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"Housing *is* Health Care"

The Impact of Supportive Housing on the Costs of Chronic Mental Illness

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Contents

Executive Summary

Some individuals with serious mental illness experience severe, long-term symptoms of their disease. They may lack insight into their condition, not adhere to treatment, and have high support needs, among other challenges. These individuals can be considered to have a chronic form of serious mental illness. Without appropriate treatment, support, and housing, they can experience recurrent crisis episodes, homelessness, and frequent interactions with emergency, criminal justice, and health systems, incurring great public expense.

This study examines how housing and in-home supports affect public spending on individuals with chronic mental illness in Maricopa County, Arizona. It does so through a comparative analysis of average costs per person per year across three housing settings: permanent supportive housing, housing with unknown in-home support, and chronic homelessness. Specifically, it analyzes costs for housing, health care, and criminal justice during the period of 2014-2019. It also features a small-sample (small-N) case study of a housing setting that provides individualized, 24/7 in-home support to individuals with chronic mental illness (CMI) who have high support needs, examining average costs per person before and after moving into that setting (2016-2019). Finally, the study outlines recommendations from interviews with dozens of experts who work with and care for individuals with CMI in Maricopa County about reducing costs and improving care.

The results quantitatively delineated that the financial costs of individuals with CMI in permanent supportive housing were 28.7% lower than individuals with CMI experiencing chronic homelessness. Health care represented the largest category of expenses across housing settings, within which behavioral health comprised the largest percentage of costs.

In the small-sample case study of a high-support housing setting, total average costs per person decreased 12.1% over two to three years of residence in that setting. Behavioral health costs declined 36%, while spending on physical health, pharmacy, and skills training increased, demonstrating a shift in spending away from crisis management toward recovery and personal development. The tenants in this setting had no criminal justice interactions during the study period.

Interview participants widely agreed that there is a need for more housing and in-home supports for individuals with chronic mental illness in Maricopa County. Housing and in-home supports were seen as critical for stability and recovery and as effective strategies for reducing homelessness, crisis episodes, interactions with the criminal justice system, and costs. The results of the quantitative cost analysis support interviewees' perspectives that providing permanent supportive housing to individuals with CMI reduces overall costs.

Introduction

Among individuals with serious mental illness, symptoms and support needs vary widely. Some are able to manage their illness and lead relatively independent and normal lives, while others experience severe symptoms over many years and need a high level of support to manage their disease. Those in the latter group may lack insight into their condition, not adhere to treatment, and require more recovery time. Individuals with these characteristics can be considered to have a more chronic form of serious mental illness, or more simply, chronic mental illness (CMI).[1,2]

Housing is a basic need and is widely recognized as a cornerstone for stability and recovery.[3,4] But, many individuals with chronic mental illness struggle to access and maintain housing. There are many reasons for this, including the shortage of affordable housing and the unique treatment and support needs of people with CMI. In many places, there are few housing options with the high level of in-home support that individuals with chronic symptoms need to stabilize and recover.[5] Without appropriate treatment and housing, they can experience recurrent crisis episodes, frequent interactions with emergency, justice, and health systems, as well as homelessness, incurring great public expense.[6,7,8,9,10,11]

This study examines how housing and in-home supports affect public spending on individuals with chronic mental illness in Maricopa County, Arizona. It does so through a comparative analysis of average costs per person per year across three housing settings: permanent supportive housing, housing with unknown in-home support, and 24/7 in-home support to individuals who have CMI and high support needs during the period of 2014-2019. It highlights a small-sample (N=9) case study of housing that provides individualized, 24/7 in-home support to individuals who have CMI and high support needs, examining average costs per person in the year prior to moving into this setting, and two to three years after (2016-2019). Finally, it outlines recommendations to reduce costs and improve care from dozens of experts who work with and care for individuals with chronic mental illness in Maricopa County.

Background

Serious Mental Illness

The National Institute of Mental Health defines serious mental illness (SMI) as “a mental, behavioral, or emotional disorder resulting in serious functional impairment, which substantially interferes with or limits one or more major life activities.”[12] While theoretically any mental illness included in the Diagnostic and Statistical Manual of Mental Disorders can be serious, it is most commonly schizophrenia, severe major depression, or bipolar disorder that lead to serious functional impairment. Examples of serious functional impairment include problems with basic daily living skills (e.g., eating, bathing, dressing), instrumental living skills (e.g., maintaining a household, managing money, getting around the community, taking prescribed medication), and functioning in social, family, or occupational contexts. Around 25% of individuals with SMI develop a Substance Use Disorder (SUD).[13] According to the National Survey on Drug Use and Health, in 2019, 20.6% (or 51.5 million people) of adults 18 and older had a mental illness; 5.2% (or 13.1 million people) had serious mental illness.[14]

SMI is caused by a complex interplay of genetic, environmental, and social factors, often resulting in a life-long illness.[15,16] With proper management, people with SMI can lead stable lives. One study estimates that 33% of people with SMI have been in remission for at least one year.[17] With treatment, people can recover, which usually means they experience symptom

remission and progress in areas of their lives that they subjectively value.[18] This is especially true when they are integrated within families, workplaces, and communities.[19] Unfortunately, treatment is difficult and expensive; it includes medical and psychological treatment, as well as housing assistance, job assistance, and social assistance.[20] Appropriate treatments and supports are often difficult to access or not available to patients due to lack of financial resources, lack of treatment options, lack of supportive networks, and stigma; 40-50% of people with SMI are estimated to receive no treatment at all.[21] As a result, individuals can experience frequent hospitalization, arrests, incarceration, victimization, family violence, or suicidality, all of which can make them even less likely to receive proper treatment.[22] Since individuals with SMI are often unable to pursue employment, especially without treatment, many experience poverty and homelessness, making them more likely to be involved with the criminal justice system instead of receiving treatment.[23] Poverty is a cause as well as a result of SMI.[24]

Chronic Mental Illness

The current study focuses on the subset of individuals with SMI who experience severe, long-term symptoms. We refer to this subgroup as individuals with Chronic Mental Illness (CMI); they are also referred to as having severe and persistent mental illness[25] and as high utilizers.[26] They may lack insight into their condition, have a co-occurring substance use disorder, not adhere to treatment, have high support needs, and require more recovery time.[27,28,29,30] It is common for individuals with CMI to cycle repeatedly through the behavioral health system, the criminal justice system, and homelessness services, incurring costs at different stops throughout the cycle, known as the "revolving door." Many of these stops, or service nodes, such as hospital emergency department visits or police interactions, can be costly, affecting diverse state and local budgets.[31] Their symptoms make finding and maintaining housing and support services a major challenge.[32]

There is no commonly shared definition of CMI among mental health professionals and researchers.[33] Previous studies have focused on this population; however, they typically define CMI as those individuals who incur the highest costs rather than relying on a clinical definition.[34]

Outcomes for Health, Housing, Criminal Justice, and Public Costs

Serious mental illness (including CMI) can lead to poor economic and health outcomes. Nationally, it is estimated that 15-20% of people with SMI live beneath the poverty line, 80% are unemployed, and 116,000 experience homelessness (around 25% of all unhoused people).[35,36] In 2019, 463,142 individuals with schizophrenia and other psychotic disorders received Supplemental Security Income (SSI),[37] but monthly SSI payments are rarely sufficient to live on.[38] These economic realities take a tragic health toll. People with SMI die on average 25 years earlier than the general population. While 30-40% of excess mortality can be attributed to suicide and injury, the rest is often due to untreated medical conditions. Most of the excess death is therefore preventable.[39]

The consequences of non-treatment are not only tragic for individuals and families but also costly to society.[40] An area of particular concern is the criminal justice system. One survey found 10% of law enforcement budgets and 21% of officer time is spent dealing with individuals with SMI, often in crisis.[41] Among booked jail inmates, the estimated prevalence rate of current serious mental illness is 14.5% for men and 31.0% for women.[42] Individuals with SMI are often charged with minor offenses like disorderly conduct.[43] Imprisonment for mental health issues is not only counterproductive for recovery but also

expensive. Studies show considerable savings from prison diversion and proper outpatient treatment.[44,45]

Given the high prevalence of homelessness and incarceration among people with SMI, any treatment must address housing. Advocates for individuals experiencing homelessness and researchers have long argued and shown that providing housing is more cost-effective than addressing homelessness-related crises.[46,47,48] Studies often find that a small subset of people incurs a disproportionately large cost, is chronically in crisis, and would benefit most from intervention.[49] A famous story by Malcolm Gladwell, "Million-Dollar-Murray," examines the life of a man experiencing homelessness who cost Nevada an estimated $1 million over 10 years, an amount much higher than the cost of providing housing for him.[50] A 2008 report by the Morrison Institute found similar potential cost savings for helping people experiencing chronic homelessness in Arizona.[51] The main conclusions of these and other studies support "Housing First," an approach that prioritizes providing individuals experiencing chronic homelessness with permanent housing as a foundation for other needed supports and/or treatments and recovery.[52,53]

Housing First is based on the theory that a stable place to live, with stable access to services, food, and a social network, is a necessary condition for people to improve their quality of life and pursue other goals, like recovery or employment. In this approach, individuals are rapidly rehoused in permanent accommodations without requirements around sobriety or treatment adherence. It has been shown to be successful and is promoted by most organizations working toward ending homelessness.[54]

While Housing First has helped people with SMI and reduced public costs,[55,56,57,58] it is often not sufficient to achieve remission of SMI or SUD symptoms.[59] Housing First programs have been criticized as "Housing Only" programs, which do not offer sufficient support.[60] The traditional Continuum-of-Care (CoC) approach has not necessarily been more successful.[61] CoC is a coordination of local service providers designed for people with SMI to advance through various stages: from outreach programs and drop-in centers to congregate living arrangements with varying levels of support, then finally to independent living. At each stage, individuals must demonstrate housing readiness, which includes being sober and complying with psychiatric treatment. Because of the strict requirements of CoC programs, people with CMI have difficulty being admitted or maintaining participation, leading to eviction from the programs.[62]

A key factor in the success of housing for individuals with SMI and CMI is its combination with treatment and supports.[63,64] Yet, across the United States, intensive community-based services and treatments are difficult to access due to a lack of providers, funding, and insurance coverage.[65] Few people who would benefit from supportive housing actually receive it.[66] Importantly, Medicaid funds cannot be used to pay for housing, including room and board, rental assistance, or non-medical services. Community behavioral health organizations can, however, collaborate with housing providers to comprehensively meet the housing, treatment, and support needs of individuals with serious mental illness.[67]

The availability of housing, treatment, and support for people with SMI and CMI is often a key question, but it is also essential to ask whether a given option is appropriate for an individual's needs and preferences. Over time, an individual's preferences and needs for housing, treatment, and support may change as their clinical condition improves or deteriorates.[68]

The Case of Maricopa County, Arizona

Maricopa County is the economic and population center of Arizona. It is home to the state capital, Phoenix. The Phoenix metropolitan area has grown rapidly over the last several decades. In 2019, the population of Maricopa County was 4,485,414, representing 61% of the state's population.[69,70]

Based on national proportions, there are an estimated 139,267 adults with SMI in Maricopa County.[71]

The Public Behavioral Health System

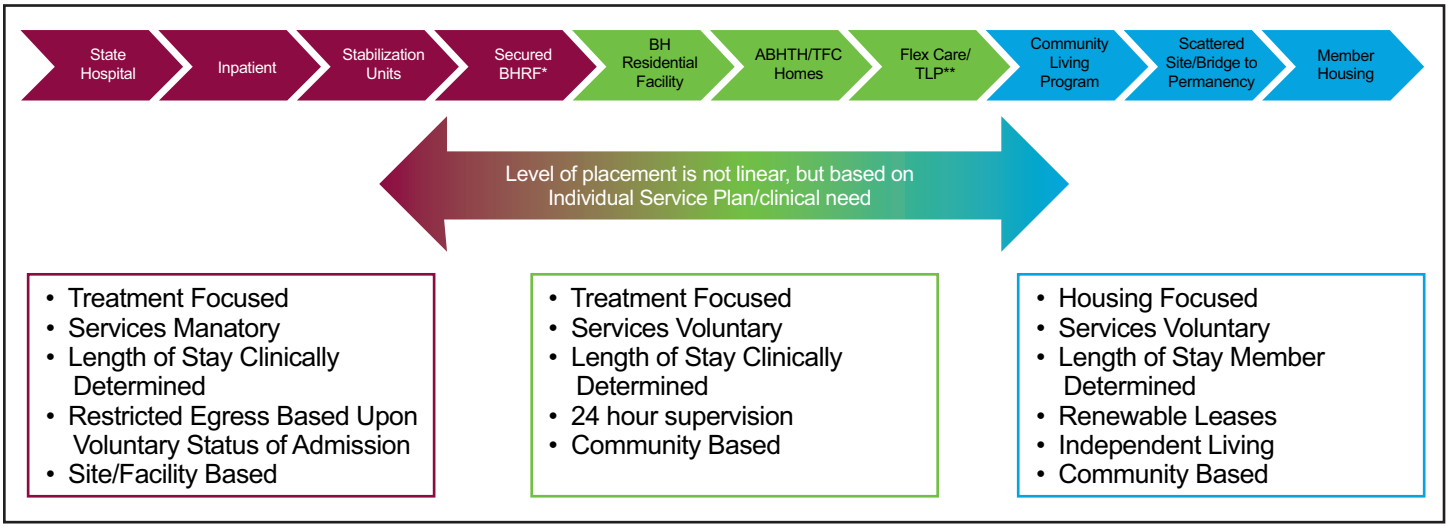
The Medicaid agency for Arizona is the Arizona Health Care Cost Containment System (AHCCCS). It provides coordination, planning, administration, regulation, and monitoring for all of Arizona's public behavioral health system. AHCCCS contracts with Regional Behavioral Health Authorities (RBHA) to deliver integrated physical and behavioral health services to Medicaid-eligible individuals with SMI. In 2013, the RBHA contract for Central Arizona (which includes Maricopa County) was awarded to Mercy Maricopa Integrated Care, now called Mercy Care.[72] In 2019, Mercy Care served 34,451 adults with SMI. This is around 25% of adults with SMI in Maricopa County.[73]

The class action lawsuit Arnold v. Sarn, filed in 1981, alleged that the Arizona Department of Health Services (ADHS) and Maricopa County "did not fulfill their statutory obligations to provide a comprehensive community mental health system." The suit was settled in 2014 and, among other things, required that the state increase the number of individuals served by housing, employment, and other services. As a result, Mercy Care expanded its permanent supportive housing subsidy and support services to include more recipients. It also offers assistance with activities of daily living, skills training, transportation, and other support services.[74] Additionally, through its Whole Person Care Initiative (WPCI), AHCCCS is engaging community stakeholders interested in augmenting the Medicaid system's ability to address housing and other social determinants that influence health outcomes.[75]

Options for Treatment and Housing

There are various housing settings designed to meet a range of treatment and support needs for individuals with SMI in Maricopa County (Figure 1).

Figure 1: AHCCCS treatment and housing continuum.[76]



For individuals experiencing a behavioral health crisis, there are treatment-focused restrictive settings with professional supervision and mandatory services, such as the Arizona State Hospital and inpatient facilities. Secured Behavioral Health Residential Facilities ("secure residential") are another example of this type of setting; currently, two such facilities are in development in Maricopa County.[77] For individuals experiencing a behavioral health issue who are at risk of going into a more restrictive setting, there are settings focused on treatment with professional supervision and voluntary services, such as personal care and skills training. Examples include Behavioral Health Residential Facilities (BHRFs) and Adult Behavioral Health Therapeutic Homes (ABHTHs). For individuals who are ready to live independently but still require support, there are settings focused on housing with voluntary services, such as case management, life skills, and peer mentoring. An example of this type of setting is permanent supportive housing, defined as "Community based housing with tenancy supports and outpatient services available up to 24 hours a day to assist members with obtaining and/or maintaining housing … provided on or off site, based upon a member's choice."[78]

However, there is not enough supply of these options to meet the needs of individuals with SMI and CMI. In 2018, AHCCCS reported 5,221 beds in behavioral health residential facilities and supportive housing in Mercy Care's service area (Central Arizona, which includes Maricopa County), covering about 15% of members with SMI.[79] A 2020 service capacity assessment of AHCCCS found that supportive housing was more available to individuals with SMI (especially Medicaid recipients) in Maricopa County compared with the national average.[80] Yet, several studies (including this one) have documented that local experts feel more housing, treatment, and support are needed for individuals with SMI and CMI in Maricopa County.[81,82]

Community-based housing (housing that is integrated into the community) has become more difficult to access as housing has become increasingly unaffordable in Maricopa County.[83] It is estimated that 163,000 affordable housing units are needed to meet current demand in Phoenix alone.[84] This shortage greatly affects vulnerable populations, including people with SMI, CMI, and other disabilities.[85] Twenty-three percent of the 107,100 individuals who receive federal rental assistance (such as Housing Choice Vouchers) in Arizona have a disability, a portion of whom have SMI. Still, four in ten low-income people in the state pay more than half their income in rent or experience homelessness but do not receive federal rental assistance because of limited funding.[86] There is consistently a waitlist for housing vouchers in Phoenix.[87] Mercy Care operates a Permanent Supportive Housing Program that helps members with SMI experiencing homelessness access a supportive housing subsidy, as well as support services. Because there are not enough vouchers and subsidies to meet demand, the Vulnerability Index-Service Prioritization Decision Assistance Tool (VI-SPDAT) is used to screen qualified AHCCCS members and prioritize individuals with the greatest need for housing.[88]

Family, friends, advocacy groups, faith-based organizations, and other social groups constitute other vital sources of support and housing for individuals with SMI. These sources fall outside any analysis of the formal AHCCCS system but are a critical part of recovery for many people.[89,90]

Homelessness, jail, and prison are not uncommon housing situations for individuals with SMI and CMI.[91] According to the 2020 count, 7,419 individuals experienced homelessness in Maricopa County.[92] Of those, 965 self-reported having a mental illness. Officials estimate that another 1,100 individuals with SMI are housed in Maricopa County jails.[93] Statewide, 12,257

prison inmates (28% of the prison population) received mental health services in 2019;[94] a portion of these individuals can be assumed to have SMI.[95] In 2018, the state mental health agency treated 1,147 people in jail and 6,915 people in homeless shelters.[96] In 2015, the Maricopa County Board of Supervisors approved the "Stepping Up" initiative to "safely reduce the number of people with serious mental illnesses in jails."[97]

In 2020, the Maricopa County budget for SMI mental health was over $61 million.[98] However, mental health services are just one of many areas of public spending on individuals with SMI and CMI; others include public safety, homelessness services, and housing. The 2021 public safety budget for Maricopa County is $1.36 billion and includes the sheriff's department, adult probation, and emergency management. In fiscal year 2020, the county spent approximately $750,000 on homeless shelters, of which nearly 30% was focused on permanent housing.[99] A portion of each of these budgets, as well as others at state and municipal levels, goes toward responding to and caring for individuals with SMI and CMI.

To get a clear picture of whether access to supportive housing impacts public spending on individuals with CMI across these diverse budgets within Maricopa County, as well as to emphasize the role of supportive housing in recovery, we conducted a comparative analysis of average costs per person per year across three housing settings. Other studies have also examined housing and/or public costs for individuals with SMI in Maricopa County.[100,101,102,103] This study adds to this body of work by focusing on the subset of individuals with SMI who experience chronic symptoms (CMI), analyzing a relatively long study period (2014-2019), comparing costs across three housing settings, and examining costs across several domains: health, housing, and criminal justice.

Methods

This study relies on a comparative analysis of public spending over six years (2014-2019) for individuals identified as having chronic mental illness to understand better the costs associated with different housing settings. The study compares individuals in permanent supportive housing with those who experience chronic homelessness and those who are housed with unknown in-home support. The Center for Health Information & Research (CHiR) at Arizona State University (ASU) collected and analyzed quantitative data on SMI and CMI status, housing setting, and costs. To identify recommendations for improving care and reducing costs of individuals with CMI, ASU's Morrison Institute for Public Policy conducted and analyzed semi-structured interviews with experts, individuals with chronic mental illness, and family members of individuals with chronic mental illness. Please refer to the appendix for a more detailed description of the methods used in this study.

Serious Mental Illness (SMI) is a designation for individuals with a mental, behavioral, or emotional disorder who need additional services and support to function in daily life and major life activities.[104] Within the population with SMI, CHiR identified the subcategory of individuals with Chronic Mental Illness (CMI) for this study by using the legal definition for secure placement of individuals with SMI who are nonadherent or nonparticipators in treatment and require more restrictive settings of care.[105] Specifically, individuals with CMI were defined as those who 1) are designated as SMI, 2) had at least two episodes requiring crisis assistance in the last two years, 3) did not adhere to the follow-up treatment within 14 days, and 4) had an interaction with the criminal justice system, made a claim for suicide or intentional self-injury or harm, or experienced recurrent crisis episodes. CHiR combined individual-level data from

multiple sources to arrive at estimates of annual housing, health care utilization, and criminal justice costs associated with individuals with CMI. Data from AHCCCS included information about medical and social services, as well as incarceration events.[106] Data on housing status came from AHCCCS and the Homeless Management Information System (HMIS), which many local service providers use to track housing status.[107] Additional data on arrests and incarceration were scraped from the Maricopa County Sheriff's Office website[108] and the City of Phoenix Open Data Portal.[109] Housing costs come from the U.S. Census[110] and the U.S. Department of Housing and Urban Development.[111,112] For the small-N case study, Copa Health provided roster data, which was used to estimate costs for individuals living in their Lighthouse group homes.

All of the results for costs are presented as average annual costs per individual, adjusted for inflation to 2020 dollars. Health care costs were calculated using allowed amounts for claims of individual AHCCCS plans that met the parameters of this study. Criminal justice costs (i.e., incarceration, law enforcement, and legal system costs) were based on indirect estimates[113,114,115,116,117,118] and other studies.[119] Therefore, they are to be treated with less certainty, as they likely undercount actual costs. Costs of permanent supportive housing were approximated using the fair market rent for an efficiency unit, and costs of housing with unknown support services were estimated using median rental costs and average subsidies. Costs of chronic homelessness were based on annual shelter expenses.[120]

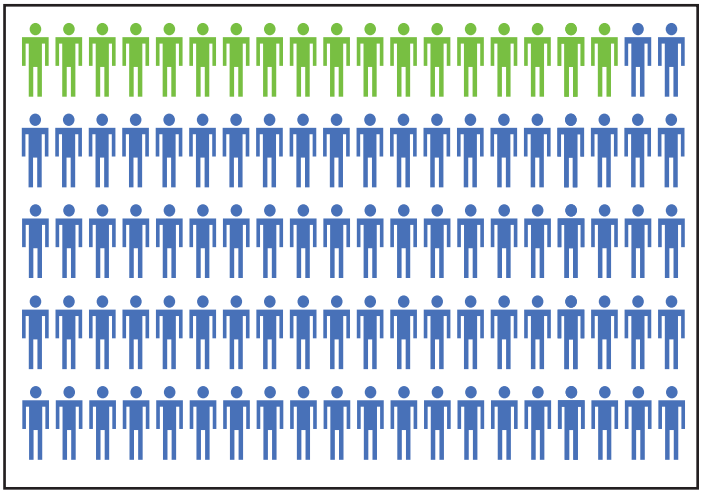
Researchers at Morrison Institute conducted confidential, semi-structured interviews via Zoom and phone with 36 experts, including family members of individuals with CMI, advocates, housing providers, behavioral health providers, homelessness services providers, legal professionals, and emergency responders. Five individuals with CMI were also interviewed about their experiences with housing and in-home supports in Maricopa County. Participants were selected based on association with relevant organizations and by recommendation (snowball sampling). Interview notes and transcripts were analyzed inductively for themes related to improving care and reducing costs.

Results

How Many Individuals in Maricopa County Were Identified as Having Chronic Mental Illness?

Over the six-year study period (2014-2019), 33,939 people enrolled in the Arizona Health Care Cost Containment System (AHCCCS) in Maricopa County were determined to have a serious mental illness (SMI). Of those, 6,291 individuals (18.5% of the SMI population) were identified as having chronic mental illness (CMI), according to the criteria outlined for this study (Figure 2; see Appendix).

Figure 2: People with chronic mental illness (represented in green) comprise 18.5% of the total population of people with serious mental illness in Maricopa County.

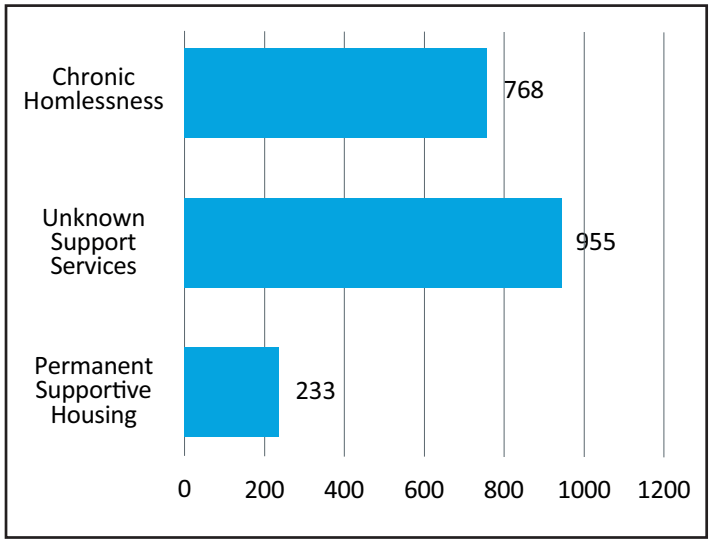


Of the 10% most costly AHCCCS members with SMI, 42.4% (1,441 people) were identified as having chronic mental illness. These 1,441 people represent 22.9% of all individuals with CMI identified in this study. This illustrates that, while there is considerable overlap between high-cost AHCCCS members and AHCCCS members with CMI, these groups are not one and the same.

The Settings Where People with Chronic Mental Illness Live

We identified three housing settings from the available data: permanent supportive housing, housing with unknown support services, and chronic homelessness. An individual's housing status was defined as the setting an individual lived in for a minimum duration of 180 days during or closest to when they met the study's criteria for a CMI designation (see Appendix for more detail). Of the AHCCCS members identified as having CMI, 31.1% (1,956 individuals) met the study criteria for housing setting. Figure 3 shows the housing settings of those individuals. This breakdown allowed us to calculate average costs per person per year by housing setting.

Figure 3: Sample frequency of individuals with CMI, by housing setting.

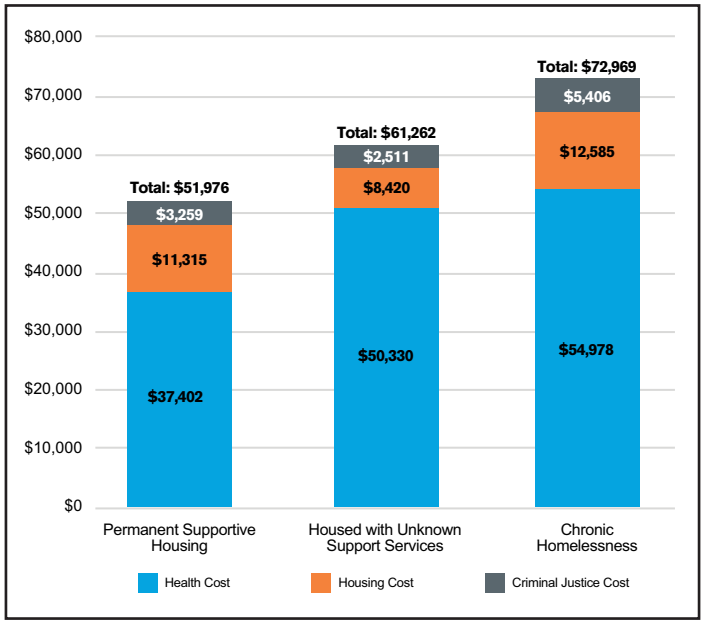


Cost Comparison Across Housing Settings

The analysis reveals notable differences in total costs per person per year by housing setting, accounting for housing, health care, and criminal justice costs (Figure 4). Individuals with CMI who experienced chronic homelessness during the study period incurred the highest average cost per person per year at $72,969, while those in permanent supportive housing incurred the lowest, at $51,976; a difference of 28.7%. The average annual costs of individuals who are housed with unknown support services fall in the middle. This data indicates that when individuals with CMI have access to housing, especially permanent supportive housing, it results in overall public cost savings.

The breakdown of costs across spending categories and housing settings is also informative. As Figure 4 illustrates, average annual costs for criminal justice interactions and housing were relatively low as a proportion

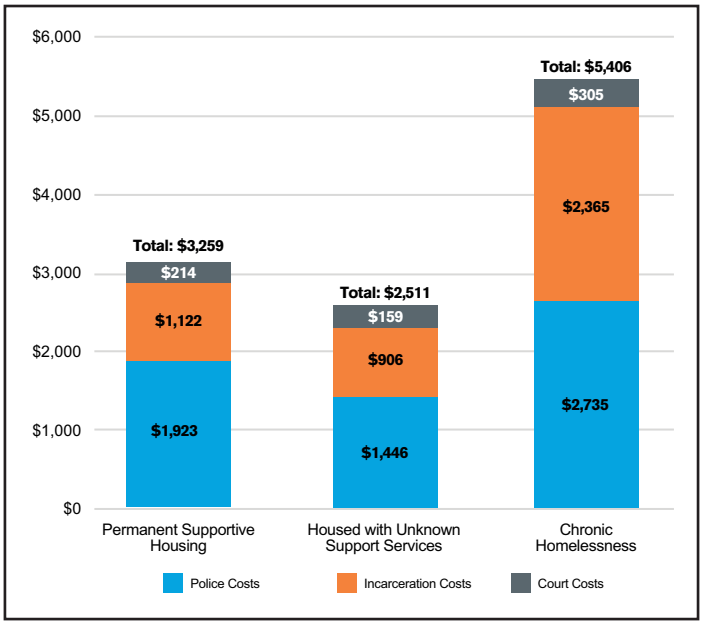
Figure 4: Average total costs of individuals with CMI in Maricopa County, per person per year, by housing setting.



of the total cost for all three housing settings. These costs did, however, vary across settings. Individuals in housing with unknown support services had the lowest average costs per person per year for both housing and criminal justice interactions; individuals experiencing chronic homelessness had the highest costs in all three categories.

The category of criminal justice interactions includes costs of police interactions, incarceration, and courts (Figure 5). Police interactions represent the largest percentage of costs in this category across housing settings, followed by incarceration costs.

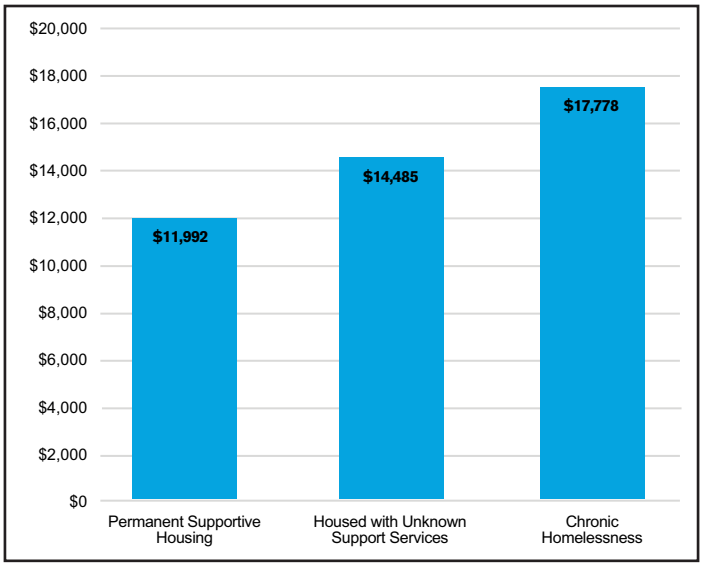
Figure 5: Average criminal justice costs of individuals with CMI in Maricopa County, per person per year, by housing setting.



Health costs represent the majority of average spending for individuals with CMI across all three housing settings, ranging from 72.0% of total costs for individuals in permanent supportive housing to 82.2% for individuals in housing with unknown support services (Figure 4). Average total health spending per person was highest among individuals experiencing chronic homelessness and lowest among individuals in permanent supportive housing, with a difference of 32%.

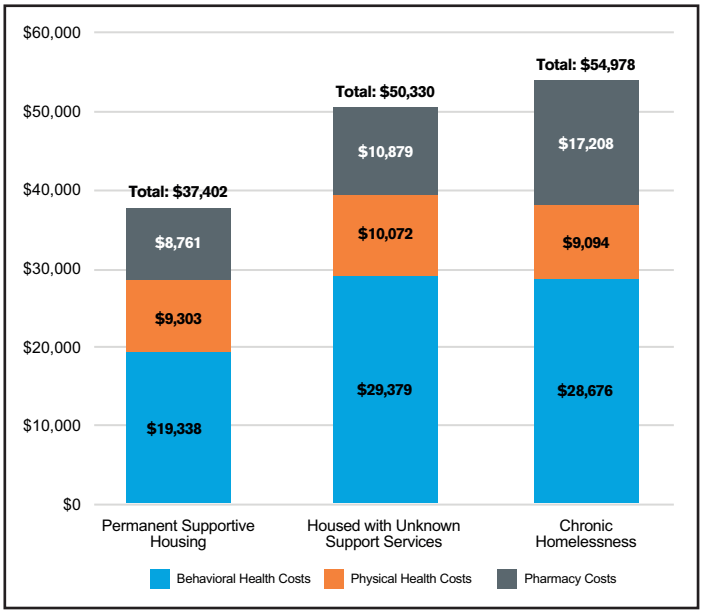
The average cost of health services administered in an inpatient setting represented a similar percentage of total health costs across housing settings (29%-32%). Inpatient costs were highest among individuals experiencing chronic homelessness at $17,778 (Figure 6).

Figure 6: Average inpatient costs of individuals with CMI in Maricopa County, per person per year, by housing setting.



Health costs consisted of three major categories: pharmacy, physical health, and behavioral health. Average annual physical health expenses per person were similar across housing settings, ranging from $9,094 among individuals experiencing chronic homelessness to $10,072 among individuals in housing with unknown support services. Average pharmacy costs varied more by housing setting. Among individuals experiencing chronic homelessness, average pharmacy costs of $17,208 were nearly double that of individuals in permanent supportive housing and 45% higher than costs for individuals in housing with unknown support services (Figure 7).

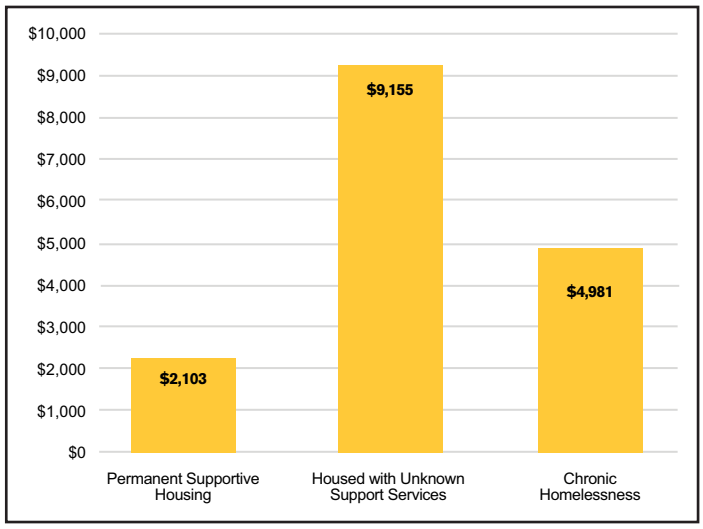
Figure 7: Average health costs of individuals with CMI in Maricopa County, per person per year, by housing setting.



Behavioral health comprises the largest percentage of health costs across all three housing settings. Average behavioral health costs were lowest among individuals in permanent supportive housing at $19,338 (51.7% of health spending for that setting), and costs were highest among individuals housed with unknown support services (58.4% of health spending; Figure 7).

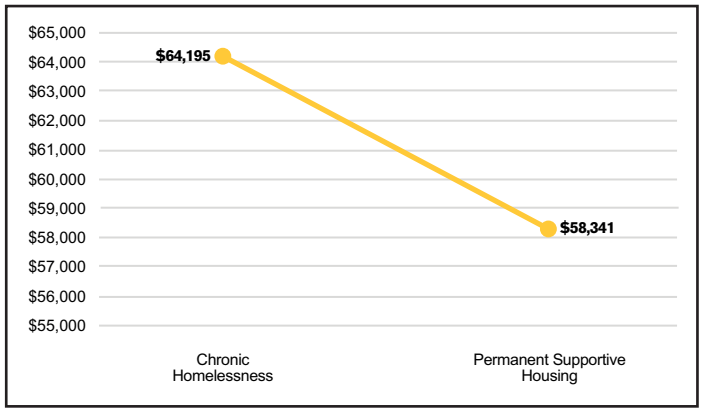
Within the category of behavioral health, the average costs of "Other mental health and substance use treatments" (an aggregated category that includes residential treatment programs, alcohol and drug services, therapy, mental health assessments, mental health services not otherwise specified, and psycho-educational services) showed variation across settings. Among individuals in housing with unknown support services, the average of $9,155 was over four times that of individuals in permanent supportive housing and nearly double that of individuals experiencing chronic homelessness (Figure 8).

Figure 8: Average costs for "Other mental health and substance use treatments" of individuals with CMI in Maricopa County, per person per year, by housing setting.



Within the study sample of individuals with CMI, we identified 78 people who transitioned from chronic homelessness (the highest-cost setting per person per year) to permanent supportive housing (the lowest-cost setting per person per year) within the study period (2014-2019). Among this group, average costs per person declined $5,854, or 10%, after transitioning to permanent supportive housing (Figure 9).

Figure 9: Average public spending per person per year on individuals with CMI who transitioned from chronic homelessness to permanent supportive housing in Maricopa County.



A Copa Health Lighthouse Group Home in Maricopa County. (Photo by Jeff Bayer/Copa Health)

Case Study: Lighthouse Model Community Homes

In Maricopa County, there are only two group homes that offer stable, long-term housing with 24/7 in-home professional support. These homes, managed by Copa Health, are called Lighthouses. The goal of the Lighthouses is to improve tenants' symptoms under stable and supportive conditions in a community-based setting. Advocates argue that the Lighthouse model is an example of how housing with higher levels of support can improve the stability and wellbeing of individuals with chronic mental illness (CMI), as well as reduce costs and shift expenses from crisis management toward recovery and personal development.[121]

Lighthouse Model Community Homes embrace a person-centered approach to housing and support. Tenants sign an annual lease and pay 30% of their income in rent. Each tenant has an individualized treatment plan, and they can come and go per that plan. Their autonomy falls between that of a nursing home and independent living. Behavioral health technicians provide 24/7 on-site support—such as cooking, shopping, getting to appointments, help with employment and volunteer opportunities—and are trained to respond to behaviors associated with SMI. In this regard, Lighthouses are most

Tenants of a Copa Health Lighthouse Group Home in Maricopa County. (Photo by Jeff Bayer/Copa Health)

similar to Behavioral Health Residential Facilities (BHRFs) but differ in their tolerance for SMI symptoms otherwise deemed "bad behavior." If a tenant experiences a crisis episode, they can go to a hospital for treatment and return to the Lighthouse when they are ready. Other housing programs, even those designed for individuals with SMI, may eject residents on the grounds of substance use, unpredictable behavior, disregard of schedules or other rule violations, hospitalization, or incarceration. In contrast, at the Lighthouses, these behaviors and experiences are recognized as characteristic of CMI; when they occur, the staff pursues appropriate options for treatment and support rather than eviction. There is no limit on tenants' length of stay at the Lighthouses, but there are criteria for when an individual may be ready for housing with less intensive support.[122,123,124]

Tenants of a Copa Health Lighthouse Group Home in Maricopa County. (Photo by Jeff Bayer/Copa Health)

The idea of the Lighthouse model began in 2014 when family members of individuals with serious mental illness, mental health advocates, and Copa Health recognized a small group of Copa Health members who were experiencing severe, long-term mental health symptoms and repeated or prolonged stays in hospitals and/or residential programs. For most individuals with SMI, hospitalization or residential treatment is needed for a short time to stabilize and prepare for the next phase, usually independent living. This group of individuals, however, had chronic symptoms and among the highest support needs of Maricopa County's SMI population. Professional clinical judgment considered them to have CMI and to need a higher level of in-home support than what was available at the time.

Copa Health developed the Lighthouse model to meet these individuals' need for long-term housing and person-centered support and reduce the costs of their care. The first Lighthouse group home opened in December 2016 with four tenants; the second opened in October 2017 with five tenants. All nine original tenants continue to live in the Lighthouse group homes today.

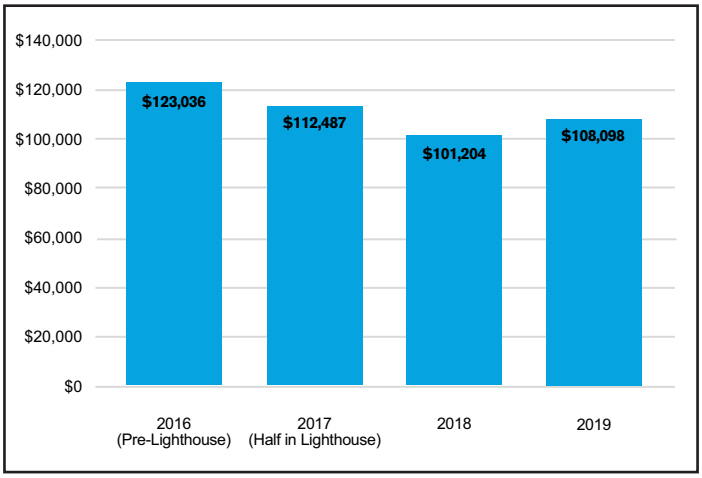
> *There's people here on-site to help me that are behavioral health techs that are trained, and they're good people, and it's a nice living situation. … There's people here to help you cook. … I love the house. It's great. I've lived here for three and a half years, and it's a great environment, the location's spectacular.*
>
> —Lighthouse tenant

> *[I]t's going great. Real great. I love my roommates. I liked the staff support I get here day in and day out. … It helps me a lot to be here and in a group home with roommates. It's awesome.*
>
> —Lighthouse tenant

Average Annual Costs of Lighthouse Tenants

Figure 10 shows average health care costs per person per year for Lighthouse tenants over the period 2016-2019. It represents costs

Figure 10: Average health costs pre- and post-Lighthouse setting, 2016-2019, per person per year.



for one year before this group moved into the Lighthouses (2016) and two to three years after they moved into the Lighthouses (2017-2019).

For the majority of 2017, only four of the nine tenants lived in the Lighthouses; the remaining five tenants moved into the second Lighthouse group home in October. Costs are included for all nine individuals. Lighthouse tenants have among the highest support needs of Maricopa County's SMI population, as reflected in the high average health costs per person per year. At $108,098, average annual spending on overall health care per Lighthouse tenant was 12.1% lower in 2019 (two to three years after moving into the Lighthouses) compared with spending in 2016, the year before the first Lighthouse opened. The decline in spending after placement in Lighthouse group homes was realized primarily in average behavioral health costs per person per year, which fell 36% between 2016 and 2019 (Figure 11).

While overall costs declined over the study period, some costs increased, particularly those associated with recovery and personal development (Figure 12). For example, pharmacy spending increased 212% from 2016 to 2019. Physical health costs increased 127% over the same period, likely because increased stability of the Lighthouses made diagnosing and treating tenants' physical ailments easier. Spending on skills training increased dramatically over this period—2,176%—which suggests Lighthouse tenants were able to spend more time on activities that helped improve their autonomy and independence.

Figure 11: Breakdown of average health costs pre- and post-Lighthouse setting, 2016-2019, per person per year.

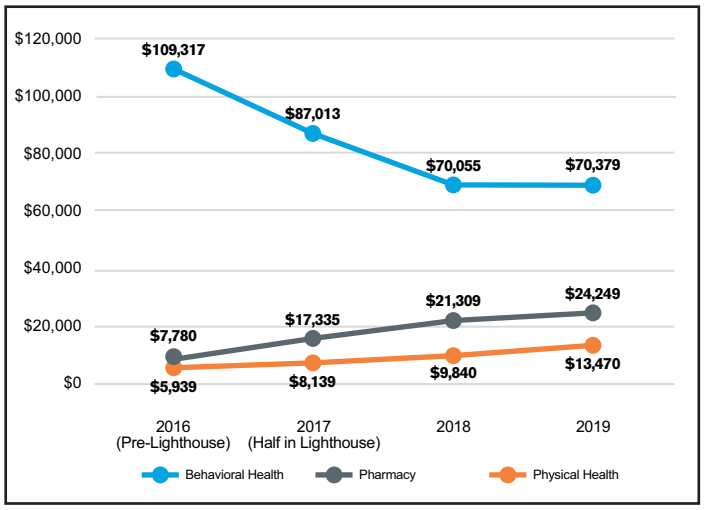
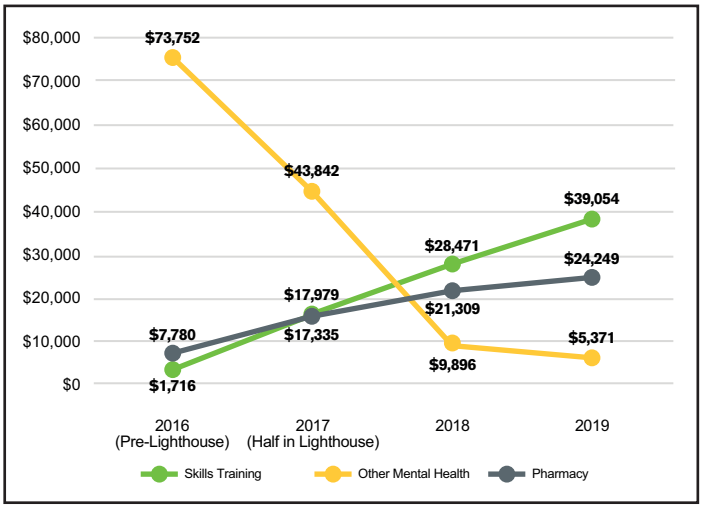


Figure 12: Average spending on select health services in Lighthouse setting, 2016-2019, per person per year (N=9).



Tenants of a Copa Health Lighthouse Group Home in Maricopa County. (Photo by Jeff Bayer/Copa Health)

Notably, none of the Lighthouse tenants had criminal justice interactions during the study period (2016-2019), meaning no costs were incurred for this category of expenses. Professionals who work with Lighthouse tenants expected that average costs would continue to decline as Lighthouse tenants improve and gain independence. However, these experts also noted that Lighthouse tenants are very likely to need in-home support over the long-term, if not over their lifetime, and that their total costs are likely to remain higher than average for individuals with CMI.

Tenant of a Copa Health Lighthouse Group Home in Maricopa County. (Photo by Jeff Bayer/Copa Health)

This case study of Copa Health's Lighthouse Community Homes is a starting point for understanding the costs of individualized care for CMI individuals with among the highest support needs in Maricopa County. Because of the small sample size of nine individuals and a relatively brief time series of four years, only limited conclusions can be drawn from this analysis. However, as one of the few housing settings in Maricopa County with 24/7 in-home care that is Medicaid-supported and long-term, it is an informative empirical case of how localized costs for individuals with CMI changed over time when receiving a high level of in-home support.

Expert Recommendations

Interview participants from a range of perspectives and experiences offered suggestions for improving care for people with chronic mental illness (CMI) and reducing costs in Maricopa County. Stable, affordable housing was widely considered essential for both improving care and reducing costs. However, many participants argued that for housing to be successful on both fronts, it must be combined with appropriate long-term treatment, quality support services, and community integration:

> *Housing is health care. And that means mental health and physical health. It's way more expensive for somebody to hit our emergency rooms, our behavioral health systems, than to provide them with support and housing. There's a cost savings of having that—supportive services and a safe place to live—versus that person being on our streets and hitting all of our crisis systems.*
>
> —Homelessness services provider

Provide Higher Levels of Treatment and Support

Many interview participants recommended providing higher levels of treatment and support to individuals with CMI than what is currently available through AHCCCS. This includes residential treatment, such as secure residential or inpatient treatment for co-occurring substance use disorders, as well as 24/7 in-home support in independent living and congregate settings.

Participants argued that individuals with CMI could benefit from these more intensive support options because they allow more time and structure to stabilize, during which their medication can take effect, and they might gain insight into their mental illness and/or recover cognitive function. The majority of existing supportive housing options are not appropriate for individuals experiencing symptoms of SMI, and too often result in eviction. As a law enforcement professional explained:

> *[If] you put people in housing that has rules—substance use, noise, cleanliness—when symptomatic, they're gonna get themselves kicked out. So, there's not really a lot of places that can manage people when they're symptomatic and keep them housed. I mean, there's, quite frankly, people that need supervision 24/7, but we don't have enough beds. … So, it'd be nice to have something in the middle, between complete lockdown-secure hospital setting to out in the community.*

A family member and advocate further explained how housing with higher levels of support and supervision can facilitate a turning point in recovery: "[N]o one wants to have [to] tell someone you're gonna have to be treated. The benefit is … often it's enough time to get them insight, and then they're on a different path for the rest of their lives. … It gives them a chance at being able to create a life and step down to living on their own, living in an apartment. They'll never have that chance if they keep cycling through going to jail and prison."

Coordinate Transitions Between Care and Housing

To help ensure individuals with CMI receive the housing and in-home support they need, participants recommended better coordination of care and housing during transitions from hospitals, jails, residential treatment, and new housing. Too often, participants explained, individuals are discharged from the hospital or jail with no housing or are placed in housing that does not meet their support needs because of lack of coordination and/or availability. Or, an

individual is placed in housing, and their supports fall away. When this occurs, the individual may end up cycling back through crisis services, the behavioral health system, the justice system, and/or experiencing homelessness. To prevent this, several participants recommended that care providers in inpatient and outpatient settings, caseworkers, housing providers, and family members coordinate more through discharge planning and data sharing. Some noted that federal regulations from the Health Insurance Portability and Accountability Act (HIPAA) could be a barrier to sharing information among providers and family members but still saw opportunities for coordination. Participants suggested developing centralized databases to track important information about shared patients and clients, such as their medication, care providers, caseworkers, emergency contacts, and contact information. For example, a behavioral health provider stated:

> *There seems to be a fragmented system between those who are hospitalized and those who are discharged. So, I think, as a system, we need to come together, and we need to have better communication related to members who are being hospitalized, and then just providing that good follow-up outpatient care for those members. ... As a starting point, hospitals and outpatient providers need to start to come together. We've done better as a system in the last couple years, but it's—certainly, there needs to be further improvement in that area. We need to have a centralized database where not only are we seeing which members are going in and out of the hospitals, but we should also be able to see each other's documentation on shared members so that we know where our members are. ... We have to have a better discharge planning process in place where those hospitals are reaching out to outpatient and then outpatient … staff are there on premises to be able to help the member with the transition and then with the follow-up doctor's appointments and such.*

Reduce Caseloads to Allow for Individualized Care

Caring for individuals with CMI can be intensive in terms of time and effort. Participants observed that the level and quality of attention and individualized support they need is often not provided, however, because the professionals charged with their care—caseworkers, Assertive Community Treatment (ACT) Teams, doctors, in-home support staff, and others—have such high caseloads and turnover. To address this challenge, participants recommended reducing caseloads and increasing pay to attract and retain qualified, committed professionals to the field and avoid burnout. As a behavioral health provider stated, "If we were to address it as a system, we will be increasing salaries to get quality people who have a desire to provide quality services to people who are receiving individualized support because caseloads are smaller and because I can meet your needs and help identify what it is before it's too late for you."

Meet Long-Term Support Needs

Some participants compared CMI with other chronic conditions like Alzheimer's disease or diabetes: More severe forms require more intensive care. They noted that the system could better accommodate the time individuals with CMI need to stabilize and recover; some may need intensive support for their whole lifetime. A CMI advocate and family member put it this way: "We have people who have cancer who are more severe than others, we have people who have heart disease that are more severe than others and need care for the rest of their lives. If you have diabetes, you need care literally for your whole life, and some people's diabetes

is more severe than others'. You need more intensive care. Well, it's the same thing with mental illness."

Set Realistic Expectations for Recovery

There was broad agreement that individuals with CMI should have consistent, appropriate housing with quality services and professional support staff to provide the stability needed to recover for as long as they need or want it. Many recommended that recovery plans reflect the likely occurrence of occasional crisis episodes, substance use, and/or criminal justice interactions, and subsequent hospitalization, inpatient treatment, and/or incarceration. Housing providers should have similarly realistic expectations. When an individual is not adhering to house rules (e.g., curfews, noise restrictions, substance use restrictions, cleanliness standards), this should be taken as an indication that the individual might be experiencing symptoms of mental illness. Instead of eviction—which is often the response to non-adherence—housing providers could help the individual seek treatment by contacting their case manager, family, or behavioral health clinic and hold their spot so they can return to their housing after these events occur. As a housing provider explained, "[T]hese are people. They are very unpredictable. They are going to have—I don't want to call them failures, but they're going to make decisions that, later on, they might regret, and let's go into this knowing that and accepting that and saying that part of our program is dealing with that and then saying, 'What does our program need to look like in order to achieve some level of success?'"

Align System Incentives with Recovery Outcomes

Some participants—particularly family members, legal professionals, and advocates—saw an opportunity for aligning system incentives with recovery outcomes of individuals with CMI and SMI. This would help ensure that all patients, including those who are more challenging to treat, such as those with CMI, receive the care they need. These participants felt that the current system prioritizes cost containment over recovery outcomes, which negatively affects those with CMI and others who are costly and/or challenging to treat and house because it discourages providers from working with them. As an advocate and family member of an individual with CMI stated:

> *The system spits out the sickest, the ones that are more difficult to care for, and I think it's money. And they make more money on the crisis triage that's going on, and that's easier to do than to have to deal with individuals that need more support. And there's not enough capacity. There's not enough appropriate housing for them. ... And the smaller number of the chronically mentally ill, who need more care, we're just ignoring them instead of prioritizing them … especially the ones that lack insight.*

Participants also saw opportunities for enhancing accountability to ensure that individuals with CMI are accessing appropriate housing, treatment, and support. Several observed that, while AHCCCS is responsible for paying for treatment and services, no entity is responsible for the quality standards of treatment and services. Furthermore, no entity is responsible for paying for housing for people with SMI or other disabilities, nor ensuring that they are placed in appropriate housing. Advocates have pursued creative strategies to address issues with their loved one's care and housing, as one family member of an individual with CMI explained:

> *There needs to be accountability within the system. … It shouldn't take attorneys, it shouldn't take a senator, it shouldn't take threatening to sue, it shouldn't be filing*

complaints with the medical boards against the psychiatrists. ... This is what you get because you guys [the RBHA] are failing to make sure that the clinics that you are contracting with are doing right by these people and that they're getting the help that they need.

Increase Access to Quality Affordable Housing

Participants encouraged steps that would improve access to housing. Many individuals with CMI depend on Supplemental Security Income and/or disability benefits, making affordability an important factor in housing access. As a housing provider explained, "There's not enough housing period on all those continuums of housing … especially for people that are on Social Security—that's what, generally eight or 900 dollars a month? And that's what a rent is." Housing supply was also identified as a critical factor that needs to be addressed. A legal professional and advocate argued, "I have found—whether it's housing or it's hospital beds or it's residentials to go to—if you open up capacity then, all of a sudden, all of those bureaucratic barriers go away. And so, to me, the bottom line is we need more units."

Others pointed to the need to address the barriers created by having a criminal record or eviction record—both common among individuals with CMI and SMI—to improve access to housing. A behavioral health provider explained:

We work with individuals who also may have eviction history, criminal history. And although we've been able to identify some private owners of, like, duplexes or small apartment complexes or individual units, when we're looking at a larger complex that, you know, requires a background check and that sort of thing, those individuals are precluded from living in those complexes a lot of the time.

Invest in Housing

Increasing the supply of affordable, accessible housing in Maricopa County will require investment. There was broad agreement among participants that Arizona should dedicate more funds to housing. While they acknowledged federal funding as an essential resource, they also identified opportunities for investment by the state, such as increasing the budget of the Arizona Housing Trust Fund, increasing the number of housing vouchers, and reallocating funds from other parts of the behavioral health system toward housing that provides higher levels of support. Housing was understood as a front-end cost-saving measure that would save money in other domains, such as jail, police, and homelessness services, especially over time. These participants noted that meeting the housing needs of individuals with CMI and SMI will require sustained public investment over the long term and that this type of investment needs support from voters and decision-makers. A behavioral health provider explained:

It comes down to voters. And government. They need to put more money into our society's most vulnerable because these other agencies have great ideas and things that they would love to do, but they can't afford to do it. … To turn around and develop some really great housing programs, it's a huge cost upfront, so you have to make do with what we have. There's just not enough money and not enough interest. So, I think it's really, from the top down, it would start with the government. And then maybe here in Maricopa [County], those funds would need to go to the RBHA to be managed, but I would like to see them loosen up some of their stipulations for people to get housing.

Create Opportunities for Social Connection and Community Integration

Participants emphasized that social connection and community integration are important factors in recovery and the overall wellbeing of individuals with CMI and SMI, which can help make housing and treatment interventions more successful. They identified several ways social connection and community integration can be fostered, including support groups, faith communities, and micro-communities where individuals with similar experiences and conditions can live near each other and socialize while still embedded in the larger community. When individuals with CMI are stable, they recommended connecting them with mentorship, volunteer opportunities, and/or employment to promote a greater sense of purpose, self-sufficiency, and community integration. As a law enforcement professional explained:

> *[F]or a mental health patient, you look at occupational, you look at interpersonal, you look at leisure activities, you look at semantics, you look at all the physical stuff. You look at their sleep habits. There is so much more that you look at, and maybe some of the financial stuff. When you look at their stressors, maybe some of that is stemming from financial [issues], but then that goes back to occupational. Are we, instead of just trying to hand them a free house because they have a mental illness, are they capable of getting a job? … If we're at the point of they're reaching a remission phase, and they're starting to get to where they can manage that … are we working to partner with local businesses to see: Can we get this person a job? Even if it's not enough to pay the rent, you feel like you're doing something. You feel like you're providing for yourself, so there's that sense of accomplishment, that interpersonal and the leisure part. Are we talking to them about: what are your hobbies? What do you do for fun? What's something you like to do?*

Conclusion

This study examined how housing and in-home supports affect public spending on individuals with chronic forms of serious mental illness, or Chronic Mental Illness (CMI), in Maricopa County, Arizona. It did so through a comparative analysis of average costs per person per year across three housing settings: permanent supportive housing, housing with unknown in-home support, and chronic homelessness. Specifically, it examined costs for housing, health care, and criminal justice during the period of 2014-2019. The sample of people with CMI was identified from AHCCCS membership during the study period, and criteria based on clinical diagnoses and behaviors. Individuals with CMI accounted for about 18% of the SMI population in Maricopa County.

The results showed a considerable overlap (42.4%) between the population identified as CMI and the highest cost individuals with SMI (top decile), but that these groups are not the same.

The quantitative cost analysis showed that individuals with CMI who lived in permanent supportive housing incurred lower public costs than individuals with CMI who lived in less supportive settings. Specifically, costs of individuals with CMI in permanent supportive housing were 28.7% lower than the costliest setting of chronic homelessness. Health care represented the largest category of expenses across housing settings, within which behavioral health comprised the largest percentage of costs. Notably, inpatient costs and other mental health and substance use treatments were considerably lower for individuals in permanent supportive housing.

In the small-sample case study (N=9) of a high-support setting (Copa Health Lighthouse Model Community Homes), tenants' total average costs decreased 12.1% within two to three years of entering that setting. Behavioral health costs declined 36%. Costs increased for physical health, pharmacy, and skills training, suggesting that mental health stabilization may allow for more care in other areas. The higher costs incurred for skills training also indicate increased capacity for personal growth and independence. The tenants in this setting had no criminal justice interactions during the study period.

We also interviewed dozens of experts who care for people with chronic mental illness in Maricopa County to identify recommendations for improving care and reducing costs. Participants widely agreed that there is a need for more housing and in-home supports for individuals with chronic mental illness in Maricopa County. Housing and in-home supports were seen as critical for stability and recovery and effective strategies for reducing homelessness, crisis episodes, interactions with the criminal justice system, and costs. The results of the quantitative cost analysis support interviewees' perspectives that providing permanent supportive housing to individuals with CMI reduces overall costs. Their high-level recommendations included:

- Provide higher levels of treatment and support
- Coordinate transitions between care and housing
- Reduce caseloads to allow for individualized care
- Meet long-term support needs
- Set realistic expectations for recovery
- Align system incentives with recovery outcomes
- Increase access to quality affordable housing
- Invest in housing
- Create opportunities for social connection and community integration

Limitations

The study had several limitations, which we outline here with their implications.

Disparate Data Systems. Accessibility and standardization of data affected the cost analysis in several ways. First, housing data and services are captured in multiple, traditionally separate data systems, including HMIS, the RBHA, and AHCCCS. Second, clinical and assessment data used to identify support needs are captured using various tools and stored in individual data systems (HMIS, RBHA, individual provider EHRs) with minimal sharing. Third, criminal justice data is challenging to obtain and has no linkable unique identifiers to the other systems. This study used probabilistic matching algorithms and harmonization to connect individuals and services from the various systems that shared their data. As a result, the population for which complete data was available was limited. In addition, some concepts were difficult to harmonize, leaving us with less resolution or accuracy on support needs, level of in-home support, and criminal justice involvement. The results for criminal justice costs are likely very conservative.

Natural Comparisons. This study compared naturally formed groups of individuals with CMI in three housing settings rather than groups matched on specific characteristics. Therefore, the direction and causality of results are not clear. There may also be systematic differences among groups in addition to housing setting.

Small-N Case Study. The sample size of nine individuals in the Lighthouse case study, as well as the relatively short time series, limit the conclusions that can be drawn from this analysis. To be more robust, the analysis could be carried out over a longer period with a larger sample size. It would likely benefit from program evaluation beyond costs as well.

Future Research

There are several opportunities for future research on chronic mental illness in Maricopa County and beyond.

Within Maricopa County, criminal justice costs could be analyzed in more detail to provide a more comprehensive picture of those costs for individuals with chronic mental illness. For example, data from the Maricopa County Office of the Courts, Maricopa County Sheriff's Office, and Maricopa County Adult Probation could identify the type and severity of crime matched to individuals' records. This analysis could also include costs beyond jail, prison, and courts, such as how much time local law enforcement personnel spend responding to situations involving individuals with SMI and CMI that do not result in arrest.

Researchers could also examine the costs when housing fails as an intervention for individuals with SMI and CMI, why it fails, and strategies to help individuals find and successfully maintain appropriate housing and supports. It would also be informative to explore how eviction impacts individuals with CMI and how limiting evictions might affect both individuals with CMI and providers. The impacts of stable housing on the frequency of service utilization and other system impacts could also be further explored.

Another opportunity area for research is in co-occurring serious mental illness and substance use disorders. For example: What treatment options are available and effective? How does dual diagnosis affect an individual's adherence to treatment and their ability to find and maintain appropriate housing? Researchers could also help identify ways to productively bridge the divide between treatment and funding for serious mental illness and substance use disorders.

Future research could also examine different cultures and approaches to SMI and disabilities and identify strengths and opportunities for each. For example, Maricopa County could be compared to other prominent cases within the United States. National comparisons could also be made between the United States and countries that have implemented different but promising approaches. These comparisons could shed light on strategies and cultures that yield positive outcomes for individuals with CMI and other disabilities, their families, and society.

Appendix: Methods

Costs: Quantitative Data Collection and Analysis

Data Sources

Data for the study period of January 1, 2014, to December 31, 2019, were collected from the sources listed here under appropriate agreements for non-public data. The data were transmitted via secure File Transfer Protocol (sFTP) to the ASU Center for Health Information & Research (CHiR) HIPAA Secure Environment for processing and analysis. With the exception of the publicly available data from the City of Phoenix, all data were matched and combined at the individual level using probabilistic and fuzzy matching algorithms developed by CHiR.

Arizona Health Care Cost Containment System (AHCCCS).[125] AHCCCS is Arizona's Medicaid agency. AHCCCS maintains records on all health care interactions for Medicaid patients in Arizona across all settings and types of care. For the cost analysis in this project, diagnostic, procedural, and pharmaceutical data were examined, including data on claims, encounters, demographics, eligibility, enrollment, and providers. Information about social services and incarceration events for Medicaid members was also gathered from this source.

Homeless Management Information System (HMIS).[126] HMIS is a local information technology system used to collect data on individuals and families experiencing homelessness or at risk of homelessness ("clients") and the provision of housing and services to those individuals. In Arizona, there is a single HMIS that covers the entire state. From this source, we received housing assessments, housing status, and type of housing placement for individuals matched within the study sample. This was the primary data source for determining housing setting.

Maricopa County Sheriff's Office (MCSO) Booking Data.[127] The MCSO mugshot page was scraped nightly for data that were then processed, compiled, and matched using a fuzzy matching algorithm. Specifically, we gathered data on demographics, interaction dates, and charge descriptions. This was the sole data source for the reason for an arrest.

City of Phoenix Open Data.[128] From the City of Phoenix Open Data Portal, we gathered Phoenix Police Department "Calls for Service" data for 2016-2019, which included the date, approximate location, and outcome of service calls.[129] We also pulled police and municipal court budget costs from the city's yearly budget statements.[130,131,132,133,134,135]

Provider Data (Copa Health). Copa Health (previously Marc Community Resources, Inc.) provided a patient roster for the tenants of their Lighthouse group homes for use in the small-N case study. The roster included names, demographic information, identification codes, dates of entry into supportive housing, levels of service, and dedicated provider identification codes.

Population and Chronic Mental Illness Sub-Group Identification

Serious Mental Illness (SMI)

For this study, the SMI population was defined by membership in the Mercy Care AHCCCS Plan. In Maricopa County, SMI evaluations are conducted by the Crisis Response Network (CRN). When CRN determines that an individual has SMI, the individual is enrolled in the AHCCCS benefits program.

Chronic Mental Illness (CMI)

Within the SMI population, the subcategory of individuals with Chronic Mental Illness (CMI) was identified using the legal definition for secure placement of individuals with SMI who are nonadherent or nonparticipators in treatment and require more restrictive settings of care.[136] Specifically, if during the study period an individual met the following criteria, they were identified as CMI:

- they were designated as Seriously Mentally Ill (SMI) with a diagnosis of "Schizophrenia" or "mood disorders," and
- they had at least two episodes requiring crisis services (mobile crisis, sub-acute facilities, emergency department, inpatient stays) within any 24-month period, and
- there was a gap of at least 14 days following the conclusion of a crisis episode with no subsequent behavioral health follow up, and
- they had an interaction with the criminal justice system, made a claim for suicide or intentional self-injury or harm, or experienced recurrent crisis episodes.

Small-N Case Study: Copa Health Lighthouse Model Community Homes

Copa Health provided the study team with a roster of Lighthouse tenants. The same data sources and methods that were used to calculate costs by housing setting were used to calculate costs of Lighthouse tenants (average per person per year). Due to the small number of individuals in this case study (N = 9), these costs were analyzed separately and are not comparable to the larger population of individuals with CMI.

Housing Status of and Costs for Individuals with CMI

Data on the housing status of individuals with Chronic Mental Illness (CMI) were derived from AHCCCS[137] and HMIS.[138] Housing status was defined as the setting an individual lived in for a minimum duration of 180 days during or nearest to when they met the study's criteria for CMI. Three housing status categories were identified for comparison: permanent supportive housing, housing with unknown in-home support, and chronic homelessness. Permanent supportive housing included housing with six-hour to 23-hour in-home support. "Housed with unknown in-home support" meant the individual was neither in the HMIS system nor living in permanent supportive housing but had a private residential address listed in the AHCCCS records. Residential addresses were verified using a Google API. Individuals were excluded from the analysis if they were not matched in the HMIS

system, were housed in a setting other than the three settings identified for comparison, or did not live in any location for a minimum of 180 days (i.e., their housing was unstable during the study period). About two-thirds of individuals identified as CMI did not meet the housing status criteria and were excluded from the study sample.

Housing costs (e.g., subsidies) for permanent supportive housing and housing with unknown supports were estimated using data from the U.S. Census and U.S. Department of Housing and Urban Development (HUD). Specifically, we used median gross rent (2015-2019)[139] and average household contribution towards rent in subsidized housing (2014-2019)[140] at the city level and fair market rent for an efficiency unit at the county level (2014-2019).[141] The housing cost for chronic homelessness was represented as the cost of a nightly shelter day,[142] extrapolated to all 365 days of a year.

Health Care Utilization and Costs for Individuals with CMI

Health care utilization was aligned with the duration of housing status. All cost measures are the sum of costs incurred while living in the specified housing setting, normalized to an annual amount. Health care costs represent the total allowed amounts for approved AHCCCS claims during the enrolled period. Total costs were adjusted for total enrollment days across all individuals in the study to get the average cost per person per year.

Criminal Justice Utilization and Costs for Individuals with CMI

Criminal justice costs included three categories: law enforcement (police dispatches), the legal system (court), and incarceration. During the respective housing statuses, criminal justice involvement was tracked for the study population through "incarcerations" recorded in the AHCCCS system.[143] Incarcerations were the most reliable event that could be traced at the individual level and provided the most direct measure of criminal justice involvement for the study sample. Incarceration was detected through suspension of AHCCCS services, which occurs when an individual has both received an Initial Appearance (IA) hearing and has been in custody for a minimum of 24 hours.[144]

The frequency of law enforcement involvement was measured by police call dispatches. Dispatches were calculated by adjusting the number of incarcerations by the "no disposition" rate (i.e., police were called but there was no action/arrest) calculated for the Phoenix Police Department using the Phoenix Open Data "Calls for Service" data for the given year.[145] Law enforcement costs were derived from the average of two estimates. The first was a cost per dispatch derived using the City of Phoenix Financial Report[146,147,148,149,150,151] and "Calls for Service" data from Phoenix Open Data for each year in the study period.[152] The second was law enforcement cost estimates in 2004 U.S. dollars and by level of infraction from a study by the RAND Corporation.[153] Publicly available MCSO data[154] were probabilistically matched to the larger SMI population to identify the distribution of crime types associated with the RAND study.[155] Costs associated with each crime type (e.g., Type 1 Violent, Type 1 Property, Type 2) were multiplied by the distribution to derive an average crime cost for the SMI population according to the RAND study. The individual estimates were within $200 of each other for the adjusted annualized cost.

The length of incarceration is calculated when the AHCCCS health plan is reinstated post-incarceration.[156] Incarceration costs were derived from fiscal year costs provided by Maricopa County.[157,158,159,160,161] Incarceration costs include initial processing (booking) fees and subsequent housing fees for every subsequent day in jail. These costs were averaged to represent per person per year criminal justice expenses.

The legal system costs were based on a subset of estimates from the RAND Corporation study capturing legal and court costs in 2004 U.S. dollars and by level of infraction.[162] The same method was used to match and estimate these costs for the SMI population and apply them to the CMI subpopulation.

Given the variable time frames from which data and estimates are derived, all cost data was adjusted using the Consumer Price Index (CPI) and, where applicable, appropriate subscales, to represent 2020 dollars.

These methods conservatively estimated criminal justice involvement based on a number of factors. Incarceration records from AHCCCS were the primary source for individual-level records for the study population. The number of incarcerations (and thus costs) is underestimated for longer jail or prison stays since AHCCCS terminates enrollment after 12 months; unless a person is reinstated after release, records would not accurately reflect the entire stay.[163] Individuals who enter jail diversion programs may not have been detected, likely resulting in a significant undercounting of other criminal justice interactions. The frequency and, therefore, the cost of police interactions are likely underestimated because a disposition of arrest that results in a stay shorter than 24 hours is not recorded in the AHCCCS system. In addition, because the estimate relied on an average “no disposition” rate for all calls, it is possible that the CMI population had a significantly different “no disposition” rate than the general population.

Interviews: Qualitative Data Collection and Analysis

To identify recommendations for improving care and reducing costs of individuals with CMI in Maricopa County, researchers at Morrison Institute conducted semi-structured, confidential interviews with 36 experts, including family members of individuals with CMI and professionals who work with individuals with CMI, such as advocates, housing providers, behavioral health providers, homelessness services providers, legal professionals (lawyers, judges), and emergency responders (e.g., police, firefighters, emergency room physicians). Participants were identified from the websites of organizations that serve or interact with individuals with SMI and CMI in Maricopa County, as well as by recommendation from other participants (snowball sampling).

The interviews were conducted via phone or Zoom between June 2020 and November 2020 and lasted between 15 and 80 minutes. Most interviews were conducted with a single participant, but some were conducted with two to four participants from the same organization at the same time. Participants were asked about their perspectives on whether and how housing factors into the stabilization and recovery of individuals with SMI in Maricopa County; which entities they consider

responsible for addressing housing and support needs; barriers to accessing housing, treatment, and support; and strategies for improving care and reducing costs associated with individuals with SMI or CMI. Professionals who work with individuals with CMI were also asked about the nature of their work with CMI individuals (e.g., typical interactions).

Five individuals with CMI were interviewed about their experiences with housing and in-home supports in Maricopa County. Individuals with CMI and their family members were asked about their housing history and experiences finding and maintaining appropriate housing and treatment. With participants' permission, the interviews were audio-recorded and transcribed (all but one participant agreed to be recorded). The transcriptions and interview notes were analyzed by a single analyst using NVIVO 12 qualitative data analysis software.[164] The codebook focused on recommendations for improving care and reducing costs. It was developed inductively using a grounded approach, in which themes could emerge from the data.

Endnotes

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