

Housing Insecurity, Behavioral Health Disorders, and Acute Care Utilization: A Cross-Sectional Study of Medicaid Members in the Portland, Oregon Metropolitan Area

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Abstract

Housing insecurity and substance use disorder (SUD) are critical public health issues in the United States with significant implications for health outcomes. This study evaluated the intersection of housing insecurity, SUD, and serious mental illness (SMI) among Medicaid enrollees in an urban center in Oregon. Using data from Health Share of Oregon, we identified three distinct cohorts—individuals with housing insecurity, those with SUD/Psychotic Disorders, and those with both conditions. Key outcomes included inpatient admission rates, average lengths of stay, and 30-day readmissions.

The findings indicate that housing insecure individuals show greater acute care utilization. Inpatient admissions for housing insecure individuals with SUD/Psychotic Disorders were nearly three times higher than those without housing insecurity (29.2% vs. 12.2%), with corresponding increases in ambulatory-sensitive hospitalizations and 30-day readmissions. The length of stay also significantly increased with housing insecurity, indicating compounding health challenges.

Effective interventions should address both housing and healthcare needs, including comprehensive case management and low-barrier access to physical, behavioral, and mental health services. These strategies could mitigate acute care utilization and improve overall health outcomes for these vulnerable populations.

Introduction

Homelessness is an increasing public health concern across the United States, and per the U.S Department of Housing and Urban Development is defined as an individual who lacks a fixed, regular, and adequate nighttime residence.⁽¹⁾ In 2023, the US Annual Homelessness Assessment Report (AHAR)'s Point-In-Time count recorded the highest number of people experiencing homelessness on a single night since reporting began in 2007; according to the National Alliance to End Homelessness (NAEH), the majority were concentrated in urban areas.⁽²⁾ The number of people in 2023 experiencing homelessness was approximately 653,100, representing a 12 percent increase between 2020 and 2023.⁽³⁾ When reporting began in 2007, 51% of people experiencing homelessness were concentrated in urban areas; by 2023, that had increased to 59%.^(3,4)

The state of Oregon, particularly the Portland, Oregon metro area, is experiencing one of the worst housing crises in the United States, with this region having the highest per-capita rate of unsheltered homelessness in the United States.⁽⁵⁾

Homelessness has a profound impact on health: a literature review of 42 studies found that people experiencing unsheltered homelessness have higher mortality rates, as well as high rates of chronic diseases, serious mental illness, and substance use compared to sheltered populations.⁽⁶⁾ Stablein et al. found a bidirectional relationship between substance use disorders (SUD) diagnoses and homelessness, and that homelessness was associated with more severe SUD, greater risk of medical

comorbidities, and poorer health outcomes.(7) One study found that people experiencing homelessness are more than six times more likely to have an Emergency Department (ED) visit for mental and SUD.(8)

Studies have also found that people with SUD, particularly Opioid Use Disorder (OUD) and/or stimulant use disorder, have higher mortality rates and higher rates of chronic diseases than the general population.(9,10) Similarly, a study found that when comparing houseless adults in Boston to Massachusetts adults as a whole, drug attributable mortality rates were 8 to 17 times higher in the urban cohort.(11) Living in urban centers also has a profound impact on health with a selective literature review finding that serious mental illness is generally higher in cities compared to rural areas, and living and or growing up in cities is associated with a considerably higher risk for schizophrenia.(12) In addition, there is a high overlap between mental illness and SUD - between 60 and 75 percent of people with SUD have at least one serious mental illness, and vice versa.(13,14)

Both housing insecurity and SUD are disproportionately represented in the Medicaid population necessitating strategies specifically addressing this population.(15) Given the intersections between SUD, serious mental illness (SMI), homelessness, and associated morbidities, understanding the acute care utilization patterns across people with housing insecurity and substance use disorders (and those with both) is essential for developing interventions.

Oregon's largest coordination care organization, Health Share of Oregon, which serves approximately 440,000 Oregon Health Plan (Medicaid) members, is working with regional health care systems and behavioral health organizations to develop an approach to understand the intersections between SUD, SMI, and housing insecurity, with the aim of ultimately improving outcomes for their Medicaid members.

This study focuses on Health Share members (Medicaid enrollees) in the Portland, Oregon metro area. The study aims to provide detailed insights into the intersections of housing insecurity, SUDs, and SMI in acute care utilization in this urban cohort. We describe inpatient utilization rates, average lengths of stay, and readmission rates among people with housing insecurity, with SUD/SMI, and among people with both housing insecurity and SUD/SMI.

While it is generally understood from the literature that individuals with SUD, SMI, or housing insecurity have higher morbidity and mortality rates than the general population, there are fewer studies that focus specifically on the impact of housing instability as a factor associated with acute care utilization within this population. This study is a collaborative effort across regional organizations with the aim of developing and implementing care coordination, clinical, and payment model interventions for Medicaid populations.

This study aims to enhance the understanding of the intersection of housing instability, SUD, and SMIs, with the ultimate goal of implementing policy decisions and resource allocation which will prevent avoidable morbidity and mortality. Medicaid is the single largest United States behavioral health services payer, and its interventions and initiatives can reach a significant number of people.

Study Data and Methods

Data Sources. We conducted a cross-sectional analysis utilizing Medicaid enrollment and claims data from Health Share of Oregon, the largest coordinated care organization (CCO) in Oregon. Health Share of Oregon serves approximately 440,000 members across three counties in the Portland metro area. The data included information on member demographics, diagnosis codes, healthcare utilization, and participation in specific housing support programs.

Population and Sample Selection Criteria. The study sample comprised adult Health Share members aged 18 and older who were enrolled for a minimum of six months during the calendar year 2023. The study's advisory group chose to use psychotic disorders as a proxy for SMI. We identified individuals with substance use disorder (SUD) and psychotic disorders through ICD-10-CM diagnosis codes in Medicaid claims data. Individuals were flagged as housing insecure if they had an ICD-10-CM Z-code indicating houselessness or housing insecurity; if they had a flag through Medicaid enrollment files designating their status as homeless; or if they participated in a Health Share housing benefit pilot designed to support individuals in need of housing assistance.

Diagnosis codes for SUD and psychotic disorders were developed collaboratively by Health Share, CareOregon (an integrated community network health plan managing specialty behavioral, physical, and oral health services), and Central City Concern (a regional integrated housing and health care Federally Qualified Health Center). Individuals dually enrolled in Medicaid and Medicare were excluded during months of dual coverage. To reduce potential misclassification, individuals with no medical claims for 2023 were excluded from the analysis.

Variables and Outcome Measures. Key demographic and social variables included age, race/ethnicity, preferred language, disability status, gender, and housing insecurity status. Healthcare utilization measures included the percentage of individuals with at least one emergency department (ED) or primary care provider (PCP) visit, and the frequency of these visits per 1,000 member months.

Primary outcomes included inpatient medical admissions, hospitalizations for ambulatory-sensitive conditions, 30-day all-cause readmissions, and average length of stay (ALOS). Inpatient admissions related to maternity were excluded. Readmission rates were calculated by identifying hospitalizations within 30 days of discharge, with only the first readmission counted and transfers combined into a single record. ALOS was calculated as the mean number of days between admission and discharge, with transfers combined. Hospitalizations for ambulatory-sensitive conditions were identified using standard definitions, and primary diagnoses for inpatient admissions were categorized using the AHRQ Clinical Classifications Software.(16)

Statistical Analysis. Descriptive statistics summarized population characteristics and healthcare utilization across the cohorts. For continuous variables like age and length of stay, means and standard deviations were reported. Frequencies and percentages were calculated for categorical variables such as race/ethnicity and gender. Rates for healthcare utilization measures, including ambulatory-sensitive

hospitalizations, inpatient admissions, 30-day all-cause readmissions, and length of stay, were calculated per 1,000 member-months as well as frequencies and percentages.

Relative risks for healthcare utilization outcomes were estimated using modified Poisson regression models. Linear regression analyses were used for continuous outcomes. Individuals with any combination of housing insecurity or SUD/Psychotic Disorders were compared to those with neither. All statistical analyses were performed using R software (version 4.3.1).

Ethical Considerations This study adhered to ethical guidelines, and a waiver of informed consent was obtained prior to data analysis. Approval was granted by the Providence Health and Services Institutional Review Board (IRB).

Results

Population Characteristics. Exhibit 1 describes baseline characteristics by housing insecurity status and SUD/Psychotic Disorder diagnosis. The study population included 19,986 individuals with a SUD or Psychotic Disorder, of whom 4,773 (approximately 39%) were identified as housing insecure. Housing insecure individuals with any SUD/Psychotic Disorder were slightly older, more likely to identify as Black/African American or American Indian/Alaska native, and more likely to identify as English speakers compared to housing-secure individuals.

Healthcare utilization was notably higher among housing insecure individuals with a SUD/Psychotic Disorder compared to the housing-secure groups. Emergency department (ED) visits were substantially higher among the housing insecure group; 76.9% had any ED utilization, compared to 49.6% in the housing-secure group. Additionally, ED visits per 1000 member-months were three times higher for housing insecure individuals (327.47) compared to those who were housing secure (101.03). Although a higher proportion of housing-secure individuals with any SUD/Psychotic Disorder accessed primary care services (87.8% vs. 78.8% among housing insecure individuals), the frequency of primary care visits per 1000 member-months was marginally higher for those who were housing insecure (481.80 vs. 461.34).

Acute Care Utilization. Exhibit 2 presents acute care utilization rates, revealing large differences by housing insecurity status. Inpatient admission rates were significantly higher among individuals with housing insecurity (9.5% vs. 3.0% for those without SUD/Psychotic Disorder, and 29.7% vs. 12.4% for those with SUD/Psychotic Disorder). Utilization rates per 1,000 member months were also notably higher among those with SUD/Psychotic Disorder, with housing insecure individuals experiencing 52.53 inpatient admissions per 1,000 member months compared to 17.23 in their housing-secure counterparts.

Hospitalizations for ambulatory-sensitive conditions and 30-day inpatient readmissions were also disproportionately higher among housing insecure individuals with SUD/Psychotic Disorder. For example, 3.6% of housing insecure individuals with SUD/Psychotic Disorder had ambulatory-sensitive hospitalizations, compared to 1.5% of housing-secure individuals. Similarly, the 30-day inpatient

readmission rate was 8.4% for housing insecure individuals with SUD/Psychotic Disorder, compared to 2.6% for their housing-secure counterparts.

Effect of Housing Insecurity and Cohort Status on Acute Care Utilization. Exhibit 3 illustrates the compounded effect of housing insecurity and SUD/Psychotic Disorder on acute care utilization. The housing insecure and SUD/Psychotic Disorder group exhibited the highest relative risks (RR) and utilization rates. Housing insecure individuals with SUD/Psychotic Disorder had a RR of 6.18 (95% CI: 5.81, 6.58; $p < 0.001$) for inpatient admissions, with a utilization rate of 45.5 admissions per 1,000 member months (95% CI: 44.4, 46.6).

For hospitalizations due to ambulatory-sensitive conditions, the RR for housing insecure individuals with SUD/Psychotic Disorder was 8.18 (95% CI: 6.77, 9.84; $p < 0.001$), and an increase of 4.72 hospitalizations per 1,000 member months (95% CI: 4.40, 5.05) when compared to individuals without housing insecurity or SUD/Psychotic Disorder. Similarly, 30-day inpatient readmissions were substantially elevated in this group, with an RR of 9.47 (95% CI: 8.34, 10.7; $p < 0.001$), and an increase of 14.6 readmissions per 1,000 member months (95% CI: 14.8, 16.0).

Length of stay also increased with housing insecurity and SUD/Psychotic Disorder diagnosis. Housing insecure individuals with SUD/Psychotic Disorder had an average length of stay 1.30 days longer than those without housing insecurity or SUD/Psychotic Disorder (95% CI: 0.815, 1.78; $p < 0.001$).

Discussion

This study represents a collaborative partnership across regional organizations serving Medicaid individuals in the Portland metro area with the goal of driving clinical, care coordination, health-related social needs, and payment model interventions. The findings underscore the significant impact of housing instability on acute care utilization among individuals with SUDs and SMI.

The findings show that housing insecure individuals with co-occurring SUD/SMI have significantly higher rates of acute care use. Specifically, inpatient admissions among housing insecure individuals with SUD/SMI were nearly three times higher than those without housing insecurity (29.7% vs. 12.4%). Higher rates of inpatient utilization, extended length of stay, and increased 30-day readmission among those experiencing housing insecurity suggest that greater housing stability could reduce acute care needs in a population with complex health and social needs.

We found that housing insecure individuals not only have higher inpatient admission rates but also experience longer stays and higher 30-day readmission rates. For those with co-occurring SUD/SMI, 30-day readmissions were three times higher than their housing-secure counterparts (8.4% vs. 2.6%). This indicates that housing instability makes managing chronic conditions and recovery more challenging.

Several factors may contribute to higher acute care use and longer length of stays, including more severe and chronic comorbid conditions, inability to effectively manage SUD during hospitalization with

models such as IMPACT, and difficulties safely discharging patients to a suitable environment to recover from severe illness or active SUDs, which prolongs hospital stays and increases readmission risk.(17)

Within Oregon, there is a pressing need for greater access to shelters and diverse types of housing, including respite, transitional, and permanent housing to better support both patients and the healthcare system. This is particularly true in the Portland Metro area, which has roughly 75% of the state's homeless population.(18–22)The most practical and scalable intervention is to integrate funding from the Department of Housing and Urban Development (HUD) and the Centers for Medicare and Medicaid Services (CMS), ensuring that both rent and supportive services are adequately funded.

There are potential opportunities to improve preventable morbidity in this population across multiple settings. Providing low-barrier access to Medication for Opioid Use Disorder (MOUD), with or without contingency management strategies, can improve engagement and reduce mortality rates.(23) Improving access to 24/7 shelters and post-hospitalization medical respite is crucial. These services provide a conducive environment for recovery, better sanitary and physical conditions for wound care and healing, and support engagement with service and treatment providers. Post-hospitalization medical respite can effectively reduce readmission rates among individuals who are unhoused.(24) Additionally, implementing low barrier (non-alcohol and drug free) permanent housing programs can help mitigate some comorbid factors due to improved sanitary and environmental conditions. Transitional recovery housing programs linked to case management and care coordination can support individuals seeking treatment and recovery pathways, contributing to long-term stability.(25)

Limitations. The results of this study should be interpreted within the context of its limitations. First, the study's reliance on diagnosis codes means undiagnosed conditions may be misclassified, potentially underestimating the affected population. The housing instability flag likely underestimates housing insecurity due to variable coding practices among providers.(26) The study's reliance on claims data also means that we could not include other measures, such as the presence of additional social needs or clinical severity of diagnoses, that may have played an important role in driving acute care utilization. Finally, our results also may not be completely generalizable to other urban populations with a different distribution of demographic characteristics, different access to housing resources, or different health care systems.

Suggestions for future research. Building on these findings, future research should investigate how specific types of housing instability affect health outcomes and healthcare utilization among individuals with SUD and SMI. It is crucial to understand how different kinds of housing challenges, whether temporary or chronic, uniquely impact the well-being and medical needs of these populations. Similarly, studies focusing on how housing instability differentially impacts the use of acute care services in individuals with various SUD and SMI diagnoses would be valuable. These insights could help inform strategies designed to improve service access, engagement, and clinical outcomes.

Examining patterns among subgroups and identifying factors that contribute to longer hospital stays—such as patient acuity or available discharge options—could provide important insights for tailoring

interventions more effectively. Additionally, understanding the temporal relationship between the onset of housing instability and the escalation in healthcare utilization could inform early intervention models. These models would be crucial for mitigating adverse health impacts and reducing unnecessary hospital admissions, ultimately leading to more effective and personalized care strategies for those affected by SUD and SMI.

Conclusion

This study underscores the critical impact of housing instability on acute care utilization among individuals with SUD and SMI within the Medicaid population in Oregon. The findings demonstrate that housing insecure individuals exhibit markedly higher rates of inpatient admissions, longer lengths of stay, and increased 30-day readmission rates compared to their housing-secure counterparts. These patterns highlight the pressing need for policy interventions that integrate housing support with health care services to reduce acute care use. Strategies such as providing low-barrier access to medication for opioid use disorder, enhancing shelter and respite services, and leveraging HUD and CMS funding streams could be instrumental in addressing the complex needs of these vulnerable populations. Addressing housing instability as a health-related social need is pivotal to improving outcomes for Medicaid beneficiaries with intersecting behavioral health conditions and housing challenges.

Declarations

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EXHIBIT 1 to 3 (table)

EXHIBIT 1 to 3 (table) are available in the Supplementary Files section.

Supplementary Files

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