

**Homelessness and Housing Need among People Living with HIV/AIDS in  
Philadelphia: Three Studies**

**A Report to the Division of Housing and Community Development of the  
City of Philadelphia**

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## Chapter 1 - Introduction and Executive Summary

**1.1. Introduction.** The statement “housing is HIV prevention and health care”<sup>1</sup> serves as a reminder of both the critical role of housing in care for people living with HIV/AIDS (PLWHA) and the particular vulnerability PLWHA carry for being unstably housed. Medical care, adherence to medication, transmission risk, physiological well-being, and mortality are all negatively affected when PLWHA do not have access to stable housing. Conversely, poverty; discrimination based on race, ethnicity and sexual orientation; and stigma that accompanies HIV/AIDS; and disability are some of the factors that disproportionately impact PLWHA and make it more difficult to maintain stable housing.<sup>2</sup>

In Philadelphia, there has been one major study on this topic in 2001,<sup>3</sup> and the last assessment of housing for PLWHA in Philadelphia was conducted in 1996. Housing and health conditions have changed considerably in the city since then, underscoring the need for recent evidence to inform policy on housing and HIV/AIDS in Philadelphia, particularly focusing on homelessness and other forms of extreme housing distress.

This report is a collection of three studies that examine dynamics around homelessness and precarious housing among PLWHA in Philadelphia using a collection of administrative datasets and surveys that were collected and maintained by the City of Philadelphia.

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<sup>1</sup> This slogan has been widely used among persons involved with HIV/AIDS research and services provision. It is also the title of a paper that provides an overview of the intersection between housing and HIV/AIDS; see Virginia Shubert and Nancy Bernstine (2007), “Moving from Fact to Policy: Housing is HIV Prevention and Health Care,” *AIDS and Behavior* volume 11, pages S172–S181 (available online at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.461.2364&rep=rep1&type=pdf>).

<sup>2</sup> A more in-depth review of the relationship between HIV/AIDS and housing is beyond the scope of this report. Along with the Shubert and Bernstine article referenced in the previous footnote, several recent studies are available for those interested in more detailed examinations of how these two topics intersect. See Angela A. Aidala, Michael G. Wilson, et al. (2016), “Housing Status, Medical Care, and Health Outcomes Among People Living With HIV/AIDS: A Systematic Review,” *American Journal of Public Health*, volume 106, number 1, pages e1–e23 (available online at: [http://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2015.302905?url\\_ver=Z39.88-2003&rfr\\_id=ori%3Arid%3Acr%3Apubmed](http://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2015.302905?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acr%3Apubmed)); M-J Milloy, Brandon D. L. Marshall, Julio Montaner and Evan Wood (2012), “Housing Status and the Health of People Living with HIV/AIDS,” *Current HIV/AIDS Reports*, volume 9, number 4, pages 364–374; Libby Perl (2016), “Housing for Persons Living with HIV/AIDS,” Washington DC: Congressional Research Service (available at: <https://www.hsdl.org/?view&did=795866>); and Julie Hilvers, Christine C. George, and Arturo V. Bendixen (2016), “HIV Housing Helps End Homelessness and HIV/AIDS in the United States,” in Eric R. Wright and Neal Carnes, editors, *Understanding the HIV/AIDS Epidemic in the United States: The Role of Syndemics in the Production of Health Disparities*, New York: Springer Press.

<sup>3</sup> Culhane DP, Gollub EE, Kuhn RR, Shpaner M. (2001). The co-occurrence of AIDS and homelessness: Results from the integration of administrative data for AIDS surveillance and public shelter utilization in Philadelphia. *Journal of Epidemiology and Community Health* 55(7): 515–520 (available at: <http://jech.bmj.com/content/55/7/515.full>).

Each of these studies examines particular dynamics around homelessness and precarious housing; together these results provide a clearer picture about the extent of homelessness among PLWHA (and vice versa) and particular factors that make the risk of homelessness and precarious housing more likely. The next three subsections summarize the findings of these three studies.

**1.2. Study #1 – Assessing Homelessness and Housing Need Among Persons with HIV/AIDS Based on the Medical Monitoring Project Survey.** The first study draws upon data collected in Philadelphia as part of the Center for Disease Control and Prevention’s (CDC) Medical Monitoring Project (MMP). MMP is a surveillance project, coordinated by the CDC in 26 US project areas that collects data from a population-based sample of persons living with HIV/AIDS to monitor clinical outcomes, standards of HIV medical care, and on-going risk factors of persons receiving HIV medical care. The survey is weighted to be representative of the overall population of persons receiving HIV/AIDS medical care in Philadelphia.

Key findings from the MMP data include:

**An estimated 25.5% or about one quarter of the care-receiving HIV/AIDS population in Philadelphia showed housing need, including homelessness (6%), over the course of a year.**

Specifically, an estimated 2,449 Philadelphia residents with HIV/AIDS (25.5%) engaged in medical care, experienced housing need. This number includes an estimated 571 persons (6%) who experienced homelessness. While it is difficult to find a comparison group, this rate can be considered as substantially higher than that of the overall population. Just looking at homelessness, annual prevalence rates are typically around one or two percent for general populations.

**Among those who indicated housing need, large majorities were already seeking assistance, either through case management or behavioral health (substance abuse or mental health-related) services.** Sixty-eight percent of those indicating housing need received case management services and 80.7% received case management, mental health, and/or substance abuse services. This indicates that, for the most part, people with housing difficulties sought out support services, and particularly case management services. PLWHA who received case management services will be the focus of the second study (Chapter 3 of this report, and summarized in subsection 1.3).

**Being of Black race increased the risk for housing need.** This finding is consistent with research literature that shows Black persons, due to residential segregation and other factors have historically had a more difficult time with accessing affordable and appropriate housing, and this consistently manifests itself in an increased vulnerability to homelessness.

**1.3. Study #2 – Housing Need among Persons Requesting AACO Medical Case Management Services.** The second study uses data collected by the City of Philadelphia’s AIDS Activities Coordinating Office (AACO) as part of the intake process for persons with HIV/AIDS who request medical case management (MCM) services.

As indicated by the MMP survey, about three-quarters of persons surveyed who experienced homelessness also sought out case management services, including MCM. Housing assistance is one of the most requested services that MCM applicants made, and the second study (chapter 3) of this report looks to better understand some of the factors that drive this need. Persons requesting MCM are not representative of the overall PLWHA population in Philadelphia (the large majority of whom never apply for MCM services), however those applying for MCM who indicate housing needs should provide a fairly representative snapshot of the subgroup of this population that had both HIV/AIDS and problems maintaining stable housing.

Based on these results, there are several factors which leave people particularly susceptible to housing need. They include:

**Transitions from institutional settings increase risk for housing need.** The largest subgroup in this study group to express a high degree of housing need were those who had exited institutional settings, particularly drug treatment and incarceration facilities, and have high levels of housing need as part of their settling back into the community. The three transitions that were most prevalent here – substance abuse, severe mental illness and incarceration – are all well-known risk factors for housing need and homelessness, and they also include disproportionately high rates of people with HIV/AIDS.

**Housing need is associated with Black race and transgender identity.** Two demographic groups showed particular housing difficulties. Transgender persons, a small subgroup in this study, were associated with the highest risk for indicated housing need. Black race, which describes two-thirds of the case management applicants, increased the odds of having housing need by 75%. These findings support how race and gender (as well as having an HIV/AIDS diagnosis) contributes to increased difficulty in finding housing.

**Material factors are a protective factor against housing need.** The findings here suggest that two protective factors that reduce the risk of declaring a housing need are living in subsidized housing and being employed. While this is hardly surprising, it does underscore the importance of having subsidized housing and vocational assistance available to persons with HIV/AIDS who have housing need.

#### **1.4. Study #3 – Assessing the Intersection between HIV/AIDS and Shelter Use in Philadelphia**

This section assesses the extent to which persons diagnosed with HIV/AIDS have a record in Philadelphia's municipal homeless shelter system, and vice versa. In doing so, it offers a window into what is perhaps the most extreme housing need – literal homelessness to the point of having to stay in an emergency shelter. In order to ascertain this intersection between shelter use and HIV/AIDS in Philadelphia, we matched two datasets. One was a registry of all PLWHA as of the end of 2014 and the second a record of all persons who stayed in homeless shelters in Philadelphia's municipally-funded shelter system.

Doing this provides an indication of the extent of shelter use (as a proxy for the more general phenomenon of homelessness) among persons living with HIV/AIDS, as well as the extent to which persons staying in the shelter system have HIV/AIDS diagnoses.

Key findings from this match include:

**Among PLWHA as of the end of 2014, 6.9% experienced a shelter stay over a seven-year period (2007-13).** These rates are complementary to, but different than the homelessness rate reported based upon the MMP data both in that the MMP data includes all forms of homelessness (not just shelter use) and MMP findings are based upon self-report rather than the record match used here. As such, MMP findings on homelessness were more comprehensive.

**Among the adults staying in shelters between 2007-14 4.6% and 2.7% of the male and female sheltered population, respectively, were living with HIV/AIDS.** These rates were substantially higher than rates in the overall population.

**Women with HIV/AIDS have different housing needs and risks than men.** While women have lower rates of HIV/AIDS diagnosis both overall and among sheltered populations, the female shelter population is at increased risk for having an HIV/AIDS diagnosis when compared to their overall population risk. Women living with HIV/AIDS also have a modestly elevated risk for experiencing a shelter stay, compared to men. Finally, women with HIV/AIDS diagnoses are much more likely than their male counterparts to be accompanied by family in a shelter.

**Black and multi-racial PLWHA were at substantially higher risk of entering shelter.** All three studies in this report found a significant and substantial racial disparity in homelessness risk. This differential in risk is consistent with continuing discrimination and residential segregation in housing among persons of Black race.

**Those who identified as transgendered were at substantially higher risk of entering shelter.** This is consistent with findings from the AACO case management data (study #2). Taking these two studies together, there is clearly an acute housing need among the relatively small group of persons diagnosed with HIV/AIDS who identify as transgender, and this likely reflects the substantial discrimination, in housing and other areas, that they experience.

**1.5. Conclusion.** Taken together, the three separate studies that comprise this report each find elevated rates of homelessness and precarious housing for PLWHA in Philadelphia. The best estimate for the extent of homelessness among this population comes from the MMP study (subsection 1.2), which estimates that 6.0% of this population experienced homelessness in the year before they were surveyed, and 25.5% showed clear signs of housing need. This underscores how extensive the general housing need is among this population. The findings from the other two studies also indicate high and disproportionate levels of housing need (MCM study in subsection 1.3) and shelter use (subsection 1.4). Thus all three studies clearly indicate an unambiguous need to provide more housing resources for Philadelphia's PLWHA population.

These studies found substantially higher risk for homelessness and precarious housing based upon transgender status and Black race. While both groups are also at higher risk for contracting HIV/AIDS, the former is a relatively small part of the overall population, while the latter constitutes a majority of those in Philadelphia with HIV/AIDS. These disparities, which come in addition to the difficulties in securing stable housing that are associated with having HIV/AIDS, underscores the need to address discrimination, both individual and systemic, along with providing housing assistance.

Transitions from incarceration and behavioral health care (substance abuse and mental health) also appeared to play a substantial role in homelessness and housing problems. This highlights not only the vulnerability for housing problems that are created by institutional transitions, but also underscores opportunities in having more housing resources available for discharge planning, particularly for PLWHA.

Finally, MCM appears to act as a framework for linking PLWHA with housing need to services, in that most PLWHA who indicated housing need will access this case management resource. This would suggest that, while outreach services are important, housing assistance, in whatever form it may be allocated, could also be distributed through the MCM framework and reach the large majority of those in need.

These three studies outline some of the dynamics of the most extreme housing needs associated with HIV/AIDS in Philadelphia. It is not comprehensive and is limited to the data that is available from available survey and administrative datasets. But given the paucity of research into housing need and HIV/AIDS in Philadelphia, it advances our knowledge in this area and provides several directions in which to direct additional resources to address increased housing need.

## Chapter 2 - Assessing Homelessness and Housing Need Among Persons with HIV/AIDS Based on the Medical Monitoring Report Survey (Study #1)

### 2.1. Introduction

A key source of information on housing need comes from data collected in Philadelphia as part of the Center for Disease Control and Prevention's (CDC) Medical Monitoring Project (MMP).<sup>4</sup> MMP is a surveillance project, coordinated by the CDC in 26 US project areas that collects data from a population-based sample of persons receiving care for HIV/AIDS to monitor clinical outcomes, standards of HIV medical care, and on-going risk factors of persons receiving HIV medical care. In this study, we use MMP data to examine the extent and correlates of individual housing need among the HIV/AIDS population in Philadelphia.

Data from this survey can, with qualifications, provide an overview of the dynamics of housing need within the larger population of persons receiving care for HIV/AIDS in Philadelphia. The MMP is a weighted survey designed to be representative of this larger population.<sup>5</sup> MMP respondents are selected based on a three-stage sampling design, described elsewhere,<sup>6</sup> with data collected via face-to-face interviews and medical record abstractions. Appropriate weights are then applied. For the weighted data to provide valid estimates of the more general population of all people in care requires that minimum numbers of respondents (generally 50) fall into the subgroups of interest.

Given that requirement, it is difficult to get sufficiently sized subgroups to appropriately use the weighted data when the annual survey only includes approximately 250 respondents and the main item of interest (i.e., unstably housed and homeless) impacts a minority of respondents. To partially offset this problem, MMP datasets from the 2009, 2010, and 2011 surveys were combined for this study (in concordance with procedures put forth by CDC).

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<sup>4</sup> The MMP data were made available, on a de-identified and anonymous basis, by the AIDS Activities Coordinating Office (AACO) of the City of Philadelphia's Department of Public Health. This study received approval from the City of Philadelphia's Institutional Review Board.

<sup>5</sup> A weighted survey means that a weighted value can be added to each response so that, when the weights are applied, the survey results are representative of the overall population of persons receiving care for HIV/AIDS in Philadelphia. The specific weight value for each individual response may vary based on his or her demographic characteristics and other factors to correct for imbalances between the survey and the overall population. For an example of how the local MMP data is used in a research study, see: Momplaisir F, Long JA, Badolato G & Brady KA (2012). The Role of Primary Care Physicians in Improving Colorectal Cancer Screening in Patients with HIV, *Journal of General Internal Medicine*. DOI: 10.1007/s11606-012-2010-z.

<sup>6</sup> For more information on this, see: Center for Disease Control and Prevention. Medical Monitoring Project (MMP). <http://www.cdc.gov/hiv/topics/treatment/mmp>. Accessed June 23, 2016; Blair JM, McNaghten AD, Frazier EL, Skarbinski J, Huang P, Heffelfinger JD (2011). CDC Clinical and behavioral characteristics of adults receiving medical care for HIV infection—Medical Monitoring Project, United States, 2007. *MMWR Surveillance Summary*. 60(11):1–20; and Frankel MR, McNaughton AD, Shapiro MF, et al (2012). A probability sample for monitoring the HIV-infected population in care in the U.S. and in selected states. *Open AIDS Journal*. 6:67–76.

But even with this increased number of responses, assessing differences between respondents who did and did not have housing need could not always be done using weighted data.

This chapter uses MMP data to assess the extent to which persons receiving care for HIV/AIDS have housing need or are homeless, and examines potential differences in the characteristics of those who do and do not show housing need. Finally, logistic regression models will further examine associations between available characteristics and circumstances reported by respondents and their housing status. Given the problems just described with using the weighted data, findings are reported for the MMP study group (i.e., unweighted results) and, when feasible (i.e., subgroups contain at least 50 respondents) the weighted results are reported as well. This permits the most complete reporting of the results from the specific MMP study group (subsequently referred to as unweighted findings), while permitting conclusions to be drawn to a more general population of those receiving HIV/AIDS care during the time of survey collection based upon the more limited weighted data results (subsequently referred to as weighted findings). The capabilities and limitations of this approach, with respect to drawing conclusions about housing need and homelessness among persons with HIV/AIDS in Philadelphia, will be discussed in more detail in the concluding section of this chapter.

## **2.2. Homelessness and Housing**

In this section, estimates of the extent of homelessness and housing need are presented. These will be the findings from the MMP that will likely receive the most attention in this needs assessment. They are reported on Table 2.1, which provides both unweighted and weighted findings from the MMP data. Looking at the last line shows that the unweighted sample consists of 720 people who were surveyed over three MMP survey years. The unweighted sample, after applying the appropriate weights, is the basis for the weighted findings—adjusted results that represent an estimated 9,587 people in Philadelphia who are diagnosed with HIV or AIDS were in care during the time period that the survey was collected.<sup>7</sup>

Homelessness and housing need findings came from two components of the MMP survey. The first component was the general survey, where there were two specific questions related to whether the respondent sought housing or shelter assistance (the two were not differentiated) and, if so, whether they received this assistance.<sup>8</sup>

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<sup>7</sup> This estimate of the size of the Philadelphia population (9,587) receiving HIV/AIDS services represents a composite for the portion from each of the three years (2009-11) over which the data for this study was collected. In other words, weights from each of these three years were adjusted to allow them to be combined to represent a one-year population specific to the three-year time period. Results for each of the three survey years were sufficiently consistent to combine them in this fashion.

<sup>8</sup> Specifically, the general MMP survey asked respondents if, first, they had received shelter or housing assistance services in the previous year, and second, whether (in the absence of having received this assistance) they sought such assistance in the past year. These questions do not specify the difference between shelter (which would indicate an episode of literal homelessness) and housing assistance (which would indicate housing need).



The second component is a set of supplemental, local questions that were included in the Philadelphia MMP interview that included questions about living situations with some options that are commonly considered to constitute being homeless. It is only through responses to these local questions that homelessness can be definitively ascertained.

Respondents were considered homeless if they indicated that in the prior 12 months they had slept in a place not meant for human habitation (streets, abandoned building, car, etc.) or they stayed in a shelter. These criteria, taken together, amount to a literal definition of homelessness that is consistent with the definition of homelessness most widely used in the U.S., and as it is defined by the U.S. Department of Housing and Urban Development (HUD).<sup>9</sup> Alternately, a survey respondent was considered to have experienced “housing need” if he or she experienced homelessness (i.e., literal homelessness here is a subset of housing need); indicated in the general component that he or she sought or received housing or shelter assistance; or was living “doubled up” in someone else’s household. Thus, in addition to including those who experienced literal homelessness, the “housing need” category covers those who have likely faced the imminent prospect of becoming homeless or a period of being precariously housed.

**Table 2.1 – Prevalence of Homelessness among Philadelphia MMP respondents**

Housing Situation in past 12 months	Source (1)	Actual Frequency	Actual %	Weighted Frequency	Weighted %
Received shelter or housing services	General	91	12.6	1,050	11.0
Sought but did not receive shelter or housing assistance	General	79	11.0	1029	10.7
In past 12 months, respondent slept in: a- place not meant for habitation (2) b- shelter	Local	32	4.4		
		38	5.3		
Literally homeless (either a or b)		50	6.3	571	6.0
Doubled up		42	5.8		
Housing need	combined	198	27.5	2,449	25.5
Others	combined	522	72.5	7,138	74.5
<b>Total N</b>		720		9,587	

Notes:

- 1) “Source” refers to the whether the data came from a question on the general MMP survey or from the local Philadelphia supplement.
- 2) A place not meant for human habitation includes streets, parks, abandoned buildings, or cars.

In one further point of clarification, having housing need is not the same as receiving an ongoing rental subsidy. Receiving a rental subsidy would make it less likely that a person would experience homelessness or housing need as their housing expenses would be considerably lower than were they paying market rent.

<sup>9</sup> See HUD’s “Homeless Emergency Assistance and Rapid Transition to Housing: Defining ‘Homeless’” Available at: [https://www.hudexchange.info/resources/documents/HEARTH\\_HomelessDefinition\\_FinalRule.pdf](https://www.hudexchange.info/resources/documents/HEARTH_HomelessDefinition_FinalRule.pdf). Accessed on August 29, 2016.

However, a person could still experience homelessness or housing need despite receiving a rental subsidy. Question about rental subsidies were not asked on the MMP survey.

Having explained the operational parameters of homelessness and housing need that will be used here, we can now consider the findings in Table 2.1. Based upon 720 unweighted responses for the individual questions, 50 persons (6.3%) reported literal homelessness in the year prior to the survey. Those who experienced homelessness are included among the 198 persons (27.5%) who indicated housing need. Applying the weights in order to generalize to the overall population, we estimate that, over the course of a year, 571 persons (6.0%) receiving HIV care experienced homelessness, part of the 2,449 persons (25.5%) who experienced housing need. This means one quarter of this population had housing difficulties over a twelve-month period based on data available on the MMP survey.

Given that there were only fifty people in the MMP survey who were identified as being literally homeless, there is insufficient data to accurately break this group down further by characteristics and circumstances. As a result, the subsequent analyses will focus primarily on the differences between the larger group of those with housing need (including the literally homeless), and the remainder of the MMP respondents. When there are sufficient numbers, the unweighted findings will be compared to the weighted findings. This was also done in Table 2.1, with the weighted results showing lower rates than the unweighted results for homelessness (6.0% compared to 6.3%) and housing need (25.5% to 27.5%). While these findings are similar, the weighted estimates are more applicable to the overall population of persons with HIV/AIDS who are receiving HIV care.

### **2.3. Demographics**

Table 2.2 shows demographic findings from the MMP survey. Looking at the age distribution, key findings include:

- Almost three-quarters of the population with HIV/AIDS were over age 40.
- The rate of housing need was highest, though not by much, for those ages 40-49 (29.5% in the unweighted findings; 27.4% in the weighted findings).
- The differences in housing need among these three age groups are non-significant, based on chi-square tests.

The gender distribution among the overall population was about two-thirds male, but women showed higher (and statistically significant) levels of housing need (30.8% compared to 23.1%). Five transgendered persons were included in the survey, and none of these indicated housing problems. This is too small a number, however, from which to weigh any conclusions.

Finally, looking at race/ethnicity, the study population (reflective of the overall Philadelphia population of PLWHA) was disproportionately Black (68.9%, compared to 45.3% for the overall Philadelphia population based on 2014 Census figures). Among the Black subgroup in the MMP survey, rates of housing need (29.9% weighted) were higher than the overall proportion.

Among the unweighted sample, the differences in housing need between Blacks and others was statistically significant.

The overall proportion of Hispanics among the surveyed HIV/AIDS population (15.1%) was consistent with that of the overall Philadelphia population (14.8% in 2014 Census), and the unweighted rate of homelessness (28.8%, too small to estimate weighted rates) was slightly and non-significantly higher than that of the unweighted MMP study group.

Note that the weighted rates of housing need, when available, were slightly lower than the unweighted rates in both tables 2.1 and 2.2.

**Table 2.2 – Demographics among Philadelphia MMP respondents, broken down by housing status**

Demographics	Unweighted		Weighted	
	N (% of total)	% Housing Need	N (% of total)	% Housing Need
<b>Age Group</b>				
18-39	191 (26.5)	28.3	2,623 (27.3)	26.3
40-49	244 (33.9)	29.5	3,102 (32.4)	27.4
50+	285 (39.6)	25.3	3,863 (40.3)	23.4
<b>Gender</b>				
Male	469 (65.1)	25.8	6,263 (65.3)	23.1
Female	246 (34.2)	31.3	3,259 (34.0)	30.8
Transgender	5 (0.6)	0		
<b>Race/Ethnicity</b>				
Black	496 (68.9)	31.5	6,382 (66.6)	29.9
White	191 (26.5)	18.3		
Other or Unknown	33 (4.6)	21.2		
Hispanic (any race)	111 (15.4)	28.8		

#### 2.4. Other Characteristics

Table 2.3 lists other personal characteristics that describe Philadelphia’s HIV/AIDS population that may be pertinent to understanding correlates to homelessness and housing need. Many of these characteristics show substantial differences between the three housing groups. Of particular note are:

- Rates of housing need were substantially lower among persons who identified as gay or lesbian (18.7% weighted) than among those who identified as heterosexual (29.8%, weighted). This difference was statistically significant.
- Substantially higher rates of housing need occurred among persons who did not finish high school (35.5%, weighted) than among those with a high school diploma (28.1, weighted).

- There was substantial variation in rates of housing need by income source in the unweighted group, with the lowest rates of housing need (11.7%) among persons who reported wage income, and higher rates among those receiving disability benefits (32.7%) or other types of public assistance (44.8%). These differences were statistically significant. Though there were not sufficient numbers to assess these differences in the weighted group, the differences in the unweighted group were large enough to where they would likely be found in the general group as well.
- Among the 7.2% of the unweighted group that was incarcerated over the previous year, a high proportion (44.2%) disclosed housing need. Corresponding rates could not be estimated for the weighted population.
- In the weighted sample, the majority presented as single households. Compared to those with others in their household, the former group had higher levels of housing need (28.5% to 21.7%). This difference was statistically significant.

**Table 2.3 – Other personal characteristics among Philadelphia MMP respondents, broken down by housing status**

Other Personal Characteristics	Unweighted		Weighted	
	N (% of total)	% Housing Need	N (% of total)	% Housing Need
<b>Sexual Orientation</b>				
Gay/Lesbian/Bisexual	262 (36.4)	20.6	3,587 (37.4)	18.7
Heterosexual	449 (62.4)	31.6	5,879 (61.3)	29.8
Other/Unknown	9 (1.2)	22.2		
<b>Education Attained</b>				
Less than High School	204 (28.3)	36.8	2,601 (27.1)	35.5
High School Graduate	257 (35.7)	30.7	3,458 (36.1)	28.1
College (any)	259 (36.0)	17.0		
<b>Income Source</b>				
Wages	223 (31.0)	11.7		
Disability Benefits	330 (45.8)	32.7	4,114 (42.9)	31.7
Public Assistance	105 (14.6)	44.8		
Other Sources	62 (8.6)	27.4		
<b>Incarceration</b>				
Jail/Prison in Past Year	52 (7.2)	44.2		
<b>Others in Household</b>				
Yes	294 (40.8)	22.1	4,163 (43.4)	21.7
No (unaccompanied)	426 (59.2)	31.2	5,424 (56.6)	28.5

In summary, there are noteworthy differences in many of these characteristics, most of which could be expected but even with that, the disparities were still striking. The extent, to which they are associated with significantly higher likelihoods of housing need, once other factors are taken into account, will be explored shortly with multiple regression models.

Finally, in keeping with the pattern of the first two tables in this section, when weighted estimates were available the tendency was to show that adjusting the unweighted data led to slightly lower rates of housing need. This consistent trend helps to assess what the weighted estimates might have been if it were possible to get valid estimates for more subgroups.

## **2.5. Substance Abuse and the Receipt of Support Services**

Substance abuse and mental illness are issues that impact both HIV/AIDS and housing need. Unfortunately the data in these areas on the MMP survey had such high levels of non-response that it was not viable to include them among these results. There were two exceptions to this. The first was a question on the frequency of alcohol use (which did not permit assessment of the extent to which alcohol use could be considered abuse), where there were no significant differences related to housing need in the unweighted results. The second question, a general question about whether the respondent used any drugs, was affirmative for 25.5% in the weighted results, and the level of housing need was higher for the affirmative group, 32.9% to 23.0%. While this difference, which was statistically significant, went in the expected direction, it is difficult to draw conclusions here. There were no data available for this study that sufficiently measured mental health problems.

In a related set of findings with better data, the MMP inquired as to whether or not respondents received three types of services – case management, substance abuse, and mental health services. Data focusing on just those who received case management services will be assessed in Chapter 3 of this report. Findings related to housing need and the receipt of either substance abuse or mental health services can be seen as a rough proxy for the association between housing need and behavioral health issues that are severe enough to require services.

According to the MMP survey findings (Table 2.4), 45.6% of the PLWHA in care population (weighted estimate) received case management services and, of these, 38.2% experienced housing need. In another way to look at this, over two-thirds of those who experienced housing need received case management services. Similar ratios were found among mental health and substance abuse services recipients. For the former, just over one quarter (26.1%) received these services, and the 44.9% in this subgroup had housing need. This accounted for almost half of those (45.8%) who experienced housing need. For the latter, 14.3% received substance abuse services and accounted for one third (33.3%) of the total with housing need.

Altogether, 80.7% of those with housing need are receiving one or more of these three types of services. Housing need appears to have been especially prevalent among groups with behavioral health problems, but four-fifths of those facing housing need were receiving services through which housing help can be funneled.

**Table 2.4 – Case management, substance abuse and mental health services received among Philadelphia MMP respondents, broken down by housing status**

	Unweighted		Weighted	
	N (% of total)	% Housing Need	N (% of total)	% Housing Need
<b>Service Received</b>				
Case Management	345 (47.9)	40.0	4,370 (45.6)	38.2
Mental Health	201 (27.9)	45.3	2,498 (26.1)	44.9
Substance Abuse	107 (14.9)	58.9	1,366 (14.3)	60.0
<b>Any of the 3 Services</b>	418 (58.1)	38.5	5,341 (55.7)	37.0

## 2.6. Logistic Regression - Putting Everything Together

Finally, two logistic regression models are fitted in order to get a better assessment of which factors that were reviewed in the previous subsections were most salient in relation to housing need and homelessness. Logistic regression models, in general, show the individual associations between a set of explanatory measures (i.e., independent variables) and an outcome measure (i.e., dependent variable) that is expressed in terms of an either-or (i.e., dichotomous) outcome.

Results from two models are shown on Table 2.5 on factors contributing to the likelihood of experiencing housing need (including those who experienced homelessness). The extent to which each explanatory factor influences the likelihood of the housing need is expressed in terms of the degree by which it adds to (or takes away from) the odds (i.e., the likelihood) of the outcome occurring. The important feature of these models is that the impact of each measure takes into account the impacts of all the other measures. Thus such models can show, after putting all of the explanatory measures into the model, which factors emerge as having statistically significant impacts on, depending upon the model, the likelihood of indicating homelessness or housing need. In table 2.5, the results of these logistic regression models are provided in terms of the odds ratios for the variables that show statistically significant relationships with the outcome. The first model is unweighted, and includes all of the measures reported in the previous four tables in this chapter. The second model is weighted, and includes only the factors that had valid results for the unweighted measures.

While there were many differences reported earlier in this chapter when looking at the individual characteristics and their relationship with the housing status groups, decidedly fewer of these characteristics show significant associations in the models in Table 2.5. For example, the education differences described earlier did not show a significant impact here on determining the likelihood that someone will be homeless or show housing need. Likewise, receipt of public assistance or not reporting healthcare coverage did not show a significant impact on the likelihood of having housing need or experiencing homelessness.

**Table 2.5 – Logistic Regression Model that Estimates Impact of Variables on Indicated Housing Need.**

	<b>Unweighted</b>		<b>Weighted</b>
	<b>Odds Ratio</b>		<b>Odds Ratio</b>
<b>Age</b>			
18-39	reference		reference
40-49	n.s.		n.s.
50+	n.s.		n.s.
<b>Gender – Male</b>	n.s.		n.s.
<b>Race – Black</b>	1.9		1.9
<b>Ethnicity – Hispanic</b>	n.s.		
<b>Education</b>			
Less than high school	n.s.		n.s.
High school graduate	reference		reference
Post-high school	n.s.		reference
<b>Sexual Orientation – Heterosexual</b>	n.s.		
<b>Income Source</b>			
Employment	0.5		reference
Public Assistance	n.s.		reference
Other/None	n.s.		reference
Disability (e.g., SSI or SSDI)	reference		n.s.
<b>Individual Household</b>	n.s.		n.s.
<b>Incarcerated in Previous Year</b>	n.s.		
<b>Services</b>			
Case Management	2.2		2.3
Mental Health	1.7		2.0
Substance Abuse	2.8		3.9

All odds-ratios reported here are statistically significant at the  $p < .05$  level.

Only a few of the characteristics that we assessed earlier showed significant associations with housing need in Table 2.5. These included Black race, which increased the odds of housing need by 90% (OR of 1.9); earnings due to employment, which decreased the odds of housing need by half (OR of 0.5); and receiving case management (CM), substance abuse (SA) or mental health (MH) services. Those receiving CM, SA, or MH services had significantly increased odds for housing need (ORs in the unweighted model of 2.2, 1.7 and 2.8, respectively; higher corresponding ORs in the weighted model). Except for the substantial increase in the SA services OR, the results from the weighted model were not substantially different from the unweighted model. Results for the other variables also did not change substantially when the three service variables were omitted (results not shown).

## 2.7. Discussion

Using results from the MMP survey, this chapter assessed the extent and correlates of housing need among those in Philadelphia who received HIV/AIDS services during the times which the survey was conducted. Extrapolating from the survey to this overall population, it was estimated that, over the course of a year, 2,449 Philadelphia residents with HIV/AIDS, or 25.5% of this entire population, experienced housing need. This number includes an estimated 571 persons (6%) who experienced homelessness. Put simply, one-fourth of this population showed housing difficulty to where they either experienced or were at risk for experiencing homelessness. These rates are indicative of the vulnerability to housing problems, in general, that persons with HIV/AIDS face.

Among those who were either in the homelessness or housing need groups, large majorities were already seeking assistance, either through case management or behavioral health (substance abuse or mental health-related) services. This was shown most directly in the descriptive findings, where 68.2% of those with housing need received case management services, and 80.7% received, either; case management, mental health, and/or substance abuse services. The odds ratios in the regression models confirmed that, among those participating in these services, there was a substantially higher likelihood of also experiencing housing need. This does not mean that such services participation led to housing need, rather than those who sought services were already more likely to have housing need.

These strong associations between services and housing need reflect identified need. People are unlikely to develop housing problems because they participated in these services; instead people sought out these services and particularly case management services, because they had problems which included securing stable housing. These findings also reflect, to some degree, the consistent link between, on one hand, substance abuse and mental health problems, and, on the other hand, homelessness and housing problems. The advantage to this strong association between persons who were homeless or showed housing need is that the majority of those needing housing assistance are already linked to services that could readily provide this assistance.

Factors related to race and income, identified in the descriptive findings and confirmed in the regression model as being related to homelessness and housing need, are also consistent with the research literature. Black persons, due to residential segregation and other factors, have historically had a more difficult time with accessing affordable and appropriate housing, and this consistently manifests itself in an increased vulnerability to homelessness. It is important to be aware of this disparity, especially in the way that racial discrimination, combined with discrimination related to HIV/AIDS diagnosis, can impede housing stability.

There are also findings that did not, ultimately, show significant associations with becoming homeless or demonstrating housing need that also bear mentioning. Transgender was non-significant, but there were very few transgendered people included in the MMP survey.



Education and age, which had significantly different distributions by housing status, were non-significant in the multivariate model (Table 2.5). This suggests that other factors were better at explaining the apparent associations of these measures to housing status.

Finally, while this survey is currently the best source of data for assessing the extent of housing need among a general population in Philadelphia with HIV/AIDS, there are substantial limitations to using the survey to assess housing. The first is that the number of respondents in the survey, 720 over the three annual survey waves used in this chapter, is small in the sense that it substantially limits general estimates and generates limited statistical power (i.e., the ability to detect statistically significant differences). Thus more of the differences identified in the frequency results might have been statistically significant in the regression results if there were more respondents in the MMP survey. In the second limitation, the information provided on housing topics remains limited to a couple of vague questions in the general survey and a couple of yes/no questions in the local questions that were added to the survey. The local questions offer a much-needed start to assessing housing problems among persons with HIV/AIDS, but they also point out how much more needs to be understood about this topic.

## **Chapter 3 - Housing Need Among Persons Requesting AACO Medical Case Management Services (Study #2)**

### **3.1. Introduction**

One function of the AIDS Activities Coordinating Office (AACO) of the City of Philadelphia's Department of Public Health is that it serves as the central point of intake for persons with HIV/AIDS who request medical case management (MCM) services. This means that someone applying for MCM services will initially contact AACO, and AACO then administers a standardized assessment to collect information about the applicant's situation. After this intake session, AACO refers the applicant to one of several non-profit HIV/AIDS service organizations. At these organizations, social workers and case managers provide specialized case management at clinics and community organizations throughout Philadelphia, and link people with HIV/AIDS to needed services and benefits.

Housing assistance is one of the most requested services that MCM applicants made, and this chapter looks to better understand some of the factors that drive this need. In order to do this, I look at the circumstances and characteristics of persons with HIV/AIDS who seek housing assistance through MCM, and compare them to their counterparts: persons who seek MCM for other reasons. Such a study can provide insights into various factors that accompany housing need among persons with HIV/AIDS. MCM applicants are a large group of persons who, in addition to being diagnosed with HIV/AIDS, have other substantial needs for which they are seeking help. As such, they are not representative of the overall population with HIV/AIDS in Philadelphia. The housing needs and the correlates of these needs that were shown among MCM recipients with housing needs, however, provide insights into the more general housing needs among people with HIV/AIDS in Philadelphia. Thus, in focusing on this MCM group, I look to identify specific circumstances and characteristics that can help to better identify and target individuals with housing need so that services can be configured to better address this need.

### **3.2. Data and Methods**

A key part of AACO's assessment process for MCM services is an intake form which collects data on a wide range of areas including demographics, information related to their HIV infection, other health and behavioral health data, and economic circumstances. The forms containing this intake information are collected by the Client Services Unit staff, notably trained social workers. AACO staff enters the responses from the intake forms into a database, which provides the basis for what is presented in this chapter.

This database contains information from 8,010 persons who completed an MCM intake form between July 2009 and June 2014.

These applicants were split into two groups based on whether or not they were "unstably housed".

Applicants in the unstably housed group all answered affirmatively to a question on the intake form on whether they “need case management to maintain my housing.” Using this criterion, 56 percent of the study group (4,468 persons) reported unstably housed, and the remaining applicants became the comparison group (3,542 persons). The results shown in this chapter are all based upon comparisons between the two groups with respect to the circumstances and characteristics that are covered in the intake form. Most of the results presented in this chapter will be descriptive, and the final subsection of this chapter contains results from two logistic regression models. This high order analysis will provide a more integrated profile of factors that are associated with (but do not necessarily cause) housing need.

Table 3.1 shows the distribution, across years, of the intakes that are the basis for these analyses. The distribution of the contacts across the years of the study period was, in an approximate sense, even. While the differences in annual distribution across subgroups were statistically significant, the differences did not appear to be different in a substantially meaningful way.

**Table 3.1 – Year of Most Recent Intake Form by Indicated Housing Need (n=8,010)**

<b>Year of Intake Form</b>	<b>Housing Need Indicated (n=4,468)</b>	<b>Housing Need Not Indicated (n=3,542)</b>
<b>2009 (last 6 months)</b>	9%	9%
<b>2010</b>	18%	20%
<b>2011</b>	18%	18%
<b>2012</b>	18%	20%
<b>2013</b>	26%	22%
<b>2014 (first 6 months)</b>	12%	12%

### 3.3. Demographics

Table 3.2 shows statistically significant differences (chi-square tests,  $p < 0.001$ ) among race/ethnicity, gender and age between the housing need group and the others who sought MCM. Looking at racial distribution, both groups predominantly consisted of respondents who identified as Black, but the housing need group had a much higher proportion (72% to 64%), and a lower proportion identifying as White (14% to 20%). Thirteen and fourteen percent of the housing need group and other group, respectively, did not indicate a race on the form, and 13% of each housing need group identified as being of Hispanic ethnicity (regardless of race).

The study group was approximately two-thirds male, which compares to national CDC and local City of Philadelphia statistics showing that three of four people living with HIV in the US are male. Persons identifying as male and female were proportionately distributed among both housing need groups.

The only clear gender-based disparity based on housing need found here was among those 121 respondents who identified as transgendered (all but three as transgender male to female). Of these respondents, 95 (79%) indicated housing need.

**Table 3.2 – Differences in Race, Hispanic Ethnicity, Gender and Age by Indicated Housing Need (n=8,010)**

	<b>Housing Need Indicated (n=4,468)</b>	<b>Housing Need Not Indicated (n=3,542)</b>
<b>Race</b>		
<b>Black</b>	72%	64%
<b>White</b>	14%	20%
<b>Other</b>	1%	1%
<b>Multiple</b>	1%	1%
<b>Unknown</b>	13%	14%
<b>Ethnicity</b>		
<b>Hispanic (any race)</b>	13%	13%
<b>Gender</b>		
<b>Male</b>	65%	68%
<b>Female</b>	33%	32%
<b>Transgender</b>	2%	1%
<b>Age</b>		
<b>0-15</b>	1%	8%
<b>16-17</b>	0%	1%
<b>18-29</b>	15%	18%
<b>30-39</b>	20%	17%
<b>40-49</b>	36%	27%
<b>50-65</b>	27%	27%
<b>65+</b>	1%	2%

The last demographic category shown on Table 3.2 was age. Here the two largest age-groups among both housing need groups were those in the 40-49 and in the 50-65 age groups. However, these two groups covered 62% of the group that indicated housing need, as compared to 54% of the group that did not indicate housing need. The youngest age groups represented here, 0-15 and 16-17, were disproportionately represented in the group that did not indicate housing need (9% to 1%).

In summary, there were clear differences in the composition of the group with housing need based on race/ethnicity, gender and age. Specifically:

- The group who indicated a housing need was proportionally much more of Black race (and less of White race).
- Over three quarters of the transgender respondents (as opposed to 55% of the total study group) indicated a housing need.
- Almost two-thirds of the housing needs group (compared to 55% of the other group) were between ages 40 and 65.

In a final note, the age distribution shown on Table 3.2 will lead to an adjustment to the study group that omits persons under age 18 in subsequent analyses.

Among the 308 persons who were under age 18, the large majority (275 or 89%) did not express a housing need. Additionally, many of the domains for which results are reported in this subsection refer to topics that are more applicable to adults (drug use, employment, etc.). This reduces the overall study group from 8,010 to 7,668, and the subgroup that indicated housing need also decreases slightly (from 4,468 to 4,432) and increases as a proportion of the entire MCM group from 56% to 58% of the entire study group.

### 3.4. Current Living Situation

The most direct correlate of housing need– current living situation – is presented on Table 3.3. Key findings here are that, compared to the other MCM applicants, those expressing housing need:

- Had much higher levels of homelessness (16%, compared to a non-negligible 3% of the non-housing needs group). While that 3% is puzzling, such a large difference is not surprising;
- Had lower rates of rental subsidy receipt (5% to 12%).
- Had higher rates of persons who were in residential treatment (8% to 3%); and
- Had much lower rates of homeownership (3% to 12%).

All of the differences in these bulleted findings were statistically significant (chi-square tests,  $p < 0.001$ ).

Additionally, more persons who indicated housing need (5.0% to 2.4%) disclosed having an eviction notice, while less of this group disclosed having a utility shutoff notice (3.3% to 4.7%). Again, these differences were statistically significant (chi-square tests,  $p < 0.01$ ).

**Table 3.3 – Comparison of Current Living Situation by Indicated Housing Need (n=7,668)**

	Housing Need Indicated (n=4,432)	Housing Need Not Indicated (n=3,236)
<b>Homeless*</b>	16%	3%
<b>Living with Friends/Relatives</b>	39%	37%
<b>Residential Treatment</b>	8%	3%
<b>Rent – no subsidy</b>	27%	30%
<b>Rent – subsidy</b>	5%	12%
<b>Own home</b>	3%	12%
<b>Other/unknown</b>	2%	3%
<b>Having an eviction notice</b>	5.0%	2.4%
<b>Having a utility shutoff notice</b>	3.3%	4.7%

Includes staying in shelters and transitional housing

In summary, there are few surprises here. There is a high (16%) rate of homelessness among those with housing need and also a fairly large group (8%) who are currently living in (and presumably preparing to exit) residential treatment settings, which is a transition that often presents an elevated risk for homelessness and housing need.

Conversely, homeownership and rental subsidies are far more prevalent among those who did not indicate housing need. This, in particular, indicates the effectiveness of rental subsidies, which are often in short supply, in ameliorating housing need.

### 3.5. HIV/AIDS

Table 3.4 shows differences on various HIV/AIDS-related factors based on indicated housing need. Differences in all of the factors on the table were statistically significant (chi-square tests,  $p < 0.001$ ).

**Table 3.4 – Comparison of HIV/AIDS-related Factors by Indicated Housing Need (n=7,668)**

	Housing Need Indicated (n=4,432)	Housing Need Not Indicated (n=3,236)
<b>Year of Diagnosis</b>		
1980-89	8%	6%
1990-99	29%	23%
2000-09	42%	37%
2010-14	18%	27%
Unknown	3%	7%
<b>Diagnosed Within 12 months of Intake</b>	10%	20%
<b>HIV Status</b>		
HIV+ No AIDS diagnosis	46%	48%
CDC-defined AIDS	31%	24%
HIV+ AIDS status unknown	21%	26%
Other or Missing Data	2%	2%
<b>Medical Care from HIV Physician</b>	89%	84%
<b>Mode of HIV Infection</b>		
Sex – Heterosexual	43%	37%
Sex – Men with Men (MSM)	23%	29%
Injection Drug Use	9%	6%
Multiple Modes	11%	7%
Other or Unknown	14%	21%

Among the key findings here:

- Persons indicating housing need tended, as a group, to have been diagnosed earlier, and there were fewer who were diagnosed within a year of completing the intake form (10% to 20%).
- Of those with HIV, only those with an AIDS diagnosis indicated housing need at a higher proportion than not indicating such need.
- Finally, the group indicating housing need had a higher proportion of persons whose mode of infection was injection drug use (9% to 6%), heterosexual sex (43% to 37%), and multiple modes (11% to 7%) than those who did not indicate a housing need.

On the other hand, this group had lower proportions of multiple modes linked to MSM (23% to 29%).

On its face, it is difficult to ascertain direct associations between HIV/AIDS-related measures and housing need. Earlier diagnosis of HIV/AIDS, for example, could be correlated with the older age of the housing need group, and could be related to other issues that are more prevalent among this age cohort. The greater housing need among persons with an AIDS diagnosis is counterintuitive, however, as persons so diagnosed often would have more access to services and disability-related support than those with HIV. Conversely, those diagnosed with HIV may be more able to work and have access to other income sources. Finally, the links between housing need and modes of transmission may be related to a wide variety of factors that frequently co-occur with the noted behaviors. The most obvious here is a relationship between injection drug use and, more generally, substance abuse. The latter has regularly been linked to homelessness and housing need.

### **3.6. Medical Issues**

Differences in housing status with regard to medical issues disclosed in the intake form were largely inconclusive. The intake form lets respondents indicate the presence of a number of health problems. Among specific morbidities there were six that were statistically significant with a higher prevalence among those indicating housing need: Hepatitis C (16% to 9%), asthma (15% to 9%), neuropathy (5.5% to 3.8%), allergies (4.7% to 3.7%), and anemia (3.4% to 2.6%). Clearly the disparity in rates of Hepatitis C, and the link to housing need shown here, is of major concern. For the other conditions, it is not clear if the disparities shown here warrant concern in the context of the housing needs assessment.

There is some evidence that the group with housing need, when taken together, had less good health than the comparison group. There are two measures, one implicit and the other explicit, of overall health on the intake form. The former, implicit means to assess overall well-being is the absence of positive indicators for all thirteen of the individual health conditions listed on the intake form. By this measure, 52% of the housing need group reported one or more of the health conditions, compared to 40% of the rest of the applicants.

The latter, a self-rated assessment of health condition ("How would you rate your health?"), had levels of missing data (19% among those not disclosing housing need and 8% of those with housing need) that were high enough to where the results were inconclusive.

### **3.7. Substance Use and Mental Illness**

Indicators from the intake form indicate higher levels of substance use among those disclosing housing need, however there are no direct indicators of how many had dependency issues or whether the magnitude of drug use was otherwise different or of more concern in this group.

Among those with housing need:

- more than one third (38%) indicated any substance use in the previous two years, compared to 22% among those not disclosing housing need.
- Twelve percent completed drug or alcohol treatment and 14% were in treatment, compared to respective rates of 8% and 5% among the comparison group.

These differences were statistically significant (chi-square,  $p < 0.001$ ).

Table 3.5 shows prevalence of drug use, with rates significantly higher (chi-square,  $p < 0.001$ ) for all categories except methamphetamine use. Also noteworthy is the relatively high number of persons exiting substance abuse treatment in both groups. Approximately one quarter of those indicating housing need were either in or had completed treatment, though it is unclear if this treatment was residential or outpatient.

**Table 3.5 – Comparison of Specific Alcohol and Illicit Substance Use by Indicated Housing Need (n=7,668)**

	Housing Need Indicated (n=4,432)	Housing Need Not Indicated (n=3,236)
<b>Marijuana</b>	16%	10%
<b>Methamphetamine</b>	2%	2%
<b>Alcohol</b>	24%	18%
<b>"Crack" Cocaine</b>	20%	9%
<b>Cocaine</b>	13%	8%
<b>Heroin</b>	11%	6%
<b>Other</b>	5%	4%
<b>Substance Abuse Treatment</b>		
<b>In Treatment</b>	14%	5%
<b>Completed Treatment</b>	12%	8%

Use here does not necessarily indicate alcohol or drug dependency, which is not assessed

Looking at indicators of mental health issues (Table 3.6), 22% of the housing needs group (compared to 13% of the other group) were in mental health treatment at the time they filled out the intake form. In contrast to substance use, which did not ask about diagnoses, the intake form specifically asked whether or not the respondent had one or more of a set of specific mental health diagnoses. As shown on Table 3.6, the housing need group had levels of diagnosis that were consistently and substantially higher than those in the no housing need group. Even among the group without housing need, the levels of major mental illness (depression, bipolar disorder, and schizophrenia) are substantial.

There are several points to this comparison of behavioral health indicators that warrant a mention. First, proportions of each group that had no indicated behavioral health problem, or that had multiple problems, was unavailable.



Given the imbalance in these proportions between the groups, it is safe to conclude that the group with housing need had higher proportions with one or multiple disorders disclosed.

Second, despite clear differences between those with and without housing need with respect to behavioral health measures, I cannot definitively translate these intake form measures into actual clinical measures. Also, the results indicate that substantial numbers of respondents, and almost one quarter of those indicating housing need, had ongoing or previous treatment experiences, which is likely to inflate the prominence of behavioral health indicators reported here.

Finally, there appears to be a substantial pipeline of persons who apply for MCM services who either are in or are exiting treatment (it is unclear if this meant residential treatment) for behavioral health (either substance abuse or mental health) issues. These findings are consistent with the well-established relationship between behavioral health issues and housing need.

**Table 3.6 – Comparison of Mental Health Diagnoses by Indicated Housing Need (n=7,668)**

	Housing Need Indicated (n=4,432)	Housing Need Not Indicated (n=3,236)
Anxiety	14%	10%
Bipolar Disorder	15%	7%
Depression	40%	29%
Schizophrenia	5%	2%
Other MH diagnosis	7%	4%
Mental Health Treatment		
In Treatment	22%	13%
Completed Treatment	0.7%	1.3%

Mental illness diagnoses based on self-report.

All differences are statistically significant (chi-square,  $p < 0.001$ ).

### 3.8. Income

Sources of income were reported on the intake form, and are shown on Table 3.7. The primary differences between those with and without housing need were that those with housing need had:

- Substantially lower levels of employment income (10% compared to 23%); and
- Higher levels of disability (43% to 30%) and welfare (19% to 10%) income.

Both bulleted differences were statistically significant (chi-square tests,  $p < 0.001$ ).

**Table 3.7 – Comparison of Income Sources by Indicated Housing Need (n=7,668)**

	<b>Housing Need Indicated (n=4,432)</b>	<b>Housing Need Not Indicated (n=3,236)</b>
<b>Employment</b>	10%	23%
<b>Disability (SSI/SSDI)</b>	43%	30%
<b>Welfare (TANF/GA)</b>	19%	10%
<b>Other</b>	5%	10%
<b>None</b>	28%	31%

Some respondents received income from more than one source, thus columns total over 100%

Data on income amounts were not available. However, judging from the high proportions in both groups who were receiving income from disability, welfare, or nowhere, I presume that the levels of poverty in both groups were high. Given the disparities among groups in these income source categories, the extent of poverty in the housing need group is almost certainly higher than the comparison group.

### **3.9. Legal Issues**

There were two measures of legal issues on the intake form. In the first, 20% of those who indicated housing need said they had some type of legal issue, compared to 14% of the non-need group. The housing need group also had much higher levels of people with incarceration history (lifetime) – 36% to 18%. Differences are statistically significant (chi-square tests,  $p < 0.001$ ). No further detail or context is available here.

### **3.10. Multiple Regressions**

The domains examined in the previous subsections have included many measures in which the MCM applicants who indicated housing need differed from their more stably housed counterparts. In order to get a clearer, more coordinated profile of characteristics and situations that have the strongest impact upon housing need, I now assess all of these measures at once by fitting two logistic regression models.

Logistic regression models, in general, show the individual associations between a set of explanatory measures (i.e., independent variables) and an outcome measure (i.e., dependent variable) that is expressed in terms of an either-or (i.e., dichotomous) outcome. Here the outcome, in both models, is whether an MCM applicant indicated a housing need. The extent to which each explanatory measure influences the likelihood of indicated housing need is expressed in terms of how much it adds to (or takes away from) the odds (i.e., the likelihood) of the MCM applicant indicating a housing need.

**Table 3.8 – Logistic Regression Model that Estimates Impact of Variables on Indicated Housing Need.**

	<b>Model 1 (n=7,668)</b>		<b>Model 2 (n=6,954)</b>
	<b>Odds Ratio</b>		<b>Odds Ratio</b>
<b>Demographics</b>			
Black	1.75		1.80
Hispanic	1.41		1.40
Female	n.s.		n.s.
Transgender	2.11		2.23
Age	0.98		0.99
<b>HIV/AIDS Diagnosis</b>			
Decade of Diagnosis			
1980s	1.39		1.45
1990s	1.47		1.57
2000s	1.51		1.53
Has AIDS Diagnosis	1.21		1.26
Receiving HIV Care	1.31		1.43
No Medical Issues	0.88		0.85
<b>Substance Use &amp; Mental Illness</b>			
Alcohol Use	1.14		n.s.
Cocaine Use	1.36		1.31
Heroin Use	n.s.		n.s.
Bipolar Disorder	1.37		1.24
Depression	1.28		1.24
Schizophrenia	1.38		n.s.
In Drug Treatment	1.62		
In MH Treatment	n.s.		
<b>Income Source</b>			
Employment	0.52		0.52
SSI or SSDI	1.25		1.34
Welfare	1.66		1.56
Other	0.64		0.62
None	0.81		0.68
Incarceration History	1.88		1.61
<b>Housing</b>			
Housing Status			
Owns Home			0.30
"Doubled Up"			n.s.
Subsidized Rent			0.23
Residential Treatment			1.61
Eviction Notice			2.71
Utility Shutoff			n.s.

All odds-ratios reported here are statistically significant at the  $p < .05$  level.

"n.s." indicates a statistically non-significant association with the outcome measure.

The set of four "housing status" measures are all compared to the category of paying market rent.

The set of three "decade of diagnosis" measures are all compared to the category of 2010's decade.

The important feature of these models is that the impact of each measure takes into account the impacts of all the other measures. Thus such models can show, after putting all of the explanatory measures into the model, which factors emerge as having statistically significant impacts on, in this case, the likelihood of an MCM applicant indicating a housing need. Table 3.8 shows the results of these logistic regression models, showing the odds ratios for the statistically significant relationships between the explanatory measures and indicated housing need.

The difference between the two models on Table 3.8 is that the second model contains a set of explanatory measures that are related to current living situation (see subsection 3.4). Including these variables created the need for two further changes: those persons who were homeless needed to be taken out of the second model due to lack of variation (i.e., those who were homeless almost always indicated a housing need); and two treatment measures (“in drug treatment” and “in MH treatment”) were dropped in favor of a third one (“residential treatment”) to eliminate redundancy. Where the first model had the full complement of 7,668 observations, the second model contains only the 6,954 non-homeless MCM applicants who did not describe themselves as being homeless.

Looking at the results on Table 3.8, there are many significant associations in both models. When this happens, the challenge becomes to prioritize these significant associations and present them so that they can most readily inform case management and emergency assistance programs in targeting services. Doing this also means disregarding some factors where the implications for services are unclear. Examples of this are factors, such as having an AIDS diagnosis, which, despite being significantly associated with indicated housing need, has a small enough impact so that changes based on this measure would not greatly reduce the likelihood of indicating housing need. Other dynamics including but not limited to, combined effects of age (where the odds decline with time), and diagnosis year (where the odds increase in successive decades), are difficult to clearly interpret and difficult to address programmatically. Finally, results the effect of HIV care, which here was associated with a 31% increased odds indicated housing need, are counterintuitive, unique, and would need more research to see how they might impact policy. The associations for these and many other variables, while not considered further here, nonetheless are valuable in their function as control variables, and can also be considered further by readers if they see this as appropriate.

Given that, the findings in the regression models on Table 3.8 that I recommend receive further consideration in addressing housing among persons with HIV/AIDS include:

- Being in substance abuse treatment. In the first model, this was associated with a 62% increase in the odds for indicating housing need. In the second model, a more general measure for residential treatment was associated with a 61% increase in these odds (compared to those paying market rent). In addition to these treatment effects, alcohol and cocaine use both had modest impacts on increased odds for indicated housing need.

- Having mental health disorders. Diagnoses such as bipolar disorder, depression, and schizophrenia all had some link with higher odds for indicating housing need, although mental health treatment did not have a significant impact.
- Demographics. Being transgender, representing a very small proportion of MCM applicants, had more than a twofold increase (111%) in the odds of having an indicated housing need. In contrast, a large majority of MCM applicants were Black race, which was associated with a 75% increase in the odds of having an indicated housing need.
- History of incarceration. This had a strong effect (+88%) on increasing the odds of indicated housing need.
- Source of income. Receiving wage income substantially decreased the odds (-48%) for indicated housing need. Conversely, receiving welfare (+25%) and disability benefits (+67%) both increased these odds.
- Paying subsidized rent. Compared to market rent, having a rental subsidy reduced the odds of indicated housing need by 77%.

### 3.11. Discussion

People who are living with HIV/AIDS seek out MCM services to facilitate gaining access to resources and services that address needs across a wide range of life domains. Among the over 7,600 applicants for these services between 2009 and 2014 whose intake forms are assessed here, over 4,400, or a bit more than half, expressed a need for obtaining or maintaining stable housing. This is not representative of the overall population of people in Philadelphia living with HIV/AIDS, as there are nearly 20,000 Philadelphia residents living with HIV/AIDS, and the large majority of those not seeking MCM services will have stable housing. However, among the considerable number of persons seeking case management assistance, housing is a widespread need. Here I take a closer look at some of the factors that are associated with this housing need, in order to better understand the nature of this housing need.

Based on these results, there are several factors which leave people particularly susceptible to housing need. They include:

**Transitions from institutional settings:** Those who had exited institutional settings, particularly drug treatment and incarceration facilities, had particularly high levels of housing need as part of their settling back into the community. Additionally, while exiting a mental health facility was not associated with a higher likelihood of housing need, diagnosis of a severe mental illness did increase this likelihood. These three – substance abuse, severe mental illness and incarceration, are all well-known risk factors for unstable housing and homelessness, and they also have disproportionate representation among the population with HIV/AIDS. The findings here strongly underscore the need to provide more resources to address housing need among persons with these characteristics, particularly as part of the process by which they transition back into the community. Such planning would involve both tangible assistance with housing, be it on a short-term or a permanent basis, and (when appropriate) more enhanced discharge planning efforts.

**Demographic indicators of housing need.** Two demographic groups had substantial housing difficulties. The first group was transgender persons, who are a small group in this study (n=121), but were the group in this study identified with the highest odds for indicating housing need (OR=2.11 or 111% increase). Black race, which describes two-thirds of the case management applicants, increased the odds of having housing need by 75%. These findings support how race and gender, (as well as having an HIV/AIDS diagnosis), lead to increased difficulty in finding housing, and indicates that efforts to address this disparity, including the assistance of the Philadelphia Commission on Human Relations, can effectively augment more traditional housing assistance. Furthermore, the small size of the transgender group and their collective high risk for housing need indicates that targeted housing assistance could efficiently provide assistance for this high-need group.

**Material Factors:** The findings here suggest that two protective factors that reduce the odds of declaring a housing need are living in subsidized housing and being employed. While this is hardly surprising, it does underscore the importance of having subsidized housing and vocational assistance available to persons with HIV/AIDS who have housing need.

In summary, these findings highlight, among a large group of persons with HIV/AIDS who sought case management assistance, factors that are associated with housing need. Those in the group with behavioral health issues (both substance abuse and mental health), and incarceration histories are at particularly high risk, and these are presumably at highest risk when they are transitioning out of residential facilities (jail, prison, treatment centers, hospitals, etc.) and into the community. Furthermore, groups that have been traditionally discriminated against in housing, Blacks and transgender persons, also have a higher likelihood of declaring housing need. These findings are consistent with a large amount of homeless research, but bring this into a more local and more HIV-specific focus. These results should assist policymakers in focusing on providing housing assistance to those groups who exhibit highest need.

## Chapter 4 - Assessing the Intersection between HIV/AIDS and Shelter Use in Philadelphia (Study #3)

### 4.1. Introduction

This chapter assesses the extent to which persons diagnosed with HIV/AIDS have a record in Philadelphia's municipal homeless shelter system. In doing so, it offers a window into what is perhaps the most extreme housing need – literal homelessness to the point of having to stay in an emergency shelter.

In order to ascertain this intersection between shelter use and HIV/AIDS in Philadelphia, we matched two datasets. One was a registry of all persons diagnosed with HIV/AIDS and the second a record of all persons who stayed in homeless shelters in Philadelphia's municipally-funded shelter system. Doing this provides an indication of the extent of shelter use (as a proxy for the more general phenomenon of homelessness) among persons diagnosed with HIV/AIDS, as well as the extent to which persons staying in the shelter system have HIV/AIDS diagnoses.

In doing this, we use a study from 2001 by Dennis Culhane and his colleagues as a reference point.<sup>10</sup> In this study, people who used public shelters had, in their words, “a three year rate of subsequent AIDS diagnosis of 1.8 per 100 person years; nine times the rate for the general population of Philadelphia”. Conversely, among people with AIDS, their results showed “a three year rate of subsequent shelter admission of 6.9 per 100 person years, and a three year rate of prior shelter admission of 9%, three times the three year rate of shelter admission for the general population.” This indicates that there were elevated rates both of HIV/AIDS among those in shelters, and of shelter use among persons with HIV/AIDS.

For this study, we did not have the data available for replicating the methods used in the Culhane et al. study. Instead we will report more basic findings from a match of updated versions of the two datasets used in that study.

The first dataset was the Enhanced HIV/AIDS Reporting System (eHARS) registry maintained by AACO. eHARS is a browser-based application provided by the Centers for Disease Control and Prevention (CDC) and maintained by AACO. It has records of all diagnoses of HIV/AIDS reported to AACO, and contains a range of information, mostly pertaining to medical circumstances, for each reported individual. Data fields included for the study included demographic data (age, gender, race/ethnicity) and year of diagnosis.

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<sup>10</sup> Culhane DP, Gollub EE, Kuhn RR, Shpaner M. (2001). The co-occurrence of AIDS and homelessness: Results from the integration of administrative data for AIDS surveillance and public shelter utilization in Philadelphia. *Journal of Epidemiology and Community Health* 55(7): 515–520 (available at: <http://jech.bmj.com/content/55/7/515.full>). Both quotes are from the abstract.

Many variables of interest, including behavioral health and substance use, insurance coverage, and economic measures, were not available from this database. The database provided for this study included all living persons diagnosed with HIV/AIDS in Philadelphia who were in the database at the end of 2014.

The second dataset was the roster of shelter users from the Homeless Management Information System (HMIS) database managed by the City's Office of Homeless Services (OHS). The information provided here was whether or not personal records in the eHARS were matched to have a shelter record, and the dates when each person's shelter stay occurred. Seven years of shelter data was available, from July 2007 through June 2014.

The matching of these two datasets was based on shared personal identifiers including name, social security number and date of birth. Data was matched by personnel from AACO, and a de-identified, merged set was provided for this study.

The findings are presented in four subsections. The first provides overall proportions of persons in the eHARS registry who had shelter records subsequent to their HIV/AIDS diagnosis. The overall rate for the seven years for which shelter data is available is broken down by calendar year and by year of diagnosis. The second subsection examines demographic breakdowns of shelter use among those in eHARS, and features both descriptive findings and results from logistic regression models. Logistic regression models, in general, show the impact of a set of explanatory measures (i.e., independent variables) upon an outcome measure (i.e., dependent variable), taking into account (i.e., controlling for) the impact of the other variables. The third results subsection looks at breakdowns by household composition (individuals and families). The fourth subsection then looks at the prevalence of HIV/AIDS among the shelter-using homeless population.

#### **4.2. Shelter Use among Persons in eHARS**

Table 4.1 shows that, overall, 6.9% of the PLWH as of the end of 2014 had a matching record in the HMIS data that was subsequent to their HIV/AIDS diagnosis, meaning that they had at least one shelter stay over the seven-year study period. As a rough comparison, the prevalence over the same seven-year study period for all adults city-wide (age 20 and over) was 3.0%.<sup>11</sup> Persons who died during this seven-year period were excluded from this analysis. This indicates that the rates of homelessness for adults living with HIV as of 2014 were over twice that of adults in Philadelphia.

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<sup>11</sup> Calculated with US Census Bureau estimates of the 2014 adult population for Philadelphia (1,168,858), based on calculations with data retrieved from <http://www.census.gov/popest/data/counties/asrh/2015/index.html>, and overall prevalence data for all adult shelter users aged 20+ (35,610 unduplicated users) provided by OHS for this study.



When prevalence rates for shelter stay (not including deaths or persons who moved from Philadelphia) are broken down by individual calendar years, the average annual prevalence rate, for the six full years, was 1.9%. Looking at the individual years, there was a modest overall downward trend, with some fluctuation. In the first full year of coverage (2008), 2.3% of the eHARS population had a shelter stay and, in the last full year of coverage (2013), the prevalence was at 1.7%. Rates for 2007 and 2014 were lower due to their only being partial data available for each of these years.

**Table 4.1 – Shelter Use among Adults in Philadelphia eHARS Registry (n=19,226)**

	<b>N (persons)</b>	<b>Overall %</b>
Any Shelter Episode	1,329	6.9
Shelter Episode in 2007*	302	1.7
Shelter Episode in 2008	425	2.3
Shelter Episode in 2009	373	2.0
Shelter Episode in 2010	393	2.1
Shelter Episode in 2011	328	1.7
Shelter Episode in 2012	303	1.6
Shelter Episode in 2013	326	1.7
Shelter Episode in 2014**	226	1.2

Note – annual shelter prevalence rates excludes all who were under age 18 in the given year

\* - 2007 covers July through December only

\*\* - 2014 covers January through June only

Table 4.2 breaks down prevalence of shelter use among PLWH in 2014, over the seven-year study period, by groupings based on year of HIV/AIDS diagnosis. The results must be read with an understanding that those in the cohorts prior to 2007 also had the opportunity to enter shelter prior to 2007, shelter use that would not have been picked up in this study. Thus, overall shelter use is underreported here, especially for the earlier cohorts. Thus the prevalence rates are conservative, particularly for the older cohorts.

**Table 4.2 - Homelessness by Year of Diagnosis**

<b>Year of HIV/AIDS Diagnosis</b>	<b>Total N</b>	<b>Any Shelter Episode bet. 7/07 – 6/14</b>	<b>Total %</b>
<b>1980-89</b>	883	45	4.6
<b>1990-99</b>	5,958	421	7.1
<b>2000-06</b>	6,057	503	8.3
<b>2007</b>	955	76	8.0
<b>2008</b>	908	65	7.2
<b>2009</b>	900	65	7.2
<b>2010</b>	733	52	7.1
<b>2011</b>	708	37	5.2
<b>2012</b>	753	38	5.1
<b>2013</b>	706	23	3.3
<b>2014</b>	665	4	0.6
<b>Total</b>	19,226	1,329	6.9

Among the more recent cohorts, where prevalence rates are reported for individual years starting in 2007, the rates drop steadily from 8.0% in 2007 to 3.3% in 2013 (2014, again, reflects a partial year). This reflects, at least in part, that these cohorts had a shorter time frame during which to enter shelter. With more complete data and adjusting for opportunity to be sheltered, which we could not do in this study, would have increased the overall 6.9% shelter rate.

### 4.3. Demographic Characteristics and Shelter Use

Descriptive and multivariate analyses show distinct associations between different demographic characteristics and risk for experiencing shelter stays subsequent to HIV/AIDS diagnosis. The differences found in the descriptive results shown on Table 4.3 may or may not be significant once the demographics are all considered together in one model. This is considered with a logistic regression model, whose results are in Table 4.4.

**Table 4.4 – Shelter Use, Broken Down by Demographic Characteristics, Among Adults in Philadelphia eHARS Registry (n=19,226)**

	Total N	Any Shelter Episode bet. 7/07 – 6/14	%
<b>Gender</b>			
Male	13,621	866	6.4
Female	5,465	445	8.1
Transgender	140	18	12.9
<b>Age</b>			
18-24	793	21	2.7
25-29	1,391	84	6.0
30-39	3,136	222	7.1
40-49	5,262	399	7.6
50-59	5,957	496	8.3
60+	2,687	107	4.0
<b>Race/Ethnicity</b>			
Hispanic (any race)	2,840	121	4.2
White (non-Hisp.)	3,499	117	3.3
Black (non-Hisp.)	12,247	1,043	8.5
Multi-racial (non-Hisp.)	415	42	10.1
Other	225	6	2.3

Table 4.3 shows shelter use rates for the available eHARS registry records as broken down by basic demographic classifications: gender, age and race/ethnicity. For gender, women had substantially higher rates than men, 8.1% to 6.4%, and the highest rates were for transgender persons, who were a much smaller group but had a much higher shelter rate at 12.9%. The shelter rates climbed steadily as the age groups got older until age 60, at which point the rates dropped sharply. Specifically, shelter use peaked in persons ages 50-59 at 8.3%.

Finally, persons who were of Black race and multi-racial (both groups excluding those of Hispanic ethnicity) had the highest rates of shelter use, at 8.5% and 10.1%, respectively, with Hispanic ethnicity (any race), White race (non-Hispanic) and other having rates that were less than half that of Blacks. It again bears mentioning that the shelter rates reported here only cover a seven-year period, where lifetime prevalence rates for post-HIV/AIDS diagnosis shelter would cover shelter use prior to 2007 as well. This leads to underreporting post-diagnosis shelter use in all of these demographic groups, and particularly among the older age groups.

**Table 4.4 –  
Logistic Regression Model that Estimates  
Impact of Variables on Indicated Housing Need**

	Homeless Odds Ratio
<b>Race/Ethnicity</b>	
White (non-Hispanic)	Reference
Black (non-Hispanic)	2.6
Hispanic (any race)	n.s.
Multi-racial (non-Hispanic)	3.1
Other	n.s.
<b>Gender</b>	
Male	Reference
Female	1.1
Transgender	2.0
<b>Age</b>	
18-24	0.3
25-49	Reference
50-59	1.2
60+	0.6

All odds-ratios reported here are statistically significant at the  $p < .05$  level.  
n.s. – non-significant p-value

Table 4.4 includes all of the demographic groupings in a single, multivariate logistic regression model. Here the outcome is a shelter stay, and the impact of each demographic characteristic on the likelihood of a shelter stay is expressed as an odds ratio (OR). The important feature of these models is that the estimated impact of each measure (i.e., the OR) simultaneously takes into account the impacts of all the other measures. Thus this model shows, after putting all of the demographic measures into the model, which factors have statistically significant impacts on the likelihood of experiencing a shelter stay. Only the ORs that are statistically significant (p-value of less than 0.05) are reported in Table 4.4. Each demographic measure (race/ethnicity, gender and age) necessarily feature a reference category, which is the group which have a baseline odds of 1 and to which each of the other categories are compared. To those unfamiliar with logistic regression, it will hopefully become clearer as results in Table 4.4 are explained in more detail.

Breaking down the results in Table 4.4:

- Race/ethnicity is divided into five groups. Identifying as Black or as multi-racial is associated with over double and triple the odds (i.e., ORs of 2.6 and 3.1), respectively, of experiencing a shelter stay as the other groups. These are strong associations that indicate substantially increased risk.
- Compared to men, those identifying as transgender are twice as likely and women are 10% more likely to experience a shelter stay. For transgender persons, this reflects a substantially increased risk and for women, a modest albeit still statistically significant increase in risk for shelter stay.
- Compared to those in the middle of the age distribution (ages 25-49), both those in the youngest and oldest age groups show a decreased risk for a shelter stay, while those in their 50s had a modest increase in risk (20%, or an OR of 1.2).

To sum up, the descriptive findings on Table 4.3 indicate numerous differences how often people in different demographic categories experience shelter stays. When all factors are combined into a logistic regression model, emerging factors of whose effects are both substantial and statistically significant are race (Black or multi-racial) and transgender identification. There are other groups, such as women or persons aged 50-59, who have a significantly higher risk for a shelter stay, but the associated effect size is modest. Finally, those in the youngest and oldest age groups have much less risk for becoming homeless. Among the youngest group, however, additional persons may have stayed in youth shelters, where they would not have been counted as homeless with these data. The drop in risk for shelter stay once people are in their sixties is well-known since people have more housing options as they become recognized as elderly.

#### 4.4. Shelter Use by Household Size

**Table 4.5 - Household Size by Sex/Gender (Shelter Users Only)**

	<b>Total Shelter Users</b>	<b>Unaccompanied</b>	<b>2-person household</b>	<b>3+ person household</b>
<b>Male</b>	866	857 (99.0%)	7 (0.8%)	2 (0.2%)
<b>Female</b>	445	340 (76.4%)	60 (13.5%)	45 (10.1%)
<b>Transgender</b>	18	18 (100%)	0 (0%)	0 (0%)
<b>Total</b>	1,329	1,215 (91.4%)	67 (5.0%)	47 (3.5%)

As shown in Table 4.5, the overwhelming majority (91%) of the study group entered shelter as individuals. Among those who enter shelter with others, all but 9 of the 114 people (92%) were women. These additional household members are most likely children, but can also consist of other adult family members. Thus, while most persons with HIV/AIDS who enter shelter do so as individuals, a substantial minority of women in this study group entered with their families, and will thus have different needs than the sheltered individuals. Additionally, some of the individuals may have had children but entered shelter alone.

#### 4.5. HIV/AIDS Diagnosis among Sheltered Adults

**Table 4.6a - HIV/AIDS Diagnosis among Sheltered Adults and Overall Philadelphia Adult Population: Men**

Age Groups	OHS Shelter System: Men			City of Philadelphia Population: Men (see note below)			Ratio: Shelter to Overall
	Total	Men w/ HIV/AIDS	% w/ HIV/AIDS	Total	Men w/ HIV/AIDS	% w/ HIV/AIDS	
20-24	518	8	1.54%	63,367	547	0.86%	1.79
25-29	1,476	46	3.12%	75,327	1,080	1.43%	2.18
30-39	3,188	142	4.45%	108,449	2,212	2.04%	2.18
40-49	4,444	241	5.42%	88,452	3,428	3.88%	1.40
50+	9,344	429	4.59%	203,901	6,304	3.09%	1.49
<b>Total</b>	<b>18,970</b>	<b>866</b>	<b>4.57%</b>	<b>539,496</b>	<b>13,571</b>	<b>2.52%</b>	<b>1.81</b>

**Table 4.6b - HIV/AIDS Diagnosis among Sheltered Adults and Overall Philadelphia Adult Population: Women**

Age Groups	OHS Shelter System: Women			City of Philadelphia Population: Women (see note below)			Ratio: Shelter to Overall
	Phila. Women	Women w/ HIV/AIDS	% w/ HIV/AIDS	Phila. Women	Women w/ HIV/AIDS	% w/ HIV/AIDS	
20-24	1,332	12	0.90%	67,401	151	0.22%	4.09
25-29	3,383	36	1.06%	81,376	283	0.35%	3.03
30-39	4,417	77	1.74%	117,346	888	0.76%	2.29
40-49	3,130	154	4.92%	96,779	1,805	1.87%	2.63
50+	4,378	166	3.79%	266,460	2,307	0.87%	4.36
<b>Total</b>	<b>16,640</b>	<b>445</b>	<b>2.67%</b>	<b>629,362</b>	<b>5,434</b>	<b>0.86%</b>	<b>3.10</b>

Data Sources for Tables 6a and 6b: City of Philadelphia Office of Homeless Services for total persons staying in shelters in 2007-14, grouped by sex and age; and City of Philadelphia's AIDS Activities Coordinating Office (AACO) eHARS registry data on PLWH as of the end of 2014 (matched with OHS shelter data) for sheltered individuals with HIV/AIDS. US Census Bureau 2014 population estimate retrieved at: (<http://www.census.gov/popest/data/counties/asrh/2015/index.html>) for City of Philadelphia population.

In the final analysis, instead of examining the prevalence of shelter use among PLWH as of the end of 2014, we look at the converse and assess the proportions of persons diagnosed with HIV/AIDS in the adult shelter population. These proportions are based on the total number of persons diagnosed with HIV/AIDS by end of 2014, alive at that point in time, listed in the eHARS registry and, the total number of persons who stayed in OHS adult and family shelters between 2007-2014; (i.e., the study period for this chapter). For comparison purposes, we also provide the proportions of persons with HIV/AIDS, based on the surveillance data, among the overall Philadelphia adult population, as derived from US Census Bureau estimates. The populations are broken down by sex and age groups.

Ages are for initial age at shelter entry, shelter users who were diagnosed subsequent to initial shelter entry would not have been identified as having HIV/AIDS. Transgender individuals were not included in these calculations due to lack of comparable data in shelter and census records.

For both sexes, the proportions of persons with HIV/AIDS among those using shelters were much higher than the corresponding proportions for the overall population.<sup>12</sup> For men and women in the shelter population, 4.57% and 2.67%, respectively had records in the eHARS registry, and were current Philadelphia residents and alive as of the end of 2014. While men had the higher levels of HIV/AIDS diagnoses in both the shelter and the overall populations, HIV/AIDS rates for sheltered women were 3.10 times the rate the overall female population, compared to sheltered men having 1.81 times the prevalence of HIV/AIDS than the overall population. For all populations (male and female, sheltered and overall) the highest prevalence rates were between ages 40-49 (at time of initial shelter entry). Taken together, HIV/AIDS is more often found among sheltered men, but rates among sheltered women are much more disproportional when compared to the overall population.

#### **4.6. Discussion & Conclusion**

Fifteen years after Culhane et al. released their paper on the intersection of HIV/AIDS and shelter use the findings in this study again show that homelessness and HIV/AIDS frequently co-occur. Among persons living with HIV in Philadelphia as of the end of 2014, 6.9% experienced a shelter stay over a seven-year period (2007-13), a rate over twice that of the overall adult Philadelphia population. Conversely, this study shows that 4.6% and 2.7% of the male and female sheltered population respectively between years 2007 through 2014 had an HIV or AIDS diagnosis.

Culhane et al. estimated that, compared to the overall Philadelphia population, the rate of shelter use for persons diagnosed with HIV/AIDS was three times higher and the rate of those with HIV/AIDS among the sheltered population was nine times higher. Our findings are lower than this, but due to data limitations we were unable to replicate Culhane et al.'s methods and thus it is difficult to draw more than general conclusions from comparing the two studies.

This study also found some differences based on demographic characteristics that are important to reiterate. While women have lower rates of prior HIV/AIDS diagnosis both overall and among sheltered populations, the female shelter population is at increased risk for having a prior HIV/AIDS diagnosis when compared to their overall risk. Women living with HIV/AIDS also had a modestly elevated risk for experiencing a shelter stay, compared to men. Finally, women living with HIV/AIDS are much more likely than their male counterparts to be accompanied by family in a shelter. All of this indicates that women with HIV/AIDS have different housing needs and risks than men, and that housing assistance efforts need to take this into account.

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<sup>12</sup> The HIV/AIDS prevalence calculations made for the overall population here are consistent to those contained in AACO's 2014 HIV/AIDS Surveillance Report. AACO's annual HIV/AIDS Epidemiological Reports are located at: <http://www.phila.com/health/aaco/aacodataresearch.html>.

Other demographic groups identified among those living with HIV as being at substantially higher risk of entering shelter are those of Black or multiple races, and those who identify as transgender. This is consistent with findings from the other two studies in this housing needs assessment. Considering results from this and the MCM studies, there is clearly an acute housing need among the relatively small group of persons living with HIV/AIDS who identify as transgender. There were also higher levels of risk for shelter stay (along with more general housing need pointed out in the other two studies) among those of Black or multiple race. The heightened risk for shelter admission among persons of Black race more generally is well-known, and this differential in risk may indicate continuing discrimination and residential segregation in housing among persons of Black race. As pointed out in the case management study, these risk differentials may point to the effects of discrimination and stigma, not only in how it relates to HIV/AIDS, but also more broadly to other minority groups. Means to address these disparities could augment more traditional housing assistance.

While these findings provide a compelling overview of shelter use among persons living with HIV/AIDS in Philadelphia, and while they are roughly consistent with the Culhane et al. study, the data available for this study was much more limited than was to theirs. This means that we were unable to be more precise than calculating basic rates for shelter use, and not having data on factors that typically are associated with higher risk for homelessness such as mental health and substance abuse indicators. These were found to be major facilitators of shelter use in the Culhane et al. study, and while we were unable to address these factors here, we have no indication to believe that these factors did not continue to play substantial roles in exacerbating homelessness risk.

There are also limitations to study that are inherent to many studies based on administrative data. These include that the intersection of HIV/AIDS and shelter use can only consider those who are included in each dataset. This means that persons with HIV/AIDS may not have been reported to the surveillance database (eHARS), or that persons may have used a shelter that was not collecting records for the HMIS dataset. For example, someone in the eHARS registry may have moved from Philadelphia and subsequently experienced shelter elsewhere. However, this study would include persons who moved to Philadelphia and experienced homelessness. This study only looks at shelter use, those persons who experienced homelessness but who did not stay in a shelter (for example, someone who exclusively stayed in an abandoned building) would be missed here. Thus the term "shelter use," used throughout this chapter, should not be seen as the same as the more general term "homelessness." Finally, the records were matched based upon common identifiers, if someone used different identifiers in each dataset he or she would not get picked up as a match. All of this combined suggests that the match rates found here would be conservative.

In conclusion, while this study is unable to take as in depth an examination of the intersection between homelessness and HIV/AIDS as might be desired, it underscores that homelessness is a crucial component to overall housing need among persons diagnosed with HIV/AIDS.