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## Reducing Homelessness among Persons with HIV: An Ecological Case Study in Delaware

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### Abstract

**Introduction:** Among persons with HIV (PWH), homelessness is associated with poorer health. From 2009–2014, national HIV prevention goals included a reduction in homelessness among PWH. We sought to examine social ecological factors associated with homelessness among PWH at a sub-national level during that period.

**Methods:** National data were used to identify Delaware as the only jurisdiction where homelessness among PWH declined from 2009–2014. We analyzed population-level indicators and conducted telephone interviews with 6 key stakeholders to further examine this trend.

**Results:** Overall homelessness, household poverty, and median housing price were associated with homelessness among PWH in Delaware. Key stakeholders indicated that centralized intake processes improved screening, referral, and linkages of clients to housing units.

**Discussion:** In addition to social and economic factors, collaborative program strategies may improve housing outcomes for PWH. Monitoring trends at sub-national levels can help identify successful approaches as well as needed services or policy change.

### Keywords

Acquired Immunodeficiency Syndrome; Housing; Homeless Persons; Delaware; Policy Making

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Housing instability and homelessness negatively affect health, and a disproportionate number of persons who experience homelessness every year are diagnosed with infectious diseases such as HIV, tuberculosis, and Hepatitis C (Beijer, Wolf, & Fazel, 2012). In a recent assessment among persons with HIV (PWH), prevalence of having experienced homelessness within the past year was 8.5% (Wainwright, Beer, Tie, Fagan, & Dean, 2020). Compared to PWH who are stably housed, PWH experiencing homelessness are more likely to have poorer access to HIV medical care, less likely to receive and adhere to anti-retroviral therapy (ART) and have higher HIV viral loads (Leaver, Bargh, Dunn, & Hwang, 2007). Improvements in housing stability have demonstrated a wide range of improved outcomes for PWH including HIV-related health outcomes, better engagement in medical care (Aidala,

et al., 2016; Towe, et al., 2019; Wolitski, et al., 2010) and reduced rates of sex and drug-related risk behaviors (Aidala, Cross, Stall, Harre, & Sumartojo, 2005).

In 2010, the National HIV/AIDS Strategy (NHAS) introduced priorities to address the domestic HIV epidemic. One of the stated goals was to reduce the percentage of PWH who are homeless to 5% by 2020, with an “annual target” decrease of 7%. On a national level, the percentage of PWH who experience homelessness (defined as living on the street, in a shelter, in a single-room-occupancy hotel, or in a car) did not decline, showing instead a potential trend upward from 7.7% in 2010 to 9.0% in 2014 (Centers for Disease Control and Prevention, June 2019). In addition, the Ending the HIV Epidemic (EHE) national program established new monitoring targets in 2017, that did not include an indicator for homelessness among PWH (<https://ahead.hiv.gov/>). We sought to understand whether there were sub-national jurisdictions where homelessness among PWH had decreased while this was prioritized in national outcomes monitoring, and the extent to which programs and services designed to address this issue were associated with improvements in this key social determinant of health.

The primary federal program dedicated to addressing housing needs for PWH is the U.S. Department of Housing and Urban Development’s (HUD) Housing Opportunities for Persons with AIDS (HOPWA) program. The HOPWA program was created in the AIDS Housing Opportunities Act, a part of the Cranston-Gonzales National Affordable Housing Act of 1990 (National Low Income Housing Coalition, 2019) and funds local communities and non-profit organizations to provide housing assistance and related supportive services to low-income PWH and their families. While not the primary intent of the program, the U.S. Department of Health and Human Services (HHS) Ryan White HIV/AIDS Program (RWHAP) also provides limited funds to support transitional, short term, or emergency housing assistance and referral services (e.g., assessment, search, placement, advocacy, and the fees associated with these services) under RWHAP Parts A, B, C, and D (Health Resources and Services Administration, 2016). Because HOPWA and Ryan White programs are decentralized at the jurisdiction (state and large metropolitan) level, funding and program implementation can greatly vary across jurisdictions. These variations may be associated with rates of homelessness and other health outcomes (e.g., rates of linkage, retention, ART prescription, and/or viral suppression) among PWH at jurisdictional levels.

We conducted a mixed-methods, ecological case study to analyze the social, economic, and policy/program factors that may contribute to reducing homelessness among PWH at a jurisdictional (e.g., state or metropolitan) level. The objectives of the present study were to:

1. identify a jurisdiction where the rate of homelessness among PWH demonstrated a decline during 2009–2014, which aligned with the period of NHAS monitoring of homelessness among PWH;
2. identify population-level economic, policy, or social factors associated with homelessness;
3. describe service providers’ perspectives of the challenges, successes, and unmet needs in addressing housing and homelessness in the selected jurisdiction.

## Methods

We conducted both quantitative and qualitative analyses. The quantitative portion involved two phases: 1) analyzing national data to identify a state/jurisdiction where homelessness was trending downward; and 2) compiling relevant jurisdiction-level population data from publicly available datasets to determine ecological factors correlated with homelessness among PWH. The qualitative portion of the analysis involved in-depth interviews with housing-related program administrators.

### Quantitative analyses of state-level trends.

First, to address whether and where jurisdictional and national trends in homelessness diverged, we conducted an analysis of CDC's Medical Monitoring Project (MMP) data. MMP is an annual cross-sectional survey designed to report information to better understand behavioral and clinical characteristics of people with HIV; during 2009–2014, data were collected to produce nationally representative estimates among persons with diagnosed HIV in medical care. These data included self-reported experiences of homelessness in the past year and were used to monitor the national HIV/AIDS strategy indicator.

During the analysis period, MMP used a three-stage, complex sampling design, in 23 project areas, including 16 U.S. states and 1 territory. Participants were sampled from all states, the District of Columbia, and Puerto Rico, followed by facilities providing outpatient HIV clinical care in those jurisdictions, and then HIV-positive adults receiving care in those facilities. MMP methods, including weighting procedures and response rates, are described in detail elsewhere (Iachan, et al., 2016). Due to sample size considerations, we grouped time of assessment in two-year intervals to increase stability of the estimates (2009 and 2010, 2011 and 2012, 2013 and 2014), and estimates were weighted based on known probabilities of selection and adjusted for non-response. As with the overall national trend, most states/jurisdictions indicated no change in homelessness during this 6-year period (data not presented). The sole exception to this pattern was Delaware. Since MMP data from Delaware suggested a decreasing trend during this period, we selected this state for further exploration of social, policy, and economic factors associated with homelessness among PWH.

Beginning in the year 2015, a significant change in data collection procedures in the MMP involved an expansion of eligibility to include all persons with diagnosed HIV (<https://www.cdc.gov/hiv/statistics/systems/mmp/>). While this change would have prohibited comparability to the period that was the focus of our analysis, we examined additional MMP data on homelessness during the years 2015–2019 to assess whether any additional trends emerged.

### Ecological Analysis.

Second, we selected a set of publicly available data to assess potential socio-economic correlates of state-level homelessness trends. Rates of HIV diagnosis, HIV prevalence, AIDS diagnosis, and death among PWH were obtained from the CDC HIV Surveillance reports and Supplemental reports (<https://www.cdc.gov/hiv/library/reports/hiv-surveillance.html>). A

measure of overall health was constructed from a response to the question “How is your general health?” in the Behavioral Risk Factor Surveillance System (BRFSS) Prevalence & Trends Data (<https://www.cdc.gov/brfss/>). The BRFSS is a state-based, random digit-dialed telephone (landline and cellphone) survey of the civilian, noninstitutionalized adult U.S. population that collects information on preventive health practices and risk behaviors. The responses were converted into a binary variable (i.e., “excellent, very good, or good health” vs. “fair or poor health”). The proportions of uninsured, vacant homes, households below the poverty level, median household income, and median housing price were obtained from the American Community Surveys 1-Year Estimates provided by the U.S. Census Bureau (<https://www.census.gov/programs-surveys/acs/>). The percent home ownership was obtained from the Current Population Survey/Housing Vacancy Survey provided by the U.S. Census Bureau (<https://www.census.gov/housing/hvs/index.html>).

The amount of HOPWA funds awarded to the state of Delaware, city of Wilmington, and three community-based organizations (Delaware HIV Consortium, Ministry of Caring, and Connections Community Support) from 2009–2014 were obtained from the Delaware HOPWA Grantee Performance Profiles (<https://www.hudexchange.info/programs/hopwa/hopwa-performance-profiles/>). For each year, we calculated a subtotal of HOPWA formula funds (i.e., sum of the funds awarded to state and Wilmington) and the total HOPWA funds (i.e., sum of the funds awarded to the state, Wilmington, and the competitive funds awarded to the aforementioned three community-based organizations; due to varying funding periods, the amount of the competitive funds in each year was estimated). We also created variables for the subtotal and total funds in logarithmic scale to address skewed data issues.

Data for all variables in the ecological models were annual aggregate state-level data for Delaware from 2009–2014. We conducted bivariate correlational analyses to measure the size and significance of the relationship between the proportion of PWH who were homeless (obtained from the MMP) and the proportion of people who were uninsured, proportion of vacant housing, proportion of households below poverty level, household median income (\$), median housing price (\$), proportion of home ownership, and overall proportion of homelessness in Delaware. We also conducted bivariate analyses of the relationships between the proportion of PWH who were homeless and rate (per 100,000) of HIV diagnoses, HIV prevalence, AIDS diagnoses rate, death rate among PWH, overall health, and total formula funding for the same time period. Because all of the variables are continuous, we calculated parameter estimates and 95% confidence intervals using a simple linear regression model. As the sample size is small, we did not build a multiple regression model. All analyses were conducted with SAS 9.4 (SAS Institute, Cary, NC).

### **Qualitative interviews and analysis.**

To supplement this population-level analysis with an in-depth program perspective, and understand the program implementation factors that may affect homelessness among PWH in Delaware, four key informant interviews (KIIs) were conducted between April and August 2019, with six program managers and policy experts (one of the four interviews included a group of 3 program staff) from four organizations/agencies that provide or refer clients to housing services in Delaware. The participating agencies included three

community-based organizations and one agency that leads all the housing projects for persons experiencing homelessness in Delaware.

KIIs were conducted over the phone using a piloted interview guide. Participants were identified through a snowball sampling approach. A primary stakeholder in Delaware suggested names of potential participants. Potential participants were invited to participate via email. If they were interested, a phone interview was scheduled and conducted. The interviews lasted approximately 60 minutes, and key informants answered questions related to successes and challenges of housing program implementation, administrative functions and decision-making, housing needs of homeless PWH, recommendations for improving outcomes for homeless and at-risk PWH. KIIs were audio recorded, with consent of the participants. Interviews were transcribed and loaded into NVivo qualitative data analysis software (QSR International [Americas] Inc., Burlington, MA) for coding and analysis. Audio files of the KIIs were deleted after transcription. These interviews were determined to be non-research program evaluation activities by CDC's National Center for HIV, Hepatitis, STD, and TB Prevention. However, verbal informed consent was obtained from the participants before each interview.

Members of the study team (CQ, SSV, YM) transcribed and reviewed each transcription for quality and completeness. Qualitative coding of KII transcripts was conducted (CQ, KR, SSV) to identify patterns and themes. An initial codebook was developed based on the structure of the interview. To ensure reliability in the coding process, the team reviewed initial codes and resolved any discrepancies via consensus.

## Results

### Quantitative Findings.

The two-year weighted average percentage of MMP respondents experiencing homeless in Delaware decreased from 11.0% in 2009–2010 to 5.0% in 2013–2014, indicating a significant decline over time ( $\beta$  [over 6 years] =  $-0.0157$ ,  $p = 0.001$ ). In contrast, self-reported homelessness among PWH from Delaware increased from 6.9% in 2015–2016 to 10.3% in 2017–2019, which was not significant ( $\beta$  [over 5 years] =  $0.0057$ , NS). Notably, no other jurisdictions demonstrated significantly positive trends for self-reported homelessness in either the 2009–2014 period or in the 2015–2019 period (data not shown).

The ecological-level analyses (Table 1) found that a higher proportion of households below the poverty level ( $\beta = -0.94$ ; 95% CI  $-1.41, -0.47$ ;  $p = 0.005$ ), lower median housing price ( $\beta = 0.88$ ; 95% CI  $0.23, 1.53$ ;  $p = 0.02$ ), and a lower proportion of overall homelessness in the jurisdiction ( $\beta = 0.94$ ; 95% CI  $0.44, 1.42$ ;  $p = 0.006$ ) were each associated with a lower proportion of homelessness among PWH in Delaware.

### Qualitative Findings.

Collectively, the key informant representatives had worked at their current positions or related agencies delivering housing services for more than 48 years. Among the interviews, we found four main themes regarding: 1) factors that reduce and prevent homelessness among PWH; 2) challenges that limit the effectiveness of housing services; 3) conflicting

perceptions on client barriers to housing, and; 4) uses for monitoring/tracking program outcomes.

**Factors that reduce or prevent homelessness.**—Across the interviews, key informants agreed that having a centralized intake system and programs that provide housing units either for persons experiencing homelessness or PWH who meet criteria for housing assistance, make provision of housing services more effective. Specifically, the centralized, state-wide intake system was seen by all informants as a means to integrate services and screen clients for eligibility for multiple services. These screenings included assessment for eligibility for homelessness services (e.g., shelter beds) and other low-income housing assistance (e.g., Section 8 or HOPWA vouchers) or emergency (short-term) housing assistance. As several noted:

“...They’re always encouraged to apply for other low income housing, so whatever other low income housing is available, for instance the occasion where a Section 8 opens up, or another local Wilmington Housing authority or another town near here, Newark, where the University is, so they ... will send out a notice and send out letters to everyone who is actively receiving that voucher to apply. We’re always strongly encouraging when these opportunities open up.”

[HI-01]

“...We go through a process, the intake process of centralized intake they do what they call a (inaudible) where they kind of categorize you in terms of intensity or the seriousness of your homelessness and they put you in a category. They make a call to agencies accordingly.”

[HI-03]

Informants described a number of different housing programs available, based on criteria related to income level, housing need severity, and HIV status. Beyond HOPWA and some senior housing, other types of population-specific housing seemed limited:

“We mainly have single men and women who come here as clients. Now some do have families, not that many. A few, yeah, there are, sure, men and women with children. We have, I think, referred people to this mental health program, they do have a unit – just one unit – for a mom with a child or it might be two children, it’s a 2-bedroom unit. We seem to have more luck with seniors, I would say, because of the senior housing that’s available.”

[HI-01]

**Challenges to housing services.**—Informants consistently noted several challenges to providing housing support to all those in need of services, including housing affordability, insufficient housing units, the complexity of application procedures, and strict requirements to either enter or stay on a waiting list:

“...I feel like I can’t overemphasize if I needed to pinpoint something in my 18 months here is that really a big challenge for us is, for all the populations that we

serve, the poor, disadvantaged, is finding affordable housing and case management support.”

[HI-04]

“I think it would be helpful, not just money for the rental assistance, but also to help people get started. You know application fees, security deposits are often a big stumbling block because there aren’t very many financial assistance programs that want to help people with security deposits because the idea is that when you move out you get that money back.”

[HI-02]

“Or, we have a lot of people who come in and out of our system. So, that’s kind of difficult when they’re on this waitlist. Because if they’re out more than 30 days then they get taken off the list, and then we have to redo the application again. So that’s a little bit of a barrier, to keep them on that active, DHAP/HOPWA waitlist.”

[HI-01]

“For the most part all of our programs, shelter or otherwise, stay at full capacity. Of course, when someone leaves and maybe a day or a week before we get someone into that placement, but for the most part, we’ve got a full capacity in other programs.”

[HI-03]

Another challenge to housing is the impact of transportation between the available units and the areas where clients might work and receive healthcare services. As one informant noted:

“...We have an issue where a lot of times we have somebody who’s experiencing homelessness in northern Delaware, but we might have a shelter bed available in southern Delaware and we don’t have those transportation resources to get them from the North to the South, or from the South back up to the North. In terms of, and we see this an awful lot when we’re dealing with someone who’s experiencing or living with HIV/AIDS as well, is that that transportation barrier to their house to work to stabilize their financial resources and back. Or their house to the healthcare system to stabilize their healthcare. We particularly see that a lot with someone who’s experiencing homelessness who also has HIV, living with HIV. So you exasperate both systems by not having that access to transportation.”

[HI-04]

**Conflicting perceptions on barriers to housing.**—Among informants, there were mixed perceptions on issues such as the level of housing demand in recent years, whether Housing First policies were uniformly practiced, how well coordination between agencies benefits clients in a holistic way, and whether traditional case management support/staffing is sufficient to meet client needs. For instance, despite the long waitlists and limited available units that were more consistently noted, one informant noted that the waitlists were shorter in recent years:

“What seems to be going on to me is that those with HIV are functioning now in the normal activities of society because we have, it seems to be, less folks are coming through our programs. Now we get less referrals ... we don’t even have a waiting list for HIV at this point which is really unusual... (PWH) don’t need that level support as they needed say 10, 15, or 20 years ago...”

[HI-03]

Another contrast in views was related to formal policy versus enacted practice of Housing First among housing providers. This could be due to site-specific implementation and program limitations, or to the eligibility screening process:

“Another barrier is they’re supposed to accept anybody, even if they’re currently using drugs, but some of them don’t want to do that. I mean like [deleted], which may have a religious basis.”

[HI-01]

“...The (housing) program will make sure they’re eligible, and if there’s anything on the application that – if they self-disclose that they have a drug or alcohol issue – they can still get on the waitlist but they need to address that in the interim, and if they have an outstanding utility bill or can’t have a lease in their name, they will be able to look that up and say, ok, Mr. Jones, for instance random name, that you have a \$2000 electric bill that has to be paid off. So what we will try to do to help them work to pay that bill down.”

[HI-01]

Most informants noted that agencies coordinated more efficiently in Delaware than in other states due to the relative size of Delaware as a state and the physical proximity of agency offices to one another. Nevertheless, for clients, health and social systems can remain siloed, and supporting different case management needs across these systems remains a challenge:

“...Most of ...the people that are in the HIV system, are either on the waiting list for housing through the state’s allotment of HIV HOPWA funds. Um, and so they’re on a waiting list already for that. And so we’re not necessarily seeing a ton coming through our homeless centralized intake referral system. And additionally with that we wouldn’t necessarily know if we’re seeing a ton of people with HIV because that’s not something, I don’t believe that it’s asked...”

[HI-04]

“...So this particular person, I think we tried to reach her, and then she finally picked up, she said because she knew it was us (housing case manager), and she told us that she hadn’t paid the rent. And she hadn’t been to the HIV doctor in like over a year, and you know, it was kind of shocking, but this is what happens. So, ... to me, I really wish there were more, either [Delaware’s HOPWA program] supervision, like that there was more staff available, or case management here available, to help someone with a higher need, or someone who’s in the situation – paying their own rent, paying their own utilities, that can’t quite manage on their income.”



[HI-01]

**Uses for monitoring/tracking program outcomes.**—We asked informants to describe how data were used for program monitoring. There were two ways that informants typically responded to this: some noted that evaluation indicators required for federal funding are collected in a central (state-level) database, and others pointed to community planning groups that reviewed the data to inform their planning processes. Indicators are used to track program outputs, not necessarily to monitor individual-level client outcomes:

“...We are [tracked] through the CMIS, the management information system, but it’s a system where we have to enter data to the centralized intake and HUD and they determine how well our programs are doing. And...they’re looking at a couple things. They’re looking at quality, they’re looking at stability, you’re looking at whether or not we able to accept referrals right away...they’re looking at client income, whether or not we are able to help folks increase their income, whether or not our beds are full, if we have full utilization or close to full utilization... Are we willing to take folks on housing first. We’re looking at the low barrier issue. They are looking at do we serve adults with disabilities. Do we serve those who have domestic violence in their history? They’re looking at our organization participation in the overall continuum of care.”

[HI-03]

## Discussion

Social determinants of health, such as housing access, affect the health and well-being of PWH. We sought to identify a jurisdiction where the rate of homelessness among PWH has demonstrated a decline during the period when it was being monitored at a national level, identify population-level economic, policy, or social factors associated with homelessness, and describe service providers’ perspectives of the challenges, successes, and unmet needs in addressing housing and homelessness in the selected jurisdiction. While at the national level, homelessness among PWH had not significantly changed from 2009 through 2014, in Delaware it did show a decline.

We found that some population-level indicators were associated with homelessness among PWH, but not always in expected directions. Some factors seemed intuitive, such as finding that lower overall cost of housing and lower overall homelessness in Delaware were associated with lower rates of homelessness among PWH over this timeframe. However, the percentage of households below the poverty level also increased during this period, and changes in homelessness among PWH were not associated with HOPWA funding levels. It may be that structural factors such as decreased housing prices and falling rates of overall homelessness could have compensated for any increases in poverty or relative stability of funding for housing services during this period, or that other factors driving the reduction in homelessness among PWH were not accounted for.

The interviews with program and policy experts reflected some of these social-ecological factors. For instance, some noted that overall demand for housing seemed to be on the

decline, and issues like the cost of housing and the ability to travel between work and available housing units can pose a barrier to uptake of services. However, those interviewed more often pointed to service-level factors to explain the decline in homelessness among PWH. The centralized intake system developed by Delaware Housing Alliance was widely regarded as having significantly improved eligibility screening, referral to relevant services, and facilitating the links between available units and eligible clients in recent years. Many of the barriers to providing housing services to all who were eligible were not unique to Delaware, e.g., long wait lists for housing vouchers, limited availability of units, and complex procedures for confirming eligibility or meeting requirements. Despite the improved efficiency many attributed to the centralized intake process, potential for silos between agencies and their primary missions were a cause of clients to occasionally ‘fall through the cracks.’ Other research has shown that service coordination alone is not likely to be sufficient to address homelessness, nor to prevent its occurrence (e.g., Shinn & Kadduri, 2020).

Housing programs are not designed to track client outcomes or address overall social or medical/health outcomes. Questions such as, ‘does the current program structure lead to more housing stability, medical stability, income generation/employment?’ or; ‘do housing programs expand or adapt to the shifting needs of the population, in alignment with larger economic or social trends?’ would require a more comprehensive evaluation approach. A program evaluation of state-level housing services could identify innovations to further the goal of reduced homelessness.

In 2020, the global COVID-19 pandemic sickened millions in the United States and led to hundreds of thousands of premature deaths. As part of the national public health response to this unprecedented crisis, HHS/CDC issued a temporary order to limit residential evictions (<https://s3.amazonaws.com/public-inspection.federalregister.gov/2020-19654.pdf>). While this measure underscores the critical role that stable housing plays in maintaining physical and mental health, many persons experiencing chronic or disabling conditions, including PWH, will likely continue to need additional supportive services to maintain housing and engagement in life-sustaining care (Padilla, Frazier, Carree, Shouse, & Fagan, 2020). Key components of ‘Housing First’ strategies, e.g., providing housing without sobriety requirements, providing information about how drug use creates additional health risks, support for residents who seek to discontinue or reduce drug use, and prioritizing program admittance for individuals who are least likely to be served in traditional housing models, appear to offer promise for maintaining housing stability and suppressed viral load among PWH (Hawke & Davis, 2012).

### **Limitations.**

Our analysis of state-level factors may not have included all relevant variables associated with reduced homelessness among PWH. For instance, we were not able to compute funding amounts contributed by the RWHAP to housing support, but this is understood to be a very small component of the RWHAP. The ecological approach to this analysis must also be interpreted with caution, as there were only 6 years of observation included and attribution of causality can be challenging. Observed bivariate associations for these kinds of indicators

may be indirect, or risk third variable explanations. MMP involves self-reported experiences of homelessness, which may be subject to response bias and homelessness in Delaware could have improved during the study period by chance.

However, local policy and programs related to housing services are likely to have a direct link to individual-level outcomes such as housing access and stability. Therefore, our ecological approach was strengthened by the complementary interviews with housing service representatives. While the sample was small, we were reasonably confident that these interviews represented the main entities engaged in this area of service delivery for Delaware. We found a great deal of consistency across the interviews on themes, with a few notable exceptions. This suggests that regardless of the agency they were representing, key informants typically identified similar patterns of service delivery strengths and challenges. If time and resources would have allowed, conducting these analyses in other jurisdictions may have strengthened our understanding of how these factors also play out in different contexts.

## Conclusion

Our findings suggest that beyond larger population-level factors such as housing costs and overall homelessness rates, greater integration of services and coordination between agencies that serve overlapping populations, may improve housing among PWH at a state level. These findings may inform approaches in other jurisdictions to reduce homelessness and improve health among PWH. While homelessness among PWH was not a core indicator in national monitoring, no changes in homelessness were observed at the national or sub-national level. Ongoing monitoring of this important social determinant of health is necessary. However, further improvements in housing services and related policies, such as recently announced increases to HOPWA funding ([https://www.hiv.gov/blog/hud-announces-41-million-hopwa-funding-opportunity-housing-intervention-fight-aids?utm\\_source=email&utm\\_medium=email&utm\\_campaign=daily20210421&utm\\_content=federalresponse](https://www.hiv.gov/blog/hud-announces-41-million-hopwa-funding-opportunity-housing-intervention-fight-aids?utm_source=email&utm_medium=email&utm_campaign=daily20210421&utm_content=federalresponse)) will also likely be required to impact rates of homelessness and foster health among PWH.

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## List of Abbreviations

<b>AIDS</b>	Acquired Immunodeficiency Syndrome
<b>ART</b>	Anti-retroviral therapy
<b>BRFSS</b>	Behavioral Risk Factor Surveillance System
<b>CDC</b>	Centers for Disease Control and Prevention

<b>CI</b>	Confidence Interval
<b>HHS</b>	U.S. Department of Health and Human Services
<b>HIV</b>	Human Immunodeficiency Virus
<b>HOPWA</b>	Housing Opportunities for Persons with AIDS
<b>HRSA</b>	Health Resources and Services Administration
<b>HUD</b>	U.S. Department of Housing and Urban Development
<b>KII</b>	Key informant interview
<b>MMP</b>	Medical Monitoring Project
<b>PWH</b>	Persons with HIV
<b>RWHAP</b>	Ryan White HIV/AIDS Program

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**Table 1.**

Social and demographic factors associated with homelessness among people with HIV in the state of Delaware, 2009 – 2014.

	Standardized Beta ( $\beta$ )	95% CI		<i>p</i> value
Uninsured (%) <sup>a</sup>	0.76	-0.14	1.66	0.08
Vacant housing (%) <sup>a</sup>	0.35	-0.95	1.65	0.496
Households below poverty level (%) <sup>a</sup>	-0.94	-1.41	-0.47	0.005
Median household income (\$1000's) <sup>a</sup>	-0.41	-1.68	0.86	0.42
Median housing price (\$10,000's) <sup>a</sup>	0.88	0.23	1.53	0.02
Home ownership (%) <sup>b</sup>	0.75	-0.17	1.67	0.086
HIV Diagnoses (per 100,000) <sup>c</sup>	0.57	-0.68	1.53	0.311
HIV Prevalence <sup>c</sup>	0.33	-1.03	1.52	0.586
AIDS Diagnoses rate <sup>c</sup>	0.12	-1.25	1.43	0.847
Deaths among PWH <sup>c</sup>	0.59	-0.52	1.71	0.213
Overall health <sup>d</sup>	0.85	-0.58	1.95	0.146
State HOPWA Funding (\$10,000's)	-0.27	-1.6	1.07	0.61
Wilmington HOPWA Funding (\$10,000's)	0.4	-0.87	1.67	0.432
Subtotal HOPWA Formula Funding (\$10000's)	0.26	-1.08	1.6	0.621
Total HOPWA Formula Funding (\$10,000's)	-0.21	-1.56	1.15	0.696
Subtotal HOPWA Formula Funding <sup>*</sup>	0.27	-1.07	1.61	0.605
Total HOPWA Formula Funding <sup>*</sup>	-0.21	-1.57	1.15	0.689
Overall Homeless (%) <sup>e</sup>	0.94	0.44	1.42	0.006

Note:

\* Log-transformation of funding. All Betas ( $\beta$ ) are standardized coefficients of bivariate analyses.

Sources:

<sup>a</sup> U.S. Census Bureau, American Community Survey 1-Year Estimates 2009–2014;

<sup>b</sup> U.S. Census Bureau, Current Population Survey/Housing Vacancy Survey, 2005 to 2018;

<sup>c</sup> CDC HIV Surveillance reports, <https://www.cdc.gov/hiv/library/reports/hiv-surveillance-archive.html>;

<sup>d</sup> CDC Behavioral Risk Factor Surveillance System (BRFSS), [https://www.cdc.gov/brfss/annual\\_data/annual\\_data.htm](https://www.cdc.gov/brfss/annual_data/annual_data.htm);

<sup>e</sup> HUD Exchange Point-In-Time Estimates, <https://www.hudexchange.info/resource/3031/pit-and-hic-data-since-2007/>.