Prioritizing Admission to Mental Health Housing Services Using the Mental Health-Allegheny Housing Assessment (MH-AHA)

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BACKGROUND

In 2020, Allegheny County, PA launched the Allegheny Housing Assessment (AHA) tool to improve its prioritization of clients who were eligible for and requesting homelessness and housing support (e.g., Rapid Rehousing and Permanent Supportive Housing). Prior to this launch, the County relied on the Vulnerability Index-Service Prioritization Tool (VI-SPDAT) that was not locally validated, took a long time to complete, required people to answer potentially traumatizing questions, relied on self-report, and resulted in people being placed on waitlists even when they were unlikely to ever receive services. The new tool sought to solve these challenges by using administrative data from Allegheny County's data warehouse to predict the risk of negative outcomes and by limiting the number of people on the waitlist to those who are likely to be served within 90[1] days. Like the VI-SPDAT, the AHA assigns a risk score that is used as part of the housing prioritization process, but it is far more accurate and equitable and doesn't require the time or trauma associated with asking sensitive questions at the time of housing crisis. The tool predicts the likelihood of three types of events, or indicators of harm, occurring in a person 's life if they remain unhoused over the next 12 months: a mental health inpatient stay, a jail booking and/or frequent use (4 or more visits) of hospital emergency rooms (ER). More information about the AHA can be found here.

The County also operates the mental health (MH) housing system (also known as mental health residential programs). Similar to the homelessness system, this system has been characterized by limited housing resources, high demand, and prolonged wait times for service, with some individuals waiting years without ever being served. Behavioral health providers referred people to MH Housing and, if they met criteria (a qualified mental health diagnosis),[2] they were placed on a waiting list with little visibility into when a bed might be available. When beds became available, a list of people at the top of the waitlist was compiled; people were prioritized by a combination of rules and gut instinct without any data to help drive these decisions. The result of this process was a lack of transparency into decisions, lower-risk individuals getting housing before higher-risk ones, and long wait times for all, i.e., the average wait time was 140 days and 53% of people never received services.

In 2022, recognizing the need to improve the strategy for prioritizing placement in MH housing programs, the Allegheny County Department of Human Services (DHS) assessed the possibility of modifying the AHA model and restructuring the referral process to incorporate results from this data driven approach. DHS wanted a more equitable and transparent way to prioritize need and place individuals in the most appropriate setting, so that eligible individuals with the highest level of need were being served first. Using a data-driven approach to determining the likelihood of harm provides an objective and comprehensive picture of the individual's risk

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1 The 90-day estimate is our goal after full implementation of the MH-AHA.

2 MH Housing Services are designed for people who have a serious mental illness (SMI) (e.g., bipolar disorder, schizophrenia, major depressive disorder) and are over 18 or older. Additionally, individuals cannot have a primary diagnosis of Substance Use Disorder, Organic Brain Syndrome, or Intellectual Disability (ID). Each housing type has additional eligibility requirements based on funding sources and other variables such as need for assistance with Activities of Daily Living (ADLs) and level of support needed to maintain the highest level of independence possible.

and needs and provides information about realistic expectations that can be shared with the referral source and the individual. The new process will result in shorter waiting times and more realistic expectations on the part of clients and referral sources.

In addition to providing housing intake decisions, the MH-AHA is a data-driven process that can shed light on the needs of individuals who are not eligible or who are eligible but unlikely to be placed quickly. DHS wanted to design a triage process to identify alternate services for these individuals and hope that lower cost/intensity interventions can be identified to address their immediate needs, thus averting possible crises and the need for hospitalization or other emergency intervention.

And finally, this change allows for a more realistic picture of the systemic need; not just a number on an ever-growing waitlist but a real number of how many people need which types of residential placement.

- This paper describes the new approach of using the Mental Health - Allegheny Housing Assessment (MH-AHA) to prioritize people for programs and how it is being deployed. The MH-AHA simplifies the referral process, reducing the burden on referring providers. Deployment of this tool allows the County to better understand the housing needs of this population and will provide information to help DHS redesign the available housing resources to more appropriately meet the needs of the population.

MENTAL HEALTH HOUSING

The degree of support provided by MH housing programs can vary from minimal support to significant assistance with Activities of Daily Living (ADLs) and skill building. Long-term community MH beds are intended to provide services that reduce the negative effects of severe mental illness and promote improved welfare and functioning. The goal of an MH housing program is to help residents develop skills that will help them maintain mental health stabilization in their current setting while obtaining the highest possible level of independent functioning. Ideally, a client who is well served by their residence will be less likely to suffer deterioration in their physical and emotional health and thus avoid negative outcomes such as suicide, self-harm, or acute mental health crisis. Three categories of MH housing will be affected by the MH-AHA:[3]

[3] Long-term Structured or Specialized Housing Services are unaffected by the new MH-AHA eligibility process.

Category 1: Group home or apartment living, for up to 24 months with 24/7 staff, to help people learn or re-learn skills and competencies necessary for living in the community. The distinction among the 2 types listed below is whether a group home or apartment setting would best provide the level of support needed to gain these skills.

- Community Residential Rehabilitation Group Home (CRR Group)
- Apartment – Community Residential Rehabilitation (CRR Apartment)

Category 2: Permanent, long-term housing in which individuals receive assistance with all basic needs (e.g., meals, laundry, hygiene, medication administration, assistance scheduling and attending needed medical and psychiatric treatment). These programs support those whose functioning has been impacted by a serious mental illness to the extent that they do not have ability to regain skills needed to live in an independent setting (although that should always remain a consideration for that person).

- Domiciliary Care (Dom Care)
- Personal Care Home (PCH)
- Community Mental Health Personal Care Home (CMHPCH)

Category 3: 24/7 – Long-term, permanent housing program. Individuals typically live in the community in one building or in an apartment located in a complex but can reach out to staff 24/7 if experiencing a crisis or in need of temporary assistance.

See **Table 1** in the Appendix for additional information about the categories of MH Housing.

Referral Pathway to MH Housing prior to the MH-AHA

Prior to implementation of the MH-AHA, referrals were mostly made by service coordinators, community and behavioral health providers, and providers serving criminal justice-involved individuals. The DHS Office of Behavioral Health (OBH) reviewed the referrals and accepted eligible individuals onto a waiting list for the appropriate level of care needed. Because the need for residential placement exceeds the capacity of the system, it was possible for people to remain on the waiting list for years without receiving a residential placement.

Assignment from the Waitlist

When an MH housing program reported a vacancy, the OBH team (including representatives from Justice-Related Services (JRS), Community Care Behavioral Health (CCBH), the Community Integration Team, housing monitor/supervisor and, if appropriate, a Transition-Aged Youth monitor) would meet to select the individual to be offered the slot, considering factors such as date of referral, level of care needed, fit with the available placement and other relevant factors.

Additional prioritization rules are detailed in **Table 1**.

TABLE 1: Prioritization of waitlist clients

Tier 1 (Considered first)	Individuals residing in and/or involved with the following systems: Transitional Recovery Unit, Comprehensive Recovery Unit, Residential Treatment Facility – Adults , Extended Acute Care, Torrance State Hospital – Civil, Torrance State Hospital Forensic, Long-Term Structured Residence, Mental Health Housing, Inpatient with a disposition, Deaf, Capitalizing on a Recovery Environment, Community Support Plan, Community Integration Team, Transition-Aged Youth – Conferencing and Teaming, and Integration and Teaming.
Tier 2	Individuals residing in/involved with the following systems: Criminal Detention (Jail), Diversion and Acute Stabilization, Inpatient Mental Health without a disposition, Transition-Aged Youth with Mental Illness who are involved with DHS Offices of Children, Youth and Families or Juvenile Probation.
Tier 3	Individuals living in the community.

Prior to the vacancy meeting, each referral source was contacted, told that a bed was available, and asked to nominate one person from their list to be presented at the vacancy meeting. For example, if the Community Integration Team had three people referred for 24/7 supportive housing, they would nominate one to be considered for this vacancy.

If there were fewer beds than those nominated in the Tier 1 group, a discussion was held to determine the most appropriate fit. On the other hand, if there were more beds than Tier 1 individuals, then the beds could be allocated to Tier 2 or Tier 3 individuals.

METHODOLOGY

For the purpose of developing the tool to support allocating MH Housing, the County started with the AHA model. We decided to exclude future jail booking as an outcome because of the low correlation between predicted risk of jail booking and other outcomes of interest, such as suicide and self-harm, death, and the use of crisis services.

Data

To build a research model data set, we used 857 referrals to the MH housing system on the waitlist from February 2019 through July 2019. These referrals had been made for 790 unique clients from November 2016 through July 2019.

Coded Features

For each referral, a set of features was built – that is, attributes about individuals that are available in the administrative data systems of Allegheny County at the referral date. The County runs an integrated data warehouse, so we were able to extract data about the relevant individuals from the following systems: demographic, prior homelessness services and housing supports, assisted housing services, child welfare, juvenile probation, jail, courts, behavioral health, poverty rates and household information. **Table 2** summarizes the overall domains of the predictor features that were tested. It is important to note that behavioral and physical health data reflect services paid for by Medical Assistance (Medicaid) or by Allegheny County; commercially paid services are not included. More than 95% of individuals involved in the MH housing system either received Medical Assistance or were uninsured. The specific features included in the model are listed in the **Appendix Table 2**.

TABLE 2: Overview of Coded Features

DOMAIN	DESCRIPTION/ EXAMPLES	COUNT OF PREDICTOR FEATURES TESTED
Child Welfare	Count of child welfare referrals for mother as alleged perpetrator, victim, child in the last year, 2 years, 3 years or ever, that were screened in, screened out or active.	68
Jail	Count of months mother spent in Allegheny County Jail in the last year, 2 years, 3 years or ever. A dummy variable to indicate current involvement.	4
Courts	Count of months mother had different types of court involvement (e.g., Probation/Family Delinquency/Common Pleas/ Magisterial District) in the last year, 2 years, 3 years or ever. Dummy variables to indicate current involvement.	52
Juvenile Probation	Count of months mother spent in Juvenile Probation (placement/nonplacement) in the last year, 2 years, 3 years or ever. Dummy Variables to indicate current involvement.	8
Behavioral and Physical Health[4]	Dummy variables to indicate health incidents in the last year, 2 years, 3 years or ever. Count of days in mental health or physical health services, including crisis, inpatient and selected outpatient services in the last year, 2 years, 3 years or ever	115
Previous interactions with Homeless Services	Count of day/ episodes mother spent in Permanent Supportive Housing (PSH), Rapid Rehousing, Bridge/Transitional, Homeless Prevention Service program, Emergency Shelter and Street Outreach in the last year, 2 years, 3 years or ever.	49
Previous interactions with Assisted Housing	Count of months spent in Allegheny County Housing Authority (ACHA) or Housing Authority of the City of Pittsburgh (HACP) public housing in the last year, 2 years, 3 years or ever.	16
Demographics	Age and gender categories	14
Poverty	Dummy variables to indicate poverty rate category and the Poverty Rates taken from "2008-2012 5-year American Community Survey (ACS) ZIP code statistics."	7

[4] Behavioral and physical health includes only those services provided under Medical Assistance or for uninsured individuals.

Table 3 provides a basic description of the waitlist data. Of those on the waitlist (n = 790), only 301 (36.29%) were ever served in MH Housing. The median age of clients was 43 years. Slightly over half were White (51.87%) and the rest were Black (46.38%), or race was missing/other (1.92%). A majority of clients were male (61%).

TABLE 3: Characteristics of Individuals on the MH Housing Waitlist (N=790)

		EVER SERVED ON WAITLIST (N=301)		NOT SERVED (N=489)		TOTAL ON WAITLIST (N=790)	
		COUNT	PERCENTAGE	COUNT	PERCENTAGE	COUNT	PERCENTAGE
Race	Black	148	49.2	221	45.2	369	46.7
	White	145	48.2	260	53.2	405	51.3
	Other/ Missing	8	2.7	7	1.4	15	1.9
Gender	Female	106	35.2	197	40.2	303	38.3
	Male	195	64.8	292	59.7	487	61.7
	Gender missing	0	—	0	—	0	—
Race-Gender	Black-Female	57	18.9	84	17.18	141	46.5
	Black-Male	91	30.2	137	28.02	228	46.8
	White-Female	47	15.6	110	22.49	157	51.8
	White-Male	98	32.6	150	30.67	248	50.9
Age (median)		45		40		43	

Note: N = 857 referrals representing 790 unique clients that were available on the waitlist from 2/1/2019 through 7/31/2019. Race is as recorded at the time of assessment. There are 4 assessments in which race was not noted.

We applied the MH Inpatient and ER baseline models to the 857 referrals on the MH Housing waitlist and classified the people on the MH Housing waitlist into three categories: High, Medium and Low Risk. Each model has different definitions of risk class—for example, high risk for ER 4+ is scored 18-20 in the ER 4+ model. **Table 4** shows the prevalence of each outcome for the overall sample compared to the prevalence for the homeless population. We find that 19% of those clients on the waitlist had an MH inpatient stay within 12 months and 12% had 4+ ER visits. Column 3 of **Table 4** shows the rates for the homeless population on which the baseline models were trained. As expected, the MH Inpatient stay rates are higher, while the homeless population has higher rates of ER visits.

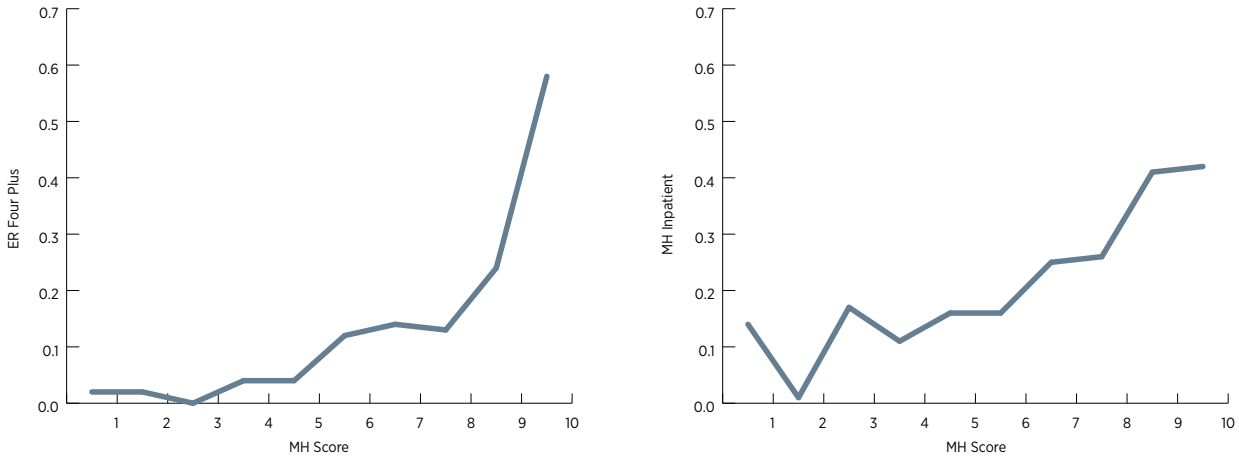
TABLE 4: Overview of outcomes within the MH Housing waitlist population and a sample of homeless population

OUTCOMES	DESCRIPTION OF TARGET OUTCOME	MH HOUSING WAITLIST POPULATION	HOMELESS POPULATION (1)
MH Inpatient	At least one inpatient MH service funded by Medicaid in the 12 months following the assessment	19%	16%
Emergency Room visits (4 or more)	More than four emergency room visits in the 12 months following the assessment	12%	21%
Count	Count	857	5,531

Notes: This shows the rate of each event as recorded in the Allegheny County data warehouse. (1) From Vaithianathan, R. & Kithulgoda, C.I. (2020). Using Predictive Risk Modeling to Prioritize Services for People Experiencing Homelessness in Allegheny County. Centre for Social Data Analytics. Auckland, New Zealand.

Figure 1 shows the proportion of relevant outcomes for each of the risk score categories and the two baseline models in the waitlist data. Around one-third of waitlist clients who scored as high risk for the baseline models ended up experiencing the predicted adversity. On the other hand, less than 10% of clients who scored as low risk experienced the outcome. For each of the sub-models, the scores are predictive.

FIGURE 1: Trained outcomes (4 or more ER visits and any MH inpatient visits) by Score



Notes: Low/ Medium/High risk are defined differently for each of the two baseline models. We define them as follows: For the ER 4+ model, low risk is defined as scoring 1–12, medium risk is 13–17 and high risk is 18–20. For the MH Inpatient model, the cut-offs are 1–13; 14–18 and 19–20, respectively.

Table 5 shows the AUC (the Area Under the Receiver Operator Characteristic Curve) and TPR (True Positive Rates) associated with applying the baseline models to the waitlist data. The ER 4+ model is strongly predictive with an AUC of 79%, while the MH Inpatient model has lower predictive accuracy.

TABLE 5: AUC, Positive Predictive Value (PPV) and True Positive Rates (TPR) of each individual harm model

BASELINE AHA MODEL	PREVALENCE FOR THE SAMPLE AS A WHOLE	AUC (95% CONFIDENCE INTERVAL)	PROPORTION WHO HAD THE OUTCOME WHO ALSO SCORED >18 (TPR)
MH Inpatient PRM	19%	66.28% [61.57%,70.99%]	47%
ER 4+ PRM	12%	79.63% [74.22%, 85.05%]	45%

Notes: This shows the predictive performance of each baseline model with respect to the outcome that the model is trained to predict. The AUC is a measure of general classification accuracy where 100% is perfect classification and 50% is no better than a toss of the coin.

Validation of baseline models using suicide/self-harm hospitalization and MH crisis

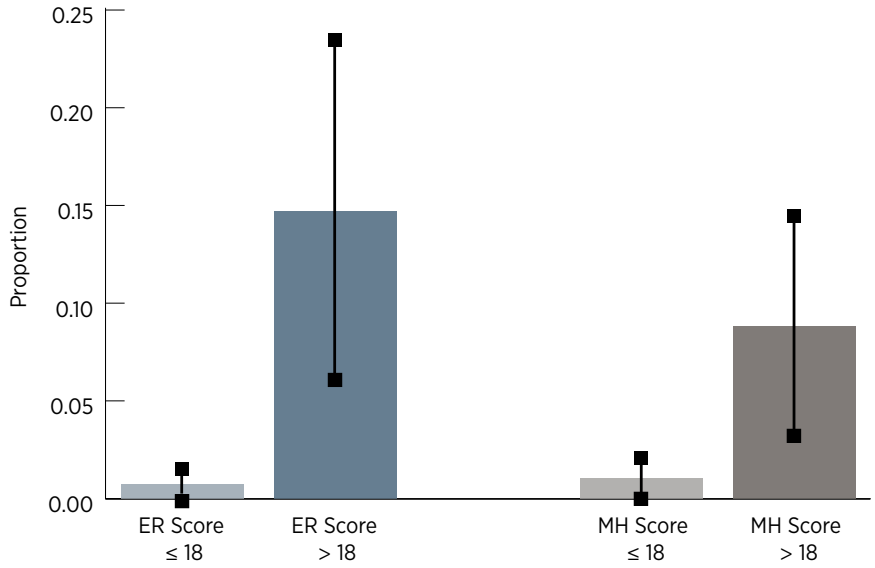
To explore if other negative outcomes were correlated with the model predictions, we evaluated whether those clients identified as highest risk by the baseline models are also at heightened risk of the sort of events that MH housing services are meant to protect patients from. For this exercise, we used the following outcome variables:

- *Suicide and Self-Harm Hospitalization:* Whether the client had a hospitalization or ER visit (Medicaid-funded only) within 12 months of being assessed for housing with a diagnosis code description for the hospital or ER encounter that included "intentional self-harm" or "suicide"
- *Mortality:* Whether the client was recorded in death records within 12 months of being assessed for housing
- *MH Crisis:* Whether the client was recorded as using an MH crisis service (Medicaid-funded only)

In general, mortality rates are very high for this population, with 1.75% of the study sample dying within 12 months; the suicide hospitalization rate is even higher, with 4% having a hospitalization that includes self-harm or suicide as a diagnosis type. We restricted attention to the subset of clients who did not receive housing and were not "transfers" (designed to avoid counting protective visits for individuals already residing in housing).

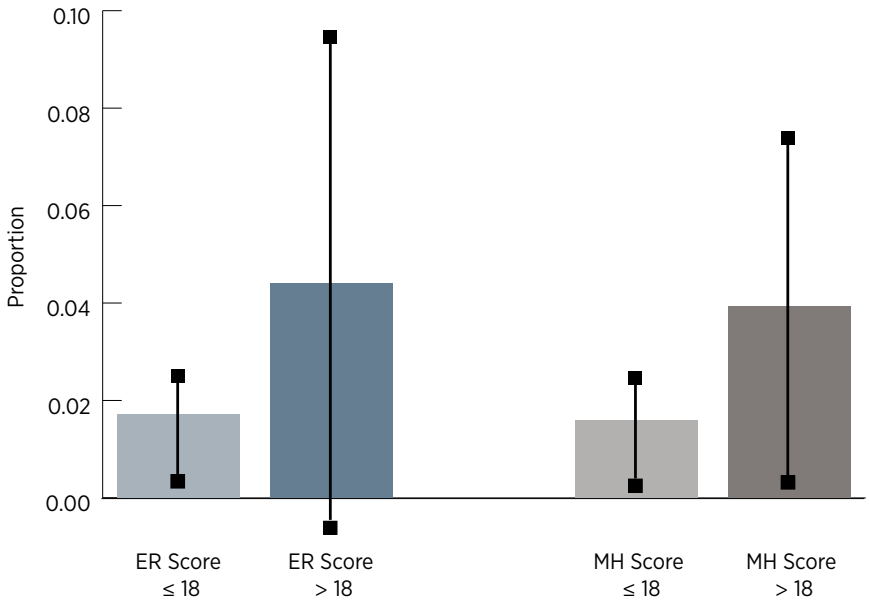
Figures 2–4 show the rate of self-harm, suicide hospitalization, mortality, and MH crisis service utilization for each of the baseline models by score level for self-harm hospitalization, mortality and MH crisis use. The graphs clearly indicate that both the MH inpatient model and the ER models align well with the risk of these "external" outcomes. The differences between low- and high-risk groups on mortality are large, though the events are rare, and the differences not precisely estimated. For suicide and MH crisis, those clients who score as high risk in the baseline models have higher rates of these events and are distinguishable from lower risk counterparts.

FIGURE 2: Self-Harm and Suicide Hospitalization 12 Months Following Assessment



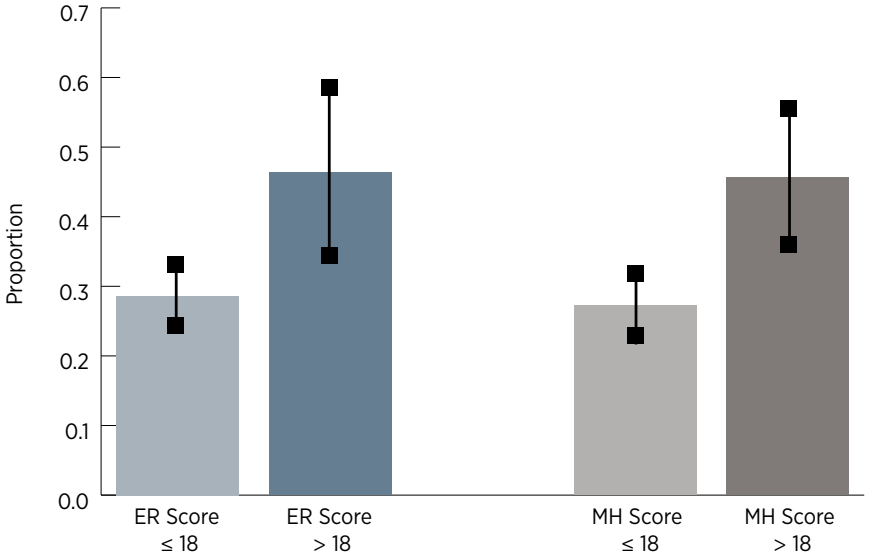
Notes: This figure shows the rates of self-harm and suicide hospitalization according to the client's score in each of the baseline models. The ticks represent the upper and lower 95% confidence intervals.

FIGURE 3: Mortality 12 Months Following Assessment



Notes: This figure shows the rates of self-harm and suicide hospitalization according to the client's score in each of the baseline models. The ticks represent the upper and lower 95% confidence intervals.

FIGURE 4: Mental Health Crisis Utilization 12 Months Following Assessment



Notes: This figure shows the rates of MH crisis use according to the client's score in each of the baseline models. The ticks represent the upper and lower 95% confidence intervals.

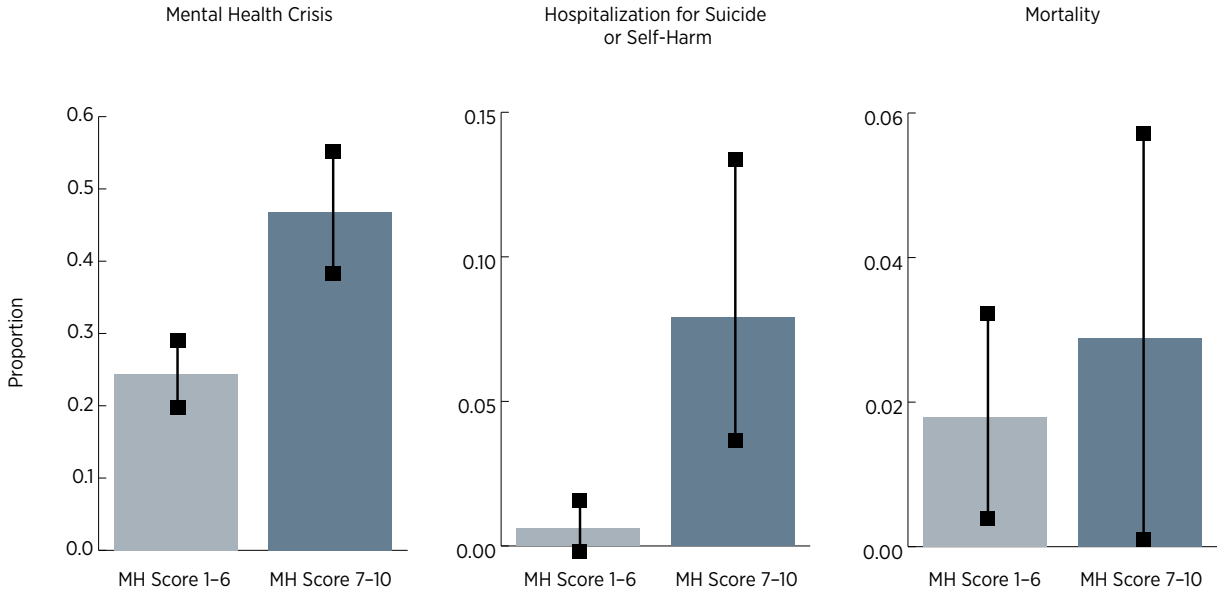
MH-AHA Score

As in the case of the AHA, we combined the scores into a single score that can be used to support prioritization. The MH Inpatient and ER baseline models are run for each client, providing risk scores of 1 (lowest risk) to 20 (highest risk). The model scores are then mapped/weighted (e.g., a model score of 20 is 5, 18-19 is 4, 15-17 is 3, 10-14 is 2 and 5-9 is 1). The weighted scores for the two models are added together to generate the combined MH-AHA score. For example, if a client has a score of 17 on the MH Inpatient model and a 20 on the ER model their combined score would be an 8; the 17 on MH Inpatient maps to a 3 and the 20 on ER maps to a 5, 3 + 5 = 8. The final MH-AHA possible scores are 1 (lowest risk) to 10 (highest risk). **Figure 6** shows the predictive accuracy for the three validation outcomes. We defined high risk as a score of 7-10 on the MH-AHA model. The bar charts plot the rate of MH crisis use, hospitalization for suicide /self-harm and mortality in the year following the MH-AHA Score. Since these are not outcomes that the baseline models were explicitly designed to predict, finding that the scores are correlated to other adverse outcomes that MH Housing is designed to avoid provides validation. The red shaded bar is for those who received a MH-AHA score of 7 – 10 while the blue shaded bar is for those who received a score of 1-6.

For MH crisis use and self-harm / suicidal hospitalization, we find that clients who score high on the MH-AHA model have statistically significantly heightened rates. For mortality, the rates are also higher for mortality but due to the small count, are not statistically significantly higher.

We also looked at rates of the trained and validation outcomes by race (Black vs. non-Black) and gender (female vs. non-female). We were not able to analyze differences in mortality due to a low number of realized events, but when we look at MH crisis use and self-harm / suicidal hospitalization we find a similar pattern of heightened rates for those being scored a 7-10 on the MH-AHA compared to others. The **Appendix** provides the equivalent of **Figures 7 and 8** for each of the sub-groups.

Figure 6: Validation Outcomes using MH-AHA



Race and Gender Analysis

We now turn to whether the scores are equally predictive when compared across race and gender sub-populations. First, when we compare the average scores across these two groups, we find that Black clients and Female clients receive higher MH-AHA scores. We find that the average MH-AHA score is 5.5 for Black clients and 4.9 for non-Black clients. Similarly, the average score for females is 5.6 compared to 4.8 for males. Both differences are statistically significant at less than 1% level.

In **Figures 7 and 8**, we examine the rates of the training outcomes (ER 4+ and MH inpatient) and one of the validation outcomes (MH Crisis) by race (Figure 7) and gender (**Figure 8**). Because there are very few deaths or suicides, we are unable to analyze these validation outcomes by sub-groups. Overall, the scores discriminate for the sub-groups well, in the sense that the prevalence of each outcome is higher for high risk than for low risk (for each race and gender sub-group). One exception is the ER outcome by gender, where females scoring at high risk have higher rates of ER 4+ than non-females. Part of the reason for this is that the prevalence of high ER use is more than double among females, who have a rate of 18% (34/190) compared with 8% among non-females.

FIGURE 7: **Validation Outcomes using MH-AHA (by Race)**

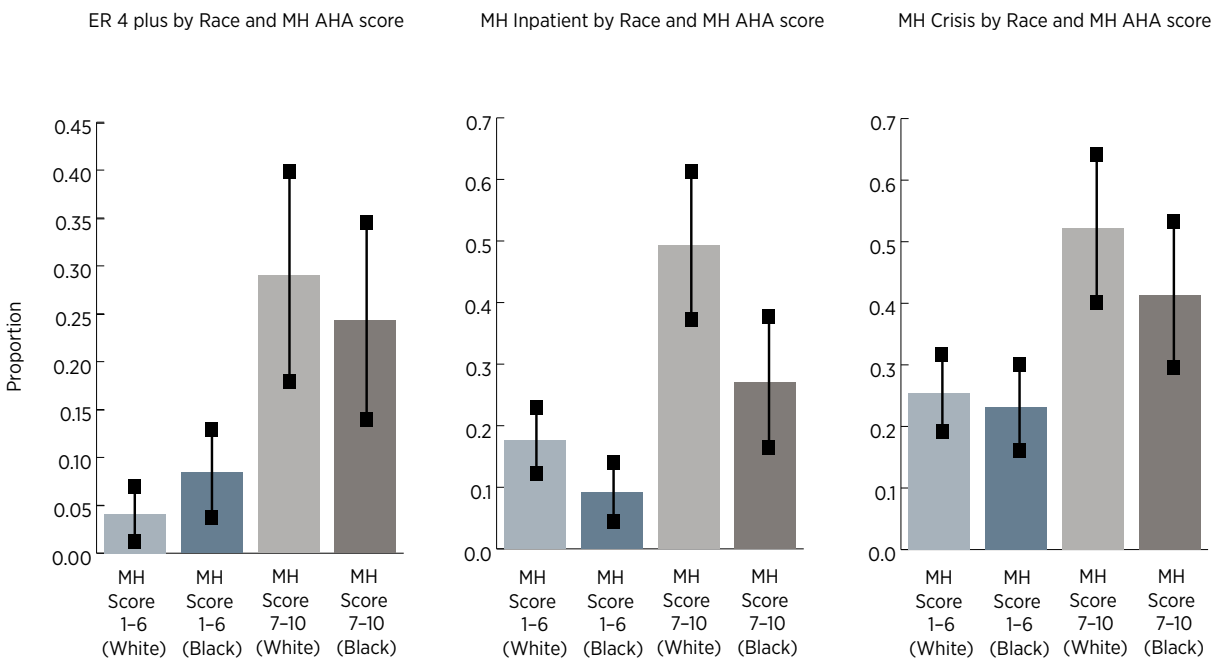
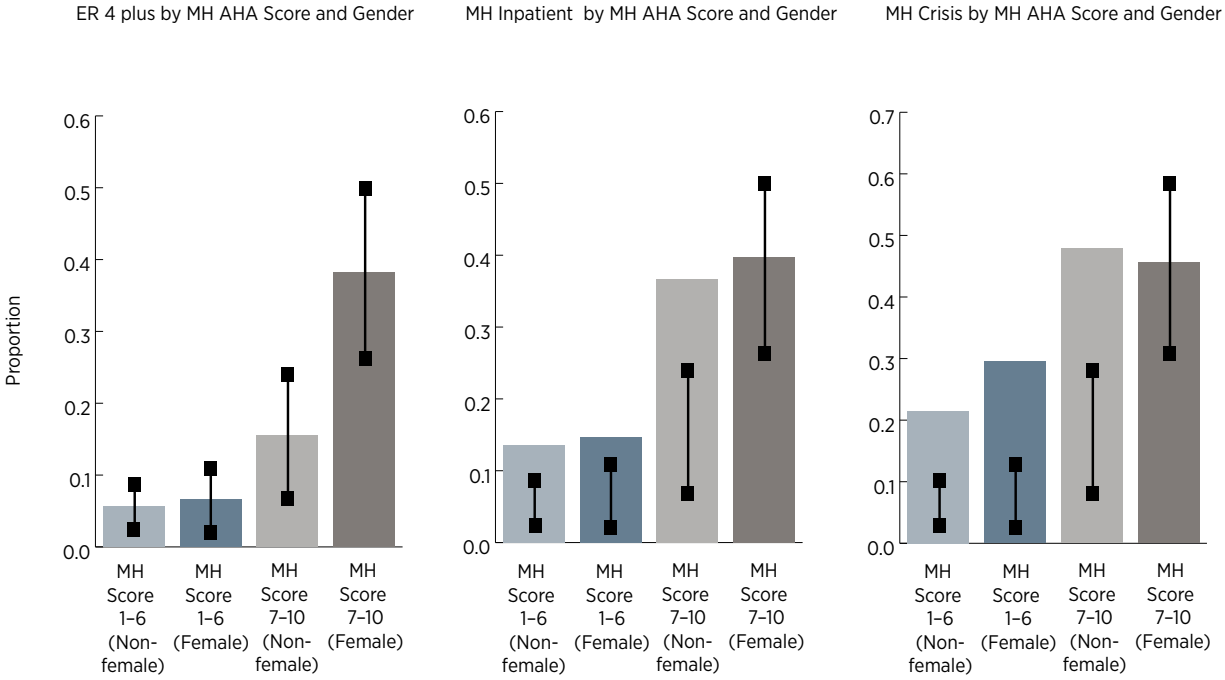


FIGURE 8: Validation Outcomes using MH-AHA (by Gender)



DEPLOYMENT OF THE MH-AHA

We now turn to the deployment of the MH-AHA tool launched in January 2023. Deployment was guided by the following principles:

- Beds will be allocated to those with the highest needs for prevention.
- Eligible individuals should experience shorter waiting times, ideally less than 90 days.
- Individuals and clinical staff should be given more upfront certainty on whether they will receive a bed, allowing them to explore alternatives if they are not deemed eligible.
- The data entry process should be streamlined, thus requiring less time for referrals.
- Utilize data from the process to support changes at the system level, i.e., support expansion of beds or reallocation if demand for some bed types is higher than for others.

For this section, we extracted more recent data, using all individuals referred for MH Housing in the period 1/1/2018 through 9/30/2022. These referrals included individuals who were already in an MH housing program (called "transfers"). Only those who were eligible for a bed (i.e., accepted to the waitlist) were included. There were 3,060 referrals relating to 2,193 unique clients. Many clients were re-referred as transfers or because their initial referral was voided for some reason.

These data included information about which type of placement was recommended (referred to as the "suggested level of care"). This level of care was specified by the professional completing the referral (typically the individual's social worker), guided by a set of business rules. In addition to the first suggested level of care (referred to as the primary level of care), professionals had the option of recommending two additional levels of care if the individual's needs allowed for flexibility. We used the primary level of care to calculate what we consider to be annual demand for each bed type group.

Using these data, we were able to establish the "demand" and "supply" over that period for these groups of services. For example, there were 1,694 clients whose suggested primary level of care was for one of COD-CRR group home, CRR group home and CRR apartments. Over that same period, 862 clients were placed in these services. Simplistically, this suggests that there were twice as many clients in need of this type of residence than there were beds. Conducting this type of analysis across all 5 groups led us to greater understanding of how much excessive demand there is across the system.

Next, we went back and generated the MH-AHA scores for all 3,060 referrals. This allowed us to estimate an eligibility cut-off for each of the service groups that would match demand to capacity. For example, we found that 863 clients in COD-CRR group home, CRR group home and/or CRR apartments scored 6+. Therefore, if we expect similar patterns of demand and supply in the next year, a cut-off of 6 would ensure that all clients who were posted onto the waitlist for COD-CRR group home, CRR group home and CRR apartments would receive a bed within a reasonable wait time.

Note that for this first deployment, we decided to exempt some services and referrals from the use of the MH-AHA score as a part of eligibility:

1. *Referrals to LTSR and Specialized Residences:* LTSR placement involves a mental health commitment (Court-ordered) and a physician's determination. These circumstances place LTSRs outside of the MH-AHA process. Specialized Residences are held for the highest-risk clients, often as the next step after LTSR. Thus, they also fall outside the purview of the MH-AHA.
2. *Transfers/Priority Categories:* Because transfers are not a net increase in occupancy for the whole system, but are motivated by more appropriate placement of clients, they are automatically posted to the new suggested level if they meet the score eligibility. If they do not meet the score eligibility, they will be reviewed by the OBH Referral Review Team to determine if they will be added to the waitlist for their primary level of care. Below is the list of priority categories that will be reviewed during the pre-screening process to determine eligibility:
    - State Hospital Civil
    - State Hospital Forensic
    - Transfer
    - RTFA (Housing Treatment Facility for Adults)
    - EAC (Extended Acute Care)
    - TRU-WPIC
    - TRU-McKeesport

Table 6 shows the degree to which demand exceeds supply for each of the level of care groups in 2021. Under the current system, the ratio of demand to supply ranges from 1.3x to 4.7x.

Table 6: Demand and Supply of MH Housing in 2021

SERVICE GROUP	DESCRIPTION	2021 DEMAND: HOW MANY CLIENTS WERE ASSESSED WITH EACH LEVEL OF CARE GROUPING?	2021 SUPPLY: HOW MANY VACANCIES WERE FILLED IN EACH LEVEL OF CARE GROUPING?	2021 DEMAND VS. SUPPLY
Category 1	CRR Apartment, CRR Group	316	174	1.8x
Category 2	CMHPCH, PCH, DOM	51	12	4.3x
Category 3	24/7	113	37	3.1x

Table 7 illustrates this in a different way, by looking at the percentage of clients assessed for each level of care in 2021, who received MH Housing services by September 2022. This percentage ranged from 22% to 47% for the levels of care that are impacted by the new MH-AHA prioritization process.

The average wait times (between being added to the waitlist and being served) are displayed in the column entitled "Average Wait Time." Average wait times range from 105 to 236 days. The columns comprising the "Proposed New System" show what we expect to happen once we apply the appropriate cut-offs of the MH-AHA tool. We expect 80-100% of those added to the waitlist to be served and over time we would expect the wait times to be less than 90 days. Simulating how these wait times will fall over the next few years is difficult because there are additional restrictions on types of clients that can be served (e.g., female-only residences) as well as specific client needs (e.g., clients who need accessible apartments) that make it complicated. We will monitor wait times closely throughout the implementation process and adjust as needed.

TABLE 7: **Comparison of Waitlist Trends from the Current System to Proposed New System**

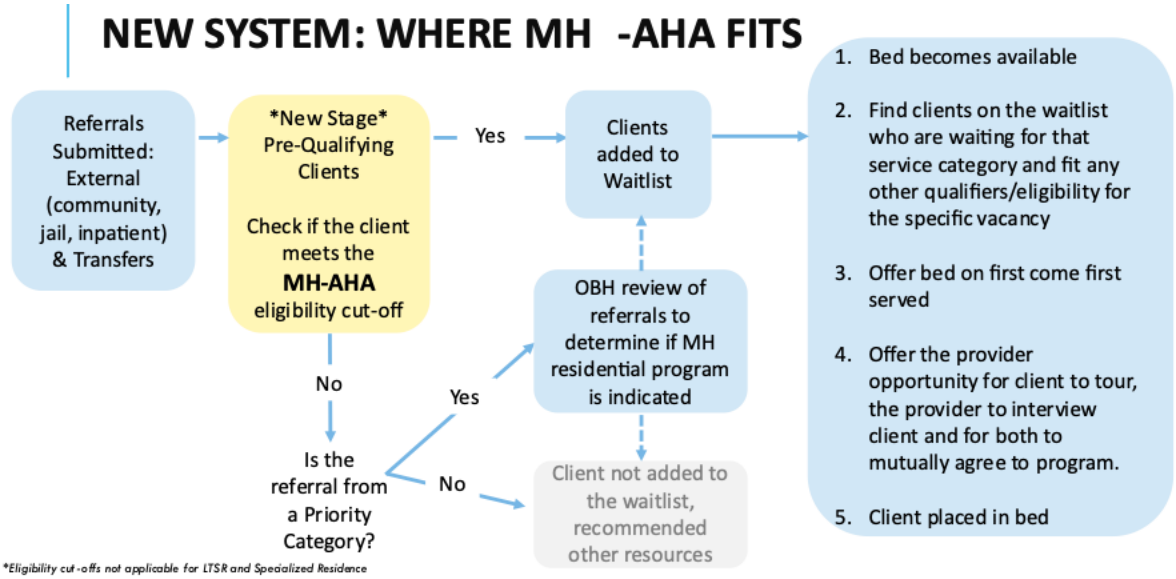
		CURRENT SYSTEM				PROPOSED NEW SYSTEM			
SERVICE GROUPS	DESCRIPTION	% ADDED TO WAITLIST	# ADDED TO WAITLIST	OF THOSE ADDED TO WAITLIST, % THAT RECEIVED MH HOUSING (AS OF 9/2022)	AVERAGE WAIT TIME	% ADDED TO WAITLIST	# ADDED TO WAITLIST	OF THOSE ADDED TO WAITLIST, % THAT RECEIVED MH HOUSING (AS OF 9/2022)	AVERAGE WAIT TIME
Category 1	CRR Apartment, CRR Group	ALL	316	47%	105 days	~55%	174	80%–100%	<= 90 days
Category 2	CMHPCH, PCH, DOM	ALL	51	22%	235 days	~30%	15	80%–100%	<= 90 days
Category 3	24/7	ALL	113	33%	137 days	~40%	44	80%–100%	<= 90 days

Note: LTSR and Specialized housing are not part of the proposed new system

Proposed change to business process

The schematic below shows the process with the addition of the MH-AHA. To be added to the waitlist, an individual must meet the eligibility cutoff score. Individuals and referring entities will be told immediately whether the individual has been added to the waitlist; those that have been added can expect a shorter turnaround of approximately 90 days. However, risk scoring does not necessarily guarantee an individual the next slot. Type of slot and individual need will also play a role in placement decisions.

Individuals who do not meet the eligibility criteria will be matched with other resources. The OBH Referral Review Team will connect providers to Community Care Behavioral Health, Allegheny County's behavioral health managed care organization, which will work with them to identify other supports for individuals who do not qualify for the waitlist.



An alternative assessment is being developed for those individuals for whom we do not have adequate data to accurately assess risk using the MH-AHA.

Expected impact of process changes

Turnover in housing is slow, so we anticipate that over a 3-to-5 year period we will see increases in the risk scores/needs of those in MH Housing. **Table 7** shows the projected score increases over that period.

SERVICE GROUP	DESCRIPTION	CURRENT SYSTEM (AVERAGE MH-AHA SCORE OF CLIENTS PLACED IN 2021)	NEW SYSTEM (ESTIMATED AVERAGE MH-AHA SCORE WITH ELIGIBILITY CUTOFFS)
3	CMHPCH, PCH, DOM	6.4	8.8
4	CRR Apartment/Group Home, COD	5.6	7.7
5	24/7	6.1	8.0

We also anticipate shorter time-to-service for those added to the waitlist. Gaps in the availability of support services will become more apparent as more individuals are denied placement on the waitlist. We expect to work with providers and realign funding to address these gaps. And over time, this tool will allow us to more accurately align supply to demand.

APPENDIX

TABLE 1: Levels of MH Housing

PROGRAM	DESCRIPTION	ELIGIBILITY AND TARGET GROUP
24/7 Supportive Housing	Provides accommodation typically in a group house with full-time on-site support staff who manage medications and maintain open communication with the community care team. Length of stay is open-ended.	Adults with an MH diagnosis who want and can live in the community with around-the-clock support may reside in 24/7 Supportive Housing. This housing is generally provided in an apartment building where MH staff also reside.
Supportive Housing	Apartments and homes are scattered throughout the community. Staff support is provided on an as-needed basis. Stays are open-ended. Each provider has its own referral process for this program.	Adults with an MH diagnosis who want to and can live in the community with on-call support.
Permanent Supportive Housing (PSH)	PSH assists people in finding rental housing in the community; can provide housing subsidies on a temporary basis and supportive services that help people maintain their housing over time. Stays are open-ended. Program availability is subject to U.S. Department of Housing and Urban Development (HUD) voucher availability.	Adult residents of Allegheny County with an MH diagnosis.
Community Residential Rehabilitation (CRR) CRR-Apartment CRR-Group Home MISA CRR-Group Home	CRR programs are available in individual apartment and group home settings. Some CRRs provide a group home setting that offers specialized services to individuals with co-occurring substance use issues. Stays are generally based on ongoing needs for support and services provided in a CRR. It is not a long-term residency.	Adults with an MH diagnosis may enroll in this transitional program, designed to develop the skills needed to live as independently as possible in the community.
Comprehensive Mental Health Personal Care Homes (CMHPCH)	Residents receive a private room and a monthly spending allowance. Stays are open-ended.	Adults with an MH diagnosis who typically require assistance with such tasks as dressing, bathing, selecting food, self-administering medication, managing their finances, and evacuating their residence in case of an emergency.
Domiciliary Care	Housing/family setting providing a caring, housing environment. Stays are open-ended.	Adults who are independently mobile/ semi-mobile but unable to live independently. Referrals go through the Area Agency on Aging.
Long Term Structured Residence (LTSR)	LTSR offers a highly structured, locked, therapeutic housing facility. Admission may occur voluntarily or involuntarily. Stays are based on the ongoing need for treatment in a LTSR setting.	Adults who require MH treatment and supervision around the clock but do not need inpatient hospitalization.

APPENDIX

PROGRAM	DESCRIPTION	ELIGIBILITY AND TARGET GROUP
Personal Care Home (PCH)	Allegheny County/DHS contracts with one Personal Care Home run by Mon-Yough Community Services (MYCS). MYCS operates Long-Run Road PCH, an 18-bed facility in Allegheny County. It is highly supervised by staff who are present 24/7 to assist residents with a focus on psychiatric stabilization and recovery.	Adults with an MH diagnosis who typically require assistance with such tasks as dressing, bathing, selecting food, self-administering medication, managing their finances, and evacuating their residence in case of an emergency.
Specialized Community Residences (SCR)	Up to three residents are supervised and supported according to plans developed with input from the resident, service coordinator and community treatment team. Stays are open-ended.	Adults with highly complex needs, who function best in a highly structured setting.

TABLE 2: Features used for the MH-AHA model

VARIABLE DESCRIPTION	MH INPATIENT	ER 4+ VISITS
Dummy if focus client had a prior diagnosis of Major depressive disorder, single episode	+	+
Total number of times the focus client visited the Emergency Room in the last 365 days	+	+
Dummy if focus client had an active behavior health incident	+	
Count of months the focus client was incarcerated in the Allegheny County Jail in the last year	+	
Count of months client was in CRT MAJ DIST NTR in the last year	+	
Count of adults in the household between the ages of 20–24	+	
Count of children in the household that are <18 at the time of the assessment	+	
Poverty Rate obtained using externally provided Zip code poverty rate file, this file comes from the 2008-2012 5-year American Community Survey (ACS) ZIP code statistics	+	
Count of days client was ever in IP REHAB	+	+
Count of days focus client ever received mental health inpatient services	+	+
Count of prior behavioral health assessments for the focus client	+	
Total number of days the focus client received an inpatient rehab service in the last 1095 days	+	
Maximum number of days in MH EMERGENCY in the last 730 days +	+	

APPENDIX

VARIABLE DESCRIPTION	MH INPATIENT	ER 4+ VISITS
Maximum number of days (of all adults in the household) the client received mental health inpatient services in the last 365 days	+	
Maximum number of days in MH INPATIENT in the last 730 days	+	
Count of days focus client was ever in OP DA	+	
Number of adults who had an active incident of bipolar disorder	+	
Number of adults in the household with a prior diagnosis of Major depressive disorder, single episode	+	
Count of months the focus client was active with the Magisterial District Court – TRF in the past	+	
Count of months the focus client was under probation supervision in the past	+	
Count of children in the household who have received homeless and housing support services	+	
Count of episodes in Shelter program, the client was in the last 2 years	+	
Count of clients in the household that are >=18 years old at the time of assessment	+	
Number of children (age<1) in the household	+	
Maximum number of months (of all adults in the household) the client was incarcerated in the Allegheny County Jail in the last year		+
Count of months client was in CRT_CM_PLS_CRM in the last year		+
Count of months the focus client was active with the Magisterial District Court in the last year		+
Count of days client was ever in MH EMERGENCY		+
Count of physical health services focus client received in the past		+

**Household variables are included in the AHA model but are not relevant for the application of the AHA model in the MH Housing context since only single individuals are scored.*