

Business Rules for the Optional Extrapolation of Subpopulation Results, Chronic Homeless Status, and Veteran Status

OVERVIEW

In following the approach used by [the HUD Extrapolation Tool](#), the subpopulation results and chronic homelessness status are not extrapolated to account for A) questions that were not answered or B) for counts of people believed to be experiencing homelessness based on an Observation Tally. The screenshot below is from the HUD Extrapolation Tool. The tool does not include a tab for Subpopulation data and, while there is a place to enter chronically homeless figures, these figures are not extrapolated.

Race (adults and children)	Sheltered		Unsheltered	Sheltered		Unsheltered	Sheltered		Unsheltered	Total
	ES	TH		ES	TH		ES	TH		
American Indian, Alaska Native, or Indigenous			1	N/A	N/A	10	N/A	N/A	11	11
Asian or Asian American			2	N/A	N/A	19	N/A	N/A	21	21
Black, African American, or African				N/A	N/A	N/A	N/A	N/A	N/A	N/A
Native Hawaiian or Pacific Islander			3	N/A	N/A	29	N/A	N/A	32	32
White				N/A	N/A	N/A	N/A	N/A	N/A	N/A
Multiple Races				N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total number of persons for which race is known			6 (9%)							64
Chronically homeless	Sheltered		Unsheltered							Total
	ES	TH								
Total number of households			5							5
Total number of persons			10							10

The count results with geographic sampling applied are below. Like the HUD Extrapolation Tool, these results do not vary if “Run with Demographic Extrapolation” is selected within the Regional Command Center.

Additional Homeless Populations (Adults Only)				
	Region High	Region Low	Region Low w/ Geo. Extrap.	Region Total
Adults with a Serious Mental Illness	209	4	11.94	220.94
Adults with a Substance Use Disorder	129	3	8.96	137.96
Adults with HIV/AIDS	12	0	0	12
Adult Survivors of Domestic Violence (optional)	110	3	8.96	118.96

The subpopulation figures increase once a weighting factor is applied to these results based on the total estimated number of people living in vehicles or makeshift shelters (VMS), however the overall estimates are lower than anticipated as they need to account for observation tallies (where these questions are not asked) as well as questions for which the person did not provide a full response to the question.

Additional Homeless Populations	Emergency Shelter	Transitional Housing	Safe Haven	Unsheltered	Total
Adults with a Serious Mental Illness	0	0	0	367	367
Adults with a Substance Use Disorder	0	0	0	229	229
Adults with HIV/AIDS	0	0	0	20	20
Victims of Domestic Violence	0	0	0	197	197

BUSINESS RULES FOR THE EXTRAPOLATION OF SUBPOPULATION RESULTS

The steps to derive the overall count estimates, with extrapolations applied to include subpopulations, veterans, and chronically homeless for those who are unsheltered are as follows...

Step 1) Derive the Overall Count Estimates

After conducting the count, and addressing data quality issues, the overall count estimates are produced. The PIT Report within the Command Center supports Geographic Sampling and Enumeration to derive count the count estimates. If this optional feature is included, the figures are extrapolated upon further based on the total estimates from the Vehicle and Makeshift Shelter Report.

1A) Derive Geographic Sampling Estimates

The PIT Report within the Command Center uses Geographic Sampling and Enumeration approach to derive count estimates from the unsheltered surveys and tallies conducted. With Geographic Extrapolation, the unsheltered count estimate for the sample region shown below is 2712.

	Region High	Region Low	Region Low w/ Geo. Extrap.	Region Total
Total number of persons	2497	88	215.42	2712.42

1B) Apply Vehicle and Makeshift Shelter (VMS) Weighting

There were an estimated 3398 people experiencing homelessness living in vehicles and makeshift shelters in which it was believed there were occupants, but the occupants could not be engaged. This report follows the [Programming Specifications for the Vehicle and Makeshift Shelter Report.docx](#). These count estimates are added to the count results from step 1A, as shown below.

VMS Count (Entire COC) =		3398
Total Unsheltered Count Estimate =	+	<u>2712</u>
Total Estimate with VMS + Unsheltered Count		6110

1C) Run PIT Reports for Safe Parking Projects

PIT reports need to be run for all Safe Parking Projects in the COC and the count results from these are added to the results from step 1B.

Step 2) Determine the Total # of Adults Surveyed

The subpopulation questions are only asked of the adults who are surveyed. Therefore, to determine the estimated count for the entire estimated population (from step 1C) these figures need to be extrapolated upon. The first step for creating this weighting factor is to determine the total number of adults who were surveyed, as shown below. This total is captured in *AdultInterviewResponses* within the PIT Results File Format.

Age Breakdowns of PEH Surveyed	Count	%
Under 5	5	0.3%
5-12	1	0.1%
13-17	3	0.2%
18-24	31	2.1%
25-34	238	15.8%
35-44	434	28.8%
45-54	377	25.0%
55-64	316	21.0%
65+	101	6.7%
Youth	9	0.6%
Adults	1497	99.4%
Total People Surveyed	1506	100.0%

The sample size is based on the total # of adults who were surveyed

Step 3) Create a weighting factor based on the # of Adults Surveyed [AdultInterviewResponses] and the Total Estimated Number of Adults. The Total Estimated Number of Adults can be significantly higher than the total number of surveys completed and includes enumeration for A) Observation Tallies, B) Geographic Sampling, and C) enumeration for Vehicle and Makeshift Shelter Surveys.

Adult Weighting (to account for VMS, Observati	Count
Total Estimated Adults (Unsheltered only, not sa	6038
Total Adults	1497
Adult Weighting Factor	4.03

Step 4) Determine Total Sample Size of People Who Answered Each of the Subpopulation Questions

For questions such as Substance Abuse, this requires both the initial question as well as a response to the “Is the condition of a long and indefinite nature and impacts the person’s ability to maintain housing?”

Additional Homeless Populations (Adults Only)	
Adults with a Serious Mental Illness	351
Adults with a Substance Use Disorder	287
Adults with HIV/AIDS	28
Adult Survivors of Domestic Violence (optional)	70

The 287 people counted as having either alcohol, drugs, or both with the long and indefinite qualifier is out of a sample size (n) of 1008 people who responded. This sample size is calculated by counting any responses where the person said “No” or anyone who responded with either alcohol, drugs, or both and the “long and indefinite” qualifier is not blank. The results for this are captured within the *Non_BlankSubstance* element within the PIT Results File Format.

Substance Use	Count	%
Alcohol use disorder	106	9.8%
Drug use disorder	284	26.1%
Both Alcohol and Drug use disorders	135	12.4%
No	562	51.7%
Total Sample Size	1087	

Substance Use w Long and Indefinite	Count	%
Alcohol use disorder	57	5.7%
Drug use disorder	168	16.7%
Both Alcohol and Drug use disorders	62	6.2%
No	562	55.8%
Has Condition but no to long and indefin	159	15.8%
Total Sample Size	1008	

This is the 287 people currently counted within the HUD PIT report (before extrapolation)

To support this step, the *PIT Results File Format* was updated to include the following additional fields. Note that each of these will be limited to Adults Only. Columns JL to JQ will contain the relevant count of surveys conducted of adults for which there was no response provided.

AdultObservationResponses: The total number of Observation Tallies gathered.

AdultInterviewResponses: The total number of Unsheltered Surveys conducted.

NonBlank_CH: Adults who were interviewed and responded with Yes or No to Developmental Disability or HIV/AIDS, OR

and any adults with “Yes” to any of the other disabling condition questions (or alcohol, drugs, or both for the

SubstanceAbuse question) with Yes or No to the following “long and indefinite” question OR “No” to any of the disabling condition questions.

NonBlank_Vet: Adults who were interviewed that responded with either Yes or No to the Veteran Status question.

NonBlank_Mental: Adults who were interviewed who responded with “Yes” to the mental illness question and either Yes or No to the long and indefinite question OR who responded No to the mental illness question.

NonBlank_Substance: Adults who were interviewed who responded with “Alcohol”, “Drugs”, or “Both” to the Substance Abuse question and either Yes or No to the long and indefinite question OR who responded No to the Substance Abuse question.

NonBlank_HIV: Adults who were interviewed who responded with either “Yes” or “No” to the HIV/AIDS question.

NonBlank_DV: This is the count of all adults who were interviewed who indicated either “No” to the question of “Are you a victim of Domestic Violence?” or Yes to this question and a response of either “Yes” or “No” to the question of “Are you Currently Fleeing this situation?”

Step 5) Create a Weighting Factor to Account for Missing Responses

To account for the missing responses, a weighting factor is created and applied for each of the subpopulation questions. The weighting factor of 1.49 is derived by dividing the total # of adults (*AdultInterviewResponses* = 1497) by the total # of people who fully responded to the question (*Non_BlankSubstance* = 1008). [The HIC and PIT Notice](#) notes that both the condition and the qualifier are needed for a person to be counted.

Adults with a Serious Mental Illness (SMI) – This population category of the PIT includes adults with a severe and persistent mental illness or emotional impairment that seriously limits a person's ability to live independently. Adults with SMI must also meet the qualifications identified in the term for “disability” (e.g., “is expected to be long-continuing or indefinite duration”).

Adults with a Substance Use Disorder–This population category of the PIT includes adults with a substance abuse problem (alcohol abuse, drug abuse, or both). Adults with a substance use disorder must also meet the qualifications identified in the term for “disability” (e.g., “is expected to be long continuing or indefinite duration”).

A weighting factor of 1.49 is produced by dividing the total number of adults by the number of people who responded to both substance abuse questions. If nobody answered the question, a weighting factor of 1 is used to avoid a divide-by-zero situation.

Subpop Weighting Factors	Count	
Total Adults	1497	
Substance Abuse - Count	1008	
Substance Abuse - Weighting Factor	1.49	

Step 6) Multiply the responses for the subpopulation question by the weighting factor from Step 5.

Substance Use (Extrap, for Missing Responses)	Count	%
Alcohol use disorder	84.7	5.7%
Drug use disorder	249.5	16.7%
Both Alcohol and Drug use disorders	92.1	6.2%
No	834.6	55.8%
Has Condition but "No" to long and indefinite	236.1	15.8%
Total Sample Size	1497	

Step 7) Apply the Adult Weighting Factor

Multiply the Adult Weighting factor from Step 3 by the figures in Step 6. This results in an estimate of 1719.2 people with a Substance Abuse Issue.

Final Substance Use Estimates for Unsheltered	Count	%
Alcohol use disorder	341.4	5.7%
Drug use disorder	1006.3	16.7%
Both Alcohol and Drug use disorders	371.4	6.2%
Has Any Substance Use Disorder w/ Long	1719.2	28.5%
No	3366.4	55.8%
Has Condition but "No" to long and indefinite	952.4	15.8%
Total Sample Size	6038.0	

Step 8: Add the Counts from Safe Parking and Safe Sleeping

As Safe Parking and Safe Sleeping figures are a straight canvas; no additional enumeration or extrapolation are applied to these. To account for these, new project types have been added to the Counting Us app and the Command Center and the data capture is addressed via optional Safe Parking or Safe Sleeping surveys that can be added into the Counting Us app. The results from these projects are exported in the Results File Format and aggregated along with the other results from above within the updated PIT Report Generation Tool.

CONSIDERATIONS FOR SUBREGIONAL REPORTING AND ANALYSIS

The sample sizes and weighting factors for subregions will deviate and, as a result, the sum of the estimates derived at a subregional level will rarely equal the estimates derived for the entire region. Regional Administrators have options on approach for how best to account for this.

1) **Follow the Approach from the HUD Extrapolation Tool and do not extrapolate for these questions**

Pros: This is the most straightforward approach and easiest to implement.
The HUD Tool can be used for this step.

Cons: This approach relies on a high survey rate to create an accurate representation of the characteristics within the community.

2) **Extrapolate for Vehicles and Makeshift Shelters and Observation Tallies but do not Extrapolate for Missing Survey Responses**

Pros: The sum of the results for the subregions will equal the sum of the results for the COC.
Avoids complicated logic for chronic homeless status, and a potential over-representation, as there are several questions that are used to determine if someone is to be considered chronically homeless.

Cons: This may underrepresent the extent of the condition for the entire COC.

3) **Extrapolate for Vehicles and Makeshift Shelters and Observation Tallies and also Extrapolate for Missing Survey Responses**

Pros: This provides a more accurate representation of the extent of the condition for the entire COC.

Cons: Small sample sizes can lead to the count estimates being disproportionate to the local reality. For example, with Albany there were only two (2) surveys completed for the HIV/AIDS question and one of the respondents (50%) indicated they had HIV/AIDS. When this percentage is applied to the estimated number of adults, it appears as if 45 of the 90 adults have HIV/AIDS. Since the denominators and weighting factors vary for each subregion, the sum of the results derived from the count estimates generated from applying these weighting factors will rarely equal the total count estimates for the entire CoC.

Final Substance Use Estimates for Unsheltered	Count	%	Albany
Has Any Substance Use Disorder w/ Long	1719.2	28.5%	0.0
Final Mental Health Estimates for Unsheltered	Count	%	Albany
Yes	2100	34.8%	0
Final HIV/AIDS for Unsheltered	Count	%	Albany
Yes	165	2.7%	45

4) **Apply weighting to the Entire COC for the HUD PIT count figures for missing data but do not apply it at the subregion level. Only show completed survey results for jurisdictional results.**

Pros: The COC estimates are a more accurate reflection of reality.
Subregional estimates are not skewed due to low sample sizes.

Cons: There are no subregional count estimates provided for these reporting figures. Instead, the percentages are based on the surveys gathered from each subregion. For Albany for example, this would show the results for only the 2 surveys where someone fully responded to the HIV/AIDS question.