

# UNSHELTERED POINT-IN-TIME COUNT: PIT COUNT ESTIMATING TOOL FOR COCS

Version 1.0

## OVERVIEW

### Background

HUD requires Continuums of Care (CoCs) to conduct Point in Time (PIT) counts of people in unsheltered locations at least every other year. Many CoCs conduct their counts by sampling parts of their jurisdiction and using those samples to derive a full estimate of people experiencing unsheltered homelessness. The **PIT Count Estimating Tool** is intended to help CoCs develop the estimate of the total number of people experiencing unsheltered homelessness based on the sample data they collect.

### Purpose of this Tool

This tool helps CoCs that already conducted the unsheltered PIT count using a sampling approach to estimate a total unsheltered PIT count.

This tool assumes that the CoC already divided its geography into smaller subareas and categorized them based on the likely number of people experiencing unsheltered homelessness within each subarea, then sampled those selected areas during the unsheltered PIT count. The tool takes the CoC's sampled PIT count data and calculates an estimated total unsheltered PIT count, which is weighted to represent the subareas that were not counted to estimate an overall count for the full area. This tool is designed to guide CoCs through these steps.

CoCs seeking assistance with selecting sample sites should use the **PIT Count Sampling Tool**, available on the [How to Use Sampling within a CoC to Conduct an Unsheltered PIT Count page](#) on HUD Exchange.

This tool will only help a CoC establish an estimate of total people experiencing unsheltered homelessness and will not calculate estimates for household, demographic, or subpopulation data. To estimate more specific data about the sampled population, a community would need to conduct a complete sampling of their community.

Guidance on conducting a complete sample of a community is provided in the [How to Use Sampling within a CoC to Conduct an Unsheltered Point-in-Time \(PIT\) Count](#) guidance document. To extrapolate for demographic data, CoCs can use the **PIT Count Extrapolation Tool**, an Excel file available for download [here](#).

## What is Sampling?

Sampling is a way to account for information about a whole group of people by only collecting data about a portion of that full group. In the context of an unsheltered PIT count, this means that a CoC could estimate the number and characteristics of all people experiencing unsheltered homelessness by counting, and potentially surveying, only some sub-regions of its full geography and then extrapolating for uncounted and un-surveyed areas.

Benefits of Sampling:

- Takes less time to complete than a full census count.
- Requires fewer staff and volunteers to conduct PIT count activities.

Drawbacks of sampling:

- Relies on assumptions about where people experience unsheltered homelessness, which are limited by a CoC's initial or known data.
- Not as accurate as a full census count.
- Unlike full counts, which can be divided by subarea, extrapolated information about demographic characteristics may not be valid for subarea reporting.

## TOOL USER GUIDE

### Summary of Tabs

Communities will undertake a two-step process to complete the exercises in the PIT Count Estimation Tool. Tabs 1 and 2 each constitute a separate step in this two-step process. The exercises for each tab are outlined in the detailed instructions below. Communities should complete the tabs in sequential order.

- [Tab 1—Subarea Types](#)
- [Tab 2—PIT Count Worksheet](#)

The Extrapolated PIT report is the final roll-up report of the exercises completed in Tabs 1 and 2. No data entry is required on this tab, which provides a weighted total unsheltered PIT count number in Tab 3 to be used for the unsheltered PIT count data submission. Tab 4 is a reference tab where updates to the tool will be recorded.

- [Tab 3—Extrapolated PIT Count](#)
- [Tab 4—Version Change Log](#)

**NOTE:** Cells are colored by expected user interaction with the PIT Count Estimation Tool:

White: User entry
Blue: Pre-populated from entries in other tabs
Grey: Calculations

## Example Tabs

To show how to use this tool in practice, each Tab's section includes screenshots with an example of how this tool could look when completed. The example uses the same numbers throughout to demonstrate how each Tab connects with data entered in prior Tabs. This example was created for illustrative purposes only. It does not reflect real PIT count data or any CoC's geographic subareas or sampling approach.

## Detailed Tool Instructions

Instructions for each of the two primary tabs requiring manual entry can be found below.

### Tab 1—Subarea Types

#### Purpose:

Provides a place for the user to enter information about their community's sampling approach, including subarea types, the number of subareas within each type, and the number of subareas they sampled.

#### Key Terms:

- 1) **Subareas:** Smaller regions within a CoC's geography. The subareas do not need to be the same size geographically, if different sized subareas help to define more balanced rates of unsheltered homelessness among subareas in a given subarea type. Consider defining subareas by census tracts, zip codes, county or city lines, neighborhoods, specific streets or highways, or some other locally specific markers that make the subarea easy to identify or natural to divide.
  - Example: Six square block in Chicago, Illinois
  - Example: Six square-miles near Bloomington, Illinois
- 2) **Subarea Types:** Categories of subareas based on predicted levels of homelessness. Subareas in the same category should be roughly comparable to one another in terms of the number of people experiencing unsheltered homelessness that the CoC would expect to count. Recommended subarea types are provided below, but communities can use more-granular categories based on local data and knowledge.
  - Example: "Certainty" subareas that must be counted to obtain an accurate count.
  - Example: "High-density" subareas that include known locations where a relatively larger number of people experiencing homelessness frequently sleep.
  - Example: "Medium-density" subareas that include areas where fewer people experience unsheltered homelessness.

- Example: "Rare or unlikely" subareas that include areas where very few or no people have been known to experience homelessness.  
Example: "Uninhabitable" subareas where it would be implausible for someone to experience unsheltered homelessness (e.g., densely forested area).

### **Community Inputs:**

- 1) **Column A:** Input all subarea types in which the CoC conducted sampling activities. CoCs should exclude any uninhabitable and unsamplable subarea types. Enter only one subarea type per cell.
- 2) **Column B:** Input the total number of subareas within each subarea type.
- 3) **Column C:** Input the total number of subareas that were sampled within each subarea type.
- 4) **Submit:** Click the "Submit" button to advance to Tab 2. This will:
  - a) generate a calculated sampling percentage for each subarea type in Column D and
  - b) adjust Tab 2 to include each subarea type.

If users later make changes to the inputs in Column A, B, or C, they should click "Submit" again.

### **Calculated Values:**

- 1) **Column D:** Displays the calculated sampling percentage for each subarea type. This percentage informs how sampled PIT count data are weighted to account for unsampled areas later.

### **Example Tab 1:**

In the example Tab 1 below, the user has input four subarea types (Column A, starting in Row 7), each with a different total number of subareas (Column B). Because the CoC has already conducted PIT count activities in their identified subareas, the user has listed the total number of subareas sampled by subarea type (Column C). Column D calculates the percentage of subareas sampled by subarea type, which will inform how the tool calculates the CoC's weighted sample later.

### Example Tab 1

	A	B	C	D
1	<b>Submit</b>			
2				
3				
4				
5	<b>Subarea Types and Percentages sampled</b>			
6	<b>Subarea type</b>	<b>Total # of subareas</b>	<b>Total # of subareas sampled</b>	<b>Percentage sampled</b>
7	Certainty Subareas	3	3	100%
8	High-Density Subareas	5	3	60%
9	Medium-Density Subareas	20	10	50%
10	Rare Subareas	15	3	20%
11				

### Tab 2—PIT Count Worksheet

#### Purpose:

Provides a worksheet for communities to enter PIT counts for the sampled subareas. Communities will input the unsheltered PIT counts for each sampled subarea.

#### Pre-Populated Fields:

- 1) **Row 6:** Subarea types imported from Tab 1.

#### Community Inputs:

- 2) **Columns A, C, E, ...:** Starting in Row 8, the user should input the subareas that were randomly sampled. Users should name each subarea in which they conducted PIT count activities.
- 3) **Columns B, D, F, ...:** Starting in Row 8, the user should input the final unsheltered PIT count for each subarea listed.
- 4) **Submit:** Click the "Submit" button to advance to Tab 3. This will:
  - a) run validation checks against information added in Tab 1 and
  - b) calculate a weighted PIT count in Tab 3.

If users later make changes to any inputs in Tab 2, they should click "Submit" again.

#### Example Tab 2:

In the example Tab 2 below, the user has clicked "Submit" on Tab 1 to generate the same names and number of subarea types in Row 6 of Tab 2. Within each subarea type, the user has named the specific subareas that were sampled for the unsheltered PIT count (starting in Row 8 of Column A, C, E, and G). The user has also input the number of people counted in each subarea (starting in Row 8, Column B, D, F, and H).

## Example Tab 2

	A	B	C	D	E	F	G	H
1	<b>Submit</b>	<b>Instructions:</b> Row 6 should contain all Subarea Types listed in Tab 1. <b>(Step 1.)</b> Starting in Row 8, input the names of subareas that were randomly sampled by subarea type (in Column A, C, E, etc.). <b>(Step 2.)</b>						
2								
3								
4								
5	<b>PIT Count Worksheet</b>							
6	<b>Certainty Subareas</b>		<b>High-Density Subareas</b>		<b>Medium-Density Subareas</b>		<b>Rare Subareas</b>	
7	<b>Subarea Name</b>	<b>PIT Count</b>	<b>Subarea Name</b>	<b>PIT Count</b>	<b>Subarea Name</b>	<b>PIT Count</b>	<b>Subarea Name</b>	<b>PIT Count</b>
8	Certainty 1	112	High 1	56	Medium 1	42	Rare 1	4
9	Certainty 2	52	High 2	76	Medium 2	25	Rare 2	12
10	Certainty 3	89	High 3	62	Medium 3	33	Rare 3	7
11					Medium 4	12		
12					Medium 5	32		
13					Medium 6	27		
14					Medium 7	54		
15					Medium 8	36		
16					Medium 9	26		
17					Medium 10	19		
18								
19								

## FINAL REPORT AND REFERENCE TAB

Information about the uses of the final Extrapolated PIT and reference tab contained in this tool can be found below.

### Tab 3 – Extrapolated PIT Count

#### Purpose:

Compiles the PIT counts entered for the sampled subareas and extrapolates these counts to obtain an overall weighted unsheltered PIT count estimate for the community.

**Note:** There is no manual data entry required in the Extrapolated PIT Count tab. The Extrapolated PIT Count tab is the final roll-up report of the community's completed exercises in Tabs 1 and 2.

### How to read the Extrapolated PIT Count Tab:

<b>Cell B2</b>	The total number of people experiencing unsheltered homelessness in all sampled subareas on the PIT count night.
<b>Cell B3</b>	The estimated total number of people experiencing unsheltered homelessness in the community on the PIT count night (across all sampled and unsampled subareas). This is the final estimate, extrapolated from the sampled subarea PIT counts.
<b>"PIT Subtotals" table, Column A:</b>	Subarea types prepopulated from Tab 1.
<b>"PIT Subtotals" table, Column B:</b>	Summed totals of subarea PIT counts by subarea type, calculated from inputs on Tab 2.
<b>"PIT Subtotals" table, Column C:</b>	Within a given subarea type, the probability that a given subarea was randomly sampled. These are the sampling percentages that were entered on Tab 1.
<b>"PIT Subtotals" table, Column D:</b>	Weight, calculated as the inverse of the probability of selection (i.e., $1 / \text{probability of selection}$ ).
<b>"PIT Subtotals" table, Column E:</b>	The extrapolated estimate of people experiencing unsheltered homelessness in the subarea type, calculated as the summed total of subarea PIT counts (Column B) multiplied by the weight (Column D).

### Example Tab 3:

The example Tab 3 below has pulled information from the example Tabs 1 and 2 to calculate a weighted PIT count sample. The example user's CoC counted 776 people across all their sampled subareas (the "Unweighted Sample" in Cell B2), and to account for all of the subareas not sampled they will include 1303 people in their unsheltered PIT count (the "Weighted Sample" in Cell B3).

To break down how it arrived at these sample totals, Tab 3 shows the total number of people counted by subarea type (Column B, Rows 8–11), which it pulls from Tab 2. The sum of these totals equals the "Unweighted Sample" (Cell B2). It then documents both the probability of each sample subarea's selection (Column C, Rows 8–11, pulled from Tab 1) and the inverse or weight of that probability (Column D, Rows 8–11) to calculate the total number of people to include in the PIT count by subarea type (Column E, Rows 8–11). The sum of these Column E totals equals the "Weighted Sample" in Cell B3.

### Example Tab 3

	A	B	C	D	E
1	<b>Unsheltered PIT Count Totals</b>		<b>Instructions:</b> All values on this tab are auto-calculated. (Row 8 in Column B) looks right. <b>Cell B2</b> should equal the number of people counted in the PIT count for the subpopulations when using a sampling approach.		
2	Unweighted Sample	776			
3	Weighted Sample	1303			
4					
5					
6	<b>Unsheltered PIT Count Subtotals</b>				
7	<b>Subarea Type</b>	<b>Summed Total # People Counted</b>	<b>Probability of Selection</b>	<b>Inverse of Probability (i.e., Weight)</b>	<b>Total # People to Include in PIT Count</b>
8	Certainty Subareas	253	100%	1.0	253
9	High-Density Subareas	194	60%	1.7	323
10	Medium-Density Subareas	306	50%	2.0	612
11	Rare Subareas	23	20%	5.0	115
12					

### Tab 4 – Version Change Log

#### Purpose:

This reference tab includes three columns that provide information on updates made to this tool over time.

- **Column A** describes the version of the tool when the update was applied.
- **Column B** is the date the update was made.
- **Column C** is a description of the change made. As a user of the PIT Count Estimating Tool, **you cannot edit this tab**. This tab includes only reference information about updates made to the tool over time.



## ADDITIONAL RESOURCES

To view all of HUD's PIT count and HIC resources visit the [PIT and HIC Guides, Tools, and Webinars Page](#). This is a one-stop site where communities can access all of HUD's guidance on how to plan and implement their PIT counts. The resources include:

- [How to Use Sampling within a CoC to Conduct an Unsheltered PIT Count](#) guidance
- The PIT Count Data Extrapolation tool (available for download [here](#))
- The [PIT Count Methodology Guide](#)
- PIT count [survey tool resources](#)
- [PIT count implementation resources](#).

If you have technical questions about this PIT Count Estimating Tool, please submit your questions to the [Ask A Question \(AAQ\) portal](#). In Step 2 of the question submission process, select "HDX Homelessness Data Exchange (including PIT, HIC, AHAR, Sys PM, LSA, and PDX)" from the "My question is related to" drop down list.