

HOMELESSNESS

RELEVANT JMP PLATFORMS AND STATISTICAL TECHNIQUES

Tabulate : Summary Statistic Table

Graph Builder : Bar Chart, Line Graph, Map

PROBLEM STATEMENT

It is estimated that over half a million people are homeless on a given night in the United States. Each year, the US Department of Housing and Urban Development (HUD) releases an Annual Homeless Assessment Report to Congress [1]. This report provides estimates of the number and types of people experiencing homelessness across the United States including estimates of how many of those are able to access a shelter. Producing accurate estimates for this report is a challenging undertaking but is necessary in order to provide visibility into this problem, identify trends, and ultimately help lead to initiatives that try to address this troubling issue.



The focus of the analyses will be to explore trends in the amount of homelessness over time, examining the rates of those that are sheltered vs. unsheltered, compare homelessness rates for different age groups, and examine/compare these rates at the state level.

DATA SET

Homelessness.jmp

Year	Year of record (2013, , 2022)
HUD Region	US Housing and Urban Development Region (I, II, ... , X)
State	State name (including Washington D.C.)
Population	Population of state (including Washington D.C.)
Overall Homeless	Estimate of the total number of people experiencing homelessness on a given night
Overall Homeless_<18	Estimate of the total number of people under the age of 18 experiencing homelessness on a given night
Overall Homeless_18-24	Estimate of the total number of people between the ages of 18 and 24 experiencing homelessness on a given night
Overall Homeless_>24	Estimate of the total number of people over the age of 24 experiencing homelessness on a given night
Sheltered Homeless	Estimate of the total number of people experiencing homelessness on a given night that are staying in a shelter <i>*Note: Sheltered means being housed for the night in either an Emergency Shelter, Transitional Housing, or Safe Haven.</i>
Sheltered Homeless_<18	Estimate of the total number of people under the age of 18 experiencing homelessness on a given night that are staying in a shelter
Sheltered Homeless_18-24	Estimate of the total number of people between the ages of 18 and 24 experiencing homelessness on a given night that are staying in a shelter
Sheltered Homeless_>24	Estimate of the total number of people over the age of 24 experiencing homelessness on a given night that are staying in a shelter
Unsheltered Homeless	Estimate of the total number of people experiencing homelessness on a given night that are not sheltered <i>*Note: Unsheltered means nighttime location is a public or private place not designed for sleeping accommodations such as on a street, park, vehicle, or abandoned building.</i>
Unsheltered Homeless_<18	Estimate of the total number of people under the age of 18 experiencing homelessness on a given night that are not sheltered
Unsheltered Homeless_18-24	Estimate of the total number of people between the ages of 18 and 24 experiencing homelessness on a given night that are not sheltered
Unsheltered Homeless_>24	Estimate of the total number of people over the age of 24 experiencing homelessness on a given night that are not sheltered

EXERCISES

1. Create a table showing the yearly count for the overall homeless and amount for each age group.

Hint: Analyze > Tabulate. Use Year for the rows, and the variables as the columns.

2. Create a stacked bar chart displaying the count of sheltered and unsheltered homeless for each year. Comment on any trends observed in these variables. Are there any years where the values are very different than the others? The Annual Homeless Assessment Report (AHAR) to Congress [1] provides an explanation for this. Before you read the explanation in the report, take a guess at why you think these data values occurred.

Hint: Graph > Graph Builder. Place 'Year' in the X Role. Place both 'Sheltered Homeless' and 'Unsheltered Homeless' in the Y Role. Select Bar Chart from the graph palette. Choose Stacked for Bar Style. Choose Sum for the Summary Statistic. Choose to Label by Value.

3. Create bar charts similar to Exercise 2 for each of the three age groups. Comment on any trends you observe.
4. Create a map of the United States where the color used for the states can be the values for any of the variables for any year.

Hint: Graph > Graph Builder. Place 'State' in the center of the graph window. Place 'Overall Homeless' as the Color Role. Then choose Redo > Column Switcher under the Red Triangle. Select all the other homeless count, sheltered and unsheltered count variables to use in the Column Switcher. The Column Switcher should appear on the left allowing you to select the specific variable to use. Select Local Data Filter under the Red Triangle. Select 'Year' as the filter variable. The Data Filter will now appear allowing you to select a specific year to use in the graph. You'll notice that the default scale to use for the color variable makes it difficult to compare states as states with very large population sizes (i.e., California, New York) will have large values for all these variables resulting in the remaining states all being similar color. To remedy this, right click on the color scale and choose Gradient. Select Quantile as the Scale Type.

Using the Column Switcher and Data Filter, examine this visualization and find 5-7 features in the data to comment on.

5. Create a new set of variables (overall and for each age group) that is the % of homeless that are sheltered.

Hint: Choose Cols > New Columns. Select Column Properties > Formula.

In the formula editor, create the formula. Example:

$$\left(\frac{\text{Sheltered Homeless}}{\text{Overall Homeless}} \right) \cdot 100$$

Name this new column (e.g., '% Sheltered'). Click OK.

6. Create a bar chart displaying the average % sheltered for each year across all the states.
Hint: Graph > Graph Builder. Place 'Year' in the X Role. Place '% Sheltered Homeless' in the Y Role. Select Bar Chart from the graph palette. Choose Mean for the Summary Statistic. Choose to Label by Value. Then choose Redo > Column Switcher under the Red Triangle. Select all the other % Sheltered variables you created. The Column Switcher should appear on the left allowing you to select the specific variable to use. Select Local Data Filter under the Red Triangle. Select 'HUD

Region' and 'State' as the filter variables. The Data Filter will now appear allowing you to select specific HUD Region(s) or State(s) to use in the graph. For comparison purposes, add a reference line at 50%. To do so, double click on the Y axis to open up the axis settings. To have all the possible graphs you'll examine to include the reference line and be on the same scale, choose 'Lock Scales' under the main red triangle, and also choose 'Retain axis settings' under the red triangle for the Column Switcher.

Using the Column Switcher and Data Filter, examine this visualization and find 5-7 features in the data to comment on.

7. Though it is valuable to examine the actual counts for these variables, for purpose of comparisons, it's better to express data such as these as a per capita variable. Create a new variable that is the count of the Overall Homeless per 100K people.

Hint: Choose Cols > New Columns. Select Column Properties > Formula.

In the formula editor, create the formula.

$$\left(\frac{\text{Overall Homeless}}{\text{Population}} \right) * 100000$$

Name this new column (e.g., 'Overall Homeless per 100K'). Click OK.

8. Create an overlay line graph displaying the 'Overall Homeless per 100K' for each State across year.

Hint: Graph > Graph Builder. Place 'Year' in the X Role. Place 'Overall Homeless per 100K' in the Y Role. Select Line Graph from the graph palette. Place 'State' in the Overlay role. Select Local Data Filter under the Red Triangle. Select 'HUD Region' and 'State' as the filter variables. The Data Filter will now appear allowing you to select specific HUD Region(s) or State(s) to use in the graph.

Using the Data Filter, examine this visualization comparing select States. Find 5-7 features in the data to comment on.

9. There are many other analyses that can be done with these data in order to uncover features and identify trends. Perform 2-3 additional analyses creating appropriate visualizations to communicate the findings.

COMPLIMENTARY MATERIALS

1. The 2022 Annual Homeless Assessment Report (AHAR) to Congress.

Part 1: Point-In-Time Estimates of Homelessness. Dec 2022.

<https://www.huduser.gov/portal/sites/default/files/pdf/2022-AHAR-Part-1.pdf>

**Note: Aggregate results in this report include the U.S. Territories American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands.*

Data Source: <https://www.hudexchange.info/homelessness-assistance/ahar/#2022-reports>

Note: Please adhere to any citation requirements for distribution and use of this report and data.