Background Information

Each year, millions of Americans move to new homes for a variety of reasons. Some people relocate for new jobs, others do it to seek education, start a family, or because of economic necessity.

The U.S. Census Bureau collects data on moving demographics and publishes it each year as part of the Current Population Survey. This data makes it possible to locate and analyze trends in why and where people move.

Problem Statement

In this assignment, students will analyze data about mobility of the population for different age groups and distances for the years 2000 through 2012.

Instructions

IMPORTANT: This is not the actual Homework for your section. You will not receive any credit for completing this project.

IMPORTANT: Complete the steps below in the order they are given. Completing the steps out of order may complicate the assignment or result in an incorrect result.

1. Download and extract the provided Data Files ZIP file. It contains the following file for use in this assignment:

   a. mobility.csv – Mobility information for different age groups from 2005 to 2015 [1].

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>Number</td>
<td>Year of mobility data.</td>
</tr>
<tr>
<td>Age Group</td>
<td>Text</td>
<td>Age group to which the population belongs.</td>
</tr>
<tr>
<td>Total Population</td>
<td>Number</td>
<td>Total population for the particular age group.</td>
</tr>
<tr>
<td>Did Not Move</td>
<td>Number</td>
<td>Number of people who did not move.</td>
</tr>
<tr>
<td>Moved Same County</td>
<td>Number</td>
<td>Number of people who moved within the same county.</td>
</tr>
<tr>
<td>Moved Same State</td>
<td>Number</td>
<td>Number of people who moved to a different county in the same state.</td>
</tr>
<tr>
<td>Moved Different State</td>
<td>Number</td>
<td>Number of people who moved to a different state.</td>
</tr>
<tr>
<td>Moved Abroad</td>
<td>Number</td>
<td>Number of people who moved into or out of the United States.</td>
</tr>
</tbody>
</table>

2. Begin by creating a new Microsoft Excel workbook named lastname_firstname_hh3_pmp.xlsx.
3. We must adjust the sheets in our workbook.
   a. Rename Sheet1 to Mobility.
   b. Add a new sheet named Scenarios.
   c. Add a new sheet named Analysis Questions.

4. Import the following item into the workbook:
   a. mobility.csv file – Import starting in cell A3 of the Mobility sheet. The file is comma-delimited. Its first row contains headers.

5. We wish to apply formatting to the Mobility sheet.
   a. We must setup a table to store data on population mobility.
      i. If a table does not already exist in cells A3 through H58, create one using a style of your choice. The table has headers and will overlap external data ranges. If prompted, convert the selection to a table and remove all external connections.
      ii. If a table already exists in cells A3 through H58, format the table using a style of your choice other than the default table style.
   b. For the table, turn on the First Column option.
   c. Enter text in the cells as indicated below:
      i. A1: Population Mobility
   d. Merge (but not center) cells A1 through H1.
   e. Apply the Heading 1 cell style to cell A1.
   f. Format the cells as indicated below:
      i. C4 through H58: number with no decimal places, use 1000 separator
   g. AutoFit the widths of columns A through H.

6. To better understand our data, we wish to create a PivotTable.
   a. Create a new PivotTable based on the data in cells A3 through H58 of the Mobility sheet. Place the PivotTable on a new sheet named Mobility PivotTable.
   b. On the PivotTable, do the following:
      i. Add the age group as a Filters field.
      ii. Add the year as a Rows field.
      iii. Add the number of people who did not move, moved in the same county, moved in the same state, moved to a different state, and moved abroad as Values fields.
c. We need to perform formatting on our PivotTable.
   i. Group the years into sets of 2 starting at 2005.
   ii. Summarize the numbers of people who moved figures by summing them.
   iii. Format the cells as indicated below:
      (1) **Sum of Did Not Move, Sum of Moved Same County, Sum of Moved Same State, Sum of Moved Different State**, and **Sum of Moved Abroad** fields: number with no decimal places, use 1000 separator

7. We also wish to apply formatting to the Scenarios sheet.
   a. Enter text in the cells as indicated below:
      i. **A1**: Population Mobility Scenarios
      ii. **A3**: Scenario
      iii. **B5**: Annual Growth Rate
      iv. **C5**: 2015
      v. **D5**: 2016
      vi. **E5**: 2017
      vii. **F5**: 2018
      viii. **G5**: 2019
      ix. **H5**: 2020
      x. **I5**: 2021
      xi. **J5**: 2022
      xii. **K5**: 2023
      xiii. **L5**: 2024
      xiv. **M5**: 2025
      xv. **A6**: Total Population
      xvi. **B6**: 0.84%
      xvii. **C6**: 312,296,000
      xviii. **A7**: Charleston Population
      xix. **B7**: 0%
      xx. **C7**: 36,322,000
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xxi. **A8**: Amount above Threshold

b. Merge (but not center) cells **A1** through **M1**.

c. Apply the *Heading 1* cell style to cell **A1**.

d. Apply background fill colors to the cells as indicated below:
   i. **A5** through **M5**: *Blue, Accent 1, Lighter 40%*
   ii. **A8** through **M8**: *White, Background 1, 25% Darker*

e. Format the cells as indicated below:
   i. **B6** through **B7**: percentage with 2 decimal places
   ii. **C6** through **M7**: number with no decimal places, use 1000 separator
   iii. **C8** through **M8**: percentage with 2 decimal places

e. AutoFit the width of columns **A** through **B**. Set the width of columns **C** through **M** to 12 (1.06”).

8. On the *Scenarios* sheet, we wish to calculate information about possible population in the future.

a. We wish to percentage of the population that moved. Enter the formulas in the cells as indicated below.
   i. **C8**: =C7/C6
   ii. **C8** through **M8**: AutoFill the formula from cell **C8**.

b. We want to estimate future salary scenarios.
   i. Enter the formula into the cell indicated below.

   **HINT**: To avoid errors, copy-and-paste the provided formula.

   (1) **D6**: =C6*(1+B6)
ii. We must adjust the future values formula so its cell references are correct when the formula is copied.

In cell D6, modify the cell references so they are column-absolute mixed or relative references as indicated:

=\text{C6}*(1+\text{B6})

iii. We will now AutoFill the modified formula. Enter the formula into the cells as indicated below.

(1) D6 through M7: AutoFill the formula from cell D6.

9. We will now evaluate two different scenarios for population mobility.

a. The first scenario involves an -0.92\% annual change in the number of people who moved, the same rate as from 2005 to 2015.

i. Enter text in the cells as indicated below:

(1) \text{A3}: Historic Growth Rate
(2) \text{B7}: -0.92\%

ii. There is nothing to do for this step. Please proceed to the next step.

iii. Using Scenario Manager, create a new scenario named Historic Growth Rate. Have the scenario work by changing the values of cells \text{A3} and \text{B7} to the values they contain now.

b. The second scenario involves having the percentage of the population that moved level out to 10.75\% in 2025.

i. Enter text in the cells as indicated below:

(1) \text{A3}: 10.75\% Moved
(2) \text{B7}: 0.00\%

ii. Use Goal Seek to find an annual growth rate to achieve 10.75\% of the population having moved in cell \text{M8}. Have Goal Seek change the value of cell \text{B7} until it locates the correct value.
iii. Using Scenario Manager, create a new scenario named 10.75% Moved. Have the scenario work by changing the values of A3 and B7 to the values they contain now.

10. We need to set up the Analysis Questions sheet so that it can store responses to the analysis questions.
   a. Enter text in the cells as indicated below:
      i. A1: Question Number
      ii. B1: Response
   b. Bold the contents of row 1.
   c. AutoFit the width of column A. Set the width of column B to 100 (8.39”).
   d. Set the height for rows 2 through 5 to 110 (1.53”).
   e. Change the vertical alignment for columns A and B so that text is displayed at the top of each row.
   f. Turn on text wrapping for column B.

11. Starting in row 2 of the Analysis Questions sheet, answer four of the five analysis questions below. Respond to one question per row.
   a. Which age group is most likely to move? Why do you think this group is more likely to move than other groups?
   b. Most people who move stay within the same county. Why do you think people are more likely to move nearby as opposed to somewhere further away?
   c. People 70 and older are far less likely to move than people in younger age groups. Why might this be the case?
   d. The rates of people moving longer distances (in the same state, to a different state, or abroad) were lower in the 2008-2011 period than before or since. What might have caused this drop?
   e. Mortgage interest rates, which affect the cost of buying a house, have been near historical lows since 2011. It doesn't seem like there has been an increase in the number of people moving, however. What are some possible reasons why more people haven’t taken advantage of the low interest rates by moving and buying houses?
Grading Rubric

This is a practice assignment and is worth no points. A comparable Homework would be worth 50 points and graded using this rubric, with partial credit awarded as appropriate:

| Steps 3a-c | 1 points total | Steps 8a-b | 6 points total |
| Step 4     | 2 points       | Steps 9a-b | 10 points total |
| Steps 5a-g | 4 points total | Steps 10a-f | 3 points total |
| Steps 6a-c | 10 points total| Steps 11a-e (pick 4 of 5) | 2.5 points each |
| Steps 7a-f | 4 points total |        |                |

The analysis questions in Steps 11a-e can be evaluated using this rubric:

<table>
<thead>
<tr>
<th>Standard</th>
<th>Meets Requirements (1.25 points)</th>
<th>Does Not Meet Requirements (0 points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer is reasonable.</td>
<td>Answer addresses the question prompt and is factually correct or a reasonable interpretation of available data.</td>
<td>Answer does not address the question prompt, is factually incorrect, or is an unreasonable interpretation of available data.</td>
</tr>
<tr>
<td>Answer is supported.</td>
<td>Logical rationale is provided to support the given answer.</td>
<td>Logical rationale is not provided to support the given answer.</td>
</tr>
</tbody>
</table>

References