Background Information

Within higher education, faculty salaries have become a contentious issue as tuition rates increase and state aid shrinks. Competitive salaries are important for recruiting top quality instructors, but they can also lead to increased costs in an era of tight budgets.

The issue of faculty salaries is especially significant in West Virginia. Salaries in the state have tended to lag significantly behind peer institutions, although some schools such as West Virginia University have made efforts to address shortfalls.

Problem Statement

In this assignment, students will explore data about faculty salaries in Southern Regional Education Board member states to look for patterns and to make predictions about future salary rates.

Instructions

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 files for use in this assignment:
   a. salary.csv – Salary information for member states of the Southern Regional Education Board from 2007 to 2014 [1].

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>College</td>
<td>Text</td>
<td>Name of the college.</td>
</tr>
<tr>
<td>State</td>
<td>Text</td>
<td>State where college is located.</td>
</tr>
<tr>
<td>Year</td>
<td>Number</td>
<td>Year of the salary information.</td>
</tr>
<tr>
<td>Category</td>
<td>Text</td>
<td>Degree-awarding category of the college.</td>
</tr>
<tr>
<td>FTE Enrollment</td>
<td>Number</td>
<td>Number of full-time equivalent students at the college.</td>
</tr>
<tr>
<td>Prof Salary</td>
<td>Currency</td>
<td>Average salary for professors.</td>
</tr>
<tr>
<td>Assoc Prof Salary</td>
<td>Currency</td>
<td>Average salary for associate professors.</td>
</tr>
<tr>
<td>Asst Prof Salary</td>
<td>Currency</td>
<td>Average salary for assistant professors.</td>
</tr>
<tr>
<td>Instructor Salary</td>
<td>Currency</td>
<td>Average salary for instructors.</td>
</tr>
<tr>
<td>Faculty Salary</td>
<td>Currency</td>
<td>Average salary for faculty members.</td>
</tr>
</tbody>
</table>

2. Begin by creating a new Microsoft Excel workbook named lastname_firstname_hw3_hesp.xlsx.
3. We must adjust the sheets in our workbook.
   a. Rename Sheet1 to Salaries.
   b. Add a new sheet named Scenarios.
   c. Add a new sheet named Analysis Questions.

4. Import the following item into the workbook:
   a. salary.csv file – Import starting in cell A3 of the Salaries sheet. The file is comma-delimited and has headers.

5. We wish to apply formatting to the Salaries sheet.
   a. Create a table based on cells A3 through J5310 using a style of your choice. The table has headers.
      The table will overlap external data ranges. Convert the selection to a table and remove all external connections.
   b. For the table, turn on the First Column option.
   c. Enter text in the cells as indicated below:
      i. A1: Higher Education Salaries
   d. Merge (but not center) cells A1 through J1.
   e. Apply the Heading 1 cell style to cell A1.
   f. Format the cells as indicated below:
      i. E4 through E5310: number with no decimal places, use 1000 separator
      ii. F4 through J5310: currency with no decimal places
   g. AutoFit the widths of columns A through J.

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 J5310 of the Salaries sheet. Place the PivotTable on a new sheet named Salary PivotTable.
   b. On the PivotTable, do the following:
      i. Add the state as a Filters field.
      ii. Add the category and then the year as Rows fields.
      iii. Add the professor salary, associate professor salary, assistant professor salary, instructor salary, and faculty salary as Values fields.
c. We need to perform formatting on our PivotTable.
   i. Group the years into sets of 2 starting at 2007.
   ii. Summarize the salary figures by averaging them.
   iii. Format the cells as indicated below:
      
      (1) **Average of Prof Salary**, **Average of Assoc Prof Salary**, **Average of Asst Prof Salary**, **Average of Instructor Salary**, and **Average of Faculty Salary** fields: currency with no decimal places

7. We also wish to apply formatting to the *Scenarios* sheet.
   
   a. Enter text in the cells as indicated below:
      
      i. **A1**: West Virginia Salary Scenarios
      ii. **A3**: Scenario
      iii. **B5**: Annual Raise
      iv. **C5**: 2014
      v. **D5**: 2015
      vi. **E5**: 2016
      vii. **F5**: 2017
      viii. **G5**: 2018
      ix. **H5**: 2019
      x. **I5**: 2020
      xi. **J5**: 2021
      xii. **K5**: 2022
      xiii. **L5**: 2023
      xiv. **A6**: Target Salary
      xv. **B6**: 0%
      xvi. **C6**: $100,000
      xvii. **A7**: Average for 4-Year Tenure Track Faculty
      xviii. **B7**: 3%
      xix. **C7**: $81,563
      xx. **A8**: Gap with Target Salary

   b. Merge (but not center) cells A1 through L1.
c. Apply the Heading 1 cell style to cell A1.

d. Apply background fill colors to the cells as indicated below:
   i. A5 through L5: Blue, Accent 1, Lighter 40%
   ii. A8 through L8: White, Background 1, 25% Darker

e. Format the cells as indicated below:
   i. B6 through B7: percentage with 2 decimal places
   ii. C6 through L8: currency with no decimal places

f. AutoFit the width of columns A through B. Set the width of columns C through L to 9.

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

   a. We wish to compute the gap between salaries and the target salary. Enter the formulas in the cells as indicated below.
      i. C8: =C6-C7
      ii. C8 through L8: 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:
iii. We will now AutoFill the modified formula. Enter the formula into the cells as indicated below.

(1) **D6** through **L7**: AutoFill the formula from cell **D6**.

9. We will now evaluate two different scenarios for salaries in West Virginia higher education.

a. The first scenario involves a 3% annual raise.
   i. Enter text in the cells as indicated below:
      (1) **A3**: 3% Raise
      (2) **B7**: 3.00%
   ii. There is nothing to do for this step. Please proceed to the next step.
   iii. Using Scenario Manager, create a new scenario named 3% Raise. Have the scenario work by changing the values of cells **A3** and **B7** to the values they contain now.

b. The second scenario involves raising the average salary for 4-year tenure track faculty to $100,000 in 2023.
   i. Enter text in the cells as indicated below:
      (1) **A3**: $100,000 Average Salary in 2023
      (2) **B7**: 0.00%
   ii. Use Goal Seek to find an annual raise rate to achieve a $0 gap with the target salary in cell **L8**. Have Goal Seek change the value of cell **B7** until it locates the correct value.
   iii. Using Scenario Manager, create a new scenario named $100,000 Average Salary. 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. Employees of 2-year and technical colleges tend to be paid less than employees of the 4-year colleges. Why might this be the case?
   b. Faculty salaries are noticeably higher at Marshall University and West Virginia University than the other 4-year colleges in West Virginia. Name at least two possible reasons for this.
   c. Other than job title and duties, name at least two other factors that might impact an employee's pay.
   d. Many higher education employees have expressed concern that West Virginia's pay rates make colleges here uncompetitive when recruiting faculty. Do you believe that this is a valid argument? Why or why not?
   e. Among 4-year colleges (including masters and doctoral institutions), is there a relationship between the number of students enrolled and salaries for professors? Why might this be (or not be) the case?

Grading Rubric

This assignment is worth 50 points. It will be graded by your instructor using this rubric, with partial credit awarded as appropriate:

<table>
<thead>
<tr>
<th>Steps 3a-c</th>
<th>1 points total</th>
<th>Steps 8a-b</th>
<th>6 points total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 4</td>
<td>2 points</td>
<td>Steps 9a-b</td>
<td>10 points total</td>
</tr>
<tr>
<td>Steps 5a-g</td>
<td>4 points total</td>
<td>Steps 10a-f</td>
<td>3 points total</td>
</tr>
<tr>
<td>Steps 6a-c</td>
<td>10 points total</td>
<td>Steps 11a-e (pick 4 of 5)</td>
<td>2.5 points each</td>
</tr>
<tr>
<td>Steps 9f</td>
<td>4 points total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The analysis questions in Steps 11a-e will 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>

Acknowledgments

The image in the introduction appears courtesy of the Southern Regional Education Board [2].
References
