Lab 2b
Tutorial on Microsoft Excel (II)

Lab Topics

Learn how to use various cell formatting options in Excel.
Apply three What-If Analyses in Excel: Goal Seek, Data Tables, and Scenario Summary
Present your data and results using charts and graphs.

Cell Formatting & Alignment

Prepare your worksheet following the steps below.

1. Continue working on the file you have from Lab 2a.
2. Enter a title for your worksheet in cell A1. Select cell range from A1 to F1. Go to Home → Alignment → Merge and Center to merge the cells and align the text to the center of the cell. Change the font size and color to make it clear.
3. Learn how to align text to different positions in a cell.
4. Use the border function under Home → Font → Borders to change the border style of the table.
5. Go to Home → Cells → Format → Format Cells to change the format of the cells to Number, Currency, etc. depending on the type of the data.

What-If Analysis

Using Excel, you can see how much a variable (output) changes its value in response to the change of another variable (input) without having to re-type or copy the formula for each input value, therefore answering the "what-if question". Excel has three built-in What-If analysis tools: 1) Goal Seek, 2) Data Table, and 3) Scenario Manager.

Goal Seek

The user sets a target output value and specifies the changeable input variables. Goal Seek will show what values the input variables need to be to get exactly the target output. Goal Seek can be viewed as a reverse process of the What-If analysis.

1. Right click on the "Base Case" tab and select "Move or Copy…". Make a copy of the worksheet and click "(move it the end)".
2. Right click on the new worksheet tab and select "Rename" to change the worksheet name to "Goal Seek".
3. Select the cell that contains the total future value (E15).
4. On the menu bar, click Data → What-If Analysis → Goal seek…. Set
   a) "**Set cell**" to the cell of total future value (E15),
   b) "**To value**" to "$1,000,000", and
   c) "**By changing cell**" to the cell of amount per period (B6).

   Click "OK" to see what happens to the results. Save your work.

Data Table (Optional. You can skip it and jump to Scenario Summary)

Data Tables are used to show how different values of one input variables affect the result of a formula. This is referred to as "sensitivity analysis." In this example, we will show how investing between 5 and 15 years will change the total future value of an investment (E15) by creating a one-variable data table.

1. Repeat Steps 1 in the "Goal Seek" section. Rename the new worksheet "Data Table".
2. Delete content in A19:B20 (A19, A20, B19, B20)
3. Type 5 in cell A21. Type the number 6 in A22. Use drag fill that you learned in the previous session to fill up to cell A31. The value of cell A31 should be 15.
4. Type "**=E15**" in cell **B20**.
5. Select the area A20:B31. Go to Data → Data Tools → What-If Analysis → Data Table. Since we arranged input values in a column, in "**column input cell**" either click on cell B4 or type B4.

Scenario Summary

Scenario Manager is another convenient way to do more than one what-if analyses at once. Unlike Data Table, Scenario Manager can have more than two input variables. In this example, you will learn how to do a Scenario Summary based on the information in Table 1 below. The analysis will show how Future Value (E15) changes in response to the changes of several other factors.

1. Click on "Base Case" sheet to set it as the active sheet.
2. On the menu bar, click Data → Data tools → What-If Analysis → Scenario Manager. Click "Add…" to add a new scenario.
3. Type "$6000 per year" in "Scenario Name", and "**B6**" in "**Changing cells**". Click "OK".
4. In the Scenario Values window, type "6000" and click "OK".
5. Click on "Add…" to create the other two scenarios:
   - "Longer investment" and
   - "Higher interest rate" based on the information in Table 1 below.
6. Click "Summary" and then set "**Result Cells**" to **E15**. Click "OK". A new worksheet named "Scenario Summary" will pop up automatically.
7. Change the table's heading to something more meaningful.

Name	Scenario	Changes
$6000 per year	What if I have only $6000 per year?	Set cell B6 to 6000
Longer investment	What if I invest for a longer time?	Set cell B4 to 20
Higher interest rate	What if the rate of Citibank is higher?	Set cells B10 to 0.02 (2%)

Table 1. Scenario Information

Drawing Charts

Creating and editing charts in Excel involve 4 major elements: Chart Type, Chart Data, Chart Options, and Chart Location. We will use a double-doughnut chart to compare the periodical investment amount and the return across the three banks.

1. Select the cell range D10:E12, which covers the investments and their returns from the three banks.
2. Select "Doughnut" as the chart type in the menu bar by clicking Insert → Charts → Other Charts.
3. Go Chart Tools → Design → Chart Layouts. Select layout 6.
4. Right click the chart and select "Select Data" from the menu. In the "Horizontal (Category) Axis Labels", select A10:A12. Click "OK". Now you can clearly see which color represents what bank.
5. Right click the chart and select "Select Data" again. In the "Legend Entries (Series)", select "Series 1" and click "Edit". Select D9 (Amount per period) as the Series name. In a similar way, select E9 for "Series 2". Click "OK".
6. Right click on one of the circles; select "Format Data Labels". Here you can customize various properties of the chart. Check "Series Name" and "Value" and uncheck "Percentage".
   - You may also change the chart font, color, label, and layout, etc. to suit your own need.
7. You can move the chart to a separate chart sheet or another existing sheet. To do this, right click on the chart and click on "move chart". To create a chart sheet, check "New Sheet" and type a title for it. You can also move the chart as an object to other existing worksheets in the file.

You can change the chart type even after it is created by right clicking it. As an exercise, try to create some other types of charts and think about the following questions:

- What are the most common types of chart you are likely to see in a business environment?
- How do they differ from each other in terms of presenting and emphasizing information?
- What business situation is each type most suitable for?

Due:

Save your Excel file and submit it on Blackboard before the next class.

Grading:

- You should have at least 4 sheets (5 if you move the chart to a new sheet)
- All tables and charts must have meaningful/clear titles, labels, etc. for easy reading. Deductions will be applied otherwise.
- See Tutorial 2a for a chance to earn extra credits.