

# Data Visualization: A Practical Approach for Absolute Beginners

## Lab 1 – Visual Literacy

### Overview

In this lab, you'll create a worksheet in Microsoft Excel that keeps tracks of basic expenses and then charts those expenses. You'll create a couple different chart types and modify the data that the chart is based on. You'll learn quickly that it's easy to visualize basic data, and that visualizations can help you quickly see differences in your underlying data.

### What You'll Need

To complete the labs, you will need the following:

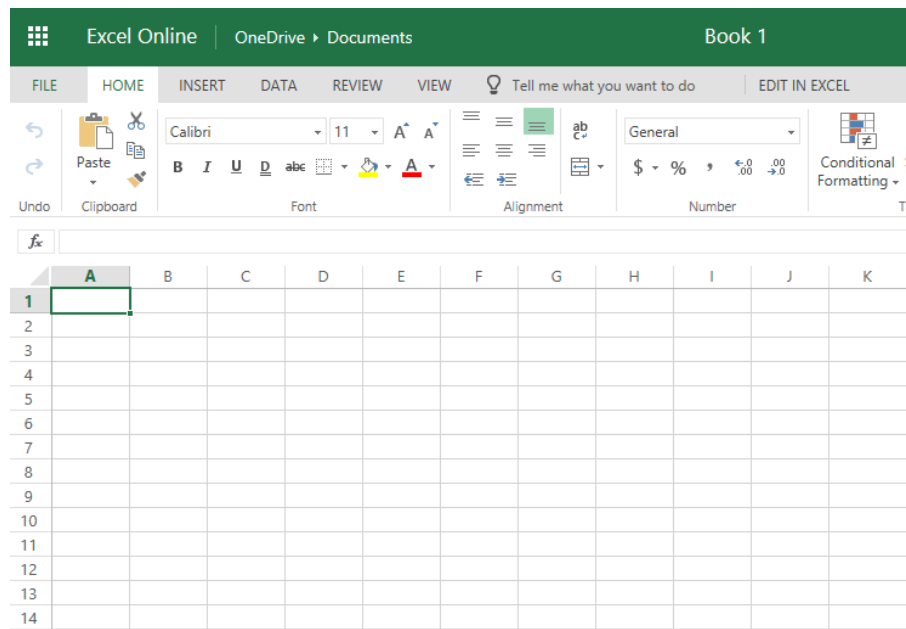
- A Windows, Linux, or Mac OS X computer with a web browser.
- A Microsoft account (for example a *hotmail.com*, *live.com*, or *outlook.com* account). If you do not already have a Microsoft account, sign up for one at <https://signup.live.com>.
- Microsoft Excel Online or Microsoft Excel for your desktop.
  - You can get Microsoft Office Online with your Microsoft account here: <https://products.office.com/en-us/office-online/documents-spreadsheets-presentations-office-online>
  - There are instructions in Module 0 for getting the trial version of Microsoft Office.

### Exercise 1: Create a Table of Data in Excel Online

In this exercise, you will create a workbook and then add some data in Microsoft Excel Online.

#### Create a workbook

1. In your web browser, navigate to <https://office.live.com/start/Excel.aspx>, and sign in using your Microsoft account credentials. You'll see Microsoft Excel Online.
2. Click **New Blank Workbook** to create your first Workbook. It will appear like this:



3. Add four column headers in row 1. Name them Place, Item, Price and Date
4. Add a few rows of data under your column headings to simulate some things you could imagine spending on things.
5. You can format your table using the toolbar in excel. Try bolding your column headings & formatting the price column as currency. Here's an example of a worksheet with this data:

	A	B	C	D
1	<b>Place</b>	<b>Item</b>	<b>Price</b>	<b>Date</b>
2	Grocery Store	Sandwich	\$ 5.00	2/19/2017
3	Movie Theater	Ticket	\$ 7.50	2/21/2017
4	Gas Station	Gasoline	\$ 22.00	2/21/2017
5	Grocery Store	Candy	\$ 6.00	2/22/2017
6				

## Exercise 2: Create a Chart in Excel Online

In this exercise, you will create your first chart in Excel Online.

### Chart your data

1. Complete exercise 1 above. You'll need a worksheet with some data to create a chart.
2. Select Columns B and C, and then click **Column** on the Insert tab of the Excel toolbar, and choose one of the 2-D Column chart types. Here's an image that shows the columns selected, and the Column icon selected:

FILE HOME INSERT DATA REVIEW VIEW Tell me what you want to do

Function Survey Table PivotTable Picture Shapes Office Add-ins

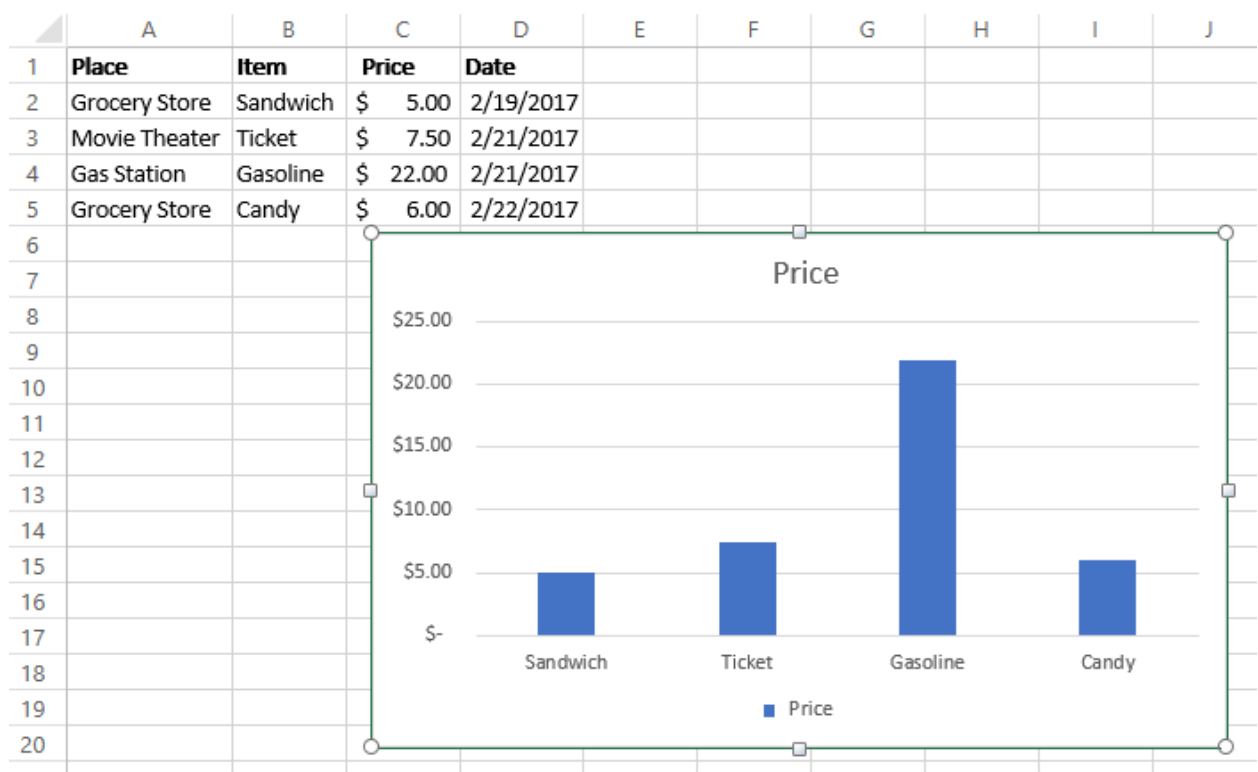
Functions Tables Illustrations Add-ins

Column Line Pie Bar Area

2-D Column

	A	B	C	D	E
1	Place	Item	Price	Date	
2	Grocery Store	Sandwich	\$ 5.00	2/19/2017	
3	Movie Theater	Ticket	\$ 7.50	2/21/2017	
4	Gas Station	Gasoline	\$ 22.00	2/21/2017	
5	Grocery Store	Candy	\$ 6.00	2/22/2017	
6					

- After you click the Column icon, your column chart will be automatically added to your worksheet. Notice how easy it is to see in the chart the prices of your items relative to each other!



### Exercise 3: Modify your data and chart

In this exercise, you will add data and modify your chart.

#### Change the chart type

- Complete exercise 1 and 2 above.

- Click on your chart and notice that the toolbar switches to options you can make to your chart.
- Change the chart type to a Bar chart: Click on **Bar**, and then one of the 2-D Bar chart options. Your bar chart should look like this:



### Change the data displayed in your chart

- Add a few extra rows of data to your worksheet below the data you already have. Simulate a few new expenses. You can create your own, or use this table:

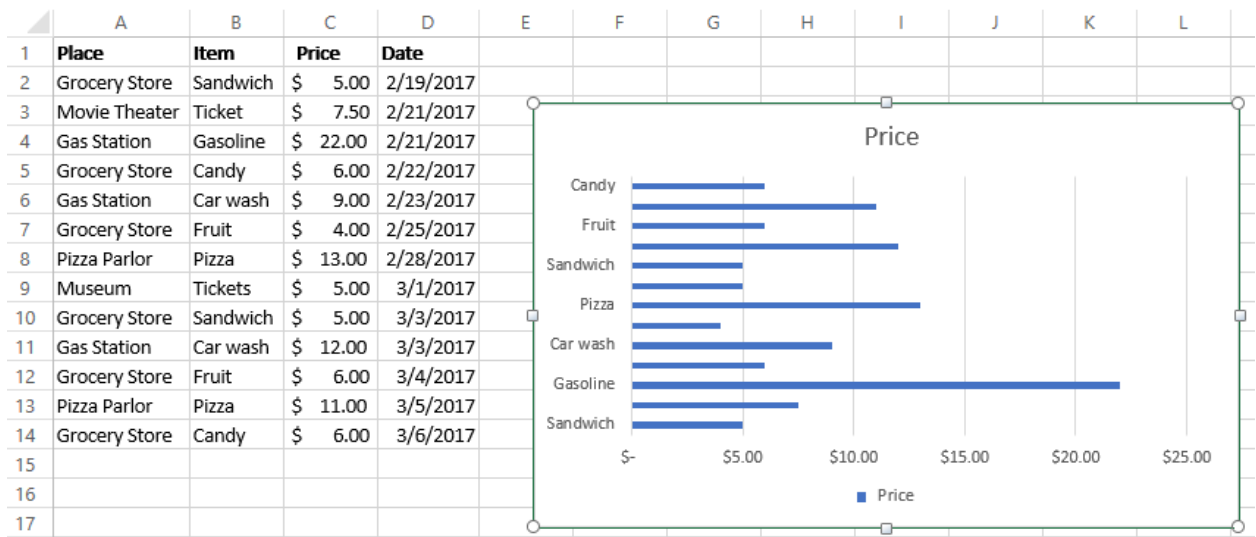
Gas Station	Car wash	\$9.00	2/23/2017
Grocery Store	Fruit	\$4.00	2/25/2017
Pizza Parlor	Pizza	\$13.00	2/28/2017
Museum	Tickets	\$5.00	3/1/2017
Grocery Store	Sandwich	\$5.00	3/3/2017
Gas Station	Car wash	\$12.00	3/3/2017
Grocery Store	Fruit	\$6.00	3/4/2017
Pizza Parlor	Pizza	\$11.00	3/5/2017
Grocery Store	Candy	\$6.00	3/6/2017

- Click on Select Data in the Chart menu and observe the formula that is specifying the data range in your chart. It may look like this: =Sheet1!\$B\$1:\$C\$5

In this example, Sheet1 is the name of the worksheet, and the chart is based on the Excel range B1:C5. The dollar signs are special notation so Excel knows to indicate a range of data.

- Change the data range to include all of your data. If your data goes to row 10, then change the range to go all the way to C10, like this: =Sheet1!\$B\$1:\$C\$10

Your chart should resemble the following that includes all the data in your worksheet:



## Sort the chart

We can improve the visualization by adding a sort order to the data. The chart will also sort the bars to bring order to the visualization.

1. Click **DATA** to bring up the data ribbon in Microsoft Excel.
2. Make sure the price column is selected, and then click **Sort Ascending** in the ribbon to sort your rows by price. The rows will sort by price, and the chart will also re-draw in sorted order.

3. Resize your chart so you can see the labels for each of your expenses. Your chart should resemble the following:

