Excel 2016 & GRAPHS

CSU Bakersfield

OVERALL AIM:

This session aims to teach you how to create basic graphs using data from different sources.

LESSON OBJECTIVES

At the end of the session, the participants will be able to:

- Describe the purpose of graphs
- Explain importance of graphing data
- Describe the 3 basic graph forms
- Identify the purpose of Pivot Charts
- Articulate the steps to create a graph
- Create charts associated with the basic graph forms
- Enhance charts for readability and meaningfulness
- Summarize the chart

GUIDING QUESTIONS

- When should I use a graph?
- What data can I graph?
- What types of graphs can I create?
- How can I make my graph more meaningful?

EXCEL 2016 & GRAPHS

Graphs are essentially the transformation of tabular data into visual diagrams. These diagram or graphs have the ability to show the relation between variable quantities of 2 or more categories. They uniquely qualified to show distributions, comparisons, proportionality, and summaries.

The first graph appeared in a paper written and published by Leonhard Euler in 1736. The graph was used to illustrate his point on the pitfalls of the bridges in Konigsberg.

For over 200 years, we have continued to use graphs to make sense of data for several reasons. First the eye has the ability to detect variations in color, shape, and pattern extremely quick. As a matter of fact, MIT neuroscientists find the brain can identify images seen for as little as 13 milliseconds (Trafton, Anne, MIT News, 01/16/2014). Another reason is that graphs convey information graphically, clearly, and effectively. Lastly, the old adage suggests that "a picture is worth a thousand words."

ANATOMY OF A GRAPH

Most graph contain 5 basic elements: X-axis, Y axis, Data Values, Chart Title, and a Legend. As a best practice, you should include axis labels.

X-Axis

The X-Axis is the horizontal line on your graph. Usually, it contains the category you are graphing, such as people, places, things, or time periods.

Y-Axis

The Y-Axis is the vertical line on your graph. It usually contains the scale information, such as the numbers, dollars, percentages, decimals, fractions, etc.

Data Values

The data values are the graphed calculations. They can be counts, sums, averages, etc.

Legend

The legend, also known as the key, helps you identify one category from another. It usually shows the color or pattern of the category and the category's name.

Chart Title

The Chart Title is like the name implies. It is the title for your graph. As a best practice, you should include sufficient information to describe your data. For example,

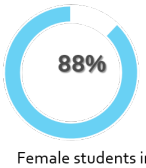
Grades vs Avg GPAs for
17/18 English 110 Students
(N=48)

3 BASIC GRAPH FORMS

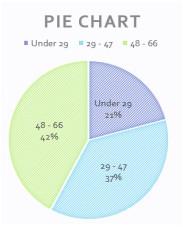
You can graph data using different types of graphs. Common types of graphs include pie, doughnut, column, bar, line, and pivot charts. Choosing the right graph type depends on your data and what you hope to visualize.

Parts of a Whole

Pie and Doughnut graphs shows the parts of a whole. These graphs work best with one category information. Common uses for these graphs are with data related to demographic information, such as gender, age groups, marital status, nationality, or ethnicity. They can also be used to show the distribution or proportionality of items, such as the % people living in a home, apartment, etc.

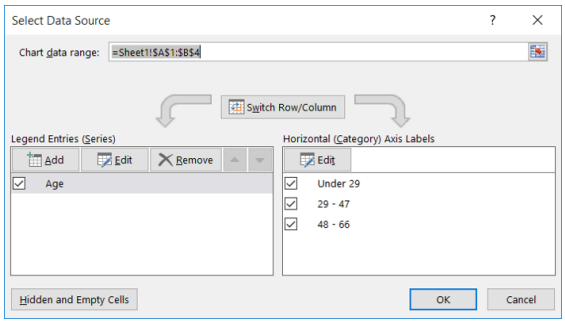


Female students in Typography 101



These graphs answer:

1. The majority of the population (participants, etc.) were ___?
2. What percentage of the population (participants, etc.) were _____?
3. How were the _____ distributed among the population of _____?

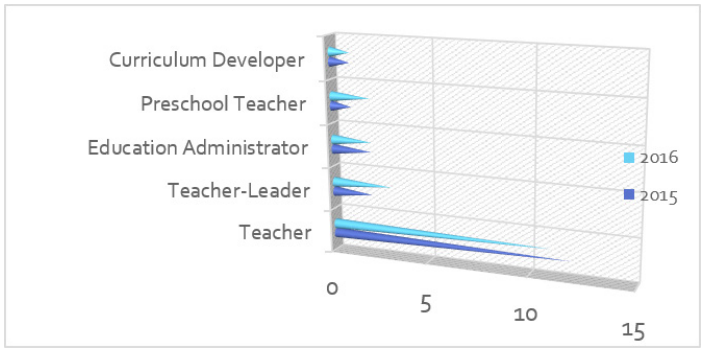


Comparison of Categories

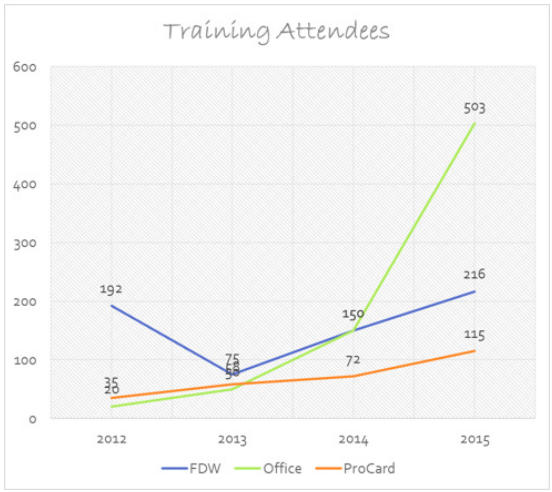
Line, Bar, and Column graphs show the relationship between one or more categories. They can help you identify patterns or trends based on comparisons.

Line and Column charts work well with data containing positive or negatives values. Whereas, Bar graphs are similar to the Column graphs, but they are better suited for categories with long names.

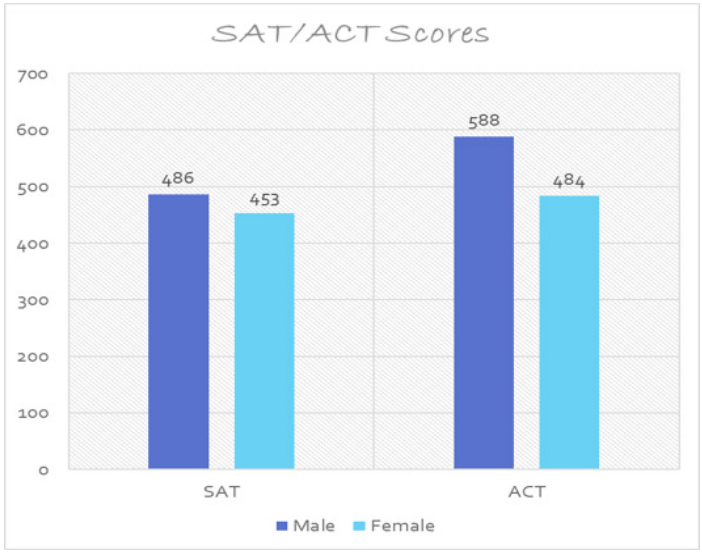
Line Chart



Bar Chart

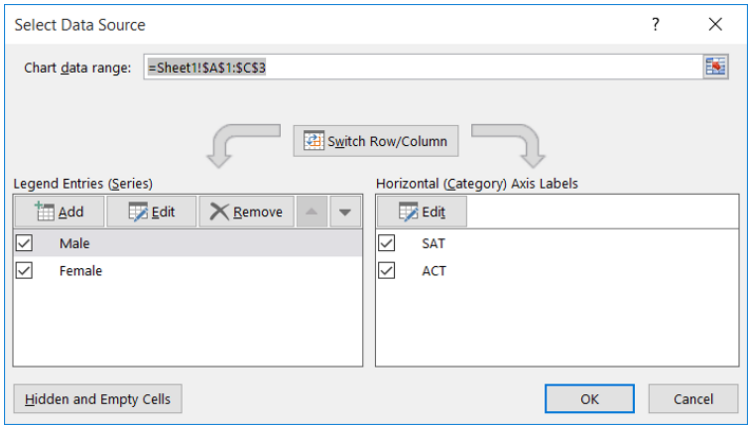


Column Chart



These graphs answer:

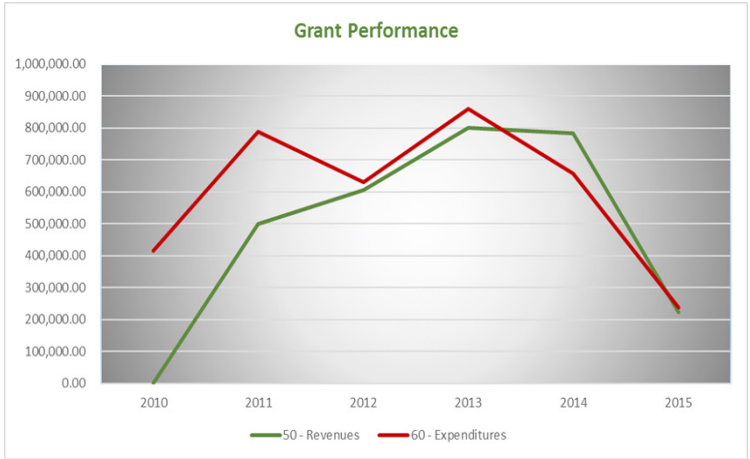
1. What is the relationship between the items?
2. Do the items move in the same or different?
3. How does one item affect others?



Trends over Times

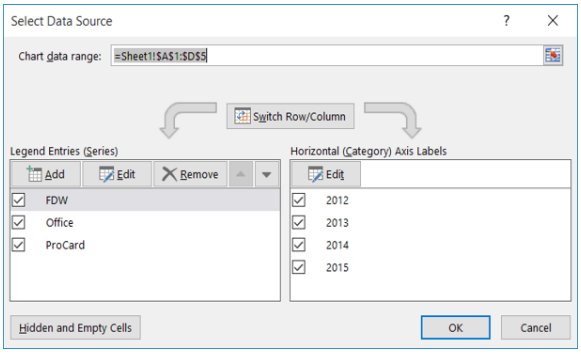
Line graphs show the relationship of one or more categories over time. It helps you identify trends and patterns more easily.

Line Chart



These graphs answer:

1. What is the relationship between the categories?
2. How does time affect the categories?
3. What trends or patterns does time reveal?



GRAPHING STEPS

Although numerous ways exist for creating graphs, one recommended way is as follows:

1. Prepare the data
2. Create chart
3. Enhance it
4. Summarize it

Prepare the data

Many times the data you have selected is not ready to be graphed. You may need to fill-in missing data or remove blank rows. If the data contains repeating rows, you will need to convert it to a pivot table.

Create the chart

When you create your chart, you will need to decide on a chart type. Most people use column charts so this step is a moot point for them. However, different charts types are more suitable than others depending on your data.

You don't have to make your mind up because it's easy to switch back and forth between the different types. Actually, it is better to experiment with the different charts and select the one that conveys the most meaning. If necessary, make a sketch of what you are envisioning.

Enhance the chart

Enhancing the chart allows you to add elements that will increase its readability. These elements can include chart titles, axis titles, and legends. You can also choose to show the data values. Additionally, you can apply a pre-defined design.

Summarize the chart

This step is equally important as the other steps and is often overlooked. In this step, you write out what the graphs describes, any patterns or trends noted, and information about the data set. You can include this information in a text box on your graph. The true value of summarizing the chart is that over time, you may not remember or the person who created the graph may no longer be available. Additionally, it helps you to avoid generalizing your information beyond the scope of the data.

3 steps for summarizing your data

1. State the chart type
2. Describe the scope of the data
3. Explain what the data shows.

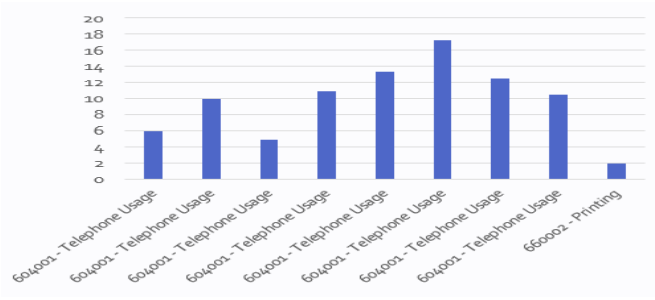
PIVOT CHARTS

If you data contains repeating rows, you will need to use a pivot chart.

Before

In the Before example, the amounts for the different rows are not added. When this information it is graphed it creates a column for each row of the data. That's not what we want.

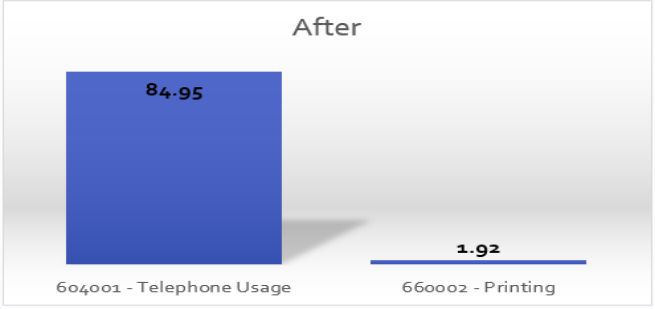
Business Unit	Fiscal Year	Period	Accounting Date	Acct Cat	Account Fdescr	Amount
BKCMP - CSU Bakersfield	2015	2	08/25/2015	604	604001 - Telephone Usage	5.95
BKCMP - CSU Bakersfield	2015	2	08/31/2015	604	604001 - Telephone Usage	9.94
BKCMP - CSU Bakersfield	2015	3	09/29/2015	604	604001 - Telephone Usage	4.82
BKCMP - CSU Bakersfield	2015	4	10/13/2015	604	604001 - Telephone Usage	10.89
BKCMP - CSU Bakersfield	2015	5	11/19/2015	604	604001 - Telephone Usage	13.25
BKCMP - CSU Bakersfield	2015	6	12/31/2015	604	604001 - Telephone Usage	17.24
BKCMP - CSU Bakersfield	2015	7	01/19/2016	604	604001 - Telephone Usage	12.44
BKCMP - CSU Bakersfield	2015	8	02/12/2016	604	604001 - Telephone Usage	10.42
BKCMP - CSU Bakersfield	2015	1	07/16/2015	660	660002 - Printing	1.92

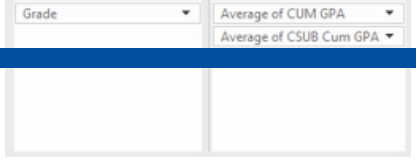


After

Conversely, the After example shows the rows added. The chart accuraely depicts columns for each row.

Account Fdescr	Amount
604001 - Telephone Usage	84.95
660002 - Printing	1.92
Grand Total	86.87





WEB RESOURCES

GCF LearnFree.org

GCF LearnFree.org is a subsidiary of Goodwill Industries. They offer free tutorials on numerous topics. The content includes step-by-step instruction as well as short videos. To learn more about Excel 2016, visit their website at:

https://edu.gcfglobal.org/en/excel2016/charts/1/

Google Search

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Excel 2016 chart basics

Youtube Search

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CSU Learn

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1. Click the magnifying glass icon
2. In the search box, type Excel 2016 pivot tables
3. Press Enter on your keyboard
4. Scroll through the topics
5. Click Select for the desired course
   The icon indicates video courses.
6. Click Start
7. Click Start Course
8. Your course will open in a new window.

NOTES

Learn more at:
Excel 2016

www.csub.edu/training/pgms/o2016P/Excel2016/index.html

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