

Table of Contents

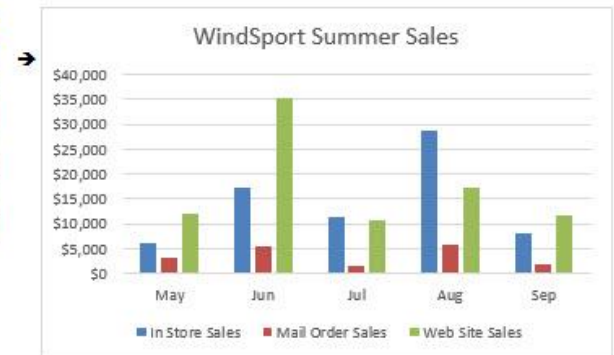
Charts	2
What do Charts do?	2
Types of Charts.....	2
Effective Charts	3
Example of Chart Junk (Can you find six examples of chart junk?)	3
Chart Elements:.....	4
Format Chart Elements with	5
Link Labels to Cells	5
BIG KEY: If the chart does not come out right	5
Chart Keyboards:.....	5
Column Charts:.....	6
Bar Charts.....	7
Pie Charts:	7
Stacked Column Charts:	8
Clustered Column Charts:	8
Histogram.....	9
Line Charts	10
X-Y Scatter	11
Break Even Chart.....	13
Bubble Chart	13
Combo Charts.....	14
Cumulative List of Keyboards Throughout Class:.....	15

Charts

- 1) Charts = Graph = Picture of quantitative (number) data.
- 2) Charts can be found in Insert Ribbon Tab.
- 3) Charts Often Come from Summarized Tables, such as this Crosstabulated tables:

→

WindSport Summer Sales				
Month	In Store Sales	Mail Order Sales	Web Site Sales	Total
May	\$6,206	\$3,275	\$12,016	\$21,497
Jun	\$17,351	\$5,328	\$35,371	\$58,050
Jul	\$11,360	\$1,555	\$10,822	\$23,737
Aug	\$28,722	\$5,913	\$17,243	\$51,878
Sep	\$7,995	\$1,913	\$11,764	\$21,672
Total	\$71,634	\$17,984	\$87,216	\$176,834



What do Charts do?

- 1) Visually portray quantitative data (number data).
- 2) Give a **quick impression** of the number data.
- 3) Create a picture that can communicate more quickly than just the numbers alone.
- 4) Charts allow you to see **patterns or trends** that you may not be able to see if you are looking at just the number data.
- 5) Allows you to make relative comparisons more quickly than if you are using a table

Types of Charts

- 1) **Column**: Use to compare differences across categories. Height of column conveys number.
- 2) **Bar**: Use to compare differences across categories. Length of bar conveys number.
- 3) **Stacked Column/Bar**: Good for displaying crosstabulation, emphasis on horizontal axis categories.
- 4) **Clustered Column/Bar**: Good for displaying crosstabulation, emphasis on legend categories.
- 5) **Histogram**: Chart used for counting numbers between a lower and upper limit. No gap between column indicates that there are no numbers between the upper and lower limit.
- 6) **Line**: Use to show trend for a number variable over a category such as time.
- 7) **Combination Chart**: Combine different chart types such as Column and Line.
- 8) **X-Y Scatter**: Used to show relationship between two number variables (x and y variables).
- 9) **Break Even Chart**: Specific type of X-Y Scatter Chart that shows the break-even cross over lines for Revenue and Costs.
- 10) **Bubble Chart**: Method of visualizing 3 variables in a 2-dimentional chart.

Effective Charts

- 1) Include number data AND labels for the number data.
- 2) No "Chart Junk".
 - Chart Junk means chart elements like:
 1. Unnecessary Repetition.
 2. Chart elements that do not contribute to the message.
 3. Chart elements that make the chart look busy:
 - i. Too many different colors
 - ii. Patterns that are distracting.
 - 3-D effects that are not necessary and can be misleading

Example of Chart Junk (Can you find six examples of chart junk?)

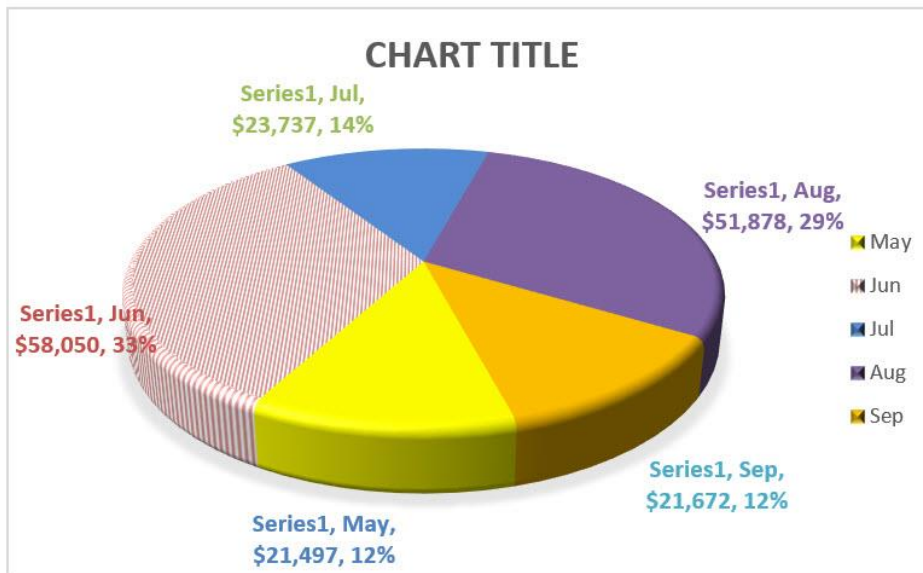
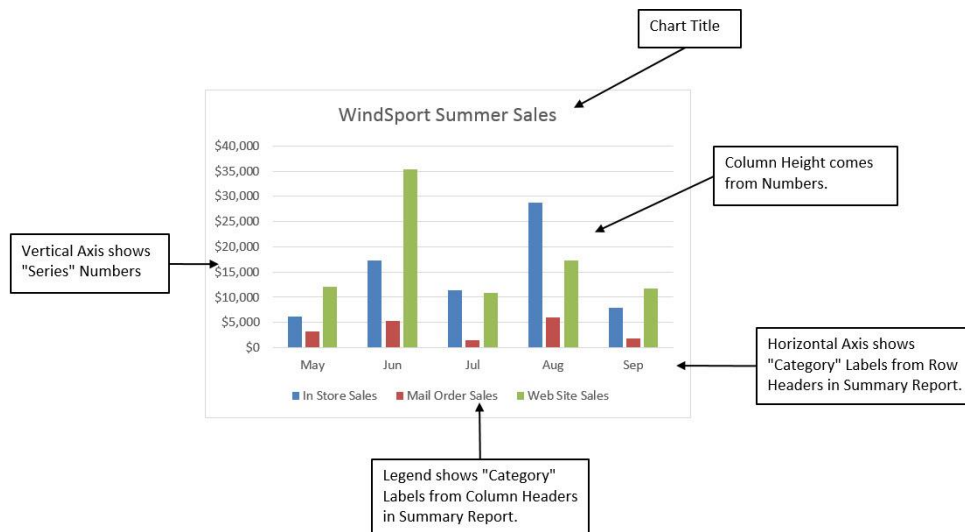


Chart Elements:

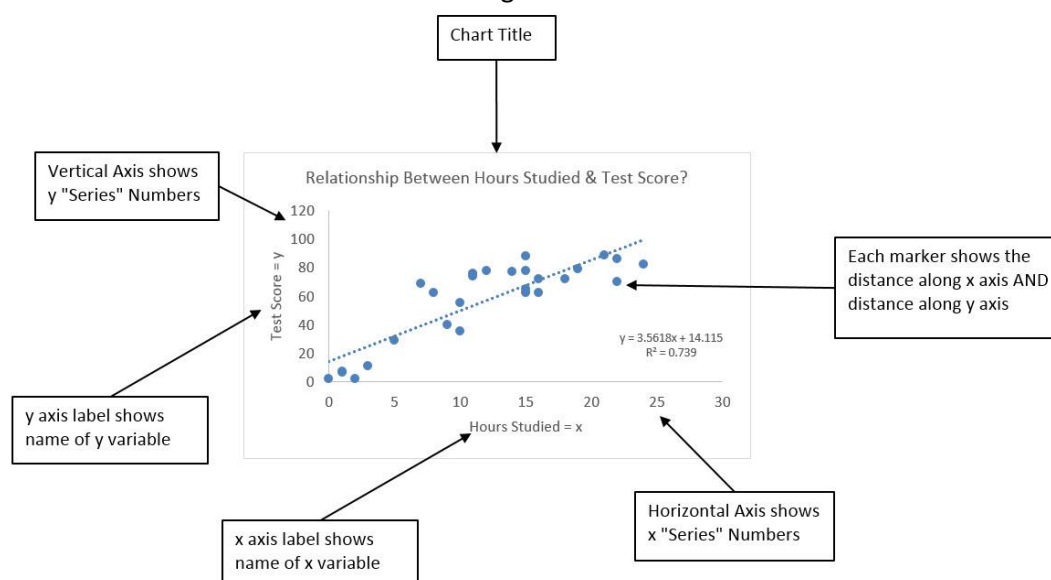
1) Chart Elements in Column Chart:

- Chart Title = informative and succinct
- "Series" = numbers in Chart
- "Category" = categories used such as "July", "Mail Order", or "0 up to 25" for a histogram chart.
- Vertical axis = numbers in a column chart
- Horizontal axis = categories in a column chart
- Legend = list of categories
- Column height conveys number



2) Chart Elements in X-Y Scatter Chart:

- Chart Title = informative and succinct
- "Series" = numbers in Chart
- Vertical axis = y numbers
- Horizontal axis = x numbers
- Axis labels = tell you what the number represents
- Markers = tell you the distance along x axis AND distance along y axis.
- Dotted line = estimated regression line.



Format Chart Elements with

- 1) Chart Elements Icon that shows up to the Right of the Chart.
- 2) Chart Styles Icon that shows up to the Right of the Chart.
- 3) Chart Filter Icon that shows up to the Right of the Chart (Be sure to click the Apply button).
- 4) Format Chart Element with Task Pane (keyboard: Ctrl + 1).

Link Labels to Cells

- 1) Click on Chart Title
- 2) Click in Formula Bar
- 3) Type equal sign
- 4) Click on cell with label
- 5) Hit Enter

BIG KEY: If the chart does not come out right

- 1) Chart Tools Design Ribbon Tab
- 2) Data Group, Select Data button
- 3) Series = Number
- 4) Category = Labels.

Chart Keyboards:

- 1) F11 = Create Chart on a new sheet
- 2) Alt + F11 = Create Chart on currently selected sheet.

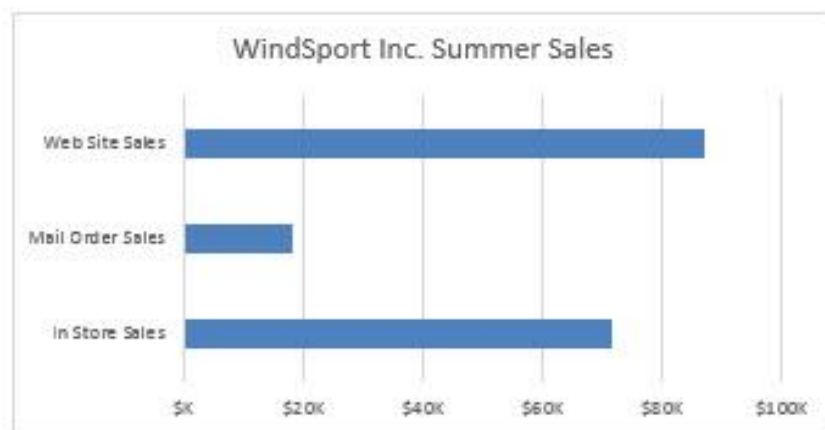
Column Charts:

- 3) Use to compare differences across categories.
- 4) Column charts are more effective at conveying differences between categories than pie charts.
- 5) Height of column conveys number.
- 6) Categories are listed on Horizontal Axis or in Legend.
- 7) Gaps in columns:
 - Gaps between columns indicate that the data on the horizontal axis are:
 1. “Categorical” or “Qualitative” Variables (like words or names)
 2. Discrete Numbers (like counting 1, 2, 3 when there are gaps between numbers)
 - No gap between columns (columns touching) indicate that the data on the horizontal axis are:
 1. Continuous Quantitative data.
 2. There are no gaps between numbers, like with an upper and lower limit used in a Histogram Chart.
- 8) Column Chart Example:



Bar Charts

- 1) Same as column charts except:
 - Length of bar conveys number
 - If page is wider than tall, bars can emphasize differences more forcefully.
 - Long category labels are displayed on a single line (not wrapped).
- 2) Bar Chart Example:



Pie Charts:

- 1) Traditionally pie charts are used to compare differences across categories or to compare parts to the whole, usually expressed as percentages.
- 2) It is more effective to use Column or Bar Charts than Pie Charts:
 - Research shows that column/bar charts convey relative differences more effectively than pie charts.
 - People perceive differences across categories more precisely with column/bar charts than with pie charts.
 - In recent years data analysts and business intelligence experts prefer to use column or bar charts rather than pie charts.

Stacked Column Charts:

- 1) Good for displaying crosstabulation.
- 2) **Emphasis is on comparing the categories listed in the horizontal axis**
- 3) If the number of row headers are equal or greater than to the number of column headers, row headers show up on horizontal axis and column headers in legend. If not, they are reversed. (You can switch this with the Switch button in the Chart Tools Design Ribbon Tab)

Clustered Column Charts:

- 1) Good for displaying crosstabulation.
- 2) **Emphasis is on comparing the categories listed in the legend**
- 3) If the number of row headers are equal or greater than to the number of column headers, row headers show up on horizontal axis and column headers in legend. If not, they are reversed. (You can switch this with the Switch button in the Chart Tools Design Ribbon Tab)

Sum of Revenue	SalesChannel			
Month	In Store Sales	Mail Order Sales	Web Site Sales	Grand Total
May	\$6,206	\$3,275	\$12,016	\$21,497
Jun	\$17,351	\$5,328	\$35,371	\$58,050
Jul	\$11,360	\$1,555	\$10,822	\$23,737
Aug	\$28,722	\$5,913	\$17,243	\$51,878
Sep	\$7,995	\$1,913	\$11,764	\$21,672
Grand Total	\$71,634	\$17,984	\$87,216	\$176,834

Clustered Column: Emphasize items in Legend:

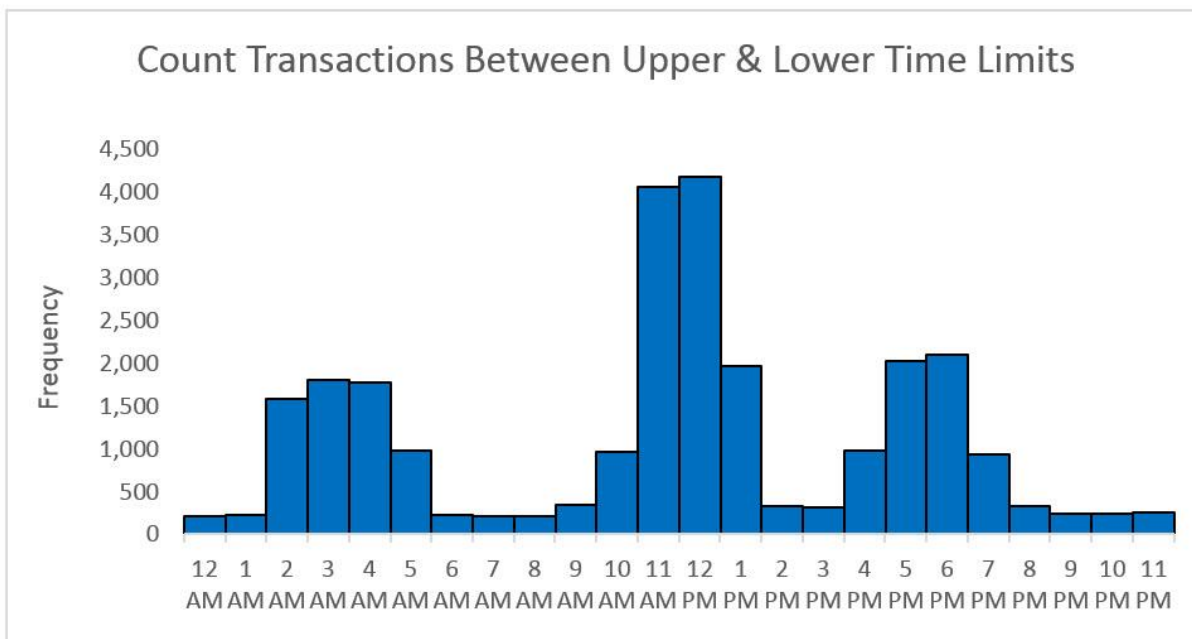
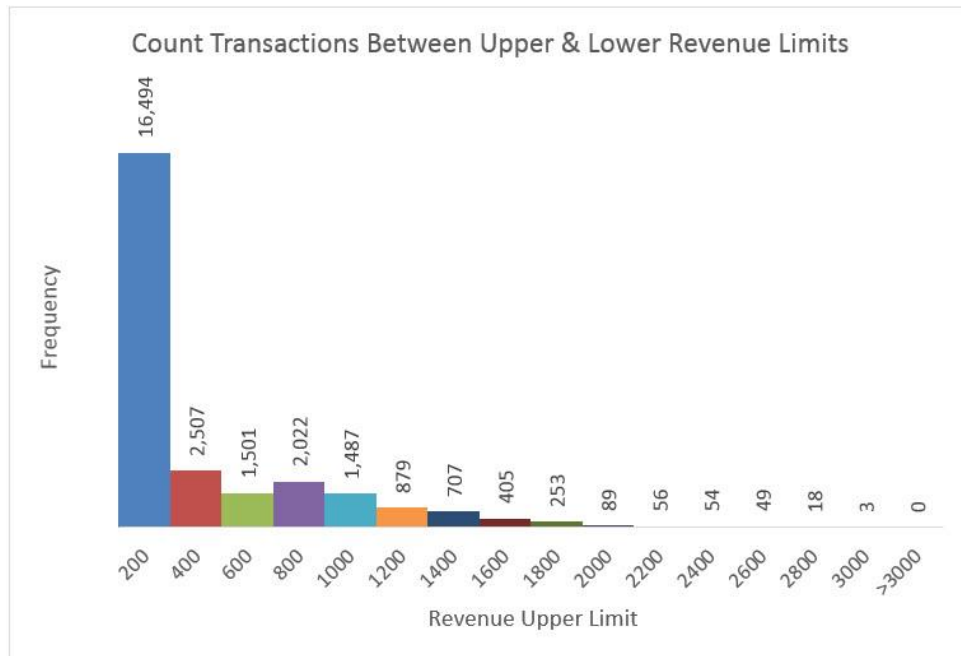


Stacked Column: Emphasize items in Horizontal Axis:



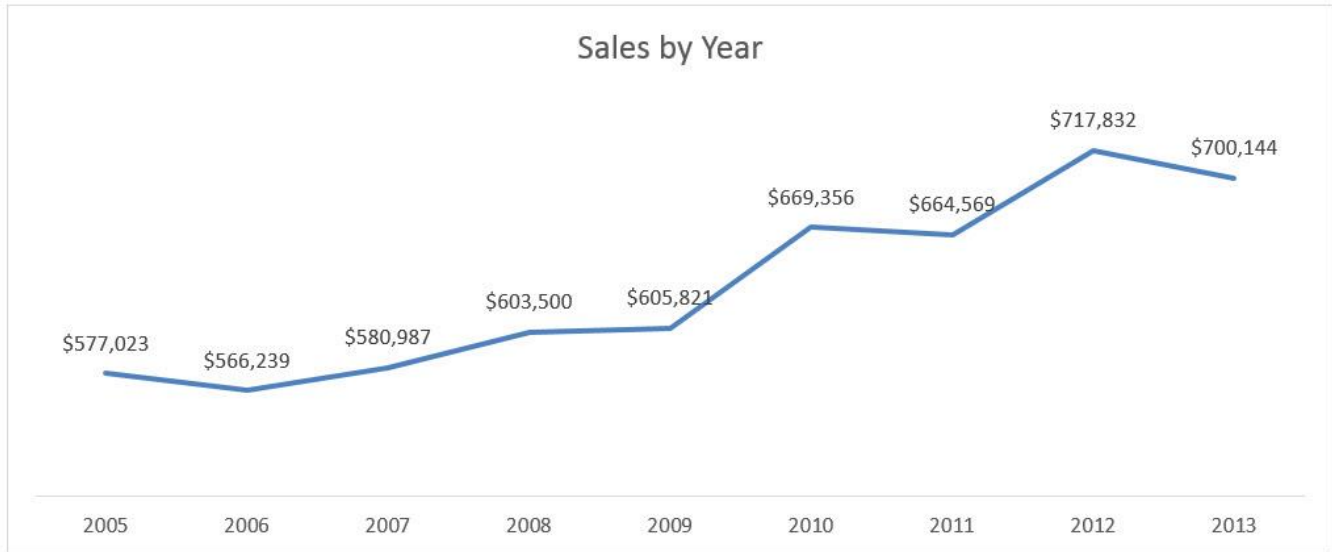
Histogram

- 1) Column or Bar with no gaps to count or add between upper and lower limit.
- 2) Examples of upper or lower limits:
 - \$0 up to \$200
 - 9 AM up to 10 AM
- 3) No gap between column indicates that there are no numbers between the upper and lower limit.
- 4) Columns are touching (no gap) to indicate that the variable is continuous.
- 5) Height of columns convey count or total
- 6) Order of classes is important to help reveal shape of data, or distribution of data.
- 7) Examples:



Line Charts

- 1) One number on vertical axis, category on horizontal axis.
- 2) Great for show trends over time.
 - Chart Time Series: Line Chart with time on horizontal axis and quantitative (number) variable on vertical axis.
- 3) Example:

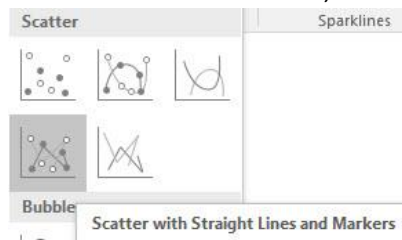


X-Y Scatter

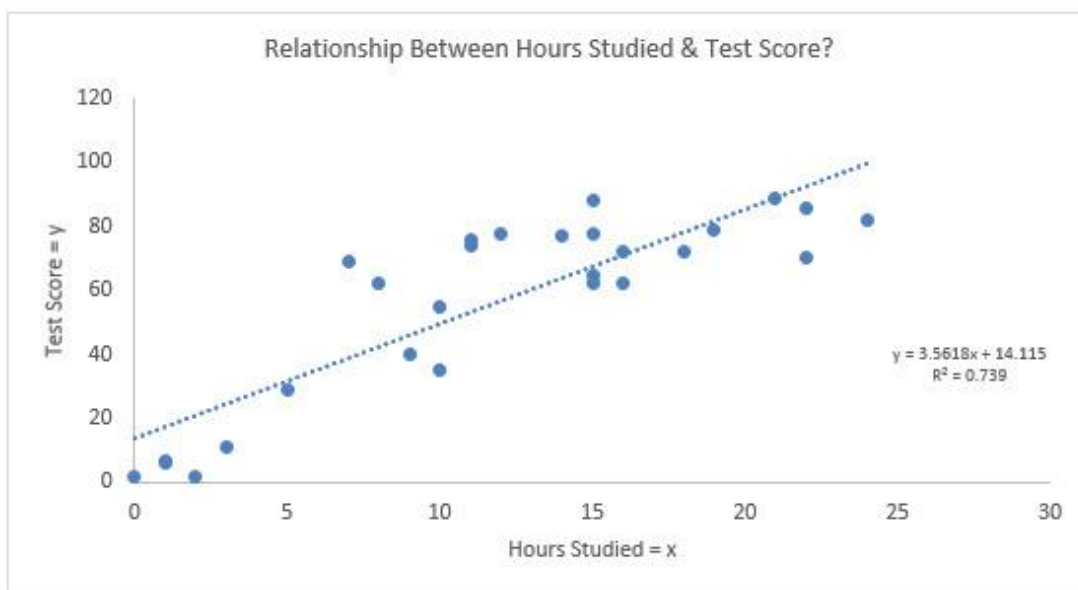
- 1) Chart that shows the relationship between two quantitative (number) variables
 - Example: Is there a relationship between study time for a test and score on test?
- 2) One number on vertical axis, one number on horizontal axis:
 - Horizontal Axis = Independent Variable = x .
 - Vertical Axis = Dependent Variable = $f(x) = y$
- 3) Always put X values in Left Most Column in the Table of Data
 - This helps the chart understand which variable is x and therefore should be on horizontal axis.
- 4) Add Regression Line and Equation and R Square:
 - Right-click plotted scatter markers
 - Add Trendline
 - Select Linear
 - Check check box for Show Equation
 - Check check box for R Square
- 5) Overcome a common mistake by Excel users:
 - Use X-Y Scatter Plot Chart, not Line Chart when plotting X-Y Scatter Data
- 6) For sample data use the Scatter option:



- 7) For a model created with formulas, like for a Break-Even Analysis use the

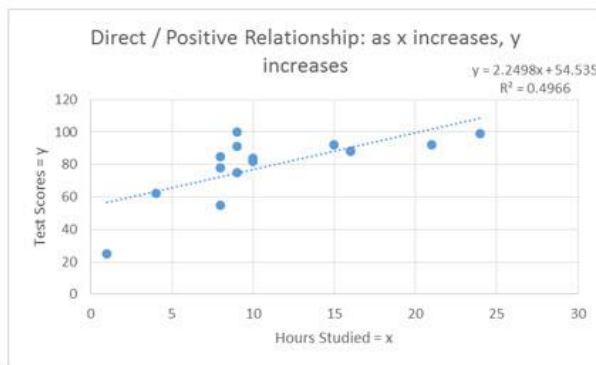


- 8) Example:

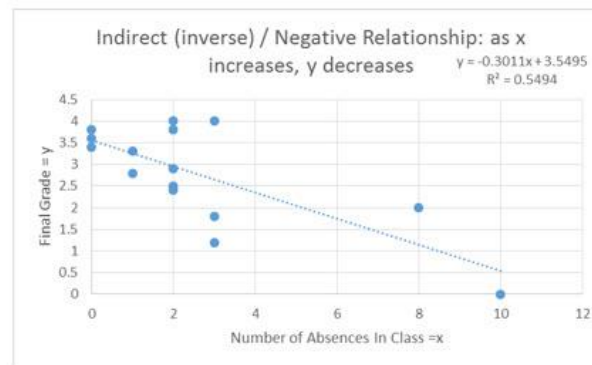


Types of Relationships

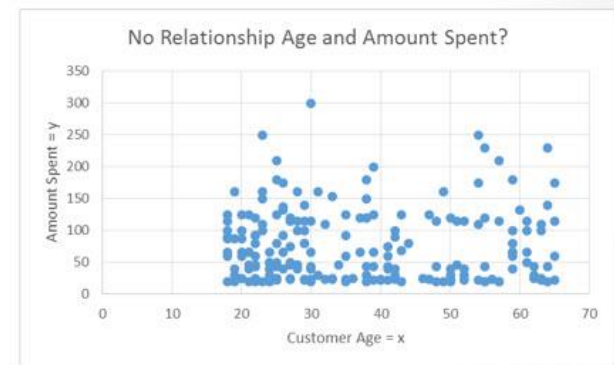
Investigate if there is a relationship: With the Scatter Chart, you look to see if there is a relationship.



Looks like “As x increases, y increases”. Direct or Positive Relationship



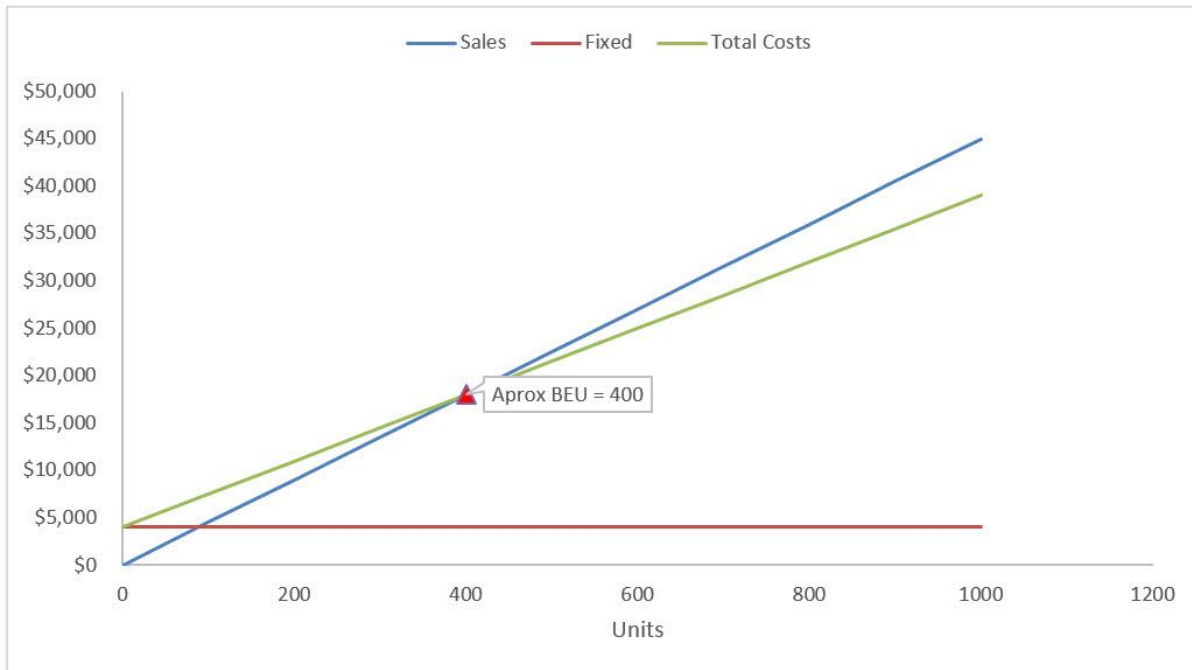
Looks like “As x increases, y decreases”. Inverse or Indirect or Negative Relationship



Looks like No Relationship

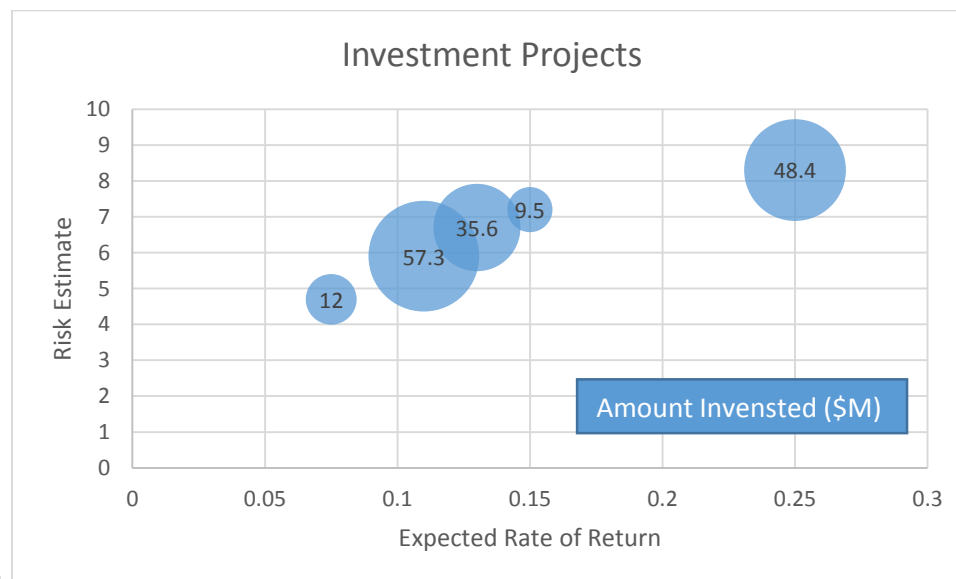
Break Even Chart

- 1) A special type of situation where the X and Y Data are created by a model built with formulas, like a Break Even Analysis.
- 2) Specific type of X-Y Scatter Chart that shows the break-even cross over lines for Revenue and Costs.
- 3) Example:



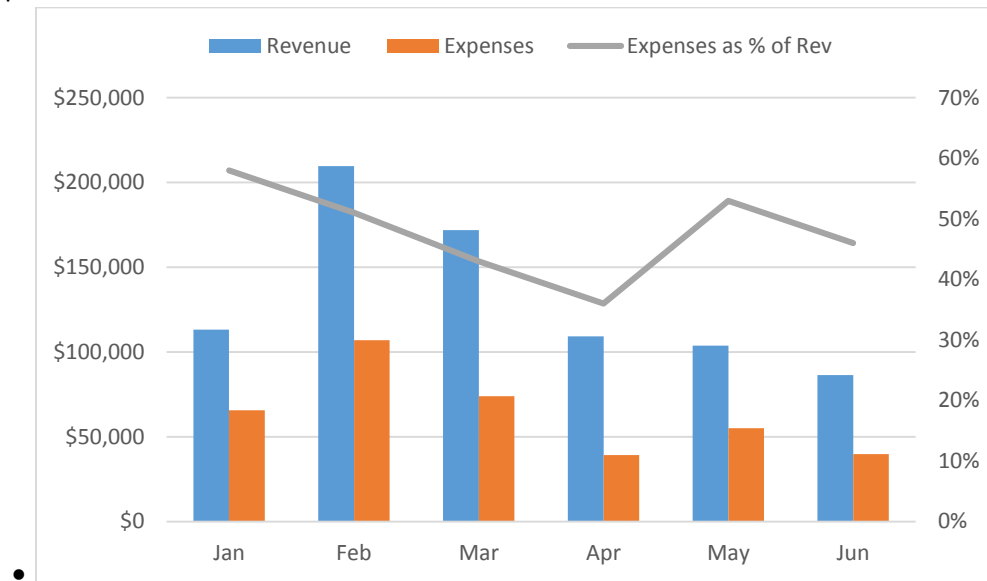
Bubble Chart

- 1) Method of visualizing 3 variables in a 2-dimentional chart
- 2) First column of table = horizontal axis
- 3) Second column in table = vertical axis
- 4) Third column = size of bubble (marker of the intersection of the horizontal and vertical axis numbers).
- 5) Example:



Combo Charts

- 1) Chart that combines different chart types, one on each vertical axis.
- 2) Example:



Cumulative List of Keyboards Throughout Class:

- 1) **Esc Key**:
 - i. Closes Backstage View (like Print Preview).
 - ii. Closes most dialog boxes.
 - iii. If you are in Edit mode in a Cell, Esc will revert back to what you had in the cell before you put the Cell in Edit mode.
- 2) **F2 Key** = Puts formula in Edit Mode and shows the rainbow colored Range Finder.
- 3) SUM Function: **Alt + =**
- 4) **Ctrl + Shift + Arrow** = Highlight column (Current Region).
- 5) **Ctrl + Backspace** = Jumps back to Active Cell
- 6) **Ctrl + Z** = Undo.
- 7) **Ctrl + Y** = Undo the Undo.
- 8) **Ctrl + C** = Copy.
- 9) **Ctrl + X** = Cut.
- 10) **Ctrl + V** = Paste.
- 11) **Ctrl + PageDown** = expose next sheet to right.
- 12) **Ctrl + PageUp** = expose next sheet to left.
- 13) **Ctrl + 1** = Format Cells dialog box, or in a chart it opens Format Chart Element Task Pane.
- 14) **Ctrl + Arrow**: jumps to the bottom of the "Current Region", which means it jumps to the last cell that has data, right before the first empty cell.
- 15) **Ctrl + Home** = Go to Cell A1.
- 16) **Ctrl + End** = Go to last cell used.
- 17) Alt keyboards are keys that you hit in succession. Alt keyboards are keyboards you can teach yourself by hitting the Alt key and looking at the screen tips.
 - i. Create PivotTable dialog box: **Alt, N, V**
 - ii. Page Setup dialog box: **Alt, P, S, P**
 - iii. Keyboard to open Sort dialog box: **Alt, D, S**
- 18) **ENTER** = When you are in Edit Mode in a Cell, it will put thing in cell and move selected cell DOWN.
- 19) **CTRL + ENTER** = When you are in Edit Mode in a Cell, it will put thing in cell and keep cell selected.
- 20) **TAB** = When you are in Edit Mode in a Cell, it will put thing in cell and move selected cell RIGHT.
- 21) **SHIFT + ENTER** = When you are in Edit Mode in a Cell, it will put thing in cell and move selected cell UP.
- 22) **SHIFT + TAB** = When you are in Edit Mode in a Cell, it will put thing in cell and move selected cell LEFT.
- 23) **Ctrl + T** = Create Excel Table (with dynamic ranges) from a Proper Data Set.
 - i. Keyboard to name Excel Table: **Alt, J, T, A**
 - ii. **Tab** = Enter Raw Data into an Excel Table.
- 24) **Ctrl + Shift + ~ (`)** = General Number Formatting Keyboard.
- 25) **Ctrl + ;** = Keyboard for hardcoding today's date.
- 26) **Ctrl + Shift + ;** = Keyboard for hardcoding current time.
- 27) **Arrow Key** = If you are making a formula, Arrow key will "hunt" for Cell Reference.
- 28) **Ctrl + B** = Bold the Font
- 29) **Ctrl + * (on Number Pad)** or **Ctrl + Shift + 8** = Highlight Current Table.
- 30) **Alt + Enter** = Add Manual Line Break (Word Wrap)
- 31) **Ctrl + P** = Print dialog Backstage View and Print Preview
- 32) **F4 Key** = If you are in Edit mode while making a formula AND your cursor is touching a particular Cell Reference, F4 key will toggle through the different Cell References:
 - i. **A1** = Relative
 - ii. **\$A\$1** = Absolute or "Locked"

- iii. **A\$1** = Mixed with Row Locked (Relative as you copy across the columns AND Locked as you copy down the rows)
 - iv. **\$A1** = Mixed with Column Locked (Relative as you copy down the rows AND Locked as you across the columns)
- 33) **Ctrl + Shift + 4** = Apply Currency Number Formatting
- 34) **Tab key** = When you are selecting a Function from the Function Drop-down list, you can select the function that is highlighted in blue by using the Tab key.
- 35) **F9 Key** = To evaluate just a single part of formula while you are in edit mode, highlight part of formula and hit the F9 key.
- i. If you are creating an Array Constant in your formula: Hit F9.
 - ii. If you are evaluating the formula element just to see what that part of the formula looks like,
REMEMBER: to Undo with Ctrl + Z.
- 36) **Alt, E, A, A** = Clear All (Content and Formatting)
- 37) Evaluate Formula One Step at a Time Keyboard: **Alt, M, V**
- 38) Keyboard to open Sort dialog box: **Alt, D, S**
- 39) **Ctrl + Shift + L** = Filter (or **Alt, D, F, F**) = Toggle key for Filter Drop-down Arrows
- 40) **Ctrl + N** = Open New File
- 41) **F12** = Save As (Change File Name, Location, File Type)
- 42) Import Excel Table into Power Query Editor: **Alt, A, P, T**
- 43) **Ctrl + 1 (When Chart element in selected)**: Open Task Pane for Chart Element
- 44) **F4 Key** = If you are in Edit mode while making a formula AND your cursor is touching a particular Cell Reference, F4 key will toggle through the different Cell References:
- i. **A1** = Relative
 - ii. **\$A\$1** = Absolute or "Locked"
 - iii. **A\$1** = Mixed with Row Locked (Relative as you copy across the columns AND Locked as you copy down the rows)
 - iv. **\$A1** = Mixed with Column Locked (Relative as you copy down the rows AND Locked as you across the columns)
- 45) Keyboard to open Scenario Manager = **Alt, T, E**
- 46) **Ctrl + Tab** = Toggle between Excel Workbook File Windows
- 47) **Ctrl + Shift + F3** = Create Names From Selection
- 48) **Ctrl + F3** = open Name Manager
- 49) **F3** = Paste Name or List of Names
- 50) **Alt + F4** = Close Active Window
- 51) **Window Key + Up Arrow** = Maximize Active Window
- 52) **Ctrl + Shift + Enter** = Keystroke to enter Array Formulas that: 1) have a function argument that requires it, or 2) whether or not you are entering the Resultant Array into multiple cells simultaneously.
- 53) **Ctrl + /** = Highlight current Array

New In This Video:

- 54) F11 = Create Chart on a new sheet
- 55) Alt + F11 = Create Chart on currently selected sheet.