CPSC203 – Introduction to Problem Solving and Using Application Software
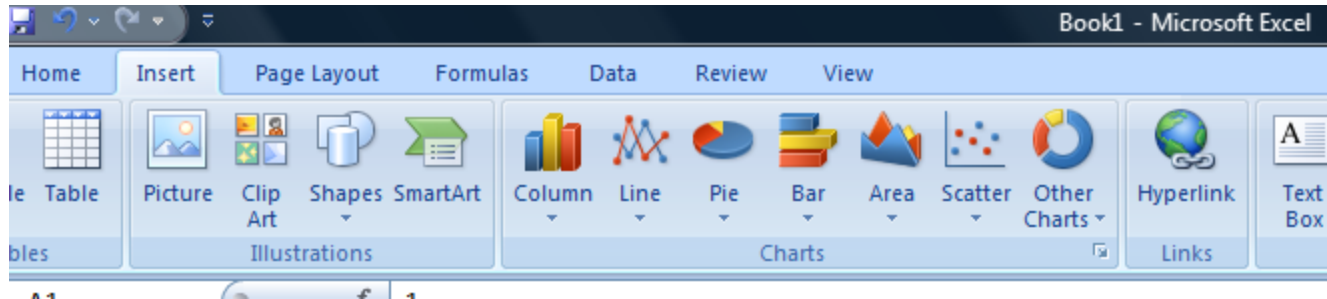
Winter 2010

Tutorial 8: Mehrdad Nurolahzade

Introduction

- Creating a chart using Chart Wizard.

- Customizing a chart.

- Good chart design principles.

Chart Wizard (1)

- Step 1: In the top menu bar, select **Insert**. You should now see a group of icons labeled **Charts**.

- Step 2: Select the data to be included in the chart.

Chart Wizard (2)

- Step 3: Select a chart type. A drop down menu should appear showing the different types of charts available. Select one of the types available.

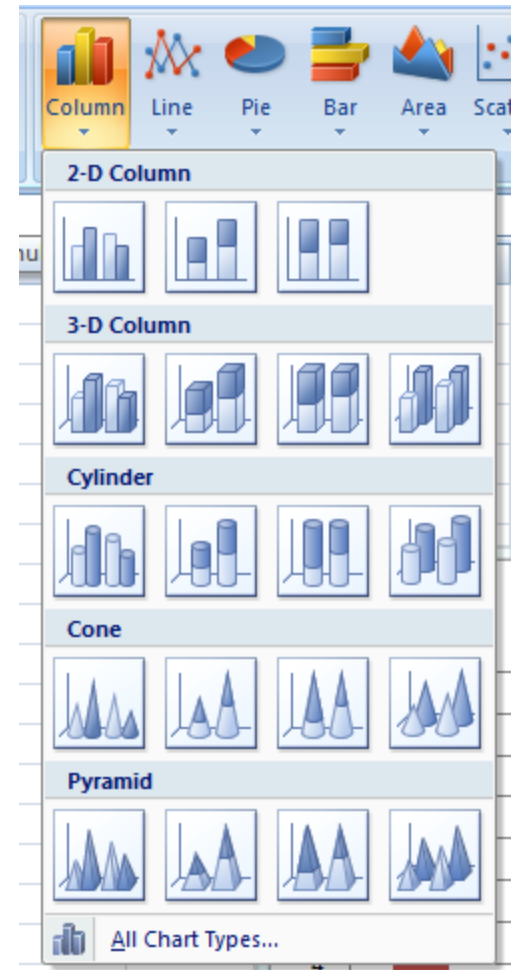# Chart Wizard (3)

- Step 4: A new chart should have been added to your current worksheet. You can move the new chart by clicking-and-dragging it to a new location in the worksheet.
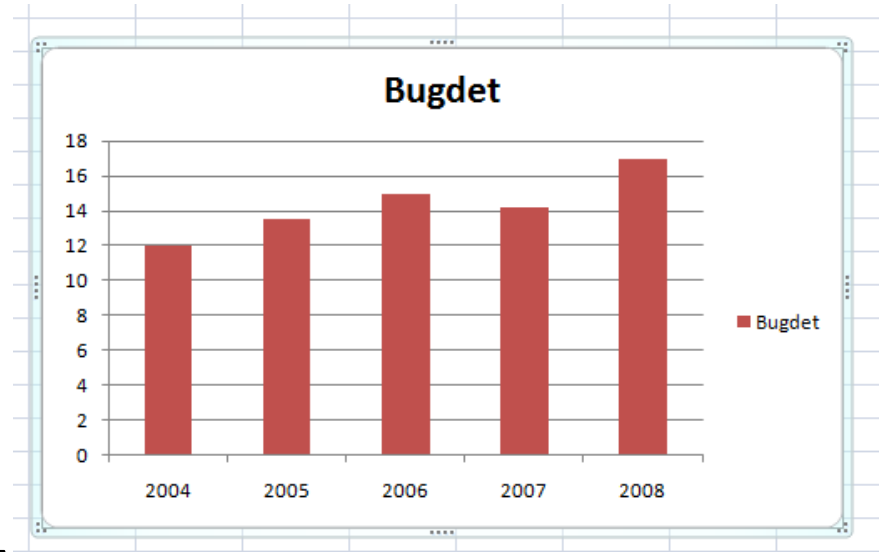
Chart Wizard (4)

- Step 5: Notice that new contextual menus have appeared under the main toolbar. These contextual menus allows for customization to be performed to the chart.
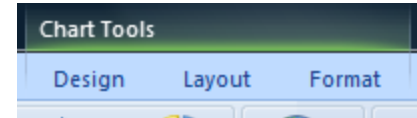
Chart Types (1)

	A	B	C	D	E
1		**Q1**	**Q2**	**Q3**	**Q4**
2	**Food**	600	650	550	700
3	**Rent**	800	700	750	900
4	**Transportation**	200	150	100	200
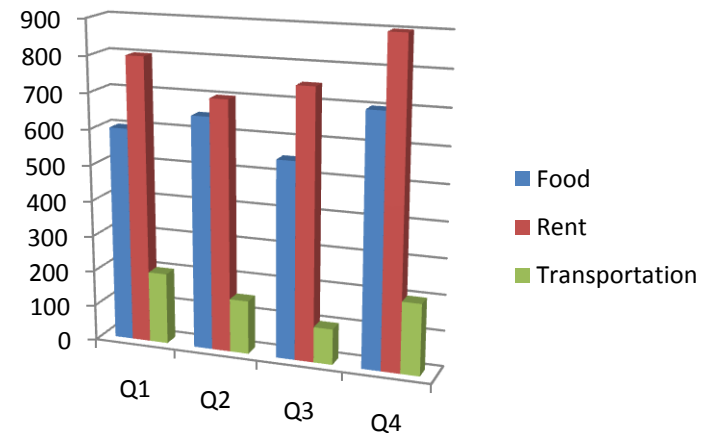
Chart Types (2)
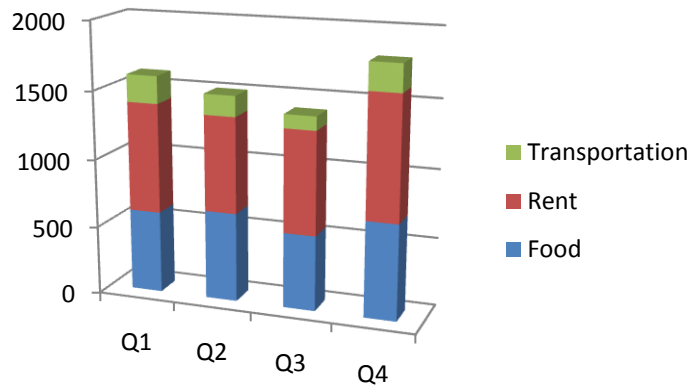
Customizing a Chart (1)

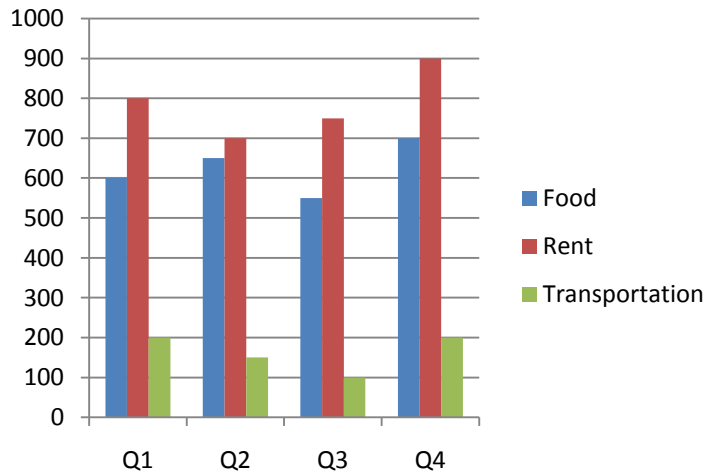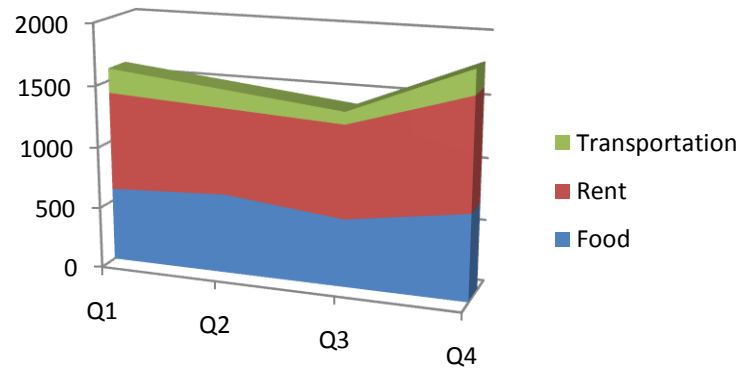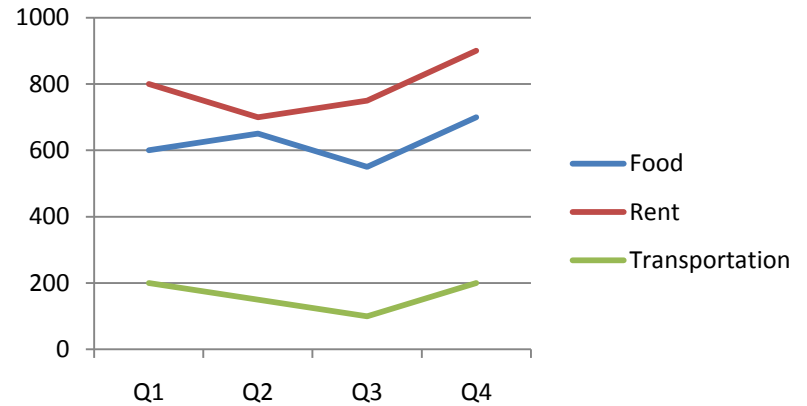- Chart elements:
  1. chart area
  2. plot area
  3. data points
  4. axis
  5. legend
  6. title
  7. data label

Customizing a Chart (2)

- Step 1: Select the chart.

- Step 2a: The **Chart Tools** menu is added to the menu bar with the three items: **Design**, **Layout**, and **Format**; Or

- Step 2b: Right-click a chart element and select **Format <element name>** from the drop down menu.

Chart Design Principals

- 6 principals of visual display of information according to Edward Tufte:
  - Maximize Data Ink Ratio
  - Minimize Chart Junk
  - Use Small Multiples to Deal with Complexity
  - Data Density
  - Multiple Use
  - Aesthetics

Chart Design Principals: Maximize Data Ink Ratio

- ## Data Ink Ratio = (data ink)/(total ink in the plot)
  - ## Ink that directly conveys information about data points

The length of an organism at the time of reproduction in relation to the generation time, plotted on a logarithmic scale.
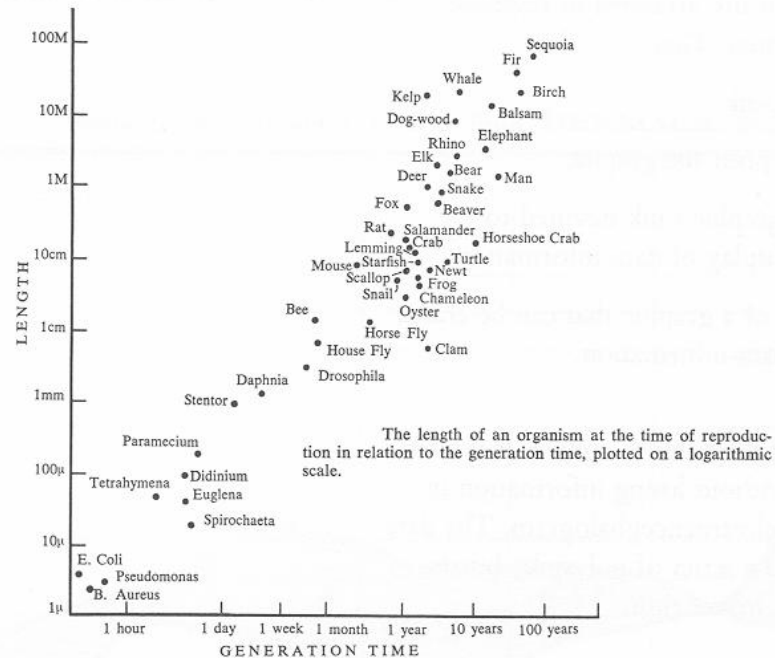
Chart Design Principals: Minimize Chart Junk

- All additional glyphs, bells, whistles, 3D effects that do not directly convey data information.
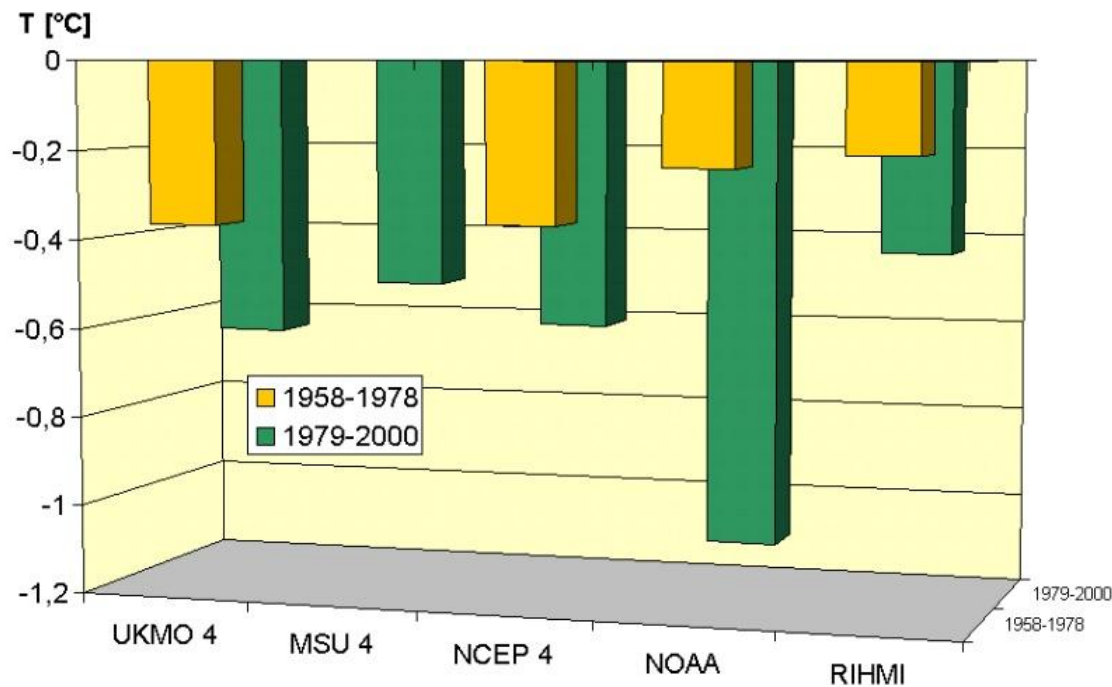
Chart Design Principals: Use Small Multiples to Deal with Complexity

- Create a basis for comparison in large or complex data sets by creating simple diagrams with common axes or common design elements.
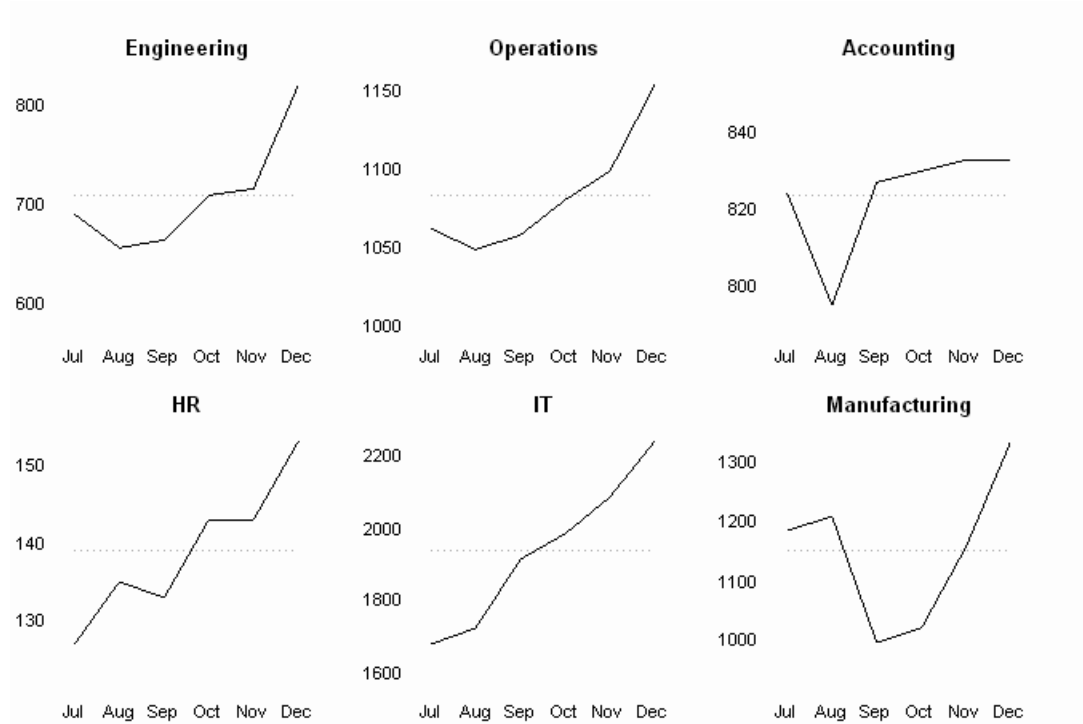
Chart Design Principals: Data Density

- Very large data sets or very complex data sets require us to find visual techniques that maintain the content of the data, but allow us to get a "gestalt" view that can not be obtained from reading a massive data table.

By Population Density

COUNTY WON BY … | KERRY | BUSH
Urban
Suburban
Rural
Unpopulated*

This map removes mostly uninhabited areas, revealing Mr. Bush's suburban and rural support in the East and South.

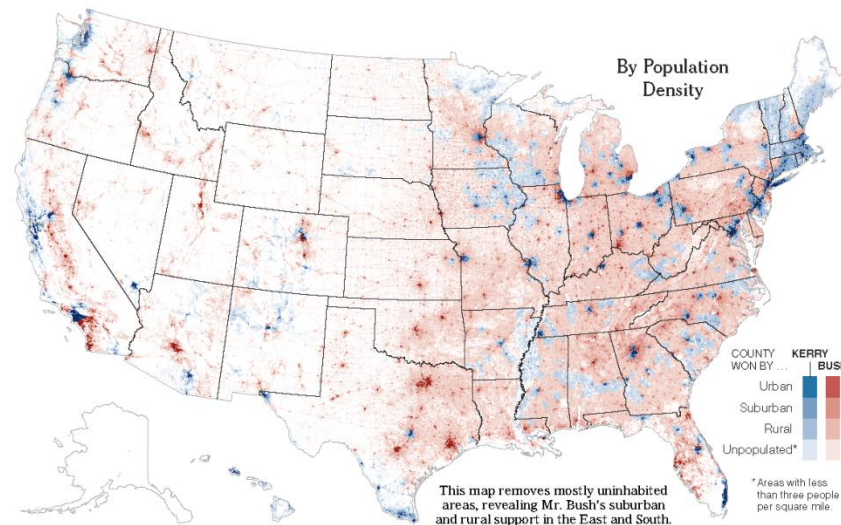* Areas with less than three people per square mile.

Chart Design Principals: Multiple Use

- If possible put visual elements to multiple uses. Data points, could also be numbered reflecting data values. Data glyphs could reflect relationships between the data attributes in frame, and other data attributes.
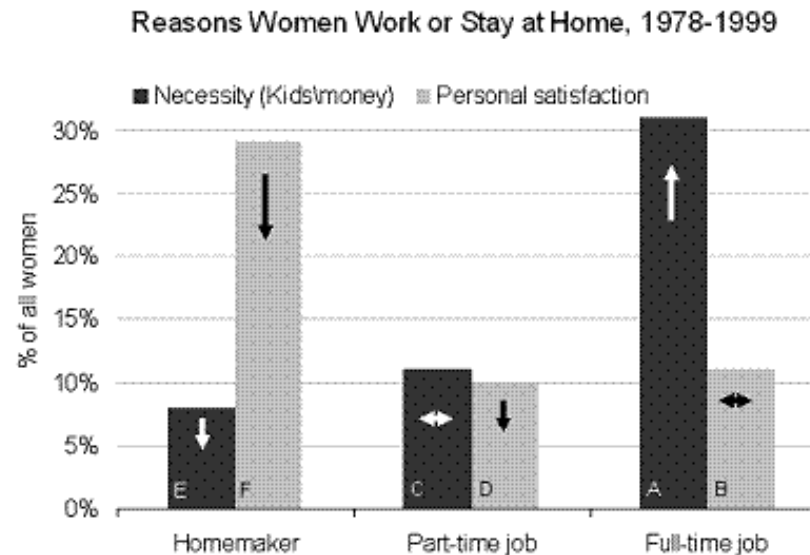

Reasons Women Work or Stay at Home, 1978-1999

Chart Design Principals: Aesthetics

- The same principles that make various art constructs effective apply also to visualization of data.

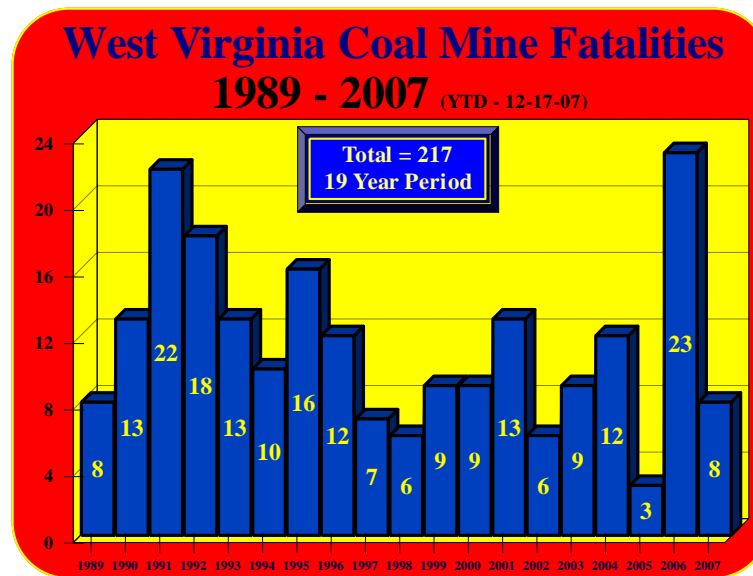West Virginia Coal Mine Fatalities 1989 - 2007 (YTD - 12-17-07)

Chart Design Principals (2)

Stephen Few's 13 Mistakes in Dashboard Design:

1. Exceeding the Boundaries of a Single Screen
2. Supplying Inadequate Context for the Data
3. Displaying Excessive Detail or Precision
4. Choosing a Deficient Measure
5. Choosing an Inappropriate Display Media
6. Introducing Meaningless Variety
7. Using Poorly Designed Display Media
8. Encoding Quantitative Data Inaccurately
9. Arranging the Data Poorly
10. Highlighting Important Data Ineffectively or Not at All
11. Cluttering the Display with Useless Decoration
12. Misusing or Overusing Color
13. Designing an Unattractive Visual Display