CMPT 155: Computer Applications for Life Sciences

Lecture 8: Charts

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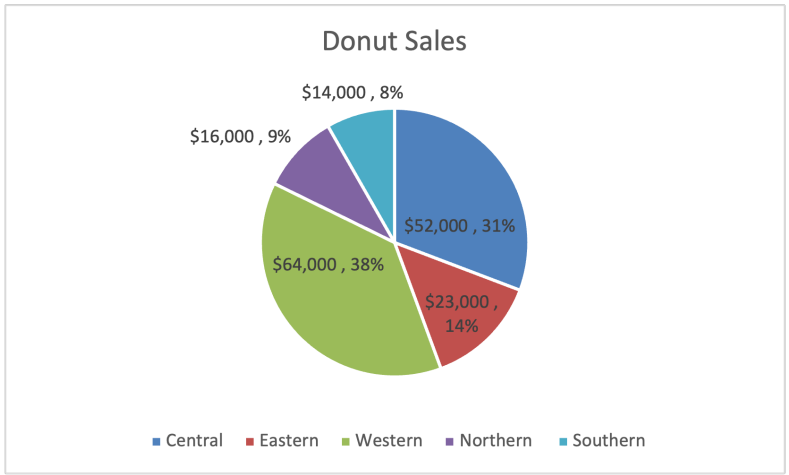
Presentation Outline

Creating Charts

- Download *SimpleChart.xlsx* from moodle
- To create a charge select the range of cells including column and row headers (A1:B7)
- On the ribbon go to View → Charts, and select the appropriate chart!
  - whats the most appropriate chart for this dataset?



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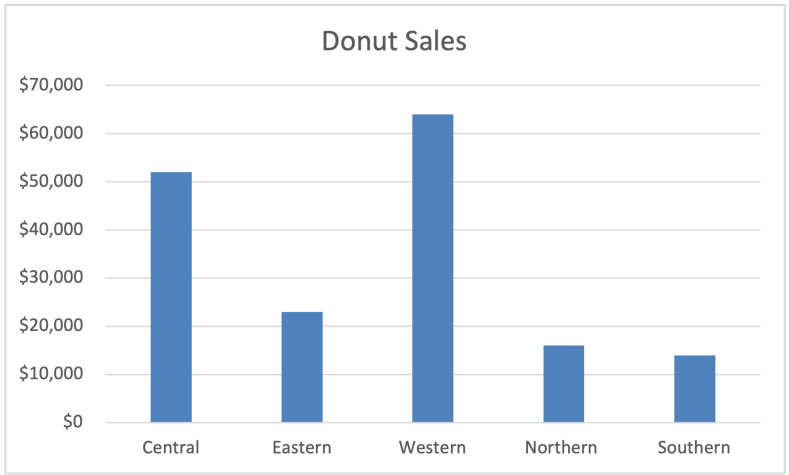

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Figure: Pie and Bar chart representations of Donut Sales

Changing Chart Types

- You can change the chart type, by
  1. right (Ctrl) clicking the chart
  2. selecting "Change Chart Type"
  3. clicking on appropriate chart type for the data selection
- What kinds of charts are appropriate for *comparing data?*

Chart Design Ribbon

The Chart Design tab in the Top Ribbon can be used to add and change chart elements.

- Add Chart Element
  - add individual elements (e.g., titles, legends, etc.)
- Quick Layout
  - modify current chart to have some preset chart elements
- Change Colors
  - Change the color palet of the chart

Chart Design Ribbon (continued)

- Switch Row/Column
  - Switches whether Excel will define a series using Rows or Columns.
  - Used to look at different groupings of data.
- Select data
  - Specifies the exact cells referenced for a series, or chart element
  - Used to correct data selection when excel's automatic methods fail.
- Change Chart Type
  - Changes the type of chart
  - Used to explore different visualization options.
- Move Chart
  - Moves chart between sheets
  - Used to collect charts in a display sheet.

Printing Charts

Charts can be printed by

1. Going to the View tab
2. Selecting the "Page Layout" button to enter print view
3. arranging/resizing charts to fit on the page.

Alternatively, charts can be incorporated into MS Word documents as Excel objects, and as still images (e.g., .png, .jpeg) in non-microsoft formats.

Charts with Multiple Series

A chart series can be described as a row or column of data. Chart series can be customized under "Select Data". Lets try looking at charts with multiple series by:

1. Downloading *MultipleSeries.xlsx*
2. Selecting all the data
3. Creating a 3D Chart

What groupings do we see?

- Use "Switch Row/Column" to change groupings
- Use "Select Data" to customize what/how data is displayed in each series.

Non-continuous Chart Ranges

- We can hold Ctrl (Cmd) to create a non-continuous selection
- This can be used to exclude data points in a graph
- I would suggest organizing data first instead of doing this.

Changing the Series' Order

In the "Select Data" section we can further customize data selection and Series' Order.
To change or modify a data series:

1. right (Ctrl) click the graph to see options
2. left-click select data
   - use up and down arrows buttons to rearrange the data series
   - use +/- buttons to add and remove data series
   - use the small graph button on the far right of each cell reference to modify cell references for each series element.

Adding Chart Elements

We can add chart elements by going to

1. The "Chart Design" tab on the ribbon
2. left-clicking the "Add Chart Element" button.

Chart Elements include:

- Axes : Typically included when a chart is created
- Axes Labels : to label x and y axes
- Chart Title : The Title that goes on top of the chart
- Data Labels : To label each individual data series
- Gridlines : costmetic effects to improve readability
- Legends : to discribe individual groupings/series

Formatting Chart Elements

Chart Elemets can be formatted by right (Ctrl) clicking the chart element on the chart. A formatting options menu on the right hand side should appear. Formatting options include:

- Paint bucket : formatting borders fills,
- Pentagon : formatting shape shadow and effects,
- BarGraph : formatting Data presentation.

Controlling a Chart's Scale

A Charts Scale can be modified by

1. right (Ctrl) clicking the axis
2. selecting "Format Axis"

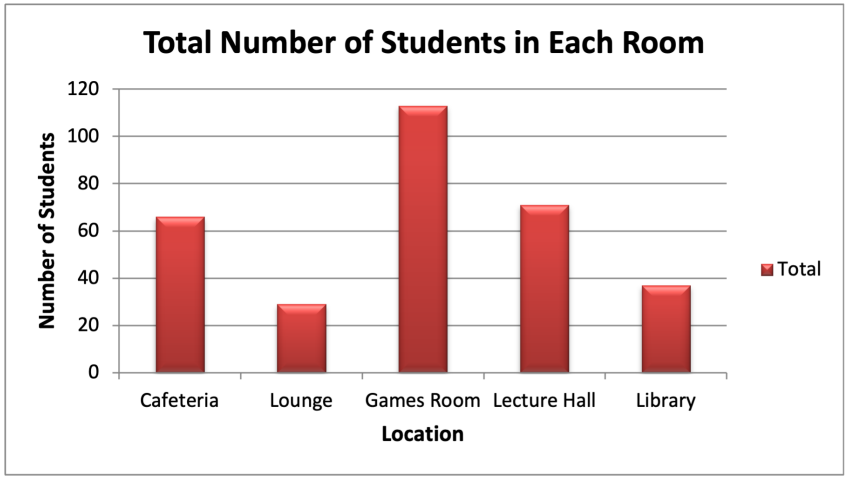
Chart Scale options typically include:

- Bounds : The minimum and maximum values for the axis
- Units : Units for the Major and Minor Tick marks along the axis
- Display Units : Units, (i.e., currency, speed, etc)

Exercise 1: Creating Simple Charts

1. Download *ColumnChartExercise.xlsx*
2. Fill in totals columns
3. Insert the following charts
   - Bar chart for the total number of students in each room.
   - Pie chart for the total number of students in each room.
   - Groupepd Column chart for male and female students in each room grouped by Room.
   - Grouped Column chart for male and female students in each room grouped by gender.
4. For each chart, include
   - Chart title
   - Axis labels
   - Legend

Exercise 1: Solution



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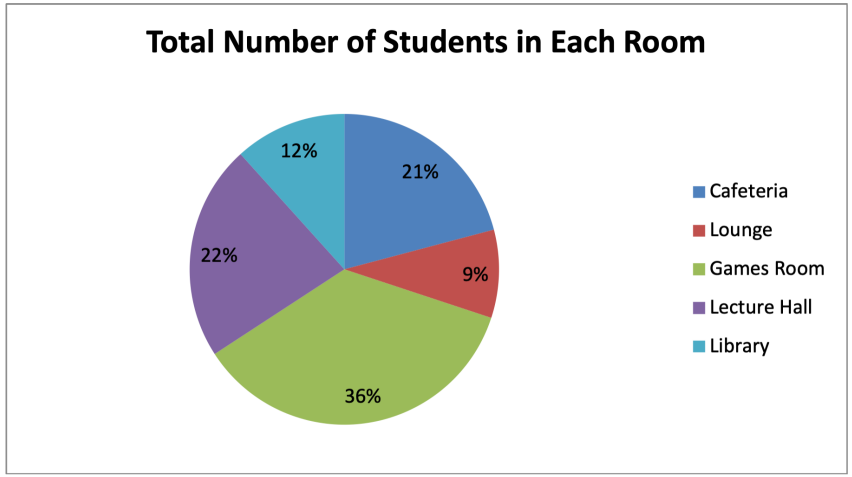

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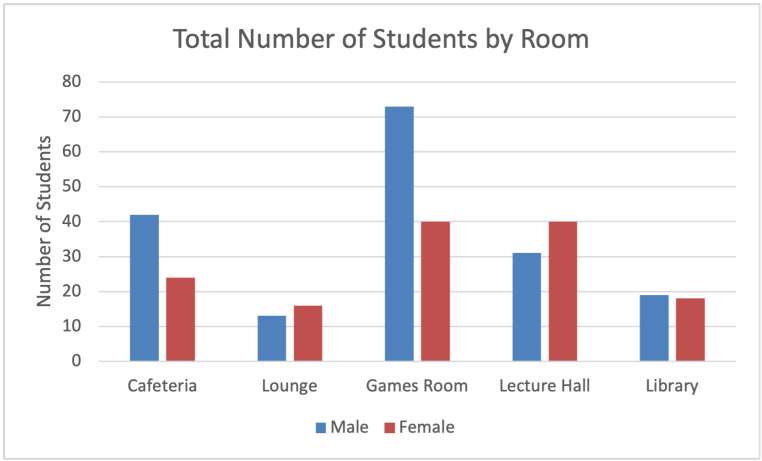

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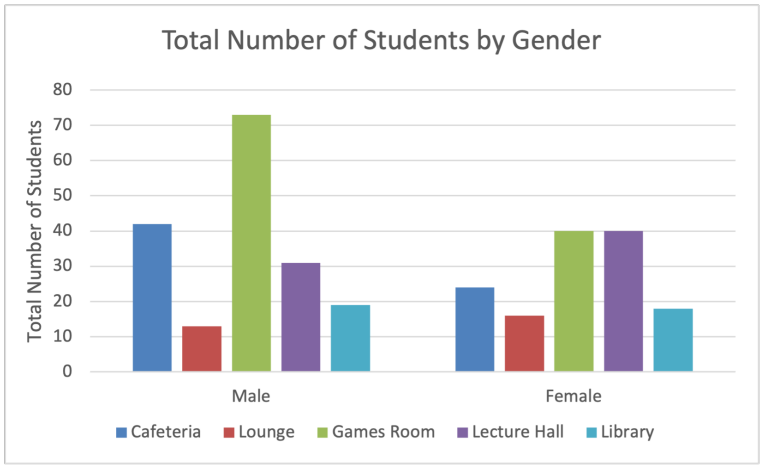

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Formatting 3-D Charts

3D charts can be created to show two groupings simulateneously or a 3-D dataset. Try creating a 3-D Bar Chart by:

1. selecting cells A1:D7 in *ColumnChartExercise.xlsx*
2. selecting the insert tab, then from selecting the bar chart selecting "3-D Column Chart"

insert an image of the 3-D Column Chart

Exploding Slices in a Pie

Exploding slices in a pie can be used to draw specific attention to certain slices. We can explode an already formed pie chart by

1. right(Ctrl) clicking the pie slices
2. Select "Format Data Series" from the drop down menu
3. Change the % explosion from the Format Dataseries pane on the right.

Grouping Slices in a Pie

Pie charts are useful for comparing proportions and further understanding sub categories in each category. Create an Exploding pie chart by

1. arranging the values for interpreation by the Pie chart wizard.This includes:
   - setting a column header
   - arranging data that will be part of the first plot and second plot
   - assigning appropriate row headers considering that subset of you want to explode.
2. select the arranged values
3. left-click "Insert" ribbon, and select pie chart.
4. select 2-D pie with an exploded second pie chart.
5. once the chart is generated right(Ctrl) click the pie chart and select "Format Data Series" from the drop down menu.
6. move series between charts until it presents the appropriate data.

Further Reading

Computer Applications for Life Sciences Chapter 2, p. 15-20