Using *EXCEL* for Basic Research Needs

A Guide for the Northwestern MSHE Research Sequence

Pivot Tables and Charts

Pivot tables are one of Excel's most powerful features. A pivot table allows you to extract the significance from a large, detailed data set.

Insert a Pivot Table

To insert a pivot table, execute the following steps.

1. Click any single cell inside the data set.
2. On the **Insert** tab, click **PivotTable**.

Add & Rearrange Fields in the Field List

Use the **field section** of the **Field List** to add fields to your PivotTable:

- Check the box next to a field name to place the field in its default area of the **Field List**. *(Typically, nonnumeric fields are added to the Rows area, numeric fields are added to the Values area, and Online Analytical Processing (OLAP) date and time hierarchies are added to the Columns area.)*

Use the **areas** section of the **Field List** to rearrange fields the way you want by dragging them between the four areas.

Fields you put in the different areas are shown in the PivotTable as follows:

- **Filters** area fields are shown as top-level report filters above the PivotTable
- **Columns** area fields are shown as **Column Labels** at the top of the PivotTable (depending on the hierarchy of the fields, columns may be nested inside columns that are higher in position).
- **Rows** area fields are shown as **Row Labels** on the left side of the PivotTable (depending on the hierarchy of the fields, columns may be nested inside columns that are higher in position).
- **Values** area fields are shown as summarized numeric values in the PivotTable.

Change Summary Calculation

By default, Excel summarizes your data by either summing or counting the items. To change the type of calculation that you want to use, execute the following steps.

1. Click any cell inside the Total column.
2. Right click and click on Value Field Settings...
3. Choose the type of calculation you want to use. (e.g. average)

Use Pivot Tables to Make a Chart/Graph

1. Click any cell inside the pivot table.
2. On the Insert tab, click the desired chart type.

Additional Resources

- Canvas > Technology Tools and Resources > Pivot Tables and Charts
- http://www.lynda.com/ (Free video tutorials for NU Students - Login with NetId)
- https://support.office.com/en-us/excel

Less Common Techniques

Chi Squared

The Chi-Square Test uses the chi-square distribution of one or more sets of data, to test whether there is a significant difference between observed frequencies and expected frequencies.

The Excel **CHITEST function** uses the chi-square test to calculate the probability that the differences between observed and expected frequencies, are likely to be simply due to sampling error, or if they are likely to be real.

The syntax of the function is:

CHITEST(actual_range, expected_range)

Where the function arguments are:

actual_range - An array of observed frequencies.

expected_range - An array of expected frequencies (must have the same dimension as the actual_ range array).

T-Tests

A t-test is any statistical hypothesis test in which the test statistic follows a Student's t-distribution if the null hypothesis is supported.

The Excel **T.TEST function** calculates the probability associated with the Student's T Test.

The syntax of the function is:

T.TEST(array1, array2, tails, type)

where the function arguments are:

array1 - The first data set.

array2 - The second data set (must have the same length as array1)

tails - The number of tails for the distribution.

type - An integer that represents the type of t-test.