



DATA ANALYSIS

Data Analysis introduces some of the features of the Analysis ToolPak available as an Excel Add-in.

Entering Data

Using the **Split** or **Freeze Panes** command located under the **Window** menu selection may aid in entering data. Though either choice permits access to the entire worksheet, the Split option offers scroll bars for each section of the spreadsheet.

Trend Lines

Excel uses the least squares method to measure how far bits of data are from a line drawn through your data points. This produces an equation that describes the trend line, also known as a regression line.

Here's how to do it:

1. Select the range enclosing your data.
2. At the bottom of the selected range, grab the fill handle with the right mouse button and drag to the end of the range enclosing the blank cells you want filled in. (The blank cells are the future trend you want to predict.) Release the mouse button and the shortcut menu pops up.
3. Clicking **Linear Trend** produces the results...the selected blank cells at the end of the range are then filled in from points further along the line.

CAUTION: Selecting Linear, or checking the Trend box in the Series dialog box replaces the original data with data created from the trend line produced from the original set. You might gain a trend, but you lose your original data.

Growth Trends

A **growth trend** bases predictions on constantly growing, or exponential, increases from period to period.

To produce a growth trend, follow the steps listed above, then at 3. select **Growth Trend** from the shortcut menu.

Standard Deviation

The standard deviation is a measure of data's scatter, and there are two ways to get it. One is to take all the data, or the whole population, as the statistician's say, and the other way is to take a random sample from the whole population and calculate the standard deviation of the sample.

STDEV function...Use this for a random sample.

STDEVP function...Use this one when you take the whole population.

Analyzing Data

Excel provides data tables to help you analyze data, as well as **Goal Seek**, **Solver** and other tools for working with data.

Goal Seek...Excel's **Goal Seek** command finds the answer to break-even problems. Goal Seek looks at your formula, asks for the value you want, and then keeps plugging numbers into the formula. It doesn't quit until it finds the number that produces the value you asked for. There are two parts to break-even formulas: a cost function and a revenue function

Note: Goal Seek is accurate to more decimal places than you probably care about. Format cells so that Goal Seek's answer is a reasonable one.

Goal Seek may come up with a number that makes no sense at all, no matter how you format it. It depends on the formula and the value you specify. In that case, use the **Data, Table** command. You can produce a range of results that way, and some of them will make more sense.

Solver

Solver is much more powerful than Goal Seek. Rather than working with only one variable, Solver works with multivariable inputs.

Solver is an add-in. Its installation is an option in the Setup program. If Solver isn't on the Tools menu, select Tools, Add-Ins and click the Solver Add-In box. If it's not there either, you'll have to get out your Excel program CD and run Setup.

Solver answers all kinds of complex optimization problems, such as:

- Finding the mix of stocks, bonds, and cash to minimize risk and maximize returns in a portfolio;
- Figuring the optimal mix of products to build from a limited inventory of parts;
- Analyzing different shipping routes to find the optimal amounts to ship by the least costly routes;
- Building a schedule that makes the best use of available staff at the lowest cost; and
- Discovering the mix of short-term investments that maximizes both liquidity and returns.

Solver is a potent but complex tool. There are Solver examples and sample worksheets built right into the program.

Common Problems

If you get the message, “**!Input Cell Reference Is Not Valid**”, make sure that the input cells you enter are the ones in your formula. The formula has to refer to both the input cells you give to the Data Table command.

If your worksheet takes forever to recalculate, remember that when you add a data table to a worksheet, Excel recalculates the whole table each time you make changes on the sheet. If you've got a big table, recalculating every cell might slow you down.

Pivot Tables

Excel has lots of choices for pulling information out of lists of data. Sorting rearranges the data to let us view it from different angles. Filtering lets us pull particular chunks of data out of the list to see it more clearly. Subtotaling summarizes the data to give us the big picture.

Pivot tables do all three things at once. A pivot table is another tool for making sense of long lists of data. Because it summarizes, sorts, and filters all at once, a pivot table gives you quick answers to questions about big databases.

Pivot tables are so-called because they can be reoriented to display different views of your data. To do that, you drag a field button on the table into a new position. That “pivots” your view of the data, as though you were spinning a globe to view the other side of the world.

Creating one...Start with an existing list, and use the Pivot Table Wizard to create the pivot table from the list. Be sure to get rid of all the subtotals and filters. Pivot tables filter data any way you choose, and they can't be created at all from a subtotaled list.

CAUTION: Don't select a cell on the actual list as the Pivot Table starting cell. Doing that dumps the pivot table right into the list, wiping out any cell contents that are already there. Since those cells contain your database data, that's the last thing you want. Excel warns you first; just click Cancel and start again.

The Query and Pivot toolbar...Unless you already popped it up and then got rid of it, creating a pivot table automatically brings up the Query and Pivot toolbar. There are handy buttons to collapse and expand the pivot table, call up the Wizard, swap the rows and column, or group selected rows or columns.

Computing Services can be reached...

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