Title

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GUI (power) — Graphical user interface for power and sample-size analysis

Description

This entry describes the graphical user interface (GUI) for the `power` command. See [PSS-2] **power** for a general introduction to the `power` command.

Menu

Statistics > Power, precision, and sample size

Remarks and examples

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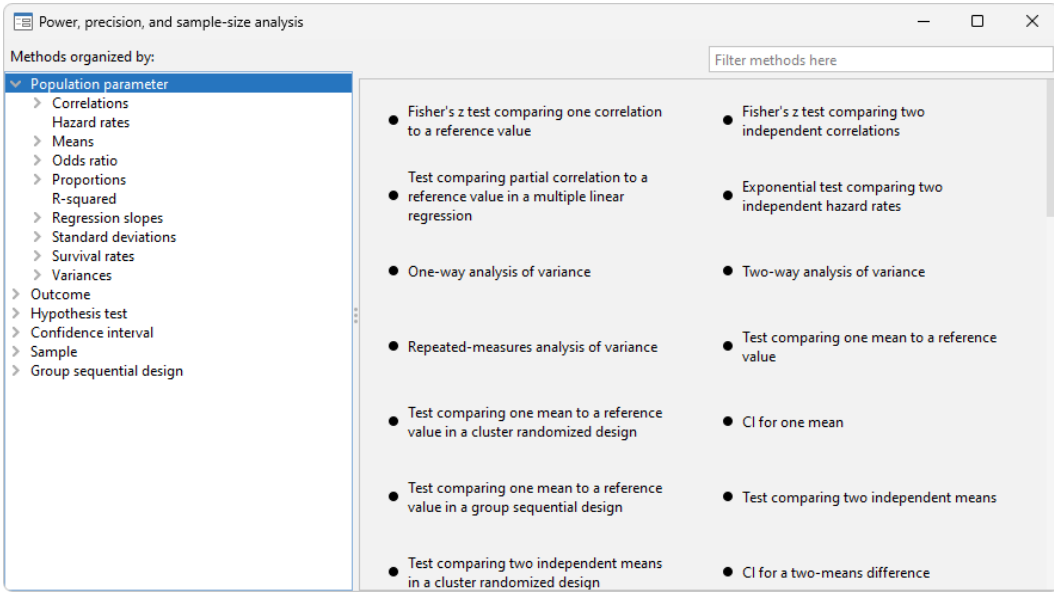
Remarks are presented under the following headings:

PSS Control Panel

You can perform PSS analysis interactively by typing the `power` command or by using a point-and-click GUI available via the PSS Control Panel.

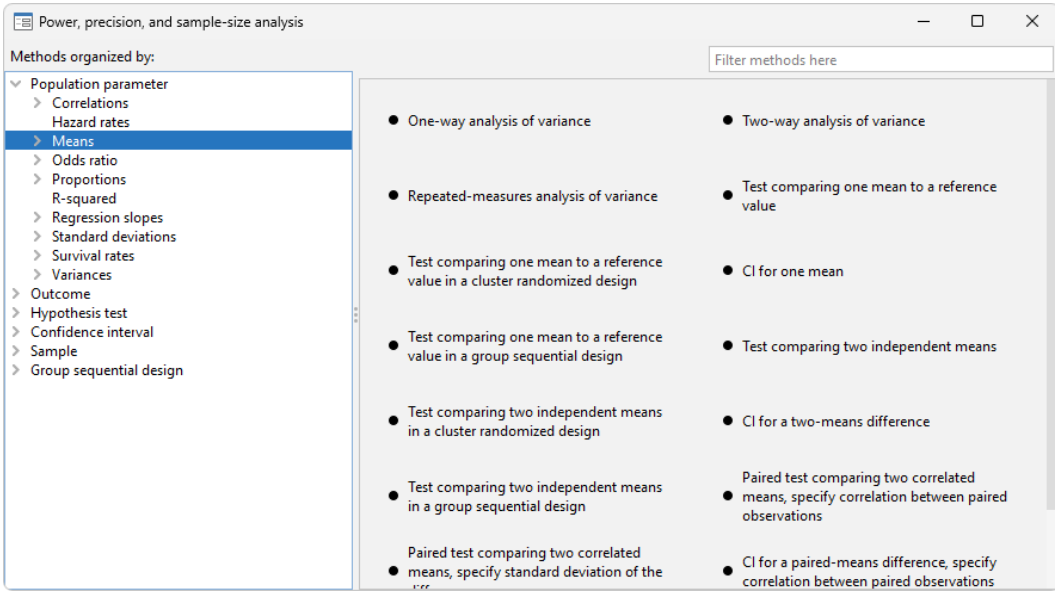
The PSS Control Panel can be accessed by selecting **Statistics > Power, precision, and sample size** from the Stata menu. It includes a tree-view organization of the PSS, PrSS, and group sequential design methods.



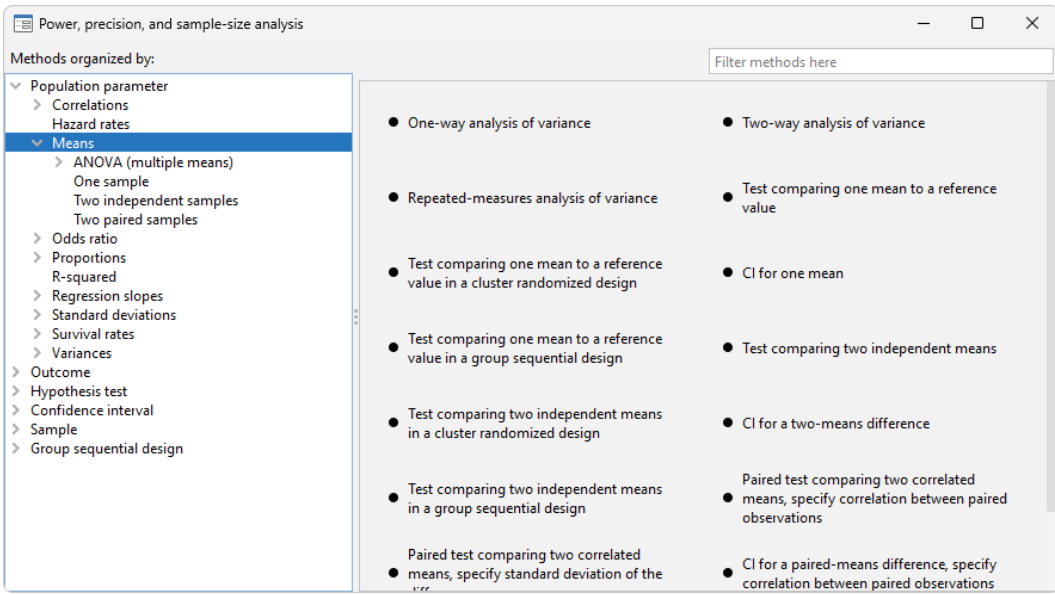
The left pane organizes the methods, and the right pane displays the methods corresponding to the selection in the left pane. On the left, the methods are organized by the type of population parameter, such as mean or proportion; the type of outcome, such as continuous or binary; the type of analysis, such as hypothesis test or confidence interval; and the type of sample, such as one sample or two samples. You click on one of the methods shown in the right pane to launch the dialog box for that method.

By default, methods are organized by **Population parameter**. We can find the method we want to use by looking for it in the right pane, or we can narrow down the type of method we are looking for by selecting one of the expanded categories in the left pane.

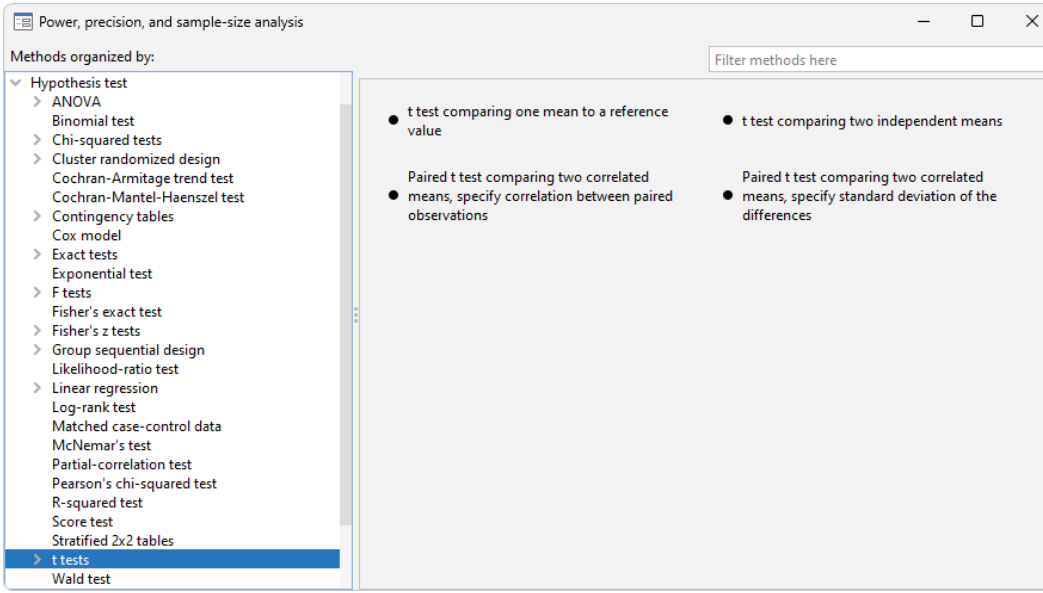
For example, if we are interested in means, we can click on **Means** within **Population parameter** to see all methods for means in the right pane.



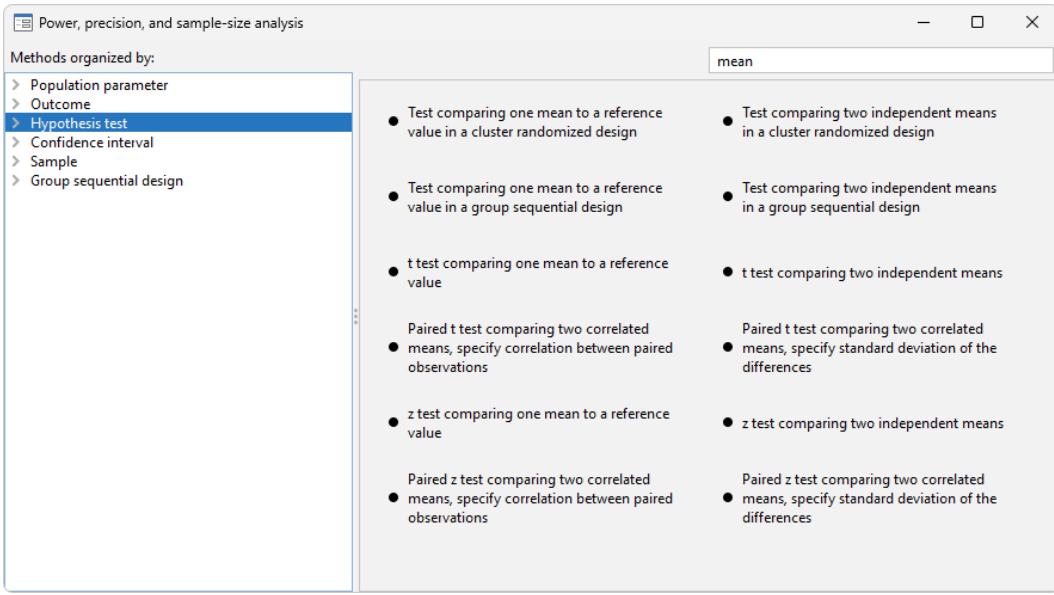
We can expand **Means** to further narrow down the choices by clicking on the symbol to the left of **Means**.



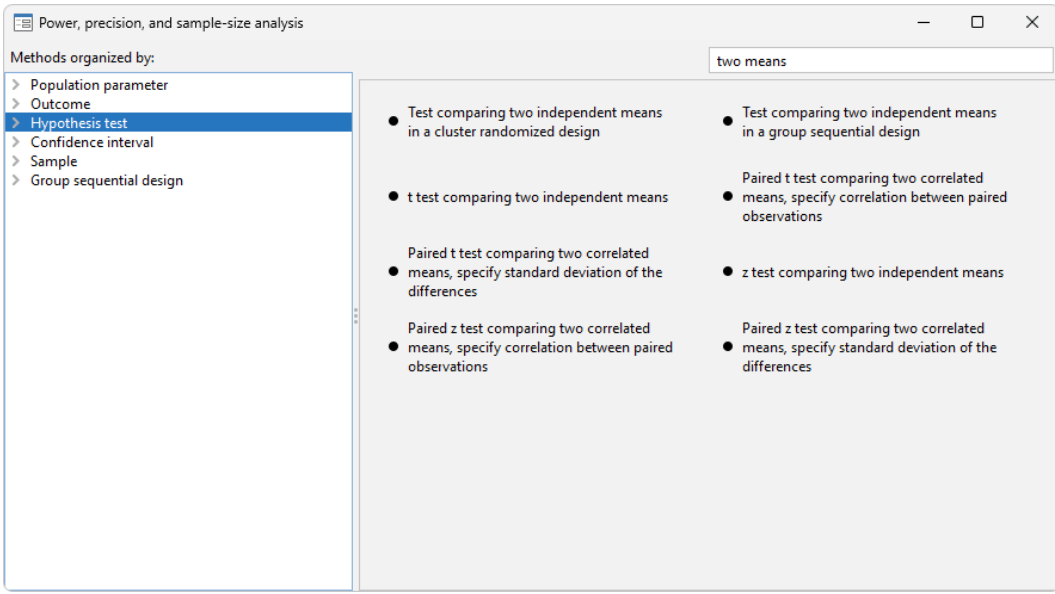
Or we can choose a method by the type of analysis by expanding **Hypothesis test** and selecting, for example, **t tests**:



We can also locate methods by searching the titles of methods. You specify the search string of interest in the *Filter* box at the top right of the PSS Control Panel. For example, if we type "mean" in the *Filter* box while keeping the focus on **Hypothesis test**, only test methods with a title containing "mean" will be listed in the right pane.



We can specify multiple words in the *Filter* box, and only methods with all the specified words in their titles will appear. For example, if we type "two means", only methods with the words "two" and "means" in their titles will be shown:

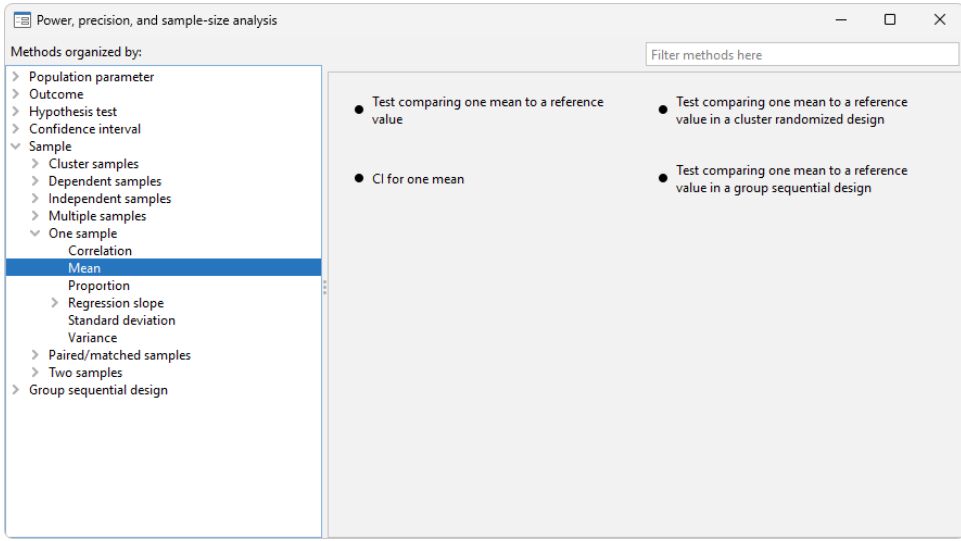


The search is performed within the group of methods selected by the choice in the left pane. In the above example, the search was done within **Hypothesis test**. When you search all methods, whether you select **Population parameter**, **Outcome**, or **Sample** in the left pane, the same set of methods appears in the right pane but in the order determined by the selected category.

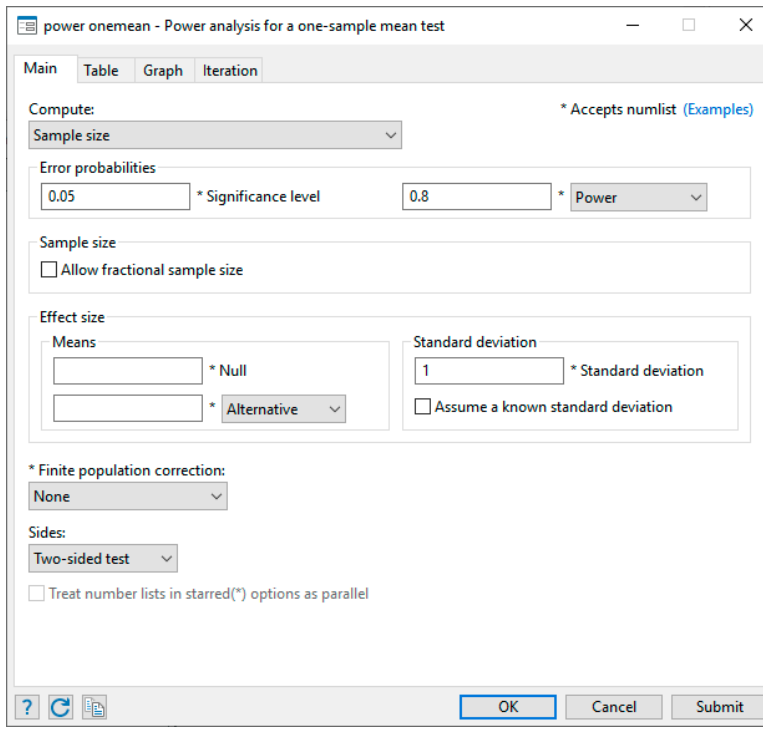
Example using PSS Control Panel

In *An example of PSS analysis in Stata* in [PSS-2] **Intro (power)**, we performed PSS analysis interactively by typing commands. We replicate the analysis by using the PSS Control Panel and dialog boxes.

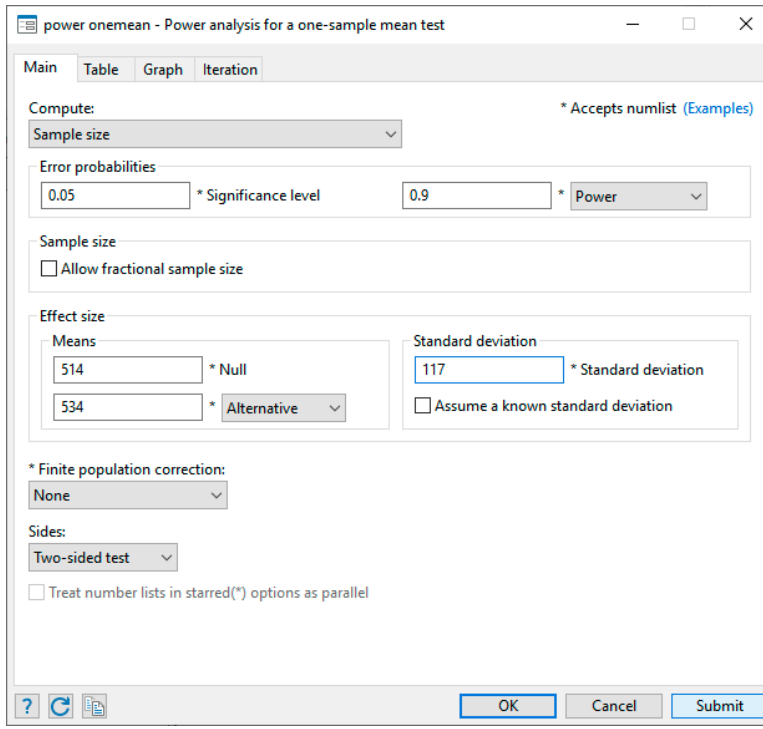
We first launch the PSS Control Panel from the **Statistics** > **Power, precision, and sample size** menu. We then narrow down to the desired dialog box by first choosing **Sample** in the left pane, then choosing **One sample** within that, and then choosing **Mean**. In the right pane, we see methods for testing the one-sample mean. We are interested in the **Test comparing one mean to a reference value**.



We invoke the dialog box by clicking on the corresponding method title in the right pane. The following appears:



Following the example from *An example of PSS analysis in Stata* in [PSS-2] **Intro (power)**, we now compute sample size. The first step is to choose which parameter to compute. The *Compute* drop-down box specifies `Sample size`, so we leave it unchanged. The next step is to specify error probabilities. The default significance level is already set to our desired value of 0.05, so we leave it unchanged. We change power from the default value of 0.8 to 0.9. We then specify a null mean of 514, an alternative mean of 534, and a standard deviation of 117 in the *Effect size* group of options. We leave everything else unchanged and click on the **Submit** button to obtain results.

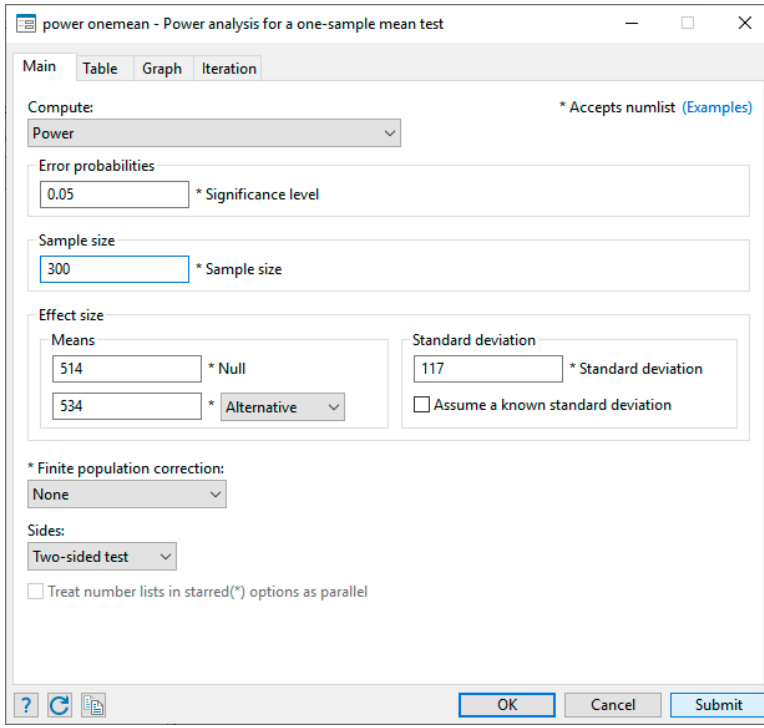


The following command is displayed in the Results window and executed:

```
. power onemean 514 534, power(0.9) sd(117)
Performing iteration ...
Estimated sample size for a one-sample mean test
t test
H0: m = m0  versus  Ha: m != m0
Study parameters:
        alpha =    0.0500
        power =    0.9000
        delta =    0.1709
           m0 =  514.0000
           ma =  534.0000
           sd =  117.0000
Estimated sample size:
            N =       362
```

We can verify that the command and results are exactly the same as what we specified in *An example of PSS analysis in Stata* of [PSS-2] **Intro (power)**.

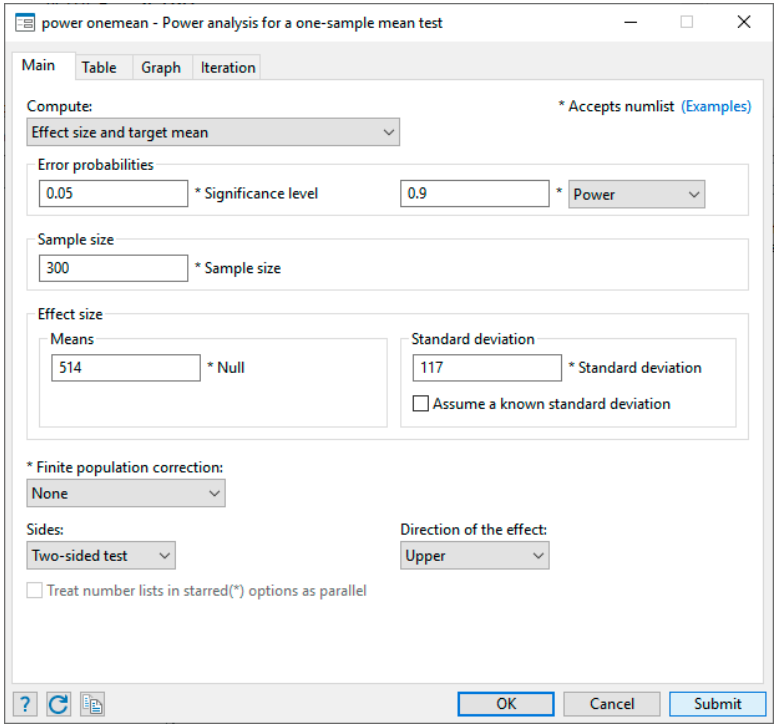
Continuing our PSS analysis, we now want to compute power for a sample of 300 subjects. We return to the dialog box and select `Power` under *Compute*. The only thing we need to specify is the sample size of 300:



The following command is issued after we click on the **Submit** button:

```
. power onemean 514 534, n(300) sd(117)

Estimated power for a one-sample mean test
t test
H0: m = m0  versus  Ha: m != m0

Study parameters:

        alpha =    0.0500
            N =       300
        delta =    0.1709
           m0 =  514.0000
           ma =  534.0000
           sd =  117.0000

Estimated power:

        power =    0.8392
```

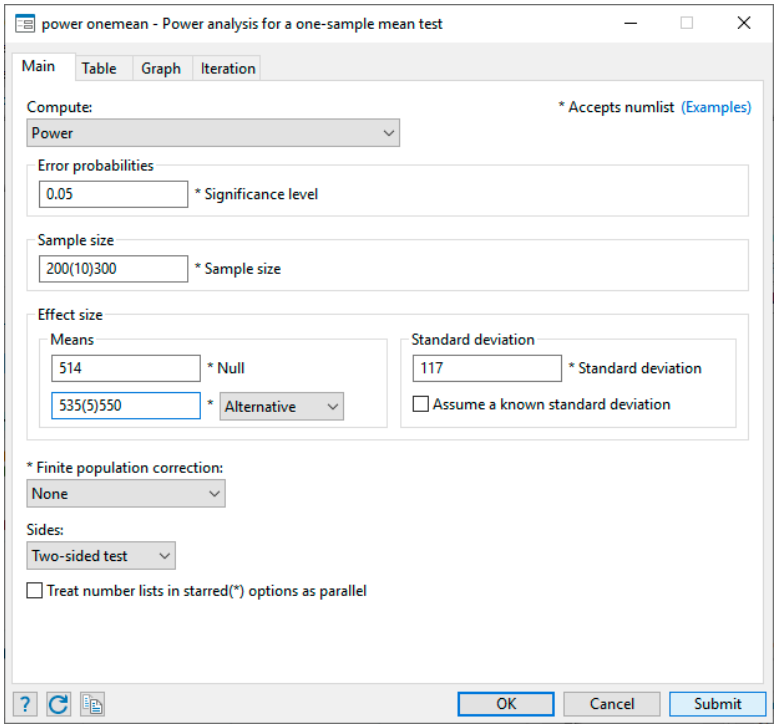
To compute effect size, we select `Effect size and target mean` under *Compute*. All the previously used values for power and sample size are preserved, so we do not need to specify anything additional.



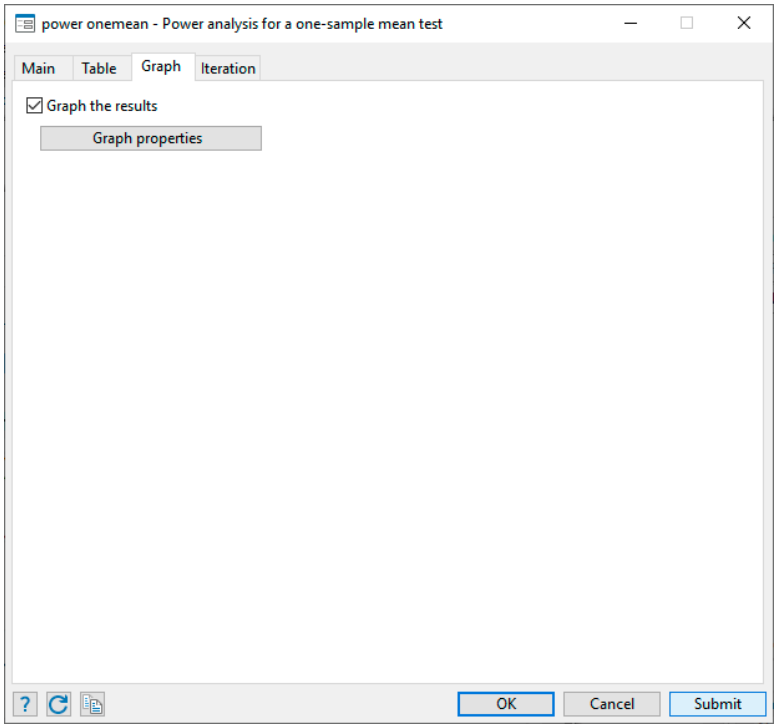
We click on the **Submit** button and get the following:

```
. power onemean 514, power(0.9) n(300) sd(117)

Performing iteration ...

Estimated target mean for a one-sample mean test
t test
H0: m = m0  versus  Ha: m != m0; ma > m0

Study parameters:

        alpha =    0.0500
        power =    0.9000
            N =       300
           m0 =  514.0000
           sd =  117.0000

Estimated effect size and target mean:

        delta =    0.1878
           ma =  535.9671
```

To produce the graph from *An example of PSS analysis in Stata*, we first select `Power` under *Compute*. Then we specify the *numlist*s for sample size and alternative mean in the respective edit boxes:

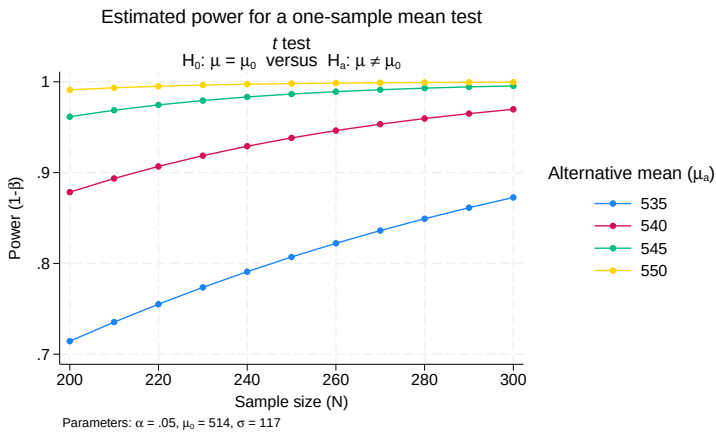


We also check the *Graph the results* box on the **Graph** tab:



We click on the **Submit** button and obtain the following command and graph:

```
. power onemean 514 (535(5)550), n(200(10)300) sd(117) graph
```



Also see

[PSS-2] **power** — Power and sample-size analysis for hypothesis tests

[PSS-2] **Intro (power)** — Introduction to power and sample-size analysis for hypothesis tests

[PSS-5] **Glossary**

[ADAPT] **GSD intro** — Introduction to group sequential designs