Description Menu Remarks and examples Also see

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

Remarks are presented under the following headings:

PSS Control Panel Example using PSS Control Panel

PSS Control Panel

You can perform PSS analysis interactively by typing the power command or by using a point-andclick 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.

Power, precision, and sample-size analysis		– 🗆 X
Methods organized by:		Filter methods here
Population parameter Correlations Hazard rates Means Odde ratio	 One-way analysis of variance 	 Two-way analysis of variance
Order Status Proportions R-squared Regression slopes Standard deviations	Repeated-measures analysis of variance	 Test comparing one mean to a reference value
Survival rates Variances Outcome Hypothesis test	• Test comparing one mean to a reference value in a cluster randomized design	Cl for one mean
Sonfidence interval Sample Group sequential design	• Test comparing one mean to a reference value in a group sequential design	 Test comparing two independent means
	• Test comparing two independent means in a cluster randomized design	CI for a two-means difference
	 Test comparing two independent means in a group sequential design 	 Paired test comparing two correlated means, specify correlation between paired observations
	 Paired test comparing two correlated means, specify standard deviation of the 	CI for a paired-means difference, specify correlation between paired observations

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

E Power, precision, and sample-size analysis		– 🗆 X
Methods organized by:		Filter methods here
Population parameter Correlations Hazard rates Means NOVA (multiple means)	 One-way analysis of variance 	 Two-way analysis of variance
One sample Two independent samples Two paired samples	• Repeated-measures analysis of variance	• Test comparing one mean to a reference value
South Annual State State of the sta	 Test comparing one mean to a reference value in a cluster randomized design 	Cl for one mean
Survival rates Variances Outcome	 Test comparing one mean to a reference value in a group sequential design 	• Test comparing two independent means
Songle Songle Group sequential design	 Test comparing two independent means in a cluster randomized design 	• CI for a two-means difference
	 Test comparing two independent means in a group sequential design 	 Paired test comparing two correlated means, specify correlation between paired observations
	 Paired test comparing two correlated means, specify standard deviation of the 	CI for a paired-means difference, specify correlation between paired observations

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

Power, precision, and sample-size analysis		– o ×
Methods organized by:		Filter methods here
 Hypothesis test ANOVA Binomial test Chi-squared tests Chi-squared tests Chi-squared test Cochran-Mantel-Haenszel test Cochran-Mantel-Haenszel test Contingency tables Cox model Exact tests Exponential test F tests F fisher's z tests Group sequential design Likelihood-ratio test Linear regression Log-rank test Partial-correlation test Pearts Pearts Pearts Pearts Pearts Score test Stratified 2x2 tables t tests 	 t test comparing one mean to a reference value Paired t test comparing two correlated means, specify correlation between paired observations 	Filter methods here • t test comparing two independent means Paired t test comparing two correlated • means, specify standard deviation of the differences
Wald test		

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.

Power, precision, and sample-size analysis		- 🗆 ×
Methods organized by:		mean
Population parameter Outcome Hypothesis test	Test comparing one mean to a reference value in a cluster randomized design	 Test comparing two independent means in a cluster randomized design
Confidence interval Sample Graum conjunctial design		
 Group sequential design 	 Test comparing one mean to a reference value in a group sequential design 	 Test comparing two independent means in a group sequential design
	 t test comparing one mean to a reference value 	• t test comparing two independent means
	 Paired t test comparing two correlated means, specify correlation between paired observations 	 Paired t test comparing two correlated means, specify standard deviation of the differences
	 z test comparing one mean to a reference value 	• z test comparing two independent means
	 Paired z test comparing two correlated means, specify correlation between paired observations 	 Paired z test comparing two correlated means, specify standard deviation of the differences

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:

😑 pow	er oneme	an - Pow	er analysis for a one-sample i	mean test			_		×
Main	Table	Graph	Iteration						
Comp	ute:			~		* Acce	pts numli	st (Exam	ples)
Samp	ie size			•					
0.05	probabili	ties	* Significance level	0.8		* Pow	er	~	
Samı A	ple size llow fract	ional sam	ple size						
Effec	t size eans		* Null * Alternative ~	Standa	ard deviation] * Star tandarc	ndard dev d deviatio	riation n	
* Finite None Sides:	e populat	ion correc	tion:						
Two-s	i ded test at numbe	✓ r lists in s	tarred(*) options as parallel						
? C					ОК	Ci	ancel	Subr	mit

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.

Main	Table	Graph	Iteration	
Comp	ute:			* Accepts numlist (Example
Samp	le size			~
0.05	r probabilit 5	ties	* Significance level	0.9 * Power ~
Samı	ple size llow fracti	ional sam	ple size	
Effec	t size			Standard doubtion
5	14		* Null	117 * Standard deviation
5	34		* Alternative \vee	Assume a known standard deviation
* Finite None	e populati	on correc	tion:	
Sides: Two-s	sided test	~		
Trea	at number	r lists in s	tarred(*) options as parallel	

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
HO: m = mO versus Ha: m != mO
Study parameters:
        alpha =
                 0.0500
                 0.9000
       power =
        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:

Main	Table	Graph	Iteration	
Comp	ute:			* Accepts numlist (Examples
Powe	er			~
Erro	r probabil	ities		
0.0	5		* Significance level	
Sam	ple size			
300)		* Sample size	
-Effec	ct size			Standard deviation
5	14		* Null	117 * Standard deviation
	24		* *	
	54		Alternative V	
			e	
• • • • • • • • • • • • • • • • • • •	e populat s	ion correc	v v	
* Finit None				
* Finit None				
* Finit None Sides: Two-	sided test	~		
* Finit None Sides: Two-	sided test	✓	tarred(*) options as parallel	
* Finit None Sides: Two- Tre	<mark>sided test</mark> at numbe	✓ r lists in st	arred(*) options as parallel	
* Finit None Sides: Two- Tre	sided test at numbe	r lists in st	tarred(*) options as parallel	

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
HO: m = mO versus Ha: m != mO
Study parameters:
       alpha =
               0.0500
           N =
                   300
                0.1709
       delta =
          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.

/lain	Table	Graph	Iteration		
Comp	ute:			* Accepts numlist (Exam	ple
Effect	t size and	target me	an	~	
Error	r probabil	ities			
0.0	5		* Significance level	0.9 * Power ~	
Sam	nle size				
300)		* Sample size		
Effec	t size				
M	eans			Standard deviation	
5	14		* Null	117 * Standard deviation	
				Assume a known standard deviation	
Finit	e populat	ion correc	ction:		
None	1		\sim		
ides:				Direction of the effect:	
Two-	sided test	\sim		Upper ~	
Tre	at numbe	r lists in s	tarred(*) options as parallel		

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
HO: m = mO versus Ha: m != mO; ma > mO
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 *numlists* for sample size and alternative mean in the respective edit boxes:

Compute: *Accepts numlist (Power Fror probabilities 0.05 * Significance level Sample size 200(10)300 * Sample size Effect size Means 514 * Null 535(5)550 * Alternative Atternative Sides:	xamples
Error probabilities Error probabilities 0.05 * Significance level Sample size 200(10)300 * Sample size Effect size Means 514 * Null 535(5)550 * Alternative * Finite population correction: None Sides:	
Sample size 200(10)300 * Sample size Effect size Standard deviation 514 * Null 535(5)550 * Alternative * Finite population correction: None None Sides:	
Effect size Means Standard deviation 514 * Null 535(5)550 * Alternative * Finite population correction: None None Sides:	
* Finite population correction: None ✓	n
Sides:	
Two-sided test v Treat number lists in starred(*) options as parallel	

== pow	er oneme	an - Pow	er analysis	for a one-	sample m	ean test		—		×
Main	Table	Graph	Iteration							
🗹 Gra	ph the re	sults								
	Graph	propertie	es							
? C							ОК	Cancel	S	ıbmit

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

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