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## Highlights

*With SPSS SamplePower you can:*

- Easily find the optimal sample size
  - Quickly perform “What if” analyses to find the sample size under various sets of assumptions
  - Deliver impressive reports with the report tool, table tool or graph tool
  - Access powerful statistical techniques such as means and their differences, ANOVA, regression and more
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# IBM SPSS SamplePower

*Get the right sample size the first time*

If your sample size is too small, you could miss important research findings. If it's too large, you could waste valuable time and resources. Why risk the potential loss of critical funding or time when you can get the right sample size the first time with IBM SPSS SamplePower?

In just a few easy steps, SPSS SamplePower helps you find the optimum sample size for your research, so you can proceed with the knowledge that you have the right foundation for your project. Whether you're a researcher, statistician or an instructor, you'll find that SPSS SamplePower makes power analysis clear and effortless.

## Get precise answers quickly

Simply specify parameters of the test situation, such as effect size, alpha level, and one- or two-tailed tests, and then generate sample sizes for any level of power with just one click. SPSS SamplePower has an interactive guide that leads you through each step, explaining terms and options as you go. An extensive help system provides step-by-step instructions for each procedure. And you don't have to hunt for information – the interactive summary panel displays your power and precision at every point.

## Compare and save research options

The software includes unique sensitivity analyses that enable you to adjust the effect size, desired power and alpha, and see the impact on the required sample size. Save and compare a series of scenarios to find the best balance among the various options.

## Present results in many formats

When you want to share your findings, use the report, table, and graph features to create graphical or text summaries. If you need to complete a grant application, for example, you can create a comprehensive text report in just a few steps. The report automatically includes explanations of the study design, assumptions, and power.



And with the one-click charts and graphs in SPSS SamplePower, you and others can evaluate your results at a glance. All of these options are exportable to popular presentation, spreadsheet, and word processing programs, such as Microsoft® Word, Microsoft Excel® and Microsoft PowerPoint®.

## Work faster with an easy-to-use interface

In addition to the classic interface, SPSS SamplePower features a simplified interface for means and proportions. Rather than provide estimates of the mean and standard deviation, you can simply sketch a picture of the expected outcomes by clicking a few buttons. The program computes the required sample size, writes an executive summary to justify this sample size, and also creates a report that explains the process in clear detail.

SPSS SamplePower is the front end of an integrated line of IBM SPSS products that covers each step in the analytical process: planning, data collecting, data access, data management and preparation, analysis, reporting, and deployment.

While you can use SPSS SamplePower on its own, you can also use it to extend the analyses you might already be doing using IBM SPSS Statistics.

## Features

### Statistical options

- Set alpha level, one- or two-tailed tests, number of decimals displayed
- Set N of cases spin control for minimum, maximum and increment
- Set computational formula (some exact formulas implemented)
- Set data entry and study design options

### Tools

- Improved graphical user interface allows even non-statisticians to easily run a power analysis and calculate optimal sample sizes
- Show power and precision (availability depends on test) with varied sample sizes, power only or power with varied effect sizes and alphas
- Create scenario text reports and lists of stored computations
- Find N for any power or for default power
- Show Cohen's effect size conventions for specific tests

## Reports, tables, and graphs

- Modify tables interactively
- Export table data to Excel or other spreadsheet programs
- Save graphs in your choice of formats, including WMF, EMF and BMP
- Export graphs to Word, PowerPoint and other programs
- Display several graphs simultaneously to assess impact of factors alone and together
- Drag and drop columns in a table and the related graphs will automatically be updated

## Statistical tests

### Means

- One-sample  $t$  test that mean=zero
- One-sample  $t$  test that mean=specified value: population variance known, unknown
- Paired  $t$  test that mean difference=zero or that difference=specified value
- Precision
- $t$  test for two independent groups with common variance: common variance known, unknown

### Proportions

- One-sample test that proportion=0.50, proportion=specific value
  - Computational options for power: normal approximation (arcsin transformation), exact binomial distribution
  - Find N for power: normal approximation (arcsin transformation), exact formula
  - Precision: normal approximation, exact formula (binomial distribution)
- 2x2 for independent samples
  - Computational options for power: arcsin approximation, normal approximation (weighted and unweighted mean p), Chi-square (two-tailed only), Chi-square with Yates correction (two-tailed only), Kramer and Greenhouse, Casagrande, and Pike (Fisher approximation)
  - Fisher exact
  - Computational options for precision: log method, log method with Yates correction, Cornfield/Gart method, Cornfield/Gart method with Yates correction
  - Effect size displayed: rate difference (default), odds and log-odds ratios, relative and log-relative risks
- 2x2 for paired samples (McNemar)
  - Computational options for power: normal approximation, exact binomial

- Sign test
  - Computational options for power: normal approximation, exact binomial
- KxC for independent samples
  - Indices of effect: effect size index, contingency coefficient, Cramér's V and Phi
  - Computational option for power: non-central Chi-square

*Correlations*

- One-sample tests that correlation=zero, correlation=specific value
  - Computational options for power: exact for test versus null of zero, Fisher Z transform for nonzero null
  - Computational options for precision: reports precision for test versus null of zero or for test versus null of specific value
- Two-sample test that correlations are equal: computational option for power, Fisher Z transformation

*ANOVA/ANCOVA*

- One-way Analysis of Variance and Analysis of Covariance
  - Effect size: enter F directly, between-groups standard deviation, range of group means and pattern of dispersion, mean for each group
- Factorial Analysis of Variance and Analysis of Covariance: two factors, three factors
  - Effect size: enter F directly, between-groups standard deviation, range of group means and pattern of dispersion, mean for each group

*Regression*

- Templates for study design
  - One set of predictors or one set of covariates followed by one set of predictors
  - Set A, Set B, and interaction
  - Polynomial regression
  - Covariates followed by dummy coded variable
- Error model
  - Model I error: error is  $1-R^2$  through the current set
  - Model II error: error is  $1-R^2$  for all variables in the model

*Logistic regression*

- One continuous predictor or two continuous predictors
- One categorical predictor with two levels or one categorical predictor with more than two levels

*Survival analysis*

- Accrual options: subjects entered prior to first study interval, subjects entered during study at constant rate, accrual varies
- Hazard rate options: constant, varies
- Attrition rate options: no attrition, constant rate, rate varies

**Cluster-randomized trials**

- One level of clustering (patients within hospitals for example)
- Find the optimal (most cost-effective) allocation ratio

**Equivalence tests**

- Equivalence tests for means and for proportions

**System requirements**

- Microsoft Windows® XP, Windows Vista® or Windows 7
- XGA monitor
- 30MB drive space

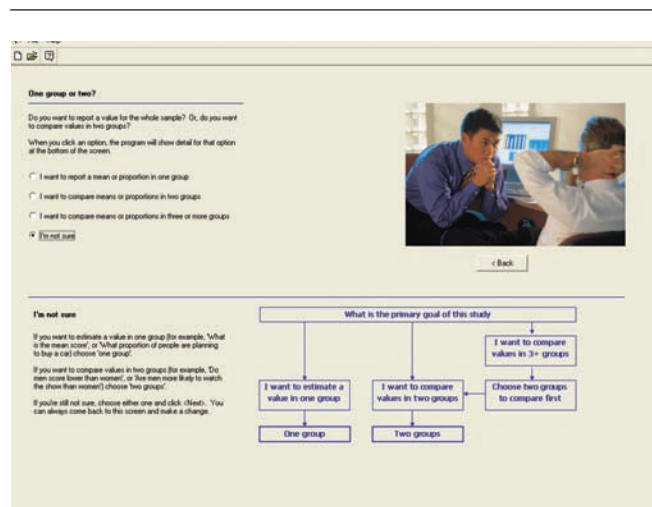


Figure 1: The “easy” interface prompts you with a series of simple questions and provides an executive summary of the rationale for the sample size, as well as a detailed report.

*“Thank you for bringing such a wonderful product to market . . . I have had to do power calculations manually. I cannot believe the time SamplePower saves. I cannot believe how easy it is to use.”*

— Mandell Bellmore, President,  
Block, McGibony, Bellmore & Associates  
Health and Hospital Consultants

## About IBM Business Analytics

IBM Business Analytics software delivers actionable insights decision-makers need to achieve better business performance. IBM offers a comprehensive, unified portfolio of business intelligence, predictive and advanced analytics, financial performance and strategy management, governance, risk and compliance and analytic applications.

With IBM software, companies can spot trends, patterns and anomalies, compare “what if” scenarios, predict potential threats and opportunities, identify and manage key business risks and plan, budget and forecast resources. With these deep analytic capabilities our customers around the world can better understand, anticipate and shape business outcomes.

## For more information

For further information or to reach a representative please visit [ibm.com/analytics](http://ibm.com/analytics).

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To request a call or to ask a question, go to [ibm.com/business-analytics/contactus](http://ibm.com/business-analytics/contactus). An IBM representative will respond to your inquiry within two business days.



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