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, 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 SamplePower makes power analysis clear and effortless.

Work faster with the new Easy Interface
In addition to the classic interface, SamplePower now features a simplified interface for means and proportions. Rather than provide estimates of the mean and standard deviation, 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.

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. SamplePower’s interactive guide leads you through each step, explaining terms and options as you go. And you don’t have to hunt for information – the interactive summary panel displays your power and precision at every point.
“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 IBM SPSS SamplePower is to use.”

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

Compare and save research options
Use SamplePower's unique sensitivity analyses 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 SamplePower's 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 SamplePower's one-click charts and graphs, 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, Excel®, and PowerPoint®.

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.
SamplePower is the front end of an integrated line of products from SPSS, an IBM Company that covers each step in the analytical process: planning, data collecting, data access, data management and preparation, analysis, reporting, and deployment. For more than 40 years, people like you have used SPSS tools and software for research of all types.

SamplePower was developed by a team of experts that includes Michael Borenstein, Hannah Rothstein, David Schoenfeld, Larry Hedges and Jacob Cohen, author of *Statistical Power Analysis for the Behavioral Sciences*.

The printed manual for SamplePower explains the logic and proper application of power analysis. It also includes full examples for each statistical procedure and details for all algorithms. An extensive help system provides step-by-step instructions for each procedure.

**About SPSS, an IBM Company**

SPSS, an IBM Company, is a leading global provider of predictive analytics software and solutions. The company's complete portfolio of products - data collection, statistics, modeling and deployment - captures people's attitudes and opinions, predicts outcomes of future customer interactions, and then acts on these insights by embedding analytics into business processes. IBM SPSS solutions address interconnected business objectives across an entire organization by focusing on the convergence of analytics, IT architecture and business process. Commercial, government and academic customers worldwide rely on IBM SPSS technology as a competitive advantage in attracting, retaining and growing customers, while reducing fraud and mitigating risk. SPSS was acquired by IBM in October 2009. For further information, or to reach a representative, visit www.spss.com.
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: 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: 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

- Fisher exact
- 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-R² through the current set
  - Model II error: error is 1-R² 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 or Vista®
- XGA monitor
- 30MB drive space