

## Comparison of SAS and SPSS Products with R Packages and Functions

R is open source software for statistics and graphics available for free at <http://www.r-project.org/>. With over 800 add-on packages, many containing multiple procedures, R can do almost everything that SAS and SPSS can do and quite a bit more. If you purchased one commercial copy of all these products from SAS or SPSS it would cost tens of thousands of dollars. Even with educational discounts, a large research organization could spend over \$100,000 per year. However, each product or package listed is only an approximate equivalent. For a given topic, each package typically has features that the others lack. This is only meant to be a convenient starting point for comparing packages.

The table below focuses only on SAS and SPSS *products* and which of them have counterparts in R. As a result, some categories are extremely broad (e.g. regression) while others are quite narrow (e.g. conjoint). R packages that have no counterparts in the form of SAS Inc. or SPSS Inc. products are not listed. There are many important topics (e.g. mixed models, offered by all three) that are not listed because neither SAS nor SPSS sell a product focused just on that.

Much more detailed information about R packages is available organized in Task Views at <http://cran.r-project.org/src/contrib/Views/>. Another site to search by task is at <http://biostat.mc.vanderbilt.edu/s/finder/finder.html>. Detailed information about most R packages is available at <http://cran.r-project.org/src/contrib/PACKAGES.html>. An introduction to R for SAS and SPSS users is at <http://oit.utk.edu/scc/RforSAS&SPSSusers.pdf>.

<i>Topic</i>	<i>SAS Product</i>	<i>SPSS Product</i>	<i>R Package</i>
Advanced Models	SAS/STAT®	SPSS Advanced Models™	stat, MASS, <i>many others</i>
Basics	SAS®	SPSS Base™	R
Conjoint Analysis	SAS/STAT®: Transreg	SPSS Conjoint™	homals, psychoR, bayesm
Correspondence Analysis	SAS/STAT®: Corresp	SPSS Categories™	homals, MASS, FactoMineR, ade4, PTak, cocorresp, vegan, made4, PsychoR
Custom Tables	SAS Base® Report, SQL, Tabulate	SPSS Custom Tables™	reshape
Data Access	SAS/ACCESS®	SPSS Data Access Pack™	DBI, foreign, RODBC
Data Mining	Enterprise Miner™	Clementine®	rattle, arules, FactoMineR
Data Preparation	Various procedures	Various procedures, SPSS Data Preparation™	dprep, various functions
Exact Tests	SAS/STAT®: various	SPSS Exact Tests™	coin, elm, exactLoglinTest, exactmaxsel, exactRankTests, and as options in many others
Genetics	SAS/Genetics®, SAS/Microarray® Solution®, JMP Genomics®	None	Bioconductor at <a href="http://www.bioconductor.org/">http://www.bioconductor.org/</a>

Geographic Information Systems/Mapping	SAS/GIS®, SAS/Graph®	SPSS Maps™ (no full GIS)	maps, mapdata, mapproj, GRASS via spgrass6, RColorBrewer, see Spatial in Task Views link above
Graphical User Interface	Enterprise Guide®	SPSS Base™	JGR, R Commander, pmg, Sciviews
Graphics – Interactive with linked windows	SAS/INSIGHT®	None	GGobi via rggobi iPlots, Mondrian via Rserve
Graphics - Static	SAS/GRAPH®	SPSS Base™	ggplot, gplots, graphics, grid, gridBase, hexbin, lattice, plotrix, scatterplot3d, vcd, vioplot, geneplotter, Rgraphics,
Guided Analysis	SAS/LAB®	None	None
Matrix/Linear Algebra	SAS/IML®, SAS/IML Workshop®	SPSS Matrix™	R, matlab, Matrix, sparseM
Missing Values Imputation	SAS/STAT®: MI	SPSS Missing Values Analysis™	aregImpute (Hmisc), EMV, fit.mult.impute (Design), mice, mitools, mvnml
Operations Research	SAS/OR®	None	glpk, linprog, LowRankQP, TSP
Power Analysis	SAS® Power and Sample Size Application, SAS/STAT: Power, GLM Power	SamplePower™	asypow, powerpkg, pwr, MBESS
Quality Control	SAS/QC®	SPSS Base™	qcc, spc
Regression Models	SAS/BASE®	SPSS Regression Models™	R, Hmisc, Design, lasso, VGAM, pda
Sampling, Complex or Survey	SAS/STAT®: surveymeans, etc.	SPSS Complex Samples™	pps, sampfling, sampling, spsurvey, survey
Structural Equations	SAS/STAT®: Calis	Amos™	sem
Text Analysis	Text Miner	SPSS Text Analysis for Surveys™, Text Miner for Clementine®	Rstem, lsa, tm
Time Series	SAS/ETS®	SPSS Trends™ Expert Modeler	Over 40 packages that do time series are described at Task View link above under Econometrics.
Time Series, Automated	SAS Forecast Studio®	SPSS Trends, DecisionTime/WhatIf™	None
Trees, Decision or Regression	Enterprise Miner™	SPSS Classification Trees™, AnswerTree™	ada, adabag, BayesTree, boost, GAMboost, gbev, gbm, maptree, mboost, mvpart, party, pinktoe, quantregForest, rpart,

			rpart.permutation, randomForest, randomForests, tree,
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