

> Easily Identify Groups and Predict Outcomes

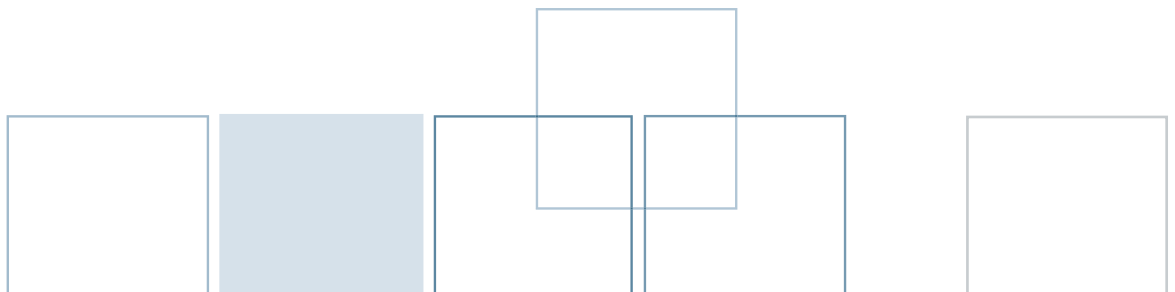
Better identify groups

The new SPSS Classification Trees add-on module creates classification and decision trees directly within SPSS to help you better identify groups, discover relationships between groups, and predict future events. You can use classification and decision trees for segmentation, stratification, prediction, data reduction and variable screening, interaction identification, category merging, and discretizing continuous variables.

Highly visual trees enable you to present categorical results in an intuitive manner—so you can more clearly explain categorical results to non-technical audiences. These trees enable you to explore your results and visually determine how your model flows. Visual results can help you find specific subgroups and relationships that you might not uncover using more traditional statistics. Because classification trees break the data down into branches and nodes, you can easily see where a group splits and terminates.

Use SPSS Classification Trees in a variety of applications, including:

- Database marketing
 - Choose a response variable to segment your customer base (responders/non-responders in a test mailing; high-, medium-, and low-profit customers; recruits who have extended service versus those who haven't)
 - Profile groups based on other attributes, such as demographics or customer activity
 - Tailor new promotions to focus on a specific subgroup, to help reduce costs and improve ROI
- Market research
 - Perform customer, employee, or recruit satisfaction surveys
 - Choose a variable that measures satisfaction (for example, on a “1-5” scale)
 - Profile satisfaction levels according to the responses to the other questions
 - Change factors, such as work environment or product quality, that can affect satisfaction
- Credit risk scoring
 - Determine risk groups (high, medium, or low)
 - Profile risk groups based on customer information, such as account activity
 - Offer the right credit line to the right applicants based on risk group
- Program targeting
 - Choose a variable with a desirable versus undesirable outcome (for example, successful completion of a welfare-to-work program)
 - Understand the factors that lead to success, based on application information
 - Customize new programs to satisfy the needs of more people



■ Marketing in public sector

- Choose a response variable for segmenting your customer base (for example, potential college applicants who actually applied versus those who haven't)
- Profile groups based on other attributes, such as demographics or customer activity
- Tailor new promotions to focus on a specific subgroup, to help reduce costs and improve ROI



SPSS Classification Trees' diagrams, tables, and graphs are easy to interpret. Use the highly visual trees to discover relationships that are currently hidden in your data.

The screenshot shows the SPSS Data Editor window with a table of results for a classification tree model. The table has columns for Node ID, Predicted Value, and Predicted Probabilities for two classes (1 and 2).

	Node ID	Predicted Value	Predicted Probability 1	Predicted Probability 2
1	9.00	1.00	.44	.56
2	8.00	.00	.81	.19
3	1.00	.00	.82	.18
4	1.00	.00	.82	.18
5	9.00	1.00	.44	.56
6	9.00	1.00	.44	.56
7	9.00	1.00	.44	.56

Use tree model results to score cases directly in SPSS.

Choose from four tree-growing algorithms

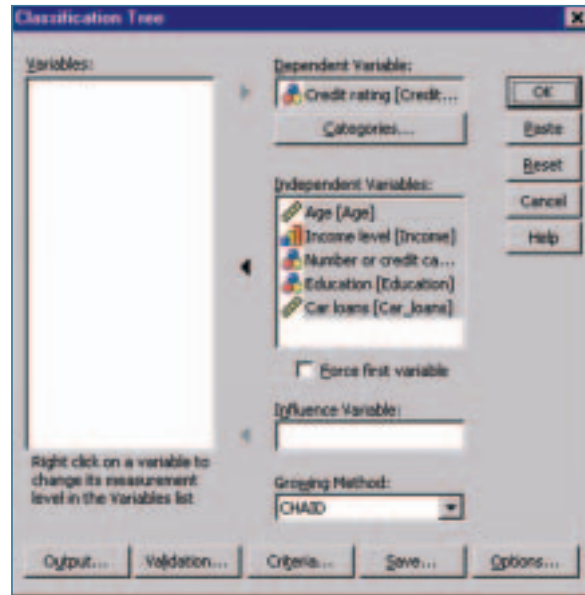
SPSS Classification Trees includes four established tree-growing algorithms:

- CHAID—A fast, statistical, multi-way tree algorithm that explores data quickly and efficiently, and builds segments and profiles with respect to the desired outcome
- Exhaustive CHAID—A modification of CHAID that examines all possible splits for each predictor
- Classification & regression trees (CRT)—A complete binary tree algorithm that partitions data and produces accurate homogeneous subsets
- QUEST—A statistical algorithm that selects variables without bias and builds accurate binary trees quickly and efficiently

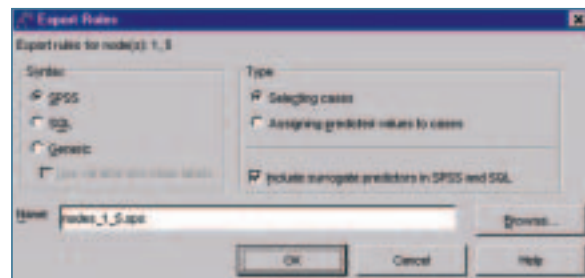
With four algorithms, you have the ability to try different types of tree-growing algorithms and find the one that best fits your data.

Extend your results with further analysis within SPSS

Since you use SPSS Classification Trees within the SPSS interface, you can create classification trees directly in SPSS and conveniently use the results to segment and group cases directly within the data. There is no back and forth between SPSS and other software. Additionally, you can generate selection or classification/prediction rules in the form of SPSS syntax, SQL statements, or simple text (through syntax). You can display these rules in the Viewer and save them to an external file for later use to make predictions about individual and new cases. If you'd like to use your results to score other data files, you can write information from the tree model directly to your data or create XML models for use in SPSS Server 13.0.



Create tree models in SPSS using CHAID, Exhaustive CHAID, CRT, or QUEST.



Directly select cases or assign predictions in SPSS from the model results, or export rules for later use.

“I am very excited about the new SPSS Classification Trees module in SPSS 13.0. It will be useful in analyzing large population groupings and uncovering previously unknown relationships within those groups.”

— Daniel Robertson, PhD
Center for Persons with Disabilities
College of Education and Human Services
Utah State University

Features

Trees

- Display tree diagrams, tree maps, bar graphs, and data tables
- Easily build trees using the comprehensive interface, which enables the setup of:
 - Measurement level (nominal, ordinal, and continuous)
 - Independent variables
 - Dependent variables
 - Influence variables
 - Growing method
 - Output setup, which includes trees, statistics, charts, and rules
 - Split sample validation or cross-validation
 - Stopping criteria
 - Saved variables, including predicted values, probability, and XML models
- Choose from four tree-growing methods
- View nodes using one of several methods: Show bar charts or tables of your target variables, or both, in each node
- Collapse and expand branches, and change other cosmetic properties, such as fonts and colors
- View and print trees
- Specify the exact zoom percentage for viewing visual tree models in the interface
- Automate tree building using the production mode
 - Automatically generate syntax from the interface
- Force one predictor into the model
- Specify prior probabilities, misclassification costs, revenues, expenses, and scale scores

Tree-growing algorithms

- Perform analysis using one of four powerful tree-growing algorithms:
 - CHAID by Kass (1980)
 - Exhaustive CHAID by Biggs, de Ville, and Suen (1991)
 - Classification & regression trees (CRT) by Breiman, Friedman, Olshen, and Stone (1984)
 - QUEST by Loh and Shih (1997)
- Handle missing predictor data using one of two methods: Assign to a category or impute by surrogate
- Discretize continuous predictor variables according to the number of categories specified
- Have pruning capabilities for CRT and QUEST
- Randomly sample source data for split-sample validation or use a variable to split the sample

Model evaluation

- Generate risk and classification tables
- Summarize node performance with evaluation graphs and tables to help identify the best segments:
 - Gains
 - Index (lift)
 - Response
 - Mean
 - Average profit
 - ROI
- Partition data between training and test data to verify accuracy
- Display summary graphs or classification rules for selected nodes using the node summary window

Deployment

- Export:
 - Tree diagrams and charts. Export formats include: Microsoft® Windows® metafile (WMF), Windows bitmap (BMP), encapsulated PostScript® (EPS), JPEG, TIFF, PNG, and Macintosh® PICT
 - Summary tables as HTML, text, Microsoft Word/RTF, and Microsoft Excel files
- Save information from the model as variables in the working data file
- Export decision rules that define selected segments in SQL to score databases, SPSS syntax to score SPSS files, or as simple text (through syntax)
- Export trees as XML models for use with SPSS Server and SmartScore® to score new cases or data files
- Publish trees as images and tables as static or interactive tables to SmartViewer® Web Server™
- For additional insight, select interesting segments in the working data file via tree nodes, and run more analyses

System requirements

- Software: SPSS Base 13.0
- Other system requirements vary according to platform

Features subject to change based on final product release.

To learn more, please call Technologies4Targeting Ltd +44 (0)1733 890790 or visit www.tech4t.co.uk/spss

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