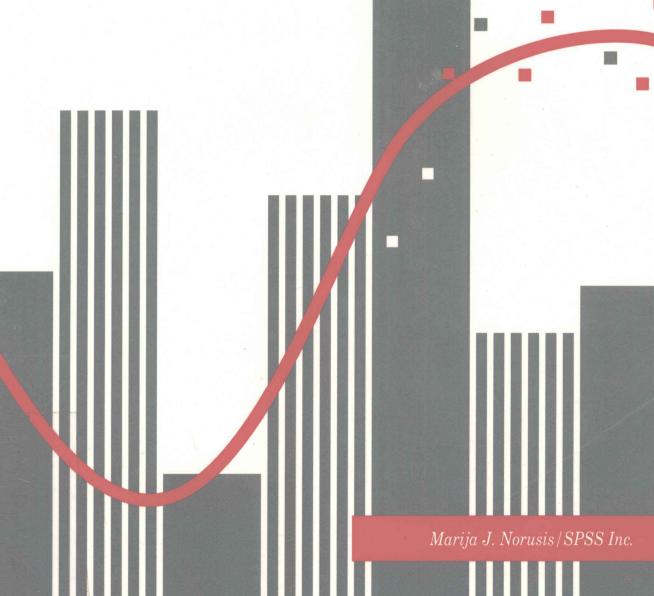


SPSS° for Windows™
Base System User's Guide
Release 6.0
_





SPSS[®] for Windows[™] Base System User's Guide Release 6.0

Marija J. Norušis/SPSS Inc.

SPSS Inc. 444 N. Michigan Avenue Chicago, Illinois 60611 Tel: (312) 329-2400 Fax: (312) 329-3668

SPSS Federal Systems (U.S.)
SPSS Asia Pacific Pte. Ltd.
SPSS Australasia Pty. Ltd.
SPSS Benelux BV
SPSS Central and Eastern Europe
SPSS France SARL
SPSS Germany
SPSS Hellas SA
SPSS Hispanoportuguesa S.L.
SPSS India Private Ltd.
SPSS Israel Ltd.

SPSS Italia srl SPSS Japan Inc. SPSS Latin America

SPSS Middle East and Africa

SPSS Scandinavia AB

SPSS UK Ltd.

For more information about SPSS® software products, please write or call

Marketing Department SPSS Inc. 444 North Michigan Avenue Chicago, IL 60611 Tel: (312) 329-2400 Fax: (312) 329-3668

SPSS is a registered trademark and the other product names are the trademarks of SPSS Inc. for its proprietary computer software. No material describing such software may be produced or distributed without the written permission of the owners of the trademark and license rights in the software and the copyrights in the published materials.

The SOFTWARE and documentation are provided with RESTRICTED RIGHTS. Use, duplication, or disclosure by the Government is subject to restrictions as set forth in subdivision (c)(1)(ii) of The Rights in Technical Data and Computer Software clause at 52.227-7013. Contractor/manufacturer is SPSS Inc., 444 N. Michigan Avenue, Chicago, IL, 60611.

General notice: Other product names mentioned herein are used for identification purposes only and may be trademarks of their respective companies.

Windows is a trademark of Microsoft Corporation.

SPSS[®] for Windows[™]: Base System User's Guide, Release 6.0 Copyright © 1993 by SPSS Inc. All rights reserved.

Printed in the United States of America.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher.

90 99 98 97 96

ISBN 0-13-178856-6

Library of Congress Catalog Card Number: 93-084969

Preface

SPSS is a comprehensive and flexible statistical analysis and data management system. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts and plots of distributions and trends, descriptive statistics, and complex statistical analyses.

SPSS® for Windows™ Release 6 brings the full power of the mainframe version of SPSS to the personal computer environment. It will enable you to perform many analyses on your PC that were once possible only on much larger machines. You can now analyze large data files with thousands of variables. The algorithms are identical to those used in SPSS software on mainframe computers, and the statistical results will be as precise as those computed on a mainframe.

SPSS for Windows provides a user interface that makes statistical analysis more accessible for the casual user and more convenient for the experienced user. Simple menus and dialog box selections make it possible to perform complex analyses without typing a single line of command syntax. The Data Editor offers a simple and efficient spread-sheet-like facility for entering data and browsing the working data file. High-resolution, presentation-quality charts and plots are included as part of the Base system.

The SPSS for Windows Base System User's Guide documents the graphical user interface of SPSS for Windows. Beneath the menus and dialog boxes, SPSS uses a command language, and some features of the system can be accessed only via command syntax. Appendix A lists the commands available only with command syntax. Complete command syntax is documented in the SPSS Base System Syntax Reference Guide.

SPSS Options

The following options are available as add-on enhancements to the SPSS Base system:

- SPSS Professional Statistics[™] provides techniques to measure the similarities and differences in data, classify data, identify underlying dimensions, and more. It includes procedures for these analyses: cluster, k-means cluster, discriminant, factor, multidimensional scaling, proximity, and reliability.
- SPSS Advanced Statistics[™] includes sophisticated techniques such as logistic regression, loglinear analysis, multivariate analysis of variance, constrained nonlinear regression, probit analysis, Cox regression, Kaplan-Meier and actuarial survival analysis.

- SPSS Tables[™] creates a variety of presentation-quality tabular reports, including complex stub-and-banner tables and displays of multiple response data.
- SPSS Trends[™] performs comprehensive forecasting and time series analyses with multiple curve-fitting models, smoothing models, and methods for estimating autoregressive functions.
- SPSS Categories[™] performs conjoint analysis and optimal scaling procedures, including correspondence analysis.
- SPSS CHAID[™] simplifies tabular analysis of categorical data, develops predictive
 models, screens out extraneous predictor variables, and produces easy-to-read tree
 diagrams that segment a population into subgroups that share similar characteristics.
- SPSS LISREL® 7 analyzes linear structural relations and simultaneous equation models.

You can expand the system yourself by incorporating programs written in C or FORTRAN, Contact SPSS Inc. for SPSS for Windows User Code documentation.

Compatibility

The SPSS for Windows Base system is designed for personal computers in the IBM PC and IBM PS/2 lines with at least 4MB of random access memory and 23MB of hard disk space, running Windows 3.1 or later. This product also functions on closely IBM-compatible hardware.

Serial Numbers

Your serial number is your identification number with SPSS Inc. You will need this serial number when you call SPSS Inc. for information regarding support, payment, a defective diskette, or an upgraded system.

The serial number can be found on the diskette labeled Installation that came with your Base system. Before using the system, please copy this number to the registration card.

Registration Card

STOP! Before continuing on, *fill out and send us your registration card*. Until we receive your registration card, you have an unregistered system. Even if you have previously sent a card to us, please fill out and return the card enclosed in your Base system package. Registering your system entitles you to:

- Technical support services
- Favored customer status
- New product announcements

Don't put it off-send your registration card now!

Customer Service

If you have any questions concerning your shipment or account, contact your local supplier, listed on p. vi.

Training Seminars

SPSS Inc. provides both public and onsite training seminars for SPSS for Windows. All seminars feature hands-on workshops. SPSS for Windows seminars will be offered in major U.S. and European cities on a regular basis. For more information on these seminars, call the SPSS Inc. Training Department toll-free at 1-800-543-6607.

Technical Support

The services of SPSS Technical Support are available to registered owners of SPSS. Customers may contact Technical Support for assistance in using SPSS products or for installation help for one of the supported hardware environments.

To reach Technical Support, send an e-mail to support@spss.com, see the SPSS home page on the World Wide Web at http://www.spss.com, or call your local supplier, listed on p. vi. Be prepared to identify yourself, your organization, and the serial number of your system.

Additional Publications

Additional copies of all SPSS product manuals may be purchased separately from Prentice-Hall, the exclusive distributor of SPSS publications. To order additional manuals, just fill out and mail the Publications insert included with your system.

Lend Us Your Thoughts

Your comments are important. So send us a letter and let us know about your experiences with SPSS products. We especially like to hear about new and interesting applications using the SPSS for Windows system. Write to SPSS Inc. Marketing Department, Attn: Micro Software Products Manager, 444 N. Michigan Avenue, Chicago IL, 60611

Contacting SPSS Inc.

If you would like to be on our mailing list, contact one of our offices below. We will send you a copy of our newsletter and let you know about SPSS Inc. activities in your area.

SPSS Inc.

Chicago, Illinois, U.S.A. Tel: 1.312.329.2400 Fax: 1.312.329.3668 Customer Service: 1.800.521.1337

Sales:

1.800.543.2185 sales@spss.com Training: 1-800-543-6607 Technical Support: 1.312.329.3410 support@spss.com

SPSS Federal Systems

Arlington, Virginia, U.S.A. Tel: 1.703.527.6777

Fax: 1.703.527.6866

SPSS Asia Pacific Pte. Ltd.

Singapore, Singapore Tel: +65.221.2577 Fax: +65.221.9920

SPSS Australasia Pty. Ltd.

Sydney, Australia Tel: +61.2.954.5660 Fax: +61.2.954.5616

SPSS Benelux BV

Gorinchem, The Netherlands Tel: +31.0183.636711 Fax: +31.0183.635839

SPSS Central and Eastern Europe

Chertsey, Surrey, U.K. Tel: +44.1932.566262 Fax: +44.1932.567020

SPSS France SARL

Boulogne, France Tel: +33.1.4699.9670 Fax: +33.1.4684.0180

SPSS Germany

Munich, Germany Tel: +49.89.4890740 Fax: +49.89.4483115

SPSS Hellas SA

Athens, Greece Tel: +30.1.7251925 Fax: +30.1.7249124

SPSS Hispanoportuguesa S.L.

Madrid, Spain Tel: +34.1.547.3703 Fax: +34.1.548.1346

SPSS India Private Ltd.

New Delhi, India Tel: +91.11.600121 x1029 Fax: +91.11.6888851

SPSS Israel Ltd.

Herzlia, Israel Tel: +972.9.598900 Fax: +972.9.598903

SPSS Italia srl

Bologna, Italy Tel: +39.51.252573 Fax: +39.51.253285

SPSS Japan Inc.

Tokyo, Japan Tel: +81.3.5474.0341 Fax: +81.3.5474.2678

SPSS Latin America

Chicago, Illinois, U.S.A. Tel: 1.312.494.3226 Fax: 1.312. 494.3227

SPSS Middle East and Africa

Chertsey, Surrey, U.K. Tel: +44.1753.622677 Fax: +44.1753.622644

SPSS Scandinavia AB

Stockholm, Sweden Tel: +46.8.102610 Fax: +46.8.102550

SPSS UK Ltd.

Chertsey, Surrey, U.K. Tel: +44.1932.566262 Fax: +44.1932.567020

Contents

Overview of SPSS for Windows 1	Data Files 27
SPSS Windows 3	Creating a New Data File 27
Designated versus Active Window 3	Opening a Data File 27
Main Menu 4	Specifying File Type 28 Options 29 Data Files Created in Non Windows
Chart Menus 4	
Icon Bars 5	Data Files Created in Non-Windows Applications 31
Status Bar 5	Reading SQL Databases 32
Statistical Analysis with the Dialog Box Interface 5 Choosing a Data File 6 Choosing a Statistical Procedure 7 Main Dialog Box 8	Variable Names and Labels 32 SQL Server Databases 32 Selecting a Database 33 Tables and Fields 33 Selecting a Subset of Cases 34
Subdialog Boxes 11	Oracle Databases 36
Persistence of Settings 15 Order of Operations 15	Tables and Fields 37 Selecting a Subset of Cases 38
Data Editor 15 Entering Data 16	Reading SQL Databases with ODBC 38 Time-saving Tip 40
Editing Data 17	Reading Text Files 41
Creating and Editing Charts 19	Define Fixed Variables 42
Pasting and Editing Command Syntax 22	Define Freefield Variables 47
Saving Results 23	Data Editor Window 49
Ending an SPSS Session 24	File Information 50
Working with Large Data Files 24	Working Data File 50 Other SPSS Data Files 51
Decimal Indicator and Windows International Settings 24	Saving Data Files 52
Keyboard Movement 25	Save As New File or Different Format 52 Specifying File Type 53
Menus 25 Dialog Boxes 25	Closing a Data File 54

Data Editor 55

Defining Variables 56 Variable Names 57 Variable Type 58 Labels 60 Missing Values 62 Column Format 63 Templates 64

Entering Data 67 Entering Data in a Selected Area Data Value Restrictions

Editing Data 69 Changing Data Values 69 Cutting, Copying, and Pasting Values 70 Inserting New Cases 73 Inserting New Variables 73 Deleting Cases and Variables 74 Moving Variables 74 Changing Data Type 75

Finding Variables 75 Finding Cases 75

Finding Data Values 76

Case Selection Status 77 Preferences 77

Display Value Labels 77 Auto New Case 78 Grid Lines 79 Fonts 79

Printing 79

Pending Transformations and the Data Editor 79

Saving Data Files 80 Save As New File or Different Format 80 Closing a Data File and Opening a Different One 80 Keyboard Movement 81

4 Output and Syntax Windows 83

Output Windows 83 Opening a New Text File in an Output Window 83 Opening an Existing Text File in an Output Window 84 Multiple Output Windows 85 Output Window Icon Bar Syntax Windows 86 Opening a New Text File in a Syntax Window 86 Opening an Existing File in a Syntax Window 86 Using SPSS Command Syntax in a Syntax Window 87 Multiple Syntax Windows 89 Syntax Window Icon Bar Editing Text Files 89 Basic Text-editing Concepts 90 Edit Menu 90 Type Fonts 93 Copying and Pasting Output into Other Applications 93

Saving Text Files 94 Save As New File 94 Saving Selected Areas of Text Files

5 Data Transformations 97

Computing Values 97

Calculator Pad 98 Functions 99 Conditional Expressions 103 Variable Type and Label 104 Syntax Rules for Expressions 105 Random Number Seed 105 Counting Occurrences 106 Defining Values to Count 107 Selecting Subsets of Cases 108

Recoding Values 108
Recode into Same Variables 108
Recode into Different Variables 111

Ranking Data 114
Ranking Method 115
Rank Ties 117

Creating Consecutive Integers from Numeric and String Values 117

Time Series Data Transformations 119
Generating Date Variables 119
Creating Time Series Variables 121
Replacing Missing Values 124
Pending Transformations 126

6 File Handling and File Transformations 127

Sorting Data 127

Transposing Cases and Variables 128
Missing Values in Transposed Data
Files 129

Combining Data Files 129

Merging Files That Contain Different
Cases 129

Merging Files That Contain Different
Variables 134

Applying a Data Dictionary 140 Weighted Files 141

Aggregating Data 141
Aggregate Functions 143
New Variable Names and Labels 145
Aggregate Filename and Location 145
Split-File Processing 146

Turning Split-File Processing On and Off 147
Sorting Cases for Split-File Processing 147

Selecting Subsets of Cases 148
Selecting Cases Based on Conditional
Expressions 150

Selecting a Random Sample 150
Selecting a Range of Dates or Times 151
Case Selection Status 153
Weighting Cases 153
Turning Weights On and Off 154

7 Data Tabulation 155

Histograms 154

A Frequency Table 155
Visual Displays 156
What Day? 158
Histograms 158
Percentiles 159
Screening Data 160

Weights in Scatterplots and

How to Obtain Frequency Tables 160
Frequencies Statistics 161
Frequencies Charts 163
Frequencies Format 164
Additional Features Available with Command Syntax 165

8 Descriptive Statistics 167

Examining the Data 167

Summarizing the Data 169
Levels of Measurement 169
Summary Statistics 171
The Normal Distribution 174
Who Lies? 177

How to Obtain Descriptive Statistics 178
Descriptives Options 179
Additional Features Available with Command
Syntax 180

Reasons for Exploring Data 181 Identifying Mistakes 181

Exploring Data 181

Exploring the Data 182 Preparing for Hypothesis Testing 182

Ways of Displaying Data 182

The Histogram 182

The Stem-and-Leaf Plot 183

The Boxplot 185

Evaluating Assumptions 187

The Levene Test 187

Spread-versus-Level Plots 188

Tests of Normality 189

Estimating Location with Robust Estimators 191

The Trimmed Mean 192

M-Estimators 192

How to Explore Your Data 195

Explore Statistics 196

Explore Plots 197

Explore Options 199

Additional Features Available with Command Syntax 199

10 Crosstabulation and Measures of Association 201

Crosstabulation 201

Cell Contents and Marginals 202

Choosing Percentages 203

Adding a Control Variable 203

Graphical Representation of Crosstabulations 205

Using Crosstabulation for Data Screening 205

Crosstabulation Statistics 206

The Chi-Square Test of Independence

Measures of Association

Nominal Measures

Ordinal Measures 215

Measures Involving Interval Data

Estimating Risk in Cohort Studies 218

Estimating Risk in Case-Control

Studies 219

How to Obtain Crosstabulations 221

Crosstabs Statistics 222

Crosstabs Cell Display 223

Crosstabs Table Format 225

Additional Features Available with Command

Syntax 225

1 Describing Subpopulation Differences 227

Searching for Discrimination 227

Who Does What? 228

Level of Education 229

Beginning Salaries 230

Introducing More Variables

How to Obtain Subgroup Means 232

Means Options Dialog Box 233

Additional Features Available with Command

Syntax 234

12 Multiple Response Analysis 235

Introduction to Multiple Response Data 235

Set Definition 236

Crosstabulations 238

Analyzing Multiple Response Data 241

How to Define Multiple Response Sets 241

How to Obtain Multiple Response

Frequencies 242

Additional Features Available with Command Syntax 243

How to Crosstabulate Multiple Response Sets 244

Define Value Ranges 245

Options 245

Additional Features Available with Command Syntax 247

13Testing Hypotheses about Differences in Means 249

Testing Hypotheses 249
Samples and Populations 250
Sampling Distributions 250
Sampling Distribution of the Mean 252

The Two-Sample T Test 254
Significance Levels 256
One-tailed versus Two-tailed Tests 256
What's the Difference? 256

Using Crosstabulation to Test Hypotheses 257

Independent versus Paired Samples 258
Analysis of Paired Data 258

Hypothesis Testing: A Review 259
The Importance of Assumptions 260

How to Obtain an Independent-Samples T Test 260

Define Groups for Numeric Variables 261
Define Groups for String Variables 262
Independent-Samples T Test Options 262

How to Obtain a Paired-Samples T Test 263

Paired-Samples T Test Options 264
Additional Features Available with Command
Syntax 265

14One-Way Analysis of Variance 267

Examining the Data 267
Sample Means and Confidence
Intervals 268

Testing the Null Hypothesis 269

Assumptions Needed for Analysis of Variance 270

The Levene Test 270

Analyzing the Variability 270
Between-Groups Variability 271
Within-Groups Variability 271
Calculating the F Ratio 272

Multiple Comparison Procedures 273

How to Obtain One-Way Analysis of Variance 275

One-Way ANOVA Define Range 276
One-Way ANOVA Contrasts 276
One-Way ANOVA Post Hoc Multiple
Comparisons 278
One-Way ANOVA Options 279
Additional Features Available with Command
Syntax 280

15 Analysis of Variance 281

Descriptive Statistics 281

Analysis of Variance 282
Testing for Interaction 284
Tests for Sex and Attractiveness 285

Explanations 285

Extensions 285

How to Obtain a Simple Factorial Analysis of Variance 286

Simple Factorial ANOVA Define Range 287 Simple Factorial ANOVA Options 287 Additional Features Available with Command Syntax 290

16 Measuring Linear Association 291

Examining Relationships 291

The Correlation Coefficient 292

Some Properties of the Correlation Coefficient 294

Calculating Correlation Coefficients 294

Hypothesis Tests about the Correlation

Coefficient 295

Correlation Matrices and Missing Data 296

Choosing Pairwise Missing-Value Treatment 297

The Rank Correlation Coefficient 297

How to Obtain Bivariate Correlations 298 Bivariate Correlations Options 300

Additional Features Available with Command Syntax 301

17 Partial Correlation Analysis 303

Computing a Partial Correlation Coefficient 303

The Order of the Coefficient 304
Tests of Statistical Significance 304

Detecting Spurious Relationships 304

Detecting Hidden Relationships 306

Interpreting the Results of Partial Correlation Analysis 307

How to Obtain Partial Correlations 307
Partial Correlations Options 308
Additional Features Available with Command Syntax 309

18 Multiple Linear Regression Analysis 311

Linear Regression 311
Outliers 312
Choosing a Regression Line 313
From Samples to Populations 314
Goodness of Fit 317

Predicted Values and Their Standard Errors 320

Searching for Violations of Assumptions 324

Locating Outliers 330

When Assumptions Appear to Be Violated 334

Multiple Regression Models 338

Predictors of Beginning Salary 338

Determining Important Variables 341

Building a Model 343

Procedures for Selecting Variables 346

Checking for Violations of Assumptions 351

Looking for Influential Points 353

Measures of Collinearity 355

Interpreting the Equation 357

How to Obtain a Linear Regression Analysis 358

Linear Regression Statistics 359

Linear Regression Plots 360

Linear Regression Save New Variables 362

Linear Regression Options 364

Additional Features Available with Command Syntax 365

19 Curve Estimation 367

Selecting a Model 367

The Health Care Composite Index 367

Predicted Values and Residuals 369

Testing for Normality 371

How to Obtain Curve Estimation 372 Saving Predicted Values and

Residuals 375

20 Distribution-Free or Nonparametric Tests 377

The Mann-Whitney Test 377
Ranking the Data 378
Calculating the Test 378
Which Diet? 379
Assumptions 380

Nonparametric Tests 380
One-Sample Tests 380
Tests for Two or More Independent Samples 386

How to Obtain the Chi-Square Test 389
Chi-Square Test Options 391
Additional Features Available with Command Syntax 391

How to Obtain the Binomial Test 392
Binomial Test Options 393
Additional Features Available with Command Syntax 394

How to Obtain the Runs Test 394
Runs Test Options 395
Additional Features Available with Command
Syntax 396

How to Obtain the One-Sample Kolmogorov-Smirnov Test 396

One-Sample Kolmogorov-Smirnov Options 398

Additional Features Available with Command Syntax 398

How to Obtain Two-Independent-Samples Tests 399

Two-Independent-Samples Define Groups 400 Two-Independent-Samples Options 401

Two-Independent-Samples Options 401
Additional Features Available with Command
Syntax 401

How to Obtain Tests for Several Independent Samples 402

Several Independent Samples Define Range 403 Several Independent Samples Options 403 Additional Features Available with Command Syntax 404

How to Obtain Two-Related-Samples Tests 404

Two-Related-Samples Options 406
Additional Features Available with Command
Syntax 406

How to Obtain Tests for Several Related Samples 407

Several Related Samples Statistics 408

21 Listing Cases 409

How to Obtain Case Listings 409
Additional Features Available with Command
Syntax 411

22 Reporting Results 413

Basic Report Concepts 413
Summary Reports 413
Listing Reports 415
Combined Reports 416
Multiple Break Variables 416
Summary Columns 417
Grand Total Summary Statistics 418

Formatting Reports 419
Titles and Footnotes 419
Column Headings 420
Displaying Value Labels 420

How to Obtain Listing Reports and Reports with Summaries in Rows 421

Data Column Format 422

Break Category Summary Statistics 424

Break Spacing and Page Options for Summaries in Rows 425

Break Column Format 426

Report Total Summary Statistics 426

Report Options for Summaries in

Rows 426

Report Layout for Summaries in Rows 427

Titles and Footers 429

How to Obtain a Report with Summaries in Columns 430

Data Column Summary Statistic for a Variable 432

Composite Summary (Total) Columns 433

Data Column Format 435

Break Options for Summaries in

Columns 435

Break Column Format 436

Report Options for Summaries in

Columns 436

Report Layout for Summaries in

Columns 437

Titles and Footers 438

Additional Features Available with Command Syntax 438

23 Overview of the SPSS Chart Facility 439

How to Create and Modify a Chart 439
Entering the Data 440
Creating the Chart 441

Modifying the Chart 443

Chart Carousel 451

Chart Carousel Menus 451
Chart Carousel Pushbuttons 452

Saving Charts in the Chart Carousel 452

Chart Definition Global Options 453

Titles, Subtitles, and Footnotes 454

Missing Values 455 Chart Templates 458

Rotated Vertical Chart Text 460

24 Bar, Line, Area, and Pie Charts 461

Chicago Uniform Crime Reports Data 461 Simple Charts 462

Clustered Bar and Multiple Line Charts 464

Drop-Line Charts 465

Stacked Bar and Area Charts 466

Variations in Bar, Line, and Area

Charts 467

100% Stacked Bar and Area Charts 467

Hanging Bar Charts 468

Mixed Charts 468

How to Obtain Bar, Line, Area, and Pie

Charts 469

Bar Charts 470

Line Charts 481

Area Charts 493

Pie Charts 501

Transposed Charts 505

Summary Functions 506

25 High-Low Charts 511

Simple High-Low Charts 511

Clustered High-Low Charts 512

Difference Line Charts 513

How to Obtain High-Low Charts 514

26 Boxplots and Error Bar Charts 537

Boxplots 537

Error Bar Charts 539

How to Obtain a Boxplot 541

Defining Boxplots 543

How to Obtain an Error Bar Chart 546

Defining Error Bar Charts 548

27 Scatterplots and Histograms 553

A Simple Scatterplot 553

Profits, Growth, and Compensation 555

Scatterplot Matrices 557

Smoothing the Data 558

Plotting in Three Dimensions 558

How to Obtain a Scatterplot 560
Defining Simple Scatterplots 561
Defining Scatterplot Matrices 562
Defining Overlay Scatterplots 564
Defining 3-D Scatterplots 565

How to Obtain a Histogram 566

28 Pareto and Control Charts 569

Pareto Charts 569

Control Charts 570
Using the Same Data on Pareto and Control Charts 572
How to Obtain a Pareto Chart 574
How to Obtain a Control Chart 582
Control Chart Options 598

29 Normal Probability Plots 601

How to Obtain Normal Probability Plots 603
Method Used to Calculate Expected Normal
Distribution 604
Weighted Data 605

30 Sequence Charts 607

Plotting Health Care Stock 607
Seasonal Trends 608
Forecasting 609
Examining the Errors 610
How to Obtain Sequence Charts 610
Time Axis Reference Lines 612
Formatting Options 613

31 Autocorrelation and Cross-Correlation 615

The Autocorrelation Function 615
The Partial Autocorrelation Function 617
The Cross-Correlation Function 618
How to Obtain Autocorrelation and Partial Autocorrelation Charts 620
Options 621
How to Obtain Cross-Correlation Charts 622
Options 623

Exploring Data with the Chart Editor 625

Enhancing Charts for Presentation 627

32 Modifying Charts 625

Editing in a Chart Window 629 Chart Menus 629 Selecting Objects to Modify 631 Changing Chart Types (Gallery Menu) 632 Additional Chart Types 632 Modifying Chart Elements (Chart Menu) Accessing Chart Options 636 Bar/Line/Area Options Pie Options 639 Boxplot Options 642 Error Bar Options 643 Scatterplot Options: Simple and Matrix Overlay Scatterplot Options 3-D Scatterplot Options 650 Histogram Options 651 Axis Characteristics Bar Spacing 666 Adding or Changing Explanatory Text 667 Adding Reference Lines Inner and Outer Frames Refreshing the Screen 674

Selecting and Arranging Data (Series Menu) 674

Bar, Line, and Area Chart Displayed Data 675

Pie Chart Displayed Data 677

High-Low-Close Displayed Data 677

Range Bar Displayed Data 678

Difference Line Displayed Data 679

Error Bar Displayed Data 680

Simple Scatterplot Displayed Data 681

Overlay Scatterplot Displayed Data 68

Scatterplot Matrix Displayed Data 684

3-D Scatterplot Displayed Data 68

Histogram Displayed Data 685

Transposing Data 686

Modifying Attributes (Attributes Menu) 687
Palettes 688

Falettes 000

Exploding Pie Chart Slices 699

Handling Missing Data in a Line Chart

Changing or Rotating the Axes 700

33 Printing 705

Printer Installation 705

Files and Windows 705

Printing a Syntax or Output File 705

Determining the Correct Width and Length for Printed Output 706

Printing a Data File 706

Options for Data Files 707

Printing a Chart File 707

Setting Up Your Printer 710

Production Mode Printing 711

34 Utilities 713

Command Index 713

Fonts 714

Variable Information 715

Variable Sets 716

Defining Variable Sets 716

Using Variable Sets 717

File Information 718

Output Page Titles 718

Displaying Output Page Titles 719

Reordering Target Variable Lists 719

Stopping the SPSS Processor 720

Microsoft Mail 720

Other Utilities 720

35 Linking and Exchanging Information Between Applications 721

Object Linking and Embedding 721 Linking an SPSS Chart 721 Alternative Method of Transferring Charts 723

Dynamic Data Exchange 724
Using SPSS Results in a Report 724
DDE Specifications for SPSS 729

Dragging and Dropping Files 732
Opening Files 732
Printing Files 733

36 Preferences 735

Session Journal 736

Journal Filename and Location 737

Working Memory 737

Open a Syntax Window at Startup 738

Transformation and Merge Options 738

699