Getting Started with SPSS



Course:Intro to StatisticsLecturer:Dr. Courtney Pindling

Overview



- Introduction to SPSS
- Installing SPSS for Windows
 - Graduate Pack (= version 13)
- Scales of Measurement and SPSS
- SPSS Menus
- Working with Data
- Documenting Outputs
- Getting Help
- Transformation of Data
- SPSS Analyze Menu
- Graphs and Tables (APA style)

Introduction



Important Links:

- SPSS Graduate Pack: <u>http://spss.com/gradpack/</u>
 - \$200 at http://www.academicsuperstore.com/market/marketdisp.html?PartNo=819983
- SPSS Tutorials: <u>http://www.stat.tamu.edu/spss.php</u>
- Statistics Lectures: http://pindling.org/Math/EDRM611/
 - Username: EDRM611, password: *leadership*
- EDRM611: <u>http://d2l.andrews.edu/</u>
- This Document: http://pindling.org/Math/EDRM611/

Installing SPSS

- Installation from CD
 - C:/Program Files/SPSS
- Serial Number Needed
- Authorization Code
 - Provided with software
- Registration
 - Authorization Wizard
 - Use Wizard to Obtained License before Registering
 - Register within two weeks
 - Only 1 installation

SPSS	To receive a License, call SPSS and speak with a representative. You will need the Authorization Code received with your software and the Lock Cod displayed below. In the U.S. and Canada, call 800-521-1337 between 8:30 AM and 5:00 PM CST. Outside of the U.S. and Canada, contact your local office.
	License Authorization Wizard - Version 1.0
	Autorization for
	SPSS Product
	Lock Code:
	4-26806
	Enter the License that you received from SPSS in the field below.

Start > Programs > SPSS for Windows > Authorization Wizard

Starting & Running SPSS

• Create Icon on Desktop

• From Windows Start menu

- SPSS for Windows
- Select SPSS v14 for Windows
- Select Options
 - Run Tutorial
 - Type in Data
 - Run an Existing Query
 - Create a New Query
 - Open and Existing Data Source

What wo	uld you like to do?
2	O Run the tutorial
	O Type in data
8	O Run an existing query
	O Create new query using Database Wizard
	Open an existing data source
	More Hies C:\Math\Math\Statistics1\Data\Types\Cor_zero.s C:\Documents and Settings\Administrator\My Doc. C:\Math\Math\Statistics1\Stats4U\Linear_Regres` C:\Math\Math\Statistics1\Stats4U\Linear_Regres` <
	Open another type of file
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Scales of Measurement

• Nominal

- Label: US 1
- Ordinal
 - Rank Order: Survey, 1 or 2
- Interval (Scales)
 - Divided Interval: 40 Deg F
- Ratio (Scales)
 - Absolute Zero: 66 bps





	*Corr_zero.sav [DataSet1] - SPSS Data Editor						
	File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help						
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	SPSS Menus						
•	File: Open/New (Data; Output), Save As, Print						
	 Edit: Copy, Paste, Insert Case/Variable 						
	View: Switch between Data & Variable Views						
•	Data: Define Variable/Case, <u>Transpose</u> ?						
	Transform: Compute, <u>Recode</u> , Rank cases						
·	 <u>Analyze</u>: Descriptive Statistics, Compare Means, Correlate, Regression, etc. 						
	Graphs: Chart Builder: Histogram, Pie, Line, etc						
	Help: Topics, Tutorial, <u>Results Coach</u> , etc						

Working with Data: Data View

- Data Entry
 - Type in
 - Obtain from file
 - Data or Output
- Manual Inputs
 - Determine Measurement Scale
 - Variable View Measure
- Data File Types
 - SPSS (.sav)
 - Excel (.xls)
 - Lotus 123 (.wk)
 - Text (.txt)
 - Data (.dat)
 - Csv (.ccs) select (*.*)

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5	1	2.36					
6	2	2.77					
7	1	2.89					
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11	2	3.76					
12	1	2.83					
13	1	2.15					
14	2	2.58					
	ata View 🔏 Va	ariable View / < >					

Working with Data: Variable View

File Edit View Data Transform Analyze

- SPSS Data Types
 - Scales Ratio
 - Ordinal Rank
 - Nominal Label
- Structure
 - **Cases** (rows): Observations
 - Variables (columns): Characteristics
- Options
 - Name: Variable Name
 - Type: Numeric, String, Date, etc
 - Width: Default 8
 - Decimals: Default 2
 - Label: Variable Report Name
 - Value: Recode Option
 - Missing: Define Omitted Values
 - Columns: Display Width
 - Align: Left, Right, Center
 - Measure: Scales, Nominal, Ordinal

Graphs Utilities Add-ons Window Help 嚯 👆 🌧 🟪 🕼 尚 ΠŤ Align Measure Right Scale 1 ≣ Right 2 Nominal v 4 Scale Ordinal 5 Nominal 6 8 9 Y ▲ ▶ X Variable View / ▲ ▲ > Variable View / < >

Working with Data: Data Management

- Data Layout
 - Paired Data (equal rows)
 - Unrelated Data
 - Data with Grouping Variable
 - Homogeneous and Mixed Data Types: Nominal and/or Ordinal
- File Menu
 - Open or New: Data or Output
 - Save As
 - Recently Used:
 - Data
 - Files (data and outputs)

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11	4.00	3.76	~				
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Working with Data: Data Outputs

• Output Title Bar

- Name of Output File
- File Type (.spo):
 Output1.spo
- Right Mouse Menu
- Content of Output Window
 - Results Tables
 - Graphs
 - Analyzes Outputs

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Window Help														
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Document Outputs: Right Click Menu



Document Outputs: Copy and Paste

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Document1 - Microsoft Word

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Document Outputs: Format Output

• Format Output

- Locate Graphic Output in Word
- Select (Left Click)
- Right Mouse Click
 - Format Picture

• Format Options

- Automatic
- Grayscale
- Black & White
- Washout



Getting Help: Help System

Help Topics	Window	Help		_
Help Sub-menus	🛇 ک	Top Tu	pics torial	
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 Statistics Results Coach 		Re Ch	gister Product eck for Updates	H
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SPSS: Help (Left Click)

Getting Help: Help Topics

😵 Base System

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Search previous results

Match similar words

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Hide Back Forward Stop Refresh	Options
Contents Index Search Favorites	Get
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Select topic: Found: 0	sys
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Getting Help Help is provided in many different forms: Help menu. The Help menu in most SPSS windows provides access to the main Help system, plus tutorials and technical reference material. Topics. Provides access to the Contents, Index, and Search tabs, which you can use to find specific Help topics. Tutorial. Illustrated, step-by-step instructions on how to use many of the basic features in SPSS. You don't have to view the whole tutorial from start to finish. You can choose the topics you want to view, skip around and view topics in any order,

case Studies. Hands-on examples of how to create various types of statistical analyses and how to interpret the results. The sample data files used in the examples are also provided so that you can work through the examples to see exactly how the results were produced. You can choose the specific procedure(s) that you want to learn about from the table of contents or search for relevant topics in the index. You can also click here to open the Case Studies.

and use the index or table of contents to find specific topics. You can also click here

- Statistics Coach. A wizard-like approach to guide you through the process of finding the procedure that you want to use. After you make a series of selections, the Statistics Coach opens the dialog box for the statistical, reporting, or charting procedure that meets your selected criteria. The Statistics Coach provides access to most statistical and reporting procedures in the Base system and many charting procedures.
- Command Syntax Reference. Detailed command syntax reference information is available in two forms: integrated into the overall Help system and as a separate document in PDF form in the SPSS Command Syntax Reference, available from the Help menu. <u>Click here</u> to open the Command Syntax Reference.

SPSS: Help (Left Click) > Select "Topics"

Getting Help: Help Sub-menus

- Help is every where
- Right Click and Left Click on
 - What's This?
- Window pops up with Explanations

Displays output. Click once to select an object (for example, so that you can copy it to the clipboard). Double-click to activate an object for editing. If the object is a pivot table, you can obtain detailed help on items within the table by right-clicking on row and column labels after the table is activated.



SPSS: Any Output (Right Click)

Getting Help: Help Tutorials

- 1. Slide Shows by Topics
- 2. Watch Using the Help System
- **3. Help menu** Tutorial



Getting Help: Results Coach

- 1. Slide Shows
- 2. Explain Results Table
- 3. Can Use Statements to Help with Analysis and Interpretation

ያ Tutorial

Bivariate Correlations

		Area	Price	Location
Pearson	Area	1.000	.960	.484
Correlation	Price	.960	1.000	.707
	Location	.484	.707	1.000
Sig. (2-tailed)	Area		.000	.019
	Price	.000		.000
	Location	.019	.000	
N	Area	24	23	23
	Price	23	23	22
	Location	23	22	23

The correlations table displays Pearson correlation coefficients, significance values, and the number of cases with nonmissing values.

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SPSS: Any Output (Right Click) > Select "Results Coach"

Getting Help: Case Studies

- 1. Slide Shows
- 2. Explain how to Use SPSS for Types of Statistical Analyses and Interpret the Results
- 3. Filled with many work through examples



SPSS: Help (Left Click) > Select "Case Study"

Data Transformation: Basics

• Recode

- Transforms Data Groups
- Standard Scores

 $z - score: z = \frac{\text{Observed Score - Mean}}{\text{Standard Deviation}} = \frac{X - M}{SD}$

• Variable Math Conversion

- Var2 = Var1 * 10

Old	New
72	75
83	83
77	75
71	75
79	75

Data Transformation: Recode

- Take Data from a Variable and Recode in Defined Groups
- Example: Data Ranging from 70 to 79 to be transformed to Value 75
- Same or Different Variable
- **Options**: Name, Label then Change

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Data Transformation: Standard Scores

- Analyze -> ...
 Check Box
- Compute the z-score for each data score
- z-score is score (X) *minus* mean (M) *divided* by standard *deviation* (SD) *Z* = [(X – M)/SD]

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Compute: Variable Math Compute

- Transform -> Compute
- Perform Math Computations on Variables
- Same or Different Variable

SPSS: Transform > Compute

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File Edit View D	ata Transform Analyze Graphs Utilities Add-ons Window Help
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Frequency for each	Ш.		47.0	0		3		3.
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	11		53.0	0		1		1.
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			57.0	0		1		1.

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Analyze > Descriptive Statistics > Frequency (Select Display Frequency Table)

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Analyze Menu: Freq Histogram

- Simple Frequency Histogram
- Compute the Frequency for each Score and display a Histogram



Analyze > Descriptive Statistics > Frequency > Charts (Select Histogram) (Option: *With normal curve*)

Analyze Menu: Central Tendency

- Central Tendency
 Statistics
- Compute the mean, median, mode, std error of mean (S.E. mean)

Pass9_GroupNValid93Missing0Mean65.97Std. Error of Mean1.377Median65.00Mode65

Analyze > Descriptive Statistics > Frequency > Statistics (Select Central Tendency: Mean, Median, Mode) > OK

Statistics

Analyze Menu: Dispersion

• Dispersion Statistics

 Compute the range, standard deviation, variance

Statistics

Pass9_Group		
Ν	Valid	93
	Missing	0
Std. Deviation		13.275
Variance		176.227
Range		70

Analyze > Descriptive Statistics > Frequency > Statistics (Select Dispersion: Range, SD, Variance) > OK

Analyze Menu: z-scores

	z-scores Statistics	pass9th	Zpass9th
	Compute the z-score	85.00	1.47689
	for each score	73.00	.56828
•	 Compute the range, standard deviation, variance 	68.00	.18970
		65.00	03745
	z = (X - M)/SD	62.00	26460
		40.00	-1.93038
		72.00	.49257
		85.00	.18970

	iet2] - S	SPSS Data Editor
Analyze Menu: Correlation	nsform 2 2 <u>R0000</u> 2.4	Analyze Graphs Utilities Add-ons Window Help Reports Descriptive Statistics General Linear Model Mixed Models
	3.1	Bivariate Correlations
 Correlation Coefficient, r Compute correlation matrix (> 2 Variables) Indicate if correlation 	2.5 2.8 2.3 2.7 2.8 3.1 3.5 3.6 3.76	Variables: Variables: VAR00001 Paste Reset Cancel Help
 Indicate level of significance 	2.83 2.15 2.58 2.75	Correlation Coefficients ✓ Pearson Kendall's tau-b ✓ Test of Significance ③ Two-tailed ✓ Flag significant correlations

Analyze > Correlate > Bivarate (Select: Pearson or Spearman, Option: Cl 95% > OK

Analyze Menu: Correlation Example

- Pearson
 Correlation
 Coefficient, r
- There is a significant correlation at alpha = 0.01

Correlations

		pass9th	pass4th
pass9th	Pearson Correlation	1	.382**
	Sig. (2-tailed)		.000
	Ν	93	93
pass4th	Pearson Correlation	.382**	1
	Sig. (2-tailed)	.000	
	Ν	93	93

**. Correlation is significant at the 0.01 level

Analyze > Correlate > Bivarate (Select: Pearson) > OK

Analyze Menu: Linear Regression

- Correlated
 Variables
- Formula

y =*mx* +*b*

Prediction

sav [DataSet2] - SPSS Data Editor								
Data	Transform	Analyze Graphs Utilities	Add-ons Window Help					
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2.00	VAR0000. 2.4	General Linear Model Mixed Models Correlate	var var					
4.00	2.5	Regression Loglinear	Linear Curve Estimation					
8.00	2.0	Classify Data Reduction	Binary Logistic Multinomial Logistic					
5.00	2.7	Scale Nonparametric Tests	Ordinal Probit					
7.00 2.00	3.1 3.5	Multiple Response	Nonlinear					
5.00	3.6 3.7	Amos 6	2-Stage Least Squares					

Analyze > Regression > Linear

32 [Select: Linear (for Equation) or Curve Estimation (for Plot)]



Coefficients^a

		Unstanc Coeffi	lardized cients	Standardized Coefficients		
Model		В	Std. Error	Beta	t	Sig.
1	(Constant)	6.543	5.656		1.157	.250
	QUANT	.931	.050	.882	18.546	.000

a. Dependent Variable: VERBAL

Analyze Menu: Compare Means

- Statistics: *t* test
- One-Sample T Test:

Sample mean against a reference value

- Independent Sample T Test
 - Done Related Samples
 - Homogeneous and Non-Homogeneous Variances
- Paired-Sample T Test
 - Correlated Samples

Analyze > Compare Means

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2	2	3.1	Correlate		۲	Paired-Samples T Te	est	
3	2	2.5	Regression		۲,	One-Way ANCVA		
4	1	2.8	Loginear Churcí		!			
5	1	23	Classify		!			
6	2	2.5	Data Reduc	ton	!			
7	4	2.1	Scale	kie Teele	[
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ŏ	1	3.1	Multiale Dee		[
9	2	3.5	Multiple Res	ponse	-			
10	1	3.6	Amos 6					
11	2	3.76						
12	1	2.83						
13	1	2.15						
14	2	2.58						
15	1	2.75						

Analyze Menu: Compare Means Example

- Statistics: *t* test
- Independent Sample T Test
 - Done Related Samples
 - Homogeneous
 Variances

					Std. Error
	ACTIV	N	Mean	Std. Deviation	Mean
QUANT	4.00	21	112.1429	12.02616	2.62432
	5.00	33	109.1818	13.63235	2.37309

Group Statistics

Independent	Samples	Test
-------------	---------	------

		Levene's Equality of	s Test for Variances	t-test for Equality of Means							
							Mean	Std. Error	95% Co Interva Differ	nfidence Il of the rence	
		F	Sig.	t	df	Sig. (2-tailed)	Difference	Difference	Lower	Upper	
QUANT	Equal variances assumed	1.123	.294	.814	52	.420	2.96104	3.63950	-4.34216	10.26423	
	Equal variances not assumed			.837	46.605	.407	2.96104	3.53817	-4.15843	10.08050	

Analyze > Compare Means > Independent-Sample T Test

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- See Help
 Tutorial on
 Graphs
- Popular Graphs
 - Histogram
 - Bar
 - Scatterplot
 - Pie

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Graph > Interactive > (Line, Pie, Histogram, Scatterplot, etc)

Graphs

- Outputs from Analyze Menu or Graph Menu
- Example: Frequency
- Tabular or Graphics of Distribution
 - Central Tendency
 - Variability
 - Shape of Data Set



Histogram

Tables

- Result Summary of Analyze Menu
- Example: Correlation
- Measures Degree of Associations between Variables
- Correlation Coefficient, r
 - Strength
 - Direction of relationship

		verbal	quant
verbal	Pearson Correlation	1	.882**
	Sig. (2-tailed)		.000
	Ν	100	100
quant	Pearson Correlation	.882**	1
	Sig. (2-tailed)	.000	
	Ν	100	100

**. Correlation is significant at the 0.01 level