



An Introduction to Preparing Data for Analysis with JMP®.
Full book available for purchase [here](#).

Contents

About This Book	ix
About The Author	xiii
Chapter 1: Data Management in the Analytics Process	1
Introduction	1
A Continuous Process	2
Asking Questions That Data Can Help to Answer	2
Sourcing Relevant Data.....	3
Reproducibility	3
Combining and Reconciling Multiple Sources.....	4
Identifying and Addressing Data Issues	4
Data Requirements Shaped by Modeling Strategies	4
Plan of the Book.....	5
Conclusion	5
References.....	5
Chapter 2: Data Management Foundations	7
Introduction	7
Matching Form to Function.....	8
JMP Data Tables	9
Data Types and Modeling Types	10
Data Types	10
Modeling Types.....	10
Basics of Relational Databases.....	12
Conclusion	13
References.....	14
Chapter 3: Sources of Data and Their Challenges	15
Introduction	15
Internal Data in Flat Files.....	15
Relational Databases.....	16

External Data on the World Wide Web.....	16
User-Facing Query Interfaces	16
Tabular Data Pages	19
Evolving WWW Data Standards	19
Ethical and Legal Considerations.....	19
Conclusion	20
References.....	21
Chapter 4: Single Files	23
Introduction	23
Review of JMP File Types	23
Common Formats Other than JMP	25
MS Excel	25
Text Files	32
SAS Files.....	39
Other Data File Formats	41
Conclusion	42
References.....	42
Chapter 5: Database Queries	43
Introduction	43
Sample Databases in This Chapter	44
Connecting to a Database.....	44
Extracting Data from One Table in a Database	48
Import an Entire Table.....	48
Import a Subset of a Table	49
Querying a Database from JMP	52
Query Builder	52
An Illustrative Scenario: Bicycle Parts	55
Designing a Query with Query Builder	57
Query Builder for SAS Server Data	64
Conclusion	66
References.....	67
Chapter 6: Importing Data from Websites.....	69
Introduction	69
Variety of Web Formats	70
Internet Open.....	70
Common Issues to Anticipate	72
Conclusion	74
References.....	75

Chapter 7: Reshaping a Data Table	77
Introduction	77
What Shape Is a Data Table?.....	78
Wide versus Long Format.....	78
Reasons for Wide and Long Formats	79
Stacking Wide Data	79
Unstacking Narrow Data	82
Additional Examples	83
Stacking Wide Data	83
Scripting for Reproducibility	85
Splitting Long Data.....	86
Transposing Rows and Columns.....	90
Reshaping the WDI Data	91
Conclusion	94
References.....	94
Chapter 8: Joining, Subsetting, and Filtering.....	97
Introduction	97
Combining Data from Multiple Tables with Join	98
Saving Memory with a Virtual Join	102
Why and How to Select a Subset	103
A Brief Detour: Creating a New Column from an Existing Column.....	104
Row Filters: Global and Local.....	107
Global Filter	107
Local Filter.....	109
A More Durable Subset.....	110
Combining Rows with Concatenate	111
Query Builder for Tables	113
Back to the Movies.....	113
Olympic Medals and Development Indicators	114
Conclusion	121
References.....	122
Chapter 9: Data Exploration: Visual and Automated Tools to Detect Problems	123
Introduction	123
Common Issues to Anticipate	124
On the Hunt for Dirty Data	125
Distribution	126
Columns Viewer	126

Multivariate (Correlations and Scatterplot Matrix)	128
More Tools within the Multivariate Platform	129
Principal Components.....	129
Outlier Analysis	130
Item Reliability	130
Explore Outliers.....	130
Quantile Range Outliers.....	132
Robust Fit Outliers.....	133
Multivariate Robust Outliers.....	133
Multivariate k-Nearest Neighbors Outliers	134
Explore Missing	135
Conclusion	136
References.....	137
Chapter 10: Missing Data Strategies	139
Introduction	139
Much Ado about Nothing?	140
Four Basic Approaches	142
Working with Complete Cases	142
Analysis with Sampling Weights.....	142
Imputation-based Methods.....	144
Recode.....	144
Informative Missing	145
Multivariate Normal Imputation	147
Multivariate SVD Imputation.....	149
Special Considerations for Time Series	151
Conclusion and a Note of Caution	153
References.....	153
Chapter 11: Data Preparation for Analysis	155
Introduction	155
Common Issues and Appropriate Strategies.....	156
Distribution of Observations	157
Noisy Data	157
Skewness or Outliers	160
Scale Differences among Model Variables	162
Too Many Levels of a Categorical Variable	163

High Dimensionality: Abundance of Columns	167
Correlated or Redundant Variables	167
Missing or Sparse Observations across Columns.....	168
A PCA Example	168
Abundance of Rows.....	173
Partitioning into Training, Validation, and Test Sets	173
Aggregating Rows with Summary Tables.....	176
Oversampling Rare Events	177
Date and Time-Related Issues	179
Formatting Dates and Times	179
Some Date Functions: Extracting Parts	180
Aggregation.....	181
Row Functions Especially Useful in Time-Ordered Data	181
Elapsed Time and Date Arithmetic	182
Conclusion	183
References.....	183
Chapter 12: Exporting Work to Other Platforms.....	185
Introduction	185
Why Export or Exchange Data?.....	185
Fit the Method to the Purpose.....	186
Save As	186
Export to a Database	187
Export to a SAS Library.....	188
Exporting Reports.....	189
Interactive Graphics	190
Static Images: Graphics Formats, PowerPoint, and Word	192
Conclusion	193
References.....	193
Index	195