



From *Administrative Healthcare Data*. Full book available for purchase [here](#).

Contents

About This Book	ix
About These Authors	xi
Acknowledgments	xiii
Chapter 1: The U.S. Healthcare System	1
Introduction	1
Data and Programming Used in This Book	2
Terminology	2
Flow of Administrative Healthcare Data	3
Key Players	4
Medical Claim Submission.....	4
Claim Processing	5
Recent Legislative Effects	6
HIPAA.....	6
Affordable Care Act.....	6
All Payer Claims Database	6
Continuing Enhancements	7
Conclusion	7
Chapter 2: Introduction to SAS Enterprise Guide and Sample Data	9
Introduction	9
Sample Data	9
What Is SAS Enterprise Guide?	11
SAS Libraries and Data Sets.....	12
Create a Permanent Library	12
View a SAS Data Set.....	13
SAS Data Types	13
Formats	14
DRG Format	15
Diagnosis Code Format	16
Applying Formats to SAS Variables	19
Formatting an Existing Variable	19
Placing Results of a Format into a New Variable.....	21
Conclusion	21
Chapter 3: The Payers	23
Introduction	23

Health Insurance	23
Medicare	24
Medicaid.....	25
Commercial Insurance	26
Others.....	26
TRICARE.....	26
CHAMPVA.....	26
FECA Black Lung.....	26
Conclusion	27
Chapter 4: The Providers.....	29
Introduction	29
Types of Providers	29
Facility.....	30
Professional	30
Pharmacy.....	31
Ancillary	31
National Provider Registry	32
NPI.....	32
Taxonomy	32
Other Provider Identifiers	33
Case Study: Standardizing Provider Names from the National Provider Registry	34
Case Study: Using Taxonomy Code to Identify Primary Care Physicians	36
Conclusion	38
Chapter 5: Facility Claims	39
Introduction	39
CMS-1450 Paper Claim Form	40
837I Electronic Claim Format	40
Data Elements Unique to Facilities	40
Type of Bill.....	40
Admission and Discharge Dates.....	42
Patient Discharge Status	43
Revenue Code.....	43
Diagnosis Codes.....	44
Present on Admission	45
Surgical Procedure Codes.....	45
DRG.....	45
Provider IDs.....	46
Others	46
Case Study: Calculating C-Section Rates among Hospitals.....	47
Create Summary Data Set for All Births.....	47
Create Summary Data Set for C-Section Births.....	49
Join Summary Data Sets	50
Create Bar Graphs.....	51
Case Study: Top Reasons for ER Utilization.....	53

Automating Reports with SAS Enterprise Guide	56
Creating Documentation in SAS Enterprise Guide.....	56
Conclusion	57
Chapter 6: Professional and Ancillary Claims	59
Introduction	59
Medical Claim Submission.....	60
CMS-1500 Claim Form	60
837P Electronic Claim Format.....	60
Data Elements Unique to CMS-1500/837P.....	60
Demographic Information.....	60
Diagnosis Codes.....	61
Diagnosis Pointer	61
Provider Identifiers	61
Procedure Codes and Modifiers	61
Place of Service	62
Provider Specialty	62
Payment Methodologies.....	62
Case Study: Identifying Children Who Miss Their Checkups	63
Identify Currently Enrolled Children under Six Years of Age.....	64
Import Excel Data	66
Identify Appropriate Professional Claims	68
Create Outreach Report	70
Create Internal Report	71
Case Study: Automating Reports with Macro Variables.....	73
Extract Code from Enterprise Guide Tasks.....	73
Import Data Code	74
Query Builder Code	75
Automate Code.....	76
Conclusion	81
Chapter 7: Pharmacy Claims	83
Introduction	83
NCPDP Claim Formats	84
Paper Claim Form.....	84
Electronic Format	84
Data Elements Unique to Pharmacy Data	86
Provider Identifiers	86
National Drug Code.....	86
Generic Product Identifier	88
Therapeutic Class Codes.....	88
Other Fields of Interest	89
Case Study: Computing Medication Adherence.....	90
PDC Computation.....	90
Data Expansion Using SAS Data Step.....	91
Create Study Period Data Set	92

Create Days Covered Data Set	94
Combine and Summarize Data	94
Graphing PDC	96
Automating PDC Graphs Generation	98
Conclusion	101
Chapter 8: Healthcare Claim Codes	103
Introduction	103
International Classification of Diseases	104
Diagnosis Codes	105
ICD-9-CM.....	105
ICD-10-CM.....	107
Surgical Procedure Codes	109
ICD-9-PCS	109
ICD-10-PCS	110
Current Procedural Terminology (CPT)	112
Category I	113
Category II.....	113
Category III.....	114
HCPCS.....	114
Level I.....	115
Level II.....	115
Level III.....	115
Modifiers	115
HIPPS	116
Other PPS Code Sets	117
NDC	117
LOINC	118
Case Study: Identifying a Patient with Complex Conditions	118
Code Simplification with SAS Array Processing	119
Identifying Members with Complex Conditions	120
Parameterizing Program 8.3 with Macro Variables	122
Case Study: Using Formats to Create Data Hygiene Routines	123
Conclusion	126
Chapter 9: The Members	127
Introduction	127
Member Demographics.....	128
Member Enrollment	129
Member Eligibility.....	130
Membership Issues of Interest	130
Membership Maintenance	130
Electronic Eligibility Inquiry	130
Changing Member ID	131
“Cross-Client” Projects	131
Householding	131

Member Months.....	131
Continuous Enrollment	132
Rate Setting and Risk Adjustment	132
Setting Rates.....	132
Adjusting Risk.....	134
Case Study: Creating Member Months Data	134
Creating a Callable Macro Program.....	135
Member Months Macro Program	137
Building a Member Months Table.....	139
Conclusion.....	141
Chapter 10: Computing and Tracking Financial Metrics.....	143
Introduction	143
Case Study: Bucketing Costs	143
Case Study: Calculating PMPM Costs.....	148
Case Study: Creating Reports	149
Conclusion.....	152
Chapter 11: HEDIS	153
Introduction	153
The Business Case	154
The Technical Challenges	154
Reporting System Components	155
Colorectal Cancer Screening.....	156
Definition	156
Eligible Population.....	156
Exclusions to Eligibility	157
Compliant Population.....	157
Hybrid Specification	158
Case Study: Developing a Rate for Colorectal Cancer Screening	158
Create a Driver Table	159
Clean Up of Membership Data.....	159
Check Continuous Enrollment	162
Identify the Denominator	165
Determine Compliant Population.....	172
Compute Rate.....	173
Conclusion	174
Chapter 12: Future Healthcare Data Issues	175
Introduction	175
Impact of the Affordable Care Act	175
Transparency in Pricing.....	176
ICD-10	176
Patient Centered Medical Home	176
Accountable Care Organization	177
Pharmacy Benefits Manager.....	177
Evolving Patient Medical Records	178

Electronic Medical Record	178
Electronic Health Record.....	178
Personal Health Record	178
Meaningful Use	179
Global Billing.....	179
All Payer Claims Database	179
Conclusion	180
Chapter 13: Extended Coding Examples	181
Introduction	181
Utility Macros	181
Age-as-of Calculation	181
Identifying Sparse Variables.....	182
Arrays of Detail Record Elements on the Header Record	187
Linking to the Diagnosis Pointer	190
Conclusion	193
Appendix	195
Glossary of Terms.....	195
CMS-1450 Claim Form.....	201
CMS-1500 Claim Form.....	202
Universal Claim Form for Prescription Drugs	203
Facility Type.....	205
Bill Sequence	206
Place of Service.....	207
Patient Status Code	210
Revenue Code	211
Index	225