

Contents

- 1 Introduction, 1
 - 1.1 Three Illustrative Problems, 2
 - 1.2 Definitions, 2
 - 1.3 Historical Perspective, 4
 - 1.4 Linkages of the Three Methods, 8
 - 1.5 Organization of the Book, 12
- 2 Overview of the Methods, 13
 - 2.1 Meta-Analysis, 13
 - 2.2 Decision Analysis, 17
 - 2.3 Cost-Effectiveness Analysis, 29
- 3 Planning the Study, 33
 - 3.1 Defining the Problem, 33
 - 3.2 Developing a Study Protocol, 34
 - 3.3 Acquiring Resources, 40
 - 3.4 Procuring Administrative Approvals, 40
- 4 Information Retrieval, 43
 - 4.1 Overall Strategy for Retrieving Information from Published Studies, 43
 - 4.2 Computerized Searches of MEDLINE, 45

- 13.3 Review of Approaches to Measuring Preferences (Utilities), 207
- 13.4 Incorporating Preference Measures into the Analysis, 207
- 14 Exploring Heterogeneity, 213
 - 14.1 Overview, 214
 - 14.2 Statistical Versus Clinical Heterogeneity, 214
 - 14.3 Practices to be Avoided, 215
 - 14.4 Limitations of Statistical Tests of Heterogeneity, 216
 - 14.5 Framework for Exploration of Clinical Heterogeneity, 218
 - 14.6 Stratification as a Method for Exploring Heterogeneity, 222
 - 14.7 Meta-Regression, 224
 - 14.8 Subgroup Analysis in Decision Analysis and Cost-Effectiveness Analysis, 225
 - 14.9 Limitations of Subgroup Analysis, 227
- 15 Sensitivity Analysis, 229
 - 15.1 Goals of Sensitivity Analysis, 229
 - 15.2 One-way Sensitivity Analysis in Decision Analysis and Cost-Effectiveness Analysis, 230
 - 15.3 Two-way, Three-way, and *n*-way Sensitivity Analysis, 234
 - 15.4 Application of the Principles of Sensitivity Analysis to Meta-Analysis, 239
- 16 Reporting Results, 244
 - 16.1 Meta-Analysis, 244
 - 16.2 Decision Analysis, 247
 - 16.3 Cost-Effectiveness Analysis, 248
 - 16.4 Graphical Presentation of the Results of Meta-Analysis, 250
 - 16.5 Graphical Presentation of the Results of Decision Analysis and Cost-Effectiveness Analysis, 259
- 17 Limitations, 263
 - 17.1 Meta-Analysis, 264
 - 17.2 Decision Analysis, 271
 - 17.3 Cost-Effectiveness Analysis, 273
 - 17.4 Life Expectancy, 275
 - 17.5 Situations Where the Methods Are Most and Least Useful, 279
 - 17.6 Improving the Methods: Recommendations of Experts, 279
 - References, 283
 - Subject Index, 297
 - Index of Examples, 305

- 4.3 Other Computer-Stored Databases, 50
- 4.4 Limitations of Computerized Searches of Computer-Stored Databases, 51
- 4.5 Publication Bias, 58
- 5 Data Collection, 68
 - 5.1 Overall Goals, 68
 - 5.2 Reliability, 69
 - 5.3 Validity, 72
 - 5.4 Bias, 73
- 6 Advanced Issues in Meta-Analysis, 75
 - 6.1 Defining Eligibility Criteria and Determining Eligibility of Individual Studies, 76
 - 6.2 Study Design, 79
 - 6.3 Inclusive Dates of Publication, 80
 - 6.4 English-Language Publications, 81
 - 6.5 Multiple Publications from the Same Study Population, 81
 - 6.6 Restrictions on Sample Size or Length of Follow-Up, 83
 - 6.7 Eligibility Based on Similarity of Treatments (or Exposures) or Outcomes, 83
 - 6.8 Completeness of Information, 85
 - 6.9 Choosing Estimates of Effect Within Eligible Studies, 87
 - 6.10 Study Quality, 89
- 7 Statistical Methods in Meta-Analysis, 94
 - 7.1 Goals of Meta-Analysis and the Problem of Heterogeneity, 95
 - 7.2 Choice of Effect Measure, 100
 - 7.3 Mantel-Haenszel Method, 101
 - 7.4 Peto Method, 104
 - 7.5 General Variance-Based Methods, 107
 - 7.6 General Variance-Based Methods That Use Confidence Intervals, 111
 - 7.7 Statistical Tests of Homogeneity, 115
 - 7.8 DerSimonian and Laird Method, 116
 - Appendix, 118
- 8 Other Statistical and Methodologic Issues in Meta-Analysis, 119
 - 8.1 Measures on a Continuous Scale, 119
 - 8.2 Trend or "Dose Response" Analysis, 127
 - 8.3 Vote Counting and Related Methods, 132

- 8.4 Statistical Approaches to Publication Bias, 133
- 8.5 Cumulative Meta-Analysis, 135
- 8.6 Meta-Analysis of Individual Level Data, 136
- 9 Complex Decision Problems, 140
 - 9.1 More Than Two Alternative Treatments or Interventions, 141
 - 9.2 More Than One Outcome, 142
 - 9.3 Many Intervening Events, 147
 - 9.4 Estimating Life Expectancy, 149
 - 9.5 Markov Models, 152
- 10 Estimating Probabilities, 159
 - 10.1 Overall Goals, 159
 - 10.2 Relying on Selected Published Sources of Information on Probabilities, 161
 - 10.3 Aggregating Information from Multiple Published Sources, 164
 - 10.4 Experts as Sources of Probability Estimates, 165
 - 10.5 Personal Experience and “Guessing” to Estimate Probabilities, 166
 - 10.6 Accounting for Uncertainty in Probability Estimates, 166
- 11 Measuring Preferences for Health States, 169
 - 11.1 The Concept of Utility, 169
 - 11.2 Conceptual Issues in the Measurement of Preferences for Health States, 170
 - 11.3 Developing Measurement Scales in Practice, 173
 - 11.4 Use of Generic Measures of Health-Related Quality of Life as Preference Measures, 179
 - 11.5 Limitations of Measures of Preferences for Health States, 181
- 12 Advanced Cost-Effectiveness Analysis, 182
 - 12.1 Types of Economic Evaluation, 183
 - 12.2 Key Concepts, 185
 - 12.3 Time Horizon, 189
 - 12.4 Identifying Contributors to Cost, 190
 - 12.5 Valuing Costs, 194
 - 12.6 Discounting, 196
 - 12.7 Inflation, 199
- 13 Utility and Cost-Utility Analysis, 202
 - 13.1 Quality-Adjusted Life-Years, 203
 - 13.2 Steps in a Utility or Cost-Utility Analysis, 206