## Contents

### Part I  Overview

1  **Causal Inference: A Statistical Paradigm for Inferring Causality**  
   Pan Wu, Wan Tang, Tian Chen, Hua He, Douglas Gunzler,  
   and Xin M. Tu  
   3

### Part II  Propensity Score Method for Causal Inference

2  **Overview of Propensity Score Methods**  
   Hua He, Jun Hu, and Jiang He  
   29

3  **Sufficient Covariate, Propensity Variable and Doubly Robust Estimation**  
   Hui Guo, Philip Dawid, and Giovanni Berzuini  
   49

4  **A Robustness Index of Propensity Score Estimation to Uncontrolled Confounders**  
   Wei Pan and Haiyan Bai  
   91

5  **Missing Confounder Data in Propensity Score Methods for Causal Inference**  
   Bo Fu and Li Su  
   101

6  **Propensity Score Modeling and Evaluation**  
   Yeying Zhu and Lin (Laura) Lin  
   111

7  **Overcoming the Computing Barriers in Statistical Causal Inference**  
   Kai Zhang and Ding-Geng Chen  
   125

### Part III  Causal Inference in Randomized Clinical Studies

8  **Semiparametric Theory and Empirical Processes in Causal Inference**  
   Edward H. Kennedy  
   141
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Structural Nested Models for Cluster-Randomized Trials</td>
<td>Shanjun Helian, Babette A. Brumback, Matthew C. Freeman, and Richard Rheingans</td>
<td>169</td>
</tr>
<tr>
<td>10</td>
<td>Causal Models for Randomized Trials with Continuous Compliance</td>
<td>Yan Ma and Jason Roy</td>
<td>187</td>
</tr>
<tr>
<td>11</td>
<td>Causal Ensembles for Evaluating the Effect of Delayed Switch to Second-Line Antiretroviral Regimens</td>
<td>Li Li and Brent A. Johnson</td>
<td>203</td>
</tr>
<tr>
<td>12</td>
<td>Structural Functional Response Models for Complex Intervention Trials</td>
<td>Pan Wu and Xin M. Tu</td>
<td>217</td>
</tr>
<tr>
<td></td>
<td>Part IV Structural Equation Models for Mediation Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Identification of Causal Mediation Models with an Unobserved Pre-treatment Confounder</td>
<td>Ping He, Zhenguo Wu, Xiaohua Douglas Zhang, and Zhi Geng</td>
<td>241</td>
</tr>
<tr>
<td>14</td>
<td>A Comparison of Potential Outcome Approaches for Assessing Causal Mediation</td>
<td>Donna L. Coffman, David P. MacKinnon, Yeying Zhu, and Debashis Ghosh</td>
<td>263</td>
</tr>
</tbody>
</table>

Index                                                                 | 315  |
Statistical Causal Inferences and Their Applications in Public Health Research
He, H.; Wu, P.; Chen, D.-G.D. (Eds.)
2016, XV, 321 p. 24 illus., 11 illus. in color., Hardcover
ISBN: 978-3-319-41257-3