

# SUMMARY OF CONTENTS

PREFACE	xv
CHAPTER 1 • INTRODUCTION	1
CHAPTER 2 • OBSERVING BEHAVIOR	13
CHAPTER 3 • ASKING QUESTIONS	85
CHAPTER 4 • RUNNING EXPERIMENTS	147
CHAPTER 5 • CREATING MASS COLLABORATION	231
CHAPTER 6 • ETHICS	281
CHAPTER 7 • THE FUTURE	355
ACKNOWLEDGMENTS	361
REFERENCES	367
INDEX	413

# CONTENTS

PREFACE	xv
<b>CHAPTER 1 • INTRODUCTION</b>	<b>1</b>
1.1 An ink blot.....	1
1.2 Welcome to the digital age .....	2
1.3 Research design .....	5
1.4 Themes of this book.....	6
1.5 Outline of this book .....	9
What to read next.....	11
<b>CHAPTER 2 • OBSERVING BEHAVIOR</b>	<b>13</b>
2.1 Introduction.....	13
2.2 Big data .....	14
2.3 Ten common characteristics of big data .....	17
2.3.1 Big .....	17
2.3.2 Always-on.....	21
2.3.3 Nonreactive .....	23
2.3.4 Incomplete.....	24
2.3.5 Inaccessible .....	27
2.3.6 Nonrepresentative .....	29
2.3.7 Drifting.....	33
2.3.8 Algorithmically confounded.....	35
2.3.9 Dirty .....	37
2.3.10 Sensitive .....	39
2.4 Research strategies.....	41
2.4.1 Counting things .....	41
2.4.2 Forecasting and nowcasting.....	46
2.4.3 Approximating experiments .....	50

<b>2.5</b>	Conclusion .....	61
	Mathematical notes .....	62
	What to read next .....	70
	Activities .....	77

## **CHAPTER 3 • ASKING QUESTIONS** 85

<b>3.1</b>	Introduction.....	85
<b>3.2</b>	Asking versus observing .....	87
<b>3.3</b>	The total survey error framework .....	89
	<b>3.3.1</b> Representation .....	91
	<b>3.3.2</b> Measurement .....	94
	<b>3.3.3</b> Cost.....	98
<b>3.4</b>	Who to ask .....	99
<b>3.5</b>	New ways of asking questions .....	107
	<b>3.5.1</b> Ecological momentary assessments.....	108
	<b>3.5.2</b> Wiki surveys.....	111
	<b>3.5.3</b> Gamification.....	115
<b>3.6</b>	Surveys linked to big data sources.....	117
	<b>3.6.1</b> Enriched asking .....	118
	<b>3.6.2</b> Amplified asking .....	122
<b>3.7</b>	Conclusion .....	130
	Mathematical notes .....	130
	What to read next.....	136
	Activities .....	141

## **CHAPTER 4 • RUNNING EXPERIMENTS** 147

<b>4.1</b>	Introduction.....	147
<b>4.2</b>	What are experiments?.....	149
<b>4.3</b>	Two dimensions of experiments: lab–field and analog–digital.....	151
<b>4.4</b>	Moving beyond simple experiments .....	158
	<b>4.4.1</b> Validity .....	161
	<b>4.4.2</b> Heterogeneity of treatment effects .....	167
	<b>4.4.3</b> Mechanisms.....	169
<b>4.5</b>	Making it happen .....	174
	<b>4.5.1</b> Use existing environments.....	175
	<b>4.5.2</b> Build your own experiment .....	178

4.5.3	Build your own product .....	182
4.5.4	Partner with the powerful .....	183
4.6	Advice .....	188
4.6.1	Create zero variable cost data .....	190
4.6.2	Build ethics into your design: replace, refine, and reduce .....	196
4.7	Conclusion .....	202
	Mathematical notes .....	203
	What to read next .....	209
	Activities .....	220
<b>CHAPTER 5 • CREATING MASS COLLABORATION</b>		<b>231</b>
5.1	Introduction.....	231
5.2	Human computation .....	233
5.2.1	Galaxy Zoo .....	234
5.2.2	Crowd-coding of political manifestos .....	241
5.2.3	Conclusion.....	244
5.3	Open calls .....	246
5.3.1	Netflix Prize .....	246
5.3.2	Foldit .....	249
5.3.3	Peer-to-Patent .....	252
5.3.4	Conclusion.....	254
5.4	Distributed data collection .....	256
5.4.1	eBird .....	257
5.4.2	PhotoCity.....	259
5.4.3	Conclusion.....	262
5.5	Designing your own .....	265
5.5.1	Motivate participants .....	265
5.5.2	Leverage heterogeneity.....	266
5.5.3	Focus attention.....	267
5.5.4	Enable surprise .....	267
5.5.5	Be ethical .....	268
5.5.6	Final design advice .....	269
5.6	Conclusion .....	271
	What to read next.....	272
	Activities .....	277

<b>CHAPTER 6 • ETHICS</b>	<b>281</b>
6.1 Introduction.....	281
6.2 Three examples .....	283
6.2.1 Emotional Contagion .....	284
6.2.2 Tastes, Ties, and Time.....	285
6.2.3 Encore .....	286
6.3 Digital is different.....	288
6.4 Four principles .....	294
6.4.1 Respect for Persons .....	295
6.4.2 Beneficence .....	296
6.4.3 Justice .....	298
6.4.4 Respect for Law and Public Interest .....	299
6.5 Two ethical frameworks .....	301
6.6 Areas of difficulty .....	303
6.6.1 Informed consent.....	303
6.6.2 Understanding and managing informational risk .....	307
6.6.3 Privacy .....	314
6.6.4 Making decisions in the face of uncertainty.....	317
6.7 Practical tips .....	321
6.7.1 The IRB is a floor, not a ceiling .....	321
6.7.2 Put yourself in everyone else’s shoes .....	322
6.7.3 Think of research ethics as continuous, not discrete.....	324
6.8 Conclusion .....	324
Historical appendix.....	325
What to read next.....	331
Activities .....	338
 <b>CHAPTER 7 • THE FUTURE</b>	 <b>355</b>
7.1 Looking forward.....	355
7.2 Themes of the future.....	355
7.2.1 The blending of readymades and custommades.....	355
7.2.2 Participant-centered data collection.....	356
7.2.3 Ethics in research design .....	357
7.3 Back to the beginning.....	358

ACKNOWLEDGMENTS	361
REFERENCES	367
INDEX	413