

# CONTENTS

## Introduction 1

### **PART ONE**

## How can marketing analytics help you? 7

### **1 Overview of statistics 9**

Measures of central tendency 9

Measures of dispersion 11

The normal distribution 14

Confidence intervals 15

Relations among two variables: covariance and correlation 16

Probability and the sampling distribution 18

Conclusion 18

Checklist: You'll be the smartest person in the room if you... 19

### **2 Consumer behaviour and marketing strategy 20**

Introduction 20

Consumer behaviour as the basis for marketing strategy 21

Overview of consumer behaviour 22

Overview of marketing strategy 24

Conclusion 27

Checklist: You'll be the smartest person in the room if you... 28

### **3 What is an insight? 29**

Introduction 29

Insights tend not to be used by executives 29

Is this an insight? 30

So, what is an insight? 31

Ultimately, an insight is about action-ability 32

Checklist: You'll be the smartest person in the room if you... 34

## PART TWO

Dependent variable techniques 35

### 4 Modelling demand and elasticity 37

Introduction 37

Dependent equation type vs interrelationship type statistics 38

Deterministic vs probabilistic equations 38

Business case 38

Results applied to business case 44

Modelling elasticity 44

Technical notes 47

*Highlight: Segmentation and elasticity modelling can maximize revenue in a retail/medical clinic chain: field test results* 51

Abstract 51

The problem and some background 52

Description of the dataset 53

First: segmentation 53

Then: elasticity modelling 55

Last: test vs control 61

Discussion 61

Conclusion: why is elasticity modelling so rarely done? 62

Checklist: You'll be the smartest person in the room if you... 63

### 5 Polynomial distributed lags 64

What is PDL? 64

An example 66

Business case 68

Conclusion 71

Checklist: You'll be the smartest person in the room if you... 72

### 6 Using Poisson regression 73

When to use Poisson regression 73

Technical note 74

Business case 75

Conclusion 77

Checklist: You'll be the smartest person in the room if you... 78

## 7 Logistic regression and market basket analysis 79

- Introduction 79
- Conceptual notes 80
- Business case 81
- Results applied to the model 82
- Lift charts 85
- How deep to mail 86
- Using the model – collinearity overview 90
- Variable diagnostics 94
- Highlight: Using logistic regression for market basket analysis* 96
  - Abstract 96
  - What is a market basket? 96
  - How is it usually done? 96
  - Logistic regression 97
  - How to estimate/predict the market basket 97
  - An example 98
  - Conclusion 100
- Checklist: You'll be the smartest person in the room if you... 101

## 8 Survival modelling and lifetime value 102

- Introduction 102
- Conceptual overview of survival analysis 103
- Business case 104
  - More about survival analysis 106
  - Model output and interpretation 108
  - Note: The only way to do churn modelling 112
  - Conclusion 114
- Highlight: Lifetime value: how predictive analysis is superior to descriptive analysis* 115
  - Abstract 115
  - Descriptive analysis 115
  - Predictive analysis 116
  - An example 118
- Checklist: You'll be the smartest person in the room if you... 122

- 9 Panel regression and same store sales 123**
- Introduction 123
  - What is panel regression? 126
  - Panel regression: details 126
  - Business case 128
    - Insights about marcom (direct mail, email and SMS) 128
    - Insights about time period (quarters) 129
    - Insights about cross-sections (counties) 130
  - Brief note on modelling same store sales 130
  - Conclusion 131
  - Checklist: You'll be the smartest person in the room if you... 132

**10 Introduction to forecasting 133**

- Overview 133
- Forecasting demand 134
- Autocorrelation 134
- Dummy variables and seasonality 135
- Business case 137
- Conclusion 141
- Checklist: You'll be the smartest person in the room if you... 142

**PART THREE**

**Interrelationship techniques 143**

**11 Simultaneous equations 145**

- Introduction 145
- What are simultaneous equations? 146
- Why go to the trouble of using simultaneous equations? 147
- Desirable properties of estimators 148
- Business case 151
- Conclusion 154
- Checklist: You'll be the smartest person in the room if you... 155

**12 Principal components and factor analysis 156**

- Interrelationship techniques 156
- What is factor analysis? 157
- What is PCA? 159
- Similarities between PCA and factor analysis 159

- Differences between PCA and factor analysis 159
- Conclusion 160
- Checklist: You'll be the smartest person in the room if you... 161
- 13 Segmentation overview 162**
- Introduction 162
- Introduction to segmentation 163
- What is segmentation? What is a segment? 163
- Why segment? Strategic uses of segmentation 164
- The four Ps of strategic marketing 166
- Criteria for actionable segmentation 168
- A priori or not? 168
- Conceptual process 169
- Highlight: Using segmentation to improve both strategy and predictive modelling 175*
- Introduction 175
- Segmentation is a strategic, not an analytic, process 175
- Why would segmentation improve predictive modelling accuracy? 176
- Segmenting variables for model improvement 177
- Example: churn modelling 177
- Interpretation and insights 179
- What if there was no segmentation? 181
- Conclusion 182
- Checklist: You'll be the smartest person in the room if you... 183
- 14 Tools of segmentation 184**
- Overview 184
- Metrics of successful segmentation 185
- General analytic techniques 185
- Segmentation techniques summary 193
- Business case 194
- Analytics 197
- Profile and output 201
- Comments/details on individual segments 203
- K-means compared to LCA 210
- Highlight: Why go beyond RFM? 214*
- Abstract 214
- What is RFM? 214

- What is behavioural segmentation? 216
- What does behavioural segmentation provide that RFM does not? 218
- Conclusion 219
- Checklist: You'll be the smartest person in the room if you... 220
  
- PART FOUR**
- Focus on media and loyalty 221**
  
- 15 Modelling marcom value 223**
  - Introduction 223
  - Value of marcom model 223
  - Business case 226
  - Checklist: You'll be the smartest person in the room if you... 229
  
- 16 Media mix modelling 230**
  - Overview of MMM 230
  - Adstock models 231
  - Single equation and PDLs 231
  - Simultaneous equations 232
  - Business case 233
    - Conclusion 237
  - Checklist: You'll be the smartest person in the room if you... 238
  
- 17 Overview of loyalty 239**
  - Introduction to loyalty 239
  - Is there a range or spectrum of loyalty? 240
  - What are the three Rs of loyalty? 241
  - Why design a programme with earn–burn measures? 242
  - Business case 246
  - A note on programme valuation 248
  - Conclusion 250
  - Checklist: You'll be the smartest person in the room if you... 252
  
- 18 Loyalty with SEM 253**
  - Structural equation modelling (SEM) 253
  - Business case 257
  - Conclusion 261
  - Checklist: You'll be the smartest person in the room if you... 262

## 19 The customer loyalty journey 263

Introduction 263

Background 264

Segmentation 265

Elasticity modelling 266

Simultaneous equations 267

The experiences questionnaire 268

Conclusion 277

Checklist: You'll be the smartest person in the room if you... 278

## PART FIVE

More important topics for everyday marketing 279

## 20 Statistical testing 281

Everyone wants to test 281

Sample size equation: use the lift measure 282

A/B testing and full factorial differences 284

Business case 286

Checklist: You'll be the smartest person in the room if you... 291

## 21 Introduction to Big Data 292

Introduction 292

What is Big Data? 292

Is Big Data important? 294

What does it mean for analytics? For strategy? 294

So what? 295

Surviving the Big Data panic 295

Big Data analytics 297

Big Data – exotic algorithms 298

Conclusion 301

Checklist: You'll be the smartest person in the room if you... 302

**Conclusion: The finale 303**

*References 311*

*Further reading 313*

*Index 315*