Index

A/B tests 324
ability bias 139
active vs. passive control treatment 19–21
adaptive conjoint analysis 575
addressable consumer, choice models and 175
ad-targeting engine 448
advanced models of choice 163–4 see also specific models
advertised reference price (ARP) 569
advertising 2, 39–40 see also marketing bans 516
effectiveness of 39
networks 448, 455
online 39–40
prices 516
targeting 448
Adwords 398
aggregate data 146, 210–13, 524
discrete-choice demand models for 205–6
Akaike Information Criterion 532, 533
Akiva, Ben 174
alternative hypotheses, in Hausman test 120, 122, 405
alternative treatment 20
Amazon 281
ecommerce model of 175
Mechanical Turk (AMT) 28, 56, 60
American privacy regulation 512
analysis of variance (ANOVA) 233, 480
analytical biases 550, 553, 555, 556
antitrust 516–17
litigation
but-for sales in the payment card industry 599–602
infant formula supplements industry 602–5
Apple Inc. v. Motorola 559
Apple Inc. v. Samsung Electronics Co. 2001 52, 64, 72, 581, 584, 609, 630
conjoint analysis 584–5
price premium 584–5
Apple v. Samsung II 573
Arellano-Bond GMM estimator 117–19
ARIMA model 99, 528, 532
asymmetric competition 433, 434, 436–7, 445
attitudes 26–7
automotive pricing 415–16
autoregressive process first-order 83
B2B context, marketing 381–2
bans, advertising 516
Bayes structure 418
theorem 182–3, 194, 196
Bayesian analysis 182–6, 186–90, 453, 598
basics of 182–6
Beta distribution in 185
binominal distribution for 184
challenge in 183
covariates and 197
decision theory and 184, 196–7
heterogeneity 193–6
likelihood principle in 182
loss function and 184
in marketing 191–7
of random-effect model 194–5
unit-level models 191–3
econometrics 181–98
application in marketing 191–7
computation 186–90
estimation 192–3
hierarchical model 625
inference 187
statistics 191, 617
VARX model 100
behavior change framework 486–7
decision theories 382
intention scale 26
beliefs 26–7
Ben & Jerry’s 652, 654, 665
All Natural claims 652, 659
consumers’ perceptions of 655
Bertrand-Nash pricing game 542
Beta distribution, in Bayesian analysis 185
Beta-Binomial model 185
between-participant design, laboratory experiments 21–2
bias 549–50
academically rigorous and unbiased methodologies 553–4
analytical biases 550, 553, 555, 556 defined 550–51
implementation, unbiased 554–5
information-related 550
pre-testing and survey instrument 556
selection-related 550–51
survey analysis 556–7
survey results, cross-validated 557–8
survey’s reliability 551–3
bias spreading 129–33
endogeneity 130–32
measurement error 132–3
in multivariate setting 132–3
bias–variance tradeoff 257–8
bidding application 377–9
big data 32, 43, 141, 231, 280, 283, 301, 314, 325, 436, 453, 456
computational challenges in 283–5
approximate MCMC algorithms 284
optimization-based approaches 285
stochastic approximation and 285–8
variational Bayes and 288–97
variety and 281–2
velocity and 281
veracity and 282
volume and 280–81
binomial probit model 191
binomial distribution, for Bayesian analysis 184
boosting 262–3
Box-Jenkins method 528, 532
brand loyalty 172
breach of contract 633
allegations 633–4
defendant’s expert assignment and findings 634–5
response to plaintiff’s rebuttal 636–7
plaintiff’s rebuttal 636
B-to-B transactions 41
B-to-C settings 41
budget constraint 203, 459, 475, 612
business-to-business marketing 390
but-for sales in the payment card industry 599–602
car allowance rebate system (CARS) 539
cash for clunkers 539, 544
cash rebates 417, 421, 424
causal inference 11, 13, 15
“difference-in-differences” approach 146
fundamental problem of 138–41
instrumental variable methods and 143–4
in marketing applications 135–50
model evaluation and 149–50
observational data, problem of 136–8
propensity score method 145–6
randomized experimentation and 141–2
CBC see choice-based conjoint (CBC) analysis
channels and purchase funnel stages 392–3
choice architecture 488
choice axioms 475
choice experiments, models using 165–6
choice models, in marketing 155–76, 187
applications of 168–9
challenges 174–6
for competitive analysis 173–4
conjoint analysis and 165–6
decomposing utility of 162–3
dynamics in 171–3
estimation 166–7
generalized logit model 163–4
heterogeneity, accounting for 170–71
logit model of choice 158–9

Natalie Mizik and Dominique M. Hanssens - 9781784716752
Downloaded from Elgar Online at 02/04/2019 07:14:28AM
via free access
marketing mix modeling and 173
multi-stage 167, 170
nested logit model 159–61
origins of 156–8
probit model of choice 161–2
for strategic problems 173–4
Tobit model 164
using choice experiments 165–6
using scanner data 165
classification and regression trees
(CART) 259–61
classification problems 264
classifier 264
linear 264–6
margin for 264–5
MML 265–6
ClearBlue pregnancy test 563
closed-ended questions 555, 656
cluster analysis 227–34, 434
clustering models for 229
data preparation for 228–9
interpretation of clusters 233–4
k-means clustering and 231–3
verification of clusters 233–4
Ward’s method and 229–31
Cochran’s Q tests 313
cointegration 86–7, 519, 520, 529
collaboration process 391
commercial litigation 666
communication strategies 431, 445, 503
community drug treatment 520
competitive analysis 375
Competitive Edge v. Staples 552
competitive market structure 431–3
DRMABS 433
DRMABS, LED-TV market 436–7
map generation 438
model comparison 442–5
competitive markets 613
competitive structure 431, 444
competitors 622
competitors’ marketing support (CM) 86
complete randomization 36
conditional demand curve 618
conjoint analysis
and choice models 165–6
Choice-Based Conjoint Analysis
(CBC) 57
data collection for 59–60
ecological validity of 64–71
experimental design of 58–9
external validity of 64
eye tracking in 68–71
formats of 56–7
gamification in 66–7
incentive alignment in 65–6
industry applications of 375
B2B context, marketing 381–2
bidding application 377–9
distribution channel 382–5
market value of attribute
improvement (MVAI) 380–81
store location 375–7
managerial applications of 52
“no choice” alternative 57
overview of 52–5
partworths in 53
estimation 61–2
inference based on 62–4
ratings-based 56
screening for attention in 67–8
self-explicated approach and 55
surveys 55, 59
conjoint analysis in litigation 572–3
analysis and reporting stage 579
antitrust litigation
but-for sales in the payment card
industry 599–602
Apple v. Samsung I 581, 584
price premium 584–5
basics 575–7
consumer surveys 574
design stage 578–9
Khoday v. Symantec Corp. 583–4
Oracle America, Inc. v. Google Inc. 580–81
planning stage 578
In re Whirlpool Corp. Front-Loading Washer Products Liability Litigation 582–3
sampling and administration stage 579
Schwab v. Philip Morris 581–2
survey implementation strategies 591–3
conjoint survey data, analysis 598–9
goal and designing the conjoint survey instrument 593–5
identifying and sampling 595–8
tactical considerations 577–8
conjoint surveys 181
analysis 592–3
data, analysis 598–9
instrument 593–5
constant proportion of investment (CPI) allocation rules 346
construct validity 562, 564, 565–6
consumer behavior 62, 474, 482, 483
consumer (mis)behavior 473
consumer precommitment 478–81
intervention, tool 481–3
policy intervention 474
individual consumer welfare 474–5
internalities and precommitment 475–7
negative externalities 474
consumer confusion 549, 553, 590, 640, 642–4, 647, 653
consumer decision making 558, 652
consumer demand models 210–13
consumer precommitment 478–81
in marketplace 481–3
consumer price responsiveness 181
consumer profiling see user profiling, in display advertising
consumer purchase funnel 391
consumer surveys 549–50, 574 see also bias
and conjoint analysis see conjoint analysis in litigation
FIJI vs. VITI case 643
allegations 643
Eveready survey design 645–7
improper sample selection 648
trademark infringement 640–41
formats for measuring likelihood of consumer confusion 641–3
consumer welfare 474–5
contingent valuation method 72
Cornell v. HP 572
correlated topic model (CTM) 448, 450, 456
correspondence analysis (CA) 250
cost specification 615
Cott Beverages, Inc. 633–7
counterfactuals 221
Cowles Commission for Research in Economics 143, 219
Cracker Barrel Old Country Store, Inc. (CBOCS) 549
criminal justice system interventions 520
cross-channel effects 395, 397
cross-check response categorization 557
cross-nested mixed linear model 291–3
Gibbs sampling in 292
MFVB vs. MCMC for 292
crossover effects 35
cross-sectional regressions 403
cross-sectional settings, measurement error in 124
cross-validation 551
crowdfunding 38
customer cash rebates 421
customer decision process, path diagram for 158
customer-initiated contacts (CIC) 390, 392
Cymbalta 629
daily narcotics use (DNU) 521, 524, 527, 529, 530
damages, calculation of 572
dashboard, marketing 399
data augmentation 453
data collection for conjoint analysis 59–60
for field experiments 36–7
data modeling 403
contemporaneous effects models 403–6
dynamic models 406–9
dynamic panel data models 409–13
physician-specific effects
dynamic models in absence of physician-specific effects
406–9
dynamic panel data models with 409–13
data quality 621
Day, George 155
decision support system 379, 416
decision theory 182, 184
and strategic covariates 196–7
decision tree-based models 259–63
boosting 262–3
classification and regression trees 259–61
decomposition and re-assembly
of markets by segmentation
(DRMABS) 433
LED-TV market 436–7
data collection 437
map exploration 438–42
map generation 438
model comparison 442–5
degrees of freedom 53–4
demand model 543
demand specification 615
demand system mirrors 615
demographic variables designing,
laboratory experiments 27–8
dependent variables 19
dynamic panel data models 113–19
selection 26
depletion of self-control 487
Diamond, Shari 590, 596–7, 655, 658
Dickey–Fuller (ADF) test 84, 532
“difference-in-differences” analysis 146, 513, 517
digital marketing 135, 324, 393, 456
Digital River 583
digitization, consumer privacy and 43
Directive 2002/58/EC, Germany 512
direct-to-physician (DTP) marketing 402
data 403
data modeling 403
contemporaneous effects models 403–6
dynamic models 406–9
dynamic panel data models 409–13
Dirichlet distribution 453
discrete choice models 158–62, 610, 615 see also specific models
discrete-choice demand models, for aggregate data 205–6, 210–13
disjunction of conjunctions 272
display advertising, user profiling in 448–9
modeling user profile 449–54
scenario analysis 454–6
distribution channels 382–5
distribution, field experiments and 42
Dorfman-Steiner (D-S) optimality conditions 342, 343
Double-Asymmetric Structural VAR model 99
DRMABS see decomposition and
re-assembly of markets by segmentation (DRMABS)
drug abuse see narcotics abuse
Durbin-Wu-Hausman test 167
dynamic choice models 171–3
dynamic marketing optimization problems
single resource single entity 354–6
single-entity multi-variable 358–62
single-entity single-price 356–8
dynamic models in absence of
physician-specific effects 406–9
dynamic panel data models 113–19
errors in variables in 128
instrumental variable-based
estimation of 116–19
OLS estimator for 114
random-effects specification for 115–16
with physician-specific effects 409–13
within estimator for 114–15
dynamic profit maximization 460
dynamic single resource single entity
optimization problems 354–6
dynamic single-entity multi-variable optimization problems 358–62
with time-varying effectiveness 360–62
without time-varying effectiveness 358–60
dynamic single-entity single-price optimization problems 356–8

eBay 39, 42
ecological validity, conjoint analysis of 64–71
economic simulation 449, 454, 456
e-discovery 661–2
electronic download service (EDS) 583
empirical generalizations 93, 306–7, 314, 343, 344
dependent variables selection 26
dependent variables selection 26
full vs. fractional factorial 25–6
individual differences, measures of 27–8
memory and process measures 27
self-reported thoughts, mood, beliefs, attitudes, and intentions 26–7
single vs. multiple factors 22–4
external validity 567–9
extreme value type 1 (EV1) 158–9
extremeness aversion 488
eye tracking evidence 27, 68–71
EZ-Pass system 52, 573
Facebook 97, 174, 450, 511
factor analysis 234–42
factor rotations in 239–41
number of factors in 238
false advertising 2, 551, 567, 579, 628, 653, 654
Fancaster, Inc. v. Comcast Corporation, etc. 568
feature exclusivity 615
feature selection, in machine learning 276–7
feature space 268
feature transform 268–9
feature valuation 609–10
error-correction approach 520, 530, 531, 533–6
erro-in-variables problem 123
European privacy regulation 511, 512
Ez-Pass system 52, 573
Eveready format 641–2, 645
Excel-based decision support tool 466
exogeneity, in specification testing 122–3
experimental designs 19–30, 473, 479, 564
between vs. within-participant 21–2
choice/behavior 27
of conjoint analysis 58–9
demographic characteristics, measures of 27–8
Federal Rules of Evidence 582
Federal Trade Commission 653
field experimentation 32–47, 397–400, 502–7, 511–14
complete/stratified randomization in 36
context of marketing and 43–44
crossover effects and 35
data collection in 36–7
distribution and 42
vs. laboratory experiments 15–19
limitations 44–6
external generalizability 45–6
lack of theory 44–5
limited scope 46
one shot 46
marketing communications and 39–40
need for 33
pricing and 40–41
products and 41–2
promotion communications and 39–40
randomization in 33–5
reciprocity by proxy 507–9
results interpretation in 37–9
rewards 509
spillover effects and 35
on Twitter 37
FIJI vs. VITI case 643
allegations 643
biased respondents with brand names 648
improper sample selection 648
standard questions, failed to ask 649
firm-initiated contacts (FIC) 390, 392
first-difference estimator 405–6, 409, 412
fixed-effects models 110
vs. mean-difference estimator 110–12
measurement error bias in 125–6
first-difference instrumental variable-based estimator 116–17
Fishbein, Martin 174
Fisher, Ronald 562
Fisher scoring 286
fixations, eye-tracking data 68
fixed-effects models 109, 405
advantage of 112
estimation of 109–10
first-difference vs. mean-difference estimator 110–12
vs. random-effects model 112–13
specification testing for 119–23
fixed-form variational Bayes (FFVB) 290–91
flat maximum principle 338–9
Food and Drug Administration 653
4 Ps of marketing mix 328
Fractus v. Samsung 554
franchised-car retailers 417
Frisch–Waugh–Lovell theorem 130
frontier analysis 424
Full Information Maximum Likelihood (FIML) approach, cointegration testing 87
full vs. fractional factorial design 25–6
functional magnetic resonance imaging (fMRI) 27
galvanic skin response (GSR) 27
gamification, in conjoint analysis 66–7
generalization, SVM 269–71
generalized forecast error variance decomposition (GFEVD) 92–3
generalized impulse response functions (GIRFs) 92–3
generalized least squares (GLS) 108–9, 116
generalized logit model 163–4
generalized method of moments (GMM) estimators 116, 117–19, 182
generalized multinomial logit model 163–4
Generalized Reduced Gradient (GRG) technique 347
Georgia-Pacific analysis 577
Gibbs sampling 283, 289, 292, 293
global norms 503, 505–6
goodness-of-fit propensity score model 145
Google 146, 511
Google Adwords 395
Google Analytics 37
Google search ads 39
government regulation and online advertising market 511
antitrust 516–17
local control 514–16
privacy 511–14
government stimulus program 539, 544
growth elasticity 460, 461
Hartman, W. 147
Hausman and Taylor (HT) estimator 122–3
Hausman specification test see specification testing
Hausman test statistic 120
Hawthorne effects 38
hazard rate models 172, 173
healthy food choices 18, 20–21, 486, 497
heroin addicts 521, 536
heterogeneity
Bayesian models of 193–6
choice models of 170–71
heuristic solutions 459, 462, 463, 464, 465
hierarchical Bayes (HB) models 61, 273, 283, 418
hierarchical logit model 293–5
population covariance matrix for 297
total variation error for 296
via hybrid VB 294–7
hotel towel usage 503
Howlett, Elizabeth 658
Hubbard v. Midland Credit Mgmt 555
hybrid VB procedure 294–7
hypertension market 468
ideal point preference models 249
illegal drug use 519 see also narcotics abuse
impulse-response functions (IRFs) 80, 88, 90–93, 106
incentive programs 415, 417, 418, 421, 422, 424, 482
incentive-aligned conjoint analysis 65–6, 69
incentive-by-proxy condition 508
incentive-compatible experiment 479
independence of irrelevant alternatives (IIA) 157
indirect least squares see Wald estimator
individual consumer welfare 474–5
individual differences
individual differences scaling (INDSCAL) 246
in personality traits 27–8
individual-consumer-level dynamics 453
individual-specific random effects 402
industry applications of conjoint analysis 375
B2B context, marketing 381–2
bidding application 377–9
distribution channel 382–5
market value of attribute improvement (MVAI) 380–81
store location 375–7
inequality constraint 576
infant formula litigation 594–5
market shares and antitrust damages in 602–5
infant formula supplements industry 602–5
inferred quality 395
information-related bias 550
infringement 640–49
Inofec BV challenges 390–91
channels and purchase funnel stages 392–3
marketing activity 392
marketing effects on purchase funnel stages 393
offline and online purchase funnels 391–2
in-person interviews 597
instrumental variables (IVs) 116, 143–4
intellectual property 517, 572, 579, 590, 593, 609, 611, 633, 667
intentions 26–7
internal validity, experimental research 564, 566–7
internalities and precommitment 475–7
internet-based surveys 597, 603
interpreting field experiment results 37–9
intervention-testing experiment 17–18
kernel functions 269
kernel method 267–9
Khoday v. Symantec Corp. 583–4
Kirzner, Israel M. 107
Klapper, D. 147
k-means clustering 231–3
Koyck model 79, 339–40, 406, 408
Kraft Food Group, Inc. 549
Kraft v. CBOCS 554, 556, 558
Kullback-Leibler (KL) divergence 289
labor participation 474
laboratory experiments 11–30
advantage of 19
designing 19–30
between vs. within-participant 21–2
choice/behavior 27
demographic characteristics, measures of 27–8
dependent variables selection 26
full vs. fractional factorial 25–6
individual differences, measures of 27–8
memory and process measures 27
passive vs. active control treatment 19–21
sample selection 28–9
sample size 29–30
self-reported thoughts, mood, beliefs, attitudes, and intentions 26–7
single vs. multiple factors 22–4
vs. field experiments 15–19
intervention-testing 17–18
phenomenon establishment 18–19
theory-testing 16–17
nature of 12–15
need for 12
for relationships between variables 12–15
rumor and 11–12
Lagrange multipliers 267, 345
Lanham Act 565
Laplace approximation of posterior 290
*Laser Dynamics v. Quanta* 572
Lasso regression 298–300
Latent Dirichlet Allocation (LDA) model 450–51
Latin Square design 24
least-squares analysis 403
least-squares dummy variable (LSDV) 110
legal practice
e-discovery 661–2
in identifying precedent 662–3
machine learning applications in 661–5
in predicting case outcomes 663–5
legal supervision (LS) 521, 537–8
Lerner index 341
libertarian paternalism 486
likelihood principle 182
Likert scale 26
limitations
of field experiments 44–6
external generalizability 45–6
lack of theory 44–5
limited scope 46
one shot 46
of normal distribution 195
linear classifiers 264–6
linear regression analysis 636
for continuous variables 259
litigation see antitrust
litigation experiments 561–3
courtroom, learning from 569–70
experimental research 564
goals 563
validity 564
construct 565–6
external 567–9
internal 564, 566–7
litigation support 1–2
local competitive asymmetry 436
local markets (DMAs) 418–20
location selection 375–7
logistic regression, for discrete data 259
logit demand system 612, 615–18
logit model 417, 419, 158–9
logit-transformation 452
long-difference estimators 128, 412
long-run impact 79–80, 85
long-term equilibrium 528–9
long-term impact 519–38
time-series models 79–98
long-term share of the total effect (LSTE) 339
lower-priced mass-market product 614
Lucas Critique 99–100
*Luce v. Gateway* 572
Luce’s axiom 157
McFadden, Daniel 157, 158
machine learning (ML) 255–77
bias–variance tradeoff 257–8
characteristics of 255
decision tree-based models 259–63
vs. econometric methods 255
feature selection in 276–7
in litigation see machine learning, in
litigation
methods 255–6
predictors in 259
as regularization 275–6
scalability in 255–6
supervised 256
support vector machines 264–74
testing 274–5
tools 255
training and 274–5
unsupervised 256
validation and 274–5
machine learning, in litigation 661
applications 665–6
expert testimony 667
classification
e-discovery 661–2
identifying precedent 662–3
predicting case outcomes 663–5
macro marketing optimization 325
mail surveys 597
mall-intercept design 655
mall-intercept survey 647
mapping 431–2
margin, in SVM 264–5, 269–71
market equilibrium 610
market expansion (ME) 376, 377, 412
market linking 155, 175
market price 557, 569, 572, 577, 591, 629–30
market response 80, 99, 324, 394, 463–4
market segmentation 375
market sensing 155, 175
market share simulators 62–4
market simulations 577
market structure 173, 243, 431–3, 435, 438, 442, 445
market value of attribute improvement (MVAI) 380–81
marketing 1 see also advertising
analytics 1, 2
applications, causal inference in 135–50
Bayesian econometric methods for 181–98
boosted decision trees in 263
communications for field
experiments 39–40
context of 43–4
field experiments in 32–47
laboratory experimentation in 11–30
machine learning and 255–77
meta analysis in 305–19
modeling choice processes in 155–76
optimization methods 324–66
panel data methods in 107–33
rumor and 11–12
science 1
structural models in 200–221
time-series models in 79–100
unobservable factors in 107
marketing activities 394
marketing budget allocation 390, 392, 397, 458
Bayer case 463–4
data and model estimation 464–6
Bayer implementation 466–7
managerial decision making 467–9
dynamic approach 459–61
implications 461–2
optimal 458–9
practical application 462–3
marketing communication activity 39, 391–2
channels and purchase funnel stages 392–3
customer-initiated contacts 392
firm-initiated contacts 392
marketing effects on purchase funnel stages 393
marketing dashboard 397, 399
marketing effects, on purchase funnel stages 393
marketing elasticity 338, 461, 462, 464
marketing input variables, optimization problems 328–9
marketing mix 98, 382
instruments 93, 97
modeling, choice models and 173
marketing optimization problems 324–66
class of 363–4
dynamic
single resource single entity 354–6
single-entity multi-variable 358–62
single-entity single-price 356–8

Natalie Mizik and Dominique M. Hanssens - 9781784716752
Downloaded from Elgar Online at 02/04/2019 07:14:28AM
via free access
empirical generalization for 344
macro 324
micro 324
software for 366
static
models 333–5
multiple entity multi-variable 347–54
multiple entity single resource 343, 345–7
single entity multi-variable 341–3
single entity single price 340–41
single resource single entity 332, 336–40
typologies of
marketing input variables 328–9
objective function 329–32
sales entities 327–8
type of objective 329–32
Markov chain 187–90, 195
Marlboro 561
Marriott hotel chains 573
Marriott’s Courtyard Hotels 52
Martek Biosciences Corporation 602
MasterCard 599–602
maximum likelihood estimation (MLE) 116, 137, 166, 204, 543
maximum margin linear (MML) classifier 265–6
mean-difference estimator, fixed-effects models 110
vs. first-difference estimator 110–112
measurement error bias in 126–7
measurement error bias 125, 406
in first difference-estimators 125–7
in mean-difference estimators 126–7
in OLS 125–6
spreading in multivariate setting 132–3
measurement error, in panel data models 123–9
assessment of 128–9
first-difference estimators 126–7
in static panels 125–6
management of 128–9
in mean-difference 126–7
in OLS 125–6
variables
cross-sectional settings 124
dynamic panel data models 128
static panel data models 125
MessageWorks 314
meta analysis, in marketing 305–19
applications 315–18, 319
estimation issues in
ancillary statistics 313
Cochran’s Q tests 313
correlated observations 312–13
equivalent tests 313–14
fail-safe n 313
fixed vs. random effects 314
weighing observations 313
post-hoc 307
as predictive simulator 314
replications and 305, 307
steps in 307–12
types of 305–6
use 306
variables for 309–10
methadone maintenance (MM)
treatment 521, 524, 527, 529, 530, 536–7
legal supervision 537–8
Metropolis–Hastings (MH) algorithm
187–90, 283, 284
Microsoft Excel 56, 62, 64
Solver function in 347
mind-set metrics, in marketing 98
Mixed Data Sampling (MIDAS) regression models 100
mobile customers
choice models and 175–6
internet channel, rise of 175
monopoly market 614
Monte Carlo Markov Chain (MCMC) methods 183, 195, 283–4
mood 26–7
multidimensional scaling (MDS)
242–50, 432
dimensionality in 246–7
dissimilarities data and 243–4
ideal point preference models 249
MDS model and 244–6
vector fitting to interpret 247–9
multi-format product line and pricing problem 351–4
with cross-market network effects 351–4
multinomial logit model 158–9, 163, 273, 385
multi-period optimizations 611
multiple additive regression trees (MART) 262–3, 274–5
multiple entity multi-variable optimization problems 347–54
multi-format product line 351–4
pricing problem 351–4
product line pricing 347–9
resource allocation with cross-market network effects 349–51
multiple entity single resource optimization problems 343, 345–7
multiple factors design, laboratory experiments 22–4
multi-stage choice models 167–70
multivariate models, bias spreading in 129–33
multivariate statistical analyses
cluster analysis 227–34
factor analysis 234–42
multidimensional scaling 242–50
multivariate time-series analysis 519, 524
MVAI see market value of attribute improvement (MVAI)
narcotics abuse 519, 524, 527–8, 533, 536, 537
narcotics use and property crime 519–21
legal supervision 537–8
methadone maintenance (MM) treatment 536–7
methodology 524
long-term equilibrium 528–9
non-stationary system with cointegration 530
short-term dynamics 529–30
stationary system 531
unit roots, presence of 528
parameter estimation methods for short-term dynamics 531–2
reciprocal dynamics 533–6
Nash equilibrium 611, 619, 620
Neches model 637
Need for Cognition Scale 28
negative externalities 474, 475, 478
Nerlove–Arrow model 354–6
nested logit model 159–61, 417, 427
structure 419
NetAirus Techs. LLC v. Apple Inc. 553
Netflix.com 281, 448
Newton method for optimization 286
Neyman, J. 138
Nickell, Stephen 115
Nike, Inc. v. Nikepal Int’l, Inc. 565
non-linear classification, SVM 267–9
nonprobability sampling 596
non-random samples 596
non-stationary system with cointegration 530
without cointegration 530–31
Norton Download Insurance (NDI) 583
nudging behavior 486, 491
nuisance, effects of 24
null hypotheses, in Hausman test 121
objective function 329
deterministic vs. stochastic 330–31
monopolistic vs. competitive situations 331–2
static vs. dynamic 329–30
oblique rotation 241
observational data, problem of 136–8
Office Depot 561
offline advertising 512 see also online advertising
offline funnel 390, 393, 394, 395
omitted variable bias 126, 312, 406, 411, 412
online advertising 39–40, 511 see also offline advertising
antitrust 516–17
local control 514–16
privacy 511–14
online funnel 392, 394, 395
online labor markets 28–9
online surveys 56, 597
online vs. offline selling 97
OpenBUGS 61
open-ended questions 555, 641, 655, 656
optimization see also marketing optimization problems
meaning of 325–6
principles of 325
Index 683

problems 326 see also specific problems

*Oracle America, Inc. v. Google Inc.* 554, 574, 580–81
ordinary least square (OLS) estimator 108–9, 114
measurement error bias in 125–6
regression 61
outlier-robust unit-root tests 85
out-of-home advertising 514–15
paid search advertisement 135
paired-comparisons based conjoint analysis 57
panel data 107
and unobservables 147–8
panel data models, in marketing 107–33
dynamic 113–19
measurement error in 123–9
assessment of 128–9
cross-sectional settings 124
dynamic panel data models 128
in first difference-estimators in static panels 125–7
management of 128–9
mean-difference 126–7
in OLS 125–6
variables in static panel data models 125
specification testing in 119–23
static 109–13
partworths 53, 576
estimation 61–2
inference based on 62–4
passive vs. active control treatment 19–21
patent infringement 11, 551, 554, 572, 579, 584, 590, 593–4, 598
paternalism 493, 586
pay-what-you-want pricing 41
*People of the State of California v. Overstock.com* 569
perceptual maps 242–4, 246–7, 249–50, 431
persistence modeling 80–81
steps 82
cointegration tests 86–7
impulse-response function derivation 90–93
unit-root testing 83–6
VAR models 87–90
strategic insights from 93–8
marketing–finance interface 97
marketing-mix effectiveness 93, 97
mind-set metrics 98
new/social media 97–8
online vs. offline selling 97
persuasive communication 491
comparisons 492
moments of truth 492–3
vividness 491–2
persuasive messages 22, 502
*Pharmacia Corp. v. GlaxoSmithKline Consumer Healthcare, L.P.* 567
phone surveys 597
physician-specific effects
dynamic models in absence of 406–9
dynamic panel data models with 409–13
PIN incentive planning system 427
“pinch-to-zoom,” smartphones feature 64
“placebo” sample 146
Poisson distribution 452
policy intervention
consumer (mis)behavior 474
individual consumer welfare 474–5
internalities and precommitment 475–7
negative externalities 474
possibilities 493–4
assortment 494
bundling 494–5
quantity 495
posterior distribution 182–7, 189, 194–7, 212, 283, 288, 422, 424, 617, 625–6, 627
potential outcomes framework 138–9, 141
power information network (PIN) database 416, 420–21
prediction models 259
predictors, in machine learning 259
present-biased consumers 477
pre-testing and survey instrument 556
pre-testing of survey 551, 556
price coefficient 612
price customization 415, 417
price effects, on demand 543, 590

Natalie Mizik and Dominique M. Hanssens - 9781784716752
Downloaded from Elgar Online at 02/04/2019 07:14:28AM via free access
**Handbook of marketing analytics**

- **price premium** 584–5, 609, 630, 659
- **price-insensitive consumers** 619
- **pricing** 375
  - field experiments and 40–41
  - mechanisms 378
- **pricing promotion decisions** 415–16
  - empirical illustration 420
  - data description 420–21
  - transaction types 421–2
  - estimation and implementation results 422
  - mid-size domestic SUV 424–7
  - simulations 422–4
  - modeling objective and specification 416–20
- **principal components analysis** 250–51
- **privacy** 511–14
- **probabilistic modeling** 451, 452
- **probit model of choice** 161–2
- **process interventions** 488
  - accessibility 490
  - defaults 490
  - order 488–90
- **product attribute valuation** 382
- **product design** 375
  - choice models and 173
  - and marketing mix modeling 173
- **product life cycle (PLC)** 361, 459
- **product line pricing optimization problems** 347–9
- **product positioning** 375
- **product-market portfolio** 174
- **products, field experiments and 41–2**
- **profile fragment** 449
- **promax** 241
- **promotion communications, for field experiments** 39–40
- **promotions on sales, effect of 40**
- **propensity score method** 145–6
- **psychological distance** 70
- **public policy context, structural models in** 539–40
- **consumers 540–41**
  - data and estimation 543–4
  - manufacturers and dealers 541–3
- **pricing decisions of car manufacturer 544–5**
- **public policy effectiveness** 519 *see also* narcotics use and property crime
- **Qualtrics** 56, 59–60, 68
- **quasi-experiment** 42, 511, 513
- **quasi-Newton method** 620
- **random coefficients**
  - logit model 598
  - model 625
- **random lottery mechanism (RLM)** 69
- **random parameter** 598
- **random sampling** 596–7
- **random utility model** 156–7, 293, 576, 617
- **random-effects estimators**
  - assumption of efficiency for in Hausman test 122
- **random-effects models** 108–9, 194
  - advantage of 112
  - Bayesian analysis of 194–5
  - for dynamic panel data models 115–16
  - vs. fixed-effects models 112–13
  - Markov chain Monte Carlo algorithm for 195
  - specification testing for 119–23
- **randomization, in field experiments** 33–5
- **reliability**
  - complete/stratified 36
  - in non-digital environment 34
  - in offline environment 34–5
  - rankings-based conjoint analysis 57
  - ratings-based conjoint analysis 56–9, 61, 62
- **reference utility** 617
regression discontinuity 148–9
regression model 182, 186–7, 191
regularization 298
  machine learning as 275–6
  penalty 271–2
  Tikhonov 272
  for tradeoff 257–8
relative substitutability 614
re-parameterizing 452
replications, meta analysis and 305, 307
research participants 28, 29
resource allocation, with cross-market network effects 349–51
resources, in marketing 328–9
ResQNet.com v. Lansa 572
retail scanner data 181
rhierMnlRwMixture routine 625
ridge regression 271, 299–300
risk-averse consumer 172
Ritz Carlton 573
role-category mapping 453
rolling-window unit-root tests 85
root mean squared errors (RMSE) 292
root-finding algorithm 620
rumor 11–12, 13–15
Saavedra v. Eli Lilly 629
saccades, eye-tracking data 68
sales entities, in optimization problems 327–8
sample selection 28–9
sample size 29–30
Samsung 561, 596
Sawtooth Software’s SSI Web suite 59, 166
Scale Multinomial Logit model 163
scanner data, models using 165
Schneider, Stephen A. 658
Schwab v. Philip Morris 581–2
Schwartz (SBC) criterion 84
screening for attention 67–8
screening protocols 551
search advertising 39, 140, 150, 511, 516–17
selection on unobservables 143, 147–8
selection-related bias 550–51
self-control premium 481
self-explicated approach 55
self-imposed restrictions 477
Self-monitoring Scale 28
self-reported thoughts 26–7
selling, online vs. offline 97
semantic differential scale 26
Sentius Int’l LLC v. Microsoft Corp. 559
serial correlation 119
shattering, notion of 270
short-run impact, time-series models 79–98
short-term dynamics 529–30
signal-to-noise ratio 125–6
simulated maximum likelihood 166
simulation methods 183
simulation-based Bayesian statistics 617
simultaneity, problem of 111, 138, 182
single entity multi-variable optimization problems 341–3
single entity single price optimization problems 340–41
single factor design, laboratory experiments 22–4
single product firms 615
single resource single entity optimization problems 332, 336–40
Skye Astiana, Plaintiff v. Ben & Jerry’s Homemade, Inc. 652
slack variables 266
Sleekcraft factors 643
smart gestures 609
smartphones 575–6
Smith v. Wal Mart Stores, Inc. 568
social networks 40
  choice models and 174–5
social norms 502, 503
Solver function, Microsoft Excel 347
specification testing 119–23
  alternative and null hypothesis 121
  computation 120
  exogeneity in 122–3
  for fixed-effects vs. random-effects 119–21
  power issues in 123
random-effects estimator, assumption of efficiency for 122
spillover effects 35
spreadsheet-driven dashboard tool 400
Squirt format 641
S-shaped functions 336
Staples 561
Stata 111, 117, 118, 119
static marketing optimization problems
models 333–5
multiple entity
multi-variable 347–54
single resource 343, 345–7
single entity
multi-variable 341–3
single price 340–41
single resource 332, 336–40
single resource single entity 332, 336–40
static Nash price competition 615
static panel data models
errors in variables in 125
fixed-effects model 109–13
random-effects model 108–9, 112–13
stationary system 531
statistical inferences 181
stochastic approximation 285–8
stochastic gradient descent (SGD) 285–8
stochastic variational inference (SVI) 285
stock keeping units (SKUs) 165
strategically defined covariates 182, 197
stratified randomization 35, 36
structural models, in marketing
200–221
definition 200
for demand and supply 219–20
for dynamic tradition 219–20
elements of 200–201
field-test models based
counterfactuals and 221
illustration 202–9
consumers heterogeneity 204–5
discrete-choice demand models
for aggregate data 205–6, 210–13
market structure 203–4
unobserved demand factors at aggregate level 207–9
multiple data sources for, combined 220
multiple methods for, combined 221
for search 220
unobservables in 200–201, 202–9
usefulness 213–18
structural models, in public policy context 539–40
consumers 540–41
data and estimation 543–4
manufacturers and dealers 541–3
pricing decisions of car manufacturer 544–5
submarket 433–4, 436, 438
submarket-separating criteria 432
supervised machine learning models
256
decision trees 259–63
support vector machines 264–74
support vector machines (SVM) 264–74
applications of 272–4
classification problems 264
generalization 269–71
latent-class 273–4
linear classifiers 264–6
margin in 269–71
misclassified examples 266–7
non-linear classification 267–9
optimization problem 271–2
regularization 271–2
VC dimension in 269–71
survey admissibility 550, 559
survey cross-validation 248, 273–5, 299
survey evidence 652
“All Natural” food products 652–4
Ben & Jerry’s “All Natural” case 654
assignment and findings 654–5
Diamond principles 655–8
Plaintiff’s criticisms 658
survey implementation strategies 591–3
conjoint survey data, analysis 598–9
goal and designing the conjoint survey instrument 593–5
identifying and sampling 595–8
survey pre-testing 551, 556
survey questionnaire 578
SurveyMonkey 56, 59
surveys
analysis 556–7
Eveready format 641
interpretation of open-ended responses 550
Index 687

reliability 551–3
results, cross-validated 557–8
Squirt format 641
swivel screen attribute 623
Symantec 583
tall dataset 280, 285, 297
television markets 431–45
Tesco 175
theory-based interventions 17
theory-testing experiment 16–17, 30
Tikhonov regularization 272
time pressure 487
time-consistent consumers 476–7
time-series analysis 519, 521
time-series data 79
time-series econometrics 390
data, organizing and leveraging 393–4
Inofec Bv
  challenges 390–91
  channels and purchase funnel stages 392–3
  marketing activity 392
  marketing effects on purchase funnel stages 393
  offline and online purchase funnels 391–2
time-series models 79–100, 393
  long-term marketing 79–80
  persistence modeling 80–98
  short-run marketing 79–80
  for stock-price data analysis 97
Tobacco Plain Packaging Act (2012), Australia 473
Tobin, James 164
Tobit model 164, 191–2
total variation error (TVE) 296
tracking goals 496
trademark dilution 561, 565, 643
Trademark Dilution Revision Act (2006) 565
trademark infringement 640–41
for measuring likelihood of consumer confusion 641–3
trademark infringement suit 568
trademark litigation 549, 590, 640
trade-offs 108, 165, 242, 378, 468, 575–6, 598, 616, 621
training 257, 265–6, 269–70, 272, 274, 276
  costs of 35
  in-person 505
  job-training program 135–6
  machine learning and 274–5
  in use of analytics 391
Trognon, Alain 114
TV Interactive Data Corp. v. Sony Corp. 554
Twitter 37, 97, 450
  advertising on 39
to comment 281
Type I error 29–30
Type II error 16–17, 29
Uniloc v. Microsoft 572
Union Carbide Corp. v. Ever-Ready, Inc. 553, 565, 641
unit roots
  presence of 528
  testing of 83
  design of 85
United States Credit Card Act (2009) 473
United States v. Vail Resorts 590
unit-level models, in marketing 191–3, 195
unit-root testing 83–6, 537
unobservables
  from explanatory variables 201–2, 203–4
  factors in marketing 107
  heterogeneity 202, 204–5
  from measurement error 202
  and panel data 147–8
  in structural models 200–201
  unobserved demand factors at aggregate level 207–9
unsupervised machine learning models 256
user profiling, in display advertising 448–9
  modeling user profile 449–54
scenario analysis 454–6
utility-to-choice probability
  transformation 159
validation 274–5
  machine learning and 274–5

Natalie Mizik and Dominique M. Hanssens - 9781784716752
Downloaded from Elgar Online at 02/04/2019 07:14:28AM
via free access
Valuclick.com 448
Vapnik-Chervonenkis (VC) 270–71
dimension 270–71
generalization theorem 269–71
variable coding 616
variable operationalization 394
variables, in cross-sectional settings 124
variational Bayesian (VB) methods 288–97
cross-nested mixed linear model 291–3
FFVB 290–91
hierarchical logit model 293–7
MFVB 288–90
variational distribution, MFVB 288–9
variety, big data and 281–2
Vector Error Correction Model 80
vector-autoregressive (VAR) models 80, 87–90, 97, 100, 394, 531, 532, 533
velocity, big data and 281
veracity, big data and 282
vice and virtue goods 478
“vice-virtue” bundle 494
Victor’s Little Secret 561
Vidale–Wolfe state equation 355, 356
Visa 599–602
visualization 433, 435
visualization of similarities (VOS) 435
vividness 491–2
volume 280–81
big data and 280–81
Wald estimator 143–4
Ward’s method 229–31
washing machines 432, 582, 628
Weibull distribution see extreme value type 1 (EV1)
Weierstrass sampler 284
weight decay 271
Werdebaugh v. Blue Diamond Growers 629
Whirlpool Corporation 582
Whirlpool Corp. Front-Loading Washer Products Liability Litigation 582–3
wide data 297–300
willingness-to-pay (WTP) 63, 351–2, 576–7, 584, 612–13
within estimator 114–15, 405–6
within-participant design disadvantage of 21
laboratory experiments 21–2
word-of-mouth marketing 98
World Wide Web, commercialization of 97
wrapper method 276–7
Yahoo! 52
Zima 511