Index

accelerated hazard functions (AHF), 385
adjustment term, 101
always takers, 317, 341
anticipation effects, 164
approximation bias, 64
Ashenfelter’s dip, 241
asymmetric loss function, 320
attrition, 32, 292
average direct effect, 58
average structural function (ASF), 35
average treatment effect (ATE), 10
conditional, 35
for treated compliers, 199
on the non-treated (ATEN), 11
on the treated (ATET), 10
back-door approach, 54
bandwidth, 65
local, 84
baseline hazard, 384
bias stability (BS), see common trend (CT)
bins, 108
blocking, 25, 28
bootstrap
naive, 155
wild, 155
canonical parametrisation, 93
causal chains, 46
causal effect, 3
cause-specific hazards, 388
censoring
left-, 382
right-, 382
changes-in-changes (CiC), 228, 244
reversed, 246
choice-based sampling, 161
common support
condition (CSC), 19, 121
problem, 45, 121
common trend (CT), 230, 243
competing risks, 378, 389
compliance intensity, 218
compliers, 271, 317, 341
conditional DiD (CDiD), see matchingDiD (MDiD)
conditional independence assumption (CIA), 15, 43, 117
for instruments (CIA-IV), 191
conditional mean independence, 117
conditioning on the future, 358
confounders, 42, 51
continuity
Hölder, 62
Lipschitz, 62
continuous-time model, 359
control function, 214
control variable approach, 214
counterfactual distribution functions, 145
counterfactual exercise, 6
cross-validation, 82
generalised, 84
crude incidence, see cumulative incidence function
cumulative incidence function, 388
curse of dimensionality, 64, 81, 131
defiers, 271, 317
DiD-RDD approach, 275
difference-in-differences (DiD), 227
difference-in-differences-in-differences, 242
direct effect, 7, 54
directed acyclic graph, 46
directional derivatives, 321
discrete-time dynamic models, 358
displacement effect, see substitution effect
distributional structural function, 36
Do-validation, 83
Dominated (Bounded) Convergence Theorem, 72
double robust estimator, 168
drop-out bias, 31
efficiency wage theory, 12
eligibility, 270
endogeneity, 337
endogenous sample selection, 31
equivariance to monotone transformations, 318
exact balance, 25
exit rate, see hazard function
exogeneity, 17

© in this web service Cambridge University Press

www.cambridge.org
Index

conditional, 125
sequential, 387
strict, 387
weak, 388
external covariates, 387

falsification tests, 163
first differencing, 262
front-door adjustment, 52
fuzzy design, 269, 343

Granger-causality, 42
Granger–Sims non-causality, 396
Gumbel distribution, 379

Hawthorne effect, 31
hazard function, 378

ideal design, 25
ignorability, 42, 116
ill-posed inverse problems, 221
independence, 44
infinite nuisance parameter, 99
influence function, 100, 169
initial subsequence, 367, 370
instrumental variable, 59, 175
local, 267
local estimator (LIVE), 208

instruments, see instrumental variable
integrated approach, 36
intended programme duration, 356
intention to treat (ITT), 31, 59, 124, 184
intermediate outcomes, 361, 368
inverse probability tilting, 154
inverse propensity weighted estimator, 168
iterated expectation, 318

k-nearest neighbour (kNN), 61, 120
Kaplan–Meier estimator, 383
kernel, 65
boundary, 66
equivalent, 68
higher-order, 66
product, 77
regression, 61
knots, 106

largest subpopulation, 336
least favourable curve, 102
leave-one-out estimate, 83
Legendre polynomials, 106
linear programming (LP), 324
local collinearity, 69
local linear estimator, 68
local parametric estimator, 90
local polynomial estimator, 66

local quantile regression, 328
log-logistic distribution, 381

marginal probability, see cumulative incidence function
marginal randomisation, 32
marginal treatment effect (MTE), 204, 207
matched pairs, 27, 120
matching, 51, 120, 127
estimators, 116
matchingDiD (MDiD), 234
mediation analysis, 54, 111
method of sieves, 104
mixed design, 270
multi-spell data, 382
multiple durations, 382

negative duration dependence, 378
never takers, 317, 341
no anticipation effects assumption, 365
non- and semi-parametric estimation, 43
non-response, 32
non-separable model, 34
non-parametric identification, 9
regression, 116
weighting estimators, 116

omitted variable bias, 42
one-sided non-compliance, 187

parallel path, see common trend (CT)
partial effect, 8
partial linear models (PLM), 90
additive, 90
partial maximum likelihood estimation, 384
path, 46
pathwise derivative, 103
perfect manipulation, 272
policy-related treatment effects (PRTE), 204
policy-relevant treatment parameters, 210
post-treatment variable, 57
potential outcome non-causality, 396
potential outcomes, 272
power series, 105
pre-programme test, see falsification test, 244
predictable-bias assumption, 236
projection matrix, see smoothing matrix
propensity score, 51, 116
matching, 140, 236
weighting estimator, 198
proportional hazard (PH), 384
mixed, 385
piece-wise-constant, 387
pseudo-treatment, 165, 307
pseudo-treatment test, see falsification test
quantile structural function (QSF), 36
randomisation bias, 31
randomised controlled trials (RCT), 18
randomised phasing-in, 32
rank invariance assumption, 214
regression method, 117, 133
regression-to-the-mean effect, 241
regular parametric submodel, 135
relevance condition, 195
restricted maximum likelihood (REML), 109
ridge regression, 68
sample bias, 30
sampling
  flow, 382
  stock, 382
selection bias, 16, 124, 132
selection on observables, 16, 116, 117
selection on unobservables, 19
semi-parametric efficiency, 102
semi-parametric variance bound, 102
sharp design, 269, 343
single index model, 90
single-spell data, 382
small area statistics, 240
smoothing, 61
  bias, 61, 64
  matrix, 84
  parameter, see bandwidth under-
  Sobolev norm, 63
sorting gain, 11
spillover effects, 13
spline, 106–111
  B-, 109
  cubic, 106
  natural cubic, 107
  P-, 110
smoothing, 108
  thin plate, 109
stable-unit-treatment-value-assumption (SUTVA), 14
stratification, see blocking
structural function
  average (ASF), 215
  distribution (DSF), 216
  quantile (QSF), 216
sub-distribution, see cumulative incidence function
subsampling, 155
substitution bias, 31
substitution effect, 7
sup Sobolev norm, 63
sup-norm, 63
surplus, 207
survival function, 378
tangent space, 103, 134
tensor product, 110
test of equality, 30
treatment, 3, 5
  definition window, 357
durations, 363
  sequences of treatments, 364
  starting times, 363
time, 390
treatment effect heterogeneity, 121
triangularity, 46, 213, 335
validity
  external, 23
  internal, 23
varying coefficient model, 91
Wald estimator, 186
wavelets, 106
weighting, 145
window, see bandwidth