Notation

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This page lists the symbols, conventions, and abbreviations used throughout the book. Where a chapter departs from these conventions locally, the chapter says so explicitly.

Greek symbols

Symbol	Meaning
α	Type I error rate (significance threshold).
β	Type II error rate; also a regression coefficient (context).
μ	Population mean.
σ	Population standard deviation; σ^2 for variance.
π	Population proportion.
θ	Generic population parameter; $\hat{\theta}$ for the estimator.
τ^2	Between-study variance in meta-analysis.
ρ	Population correlation; intra-class correlation (ICC).
λ	Rate parameter; eigenvalue (context).

Latin symbols

Symbol	Meaning
n	Sample size.
N	Population size.
$\bar{x}$	Sample mean.
s	Sample standard deviation; s^2 for variance.
$\hat{p}$	Sample proportion.
SE	Standard error of an estimator.
p	p-value.
L, ℓ	Likelihood and log-likelihood.
I^2	Heterogeneity statistic in meta-analysis.

Operators and notation

- $\sim$ — “is distributed as”.

- $\hat{\theta}$ — an estimator of the parameter θ.
- $X \perp Y$ — independence.
- $E[\cdot]$, $\mathrm{Var}[\cdot]$ — expectation and variance.
- $X \mid Y$ — X given Y (conditional).

Abbreviations

Abbrev.	Expansion
CI	Confidence interval (frequentist); credible interval (Bayesian) — context disambiguates.
RR	Relative risk (risk ratio).
OR	Odds ratio.
HR	Hazard ratio.
AUC	Area under the (ROC) curve.
LR+ / LR−	Positive / negative likelihood ratio.
PPV / NPV	Positive / negative predictive value.
MLE	Maximum likelihood estimator.
GLM	Generalised linear model.
GLMM	Generalised linear mixed model.
GEE	Generalised estimating equation.
RCT	Randomised controlled trial.
ITT	Intention to treat.
PP	Per protocol.
MI	Multiple imputation.
FDR	False discovery rate.
BH	Benjamini–Hochberg (FDR procedure).
TRIPOD	Transparent Reporting of a multivariable prediction model.
STROBE	Strengthening the Reporting of Observational Studies in Epidemiology.
CONSORT	Consolidated Standards of Reporting Trials.
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses.
ARRIVE	Animal Research: Reporting of In Vivo Experiments.
STARD	Standards for Reporting of Diagnostic Accuracy.

Code conventions

- The base R pipe `|>` is used throughout. Files mixing `%>%` and `|>` are flagged in `GENERATION_LOG.md`.
- Package functions are written qualified the first time they appear in a chapter (`dplyr::filter()`), then bare on subsequent uses.

- Code blocks shown in the rendered book are display-only; the book is built with `eval = FALSE` globally and verified to knit cleanly without side effects. To run a chunk yourself, copy it into an R session with the libraries cited in that section attached.