

List of Examples

DiMaggio and Mantle. 6
 Weed seeds. 6, 23, 37, 38
 Vole reproduction. 7, 24, 37
 Woolly-bear caterpillar cocoons. 7
 Homophone confusion and Alzheimer's disease. 8
 Gear tooth strength. 9
 Immigrants to the United States. 10, 17
 Cholesterol levels in Guatemalans. 11, 39
 Hawaiian blood types. 19, 273
 Radioactive disintegrations. 25, 265, 309
 Degree of cloudiness at Breslau. 26
 EPA mileage values for subcompact cars. 46, 228
 Heights of adult males in the United Kingdom. 57, 144, 315
 Medical malpractice insurance. 65
 Cloud seeding. 73
 Insects in an apple orchard. 88, 95
 Opinions about a change in tax law. 90, 133
 Acceptance sampling for electronic devices. 101, 108
 Machine parts. 104
 Inheritance in peas (flower color). 106, 261, 299
 An opinion poll. 117
 Leading questions. 119
 An HIV vaccine trial. 125
 Scotland coronary prevention study. 126
 Instant coffee purchases. 131
 Newcomb's measurements of the speed of light. 157, 173
 Heights of husbands and wives. 160
 Strength of bricks. 163
 Brain changes in response to experience (rat cortex). 169
 Darwin's plant height comparison. 175, 179
 Energy consumption. 187, 192
 Paspalum grass. 195
 Fecundity of fruitflies. 199, 292
 Cowbird parasitization of flycatchers. 209, 212
 Weights and heights for the Stat 214 example. 220
 Bee forewing vein length. 221
 Age at first word and Gesell test scores. 223
 Arsenic concentrations. 243
 Wheatear weight lifting and health status example. 253

320 Examples

Inheritance in peas (seed shape and color). 263, 299

Inheritance in maize (leaf characteristics). 264

Bacteria counts. 267, 310

Cocaine addiction. 269

Attitudes of School Children. 271

Potato leafhopper survival. 277

Index

- analysis of variance (ANOVA) 278
- association (also see correlation)
 - negative linear 217
 - nonlinear 219, 241
 - positive linear 217
- Bernoulli model 298
- Bernoulli trials 79
- biased estimator 78
- biased sample 64
- binomial distribution 303
- bivariate data 215
- bivariate outlier 235
- box (and whiskers) plot 42
 - modified box plot 53
 - inner fences 54
 - outer fences 54
- Chebyshev's rule 59
- Chi-square
 - statistic 259
 - tests
 - for goodness of fit 260
 - for homogeneity 268
 - for independence 273
- coefficient of determination 232
- confidence interval estimate 86
 - Agresti–Coull interval for p 88
 - confidence level 86
 - confidence bound 108, 122, 162, 190
 - interval for $p_1 - p_2$ 116
 - interval for median 178
 - interval for μ 156
 - interval for $\mu_1 - \mu_2$ 187, 204, 211
 - interval for β 249
 - Wald interval for p 92
 - Wilson interval for p 87
- control group 72
- correlation (also see association)
 - correlation coefficient 218
 - direction of the correlation 219
 - linear correlation 218
 - no correlation 220
 - strength of the correlation 219
- data 1
- density curve 82, 139, 311
- dichotomous population 77
- distribution 1
 - frequency distribution 13
 - relative frequency distribution 13
- experimental study 71
- explanatory variable 2, 215
- extrapolation 230
- extreme value 53
- F -tests 278, 284, 286
- failure 77
 - failure group 77
 - failure probability 77
- fences (see boxplot)
- five number summary 38
- graph
 - bar graph 14
 - frequency histogram 28
 - histogram 21
 - pie graph 14
 - probability histogram 139
 - relative frequency histogram 29
 - segmented bar graph 14
 - stem and leaf histogram 28
- histogram (see graph)
- hypergeometric distribution 305
- hypothesis
 - directional hypothesis 105
 - null hypothesis 94
 - research hypothesis 94
- hypothesis test 94

- influential point 236
- interquartile range 38
- joint distribution 215
- least squares (see regression)
- linear combinations of means 290
- margin of error 87, 92, 130, 133, 156, 187, 204
- maximum 35
- mean
 - estimating 154
 - population 140, 312
 - sample 43
- median (see also population median)
 - estimating 174
 - finding the sample median 36
 - population 174, 312
 - sample 36
- midrange 35
- minimum 35
- mode 23
- μ_0 166
- nested models 278
- nonnormality 148
- normal approximation
 - distribution of \hat{p} 84
 - distribution of $\hat{p}_1 - \hat{p}_2$ 115
- normal probability model 143
 - cumulative probabilities 146, 314
 - density curve 83, 139, 311
 - normal distribution 83, 143, 312
 - standardization 145, 314
- normal probability plot 150
- observational study 70
- observed significance level 99
- outlier 39, 53
- P -value 98
 - interpretation of 99
- parameter 63
- percentile rank 54
- point cloud 217
- Poisson distribution 308
- population 1, 63
 - sampled population 64
 - target population 64
- population mean (see mean)
- population median (also see median)
 - confidence interval 178
 - hypothesis test 174
- prediction interval 253
- probability model
 - for a continuous variable 139, 311
 - for a discrete variable 139, 297
- proportion
 - population failure 77
 - population success 77
 - sample success 77
- \hat{p} 77
- \tilde{p} 93
- \tilde{p}_k 87
- p_0 96
- quartiles 37
 - finding quartiles 37
- random digits 67
- random number table 68
- random sample 65, 142
 - simple random sample 66
 - selected with replacement 66
 - selected without replacement 66
 - stratified random sample 70
- randomized comparative experiment 72
- range 36
- ranks 206
 - rank-sum test 206
 - ties 208
 - two-sample Mann-Whitney test 206
 - Wilcoxon rank-sum test 206

- regression
 - estimation of mean response 251
 - inference for slope 249
 - linear relationship 226
 - predicted value 230
 - prediction of response 252
 - residual value 230
 - residual plot 233
- regression line
 - fitted 226, 245
 - intercept 227, 244
 - intercept and slope form 227, 244
 - mean and slope form 227, 244
 - population 244
 - slope 227, 244
- response variable 2, 71, 215
- sample 1, 63
- sampling 63
- sampling distribution 77
 - of \hat{p} 80, 306
 - of $\hat{p}_1 - \hat{p}_2$ 113
 - of \bar{X} 142
 - of $\bar{X}_1 - \bar{X}_2$ 184
- sampling frame 67
- scatterplot 216
- Scheffé method 291
- shapes 22
 - direction of skewness 22
 - skewed 22
 - symmetric 22
- shift assumption 183
- significance level 99
- simple linear regression 243
 - least squares estimates 246
- simultaneous confidence intervals 290
- skewness (see shape)
- standard deviation
 - pooled sample 186
 - sample 45
- standard error 78
 - of \hat{p} 80
 - of $\hat{p}_1 - \hat{p}_2$ 115
 - of \bar{X} 142, 155
 - of $\bar{X}_1 - \bar{X}_2$ 186, 187, 204
- standard normal distribution 83, 143, 312
- statistic 35, 63
- statistical hypothesis (see hypothesis)
- stem and leaf histogram 28
 - splitting the stems 32
- strata 70
- Student's t distribution 155
- Student's t test statistic 163, 190
- subpopulation 69
- success
 - success group 77
 - success probability 77
- sum of squares 279
- treatment 71
- treatment group 72
- unbiased estimate 78
- uniform distribution 301
- unimodal 57
- unit 1
- unusual point 222
- variable
 - definition 1
 - discrete and continuous 2
 - explanatory variable 2, 215
 - indicator variable 15
 - nominal and ordinal 1
 - qualitative 1
 - quantitative 2
 - response variable 2, 71, 215
- variance 45
- Z -score 56
 - Chebyshev's rule 59
 - the 68%-95%-99.7% rule 57