Index

<table>
<thead>
<tr>
<th>Term</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>accelerated failure time model</td>
<td>154</td>
</tr>
<tr>
<td>actuarial estimate</td>
<td>46</td>
</tr>
<tr>
<td>additive proportional hazards model</td>
<td>156</td>
</tr>
<tr>
<td>adjusted rate</td>
<td>107</td>
</tr>
<tr>
<td>age-specific mortality rate</td>
<td>27, 29, 30, 31</td>
</tr>
<tr>
<td>age-specific rate</td>
<td>107</td>
</tr>
<tr>
<td>analytic function</td>
<td>53</td>
</tr>
<tr>
<td>approximate average rate</td>
<td>6</td>
</tr>
<tr>
<td>assumption-free</td>
<td>184</td>
</tr>
<tr>
<td>average approximate rate</td>
<td>7, 8, 10</td>
</tr>
<tr>
<td>average mortality rate</td>
<td>9, 19, 20, 37</td>
</tr>
<tr>
<td>average rate</td>
<td>4</td>
</tr>
<tr>
<td>baseline hazard function</td>
<td>144, 147, 162, 191, 202, 215, 216</td>
</tr>
<tr>
<td>baseline hazard rate</td>
<td>137</td>
</tr>
<tr>
<td>baseline survival function</td>
<td>177</td>
</tr>
<tr>
<td>bias</td>
<td>17, 47, 77, 85, 96, 113, 197</td>
</tr>
<tr>
<td>binary variable</td>
<td>196</td>
</tr>
<tr>
<td>binomial distribution</td>
<td>11, 12, 66, 71, 79</td>
</tr>
<tr>
<td>censored</td>
<td>75, 95, 96, 130, 131, 132, 135, 189, 198</td>
</tr>
<tr>
<td>censored observation</td>
<td>73, 78</td>
</tr>
<tr>
<td>centered variable</td>
<td>191</td>
</tr>
<tr>
<td>chi-square distribution</td>
<td>61, 63, 135, 142, 153, 188, 200</td>
</tr>
<tr>
<td>chi-square test</td>
<td>134, 136, 149</td>
</tr>
<tr>
<td>clinical life table</td>
<td>42</td>
</tr>
<tr>
<td>Cochran–Mantel–Haenszel test</td>
<td>133</td>
</tr>
<tr>
<td>cohort life table</td>
<td>27</td>
</tr>
<tr>
<td>commensurate</td>
<td>175</td>
</tr>
<tr>
<td>complete life table</td>
<td>27</td>
</tr>
<tr>
<td>complete observation</td>
<td>73, 78</td>
</tr>
<tr>
<td>conditional probability</td>
<td>10, 22, 28, 31, 92</td>
</tr>
<tr>
<td>conditional probability of death</td>
<td>37, 45, 69, 78</td>
</tr>
<tr>
<td>conditional survival probability</td>
<td>68, 69, 79, 87, 93, 107</td>
</tr>
<tr>
<td>confidence band</td>
<td>83</td>
</tr>
<tr>
<td>confidence interval</td>
<td>14, 17, 24, 46, 57, 66, 80, 81, 83, 85, 86, 96, 98, 100, 101, 104, 105, 114, 115, 119, 122, 125, 141, 142, 190</td>
</tr>
<tr>
<td>confounding</td>
<td>172, 194, 195, 196</td>
</tr>
<tr>
<td>constant of proportionality</td>
<td>155</td>
</tr>
<tr>
<td>Cox, D.</td>
<td>184</td>
</tr>
<tr>
<td>Cox–Snell residual value</td>
<td>178, 179, 180, 182, 205</td>
</tr>
<tr>
<td>crude mortality rate</td>
<td>21, 35, 36</td>
</tr>
<tr>
<td>cumulative disease incidence</td>
<td>87</td>
</tr>
<tr>
<td>cumulative hazard function</td>
<td>87, 121, 123</td>
</tr>
<tr>
<td>cumulative probability</td>
<td>71</td>
</tr>
<tr>
<td>current life table</td>
<td>27, 35</td>
</tr>
<tr>
<td>current mortality rate</td>
<td>30, 31, 42</td>
</tr>
<tr>
<td>current status data</td>
<td>76</td>
</tr>
<tr>
<td>delta method</td>
<td>65</td>
</tr>
<tr>
<td>dependent variables</td>
<td>155</td>
</tr>
<tr>
<td>derivative</td>
<td>2, 25, 64, 65</td>
</tr>
<tr>
<td>distribution-free</td>
<td>130</td>
</tr>
<tr>
<td>distributions</td>
<td></td>
</tr>
<tr>
<td>binomial distribution</td>
<td>11, 12, 66, 71, 79</td>
</tr>
<tr>
<td>chi-square distribution</td>
<td>61, 63, 135, 142, 153, 188, 200</td>
</tr>
<tr>
<td>exponential distribution</td>
<td>90, 91, 94, 96, 100, 119, 206</td>
</tr>
<tr>
<td>normal distribution</td>
<td>12, 14, 15, 24, 65, 80, 97, 100, 101, 105, 113, 115, 141, 142, 147</td>
</tr>
<tr>
<td>Poisson distribution</td>
<td>65, 66</td>
</tr>
<tr>
<td>Weibull probability distribution</td>
<td>111, 144</td>
</tr>
</tbody>
</table>
effective number, 45, 46
effect measure modification, 171
estimation
actuarial estimate, 4
Kaplan–Meier estimate, 70
least squares estimation, 11, 151, 206, 216
maximum likelihood estimation, 53, 54, 56, 57, 58, 96, 98, 101, 113, 114, 115, 139, 146, 162, 167, 187, 188, 190
model-free estimate, 73, 120, 121, 173
nonparametric estimate, 73
partial likelihood estimation, 187, 189, 191, 193, 198, 216
product-limit estimation, 70, 72, 75, 79, 84, 85, 87, 89, 90, 102, 103, 116, 119, 121, 122, 129, 130, 144, 185, 202, 203, 205, 216
expectation of life, 29
expected value, 133
exponential distribution, 90, 91, 94, 96, 100, 119, 206
exponential function, 90, 103
exponential model, 137, 144
extended model, 215
failure rate, 3
Fisher’s exact test, 133
follow-up data, 42
force of mortality, 3
gamma function, 116
goodness-of-fit, 103, 119, 123, 143, 160, 178, 205, 207
Gossett, W. S., 129
Graunt, J., 27, 39, 42
Greenwood, M., 79
Greenwood’s variance, 46, 79, 80, 86, 88, 123
Halley, E., 27
Harrell, F., 183
hazard function, 37, 49, 86, 87, 111, 114, 121, 123, 144, 185, 198
hazard rate, 3, 20, 23, 26, 37, 47, 91, 93, 94, 96, 98, 100, 111, 113, 125, 137, 140, 170, 171, 173, 174
hazard ratio, 147, 149, 151, 153, 155, 156, 158, 159, 162, 169, 176, 190, 193, 201, 213
heterogeneity, 16, 17
incomplete survival time, 44
independent variable, 155
index plot, 209
instantaneous rate, 3
interaction, 171, 192, 199, 200, 212, 213, 214
interval censored, 76
inverse function, 125
inverse Weibull survival function, 117
Kaplan–Meiers estimate, 70
least squares estimation, 116, 151, 206, 216
left censored, 76
length bias, 76
life mortality rate, 30
life table, 68
likelihood function, 54, 56, 57, 58, 59
likelihood ratio test, 59, 63, 124, 142, 149, 171, 193, 199
likelihood value, 57
linear interpolation, 72
linear regression model, 136
logistic model, 146
logistic transformation, 13, 15
logit, 13
log-likelihood function, 55, 56
log-likelihood value, 59, 60, 61, 62, 63, 123, 142, 149, 151, 153
log-log transformation, 103, 115, 143, 151, 181, 206, 207, 216
log-odds, 13
log-rank test, 129, 135, 188, 189
maximum likelihood estimation, 53, 54, 56, 57, 58, 96, 98, 101, 113, 114, 115, 139, 146, 162, 167, 187, 188, 190
mean additional years, 35, 42
mean lifetime, 38, 39
mean moving average, 51
mean number of deaths, 4, 7, 8
mean survival time 4, 7, 8, 20, 21, 23, 30, 72, 83, 84, 95, 96, 97, 98, 102, 116, 138, 140, 148
median moving average, 51
median survival time, 22, 85, 86, 100, 101, 116, 117, 119, 140, 148, 166, 168, 175, 212
median time of death, 72
Miller, R., 180
model-free estimate, 73, 120, 121, 173
models
  accelerated failure time model, 154
  additive proportional hazards model, 155
  exponential model, 137, 144
  extended model, 215
  linear regression model, 136
  logistic model, 146
  multivariable additive proportional hazards model, 198
  multivariable hazards model, 156, 168, 184
  multivariable model, 172
  multivariable regression model, 157
  nested two-sample model, 193
  nonadditive model, 170, 171, 173
  two-sample model, 202
  two-sample proportional hazards model, 138, 187
  Weibull hazards model, 155
  modified Cox–Snell residual value, 180, 210
  mortality function, 87
  mortality rate, 8, 21, 34, 107
  multivariable additive proportional hazards model, 198
  multivariable hazards model, 156, 168, 184
  multivariable model, 172
  multivariable regression model, 157
  nested model, 62
  nested two-sample model, 193
Newton, I., 1
nominal variable, 163, 164, 165
nonadditive model, 170, 171, 173
noninformative, 75, 96, 189, 198
nonparametric analysis, 202
nonparametric estimate, 73
normal distribution, 12, 14, 15, 24, 65, 80, 97, 100, 101, 105, 113, 115, 141, 142, 147
odds ratio, 146
parametric analysis, 202
partial likelihood estimation, 187, 189, 191, 193, 198, 216
percentile, 116, 117, 118
pointwise confidence interval, 83
Poisson distribution, 65, 66
probability, 9, 10
probability of death, 11, 16, 17, 22, 23, 28, 31, 45, 107, 108
product-limit estimation, 70, 72, 75, 79, 84, 85, 87, 89, 90, 102, 103, 116, 119, 121, 122, 129, 130, 144, 185, 202, 203, 205, 216
product-limit table, 84, 86
properties of variance, 110
proportional hazard function, 137
quantile plot, 83
radix, 28
randomization, 158
rates
  adjusted rate, 107
  age-specific mortality rate, 27, 29, 30, 31
  age-specific rate, 107
  approximate average rate, 6
  average approximate rate, 7, 8, 10
  average mortality rate, 9, 19, 20, 37
  average rate, 4
  baseline hazard rate, 137
  crude mortality rate, 21, 35, 36
  current mortality rate, 30, 31, 42
  exponential model, 137, 144
  failure rate, 3
  hazard rate, 3, 20, 23, 26, 37, 47, 91, 93, 94, 96, 98, 100, 111, 113, 125, 137, 140, 170, 171, 173, 174
  instantaneous rate, 3
  mortality rate, 8, 21, 34, 107
  relative rate, 3
  regression coefficients, 198, 212, 215
  relative hazard ratio, 157, 160
  relative rate, 3
  residual value, 178, 179, 180, 181, 209
scale parameter, 111, 125, 150, 163, 167, 169, 177
score likelihood test, 189
semiparametric, 156, 185
shape parameter, 111, 150, 151, 153, 162, 174, 177, 190, 201
significance probability, 15
smoothing technique, 51
Index

statistical power, 197
statistical test, 57, 66, 119, 216
step function, 71, 122
stratified analysis, 215
survival function, 1, 2, 3, 4, 5, 18, 26, 36, 49, 51, 83, 91, 114, 116, 130, 177, 202, 204
survival probability, 19, 23, 36, 45, 47, 50, 68, 70, 71, 72, 75, 77, 79, 80, 83, 90, 93, 103, 116, 129, 136, 144
Taylor series expansion, 65
test statistic, 61
tests
  chi-square test, 134, 136, 149
  Cochran–Mantel–Haenszel test, 133
  Fisher’s exact test, 133
  likelihood ratio test, 59, 63, 124, 142, 149, 171, 193, 199
  log-rank test, 129, 135, 188, 189
  score likelihood test, 189
  statistical test, 57, 66, 119, 216
test statistic, 61
two-sample test, 146
  Wald’s test, 58, 71, 174, 175, 188, 193
total survival time, 29, 30
transformation, 13, 66, 81, 96, 97, 103, 120, 121, 178, 210, 216
two-sample model, 202
two-sample proportional hazards model, 138, 187
two-sample test, 146
  uniform risk, 17
  Wald’s test, 58, 171, 174, 175, 188, 193
Weibull hazards model, 155
Weibull probability distribution, 111, 144
Weibull survival function, 106