Table A1

RMSE of Ridge Regression Model with Different Penalty Values in Case 1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Penalty value | RMSE | Penalty value | RMSE | Penalty value | RMSE |
| 0.000 | 1.000 | 0.340 | 0.172 | 0.680 | 0.130 |
| 0.020 | 0.709 | 0.360 | 0.166 | 0.700 | 0.128 |
| 0.040 | 0.571 | 0.380 | 0.163 | 0.720 | 0.126 |
| 0.060 | 0.385 | 0.400 | 0.160 | 0.740 | 0.124 |
| 0.080 | 0.318 | 0.420 | 0.158 | 0.760 | 0.123 |
| 0.100 | 0.260 | 0.440 | 0.155 | 0.780 | 0.121 |
| 0.120 | 0.253 | 0.460 | 0.152 | 0.800 | 0.120 |
| 0.140 | 0.267 | 0.480 | 0.149 | 0.820 | 0.114 |
| 0.160 | 0.231 | 0.500 | 0.147 | 0.840 | 0.118 |
| 0.180 | 0.211 | 0.520 | 0.144 | 0.860 | 0.115 |
| **0.200** | **0.199** | 0.540 | 0.142 | 0.880 | 0.114 |
| **0.220** | **0.199** | 0.560 | 0.143 | 0.900 | 0.113 |
| 0.240 | 0.194 | 0.580 | 0.140 | 0.920 | 0.111 |
| 0.260 | 0.192 | 0.600 | 0.138 | 0.940 | 0.110 |
| 0.280 | 0.181 | 0.620 | 0.135 | 0.960 | 0.105 |
| 0.300 | 0.177 | 0.640 | 0.134 | 0.980 | 0.105 |
| 0.320 | 0.172 | 0.660 | 0.131 | 1.000 | 0.103 |

Table A2

RMSE of Ridge Regression Model with Different Penalty Values in Case 2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Penalty value | RMSE | Penalty value | RMSE | Penalty value | RMSE |
| 0.000 | 1.000 | 0.340 | 0.159 | 0.680 | 0.113 |
| 0.020 | 0.571 | 0.360 | 0.152 | 0.700 | 0.110 |
| 0.040 | 0.420 | 0.380 | 0.148 | 0.720 | 0.109 |
| 0.060 | 0.304 | 0.400 | 0.145 | 0.740 | 0.109 |
| 0.080 | 0.258 | 0.420 | 0.142 | 0.760 | 0.107 |
| 0.100 | 0.268 | 0.440 | 0.138 | 0.780 | 0.105 |
| 0.120 | 0.231 | 0.460 | 0.136 | 0.800 | 0.103 |
| 0.140 | 0.220 | 0.480 | 0.133 | 0.820 | 0.102 |
| 0.160 | 0.210 | 0.500 | 0.131 | 0.840 | 0.101 |
| 0.180 | 0.202 | 0.520 | 0.128 | 0.860 | 0.099 |
| 0.200 | 0.212 | 0.540 | 0.126 | 0.880 | 0.098 |
| 0.220 | 0.207 | 0.560 | 0.124 | 0.900 | 0.097 |
| 0.240 | 0.182 | 0.580 | 0.122 | 0.920 | 0.096 |
| 0.260 | 0.177 | 0.600 | 0.120 | 0.940 | 0.095 |
| 0.280 | 0.172 | 0.620 | 0.118 | 0.960 | 0.094 |
| **0.300** | **0.167** | 0.640 | 0.117 | 0.980 | 0.092 |
| 0.320 | 0.163 | 0.660 | 0.115 | 1.000 | 0.091 |

Table A3

RMSE of Ridge Regression Model with Different Penalty Values in Case 3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Penalty value | RMSE | Penalty value | RMSE | Penalty value | RMSE |
| 0.000 | 1.000 | 0.340 | 0.138 | 0.680 | 0.102 |
| 0.020 | 0.677 | 0.360 | 0.136 | 0.700 | 0.100 |
| 0.040 | 0.556 | 0.380 | 0.133 | 0.720 | 0.099 |
| 0.060 | 0.312 | 0.400 | 0.129 | 0.740 | 0.098 |
| 0.080 | 0.293 | 0.420 | 0.127 | 0.760 | 0.096 |
| 0.100 | 0.263 | 0.440 | 0.126 | 0.780 | 0.095 |
| 0.120 | 0.228 | 0.460 | 0.122 | 0.800 | 0.094 |
| 0.140 | 0.218 | 0.480 | 0.121 | 0.820 | 0.093 |
| 0.160 | 0.205 | 0.500 | 0.118 | 0.840 | 0.092 |
| 0.180 | 0.185 | 0.520 | 0.117 | 0.860 | 0.091 |
| 0.200 | 0.177 | 0.540 | 0.115 | 0.880 | 0.090 |
| 0.220 | 0.211 | 0.560 | 0.114 | 0.900 | 0.089 |
| 0.240 | 0.165 | 0.580 | 0.111 | 0.920 | 0.088 |
| 0.260 | 0.199 | 0.600 | 0.110 | 0.940 | 0.087 |
| 0.280 | 0.181 | 0.620 | 0.108 | 0.960 | 0.086 |
| 0.300 | 0.144 | 0.640 | 0.106 | 0.980 | 0.085 |
| **0.320** | **0.140** | 0.660 | 0.104 | 1.000 | 0.084 |

Table A4

Recognized Results of Different Method

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ID | Ridge  regression | MLR | Pcc | ID | Ridge regression | MLR | Pcc |
| A1 | 0.0031 | -0.010 | -0.0126 | B14 | 0.0003 | 0.008 | 0.0797 |
| A2 | 0.0014 | -0.029 | 0.1579 | B15 | -0.0006 | -0.018 | -0.0988 |
| A3 | -0.0014 | -0.013 | -0.0023 | B16 | 0.0018 | 0.047 | 0.0219 |
| A4 | -0.0002 | 0.030 | 0.1315 | B17 | 0.0008 | 0.058 | 0.1601 |
| A5 | -0.0006 | 0.040 | 0.1303 | **B18** | **0.116** | **0.3115** | **0.1071** |
| A6 | 0.0005 | -0.020 | 0.1917 | B19 | -0.0003 | -0.055 | -0.0191 |
| A7 | 0.0006 | -0.079 | -0.0285 | B20 | 0.0006 | 0.069 | 0.4042 |
| A8 | 0.0001 | -0.052 | -0.1263 | B21 | -0.0003 | -0.038 | 0.0479 |
| A9 | -0.0007 | 0.047 | 0.0384 | C1 | 0.0021 | 0.015 | 0.0272 |
| A10 | 0.0000 | 0.078 | -0.0644 | C2 | -0.0005 | 0.013 | -0.0578 |
| A11 | 0.0002 | 0.012 | 0.0041 | C3 | -0.0004 | 0.043 | 0.1994 |
| A12 | 0.0000 | 0.058 | 0.2715 | C4 | -0.0030 | 0.013 | -0.118 |
| A13 | 0.0000 | -0.022 | 0.0753 | C5 | 0.0021 | -0.097 | -0.0681 |
| **A14** | **0.253** | **0.9325** | **0.9459** | C6 | 0.0002 | 0.069 | 0.1803 |
| A15 | -0.0004 | 0.070 | 0.2639 | C7 | 0.0009 | 0.065 | 0.2023 |
| A16 | 0.0001 | -0.048 | -0.0933 | C8 | 0.0047 | -0.038 | 0.0107 |
| A17 | 0.0009 | 0.042 | 0.1439 | C9 | -0.0005 | 0.028 | -0.0814 |
| A18 | 0.0020 | -0.031 | -0.1377 | C10 | 0.0005 | -0.074 | 0.0996 |
| A19 | -0.0014 | 0.043 | 0.105 | C11 | 0.0008 | 0.015 | 0.1846 |
| A20 | -0.0105 | 0.040 | -0.1232 | C12 | 0.0005 | -0.073 | 0.0793 |
| A21 | 0.0003 | -0.036 | -0.0943 | C13 | 0.0002 | 0.050 | 0.0929 |
| A22 | 0.0000 | -0.040 | -0.2792 | C14 | 0.0010 | -0.070 | 0.033 |
| A23 | -0.0002 | 0.032 | 0.2293 | C15 | 0.0041 | -0.031 | -0.0048 |
| A24 | 0.0003 | -0.034 | -0.1274 | C16 | -0.0003 | -0.028 | 0.0429 |
| A25 | 0.0002 | 0.025 | 0.1876 | C17 | -0.0001 | -0.038 | -0.0776 |
| A26 | -0.0003 | -0.066 | -0.16 | C18 | 0.0004 | 0.034 | 0.0054 |
| A27 | 0.0005 | -0.008 | -0.1868 | C19 | -0.0000 | -0.010 | 0.1194 |
| B1 | 0.0040 | -0.011 | 0.117 | C20 | 0.0000 | 0.002 | 0.0226 |
| B2 | -0.0003 | -0.021 | -0.1462 | C21 | -0.0004 | 0.068 | 0.1785 |
| B3 | -0.0012 | 0.049 | 0.37 | C22 | -0.0004 | -0.036 | 0.0694 |
| B4 | -0.0005 | 0.013 | 0.023 | C23 | -0.0006 | -0.033 | -0.0107 |
| B5 | -0.0009 | 0.033 | 0.3392 | C24 | -0.0011 | -0.054 | 0.0222 |
| B6 | -0.0005 | 0.041 | 0.1324 | C25 | 0.0000 | -0.047 | -0.3125 |
| B7 | -0.0002 | 0.043 | 0.5203 | C26 | -0.0002 | 0.030 | 0.1926 |
| B8 | -0.0002 | -0.035 | -0.111 | C27 | 0.0002 | 0.014 | -0.073 |
| B9 | -0.0003 | 0.007 | 0.0028 | C28 | 0.0006 | -0.048 | -0.0415 |
| B10 | 0.0002 | 0.033 | -0.0264 | C29 | 0.0002 | 0.047 | 0.1069 |
| B11 | -0.0003 | 0.024 | 0.046 | C30 | 0.0011 | 0.066 | 0.401 |
| B12 | -0.0005 | 0.039 | 0.041 | C31 | 0.0035 | 0.052 | 0.1504 |
| B13 | 0.0008 | 0.061 | 0.166 | C32 | 0.0024 | 0.033 | -0.0321 |