

```

1 Enter # of Target Variables: 1
2 pelvic_incidence pelvic_tilt lumbar_lordosis_angle sacral_slope \
3 0 63.028 22.553 39.609 40.475
4 1 39.057 10.061 25.015 28.996
5 2 68.832 22.218 50.092 46.614
6 3 69.297 24.653 44.311 44.644
7 4 49.713 9.652 28.317 40.061
8
9 pelvic_radius degree_spondylolisthesis pelvic_slope Direct_tilt \
10 0 98.673 -0.254 0.745 12.566
11 1 114.405 4.564 0.415 12.887
12 2 105.985 -3.530 0.475 26.834
13 3 101.868 11.212 0.369 23.560
14 4 108.169 7.919 0.543 35.494
15
16 thoracic_slope cervical_tilt sacrum_angle scoliosis_slope Class_att
17 0 14.539 15.305 -28.659 43.512 Abnormal
18 1 17.532 16.785 -25.531 16.110 Abnormal
19 2 17.486 16.659 -29.032 19.222 Abnormal
20 3 12.707 11.424 -30.470 18.833 Abnormal
21 4 15.955 8.872 -16.378 24.917 Abnormal
22
23 List of Features:
24 ['pelvic_incidence', 'pelvic_tilt', 'lumbar_lordosis_angle', 'sacral_slope',
25 'pelvic_radius', 'degree_spondylolisthesis', 'pelvic_slope', 'Direct_tilt',
26 'thoracic_slope', 'cervical_tilt', 'sacrum_angle', 'scoliosis_slope']
27
28 List of Targets:
29 ['Class_att']
30
31 pelvic_incidence pelvic_tilt lumbar_lordosis_angle sacral_slope \
32 count 310.000000 310.000000 310.000000 310.000000
33 mean 60.496677 17.542813 51.930919 42.953826
34 std 17.236536 10.008321 18.554046 13.423121
35 min 26.148000 -6.555000 14.000000 13.367000
36 25% 46.430000 10.667250 37.000000 33.347250
37 50% 58.691500 16.357500 49.562500 42.405000
38 75% 72.878000 22.120500 63.000000 52.696000
39 max 129.834000 49.432000 125.742000 121.430000
40
41 pelvic_radius degree_spondylolisthesis pelvic_slope Direct_tilt \
42 count 310.000000 310.000000 310.000000 310.000000
43 mean 117.920674 26.296694 0.47299 21.321500
44 std 13.317389 37.559017 0.28582 8.639435
45 min 70.083000 -11.058000 0.00300 7.027000
46 25% 110.709250 1.604000 0.22475 13.054250
47 50% 118.268000 11.768000 0.47600 21.907000
48 75% 125.467500 41.287500 0.70500 28.953750
49 max 163.071000 418.543000 0.99900 36.744000
50
51 thoracic_slope cervical_tilt sacrum_angle scoliosis_slope
52 count 310.000000 310.000000 310.000000 310.000000
53 mean 13.064513 11.933332 -14.053177 25.645987
54 std 3.399699 2.893275 12.225595 10.450537
55 min 7.038000 7.031000 -35.287000 7.008000
56 25% 10.417750 9.541250 -24.289500 17.188750
57 50% 12.938500 11.954000 -14.623000 24.932000
58 75% 15.889500 14.371500 -3.496750 33.979500
59 max 19.324000 16.821000 6.972000 44.341000
60
61 Training set score: 0.839
62 Test set score: 0.882
63 Warning: Maximum number of iterations has been exceeded.
64 Current function value: 7.886647
65 Iterations: 35
66
67 Results: Logit
68 =====
69 Model: Logit Pseudo R-squared: -11.178
70 Dependent Variable: y AIC: 3446.8049
71 Date: 2021-03-21 10:59 BIC: 3487.3636
72 No. Observations: 217 Log-Likelihood: -1711.4
73 Df Model: 11 LL-Null: -140.53
74 Df Residuals: 205 LLR p-value: 1.0000

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74 Converged: 0.0000 Scale: 1.0000
75 No. Iterations: 35.0000
76 -----
77 Coef. Std.Err. z P>|z| [0.025 0.975]
78 -----
79 x1 -1142573.4329 509613.9569 -2.2420 0.0250 -2141398.4344 -143748.4315
80 x2 642974.2455 286781.0504 2.2420 0.0250 80893.7153 1205054.7757
81 x3 3.5160 2.1709 1.6195 0.1053 -0.7390 7.7709
82 x4 926554.3134 413264.0998 2.2420 0.0250 116571.5617 1736537.0651
83 x5 -22.2673 9.9289 -2.2427 0.0249 -41.7276 -2.8069
84 x6 33.9472 15.5980 2.1764 0.0295 3.3757 64.5186
85 x7 -1.2469 0.7419 -1.6807 0.0928 -2.7011 0.2072
86 x8 -3.3025 1.4878 -2.2198 0.0264 -6.2184 -0.3865
87 x9 3.9210 2.0228 1.9384 0.0526 -0.0437 7.8857
88 x10 5.9020 2.4801 2.3797 0.0173 1.0411 10.7630
89 x11 -0.1529 0.5684 -0.2690 0.7879 -1.2670 0.9612
90 x12 -3.5706 1.6937 -2.1082 0.0350 -6.8901 -0.2511
91 =====
92
93 Training set score: 0.853
94 Test set score: 0.882
95 Optimization terminated successfully.
96 Current function value: 0.464756
97 Iterations 7
98 Results: Logit
99 =====
100 Model: Logit Pseudo R-squared: 0.282
101 Dependent Variable: y AIC: 221.7040
102 Date: 2021-03-21 10:59 BIC: 255.5030
103 No. Observations: 217 Log-Likelihood: -100.85
104 Df Model: 9 LL-Null: -140.53
105 Df Residuals: 207 LLR p-value: 2.1758e-13
106 Converged: 1.0000 Scale: 1.0000
107 No. Iterations: 7.0000
108 -----
109 Coef. Std.Err. z P>|z| [0.025 0.975]
110 -----
111 x1 0.2312 0.2309 1.0013 0.3167 -0.2214 0.6839
112 x2 -0.8025 0.2559 -3.1365 0.0017 -1.3040 -0.3010
113 x3 -1.0456 0.2348 -4.4524 0.0000 -1.5058 -0.5853
114 x4 2.2779 0.4185 5.4427 0.0000 1.4576 3.0981
115 x5 0.0907 0.1759 0.5157 0.6061 -0.2540 0.4354
116 x6 -0.0040 0.1758 -0.0227 0.9819 -0.3486 0.3406
117 x7 -0.0005 0.1748 -0.0030 0.9976 -0.3431 0.3420
118 x8 0.3346 0.1754 1.9076 0.0564 -0.0092 0.6784
119 x9 -0.0620 0.1781 -0.3483 0.7276 -0.4110 0.2870
120 x10 -0.0431 0.1770 -0.2435 0.8076 -0.3899 0.3037
121 =====
122
123 pelvic_radius degree_spondylolisthesis
124 0 98.673 -0.254
125 1 114.405 4.564
126 2 105.985 -3.530
127 3 101.868 11.212
128 4 108.169 7.919
129 Training set score: 0.793
130 Test set score: 0.839
131 Optimization terminated successfully.
132 Current function value: 0.510586
133 Iterations 6
134 Results: Logit
135 =====
136 Model: Logit Pseudo R-squared: 0.212
137 Dependent Variable: y AIC: 225.5945
138 Date: 2021-03-21 10:59 BIC: 232.3543
139 No. Observations: 217 Log-Likelihood: -110.80
140 Df Model: 1 LL-Null: -140.53
141 Df Residuals: 215 LLR p-value: 1.2485e-14
142 Converged: 1.0000 Scale: 1.0000
143 No. Iterations: 6.0000
144 -----
145 Coef. Std.Err. z P>|z| [0.025 0.975]
146 -----

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```
147 x1      -0.7484      0.1957      -3.8245      0.0001      -1.1320      -0.3649
148 x2       1.6879      0.2672       6.3173      0.0000       1.1642       2.2116
149 =====
150
151
152                precision      recall  f1-score      support
153
154      Abnormal      0.68      0.71      0.69      24
155      Normal      0.90      0.88      0.89      69
156
157      accuracy                0.84      93
158      macro avg      0.79      0.80      0.79      93
159      weighted avg      0.84      0.84      0.84      93
```