**Supplementary Table 1** Baseline characteristics of the clinical variables of 292 patients with COVID-19.

| Total(n=292) | Survivor(n=235) | Non-survivor(n=57) | p-value |
| --- | --- | --- | --- |
| **Age** | 53.5 ±14.3 | 68.8 ± 11.4 | 0.000 |
| **Sex**MenWomen | 103 (43.8%)132 (56.2%) | 37 (64.9%)20 (35.1%) | 0.004 |
| **Fever**YesNo | 183 (77.9%)52 (22.1%) | 44 (77.2%)13 (22.8%) | 0.912 |
| **Dizziness**YesNo | 13 (5.5%)222 (94.5%) | 3 (5.3%)54 (94.7%) | 0.936 |
| **Fatigue**YesNo | 112 (47.7%)123 (52.3%) | 32 (56.1%)25 (43.9%) | 0.251 |
| **Nausea**YesNo | 23 (9.8%)212 (90.2%) | 4 (7.0%)53 (93.0%) | 0.517 |
| **Diarrhea**YesNo | 43 (18.3%)192 (81.7%) | 12 (21.1%)45 (78.9%) | 0.633 |
| **Muscle pain**YesNo | 49 (20.9%)186 (79.1%) | 7 (12.3%)50 (87.7%) | 0.140 |
| **Confusion**YesNo | 5 (2.1%)230 (97.9%) | 9 (15.8%)48 (84.2%) | 0.000 |
| **Difficulty in Breathing**YesNo | 128 (54.5%)107 (45.5%) | 39 (68.4%)18 (31.6%) | 0.056 |
| **Cough**YesNo | 151 (64.3%)84 (35.7%) | 38 (66.7%)19 (33.3%) | 0.733 |
| **Expectoration**YesNo | 69 (29.4%)166 (70.6%) | 22 (38.6%)35 (61.4%) | 0.177 |
| **CT: exudative lesion**YesNo | 56 (23.8%)179 (76.2%) | 11 (19.3%)46 (80.7%) | 0.465 |
| **CT: ground glass shadow**YesNo | 49 (20.9%)186 (79.1%) | 5 (8.8%)52 (91.2%) | 0.035 |
| **Hypertension**YesNo | 40 (17.0%)195 (83.0%) | 15 (26.3%)42 (73.7%) | 0.107 |
| **Accouchement**YesNo | 15 (6.4%)220 (93.6%) | 0 (0%)57 (100%) | 0.050 |

**Supplementary Table 2** Baseline characteristics of the clinical measurement variables of patients of in-sample data set.

|  | **Survivor** | **Non-survivor** |
| --- | --- | --- |
| Variables | Mean | SD | Min | Max | Mean | SD | Min | Max |
| Alanine aminotransferase | 53.5 | 14.3 | 23 | 93 | 77.2 | 228.5 | 4 | 1747 |
| Aspartate transaminase | 40.1 | 31.0 | 5 | 234 | 93.4 | 299.6 | 9 | 2300 |
| Lactate dehydrogenase | 31.2 | 17.8 | 11 | 136 | 629.3 | 663.4 | 181 | 5193 |
| Normal platelet | 241.6 | 135.6 | 98 | 1188 | 185.9 | 114.8 | 20 | 594 |
| Neutrophil | 221.1 | 83.6 | 23 | 481 | 8.9 | 5.3 | 1.09 | 23.05 |
| Monocytes | 4.6 | 3.2 | 0.73 | 26.24 | 0.4 | 0.3 | 0.05 | 1.3 |
| Total bilirubin | 0.5 | 0.2 | 0.09 | 1.65 | 18.3 | 17.3 | 3 | 123 |
| Temperature | 12.3 | 6.6 | 3.4 | 46 | 37.6 | 1.0 | 36.1 | 40 |
| Heart rate | 37.2 | 1.0 | 35.9 | 42 | 93.9 | 25.4 | 40 | 200 |
| Respiratory rate | 90.9 | 15.0 | 55 | 130 | 26.4 | 7.8 | 16 | 50 |
| Systolic pressure | 22.4 | 13.9 | 2 | 225 | 133.8 | 21.4 | 92 | 190 |
| Diastolic pressure | 128.1 | 17.8 | 75 | 230 | 76.4 | 17.4 | 30 | 142 |
| Creatinine | 81.3 | 12.2 | 50 | 150 | 155.1 | 210.6 | 43.3 | 1040.8 |
| Lymphocyte count | 87.5 | 137.0 | 6.7 | 971 | 0.7 | 0.4 | 0.13 | 2.28 |
| White blood cell | 1.7 | 6.2 | 0.19 | 96.08 | 10.1 | 5.5 | 1.27 | 25 |
| C reactive protein | 6.7 | 8.2 | 1.0 | 123.18 | 80.6 | 50.0 | 0.1 | 183.5 |
| Blood urea nitrogen | 24.4 | 33.9 | 0.1 | 147.4 | 12.9 | 11.4 | 3.36 | 52.83 |

Note: Continuous variables are expressed by mean, standard deviation and the minimum, and the maximum values. Categorical variables are expressed by the number and percentage of patients in each category. There were no missing values in the data set. If the variable is continuous, then the t-test is used to test the statistical significance (p-value) of the difference between the two categories.

**Supplementary Table 3** Variable values of the out-sample data set.

| Total samples(n=13) | Survivor(n=10) | Non-survivor(n=3) |
| --- | --- | --- |
|  | Mean | SD | Min | Max | Mean | SD | Min | Max |
| **Age** | 61.5 | 12.9 | 37.0 | 78.0 | 61.0 | 4.4 | 56.0 | 64.0 |
| **Confusion**YesNo |  1 (10.0%)9 (90.0%) | 0 (0%)3 (100%) |
| Blood urea nitrogen  | 5.6 | 2.1 | 2.0 | 8.9 | 10.4 | 5.7 | 5.4 | 16.6 |
| Respiratory rate | 26.2 | 5.3 | 20.0 | 35.0 | 28.7 | 5.8 | 22.0 | 32.0 |
| Systolic pressure | 136.9 | 16.6 | 110.0 | 161.0 | 122.0 | 25.2 | 101.0 | 150.0 |
| Diastolic pressure | 84.2 | 10.7 | 69.0 | 104.0 | 78.7 | 13.7 | 63.0 | 88.0 |
| Lactate dehydrogenase  | 286.4 | 95.0 | 132.0 | 447.0 | 664.0 | 192.2 | 447.0 | 813.0 |
| C reactive protein  | 0.8 | 0.4 | 0.3 | 1.5 | 0.7 | 0.2 | 0.5 | 0.8 |
| Lymphocyte count | 52.5 | 38.8 | 4.0 | 106.5 | 121.2 | 37.0 | 81.3 | 154.3 |

**Supplementary Table 4** The machine learning parameters and Multivariate logistic regression parameters setting.

|  |  |
| --- | --- |
| Machine learning method | Parameters setting |
| Random Forest | n\_estimators=100, max\_depth = 2, max\_leaf\_nodes = 5 |
| XGboost | n\_estimators=100, max\_depth = 2, max\_leaf\_nodes = 3 |
| Multivariate Logistic Regression | random\_state=0 |