Table 3.1: Linear Regression Results of Models 1 & 2 & 3

|  |  |  |  |
| --- | --- | --- | --- |
|  | Dependent variable: | | |
|  |
|  | Cdiff(0) | | |
|  | (Model 1) | (Model 2) | (Model 3) |
|  | | | |
| Cdiff(7) | 0.486\*\*\* | 0.462\*\*\* | 0.461\*\*\* |
|  | (0.005) | (0.005) | (0.005) |
|  |  |  |  |
| Cdiff(14) | 0.114\*\*\* | 0.110\*\*\* | 0.110\*\*\* |
|  | (0.003) | (0.004) | (0.004) |
|  |  |  |  |
| Cdiff(1) | -0.544\*\*\* | -0.551\*\*\* | -0.552\*\*\* |
|  | (0.004) | (0.004) | (0.004) |
|  |  |  |  |
| Cdiff(8) | 0.359\*\*\* | 0.337\*\*\* | 0.336\*\*\* |
|  | (0.005) | (0.005) | (0.005) |
|  |  |  |  |
| Cdiff(2) | -0.435\*\*\* | -0.444\*\*\* | -0.445\*\*\* |
|  | (0.005) | (0.005) | (0.005) |
|  |  |  |  |
| Cdiff(9) | 0.222\*\*\* | 0.211\*\*\* | 0.210\*\*\* |
|  | (0.004) | (0.004) | (0.004) |
|  |  |  |  |
| Cdiff(6) | 0.073\*\*\* | 0.055\*\*\* | 0.054\*\*\* |
|  | (0.005) | (0.005) | (0.005) |
|  |  |  |  |
| Cdiff(3) | -0.276\*\*\* | -0.282\*\*\* | -0.283\*\*\* |
|  | (0.005) | (0.005) | (0.005) |
|  |  |  |  |
| Cdiff(10) | 0.111\*\*\* | 0.107\*\*\* | 0.107\*\*\* |
|  | (0.004) | (0.004) | (0.004) |
|  |  |  |  |
| Cdiff(12) | -0.110\*\*\* | -0.109\*\*\* | -0.109\*\*\* |
|  | (0.003) | (0.004) | (0.004) |
|  |  |  |  |
| Cdiff(13) | -0.111\*\*\* | -0.114\*\*\* | -0.114\*\*\* |
|  | (0.004) | (0.004) | (0.004) |
|  |  |  |  |
| Cdiff(4) | -0.140\*\*\* | -0.145\*\*\* | -0.146\*\*\* |
|  | (0.004) | (0.004) | (0.004) |
|  |  |  |  |
| Cdiff(5) | -0.071\*\*\* | -0.081\*\*\* | -0.082\*\*\* |
|  | (0.005) | (0.005) | (0.005) |
|  |  |  |  |
| Ddiff(8) |  | 2.100\*\*\* | 2.098\*\*\* |
|  |  | (0.110) | (0.110) |
|  |  |  |  |
| Ddiff(7) |  | 1.908\*\*\* | 1.907\*\*\* |
|  |  | (0.101) | (0.101) |
|  |  |  |  |
| Ddiff(6) |  | 1.313\*\*\* | 1.312\*\*\* |
|  |  | (0.090) | (0.090) |
|  |  |  |  |
| Ddiff(5) |  | 0.672\*\*\* | 0.671\*\*\* |
|  |  | (0.070) | (0.070) |
|  |  |  |  |
| Ddiff(9) |  | 1.565\*\*\* | 1.563\*\*\* |
|  |  | (0.114) | (0.114) |
|  |  |  |  |
| Ddiff(10) |  | 1.401\*\*\* | 1.399\*\*\* |
|  |  | (0.112) | (0.112) |
|  |  |  |  |
| Ddiff(11) |  | 1.389\*\*\* | 1.386\*\*\* |
|  |  | (0.107) | (0.107) |
|  |  |  |  |
| Ddiff(12) |  | 1.048\*\*\* | 1.047\*\*\* |
|  |  | (0.100) | (0.100) |
|  |  |  |  |
| Ddiff(13) |  | 0.900\*\*\* | 0.899\*\*\* |
|  |  | (0.089) | (0.089) |
|  |  |  |  |
| Ddiff(14) |  | 0.569\*\*\* | 0.569\*\*\* |
|  |  | (0.070) | (0.070) |
|  |  |  |  |
| P |  |  | 0.00000\*\*\* |
|  |  |  | (0.00000) |
|  |  |  |  |
| Ddiff(2) |  | 0.282\*\*\* | 0.282\*\*\* |
|  |  | (0.063) | (0.063) |
|  |  |  |  |
| Ddiff(1) |  | 0.182\*\*\* | 0.181\*\*\* |
|  |  | (0.063) | (0.063) |
|  |  |  |  |
| Constant | 14.180\*\*\* | 13.018\*\*\* | 9.417\*\* |
|  | (3.778) | (3.761) | (3.892) |
|  |  |  |  |
|  | | | |
| Observations | 52,962 | 52,962 | 52,962 |
| R2 | 0.585 | 0.589 | 0.589 |
| Adjusted R2 | 0.584 | 0.588 | 0.589 |
| Residual Std. Error | 867.294 (df = 52948) | 863.136 (df = 52936) | 863.040 (df = 52935) |
| F Statistic | 5,731.463\*\*\* (df = 13; 52948) | 3,030.079\*\*\* (df = 25; 52936) | 2,914.683\*\*\* (df = 26; 52935) |
|  | | | |
| Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | | | |

Table 3.4: Linear Regression Results of Models 3 & 4

|  |  |  |
| --- | --- | --- |
|  | Dependent variable: | |
|  |
|  | Cdiff(0) | |
|  | (Model 3) | (Model 4) |
|  | | |
| Cdiff(7) | 0.461\*\*\* | 0.462\*\*\* |
|  | (0.005) | (0.005) |
|  |  |  |
| Cdiff(14) | 0.110\*\*\* | 0.110\*\*\* |
|  | (0.004) | (0.004) |
|  |  |  |
| Cdiff(1) | -0.552\*\*\* | -0.551\*\*\* |
|  | (0.004) | (0.004) |
|  |  |  |
| Cdiff(8) | 0.336\*\*\* | 0.337\*\*\* |
|  | (0.005) | (0.005) |
|  |  |  |
| Cdiff(2) | -0.445\*\*\* | -0.444\*\*\* |
|  | (0.005) | (0.005) |
|  |  |  |
| Cdiff(9) | 0.210\*\*\* | 0.211\*\*\* |
|  | (0.004) | (0.004) |
|  |  |  |
| Cdiff(6) | 0.054\*\*\* | 0.055\*\*\* |
|  | (0.005) | (0.005) |
|  |  |  |
| Cdiff(3) | -0.283\*\*\* | -0.282\*\*\* |
|  | (0.005) | (0.005) |
|  |  |  |
| Cdiff(10) | 0.107\*\*\* | 0.107\*\*\* |
|  | (0.004) | (0.004) |
|  |  |  |
| Cdiff(12) | -0.109\*\*\* | -0.109\*\*\* |
|  | (0.004) | (0.004) |
|  |  |  |
| Cdiff(13) | -0.114\*\*\* | -0.114\*\*\* |
|  | (0.004) | (0.004) |
|  |  |  |
| Cdiff(4) | -0.146\*\*\* | -0.145\*\*\* |
|  | (0.004) | (0.004) |
|  |  |  |
| Cdiff(5) | -0.082\*\*\* | -0.081\*\*\* |
|  | (0.005) | (0.005) |
|  |  |  |
| Cdiff(8) | 2.098\*\*\* | 2.100\*\*\* |
|  | (0.110) | (0.110) |
|  |  |  |
| Cdiff(7) | 1.907\*\*\* | 1.908\*\*\* |
|  | (0.101) | (0.101) |
|  |  |  |
| Cdiff(6) | 1.312\*\*\* | 1.313\*\*\* |
|  | (0.090) | (0.090) |
|  |  |  |
| Cdiff(5) | 0.671\*\*\* | 0.672\*\*\* |
|  | (0.070) | (0.070) |
|  |  |  |
| Cdiff(9) | 1.563\*\*\* | 1.565\*\*\* |
|  | (0.114) | (0.114) |
|  |  |  |
| Cdiff(10) | 1.399\*\*\* | 1.401\*\*\* |
|  | (0.112) | (0.112) |
|  |  |  |
| Cdiff(11) | 1.386\*\*\* | 1.389\*\*\* |
|  | (0.107) | (0.107) |
|  |  |  |
| Cdiff(12) | 1.047\*\*\* | 1.048\*\*\* |
|  | (0.100) | (0.100) |
|  |  |  |
| Cdiff(13) | 0.899\*\*\* | 0.900\*\*\* |
|  | (0.089) | (0.089) |
|  |  |  |
| Cdiff(14) | 0.569\*\*\* | 0.569\*\*\* |
|  | (0.070) | (0.070) |
|  |  |  |
| P | 0.00000\*\*\* |  |
|  | (0.00000) |  |
|  |  |  |
| Cdiff(2) | 0.282\*\*\* | 0.282\*\*\* |
|  | (0.063) | (0.063) |
|  |  |  |
| Cdiff(1) | 0.181\*\*\* | 0.182\*\*\* |
|  | (0.063) | (0.063) |
|  |  |  |
| Constant | 9.417\*\* | 13.018\*\*\* |
|  | (3.892) | (3.761) |
|  |  |  |
|  | | |
| Observations | 52,962 | 52,962 |
| R2 | 0.589 | 0.589 |
| Adjusted R2 | 0.589 | 0.588 |
| Residual Std. Error | 863.040 (df = 52935) | 863.136 (df = 52936) |
| F Statistic | 2,914.683\*\*\* (df = 26; 52935) | 3,030.079\*\*\* (df = 25; 52936) |
|  | | |
| Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | | |

Figure 3.1 Diagnostic Test Results

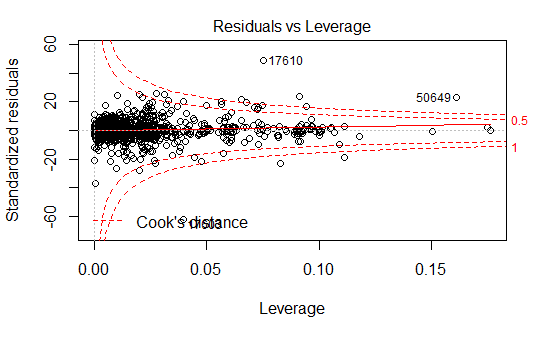
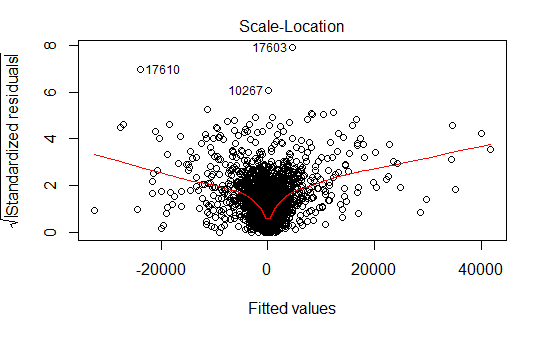
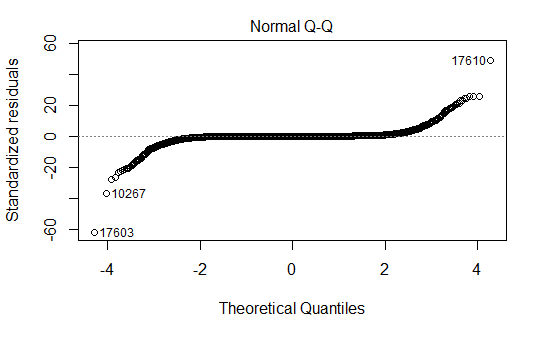
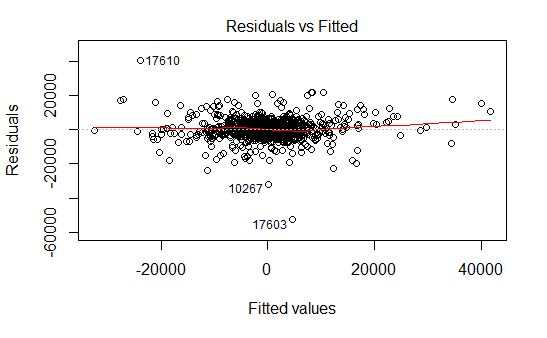


Figure 1.1 The Logarithm of World Covid-19 Case Number Figure 1.2 The Logarithm of World Covid-19 Death Number

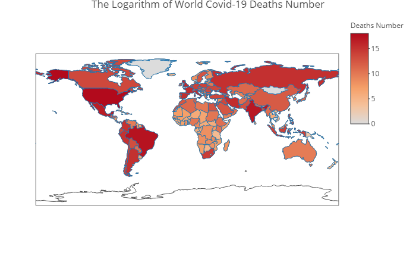
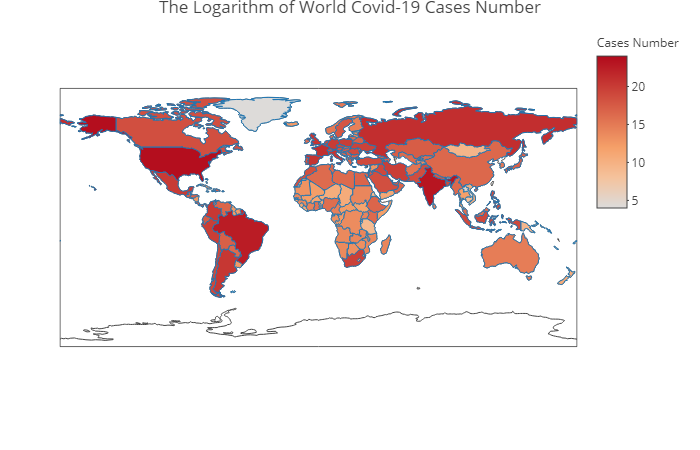


Figure 1.3 The Ratio of World Covid-19 Death to Case Number Figure 1.4 The Ratio of World Covid-19 Death/Pop\*100

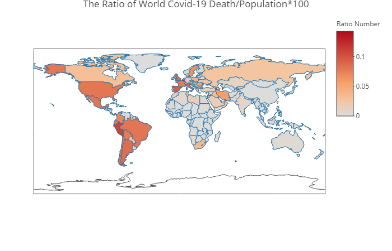
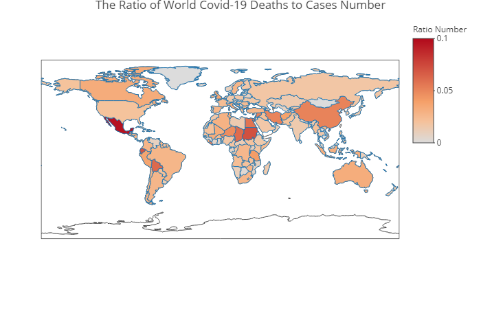


Figure 1.5 The Logarithm of World Population in 2019 Figure 1.6 The Logarithm of World Population Density in 2019

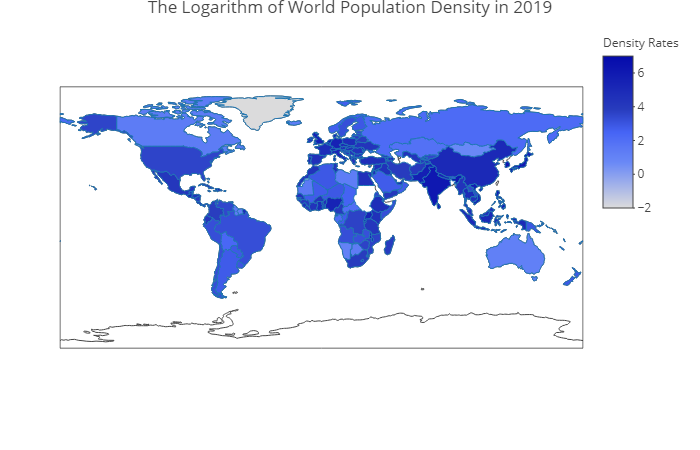
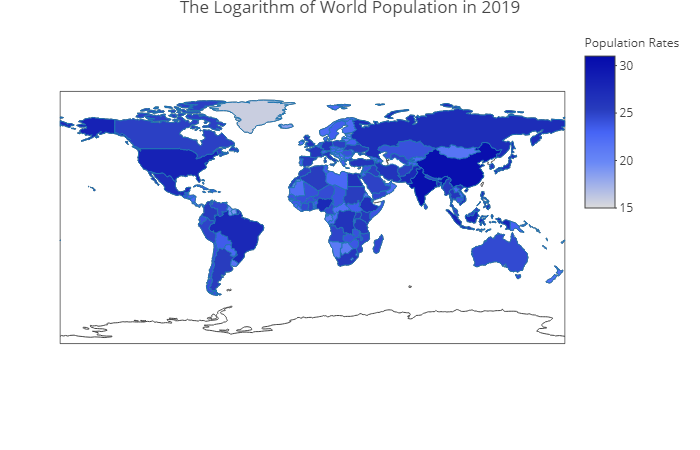


Table 3.2: ANOVA Test Results of Comparing Models 1 & 2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model Name | Res.DF | RSS | Df | Sum of Sq | F | Pr(>F) |
| 1 | 52547 | 39.17 |  |  |  |  |
| 2 | 52534 | 38.78 | 13 | 388052910 | 40.438 | <2.2e-16 \*\*\* |

Table 3.3: ANOVA Test Results of Comparing Models 2 & 3

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model Name | Res.DF | RSS | Df | Sum of Sq | F | Pr(>F) |
| 2 | 52534 | 38.78 |  |  |  |  |
| 3 | 52533 | 38.77 | 1 | 11207507 | 15.187 | 9.75e-05 \*\*\* |

Table 3.5: ANOVA Test Results of Comparing Models 3 & 4

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model Name | Res.DF | RSS | Df | Sum of | F | Pr(>F) |
| 3 | 52533 | 38.77 |  |  |  |  |
| 4 | 52534 | 38.78 | -1 | -11207507 | 15.187 | 9.75e-05 \*\*\* |