Meeting 5

Rui Li

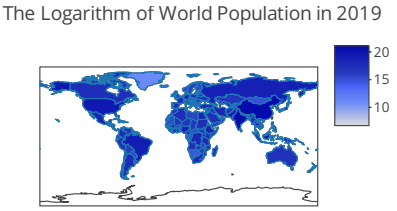
11/24/2020

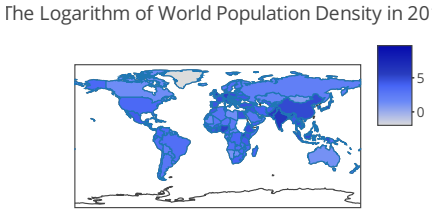
Require packages

Cleaning Data

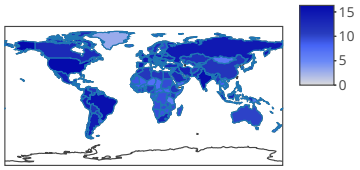
Data Summary

Ploting data

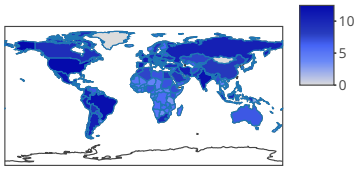


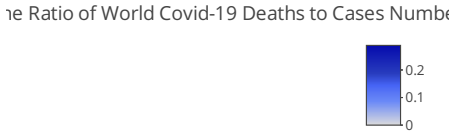


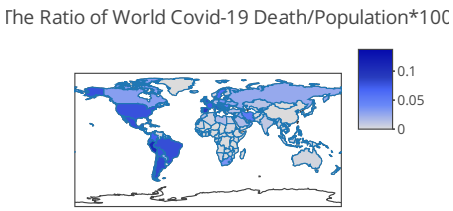
The Logarithm of World Covid-19 Cases Number



The Logarithm of World Covid-19 Deaths Number




ıe Ratio of World Covid-19 Deaths to Cases Numbe
0.2
0.1
0



#Modeling

```
##
## Call:
## lm(formula = cases ~ `CASE-1` + `CASE-2` + `CASE-3` + `CASE-4` +
##     `CASE-5` + `CASE-6` + `CASE-7` + `CASE-8` + `CASE-9` + `CASE-10` +
##     `CASE-11` + `CASE-12` + `CASE-13` + `CASE-14`, data = na.omit(data1))
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -42444    -14     -5      4  53882
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  5.111539   3.633207   1.407 0.159464
## `CASE-1`     0.407385   0.004162  97.878  < 2e-16 ***
## `CASE-2`     0.122695   0.004480  27.389  < 2e-16 ***
## `CASE-3`     0.143201   0.004448  32.197  < 2e-16 ***
## `CASE-4`     0.157681   0.004427  35.617  < 2e-16 ***
## `CASE-5`     0.084409   0.004423  19.086  < 2e-16 ***
## `CASE-6`     0.137262   0.004328  31.714  < 2e-16 ***
## `CASE-7`     0.455788   0.004224 107.909  < 2e-16 ***
## `CASE-8`    -0.176051   0.004177 -42.145  < 2e-16 ***
## `CASE-9`    -0.152075   0.004182 -36.364  < 2e-16 ***
## `CASE-10`   -0.109508   0.004185 -26.168  < 2e-16 ***
```

```
## `CASE-11`   -0.132647   0.004138 -32.058  < 2e-16 ***
## `CASE-12`   -0.121954   0.004088 -29.833  < 2e-16 ***
## `CASE-13`   -0.015700   0.004076  -3.852 0.000117 ***
## `CASE-14`    0.175783   0.003772  46.603  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 834.5 on 54554 degrees of freedom
## Multiple R-squared:  0.9743, Adjusted R-squared:  0.9743
## F-statistic: 1.478e+05 on 14 and 54554 DF,  p-value: < 2.2e-16
```

```
##
## Call:
## lm(formula = cases ~ `DEATH-1` + `DEATH-2` + `DEATH-3` + `DEATH-4` +
##     `DEATH-5` + `DEATH-6` + `DEATH-7` + `DEATH-8` + `DEATH-10` +
##     `DEATH-11` + `DEATH-12` + `DEATH-13` + `DEATH-14`, data = na.omit(data2))
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -54653    -70    -66    -37  93780
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  65.6730    14.1060   4.656 3.24e-06 ***
## `DEATH-1`     3.9189     0.2587  15.148  < 2e-16 ***
## `DEATH-2`     2.2434     0.2601   8.625  < 2e-16 ***
## `DEATH-3`     0.5225     0.2643   1.977 0.048022 *
## `DEATH-4`     1.9138     0.2662   7.190 6.59e-13 ***
## `DEATH-5`     2.0432     0.2667   7.661 1.88e-14 ***
## `DEATH-6`     2.2619     0.2656   8.518  < 2e-16 ***
## `DEATH-7`     3.8777     0.2686  14.435  < 2e-16 ***
## `DEATH-8`     1.7515     0.2649   6.612 3.82e-11 ***
## `DEATH-10`    0.9885     0.2600   3.802 0.000144 ***
## `DEATH-11`    2.5192     0.2609   9.654  < 2e-16 ***
## `DEATH-12`    2.8053     0.2614  10.731  < 2e-16 ***
## `DEATH-13`    4.3647     0.2593  16.830  < 2e-16 ***
## `DEATH-14`    6.0699     0.2535  23.947  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 3222 on 54555 degrees of freedom
## Multiple R-squared:  0.6169, Adjusted R-squared:  0.6168
## F-statistic:  6757 on 13 and 54555 DF,  p-value: < 2.2e-16
```

```
##
## Call:
## lm(formula = cases ~ `CASE-1` + `CASE-2` + `CASE-3` + `CASE-4` +
##     `CASE-5` + `CASE-6` + `CASE-7` + `CASE-8` + `CASE-9` + `CASE-10` +
##     `CASE-11` + `CASE-12` + `CASE-13` + `CASE-14` + `DEATH-1` +
##     `DEATH-2` + `DEATH-4` + `DEATH-5` + `DEATH-6` + `DEATH-7` +
##     `DEATH-9` + `DEATH-10` + `DEATH-12` + `DEATH-13` + `DEATH-14`,
##     data = na.omit(data3))
##
## Residuals:
```

```
##    Min     1Q Median     3Q    Max
## -41043     -9      1      9  53947
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.671802   3.631182  -0.185  0.85322
## `CASE-1`     0.399744   0.004221  94.707  < 2e-16 ***
## `CASE-2`     0.117546   0.004515  26.036  < 2e-16 ***
## `CASE-3`     0.142202   0.004432  32.085  < 2e-16 ***
## `CASE-4`     0.155220   0.004475  34.689  < 2e-16 ***
## `CASE-5`     0.077328   0.004473  17.287  < 2e-16 ***
## `CASE-6`     0.126897   0.004394  28.882  < 2e-16 ***
## `CASE-7`     0.448283   0.004268 105.024  < 2e-16 ***
## `CASE-8`    -0.173202   0.004172 -41.516  < 2e-16 ***
## `CASE-9`    -0.140962   0.004243 -33.220  < 2e-16 ***
## `CASE-10`   -0.103582   0.004241 -24.426  < 2e-16 ***
## `CASE-11`   -0.127131   0.004132 -30.765  < 2e-16 ***
## `CASE-12`   -0.117324   0.004133 -28.388  < 2e-16 ***
## `CASE-13`   -0.018707   0.004123  -4.537 5.71e-06 ***
## `CASE-14`    0.175697   0.003818  46.015  < 2e-16 ***
## `DEATH-1`   -0.108730   0.067223  -1.617  0.10579
## `DEATH-2`    0.322153   0.068549   4.700 2.61e-06 ***
## `DEATH-4`    0.152686   0.067921   2.248  0.02458 *
## `DEATH-5`    0.581602   0.069561   8.361  < 2e-16 ***
## `DEATH-6`    0.782904   0.070313  11.135  < 2e-16 ***
## `DEATH-7`    0.636819   0.070498   9.033  < 2e-16 ***
## `DEATH-9`   -0.679943   0.068675  -9.901  < 2e-16 ***
## `DEATH-10`  -0.123822   0.067689  -1.829  0.06736 .
## `DEATH-12`  -0.434272   0.068444  -6.345 2.24e-10 ***
## `DEATH-13`  -0.116116   0.068496  -1.695  0.09004 .
## `DEATH-14`  -0.195638   0.066319  -2.950  0.00318 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 829 on 54543 degrees of freedom
## Multiple R-squared:  0.9746, Adjusted R-squared:  0.9746
## F-statistic: 8.388e+04 on 25 and 54543 DF,  p-value: < 2.2e-16
```