**Regression Model March 11**

**TOTAL\_DEATHS\_PER\_MILLION**

Call:

lm(formula = total\_deaths\_per\_million ~ GHSI + population\_density +

aged\_65\_older + gdp\_per\_capita + WGI + total\_cases\_per\_million +

total\_tests\_per\_thousand + offset(log(Day)), data = COVID\_d)

Residuals:

Min 1Q Median 3Q Max

-2.1051 -0.8068 0.2475 0.6740 2.2054

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -5.66689113 1.89601877 -2.989 0.00755 \*\*

GHSI 0.03373156 0.03925118 0.859 0.40085

population\_density 0.00217899 0.00165342 1.318 0.20322

aged\_65\_older 0.12939179 0.06511542 1.987 0.06152 .

gdp\_per\_capita 0.00004569 0.00004445 1.028 0.31689

WGI -2.83396434 0.90205009 -3.142 0.00537 \*\*

total\_cases\_per\_million 0.03706810 0.01023015 3.623 0.00181 \*\*

total\_tests\_per\_thousand -1.41644740 0.64237876 -2.205 0.03998 \*

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.396 on 19 degrees of freedom

(48 observations deleted due to missingness)

Multiple R-squared: 0.7218, Adjusted R-squared: 0.6194

F-statistic: 7.044 on 7 and 19 DF, p-value: 0.0003245

**TOTAL\_CASES**

Call:

lm(formula = total\_cases ~ GHSI + population\_density + aged\_65\_older +

gdp\_per\_capita + WGI + total\_cases\_per\_million + total\_tests\_per\_thousand +

offset(log(Day)), data = COVID\_d)

Residuals:

Min 1Q Median 3Q Max

-3031.4 -880.9 203.6 651.4 2221.6

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -7294.05459 1910.13087 -3.819 0.001159 \*\*

GHSI 147.25100 39.54333 3.724 0.001440 \*\*

population\_density 2.16146 1.66572 1.298 0.209955

aged\_65\_older 113.67172 65.60008 1.733 0.099333 .

gdp\_per\_capita -0.03927 0.04478 -0.877 0.391433

WGI -2212.67343 908.76407 -2.435 0.024928 \*

total\_cases\_per\_million 40.14407 10.30629 3.895 0.000974 \*\*\*

total\_tests\_per\_thousand -469.04529 647.16000 -0.725 0.477422

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1406 on 19 degrees of freedom

(48 observations deleted due to missingness)

Multiple R-squared: 0.7463, Adjusted R-squared: 0.6528

F-statistic: 7.983 on 7 and 19 DF, p-value: 0.0001458

**Regression Model June 15**

**TOTAL\_DEATHS\_PER\_MILLION**

Call:

lm(formula = total\_deaths\_per\_million ~ GHSI + population\_density +

aged\_65\_older + gdp\_per\_capita + WGI + total\_cases\_per\_million +

total\_tests\_per\_thousand + offset(log(Day)), data = COVID\_d)

Residuals:

Min 1Q Median 3Q Max

-206.94 -61.32 -18.23 28.84 643.19

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -355.934636 108.299984 -3.287 0.00167 \*\*

GHSI 7.139814 2.118491 3.370 0.00130 \*\*

population\_density -0.002172 0.017407 -0.125 0.90108

aged\_65\_older 6.879875 3.365768 2.044 0.04520 \*

gdp\_per\_capita -0.001140 0.001666 -0.685 0.49615

WGI -55.042054 44.218755 -1.245 0.21790

total\_cases\_per\_million 0.015725 0.007212 2.181 0.03302 \*

total\_tests\_per\_thousand 0.142006 0.432632 0.328 0.74384

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 128.1 on 62 degrees of freedom

(112 observations deleted due to missingness)

Multiple R-squared: 0.3356, Adjusted R-squared: 0.2606

F-statistic: 4.474 on 7 and 62 DF, p-value: 0.0004406

**NB Regression Model June 15**

**TOTAL\_DEATHS\_PER\_MILLION**

Call:

glm.nb(formula = total\_deaths\_per\_million ~ GHSI + population\_density +

aged\_65\_older + gdp\_per\_capita + WGI + total\_cases\_per\_million +

total\_tests\_per\_thousand + offset(log(Day)), data = COVID\_d,

init.theta = 0.9847062132, link = log)

Deviance Residuals:

Min 1Q Median 3Q Max

-4.0539 -0.9885 -0.3258 0.2208 1.9643

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -5.46026802 0.89408487 -6.107 0.0000000010146 \*\*\*

GHSI 0.05204905 0.01719095 3.028 0.002464 \*\*

population\_density -0.00053899 0.00014828 -3.635 0.000278 \*\*\*

aged\_65\_older 0.11368717 0.02713469 4.190 0.0000279280712 \*\*\*

gdp\_per\_capita 0.00001613 0.00001336 1.208 0.227128

WGI -0.82532274 0.36255613 -2.276 0.022822 \*

total\_cases\_per\_million 0.00038316 0.00005721 6.697 0.0000000000213 \*\*\*

total\_tests\_per\_thousand -0.00595465 0.00345401 -1.724 0.084711 .

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for Negative Binomial(0.9847) family taken to be 1)

Null deviance: 168.416 on 69 degrees of freedom

Residual deviance: 80.835 on 62 degrees of freedom

(112 observations deleted due to missingness)

AIC: 663.03

Number of Fisher Scoring iterations: 1

Theta: 0.985

Std. Err.: 0.161

Warning while fitting theta: alternation limit reached

2 x log-likelihood: -645.027

**Regression Model June 15**

**TOTAL\_CASES**

Call:

lm(formula = total\_cases ~ GHSI + population\_density + aged\_65\_older +

gdp\_per\_capita + WGI + total\_cases\_per\_million + total\_tests\_per\_thousand +

offset(log(Day)), data = COVID\_d)

Residuals:

Min 1Q Median 3Q Max

-245892 -111127 -37410 48068 1627566

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -590282.608 206348.209 -2.861 0.005756 \*\*

GHSI 14163.446 4036.444 3.509 0.000844 \*\*\*

population\_density -1.831 33.166 -0.055 0.956147

aged\_65\_older -1837.299 6412.930 -0.286 0.775451

gdp\_per\_capita -1.457 3.174 -0.459 0.647737

WGI -103420.820 84251.728 -1.228 0.224267

total\_cases\_per\_million 18.456 13.741 1.343 0.184115

total\_tests\_per\_thousand 388.890 824.310 0.472 0.638742

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 244100 on 62 degrees of freedom

(112 observations deleted due to missingness)

Multiple R-squared: 0.2105, Adjusted R-squared: 0.1214

F-statistic: 2.362 on 7 and 62 DF, p-value: 0.03317

**NB Regression Model June 15**

**TOTAL\_CASES**

Call:

glm.nb(formula = total\_cases ~ GHSI + population\_density + aged\_65\_older +

gdp\_per\_capita + WGI + total\_cases\_per\_million + total\_tests\_per\_thousand +

offset(log(Day)), data = COVID\_d, init.theta = 0.6405728839,

link = log)

Deviance Residuals:

Min 1Q Median 3Q Max

-2.40625 -1.12414 -0.55192 0.07705 2.88580

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 1.04427499 1.05639541 0.989 0.322895

GHSI 0.10906841 0.02066449 5.278 0.000000131 \*\*\*

population\_density 0.00018377 0.00016979 1.082 0.279102

aged\_65\_older -0.01729123 0.03283049 -0.527 0.598414

gdp\_per\_capita -0.00001326 0.00001625 -0.816 0.414500

WGI -1.57034150 0.43132182 -3.641 0.000272 \*\*\*

total\_cases\_per\_million 0.00028987 0.00007035 4.121 0.000037779 \*\*\*

total\_tests\_per\_thousand -0.00051022 0.00422000 -0.121 0.903766

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for Negative Binomial(0.6406) family taken to be 1)

Null deviance: 136.721 on 69 degrees of freedom

Residual deviance: 85.674 on 62 degrees of freedom

(112 observations deleted due to missingness)

AIC: 1620.6

Number of Fisher Scoring iterations: 1

Theta: 0.6406

Std. Err.: 0.0915

2 x log-likelihood: -1602.6370