Call:

lm(formula = log(X2016.Crude.Rate) ~ log(PovertyPercent) + Narcan2015 +

log(Population1516) + Grad.Rate)

Residuals:

Min 1Q Median 3Q Max

-1.55068 -0.32449 -0.01329 0.29593 1.39995

Coefficients:

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

(Intercept) -2.615246 0.278679 -9.384 < 2e-16 \*\*\*

log(PovertyPercent) 0.164101 0.033452 4.906 1.04e-06 \*\*\*

Narcan2015 -0.150328 0.026576 -5.657 1.86e-08 \*\*\*

log(Population1516) -0.100317 0.011401 -8.799 < 2e-16 \*\*\*

Grad.Rate -0.5453 0.002267 -2.405 0.0163 \*

---

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

Residual standard error: 0.4555 on 1433 degrees of freedom

(1 observation deleted due to missingness)

Multiple R-squared: 0.1213, Adjusted R-squared: 0.1188

F-statistic: 49.45 on 4 and 1433 DF, p-value: < 2.2e-16

**OD = -2.62 + .16log(PovertyRate) - 0.10log(Population) - 0.54(GradRate) 0.15(NarcanAvailability)**

**Iteration 1: OD vs. prescription rate and naloxone access** (0, 1, 2 for 2015 to 2016 access)

Residuals:

Min 1Q Median 3Q Max

-1.90964 -0.33542 -0.01473 0.33135 1.49714

Coefficients:

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

(Intercept) -4.48338 0.09254 -48.447 < 2e-16 \*\*\*

log(PovertyPercent) 0.25570 0.03313 7.718 2.20e-14 \*\*\*

Narcan1516 -0.08112 0.01832 -4.428 1.02e-05 \*\*\*

---

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

Residual standard error: 0.4716 on 1436 degrees of freedom

Multiple R-squared: 0.05657, Adjusted R-squared: 0.05525

F-statistic: 43.05 on 2 and 1436 DF, p-value: < 2.2e-16

**Comments:**

Tried with narcan2016 only, r-square was 0.04... so the average seems a little more accurate

Limited to only 2016 overdose deaths - issue is also that deaths aren’t limited to opioids, they include all drug overdoses

**2015-16 CRUDE RATE VS. Poverty Rate(log), Narcan Access 15-16(0,1,2), Population(log)**

Residuals:

Min 1Q Median 3Q Max

-1.63802 -0.32656 -0.00571 0.30971 1.38725

Coefficients:

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

(Intercept) -3.07570 0.18533 -16.596 < 2e-16 \*\*\*

log(PovertyPercent) 0.17107 0.03374 5.071 4.48e-07 \*\*\*

Narcan1516 -0.06499 0.01796 -3.619 0.000305 \*\*\*

log(Population1516) -0.09905 0.01139 -8.696 < 2e-16 \*\*\*

---

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

Residual standard error: 0.4598 on 1435 degrees of freedom

Multiple R-squared: 0.1038, Adjusted R-squared: 0.1019

F-statistic: 55.4 on 3 and 1435 DF, p-value: < 2.2e-16

**2015-16 CRUDE RATE VS. Poverty Rate(log), Narcan Access 2016 (0,1), Population(log)**

Residuals:

Min 1Q Median 3Q Max

-1.69469 -0.32084 -0.00592 0.31242 1.47345

Coefficients:

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

(Intercept) -3.12952 0.18718 -16.720 < 2e-16 \*\*\*

log(PovertyPercent) 0.17896 0.03386 5.285 1.46e-07 \*\*\*

Narcan2016 0.02023 0.03190 0.634 0.526

log(Population1516) -0.10371 0.01140 -9.100 < 2e-16 \*\*\*

---

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

Residual standard error: 0.4619 on 1435 degrees of freedom

Multiple R-squared: 0.09587, Adjusted R-squared: 0.09398

F-statistic: 50.72 on 3 and 1435 DF, p-value: < 2.2e-16

**2015-2016 CRUDE RATE VS. Poverty Rate(log), Narcan Access 2015(0,1), Population(log)**

Residuals:

Min 1Q Median 3Q Max

-1.58938 -0.32118 -0.00889 0.30225 1.41373

Coefficients:

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

(Intercept) -3.13050 0.18361 -17.050 < 2e-16 \*\*\*

log(PovertyPercent) 0.16864 0.03346 5.040 5.25e-07 \*\*\*

Narcan2015 -0.15767 0.02647 -5.957 3.23e-09 \*\*\*

log(Population1516) -0.09611 0.01131 -8.499 < 2e-16 \*\*\*

---

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

Residual standard error: 0.4563 on 1435 degrees of freedom

Multiple R-squared: 0.1174, Adjusted R-squared: 0.1156

F-statistic: 63.65 on 3 and 1435 DF, p-value: < 2.2e-16