Models

```
library(tidyverse)
library(stargazer)
library(sandwich)
data <- read_rds("../data/processed/main_state_data.RDS")

## All below done in Python Now ##
##################################
# Colnames: replace spaces with underscore,
# remove parantheses, metacharacters () must be enclosed in []
#colnames(data) <- gsub(" ", "_", colnames(data))
#colnames(data) <- gsub("[()]", "", colnames(data))

head(data)
```

```
data$NoFaceMaskEmploy
```

```
##  [1] 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0
## [39] 0 0 0 1 1 0 0 0 0 0 0 0 0
```

```
lm1 <- lm(log(Case.Rate.per.100000.in.Last.7.Days) ~ SIP, data = data)

lm2 <- lm(log(Case.Rate.per.100000.in.Last.7.Days) ~ SIP + workplaces_2020.10.10, data = data)

lm3 <- lm(log(Case.Rate.per.100000.in.Last.7.Days) ~ SIP + workplaces_2020.10.10 + NoFaceMask, data = da

lm4 <- lm(log(Case.Rate.per.100000.in.Last.7.Days) ~ SIP + workplaces_2020.10.10 + NoFaceMask + NoFaceMa

cov1 <- vcovHC(lm1, type = "HC1")
robust_se1 <- sqrt(diag(cov1))

cov2 <- vcovHC(lm2, type = "HC1")
robust_se2 <- sqrt(diag(cov2))

cov3 <- vcovHC(lm3, type = "HC1")
robust_se3 <- sqrt(diag(cov3))

cov4 <- vcovHC(lm4, type = "HC1")
robust_se4 <- sqrt(diag(cov4))

# Produce initial stargazer table
# Copy results to regression-tables.tex,
# Change covariate names, etc, then produce
# regression-tables.pdf which will knit into
# draft report
stargazer(lm1,
```

```
          lm2,
          lm3,
          lm4, se = list(robust_se1, robust_se2, robust_se3, robust_se4),
          notes.append = TRUE, notes.align = "l",
          notes = "This will be replaced")
```

```
##
## % Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harva
## % Date and time: Thu, Dec 10, 2020 - 10:57:34 AM
## \begin{table}[!htbp] \centering
##   \caption{}
##   \label{}
## \begin{tabular}{@{\extracolsep{5pt}}lcccc}
## \\[-1.8ex]\hline
## \hline \\[-1.8ex]
##  & \multicolumn{4}{c}{\textit{Dependent variable:}} \\
## \cline{2-5}
## \\[-1.8ex] & \multicolumn{4}{c}{log(Case.Rate.per.100000.in.Last.7.Days)} \\
## \\[-1.8ex] & (1) & (2) & (3) & (4)\\
## \hline \\[-1.8ex]
##  SIP & $-$0.781$^{***}$ & $-$0.650$^{***}$ & $-$0.623$^{***}$ & $-$0.586$^{***}$ \\
##   & (0.207) & (0.206) & (0.199) & (0.200) \\
##   & & & & \\
##  workplaces\_2020.10.10 &  & 0.043$^{***}$ & 0.042$^{***}$ & 0.038$^{***}$ \\
##   &  & (0.015) & (0.016) & (0.015) \\
##   & & & & \\
##  NoFaceMask &  &  & 0.113 & $-$0.023 \\
##   &  &  & (0.196) & (0.231) \\
##   & & & & \\
##  NoFaceMaskEmploy &  &  &  & 0.424 \\
##   &  &  &  & (0.285) \\
##   & & & & \\
##  Constant & 3.797$^{***}$ & 4.579$^{***}$ & 4.499$^{***}$ & 4.397$^{***}$ \\
##   & (0.175) & (0.309) & (0.356) & (0.343) \\
##   & & & & \\
## \hline \\[-1.8ex]
## Observations & 51 & 51 & 51 & 51 \\
## R$^{2}$ & 0.193 & 0.297 & 0.301 & 0.326 \\
## Adjusted R$^{2}$ & 0.177 & 0.267 & 0.257 & 0.267 \\
## Residual Std. Error & 0.669 (df = 49) & 0.631 (df = 48) & 0.636 (df = 47) & 0.631 (df = 46) \\
## F Statistic & 11.742$^{***}$ (df = 1; 49) & 10.118$^{***}$ (df = 2; 48) & 6.762$^{***}$ (df = 3; 47)
## \hline
## \hline \\[-1.8ex]
## \textit{Note:}  & \multicolumn{4}{l}{$^{*}$p$<$0.1; $^{**}$p$<$0.05; $^{***}$p$<$0.01} \\
##  & \multicolumn{4}{l}{This will be replaced} \\
## \end{tabular}
## \end{table}
```

```
sandwich::vcovHC
```

```
## function (x, ...)
## {
##     UseMethod("vcovHC")
```

```
## }
## <bytecode: 0x0000000001902d458>
## <environment: namespace:sandwich>
```

```
lm3 <- lm(log(Case.Rate.per.100000.in.Last.7.Days) ~ SIP + workplaces_2020.10.10 + NoFaceMask, data = da

summary(lm3)
```

```
##
## Call:
## lm(formula = log(Case.Rate.per.100000.in.Last.7.Days) ~ SIP +
##     workplaces_2020.10.10 + NoFaceMask, data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.69009 -0.34581  0.01823  0.47952  1.13260
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)            4.49896    0.37953  11.854    1e-15 ***
## SIP                   -0.62287    0.22713  -2.742   0.0086 **
## workplaces_2020.10.10  0.04150    0.01622   2.559   0.0138 *
## NoFaceMask             0.11254    0.19552   0.576   0.5676
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6359 on 47 degrees of freedom
## Multiple R-squared:  0.3015, Adjusted R-squared:  0.2569
## F-statistic: 6.762 on 3 and 47 DF,  p-value: 0.0006949
```

```
lm3_2 <- lm(Case.Rate.per.100000.in.Last.7.Days ~ SIP + workplaces_2020.10.10 + NoFaceMask, data = data)


summary(lm3_2)
```

```
##
## Call:
## lm(formula = Case.Rate.per.100000.in.Last.7.Days ~ SIP + workplaces_2020.10.10 +
##     NoFaceMask, data = data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -26.964 -13.331  -3.882   9.249  65.914
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)            65.7892    12.1668   5.407  2.1e-06 ***
## SIP                   -22.2795     7.2813  -3.060  0.00365 **
## workplaces_2020.10.10   0.9701     0.5199   1.866  0.06832 .
## NoFaceMask              8.9653     6.2678   1.430  0.15922
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
## Residual standard error: 20.39 on 47 degrees of freedom
## Multiple R-squared:  0.3196, Adjusted R-squared:  0.2762
## F-statistic:  7.36 on 3 and 47 DF,  p-value: 0.000384
```