Franklin County PA Covid

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##Current Data

The data within this model is limited. There exists no easy package in R for PA Coronavirus cases by county. I've entered in this data manually.

```
knitr::opts_chunk$set(error = TRUE)
#load libs
library("tidyverse")
library("ggplot2")

franklinCountyCorona <- data.frame("day" = c(seq(1,12)), "dates" = seq(as.Date("2020-03-20"), by = "days
```

##Fit

The fit model

```
fit <- lm(formula = log(cases) ~ day, data = franklinCountyCorona)

summary(fit)
```

```
##
## Call:
## lm(formula = log(cases) ~ day, data = franklinCountyCorona)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.58456 -0.12797  0.01912  0.17339  0.44585
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.57348    0.17752  -3.231  0.00901 **
## day          0.28951    0.02412  12.003 2.91e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.2884 on 10 degrees of freedom
## Multiple R-squared:  0.9351, Adjusted R-squared:  0.9286
## F-statistic: 144.1 on 1 and 10 DF,  p-value: 2.914e-07
```

##Using the model

Useing the model to generate data for an additional amount of time. Placed in final model

```
newDay <-data.frame("day" = c(seq(1, 30)))
nextTwentyDays <-predict(fit, newDay)
nextTwentyDays <- as.data.frame(nextTwentyDays)
tmp <- seq(as.Date("2020-03-20"), by = "days", length.out = 30)
names(nextTwentyDays)[1] <- "cases"
```

```
nextTwentyDays[1,1] <- 1
nextTwentyDays <- mutate(nextTwentyDays,
                         "day"    = c(seq(1, 30)),
                         "cases" = ceiling(10^log(nextTwentyDays$cases)),
                         "dates" = tmp)
finalModel<- merge(nextTwentyDays, franklinCountyCorona, by = "dates", all = TRUE)
```

##Plot the data

Used the data from the model to plot

```
ggplot(finalModel, aes(x = dates)) +
  geom_point(aes(y = cases.x), color = "darkgrey") +
  geom_point(aes(y = cases.y), color = "red") +
  geom_path(aes(y = cases.x), color = "grey") +
  geom_path(aes(y = cases.y), color = "black") +
  labs(x = "Dates", y = "Cases") +
  ggtitle("Franklin County PA confirmed Covid19 Cases Model 30 Days") +
  theme_bw()
```

```
## Warning: Removed 18 rows containing missing values (geom_point).
```

```
## Warning: Removed 18 row(s) containing missing values (geom_path).
```