

Project 3 - COVID19 Model

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Read in data:

```
covid19 <- read_csv("covid19-1.csv")

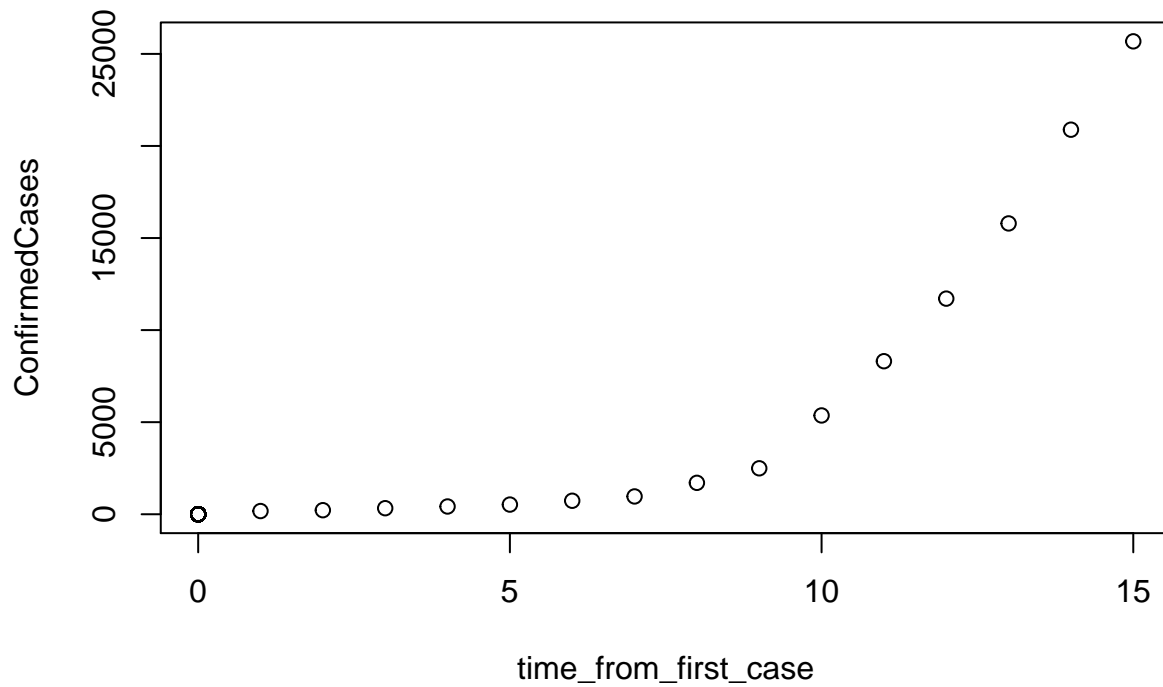
## Parsed with column specification:
## cols(
##   Id = col_double(),
##   `Province/State` = col_character(),
##   `Country/Region` = col_character(),
##   Lat = col_double(),
##   Long = col_double(),
##   Date = col_character(),
##   ConfirmedCases = col_double(),
##   Fatalities = col_double()
## )
```

Explore data - NY Example:

```
NY_dat = covid19 %>% filter(`Province/State` == "New York")

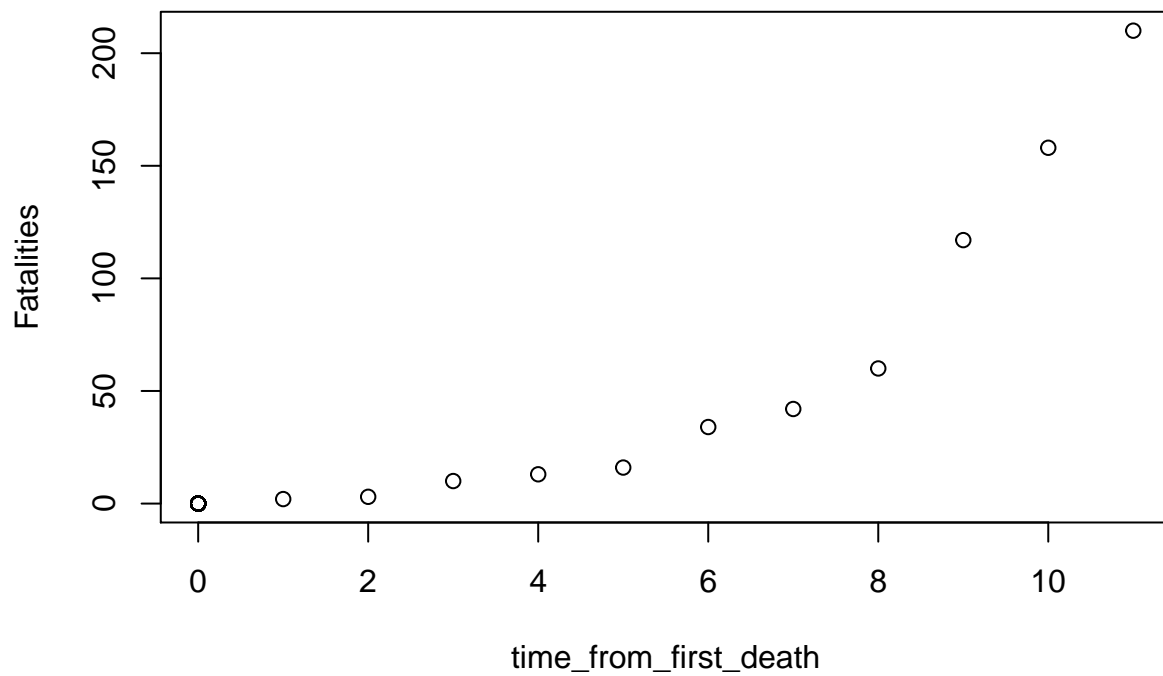
#Initialize column - time from 1st case
NY_dat$time_from_first_case <- rep(0, dim(NY_dat)[1])
#Find location of first confirmed case
case = sum(NY_dat$ConfirmedCases == 0)
#Fill in column
j = 1
for (i in (case+1):dim(NY_dat)[1]) {
  NY_dat$time_from_first_case[i] = j
  j = j+1
}

#Check whether logistic curve is good approximation - cases
plot(ConfirmedCases ~ time_from_first_case, data = NY_dat)
```



```
#Initialize column - time from 1st death
NY_dat$time_from_first_death <- rep(0, dim(NY_dat)[1])
#Find location of first confirmed case
deaths = sum(NY_dat$Fatalities == 0)
#Fill in column
j = 1
for (i in (deaths+1):dim(NY_dat)[1]) {
  NY_dat$time_from_first_death[i] = j
  j = j+1
}

#Check whether logistic curve is good approximation - fatalities
plot(Fatalities ~ time_from_first_death, data = NY_dat)
```



#Appears to have exponential growth, will try logistic growth model however

Estimation of logistic growth curve parameters: