epiChart

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Load data from the simulations

```
#load + concatenate the csvs
df <- list.files(path = "epi_csvs",full.names = TRUE) %>%
  lapply(read_csv) %>%
  bind_rows

#create summary dataframe
new_df <- df %>%
  group_by(X1) %>%
  summarise(Susceptible = sum(S), Exposed = sum(E), Infected = sum(I), Recovered = sum(R), Hospitalized

#generate the TA-level summaries
summary_df <- df %>%
  group_by(TA, ID) %>%
  summarise(Population = max(POP), Incidences = max(R) + max(D), Recovered = max(R), Deaths = max(D), P
write.csv(summary_df, "new_summary.csv")
```

Cross-check some total figures

```
#Check num susceptible at beginning and end
print(paste0("The number of susceptible individuals at t = 0 was: ", new_df$Susceptible[1]))
```

```
## [1] "The number of susceptible individuals at t = 0 was: 19406411"
```

```
print(paste0("The number of susceptible individuals after one year was: ", new_df$Susceptible[366]))
```

```
## [1] "The number of susceptible individuals after one year was: 3032454.56874175"
```

```
print(paste0("The total number of incidences was: ", new_df$Susceptible[1] - new_df$Susceptible[366]))
```

```
## [1] "The total number of incidences was: 16373956.4312583"
```

```
print(paste0("As a check, this should match: ", new_df$Deaths[366] + new_df$Recovered[366]))
```

```
## [1] "As a check, this should match: 16374197.4298359"
```

```
#Check num exposed at beginning and end
print(paste0("The number of exposed individuals at t = 0 was: ", new_df$Exposed[1]))
```

```
## [1] "The number of exposed individuals at t = 0 was: 0"
```

```
print(paste0("The number of exposed individuals at the end of one year was: ", new_df$Exposed[366]))
```

```
## [1] "The number of exposed individuals at the end of one year was: 7.4452941637464e-15"
```

```
print(paste0("The max. number of exposed individuals at one time was: ", max(new_df$Exposed)))
```

```
## [1] "The max. number of exposed individuals at one time was: 1610080.41580503"
```

```r
#Check num infected at beginning and end
print(paste0("The number of infected individuals at t = 0 was: ", new_df$Infected[1]))
```

```
## [1] "The number of infected individuals at t = 0 was: 241"
```

```r
print(paste0("The number of infected individuals at the end of one year was: ", new_df$Infected[366]))
```

```
## [1] "The number of infected individuals at the end of one year was: 1.27943899203934e-14"
```

```r
print(paste0("The max. number of infected individuals at one time was: ", max(new_df$Infected)))
```

```
## [1] "The max. number of infected individuals at one time was: 1557662.51297946"
```

```r
#Check num hospitalized at beginning and end
print(paste0("The number of hospitalized individuals at t = 0 was: ", new_df$Hospitalized[1]))
```

```
## [1] "The number of hospitalized individuals at t = 0 was: 0"
```

```r
print(paste0("The number of hospitalized individuals at the end of one year was: ", new_df$Hospitalized
```

```
## [1] "The number of hospitalized individuals at the end of one year was: 9.07585751014131e-11"
```

```r
print(paste0("The max. number of hospitalized individuals at one time was: ", max(new_df$Hospitalized))
```

```
## [1] "The max. number of hospitalized individuals at one time was: 119101.203835423"
```

```r
#Check num in critical care at beginning and end
print(paste0("The number of individuals in critical care at t = 0 was: ", new_df$Critical[1]))
```

```
## [1] "The number of individuals in critical care at t = 0 was: 0"
```

```r
print(paste0("The number of individuals in critical care at the end of one year was: ", new_df$Critical
```

```
## [1] "The number of individuals in critical care at the end of one year was: 0.00142231890301651"
```

```r
print(paste0("The max. number of individuals in critical care at one time was: ", max(new_df$Critical))
```

```
## [1] "The max. number of individuals in critical care at one time was: 29889.0586242636"
```

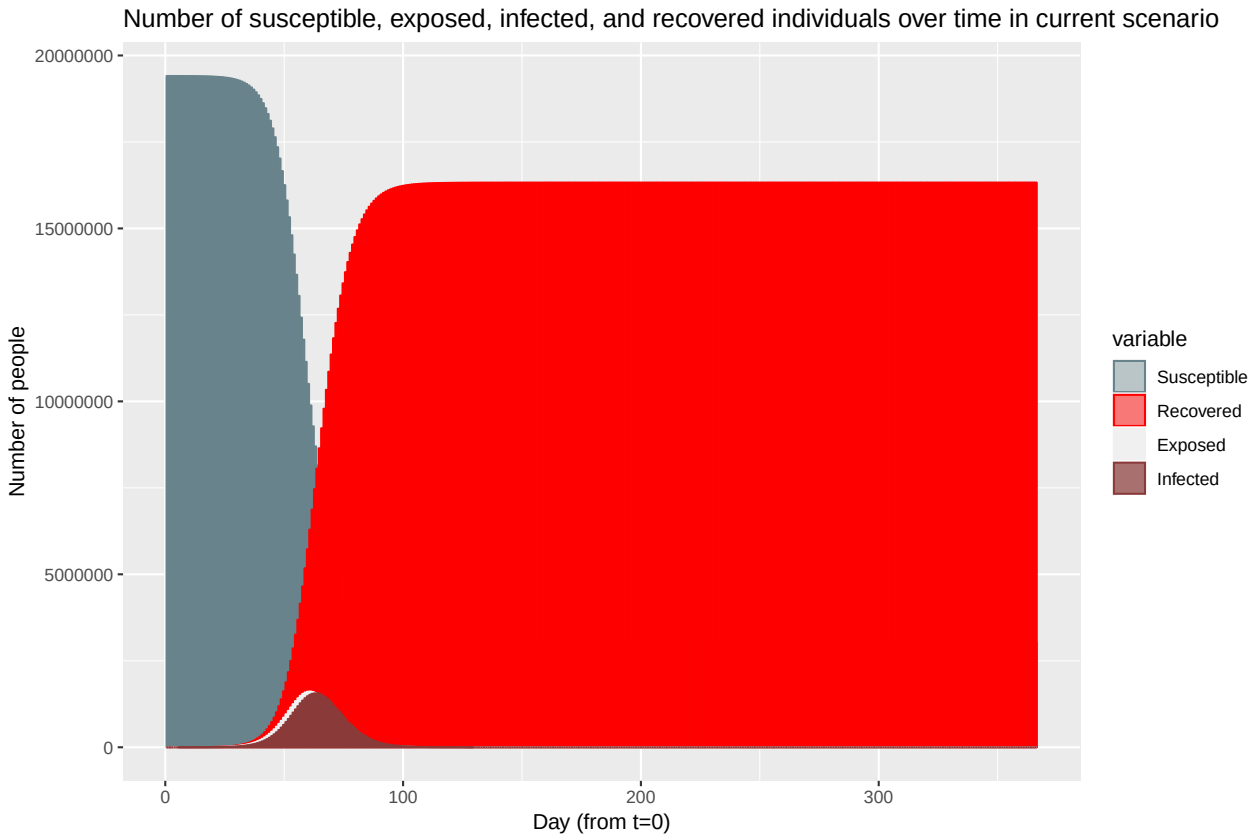
```r
#Check num infected
```

Make charts

First, include all states of interest

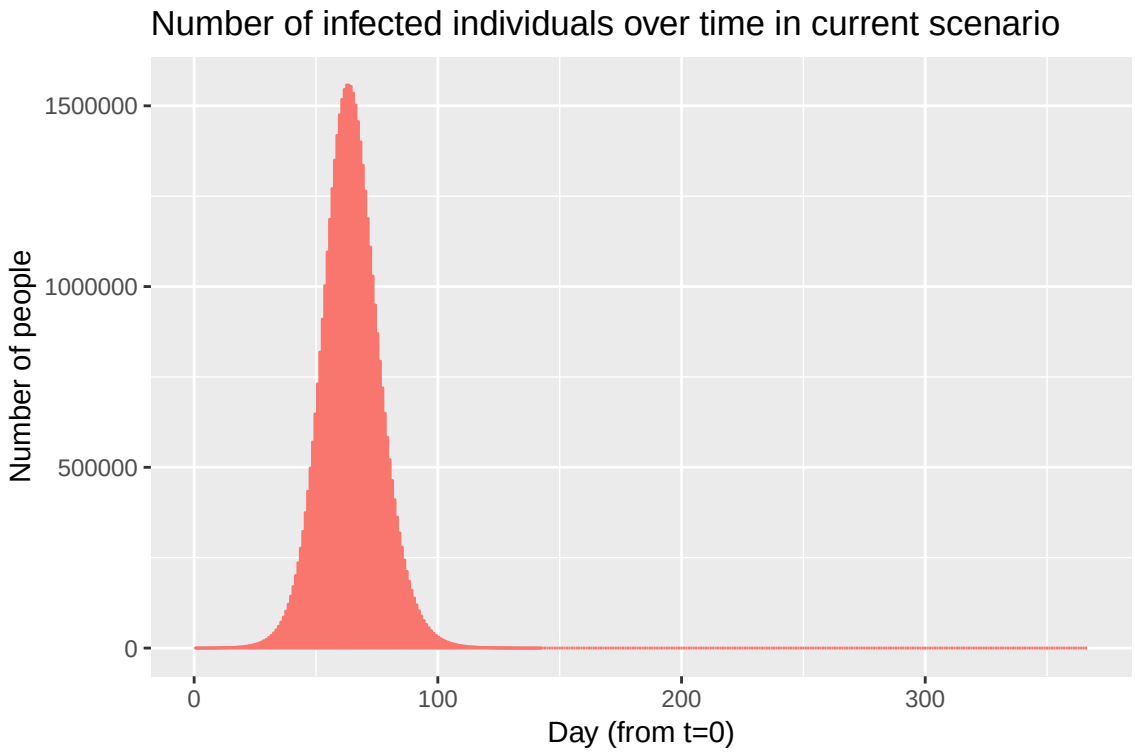
```r
longData <- melt(new_df, id = c("X1"))

#Order for purposes of chart
longData$variable <- factor(longData$variable,
                            levels = c("Susceptible", "Recovered","Exposed", "Infected", "Hospitalized"

#Override scientific notation default
options(scipen=10000)

# First chart - SEIR
ggplot(data=subset(longData, longData$variable %in% c("Susceptible", "Recovered","Exposed", "Infected"))
       aes(x=X1, y=value, fill=variable, color=variable, alpha=variable)) +
  geom_bar(stat="identity", position = "identity") +
  scale_colour_manual(values=c("lightblue4", "red", "gray94", "indianred4")) +
  scale_fill_manual(values=c("lightblue4", "red", "gray94", "indianred4")) +
  scale_alpha_manual(values=c(.4, .5, .6, .7, .8)) +
```

```
  xlab("Day (from t=0)") +
  ylab("Number of people") +
  ggtitle("Number of susceptible, exposed, infected, and recovered individuals over time in current scen
```



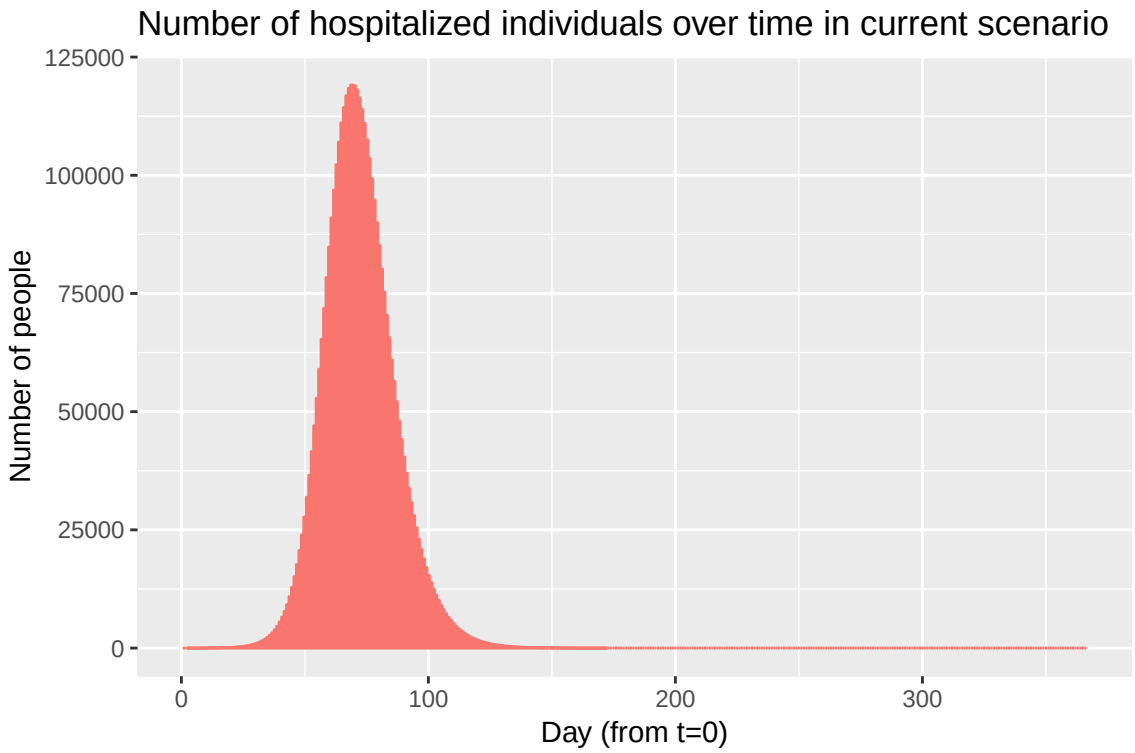
Curve for solely those infected

```
options(scipen=10000)

# Second chart - Infected
ggplot(data=subset(longData, longData$variable =="Infected"),
       aes(x=X1, y=value, fill="indianred4", color="indianred4", alpha=.8)) +
  geom_bar(stat="identity", position = "identity") +
  xlab("Day (from t=0)") +
  ylab("Number of people") +
  ggtitle("Number of infected individuals over time in current scenario")+
  theme(legend.position="none")
```



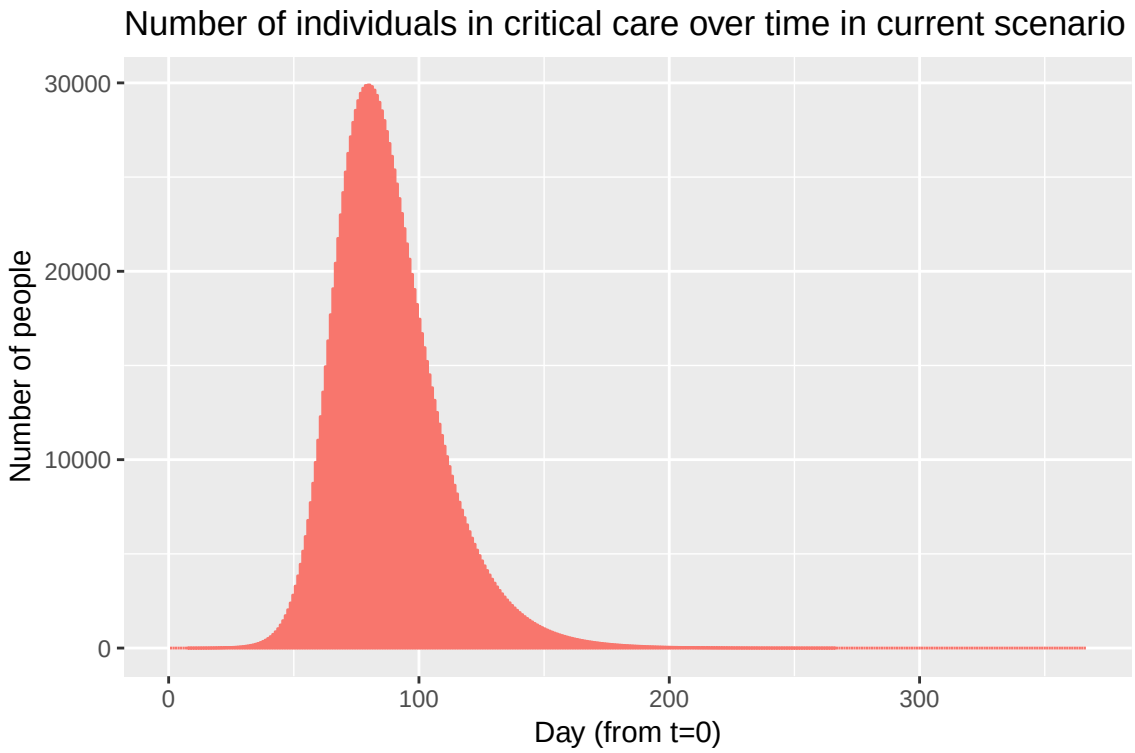
Curve for solely those hospitalized

```
options(scipen=10000)

# Second chart - Hospitalized
ggplot(data=subset(longData, longData$variable =="Hospitalized"),
       aes(x=X1, y=value, fill=variable, color=variable, alpha=.8)) +
  geom_bar(stat="identity", position = "identity") +
  xlab("Day (from t=0)") +
  ylab("Number of people") +
  ggtitle("Number of hospitalized individuals over time in current scenario")+
  theme(legend.position="none")
```



Curve for solely those in critical care

```
options(scipen=10000)

# Third chart - critical care
ggplot(data=subset(longData, longData$variable =="Critical"),
       aes(x=X1, y=value, fill=variable, color=variable, alpha=.8)) +
  geom_bar(stat="identity", position = "identity") +
  xlab("Day (from t=0)") +
  ylab("Number of people") +
  ggtitle("Number of individuals in critical care over time in current scenario")+
  theme(legend.position="none")
```


Number of individuals in critical care over time in current scenario
30000
20000
10000
0
Number of people
0
100
200
300
Day (from t=0)