epiChart

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Load data from the simulations

```r
#load + concatenate the csvs for each scenario
df_0_.25 <- list.files(path = "epi_csvs/0-0.25",full.names = TRUE) %>%
  lapply(read_csv) %>%
  bind_rows

df_30_.75 <- list.files(path = "epi_csvs/0-0.75",full.names = TRUE) %>%
  lapply(read_csv) %>%
  bind_rows

#create summary dataframe
new_df_0_.25 <- df_0_.25 %>%
  group_by(X1) %>%
  summarise(Susceptible = sum(S), Exposed = sum(E), Infected = sum(I), Recovered = sum(R), Hospitalized

new_df_30_.75 <- df_30_.75 %>%
  group_by(X1) %>%
  summarise(Susceptible = sum(S), Exposed = sum(E), Infected = sum(I), Recovered = sum(R), Hospitalized

#generate the TA-level summaries
summary_df_0_.25 <- df_0_.25 %>%
  group_by(TA, ID) %>%
  summarise(Population = max(POP), Incidences = max(R) + max(D), Recovered = max(R), Deaths = max(D), Po
write.csv(summary_df_0_.25, "new_summary_0-.25.csv")

summary_df_30_.8 <- df_30_.75 %>%
  group_by(TA, ID) %>%
  summarise(Population = max(POP), Incidences = max(R) + max(D), Recovered = max(R), Deaths = max(D), Po
write.csv(summary_df_30_.8, "new_summary_30-.8.csv")
```

Cross-check some total figures for first reduction set

```r
#Check figures for num susceptible
print(paste0("The number of susceptible individuals at t = 0 was: ", new_df_30_.75$Susceptible[1]))
```

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

```r
print(paste0("The number of susceptible individuals after one year was: ",new_df_30_.75$Susceptible[366]
```

```
## [1] "The number of susceptible individuals after one year was: 6448831.53644974"
```

```r
print(paste0("The total number of incidences was: ", new_df_30_.75$Susceptible[1] - new_df_30_.75$Suscep
```

```
## [1] "The total number of incidences was: 12957579.4635503"
```

```r
print(paste0("As a check, this should match: ", new_df_30_.75$Deaths[366] + new_df_30_.75$Recovered[366]
```

```
## [1] "As a check, this should match: 12957820.4447983"
```

```r
#Check figures for num exposed
print(paste0("The number of exposed individuals at t = 0 was: ", new_df_0_.25$Exposed[1]))
```

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

```r
print(paste0("The number of exposed individuals at the end of one year was: ", new_df_0_.25$Exposed[366]
```

```
## [1] "The number of exposed individuals at the end of one year was: 2.85095127095458e-14"
```

```r
print(paste0("The max. number of exposed individuals at one time was: ", max(new_df_0_.25$Exposed)))
```

```
## [1] "The max. number of exposed individuals at one time was: 51.1884620726731"
```

```r
#Check figures for num infected
print(paste0("The number of infected individuals at t = 0 was: ", new_df_30_.75$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_30_.75$Infected[3
```

```
## [1] "The number of infected individuals at the end of one year was: 1.52447213326816e-05"
```

```r
print(paste0("The max. number of infected individuals at one time was: ", max(new_df_30_.75$Infected)))
```

```
## [1] "The max. number of infected individuals at one time was: 751460.889857632"
```

```r
#Check figures for those hospitalized
print(paste0("The number of hospitalized individuals at t = 0 was: ", new_df_0_.25$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_0_.25$Hospita
```

```
## [1] "The number of hospitalized individuals at the end of one year was: 1.71607004438621e-14"
```

```r
print(paste0("The max. number of hospitalized individuals at one time was: ", max(new_df_0_.25$Hospitali
```

```
## [1] "The max. number of hospitalized individuals at one time was: 5.1246772067518"
```

```r
#Check figures for critical care
print(paste0("The number of individuals in critical care at t = 0 was: ", new_df_0_.25$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_0_.25$Cri
```

```
## [1] "The number of individuals in critical care at the end of one year was: 2.15788548045324e-09"
```

```r
print(paste0("The max. number of individuals in critical care at one time was: ", max(new_df_0_.25$Criti
```

```
## [1] "The max. number of individuals in critical care at one time was: 1.03689665916074"
```

Make charts

First, include all states of interest

```r
longData <- melt(new_df_0_.25, id = c("X1"))

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

#Override scientific notation default
```
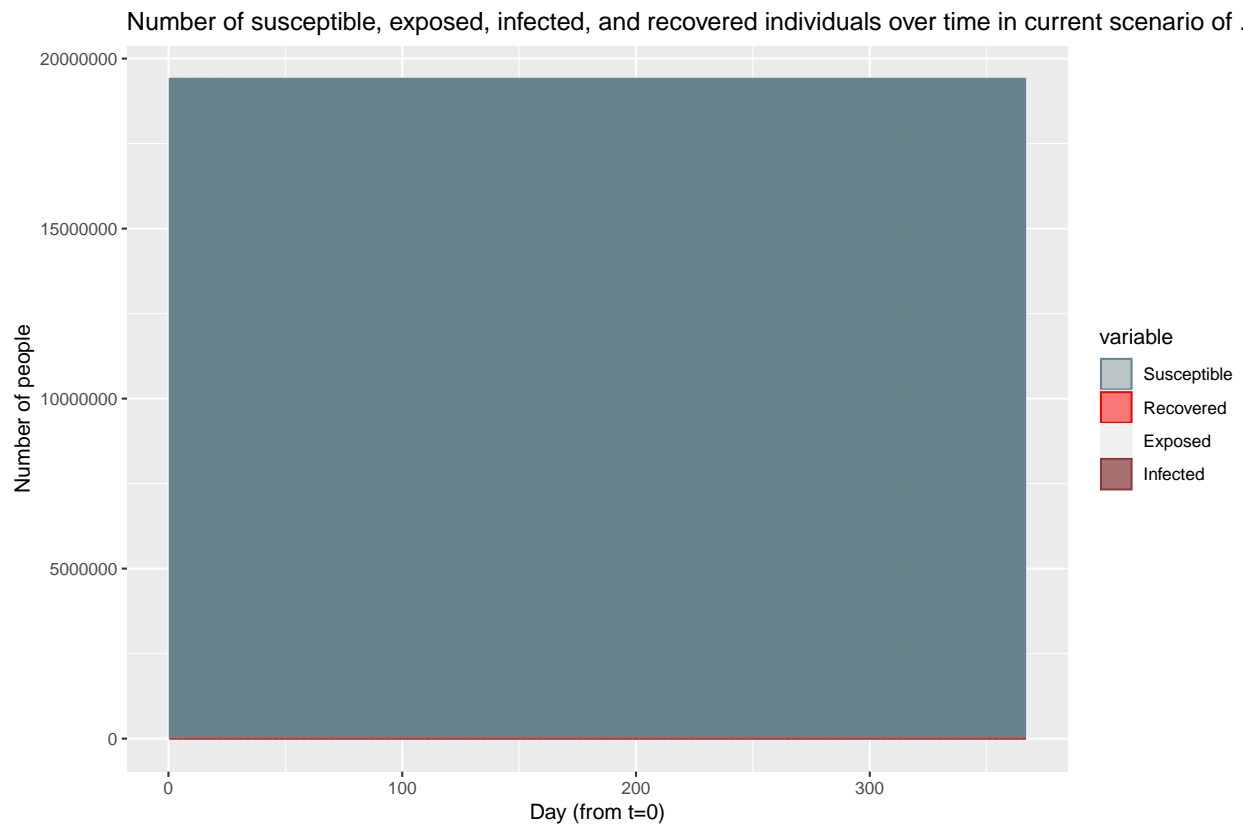
```
options(scipen=10000)

# 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 sce
```


Number of susceptible, exposed, infected, and recovered individuals over time in current scenario of .2

Make charts

First, include all states of interest

```
longData2 <- melt(new_df_30_.75, id = c("X1"))

#Order for purposes of chart
longData2$variable <- factor(longData$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"))
```
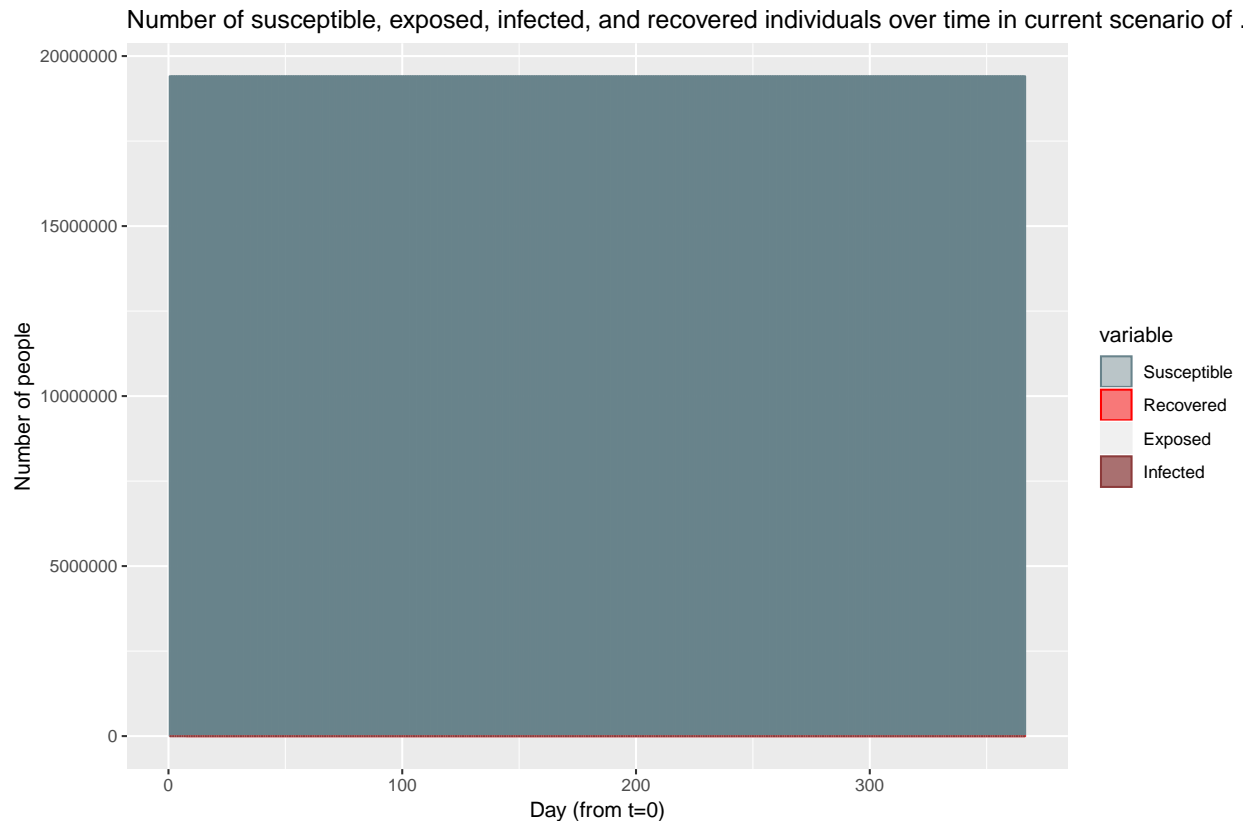
3

```
    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 scer
```


Number of susceptible, exposed, infected, and recovered individuals over time in current scenario of .8
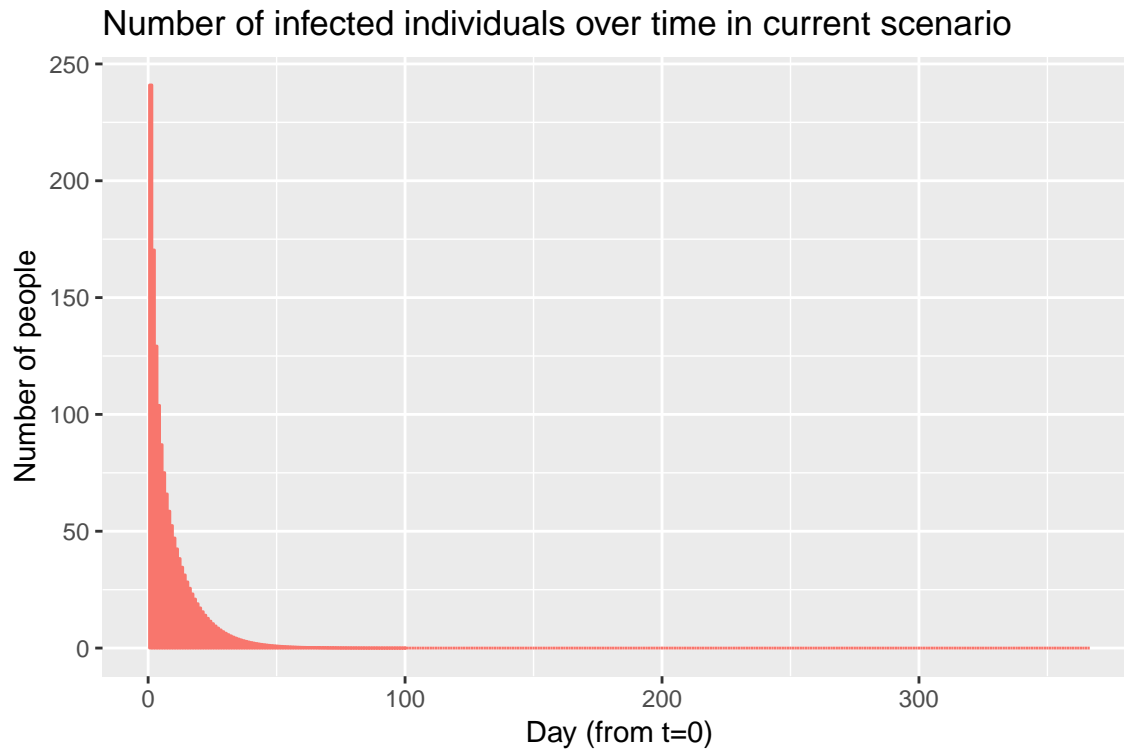
Curve for solely those infected

```
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")
```
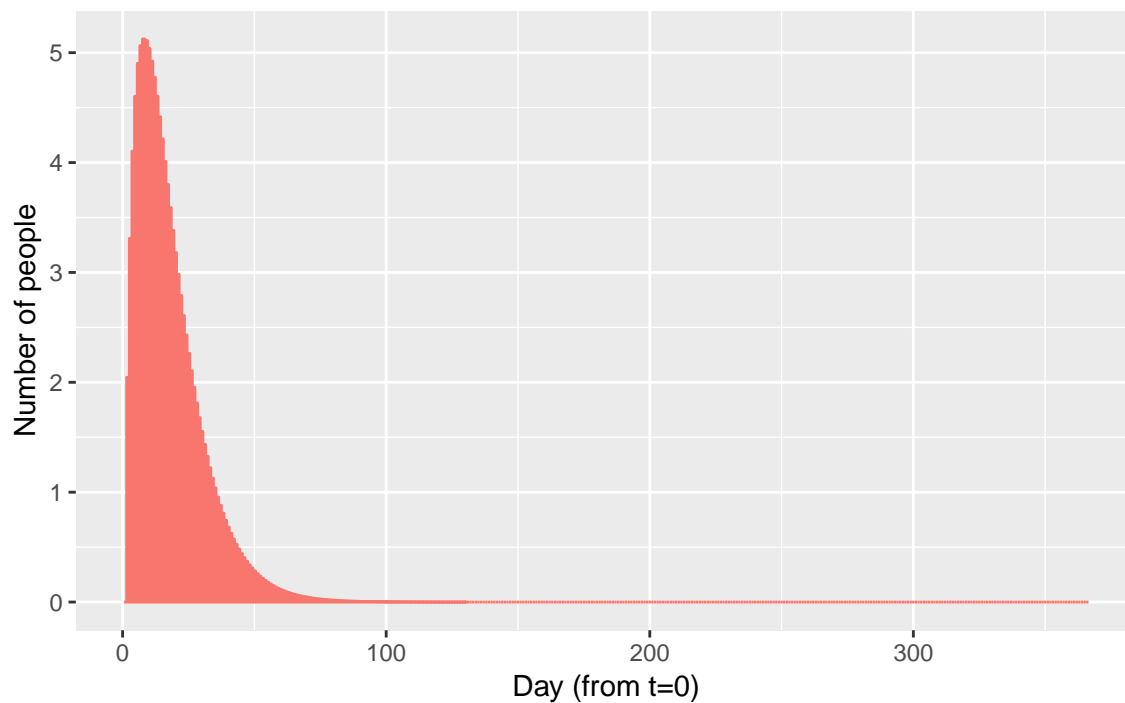
Number of infected individuals over time in current scenario

Curve for solely those hospitalized

```r
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")
```

Number of hospitalized individuals over time in current scenario

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