

Covid19

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En este estudio queremos tener una visión por escalas desde nuestra Comunidad Autónoma Aragón, pasando a nivel nacional para finalmente hacer un análisis internacional.

Queremos entender el virus, su comportamiento e incidencia por países y la visualización de datos de cada uno de ellos en el tiempo.

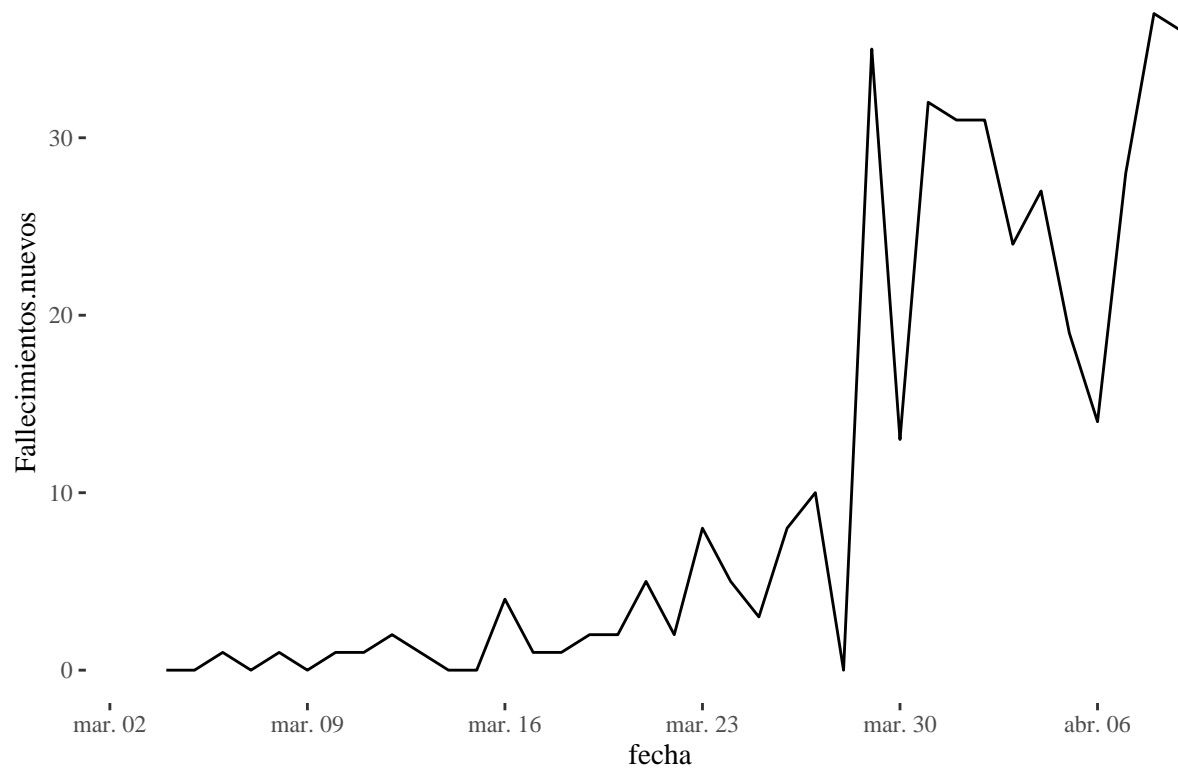
Lamentablemente nos centraremos en la mayor parte del estudio en los fallecidos que a pesar ## de proporcionar cifras con retraso, son más fiables que las de contagios detectados de los

que se estima que se detecta a nivel nacional una fracción inferior al 10%.

Veamos la evolución de fallecidos diarios en Aragón.

```
ggplot(covar,aes(x=fecha,y=Fallecimientos.nuevos),na.rm =TRUE)+geom_line()+theme_tufte()+  
  ggtitle( "Evolución de fallecidos diarios en Aragón")
```

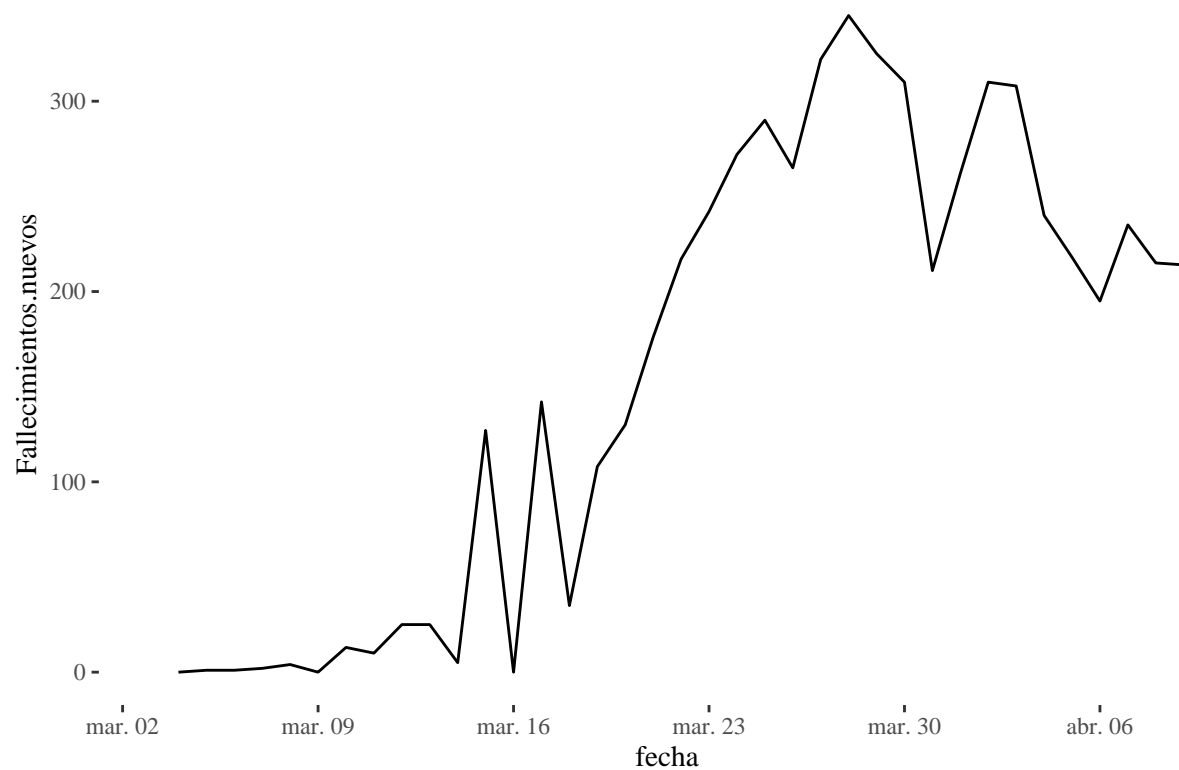
Evolución de fallecidos diarios en Aragón



Veamos a continuación la evolución fallecidos diarios en la Comunidad de Madrid.

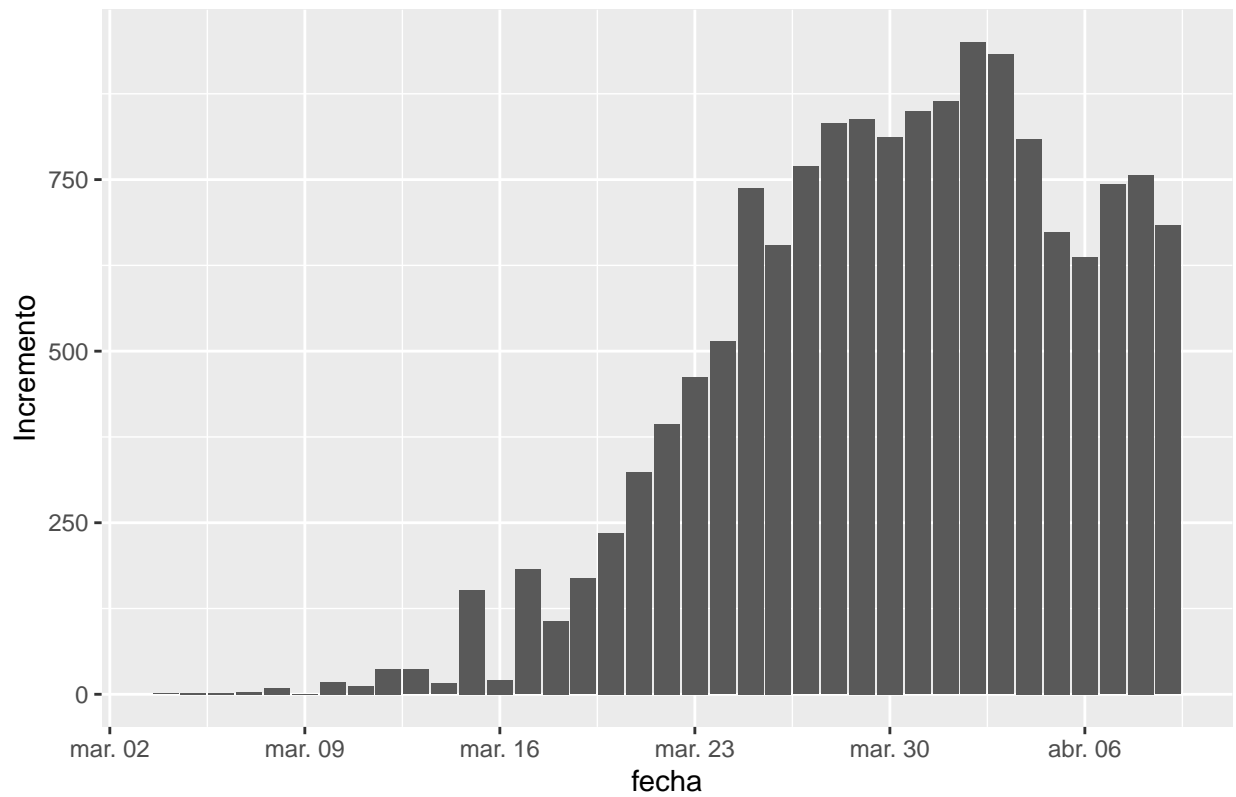
```
ggplot(covar,aes(x=fecha,y=Fallecimientos.nuevos),na.rm =TRUE)+geom_line()+theme_tufte()+  
ggtitle( "Fallecimientos diarios nuevos en la Comunidad de Madrid")
```

Fallecimientos diarios nuevos en la Comunidad de Madrid



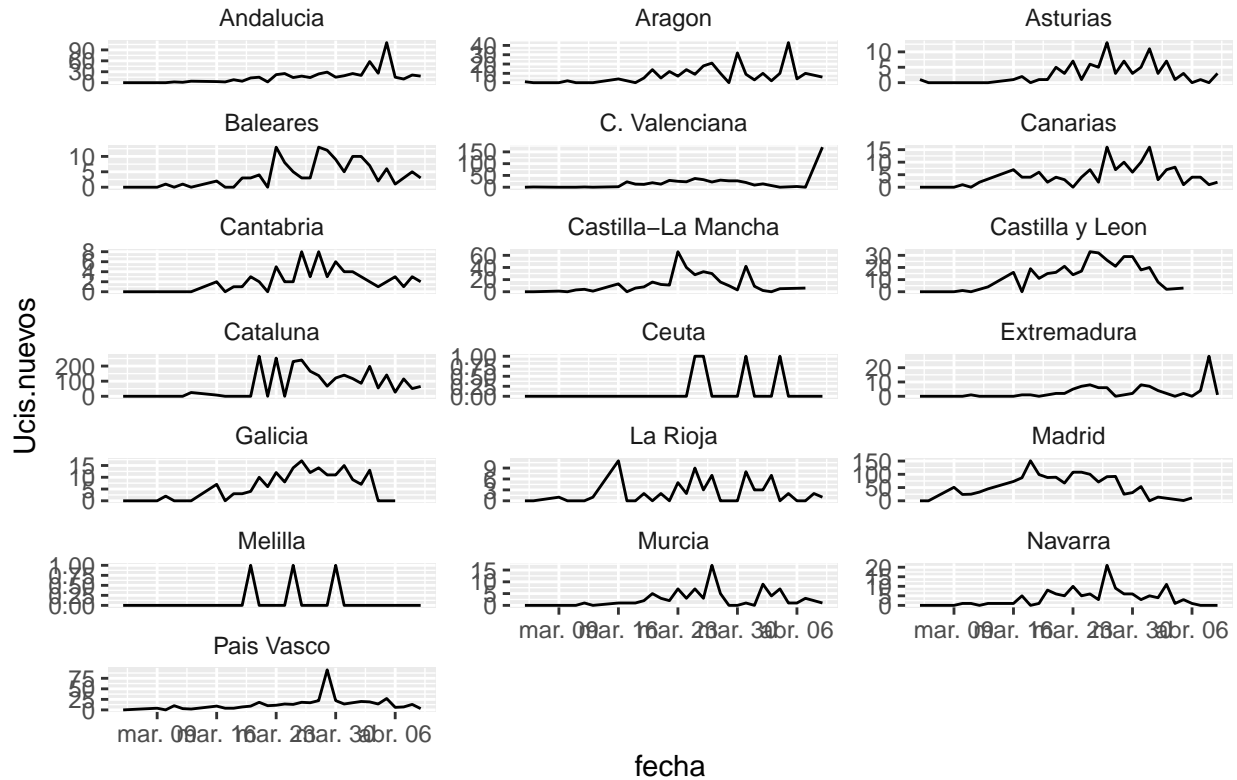
```
ccaa_covid19_fallecidos_long <- ccaa_covid19_fallecidos_long %>% filter( CCAA == "Total")
ggplot(data=ccaa_covid19_fallecidos_long, aes(x = fecha,y = Incremento)) +
  geom_bar(stat="identity", position="dodge")+
  ggtitle( "Fallecimientos diarios en España")
```

Fallecimientos diarios en España



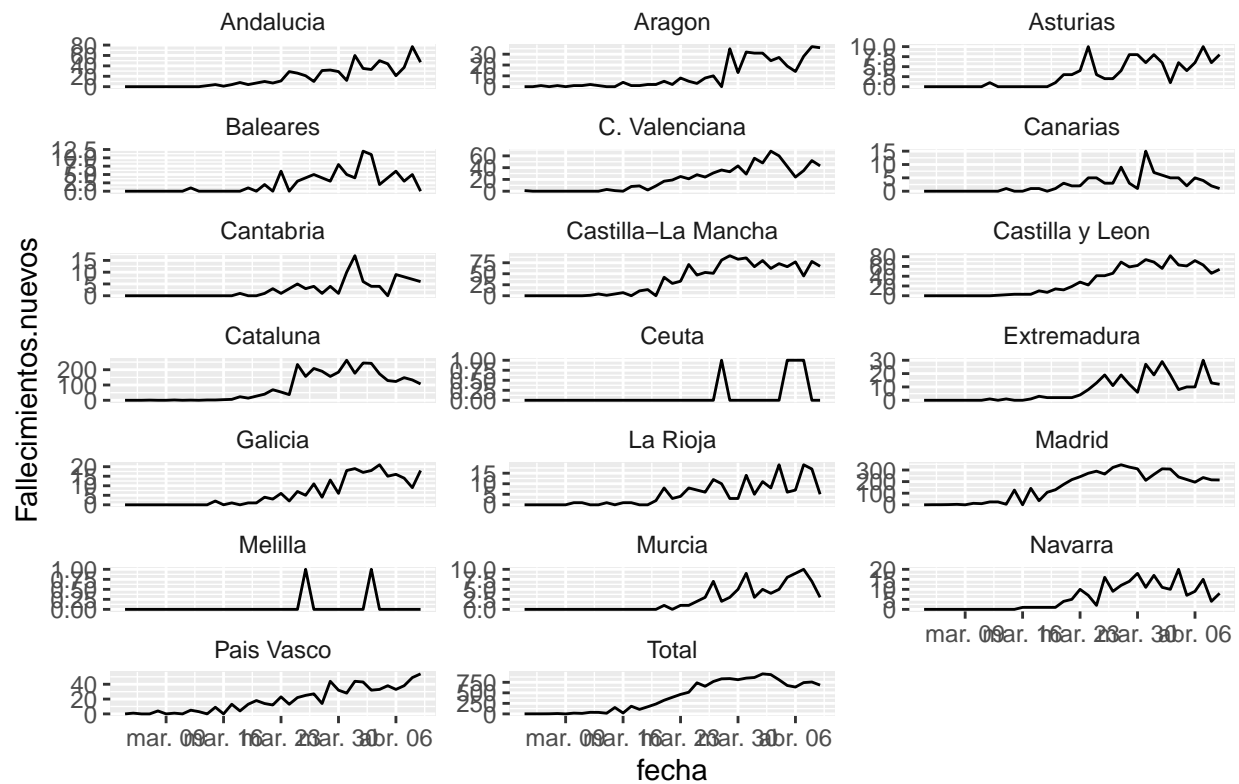
```
covca<-na.omit(covca)
ggplot(covca, aes(fecha,Ucis.nuevos,group = 1)) +
  geom_line() +
  facet_wrap(vars(CCAA), scales = "free_y", ncol = 3, strip.position = "top") +
  theme(strip.background = element_blank(), strip.placement = "outside")+
  ggtitle( "Ingresos Ucis diarios comparativa por Comunidades Autónomas")
```

Ingresos Ucis diarios comparativa por Comunidades Autónomas



```
covca<-na.omit(covca)
ggplot(covca, aes(fecha,Fallecimientos.nuevos,group = 1)) +
  geom_line() +
  facet_wrap(vars(CCAA), scales = "free_y", ncol = 3, strip.position = "top") +
  theme(strip.background = element_blank(), strip.placement = "outside")+
  ggtitle( "Fallecimientos diarios comparativa por Comunidades Autónomas y Total")
```

Fallecimientos diarios comparativa por Comunidades Autónomas y Total

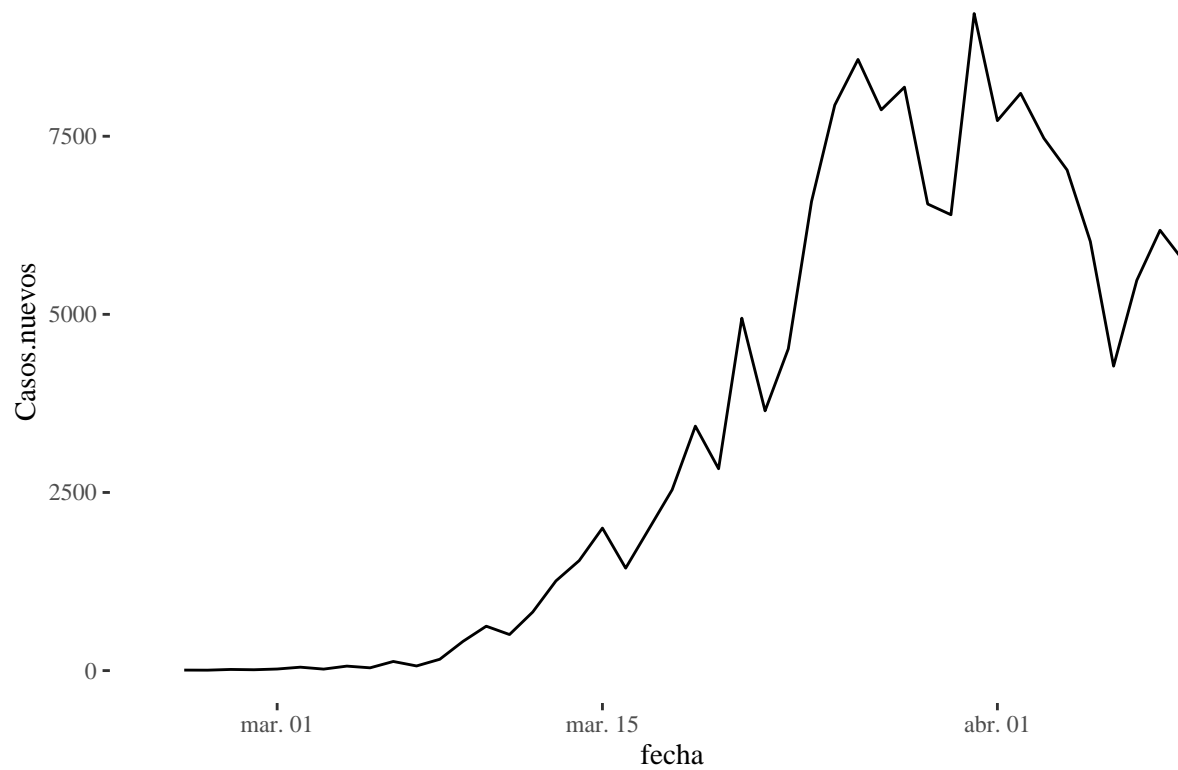


Ahora continuaremos con el analisis a nivel nacional.

Nuevos casos diarios a nivel nacional.

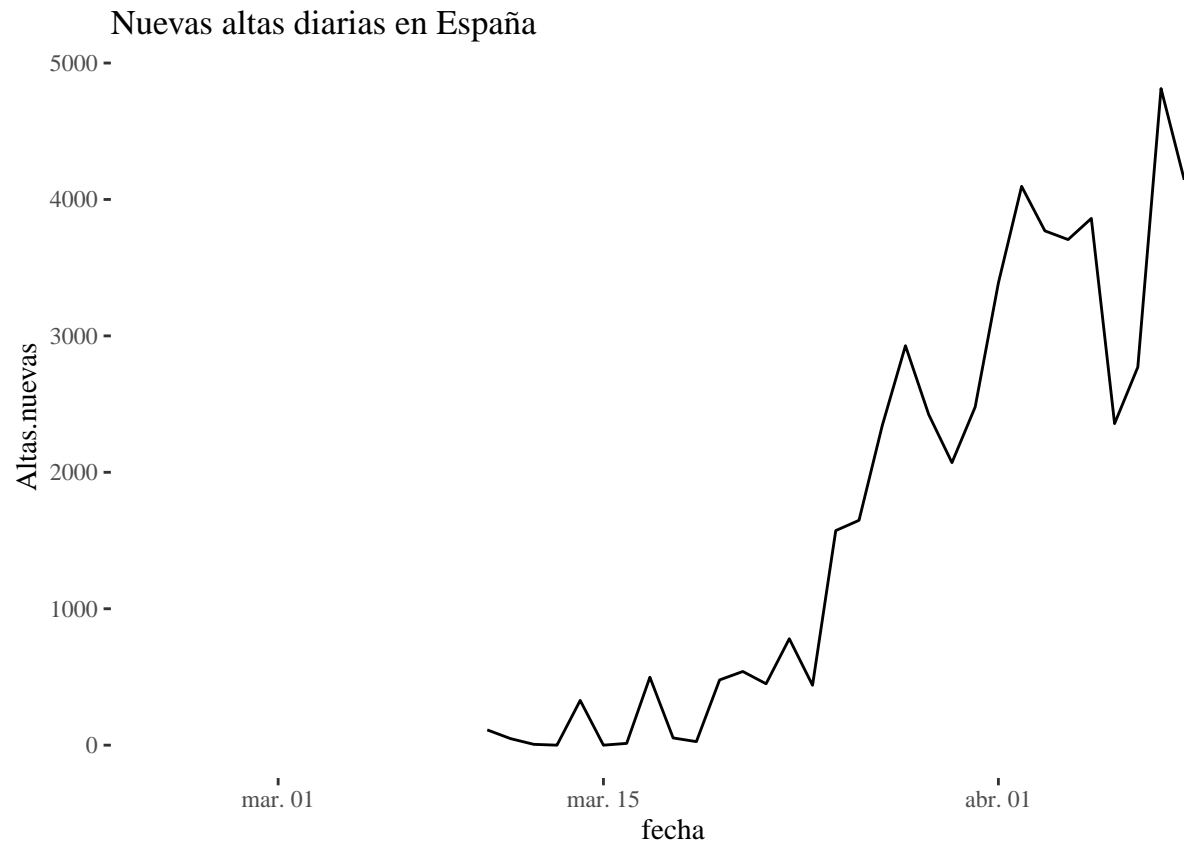
```
ggplot(covsp, aes(x=fecha, y=Casos.nuevos), na.rm = TRUE) + geom_line() + theme_tufte() +
  ggtitle("Nuevos casos diarios a nivel nacional")
```

Nuevos casos diarios a nivel nacional



Las nuevas altas diarias en España.

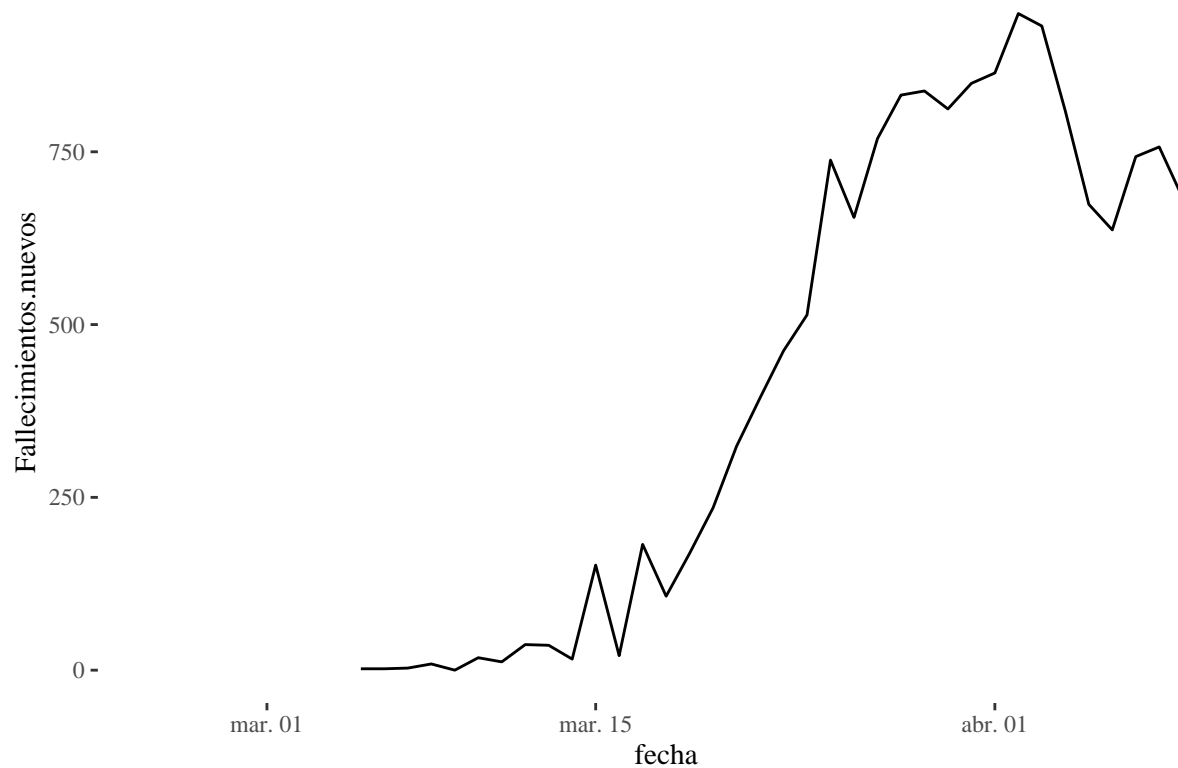
```
ggplot(covsp,aes(x=fecha,y=Altas.nuevas),na.rm = TRUE)+geom_line()+theme_tufte()+  
ggtitle( "Nuevas altas diarias en España")
```



Los nuevos fallecimientos por día España.

```
ggplot(covsp,aes(x=fecha,y=Fallecimientos.nuevos),na.rm = TRUE)+geom_line()+theme_tufte()+  
ggtitle( "Nuevos fallecimientos por día España")
```

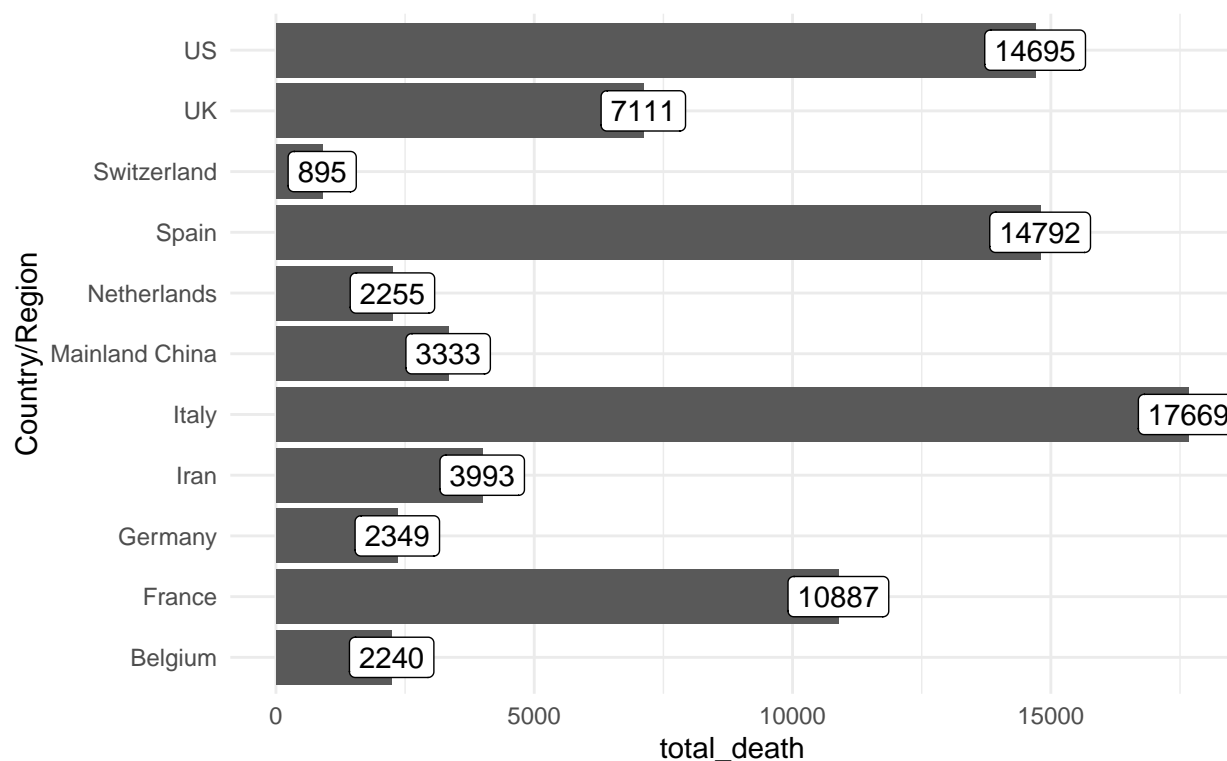

Nuevos fallecimientos por día España



Fallecidos por países.

```
corona28 <- corona_latest
corona28_country <- corona28 %>%
group_by(`Country/Region`) %>%
summarize(total_death = sum(Deaths),
          total_recovered = sum(Recovered),
          total_confirmed = sum(Confirmed)) %>%
mutate(recovery_rate = round(total_recovered / total_confirmed,2))
corona28_country %>%
filter(!`Country/Region` %in% 'Others') %>%
arrange(desc(total_death)) %>%
head(11) %>%
ggplot() + geom_bar(aes(`Country/Region`, total_death), stat = "identity") +
geom_label(aes(`Country/Region`, total_death, label = total_death)) +
coord_flip() +
theme_minimal() +
labs(title = "Principales países por total de casos fallecidos",
     caption = "Fuente: Kaggle")
```

Principales países por total de casos fallecidos



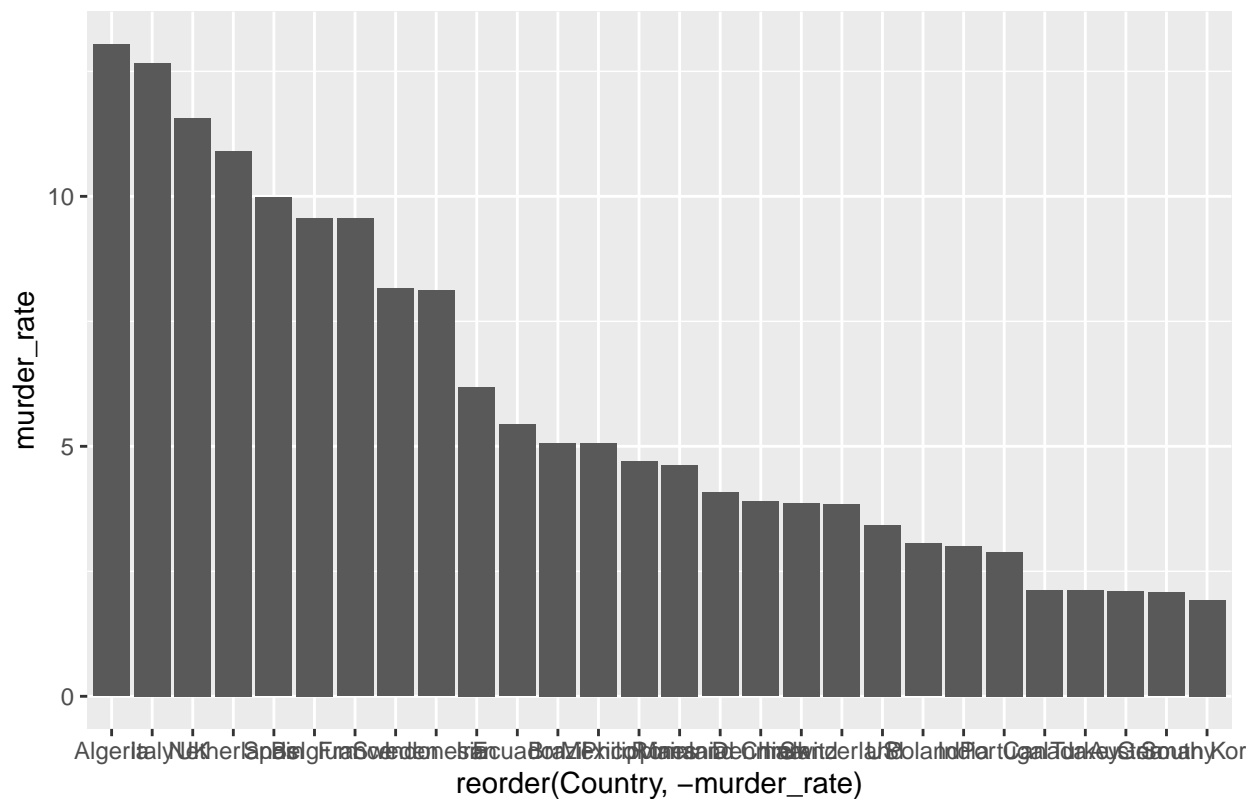
Fuente: Kaggle

```
filtered <- filter(df, df$Date==max(df$Date)) %>% group_by(Country) %>%
summarise(Confirmed = sum(Confirmed) , Deaths = sum(Deaths) , Recovered = sum(Recovered))
murder_rate <- filtered$Deaths / filtered$Confirmed * 100
filtered$murder_rate <- murder_rate
filtered<- filtered%>% filter (Deaths >= 136)
filtered <- filtered[order(filtered$murder_rate,decreasing = TRUE),]
filtered[0:10,]
```

```
## # A tibble: 10 x 5
##   Country      Confirmed Deaths Recovered murder_rate
##   <fct>         <dbl>   <dbl>     <dbl>     <dbl>
## 1 Algeria         1572     205       237       13.0
## 2 Italy          139422   17669    26491      12.7
## 3 UK              61474    7111      345       11.6
## 4 Netherlands    20682    2255      272       10.9
## 5 Spain          148220   14792   48021       9.98
## 6 Belgium         23403    2240     4681       9.57
## 7 France          113959   10887   21452       9.55
## 8 Sweden           8419     687       205       8.16
## 9 Indonesia        2956     240        222      8.12
## 10 Iran           64586    3993   29812       6.18
```

```
ggplot(data=filtered, aes(x=reorder(Country,-murder_rate), y=murder_rate)) +
  geom_bar(stat="identity", position="dodge")+
  ggtitle("Letalidad por país")
```

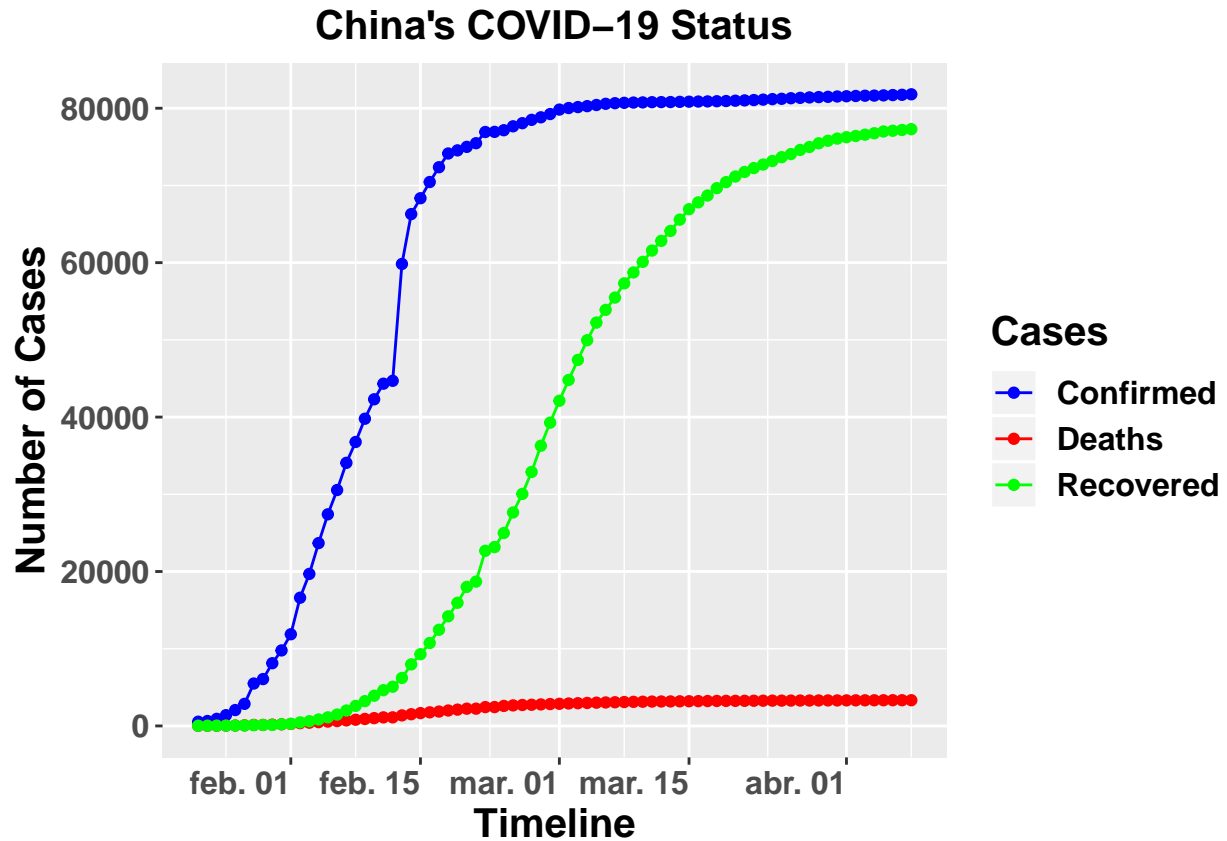
Letalidad por país



```
China <- filter(df, Country == "Mainland China") %>% group_by(Date) %>%
summarise(Confirmed = sum(Confirmed) , Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))

#Line Plot
China_plot<- ggplot(China, aes(x= Date, y= Count ,fill = Cases, color = Cases , group=Cases ))+
  geom_line(aes(colour = Cases))+geom_point()+
  scale_fill_manual(values = c("blue","red","green"))+scale_colour_manual(values = c("blue","red","green"))+
  labs(x="Timeline", y="Number of Cases", title = "China's COVID-19 Status", fill = 'Cases')+
  theme( plot.title = element_text(hjust = 0.5 , face = "bold", size = 15),
        text = element_text(hjust = 1, face = "bold", size = 15),
        axis.title.x = element_text(hjust = 0.5),
        axis.title.y = element_text(hjust = 0.5))

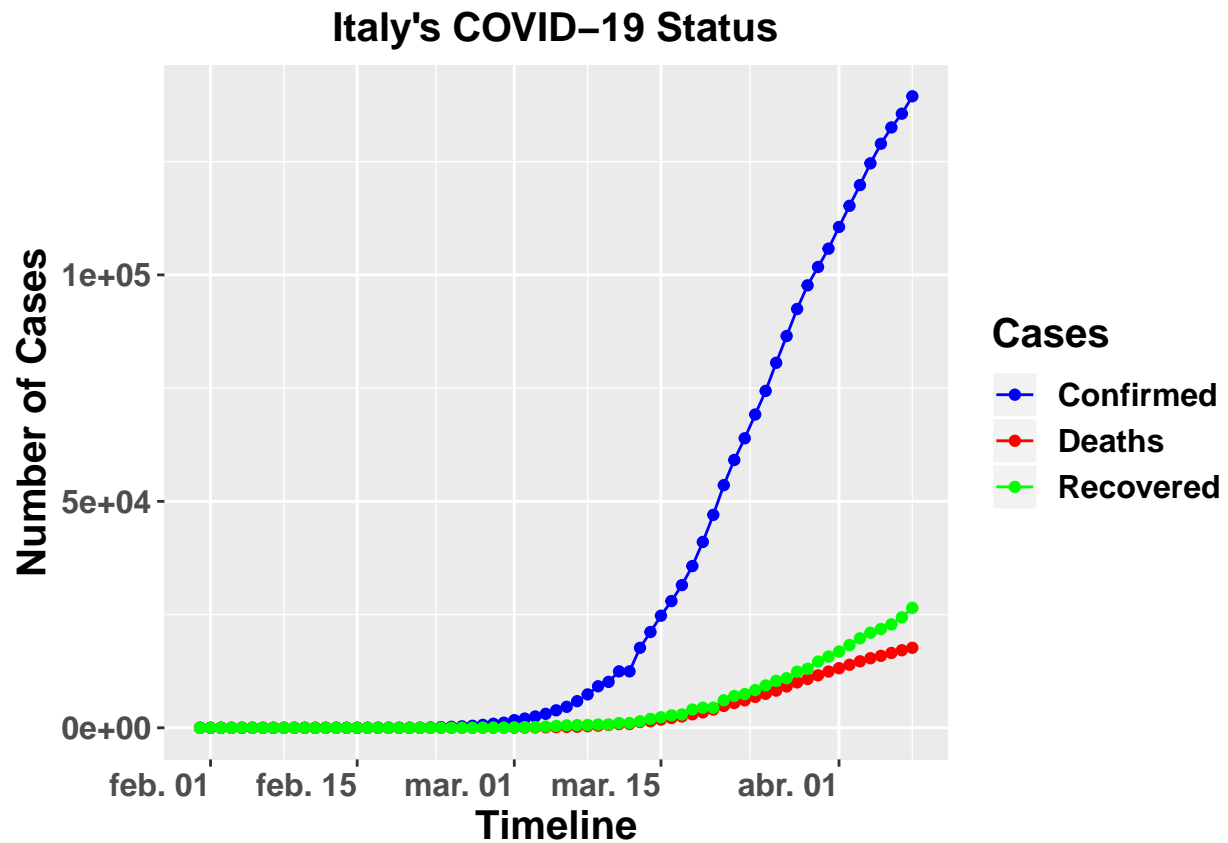
China_plot
```



```
italy <- filter(df, Country == "Italy") %>% group_by(Date) %>%
  summarise(Confirmed = sum(Confirmed), Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
  gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))

#Line Plot
Italy_plot <- ggplot(italy, aes(x= Date, y= Count, fill = Cases, color = Cases, group=Cases)) +
  geom_line(aes(colour = Cases)) + geom_point() +
  scale_fill_manual(values = c("blue", "red", "green")) + scale_colour_manual(values = c("blue", "red", "green")) +
  labs(x="Timeline", y="Number of Cases", title = "Italy's COVID-19 Status", fill = 'Cases') +
  theme(plot.title = element_text(hjust = 0.5, face = "bold", size = 15),
        text = element_text(hjust = 1, face = "bold", size = 15),
        axis.title.x = element_text(hjust = 0.5),
        axis.title.y = element_text(hjust = 0.5))

Italy_plot
```

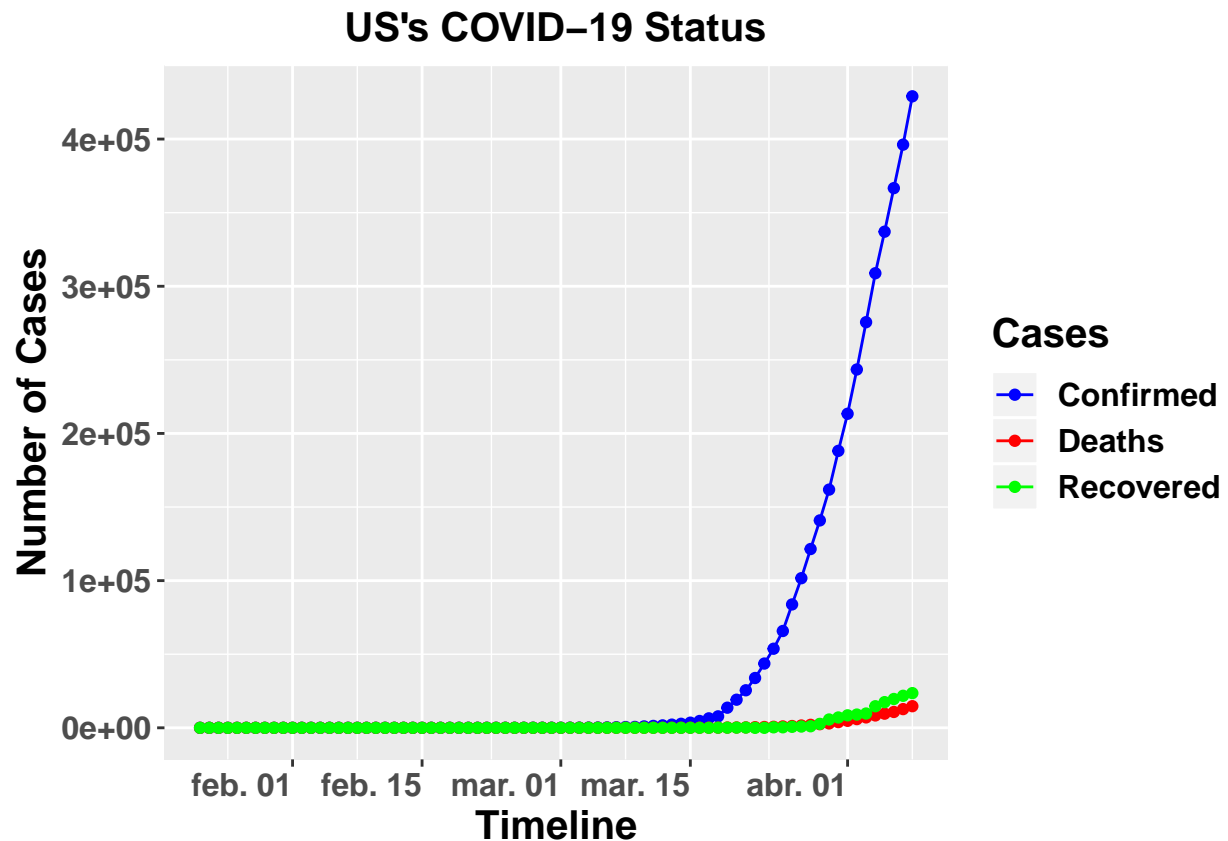


```
US <- filter(df, Country == "US") %>% group_by(Date) %>%
  summarise(Confirmed = sum(Confirmed), Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
  gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))
```

#Line Plot

```
US_plot <- ggplot(US, aes(x= Date, y= Count ,fill = Cases, color = Cases , group=Cases ))+
  geom_line(aes(colour = Cases))+geom_point()+
  scale_fill_manual(values = c("blue","red","green"))+scale_colour_manual(values = c("blue","red","green"))+
  labs(x="Timeline", y="Number of Cases", title = "US's COVID-19 Status", fill = 'Cases')+
  theme( plot.title = element_text(hjust = 0.5 , face = "bold", size = 15),
        text = element_text(hjust = 1, face = "bold", size = 15),
        axis.title.x = element_text(hjust = 0.5),
        axis.title.y = element_text(hjust = 0.5))
```

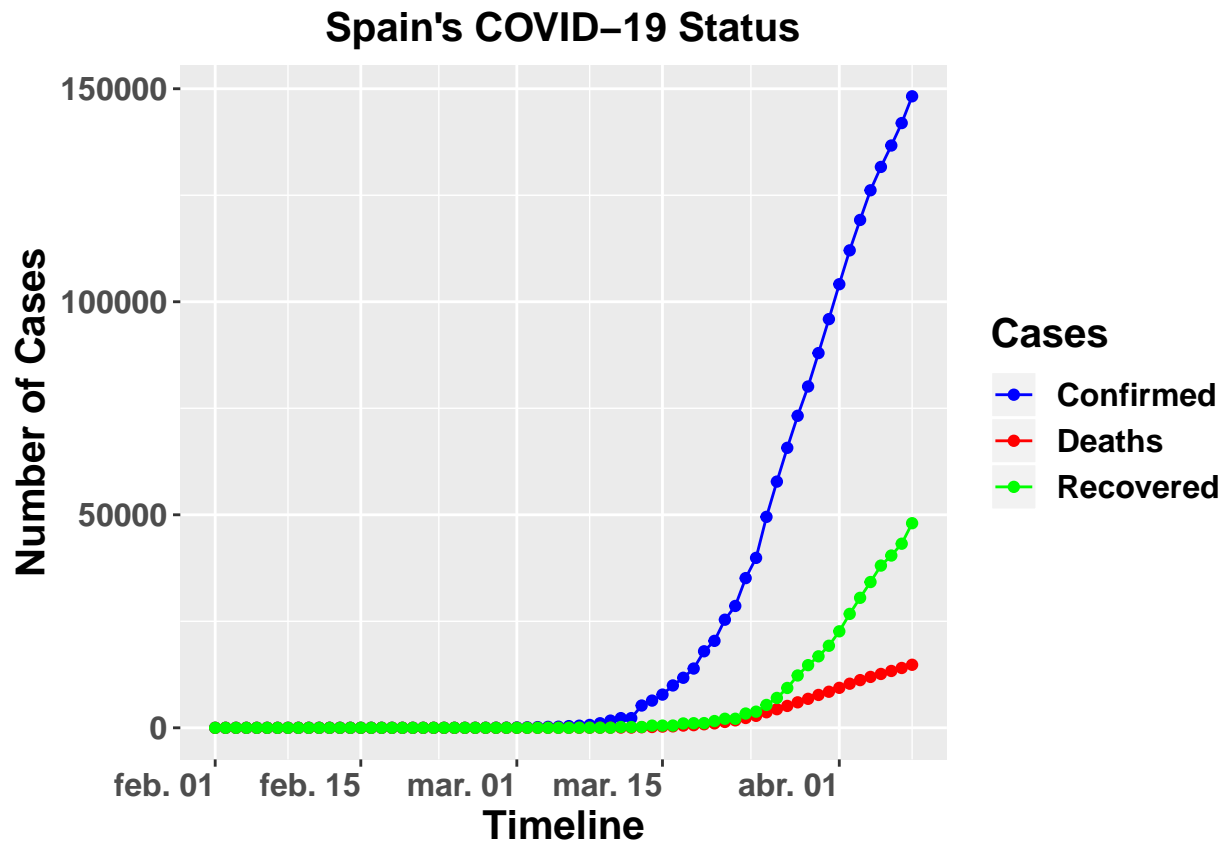
```
US_plot
```



```
Spain <- filter(df, Country == "Spain") %>% group_by(Date) %>%
  summarise(Confirmed = sum(Confirmed), Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
  gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))

#Line Plot
Spain_plot <- ggplot(Spain, aes(x= Date, y= Count ,fill = Cases, color = Cases , group=Cases ))+
  geom_line(aes(colour = Cases))+geom_point()+
  scale_fill_manual(values = c("blue","red","green"))+scale_colour_manual(values = c("blue","red","green"))+
  labs(x="Timeline", y="Number of Cases", title = "Spain's COVID-19 Status", fill = 'Cases')+
  theme( plot.title = element_text(hjust = 0.5 , face = "bold", size = 15),
        text = element_text(hjust = 1, face = "bold", size = 15),
        axis.title.x = element_text(hjust = 0.5),
        axis.title.y = element_text(hjust = 0.5))

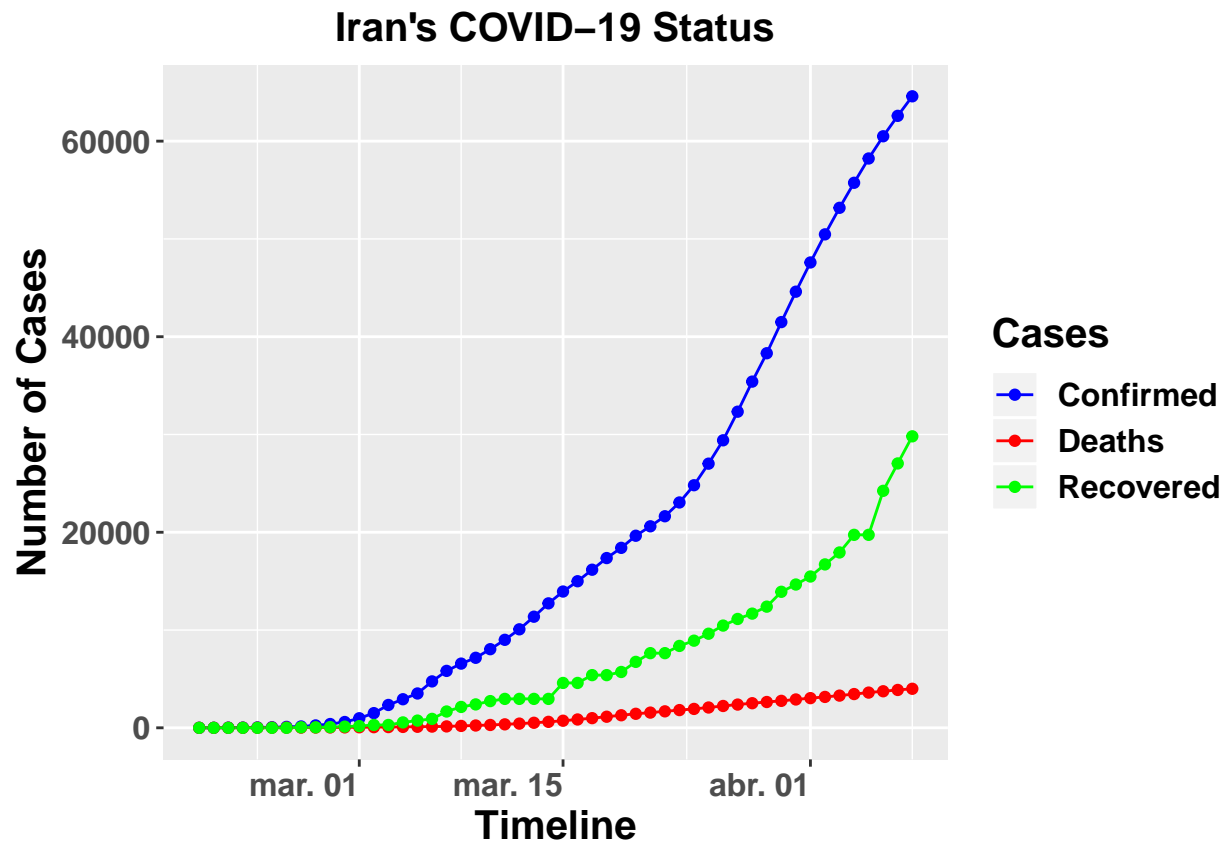
Spain_plot
```



```
Iran <- filter(df, Country == "Iran") %>% group_by(Date) %>%
summarise(Confirmed = sum(Confirmed) , Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))

#Line Plot
Iran_plot <- ggplot(Iran, aes(x= Date, y= Count ,fill = Cases, color = Cases , group=Cases ))+
  geom_line(aes(colour = Cases))+geom_point()+
  scale_fill_manual(values = c("blue","red","green"))+scale_colour_manual(values = c("blue","red","green"))+
  labs(x="Timeline", y="Number of Cases", title = "Iran's COVID-19 Status", fill = 'Cases')+
  theme( plot.title = element_text(hjust = 0.5 , face = "bold", size = 15),
        text = element_text(hjust = 1, face = "bold", size = 15),
        axis.title.x = element_text(hjust = 0.5),
        axis.title.y = element_text(hjust = 0.5))

Iran_plot
```

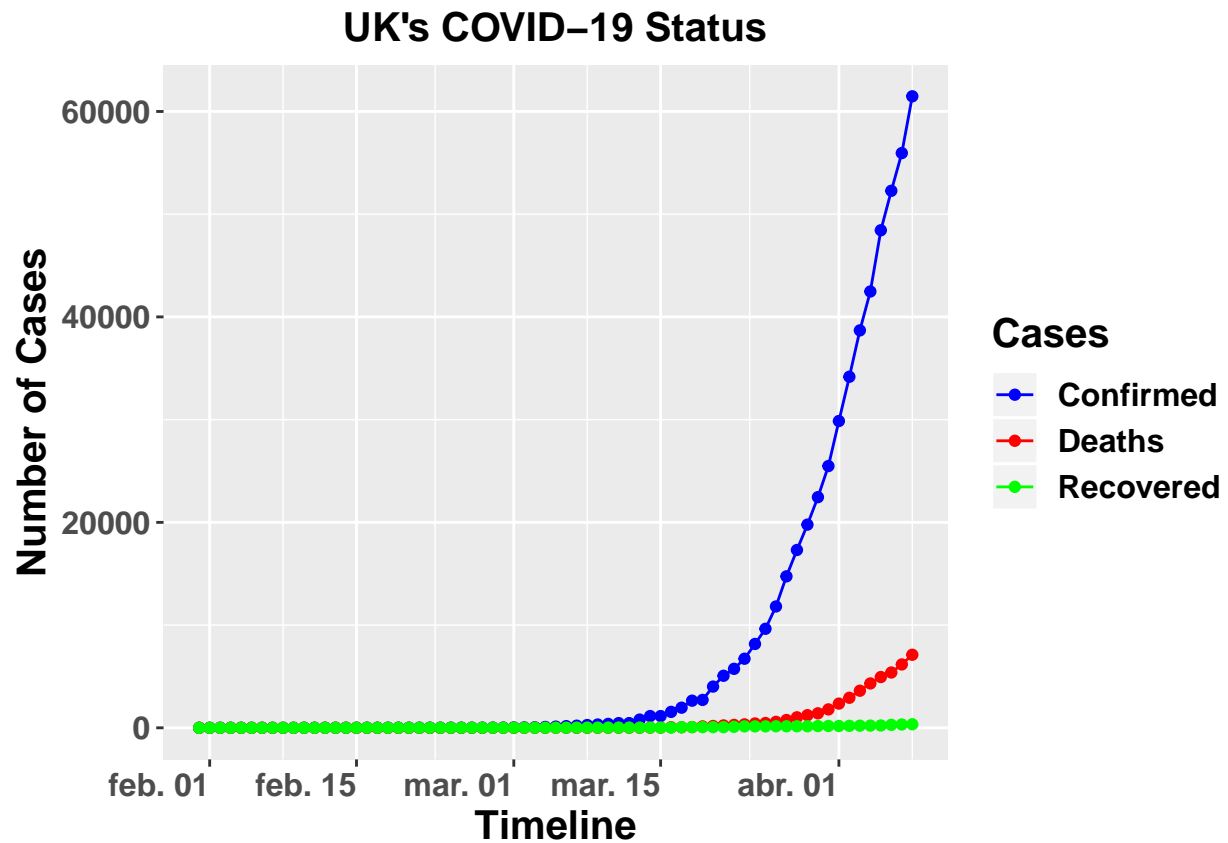


```
UK <- filter(df, Country == "UK") %>% group_by(Date) %>%
  summarise(Confirmed = sum(Confirmed), Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
  gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))
```

#Line Plot

```
UK_plot <- ggplot(UK, aes(x= Date, y= Count ,fill = Cases, color = Cases , group=Cases ))+
  geom_line(aes(colour = Cases))+geom_point()+
  scale_fill_manual(values = c("blue","red","green"))+scale_colour_manual(values = c("blue","red","green"))+
  labs(x="Timeline", y="Number of Cases", title = "UK's COVID-19 Status", fill = 'Cases')+
  theme( plot.title = element_text(hjust = 0.5 , face = "bold", size = 15),
    text = element_text(hjust = 1, face = "bold", size = 15),
    axis.title.x = element_text(hjust = 0.5),
    axis.title.y = element_text(hjust = 0.5))
```

```
UK_plot
```

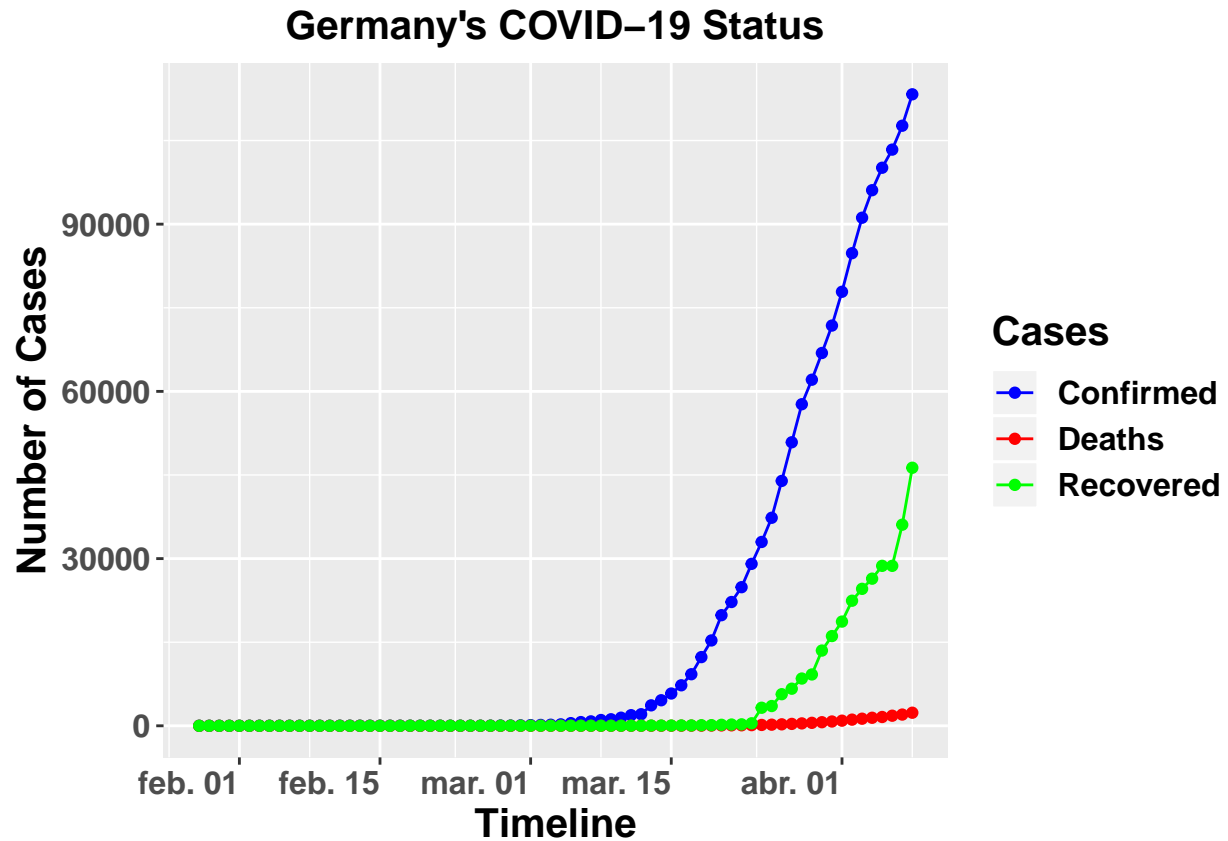



```
Germany <- filter(df, Country == "Germany") %>% group_by(Date) %>%
summarise(Confirmed = sum(Confirmed) , Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))
```

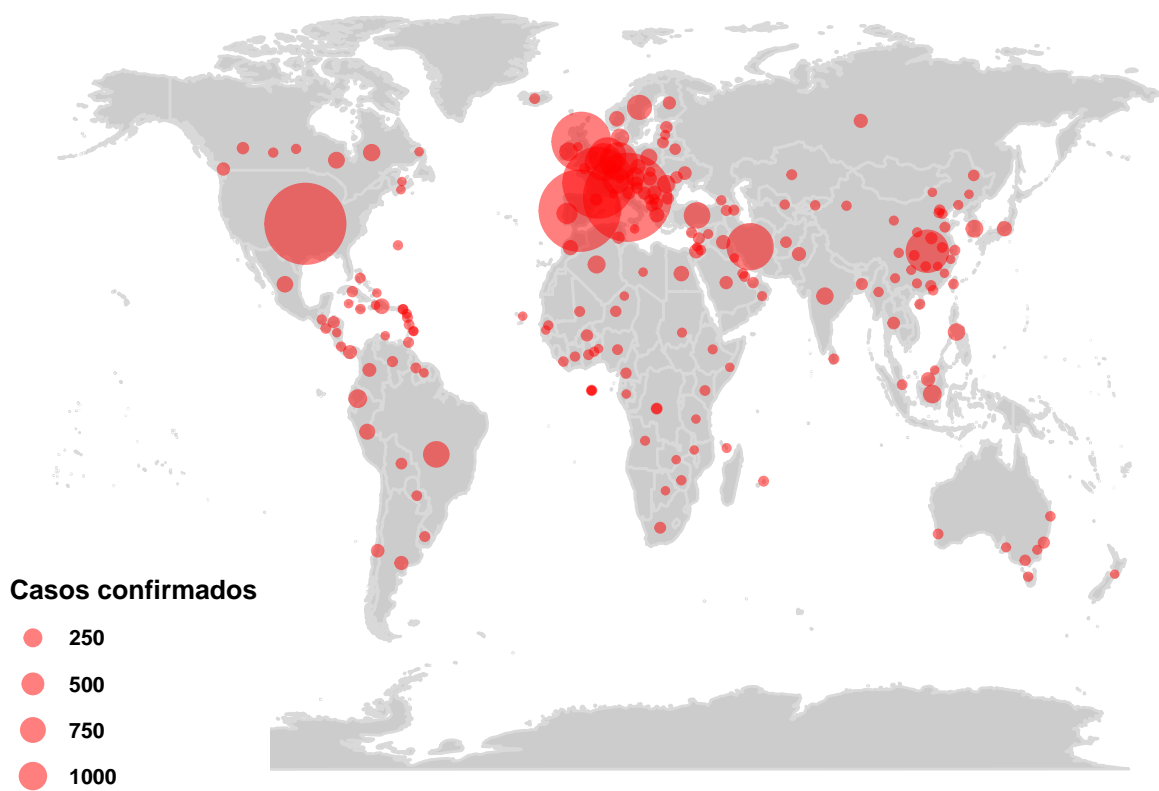
#Line Plot

```
Germany_plot <- ggplot(Germany, aes(x= Date, y= Count ,fill = Cases, color = Cases , group=Cases ))+
  geom_line(aes(colour = Cases))+geom_point()+
  scale_fill_manual(values = c("blue","red","green"))+scale_colour_manual(values = c("blue","red","green"))+
  labs(x="Timeline", y="Number of Cases", title = "Germany's COVID-19 Status", fill = 'Cases')+
  theme( plot.title = element_text(hjust = 0.5 , face = "bold", size = 15),
        text = element_text(hjust = 1, face = "bold", size = 15),
        axis.title.x = element_text(hjust = 0.5),
        axis.title.y = element_text(hjust = 0.5))
```

Germany_plot



```
data <- filter(df_deaths,df_deaths[,ncol(df_deaths)]>0)
world <- ggplot() +
  borders("world", colour = "gray85", fill = "gray80") +theme_map()
map_death <- world +
  geom_point(aes(x = data$Long, y = data$Lat, size = as.integer(unlist(data[,ncol(df_deaths)]))),
    data = data,
    colour = 'red', alpha = .5) +
  scale_size_continuous(range = c(1, 15),
    breaks = c(250, 500, 750, 1000)) +
  labs(size = 'Casos confirmados')+ theme( plot.title = element_text(hjust = 0.5 , face = "bold", size = 10),
    text = element_text(hjust = 1,face = "bold", size = 10))
map_death
```



Links

Gracias especialmente a datadista por mantener base de datos actualizada del

Ministerio de Sanidad.

Enlaces a bases de datos.

https://www.kaggle.com/sudalairajkumar/novel-corona-virus-2019-dataset/download/uMF6QnlPB7ScS6BxTw1I%2Fversions%2FXDJvWcErFIHv3R7zGrDD%2Ffiles%2Ftime__19__data.csv?datasetVersionNumber=56

https://www.kaggle.com/sudalairajkumar/novel-corona-virus-2019-dataset/download/uMF6QnlPB7ScS6BxTw1I%2Fversions%2FXDJvWcErFIHv3R7zGrDD%2Ffiles%2Ftime__series__covid__19__confirmed.csv?datasetVersionNumber=56

https://www.kaggle.com/sudalairajkumar/novel-corona-virus-2019-dataset/download/uMF6QnlPB7ScS6BxTw1I%2Fversions%2FXDJvWcErFIHv3R7zGrDD%2Ffiles%2Ftime__series__covid__19__deaths.csv?datasetVersionNumber=56

https://www.kaggle.com/sudalairajkumar/novel-corona-virus-2019-dataset/download/uMF6QnlPB7ScS6BxTw1I%2Fversions%2FXDJvWcErFIHv3R7zGrDD%2Ffiles%2Ftime__series__covid__19__recovered.csv?datasetVersionNumber=56

https://raw.githubusercontent.com/datadista/datasets/master/COVID%2019/ccaa__covid19__fallecidos__long.csv

https://raw.githubusercontent.com/datadista/datasets/master/COVID%2019/ccaa__covid19__fallecidos__long.csv

- Map tracks coronavirus outbreak in near real time
- Coronavirus COVID-19 Global Cases by Johns Hopkins CSSE
- Coronavirus disease (COVID-19) outbreak - WHO
- coronavirus R package provides a tidy format dataset
- An AI Epidemiologist Sent the First Warnings of the Wuhan Virus