

Covid19

David Jimeno

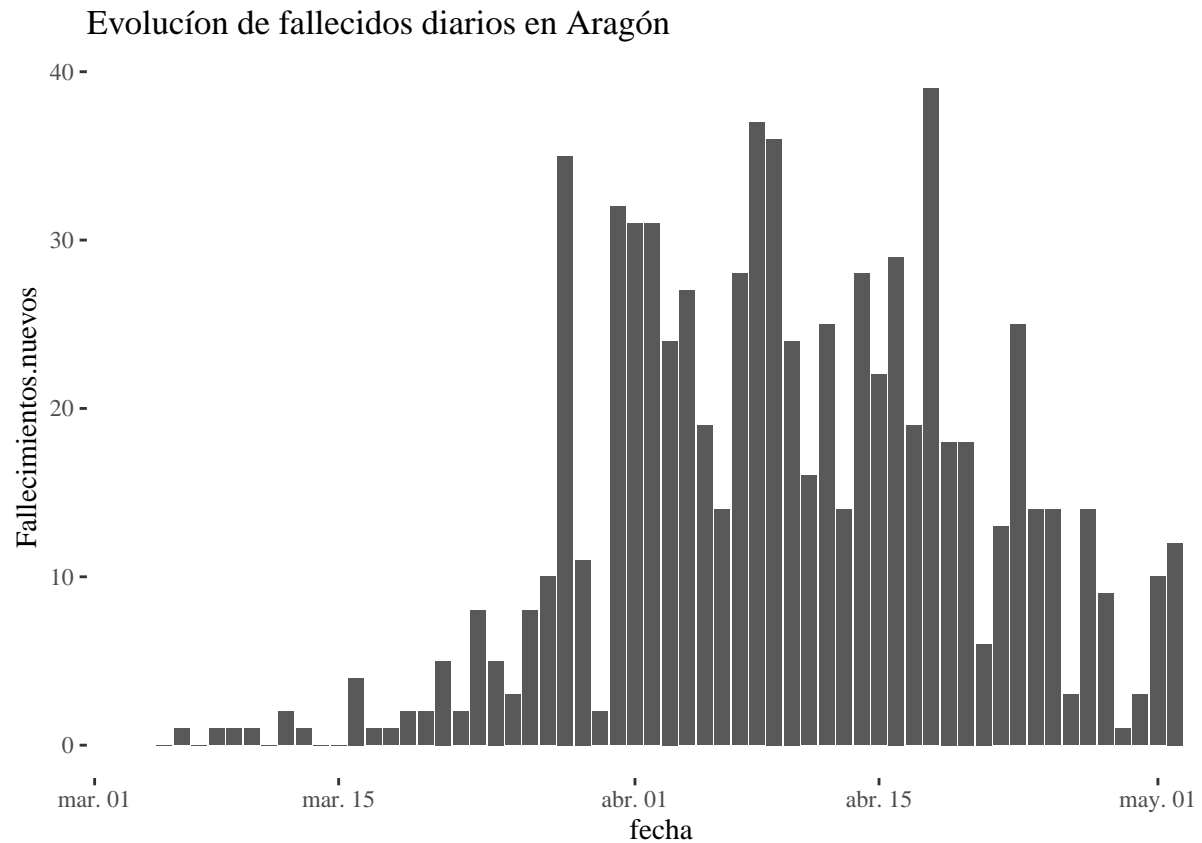
02/5/2020

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.

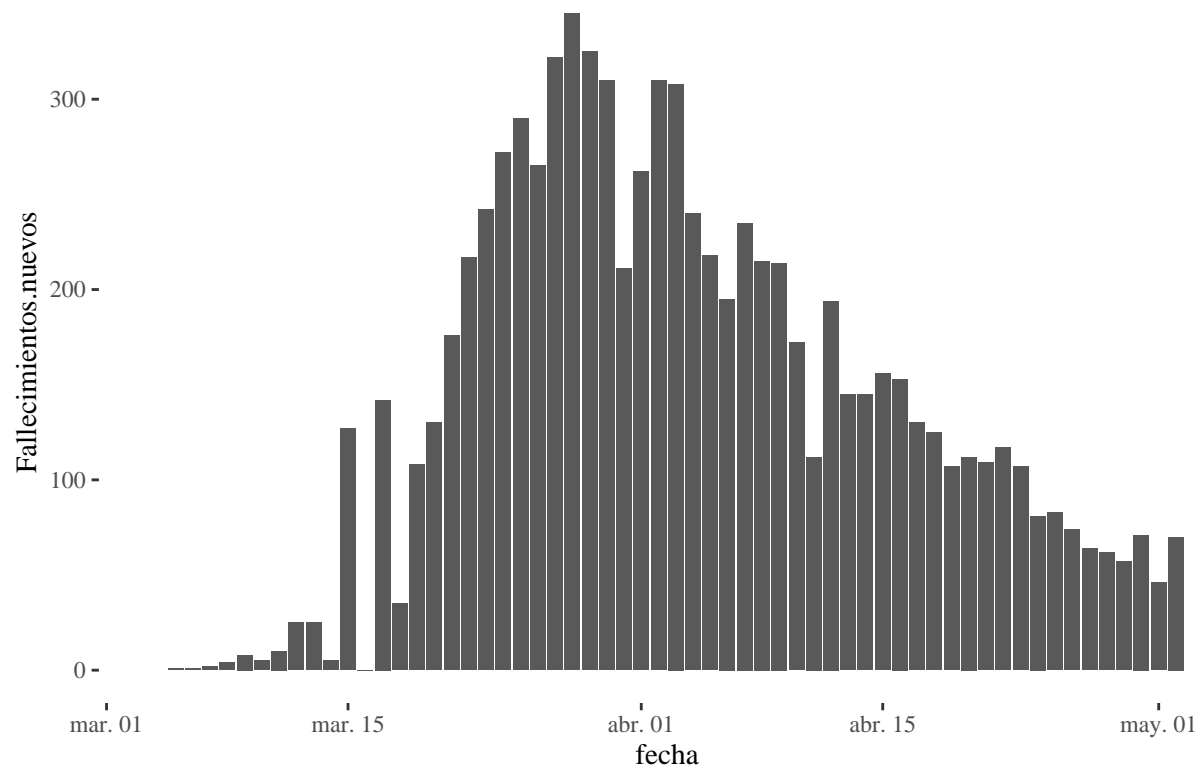
```
ggplot(covar,aes(x=fecha,y=Fallecimientos.nuevos),na.rm =TRUE)+geom_bar(stat="identity", position="dodge")
ggtitle( "Evolución de fallecidos diarios en Aragón")
```



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

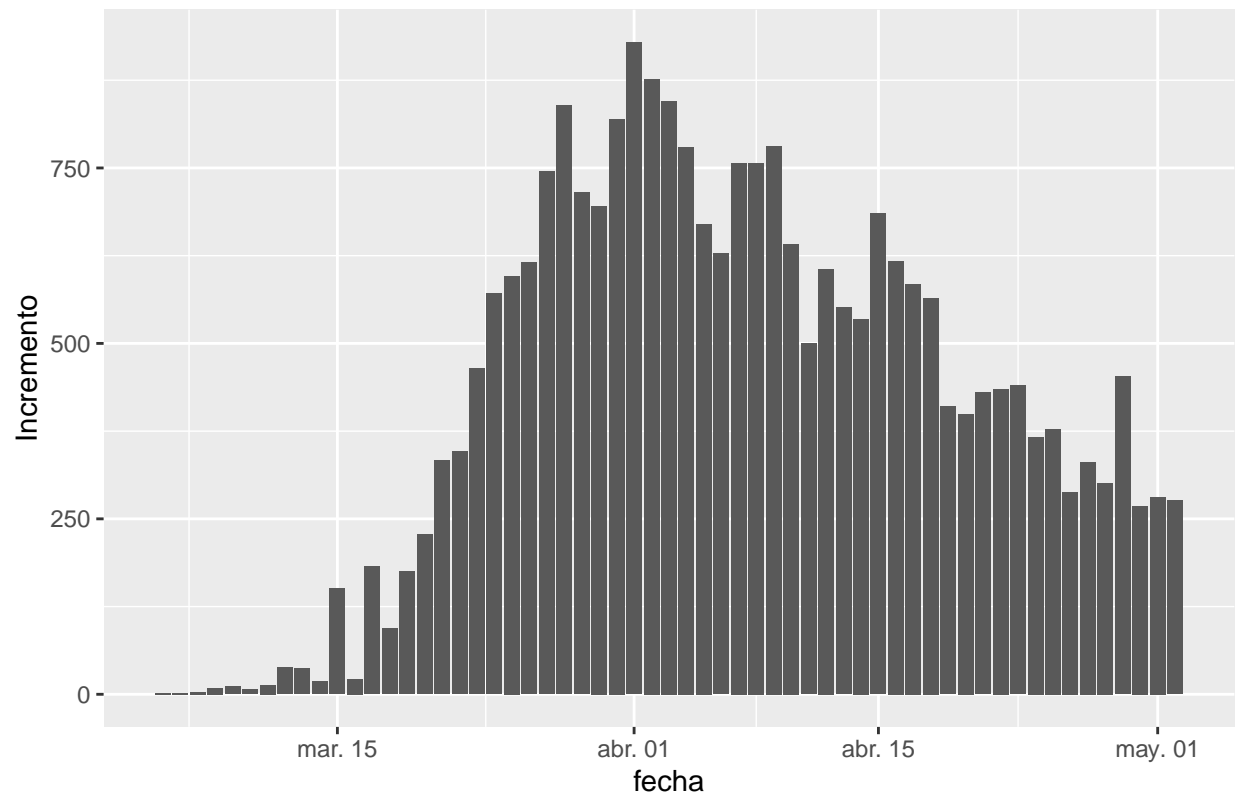
```
ggplot(covar,aes(x=fecha,y=Fallecimientos.nuevos),na.rm =TRUE)+geom_bar(stat="identity", position="dodge")
ggtitle( "Fallecimientos diarios nuevos en la Comunidad de Madrid")
```

Fallecimientos diarios nuevos en la Comunidad de Madrid



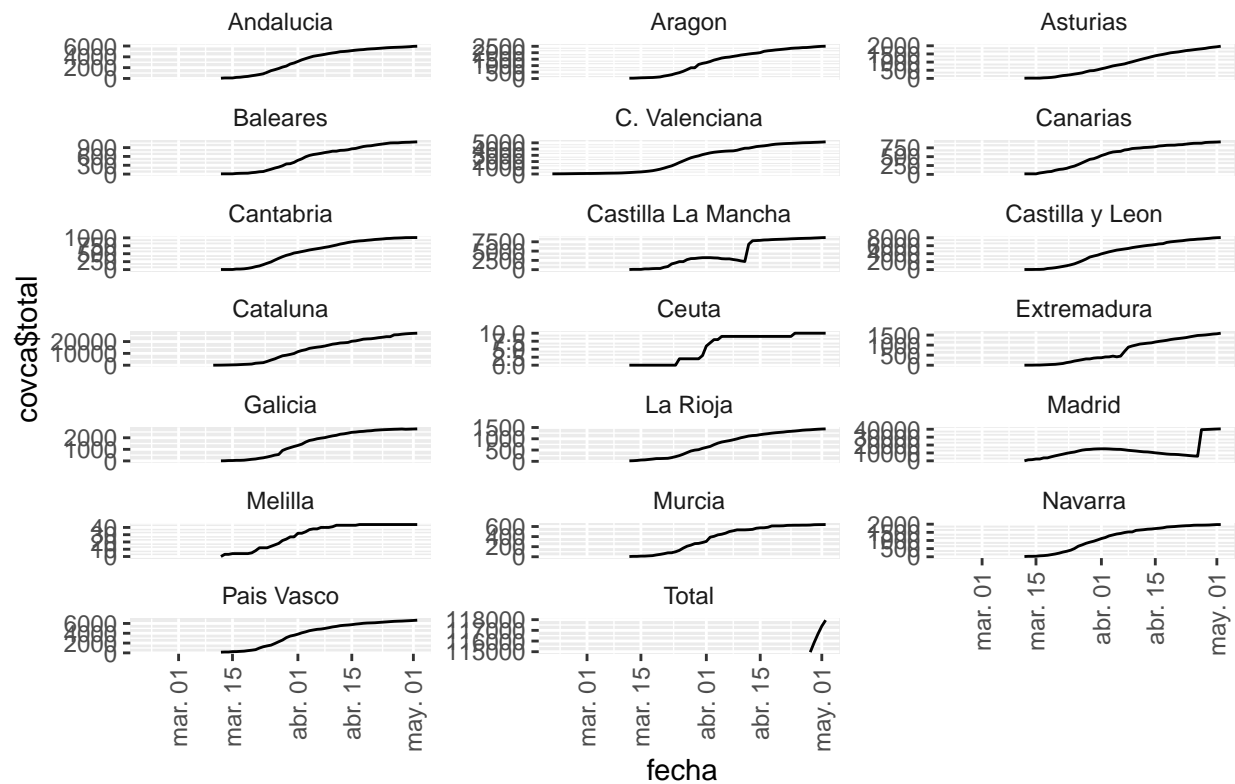
```
ccaa_covid19_fallecidos_long <- ccaa_covid19_fallecidos_long %>% filter( CCAA == "Total")
ggplot(data=ccaa_covid19_fallecidos_long, aes(x = fecha,y = Incremento)) +
  geom_bar(stat="identity", position="dodge")+
  ggtitle( "Fallecimientos diarios en España")
```

Fallecimientos diarios en España



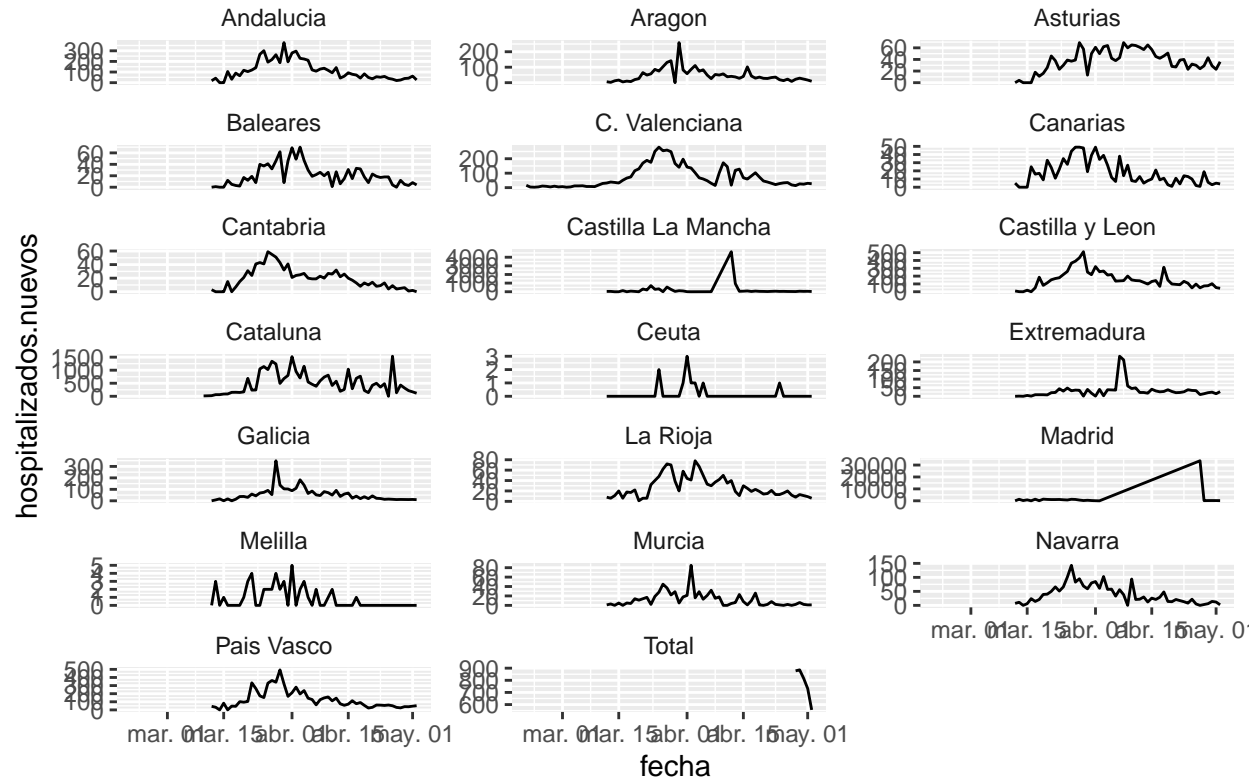
```
covca<-na.omit(covca)
ggplot(covca, aes(fecha,covca$total,group = 1)) +
  geom_line() +
  facet_wrap(vars(CCAA), scales = "free_y", ncol = 3, strip.position = "top") +
  theme(strip.background = element_blank(), strip.placement = "outside")+
  theme(axis.text.x=element_text(angle=90,hjust=1,vjust=0.5))+
  ggtitle( "Casos que han precisado hospitalización por CCAA")
```

Casos que han precisado hospitalización por CCAA



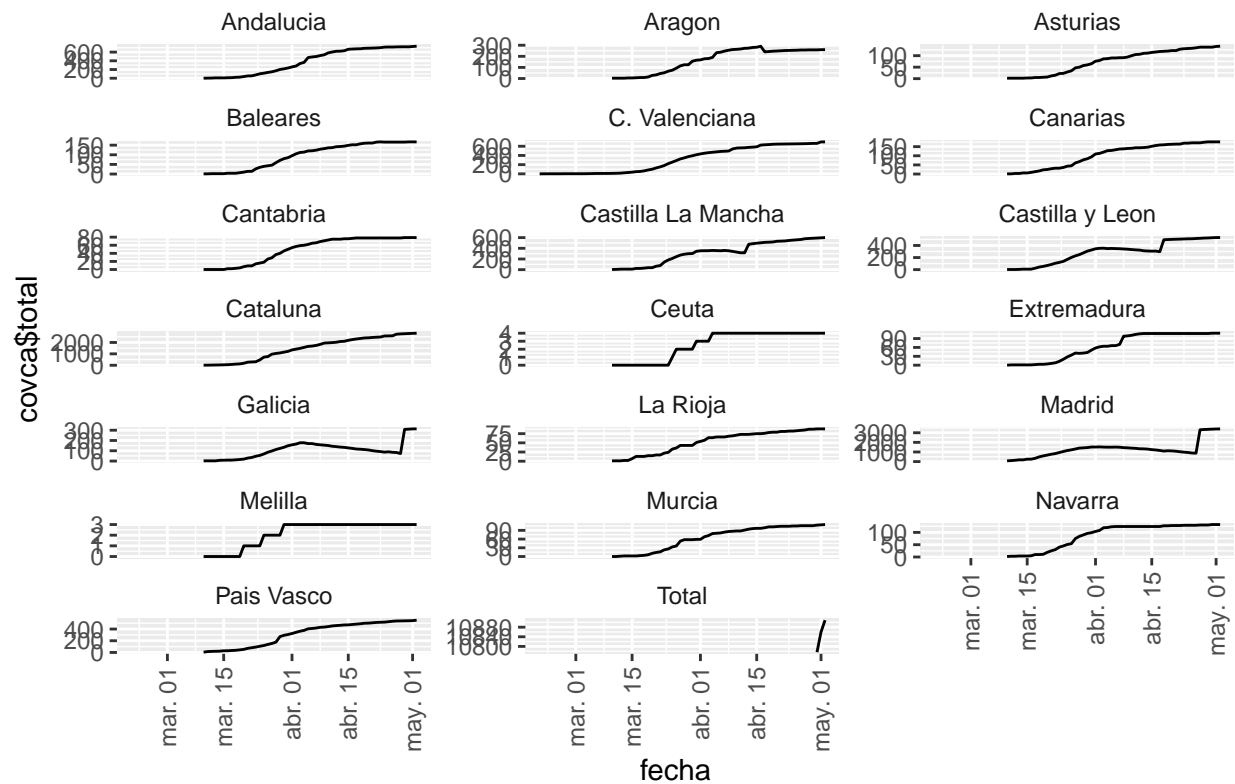
```
covca<-na.omit(covca)
ggplot(covca, aes(fecha,hospitalizados.nuevos,group = 1)) +
  geom_line() +
  facet_wrap(vars(CCAA), scales = "free_y", ncol = 3, strip.position = "top") +
  theme(strip.background = element_blank(), strip.placement = "outside")+
  ggtitle( "Hospitalizados nuevos comparativa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

Hospitalizados nuevos comparativa por C. Autónomas



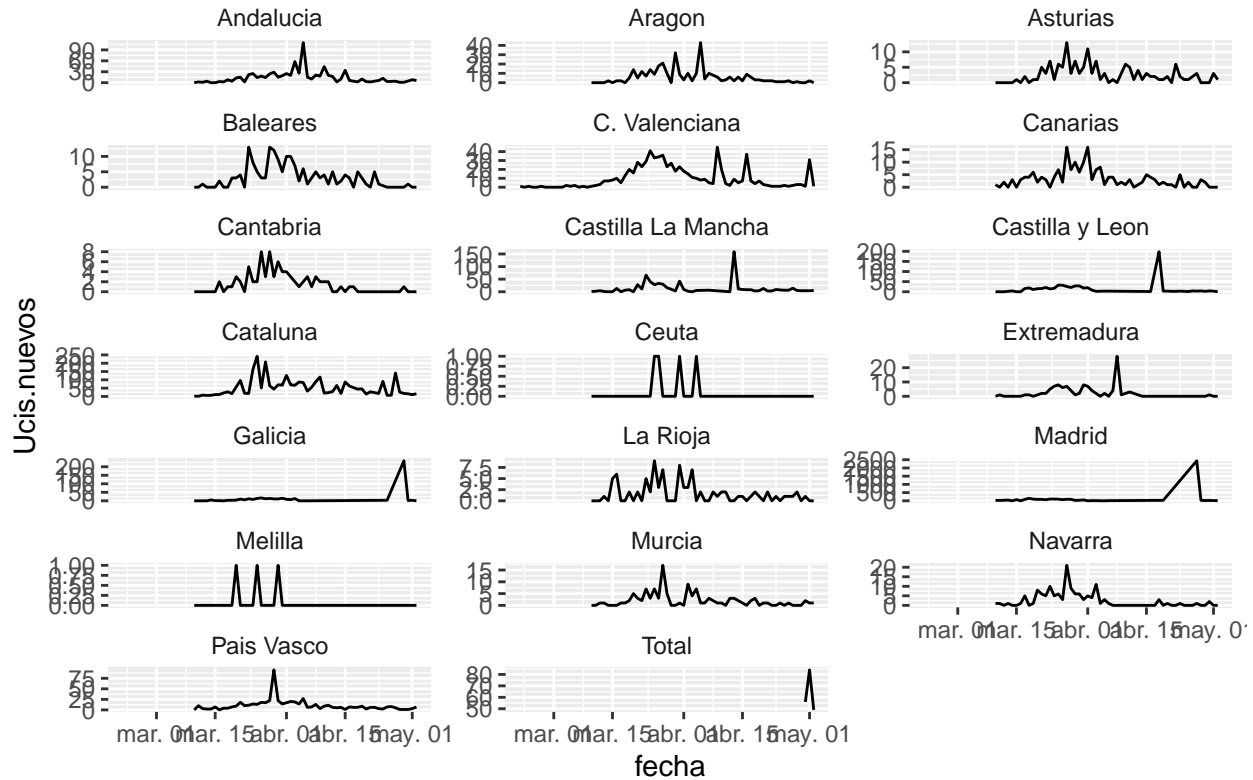
```
covca<-na.omit(covca)
ggplot(covca, aes(fecha,covca$total,group = 1)) +
  geom_line() +
  facet_wrap(vars(CCAA), scales = "free_y", ncol = 3, strip.position = "top") +
  theme(strip.background = element_blank(), strip.placement = "outside")+
  theme(axis.text.x=element_text(angle=90,hjust=1,vjust=0.5))+
  ggtitle( "Ingresos totales en Ucis comparativa por Comunidades Autónomas")
```

Ingresos totales en Ucis comparativa por Comunidades Autónomas



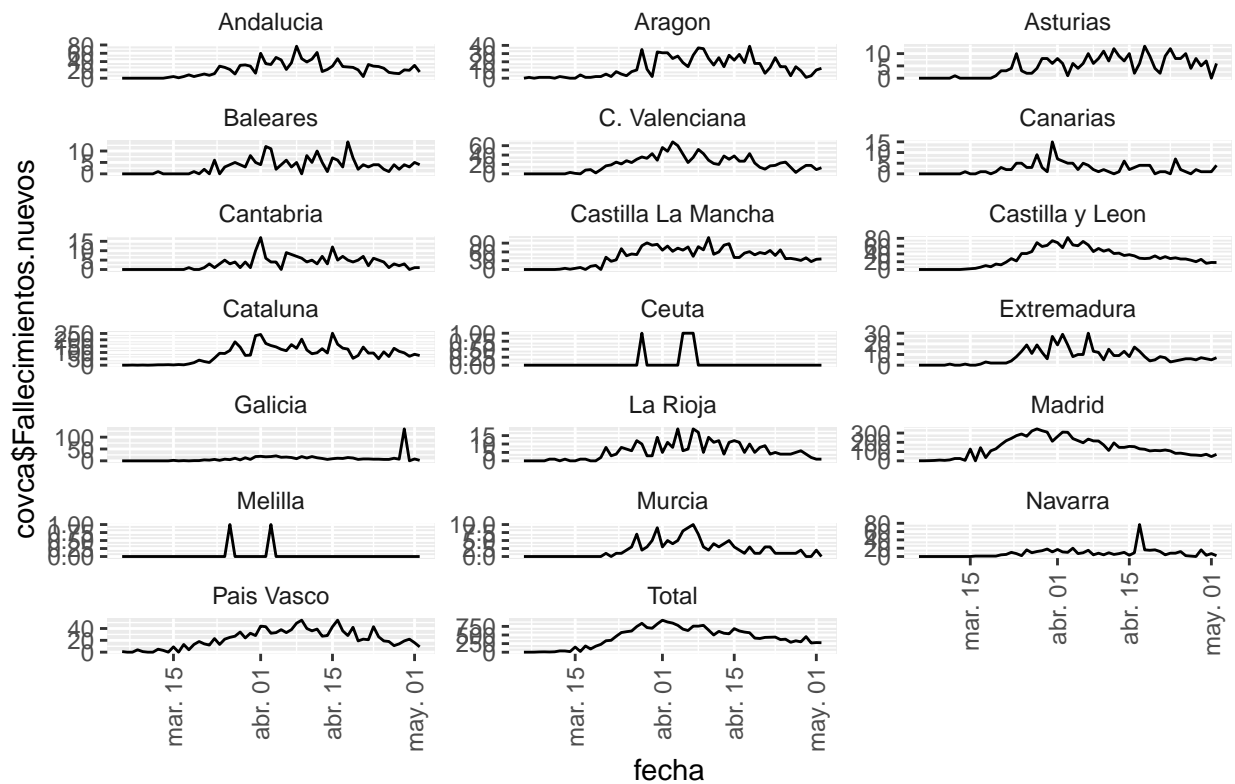
```
covca<-na.omit(covca)
ggplot(covca, aes(fecha,Ucis.nuevos,group = 1)) +
  geom_line() +
  facet_wrap(vars(CCAA), scales = "free_y", ncol = 3, strip.position = "top") +
  theme(strip.background = element_blank(), strip.placement = "outside")+
  ggtitle( "Ingresos Ucis nuevos comparativa por Comunidades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

Ingresos Ucis nuevos comparativa por Comunidades Autónomas



```
covca<-na.omit(covca)
ggplot(covca, aes(fecha,covca$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")+
  theme(axis.text.x=element_text(angle=90,hjust=1,vjust=0.5))+
  ggtitle( "Pacientes Fallecidos diarios comparativa por Comunidades Autónomas")
```


Pacientes Fallecidos diarios comparativa por Comunidades Autónomas

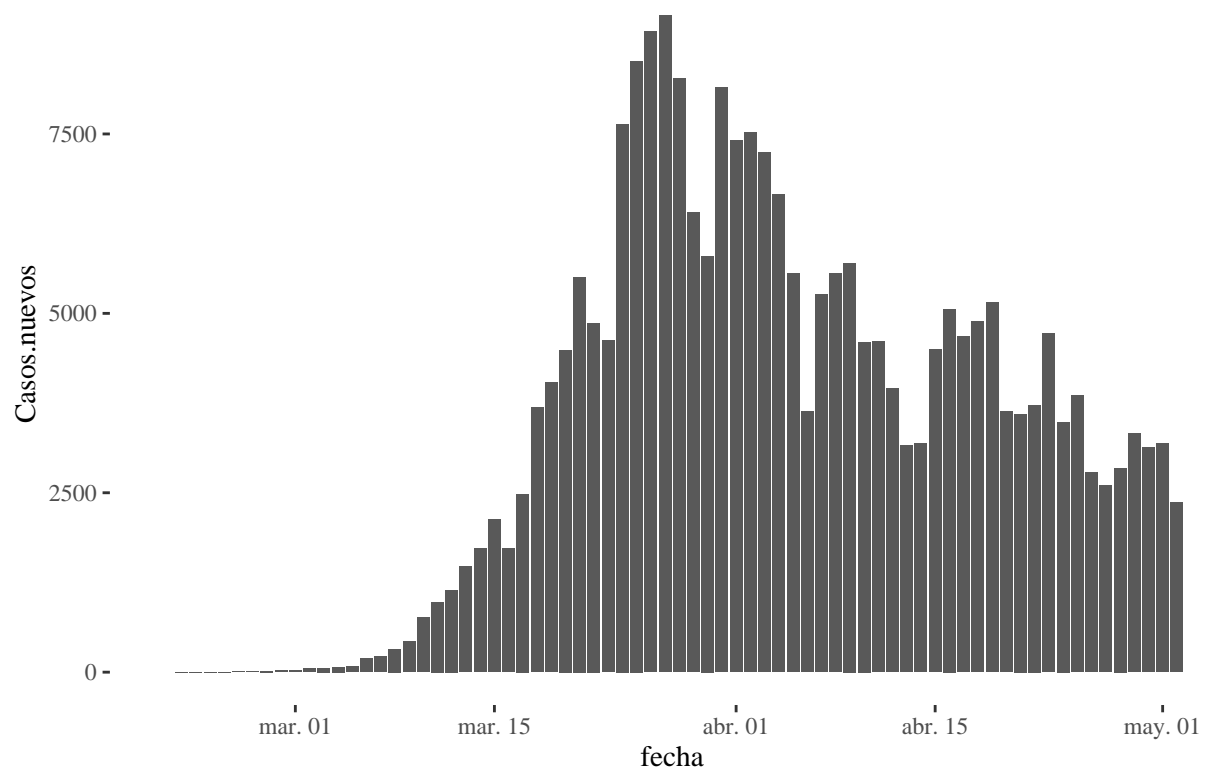


Ahora continuaremos con el analisis a nivel nacional.

Nuevos casos diarios a nivel nacional.

```
ggplot(covsp,aes(x=fecha,y=Casos.nuevos),na.rm = TRUE)+geom_bar(stat="identity", position="dodge")+theme(
  ggtitle( "Nuevos casos diarios a nivel nacional")
```

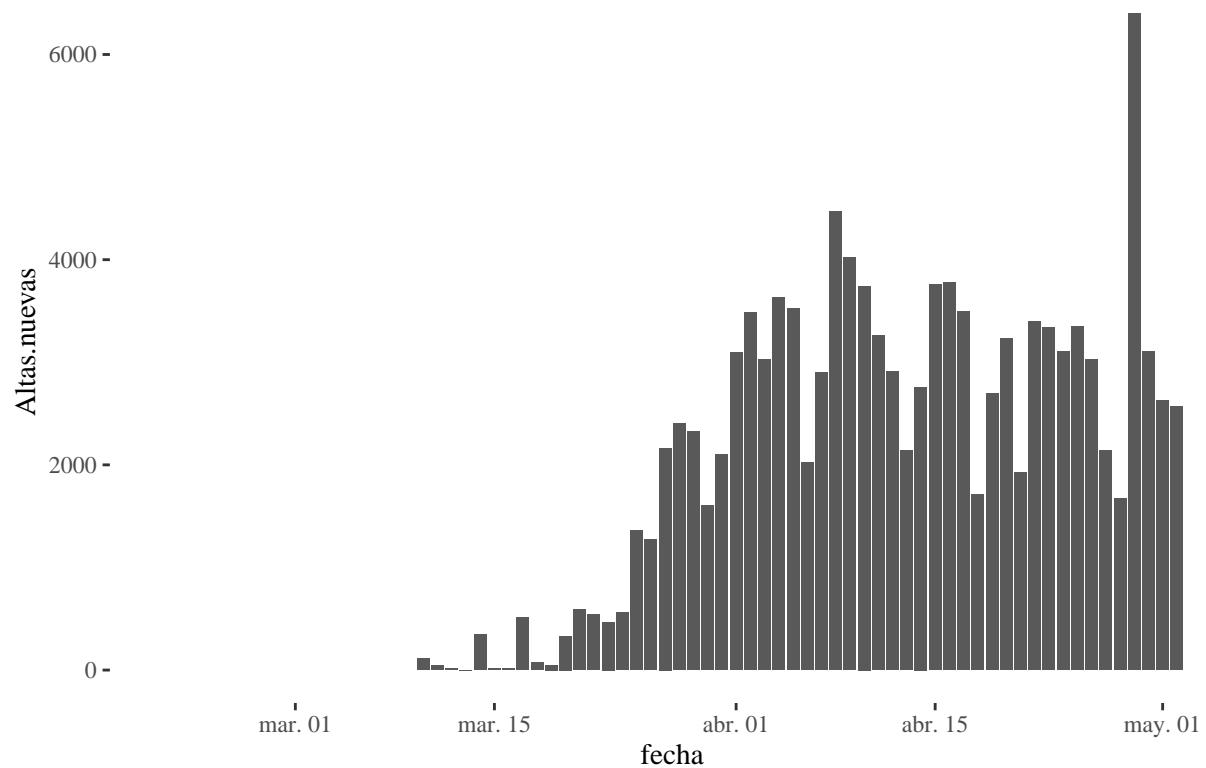
Nuevos casos diarios a nivel nacional



Las nuevas altas diarias en España.

```
ggplot(covsp,aes(x=fecha,y=Altas.nuevas),na.rm = TRUE)+geom_bar(stat="identity", position="dodge")+theme_minimal()+  
ggtitle( "Nuevas altas diarias en España")
```

Nuevas altas diarias en España



```
total_cases <- sum(corona_latest$Confirmed)
```

Confirmados totales a nivel mundial.

```
confirmados <- sum(corona_latest$Confirmed) #computeContactRate()  
confirmados
```

```
## [1] 3343777
```

Recuperados mundiales totales.

```
recuperados <- sum(corona_latest$Recovered) #computeAverageRating()  
recuperados
```

```
## [1] 1053327
```

% Recuperados mundiales totales.

```
porcentaje_recuperados <- (recuperados/confirmados)*100
porcentaje_recuperados
```

```
## [1] 31.50111
```

Fallecidos totales a nivel mundial.

```
mueritos <- sum(corona_latest$Deaths)
mueritos
```

```
## [1] 238650
```

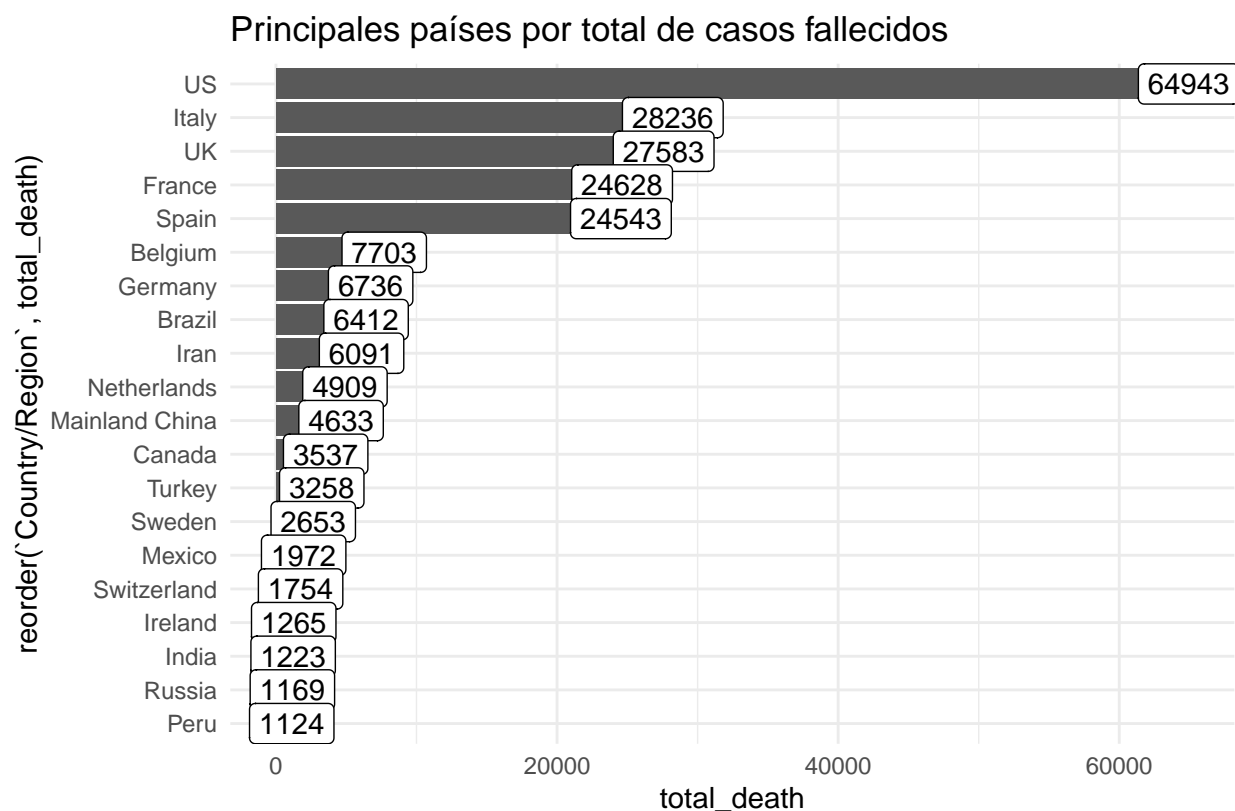
% Letalidad mundial.

```
porcentaje_letalidad <- (mueritos/confirmados)*100
porcentaje_letalidad
```

```
## [1] 7.137139
```

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(20) %>%
ggplot() + geom_bar(aes(x=reorder(`Country/Region`, total_death), y= 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")
```



Fuente: Kaggle

Letalidad descendente en países con más de 136 fallecidos.

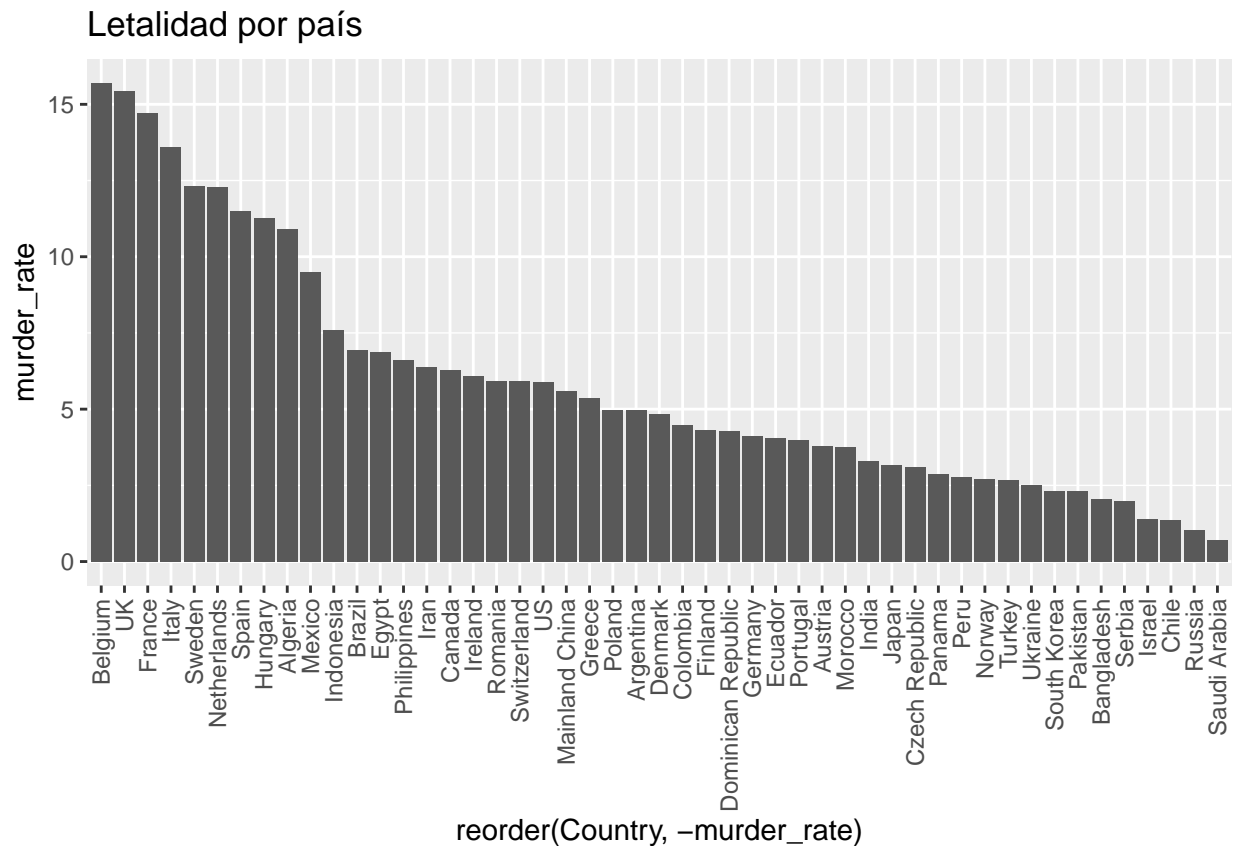
```
filtered <- filter(df, df$Date==max(df$Date)) %>% group_by(Country) %>%
summarise(Confirmed = sum(Confirmed) , Deaths = sum(Deaths) , Recovered = sum(Recovered))
murder_rate <- filtered$Deaths / filtered$Confirmed * 100
filtered$murder_rate <- murder_rate
filtered<- filtered%>% filter (Deaths >=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

```
## # A tibble: 10 x 5
##   Country      Confirmed Deaths Recovered murder_rate
##   <fct>         <dbl>   <dbl>     <dbl>     <dbl>
## 1 Belgium      49032    7703      11892      15.7
## 2 UK           178685   27583       892      15.4
## 3 France       167305   24628     51124      14.7
## 4 Italy         207428   28236     78249      13.6
## 5 Sweden        21520    2653       1005      12.3
## 6 Netherlands   39989    4909        138      12.3
## 7 Spain        213435   24543    112050      11.5
## 8 Hungary         2863     323         609      11.3
## 9 Algeria        4154     453        1821      10.9
## 10 Mexico        20739    1972       12377       9.51
```

```
filtered <- filtered[order(filtered$murder_rate),]
filtered[0:10,]
```

```
## # A tibble: 10 x 5
##   Country      Confirmed Deaths Recovered murder_rate
##   <fct>         <dbl>   <dbl>     <dbl>     <dbl>
## 1 Saudi Arabia    24097     169      3555      0.701
## 2 Russia          114431    1169     13220      1.02
## 3 Chile           17008     234      9018      1.38
## 4 Israel          16101     225      9156      1.40
## 5 Serbia           9009     179      1343      1.99
## 6 Bangladesh      8238     170       174      2.06
## 7 Pakistan        18114     417      4715      2.30
## 8 South Korea     10780     250      9123      2.32
## 9 Ukraine         10861     272      1413      2.50
## 10 Turkey         122392    3258     53808      2.66
```

```
ggplot(data=filtered, aes(x=reorder(Country,-murder_rate), y=murder_rate)) +
  geom_bar(stat="identity", position="dodge") + theme(axis.text.x=element_text(angle=90,hjust=1,vjust=1))
ggtitle("Letalidad por país")
```

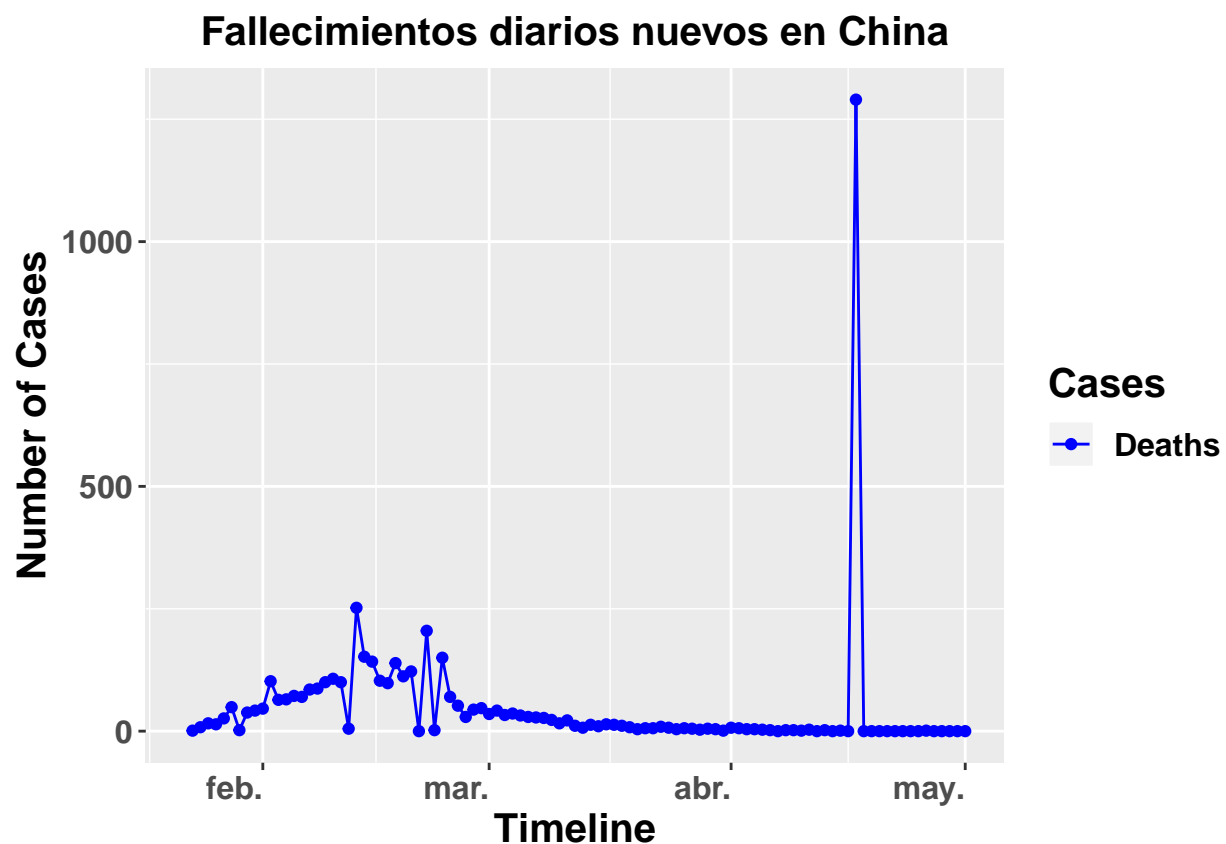


```
China <- filter(df, Country == "Mainland China") %>% group_by(Date) %>%
  summarise(Confirmed = sum(Confirmed), Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
  gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))
```

```
China2 <- filter(China, Cases == "Deaths",)
China2$Fallecimientos.nuevos <- c( NA, diff(China2$Count))

China_plot2<- ggplot(China2, aes(x= Date, y= Fallecimientos.nuevos ,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 = "Fallecimientos diarios nuevos en China", 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))
```

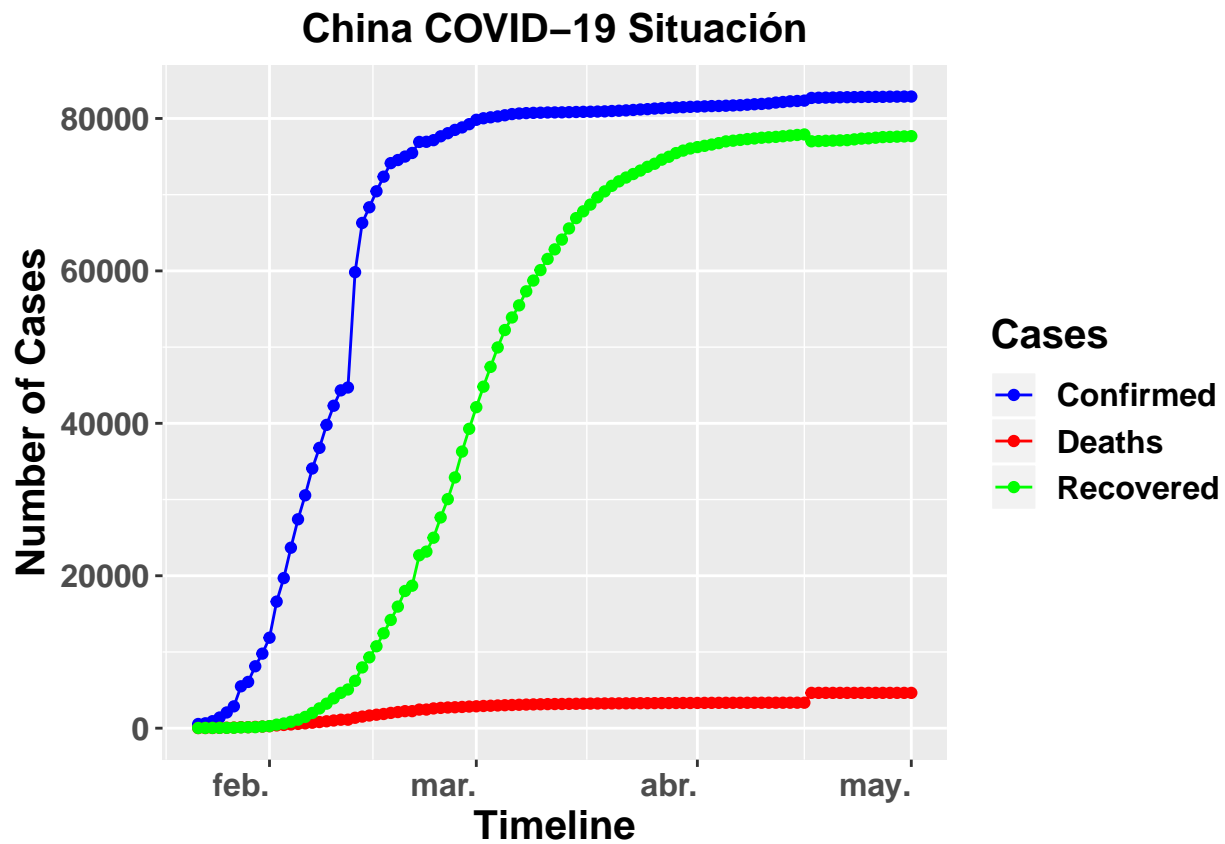
China_plot2



#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 COVID-19 Situación", 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



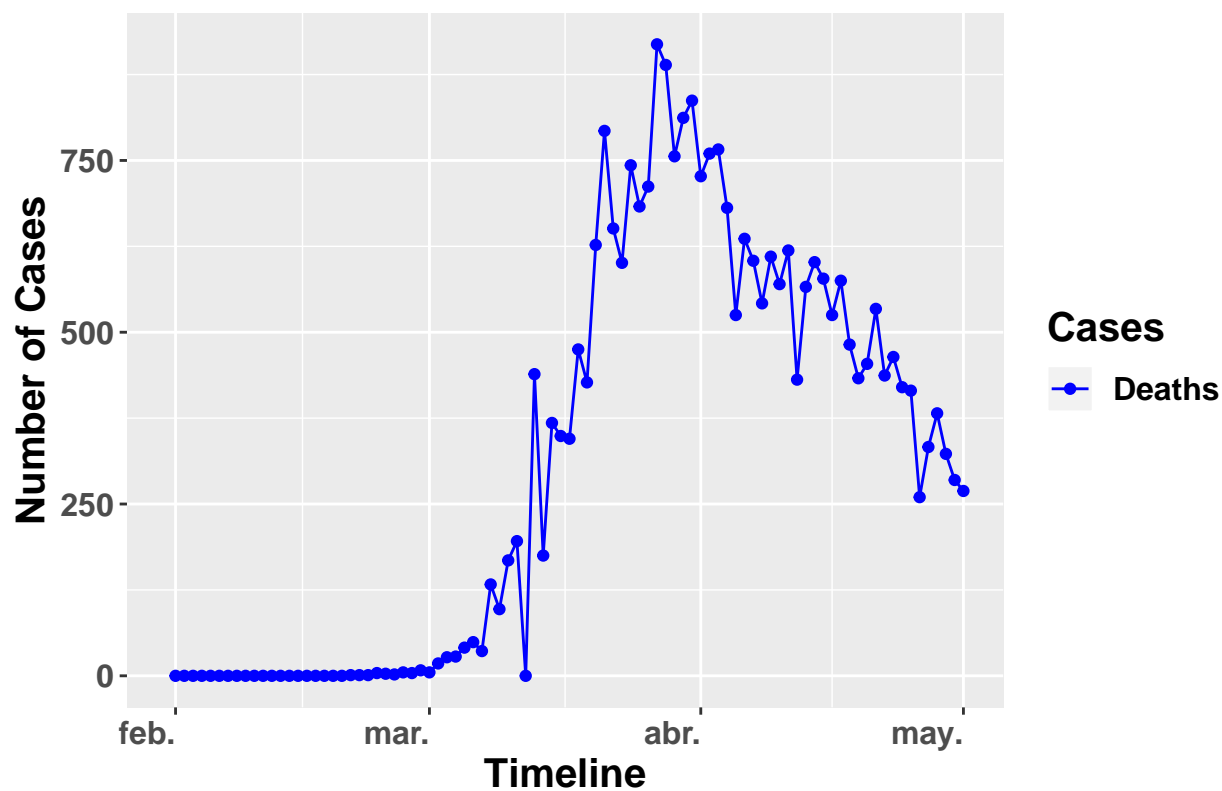
```
italy <- filter(df, Country == "Italy") %>% group_by(Date) %>%
  summarise(Confirmed = sum(Confirmed), Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
  gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))
```

```
italy2 <- filter(italy, Cases == "Deaths",)
italy2$Fallecimientos.nuevos <- c( NA, diff(italy2$Count))
```

```
italy_plot2 <- ggplot(italy2, aes(x= Date, y= Fallecimientos.nuevos, 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 = "Fallecimientos diarios nuevos en Italia", 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_plot2

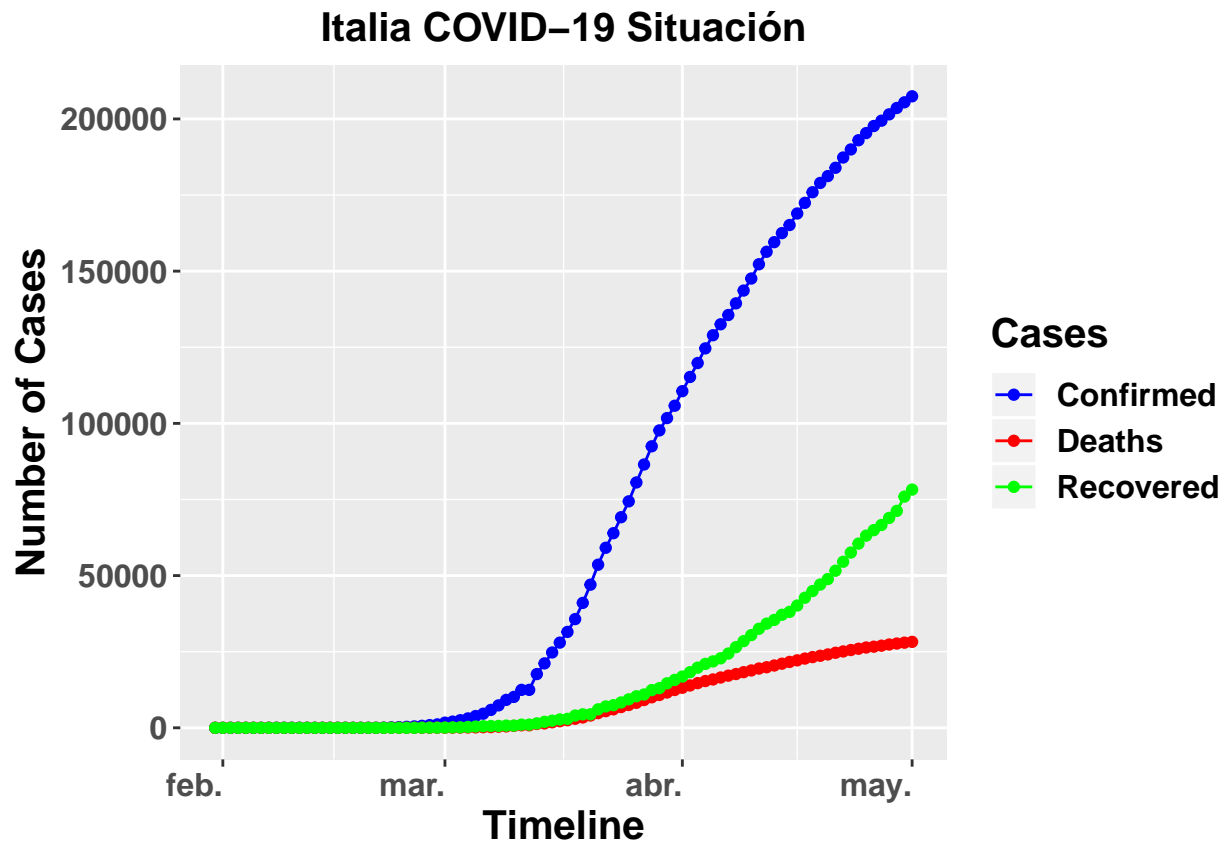
Fallecimientos diarios nuevos en Italia



#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","r
  labs(x="Timeline", y="Number of Cases",title = "Italia COVID-19 Situación", 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

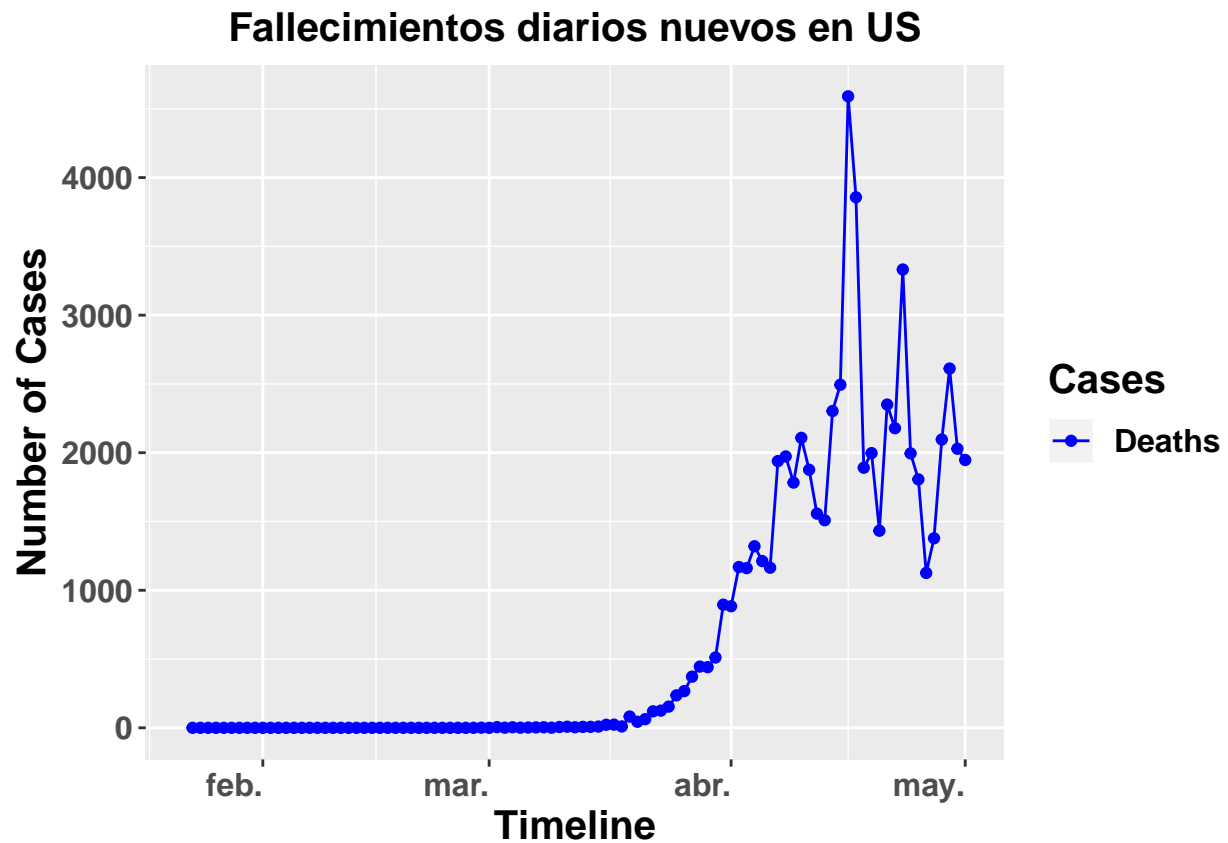


```
US <- filter(df, Country == "US") %>% group_by(Date) %>%
  summarise(Confirmed = sum(Confirmed), Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
  gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))
```

```
US2 <- filter(US, Cases == "Deaths",)
US2$Fallecimientos.nuevos <- c( NA, diff(US2$Count))
```

```
US_plot2<- ggplot(US2, aes(x= Date, y= Fallecimientos.nuevos ,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","r
  labs(x="Timeline", y="Number of Cases",title = "Fallecimientos diarios nuevos en US", fill =
  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))
```

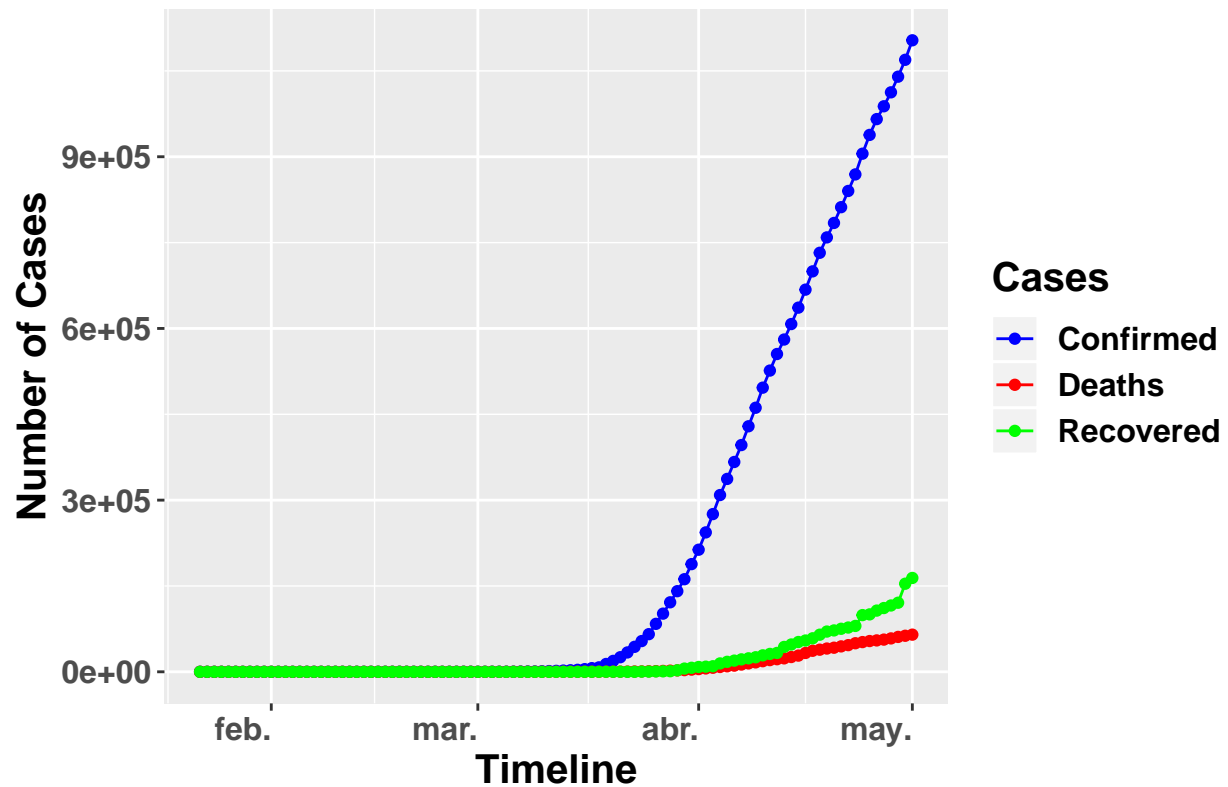
```
US_plot2
```



```
#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","r
  labs(x="Timeline", y="Number of Cases",title = "US COVID-19 Situación", 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
```

US COVID-19 Situación



```
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))
```

Media Incrementos porcentuales casos diarios semana antes confinamiento

```
Spain2.2 <- filter(Spain, Cases == "Confirmed",)
Spain2.2$Casos.nuevos <- c( NA, diff(Spain2.2$Count))
Spain2.2 <- Spain2.2 %>%
  mutate(pct_change = (Casos.nuevos / lag(Casos.nuevos) - 1) * 100)

Spain2.2 <- na.omit(Spain2.2)
Spain2.2[Spain2.2 == Inf] <- 0

sp <- subset(Spain2.2, Date >= "2020-03-08" & Date <= "2020-03-14")
ac <- sum(sp$pct_change) / 7
ac
```

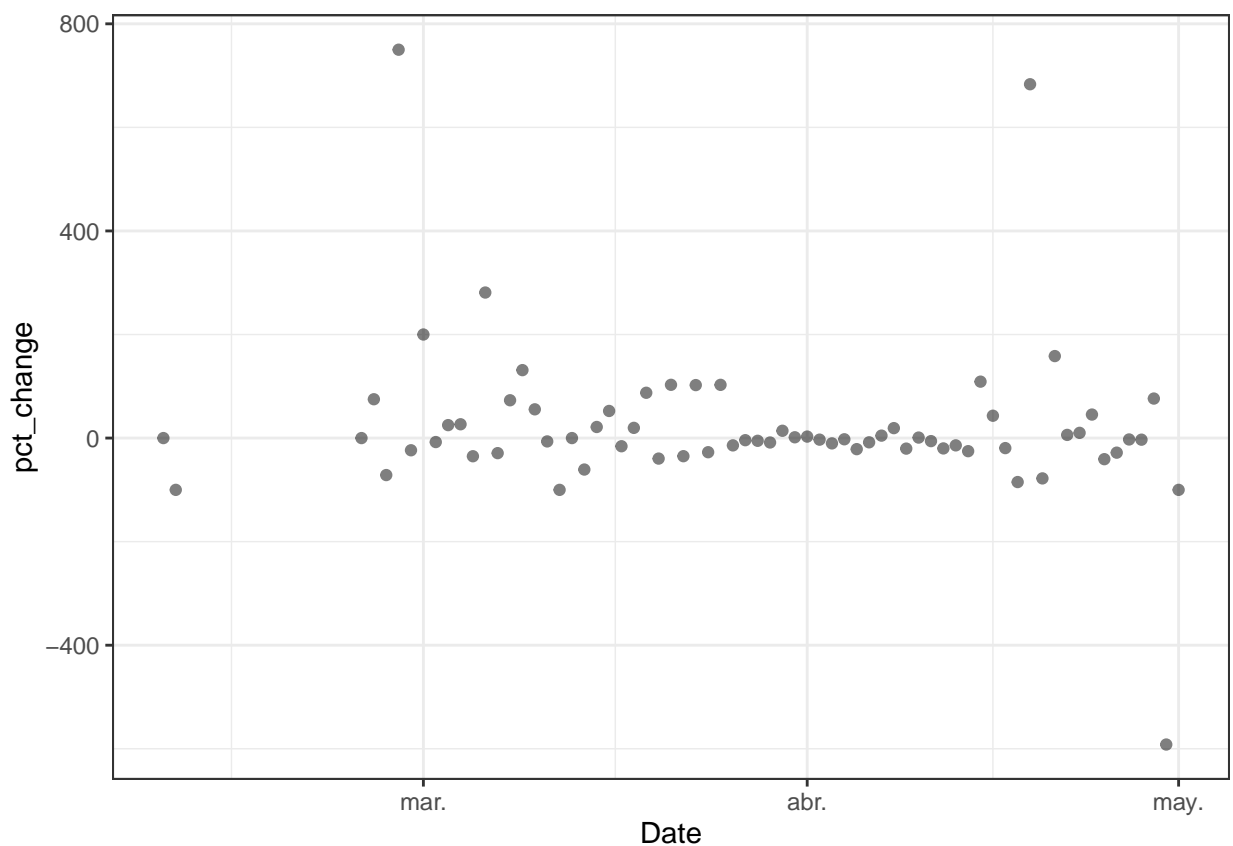
```
## [1] 13.21495
```

Incrementos porcentuales casos confirmados diarios

```
Spain2.3 <- filter(Spain, Cases == "Confirmed",)
Spain2.3$Casos.nuevos <- c( NA, diff(Spain2.3$Count))
Spain2.3 <- Spain2.3 %>%
  mutate(pct_change = (Casos.nuevos/lag(Casos.nuevos) - 1) * 100)

Spain2.3 <- na.omit(Spain2.3)
Spain2.2[Spain2.2 == Inf] <- 0

p1 <- ggplot(Spain2.2, aes(x=Date,y=pct_change)) + geom_point(alpha=0.5) + theme_bw()
p1
```



Media incrementos porcentuales diario fallecidos semana antes confinamiento

```
Spain2.1 <- filter(Spain, Cases == "Deaths",)
Spain2.1$Fallecimientos.nuevos <- c( NA, diff(Spain2.1$Count))
Spain2.1 <- Spain2.1 %>%
  mutate(pct_change = (Fallecimientos.nuevos/lag(Fallecimientos.nuevos) - 1) * 100)
sp <- subset(Spain2.1, Date >= "2020-03-08" & Date <= "2020-03-14")
ac <- sum(sp$pct_change)/7
ac
```

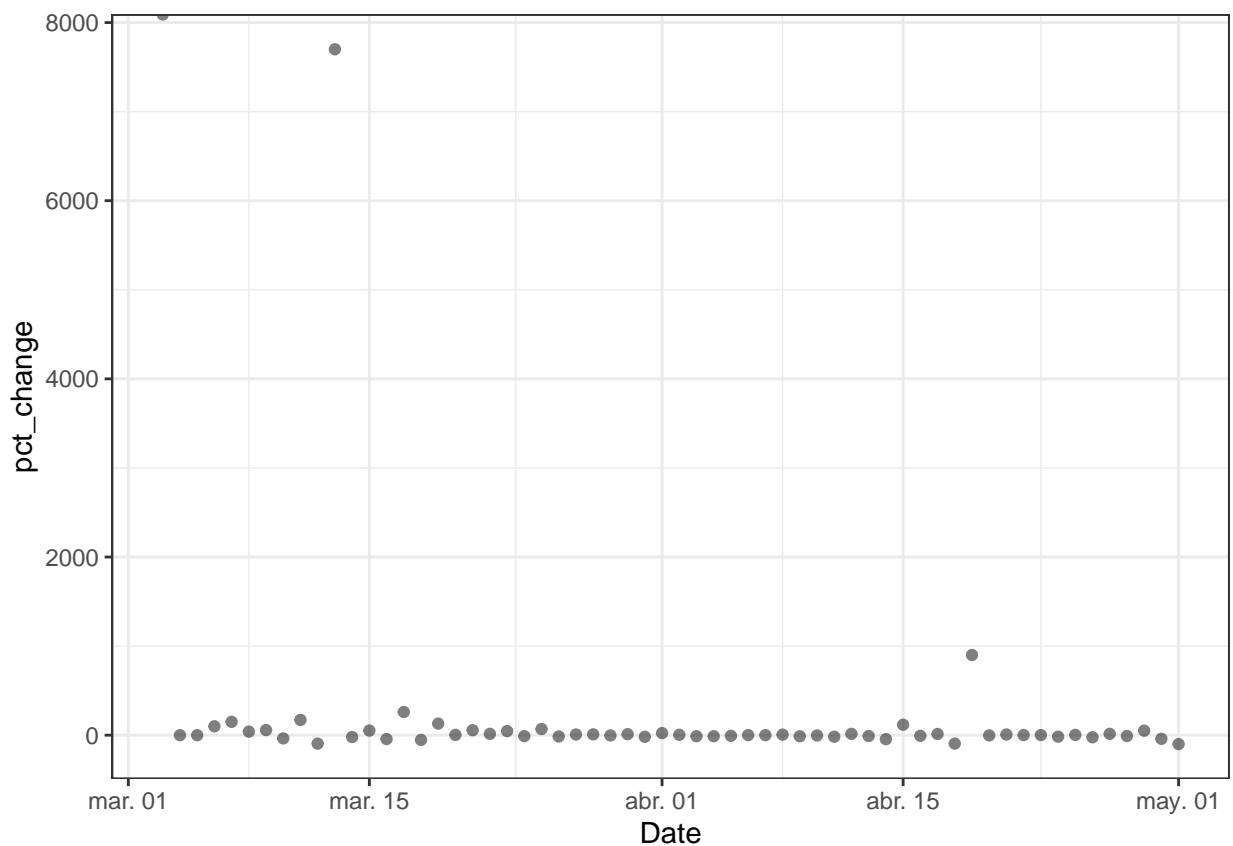
```
## [1] 1116.708
```

incrementos porcentuales diarios fallecidos hoy

```
Spain2 <- filter(Spain, Cases == "Deaths",)
Spain2$Fallecimientos.nuevos <- c( NA, diff(Spain2$Count))
Spain2<- Spain2 %>%
  mutate(pct_change = (Fallecimientos.nuevos/lag(Fallecimientos.nuevos) - 1) * 100)

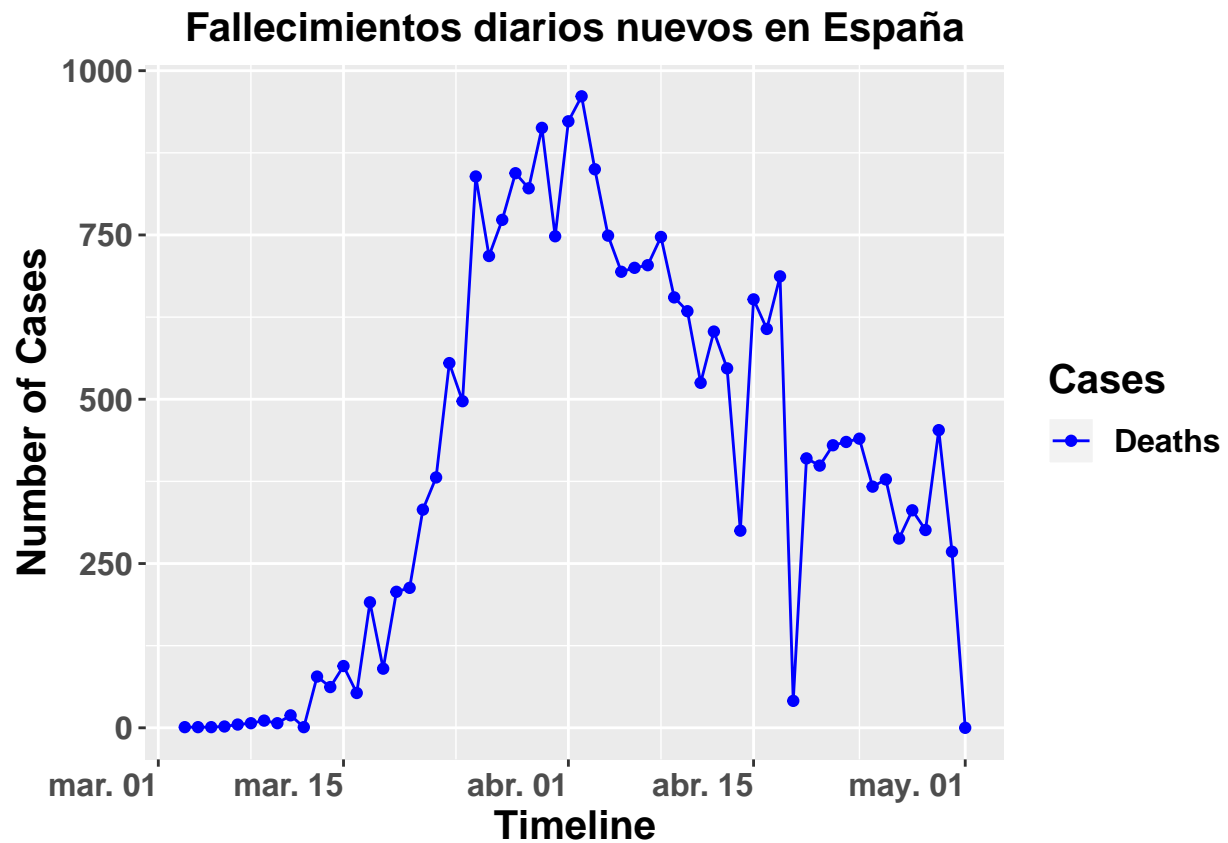
Spain2 <- na.omit(Spain2)

p1 <- ggplot(Spain2, aes(x=Date,y=pct_change)) + geom_point(alpha=0.5) + theme_bw()
p1
```



```
Spain_plot2<- ggplot(Spain2, aes(x= Date, y= Fallecimientos.nuevos ,fill = Cases, color = Cases , group=
  geom_line(aes(colour = Cases))+geom_point()+
  scale_fill_manual(values = c("blue","red","green"))+scale_colour_manual(values = c("blue","r
  labs(x="Timeline", y="Number of Cases",title = "Fallecimientos diarios nuevos en España", fi
  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_plot2

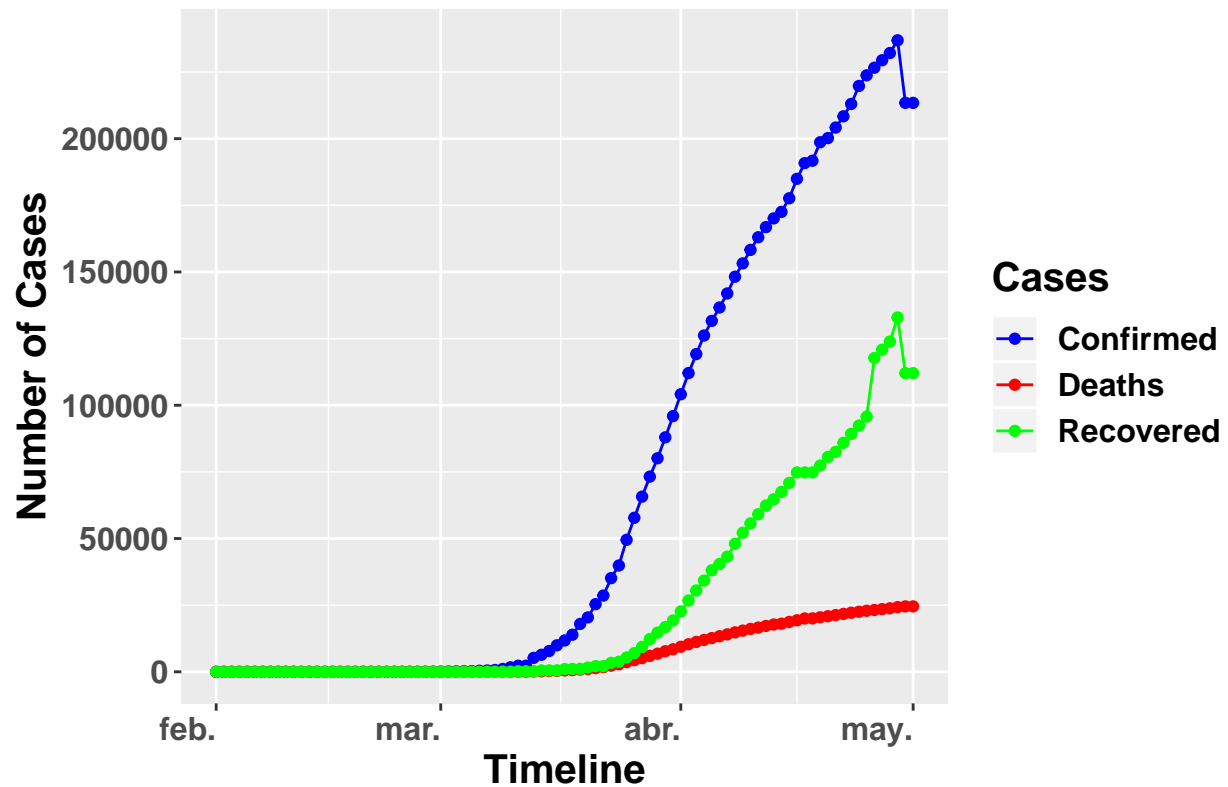


#Line Plot

```
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 = "España COVID-19 Situación", 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

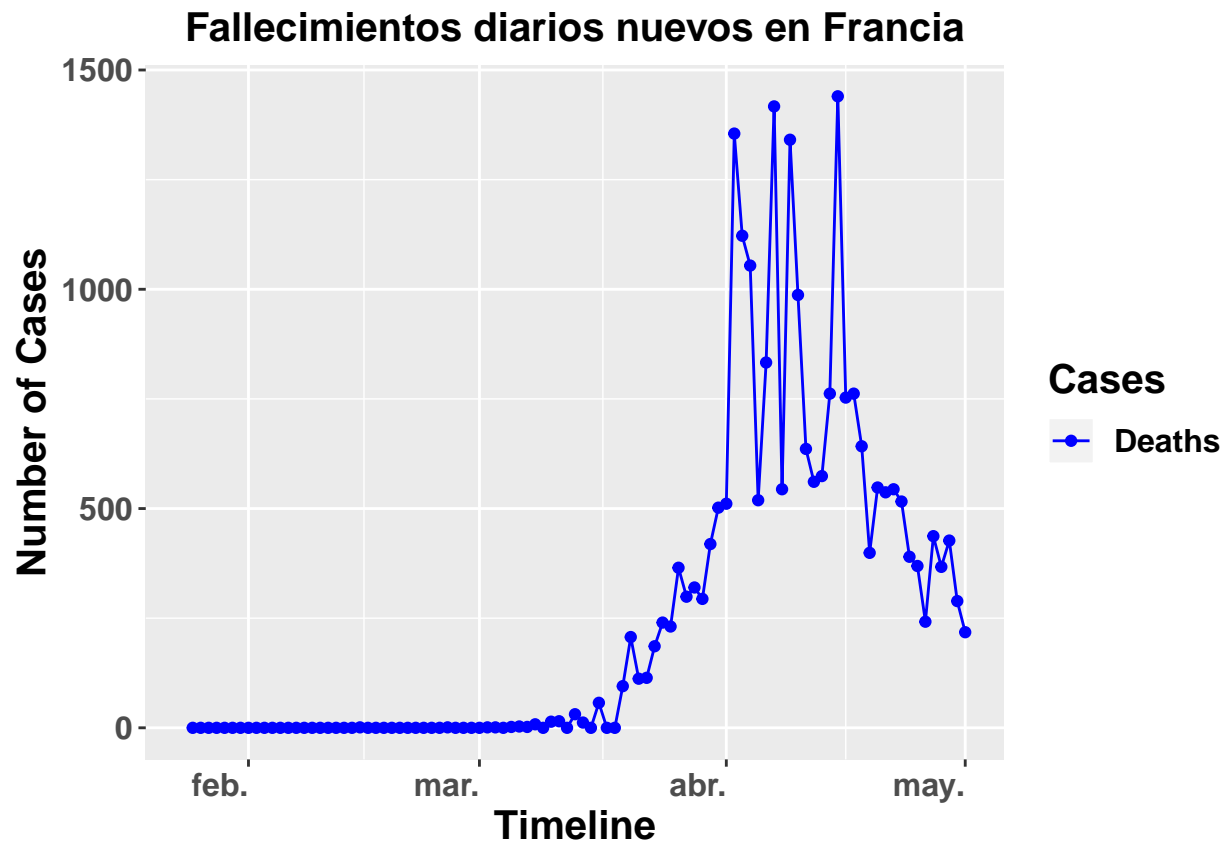
España COVID-19 Situación



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

```
France2 <- filter(France, Cases == "Deaths",)
France2$Fallecimientos.nuevos <- c( NA, diff(France2$Count))
France_plot2<- ggplot(France2, aes(x= Date, y= Fallecimientos.nuevos ,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 = "Fallecimientos diarios nuevos en Francia", 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))
```

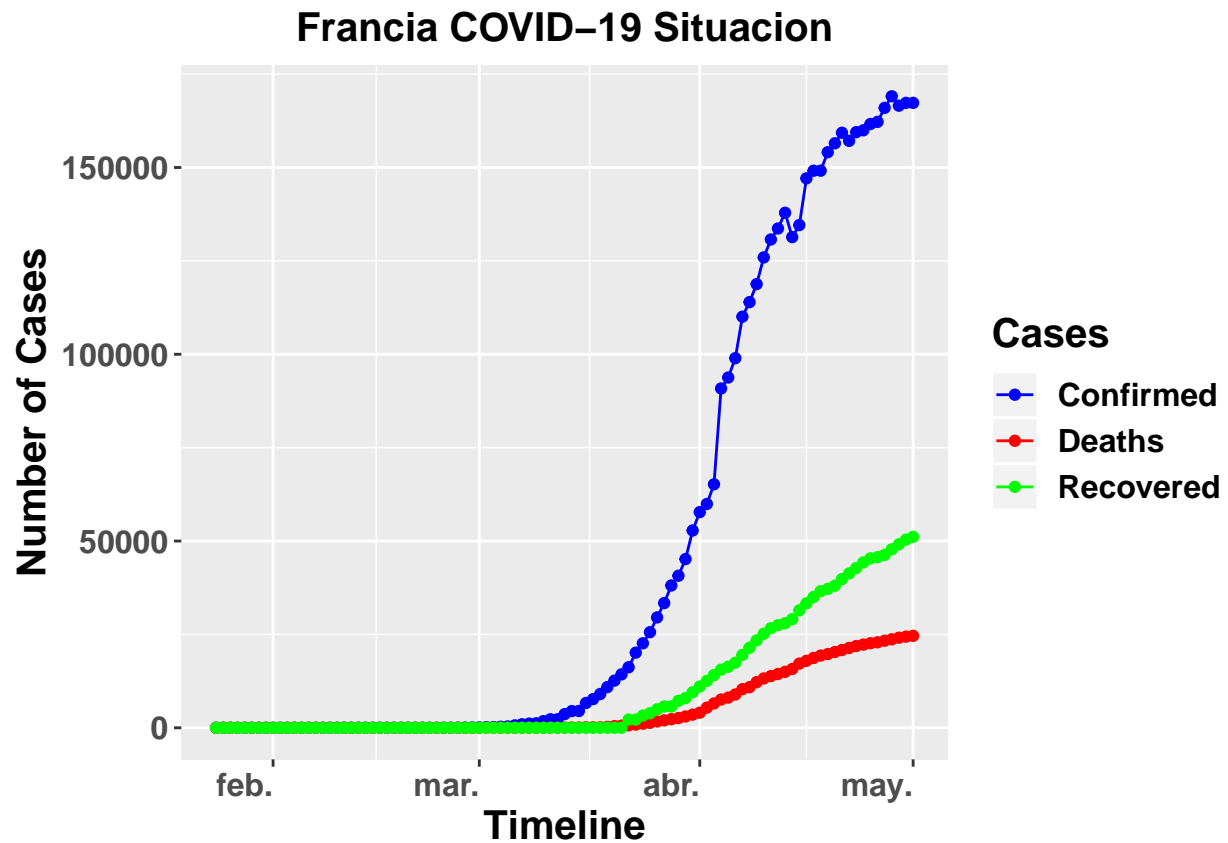
France_plot2



#Line Plot

```
France_plot <- ggplot(France, 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 = "Francia COVID-19 Situacion", 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))
```

France_plot

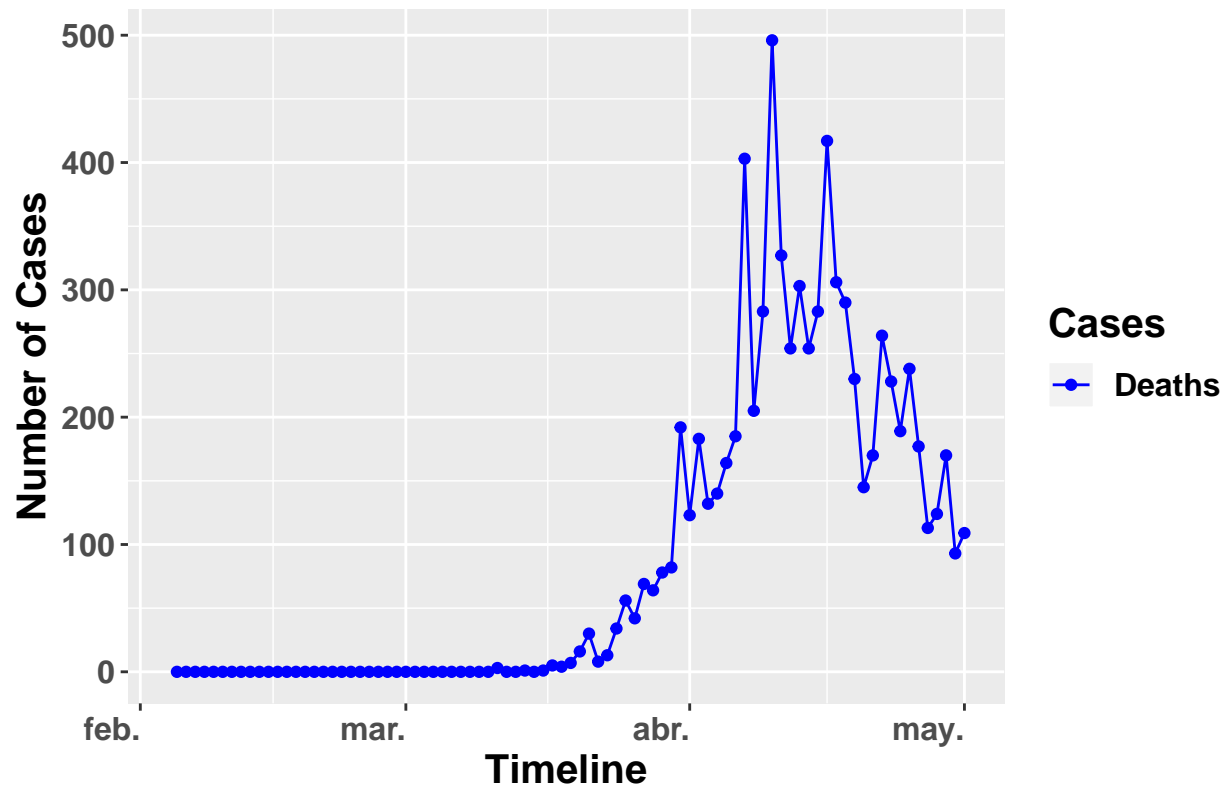


```
Belgium <- filter(df, Country == "Belgium") %>% group_by(Date) %>%
summarise(Confirmed = sum(Confirmed), Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))
```

```
Belgium2 <- filter(Belgium, Cases == "Deaths",)
Belgium2$Fallecimientos.nuevos <- c( NA, diff(Belgium2$Count))
Belgium_plot2 <- ggplot(Belgium2, aes(x= Date, y= Fallecimientos.nuevos, 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 = "Fallecimientos diarios nuevos en Belgica", 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))
```

```
Belgium_plot2
```

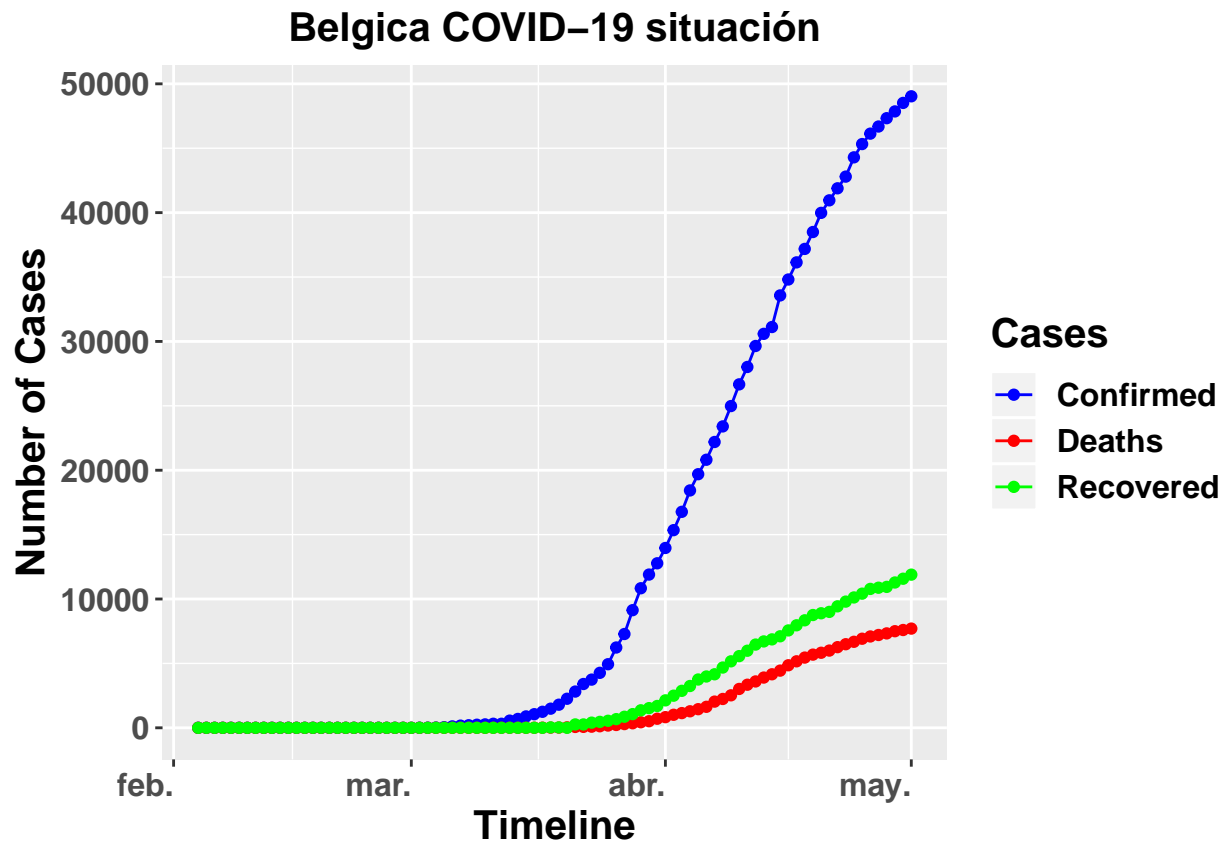
Fallecimientos diarios nuevos en Belgica



#Line Plot

```
Belgium_plot <- ggplot(Belgium, 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 = "Belgica COVID-19 situación", 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))
```

Belgium_plot



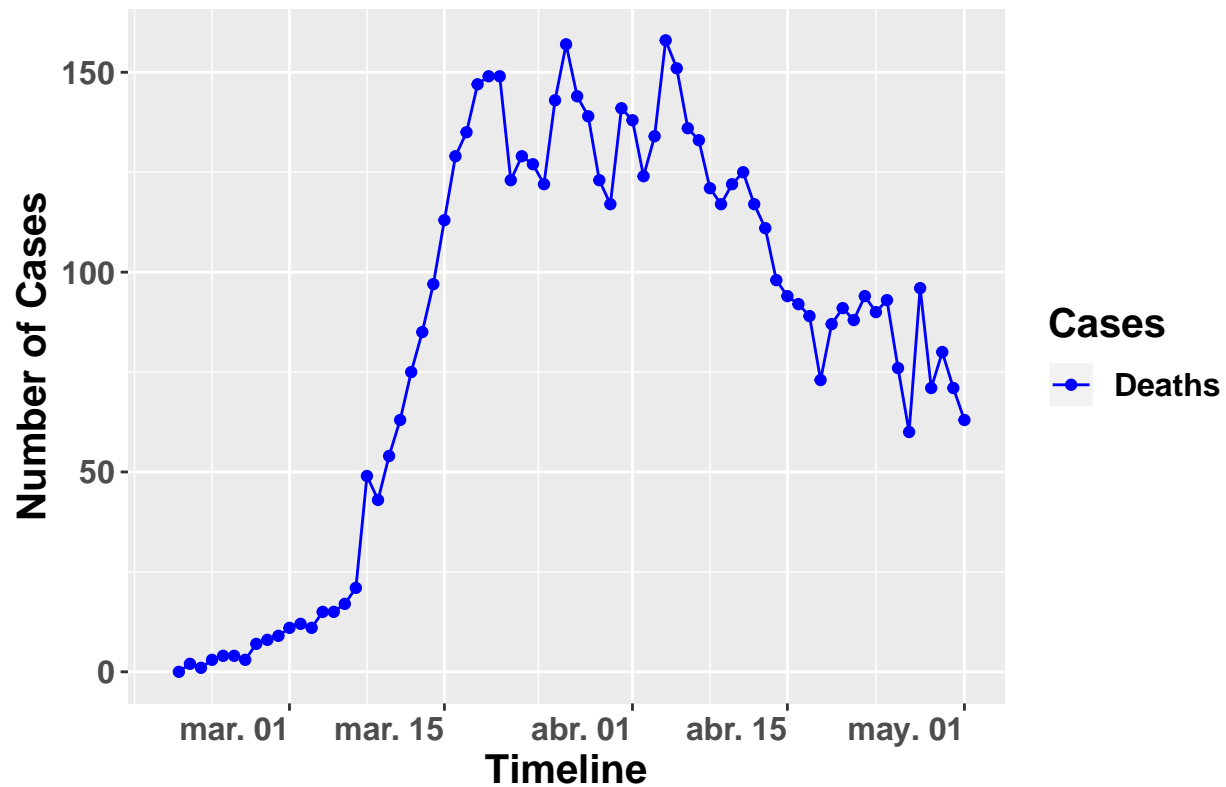
```
Iran <- filter(df, Country == "Iran") %>% group_by(Date) %>%
  summarise(Confirmed = sum(Confirmed), Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
  gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))
```

```
Iran2 <- filter(Iran, Cases == "Deaths",)
Iran2$Fallecimientos.nuevos <- c( NA, diff(Iran2$Count))
```

```
Iran_plot2 <- ggplot(Iran2, aes(x= Date, y= Fallecimientos.nuevos , 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 = "Fallecimientos diarios nuevos en Iran", fill = "Cases", color = "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_plot2
```

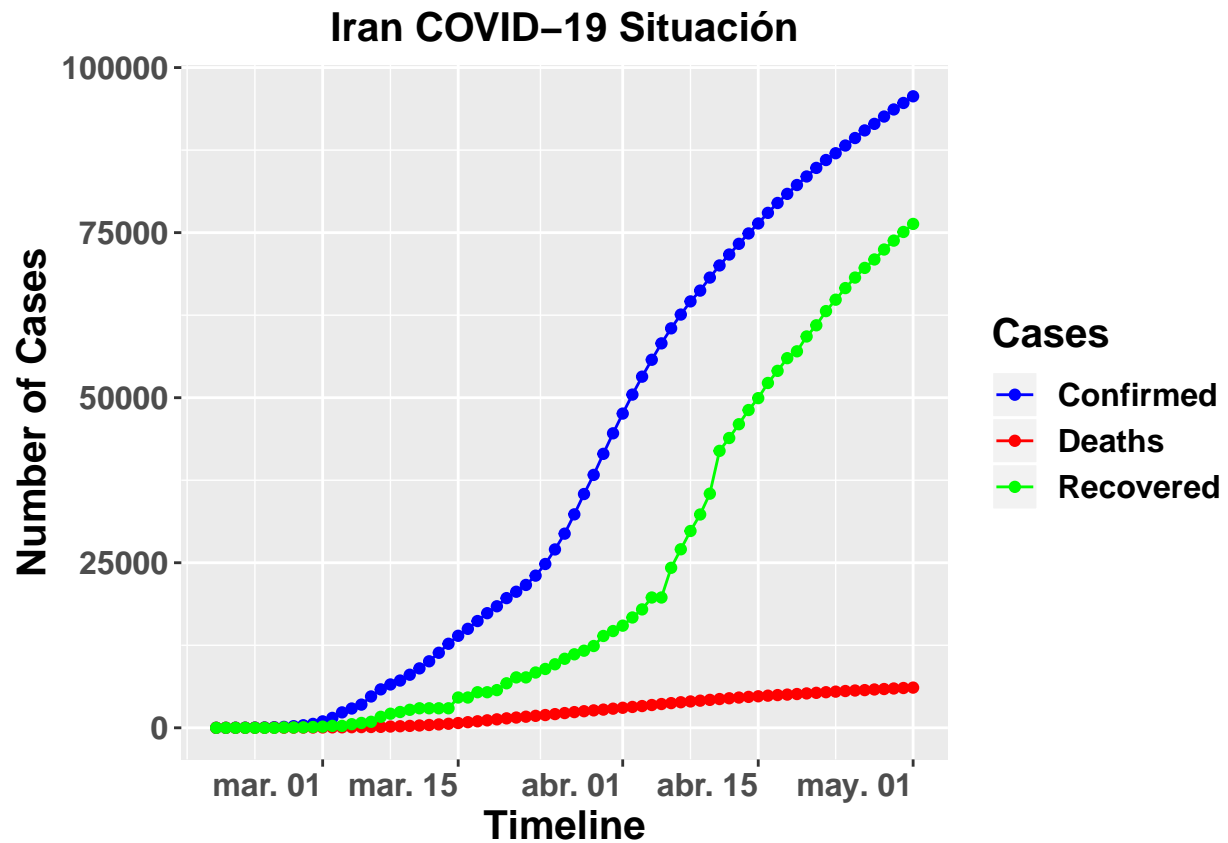
Fallecimientos diarios nuevos en Iran



#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","r
  labs(x="Timeline", y="Number of Cases",title = "Iran COVID-19 Situación", 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

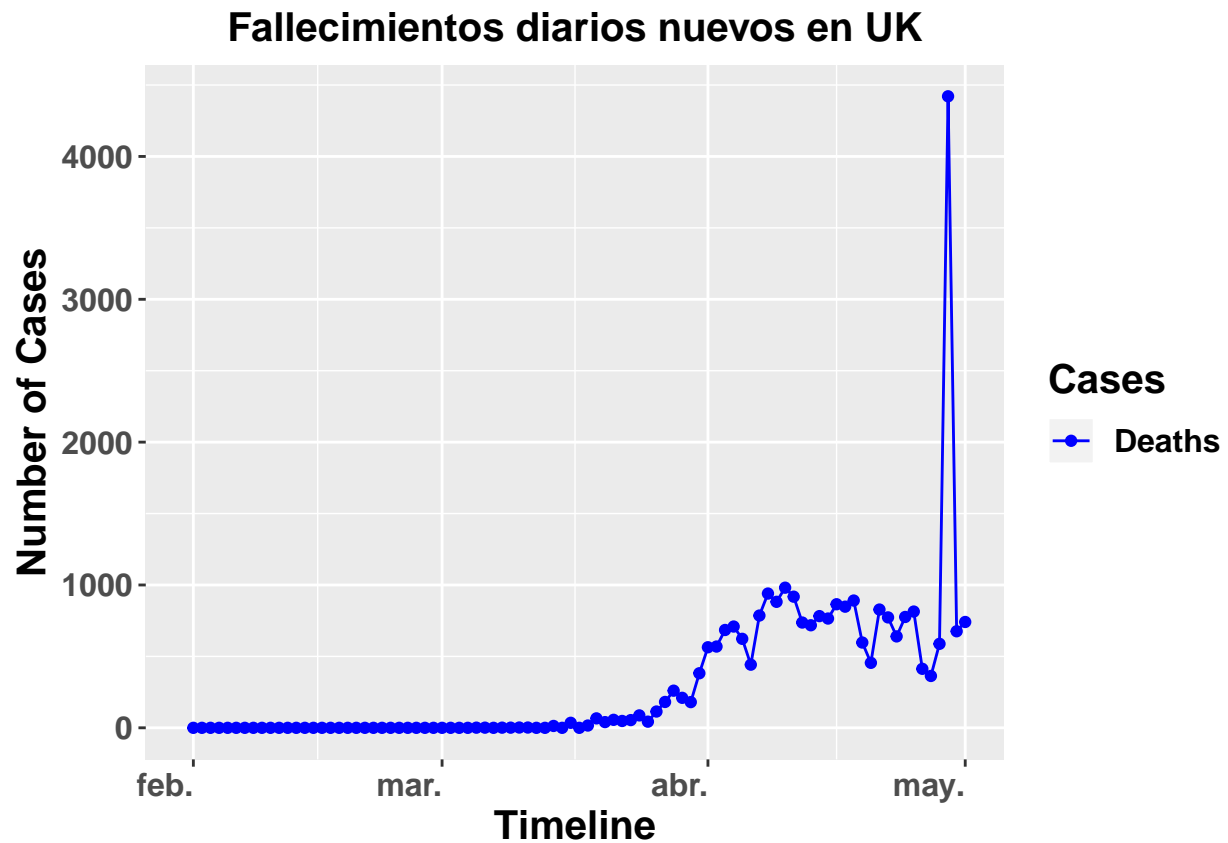


```
UK <- filter(df, Country == "UK") %>% group_by(Date) %>%
  summarise(Confirmed = sum(Confirmed), Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
  gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))
```

```
UK2 <- filter(UK, Cases == "Deaths",)
UK2$Fallecimientos.nuevos <- c( NA, diff(UK2$Count))
```

```
UK_plot2<- ggplot(UK2, aes(x= Date, y= Fallecimientos.nuevos ,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","r
  labs(x="Timeline", y="Number of Cases",title = "Fallecimientos diarios nuevos en UK", fill =
  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))
```

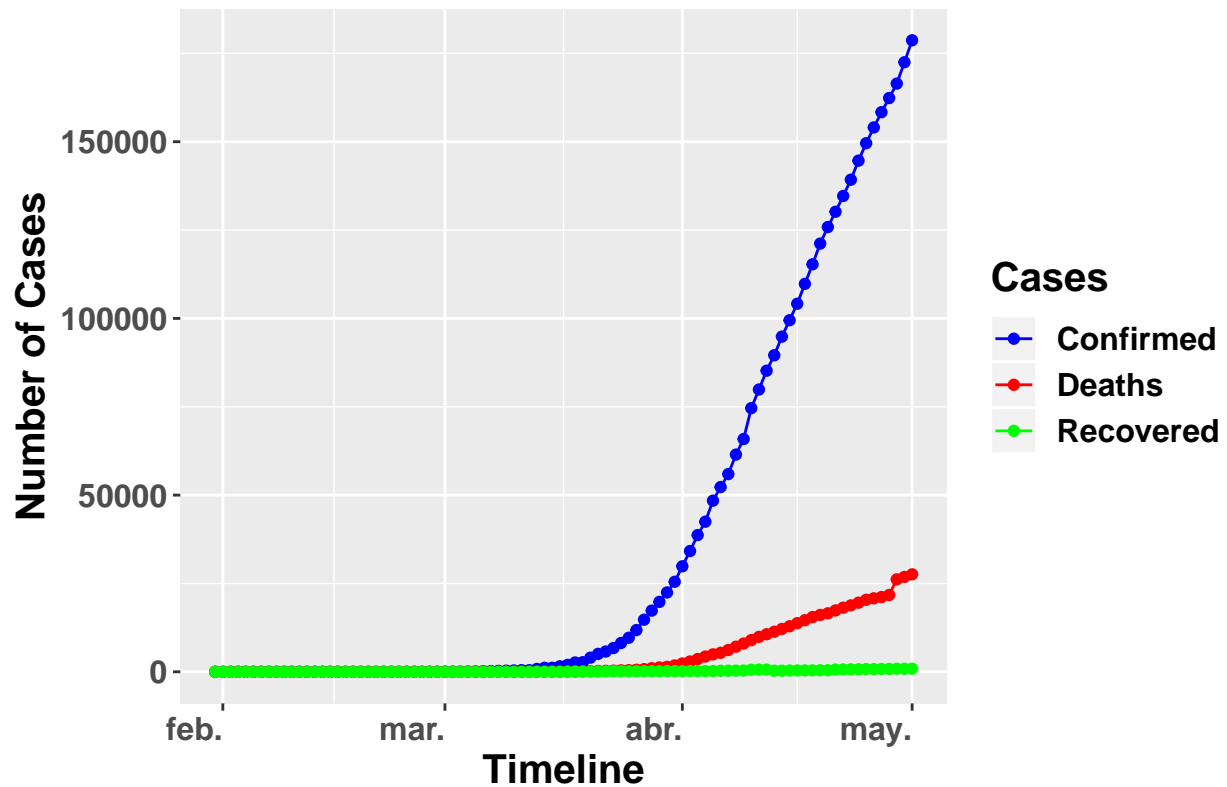
```
UK_plot2
```



```
#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 = "Reino Unido COVID-19 Situación", fill = 'Cases', color = 'Deaths')
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
```

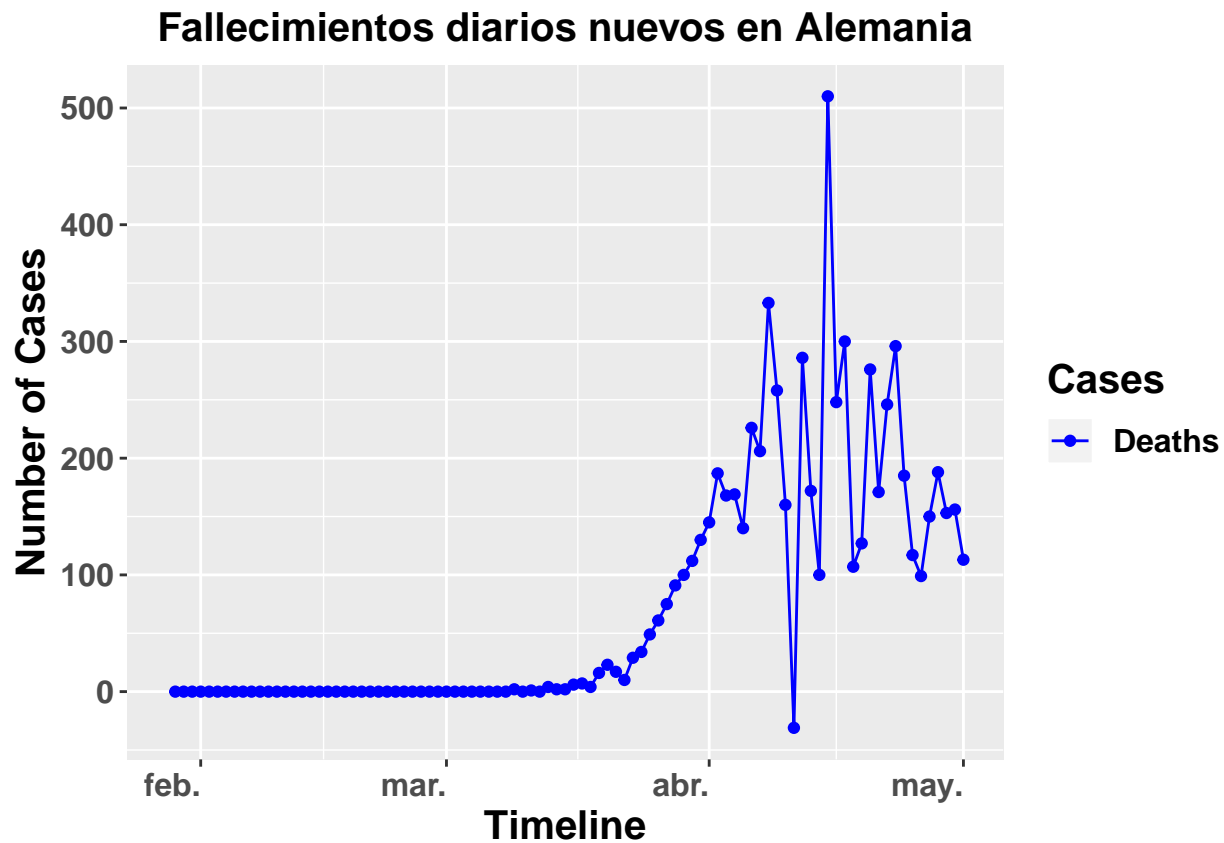
Reino Unido COVID-19 Situación



```
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))
```

```
Germany2 <- filter(Germany, Cases == "Deaths",)
Germany2$Fallecimientos.nuevos <- c( NA, diff(Germany2$Count))
Germany_plot2<- ggplot(Germany2, aes(x= Date, y= Fallecimientos.nuevos , fill = Cases, color = Cases , g
  geom_line(aes(colour = Cases))+geom_point()+
  scale_fill_manual(values = c("blue","red","green"))+scale_colour_manual(values = c("blue","r
  labs(x="Timeline", y="Number of Cases", title = "Fallecimientos diarios nuevos en Alemania",
  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))
```

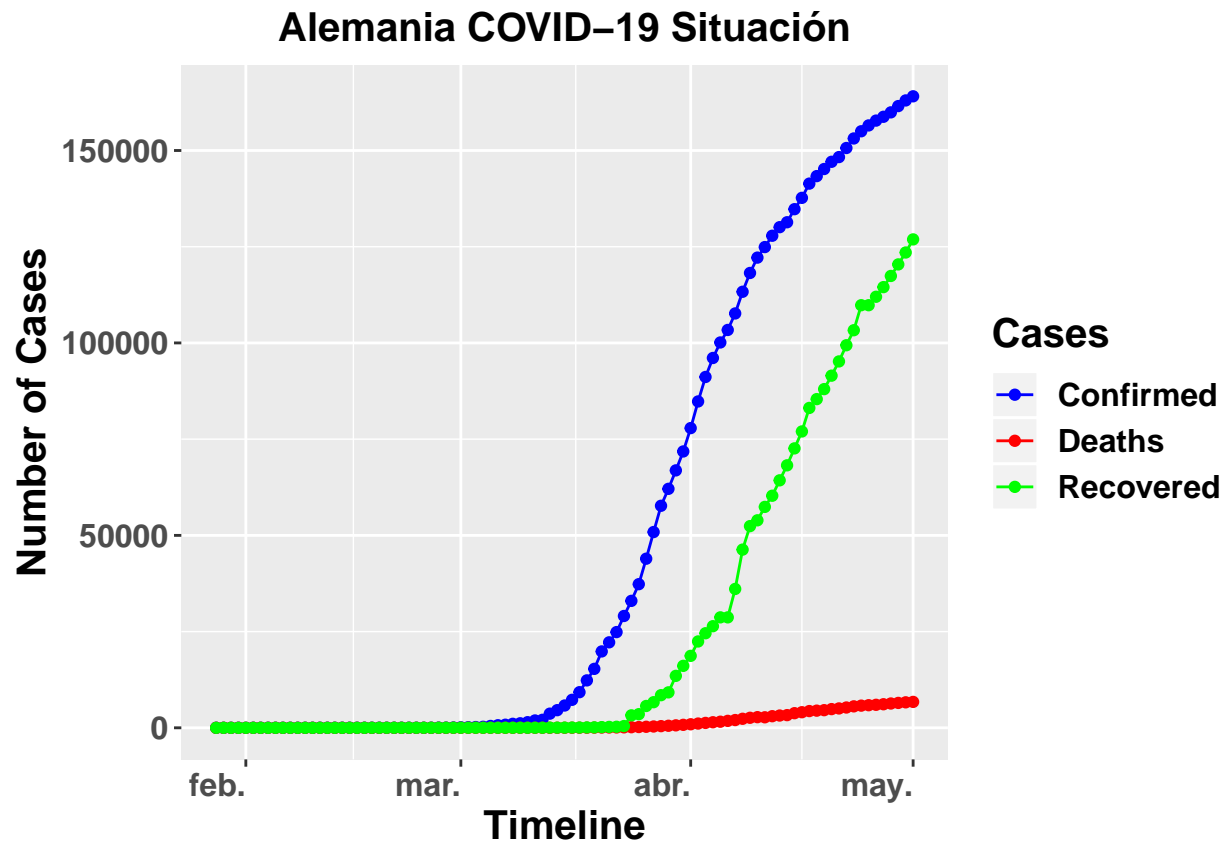
Germany_plot2



#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 = "Alemania COVID-19 Situación", fill = 'Cases', color = '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



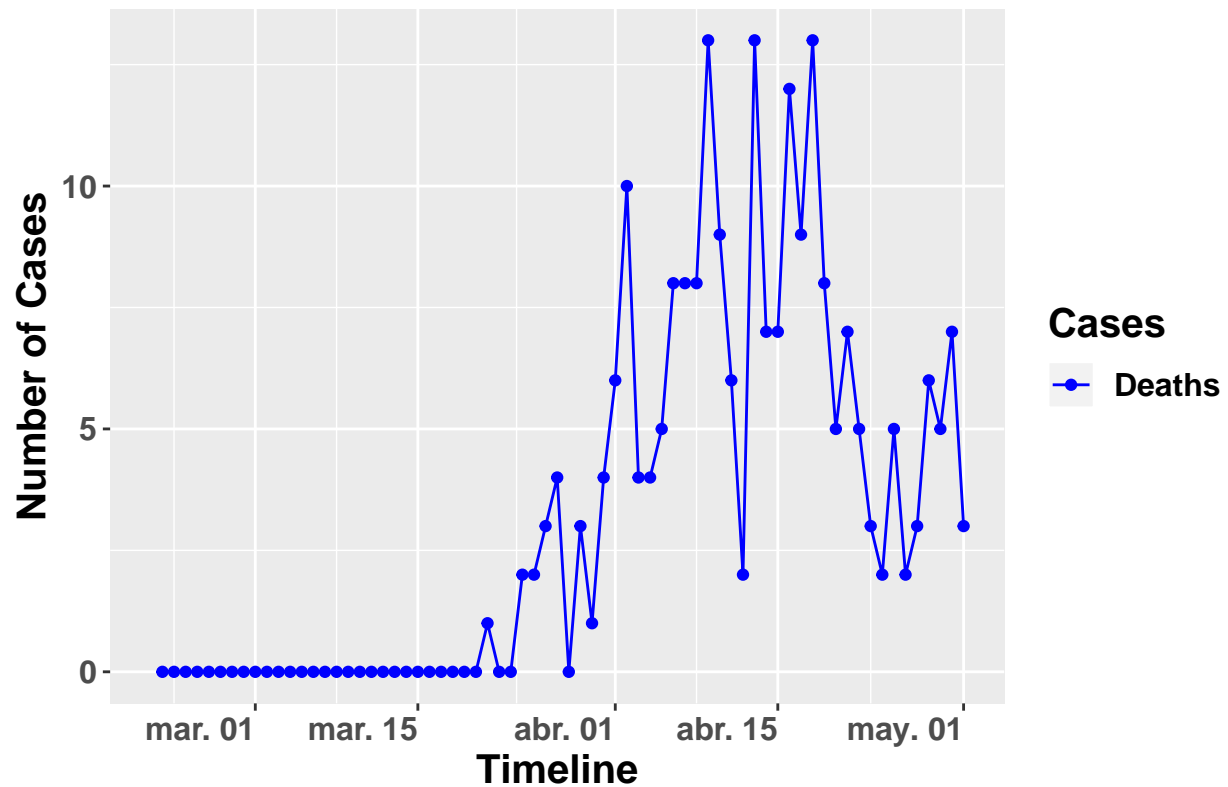
```
Israel <- filter(df, Country == "Israel") %>% group_by(Date) %>%
summarise(Confirmed = sum(Confirmed) , Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))
```

```
Israel2 <- filter(Israel, Cases == "Deaths",)
Israel2$Fallecimientos.nuevos <- c( NA, diff(Israel2$Count))
```

```
Israel_plot2<- ggplot(Israel2, aes(x= Date, y= Fallecimientos.nuevos ,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 = "Fallecimientos diarios nuevos en Israel", 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))
```

```
Israel_plot2
```

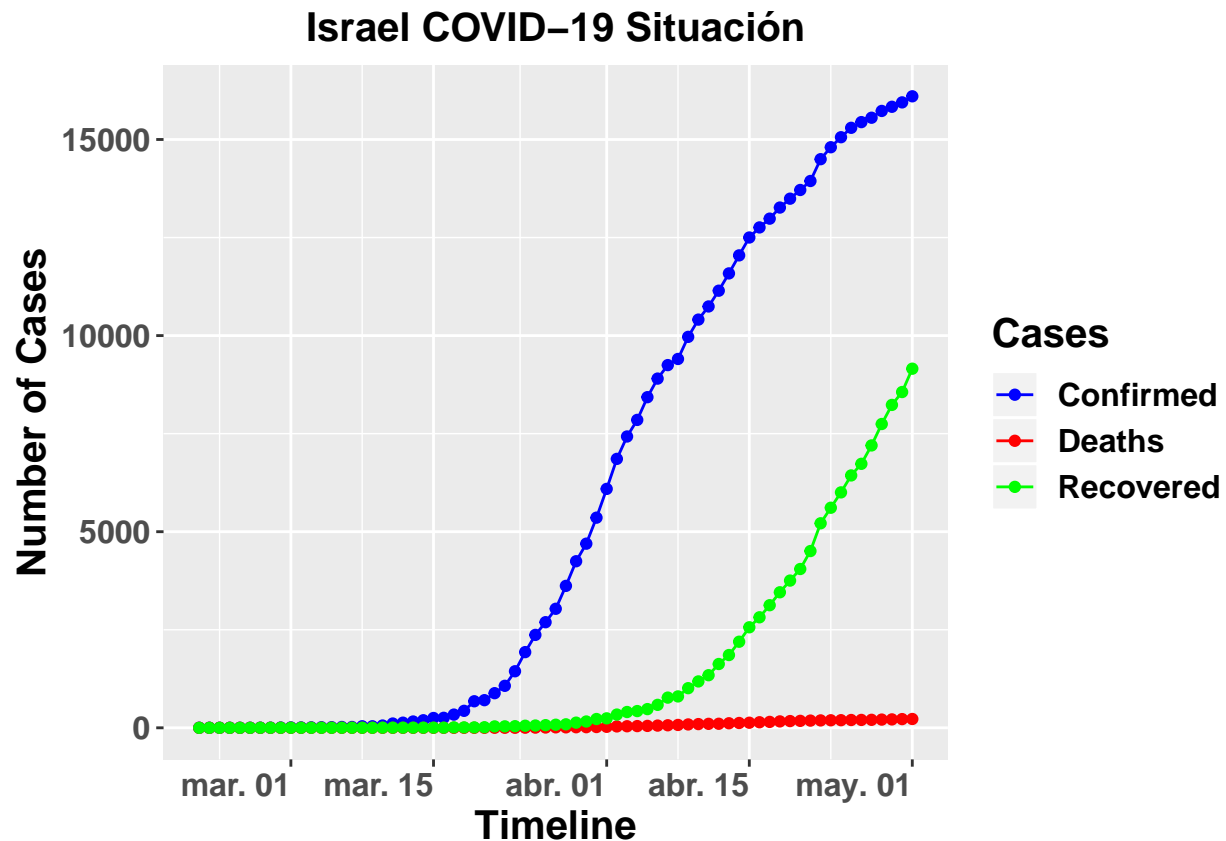
Fallecimientos diarios nuevos en Israel



#Line Plot

```
Israel_plot <- ggplot(Israel, 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 = "Israel COVID-19 Situación", 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))
```

Israel_plot

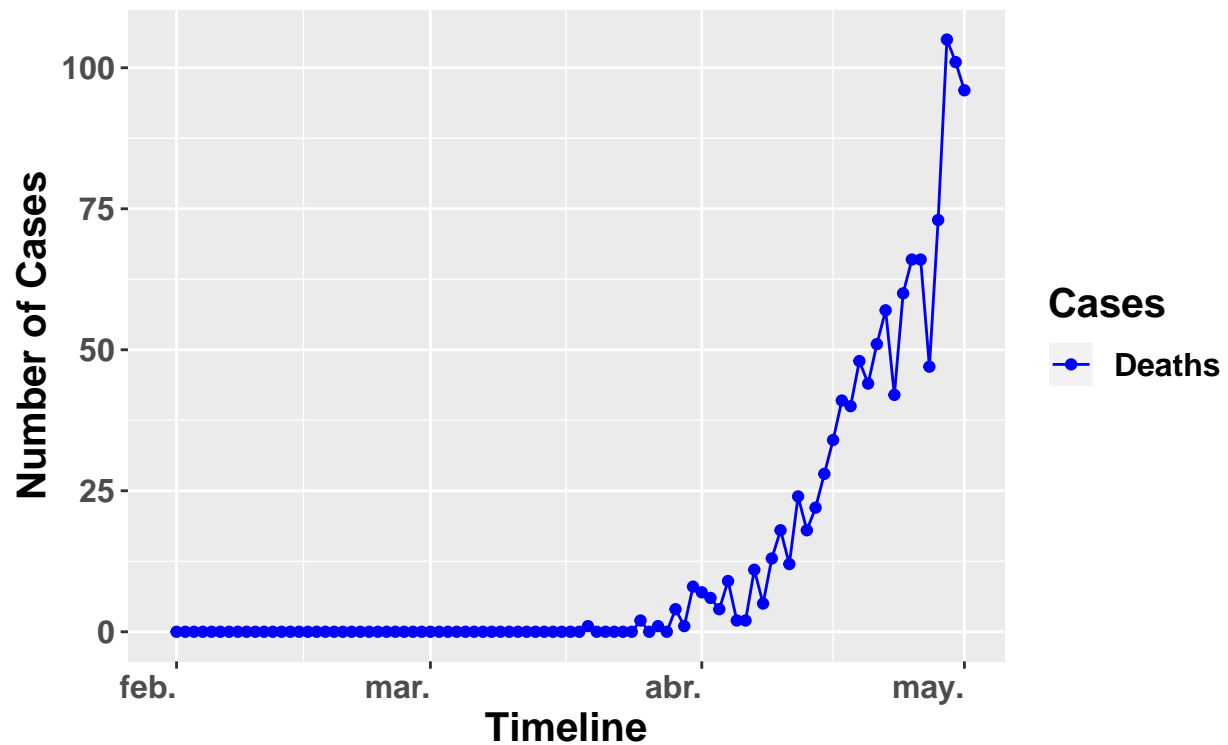


```
Russia <- filter(df, Country == "Russia") %>% group_by(Date) %>%
summarise(Confirmed = sum(Confirmed), Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))
```

```
Russia2 <- filter(Russia, Cases == "Deaths",)
Russia2$Fallecimientos.nuevos <- c( NA, diff(Russia2$Count))
Russia_plot2<- ggplot(Russia2, aes(x= Date, y= Fallecimientos.nuevos ,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 = "Fallecimientos diarios nuevos en Russia")
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))
```

```
Russia_plot2
```

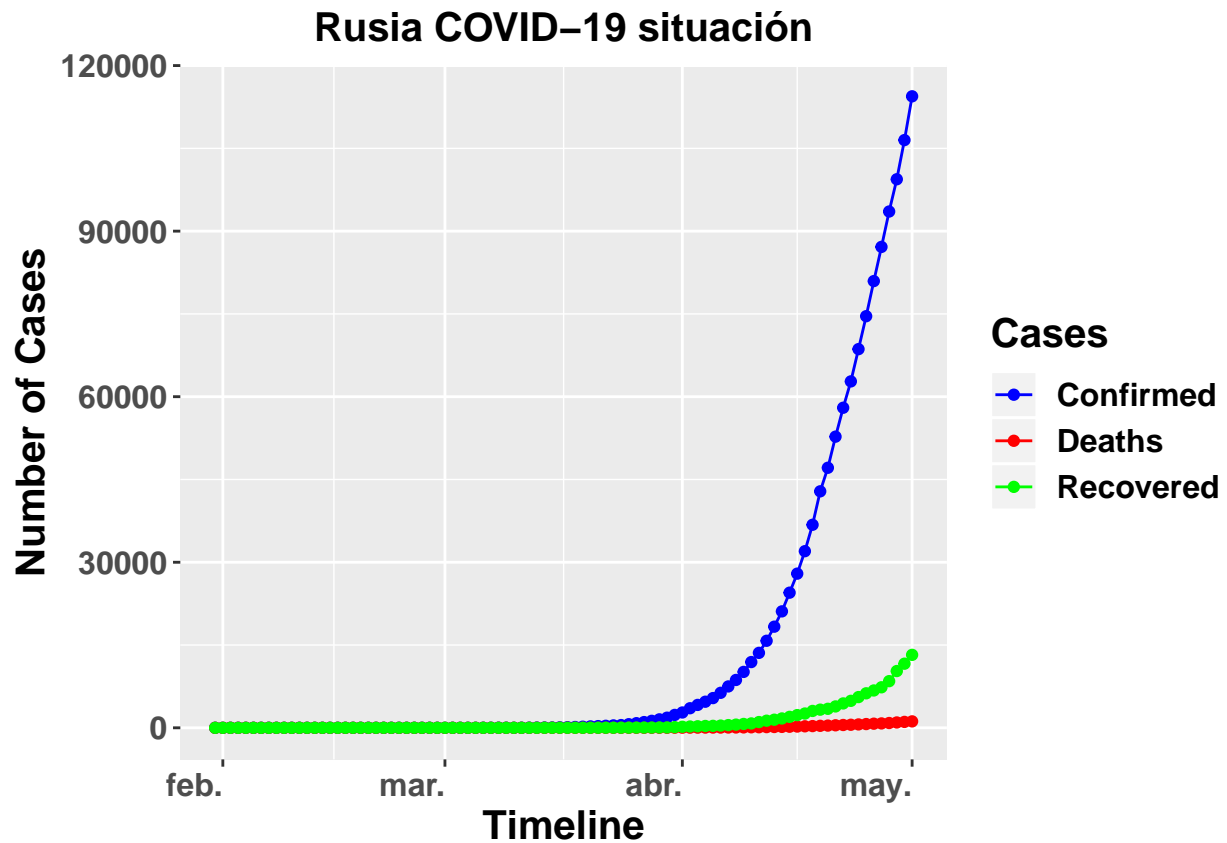
Fallecimientos diarios nuevos en Russia



#Line Plot

```
Russia_plot <- ggplot(Russia, 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 = "Russia COVID-19 situación", 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))
```

Russia_plot



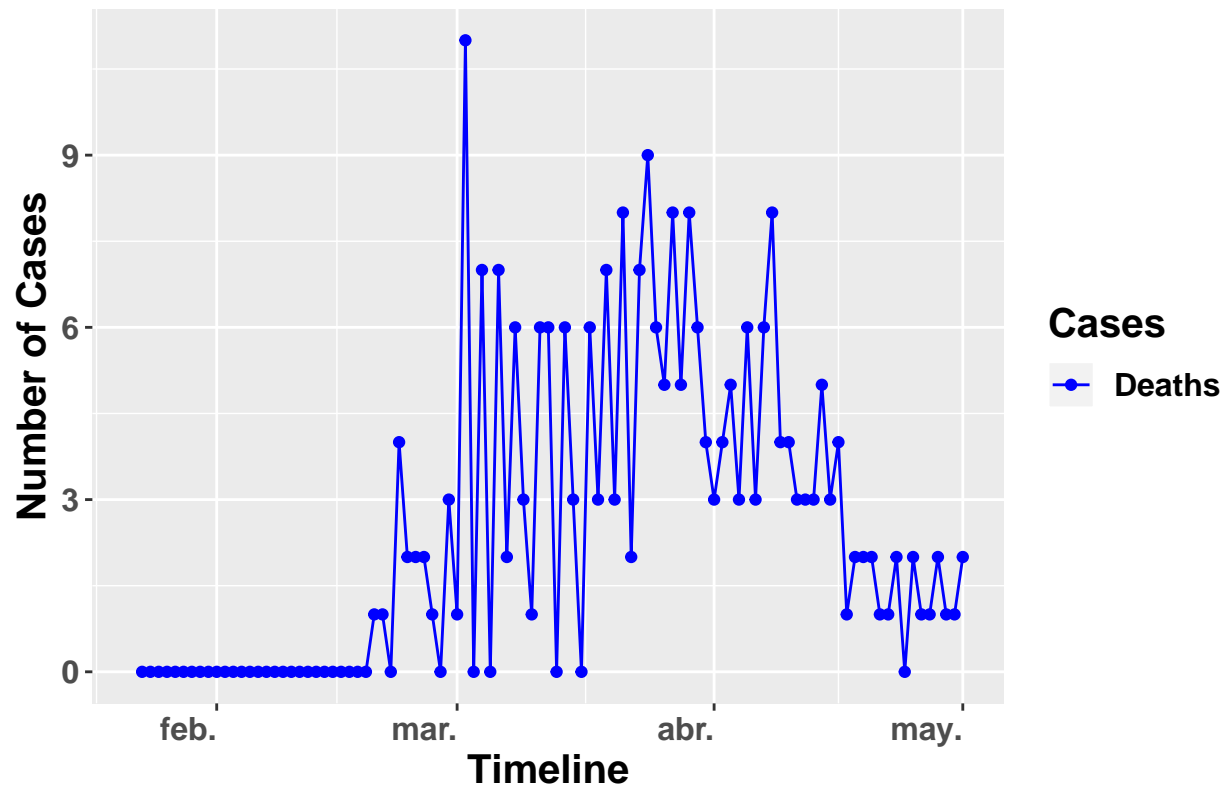
```
South_Korea <- filter(df, Country == "South Korea") %>% group_by(Date) %>%
summarise(Confirmed = sum(Confirmed), Deaths = sum(Deaths), Recovered = sum(Recovered)) %>%
gather(key = Cases, value = Count, c(Confirmed, Deaths, Recovered))
```

```
South_Korea2 <- filter(South_Korea, Cases == "Deaths",)
South_Korea2$Fallecimientos.nuevos <- c( NA, diff(South_Korea2$Count))
```

```
South_Korea_plot2<- ggplot(South_Korea2, aes(x= Date, y= Fallecimientos.nuevos ,fill = Cases, color = 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 = "Fallecimientos diarios nuevos en Corea del Sur") +
  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))
```

```
South_Korea_plot2
```

Fallecimientos diarios nuevos en Corea del Sur

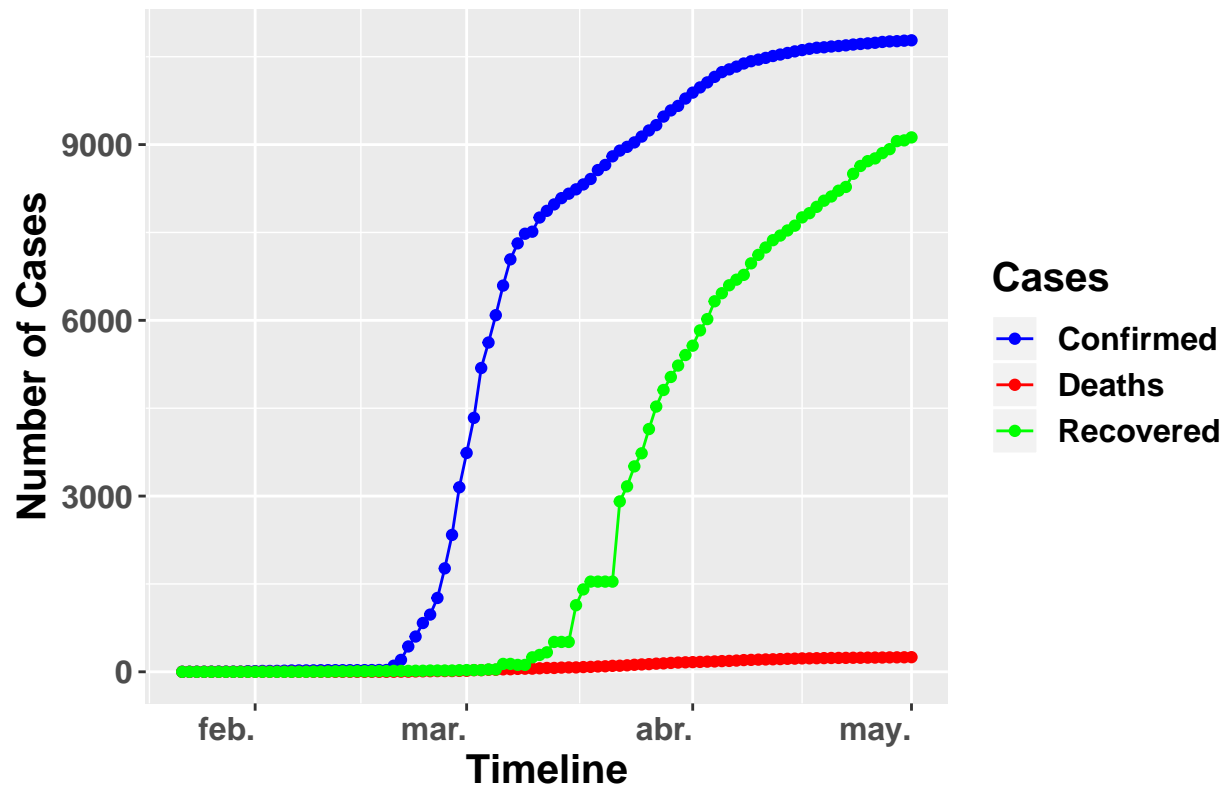


#Line Plot

```
South_Korea_plot <- ggplot(South_Korea, 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 = "Corea del Sur COVID-19 Situación", fill = 'Cases', color = '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))
```

South_Korea_plot

Corea del Sur COVID-19 Situación



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

```
Japan2 <- filter(Japan, Cases == "Deaths",)
Japan2$Fallecimientos.nuevos <- c( NA, diff(Japan2$Count))
```

```
Japan2 %>%
mutate(pct_change = (Fallecimientos.nuevos / lag(Fallecimientos.nuevos) - 1) * 100)
```

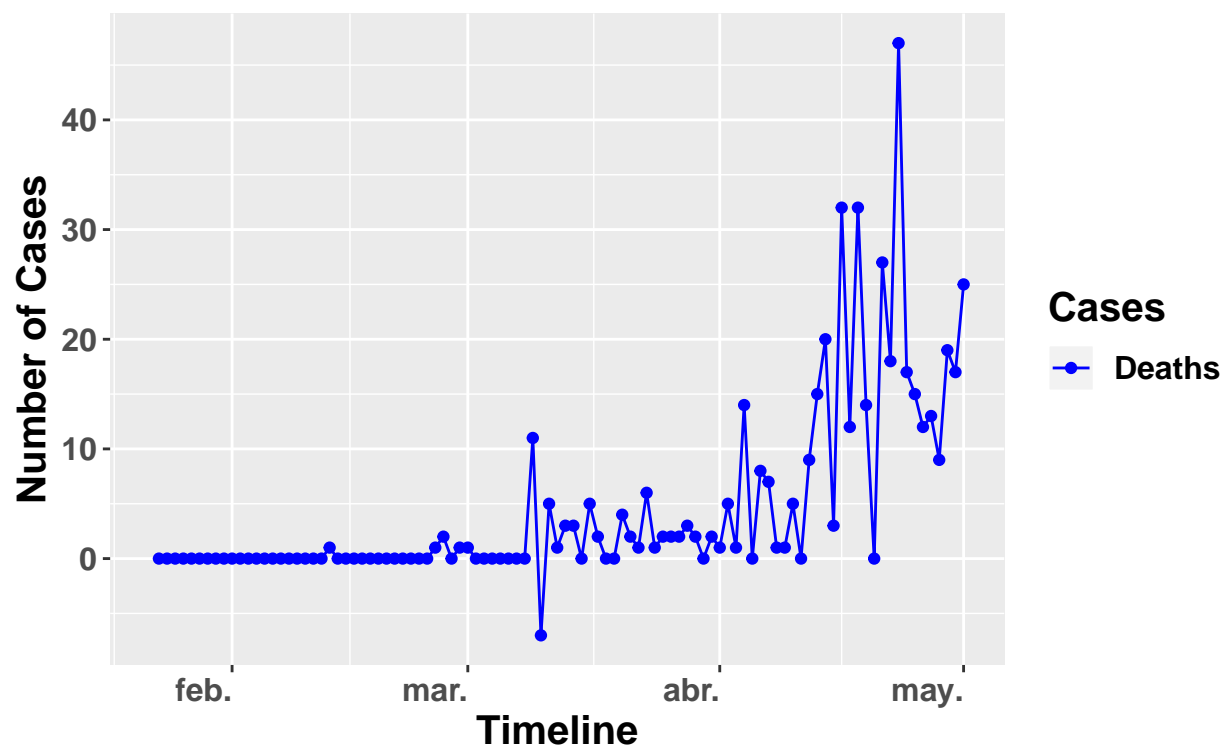
```
## # A tibble: 101 x 5
##   Date      Cases Count Fallecimientos.nuevos pct_change
##   <date>    <chr> <dbl>          <dbl>          <dbl>
## 1 2020-01-22 Deaths    0             NA             NA
## 2 2020-01-23 Deaths    0             0             NA
## 3 2020-01-24 Deaths    0             0             NaN
## 4 2020-01-25 Deaths    0             0             NaN
## 5 2020-01-26 Deaths    0             0             NaN
## 6 2020-01-27 Deaths    0             0             NaN
## 7 2020-01-28 Deaths    0             0             NaN
## 8 2020-01-29 Deaths    0             0             NaN
## 9 2020-01-30 Deaths    0             0             NaN
## 10 2020-01-31 Deaths    0             0             NaN
## # ... with 91 more rows
```



```
Japan_plot2<- ggplot(Japan2, aes(x= Date, y= Fallecimientos.nuevos ,fill = Cases, color = Cases , group=
  geom_line(aes(colour = Cases))+geom_point()+
  scale_fill_manual(values = c("blue","red","green"))+scale_colour_manual(values = c("blue","r
  labs(x="Timeline", y="Number of Cases",title = "Fallecimientos diarios nuevos en Japón
    ", 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))
```

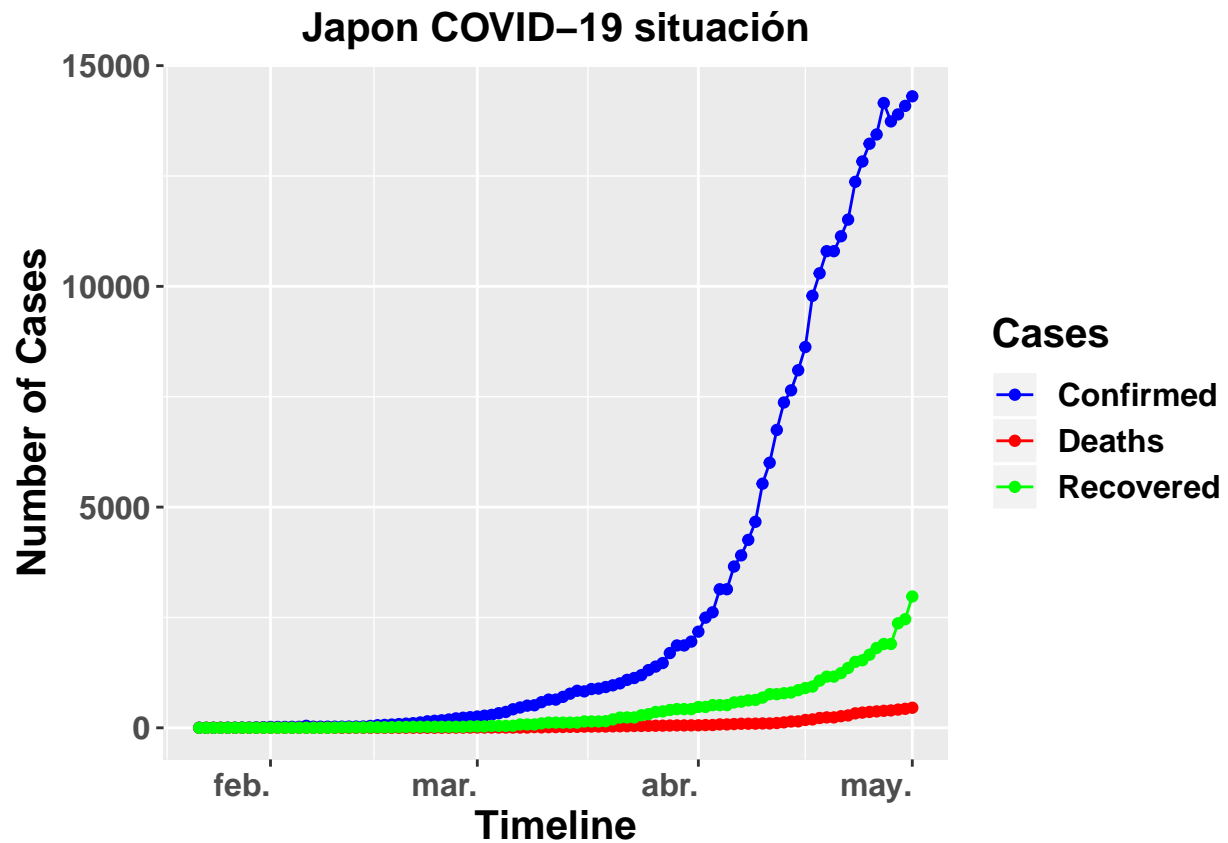
Japan_plot2

Fallecimientos diarios nuevos en Japón



```
#Line Plot
Japan_plot <- ggplot(Japan, 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","r
  labs(x="Timeline", y="Number of Cases",title = "Japon COVID-19 situación", 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))
```

Japan_plot



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

```
World1 <- filter(World, Cases == "Confirmed",)
World1$Confirmados.nuevos <- c( NA, diff(World1$Count))
World_plot<- ggplot(World1, aes(x= Date, y= Confirmados.nuevos ,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 = "Confirmados diarios nuevos en el Mundo", 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))
```

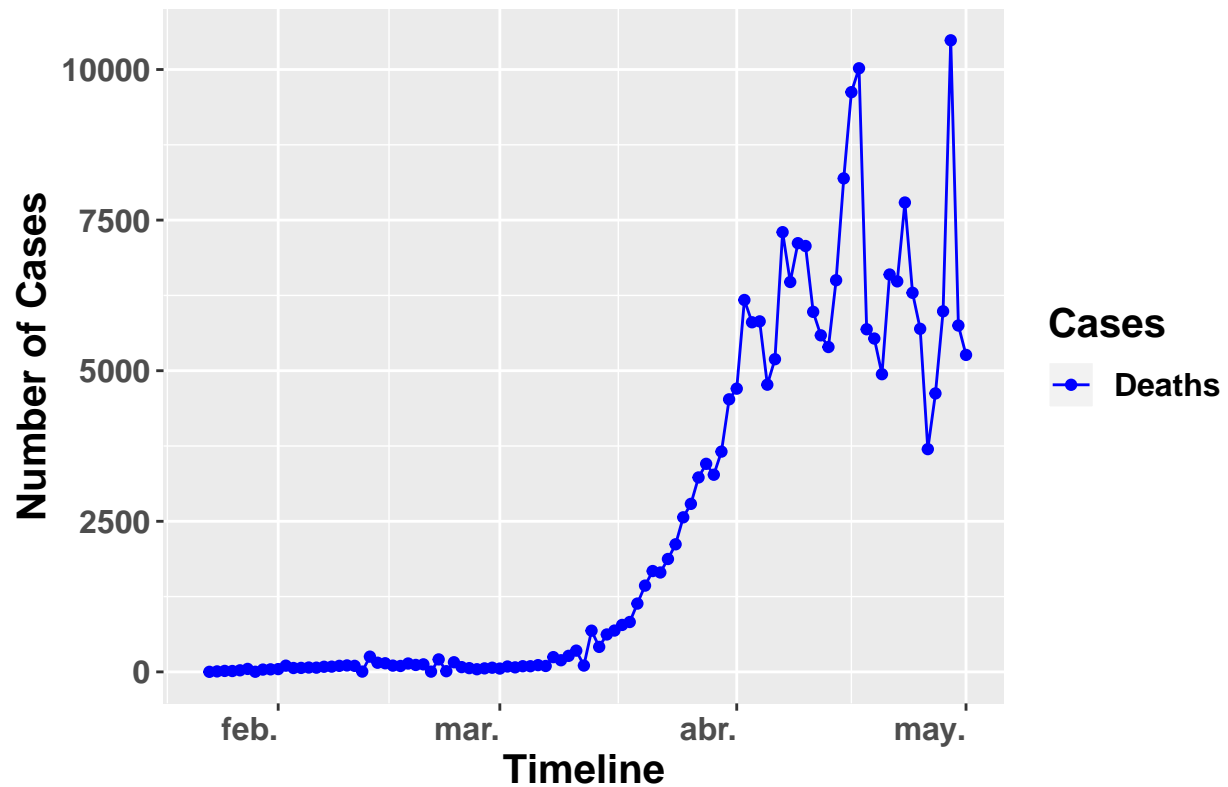
World_plot



```
World2 <- filter(World, Cases == "Deaths",)
World2$Fallecimientos.nuevos <- c( NA, diff(World2$Count))
World_plot2<- ggplot(World2, aes(x= Date, y= Fallecimientos.nuevos ,fill = Cases, color = Cases , group=
  geom_line(aes(colour = Cases))+geom_point()+
  scale_fill_manual(values = c("blue","red","green"))+scale_colour_manual(values = c("blue","r
  labs(x="Timeline", y="Number of Cases",title = "Fallecimientos diarios nuevos en el Mundo",
  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))
```

World_plot2

Fallecimientos diarios nuevos en el Mundo

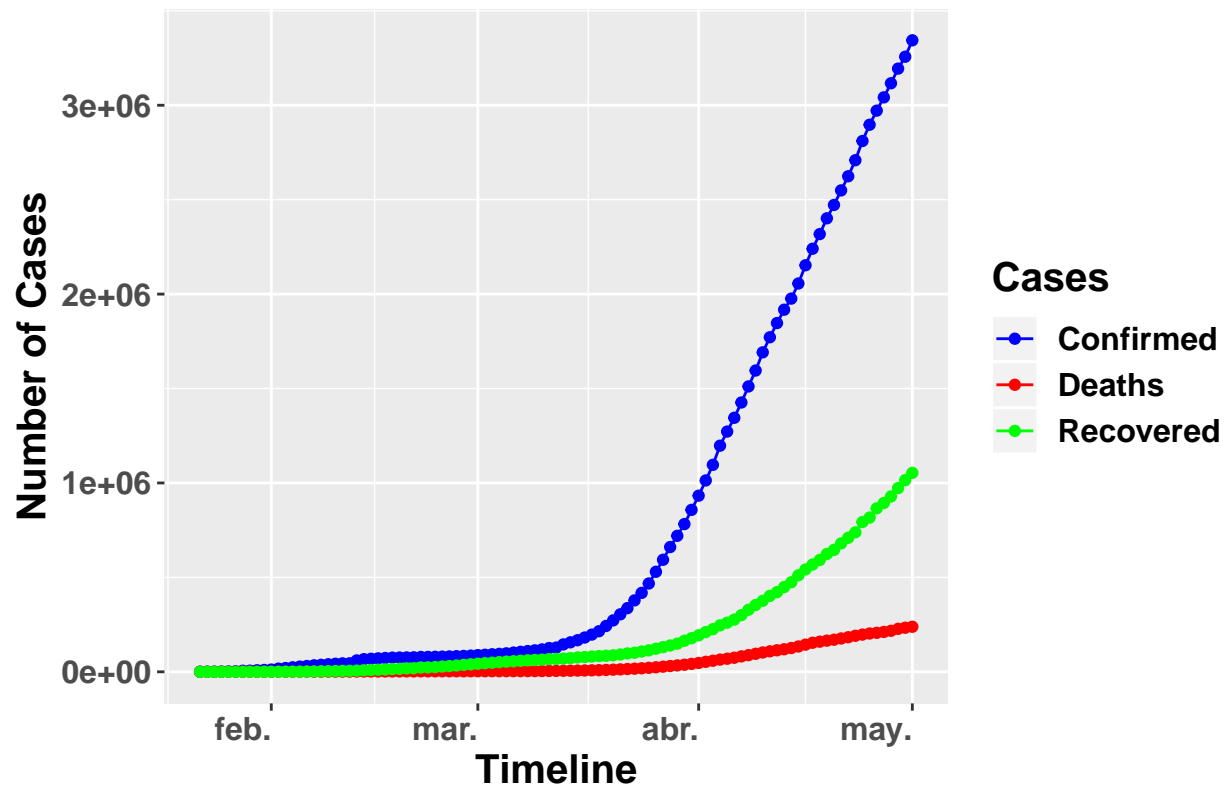


#Line Plot

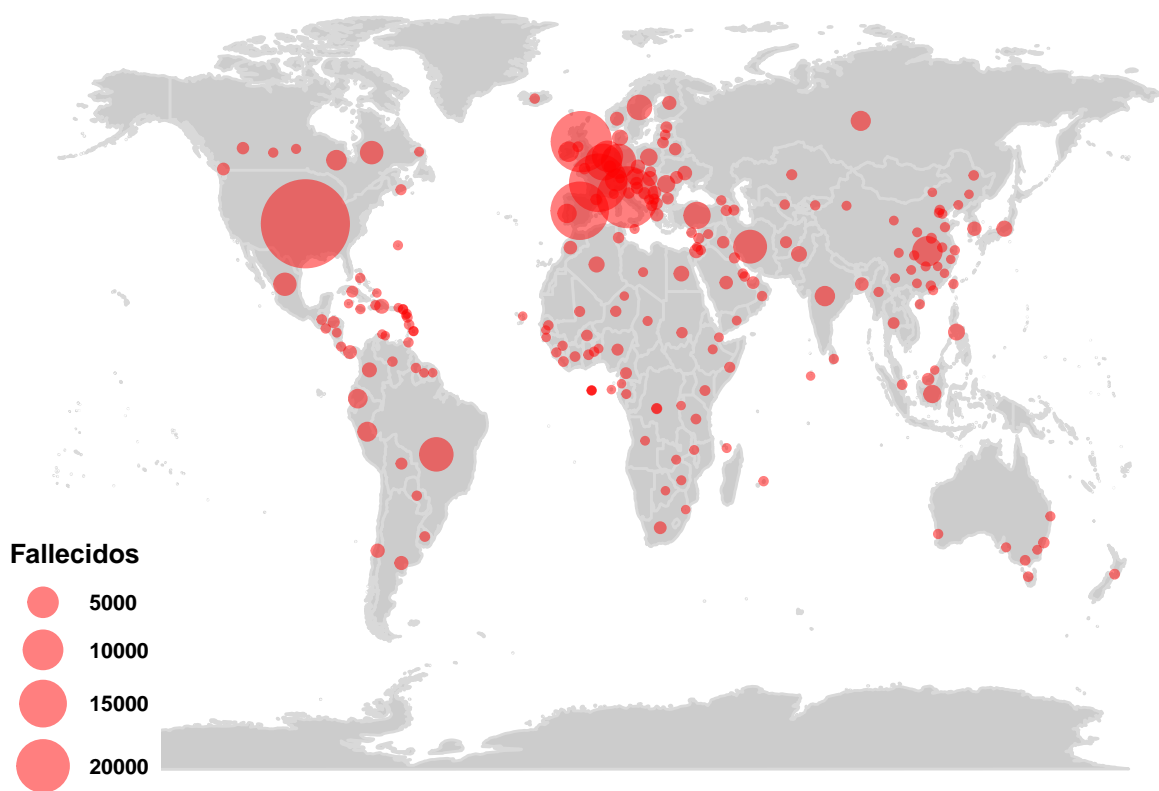
```
World_plot <- ggplot(World, aes(x= Date, y= Count ,fill = Cases, color = Cases , group=Cases ))+
  geom_line(aes(colour = Cases))+geom_point()+
  scale_fill_manual(values = c("blue","red","green"))+scale_colour_manual(values = c("blue","red","green"))+
  labs(x="Timeline", y="Number of Cases",title = "Situación mundial COVID-19 ", 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))
```

World_plot

Situación mundial COVID-19



```
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(5000, 10000, 15000, 20000)) +
  labs(size = 'Fallecidos')+ 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/nacional__covid19.csv

https://raw.githubusercontent.com/datadista/datasets/master/COVID%2019/ccaa__covid19__uci__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