Statistical visualization and computation: COVID project

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2021

Here, I am performing descriptive statistics on the cumulative incidences of death due to COVID 19 by different regions in Switzerland using the dataset from the federal institute of public health.

https://www.covid19.admin.ch/en/overview?time=total

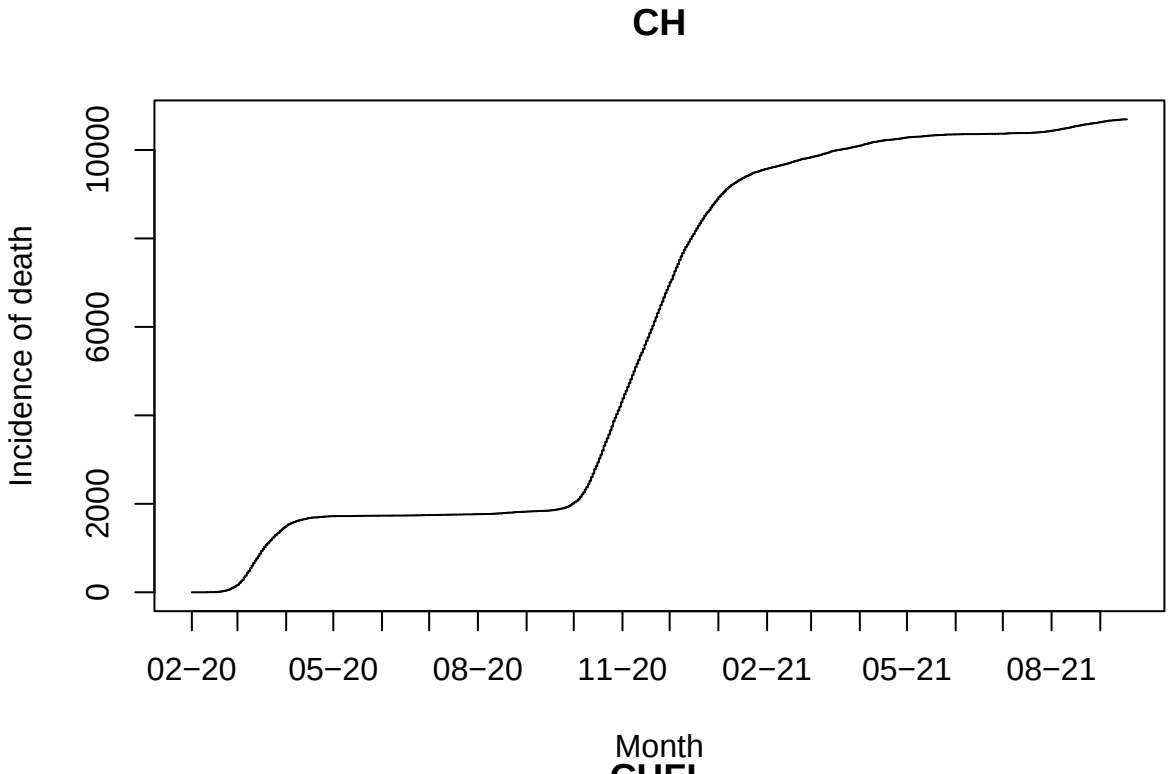
Overview of cumulative incidences of death

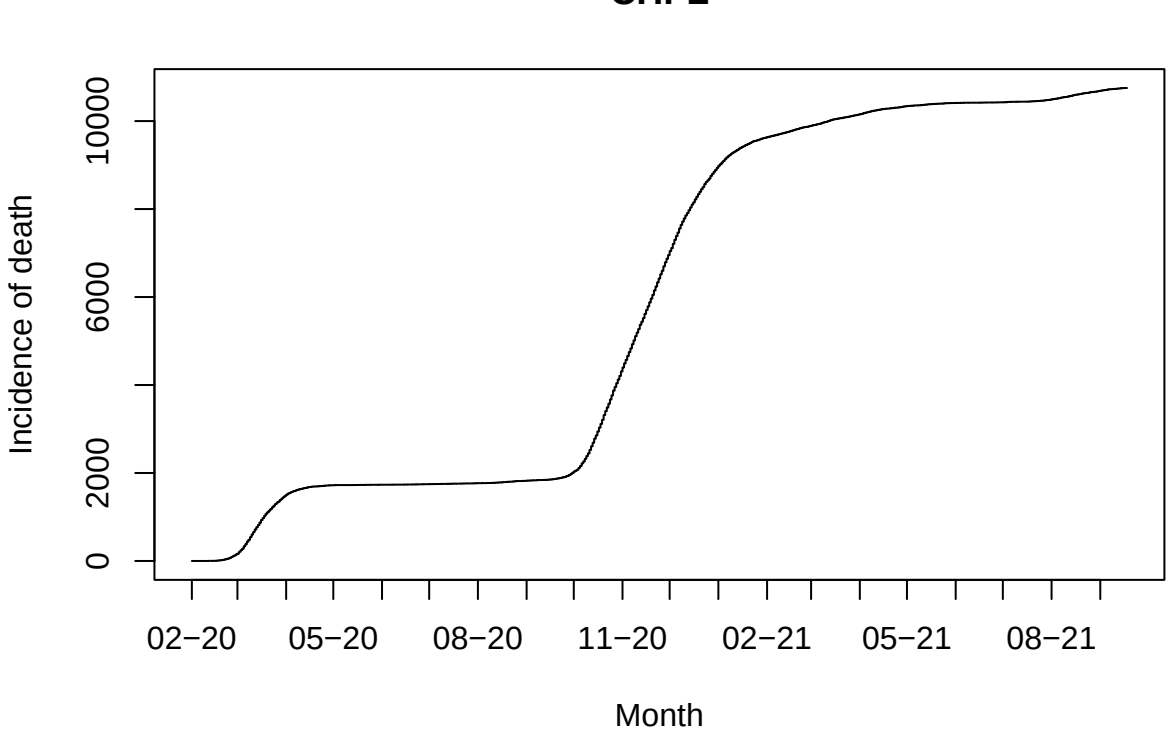
We start by loading the data

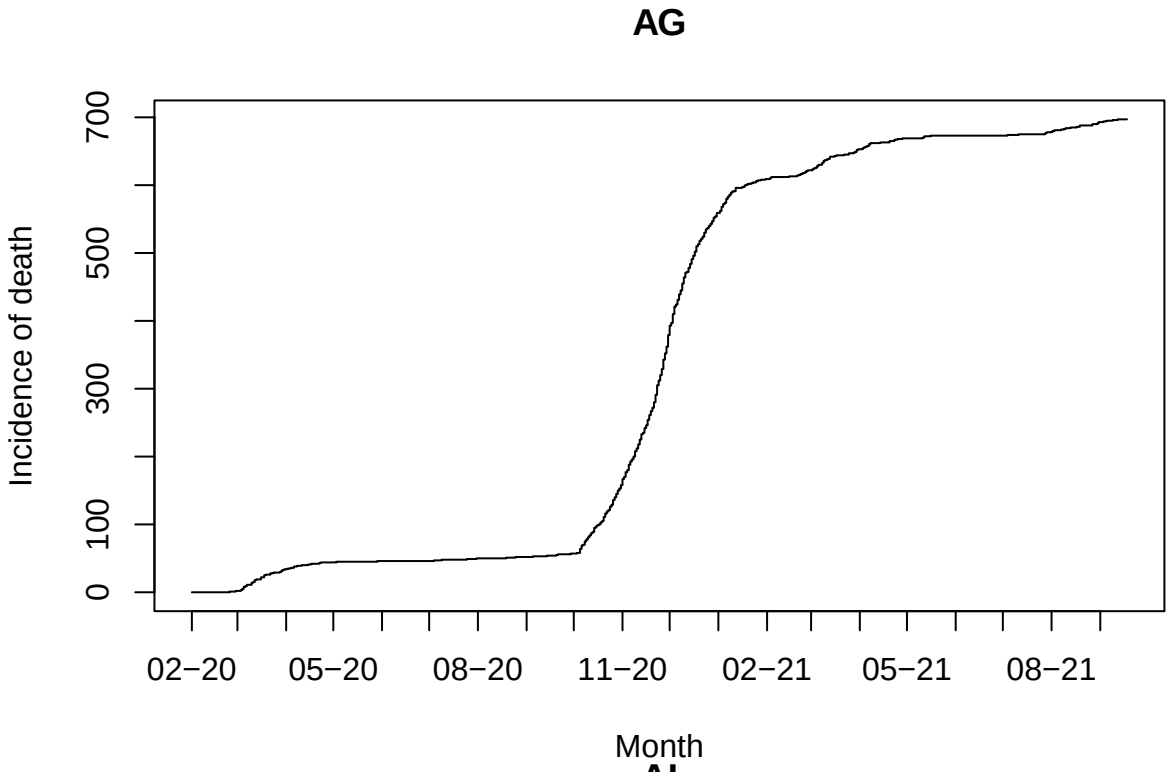
```
df.death <- read.csv("bag_covid_19_data_csv_11_October_2021/data/COVID19Death_geoRegion.csv")
df.cases <- read.csv("bag_covid_19_data_csv_11_October_2021/data/COVID19Cases_geoRegion.csv")
df.hospital <- read.csv("bag_covid_19_data_csv_11_October_2021/data/COVID19Hosp_geoRegion.csv")
```

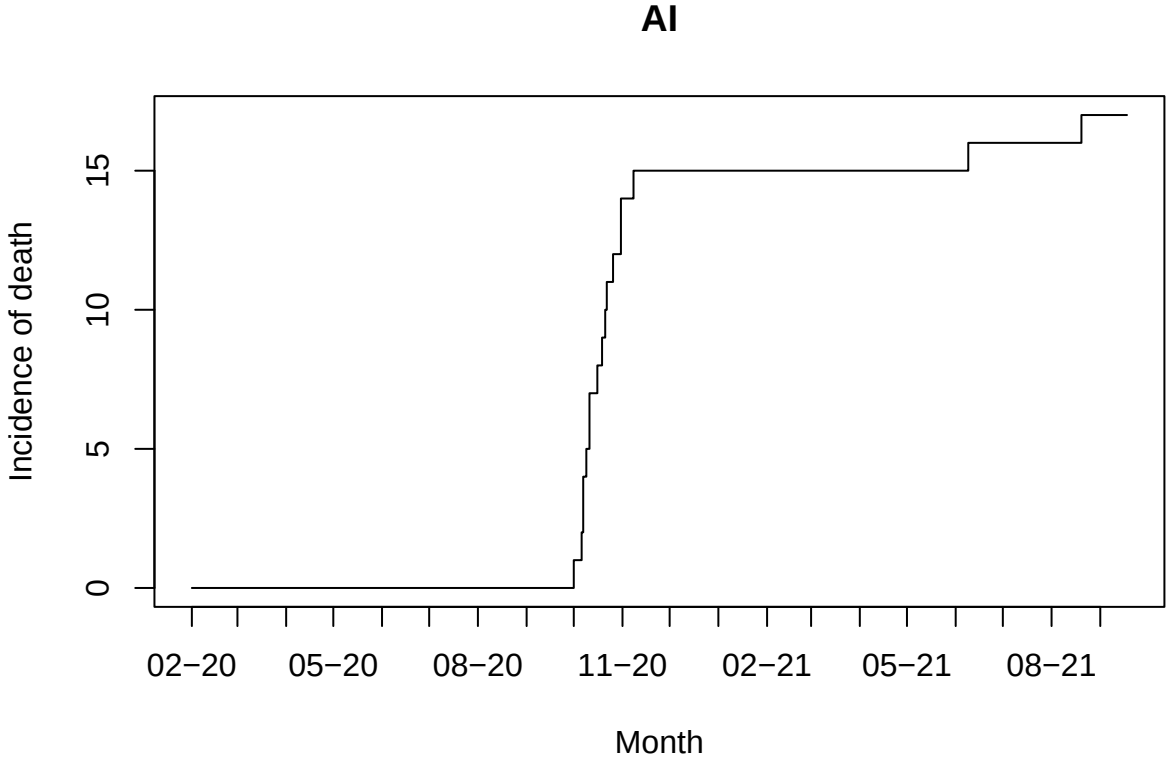
Next, we plot the cumulative incidences of death for the different geographic categories

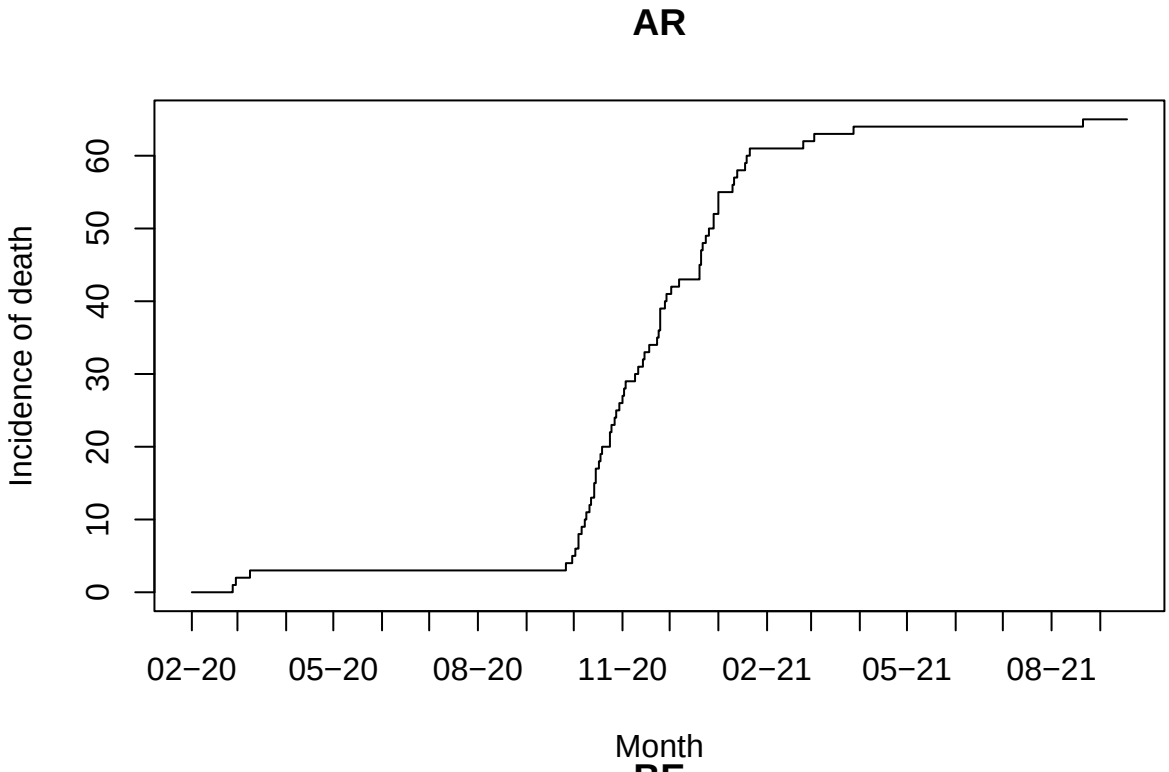
```
regions.death <- unique(df.death$geoRegion)
for (i in regions.death) {
    region.df.death <- df.death[df.death$geoRegion == i, ]
    plot(as.Date(region.df.death$datum), region.df.death$sumTotal,
        "s", xaxt = "n", xlab = "Month", ylab = "Incidence of death",
        main = i)
    axis.Date(1, at = seq(min(as.Date(region.df.death$datum)),
        max(as.Date(region.df.death$datum)) + 6, "months"), format = "%m-%y")
}
```

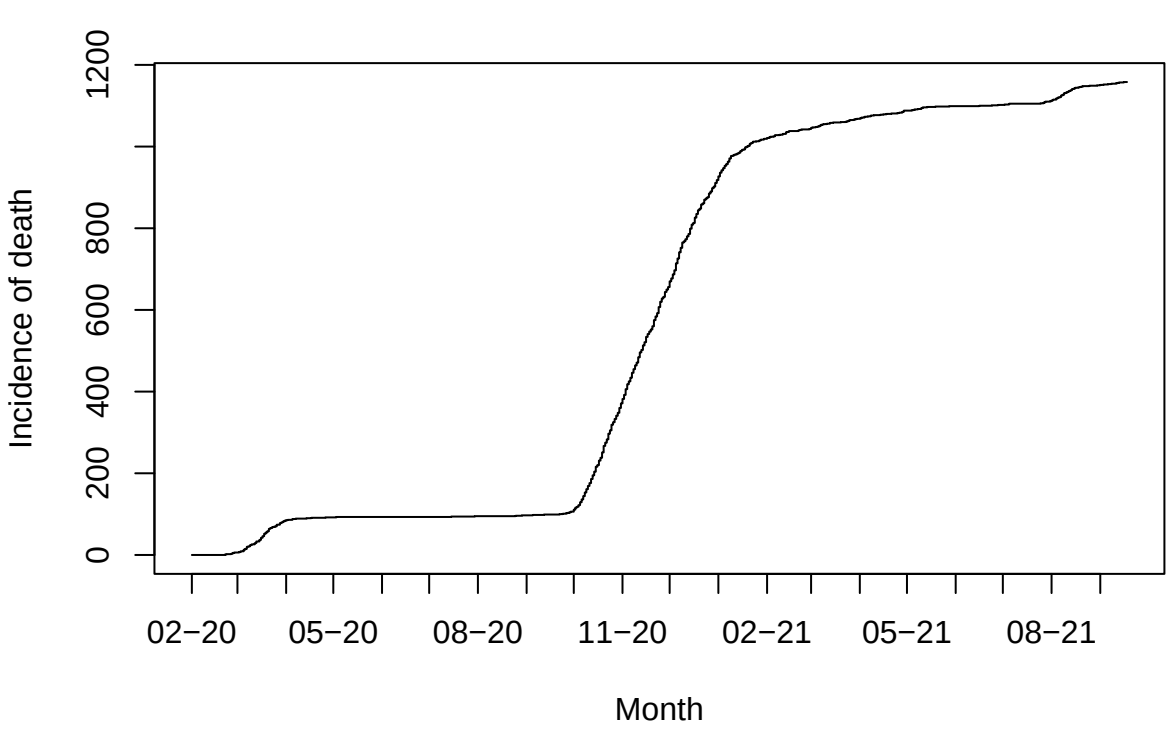

CH
Incidence of death
0
2000
6000
10000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

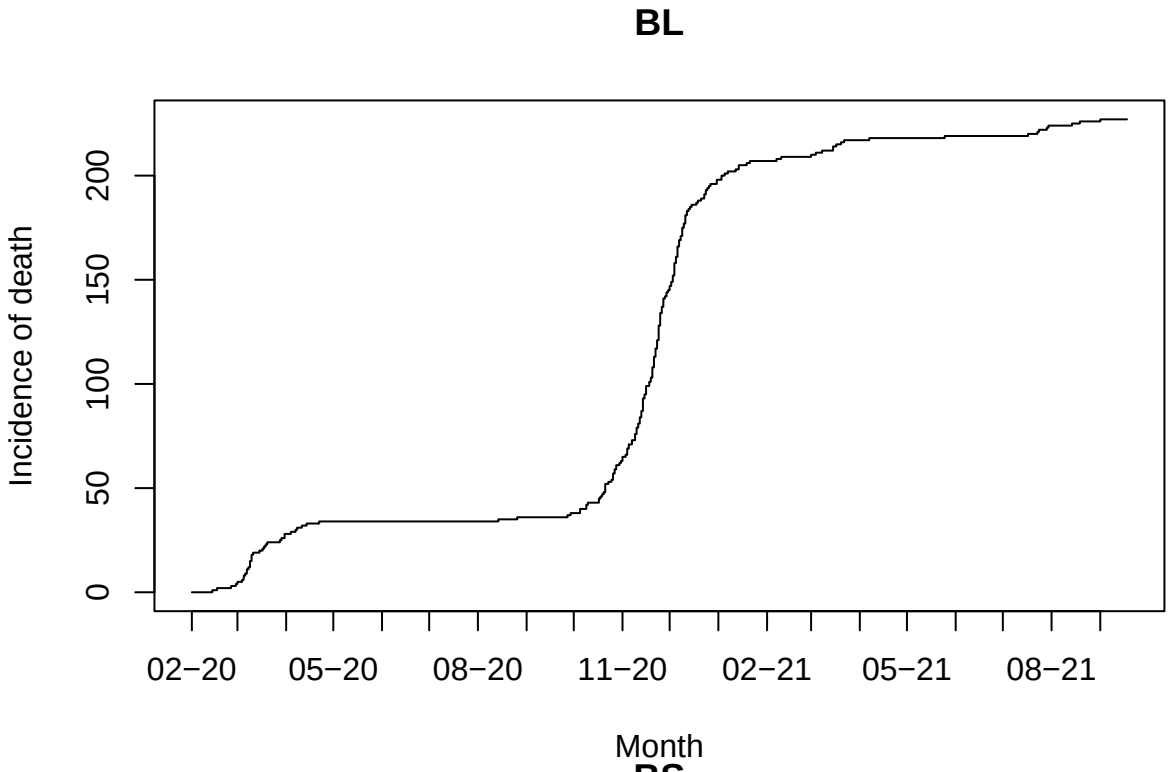

CHFL
Incidence of death
0
2000
6000
10000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

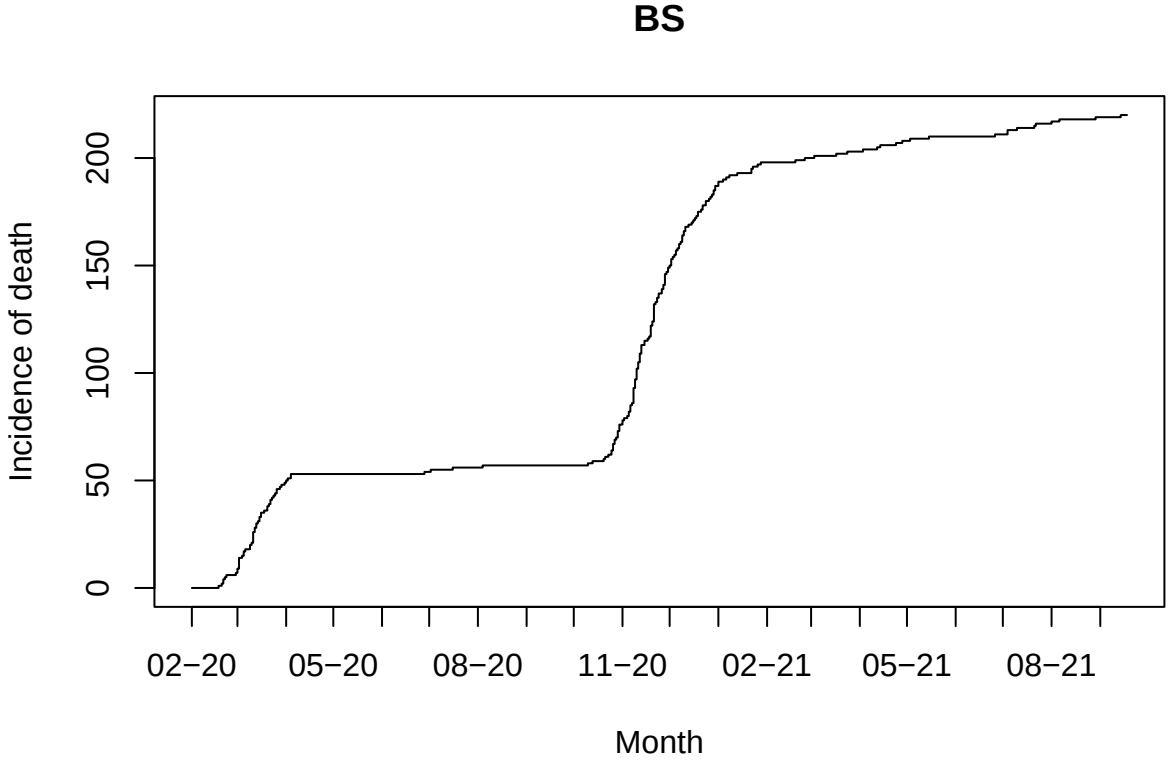

AG
Incidence of death
0
100
300
500
700
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

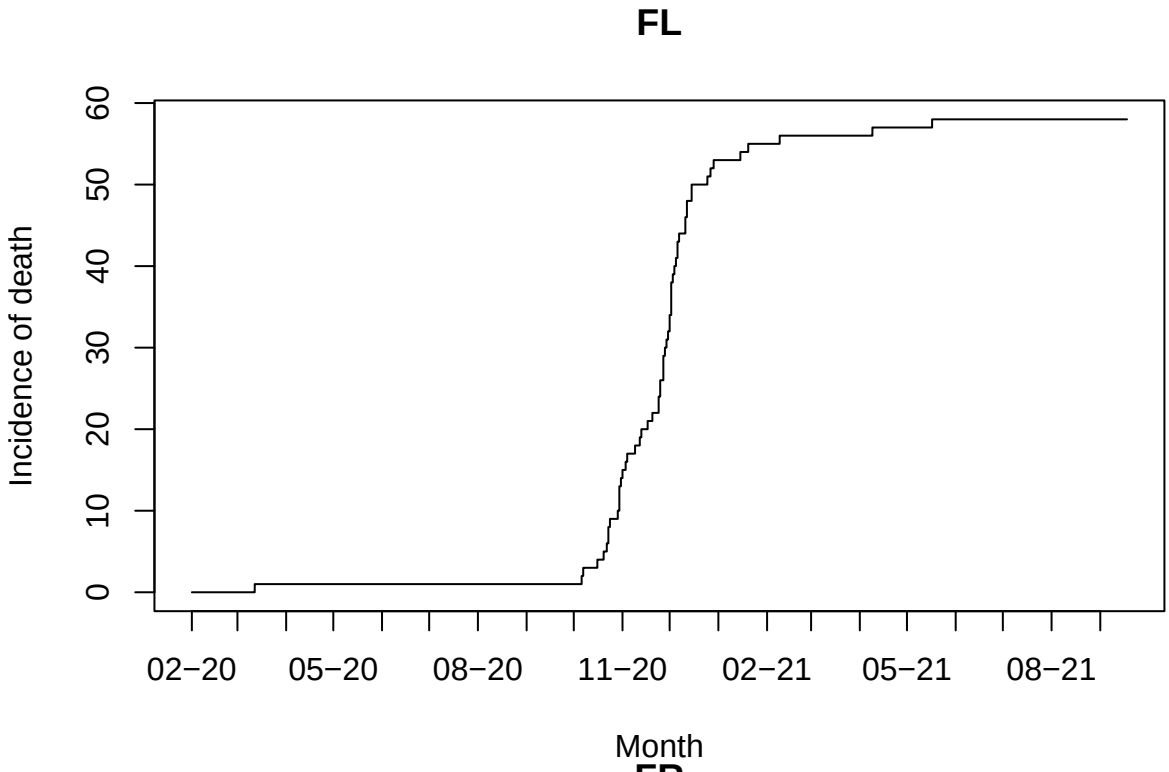

AI
Incidence of death
0
5
10
15
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

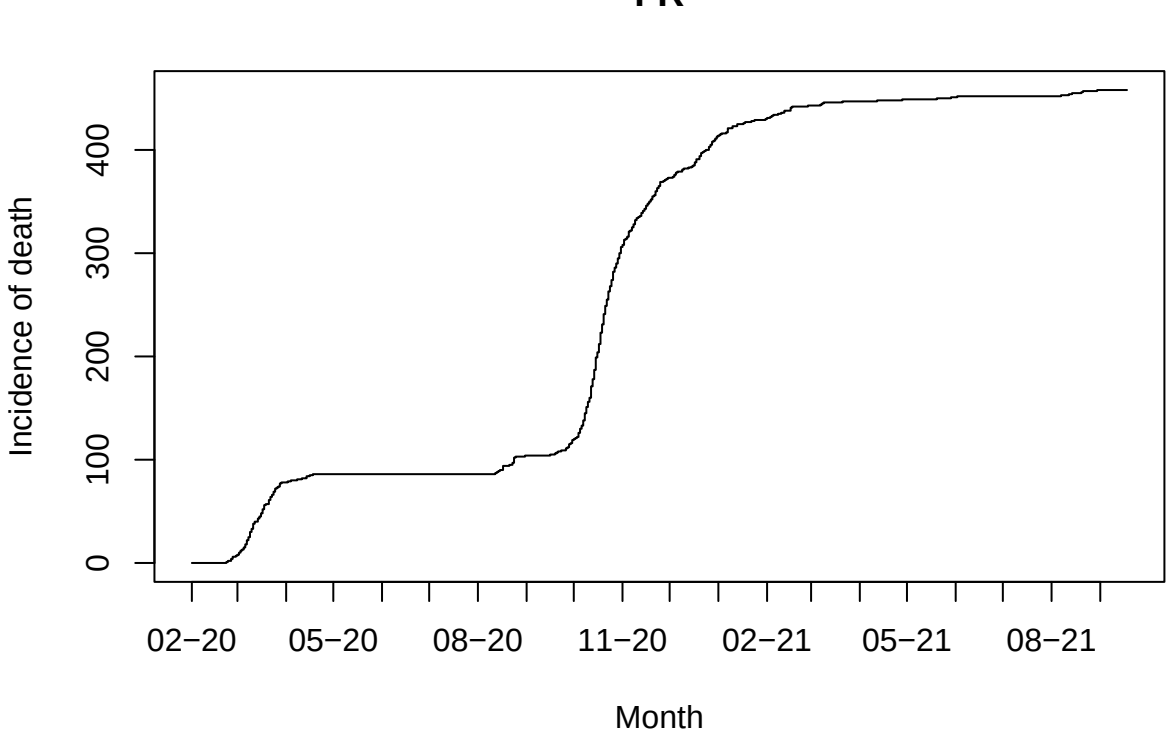

AR
Incidence of death
0
10
20
30
40
50
60
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

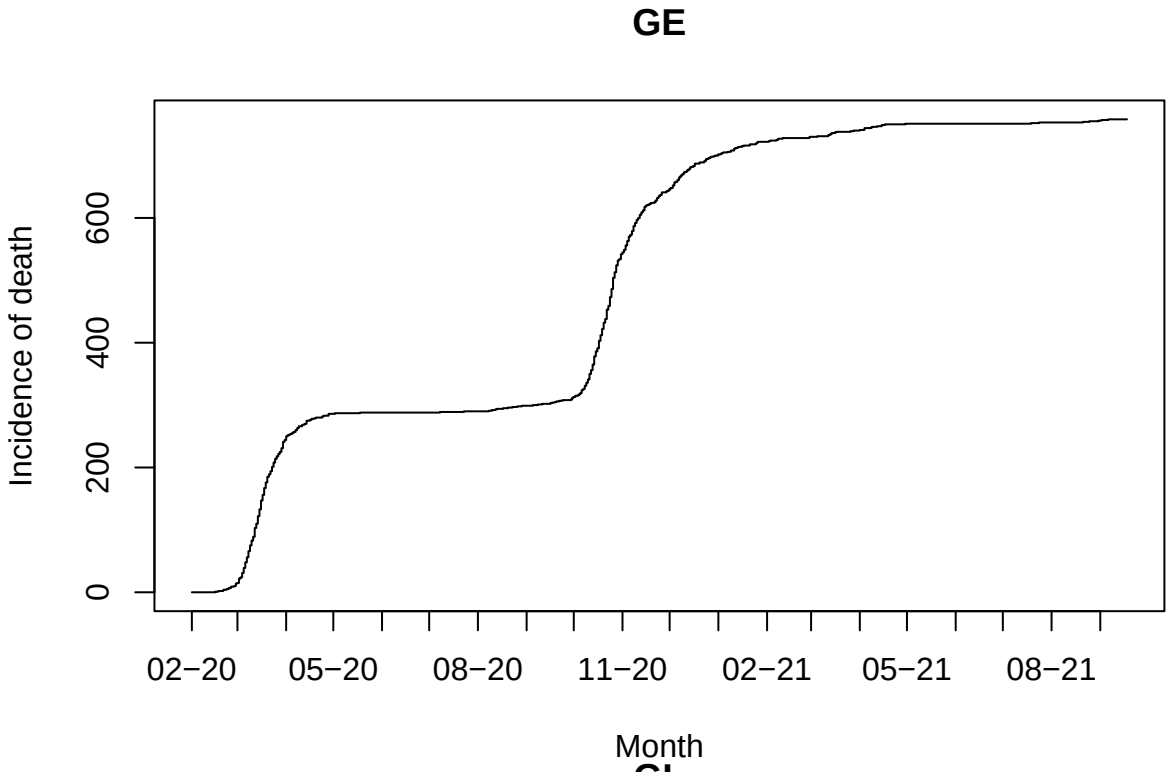

BE
Incidence of death
0
200
400
600
800
1200
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

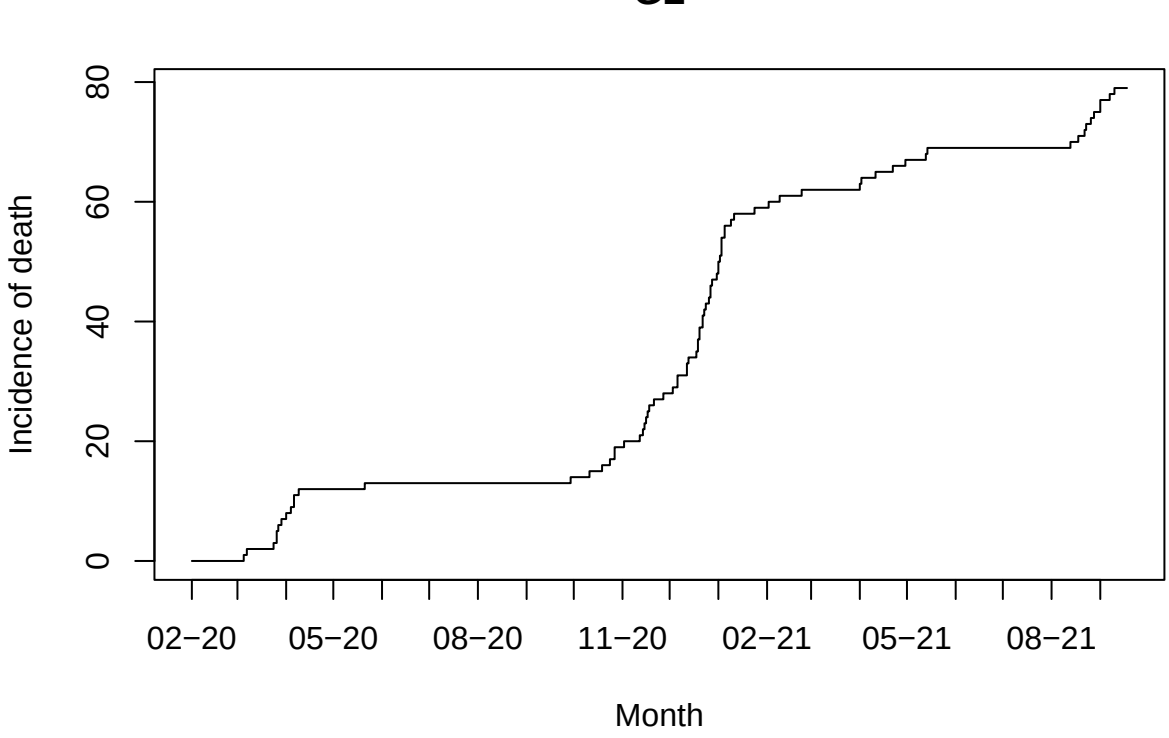

BL
Incidence of death
0
50
100
150
200
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

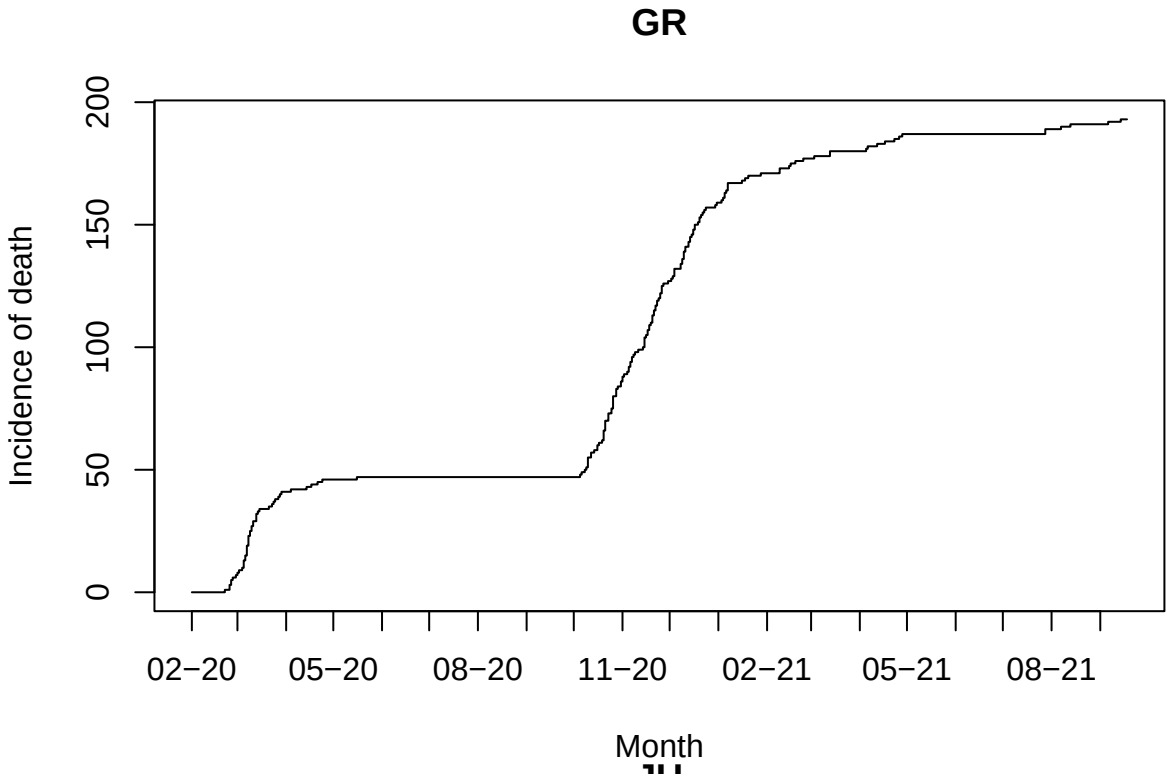

BS
Incidence of death
0
50
100
150
200
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

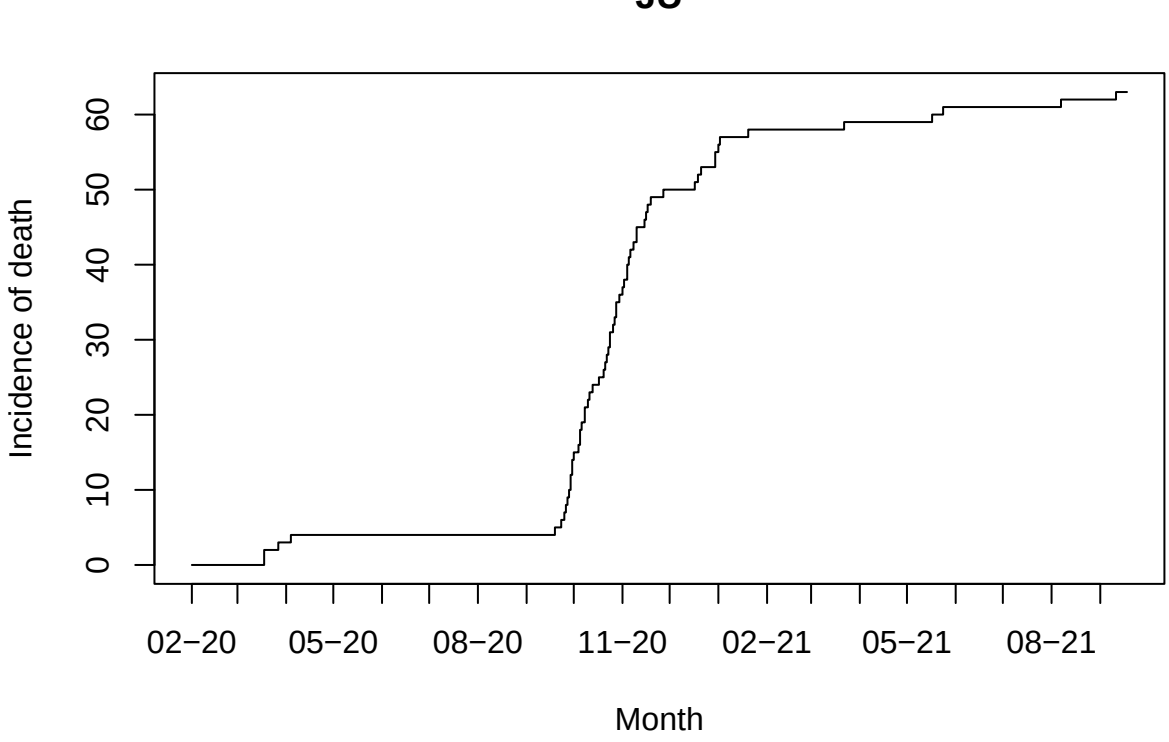

FL
Incidence of death
0
10
20
30
40
50
60
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

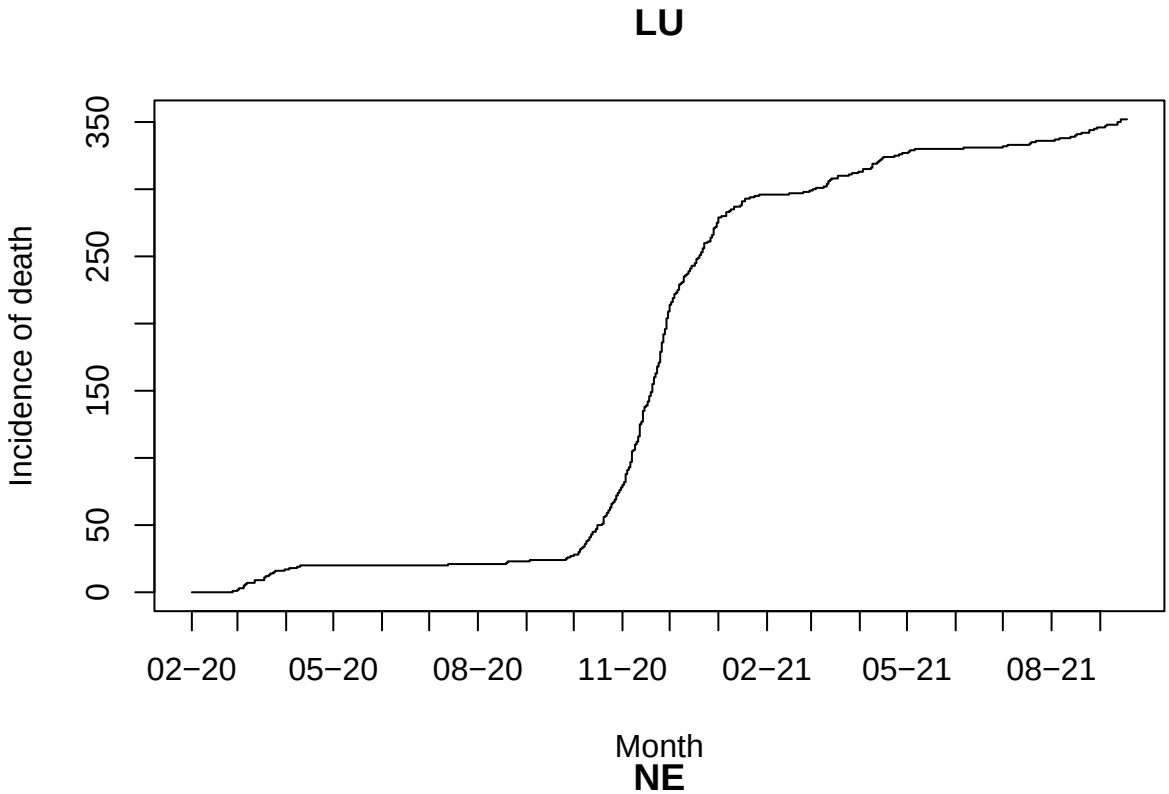

FR
Incidence of death
0
100
200
300
400
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

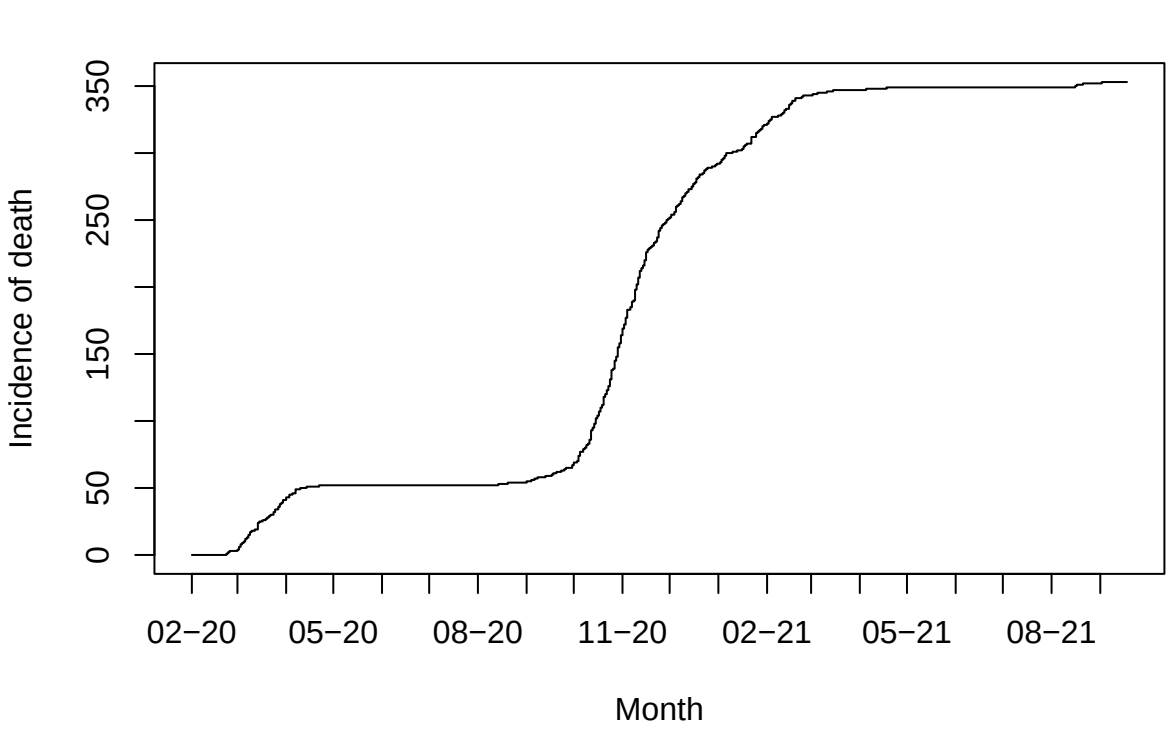

GE
Incidence of death
0
200
400
600
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

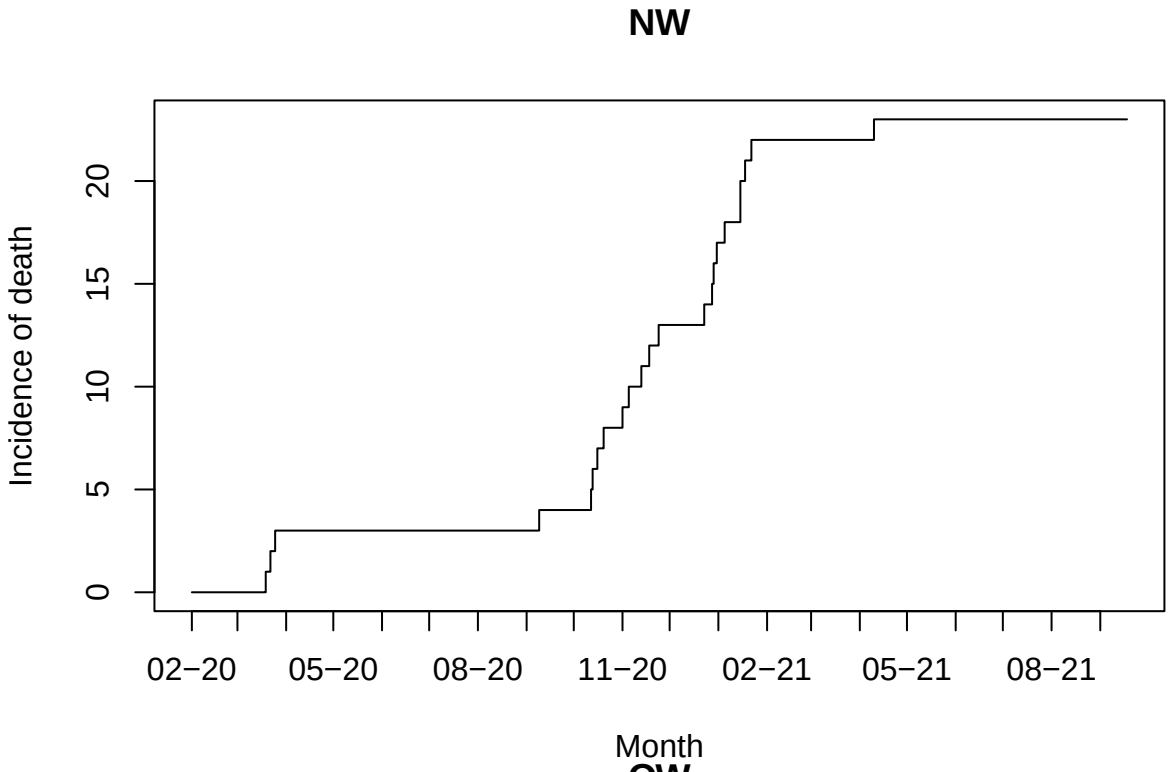

GL
Incidence of death
0
20
40
60
80
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

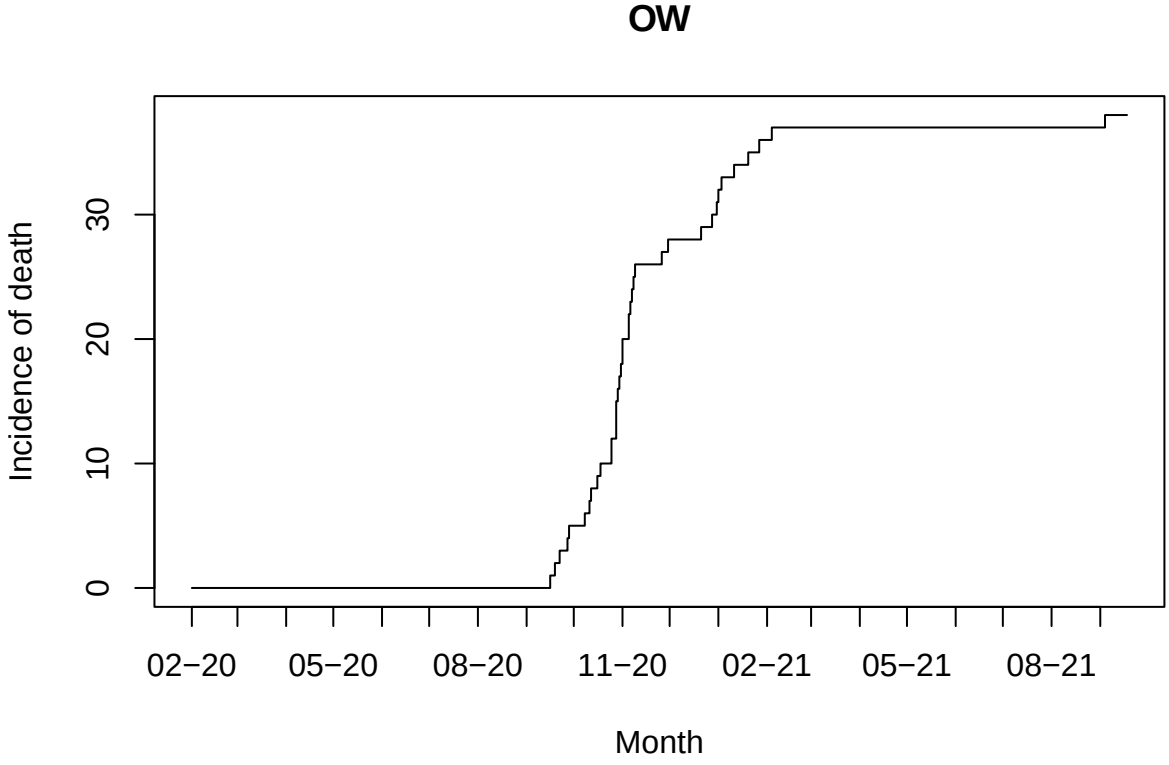

GR
Incidence of death
0
50
100
150
200
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

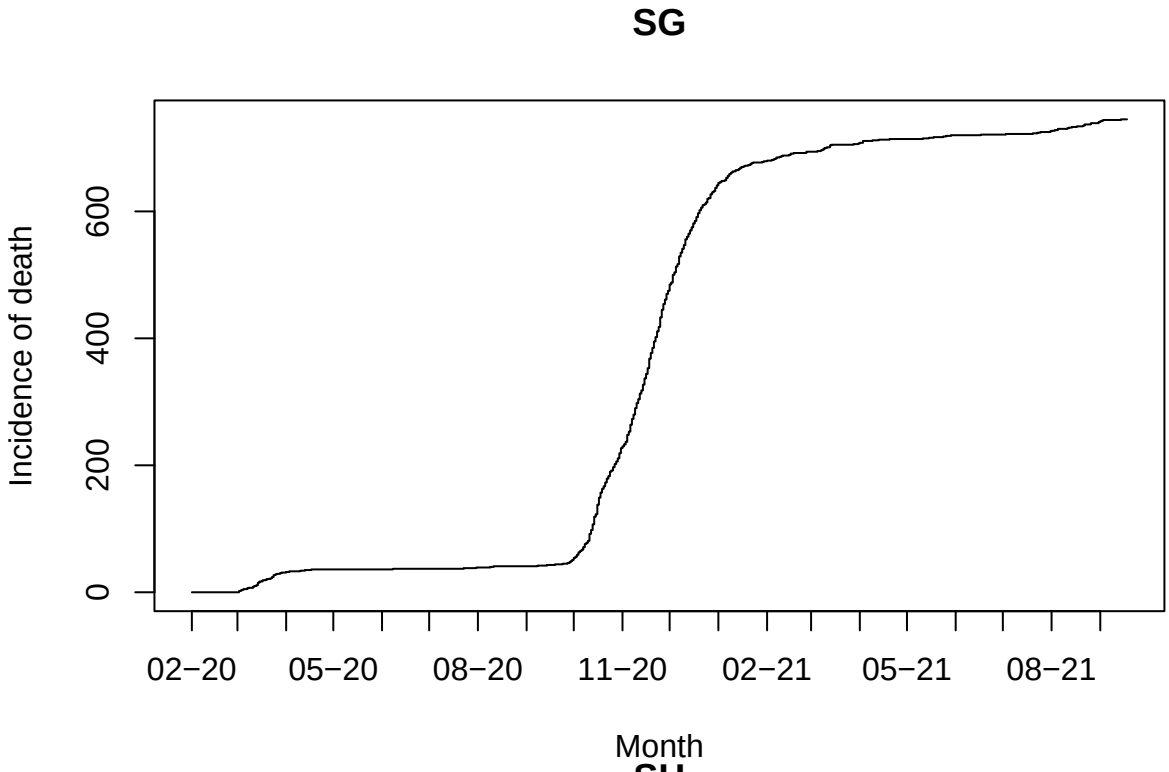

JU
Incidence of death
0
10
20
30
40
50
60
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

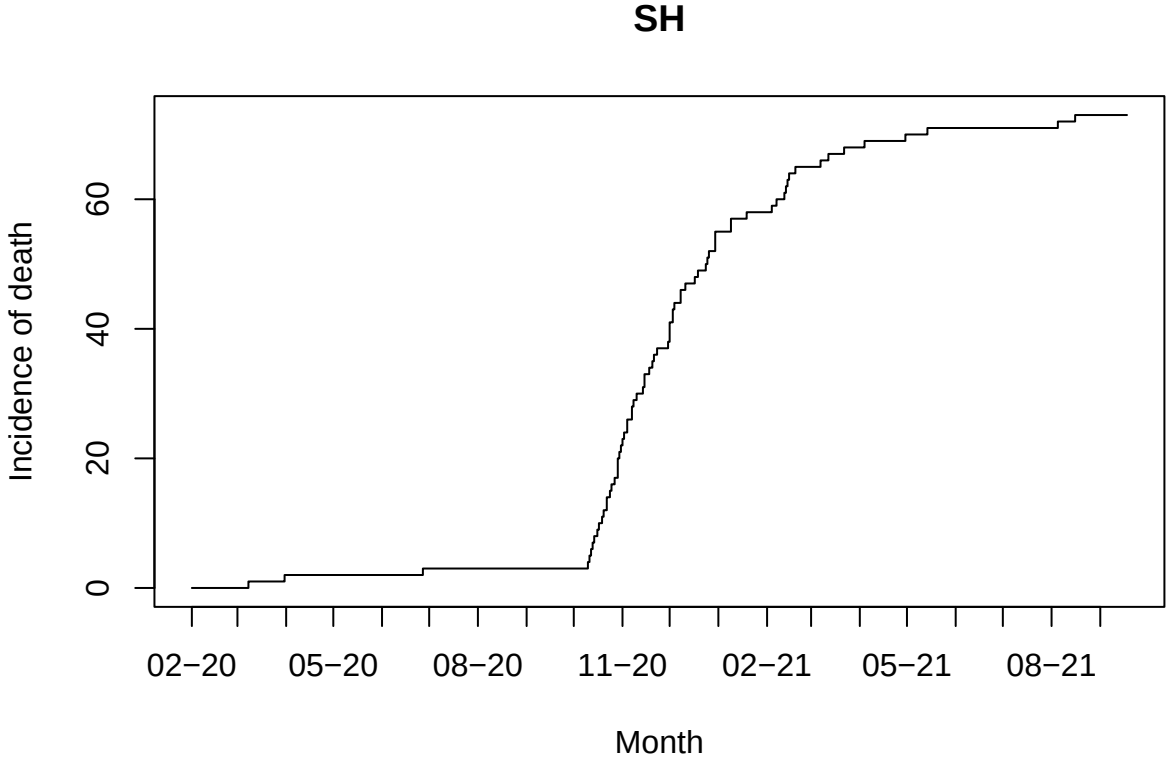

LU
Incidence of death
0
50
150
250
350
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

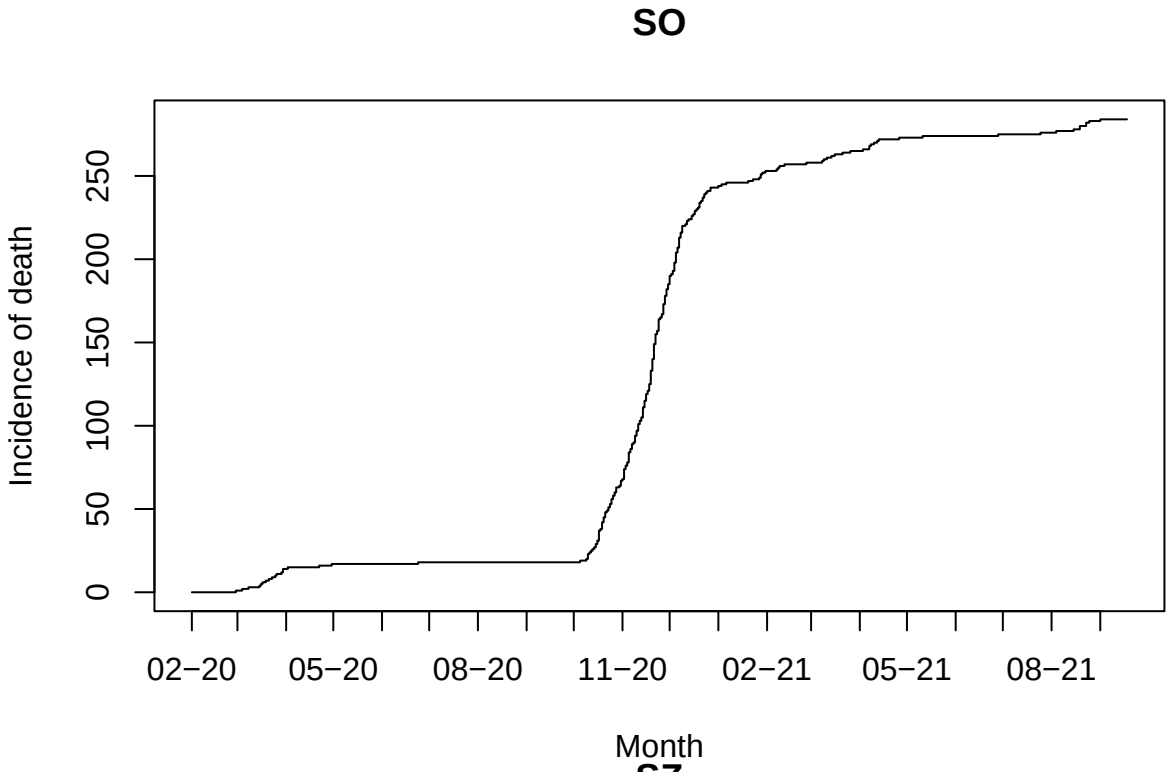

NE
Incidence of death
0
50
150
250
350
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

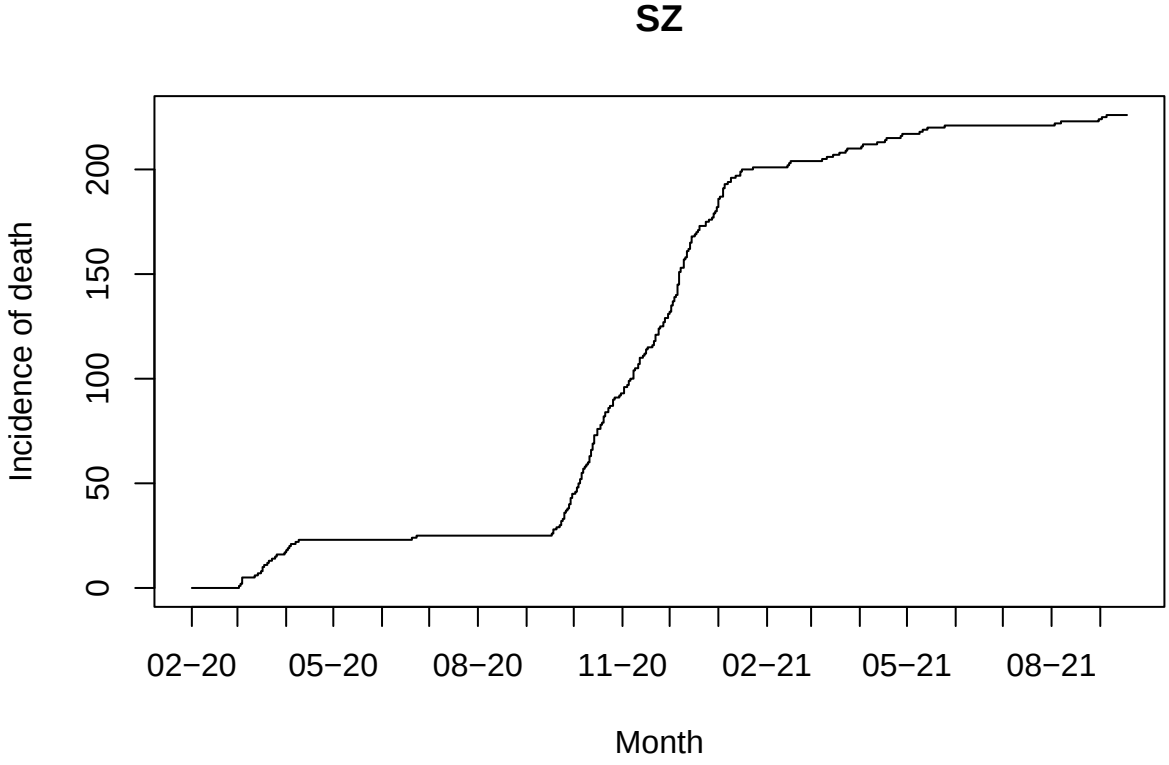

NW
Incidence of death
0
5
10
15
20
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

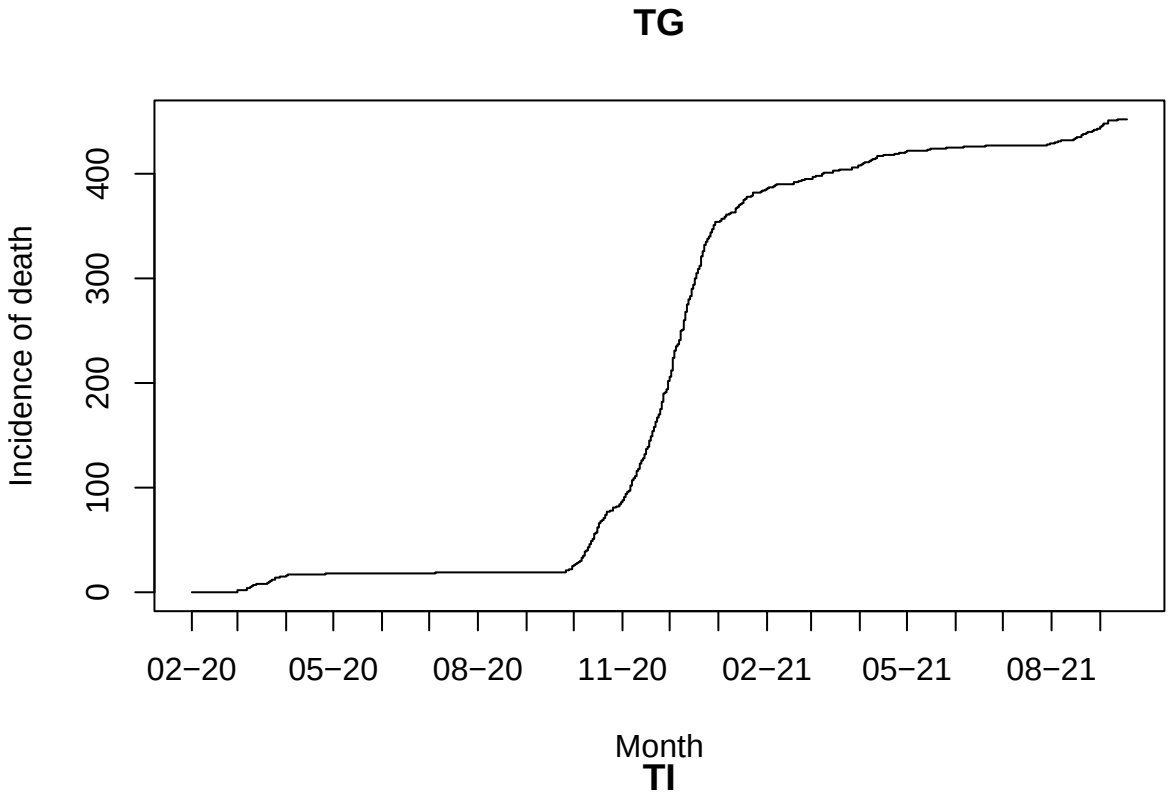

OW
Incidence of death
0
10
20
30
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

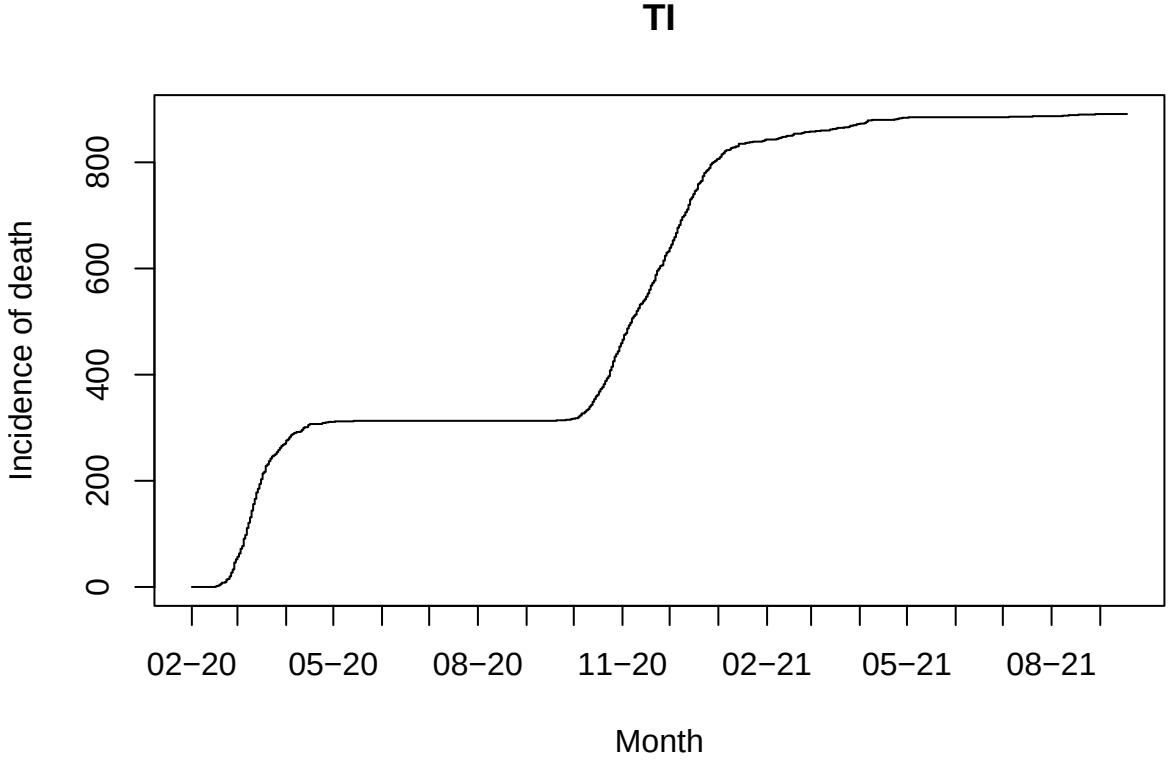

SG
Incidence of death
0
200
400
600
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

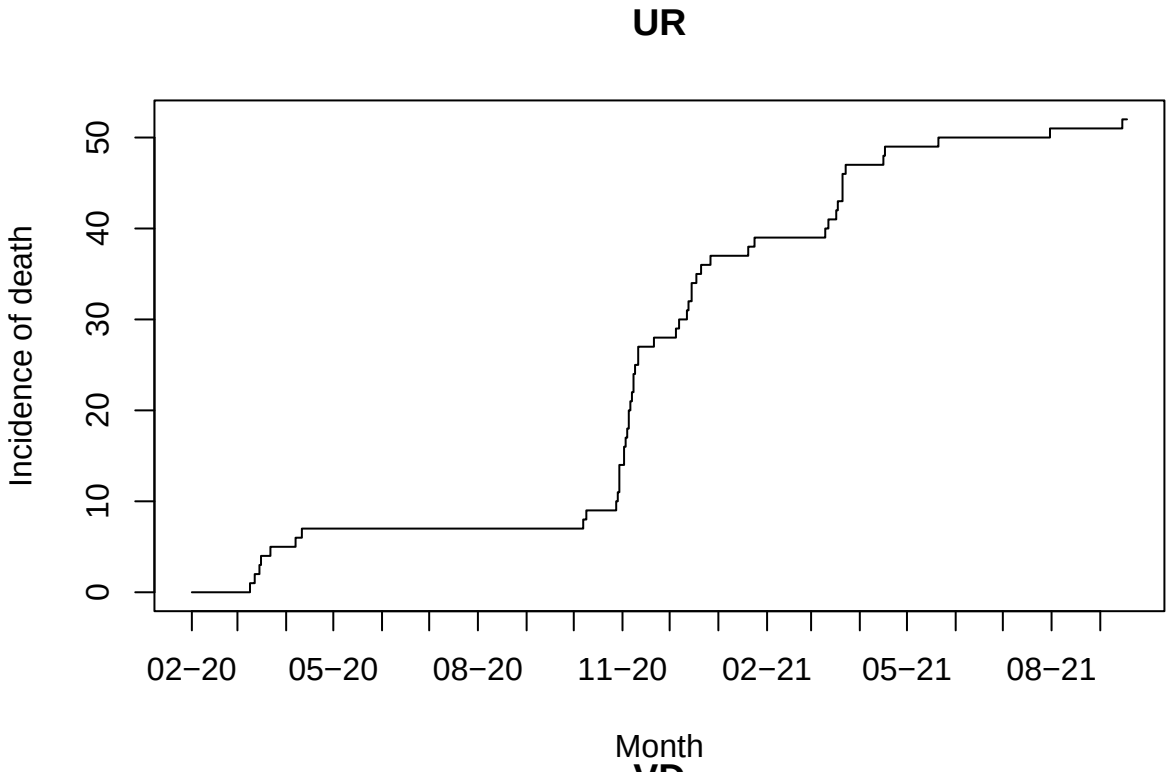

SH
Incidence of death
0
20
40
60
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

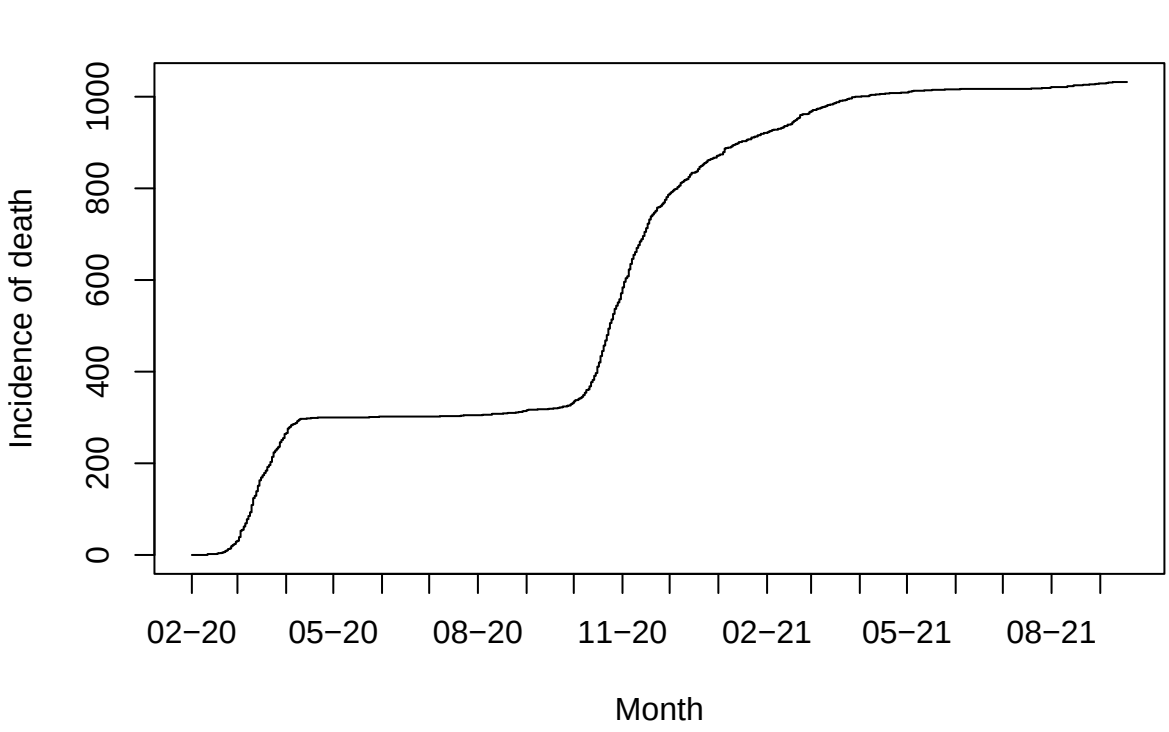

SO
Incidence of death
0
50
100
150
200
250
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

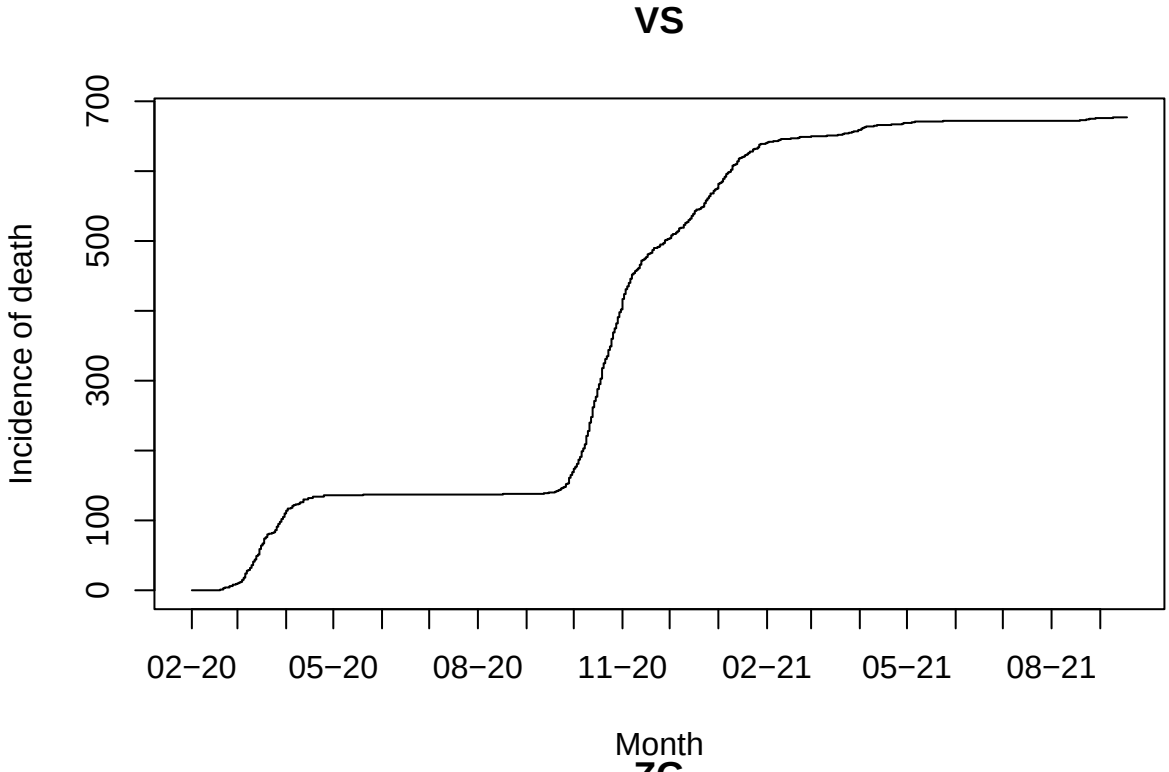

SZ
Incidence of death
0
50
100
150
200
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

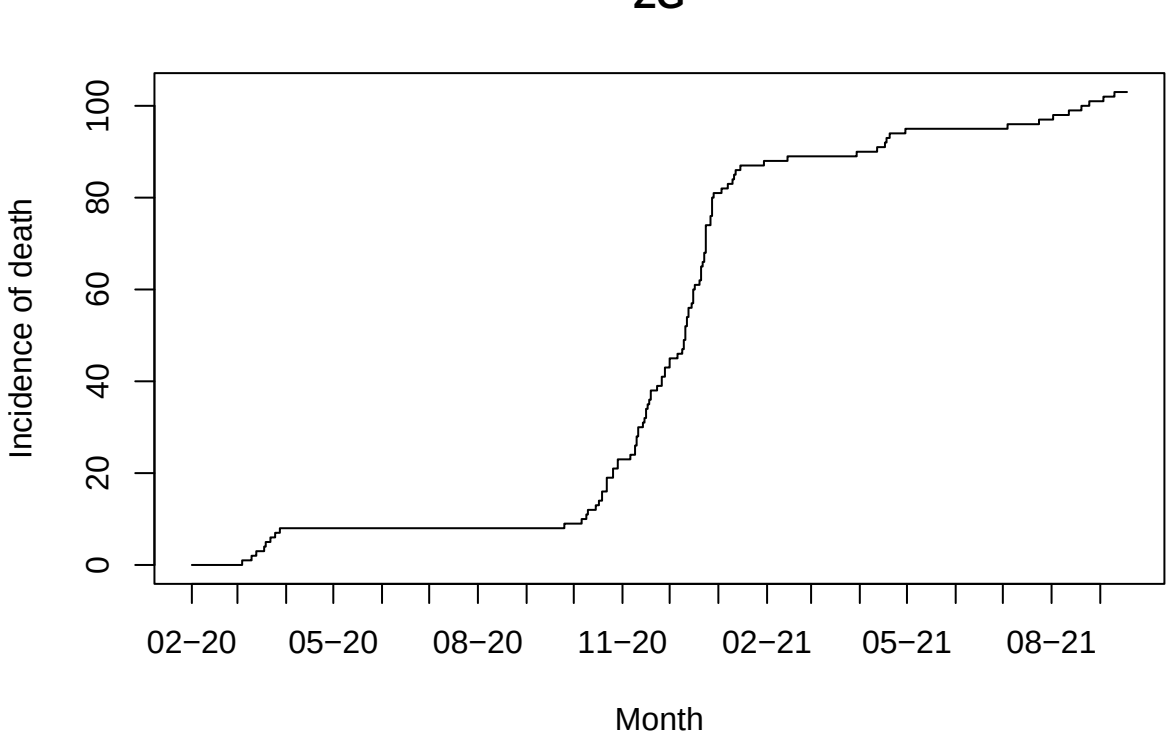

TG
Incidence of death
0
100
200
300
400
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

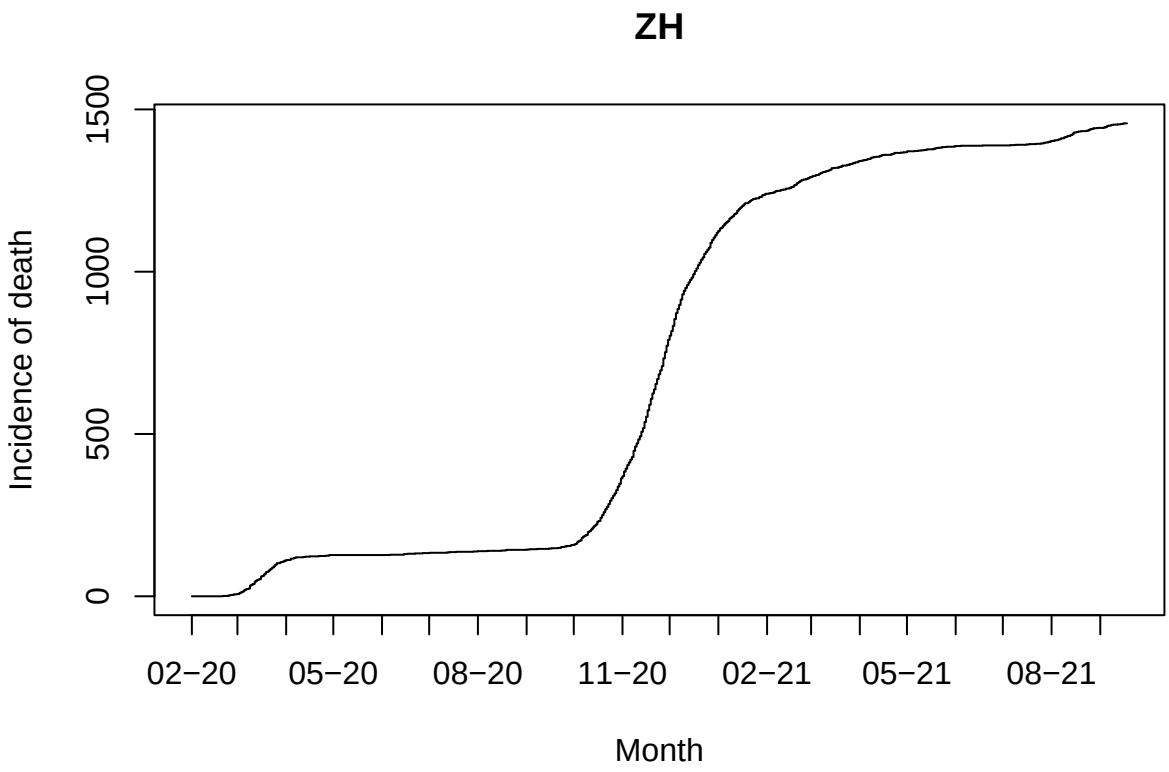

TI
Incidence of death
0
200
400
600
800
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month


UR
Incidence of death
0
10
20
30
40
50
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month


VD
Incidence of death
0
200
400
600
800
1000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

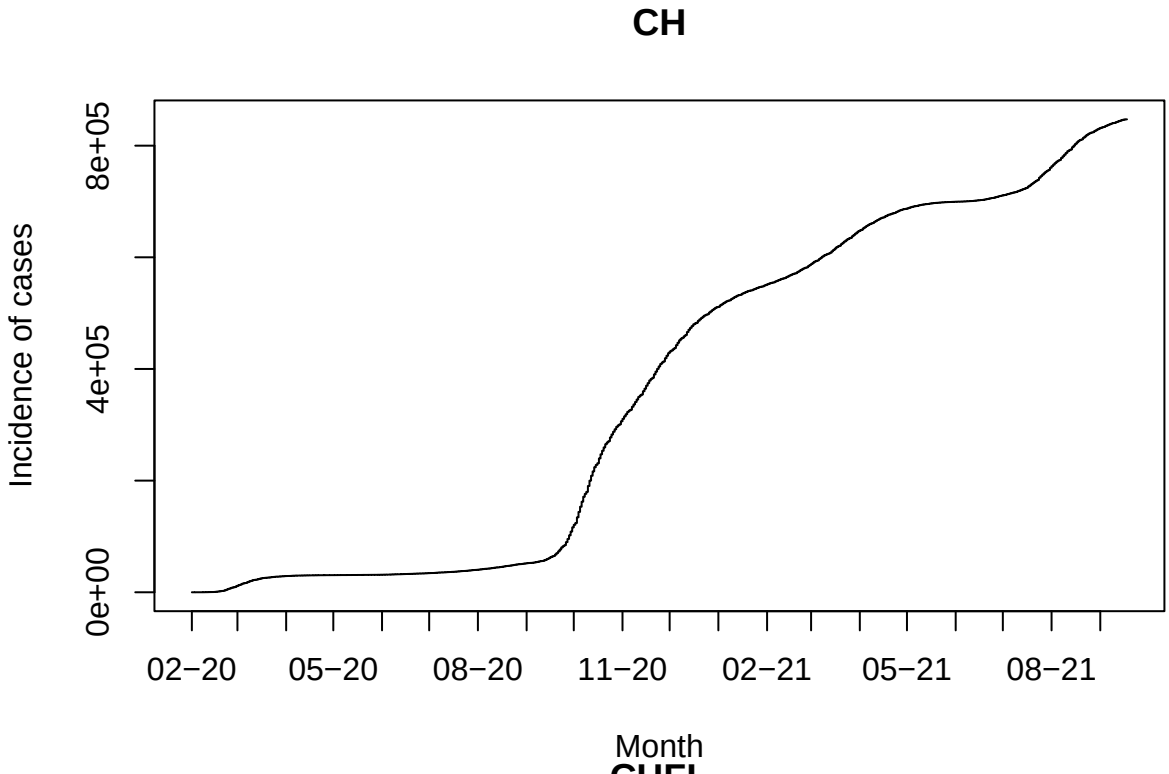

VS
Incidence of death
0
100
300
500
700
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

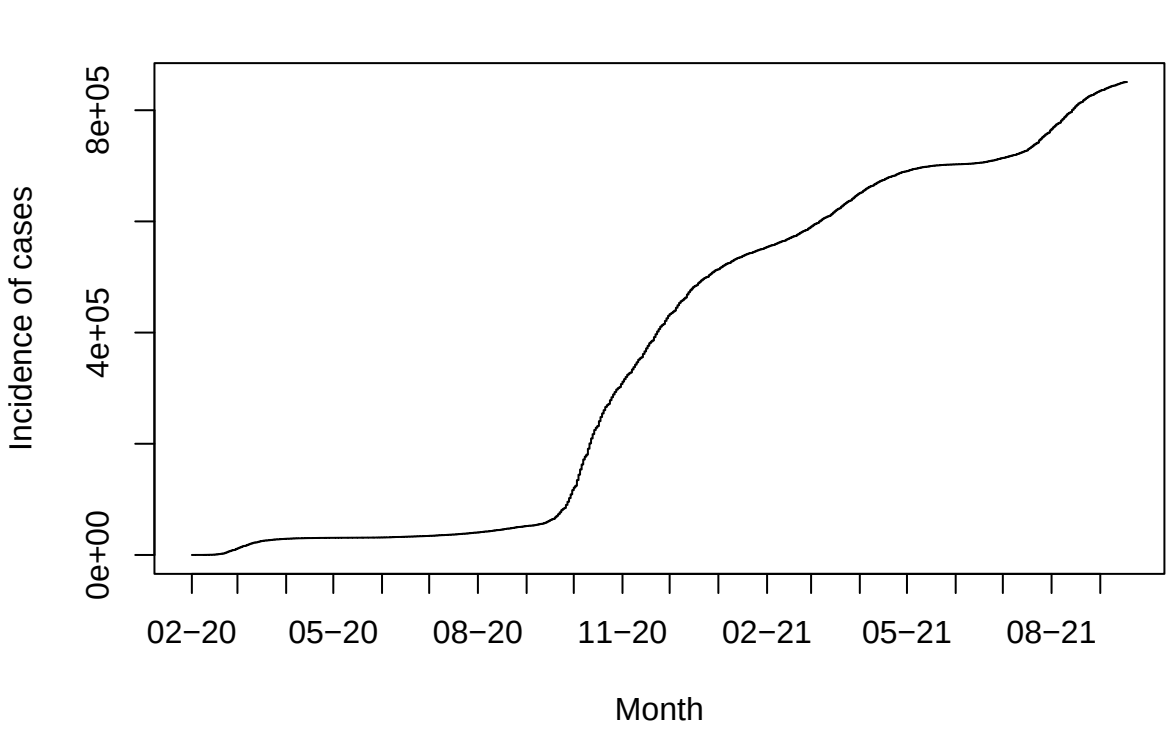

ZG
Incidence of death
0
20
40
60
80
100
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

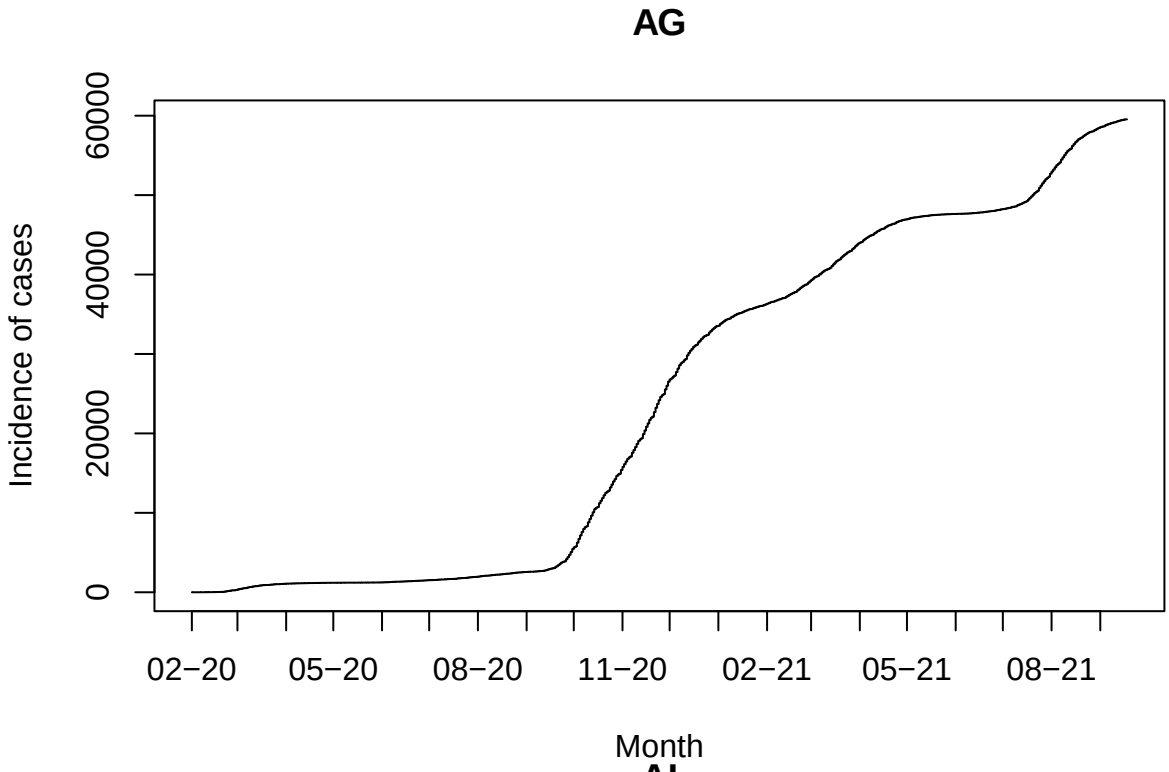


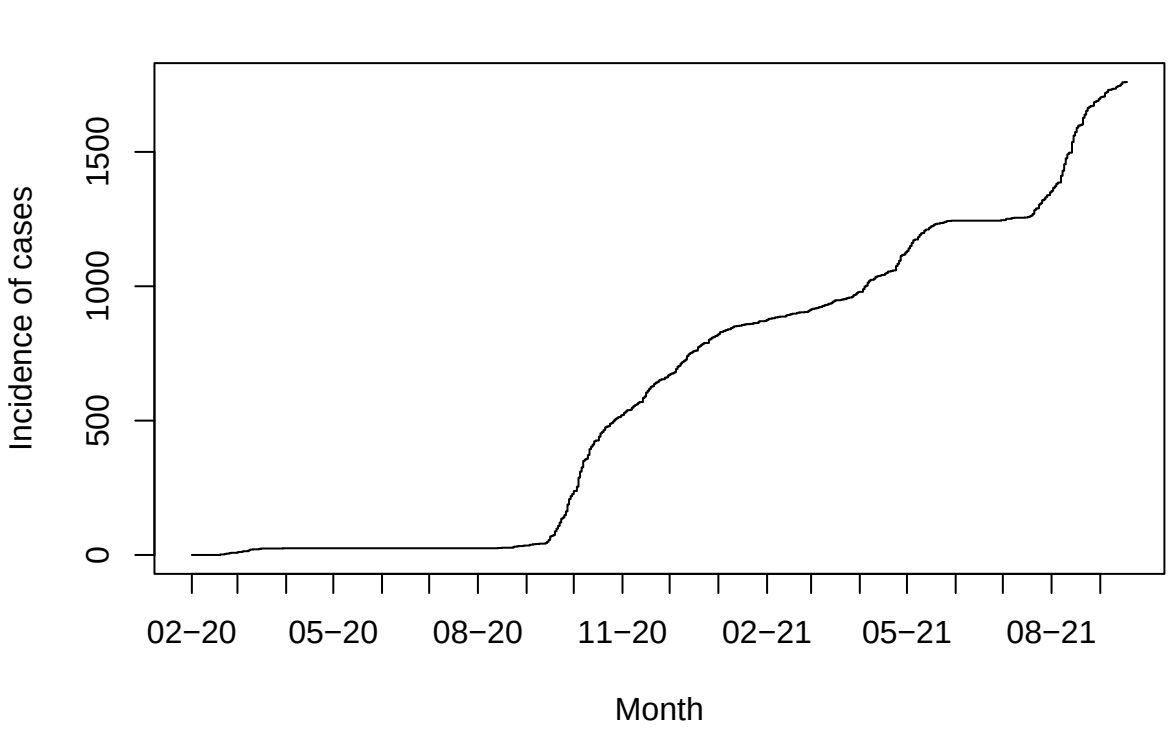
Next, we plot the cumulative incidences of cases for the different geographic categories

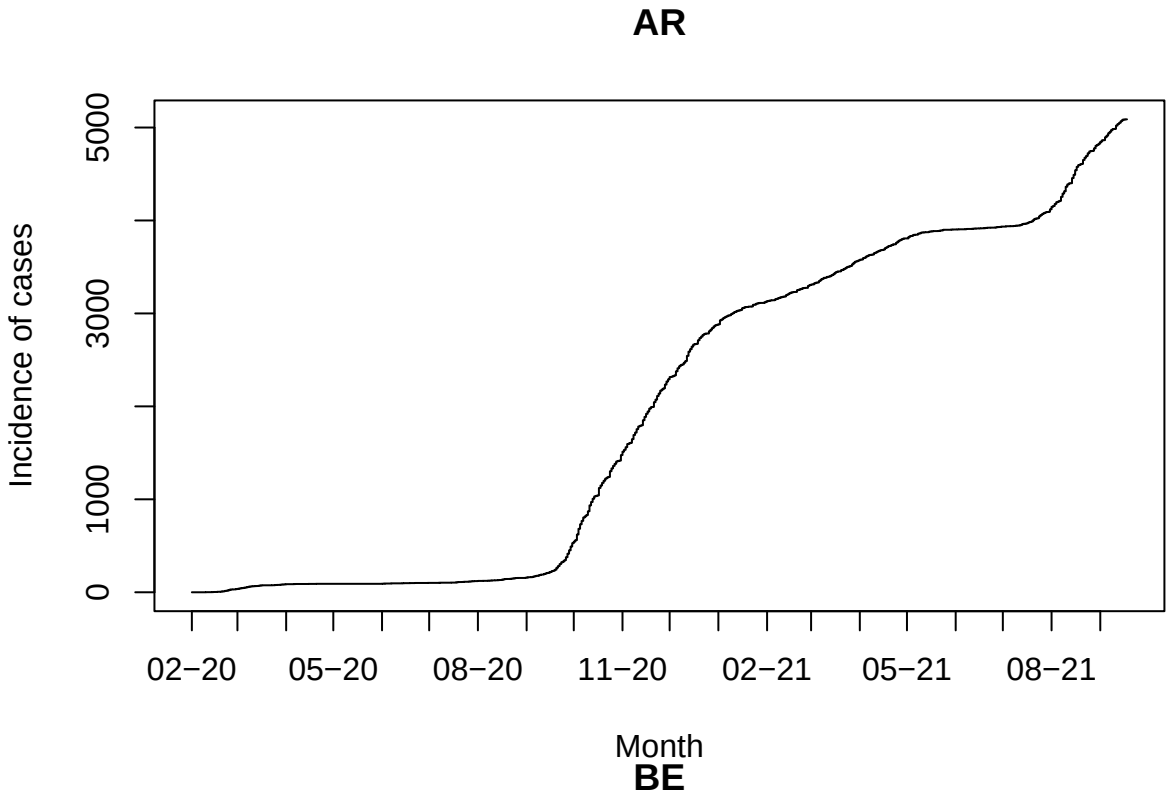
```
regions.cases <- unique(df.cases$geoRegion)
for (i in regions.cases) {
    region.df.cases <- df.cases[df.cases$geoRegion == i, ]
    plot(as.Date(region.df.cases$datum), region.df.cases$sumTotal,
        "s", xaxt = "n", xlab = "Month", ylab = "Incidence of cases",
        main = i)
    axis.Date(1, at = seq(min(as.Date(region.df.cases$datum)),
        max(as.Date(region.df.cases$datum)) + 6, "months"), format = "%m-%y")
}
```

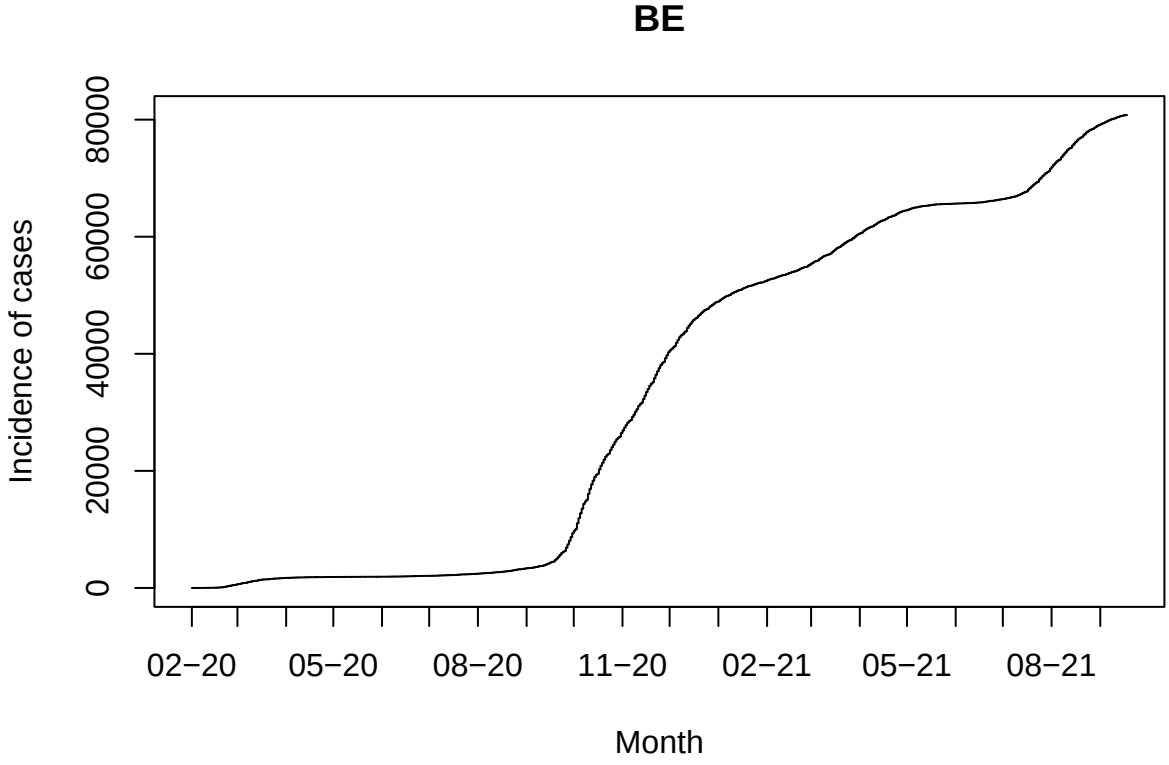

CH
Incidence of cases
0e+00
4e+05
8e+05
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

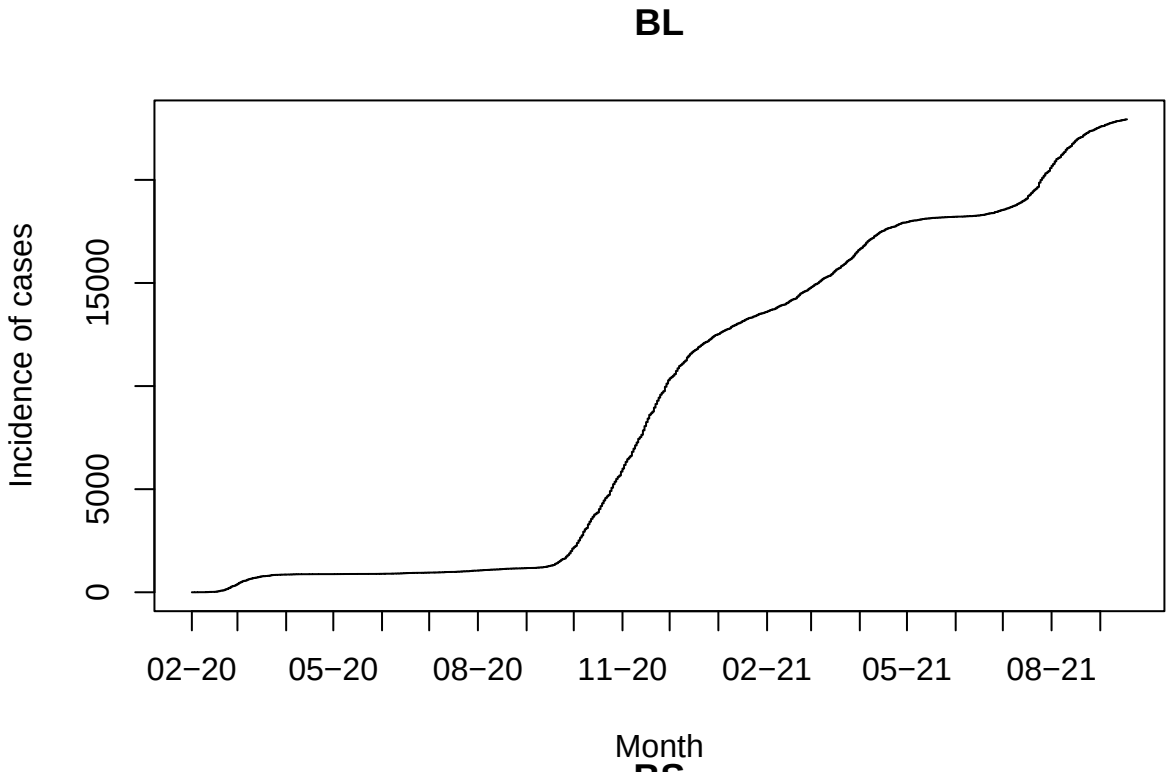

CHFL
Incidence of cases
0e+00
4e+05
8e+05
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

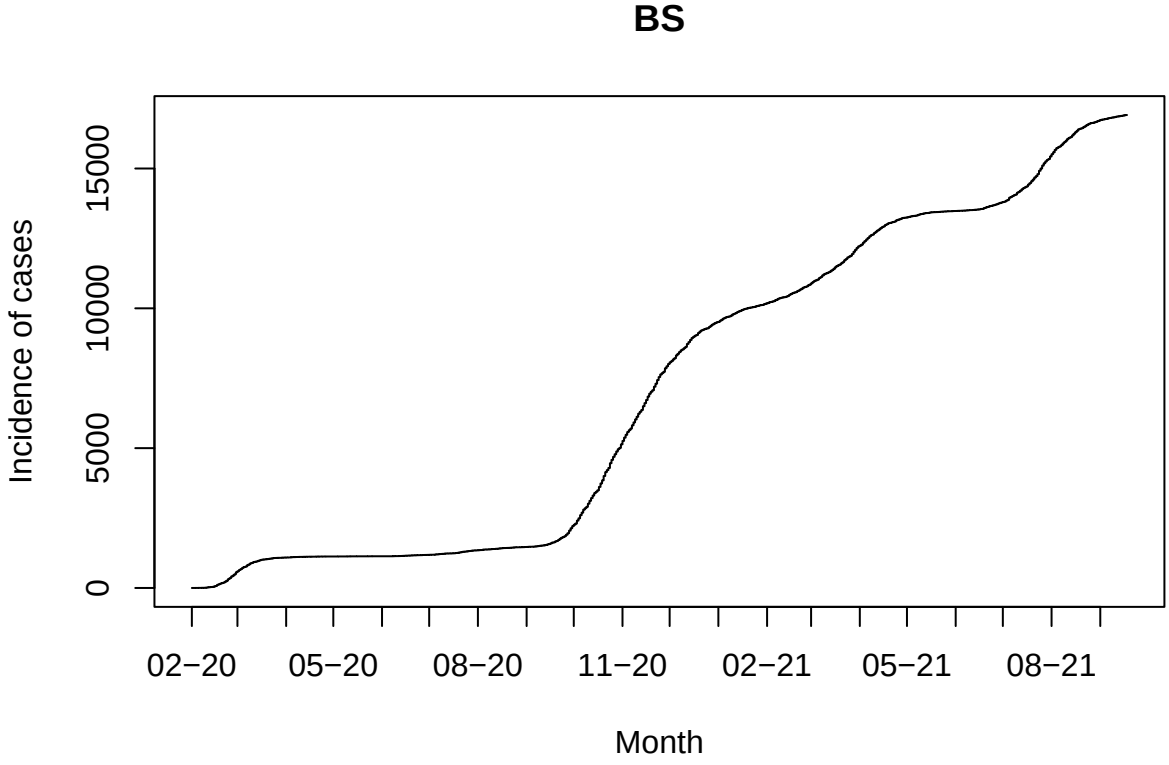

AG
Incidence of cases
0
20000
40000
60000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

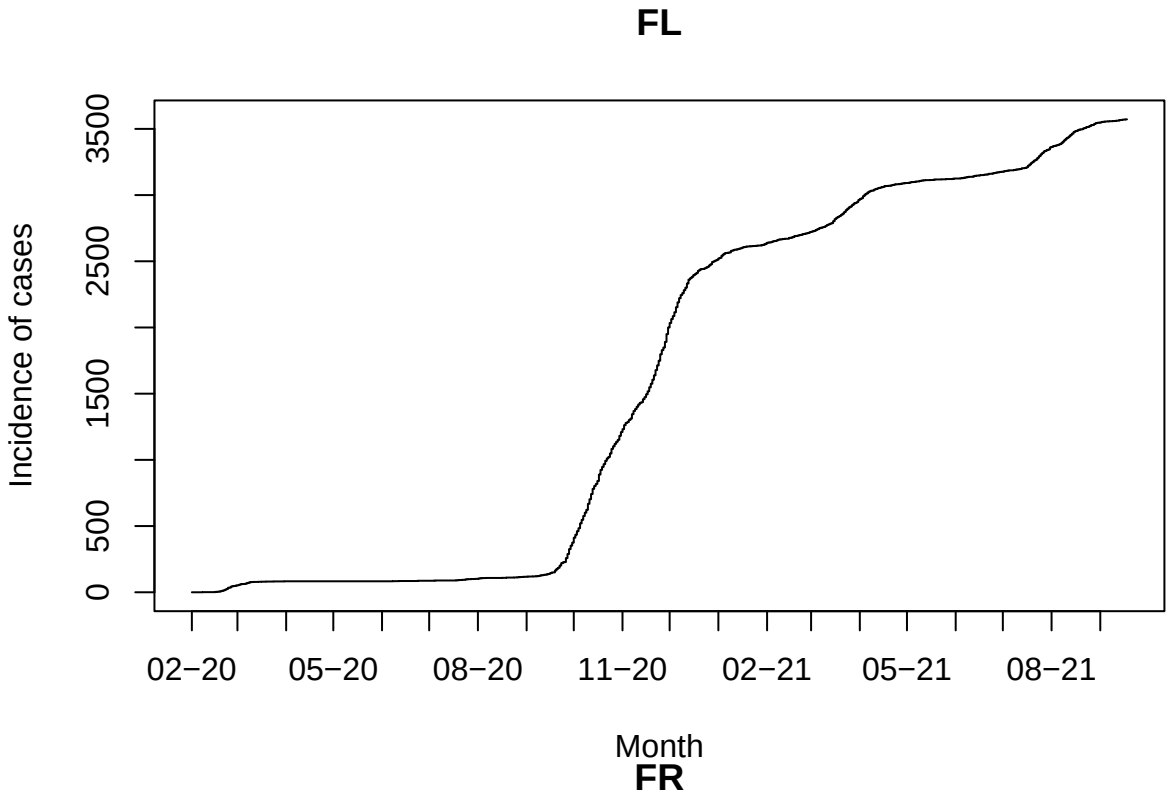

AI
Incidence of cases
0
500
1000
1500
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

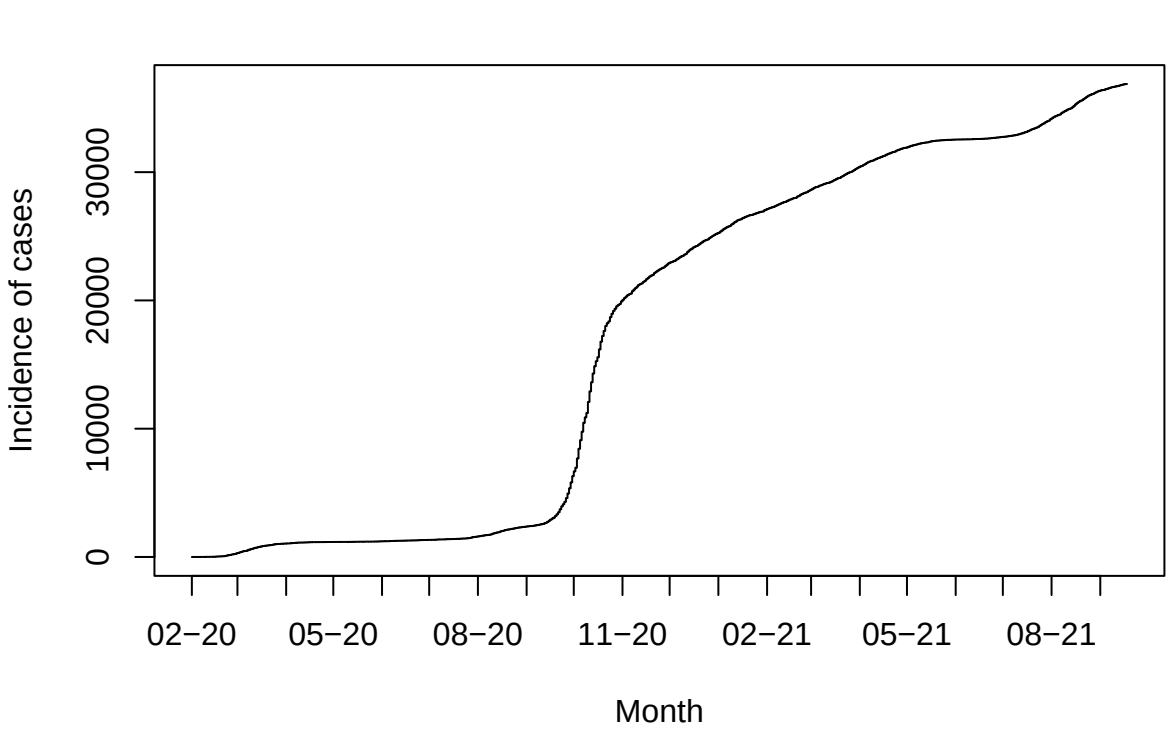

AR
Incidence of cases
0
1000
3000
5000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

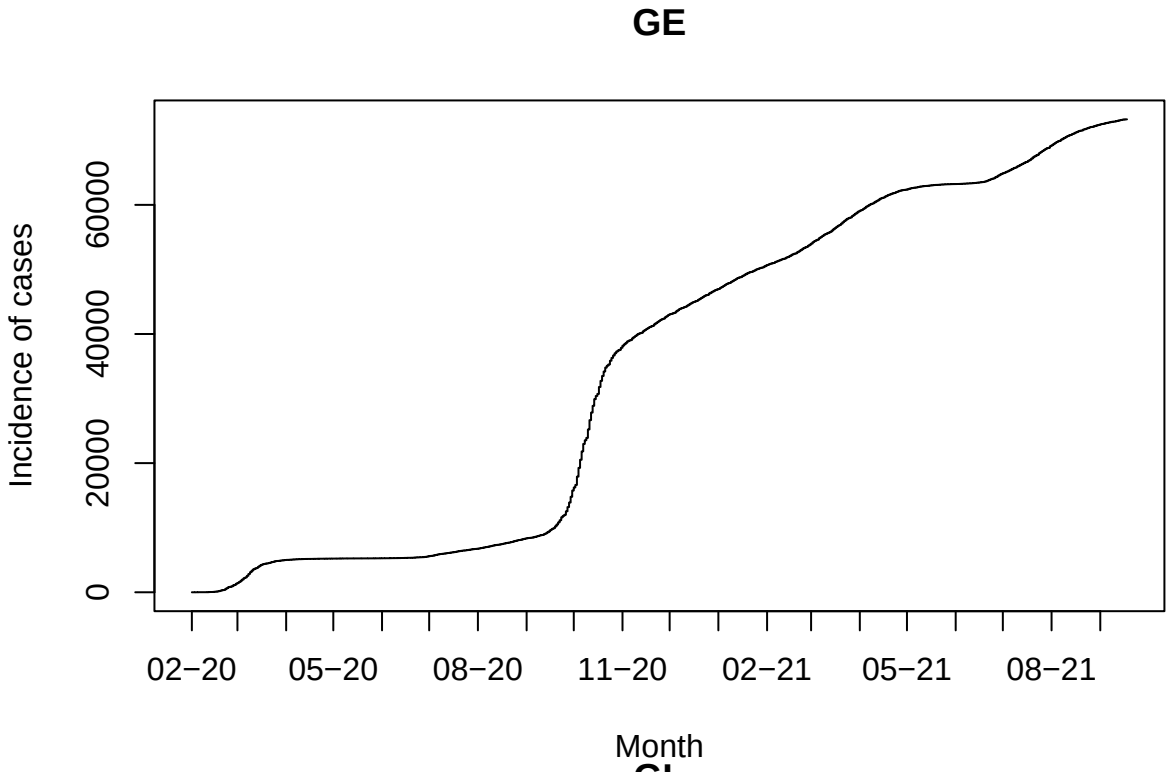

BE
Incidence of cases
0
20000
40000
60000
80000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

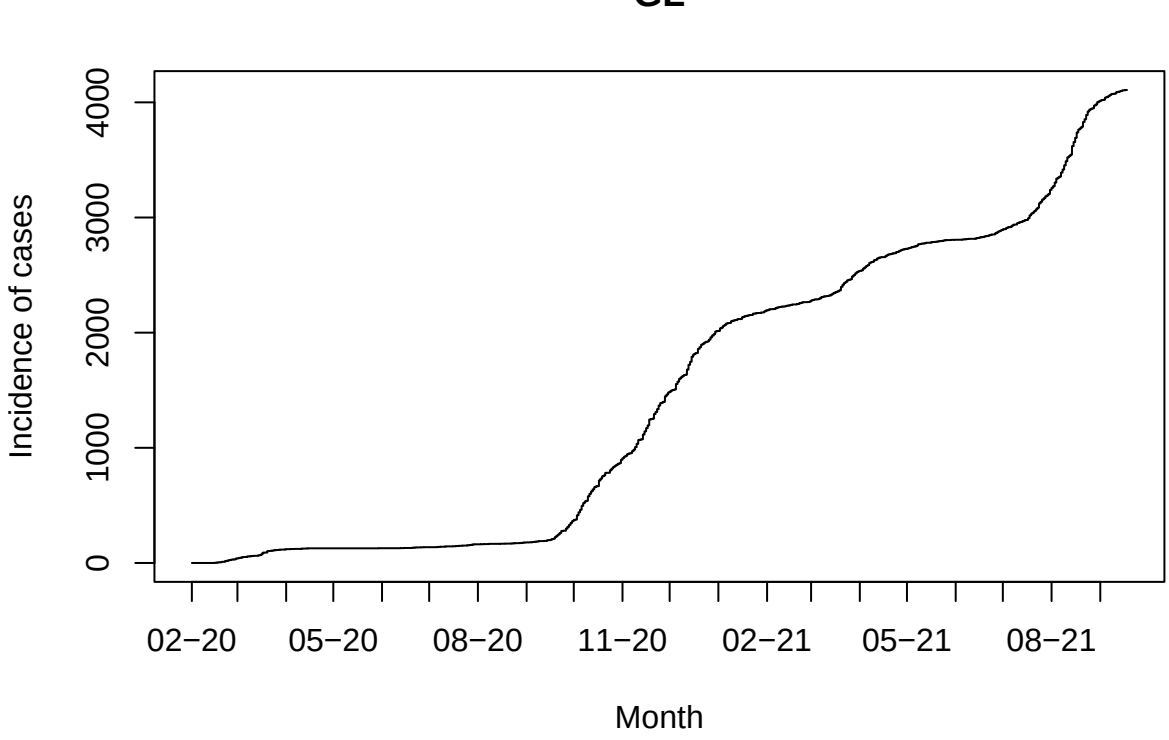

BL
Incidence of cases
0
5000
15000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

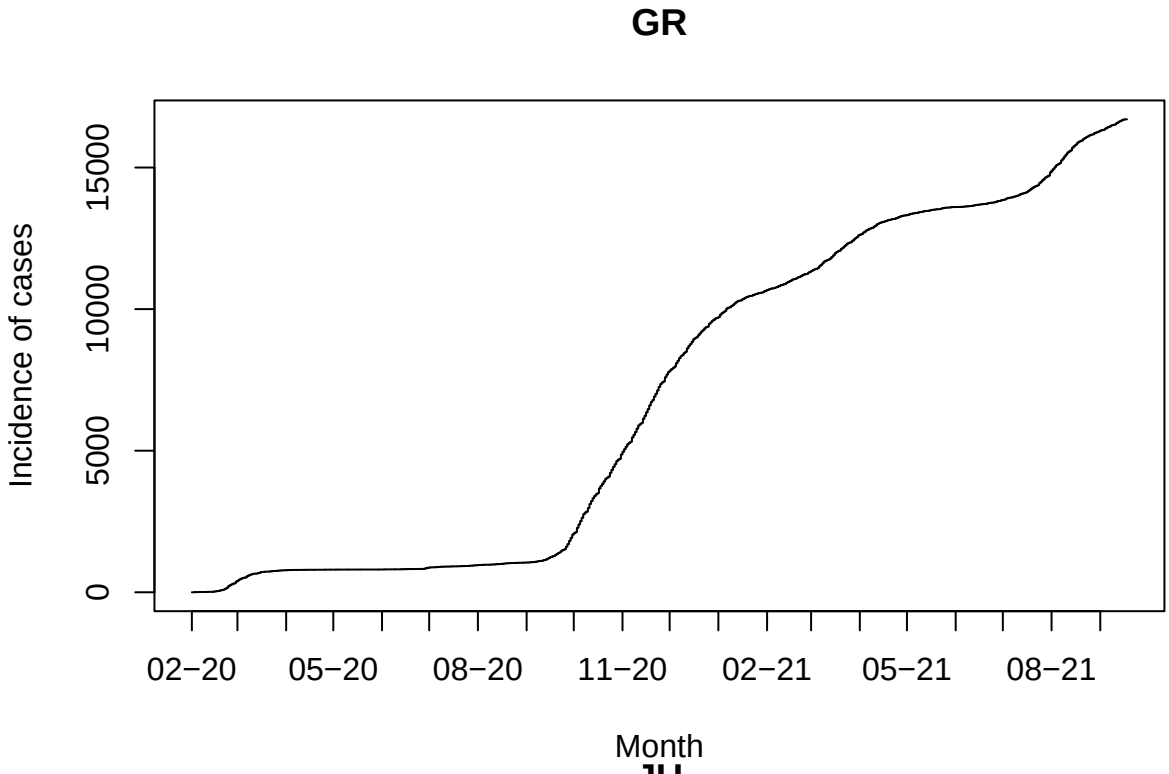

BS
Incidence of cases
0
5000
10000
15000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

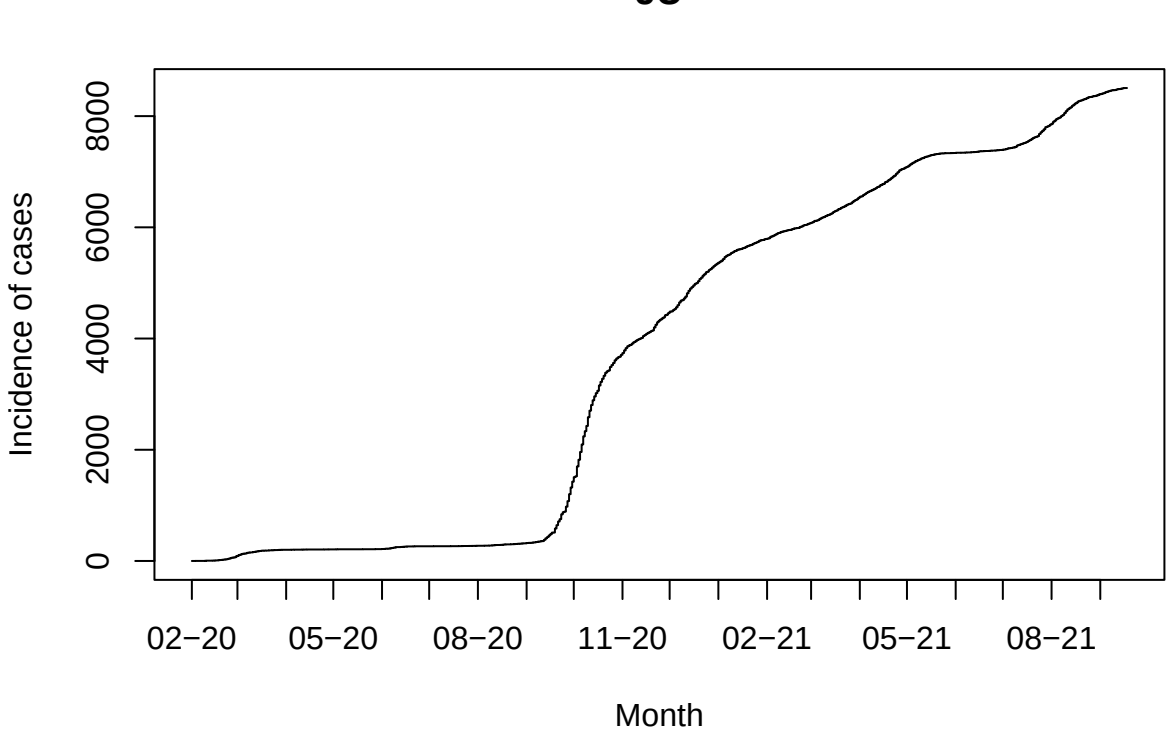

FL
Incidence of cases
0
500
1500
2500
3500
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

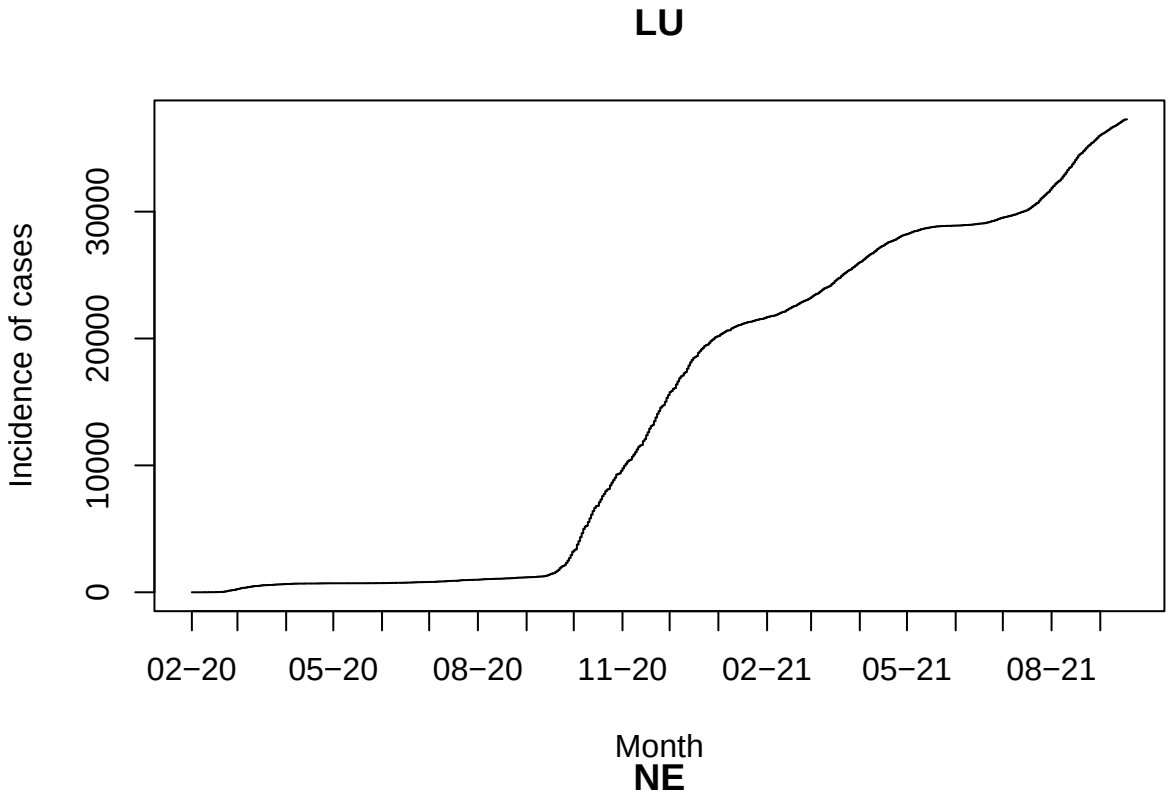

FR
Incidence of cases
0
10000
20000
30000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

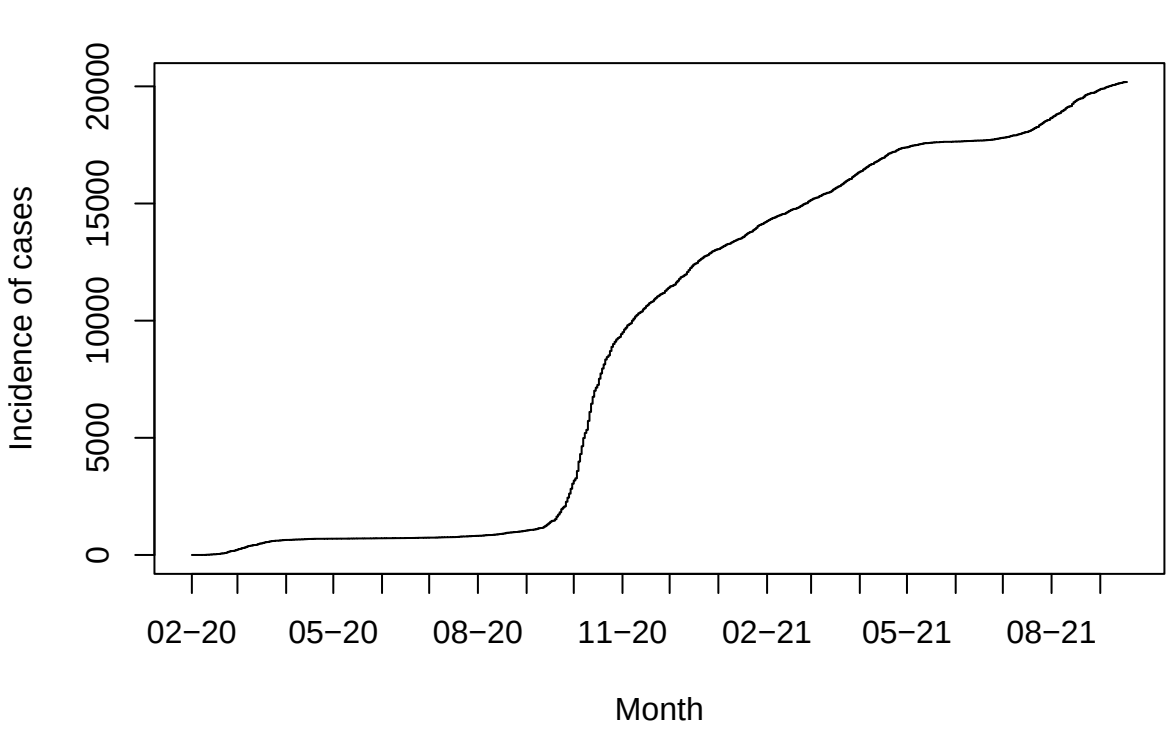

GE
Incidence of cases
0
20000
40000
60000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

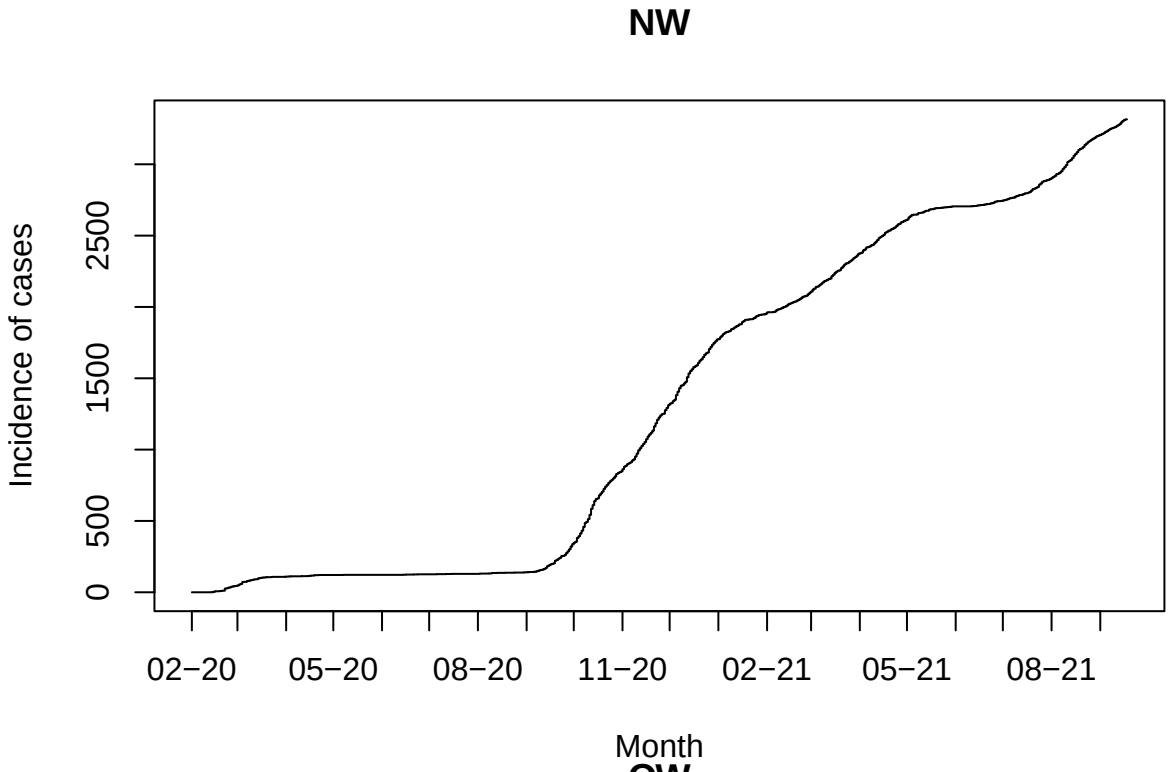

GL
Incidence of cases
0
1000
2000
3000
4000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

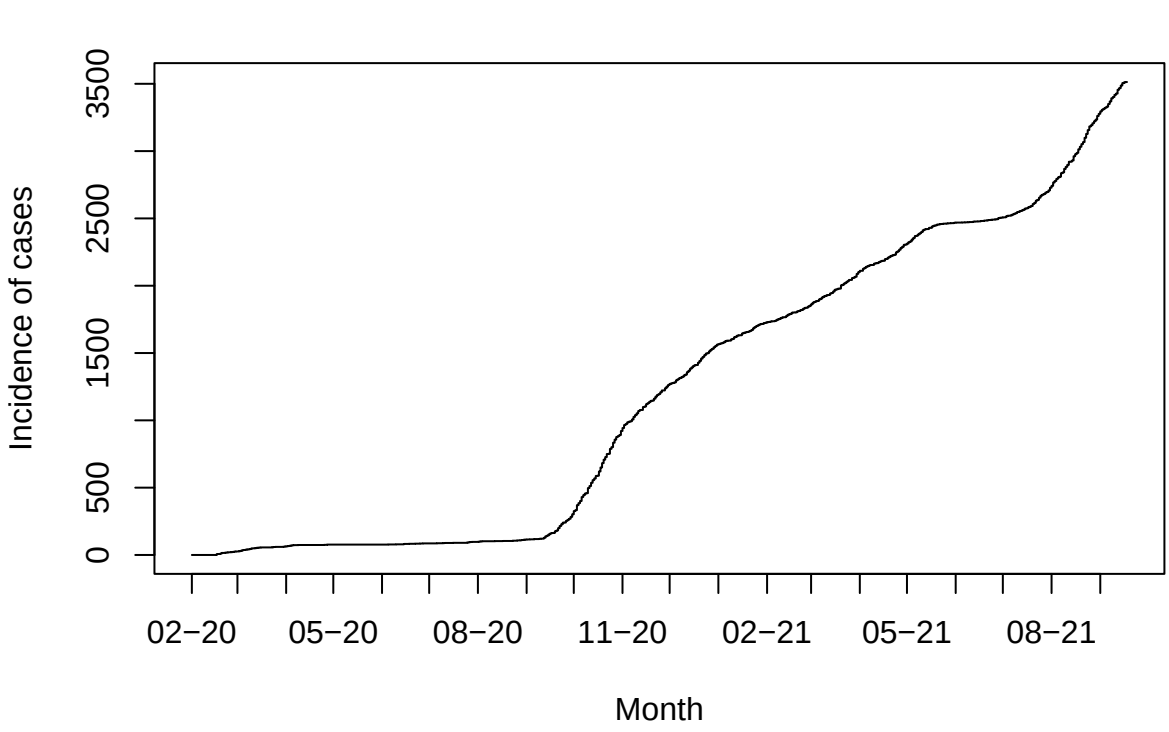

GR
Incidence of cases
0
5000
10000
15000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

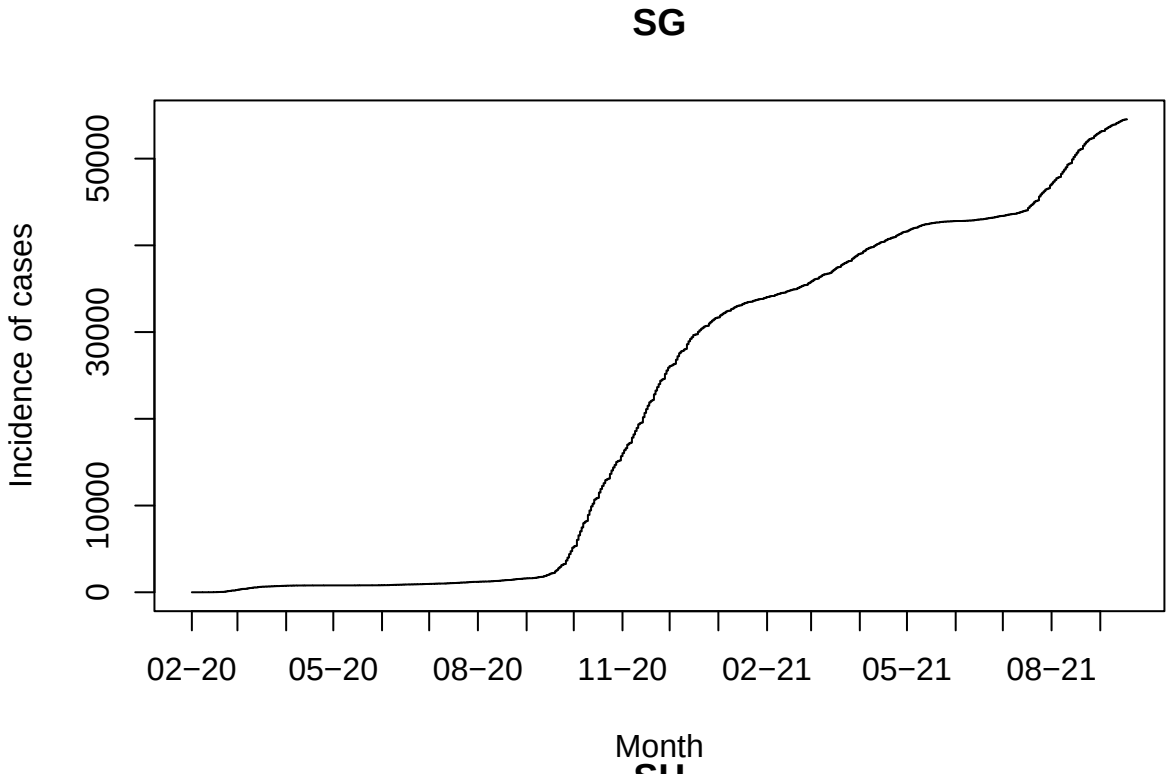

JU
Incidence of cases
0
2000
4000
6000
8000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

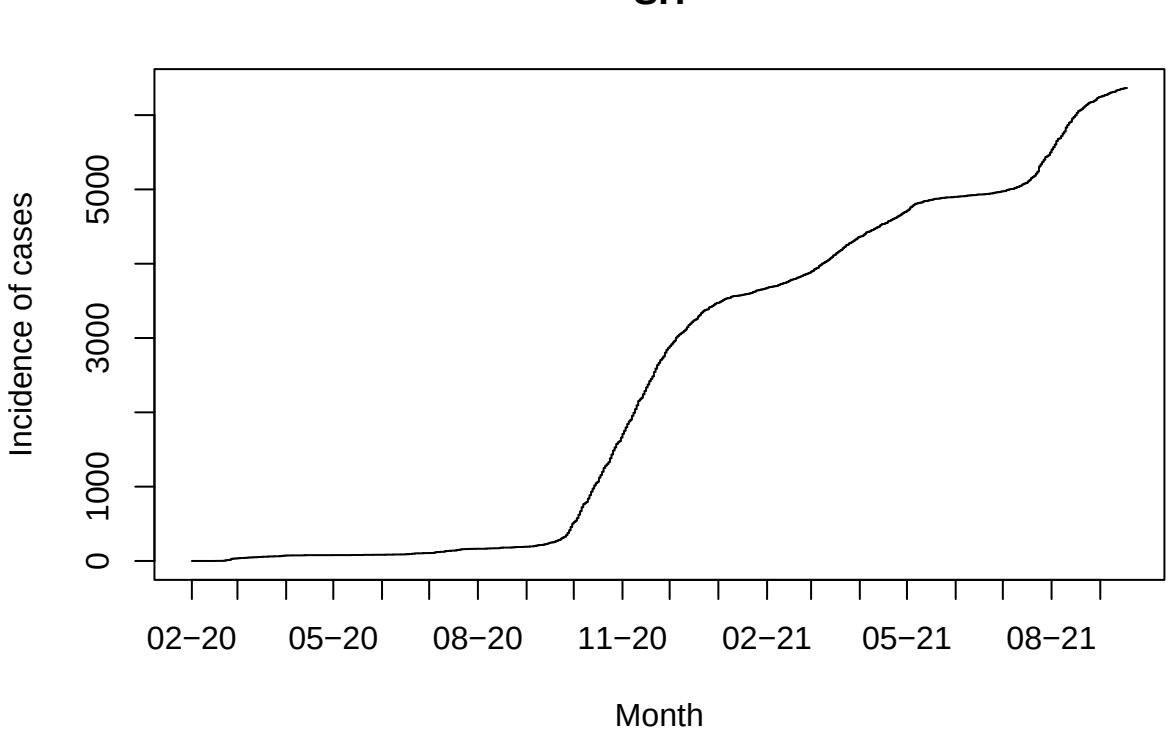

LU
Incidence of cases
0
10000
20000
30000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

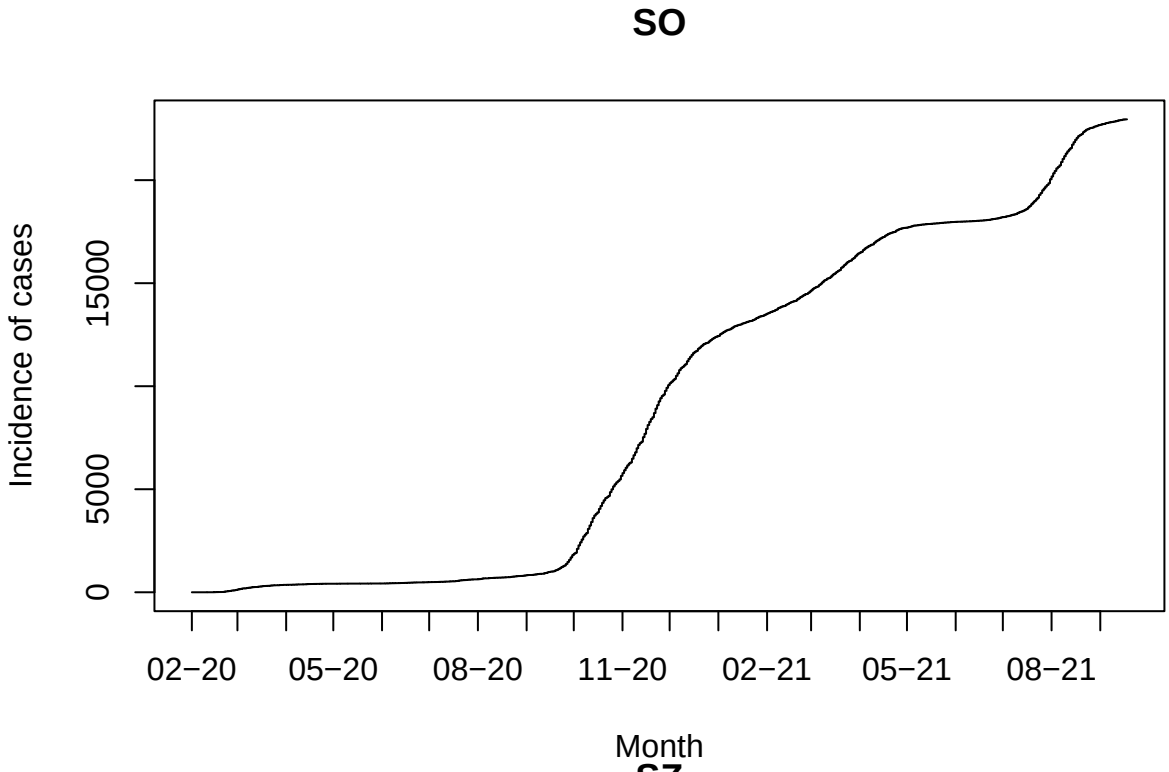

NE
Incidence of cases
0
5000
10000
15000
20000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

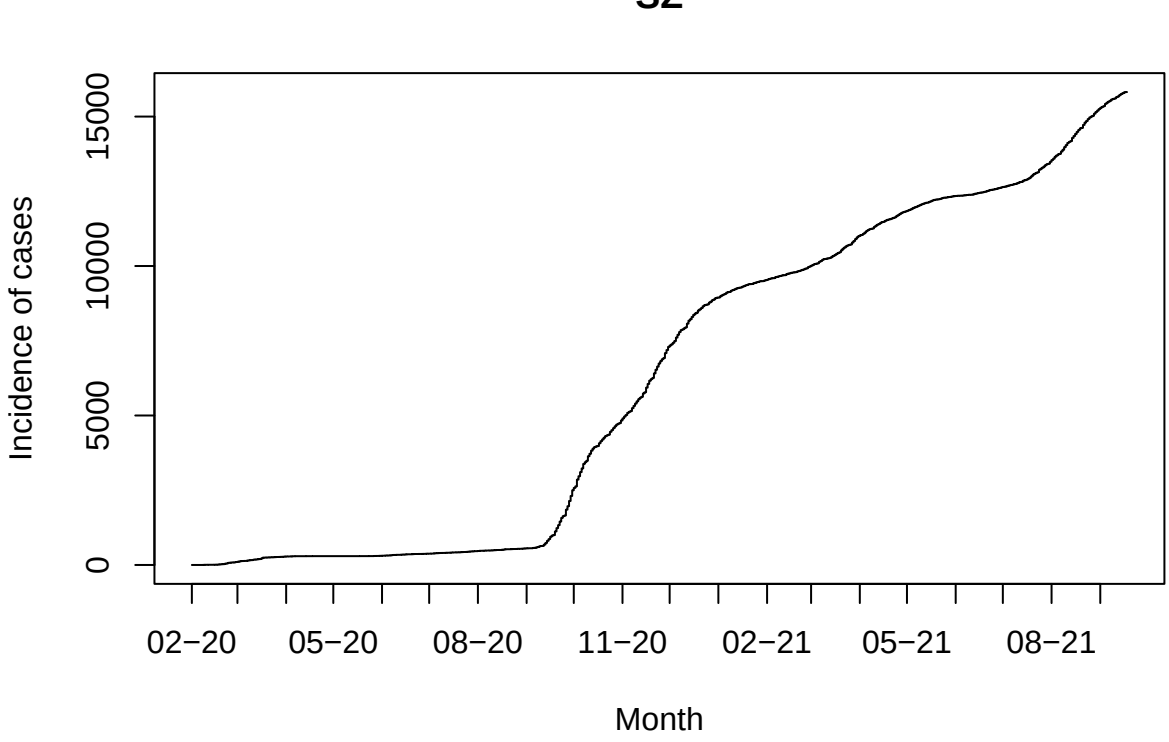

NW
Incidence of cases
0
500
1500
2500
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

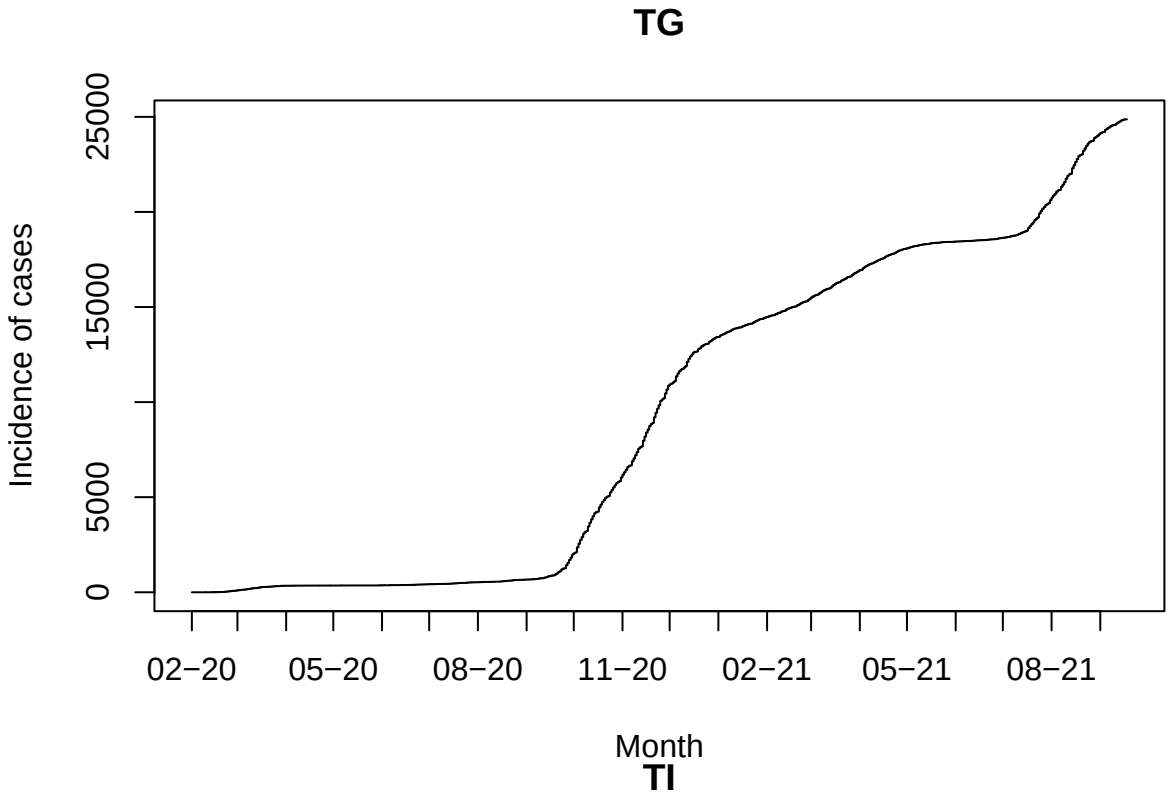

OW
Incidence of cases
0
500
1500
2500
3500
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

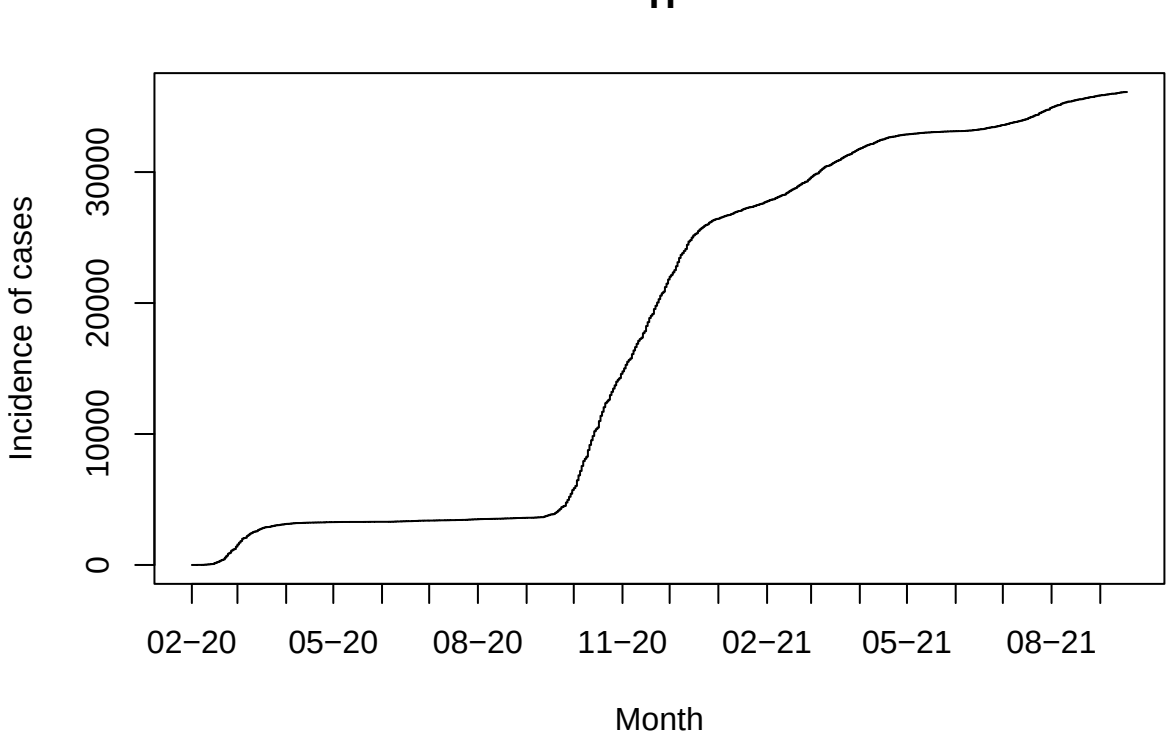

SG
Incidence of cases
0
10000
30000
50000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

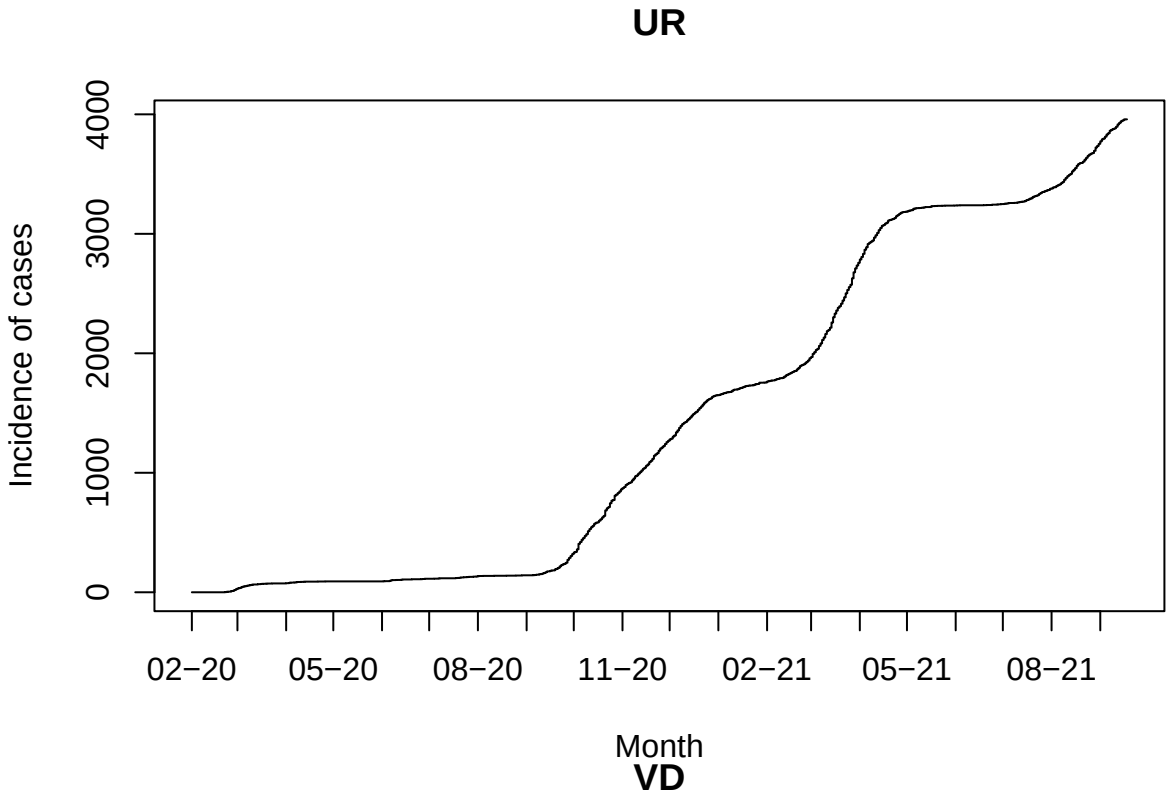

SH
Incidence of cases
0
1000
3000
5000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

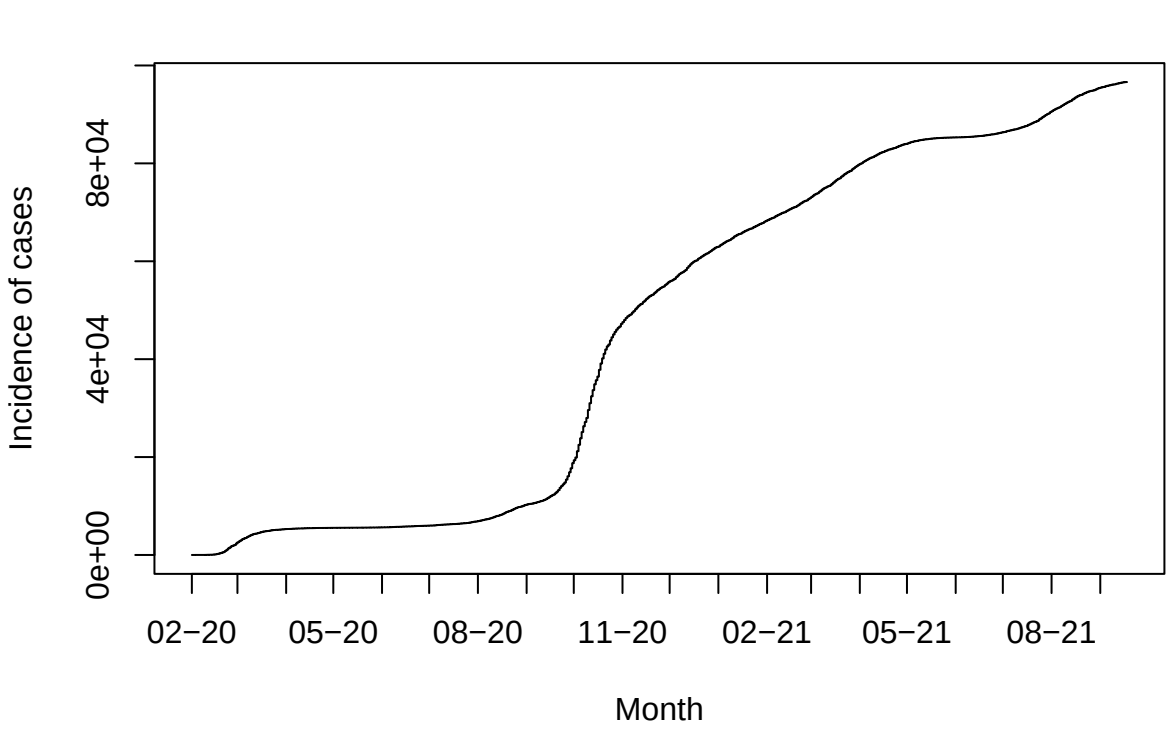

SO
Incidence of cases
0
5000
15000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

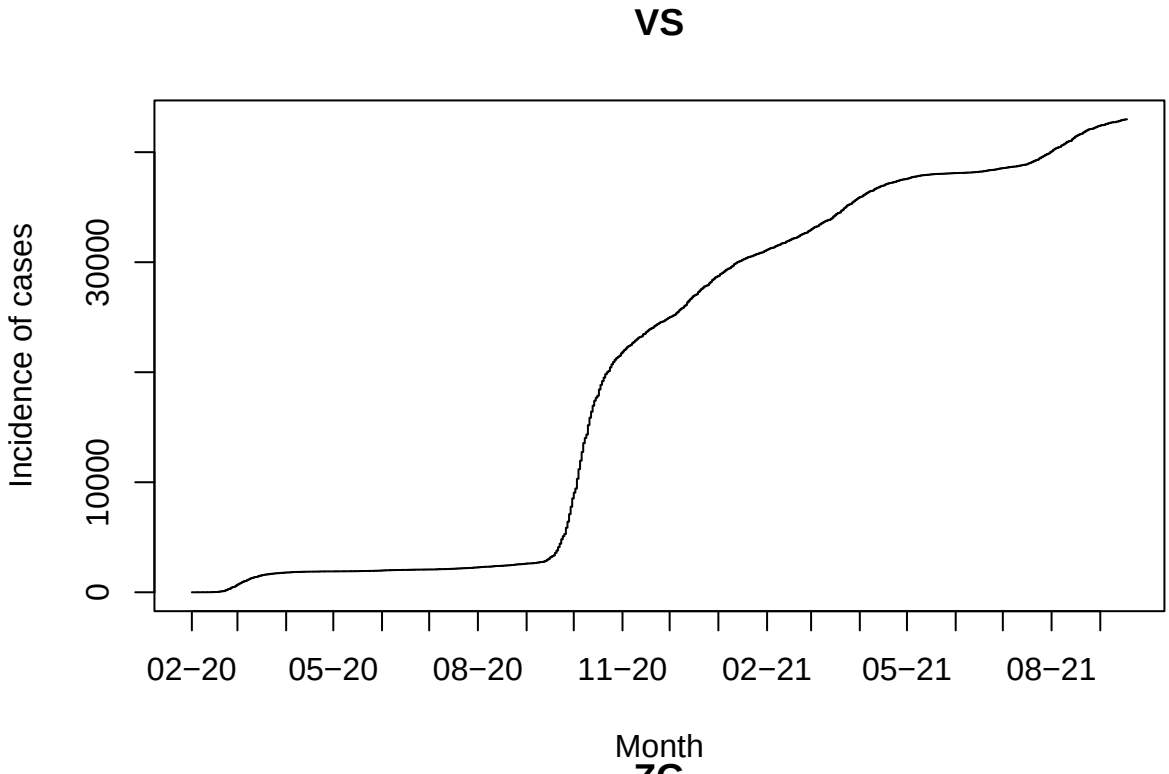

SZ
Incidence of cases
0
5000
10000
15000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

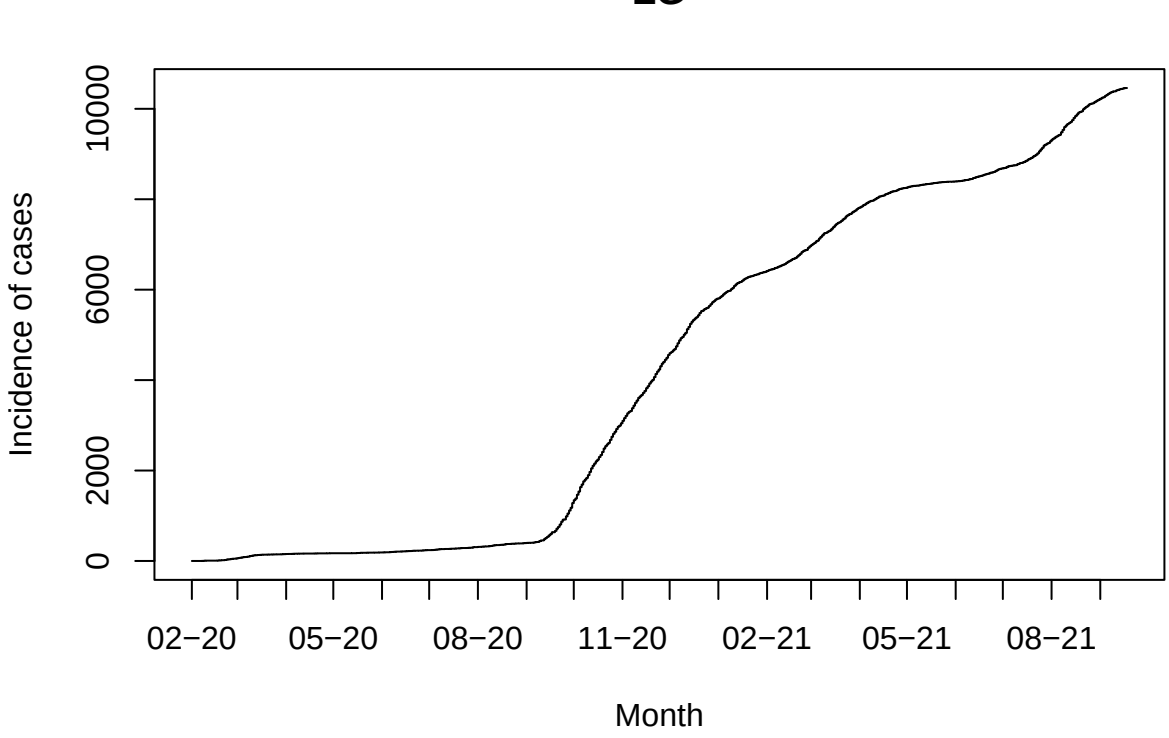

TG
Incidence of cases
0
5000
15000
25000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

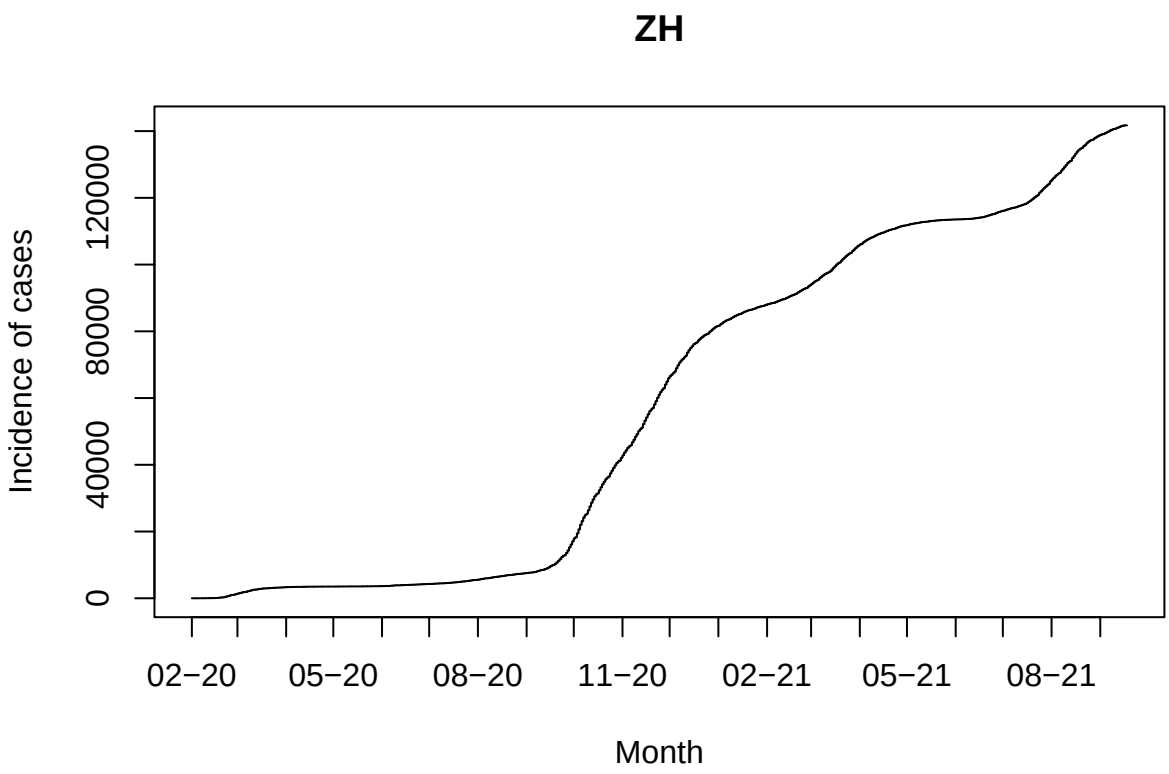

TI
Incidence of cases
0
10000
20000
30000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month


UR
Incidence of cases
0
1000
2000
3000
4000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month


VD
Incidence of cases
0e+00
4e+04
8e+04
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

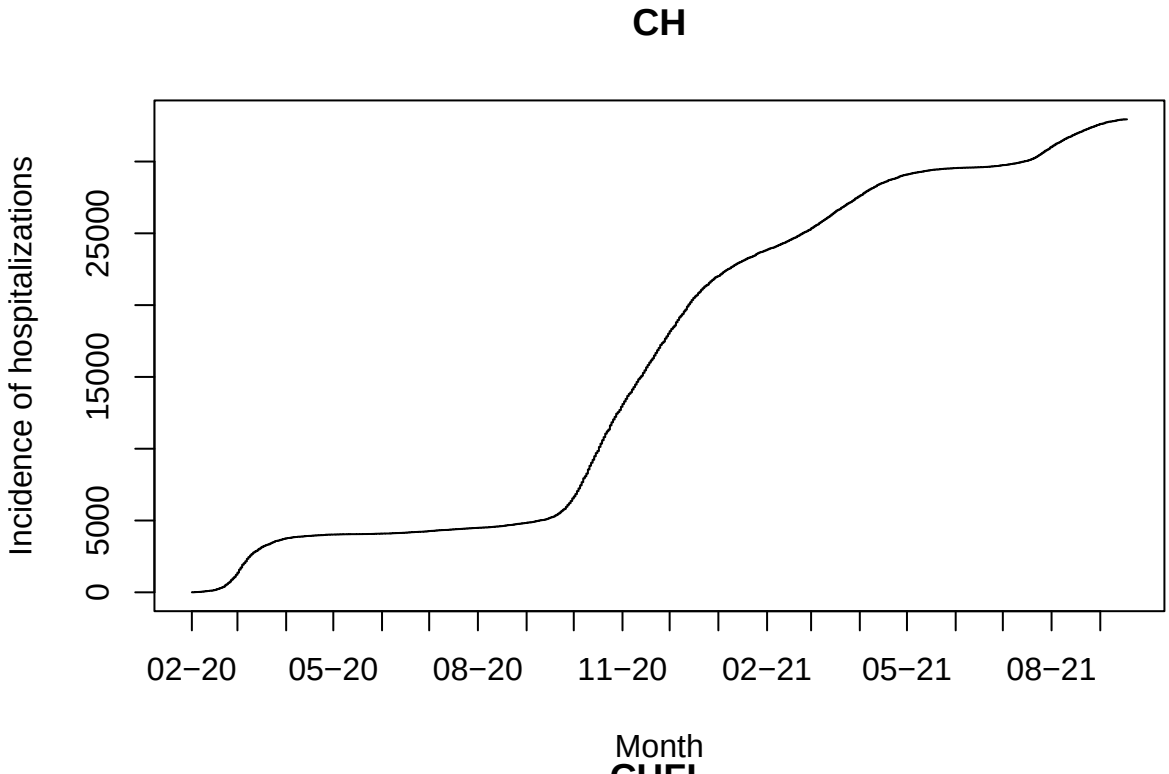

VS
Incidence of cases
0
10000
30000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

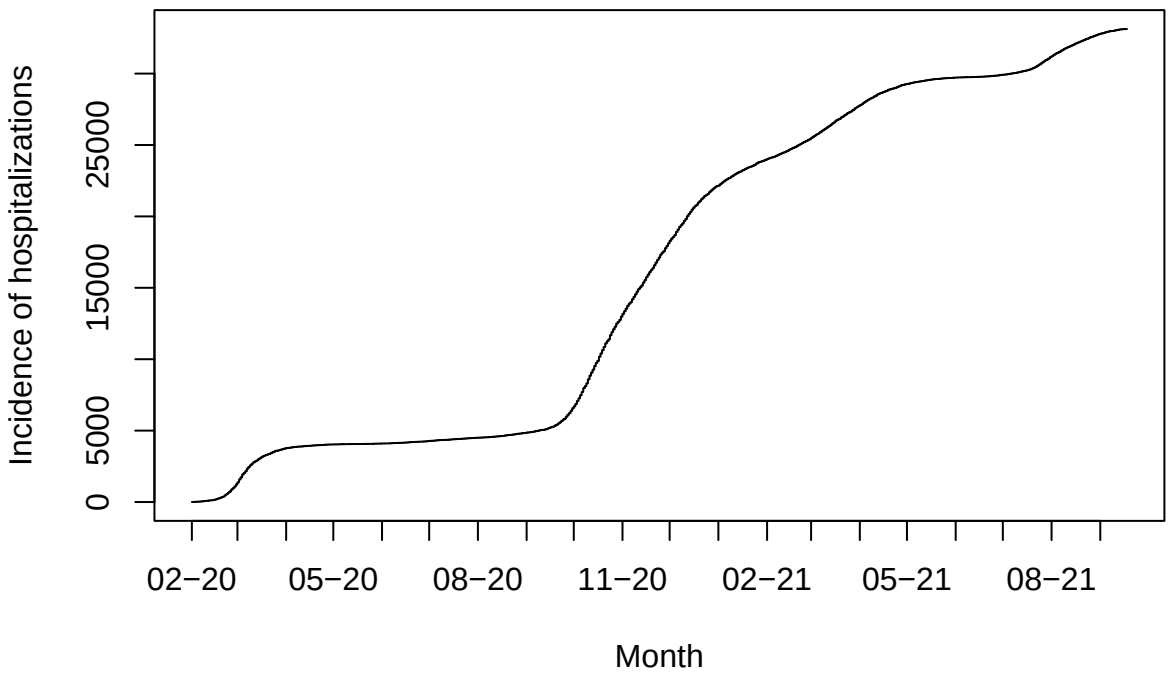

ZG
Incidence of cases
0
2000
6000
10000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

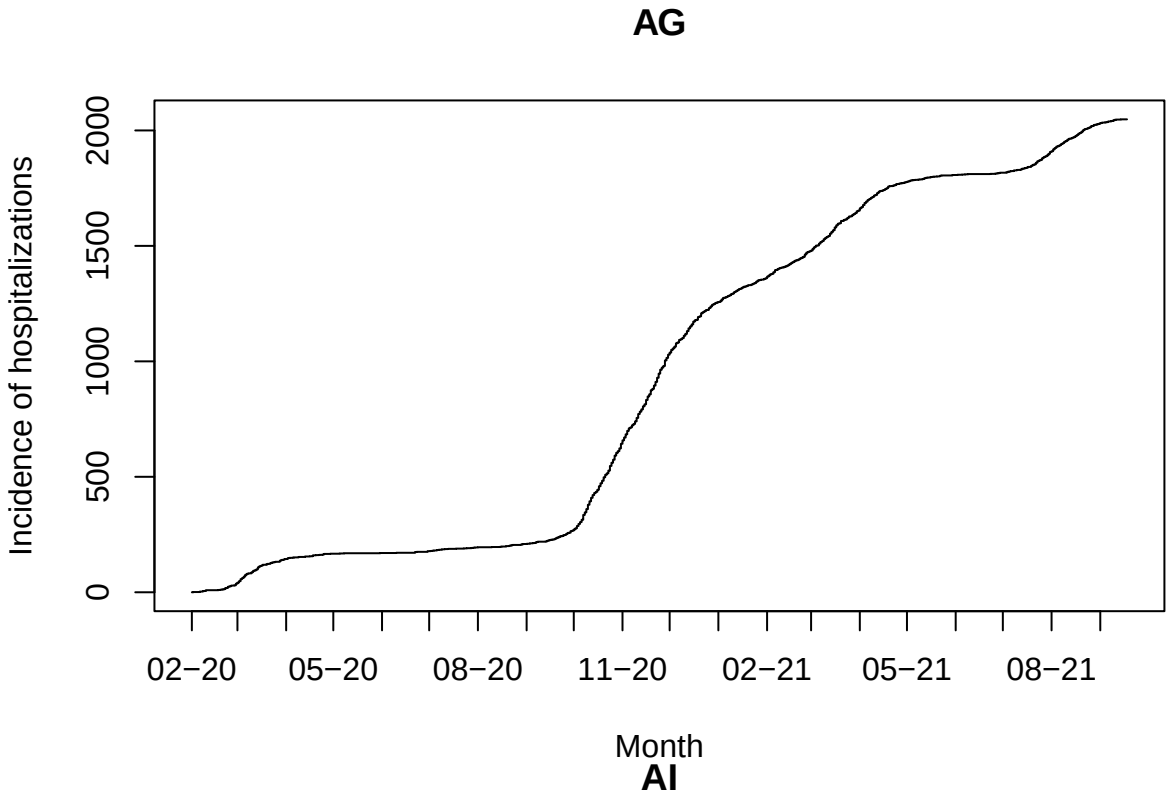


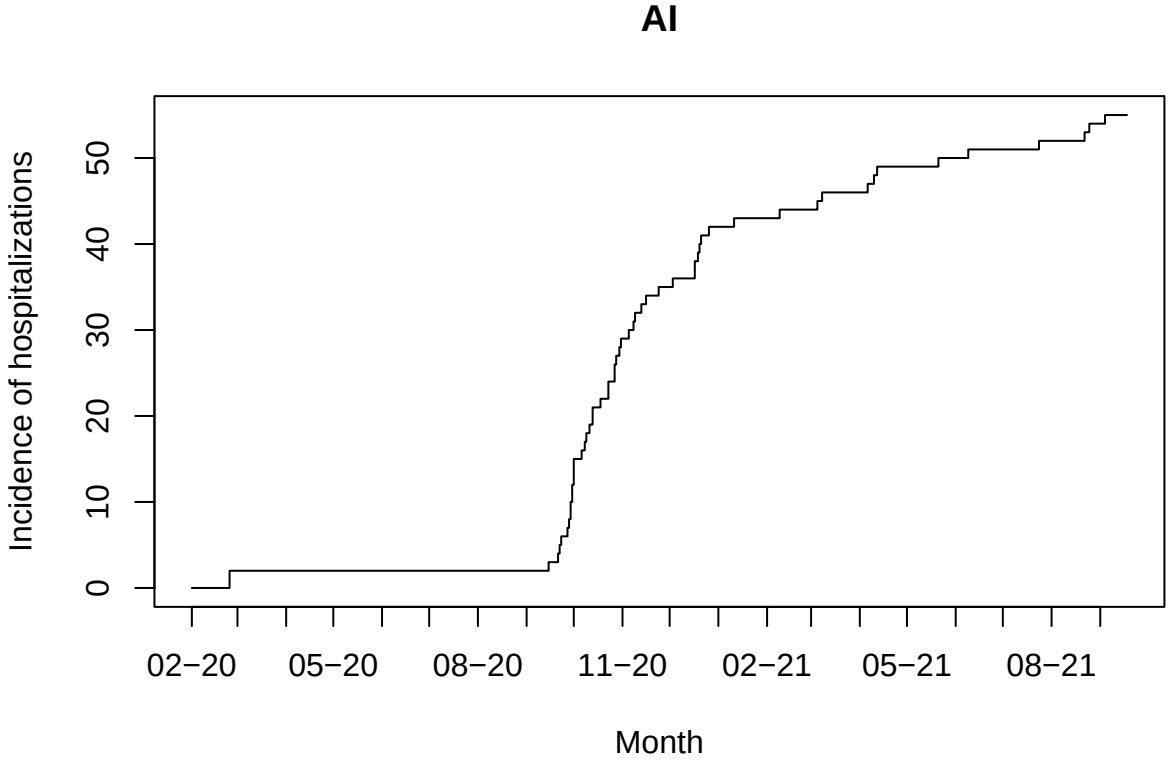
Furthermore, we plot the cumulative incidences of hospitalizations for the different geographic categories

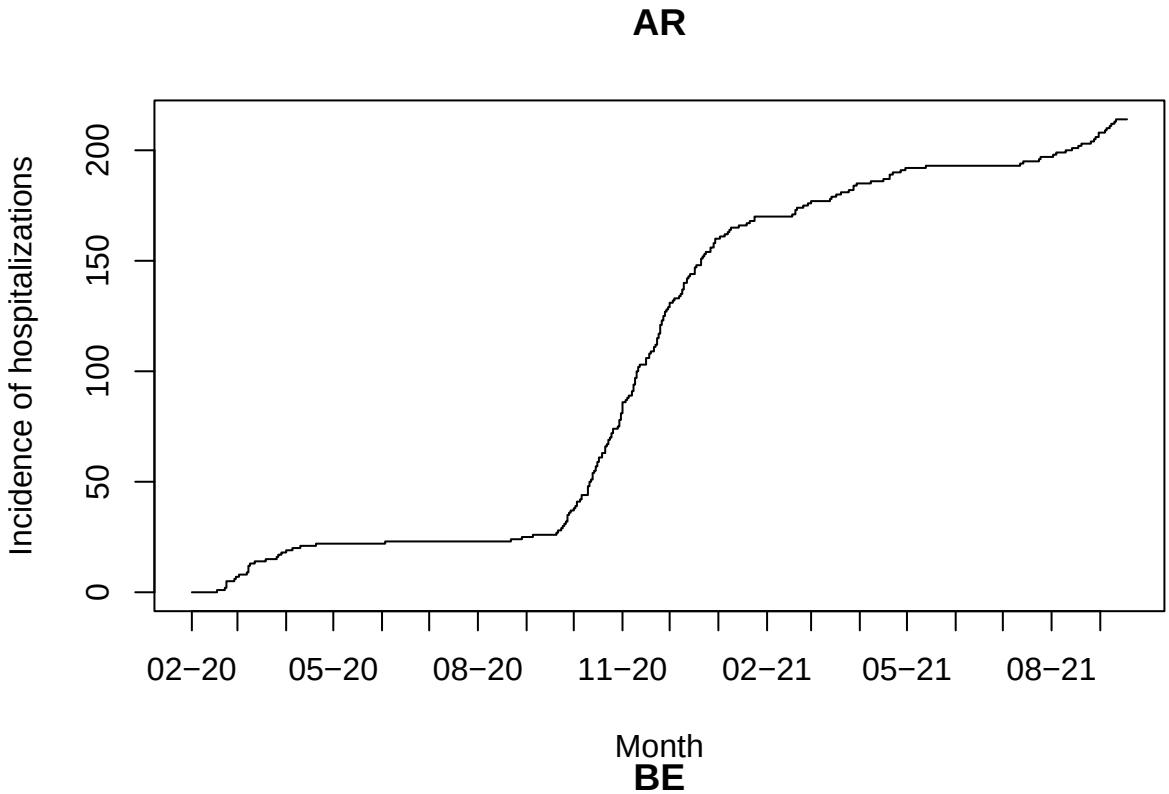
```
regions.hospital <- unique(df.hospital$geoRegion)
for (i in regions.hospital) {
    region.df.hospital <- df.hospital[df.hospital$geoRegion ==
        i, ]
    plot(as.Date(region.df.hospital$datum), region.df.hospital$sumTotal,
        "s", xaxt = "n", xlab = "Month", ylab = "Incidence of hospitalizations",
        main = i)
    axis.Date(1, at = seq(min(as.Date(region.df.hospital$datum)),
        max(as.Date(region.df.hospital$datum)) + 6, "months"),
        format = "%m-%y")
}
```

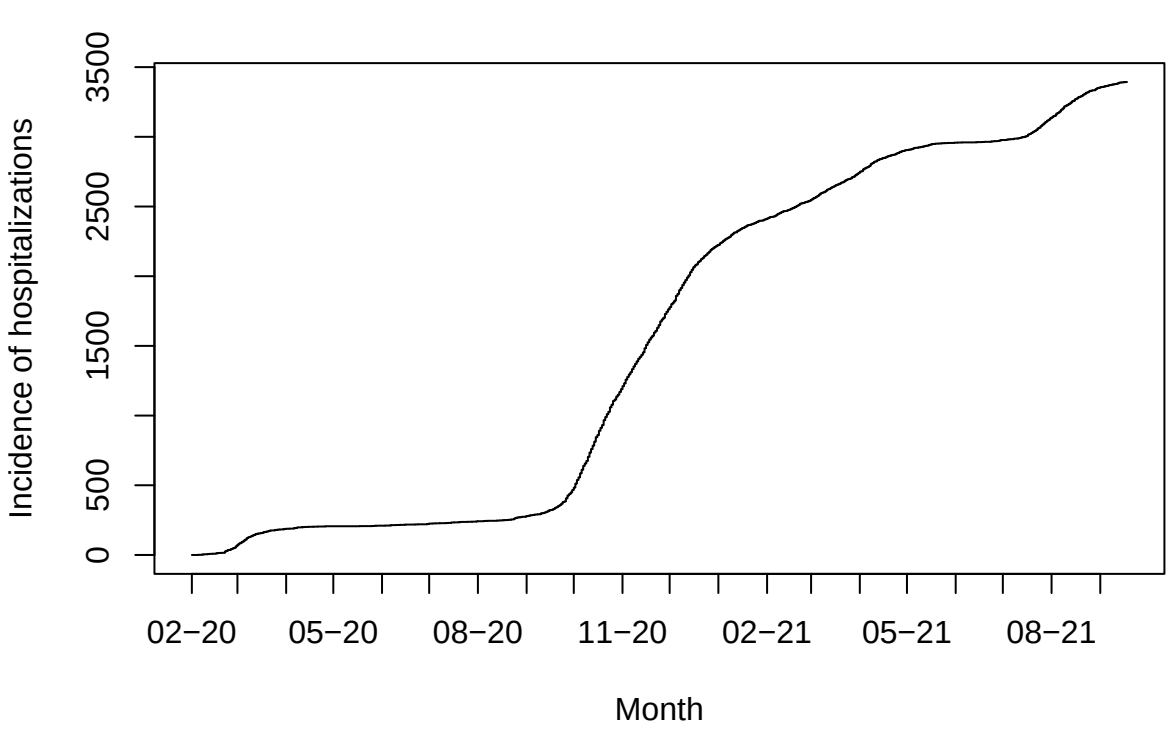

CH
Incidence of hospitalizations
0
5000
15000
25000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

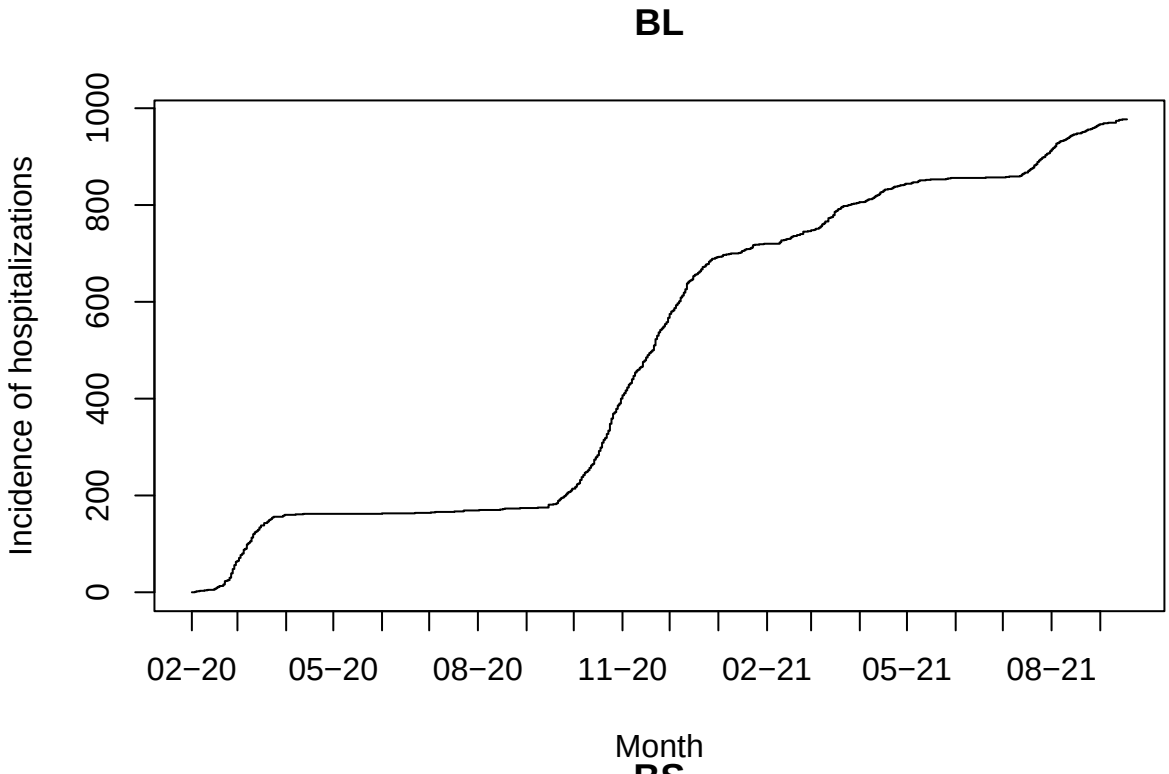

CHFL
Incidence of hospitalizations
0
5000
15000
25000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

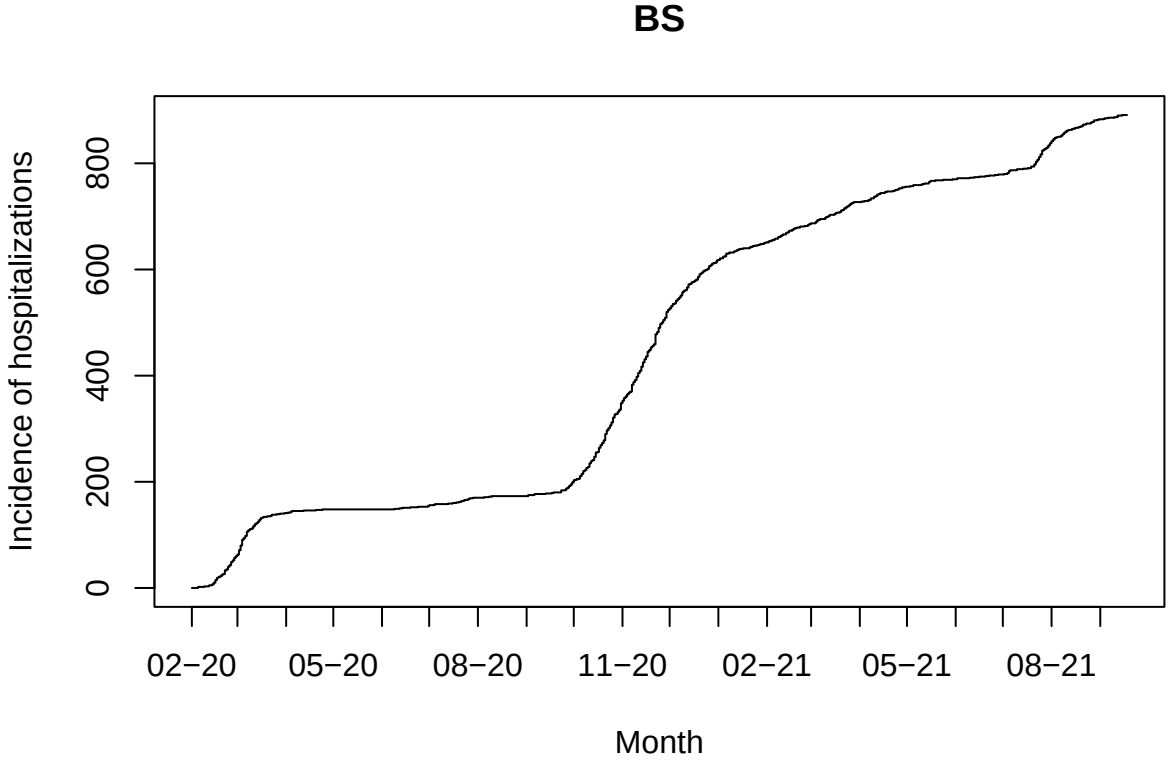

AG
Incidence of hospitalizations
0
500
1000
1500
2000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

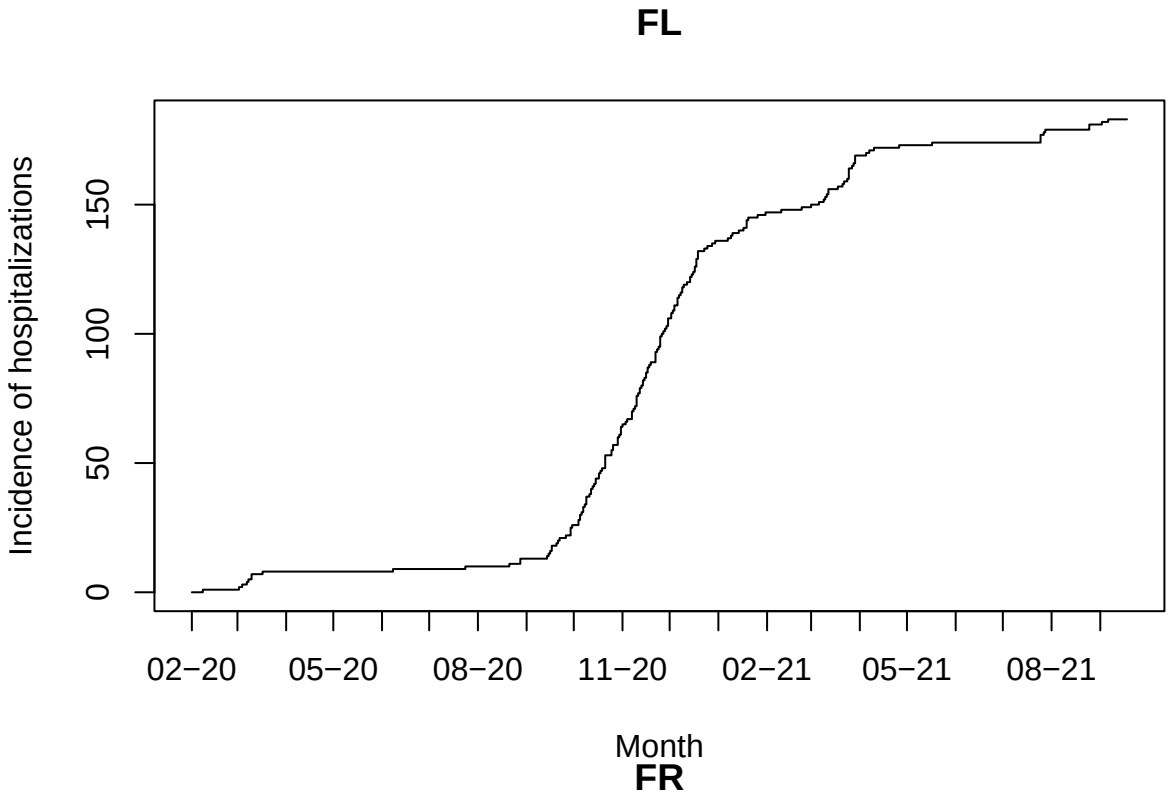

AI
Incidence of hospitalizations
0
10
20
30
40
50
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

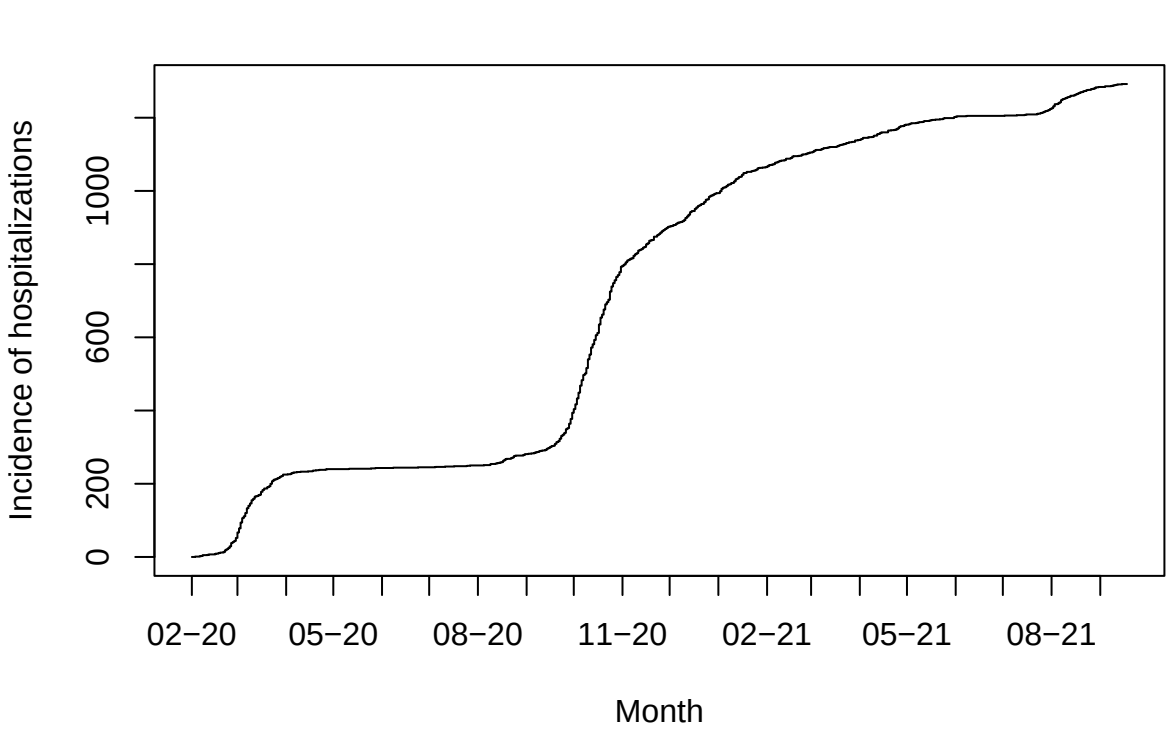

AR
Incidence of hospitalizations
0
50
100
150
200
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

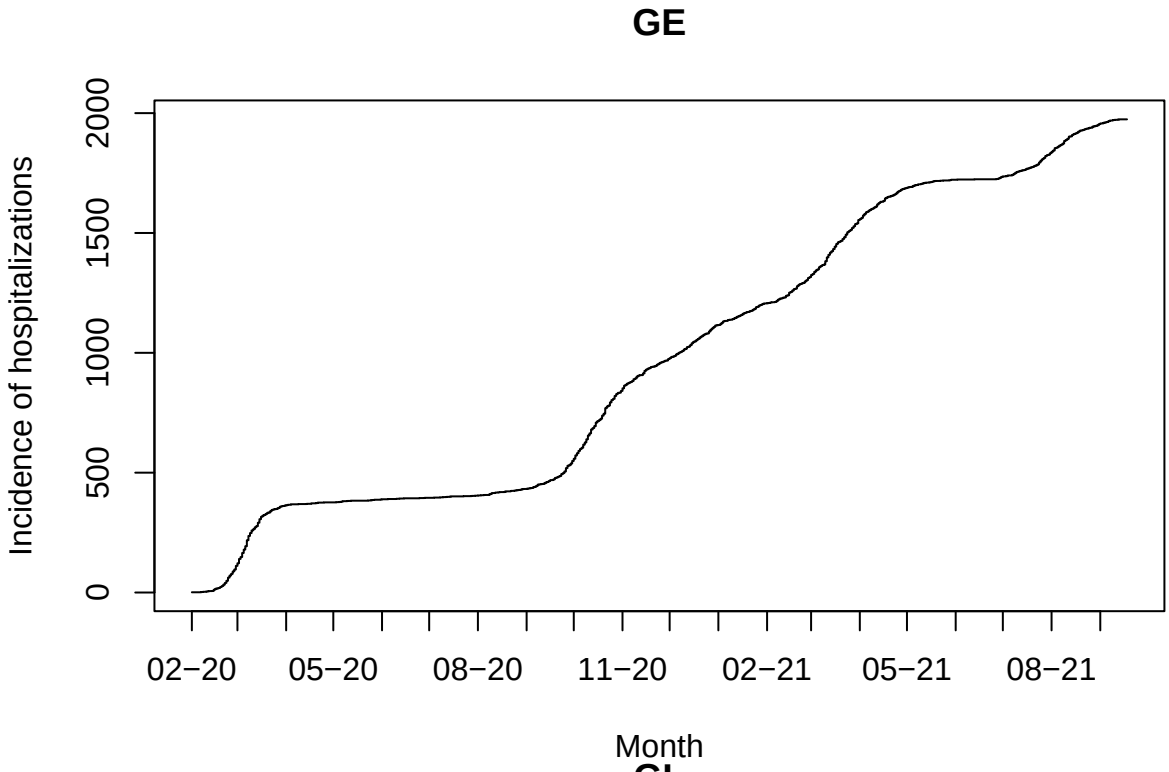

BE
Incidence of hospitalizations
0
500
1500
2500
3500
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

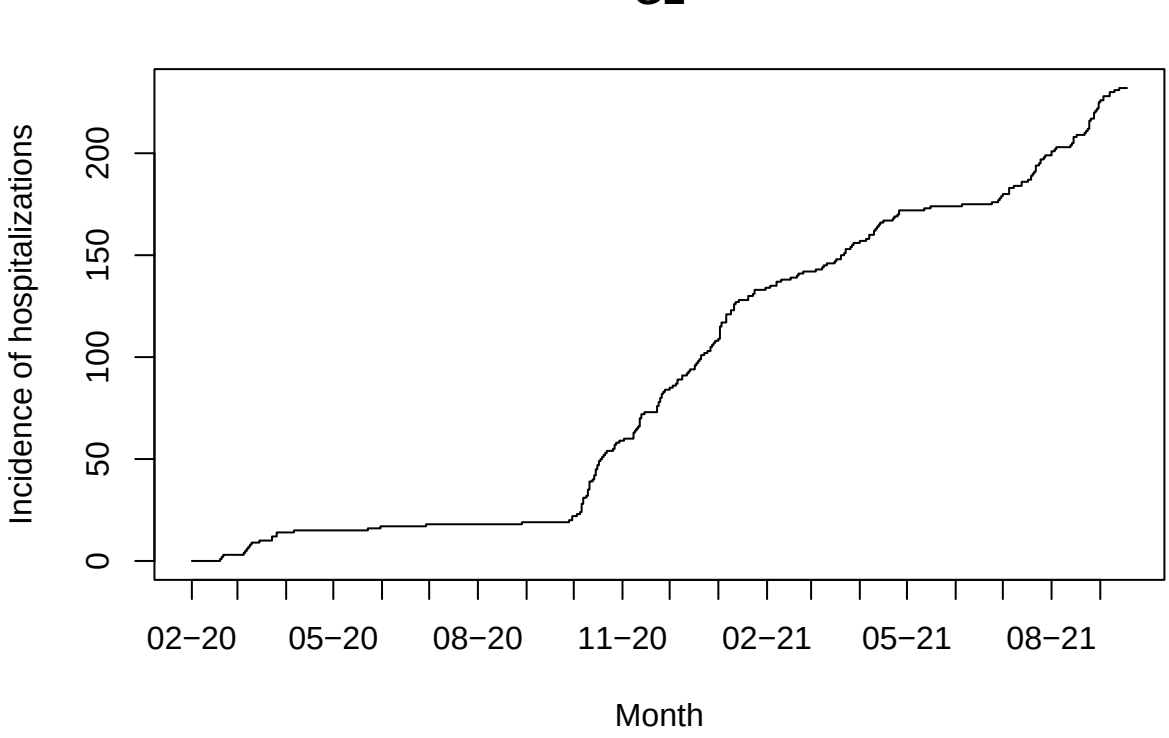

BL
Incidence of hospitalizations
0
200
400
600
800
1000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

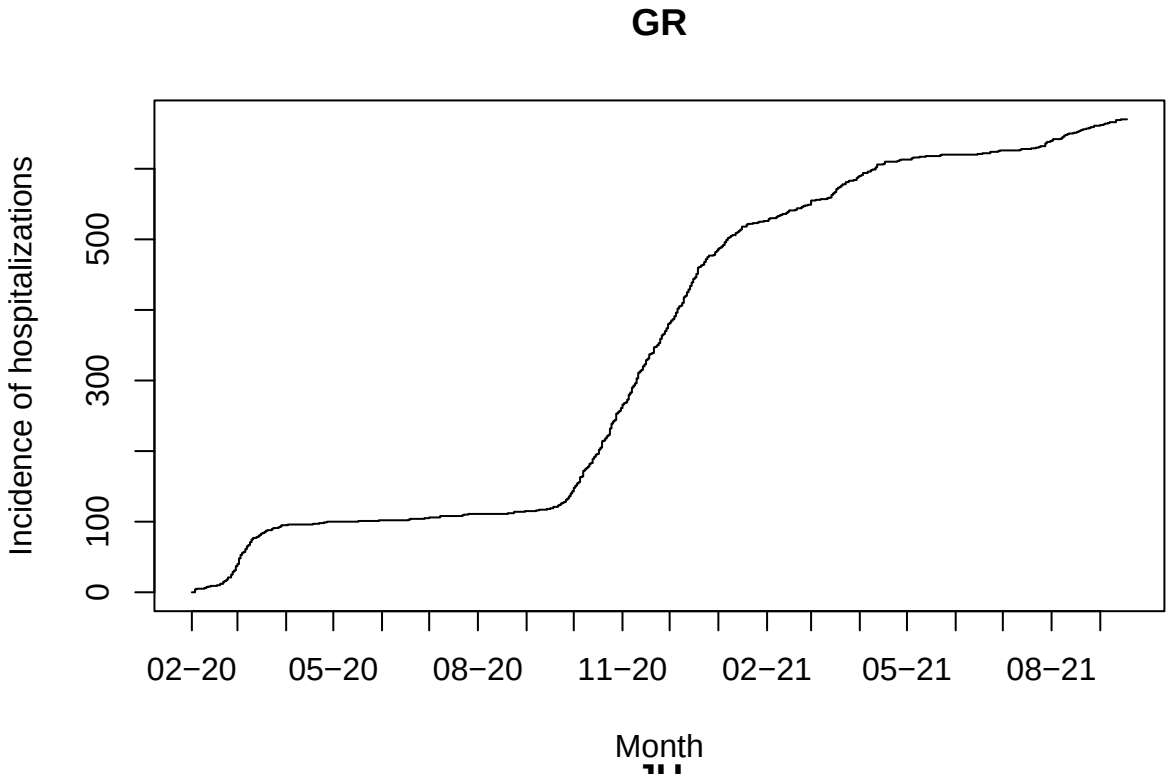

BS
Incidence of hospitalizations
0
200
400
600
800
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

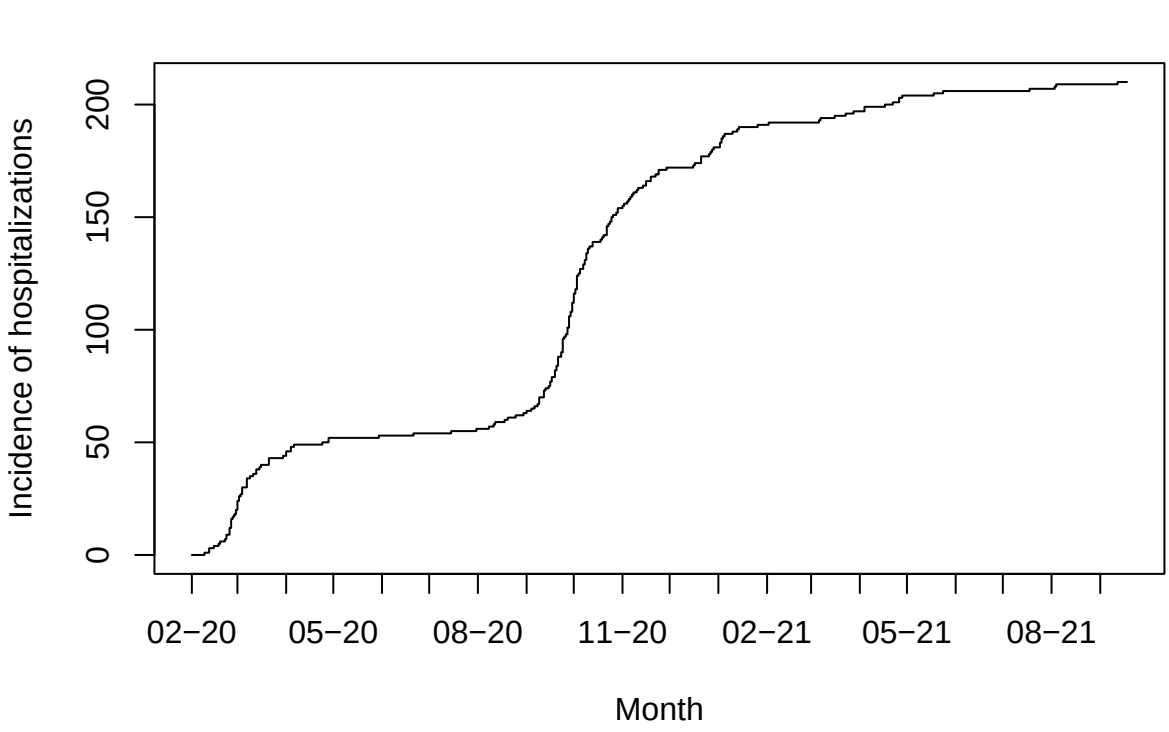

FL
Incidence of hospitalizations
0
50
100
150
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

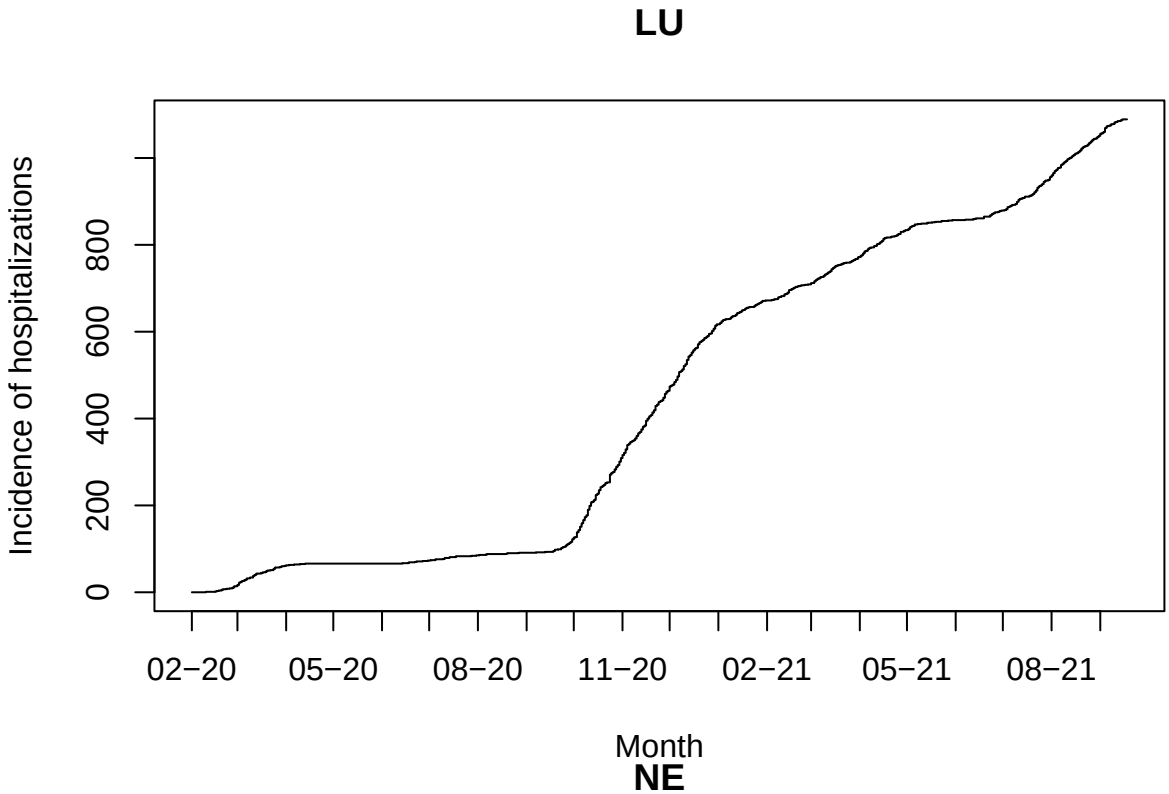

FR
Incidence of hospitalizations
0
200
600
1000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

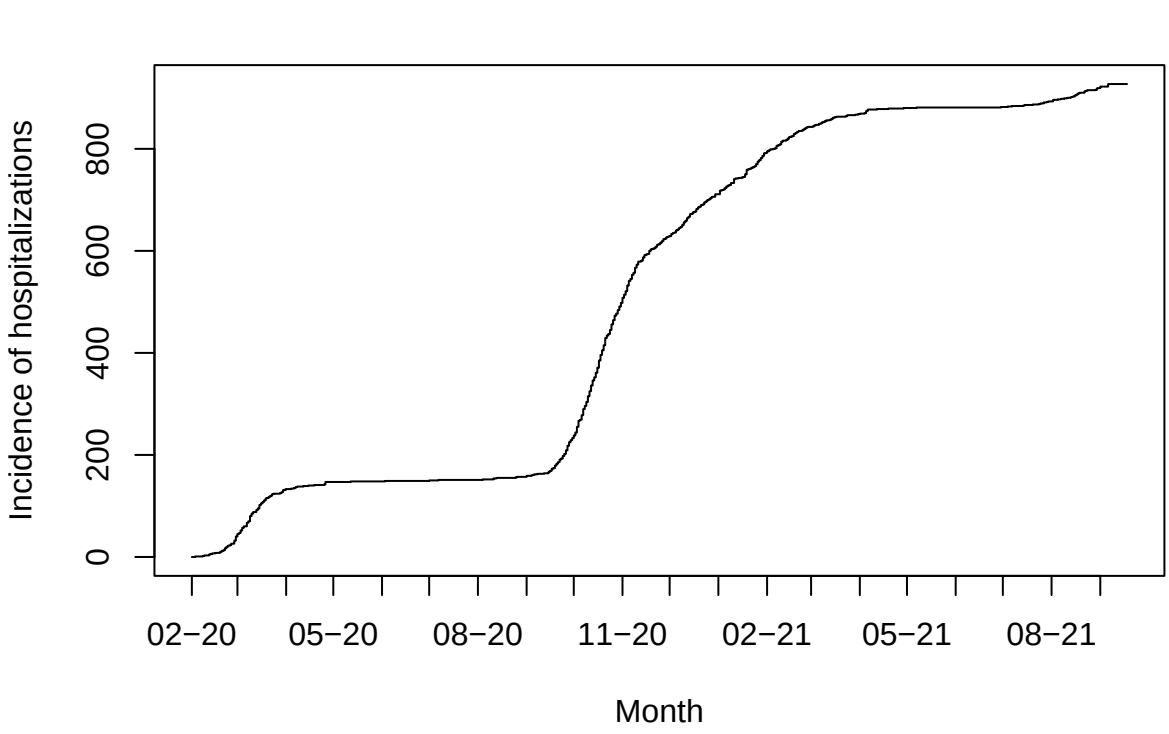

GE
Incidence of hospitalizations
0
500
1000
1500
2000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

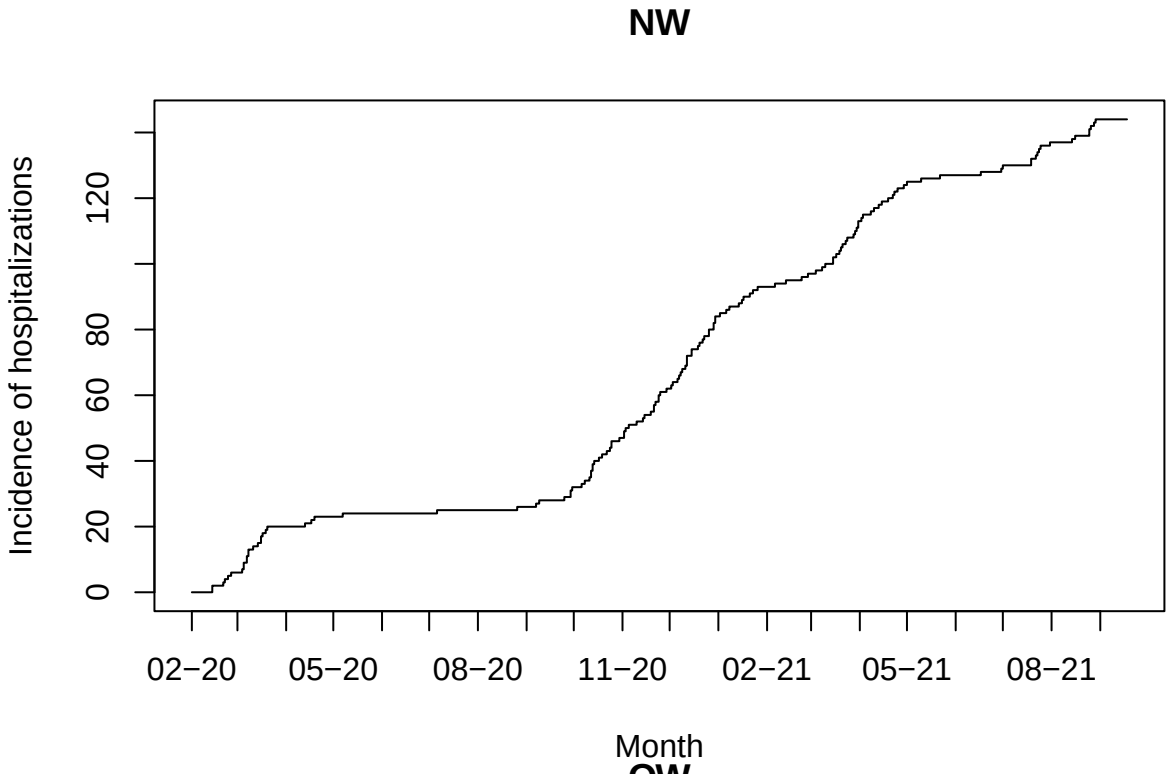

GL
Incidence of hospitalizations
0
50
100
150
200
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

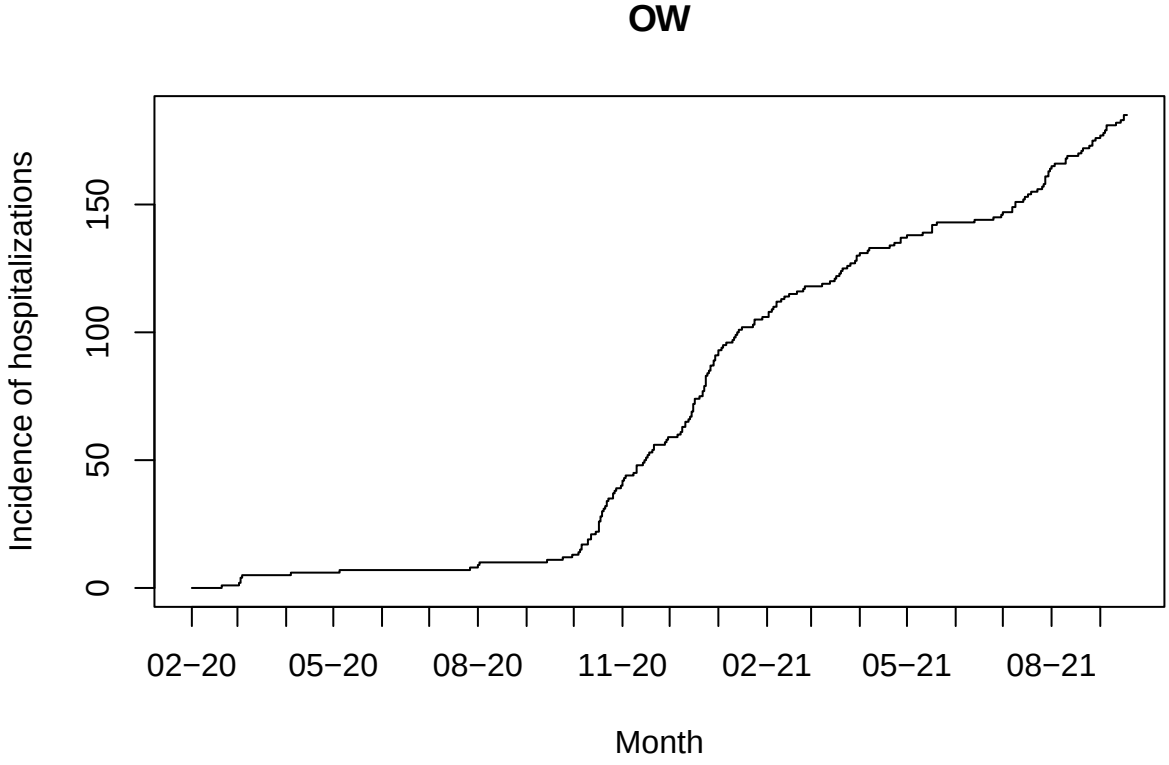

GR
Incidence of hospitalizations
0
100
300
500
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

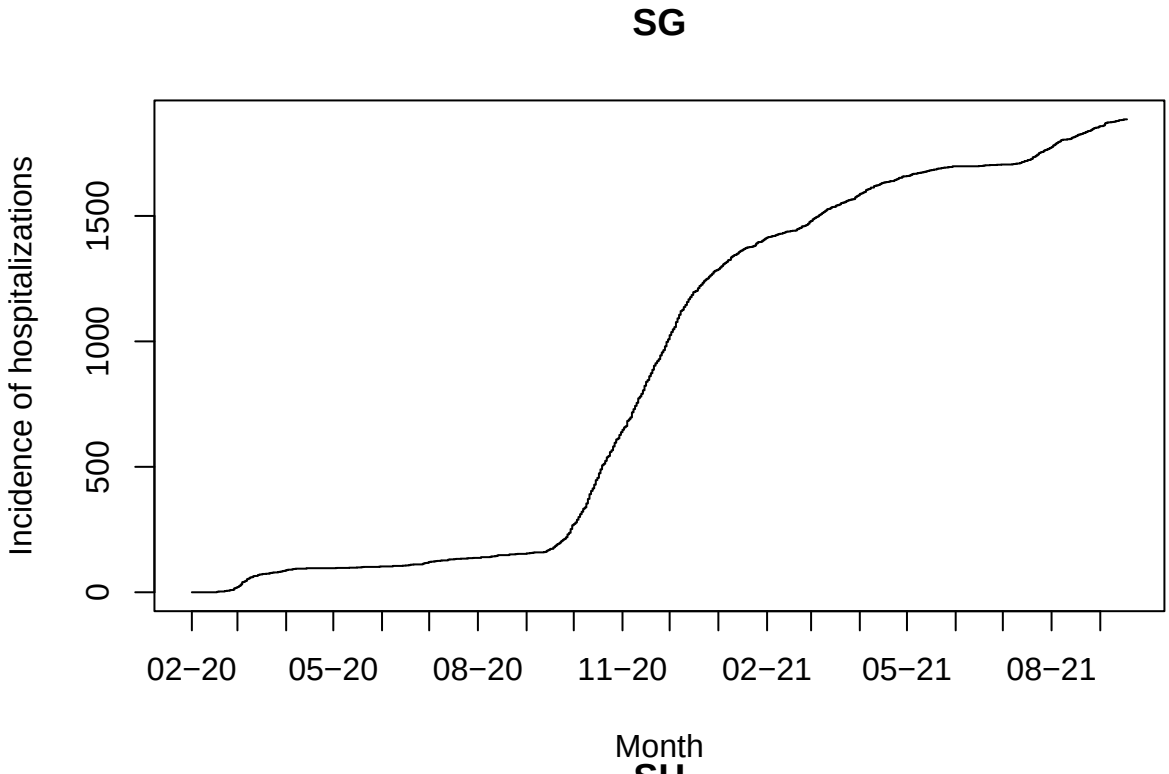

JU
Incidence of hospitalizations
0
50
100
150
200
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

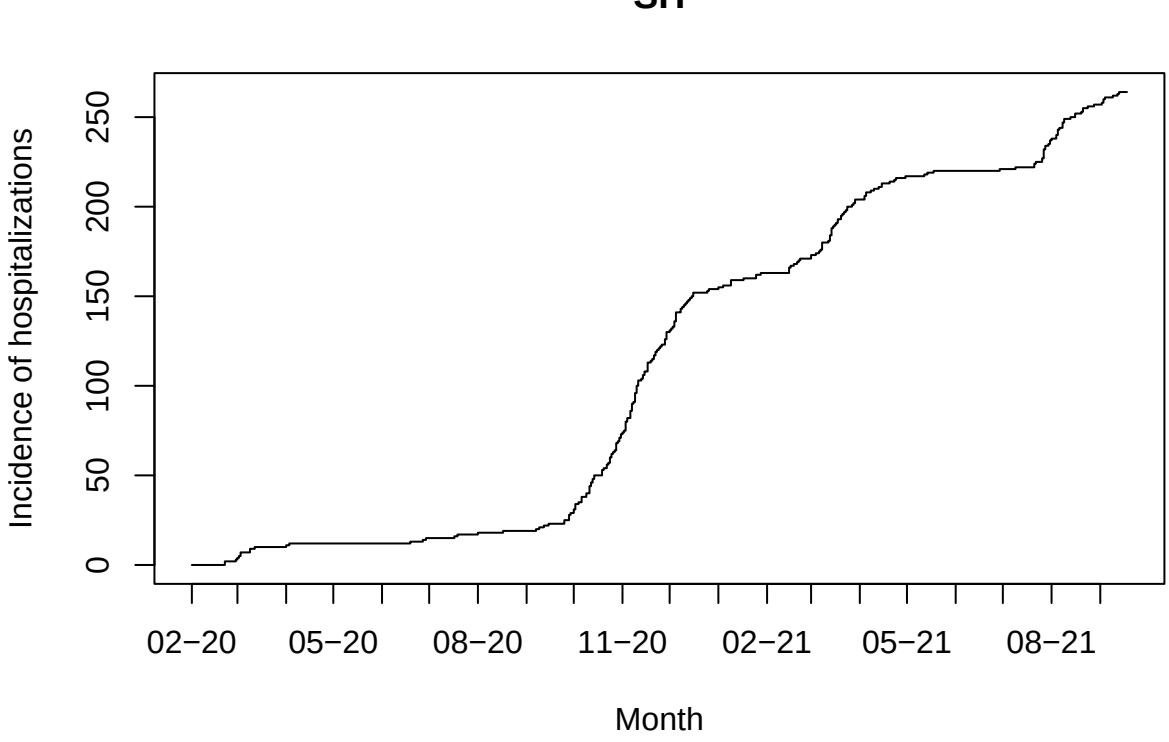

LU
Incidence of hospitalizations
0
200
400
600
800
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

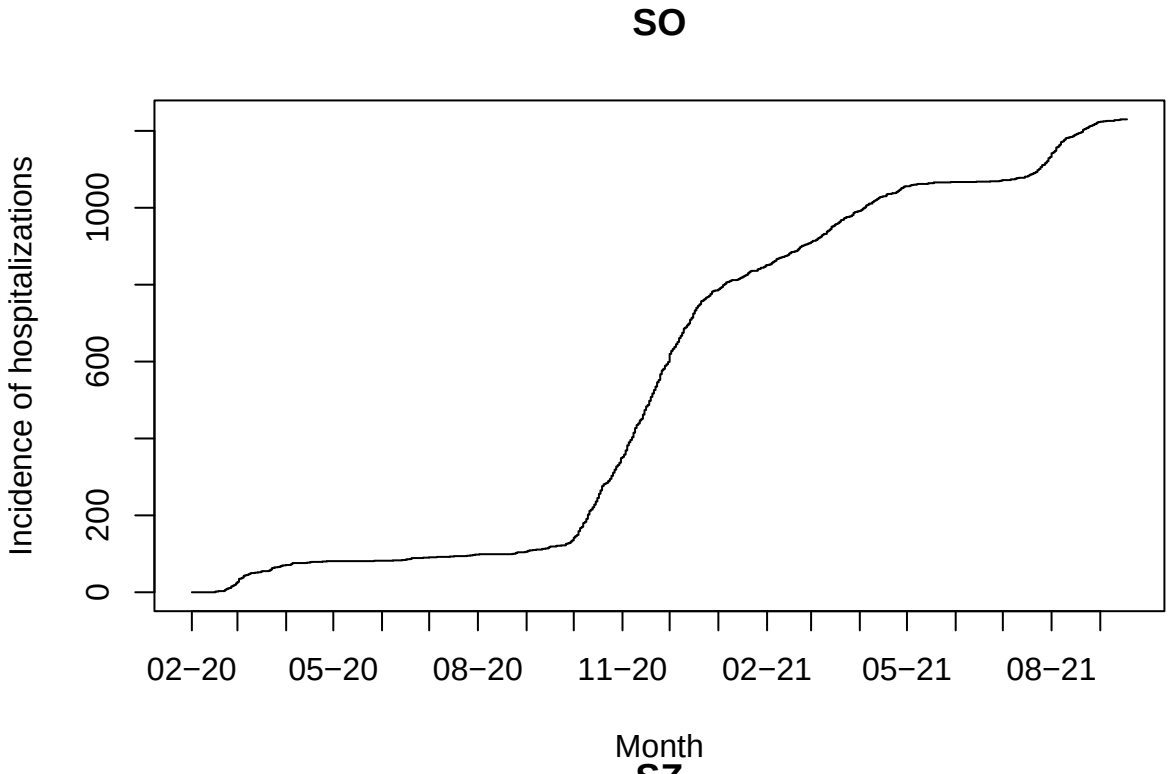

NE
Incidence of hospitalizations
0
200
400
600
800
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

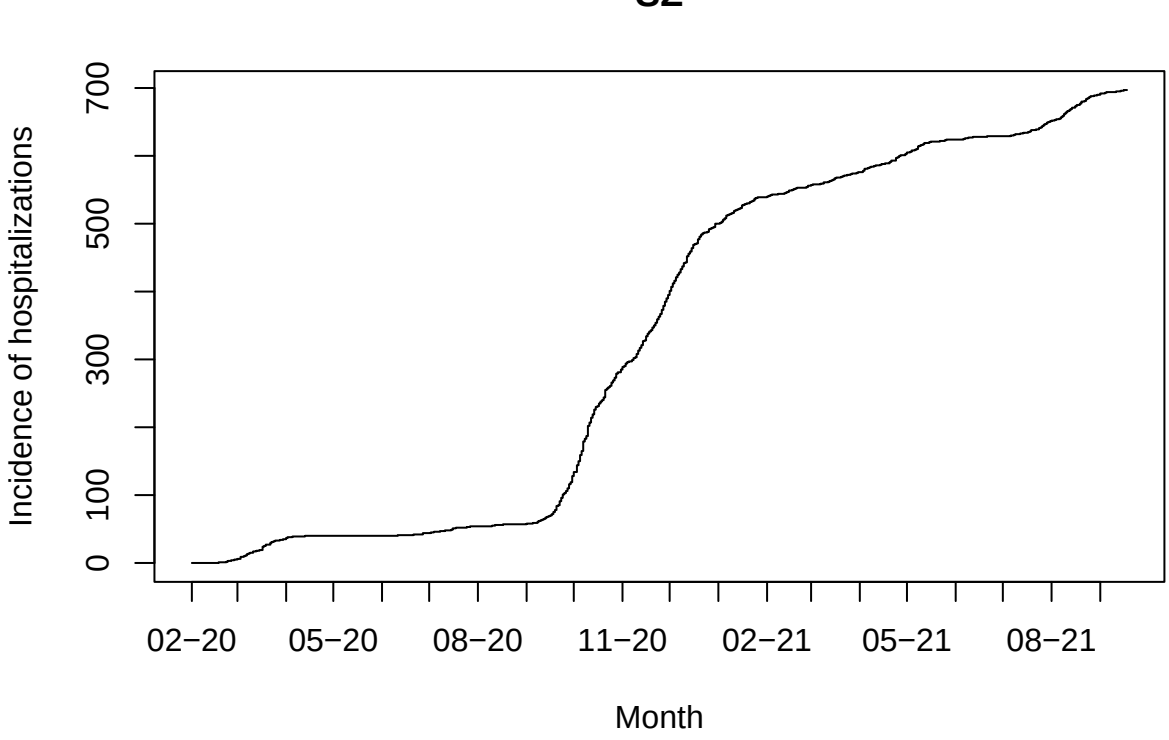

NW
Incidence of hospitalizations
0
20
40
60
80
120
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

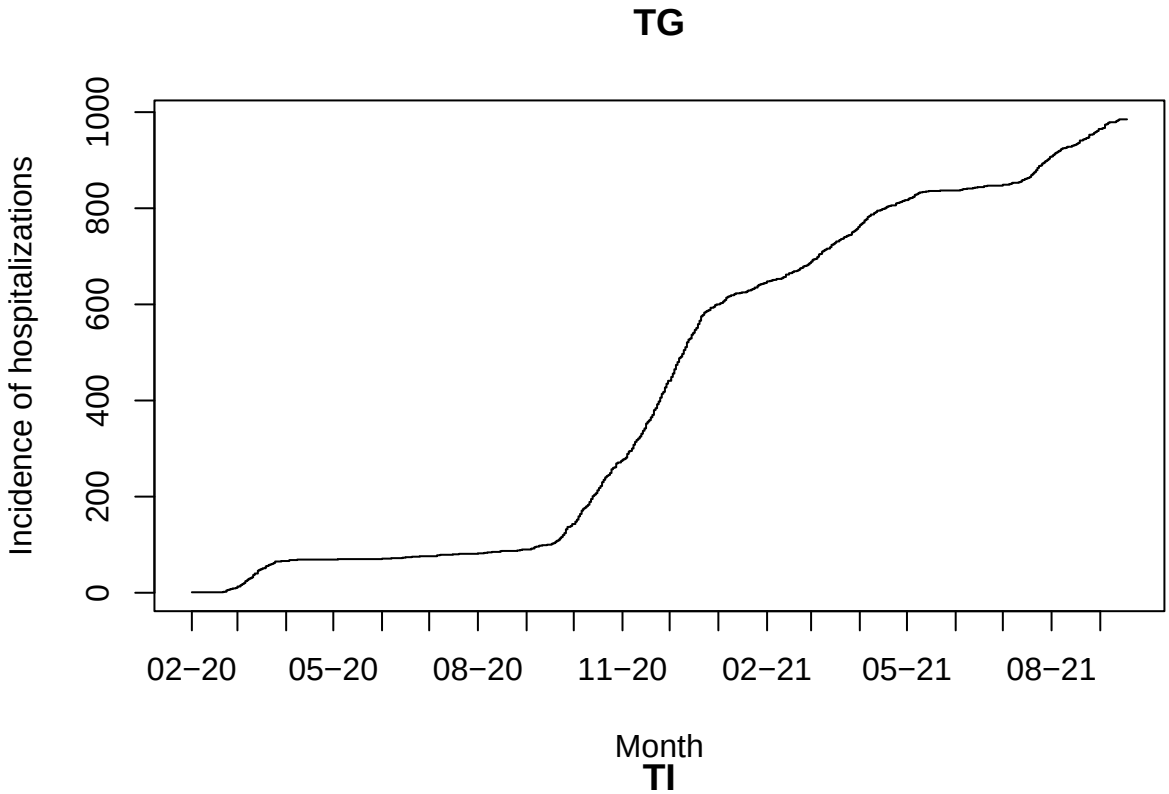

OW
Incidence of hospitalizations
0
50
100
150
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

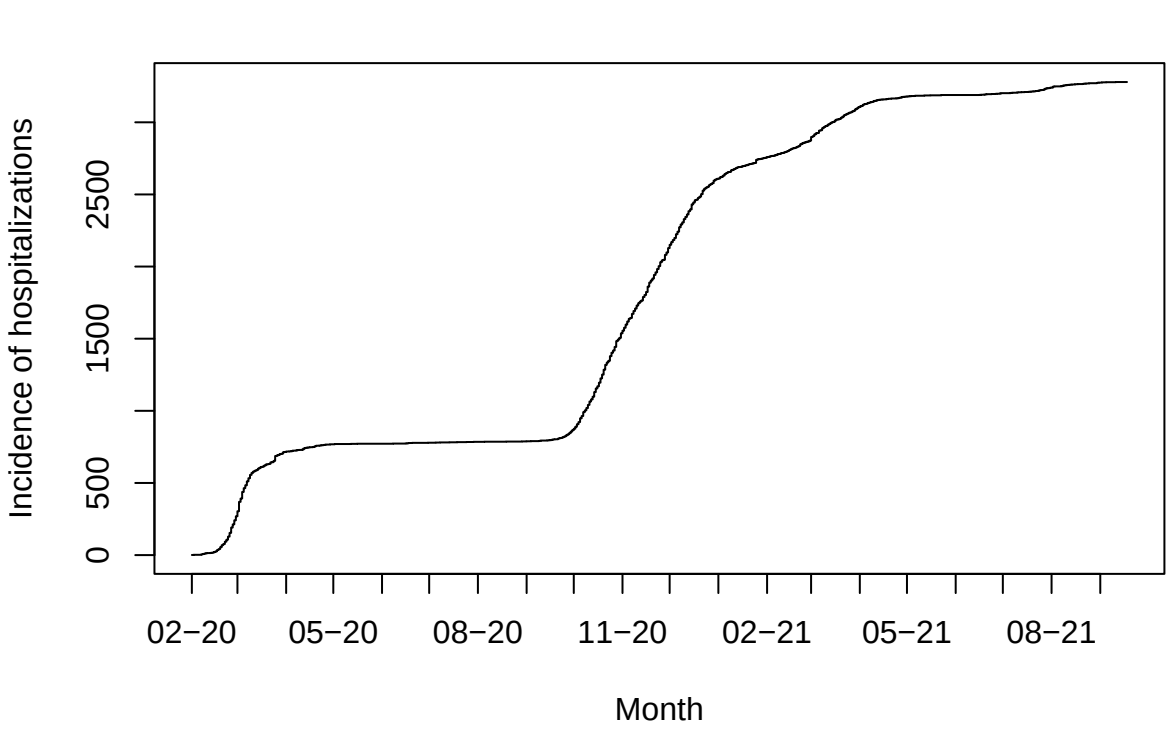

SG
Incidence of hospitalizations
0
500
1000
1500
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

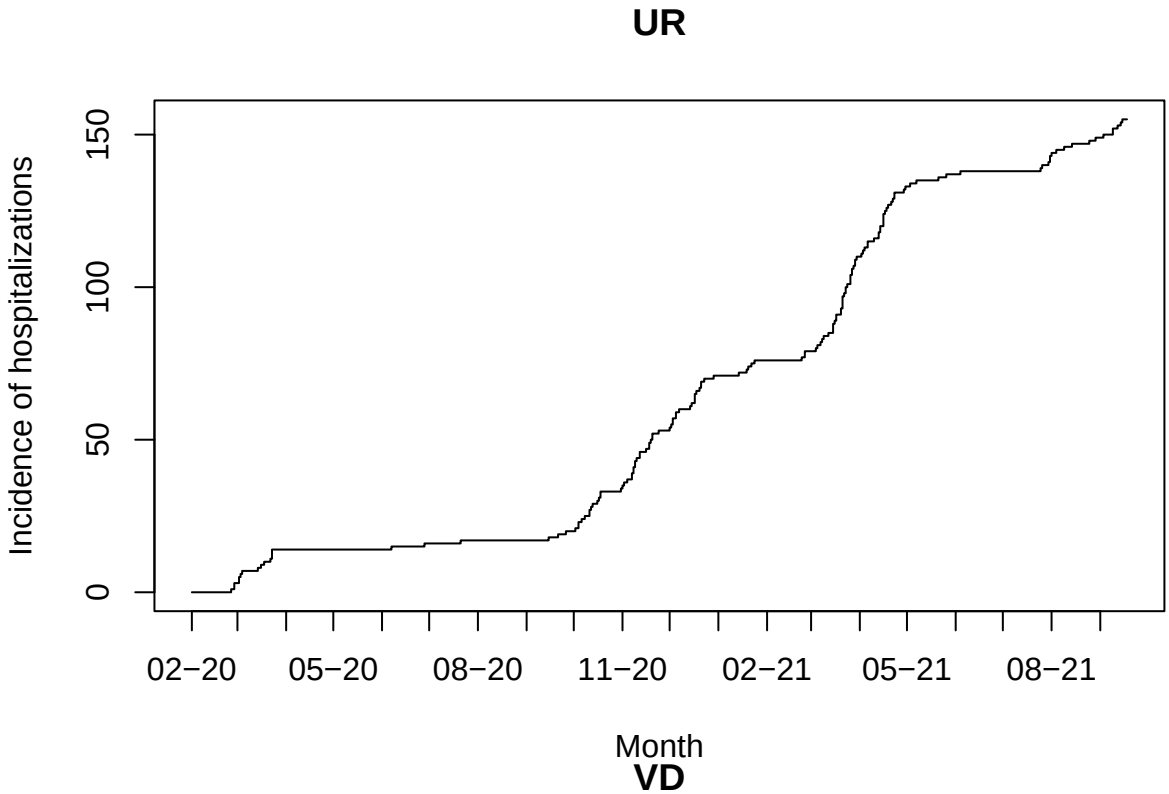

SH
Incidence of hospitalizations
0
50
100
150
200
250
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

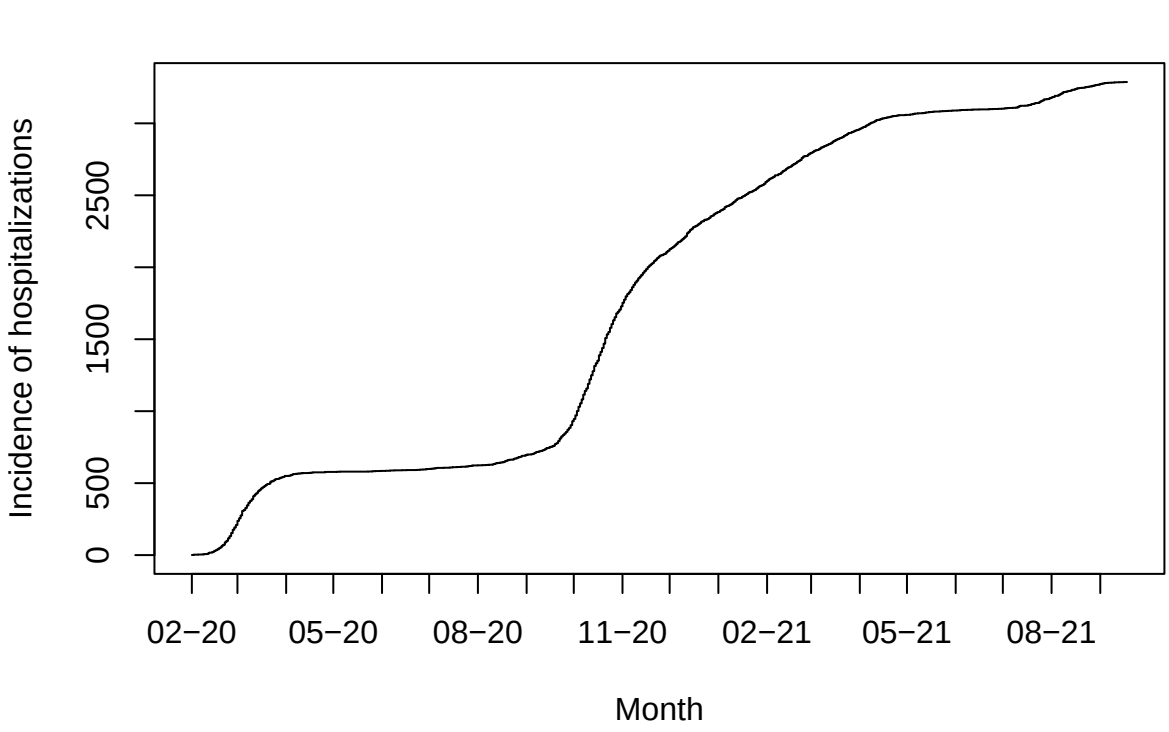

SO
Incidence of hospitalizations
0
200
600
1000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

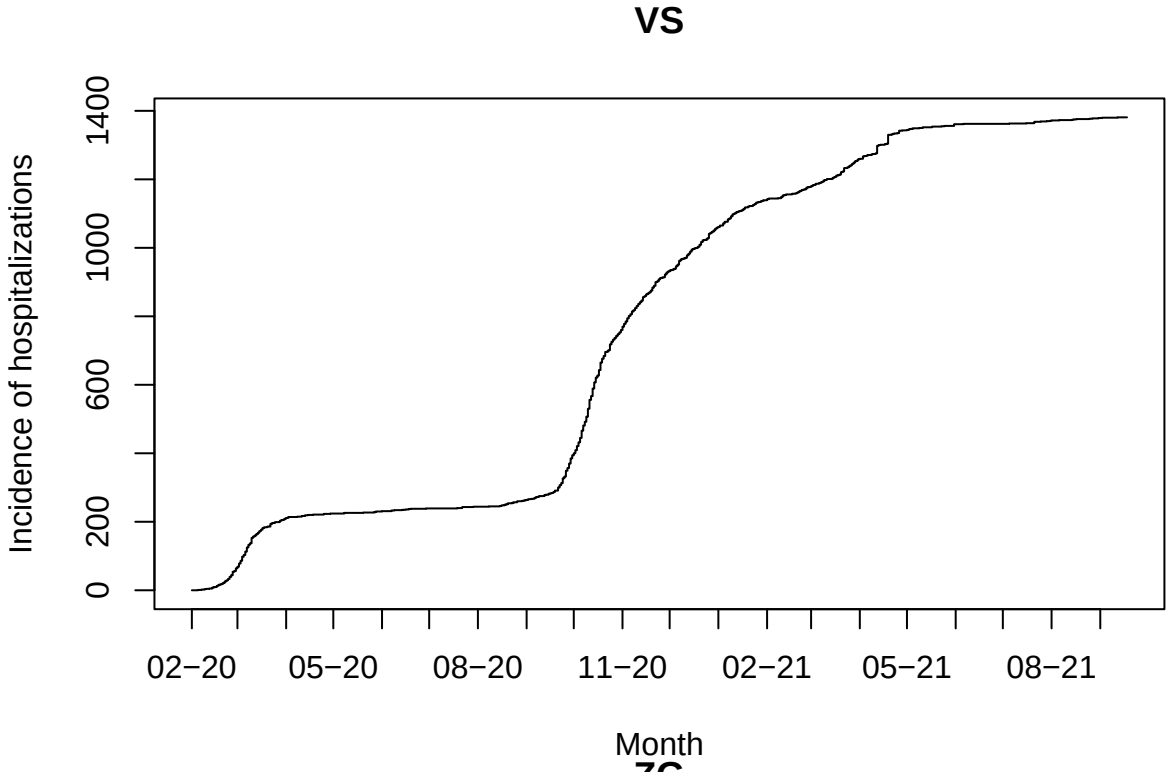

SZ
Incidence of hospitalizations
0
100
300
500
700
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

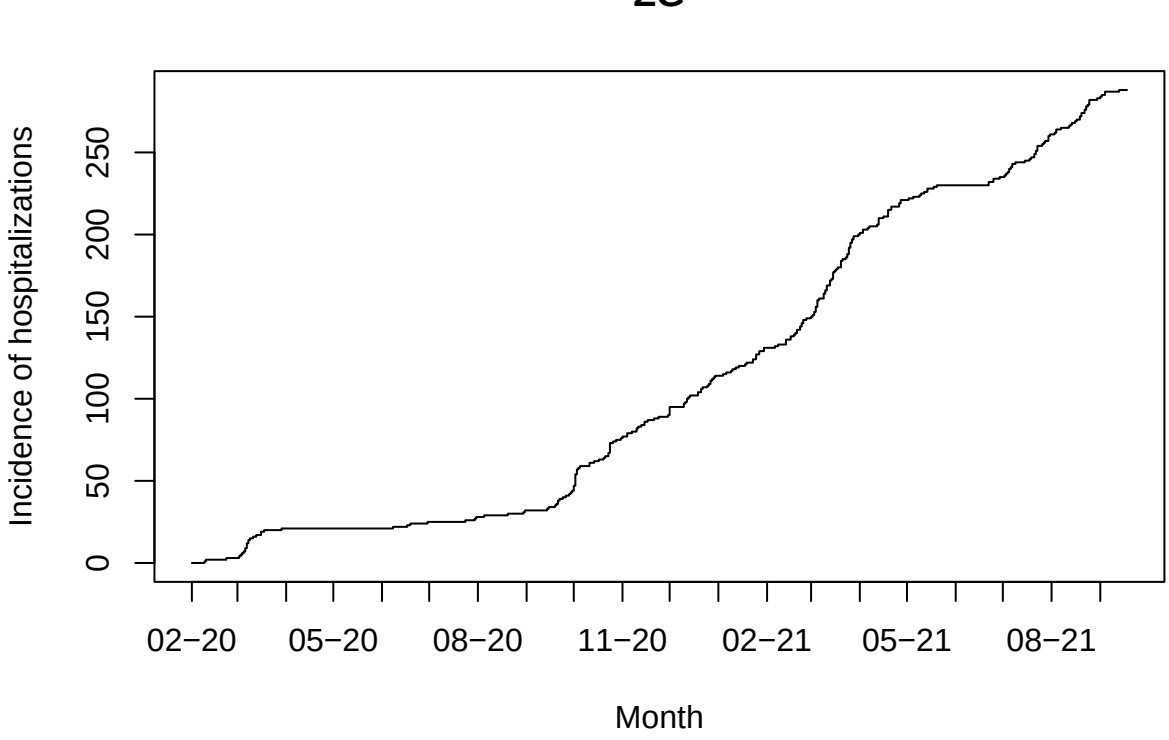

TG
Incidence of hospitalizations
0
200
400
600
800
1000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month

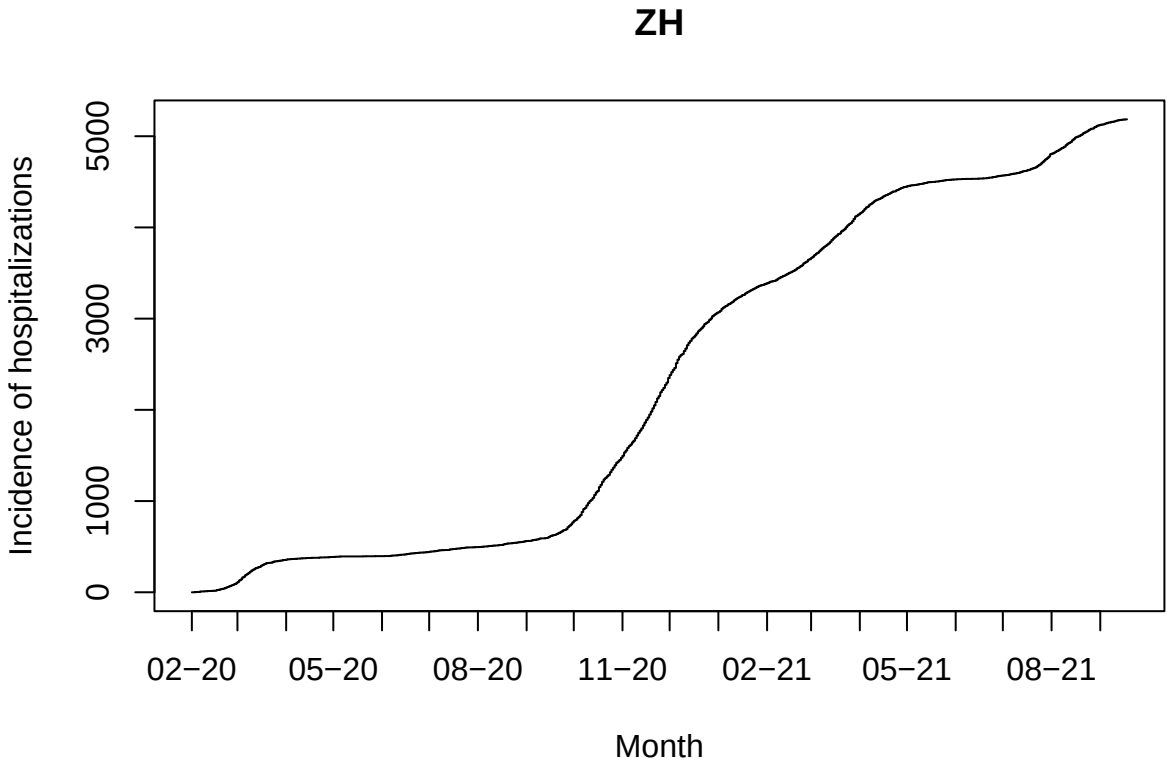

TI
Incidence of hospitalizations
0
500
1500
2500
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month


UR
Incidence of hospitalizations
0
50
100
150
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month


VD
Incidence of hospitalizations
0
500
1500
2500
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month


VS
Incidence of hospitalizations
0
200
600
1000
1400
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month


ZG
Incidence of hospitalizations
0
50
100
150
200
250
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month


ZH
Incidence of hospitalizations
0
1000
3000
5000
02−20
05−20
08−20
11−20
02−21
05−21
08−21
Month