

Infection and Mortality Rates of CoronaVirus Disease

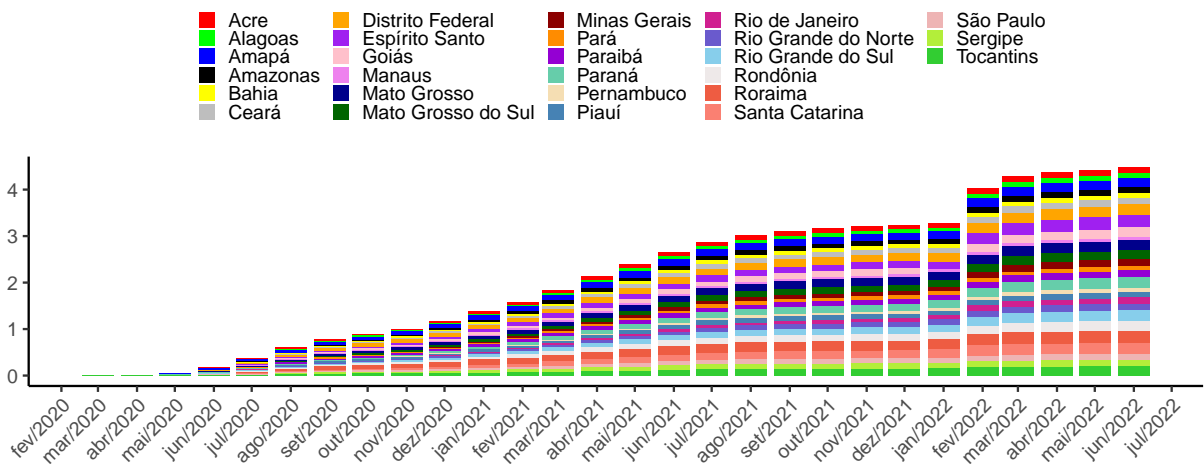
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Evolution of Pandemic in Brazil

Portion of Population Infected by Brazilian State

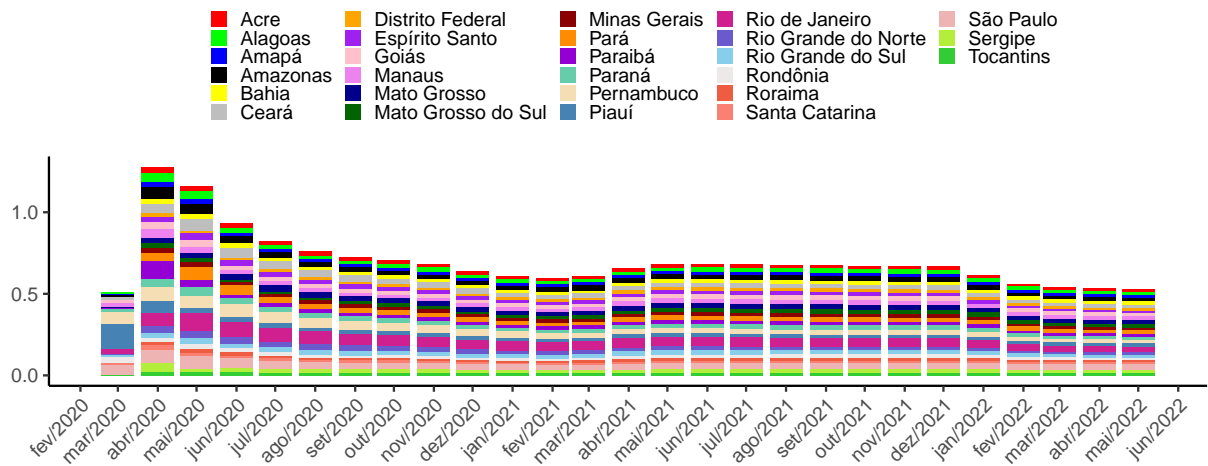


Source: Ministry of Health

It is observed that the portions of the population infected by state started to slow down due to the increase in the vaccinated population, which was already more than half of the Brazilian population in September/21. Even so, in June/22 there were high rates of contaminated population, as in Pará, Acre, Pernambuco, Roraima, Espírito Santo, São Paulo, Santa Catarina and Amazonas.

Evolution of the Pandemic in Brazil

Mortality Rate by Brazilian State



Source: self elaboration using Ministry of Health data

According to data from the Ministry of Health, in the first weeks of the pandemic in Brazil, where mortality was much higher than in the following months, the states that were more vulnerable to the treatment of infected patients were the states of Piauí and Pernambuco: in one year, the Northeast accumulated 22.9% of cases and 21.5% of the country's deaths from Covid-19 (Kendall et al, 2021).

```
library(covid19.analytics)

vaccination = covid19.analytics::covid19.vaccination()

vaccination$date= as.Date(vaccination$date)

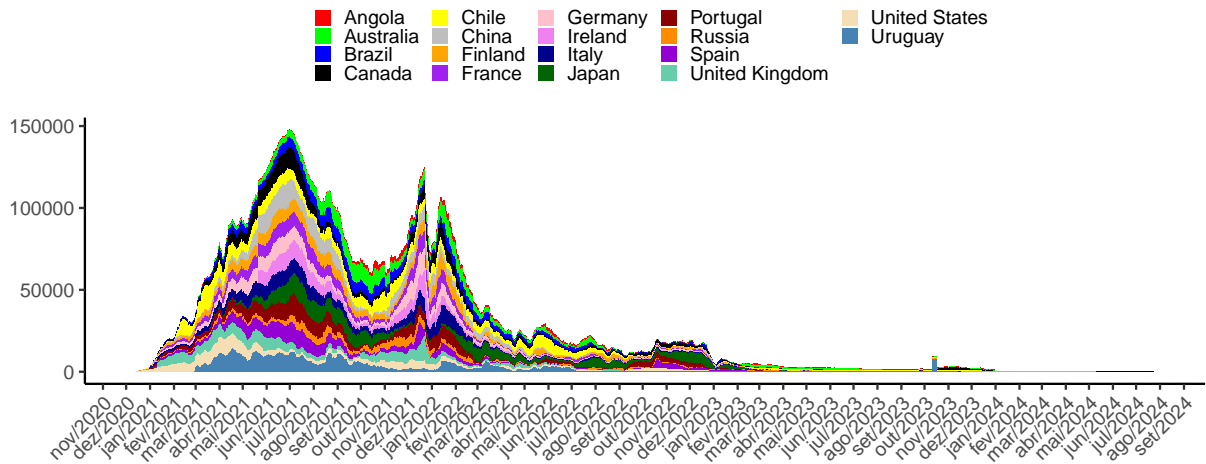
vaccination%>%
  dplyr::filter(location == 'United Kingdom' | location == 'Chile' |
                location == 'Portugal' | location == 'Spain' |
                location == 'Uruguay' | location == 'Ireland' |
                location == 'United States' | location == 'Italy' |
                location == 'France' | location == 'Russia' |
                location == 'China' | location == 'Australia' |
                location == 'Brazil' | location == 'Finland' |
                location == 'Angola' | location == 'Canada' |
                location == 'Germany' | location == 'Japan')%>%
  ggplot(aes(x=date, y = daily_vaccinations_per_million))+
  geom_col(aes(fill=location))+
  scale_x_date(breaks = date_breaks('1 month'), labels = date_format('%b/%Y'))+
  theme_classic()+
  theme(legend.position = 'top',
        legend.key.size = unit(0.3, 'cm'),
        legend.title = element_blank(),
        axis.text.x = element_text(angle = 45, hjust = 1))+
  scale_fill_manual(values = c("red", "green",
                              "blue", "black",
                              "yellow", "grey",
                              "orange", "purple",
```

```

'pink', 'violet',
'darkblue', 'darkgreen',
'darkred', 'darkorange',
'darkviolet', 'mediumaquamarine',
'wheat', 'steelblue'))+
  labs(title = 'Evolution of the world performance in the introduction of vaccines',
        x='', y='',
        caption = 'Source: self elaboration using Ministry of Health data')

```

Evolution of the world performance in the introduction of vaccines
number of vaccinated people by ten thousands of people



Source: self elaboration using Ministry of Health data

The implementation of the vaccine as a preventive measure, although not largely accepted when compared to other countries such as China, Japan, Portugal and Ireland, proved to be an important action to contain the pandemic in Brazil, having been successful in flattening the curve of new cases. However, its effectiveness still seems uncertain in the face of new variants of the disease.