

# The Brazilian Amazon & COVID-19

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## Background and Overview

This is a report on SARS-CoV-2 genetic data, as well as some COVID-19 prevalence data for Manaus and Sao Paulo. (Buss *et al.*, 2020).

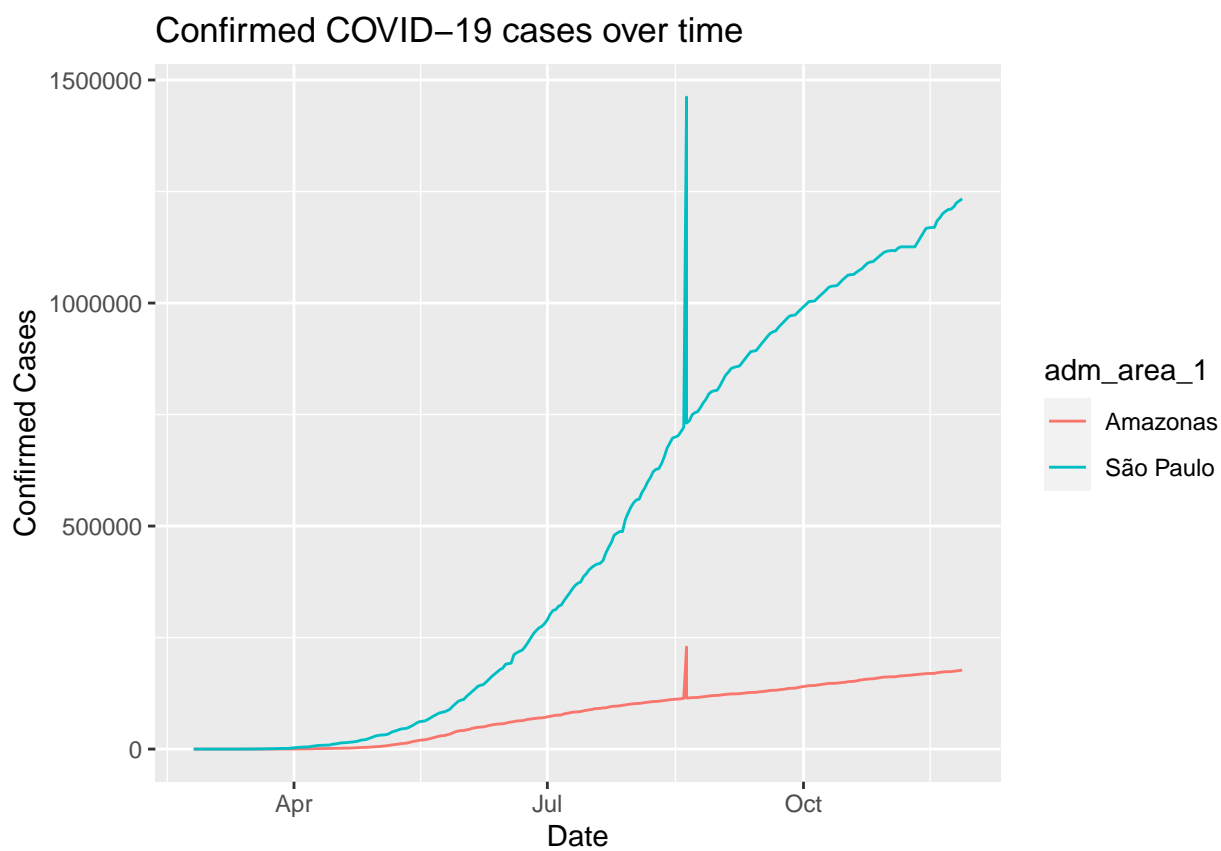
## Methods

### Suggested Sources

- [vcfR package website](#).
- <https://kjhealy.github.io/covdata/>
- <https://github.com/como-ph/oxcovid19>
- <https://ropensci.org/blog/2020/10/20/searching-medrxivr-and-biorxiv-preprint-data/>
- <https://covidtracking.com/data/api>
  - `readr::read_csv("https://api.covidtracking.com/v1/states/daily.csv")`
- <https://rt.live/>
  - `readr::read_csv("https://d14wlfuexuxgcm.cloudfront.net/covid/rt.csv")`

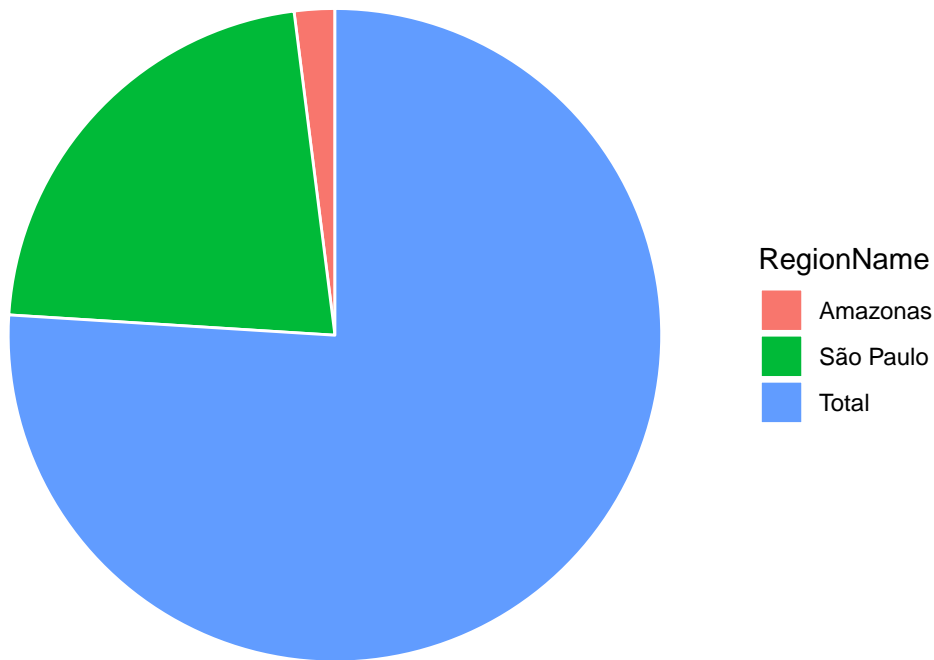
## Results and Discussion

### Figures



**Figure :** The state of Sao Paulo saw more total confirmed cases than the state of Amazonas.

## Populations of Brazil

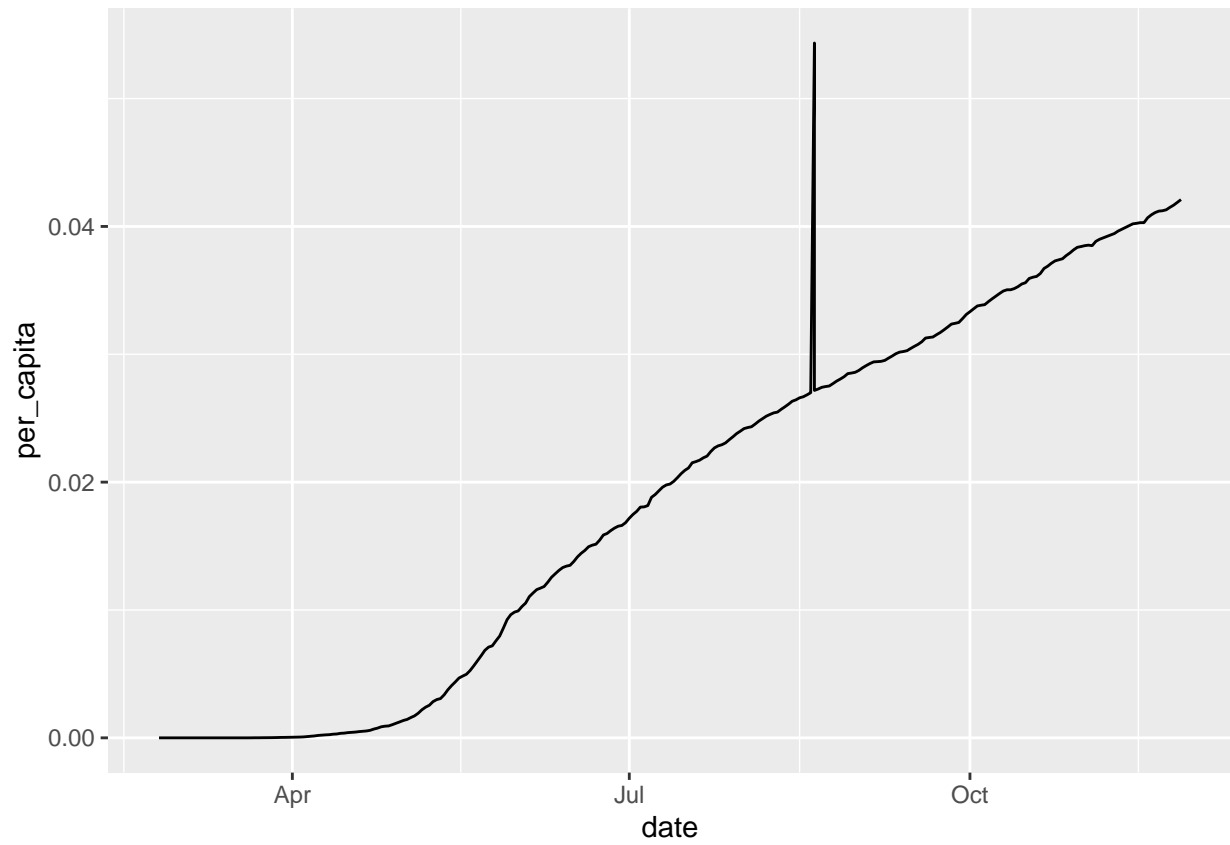


```
## # A tibble: 3 x 4
## # Groups:   population [3]
##   RegionName region population Source
##   <chr>      <chr>      <dbl> <chr>
## 1 Amazonas   AM          4207714 <NA>
## 2 São Paulo  SP          46289333 <NA>
## 3 Total      Total       159825805 <NA>
```

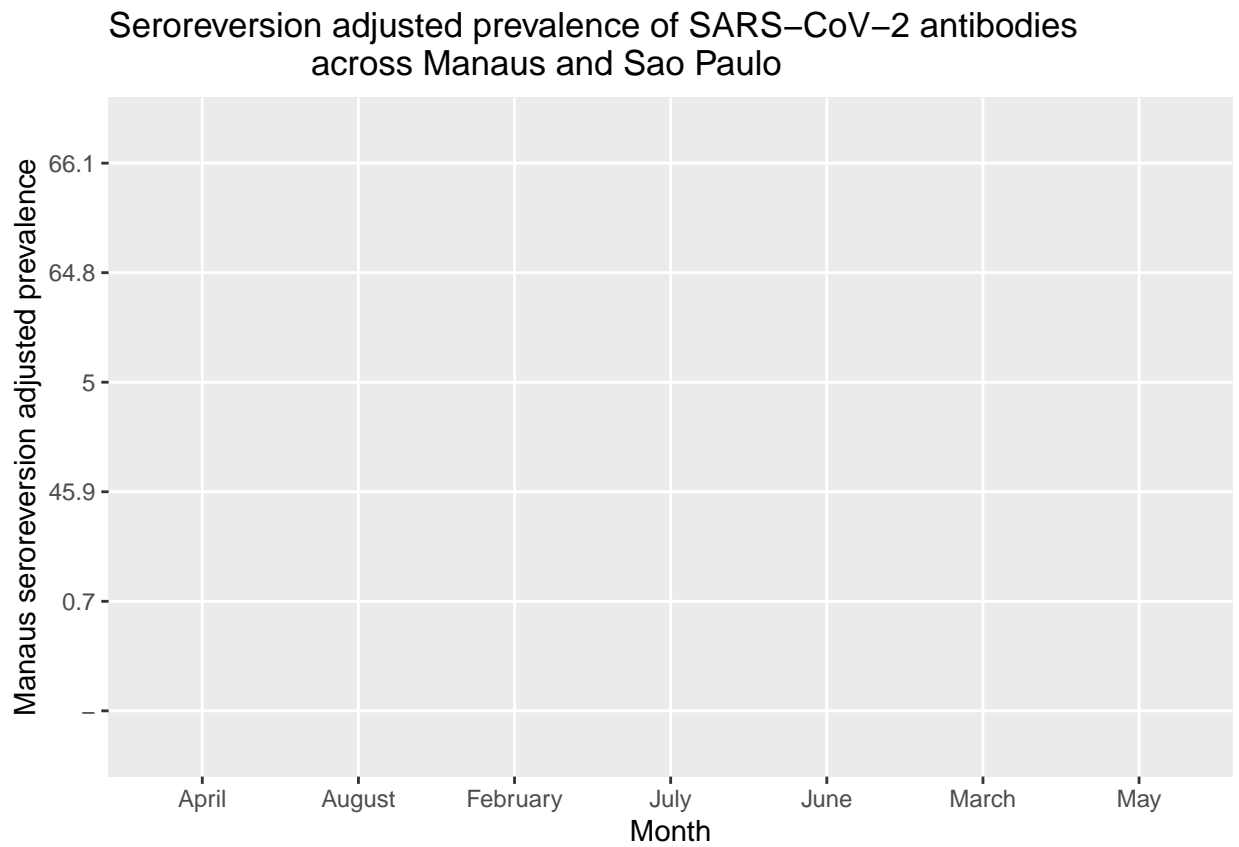
**Figure:** Sao Paulo is much larger than Amazonas by population.

```
## mapping: x = ~date, y = ~per_capita
## geom_line: na.rm = FALSE, orientation = NA
## stat_identity: na.rm = FALSE
## position_identity

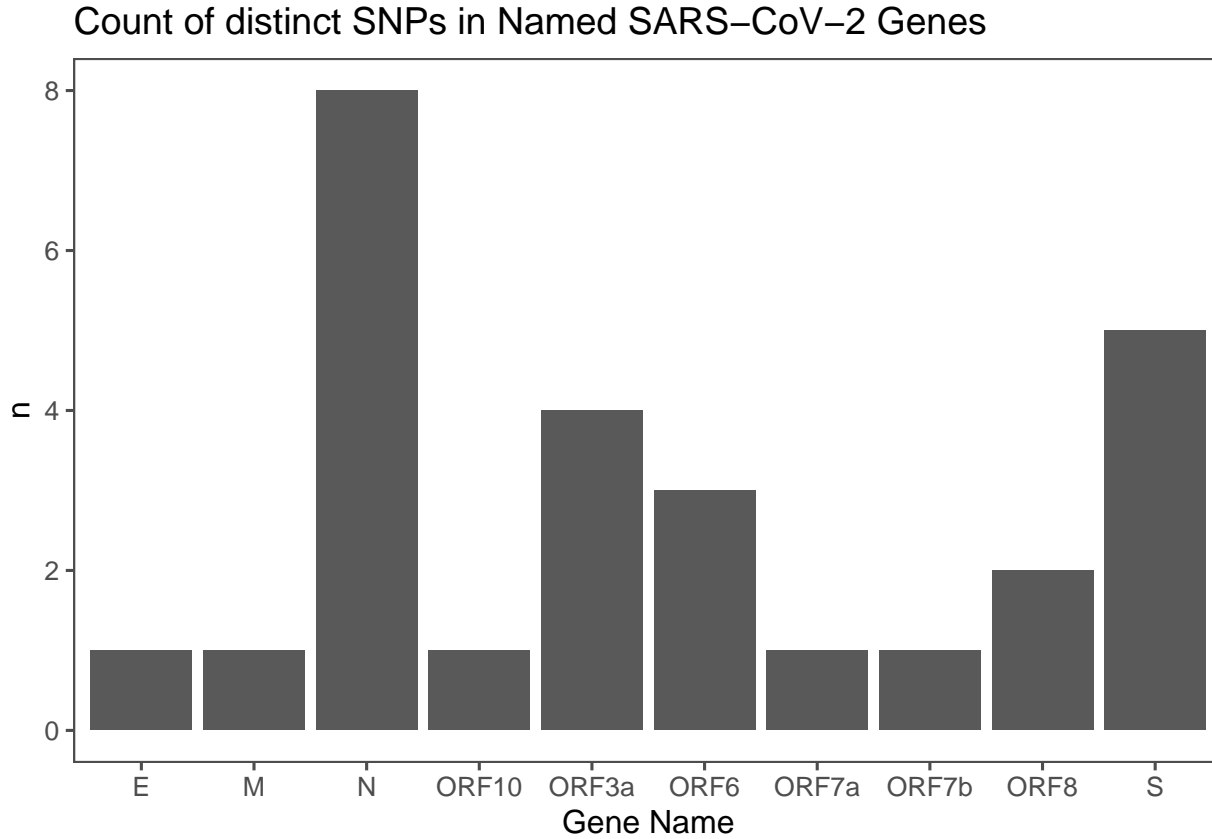
## $x
## [1] "Date"
##
## $y
## [1] "Confirmed Cases"
##
## $title
## [1] "Confirmed COVID-19 cases per capita over time"
##
## attr(,"class")
## [1] "labels"
```



**Figure:** Amazonas saw greater confirmed cases per capita than Sao Paulo.



**Figure:** Manaus saw more antibody prevalence of SARS-CoV-2 than Sao Paulo.



**Figure:** N and S genes have more unique SNPs in the set of samples analyzed.

## Tables

| Gene Name | Start | End   | Length |
|-----------|-------|-------|--------|
| S         | 21563 | 25384 | 3821   |
| ORF3a     | 25393 | 26220 | 827    |
| E         | 26245 | 26472 | 227    |
| M         | 26523 | 27191 | 668    |
| ORF6      | 27202 | 27387 | 185    |
| ORF7a     | 27394 | 27759 | 365    |
| ORF7b     | 27756 | 27887 | 131    |
| ORF8      | 27894 | 28259 | 365    |
| N         | 28274 | 29533 | 1259   |
| ORF10     | 29558 | 29674 | 116    |

**Table 1:** Gene names, locations, and lengths in the SARS-CoV-2 genome. Higher SNP counts in the S and N genes may be related to the larger size of these genes.

## Sources Cited

Buss,L.F. *et al.* (2020) COVID-19 herd immunity in the brazilian amazon. *medRxiv*.