Exploratory Data Analysis (EDA)

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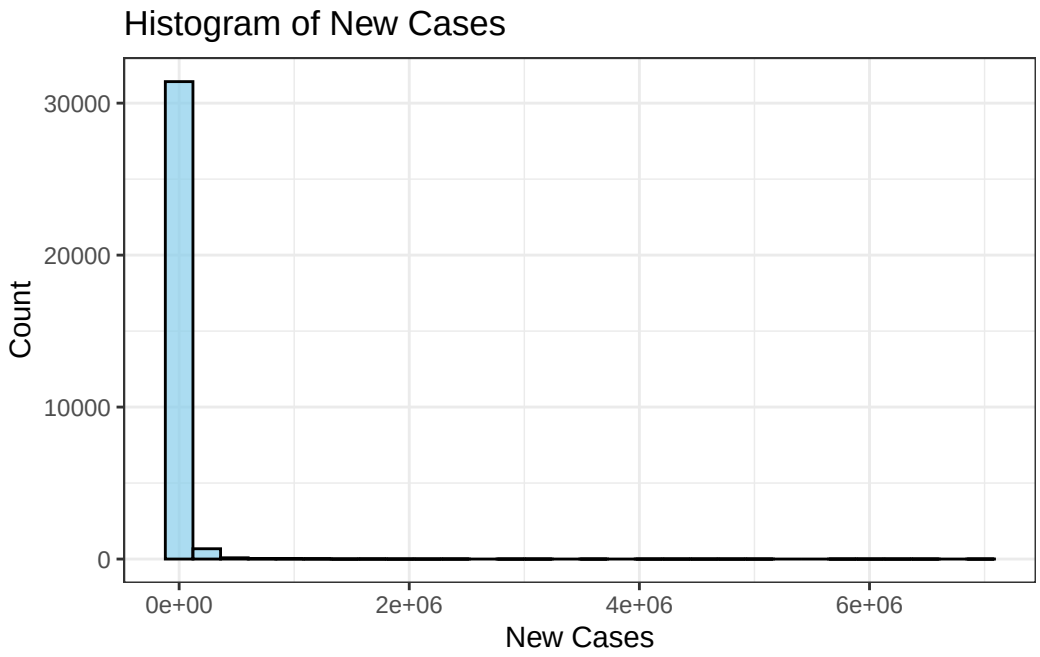
Univariate Analysis

We start with response variable `new_cases` and check for missingness:

```
# A tibble: 161 x 3
   continent     location  date
   <chr>         <chr>     <date>
 1 South America Argentina 2020-01-01
 2 North America Mexico    2020-01-01
 3 South America Argentina 2020-01-02
 4 North America Mexico    2020-01-02
 5 Asia          Sri Lanka 2020-01-28
 6 Asia          India     2020-02-02
 7 North America Canada    2020-02-07
 8 Asia          India     2020-03-02
 9 Asia          Sri Lanka 2020-03-11
10 Asia          Sri Lanka 2020-03-14
# i 151 more rows
```

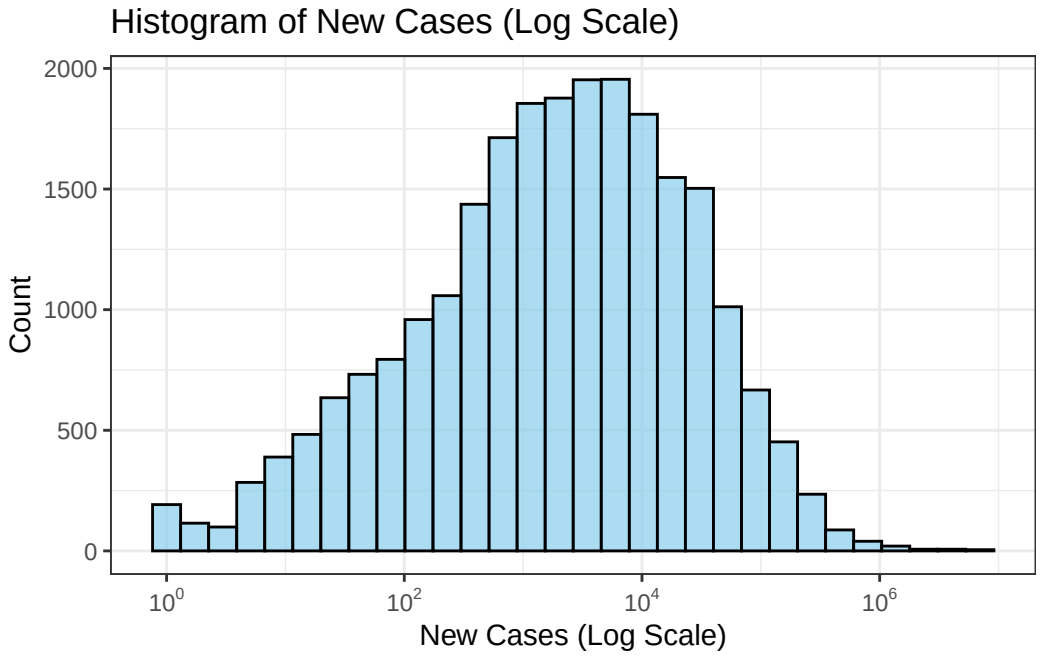
There are **161** missing response values, mainly at the beginning of the COVID outbreak before 2020/9 or more recently after 2023/5

Then, looking at the distribution of the response variable:



The distribution is heavily skewed to the right.

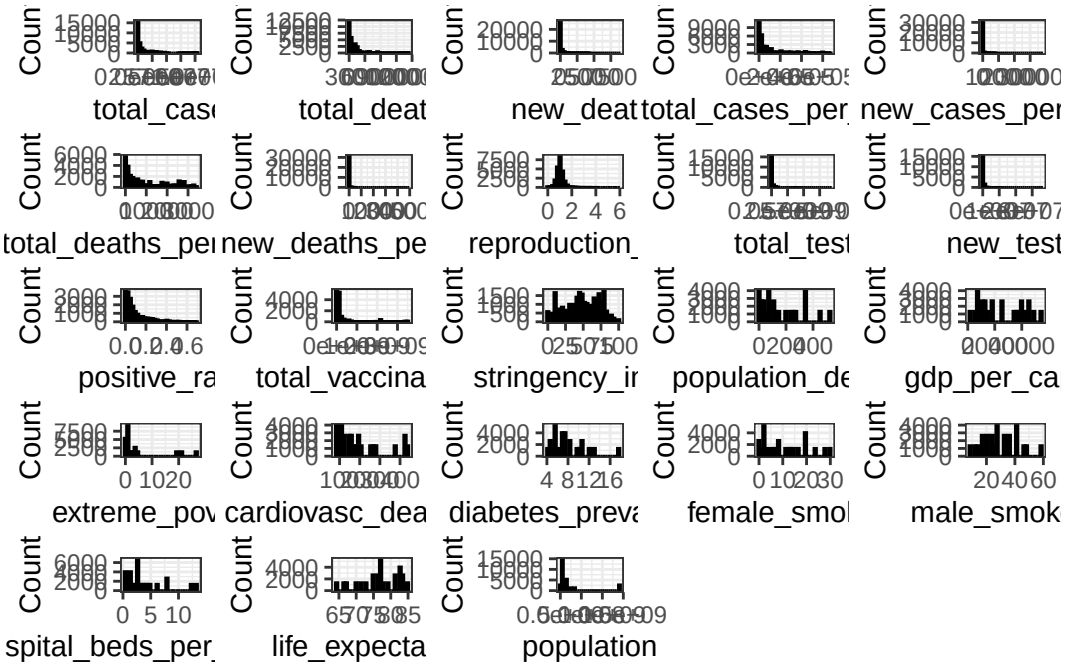
We thus **log-transform** `new_cases` and look at the distribution after transformation:



It looks much more normally distributed now. When it comes to model training, we should

probably consider log transforming the response variable first and then de-log when making predictions.

Also, a quick overview of the distribution of significant predictor variables:



We see that most of the predictor variables are also heavily **positively skewed**. Features such as `female_smokers`, `male_smokers`, and `life_expectancy` do have a more even distribution and its time-independence make them good features to use for clustering imputation.