# Esmating Covid-19 Rt

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This is a self-learning project from the following tutorial on datacamp: https://www.datacamp.com/community/tutorials/replicating-in-r-covid19

### Bettencourt & Ribeiro

#### Modeling arrivals

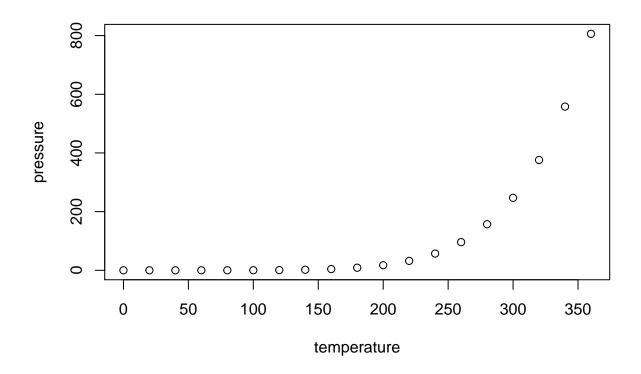
Using Poisson Distribution to model the 'arrival' process of infections. Let  $\lambda$  be the average rate of infections per day, then the probability of k new cases on a day is given by

$$P(k|\lambda) = \frac{\lambda^k e^{-\lambda}}{k!}$$

#### Code setup

#### library(tidyverse)

```
## Warning: package 'tidyverse' was built under R version 3.4.2
## -- Attaching packages -----
                                        ----- tidyverse 1.2.1 --
## v ggplot2 3.1.1
                       v purrr
                                0.3.2
## v tibble 2.1.1
                       v dplyr
                               0.8.0.1
## v tidyr
           0.8.0
                       v stringr 1.2.0
## v readr
            1.1.1
                       v forcats 0.4.0
## Warning: package 'tibble' was built under R version 3.4.4
## Warning: package 'tidyr' was built under R version 3.4.3
## Warning: package 'purrr' was built under R version 3.4.4
## Warning: package 'dplyr' was built under R version 3.4.4
## Warning: package 'forcats' was built under R version 3.4.4
## -- Conflicts ------ tidyverse conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()
                   masks stats::lag()
```



## References:

 $http://systrom.com/blog/the-metric-we-need-to-manage-covid-19/\\ https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0002185$