

## Inference of Covid-19 vaccines effectiveness and uncertainty using bayesian methods

The European Medicines Agency (EMA) has authorized four different brand of Covid-19 Vaccines:

- Comirnaty (BNT162b2) (COVID-19 mRNA vaccine produced by BioNTech/Pfizer);
- COVID-19 Vaccine Moderna (Moderna Biotech);
- Vaxzevria (previously COVID-19 Vaccine called AstraZeneca);
- COVID-19 Vaccine Janssen (Janssen-Cilag International NV)

For the project:

1. collect official data available in [1], [2], [3] and [4] on the clinical trial performed for each vaccine and compute with JAGS or stan the efficacy of each Vaccine. Infer the the 95% credibility interval.
2. more recently tests on the efficacy of Vaccine for young people have started. Try to collect available official data from the European medicines Agency (<https://www.ema.europa.eu/en>) or the U.S. Food and Drug (FDA) (<https://www.fda.gov/>) and perform a bayesian analysis of the data as a function of the age of the patients.

## Bibliography

- [1] <https://www.ema.europa.eu/en/medicines/human/EPAR/comirnaty>
- [2] <https://www.ema.europa.eu/en/medicines/human/EPAR/covid-19-vaccine-moderna>
- [3] <https://www.ema.europa.eu/en/medicines/human/EPAR/vaxzevria-previously-covid-19-vaccine-astrazeneca>
- [4] <https://www.ema.europa.eu/en/medicines/human/EPAR/covid-19-vaccine-janssen>