|  |  |  |  |
| --- | --- | --- | --- |
| Age Bracket | Percentage of Population | Hospitalisation Rate | Mortality Rate |
| 0 – 9 | 11.33% | 0.6x | 0.2x |
| 10 - 19 | 11.75% | 0.2x | 0.1x |
| 20 – 34 | 20.54% | 1x | 1x |
| 35 – 49 | 19.41% | 1.7x | 3x |
| 50 – 64 | 19.45% | 3.5x | 30x |
| 65 – 79 | 13.54% | 6x | 75x |
| 80+ | 4.97% | 15x | 250x |

Hospitalisation/Mortality rates: <https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-age.html>

First data source for age distribution (UK): <https://www.statista.com/statistics/281208/population-of-the-england-by-age-group/>

Second data source for age distribution (USA): <https://www.science.org/doi/10.1126/science.abe8372>

# Grid Search Methodology

Metrics to output:

* Total infections
* Total hospitalisations
* Total deaths
* Infections per age bracket
* Hospitalizations per age bracket
* Deaths per age bracket

Parameters for vaccination:

* Vaccine supply
  + Limits number of vaccinations that can occur
* Age prioritisation
  + Order of ages that can be vaccinated, i.e. 80+ -> 60-80 -> 40-60 -> etc
  + Not number of vaccinations per age-bracket, just the order in which they are provided
* Vaccine efficacy
  + Chance for vaccine to prevent infection
* Number of vaccinations per time step
  + I.e. Constant total number of vaccinations, but changes how quickly they are “rolled out”

# Literature Review – Additional Papers

<https://www.nature.com/articles/s41577-022-00687-3#Sec4>

<https://www.sciencedirect.com/science/article/pii/S0022519313000258>

<https://link.springer.com/chapter/10.1007/978-1-4419-7185-2_1>

<https://www.mdpi.com/2076-393X/10/4/591>