|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | 1. | 2 | 3. | 4 | 5. | 6. |  |  |  |
|  | 2 | ~1.899\* | - | 2.08\* | ~2 | 1.7-3.3 |  |  |  |
| Protection Rate () | - | [0.172 - 0.085] | - | - | - |  |  |  |  |
| Infect Rate ( | - | 1.0 | - | 0.7676 \*\*\* | - |  |  |  |  |
| Latent/ Incubation Time ( | - | 2 | - | 5-6 | 8.1 |  |  |  |  |
| Time until Reporting | - | - | - | - | 6.1 |  |  |  |  |
| Quarantine Time( | - | [5.6 - 7.4] | - | 12 | - |  |  |  |  |
| Cure Rate | - | [~0.015] | - | - |  |  |  |  |  |
| Mortality Rate | - | [~0.01] | - | 0.0207 | - |  |  |  |  |
| Study Date | - | Feb. 15 | Feb. 11 | Jan. 22 | - |  |  |  |  |
| Predicted Epidemic End Date (China) | - | ~Mid Mar. | Mar. 5 | - | - |  |  |  |  |
| Predicted Epidemic End Date (Hubei) | - | ~Apr. | Mar. 10 | - | - |  |  |  |  |
| Predicted Final Infection Count (China) | - | 14500 | 51600 | - | - |  |  |  |  |
| Predicted Final Infection Count (Hubei) | - | 75000 | 39,000 | 8042 | - |  |  |  |  |

Note: All parameters are not directly comparable, table just for reference. Refer to original papers,referenced, for parameter specifics (Distributions, errors, ie.). \*Strongly spatial/temporal dependent,\*\*Given as:,\*\*\*Model gives decaying at 0.0207/day,

Parameters to Estimate:

1. (
2. ...

Discrepancies in different models to addressed:

1. Regional differences (I.E Different rate parameters, dependent on healthcare quality and other socio-economic factor)
2. Time frame of the data, fed to the moel [Easily addressed]
3. Differences in testing rates and policies.
4. Differences in scale and method of control policies.
5. ...

Lit:

1. Impact of non-pharmaceutical interventions (NPIs) to reduce COVID19 mortality and healthcare demand - DOI: <https://doi.org/10.25561/77482> - Imperials review on modelling the effects of preventive measures in the UK. [Concludes that, models of control schemes are insensitive to transmission model parameters]
2. \*Epidemic analysis of COVID-19 in China by dynamical modeling- <https://doi.org/10.1101/2020.02.16.20023465> - Use’s a 7 state [SPEIRQR] generalized model, and time dependent cure, and mortality rate (Exactly the same as the model already on GIT). Inverse inference results match reported starting date, Jan 1st. States a optimistic forecast, of end infections in Wuhan, as middle of march. Total
3. Trend and forecasting of the COVID-19 outbreak in China - DOI: 10.1016/j.jinf.2020.02.014 - Parameter estimates not included, but claim to have used SEIR (Although no mention of method). Time dependent, infection and death rates.
4. \*Modelling the epidemic trend of the 2019 novel coronavirus outbreak in China [See Appendix for Model] - <https://doi.org/10.1101/2020.01.23.916726> - Uses a 5 state model [SEIJR] model. Limited success due to the lack of data at time paper was written.
5. \*Early dynamics of transmission and control of COVID-19: a mathematical modelling study -<https://doi.org/10.1016/S1473-3099(20)30144-4> - <https://github.com/adamkucharski/2020-ncov/> - A detailed stochastic SEIR model, with special interest in quantifying temporal dynamics of certain parameters, such as R\_0. Seems to have reasonable success with this.
6. \*Effective containment explains sub-exponential growth in confirmed cases of recent COVID-19 outbreak in Mainland China - arXiv:2002.07572 - ‘this outbreak is dominated by fundamental mechanisms that are not captured by standard epidemiological models’, Proposes a ‘SIR-X’ model and a scaling law, that appears to have success irrespective of region.

MISC:

* Review of R\_0 studies. 13th Feb - <https://doi.org/10.1093/jtm/taaa021>
* Incubation Time, 5.8 days - DOI: 10.1101/2020.01.27.20018986