**Table S1. Reports in the different mathematical model published in COVID-19.**

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| **Models** | **Methods** | **Parameters and results** | **References** |
| GLEAM | BCA | *Tg*: 7.5 days; *R0*: 2.57 (90% CI 2.37 - 2.78); *Td*: 4.2 days (90% CI 3.8 - 4.7) | (1) |
| SEIR model | MCMC method | *R0*: 2.68 (95% CrI 2.47-2.86); The epidemic doubling time: 6.4 days (95% CrI 5.8-7.1) | (2) |
| A branching process model | A negative binomial distribution | *R0*: 1.5, 2.5, 3.5 | (3) |
| Stochastic simulations model | A negative-binomial offspring distribution | *R*0 was 2.2 (90% high density interval: 1.4 - 3.8); *k*: median: 0.54, 90% high density interval: 0.014-6.95 | (4) |
| SEIR model | --- | *R*0 was 3.11 (95% CI, 2.39 - 4.13) | (5) |
| GAM | The lagged probability distribution | *R0* of nationwide and Wuhan: 4.5, 4.4; The doubling time: 2.4 days | (6) |
| Simple non-linear growth models | The NLS framework | *R*0: 2.24 (95% CI: 1.96 - 2.55) to 3.58 (95% CI: 2.89 - 4.39); g was 8- and 2-fold | (7) |
| A dynamic compartmental model (Eq. (1)-(2)) | NLS method; MCMC methods; M-H algorithm | Basic *R0*: 4.71 (4.50 - 4.92); Effective *R0*: 2.08 (1.99 - 2.18); The epidemic peak time: peak in early March 2020 (80 days since initiation) | (8) |
| IDEA model | --- | *R0* varied from 2.0 to 3.1  | (9) |
| BDSS model | The Bayesian MCMC algorithm | The median estimate of *Re* shifted from 1.6 to 1.1 on around January 1, 2020.  | (10) |
| SEIR and SEIHR models  | The least square method; MCMC; Likelihood function method | *R0* was 6.47 (95% *CI*：5.71 - 7.23) | (11) |
| Modified SIR model | --- | The actual number of infected cases: 88,075 cases (Jan 31, 2020); Isolation wards and ICU were 34,786 and 9,346, respectively | (12) |

**Notes:** GLEAM: The Global Epidemic and Mobility Model; Bayesian Computation approach: BCA; *Tg*: A generation time; *R0*: reproductive number; *Td*: a doubling time; MCMC: Markov Chain Monte Carlo; *k*: Dispersion parameter; GAM: generalized additive model; NLS: nonlinear least square; g: Intrinsic growth rate; MH: Metropolis-Hastings; IDEA: Incidence Decay and Exponential Adjustment; EG: Exponential Growth; ML: maximum likelihood; BDSS: birth-death skyline serial; *Re*: effective reproductive number

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