

Good Reporting of Epidemic Models: Mathematics, Statistics and Uncertainty. EPIFORGE 2020

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9 February 2022

The role of uncertainty in modelling pandemics

- A medical statistician's interests . . .
- not that of an expert mathematical modeller,
- nor of an expert in infectious disease modelling.
- . . .but referee of too many covid-19 manuscripts.

I wish to expand the discussions of uncertainty from different perspectives.

You might also think “reproducibility”.

equator network:

<https://www.equator-network.org/>

- The EQUATOR (Enhancing the QUALity and Transparency Of health Research) Network is an international initiative that seeks to improve the reliability and value of published health research literature by promoting transparent and accurate reporting and wider use of robust reporting guidelines.
- It is the first coordinated attempt to tackle the problems of inadequate reporting systematically and on a global scale; it advances the work done by individual groups over the last 15 years.

The EPIFORGE 2020 guidelines

<https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1003793>

To improve the consistency, reproducibility, comparability, and quality of epidemic forecasting reporting.

- **Title and Abstract**

- 1 Describe the study as forecast or prediction research in at least the title or abstract

- **Introduction**

- 2 Define the purpose of study and forecasting targets

The EPIFORGE 2020 guidelines: methods

- 3 Fully document the methods
- 4 Identify whether the forecast was performed prospectively, in real time, or retrospectively
- 5 Explicitly describe the origin of input source data, with references
- 6 Provide source data with publication, or document reasons as to why this was not possible
- 7 Describe input data processing procedures in detail
- 8 State and describe the model type, and document model assumptions, including references
- ...

The EPIFORGE 2020 guidelines: methods

- 9 Make the model code available, or document the reasons why this was not possible
- 10 Describe the model validation, and justify the approach
- 11 Describe the forecast accuracy evaluation method used, with justification
- 12 Where possible, compare model results to a benchmark or other comparator model, with justification of comparator choice
- 13 Describe the forecast horizon, with justification of its length

The EPIFORGE 2020 guidelines: Results

- 14 Present and explain uncertainty of forecasting results
- 15 Briefly summarize the results in nontechnical terms, including a nontechnical interpretation of forecast uncertainty
- 16 If results are published as a data object, encourage a time-stamped version number

The EPIFORGE 2020 guidelines: Discussion

- 17 Describe the weaknesses of the forecast, including weaknesses specific to data quality and methods
- 18 If the research is applicable to a specific epidemic, comment on its potential implications and impact for public health action and decision- making
- 19 If the research is applicable to a specific epidemic, comment on how generalizable it may be across populations

The end ...

or beginning of your contributions

Thank you for your attention.

Questions