What makes a good **Modelling project (report)**

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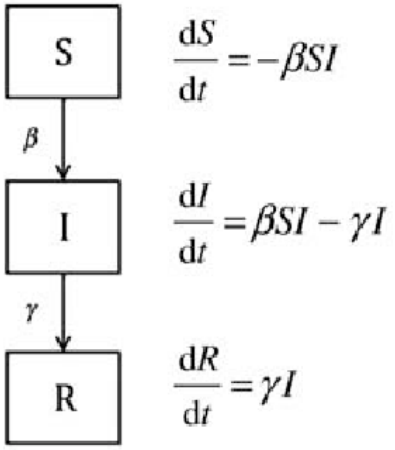
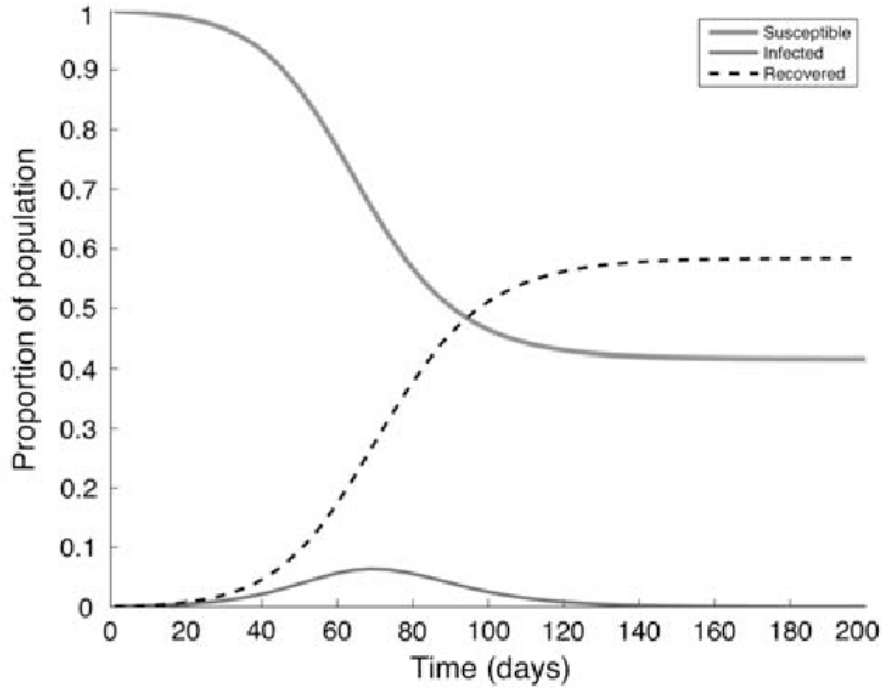
2nd July 2021 – MSc Epidemiology Research projects webinar

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

Modeling project

Using a mathematical model to address epidemiological question





Good modeling project

- Similar to other Msc projects

- Priorities
  - Clear question, clear methods
  - **DO** learn some coding, but ask for help
  - **DO** something small really well
  - **DON'T** do lots of things superficially
  - **DON'T** spend 2/3 time on model calibration
  - **DO** how your epi thinking through reasoning around impact of limitations

- Refer to marking guidance -->

Guidance for project markers: Criteria according to type of report

MODELLING
Abstract, introduction, and background to the review • Is the abstract an adequate summary? (clear, logically structured and providing a good summary of the key contents of the report) • Literature coverage should be adequate but not excessive (clear, and understandable to someone not familiar with the topic, shows evidence of critical appraisal from an epidemiological perspective, and leads logically to the project aims and objectives). • Is the approach used to identify literature sources described, and is it appropriate? • Is a rationale given for why mathematical modelling is suited to address the research question? • Is a good understanding of the epidemiology and natural history of the disease under study and of the problem being modelled demonstrated?
Aims and objectives (research question) • Are the overall aims and specific objectives clearly stated? • Do they follow logically from the rationale in the introduction? • Is the scope of the aims appropriate for an MSc project?
Methods • Is there a description of the sources of data used to define parameter values (for example with regard to uncertainty, generalizability, potential for bias)? • Is the structure of the model clearly explained with diagrams and equations? • Does the model include an appropriate level of detail? Is the model appropriately

A few pointers

Guidance for project markers: Criteria according to type of report

Intro/background

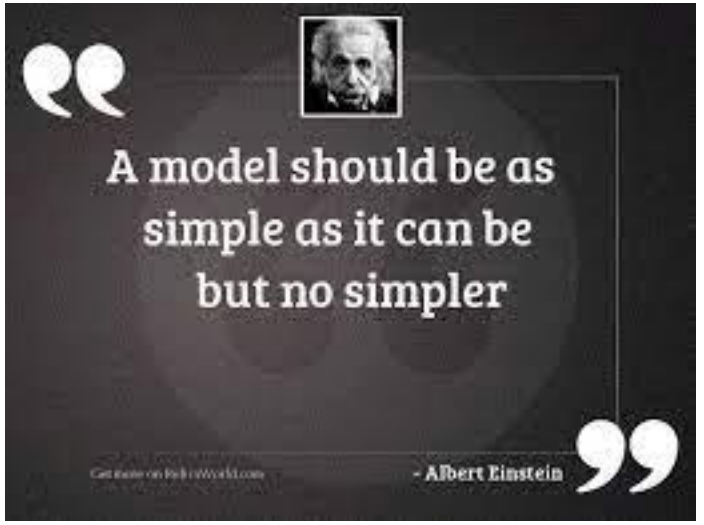
- Rationale: why mathematical model
  - Make clear – link epidemiological question to modelling approach
- Epi and Natural history
  - Limit to key aspects for your project
- Aims/Objectives
  - Scope appropriate – **don't (try to) do too much**

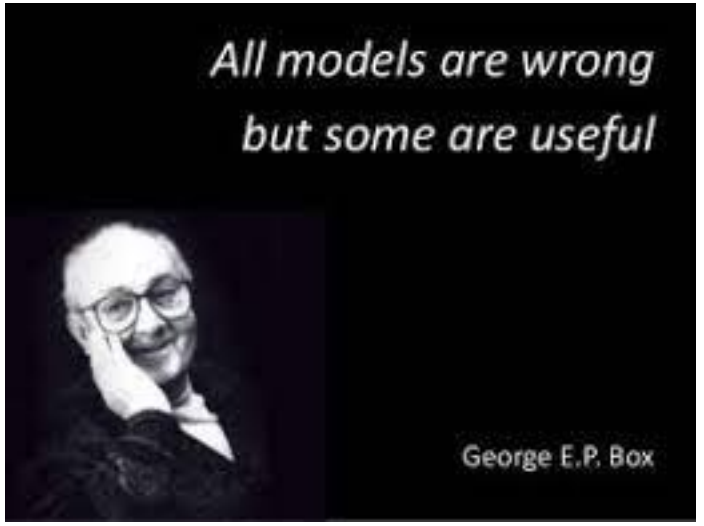
A few pointers

Guidance for project markers: Criteria according to type of report

Methods

- Appropriate level of detail in model
  - Not too little, not too much
  - **Really important** – avoid complications where possible
  - Every complication needs to be parameterized, coded, checked, **debugged,** interpreted
  - Challenge/Risk to time available, and ability to interpret results



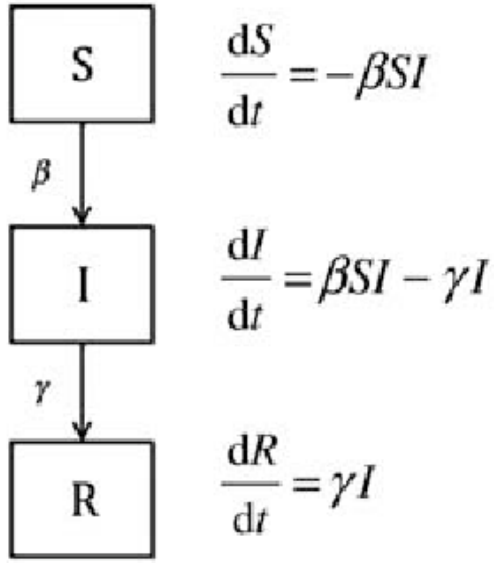


A few pointers

Guidance for project markers: Criteria according to type of report

Methods

- Appropriate sensitivity analyses
  - **Keep limited – 1 or 2**
  - Challenge/Risk to time available, and ability to interpret results
  - Show your epi ability by reasoning through main direction and strength of potential sensitivity analyses
- Computational methods
  - This is Epi MSc, not mathematics/statistics
  - Understand and describe concepts, not prove from first principles
- Presentation
  - A flow diagram and set of equations are essential



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Thank you for your attention

Any questions?

Note: slides on CMMID LSHTM website (under ‘Resources’)
https://www.lshtm.ac.uk/research/centres/centre-mathematical-modelling-infectious-diseases/resources