Online Advanced Methods for Cost-Effectiveness Analysis

Presentation 6: Model structure
6.2: Introduction to decision models and alternative types

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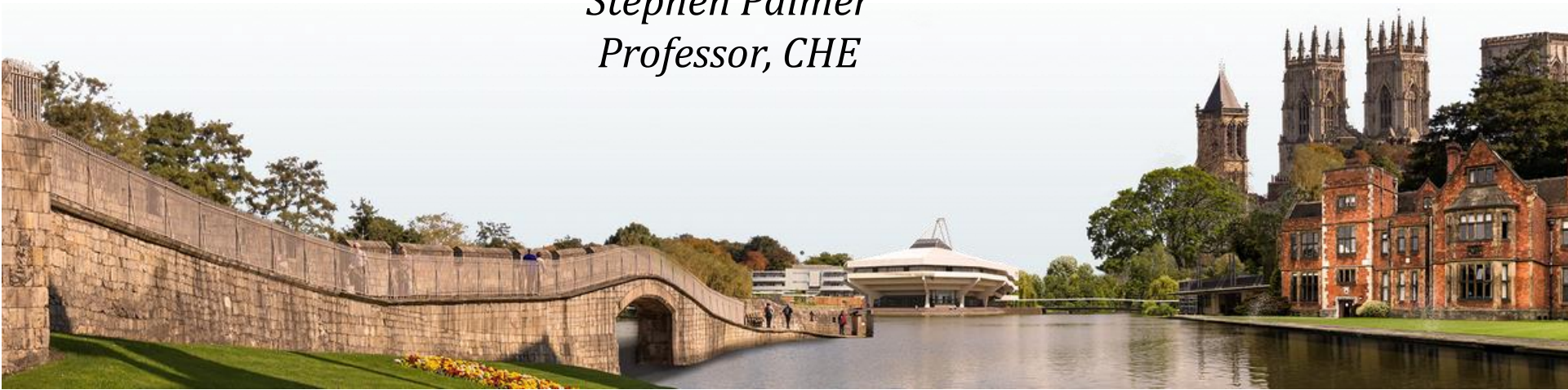


Objectives

- Understand the key features of decision models
- Identify circumstances where decision models are required
- Explore key factors which determine the type of model
- Recognise trade-offs between flexibility and computational burden

What is a decision model?

- A mathematical prediction of health-related events
  - Usually for specific groups of patients
  - Events are linked to costs and health outcomes
  - Synthesise data from various sources
  - Uncertainty in data inputs
- Systematic approach to decision making under conditions of uncertainty

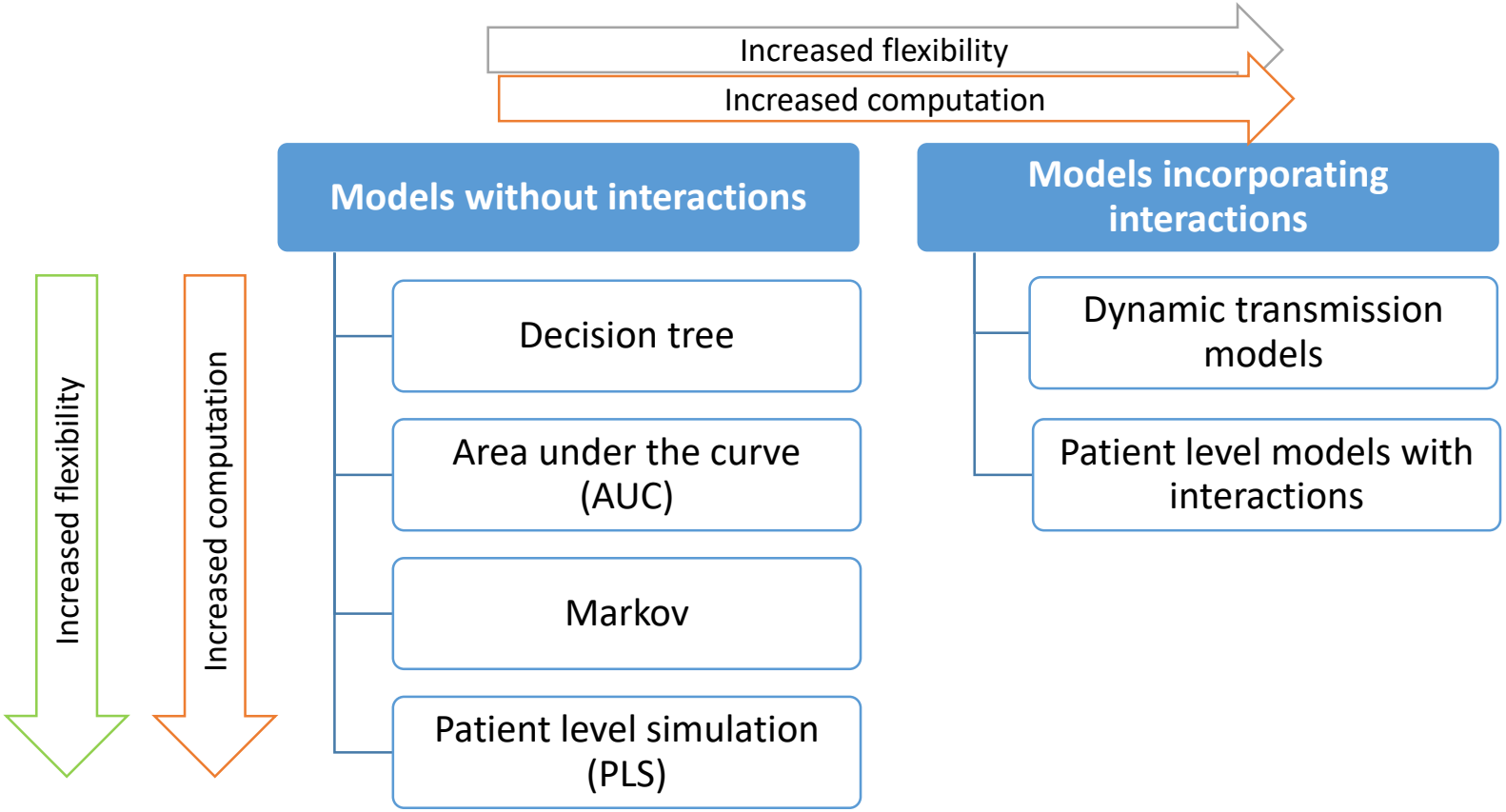
When is a decision model required?

- All the relevant evidence is not contained in a single trial
- Patients participating in trials do not match the typical patients likely to use the technology
- Intermediate outcome measures are used in trials rather than effect on health-related quality of life and survival
- Relevant comparators have not been used, or trials do not include evidence on relevant subgroups
- Clinical trial design includes crossover (treatment switching) that would not occur in clinical practice
- Costs and benefits of the technologies extend beyond the trial follow-up period

Factors determining choice of model structure

- Natural history and care pathway
  - Do relevant health events occur over time?
  - Does the risk of these events alter over time?
  - Does the risk of these events depend on patient history?
- Impact of intervention
  - Is the intervention equally effective over time?
  - Does the initial health change persist when treatment stops?
- Data availability and computational burden
  - Is sufficient data available to inform the required parameters?
  - Can uncertainty be appropriately reflected?
- Transparency and communication

Modelling approaches commonly used in economic evaluation



Summary

- Decision models provide a formal framework to inform decision making in presence of uncertainty
- Models are required in most circumstances to meet the requirements of cost-effectiveness analyses
- A range of factors will influence model choices and alternative structures
- Model types differ in terms of flexibility and computational burden