

JVI 🛠 NALVETRIANVE

R YOU SERIOUSLY STILL USING EXCEL?

THE MANY ADVANTAGES OF OPEN SOURCE DECISION MODELLING IN EFFICIENT PROGRAMMING LANGUAGES



IVI 🔆 INNOVATION AND VALUE INITIATIVE



Speakers

- > Jeroen Jansen PhD
 - > The Innovation and Value Initiative
 - > Precision Xtract / Precision Health Economics
 - > Department of Health Policy & Research (Epidemiology), Stanford University School of Medicine
- > Gianluca Baio PhD
 - > Department of Statistical Science, University College London
- > Howard Thom PhD
 - > Bristol Medical School, Population Health Sciences, University of Bristol
- > Devin Incerti PhD
 - > The Innovation and Value Initiative
 - > Precision Health Economics

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Live Content Slide

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Poll: What software do you mostly use for cost-effectiveness analysis?

Live Content Slide When playing as a slideshow, this slide will display live content

Poll: Do you think R is better for costeffectiveness analysis and modelling than Excel?



Why still Excel?

Jeroen P Jansen jeroen.jansen@thevalueinitiative.org

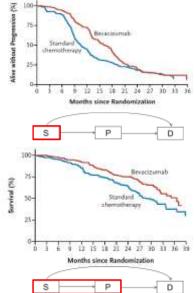
Common practice - 2-step approach

- Input parameter estimation (by means of evidence synthesis) with statistical software
- Forward simulation to calculate expected outcomes (e.g. QALYs, costs, NMBs, etc.) with economic model implemented in MS Excel

Parallel universes – parameter estimation & simulation modeling

Clinical evaluation

- Median PFS
- Median OS
- Hazard ratios
- 1-year survival
- 2-years survival
- Etc.



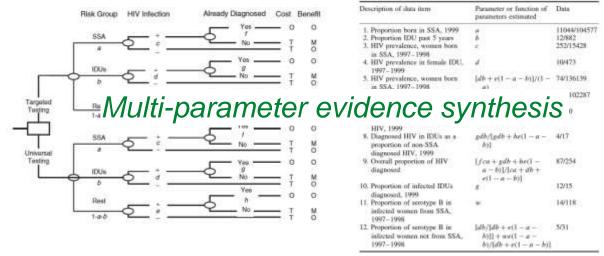
Economic evaluation

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- Expected PFS
- Expected OS
- Expected QALYs
- Difference in QALYs
- Expected costs
- Differences in costs



Where does parameter estimation stop and (forward) simulation start? False dichotomy



Ades AE, Cliffe S. Markov Chain Monte Carlo estimation of a multi-parameter decision model: consistency of evidence and the accurate assessment of uncertainty. Medical Decision Making 2002;22:359–371.

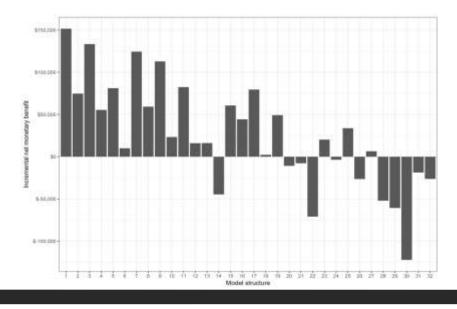
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Complex models



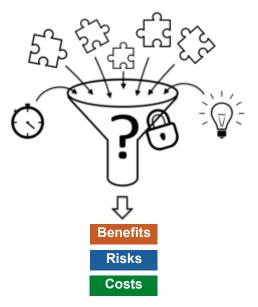
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Quantifying decision uncertainty as a function of parameter uncertainty and structural uncertainty



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Transparency & reproducibility



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Transparency & reproducibility

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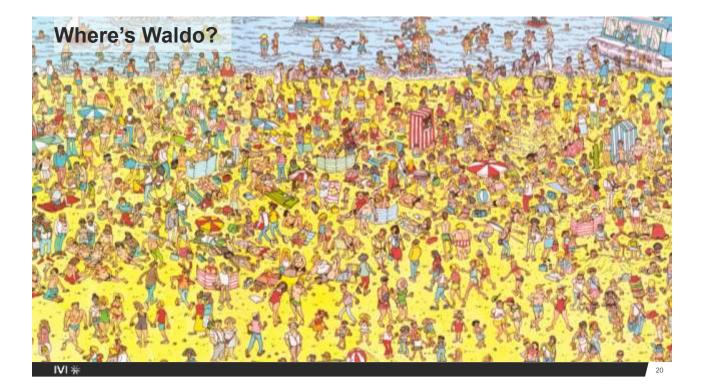
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Transparency & reproducibility

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What do we mean by model transparency?

- > Concept, math
- > Face validity
- > Implementation/programming
- > ...
- > Familiarity with software?
- > Open-source

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Alternative

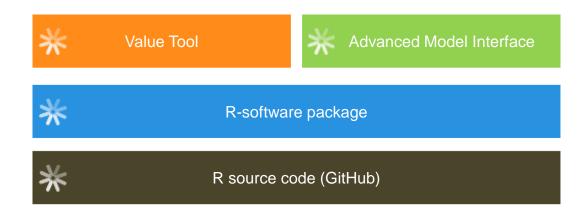




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R-based models are not only syntax



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Time to change

