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HOW TO CALCULATE VALUE OF INFORMATION IN SECONDS USING 'SAVI', THE SHEFFIELD ACCELERATED VALUE OF INFORMATION WEB APP.

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BACKGROUND: Health economic models are used to estimate the expected costs and health outcomes of competing decision options. Model parameters are generally uncertain, and it is often useful to quantify the value of undertaking further data collection in order to reduce uncertainty. An upper bound on the value of resolving all uncertainty regarding an input parameter is quantified by its partial Expected Value of Perfect Information (EVPI). The value of a specific future study is quantified by its Expected Value of Sample Information (EVSI).

PROBLEM: The standard approach to computing both partial EVPI and EVSI is via a nested two-level Monte Carlo scheme that includes at each inner loop step both parameter sampling and model evaluation. This scheme can be prohibitively slow for complex models (eg. patient-level simulation models). Additional difficulties may occur in the calculation of EVSI if we have to resort to Markov-chain Monte Carlo (eg. using WinBUGS) to generate samples from the posterior distribution of the parameters given the simulated data for our proposed study.

These difficulties have resulted in the restriction of Value of Information analyses to a small subset of health economic evaluations.

SOLUTION: We have developed fast non-parametric regression based methods for computing both partial EVPI and EVSI. For partial EVPI we require only the 'probabilistic sensitivity analysis' sample: a single set of samples from the model parameters, along with the corresponding modelled costs and health outcomes. The only extra requirement for EVSI is the ability to simulate study data. There is no need to re-run the model in either case.

We have made available an easy-to-use, open access, web-based Value of Information calculator called 'SAVI' http://savi.shef.ac.uk/SAVI.

CONCLUSION: Value of Information measures can now be computed quickly for models of any complexity, and hence be made more widely available to modellers and decision makers.