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De nieuwe richtlijn en Value of Information analysis

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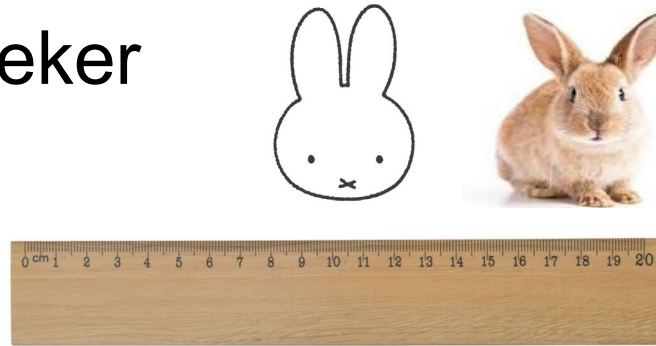
Value of Information analysis

- › Minder vrijblijvend dan het was.
 - Want deze informatie is heel nuttig
 - En het is eigenlijk nauwelijks extra moeite, zeker gezien de tools die beschikbaar zijn.
- › EVPI moet altijd
- › EVPPI moet, kan voor groepen parameters
- › Eventueel nog aanvullende analyses

Waarom Value of information nuttig is

› Al onze analyses zijn onzeker

- Structurele onzekerheid
- Parameteronzekerheid
- Steekproef-onzekerheid

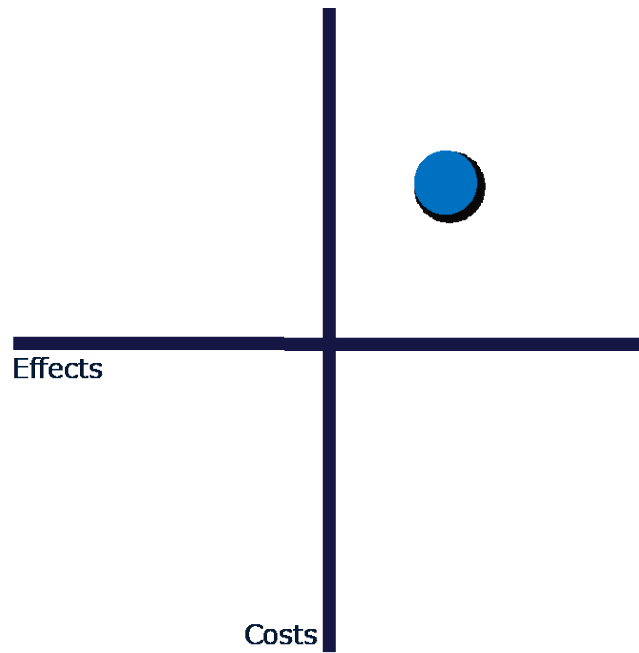


Imprecision
Bias
Unavailability

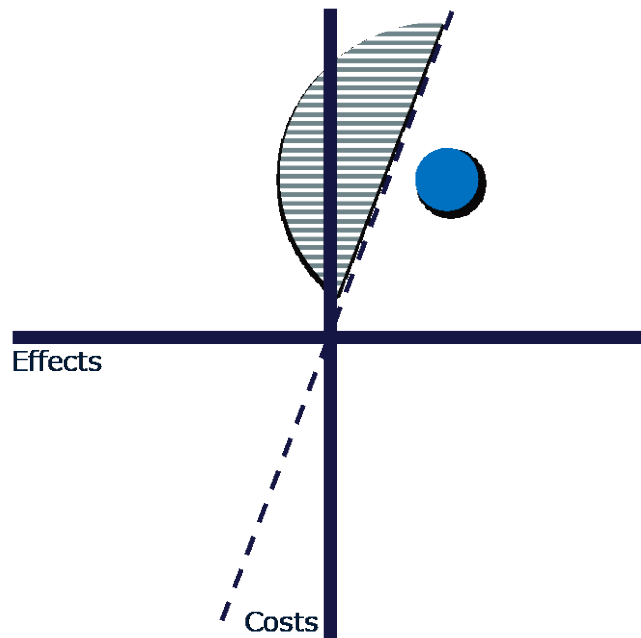
› VOI geeft inzicht in de *gevolgen* van onzekerheid

- Voor de beslissing
- Voor nut en noodzaak van nader onderzoek

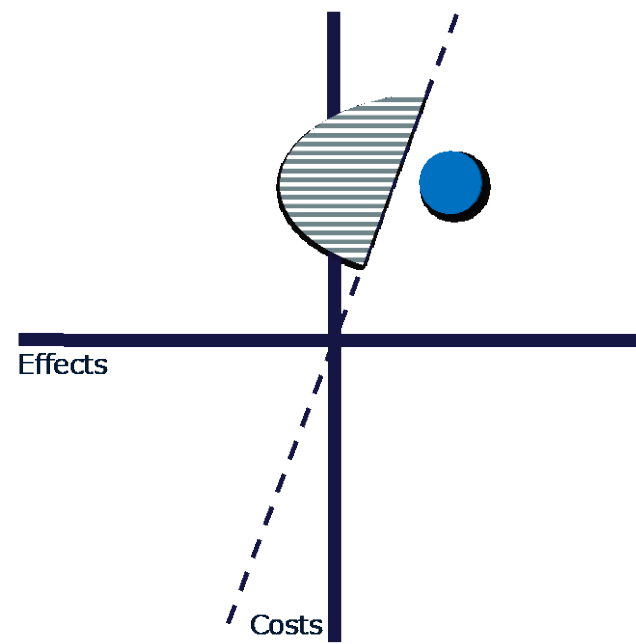
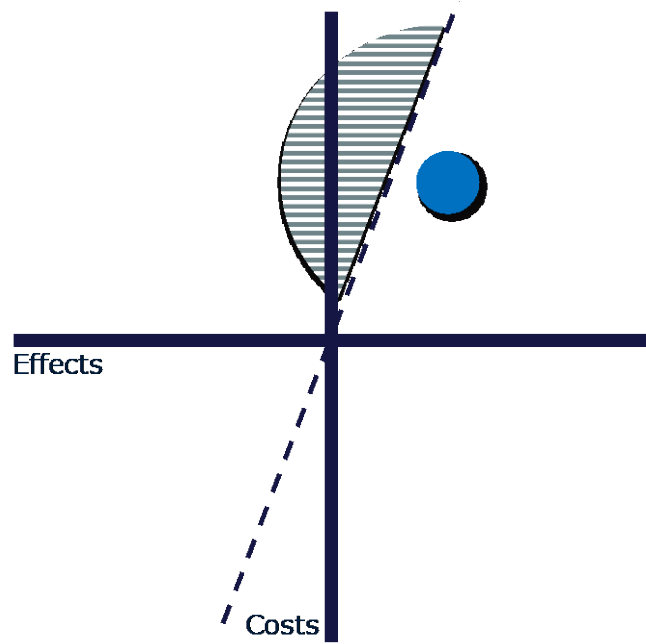
In een figuur (met dank aan Manuela Joore)



In een figuur (met dank aan Manuela Joore)



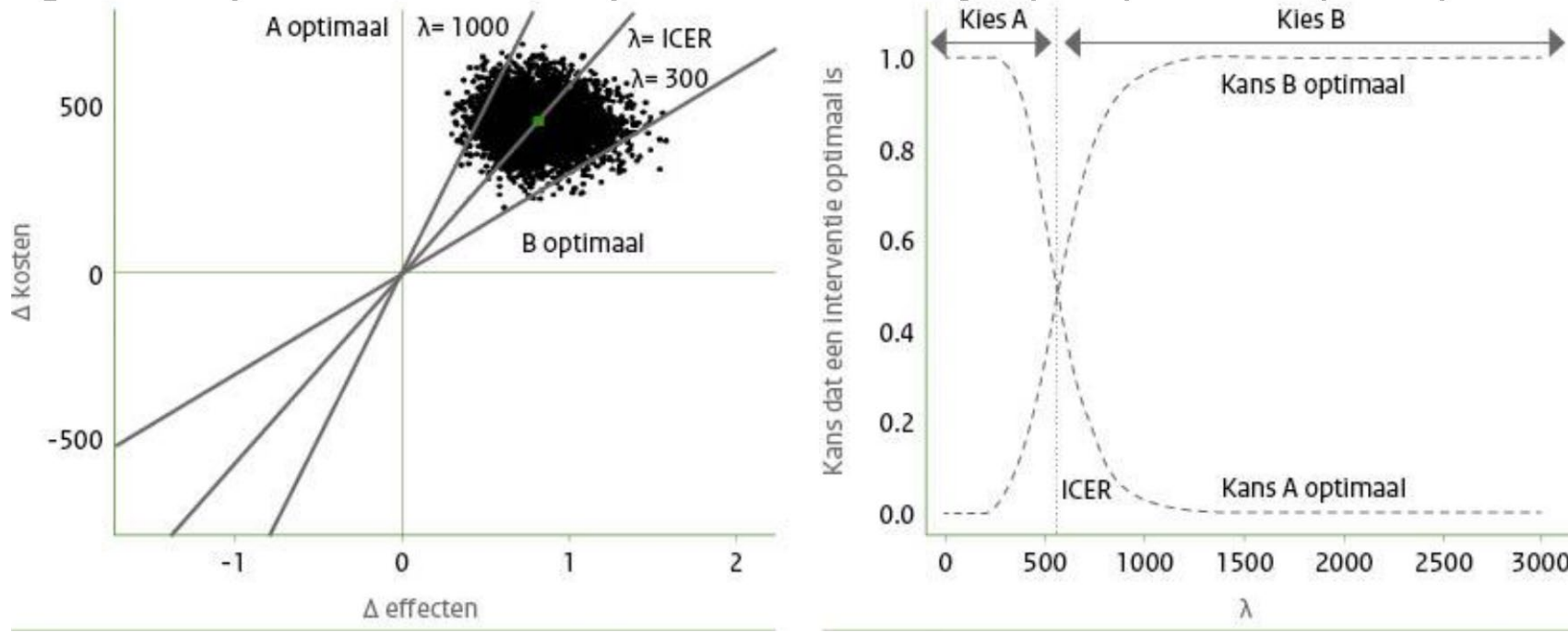
In een figuur (met dank aan Manuela Joore)



Hoe ging het ook al weer?

- › CE-plane en CEAC: inzicht in onzekerheid en beslisonzekerheid

Figuur 1: CE-plane met uitkomsten probabilistische analyse (links) en CEACs (rechts)



Hoe ging het ook al weer?

Iterations	Treatment	
	A	B
1	€ 25.770	€ 26.162
2	€ 26.323	€ 26.220
3	€ 25.781	€ 26.840
4	€ 25.090	€ 25.623
5	€ 25.595	€ 26.153
6	€ 25.614	€ 26.549
7	€ 25.300	€ 25.918
8	€ 24.891	€ 24.824
9	€ 25.675	€ 27.039
10	€ 25.835	€ 25.730
Expectation	€ 25.589	€ 26.106

Max exp NB



EVPI berekening is heel eenvoudig als de PA er is.

Iterations	Treatment		Optimal choice	Max NMB
	A	 B		
1	€ 25.770	€ 26.162	B	€ 26.162
2	€ 26.323	€ 26.220	A	€ 26.323
3	€ 25.781	€ 26.840	B	€ 26.840
4	€ 25.090	€ 25.623	B	€ 25.623
5	€ 25.595	€ 26.153	B	€ 26.153
6	€ 25.614	€ 26.549	B	€ 26.549
7	€ 25.300	€ 25.918	B	€ 25.918
8	€ 24.891	€ 24.824	A	€ 24.891
9	€ 25.675	€ 27.039	B	€ 27.039
10	€ 25.835	€ 25.730	A	€ 25.835
Expectation	€ 25.589	€ 26.106		€ 26.133
	Max exp NB		Exp max NB	

Iterations	Treatment		Optimal choice	Max NMB	Opportunity loss
	A	 B			
1	€ 25.770	€ 26.162	B	€ 26.162	€0
2	€ 26.323	€ 26.220	A	€ 26.323	€103
3	€ 25.781	€ 26.840	B	€ 26.840	€0
4	€ 25.090	€ 25.623	B	€ 25.623	€0
5	€ 25.595	€ 26.153	B	€ 26.153	€0
6	€ 25.614	€ 26.549	B	€ 26.549	€0
7	€ 25.300	€ 25.918	B	€ 25.918	€0
8	€ 24.891	€ 24.824	A	€ 24.891	€67
9	€ 25.675	€ 27.039	B	€ 27.039	€0
10	€ 25.835	€ 25.730	A	€ 25.835	€105

Expectation	€ 25.589	€ 26.106	€ 26.133	€27
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Max exp NB

Exp max NB

EVPI * Populatieomvang *
Tijdshorizon

EVPPI net zo eenvoudig, maar kost tijd (veel loops)

Er zijn benaderingsmethodes

ISPOR Report

Value of Information Analysis for Research Decisions—An Introduction: Report 1 of the ISPOR Value of Information Analysis Emerging Good Practices Task Force

Elisabeth Fenwick, PhD,^{1,*} Lotte Steuten, PhD,² Saskia Knies, PhD,³ Salah Ghabri, PhD,⁴ Anirban Basu, PhD,⁵ James F. Murray, PhD,⁶ Hendrik (Erik) Koffijberg, PhD,⁷ Mark Strong, PhD,⁸ Gillian D. Sanders Schmidler, PhD,⁹ Claire Rothery, PhD¹⁰



SAVI - Sheffield Accelerated Value of Information

Release version 2.2.0 (2021-06-04)
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What SAVI does

Using **only** PSA results from your model

In a matter of seconds from the SAVI online application you can generate:

- Standardised assessment of uncertainty (C-E planes and CEACs)
- Overall EVPI per patient, per jurisdiction per year and over your decision relevance horizon
- Expected Value of Perfect Parameter Information (EVPPI) for single and groups of parameters

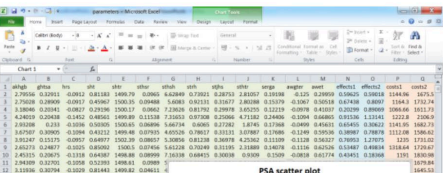
Disclaimer: This application is based on peer-reviewed statistical approximation methods. It comes with no warranty and should be utilised at the user's own risk (see [here](#)). The [underlying code](#) is made available under the [BSD 3-clause license](#).

If you use SAVI in your work please cite our paper

Strong M, Oakley JE, Brennan A. Estimating multi-parameter partial Expected Value of Perfect Information from a probabilistic sensitivity analysis sample: a non-parametric regression approach. *Medical Decision Making*. 2014;**34**(3):311-26. Available open access [here](#).

The SAVI process has 4 steps (using the TABS from left to right)

Step 1: Save PSA input parameters, costs and effects as separate .csv files



PSA scatter plot

Contact Us

For any queries or to report a bug please send an email to savi@sheffield.ac.uk

News

SAVI is now available as an R package, allowing you to run SAVI directly on your own machine. You can download instructions [here](#).

New features and bug fixes

New for version 2.2.0
SAVI now has a new web address <https://savi.shef.ac.uk/SAVI/>
This means that traffic to and from SAVI is now encrypted. The old <http://savi.shef.ac.uk/SAVI/> address should redirect to the new address.

Fix for version 2.1.4
We have applied a patch to avoid numerical problems in the regression estimation if parameters are very highly skewed

Fix for version 2.1.3
We have fixed a bug in the 'Download Summary Report' function that caused an incorrect plot of overall EVPI against the threshold value

Supplementary Appendix

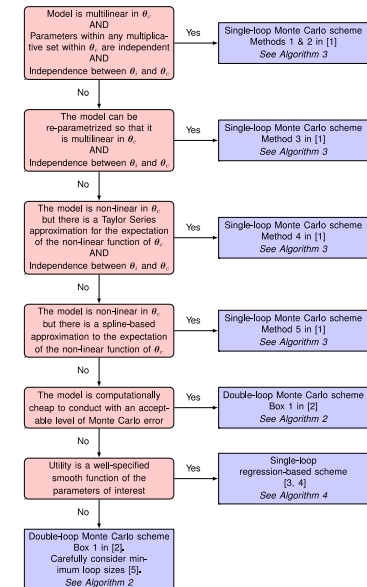
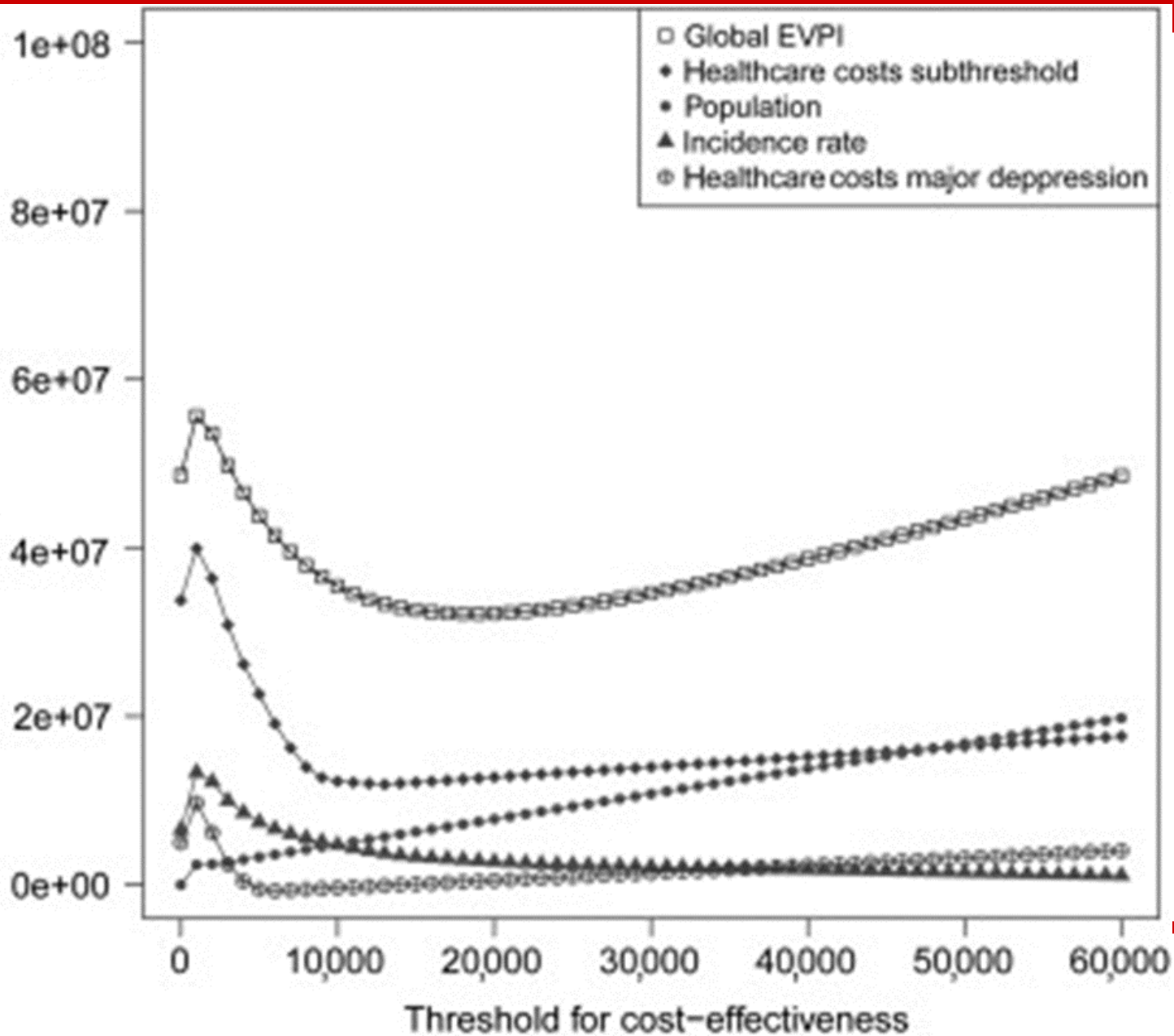


Figure 1: Process for choosing a method for computing the Expected Value of Partial Perfect Information based on model features. Algorithm numbers refer to algorithms in the main report.

Voorbeeld van EVPPI resultaten



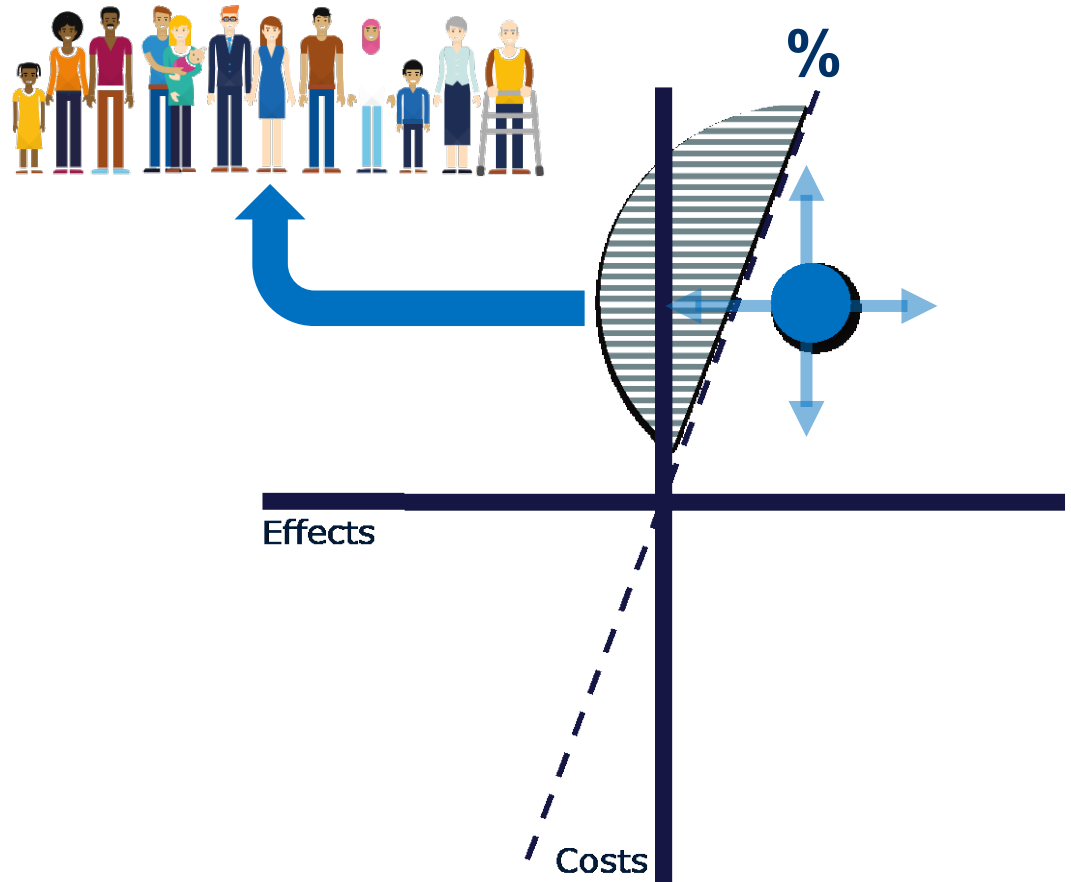
Alles op een rijtje

PA

- › Verwachte kosten en effecten
- ⬈ › Onzekerheid rond deze beide uitkomsten
- % › Kans op kosten-effectief gegeven drempelwaarde (beslisonzekerheid)

EVPI & EVPPI

- › Verwachte gevolgen van onzekerheid in alle (EVPI) of enkele (EVPPI) modelparameters in relatie tot de beslissing
- › Individueel of populatieniveau
- › Voor de relevante tijdshorizon



Meer informatie

- › Verdiepingsmodule van de richtlijn
- › ISPOR good practice guidelines

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ISPOR Report

Value of Information Analytical Methods: Report 2 of the ISPOR Value of Information Analysis Emerging Good Practices Task Force

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