SEJ Flyover

Cooke

RFF

Jan 25 2018

Quantifying Uncertainty: Structured Expert Judgment

European Commission

Community research

Project report

Nuclear science and technology

Procedures guide for structured expert judgment
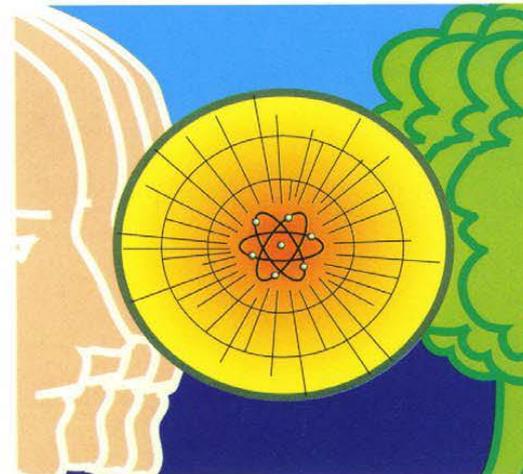
EURATOM

Anno 2016 over 200 professional applications

Nuclear	EU, USNRC
Aerospace	ESTEC, NASA
Chemical Process	VROM , SHELL
Dose Response	VROM
Environmental Transport	EU, USNRC, VROM
Banking / Investment	SHELL, AMS Optie
Volcanoes	UK, EU
Aeronautics	VROM, AIRBUS, BA
Project mngt	Robert Woods Johnson
Public Health	Health Canada
Civil Infrastructure	UK, NL, EPA
Invasive Species	NOAA
Ice Sheets	RL Foundation, UK
Global Burden of Disease	WHO, CDC

Ice Sheet Elicitation
Nov. 2012
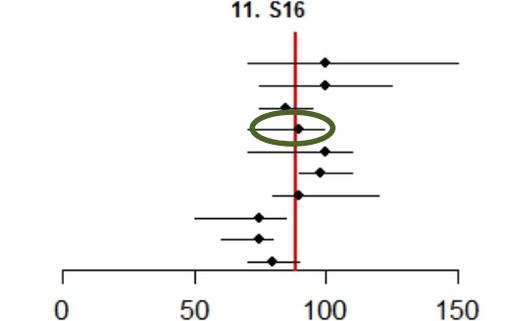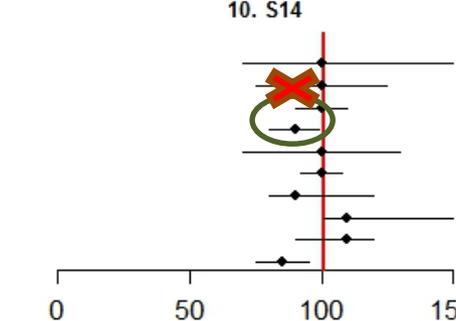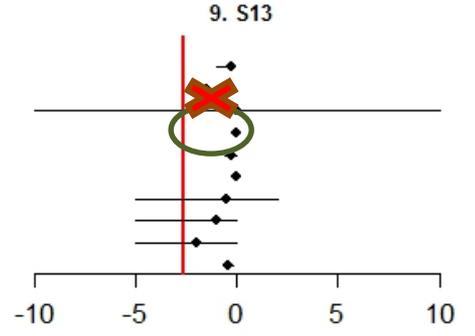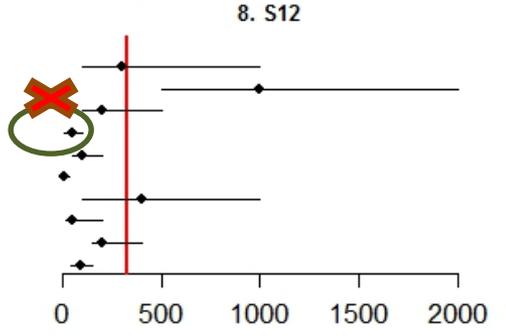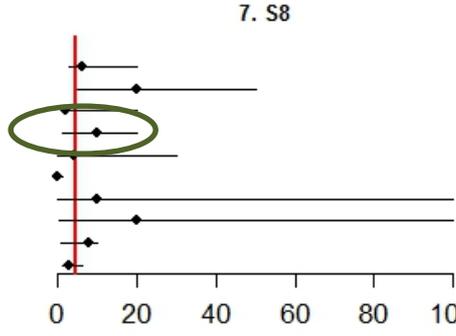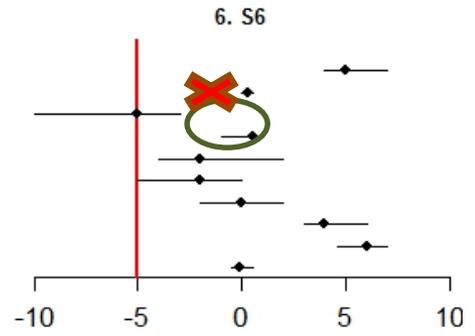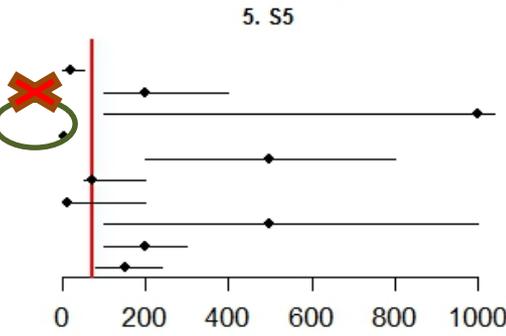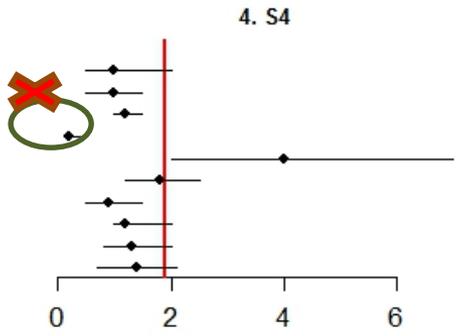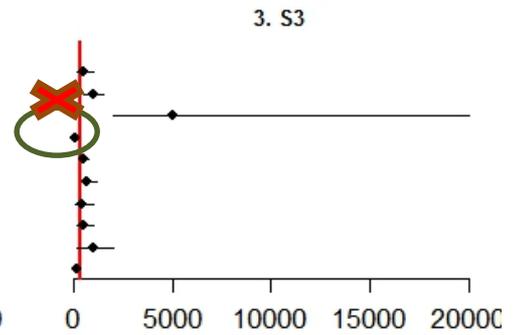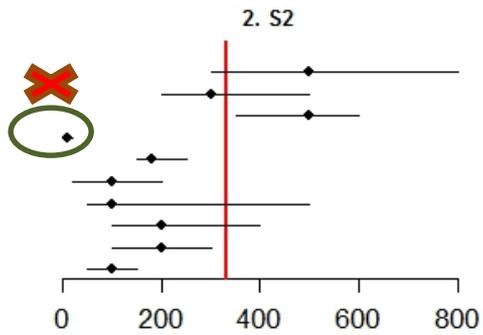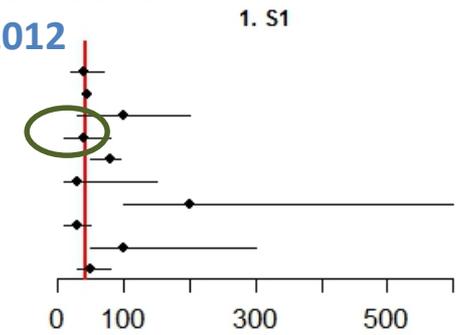
Prob FALSE rejection :
Expert 1 = 0.4
Expert 7 = 0.33
Expert 4 = 0.000006

323 Post 2006 Experts

Statistical Accuracy, 323 post 2006 experts

WHO Global burden of disease

72 experts, 135 panels, Remote elicitation by novices
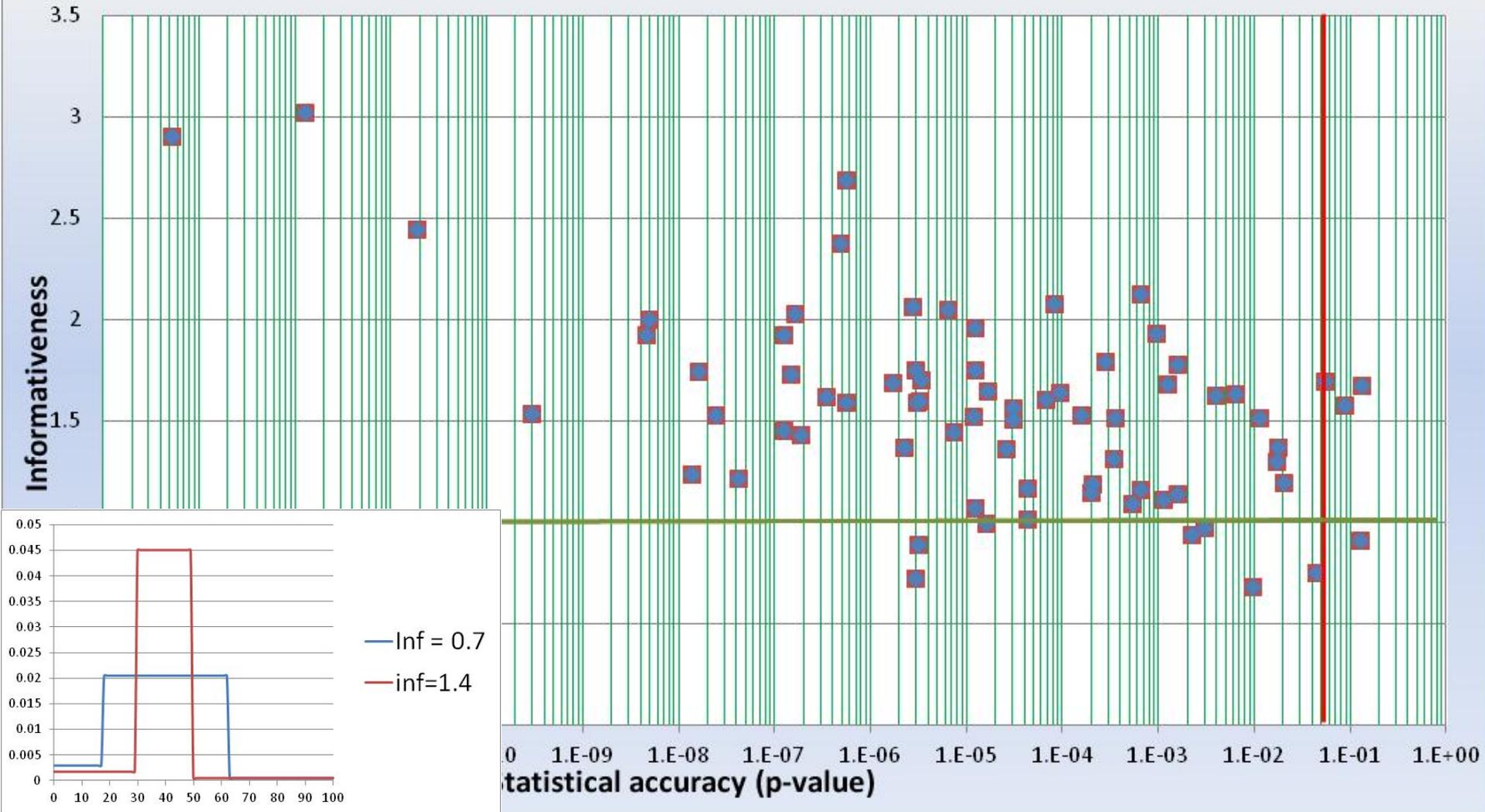
First Miracle of SEJ
## EW tends to give good statistical performance (at the expense of informativeness)

Global Burden of Disease: 72 experts, Equal weight
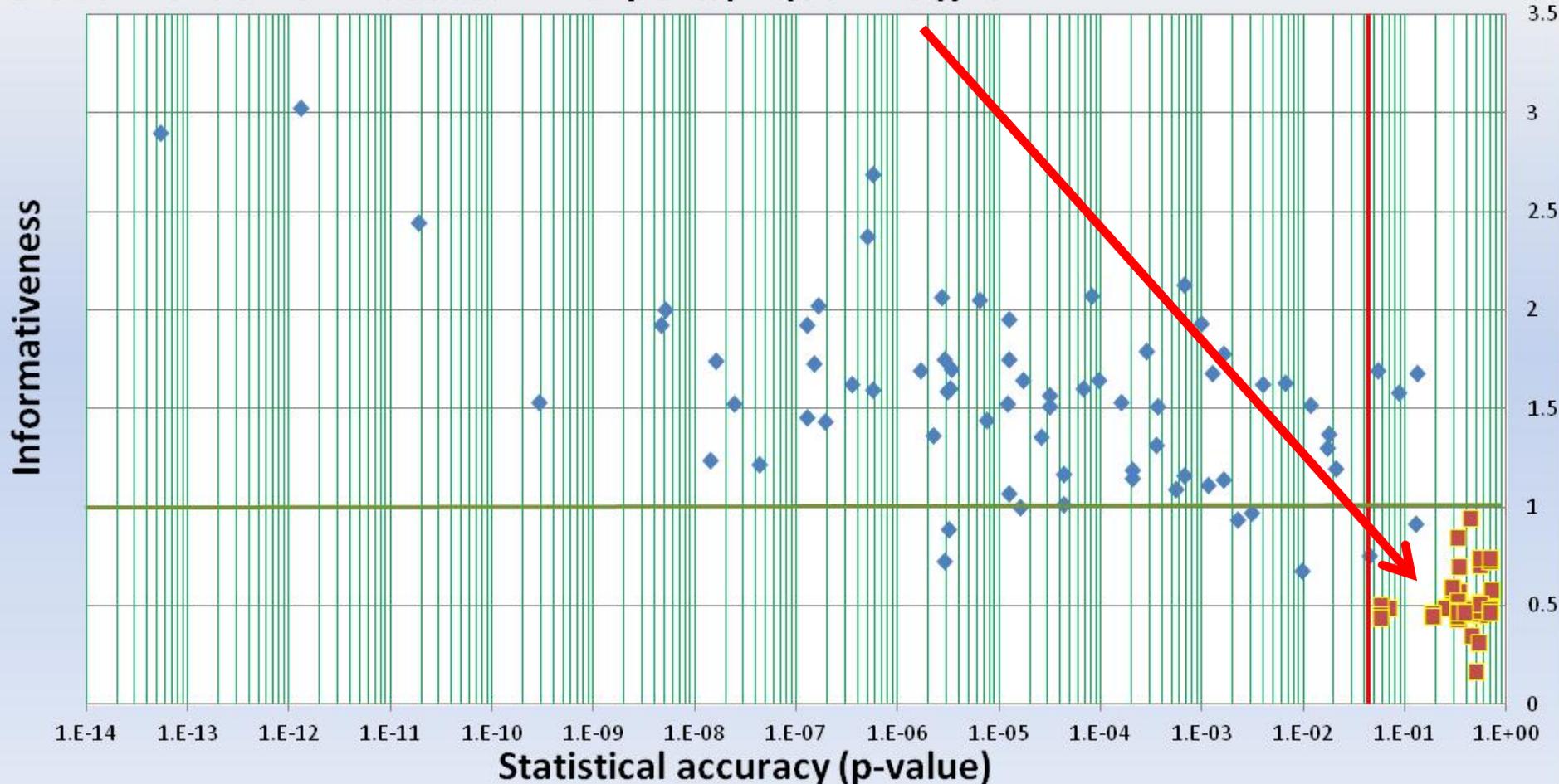
Second Miracle of SEJ
## PW preserves statistical accuracy and recovers informativeness

Global Burden of Disease: 72 experts, Equal weight, Performance weight

YTBIDS 48 experts, 16 Panels
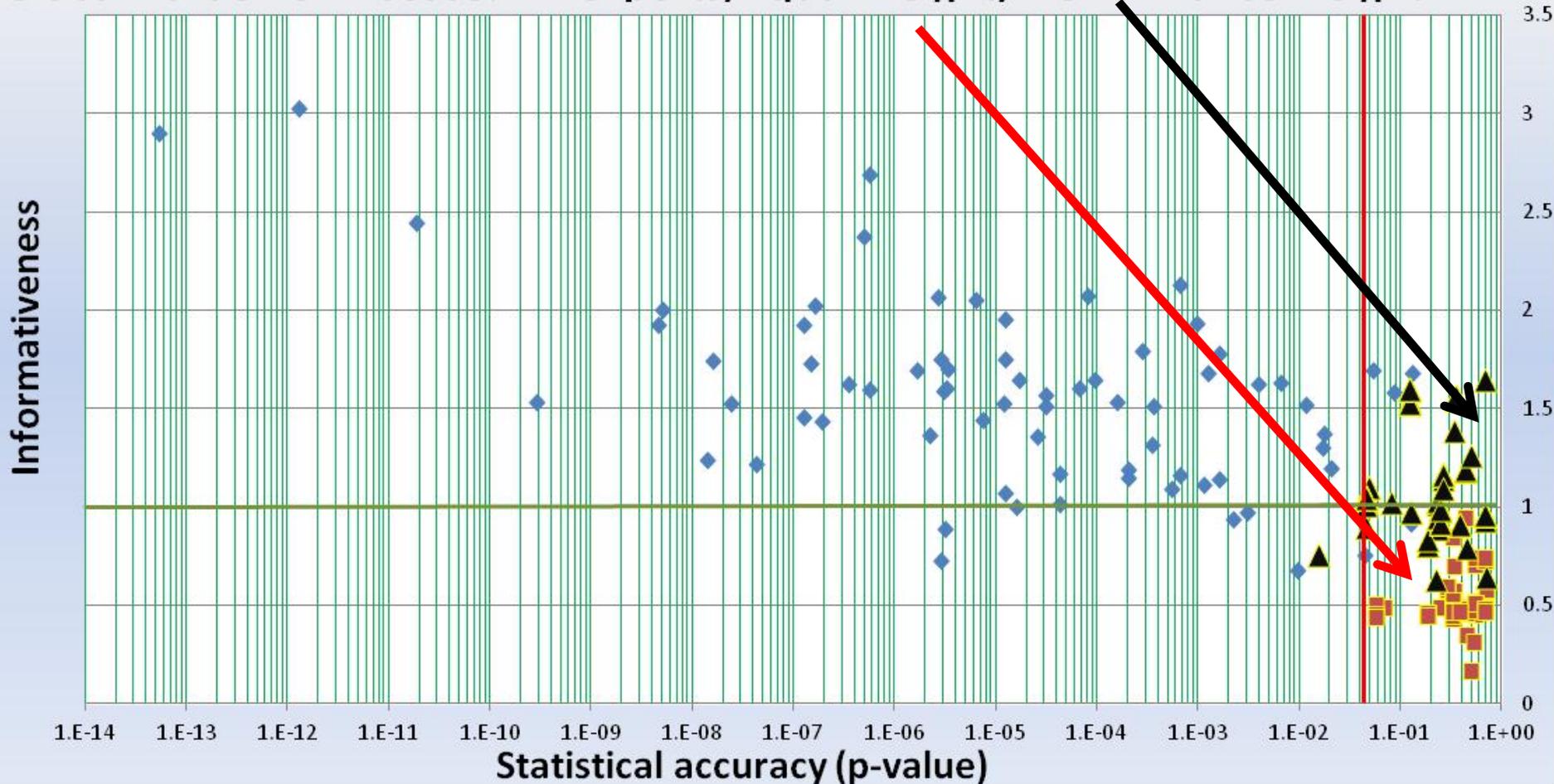
# Peer Rankings DON'T Predict Performance
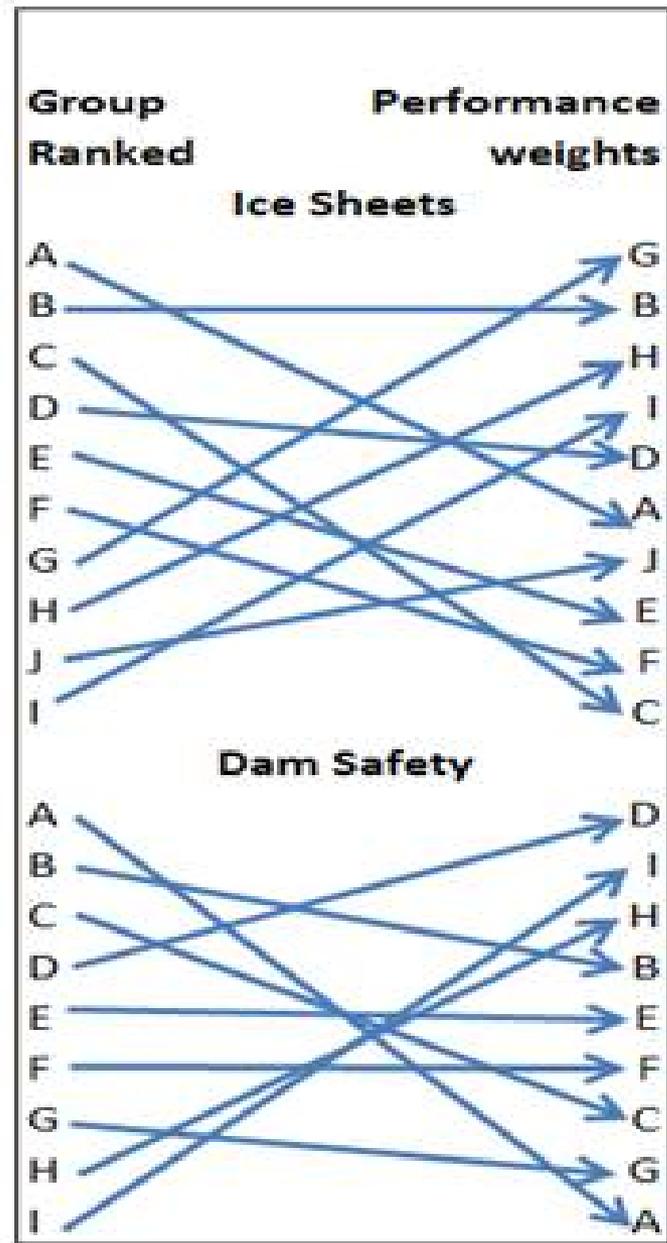
Out of Sample Cross-Validation:
of Classical Model

62 studies, per study: geomeans of comparisons of PW/EW combined score ratios. Eggstaff, Mazzuchi, Sarkani (2013 RESS);
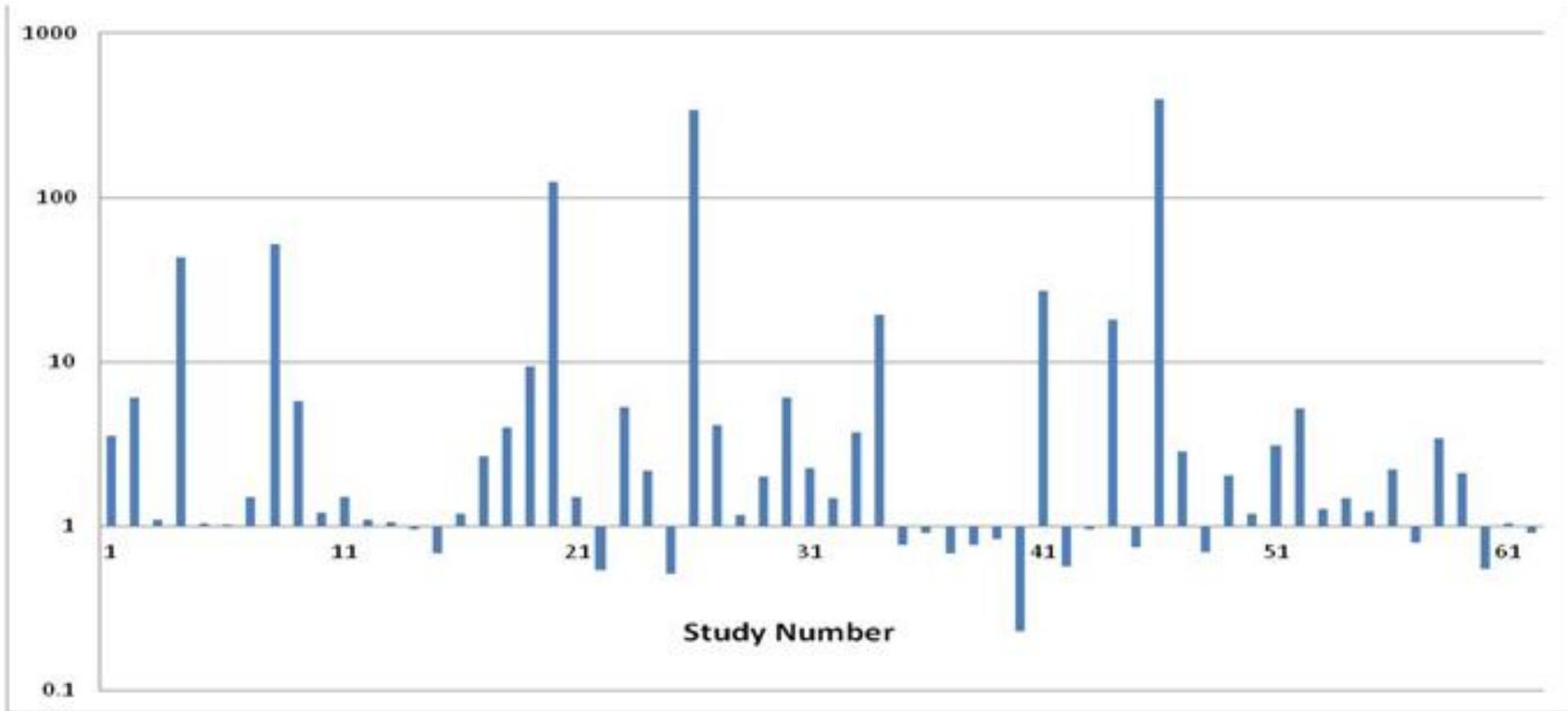
Questions?

Average over all studies per % training set size of the average *PWSa* and average *EWSa (post 2006)*
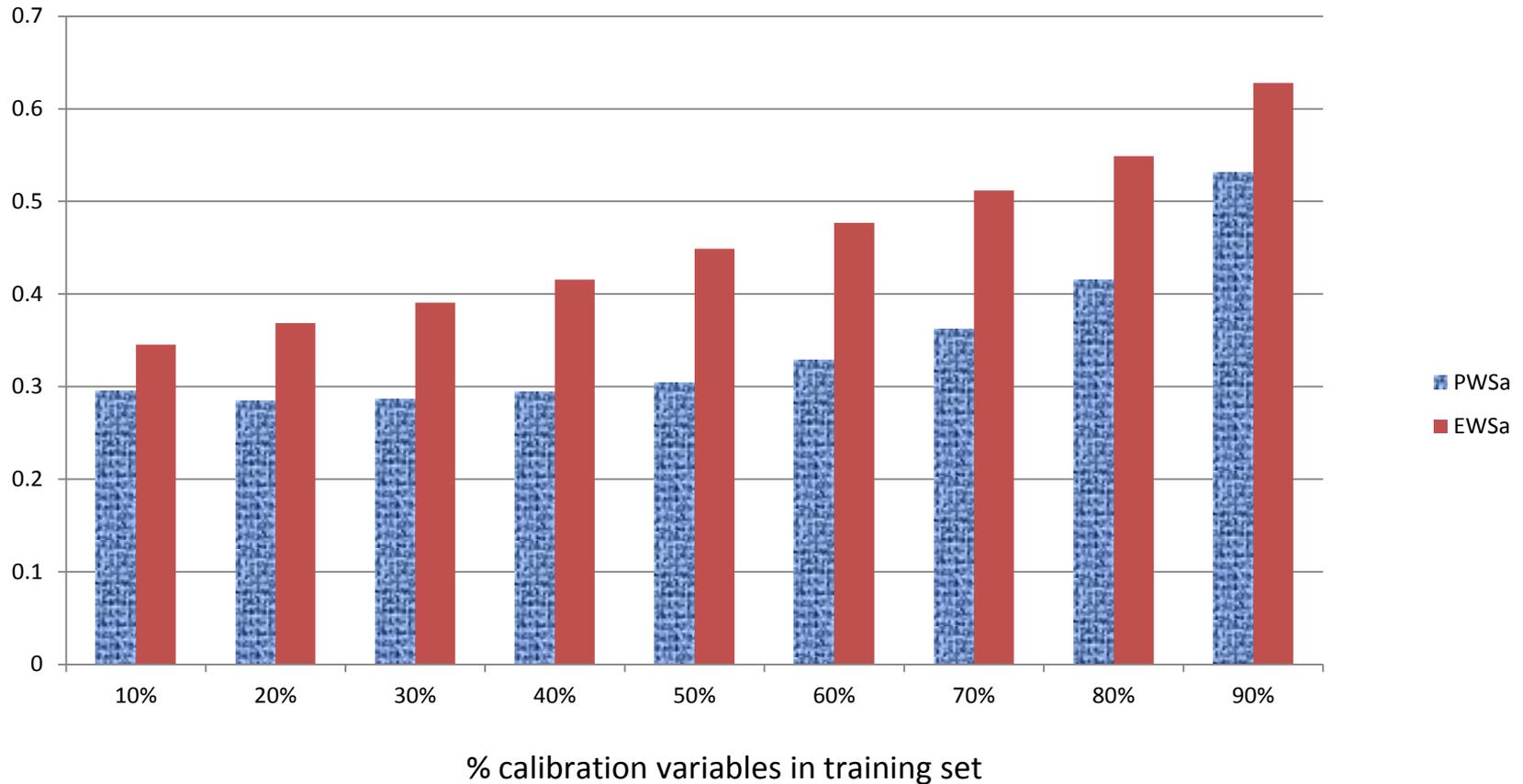
Average over all studies per % training set size of the average *PWInf* and average *EWInf*

% calibration variables in training set
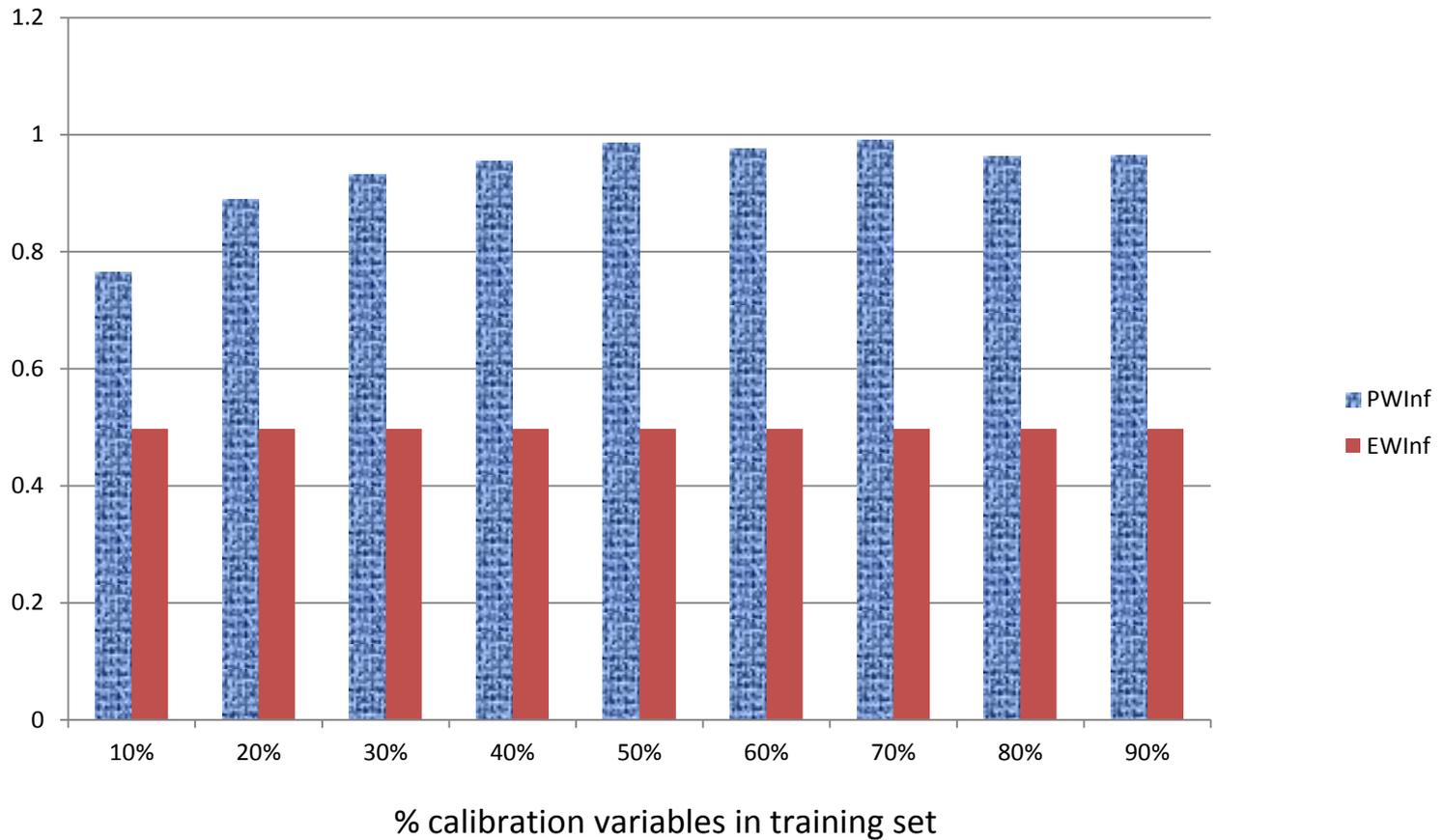
Average over all studies per % training set size of the average *PWComb* and average *EWComb*

% calibration variables in training set