71st Advisory Forum meeting
Bucharest, Romania, 03-04.04.2019

RAKIP-EFSA/BfR model repository

Knowledge Junction

R4EU

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Trusted science for safe food

efsa
European Food Safety Authority

Different scope yet thoroughly related

RA modelling community

RAKIP and EFSA BfR model repository

R4EU

End users

Knowledge Junction

All

EFSA Journal

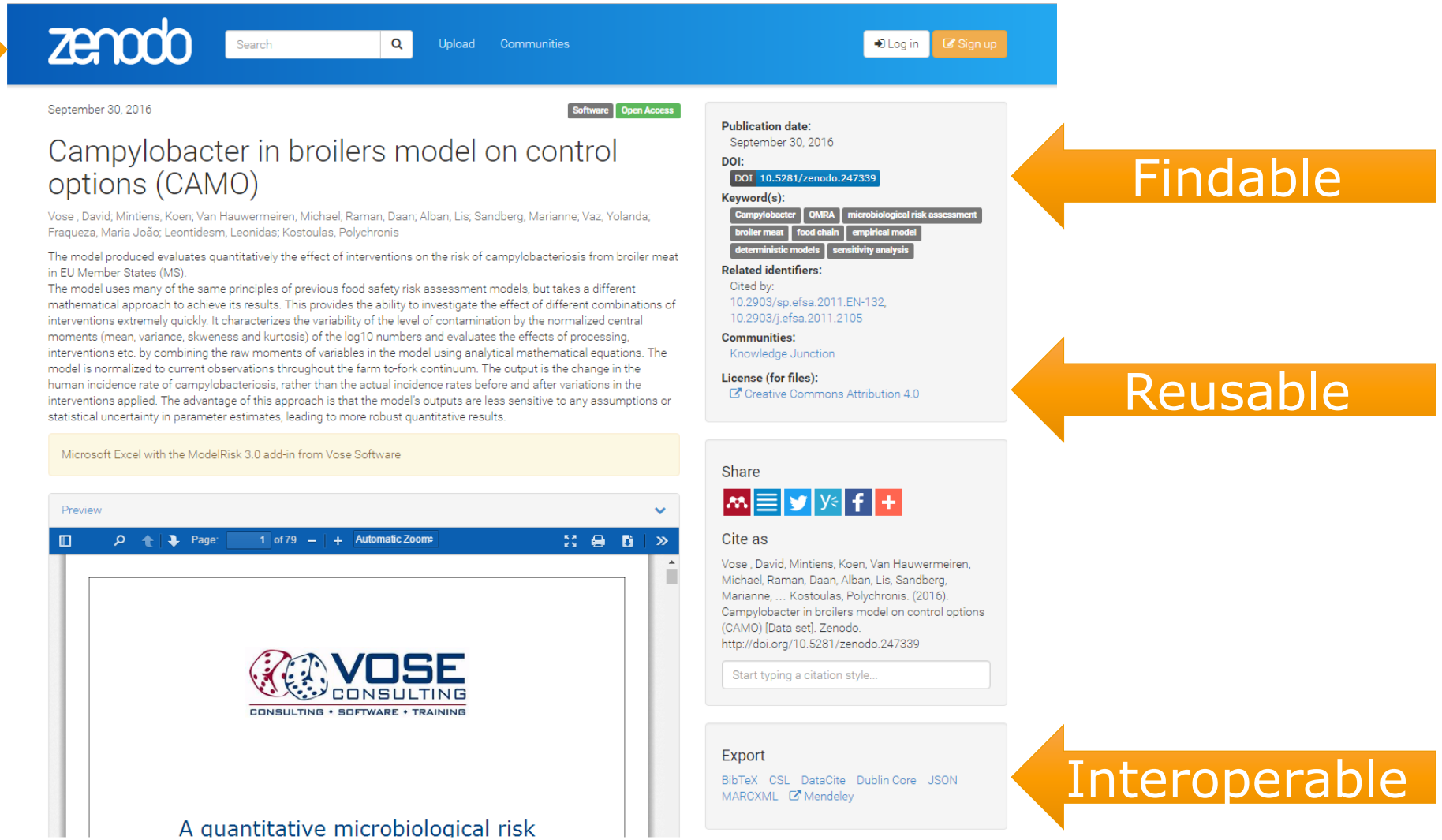
Knowledge Junction

- **Community:** a curated, open repository for the exchange of evidence and supporting materials used in food and feed safety risk assessments.
- **Aim:** to improve transparency, reproducibility and evidence reuse.
- **Content:**
  - Evidence – reports, datasets, images, videos, laboratory outputs
  - Supporting materials – software, tools, models, code, protocols, appraisal schemes
  - Risk assessment – mandates, opinions, statements, guidance documents, annual and strategic plans provided by Member States

Preparatory Risk Assessment Knowledge Base

FAIR PRINCIPES IN PRACTICE

Accessible



Findable

Reusable

Interoperable

RAKIP and the EFSA –BfR model repository

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KNIME

- RAKIP model repository
  - Uploading of models
  - Downloading of models
  - Modification of models

- EFSA-BfR model repository
  - Uploading of models
  - Downloading of models
  - Modification of models
  - Provision of DOI through Knowledge Junction – versioning through DOI
  - Transfer of models from repository to KJ - curation
  - Execution of models directly from the KJ
  - Linkage to many other types of objects (Scientific documents, Scientific Opinions etc.)

R4EU

efsa
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bmd
benchmark dose modeling

MDR
multi-drug resistance analysis

MonteCarlo
risk assessment using Monte Carlo

efsa
European Food Safety Authority

MonteCarlo Comparison
compare risk assessment scenarios

Database
Member states risk assessment activities

ribess
risk based surveillance systems

sampelator
sample size calculator

efsa
European Food Safety Authority

Expert Knowledge Elicitation

spatial
exploratory analysis for spatio-temporal epidemiology

mss-to-excel
transform MSS files into Excel files

Abstract Screening

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EU-RAA
EU Risk Assessment Agenda Projects and Partnering

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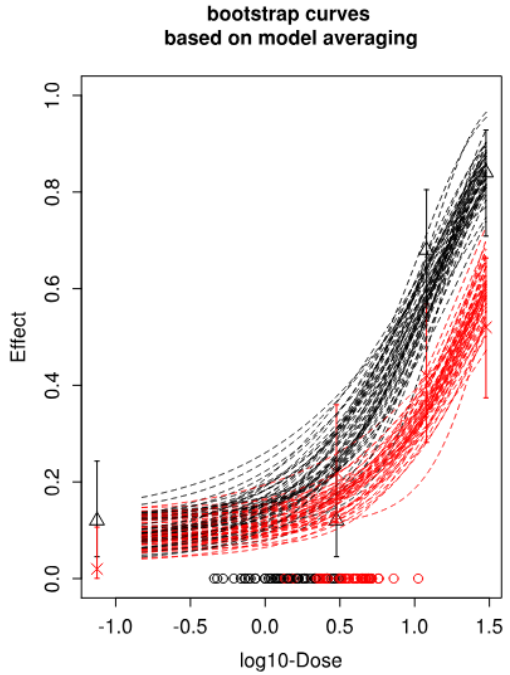
Back up slides

What is it for?	• To estimate the dose corresponding to the benchmark response of interest. The software can apply model averaging.
Pre-requisites?	• Extended PROAST data format
Outputs?	• BMD report • R code available on https://zenodo.org/record/889583 • Manual (under update) • In 2017, EFSA organised a workshop on BMD (not specific on the tool). Information available on • https://www.efsa.europa.eu/en/events/event/170301-0



What is it for?

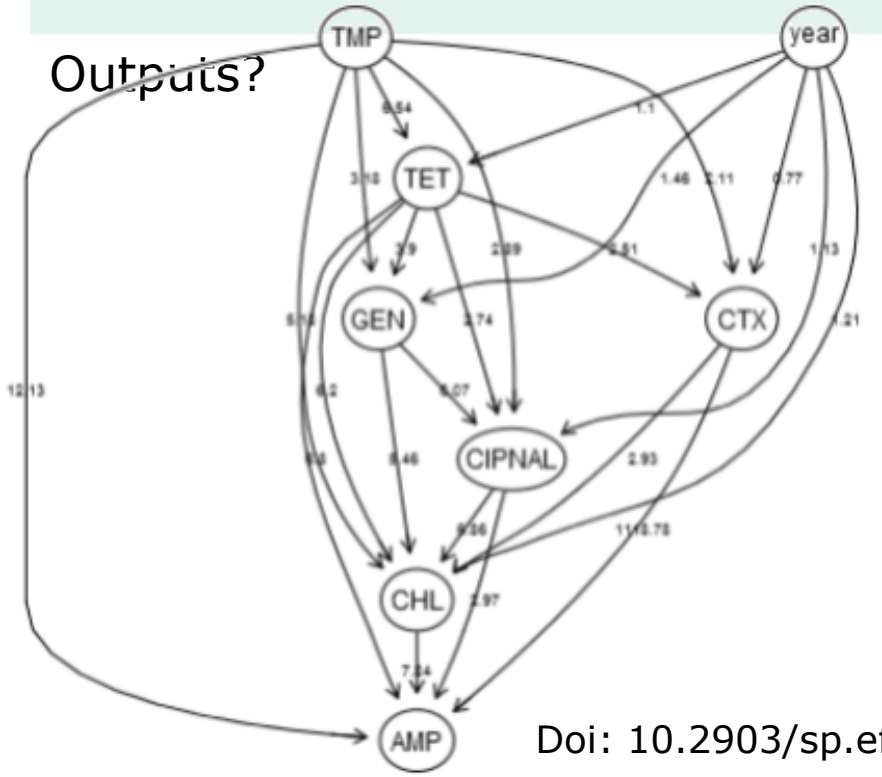
- Analyse AMR data to indicate MDR

Pre-requisites?

- AMR data (in the same format as used for the EC reporting)

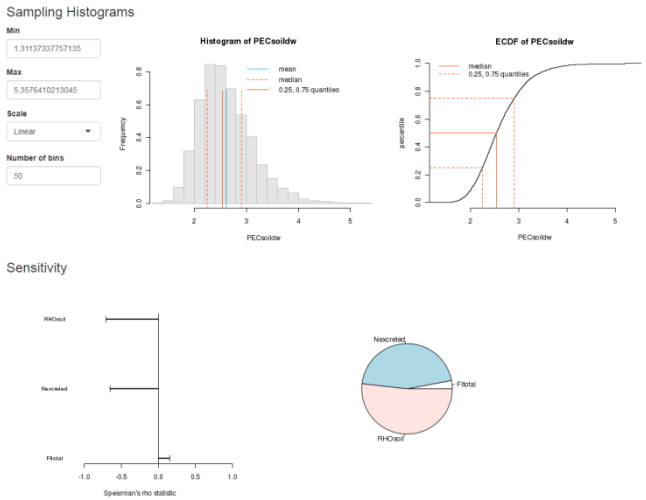
Outputs?

- Data exploration under many different tools, e.g. Spatial analysis, Bayesian networks, Generalized Estimating Equation, Latent Class Analysis, etc.



Doi: 10.2903/sp.efsa.2016.EN-1084

What is it for?	• A computational approach to model the probability of different outcomes in a process • Mainly used, so far, for plant health RA
Pre-requisites?	• Model equation • Knowledge of the probability distribution for each of the input variables
Outputs?	• Probability distribution of the output variable • Sensitivity analysis for the input/output variables • Uncertainty evaluations



What is it for?

Estimation of the sample size, design prevalence, global sensitivity and probability of freedom from disease

Pre-requisites?

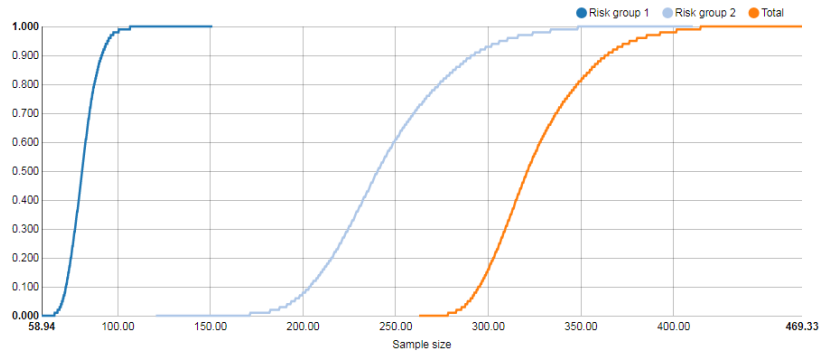
- Population Size
- Design Prevalence/Samples taken
- Test sensitivity

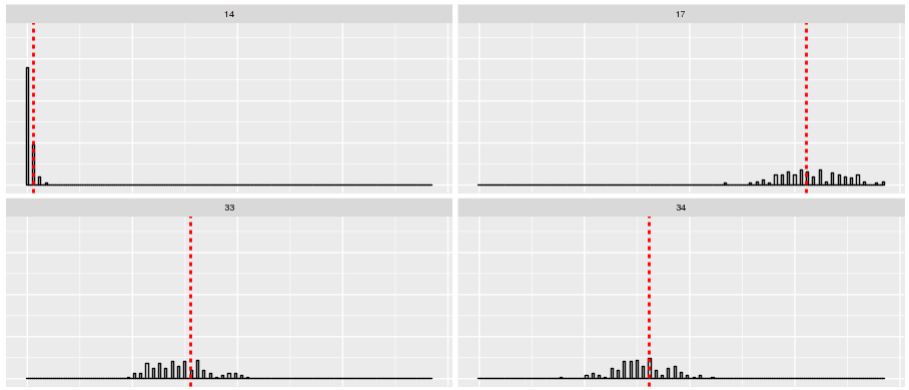
Outputs can take into account Risk Factors with different relative risks and proportions in the populations

Finite population

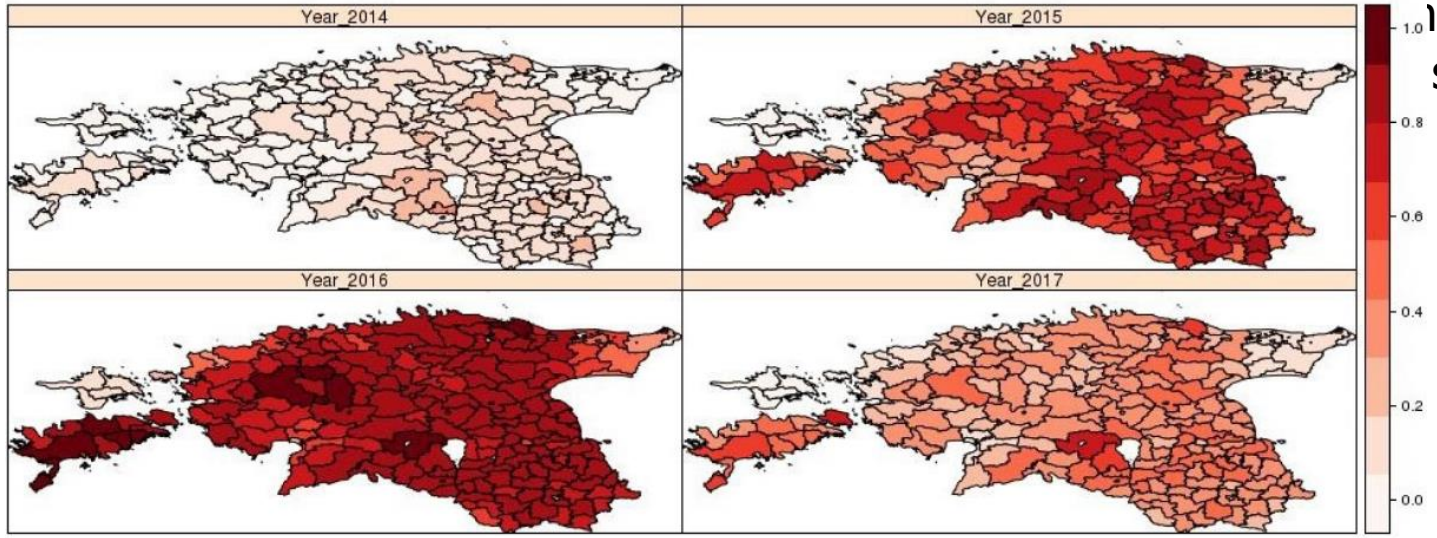
	Species	Population size	Sample size	Group sensitivity
1	Sheep	340.000	81.000	0.780
2	Others	660.000	240.000	0.776

Total sample size: 321
Global sensitivity: 0.95
Download



What is it for?	Sample a dataset following a sampling strategy (random sampling, stratified sampling, multi-step sampling, measure change over time, etc.)
Pre-requisites?	Sample size, desired difference to be tested for or power; Population to be sampled
	Sample table; Sampelator can provide a visual indication of representativeness for the sampling performed

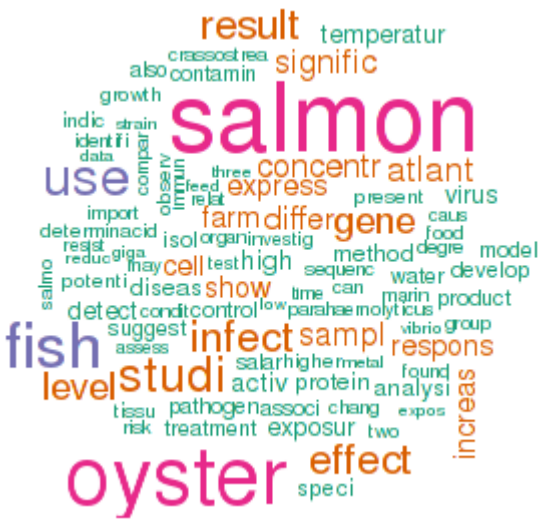
What is it for?	Exploring epidemiological scenarios using two model classes (Bayesian hierarchical models, Generalised additive models)
Pre-requisites?	Temporal and spatial data



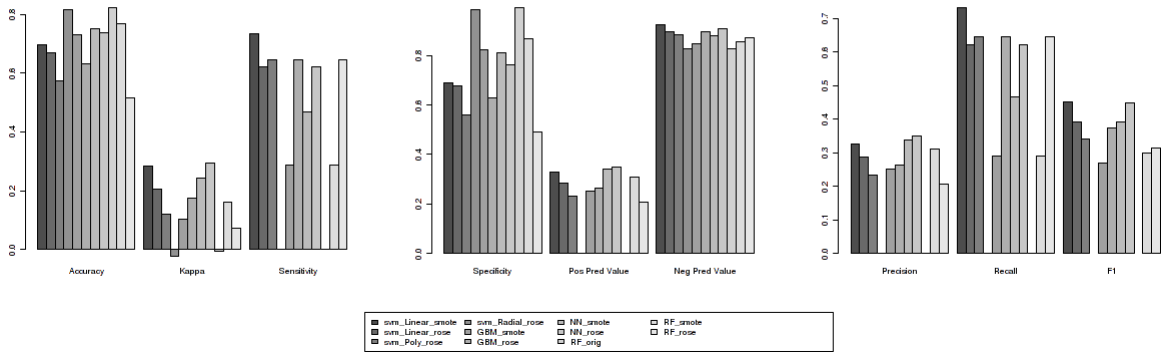
models which
sk factor

doi: 10.2903/j.efsa.2017.5068

What is it for?	Selection of publications to be used in a systematic review (pilot phase)
Pre-requisites?	Full-text articles or abstracts; Training data (~10%)
Outputs?	Inclusion prediction probabilities



Plot of the performance of the individual models in the ensemble



Doi: 10.2903/sp.efsa.2018.EN-1427

			
What is it for?	Compare different Montecarlo Scenarios	Facilitate EKE using the WEB to contact and gather expert replies	Database with MS Risk Assessment Agendas for the Delphi priorities
Pre-requisites?	Have used Montecarlo WEB app for each Scenario	Have a well formulated question and a group of experts to elicit	
Outputs?	Report with comparison of Scenarios using probability distribution and tables	Report with the EKE performed, providing a documented process for each expert	Report on MS proposals and graphical presentation of the information