Inspections and Samples:
Risk Based versus Random

J. Meekes, I. Kopacka

52nd EFSA Focal Point meeting – 2023-09-27

Background

What challenges do we face?

Advantages of representative data

- Unbiased
- Suitable for parameter estimates
- No „blind spots"

Advantages of risk-based data

- Efficient (when detection oriented)
- On high-risk units; decreased inspection burden for low-risk units

Problem:

What to do when both representative and risk-based goals are of interest?

Efficiency + Inference (risk factor validation, prevalence estimates etc.)

Goals of Phase 1
Project year 2023

- Assess the current situation regarding the use of risk-based and random controls at AGES and NVWA

- Review the literature on the topic of combining risk-based and random controls

- Develop approaches to

  - re-use data from risk-based controls for representative purposes

  - split controls into separate random and risk-based samples and allocate resources based on objective criteria

WP Inventory of current practice
Case descriptions

AGES

- Feed inspection plan (manufacturing and placing on market)

- Food safety sampling plan - retail

- Freedom from an animal disease: *Brucella melitensis* in sheep and goats

NVWA

- National plan for microbiological safety of food products

- Amusement park rides and playground equipment

- Animal welfare in pigs

WP Inventory of current practice
## Quantitative Inventory NVWA

Distribution of planned inspections and samples
From 2019 untill 2022

Sort activity: Risk based | Unclassified | Random
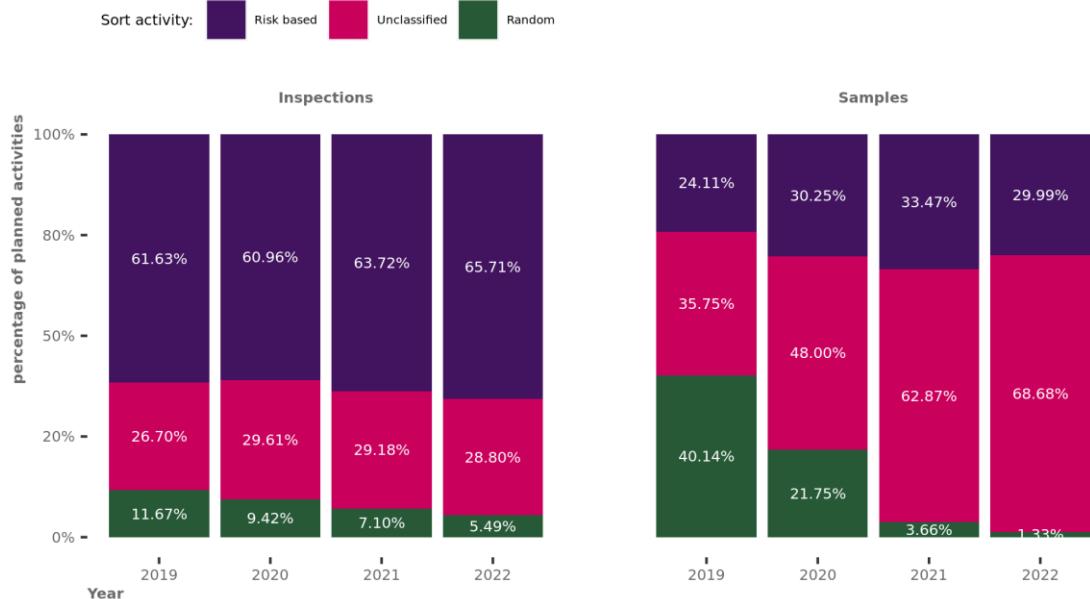
		Relative realization*		
	Year	Risk-based	Random	Unclassifiable
Inspections	2019	95%	61%	120%
	2020	86%	77%	142%
	2021	101%	76%	105%
	2022	96%	32%	124%
Samples	2019	88%	96%	108%
	2020	60%	34%	155%
	2021	51%	2%	131%
	2022	46%	0%	126%

* total realisation standardized to 100%

WP Literature Review

- Contracted to Delft University of Technology
- Main question: How might risk-based and random methods be combined for surveillance programs?
  - Literature review on methods
  - Strength-weakness analysis on these methods

Report for NVWA and AGES

Dynamics of Optimization: Inspection Strategy and Methods

TUDelft Delft University of Technology

Table 1. Assessment Framework

	Questions	Answer	STM	ABM	BN	NN	DT	Expert consultation	AHP
Data Requirements	What is the level of input needed?	Quantitative	1	1			1	1	1
		Qualitative					1	1	1
	What is the amount of data needed?	Large			1	1	1		
		Small	1	1				1	1
Updating	Can the model easiliy be updated with new data?	Yes			1	1			
		No	1					1	1
Implementability	Does it take a long time to develop the method?	Yes	1	1	1	1	1	1	
		No							
	Is it easy to implement in practice?	Yes						1	1
		No	1	1	1	1	1		
Transparency	Is it clear how the model delivers the output?	Yes							
		No				1		1	1

WP Symposium
Meeting in Utrecht, 20-22.6.2023

- Day 1: Workshop with 25 experts who design and implement control programs in NL

- Days 2-3:
  - Discuss collected input from experts
  - Establish clear directions for the development of approaches and methods
  - Prioritize tasks for the rest of the project year

# WP Concept development
Two „Solution Avenues"

Allocation:

- 2 separate samples: random and risk-based
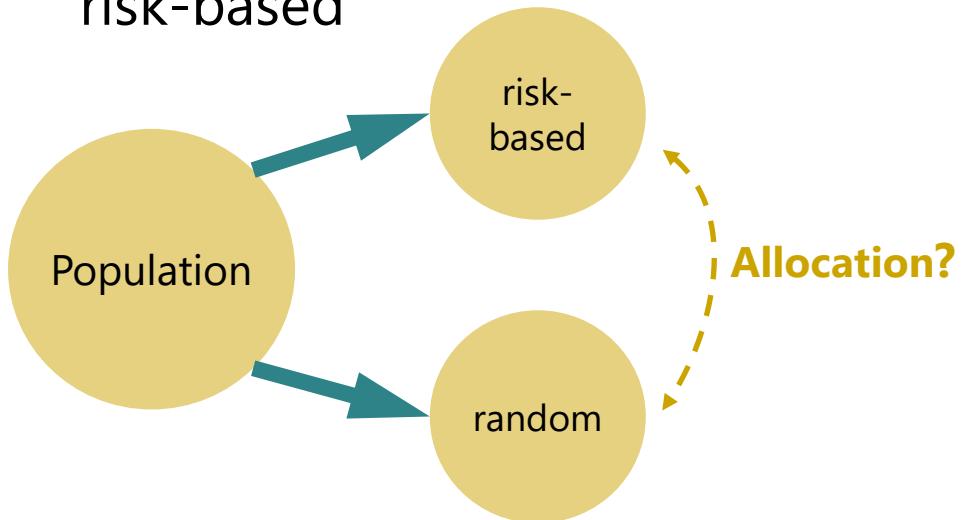
Recovery:

- Derive representative results from risk-based samples
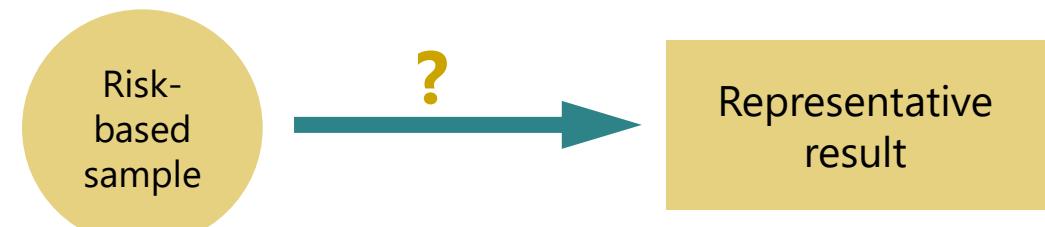
9 scenarios

Plans for 2024 (Phase 2)

What are the next steps?

- Applying for funding through EFSA Focal Points (3rd submission window – Oct. 15)

- Goals:

  - continuing theoretical development of the approaches

  - sharing the approaches developed in Phase 1 with other participating member agencies

  - applying the approaches to set up several **use cases** (at least one per participating agency)

Want to join?

- Looking for additional project partners (2-5)

- Interested? Please contact:
    - Ian Kopacka (Austria), or
    - Joost Meekes (The Netherlands), or
    - the Austrian or Dutch Focal Points