ESTIMATION OF INDIRECT ECONOMIC IMPACTS OF DISEASE OUTBREAKS:

a methodology applied to a hypothetical African Swine Fever outbreak in Switzerland

Savioli G[1,2,3] | Ahmadi BV[4] | Muñoz V[5,6] | Rosso F[4] | Schuppers M[5]

[1]Veterinary Public Health Institute, Vetsuisse Faculty, University of Bern, Bern, Switzerland.
[2]Veterinary Services of the Swiss Armed Forces, Caserne Sand, Bern, Switzerland.
[3]Swiss Federal Food Safety and Veterinary Office, Bern, Switzerland
[4]Animal Production and Health Division (NSA), Food and Agriculture Organisation (FAO), Rome, Italy.
[5]SAFOSO AG, Liebefeld, Switzerland.
[6]Section of Epidemiology, Vetsuisse Faculty, University of Zurich, Zurich, Switzerland.

INTRODUCTION

African Swine Fever (ASF)
- ◊ viral notifiable infectious disease affecting both wild boar and domestic pigs
- ◊ case fatality rate near 100% (acute form)
- ◊ no treatment nor reliable vaccine
- ◊ unprecedented spread in Europe and Asia since 2007, with serious economic impacts

Indirect costs of disease outbreaks:
- ◊ may include cost associated with disease control policies and market phenomena
- ◊ are often higher than the direct costs
- ◊ affect a broad range of sectors
- ◊ are diffcult to quantify (complex)

A good estimation of indirect costs of disease outbreaks is needed for **evidence-based, economically sound policy-making.**

AIM

Create a method to estimate the indirect costs of a hypothetical African swine fever outbreak in Switzerland, with a focus on understanding the economic impacts of disease control strategies.

Main challenge: Combining qualitative and quantitative data to estimate costs

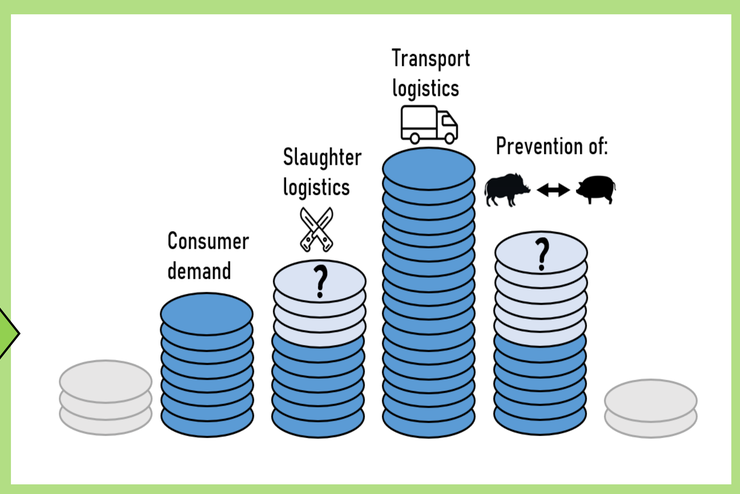
METHODS & RESULTS

DATA

QUALITATIVE DATA + QUANTITATIVE DATA

1. Stakeholder interviews
2. Disease control regulations
3. Industry data

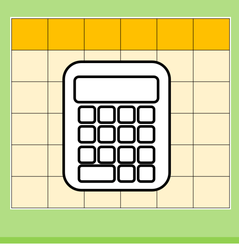
RANKING OF MEASURE CATEGORIES



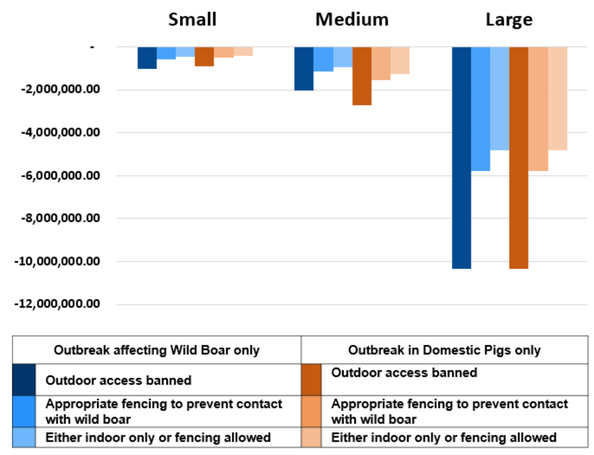
DATA CAPTURE

Measures	Measure Category	Stakeholders				
		A	B	C	D	E
		1	0	1	0	1
		0	0	1	0	0

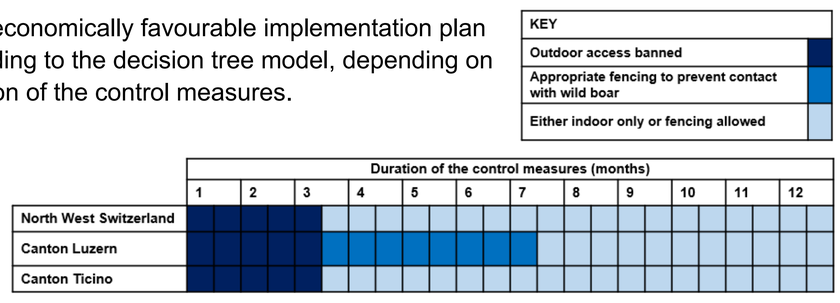
COST CALCULATOR + DECISION TREE MODEL



Estimated costs for fattening pig farms from the cost calculator model, associated with three implementation plans for 'Prevention of domestic pig and wild boar contact' in an ASF outbreak in North West Switzerland, lasting 12 months, for three possible outbreak sizes (large, medium, small). (Costs in CHF)



Most economically favourable implementation plan according to the decision tree model, depending on duration of the control measures.



MAIN FINDINGS

- ◊ **A new framework to integrate qualitative and quantitative data to guide disease control strategy.**
- ◊ Economically important measures affect: **'Transport logistics'**, **'Consumer demand'**, **'Prevention of wild boar and domestic pig contact'**, **'Slaughter logistics'**.
- ◊ For the measure category 'Prevention of wild boar and domestic pig contact':
  - ⇒ If outdoor access is banned, partial or total depopulation of fattening pig farms in order to reduce herd size to comply with this results in high costs
  - ⇒ Most economically favourable strategy depends on duration of the outbreak!

Further details available in the publication:

Contact:
Giulia Savioli
giulia.savioli@blv.admin.ch

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Food and Agriculture Organization of the United Nations

VETERINARY PUBLIC HEALTH INSTITUTE

SAFOSO

Funding: this project was funded by the Swiss Federal Veterinary and Food Safety Office. Giulia Savioli was supported and funded by the Veterinary Services of the Swiss Armed Forces. FAO made available the expertise of Bouda Vosough Ahmadi. We also give thanks to the Veterinary Public Health Institute of the University of Bern for supporting Giulia Savioli.