

The economic sustainability of biosecurity in pig farming: a systematic review with bibliometric, network and content analysis



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1 INTRODUCTION

Biosecurity measures adoption helps to prevent introduction and spread of diseases in farms but increases management and investment costs, potentially reducing profits. This study is part of the ongoing European HE Project BIOSECURE.

2 OBJECTIVES

To assess the current state of knowledge on the economic aspects of biosecurity in pig farming.

Main **Research Questions**:

- 1 Is the economic sustainability of biosecurity an emerging trend in the field of the swine supply chain?
- 2 How does economic sustainability influence biosecurity practices in pig farming?
- 3 What are the economic aspects and cost analyses of biosecurity measures in pig farming discussed in the scientific literature?

3 METHODS

Systematic literature review following **PRISMA** guidelines.

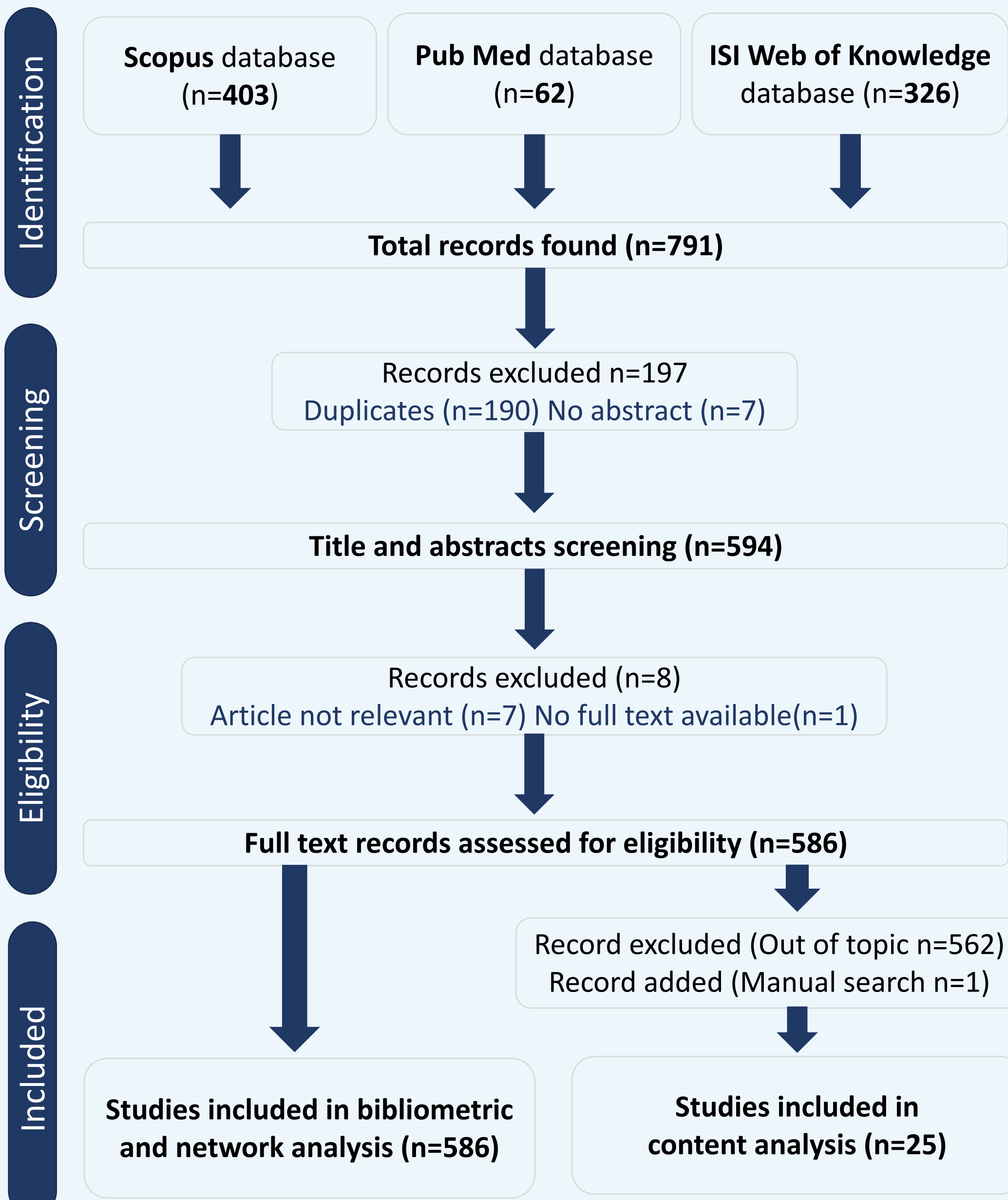
- Data extraction: November 22, 2023
- Databases: Scopus, PubMed, Web of Science
- Time span: 1995-2023

Groups of keywords:

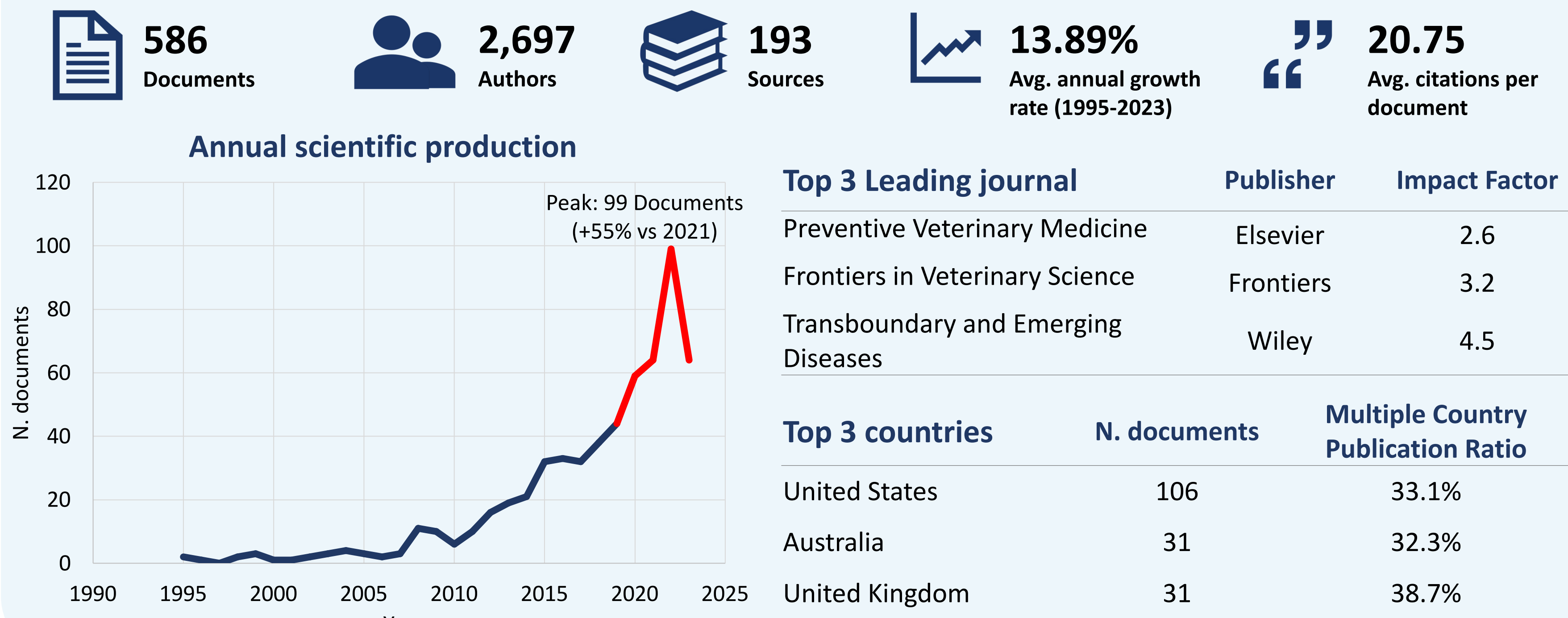
- A. Animal species (swine)**
- B. Economic aspects**
- C. Biosecurity field**

- 1 **BIBLIOMETRIC ANALYSIS:**
Document were imported into R software and transformed into a bibliographic data frame.
- 2 **NETWORK ANALYSIS:**
Performed by using VOSviewer 1.6.14 software (a keywords co-occurrence analysis, that show graphically the frequencies and links between keywords). Only keywords with at least 10 occurrences were included.
- 3 **CONTENT ANALYSIS:**
Conducted through a critical appraisal of articles containing quantitative data on the economic aspects or costs of biosecurity, and agreement reached among all the authors regarding the inclusion or exclusion of each paper.

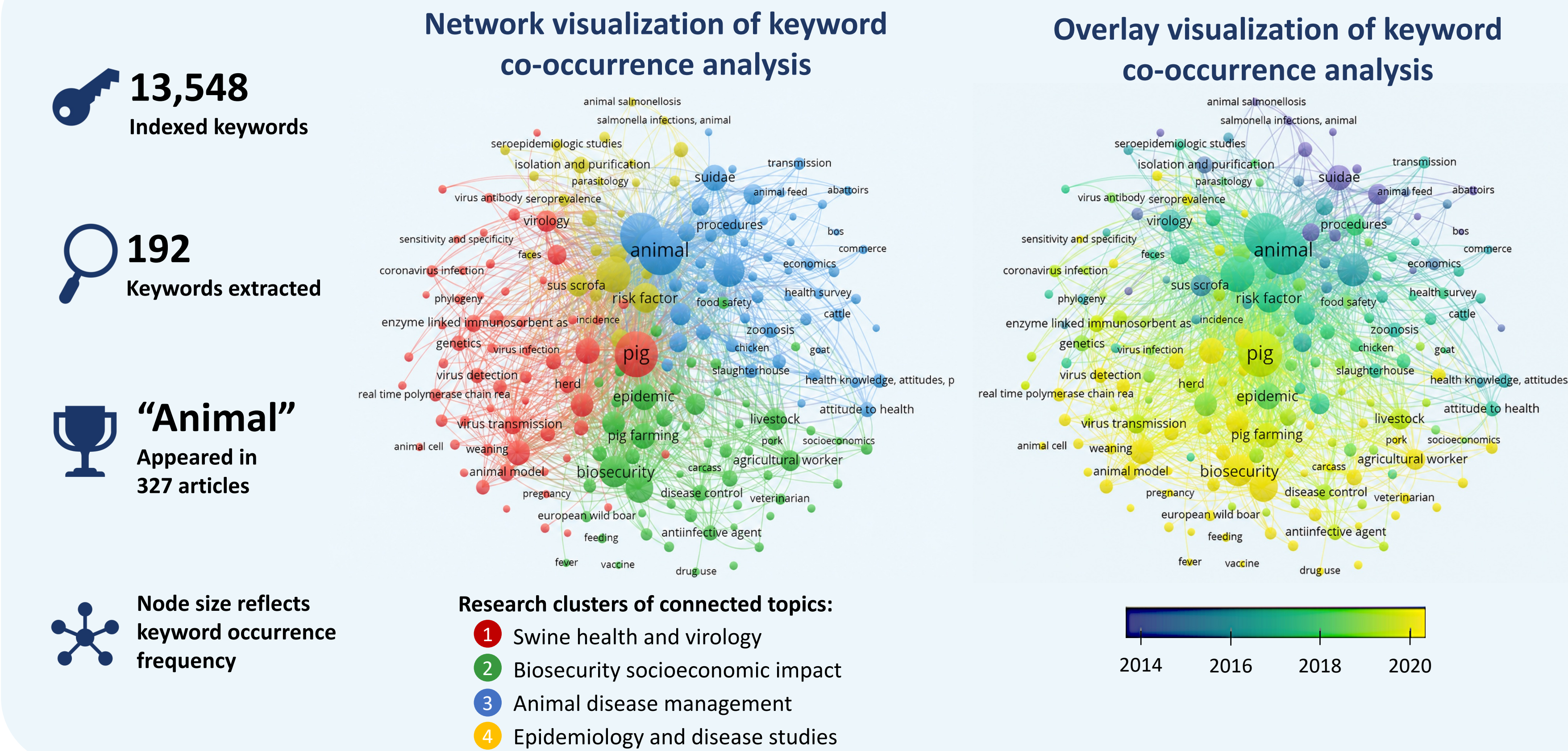
4 PRISMA FLOW-DIAGRAM



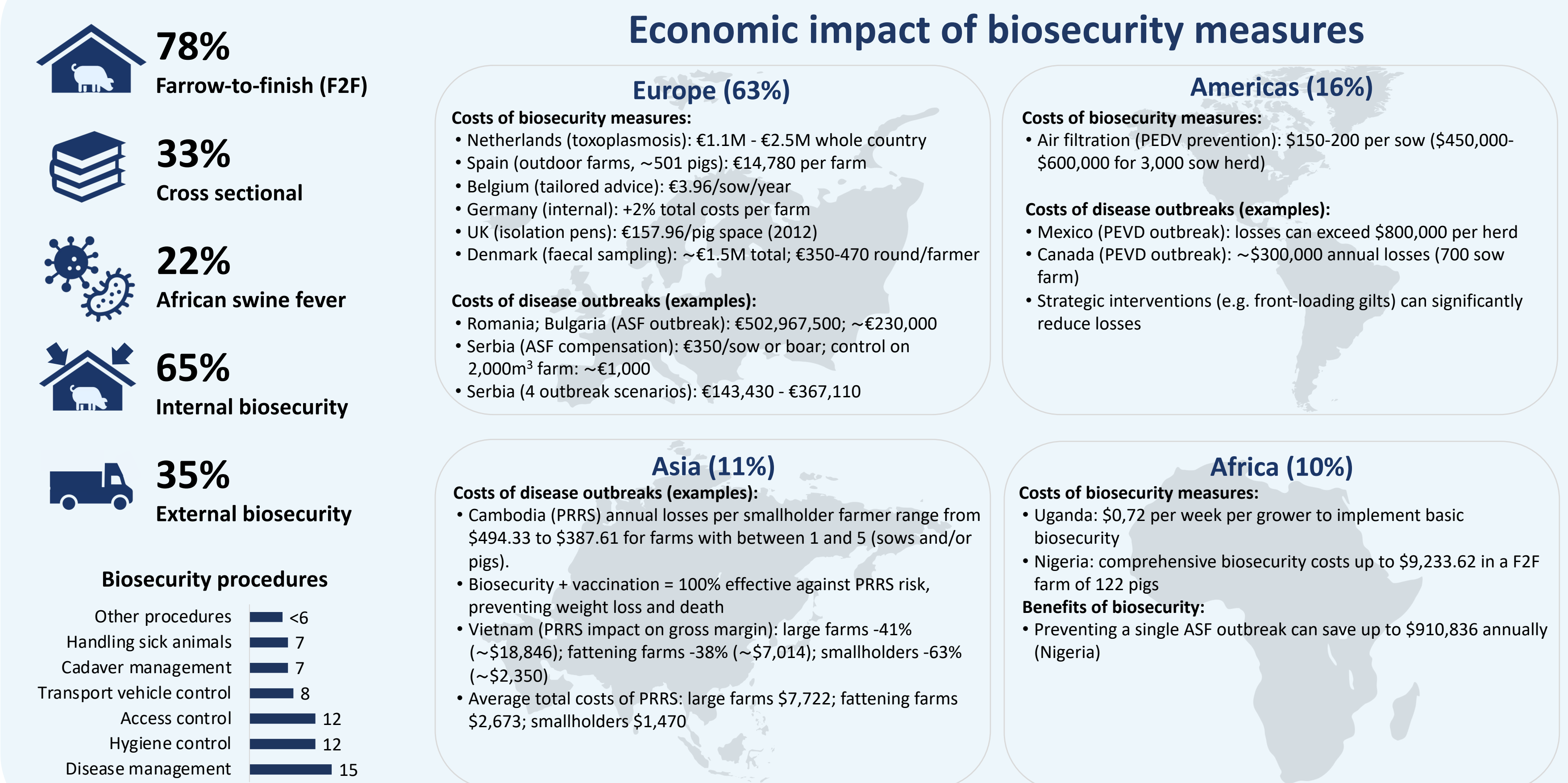
5 BIBLIOMETRIC ANALYSIS



6 NETWORK ANALYSIS



7 CONTENT ANALYSIS



8 CONCLUSIONS

- Farrow-to-finish pig farms are the most studied due to their greater control over production economies of scale.
- The magnitude of the economic return depends on disease risk, farm characteristics and regional context.
- Targeted policies and financial support are needed, especially among small-scale farms.
- Future research should quantify the effectiveness of specific biosecurity measures in reducing disease risk, enabling robust cost-effectiveness analyses.

9 TAKE-HOME MESSAGE

