

# The surveillance landscape in Europe

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One World, One Health, One Surveillance?

One Surveillance, One Budget?

Which surveillance option is the most **effective**?  
Which surveillance option is the most **cost-effective**?

**Who pays, who gains?** Who should bear the costs? Who benefits from surveillance? Is surveillance a public or private good?

## Questions often encountered

Is my surveillance **good** (enough)? How can I **improve** my surveillance?

Is surveillance **worth** it? Should we do surveillance?

**Where** should we focus our surveillance efforts?

## Economics of surveillance

- Economic efficiency – resource allocation
  - Optimisation, acceptability, least-cost criteria
- Comparison of benefits or outcomes (e.g. production losses avoided, human disease avoided, ability to trade, reputation) with costs of surveillance
- Prioritisation
- Understanding of the system and human behaviour (→ risk factors)

## Aim and objectives

To **characterise the context** within which **the development of animal health surveillance and evaluation frameworks and tools occurs**

By describing

- existing public and private surveillance systems (including sources of finance) for all species
- animal populations, trade flows and critical infrastructure
- how decisions about the allocation of resources to animal health surveillance are currently made

## Data collection

- **13 Countries:** Belgium, Bulgaria, Czech Republic, Denmark, France, Germany, Great Britain, Ireland, Italy, the Netherlands, Spain, Sweden, and Switzerland
- **Sources:**
  - Scientific literature, internet pages, government reports, national statistics
  - EU Trade Control and Expert System, Eurostat
  - Interviews with decision-makers in 7 countries
- **Surveillance data:**
  - Public and private surveillance systems, all threats, types and species
  - Data collated to characterise these systems
- **Population and economic data:** livestock and bee holdings in Europe, human and animal populations, gross domestic product, farm values
- **Infrastructure data:** slaughterhouses, livestock markets, traders, transporters, feedmills, laboratories, veterinarians

## Surveillance system components: Purpose and species

- 798 enhanced passive and active SSC recorded
- Main purposes:
  - 1) Early detection/warning
  - 2) To detect cases to allow specific action to be taken to facilitate control or eradication
  - 3) Surveillance to substantiate freedom from disease or infection
- Most frequently targeted species:
  - 1) Cattle (23%)
  - 2) Pigs (16%)
  - 3) Poultry (14%)

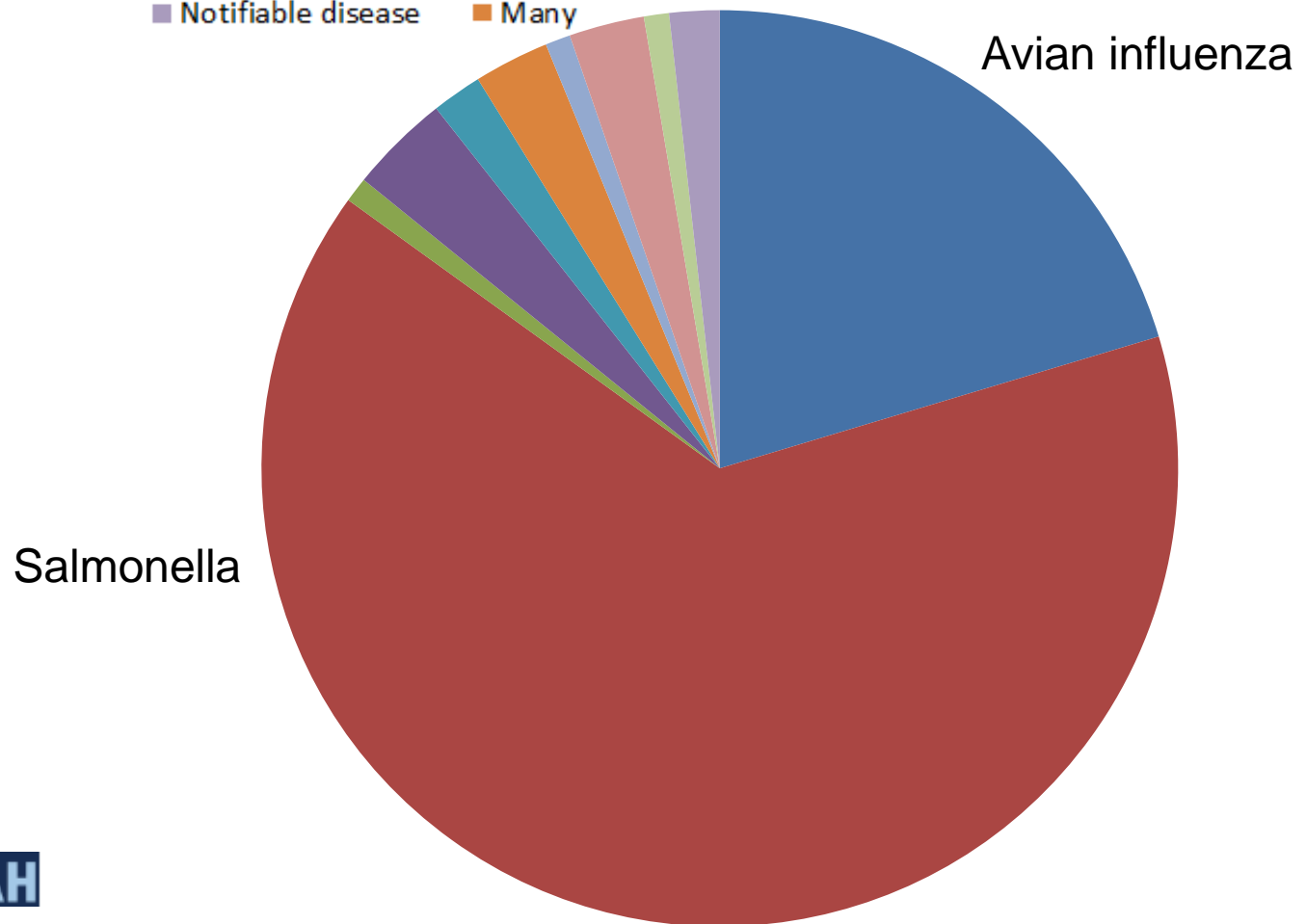
## Surveillance system components: hazards

- Most frequently recorded:
  - Salmonellosis (16%)
  - Brucellosis (10%)
  - Avian influenza (8%)
  - Classical swine fever (4%)
  - Bovine tuberculosis (4%)
  - Bluetongue (4%)
  - Bovine spongiform encephalitis (2.5%)



# Poultry components

- Mycoplasma
- Newcastle disease
- Emerging disease
- Notifiable disease
- Tuberculosis
- Campylobacter
- Coccidiosis and clostridiosis
- Many



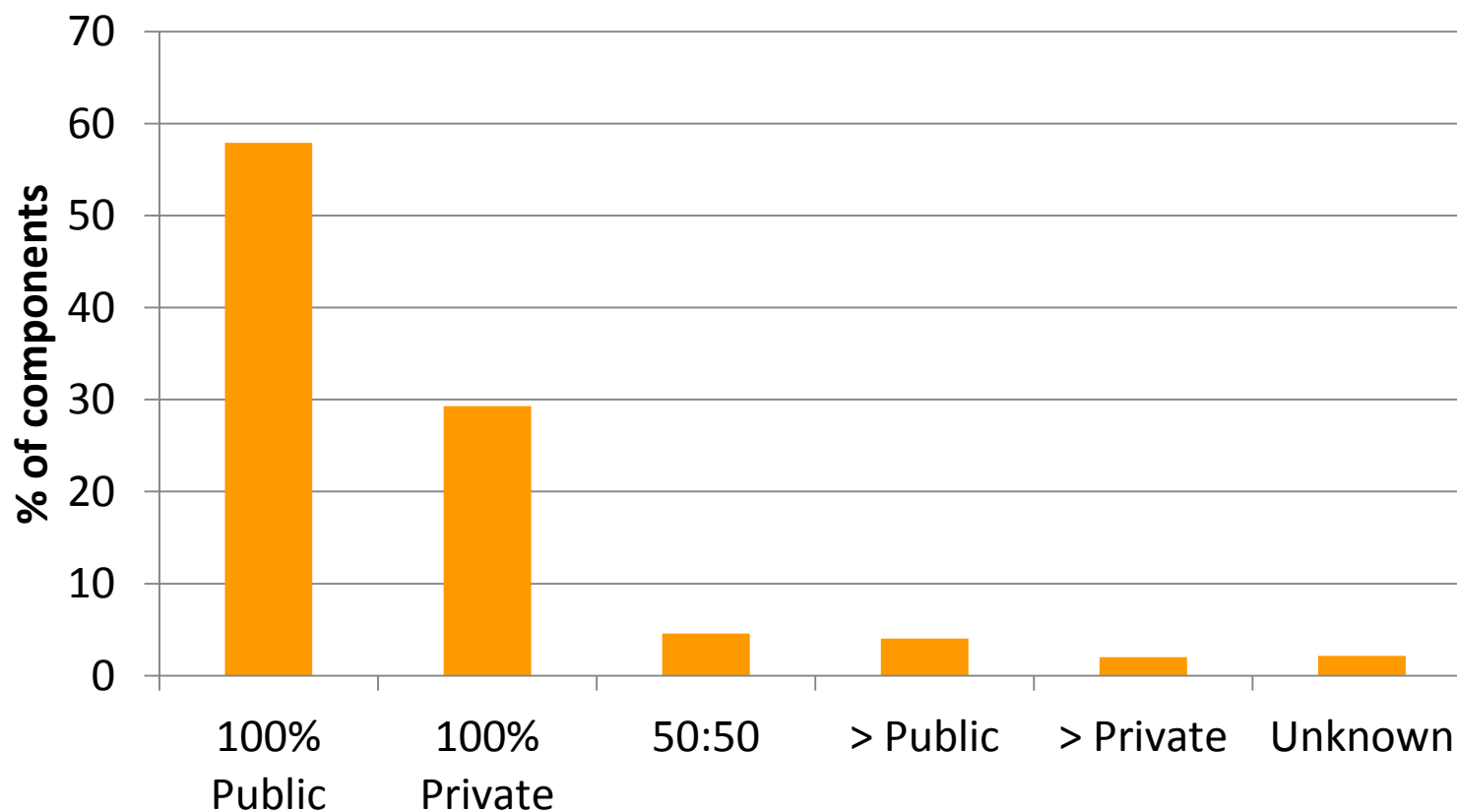
How much does  
surveillance cost in  
these countries?

## Surveillance system components: Expenditures

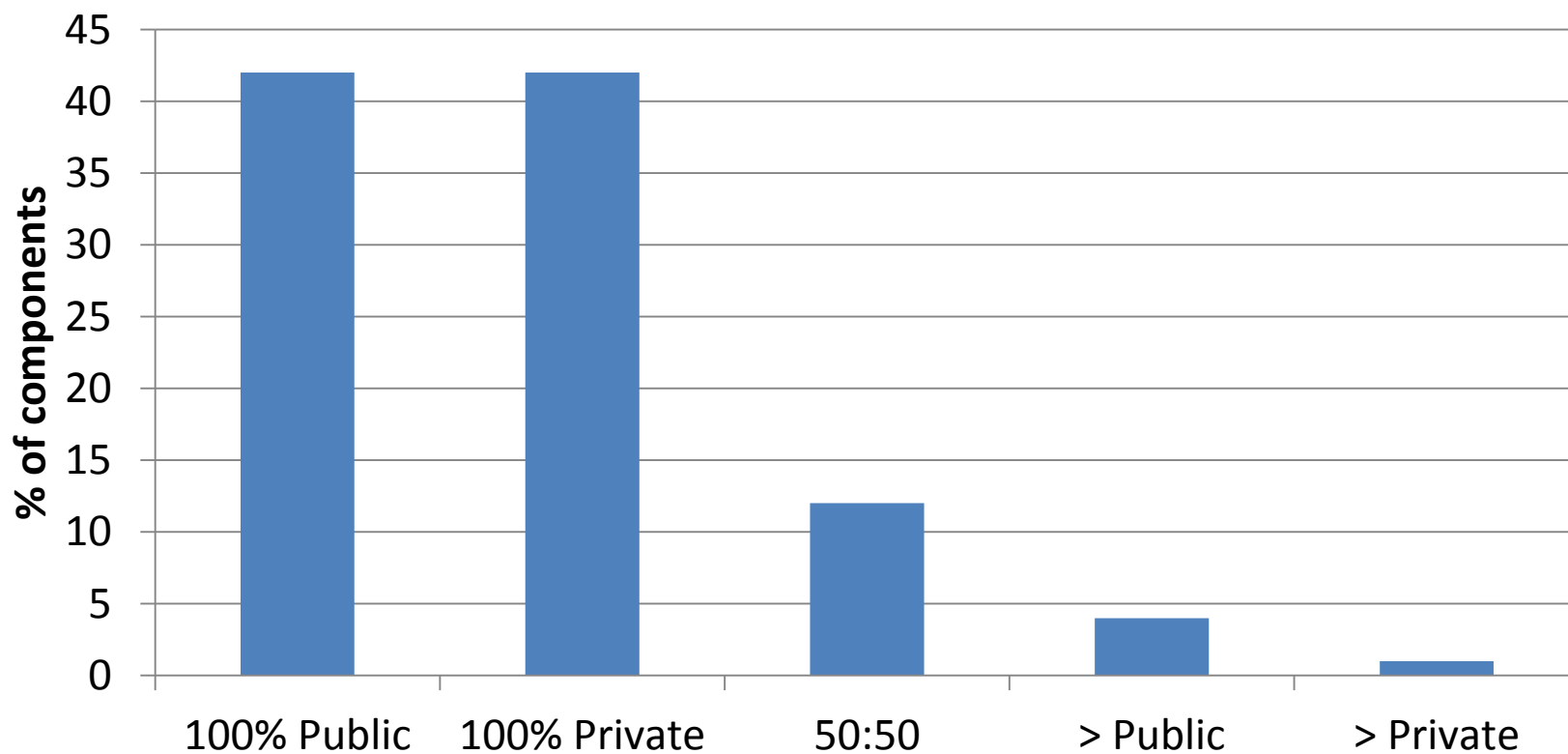
Species	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13
All species		0/1	0/1				1/6			0/2	0/1	0/1	
Avian <sup>a</sup>						0/1	2/2			0/1			0/2
Bees		0/1									1/2		
Cattle	2/7	1/20	8/28	7/12	5/11	12/23	7/29	0/1	3/4	0/13	1/11	2/13	0/15
Equidae		0/7	0/6	1/3		0/2					2/11	0/6	
Fish													
Insect vectors													
Multi													
Other			0/10	0/1		2/2					4/26	3/12	
Pigs	0/2	2/24	0/12	2/7	0/6	6/18	6/14		0/1	0/2	0/15	3/16	0/11
Poultry	0/8	5/18	5/10	0/1	0/4	3/16	6/9		0/1	0/12	0/14	4/10	0/9
Ruminants		1/3	2/4		3/3	0/1	0/2			0/1	0/3	1/2	
Small Ruminants	0/2	2/10	8/17	2/6	2/4	7/8	4/8		1/1	0/8	2/17	5/10	0/3
Wildlife		3/15	2/5	1/3	0/1	5/7	1/1			0/5	0/9	0/6	
<b>TOTAL</b>	<b>2/19</b>	<b>15/121</b>	<b>26/109</b>	<b>14/37</b>	<b>10/32</b>	<b>38/88</b>	<b>32/78</b>	<b>0/3</b>	<b>5/8</b>	<b>0/52</b>	<b>11/117</b>	<b>18/94</b>	<b>0/40</b>

171/798 components with cost estimate = 21%

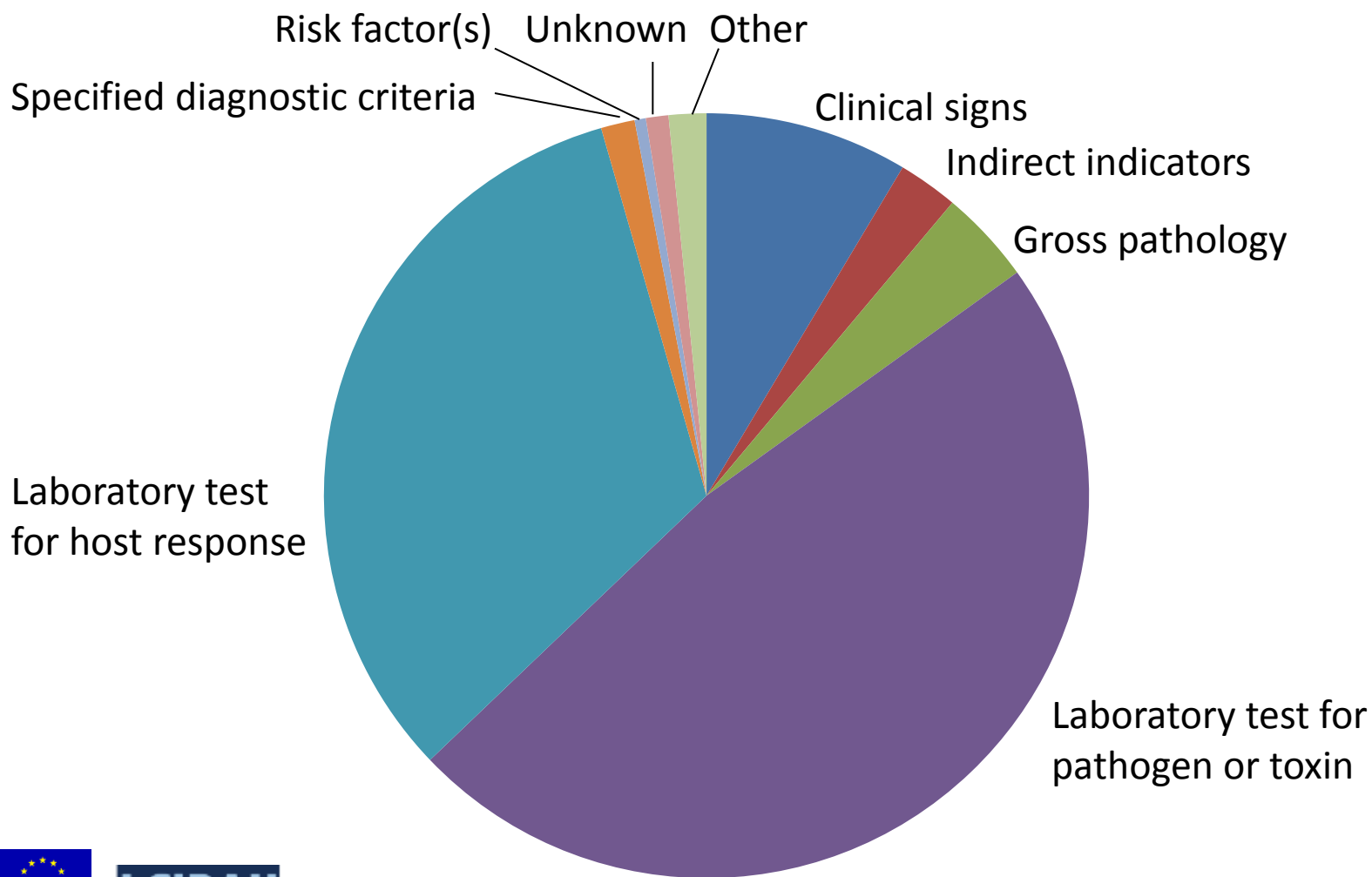
## Surveillance system components: Private or public funding



## Surveillance system components: Private or public funding – poultry only



## Surveillance system components: Case definition

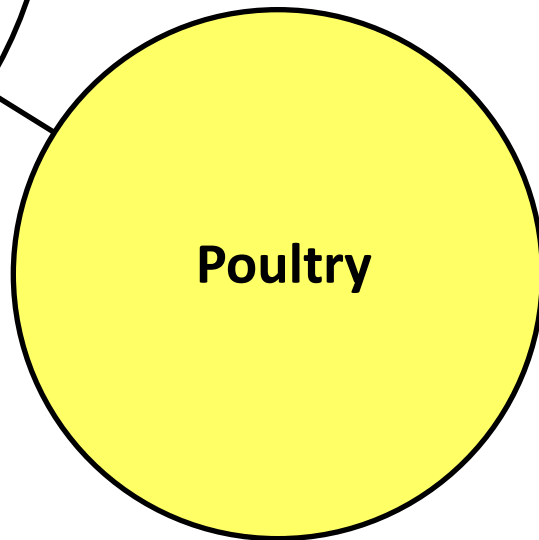
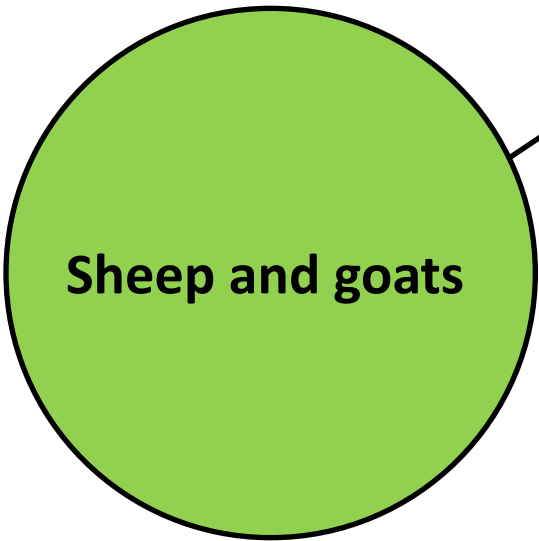
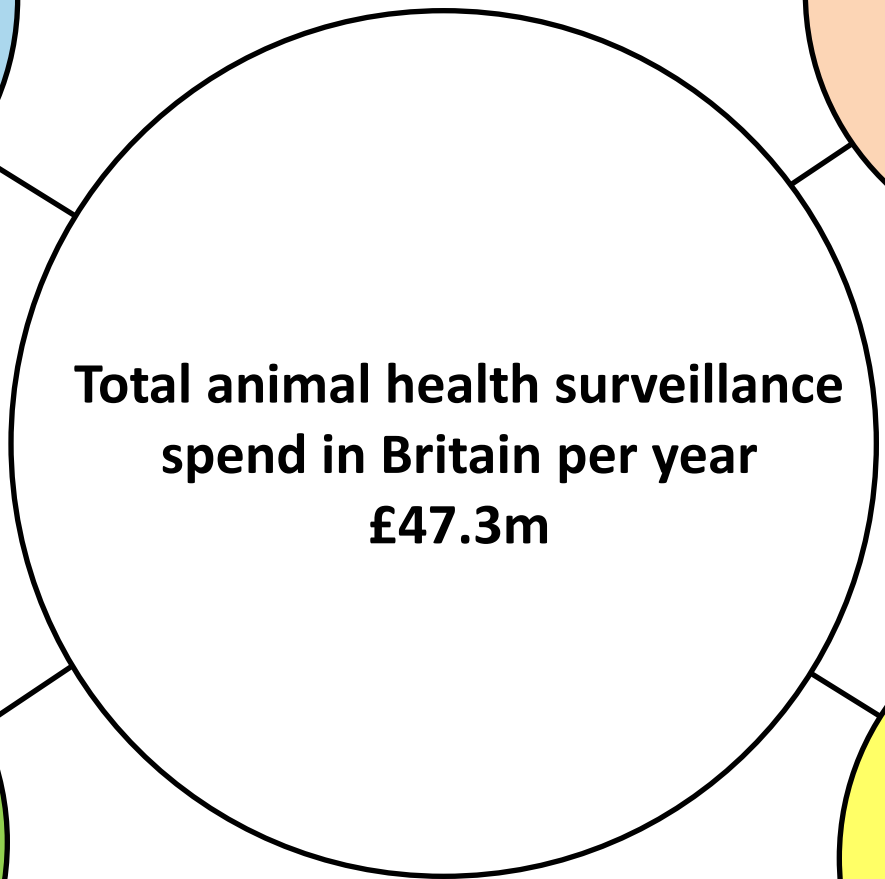
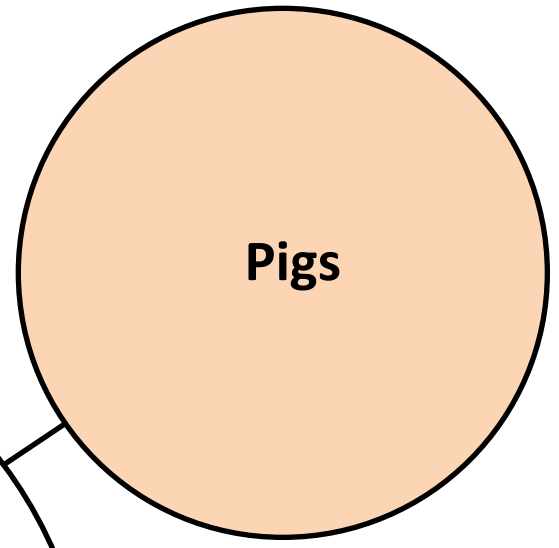
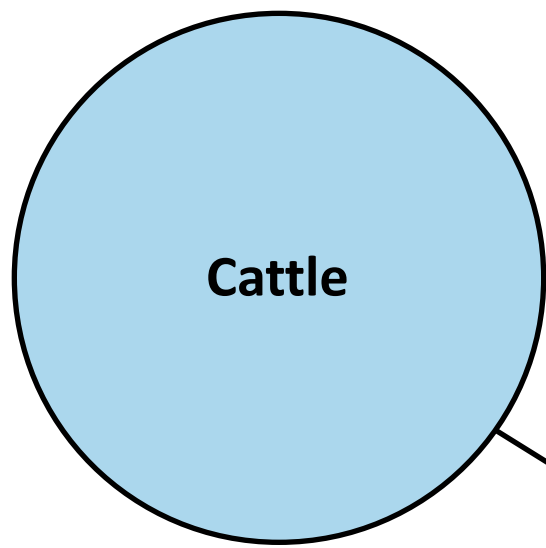


**Total animal health surveillance  
spend in Britain per year  
£47.3m**

## Paper

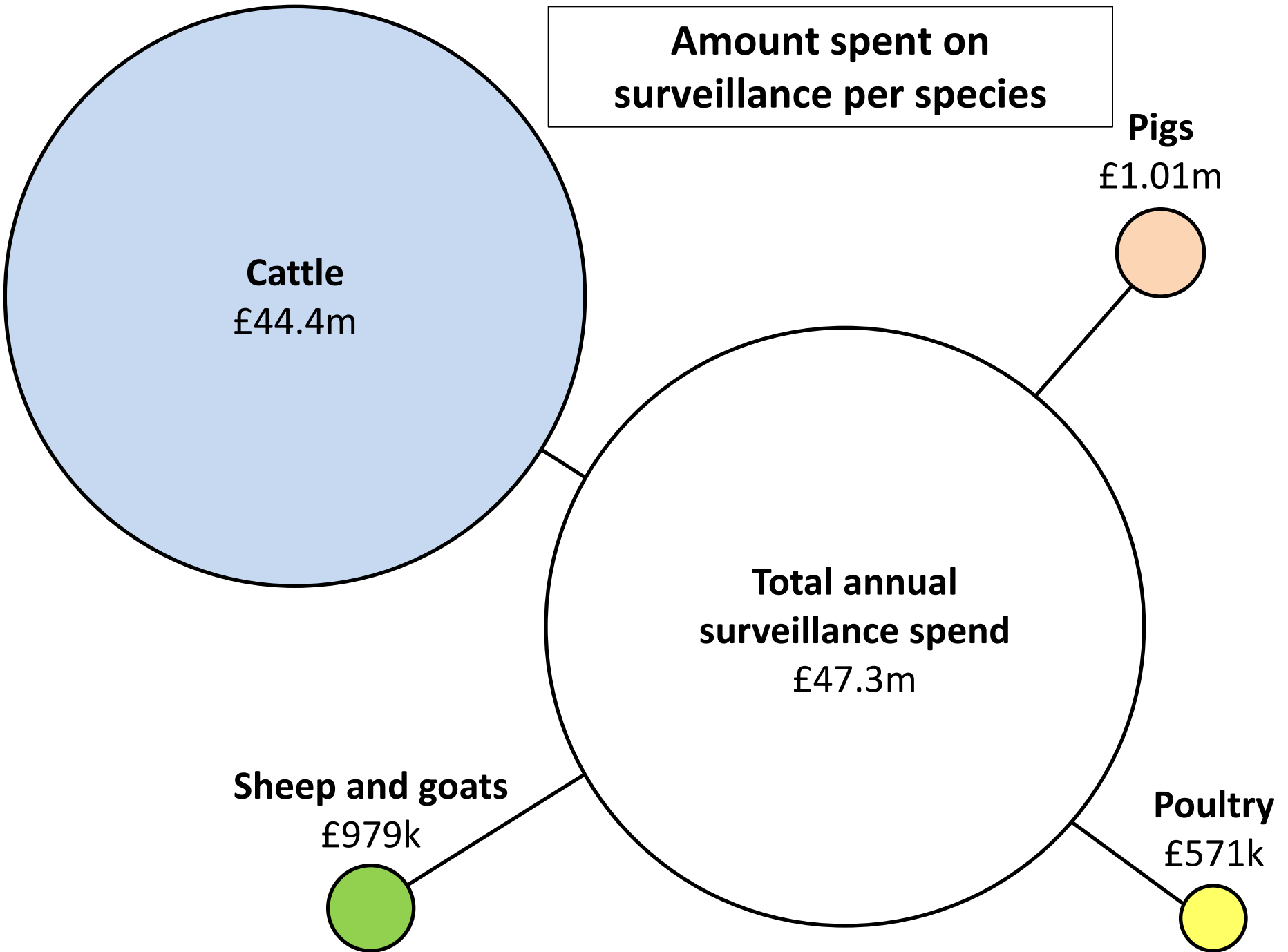
**Assessing the expenditure distribution of animal  
health surveillance: the case of Great Britain**

Veterinary Record  
(2014) 174, 16

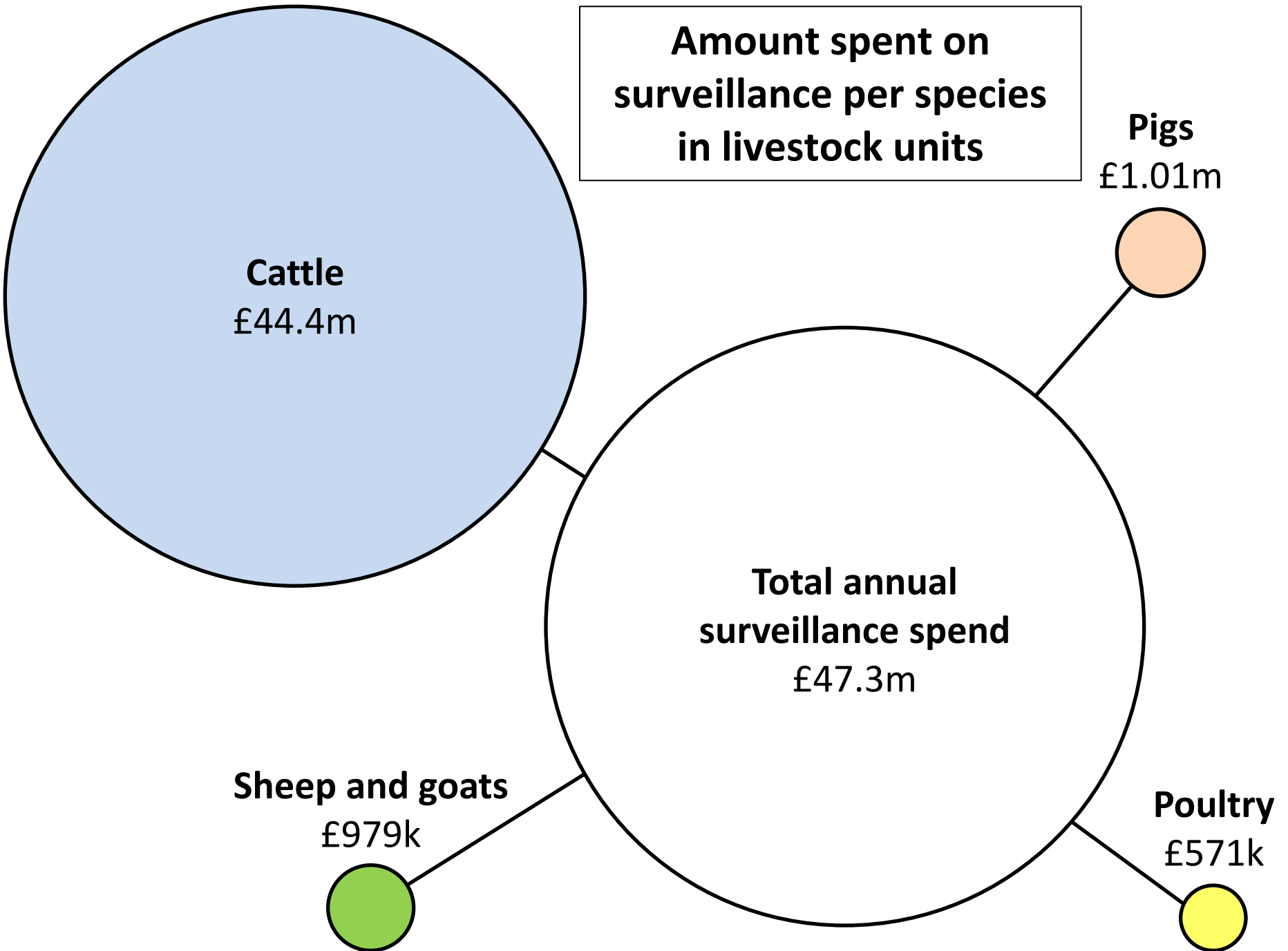




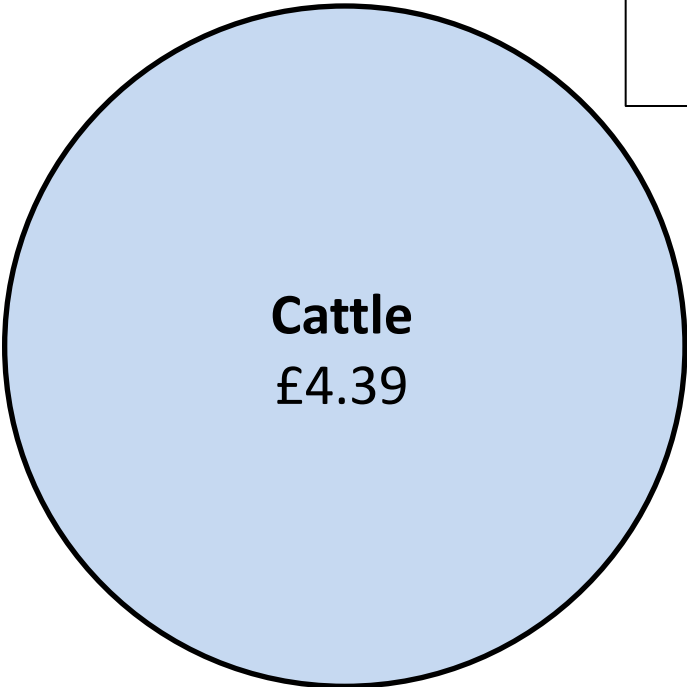
**Amount spent on  
surveillance per species**



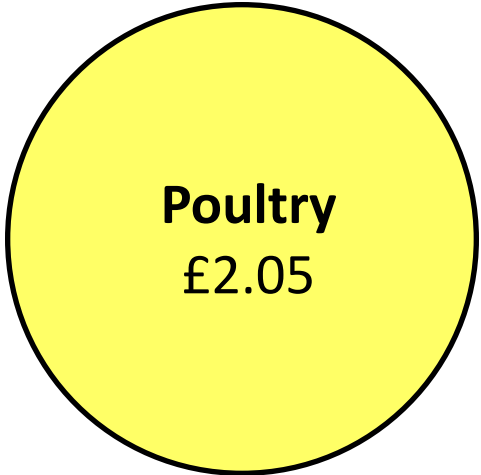
**Amount spent on  
surveillance per species  
in livestock units**



**Amount spent on surveillance per  
standardised livestock unit**



**Sheep and goats**



# Comparison to economic value

- Surveillance expenditure in proportion to the economic contribution of each species to the UK economy?
- Surveillance expenditure by species compared to the economic value of each livestock sector

Livestock sector	UK population size in 2011
Cattle	9,933,000
Sheep and goats	31,722,000
Pigs	4,441,000
Poultry	162,551,000

## Decision-maker interviews

- Multitude of private-public partnerships
- Single most important decision criteria influencing surveillance
  - International legal requirement (including EU obligations)
  - National legal requirement
  - Cost-benefit measure, cost-effectiveness measure, and expected costs
  - Disease situation in the country
  - Impact related criteria
- Various needs for further information identified (e.g. epidemiological and economic information)

## Opportunities

- Cost data an important element in understanding and informing resource allocation
- Data not easily accessible or available
- Practical cost calculation tool for surveillance
- Comparison of the economic value of livestock units to on-going surveillance efforts and the associated resource use
- Surveillance focusing on novel areas, in particular health-event based surveillance
- Making use of private-public partnerships

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