



1st International One Health Congress

Human Health, Animal Health, the
Environment and Global Survival

Melbourne Convention Centre
Victoria, Australia
14–16 February 2011

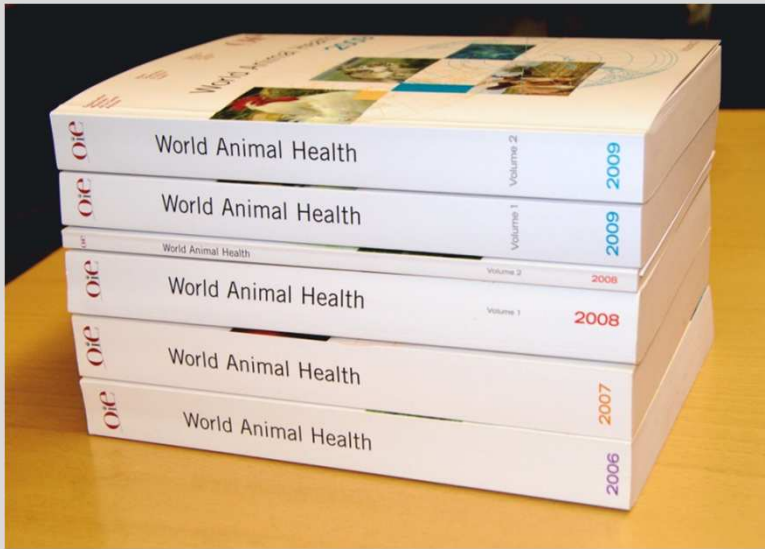
Comprehensive Analysis of OIE World Animal Health Data as a Means to Identify Global Disease Trends

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Melbourne, 14.02.2011

Simple, but previously unanswered questions

- **How many livestock units** are lost due to OIE-reportable diseases?
- **Which disease** causes the worst losses?
- Do **zoonoses or non-zoonoses** cause more losses?
- **Which countries** lose most livestock?
- **Which species** suffers the worst losses?
- Do losses **increase or decrease** over time?

Materials and Methods



$$4 \times 176 \times 71 \times (8 \times 5 + 1 + 13)$$

4 years (2006, 2007, 2008, 2009)
x 176 countries
x 71 diseases (30 zoonoses, 41 non-zoonoses)
x (8 species groups: cattle, sheep and goat, swine, equidae (horses and mules), camelidae (camels and ,other camelids', i.e. Llamas and alpaccas), buffalo, poultry (chicken, ducks, turkeys, geese and guinea fowl), wild animals
x 5 disease outcomes per species: susceptible, cases, deaths, destroyed, slaughtered
+ 1 number of outbreaks (for all species)
+13) species for livestock population data: cattle, buffalo, horses, mules, camels, other camelids, swine, sheep, goat, chicken, turkey, geese, guinea fowl

= 2'699'136 data points in a 5-dimensional matrix

Definition of a Livestock Unit (LSU)



1.1 LSU



0.25
LSU



0.9LSU



0.1
LSU



0.8 LSU

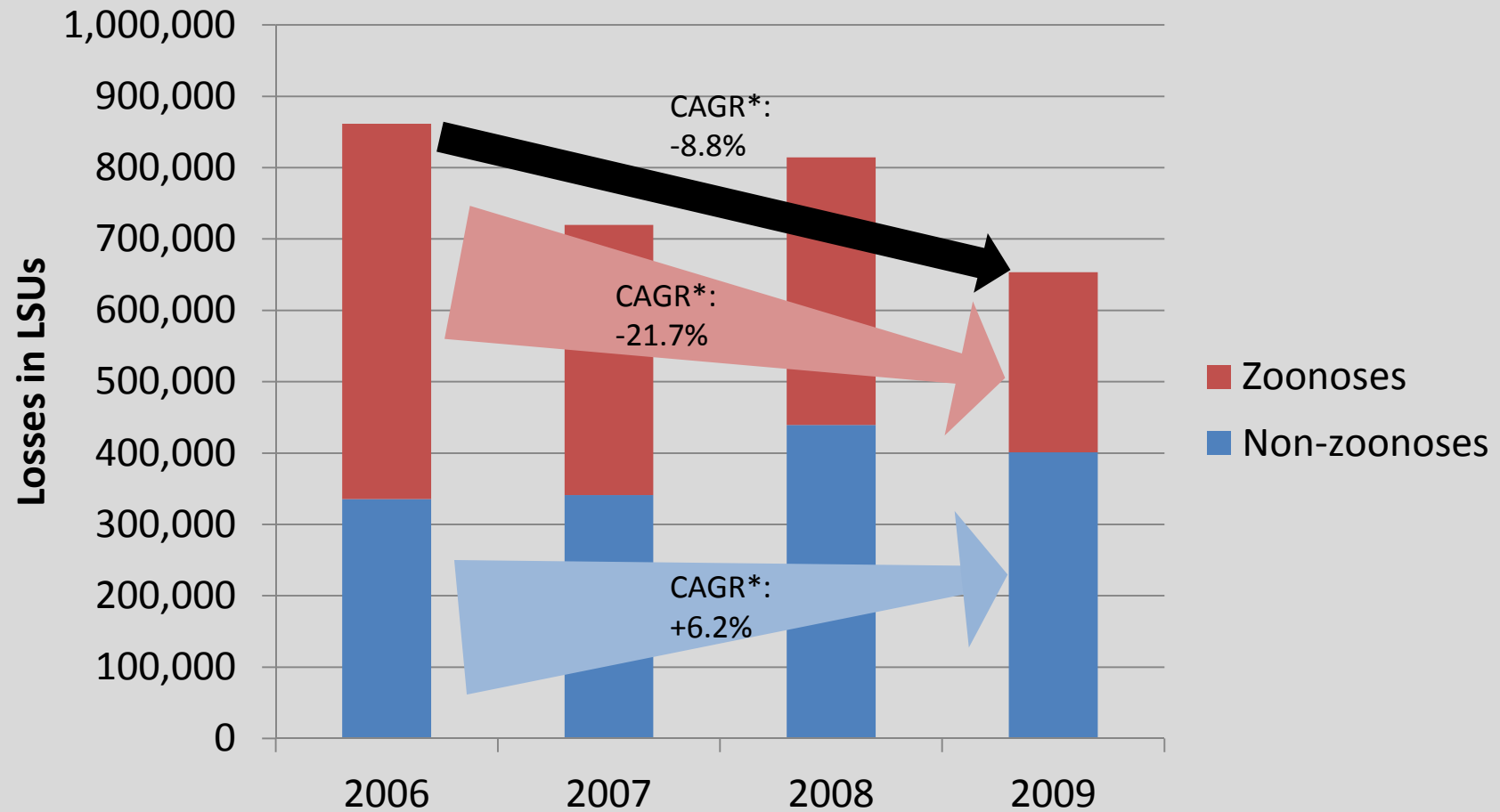


0.015 LSU



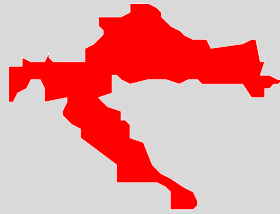
Results

Changes in LSU losses



* Compound annual growth rate

How much is 762'212 LSU's?



All livestock in Croatia

OR



All cattle in Malaysia

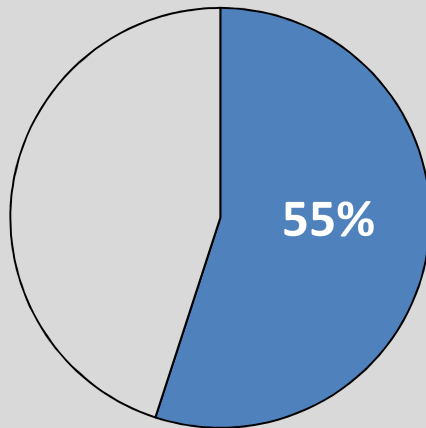
OR



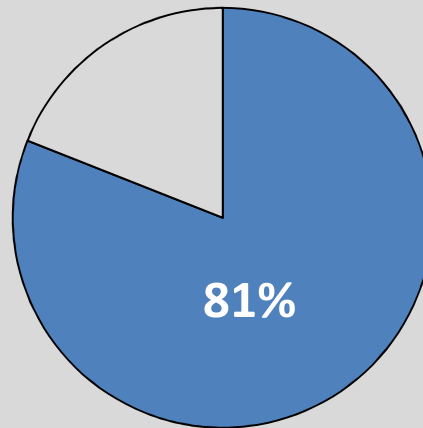
All pigs in Bolivia

One World – One Disease?

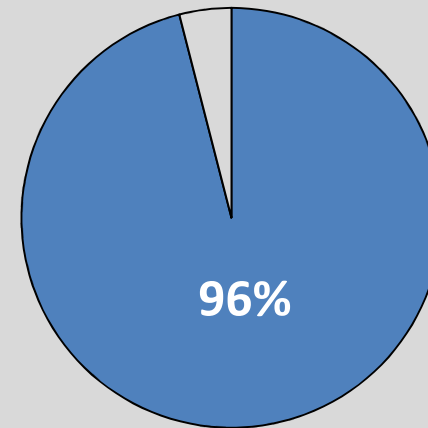
**Total share of
most affected
country**



**Total share of 3
most affected
countries**

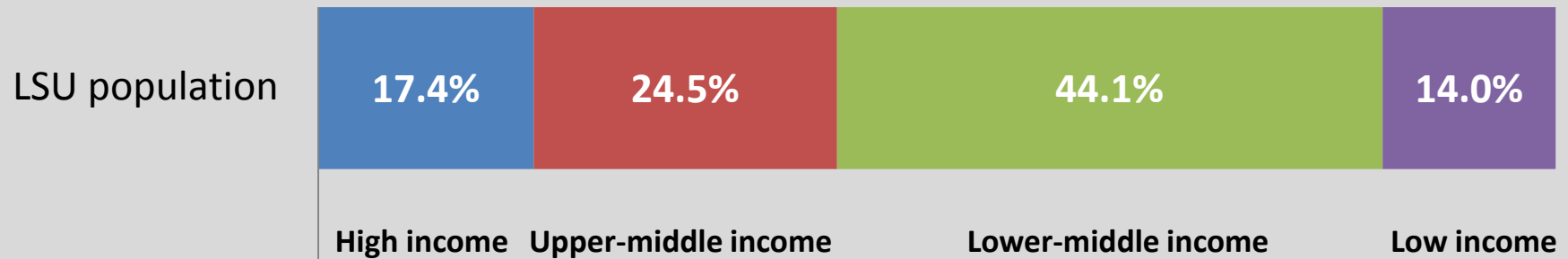


**Total share of 10
most affected
countries**



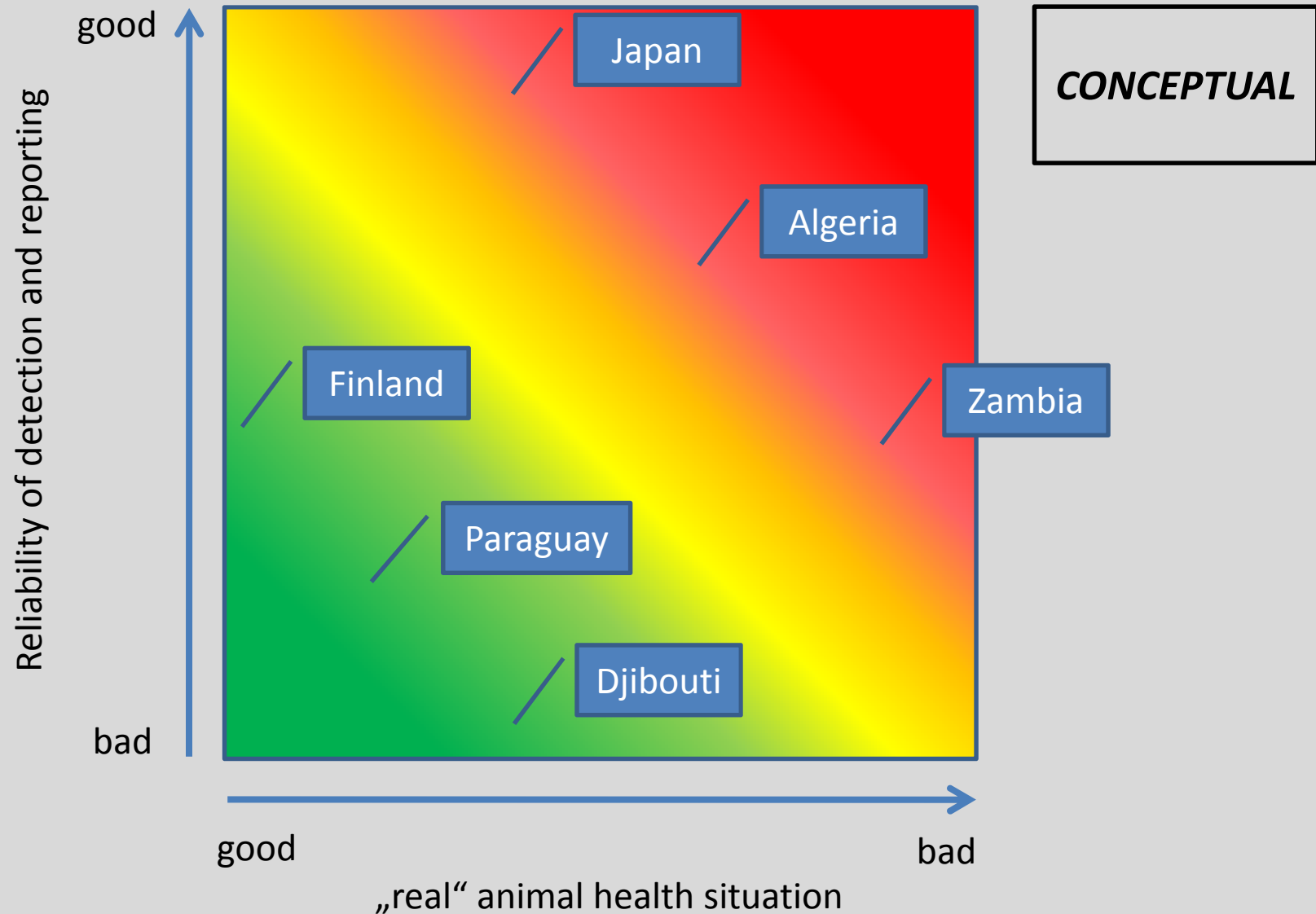
Loss distribution by income category*

LSU losses

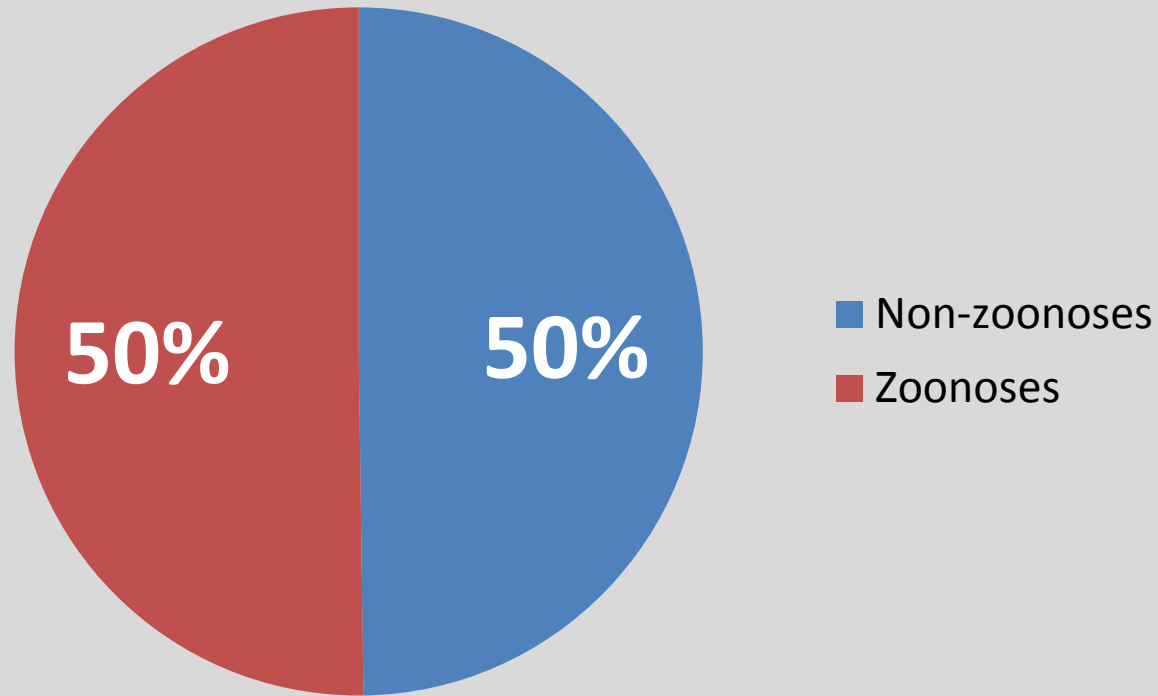


* According to World Bank categories

What the colours (might) mean

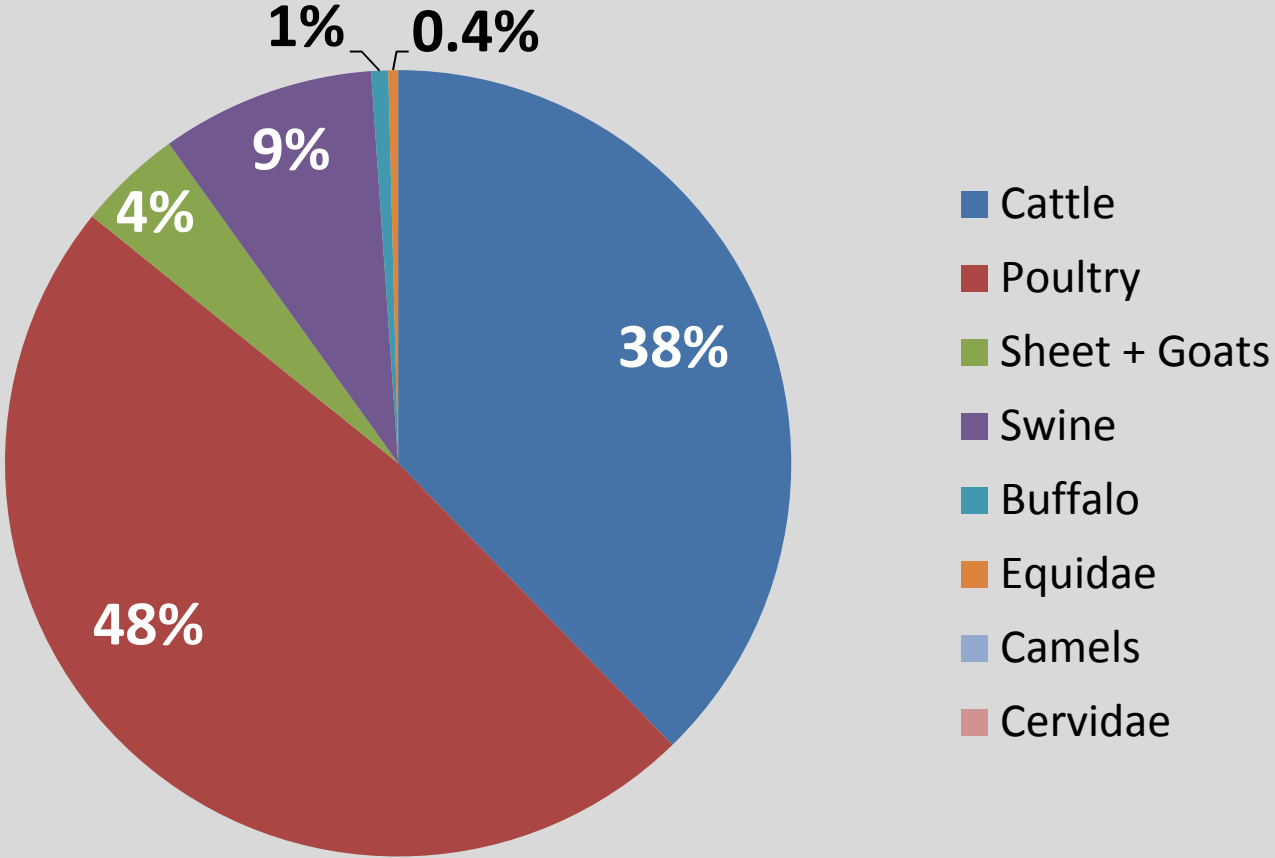


Loss of LSUs by group of diseases



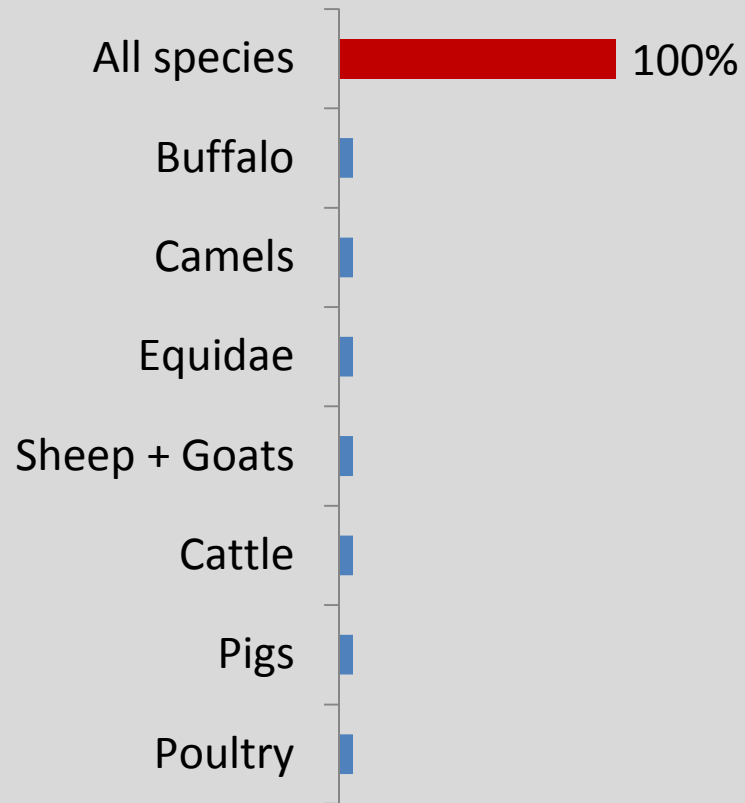
**Total loss:
762'212 LSUs**

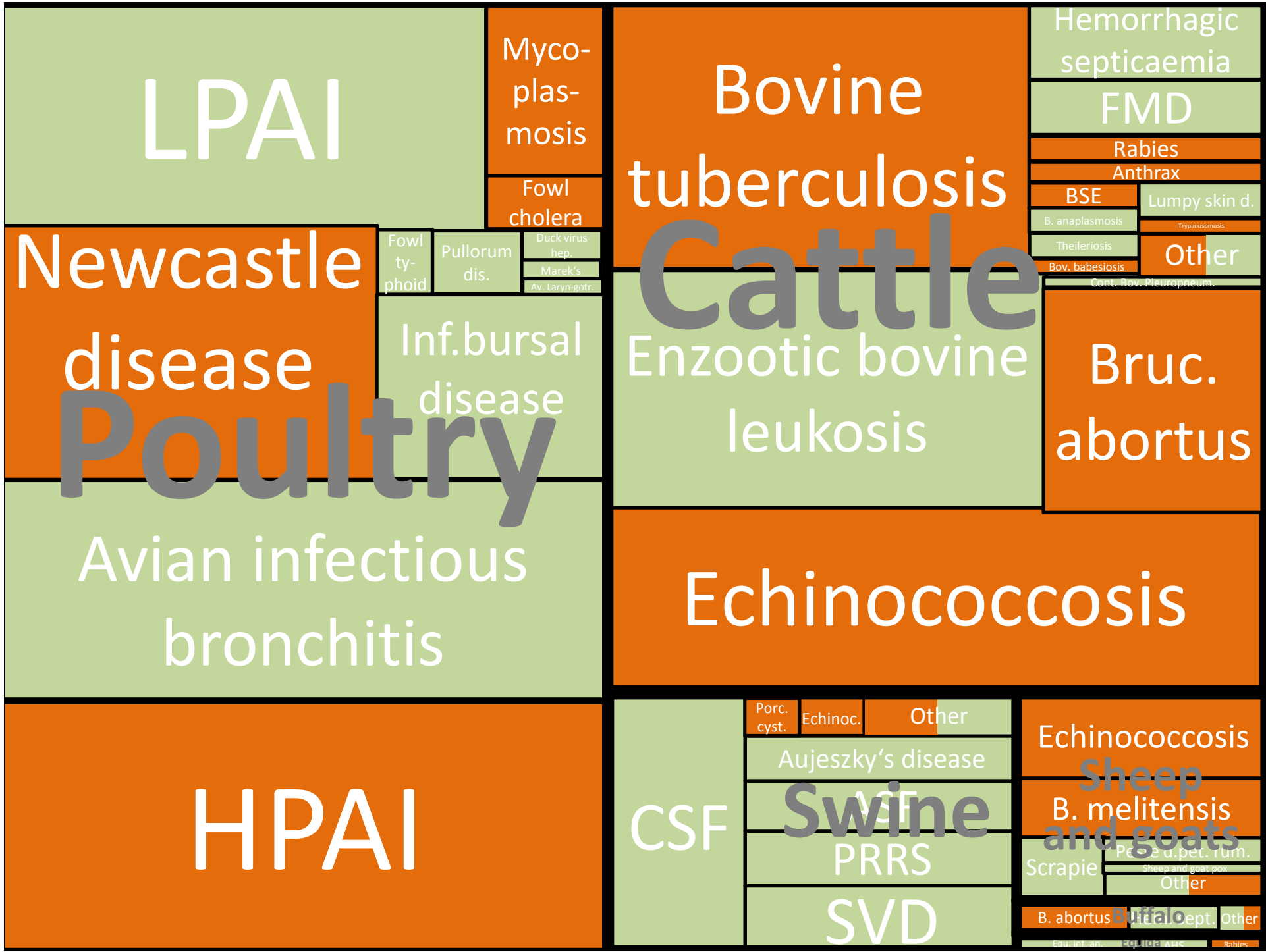
Loss of LSUs by species: all diseases



Total loss:
762'212 LSUs

Who is the sickest patient?





LPAI

Myco-
plas-
mosis

Bovine
tuberculosis

Hemorrhagic
septicaemia

FMD

Rabies

Anthrax

BSE

Lumpy skin d.

B. anaplasmosis

Trypanosomosis

Theileriosis

Other

Bov. babesiosis

Cent. Bov. Pleuropneum.

Newcastle
disease

Fowl
ty-
phoid

Pullorum
dis.

Duck virus
hep.
Marek's
Av. Laryngotr.

Cattle

Enzootic bovine
leukosis

Bruc.
abortus

Poultry

Inf. bursal
disease

Avian infectious
bronchitis

Echinococcosis

HPAI

Porc.
cyst.

Echinoc.

Other

Aujeszký's disease

ASF

PRRS

SVD

CSF

Swine

Echinococcosis

Sheep

B. melitensis

and goats

Scrapie

Per. d. pet. rum.

Other

B. abortus

Other

Other

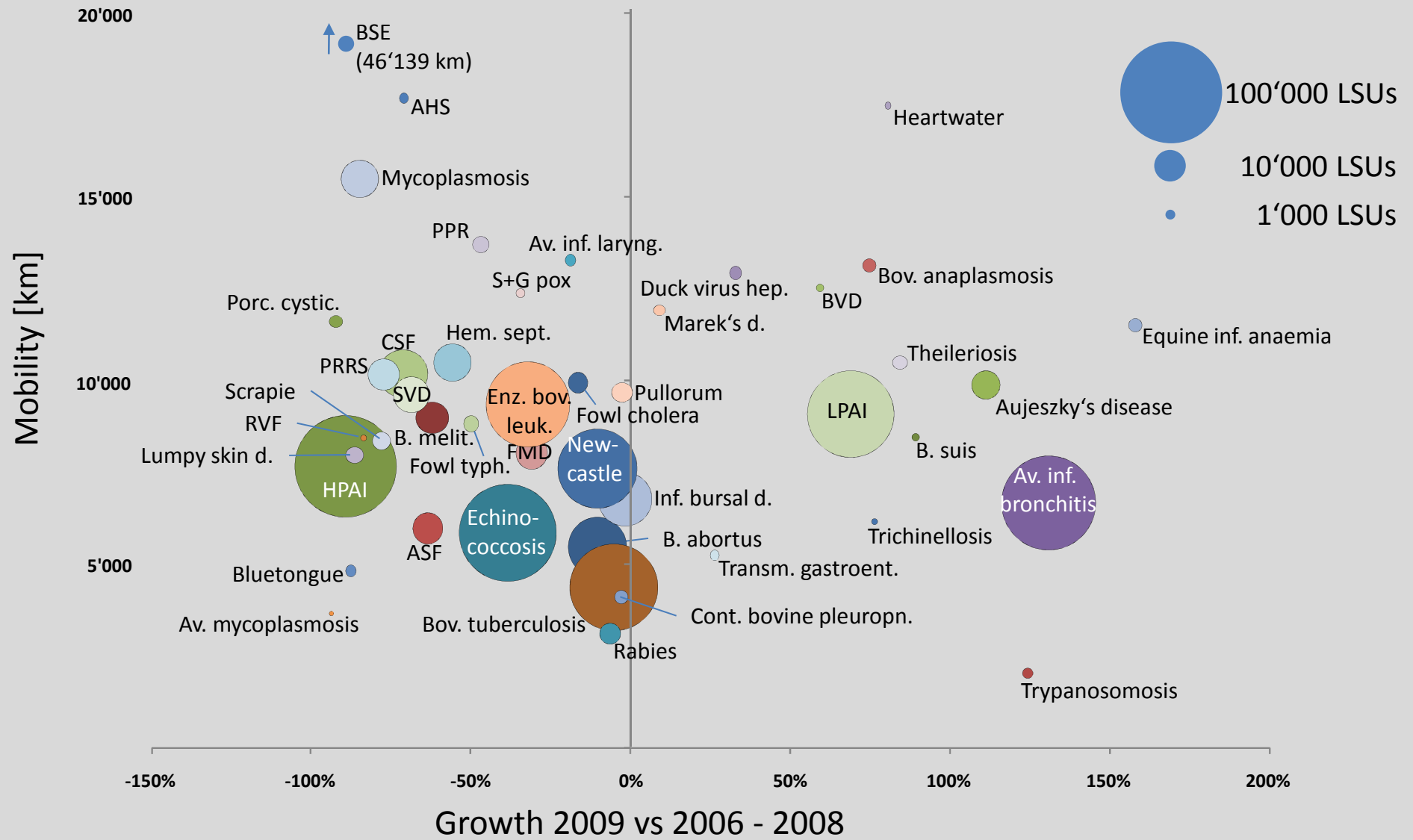
Equ. inf. an.

Rabies

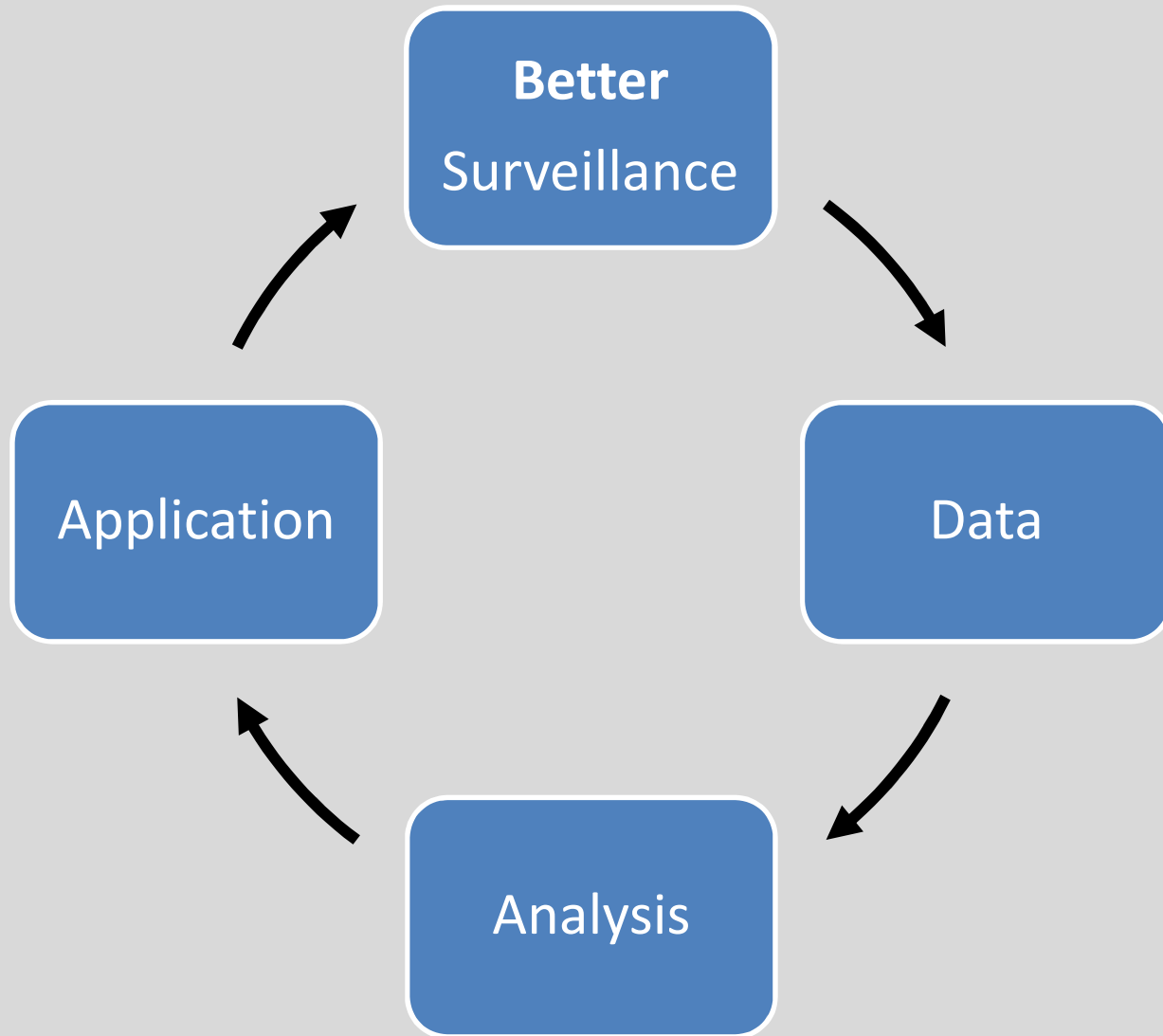
ARC

Rabies

Growth / Size / Mobility



We need **better** surveillance



Outlook

- Extension of time series / ,early warning‘
- Animal health – human health
- Impact of climate change
- Quality of veterinary services
- Close loop with improved surveillance

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Disclaimer

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Thank you



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