A RISK BASED MODEL TO GUIDE DECISIONS ON ZONIFICATION TO STOP VACCINATION IN A FREE COUNTRY WITH VACCINATION

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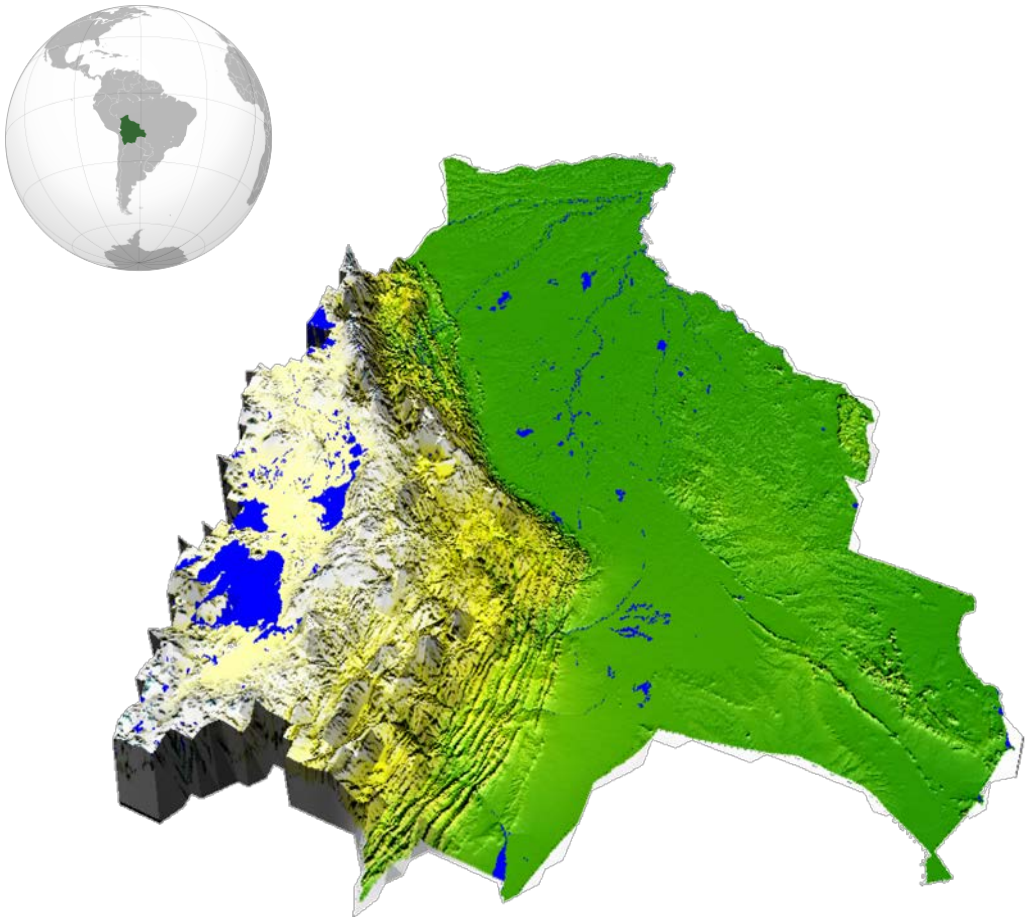
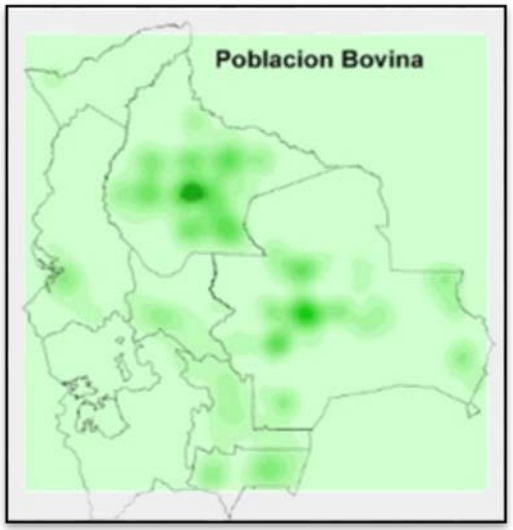
Bolivia



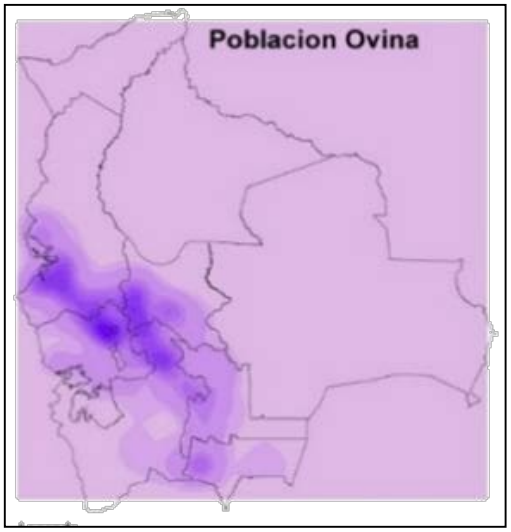
Geographical regions

- Amazons
- Chaco
- Valleys
- Highlands

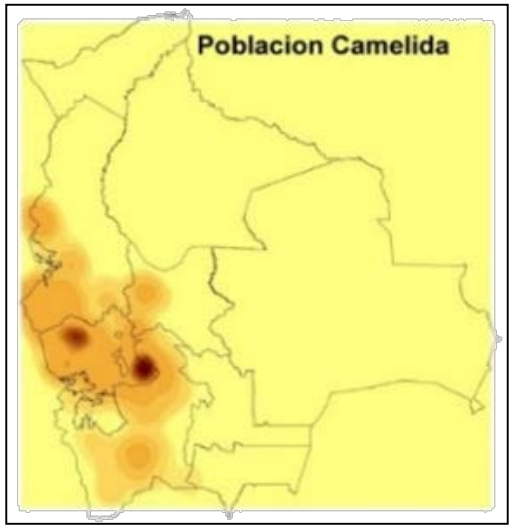
Area: **1.098.581 Km²**



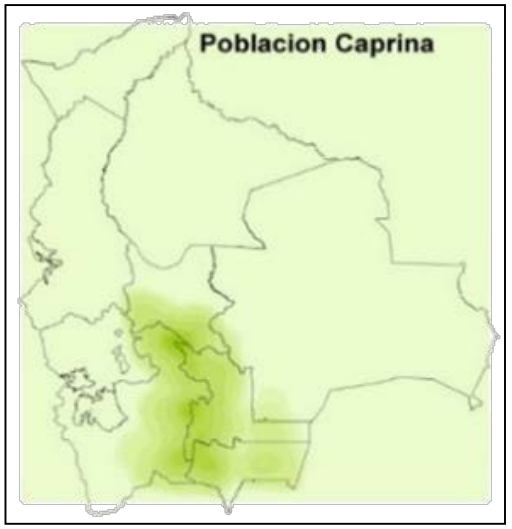
8 637 358 cattle



5 386 939 Sheep

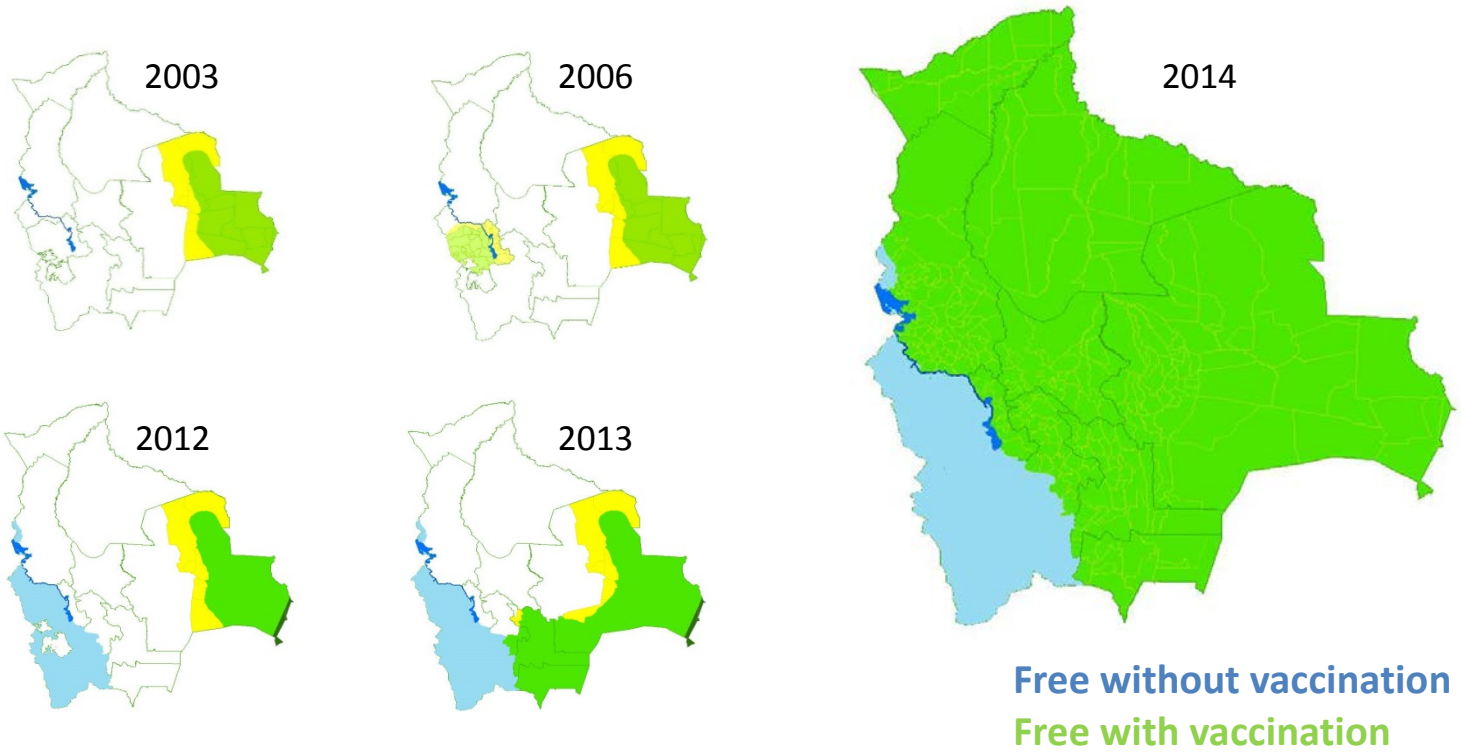


2 572 226 camelids



1 722 606 goats

FMD situation

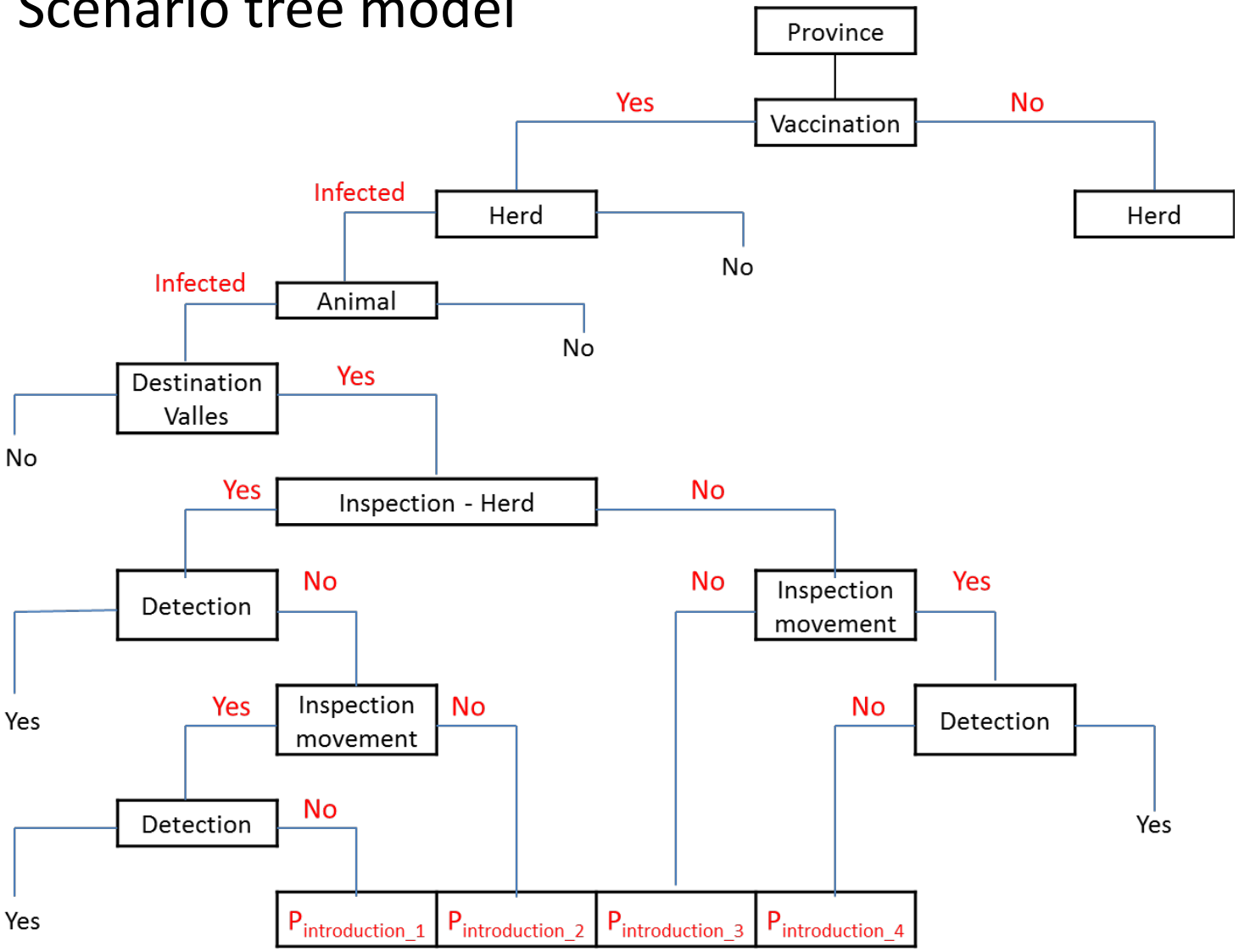


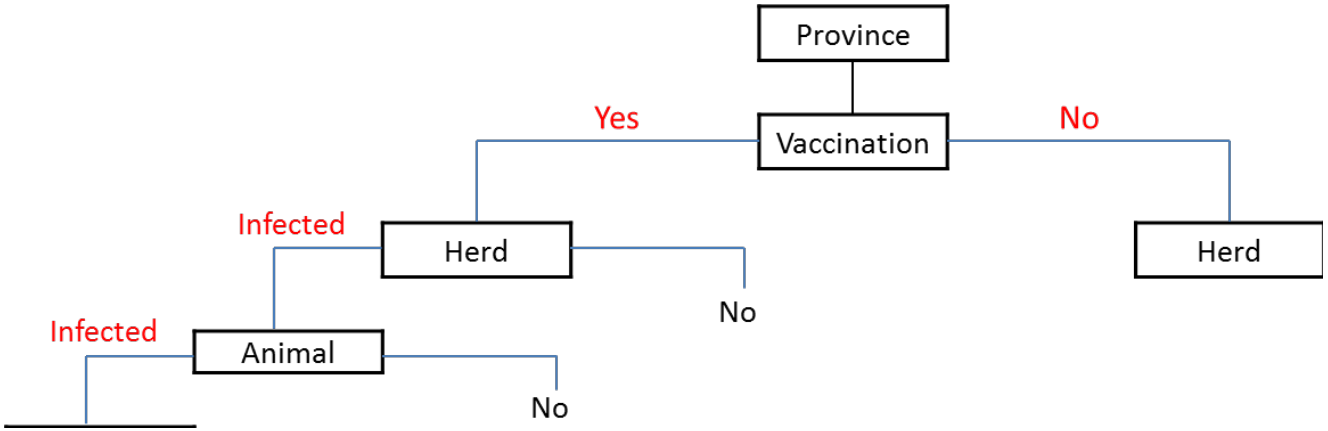
- Eradication programme (started 2000) based on surveillance, control of movements and mass vaccination of the cattle population
- The goal is to gradually extend the free without vaccination zones in a risk based manner

Objective

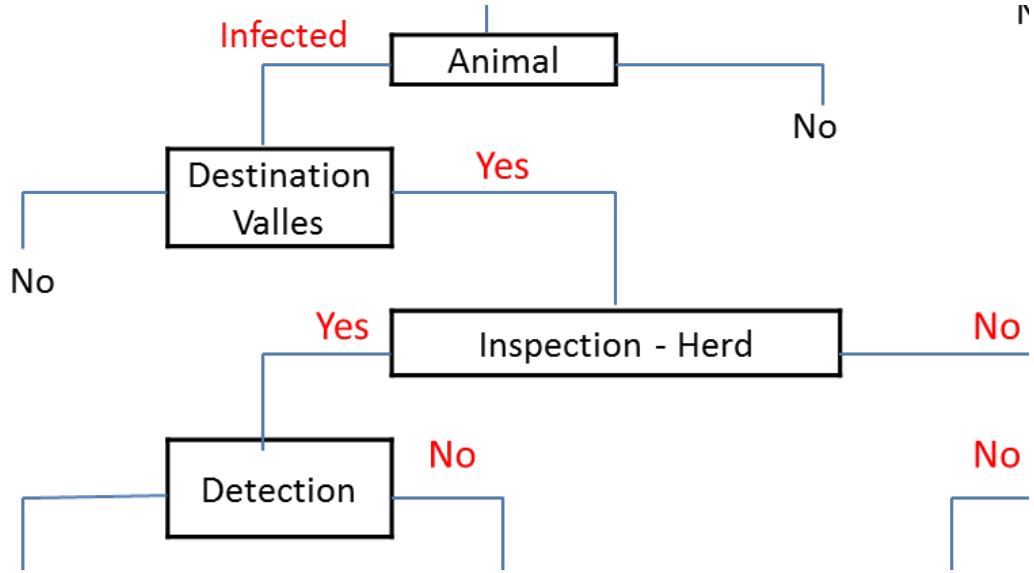
To develop a model to quantify the risk of FMD introduction into zones where vaccination is discontinued and evaluate the efficacy of control measures to minimise this risk.

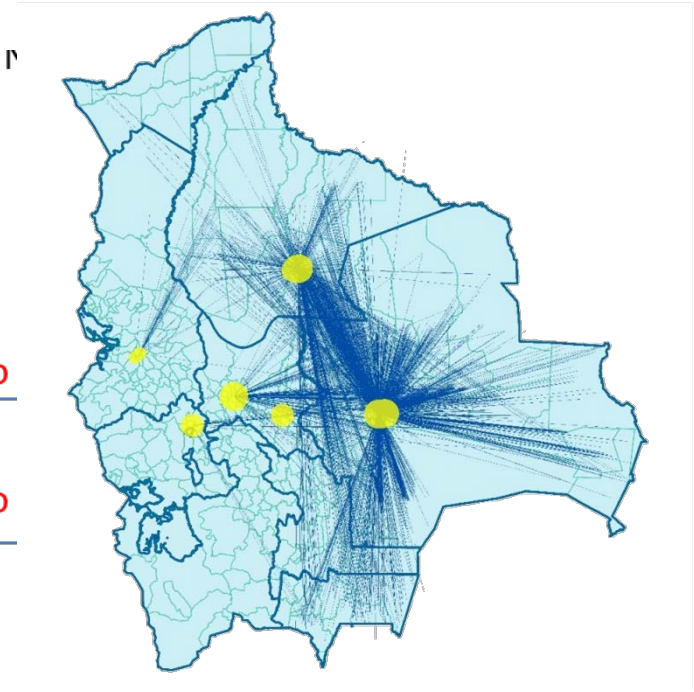
Methods: Scenario tree model





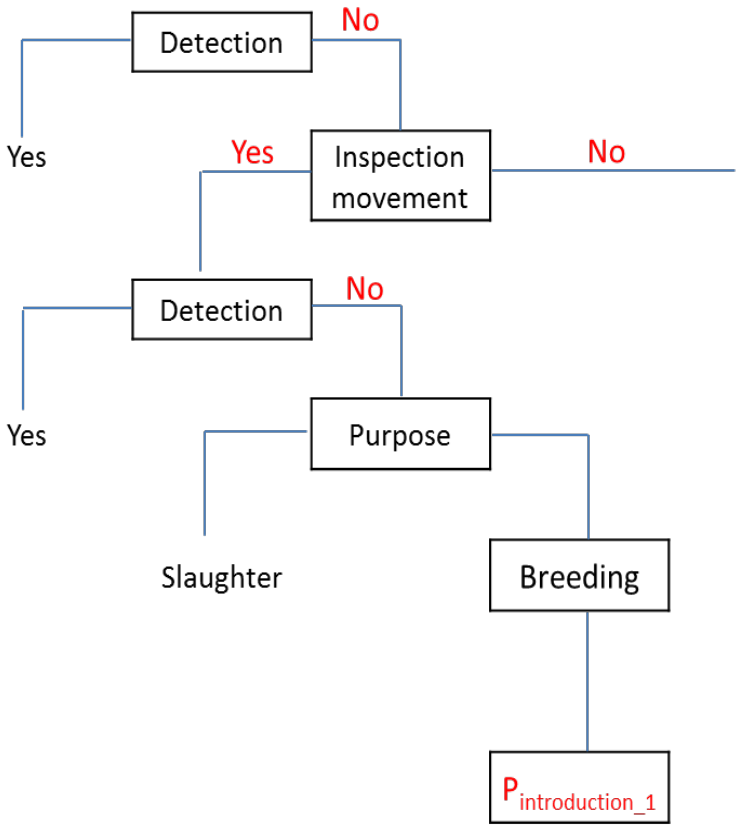
Parameters	Description	Reference
Vaccination	Province vaccination coverage - Proportion	SENASAG
Herd level infection	Prevalence = 0.015 Design prevalence used for surveillance	SENASAG
Risk of infection	Adjusted relative risk for non-vaccinated Vs vaccinated	Gonzales et al 2014. Vaccine
Anima level infection	Within herd prevalence 0.29 (0.04-0.50)	Gonzales et al 2014. Vaccine





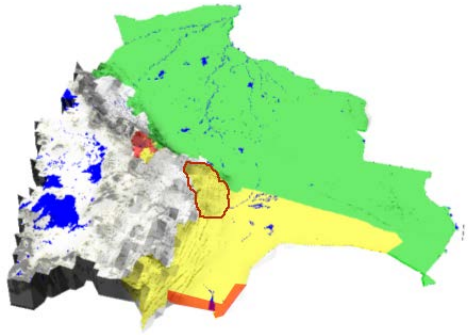
Cattle movements

Parameters	Description	Reference
Destination	Proportion cattle going to area of interest	SENASAG – Movement records
Herd inspection (clinical)	Sensitivity clinical inspection 0.35 (0.25 – 0.40)	Gonzales et al 2014. Vaccine



Parameters	Description	Reference
Movement inspections	Proportion of animals inspected at road control posts 0.10 (0.05-0.015)	SENASAG.
Clinical inspection	Sensitivity clinical inspection 0.35 (0.25 – 0.40)	Gonzales et al 2014. Vaccine
Purpose of movement	Proportion of cattle moved for breeding	SENASAG – Movement records

Results

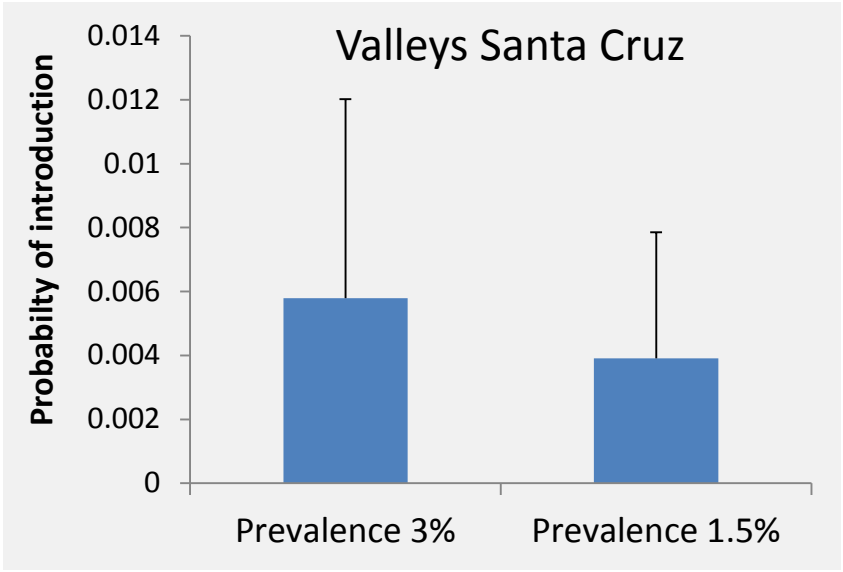


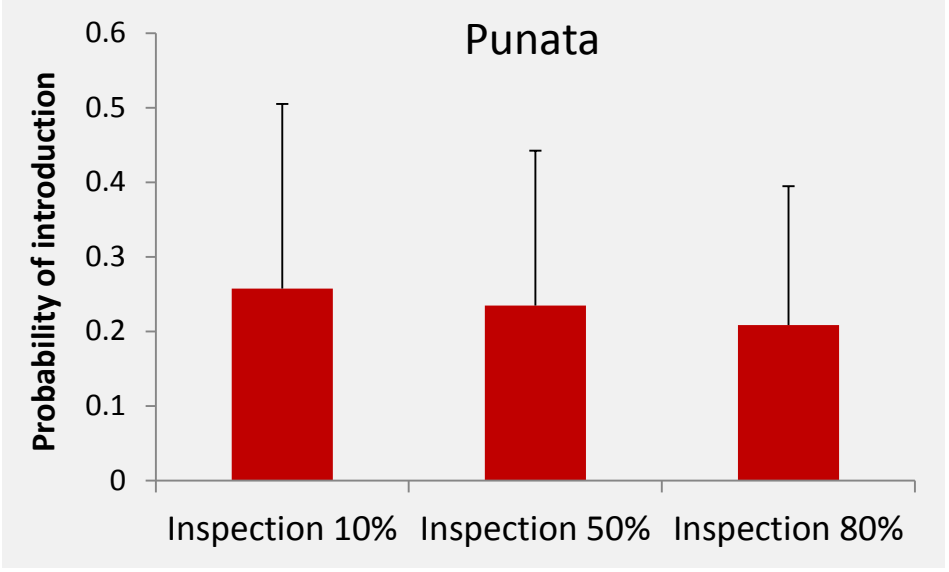
Zones

- No vaccination
- No Vaccination
- Once per year
- Twice per year
- One Mass vaccination + One < 24 months

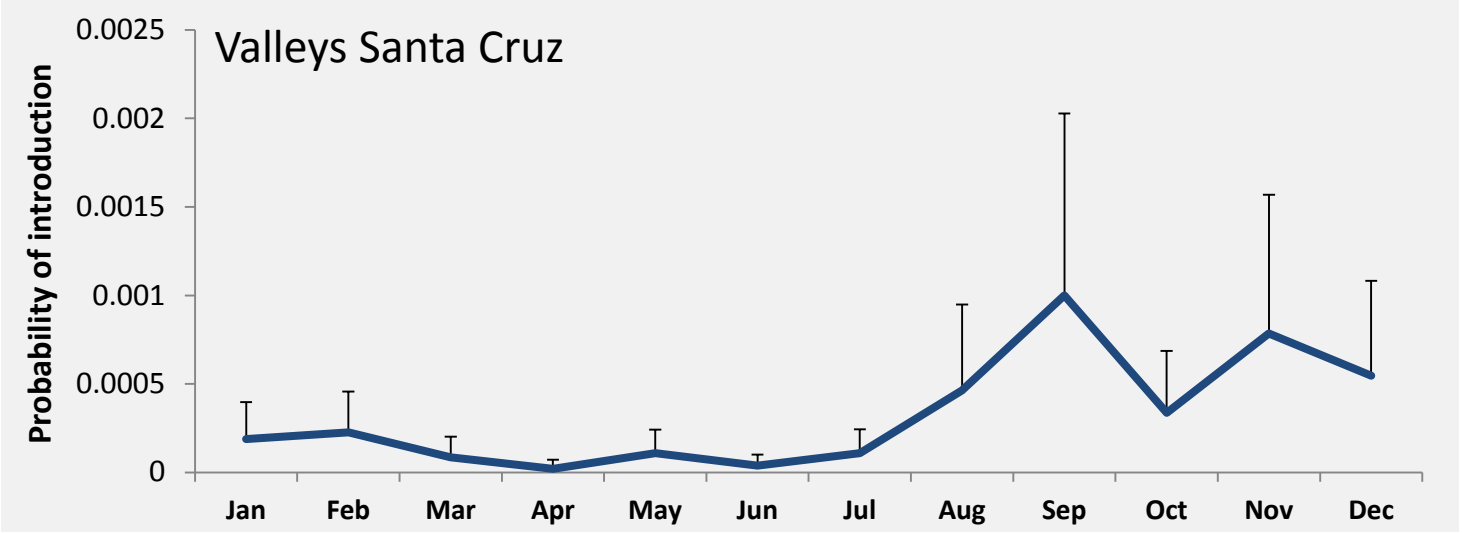
Two zones as examples

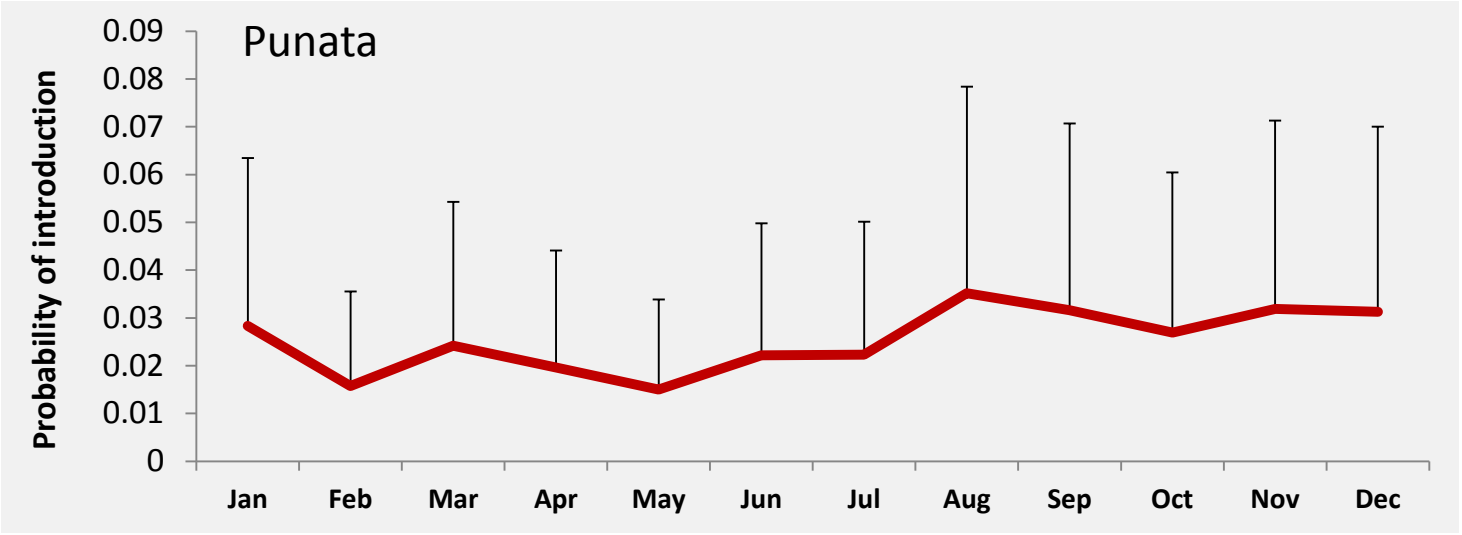
Yearly probability of introduction





Monthly probability of introduction





Conclusions

- Clear differences in risk of introduction in different regions/zones can be observed
- This differences can be used to stop vaccination or target vaccination to specific zones
- Cattle moved from areas free with vaccination are considered the main risk for areas where vaccination is not applied
- Work is being done on improving data collection on inspection parameters from control posts and fairs in the country
- Future work: Combine risk of introduction with risk of transmission

Thank you

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