# *Mycoplasma gallisepticum* infection in Antananarivo chicken market: Prevalence and Risk factors associated

- Background: *Mycoplasma gallisepticum* is bacteria affecting chicken, other bird species and wild bird (Chronic respiratory disease)

- Statistical model question: What are the risk factors associated with *Mycoplasma gallisepticum* infection in chicken sellers in Antananarivo markets?

- Mechanistic model question: How does *Mycoplasma gallisepticum* infection transmit through the chicken in market?

- Acknowledgements: Rila, Sedera, Romario, all E$^2$M$^2$ participants



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**Statistical question**: What are the risk factors associated with Mycoplasma gallisepticum infection in chicken sellers in Antananarivo markets?

R function: glm(MG infection ~ Size of market + District source + other species on the stall + Sick chicken + Dead chicken + Vaccination status, data= Surveydata)
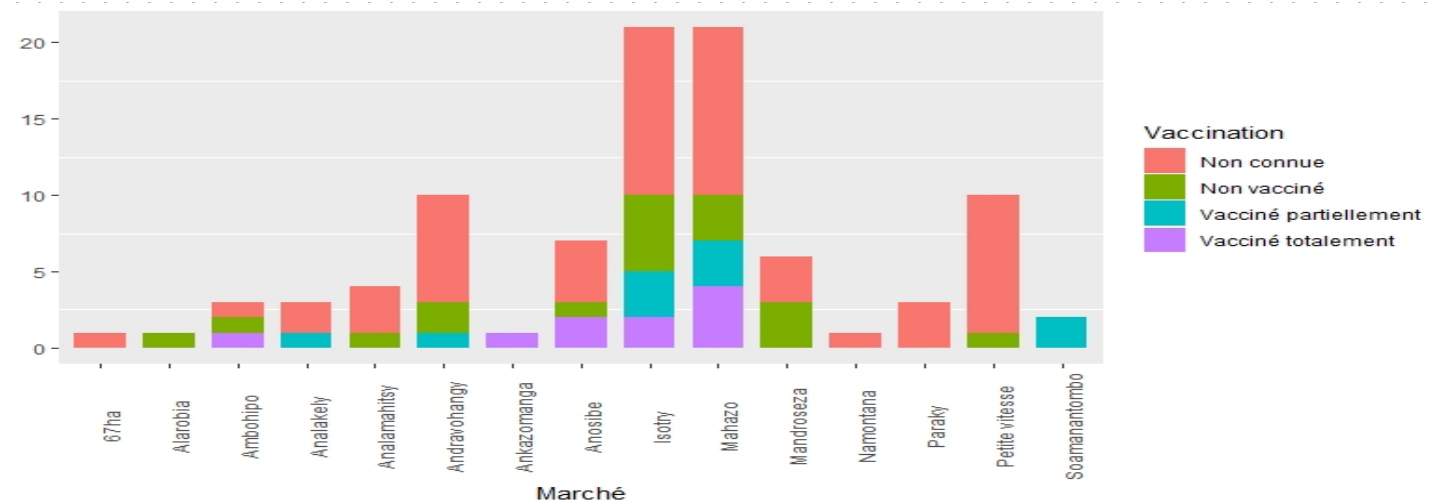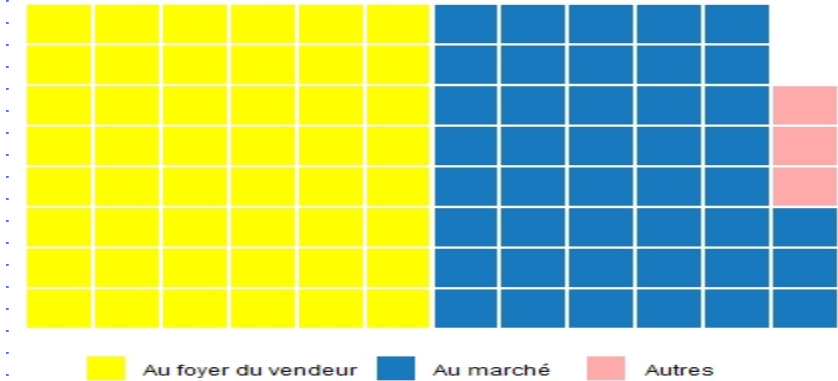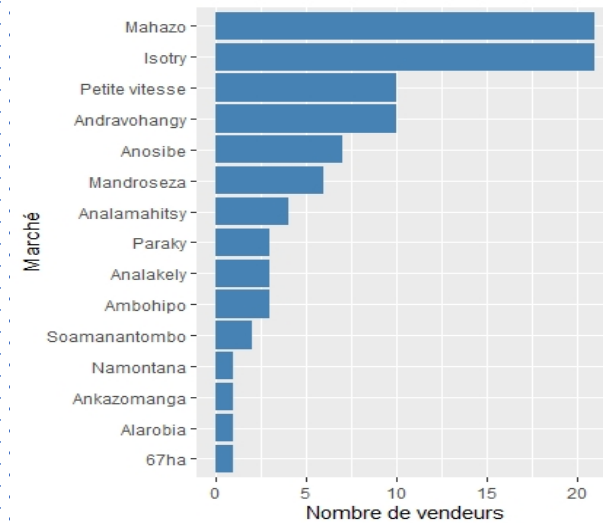
Explanatory variables: Size of market, chicken source type, district source, other species on stall, sick chickens, dead chickens, vaccination status.

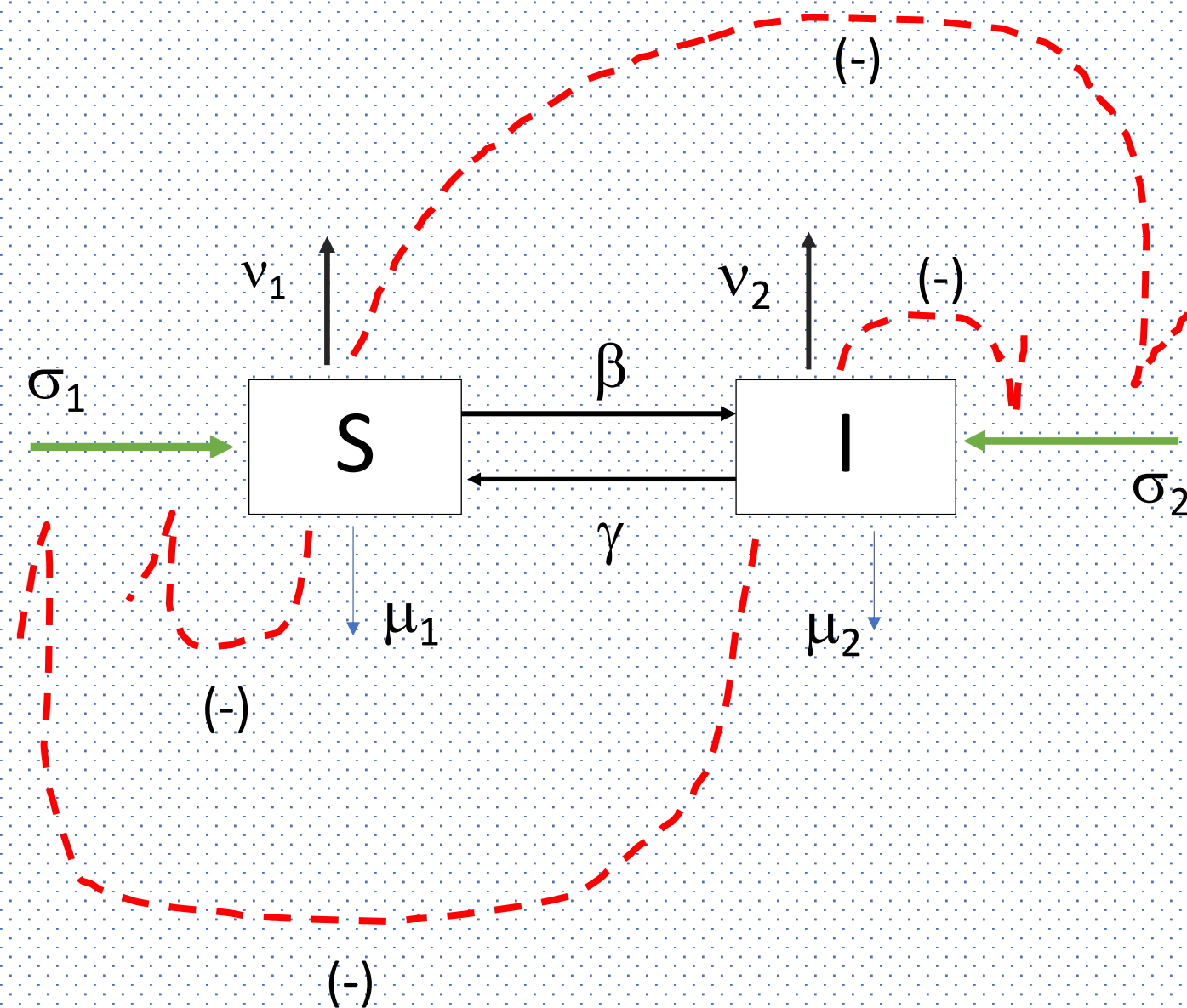Response variable: Mycoplasma gallisepticum infection status

Distribution: Binomial

Link: logit

Hypothesis: The more the market size is higher, the more the infection is important.



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# Mechanistic question: How does *Mycoplasma gallisepticum* infection transmit through the chicken in market?

(-)

$\nu_1$

$\sigma_1$

S

$\beta$

$\gamma$

(-)

$\mu_1$

$\nu_2$

(-)

I

$\sigma_2$

$\mu_2$

(-)

(-)

## Processes
$\sigma_1$: Purchase chicken rate
$\sigma_2$: Purchase infected chicken rate
$\nu_1$: susceptible chicken sold
$\nu_2$: infectious chicken sold
$\mu_1$: susceptible mortality rate
$\mu_2$: infectious mortality rate
$\beta$: transmission
$\gamma$: rate of dicresing immunity

## States
S: Susceptible chicken
I: Infectious chicken

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# Future directions

- Conduct a study about the infection among wild birds

- Understand how to control the infection (Prevention and Treatment)

- Study the impact of the disease (Food security)

Thanks a lot!!!   You are the best!!!

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