Seroprevalence in human and associated risk factors to hantavirus in Madagascar

Statistical question: What are the risk factors associated with human testing seropositive (IgG) for hantavirus in Madagascar ?

Mechanistic question: How does age influence human seroprevalence of hantavirus in Madagascar ?

Host reservoirs

Virus transmission to human

Human disease

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Statistical question: *What are the risk factors associated with human testing seropositive (IgG) for hantavirus in Madagascar ?*

Response Variable: seropositive/seronegative IgG hantavirus

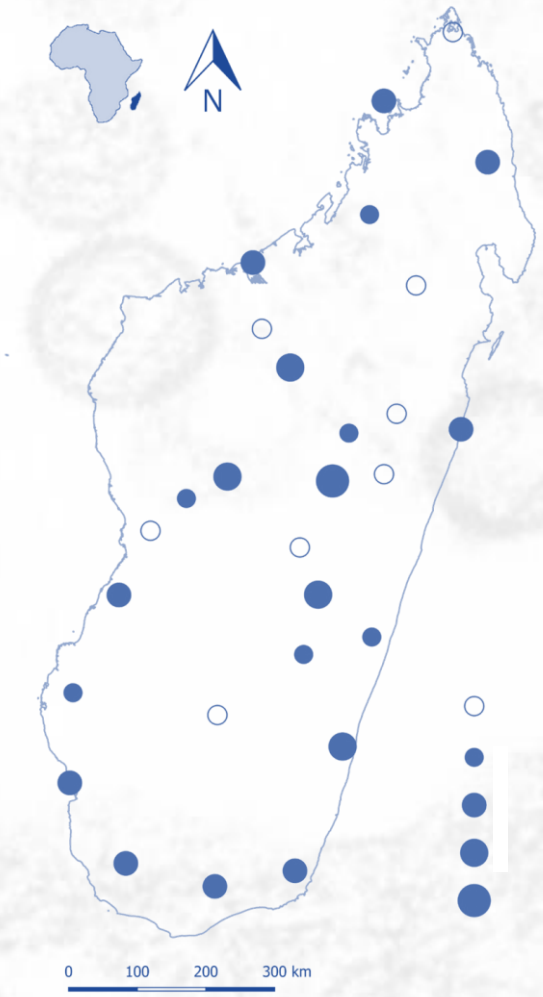
Predictor Variables: age, sex, occupation, location

Family: binomial

Link: logit

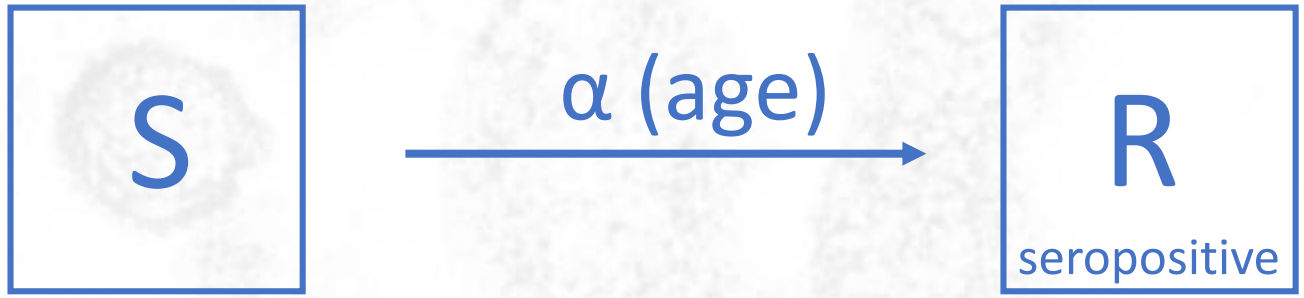
Hypothesis: We suggest that living close to the forest will increase the risk of infection with hantaviruses because it involves more contact with rodents.

R code: glm(status~age+sex+occupation+location, family=''binomial'', data=serohantamad)



Seroprevalence : 2.7% (46/1680)

Mechanistic question: *How does age influence human seroprevalence of hantavirus in Madagascar ?*



States

S: susceptible human

R: Recovered human

Process

α: force of infection

$$\frac{dS}{dt} = -\alpha(a)S$$

$$\frac{dR}{dt} = \alpha(a)\,(1 - R(a))$$

Next Step

- Further study : test focused on human with fever with unknown etiology and/or renal failure

- Conduct molecular test on *R. rattus* and fit relevant mechanistic transmission models on obtained data

Aknowledgment: all of E2M2 participants/Mentors/Instructors