



ZOONOTIC RISK FACTORS FOR *CAMPYLOBACTER* INFECTION IN RURAL MALAGASY COMMUNITIES

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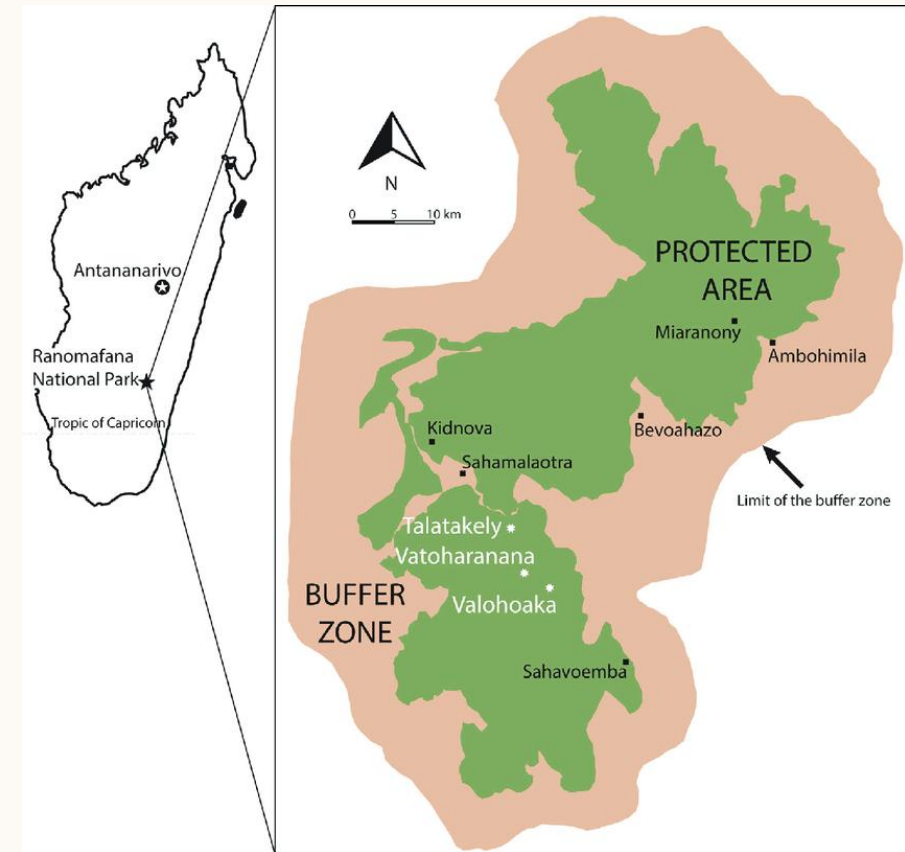


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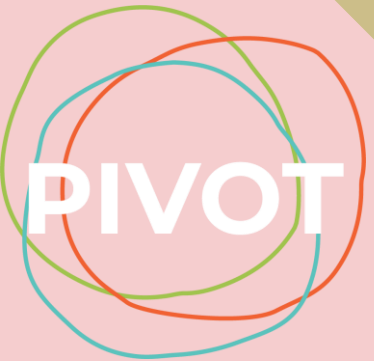
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BACKGROUND

- In 2016, 1.6 million deaths were attributable to diarrheal diseases¹
- *Campylobacter* is a disease-causing pathogen, highly associated with livestock farming²
- In Madagascar, diarrheal diseases account for 11% of deaths, making it the number one cause of death in the country³
- Pivot and Centre ValBio have developed a model to facilitate health care to villages at the Ranomafana National Park border⁴



McGee E, et al.



PURPOSE

The purpose of this project is to generate a report from a cross-sectional study conducted in 2017 pertaining to risk factors associated with *Campylobacter* infection and ultimately the development of diarrheal disease.

AIMS

1. Collect information on Madagascar, its village communities, and their vulnerability to diarrhea from zoonotic infections through a literature review.
2. Estimate the association between exposure to domestic and wildlife animals and *Campylobacter* infection while accounting for other noteworthy covariates.
3. Develop a report that describes the analysis, results, and future implications to be shared with the research team, PI, and Centre ValBio.

METHODS



DATA SET

“Eco-Epidemiology of Diarrheal Disease” project dataset courtesy of Dr. Thomas Gillespie



DATA COLLECTION

In 2017, the research team administered surveys and collected stool sample of ~215 households



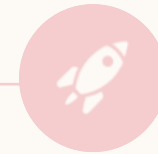
PREPARATION FOR ANALYSIS

Literature review and Directed Acyclic Graph (DAG) theory to determine covariates; Data cleaning in R



LOG BINOMIAL MODELING

1. Assess Collinearity
2. Assess Interaction
3. Assess Confounding
4. Interpret Results



RESULTS

Prevalence Ratio of exposure to domestic and wildlife animals and the outcome of *Campylobacter* infection



Studio[®]

Libraries: janitor, rio, tidyverse, glm2

FEASIBILITY

COMPLETED PROJECT TASKS

- Met with research team about project details and dataset specifics
- Developed final draft of Capstone Project Proposal
- Conducted a literature review

REMAINING PROJECT TASKS

- Develop a DAG
- Clean data
- Implement modeling strategy
- Interpret results
- Write Report

ALTERNATIVE METHODS

R Studio Cloud → SAS

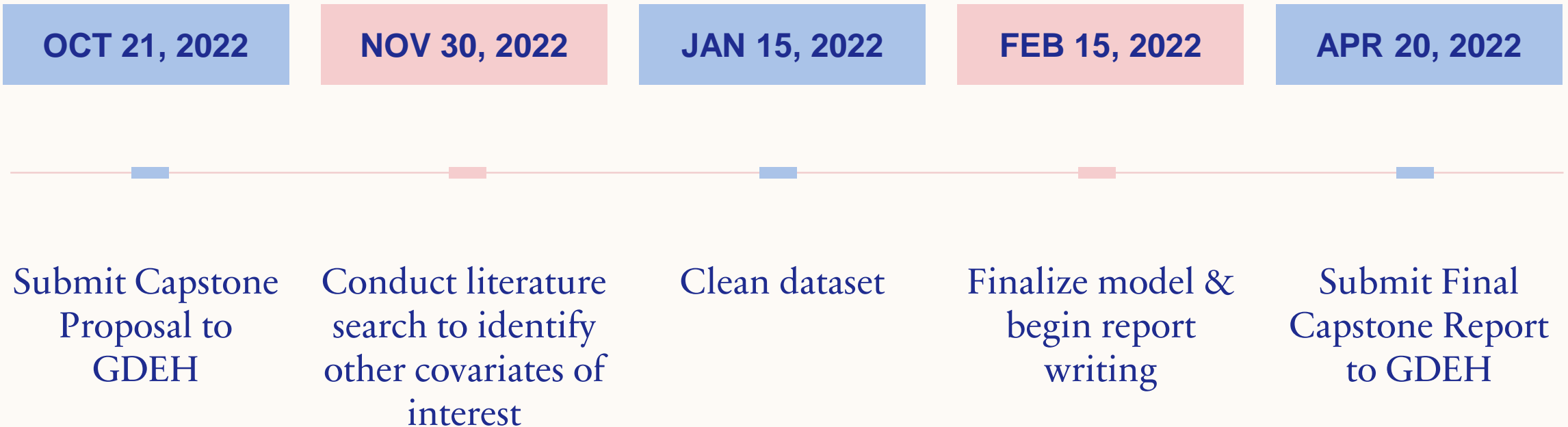
Model doesn't Converge → Explore a different outcome

PUBLIC HEALTH CONTRIBUTION & SIGNIFICANCE ⁶

- Contributes to greater insight on exposure to domestic and wildlife animals associated with *Campylobacter*.
- Informs Pivot and Centre ValBio's future interventions for rural Malagasy Communities
- Emphasizes the importance of multidisciplinary work & One Health collaboration for complex public health issues

Deliverable: A report detailing the analysis presented to the research team, the Principal Investigator, Pivot, and Centre ValBio

PROJECT TIMELINE



QUESTIONS?

Thank you!

Marisa Wong

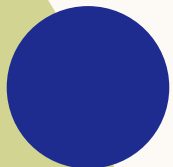
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REFERENCES

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- ⁵Mcgee E, Vaughn S. Of lemurs and louse flies: The biogeochemical and biotic effects of forest disturbance on *Propithecus edwardsi* and its obligate ectoparasite *Allobosca crassipes* in Ranomafana National Park, southeastern Madagascar. *American journal of primatology*. 2017;79. doi:10.1002/ajp.22676

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