

Modelling sample bias in mosquito vector occurrence data within Kenya, Tanzania, and Uganda

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Team & project profile

- The IDEM team is responsible for statistical/geospatial modelling of disease trajectories and vectors.
- The Vector Atlas Project is a global partnership creating a database of mosquito vectors across Africa to curb the spread of regional malaria.
- My role was to begin a research project visualizing sample bias in the existing literature with a focus on Uganda, Kenya, and Tanzania.

Project Sequence

- **Step 1:** I created geospatial and hexbin maps of vector points across the Vector Atlas database.
- **Step 2:** I indexed and sorted the local affiliations of 200+ articles in the database to model bias towards research centers.
- **Step 3:** I retrieved a ‘travel time’ accessibility map using the research institutions to run spatial programs looking at bias and other ecological estimates on the data.
- **Step 4:** I drafted a report on my findings, statistical methods of bias correction, and implications.

Reflection

- Over my 8-week internship at Telethon Kids Institute, I worked on a R-based project mapping bias in malaria-transmitting vector data to inform public health policy in Africa.
- As a student studying Public and International Affairs, I found it very eye-opening to be on the other side—the data collection and research stage—of the policy-making process.



IDEM on retreat in Dunsborough, WA

- I generally do civic and community-oriented work in my local spaces, so working on a public health project geared towards serving communities in East Africa (and conducted in another continent!) pushed me to grow as a student and a person.
- I understood that malaria, a priority in the public health world, was a parasitic disease with a large death toll in sub-Saharan Africa before this internship. However, I gained a much broader understanding of the risk factors and importance of ecological research to create targeted preventive strategies due to my time at TKI.



Caversham Wildlife Park with the interns

- I enjoyed experiencing the day-to-day life of a top Australian medical research institution for a few months. The environment at TKI was welcoming and lively, and I grew fond of all the people there!
- Some highlights were the Noongar culture presentations for NAIDOC Week, the great chats and Thursday team cake in the ‘Manda’ (meeting place), and a beautiful nature walk with my supervisors in King’s Park over lunch.

Looking ahead

- My time at TKI strengthened my appreciation for working with data in the workplace, even though I may not go into a full-time career in data analysis.
- I was pushed outside of my comfort zone and gained valuable ecology and modelling experience, which I will apply to my future courses and independent work.
- My IDEM project will become the basis of a research paper to be published after work on the project on finalized, which is rewarding!

Conclusion

- Sample bias in research, especially ecological vector research, can contribute to inaccurate occurrence estimates.
- We must correct for bias and take more extensive vector counts to better guide public health policy.

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