



**IDM** INSTITUTE FOR  
DISEASE MODELING

## **Patterns of net ownership, retention, and use in sub-Saharan Africa**

Amelia Bertozzi-Villa, Samir Bhatt, Peter Gething, Caitlin Bever



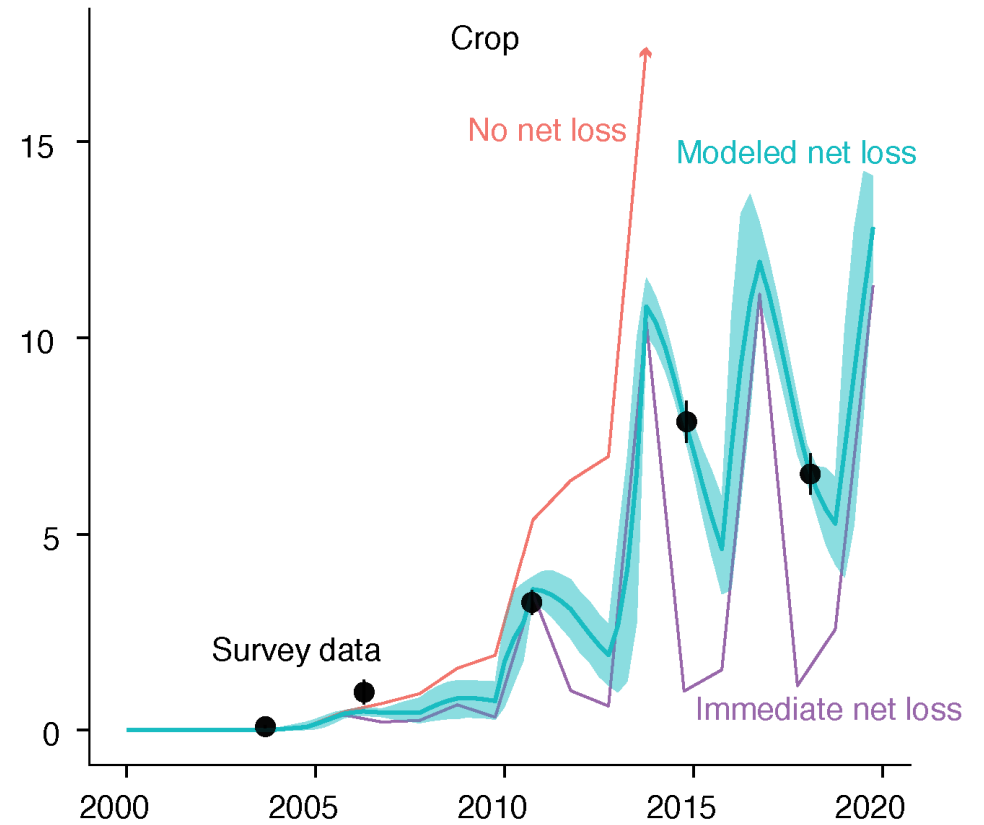
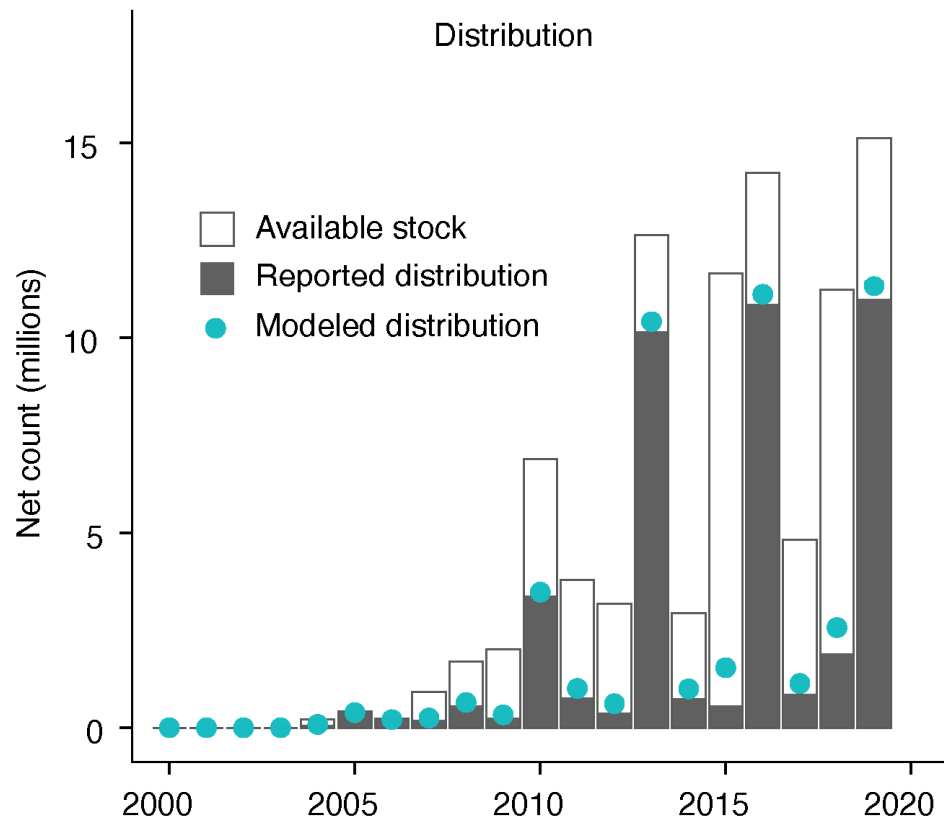
malaria atlas project

BILL & MELINDA  
GATES *foundation*

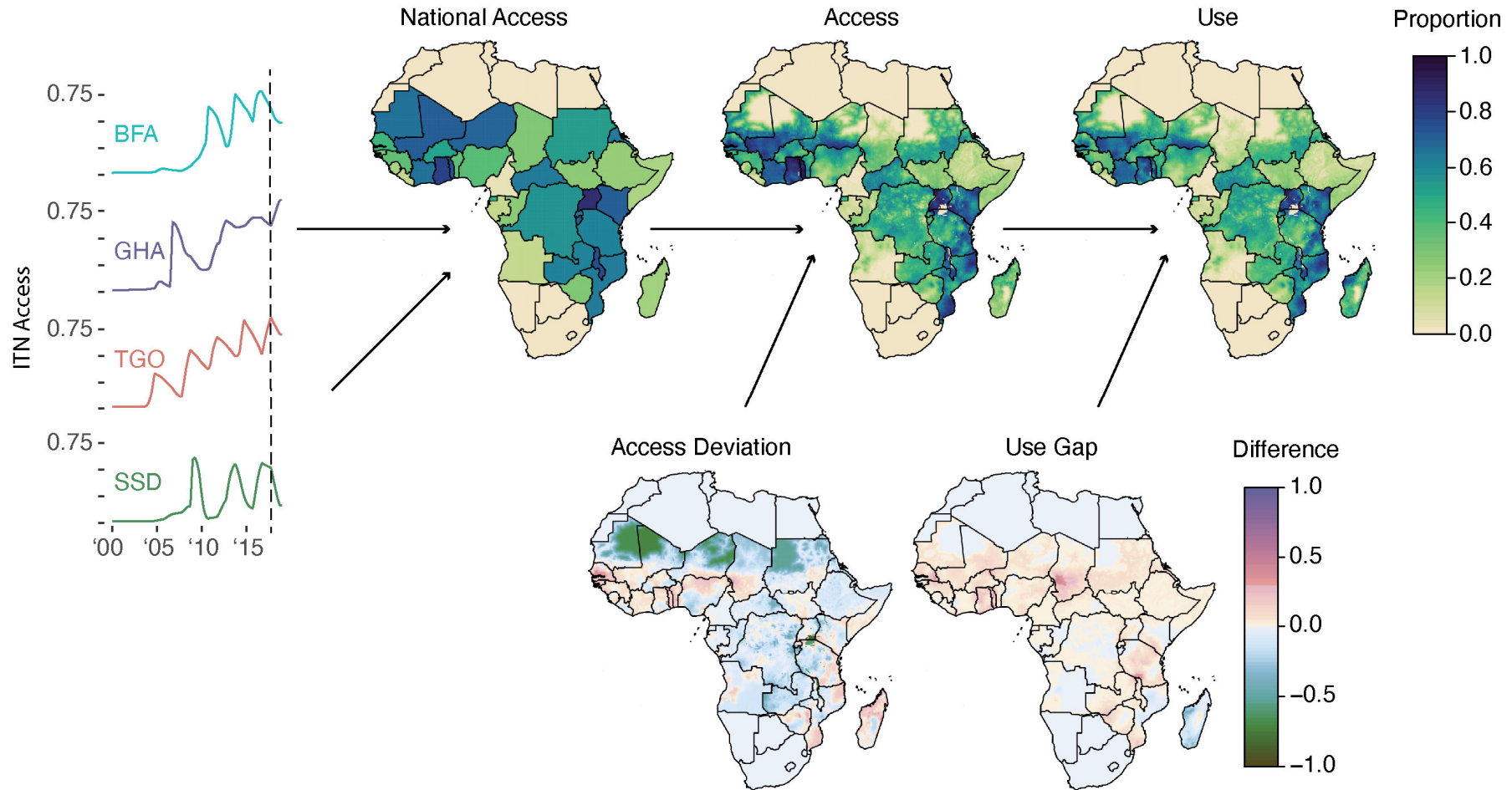
ITNs are extremely impactful. What are the barriers to coverage?

What are distribution, retention, and use patterns over space and time?

# Step 1: Mechanistic national model for time series and net retention.



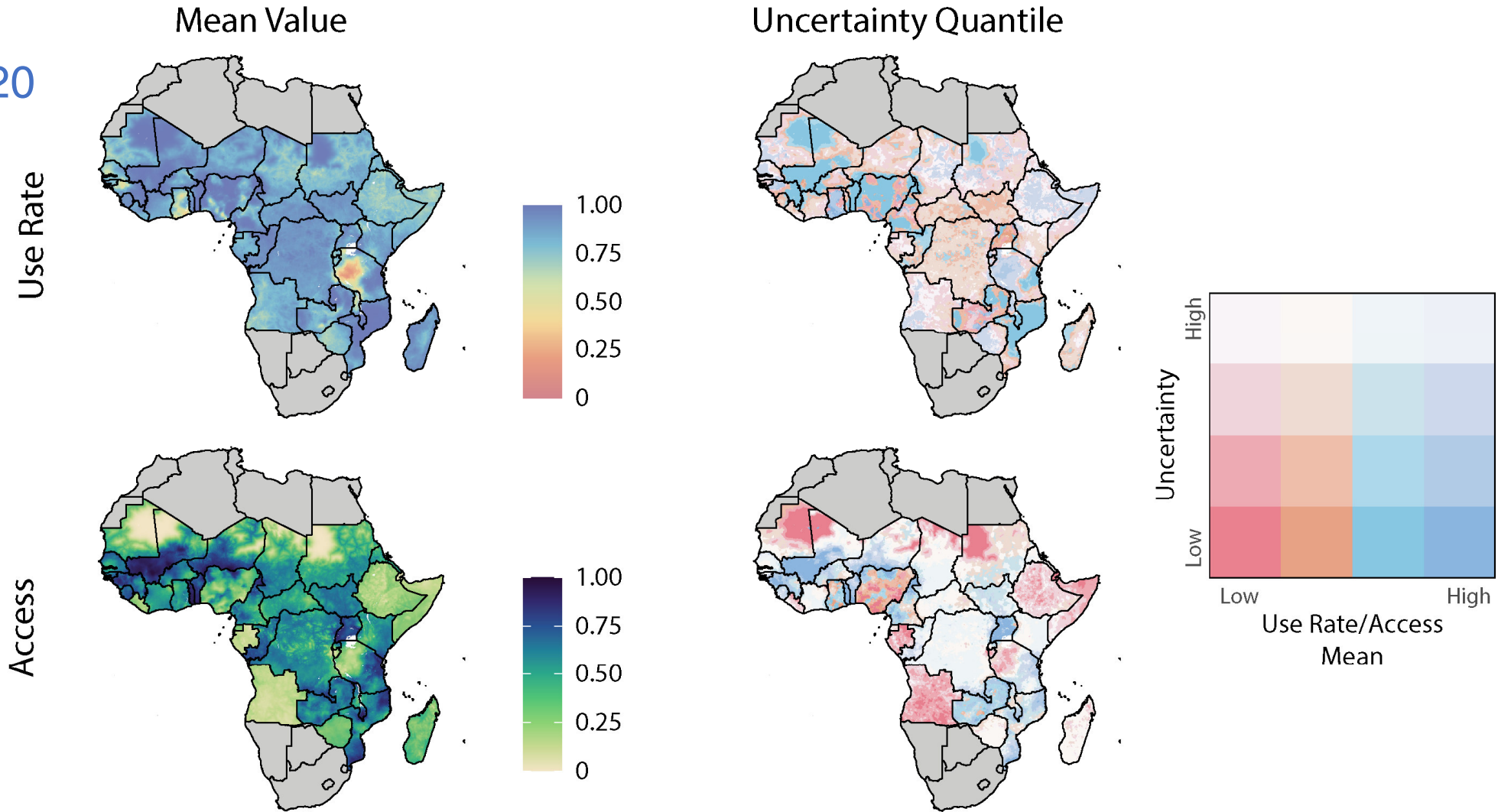
## Step 2: Geospatial model for subnational patterning.



People tend to use the nets they have access to.

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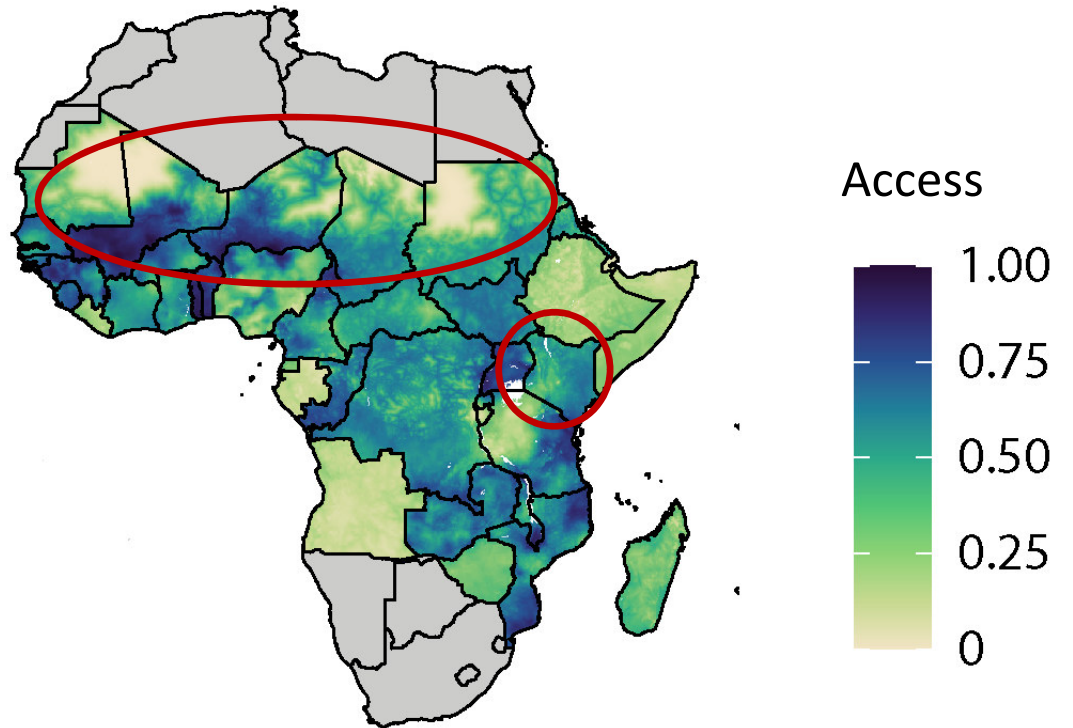
2020



What drives subnational variation in access?

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True risk gradients





# What drives subnational variation in access?

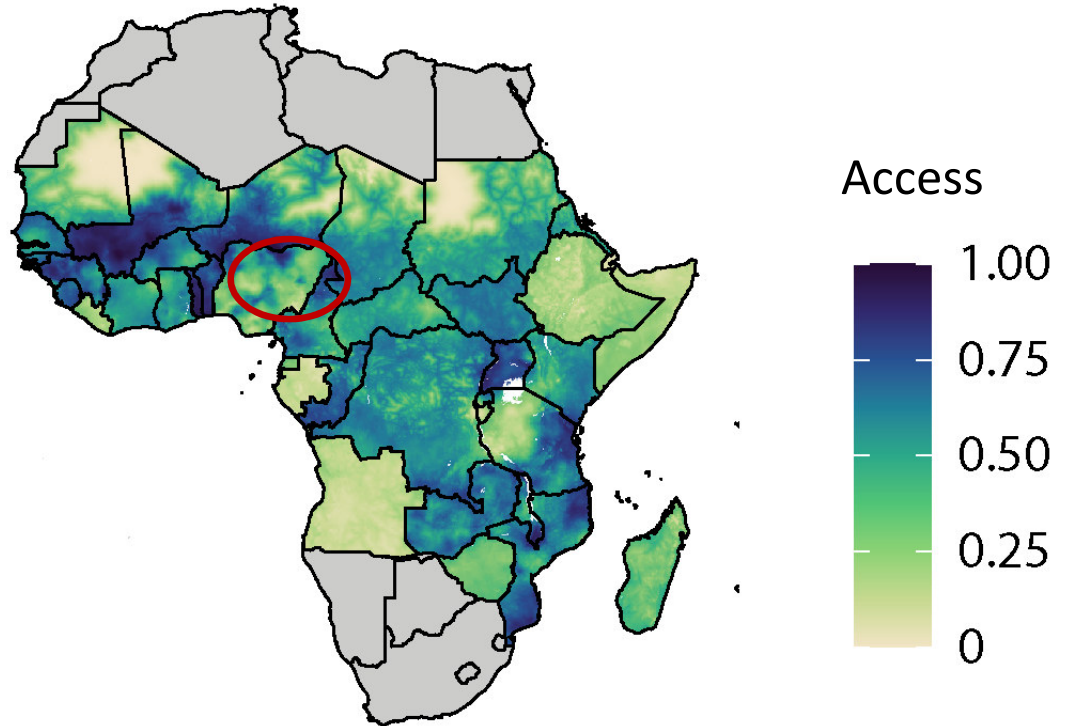
True risk gradients

Logistical/distribution issues

Household size limitations

Rural areas

Conflict zones



# What drives subnational variation in access?

True risk gradients

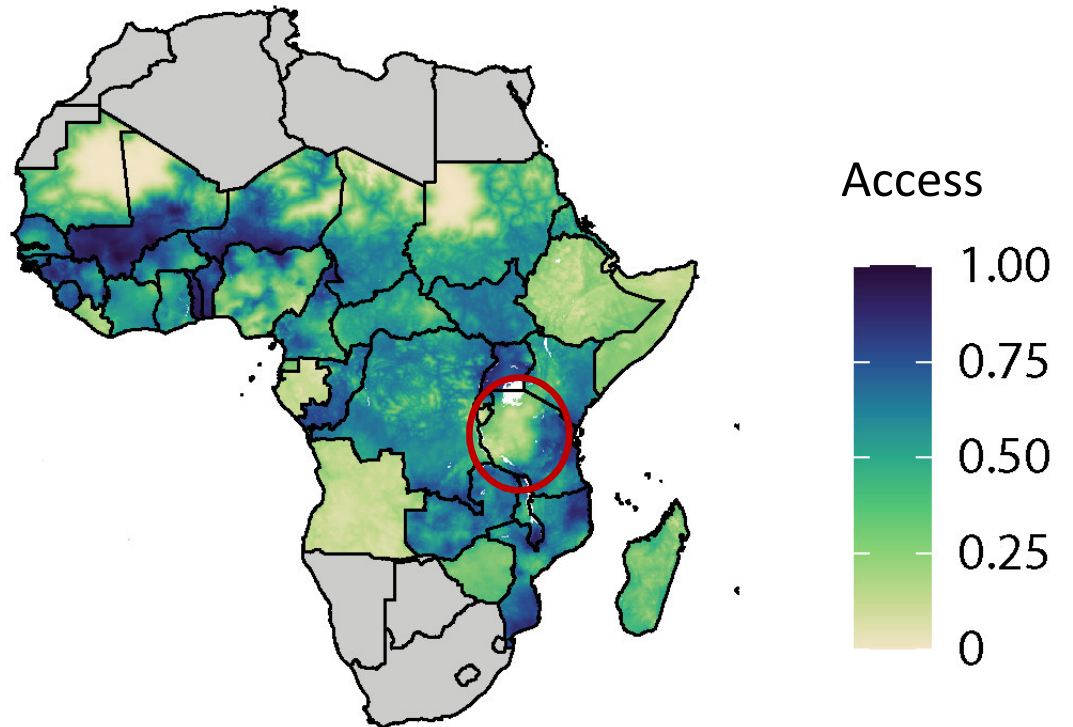
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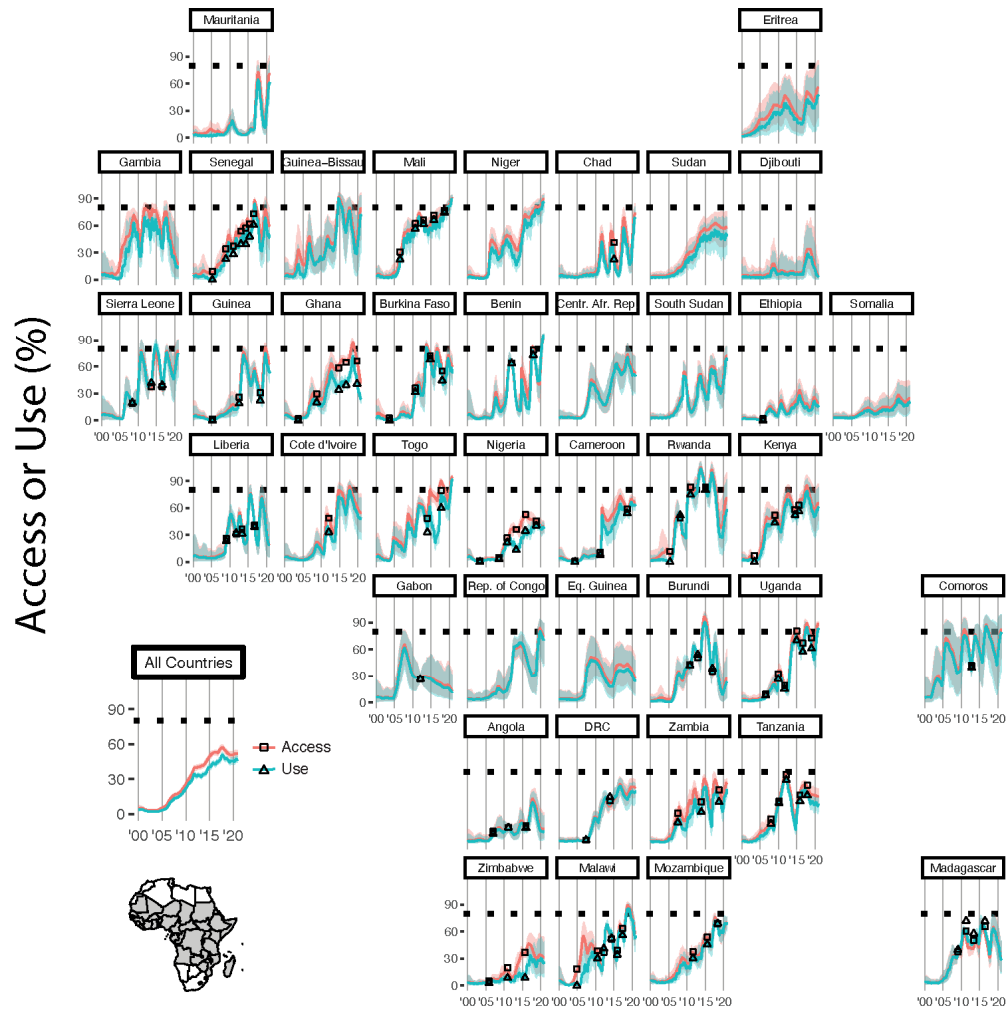
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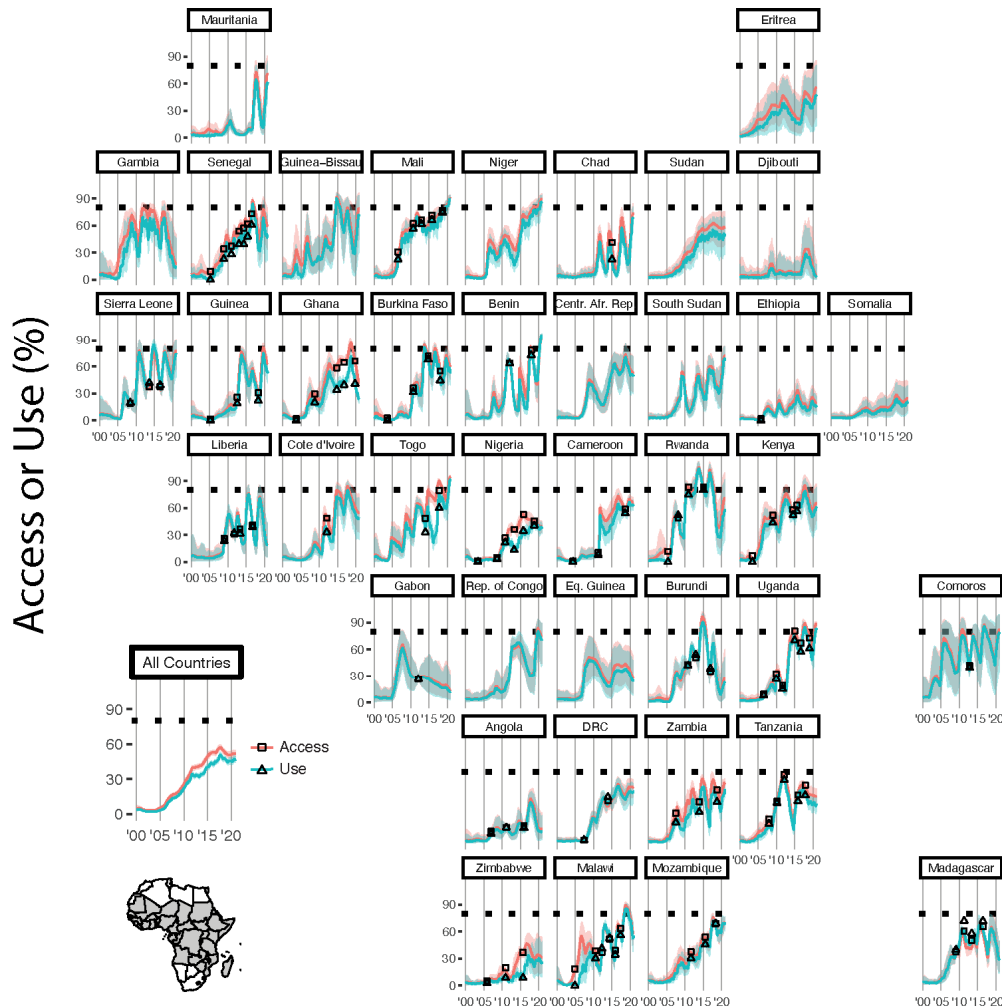
Data collection artefacts



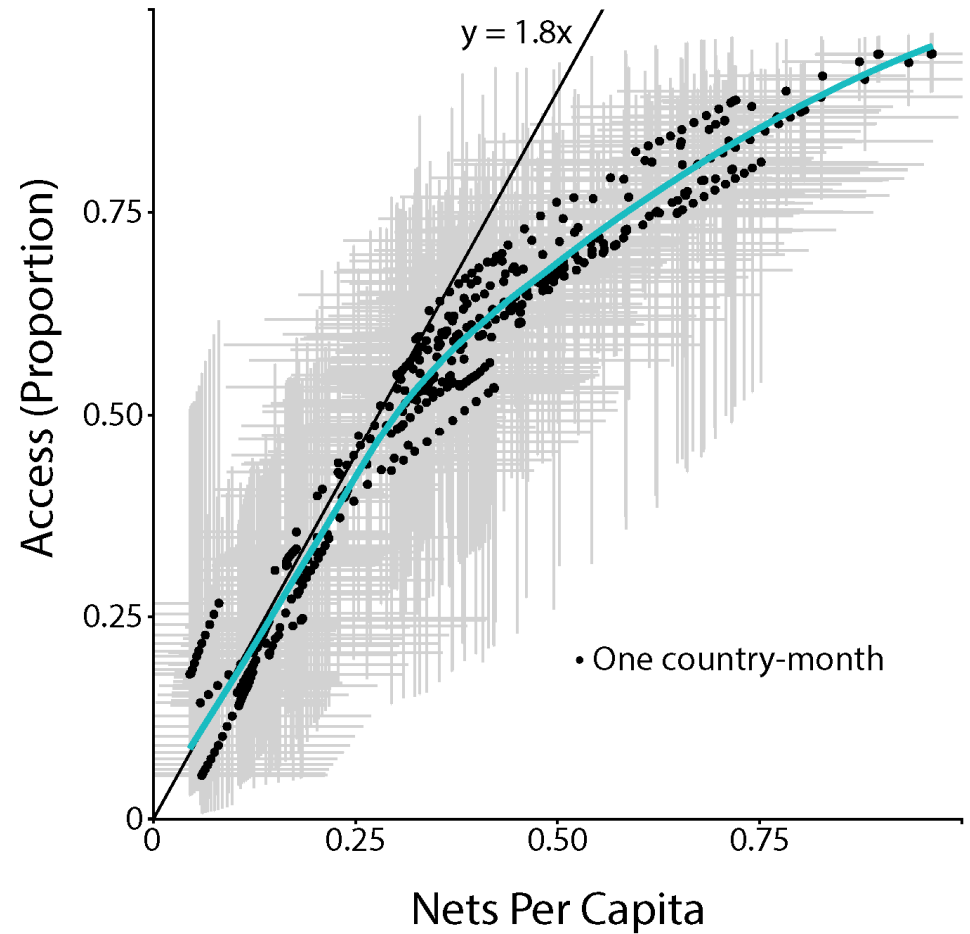
Access (distribution AND retention) is the bigger barrier to universal coverage.



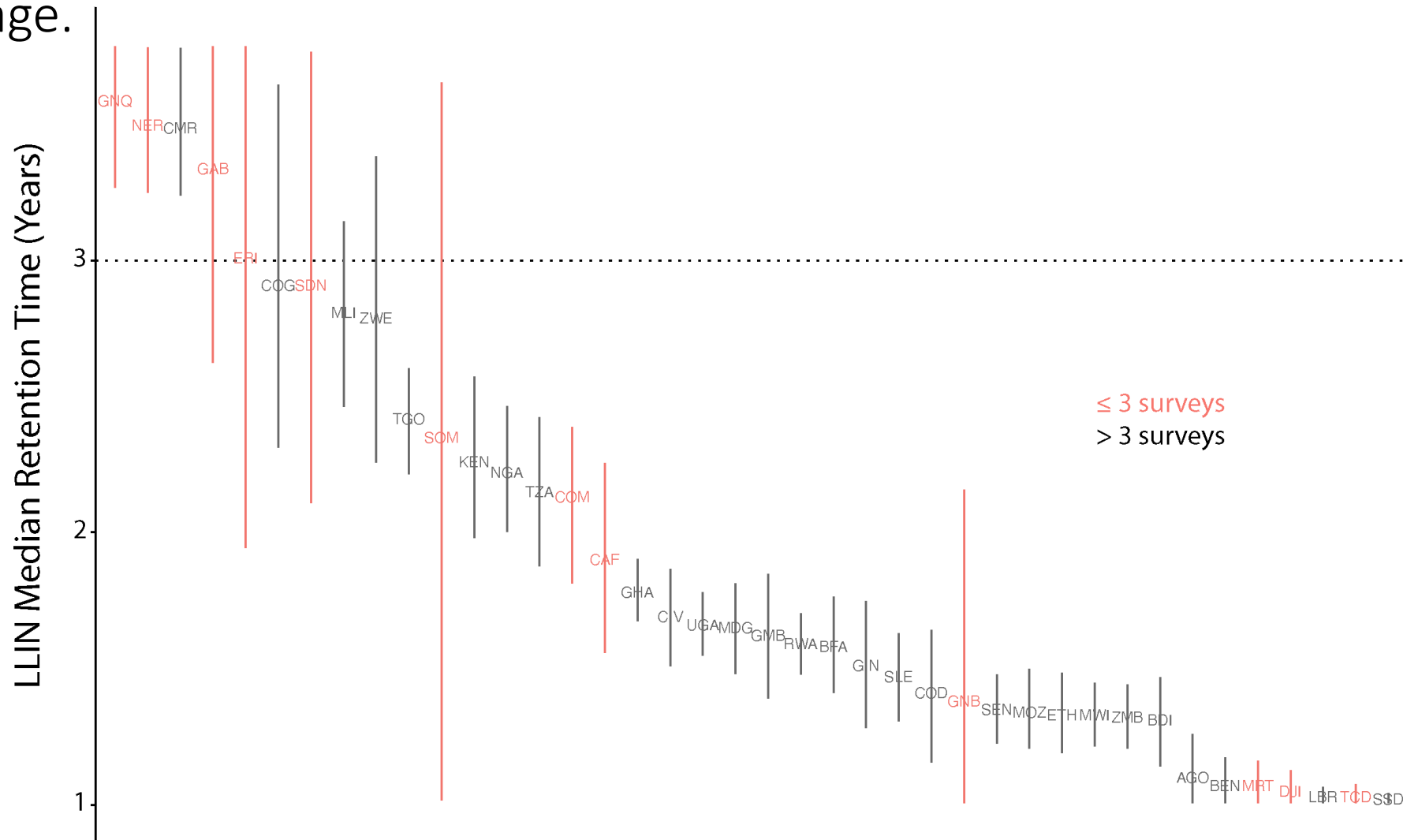
Access (distribution AND retention) is the bigger barrier to universal coverage.



2020 Access vs Nets Per Capita



Access (distribution AND retention) is the bigger barrier to universal coverage.



## Policy Implications

Need for longer net retention, potentially more durable nets

Allocation is extremely important as coverage levels increase

Net use is good overall, but could be better in many places



Relative impact of these mechanisms isn't immediately clear, but this model could give a pathway to explore tradeoff spaces

We need to consider all of these results in a holistic context

Future work: extend the model to consider entomological efficacy

Preprint: <https://www.researchsquare.com/article/rs-199628/v1>