**Analysis Tutorial Prospectus**

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1. **Title**

Shiny application for assessing impact of *Anopheles stephensi* in Ethiopia using epidemiological data

1. **Research Questions(s)**

How has the presence of *Anopheles stephensi* influenced malaria transmission in Ethiopia? What trends in malaria cases can be observed before and after *Anopheles stephensi* was detected*?* How can we develop a tool for visualizing the transmission pattern of this invasive species?

1. **Objective(s)**
2. Develop a ShinyApp to visualize and analyze epidemiological data from Erer, Ethiopia, tracking malaria case trends over time
3. Integrate data on Anopheles stephensi occurrence with malaria case trends to assess potential links between its spread and changes in transmission patterns
4. Use statistical analysis tools to identify high-risk areas and support malaria control efforts.
5. **Approach**

This project will develop a ShinyApp to analyze malaria epidemiological data from Ethiopia, focusing on trends in malaria cases and the impact of *Anopheles stephensi.* The app will allow users to explore malaria case trends overtime, analyze demographic factors and visualize spatial patters of *Anopheles stephensi* distribution. It will integrate filters for key variables such as mosquito net usage, insecticide spraying and travel history. In communication with ChatGPT, I will build this application using R and leveraging packages like shiny, tidyverse, ggplot2, ggmap, and data.table. The app will provide an accessible platform for decision making in malaria control effort, supporting researchers and public health officials in developing targeted intervention strategies.

1. **Selected References**

Carter, T. E., Yared, S., Gebresilassie, A., Bonnell, V., Damodaran, L., Lopez, K., ... & Balkew, M. (2018). First detection of the invasive malaria vector Anopheles stephensi in Ethiopia using molecular and morphological approaches. Acta Tropica, 188, 180-186. <https://doi.org/10.1016/j.actatropica.2018.09.010>

Perkel, JM. 2023. Six tips for better coding with ChatGPT. Nature, 618(7964), 422–423.

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Yadav, C. P., & Sharma, A. (2022). National Institute of Malaria Research-Malaria Dashboard (NIMR-MDB): A digital platform for analysis and visualization of epidemiological data. *The Lancet regional health. Southeast Asia*, *5*, 100030. <https://doi.org/10.1016/j.lansea.2022.100030>