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## INTRODUCTION

Tuberculosis (TB) continues to be a global public health problem and the leading cause of infectious mortality globally, regardless of diagnostic advances and treatment programs. The standard treatment regimen is considered highly effective for drug-susceptible TB diseases, but some patients may relapse after treatment.

Relapse is associated with treatment failure and may result either from difficult clinical management resulting in sub-therapeutic drug-to-drug interaction concentrations of key TB drugs, compromised drug metabolism, or insufficient adherence to patient-related factors. Unfortunately, there is very little knowledge about how patients in Ghana are identified as having relapses in the treatment of tuberculosis.

## METHOD

This study used numerical, analytical and statistical data mining in a quantitative analysis design to create a predictive treatment relapse model for TB patients in the Central Regions of Ghana. GeneXpert and microscopy results were used to build a model for predicting treatment relapse of patients by using R software package. Geospatial tool in SatScan was used to explore cluster of TB burden.
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## CONCLUSION

In conclusion study predicted that females have better treatment outcome compared to males.

Patients within the ages of 40.5 and 49.5 years used in the model fall within the young adult population of patients, predicted to have high TB prevalence, TB-HIV co-infections, RIF resistance, PTB, treatment and test outcomes.

## REFERENCE

1. Tola, A., Minshore, K. M., Ayele, Y., and Mekuria, A. N. (2019). Tuberculosis Treatment Outcomes and Associated Factors among TB Patients Attending Public Hospitals in Harar Town, Eastern Ethiopia: A Five-Year Retrospective Study. Tuberculosis research and treatment.

2. Kaur, D., Bedi, R., and Gupta, S. K. (2015, July). Review of decision tree data mining algorithms: ID3 and C4. 5. In Proceedings of international conference on Information Technology and Computer Science, 11-12.

3. Murphy, M. E., Wills, G. H., Murthy, S., Louw, C., Bateson, A. L. C., Hunt, R. D., McHugh, T. D., Nunn, A. J., Meredith, S. K., Mendel, C. M., Spigelman, M., Crook, A. M., Gillespie, S. H., and REMoxTB Consortium (2018). Gender differences in tuberculosis treatment outcomes: a post hoc analysis of the REMoxTB study. BMC Medicine, 16, (189).

## RESULTS

Relapse associated with TB treatment was generally on the low side across the study population. Males tended to record higher cases of relapse when compared with the females with majority of cases among both sexes recorded with no treatment relapse treatment relapse was found to higher among the age group 41-60 years followed by 21-40 years and with the advanced age group 61-80 years being the least
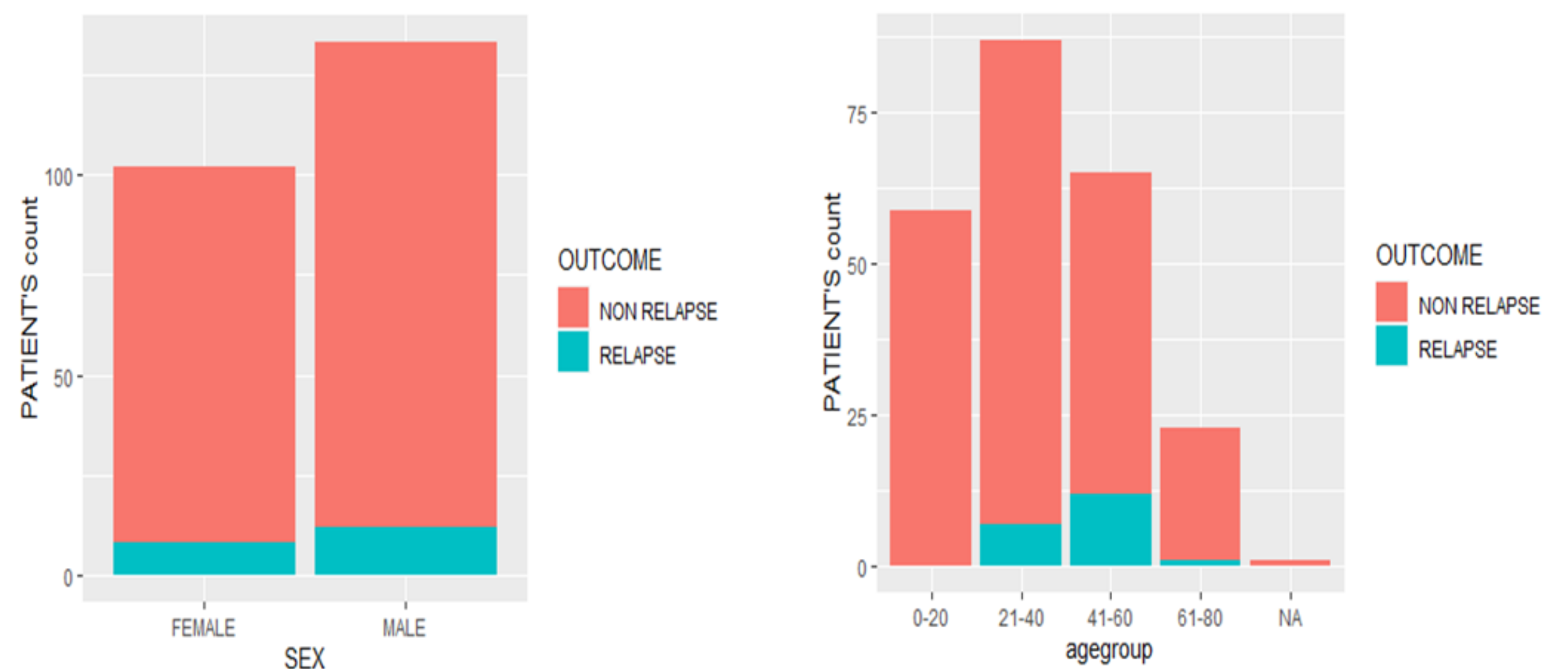


The figure below indicates all the six clusters identified were statistically significant (p < 0.05). Cluster 1, Komenda-Edina-Eguafo-Abbrim (KEEA) district and Cape Coast Metropolitan Assembly (CCMA) had most annual cases/100000 population and relative risk of 24.5/100000 and 8.41/100000 respectively with no overlap, followed by Twifo Hemang Lower Denkyira district (Cluster 5) with 23.5/100000 and 4.23 of annual cases/100000 population and relative risk respectively. Cluster 2 (Sekondi-Takoradi Metropolis) had the least with annual 0.7 cases/100000 population and relative risk of 0.091 without overlap. There was also significant overlap of cases and exposure among Clusters
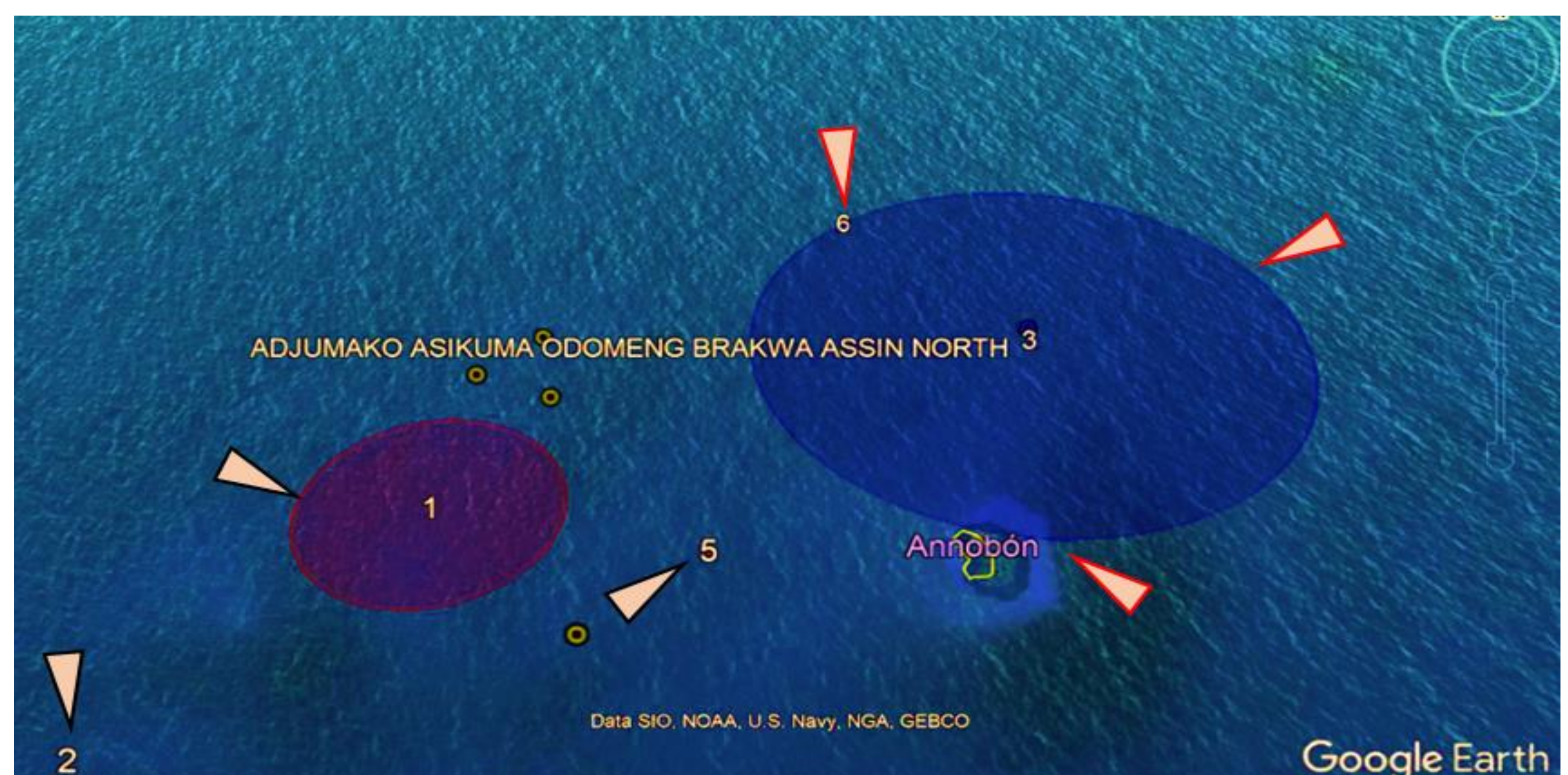


This study made use of GeneXpert and Microscopy test methods outcome, age and sex to develop a model to predict unfavourable treatment outcomes of patients' using decision tree in R studio as show in the figure below. The use of the male gender as part of the rules in the prediction model was based on the evidence from other studies (Murphy et al., 2018; Tola et al., 2019) and current study suggesting females to have better treatment outcome compared to males.