Spatial exploration of perception of having fewer sexual partners as HIV/AIDS risk reduction in South Africa

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BACKGROUND

South Africa has the largest number of people living with HIV/AIDS with an estimation of approximately 9 million which is 14% of the population and accounts for 24% of HIV/AIDS infections worldwide. One of the factors that reduces chances or risk of contracting HIV/AIDS is to limit the number sexual partners. To deliver targeted policy and raise awareness in the effort of reducing and preventing deaths resulting from the pandemic, it is important to understand the relationship between the perception of having fewer sexual partners and its covariates. This research aims to explore the spatial pattern of perception of having fewer sexual partners as HIV/AIDS risk reduction across the country as well as its related factors at district level
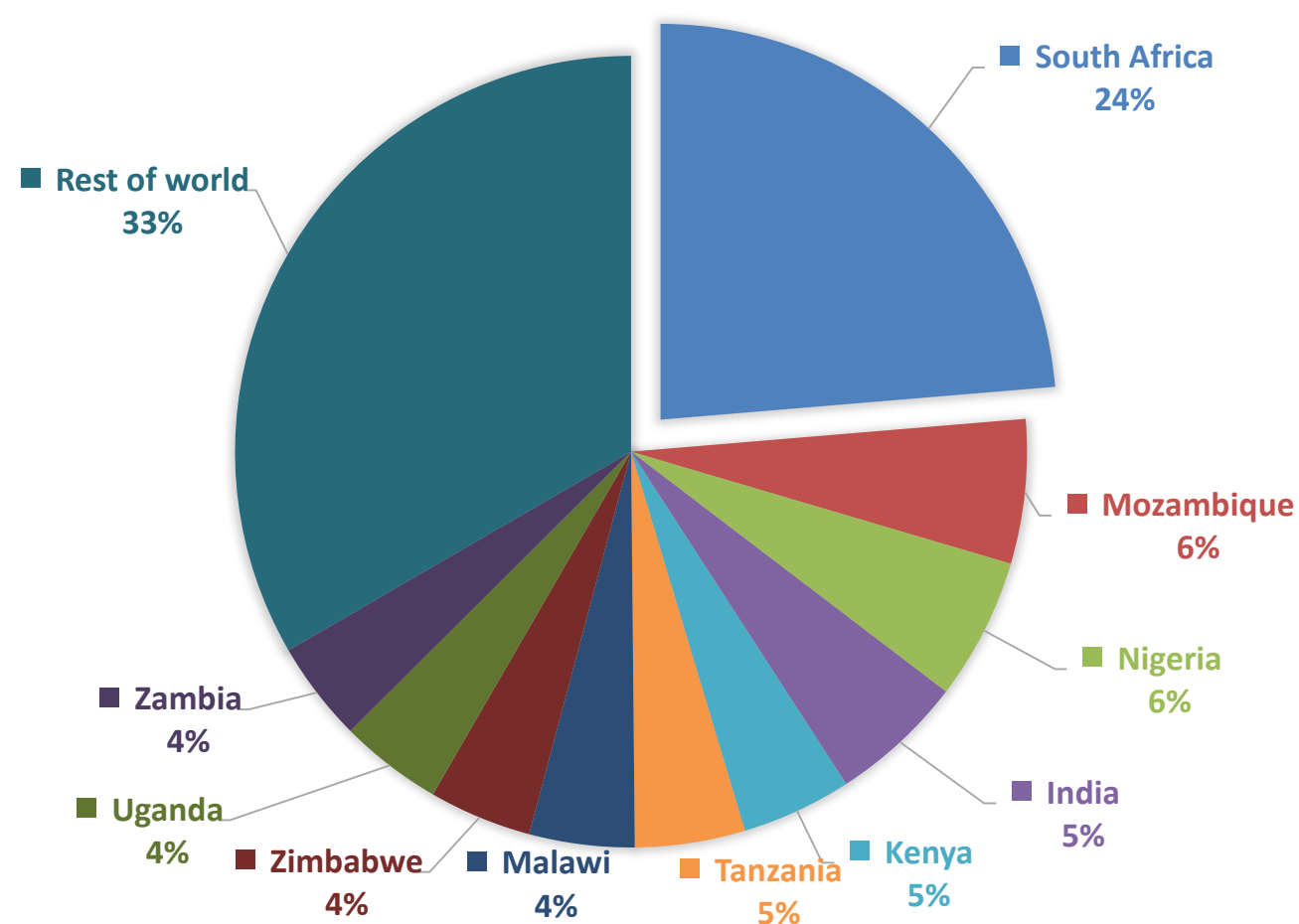

Figure 1: Global HIV/AIDS infections

DATA AND METHODOLOGY

The poster utilized data from the South African National HIV Prevalence, HIV Incidence, Behaviour and Communication Survey of 2017 (SABSSM V). Household samples were randomly selected from 1457 small area layers computed by StatsSA and 15 households were selected from each sampled small area layer. The variable of interest for this research was the question: "Can a person reduce the risk of HIV by having fewer sexual partners?" The question was a categorical outcome variable and was coded as follows: 1 = Yes; 2 = No; 3 = Do not know; where "Yes" was selected for the analysis. The total number of responses for this outcome was n = 28161.

Spatial autocorrelation (Global Moran's *I*) was employed to indicate whether the spatial distribution of the perception of fewer sexual partner as a HIV/AIDS risk reduction method was dispersed, random or clustered. Geographically Weighted Poisson Regression (GWPR) modelling was used to identify covariates that had a significant impact in influencing the variable of interest

RESULTS & DISCUSSION

Spatial autocorrelation (Moran's *I* = 0.249, z-score = 3.043; p-value = 0.002) results showed that perception of having fewer sexual partners as a HIV/AIDS risk reduction was positively clustered across districts. Concentration of the perception is observed more in metros as opposed to districts which cover rural areas (Fig 2).The GWPR model (pseudo R2 = 0.95 and AICc = 1017) showed that being male, unemployed, young and never married were significant factors influencing perception of having fewer sexual partners as a HIV/AIDS risk reduction. The deviance residuals indicate that the model performed better in districts where there were higher response rates (Fig 3). This suggests that a more accurate prediction is facilitated by a higher training sample.
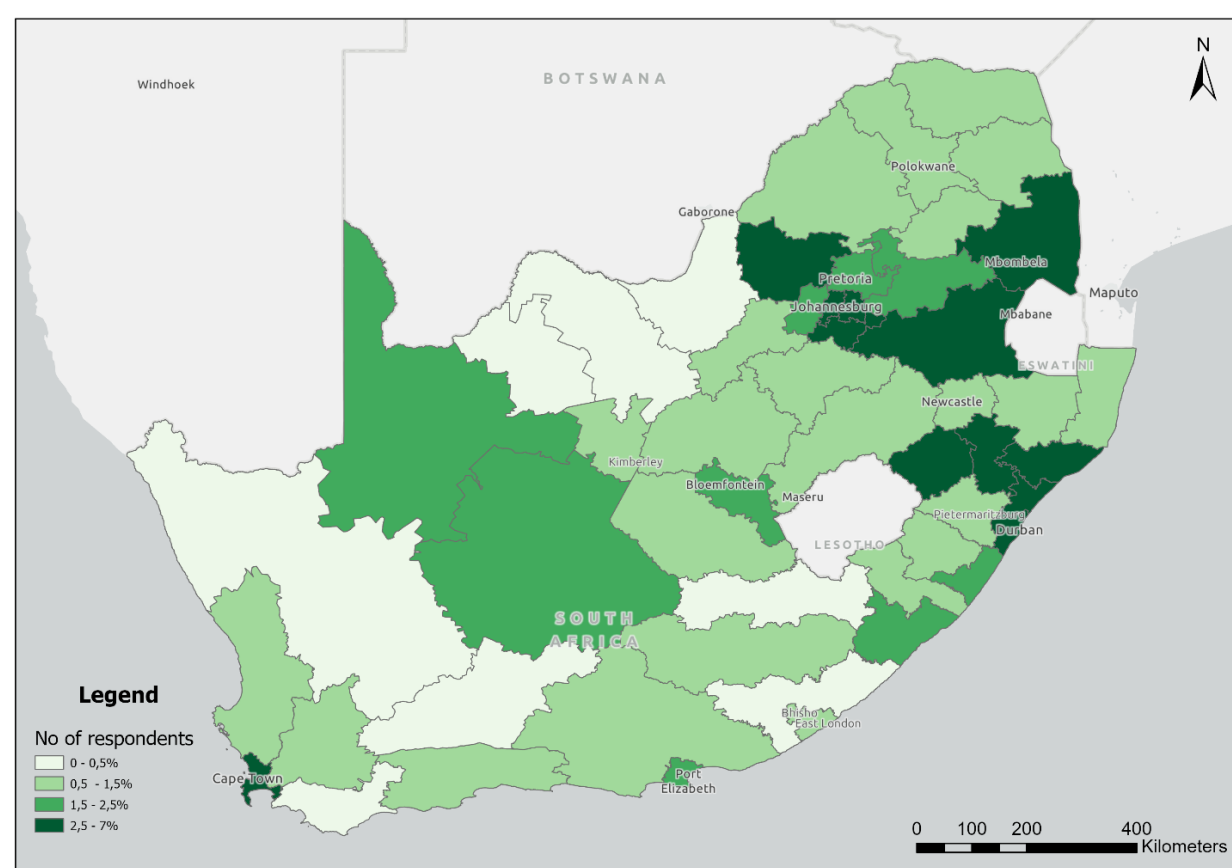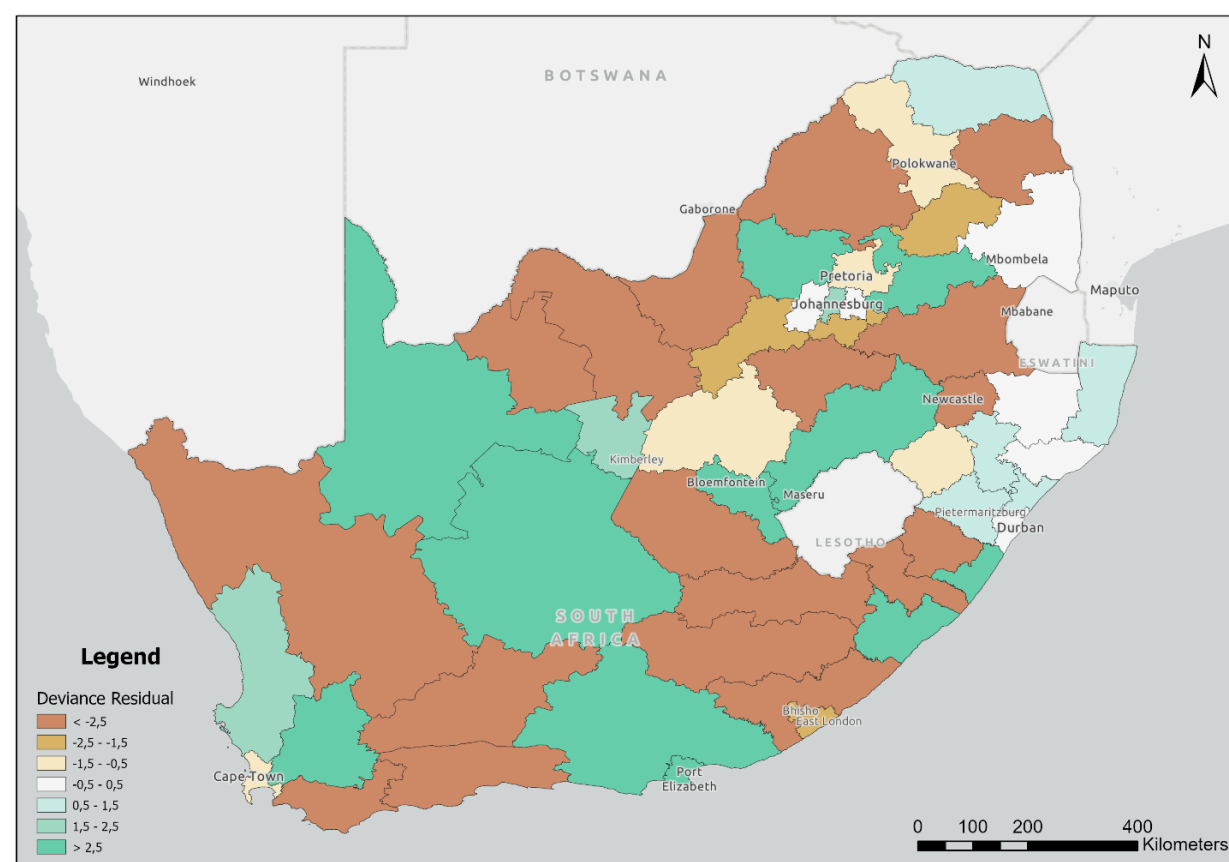

Figure 2: Spatial distribution of responses

Figure 3: Spatial distribution of GWPR model deviance residuals

CONCLUSION

This research demonstrates that spatial heterogeneity of perception of having fewer sexual partners to minimize risk of getting HIV/AIDS exists across 52 districts of South Africa. These findings further highlighted that spatial knowledge can be utilized to address factors influencing this perception at local level and to ensure geographically targeted interventions by policy makers.