

Spatial accessibility of COVID-19 vaccination sites in South Africa

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Introduction

- Access to healthcare is an important component of an overall health system.
- Measuring spatial accessibility to healthcare contributes to a wider understanding of the performance of health systems.
- Defining the location of health services in relation to the communities they are intended to serve is the cornerstone of health system planning
 - Ensuring that no one is geographically marginalized from essential services.
- Spatial accessibility presents an important barrier to accessing healthcare services.

Introduction Cont...

- In South Africa, majority of users of public health facilities, particularly in informal settlements and rural areas, use public transport or walk to facilities.
- The travel time and transport options for reaching services may pose a significant access barrier.
- Tsoka and le Sueur (2004) reported that clinic use declined with increasing distance.
- Access to vaccination sites is important in an effort to vaccinate as many people as possible.
- Aim - analyse the spatial pattern and accessibility of COVID-19 vaccination sites in the early Phases of the vaccination programme.

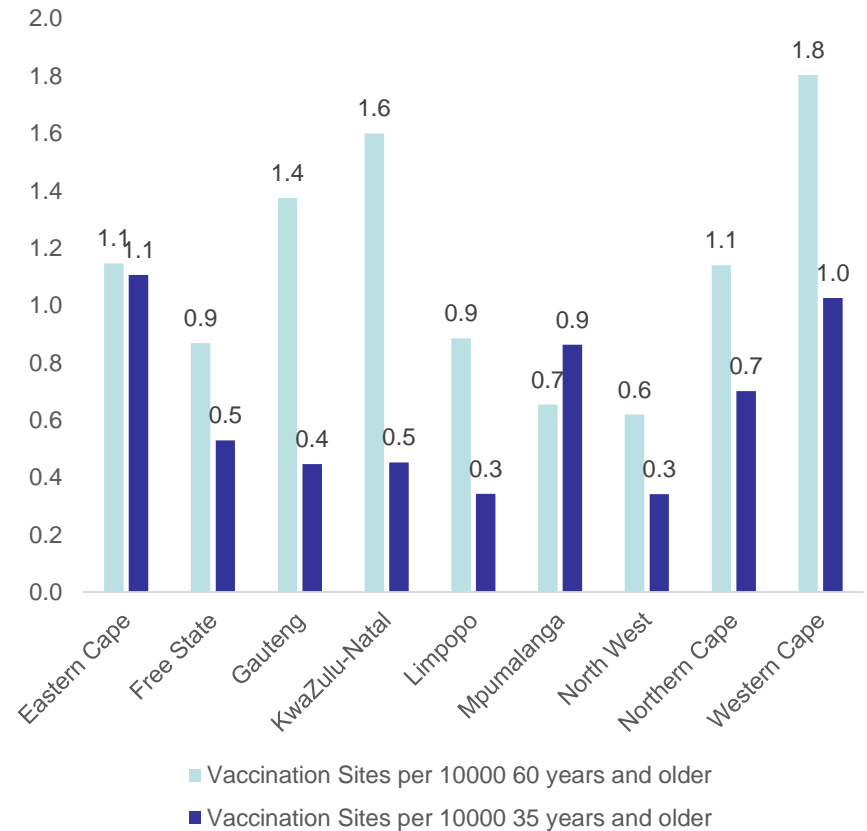
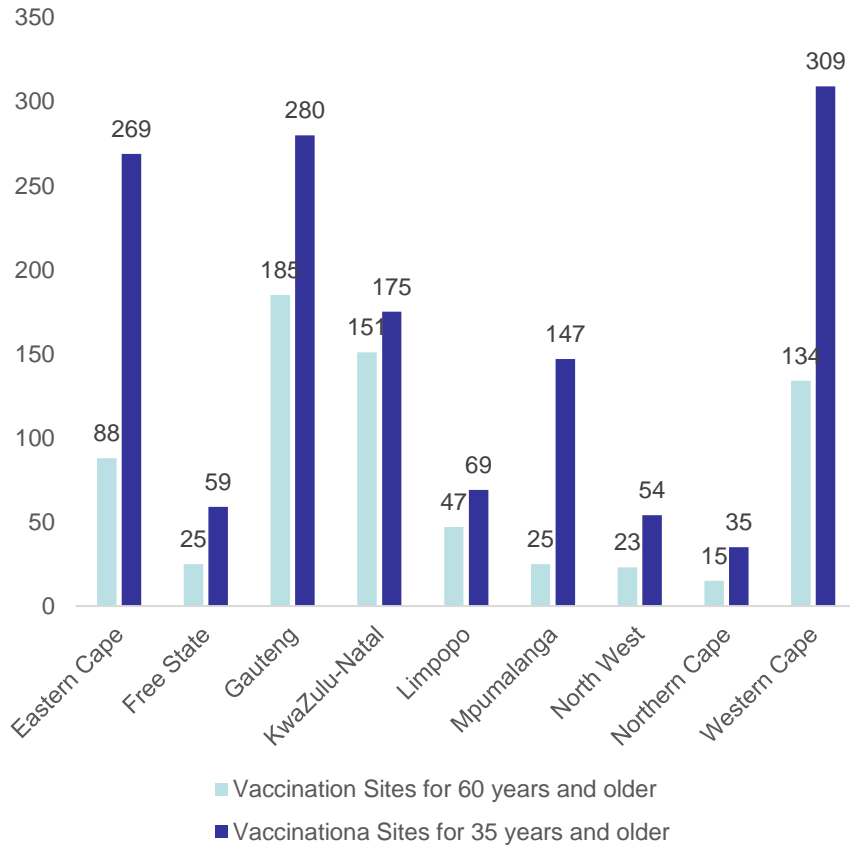
Methods

- Active vaccination sites (both public and private) obtained from National Department of Health coronavirus website.
 - (<https://www.sacoronavirus.co.za/>)
- Geocoding;
 - Health Facilities Data from Department of Health.
 - Google Map.
 - Points of Interest Data from AfriGIS.
- Built-up Areas from DALRRD.
- 2021 Mid-year Population Estimates from Stats SA.
- ArcGIS 10 used for density indicators and Kernel density analysis.

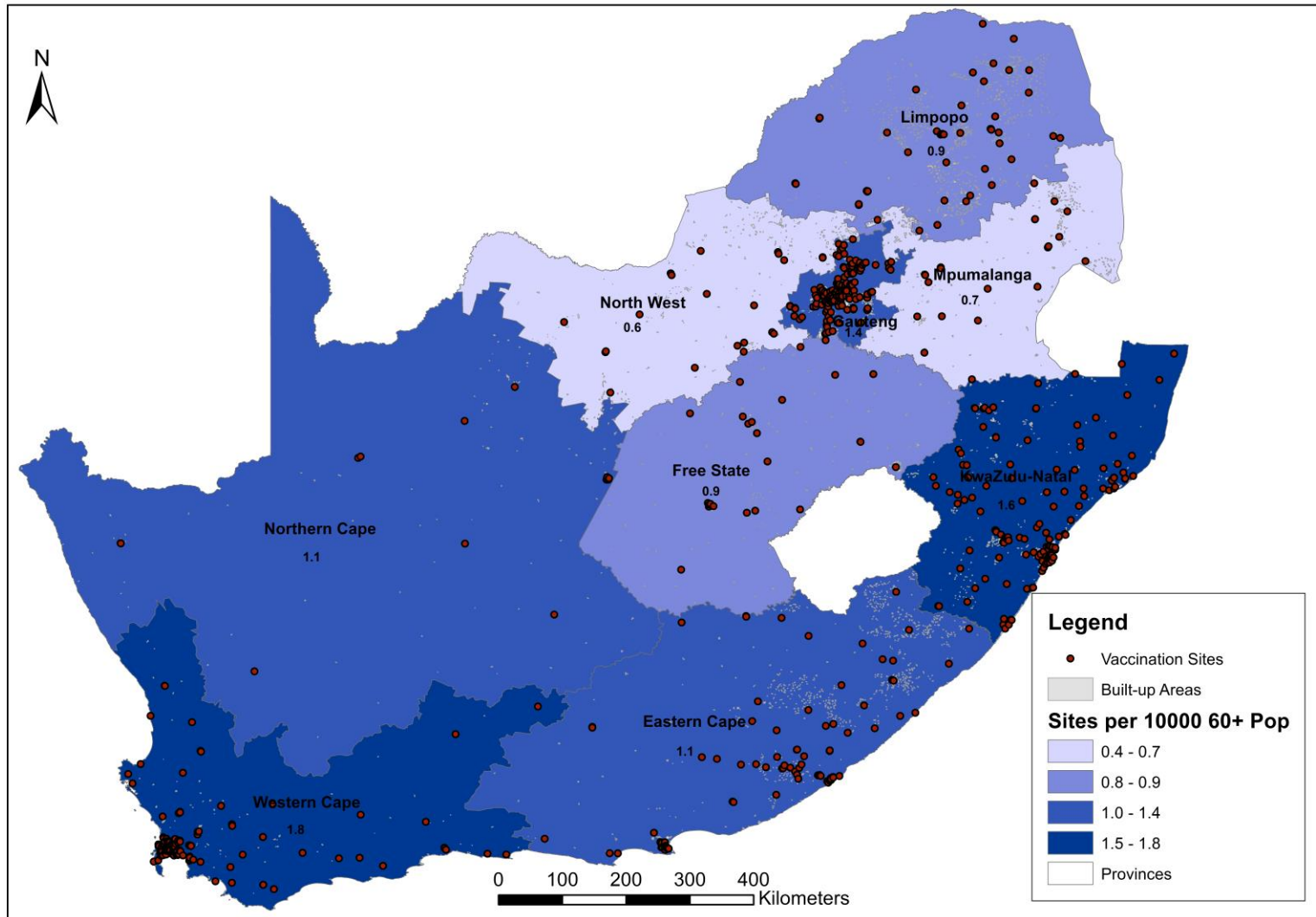
Results

- In the early Phases of the vaccination programme;
 - 691 active vaccination sites were obtained and only 663 could be geocoded.
 - Gauteng had the highest number of vaccination sites with 172, followed by KwaZulu-Natal and Western Cape with 141 and 130 respectively.
- As of 2 August 2021;
 - 1394 active vaccination sites obtained and only 1362 could be geocoded.
 - Western Cape had the highest active vaccination sites with 309, Gauteng with 280 and Eastern Cape with 269.

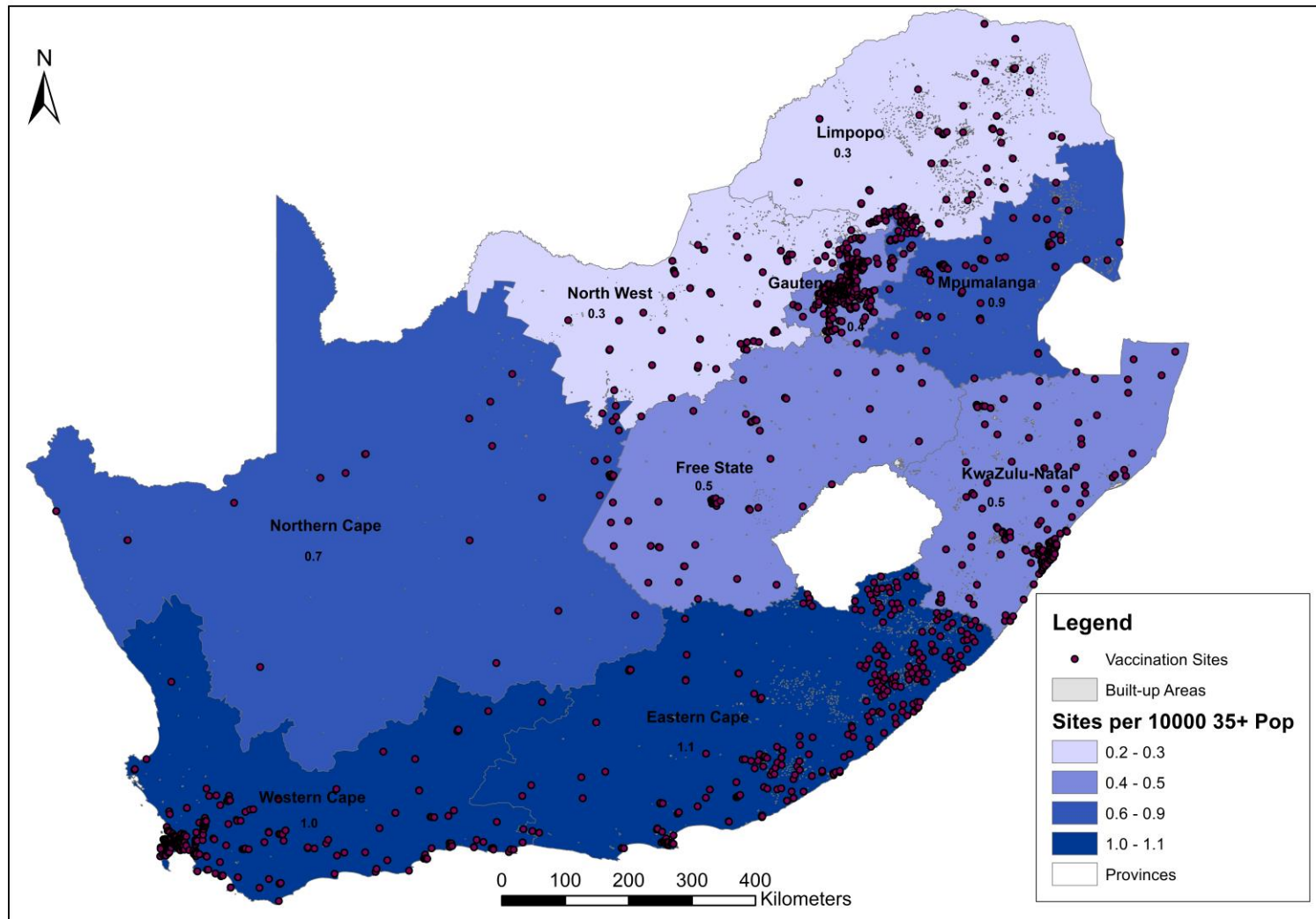
Vaccination sites and density indicators for both elderly and adult population (35+)



Vaccination Sites and Density for Elderly



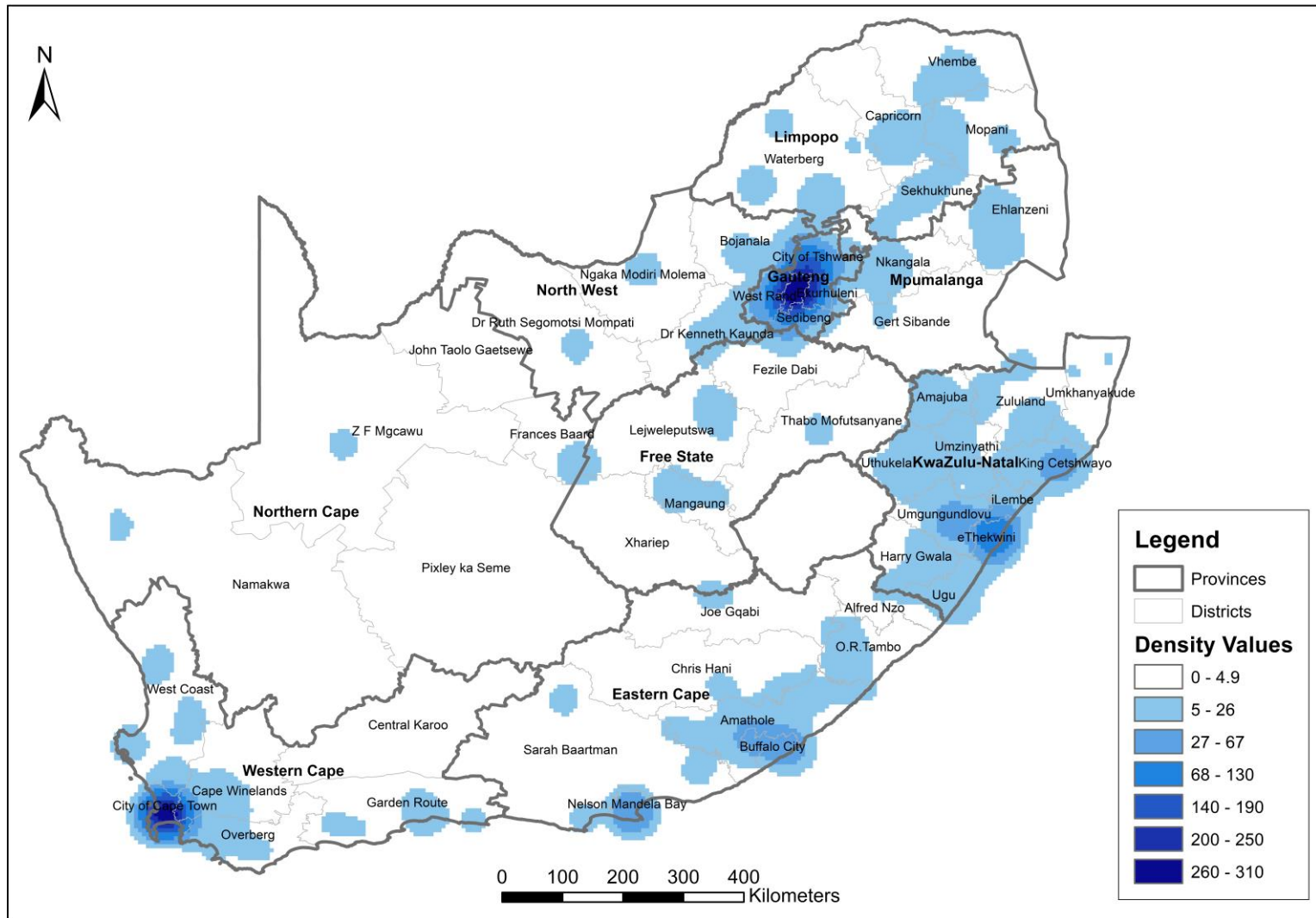
Vaccination Sites and Density for Adults (35+)



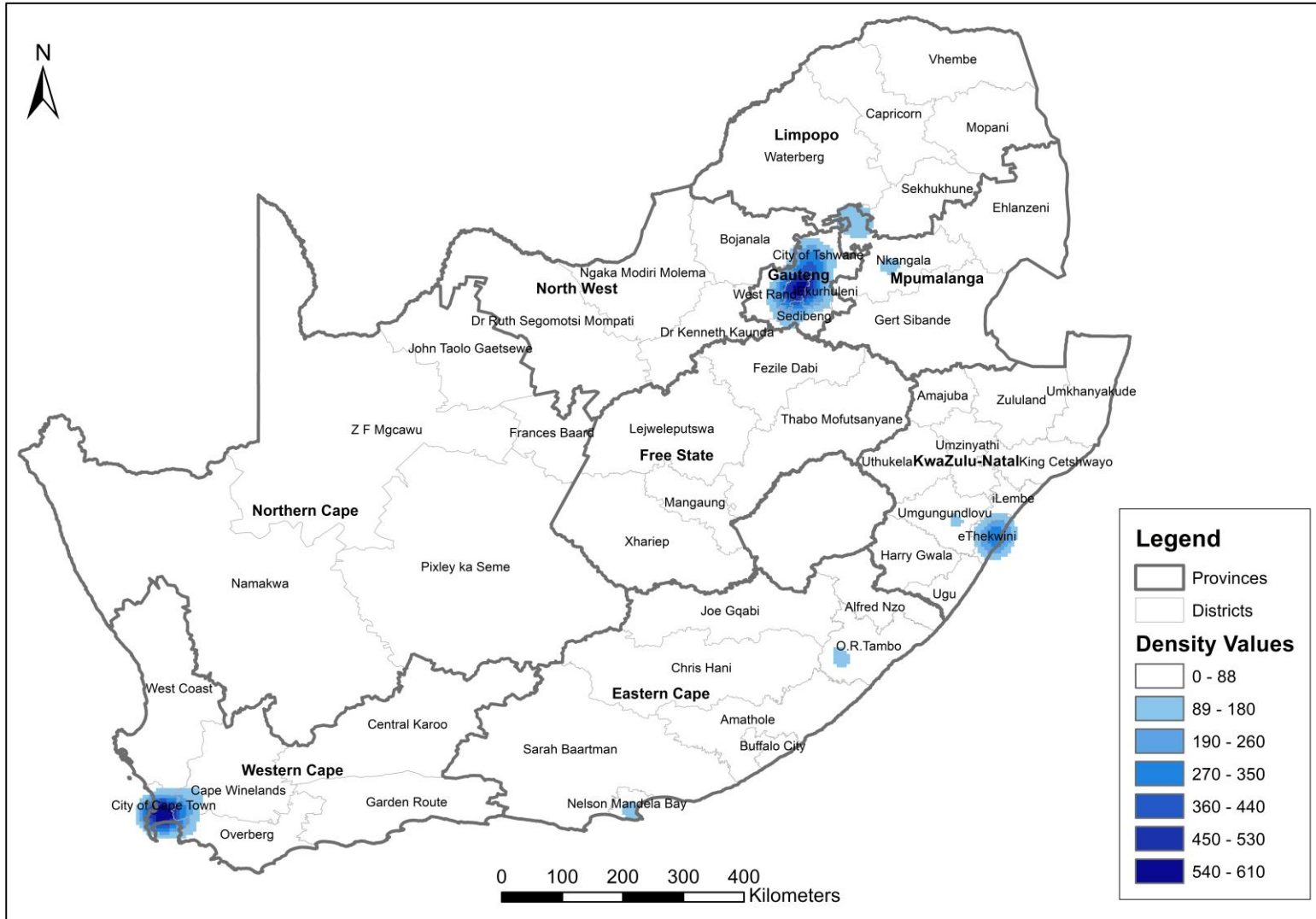
Results Cont...

- Kernel density results showed that vaccination sites were clustered around the metropolitan areas of Gauteng, Western Cape and KwaZulu-Natal.
- In early Phase;
 - Most districts in Northern Cape had about 2 vaccination sites except Francis Baard which had around four vaccination sites.
 - Xhariep district in Free State had only 1 vaccination site.
- As of 2 August;
 - More than 10 added in Xhariep district.

Kernel Density Map – Early Phase



Kernel Density Map – As of 2 August



Discussion

- Preliminary findings show existing inequality between urban and rural areas.
 - Transport challenges to vaccine sites in Free State.
 - Transport challenges to vaccine sites in Eastern Cape.
- Access to vaccine vs vaccine hesitancy or reluctance.
- Distance reduces healthcare seeking appetite.

Discussion Cont...

- Existing initiatives to improve vaccination in rural areas
 - 3 mobile vaccination labs in trucks by SAMRC, Chan Soon Shiong Foundation, the National Health Laboratory Service, and the National and Eastern Cape Department of Health.
 - GoGOGOgo programme, initially developed by Jane Simmonds in Mpumalanga, to vaccinate elderly on pension pay points.
 - Transvaco (a vaccination train) - to reach remote parts of South Africa. From Springs, Ekurhuleni to the Eastern Cape.
 - Government initiative of transport for 50 years and older.

Conclusion

- Spatial inequality in access to vaccination sites between urban and rural areas.
- More efforts need to be undertaken to ensure that there are enough vaccination sites in the remote areas
 - Ensure that all citizens have access to the vaccine in order for the country to reach the targeted immunity timeously.
- The project is continuing and more analysis will be explored as more vaccination sites are obtained.

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