Hyperlocal Support of Vaccine Uptake in South Africa

December 2021

Hyperlocal Support of Vaccine Uptake: Overview

We aim to bring local understanding of uptake barriers across South Africa

Goals

A **deeper understanding** of how the 3C's occur locally and across entire countries to inform broad Risk Communication and Community Engagement (RCCE) efforts.

A **detailed mapping of J&J's consumer segments** and media consumption patterns across the country to close the gap between data and action.
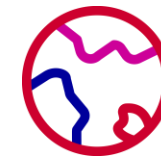
An **interactive tool to equip implementors with hyperlocal data** to overcome barriers to vaccine uptake faster.

Outputs

Comprehensive reports containing overviews and detailed assessments of hyperlocal patterns of vaccine confidence, complacency, convenience, consumer segmentation, and media consumption patterns across the entire country.

DATAfraym – an interactive web-based dashboard – access, for custom data exploration, analysis, and exports, with mapping available at a 1 square kilometer level of granularity.
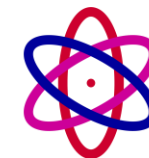
Complete datasets available regarding vaccine confidence, complacency, convenience, consumer segmentation, and media consumption patterns across the entire country, at a 1 square kilometer level of granularity.

Paired with WHO's 3C Framework, we've mapped J&J's Consumer Segments to identify where vaccine uptake challenges are likely to occur

The 3C's

Confidence: High confidence = *More* likely to take a Vx

Convenience: High convenience = *More* likely to take a Vx

Complacency: High complacency = *Less* likely to take a Vx

Meet the segments: An introduction

	Segment 1 Confident enthusiasts	Segment 2 Vaccine sceptics	Segment 3 COVID cynics	Segment 4 Enthusiastic pragmatists	Segment 5 Vaccine ambivalents
Summary	Convinced of COVID threat and vaccine benefits. Would be quick adopters driven by social responsibility to protect their community.	Convinced of COVID threat, but scepticism around vaccine safety and efficacy inhibits perceived benefit and quick uptake.	Strongly hesitant of COVID threat and a COVID vaccine. Mistrust in the vaccine's purpose and advocates means they will be slow to vaccine adoption, if at all.	Convinced of COVID threat and merits of a vaccine, but inhibited by practical barriers. Cost-benefit analysis of the process could cause uptake delay.	Not convinced of the threat of COVID as a disease and lack motivation to seek a vaccine, but few barriers to uptake. Could be moved by social norms and strong messaging.
% of population	24%	25%	12%	19%	20%
Likelihood to take a COVID-19 vaccine	Very High	Moderately low	Very Low	High	Moderate
Speed of uptake	As soon as possible	Wait at least 6-12 months	Never	As soon as possible	Wait at least 6-12 months
Perceived ease of getting the vaccine	Very easy	Fairly easy	Fairly easy	Not easy/not at all easy	Fairly easy
COVID disease perceptions	High perceived risk and severity	High perceived risk and severity	Low perceived risk and severity	High perceived risk and severity	Low perceived risk and severity

Consumer Segmentation

Different segments of people have different motivations and reasons to not get a COVID-19 vaccine (barriers)

Data and Methods

We used geospatial machine learning methods to create local understanding of vaccination uptake barriers across the entire country down to the square kilometer.

Data

This report leverages the 2021 Fraym South Africa field survey (May 2021)

Health facilities in sub-Saharan Africa were sourced from the World Health Organization.[1]

Walking and driving time to health facilities were sourced from the Malaria Atlas Project.[2]

Methods

Machine Learning for Hyperlocal Mapping: The localized maps seen in this report were produced using the proprietary software FUSEfraym™. This software uses artificial intelligence and machine learning (AI/ML) to weave together survey data with satellite imagery and geostatistical datasets.
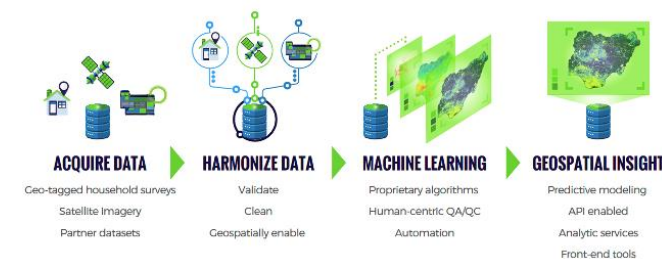
Note 1: This master list of health facilities w as developed from a variety of government and non-government sources from 50 countries in sub-Saharan Africa, accessible here: https://data.humdata.org/dataset/health-facilities-in-sub-saharan-africa
Note 2: Least-cost distance compensates for travel costs, such as slope and terrain, accessible here: https://malariaatlas.org/research-project/accessibility-to-healthcare/
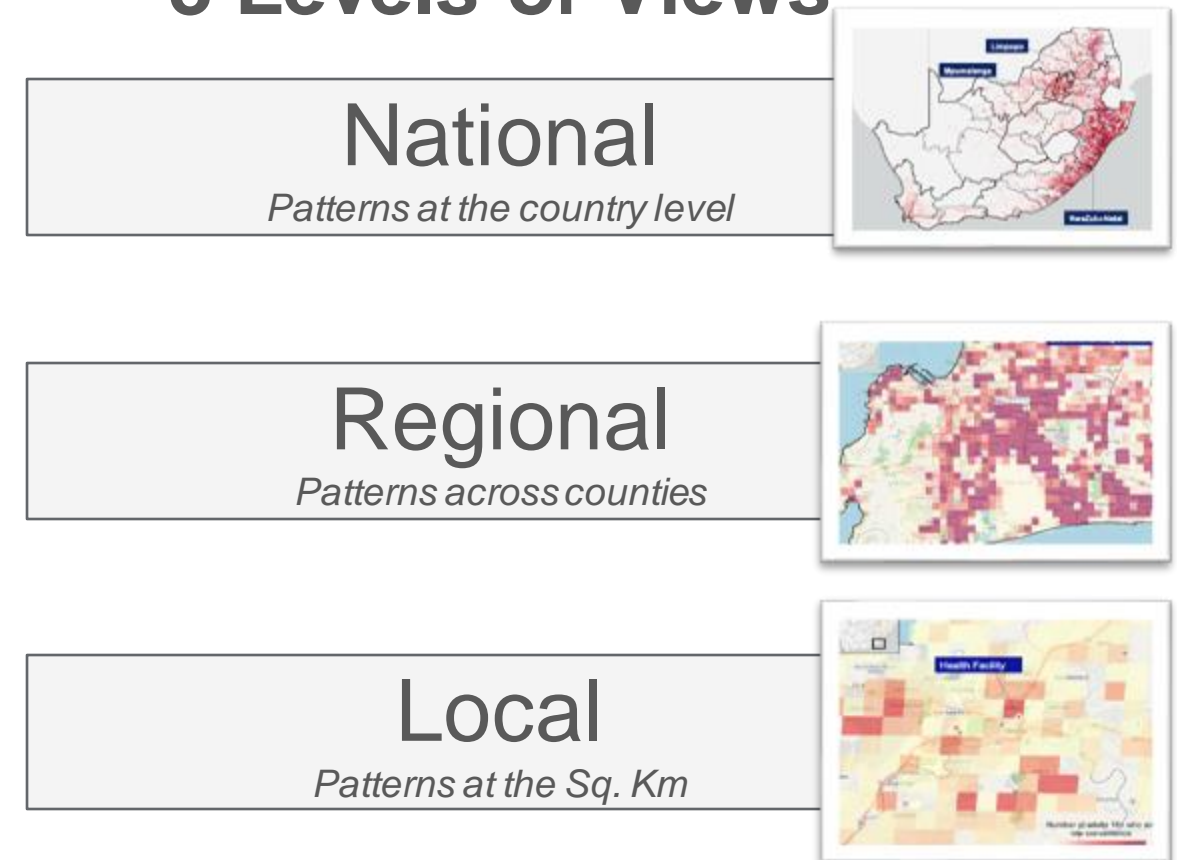
Use this Document as Inspiration

Paired with WHO's 3C Framework, we've mapped J&J's Consumer Segments to identify where vaccine uptake challenges are likely to occur.

Potential ways to use this analysis:

- Concentrate communication campaigns and media spending in specific geographic areas

- Target specific messages to niche audiences in prioritized geographies

- Optimize vaccine distribution

- Service & Product Delivery Planning

3 Levels of Views

National
Patterns at the country level

Regional
Patterns across counties

Local
Patterns at the Sq. Km

Ex. 1: Reaching 'Vaccine Skeptics' Near Cape Town

How do we reach those near Cape Town who are worried about COVID but have vaccine concerns?

WHO are we looking for?

Segment 2	
Vaccine sceptics	
Summary	Convinced of COVID threat, but scepticism around vaccine safety and efficacy inhibits perceived benefit and quick uptake.
% of population	25%
Likelihood to take a COVID-19 vaccine	Moderately low
Speed of uptake	Wait at least 6-12 months
Perceived ease of getting the vaccine	Fairly easy
COVID disease perceptions	High perceived risk and severity

WHERE do we find them?

People in the **vaccine skeptics** segment can be seen in greater numbers in the dark blue squares on the map below, around the Cape Town area. They aren't focused in one place.

Number of adults 18+ that are vaccine sceptics

10   700+

Esri South Africa, Esri, HERE, Garmin, NASA, USGS
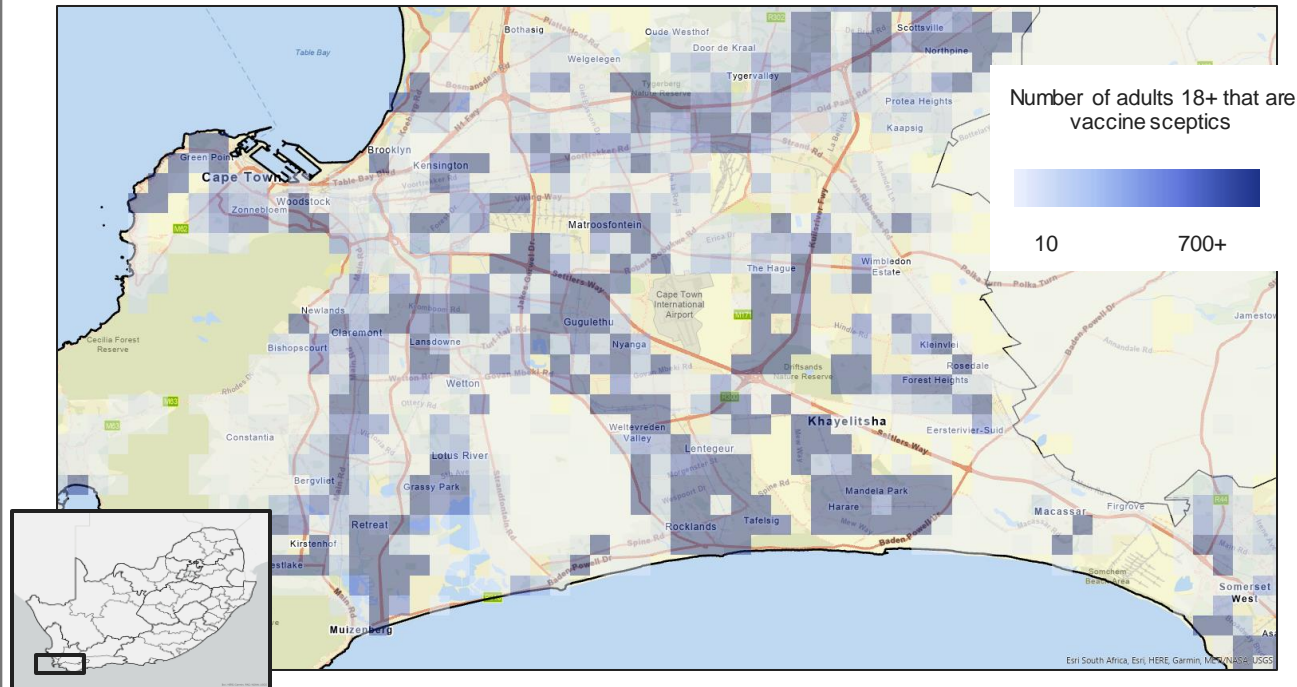
HOW do we reach them?

Media consumption patterns for Vaccine Skeptics around Cape Town can be seen in the chart below.

Given their heavy social media use, as well as their broad geographical distribution, a digital programmatic RCCE campaign via WhatsApp and Facebook might be most effective to reach this group, using geolocations as target points.

Media	% Vaccine Sceptic Adults
Social Media	
WhatsApp	95%
Facebook	85%
YouTube	77%
Instagram	47%
Radio	
Radio FM	26%
Jacaranda FM	18%
Radio RSG	16%
Ukhozl FM	12%
TV	
E TV	50%
SABC1	39%
BCC	31%
CNN	27%

Putting it all together: *In order to reach Vaccine Skeptics near Cape Town, leverage Facebook and WhatsApp Platforms near Cape Town, Lansdowne and Claremont.*

# Ex. 2: Finding 'Enthusiastic Pragmatists' Nationally

How do we reach those who *want* vaccines but don't think they can get them?

WHO are we looking for?

Segment 3 *Enthusiastic pragmatists*	
Summary	Convinced of COVID threat and merits of a vaccine, but inhibited by practical barriers. Cost-benefit analysis of the process could cause uptake delay.
% of population	19%
Likelihood to take a COVID-19 vaccine	High
Speed of uptake	As soon as possible
Perceived ease of getting the vaccine	Not easy/not at all easy
COVID disease perceptions	High perceived risk and severity

WHERE do we find them?

People in the **enthusiastic pragmatists** segment are disproportionately located around Kwazulu-Natal and near Durban.

Kwazulu-Natal

Xhariep

Proportion of adults 18+ who are enthusiastic pragmatists

< 10%   > 75%

Esri, HERE, Garmin, FAO, NOAA, USGS
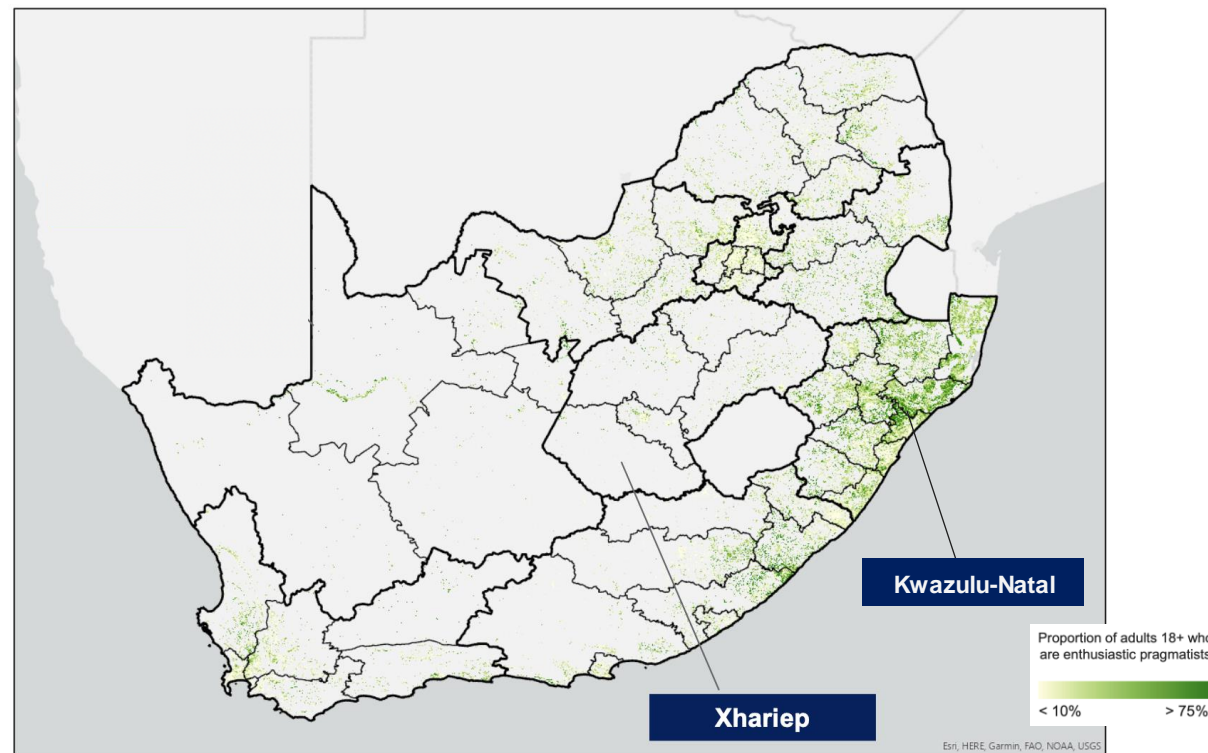
HOW do we reach them?

Residents in KwaZulu-Natal mostly use social media, but most also watch regularly, primarily in Isuzulu.

Social Media

Facebook Users %	91
Instagram Users %	44

Language

English %	12
Afrikaans %	1
Isixhosa %	7
Isizulu %	70

Communications and Media

TV Viewers %	66
Mobilephone Ownership %	93
Radio Ownership %	61

Johnson & Johnson   fraym

# Ex. 3: Understanding Complacency in Johannesburg

How do we reach those who *might* take a vaccine but don't see a risk in Covid, in Johannesburg?

WHO are we looking for?

|	Segment 5 — Vaccine ambivalents
Summary	Not convinced of the threat of COVID as a disease and lack motivation to seek a vaccine, but few barriers to uptake. Could be moved by social norms and strong messaging.
% of population	20%
Likelihood to take a COVID-19 vaccine	Moderate
Speed of uptake	Wait at least 6-12 months
Perceived ease of getting the vaccine	Fairly easy
COVID disease perceptions	Low perceived risk and severity

WHERE do we find them?

People in central Johannesburg tend to be **less complacen**t, whereas those in the suburbs – particularly to the south-east and east, tend to be **more complacent**.
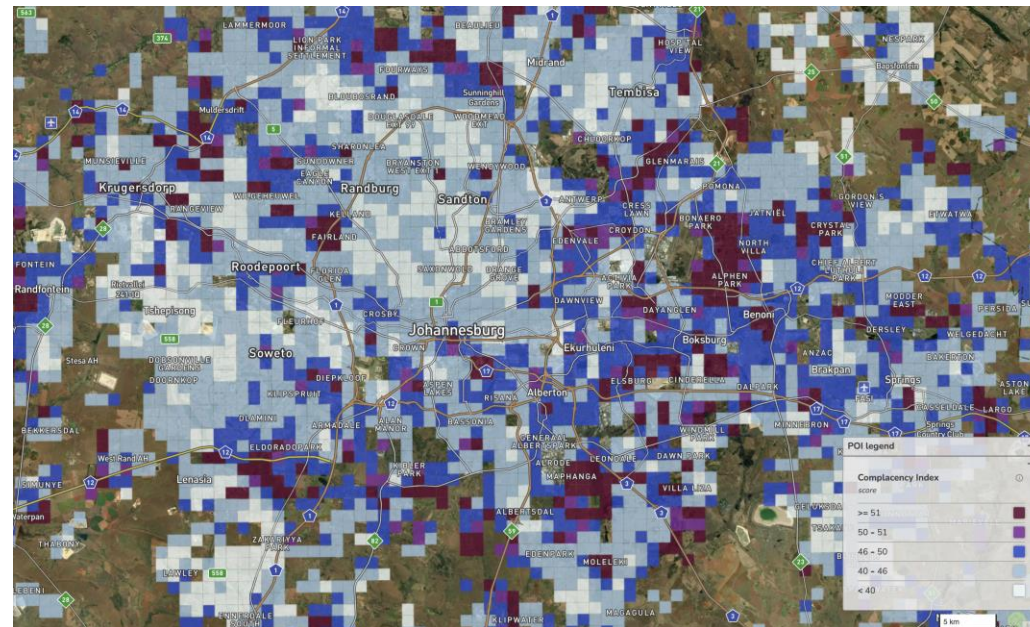
HOW do we reach them?

Pop-up vaccination sites in the east end of Johannesburg could be used to reach those in complacency 'hot spots' where the residents tend to be less motivated to travel for a shot.
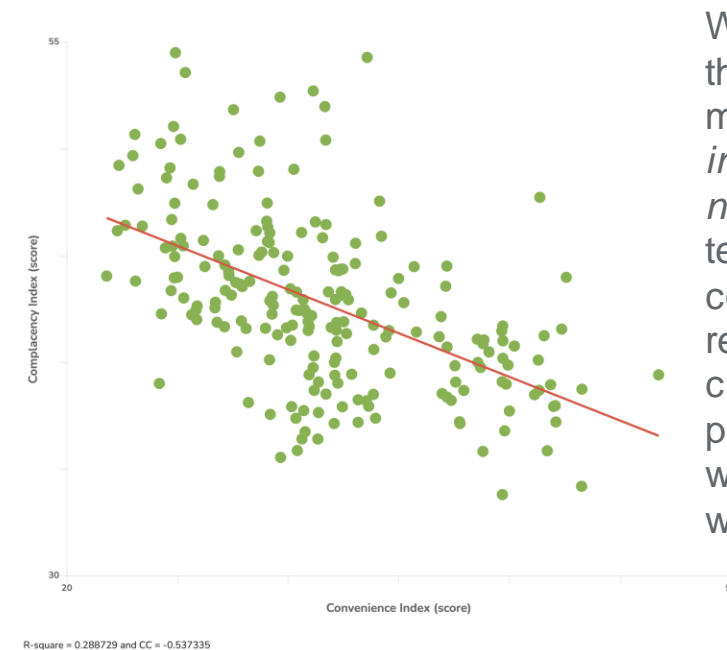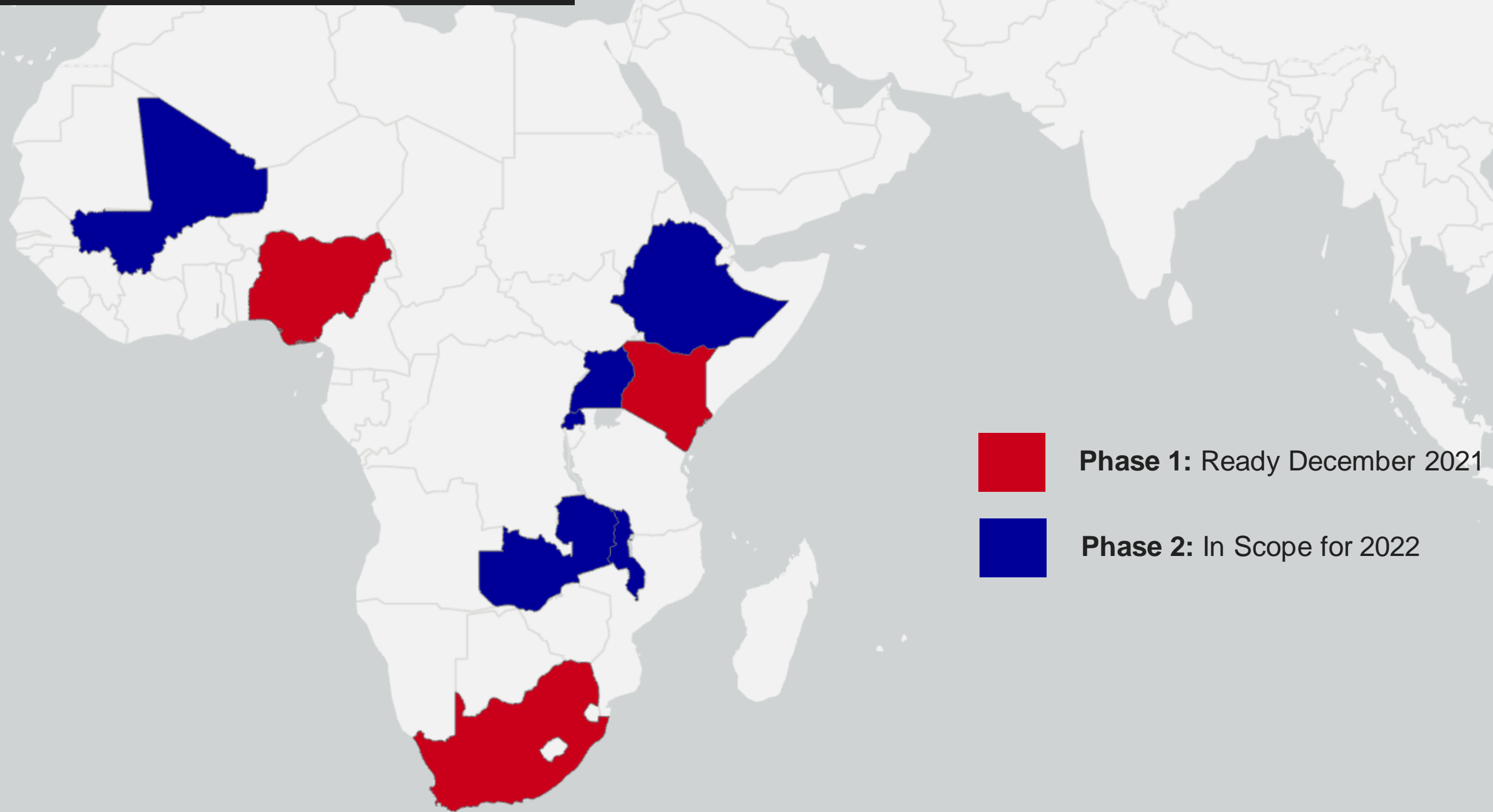
We also know that those who are more complacent *in this neighborhood* tend to have more convenience-related challenges, so pop-up clinics would serve them well.

R-square = 0.288729 and CC = -0.537335

What are other use cases for these data?

Appendix

Contacts

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Meet the segments: An introduction

	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5
	Confident enthusiasts	*Vaccine sceptics*	*COVID cynics*	*Enthusiastic pragmatists*	*Vaccine ambivalents*
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