

South African COVID-19 Vulnerability Index Dashboard

Frequently Asked Questions



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What is the Vulnerability Index?

The South African COVID-19 Vulnerability Index (SA CVI) aims to statistically and spatially identify vulnerable populations that are more likely to be adversely affected should COVID-19 spread in the affected area.

The Index uses Census 2011 data and eight indicators related to labour force activity, access to media, household services, overcrowding, multigenerational status, age and chronic illness to output a composite indicator to reflect the vulnerability status of citizens to the Covid-19 virus and where these individuals are located.

The index uses a natural counting approach to determine the **headcount** of vulnerable individuals within a population as well as measure their level of simultaneous vulnerability determining **intensity**.



Employed
with private
vehicle



Access to
media



Access to
water



Access to
sanitation



Over-
crowding



Multi-
generational
households



Age
(elderly
60+)



Chronic
medication



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How is the Vulnerability Index measured?

The Index was compiled using an adaptation of the Alkire Foster method.

A composite index was calculated and produced based on 8 indicators. All indicators have equal weights and hence each have a share of 1/8 contributed to the total weight of 1.



Headcount is defined as the proportion of persons that are considered to be multi-dimensionally vulnerable. The vulnerable were identified using a vulnerability cut-off, which represents the proportion of minimum deprivation a person must experience in order to be identified as vulnerable.



Intensity is defined as the average proportion of indicators in which multi-dimensionally vulnerable persons are deemed vulnerable. The intensity of the vulnerability was then computed based on the number of themes/indicators that an individual is vulnerable in.

The **Vulnerability Index** score was then calculated as the headcount multiplied by the intensity. The final score was ranked from 0-5 with 5 being the most vulnerable, 0 the least.



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What data is used and what geographic levels are mapped?

The index uses 2011 Census data and the index considers the population in all Enumeration Areas (EAs).

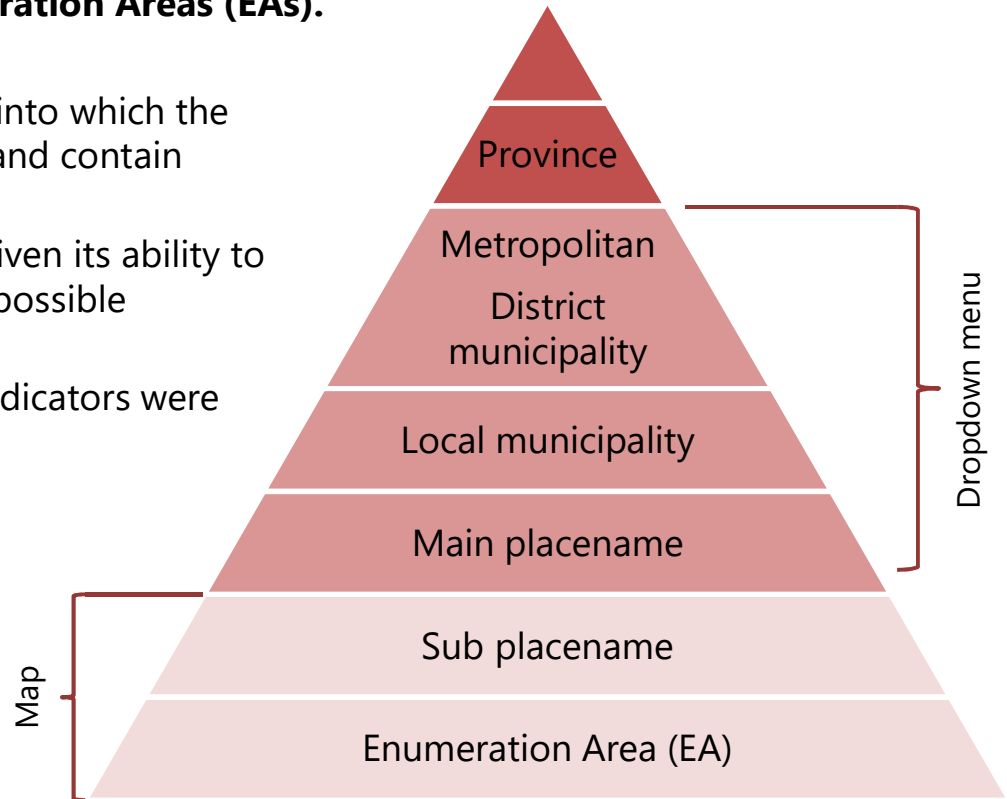
An EA is the smallest geographical area into which the country is divided for Census purposes and contain between 100 to 250 households.

Census data is the default data source given its ability to disaggregate information to the lowest possible geographic area.

Using variables found in Census 2011, indicators were generated at person level.

The index is mapped at EA level and can be queried using the dashboard dropdown menu at the level of municipality and placename.

Geographic hierarchy



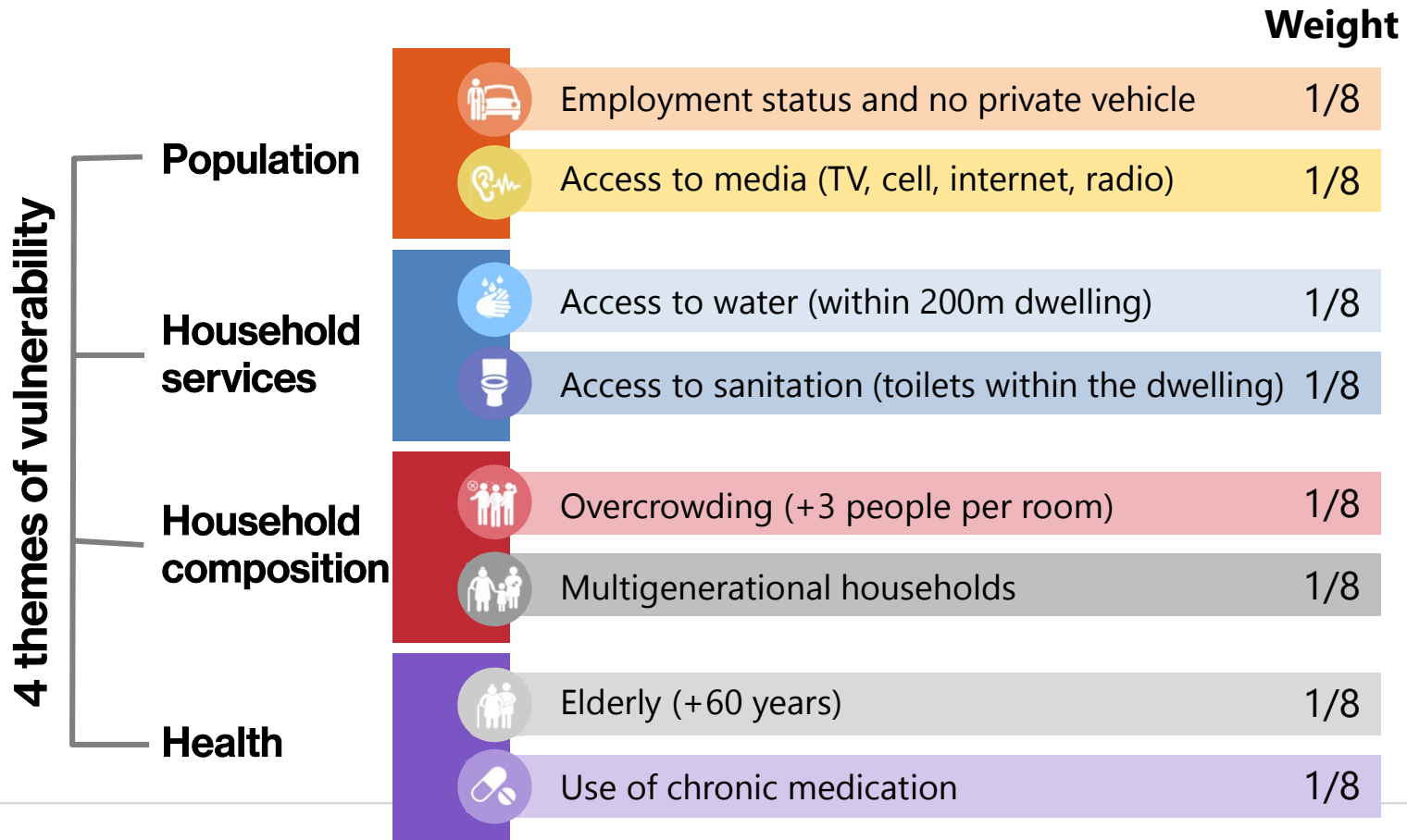
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What indicators make up the index?

There are 8 indicators under 4 themes all with an equal weighting in terms of contributions



What was the rationale for the indicators and cut-offs?

Employed + no private vehicle*		If any person is employed and does not own a car Likelihood of using public transport
Access to media		If any person does not own TV, radio, cell or internet Likelihood of understanding the infection spread
Access to water		If any person does not have access to piped water within dwelling Likelihood of easy access to water for hygiene
Access to sanitation		If any person does not have access toilet in dwelling Likelihood of using shared / public toilet facilities
Overcrowding		More than 3 persons per functional room Likelihood of sharing rooms as a health risk if infected
Multigenerational households		Children (0-15 years) and elderly (60+) in household Likelihood of children as inadvertent carriers infecting others
Age (elderly 60+)		If any person is 60 years and older Likelihood of population at risk for fatality if infected
Chronic medication*		If any person uses Chronic Medication Likelihood of individuals having co-morbidities

* due to lack of data, proxy indicators were used



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What does the dashboard look like?


There are 9 provincial dashboards that consist of a map and chart interface

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Employed with private vehicle




Access to media




Access to water




Access to sanitation




Overcrowding




Multi-generational households



Age (elderly 60+)



Chronic medication




Click on a province

How to use the dashboard

- Select a province using the map on the right, a dashboard for the index will open for that province in a new window
- Use the drop down menu to **search, select / deselect** a district municipality, local municipality or a placename of in
- An EA map will be generated based on your selection along with the index information in a chart.
- **Remember to deselect all options when choosing different municipality or placename.**
- Using your mouse, you can hover over the map and chart for further information related to the index measures for

Note: for some areas such as Metro's the map will not render due to the number of polygons, ensure you choose a specific placename in these instances.

South African COVID-19 Vulnerability Index (SA CVI)

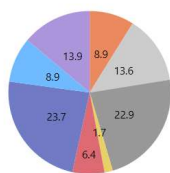


KwaZulu-Natal Province

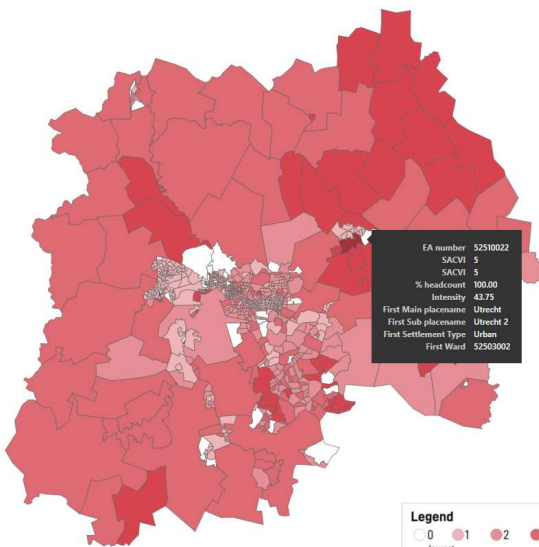
Select Municipality and placename

Headcount **35.9** Intensity **27.6**

Index contributions



- Employed + no private vehicle
- Access to media
- Access to water
- Access to sanitation
- Overcrowding
- Multigenerational households
- Age (elderly 60+)
- Chronic medication




EA number 52510022
 SACVI 5
 SACVI 5
 % headcount 100.00
 Intensity 48.75
 First Main placename Utrecht
 First Sub placename Utrecht 2
 First Settlement Type Urban
 First Ward 52503002


Legend

0 1 2 3 4 5

lowest highest



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How do you use the index dashboards?

KwaZulu-Natal Province

Select Municipality and placename

Multiple selections

- Select all
- Amajuba
 - Dannhauser
 - Annieville
 - Anville
 - Bright Home
 - Chelmsford
 - Chester
 - Clifton
 - Cloneen
 - ...

Using the drop down menu the user can select / deselect the municipality and placename, and toggle using the arrows to expand or close the selection. The map will automatically zoom to the selected area of interest. The user can deselect to make an alternate or multiple selection.

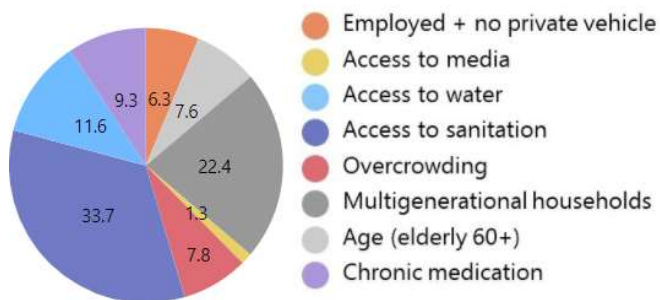
Using their mouse, they can hover over map and information in tooltips will appear related to that area.

EA number	52510022
SACVI	5
SACVI	5
% headcount	100.00
Intensity	43.75
First Main placename	Utrecht
First Sub placename	Utrecht 2
First Settlement Type	Urban
First Ward	52503002

Headcount
53.0

Intensity
28.5

Index contributions



The headcount, intensity and index contributions linked to a specific area will be automatically displayed. The user can also hover over elements of the dashboard to view tooltip information about that specific area, including definitions.



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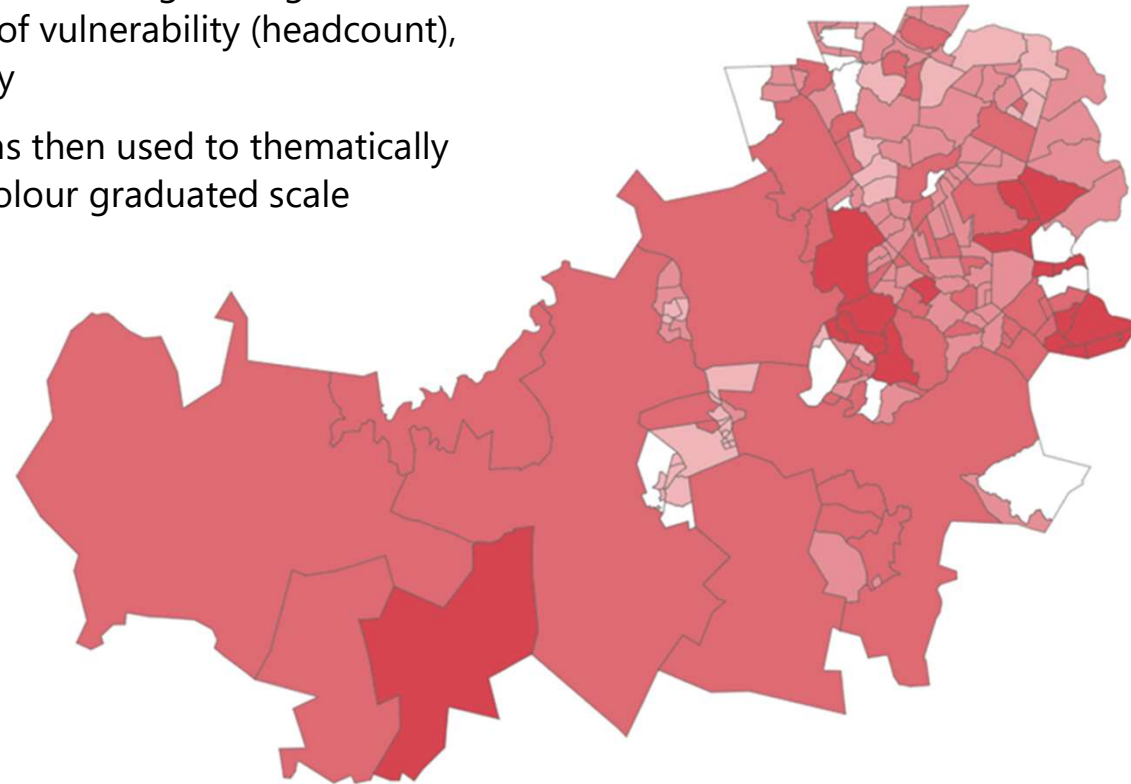
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How do you use the index dashboards?

The final map classification of the VIndex values per EA is ranked from 1-5 with 5 being the highest and indicates the incidence of vulnerability (headcount), adjusted by the intensity

This ranked EA value was then used to thematically map the ranking on a colour graduated scale



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Understanding the index ...

Headcount = the proportion of persons that are considered to be multi-dimensionally vulnerable

The headcount is 100% which indicates that all persons residing in the EA are vulnerable to some extent

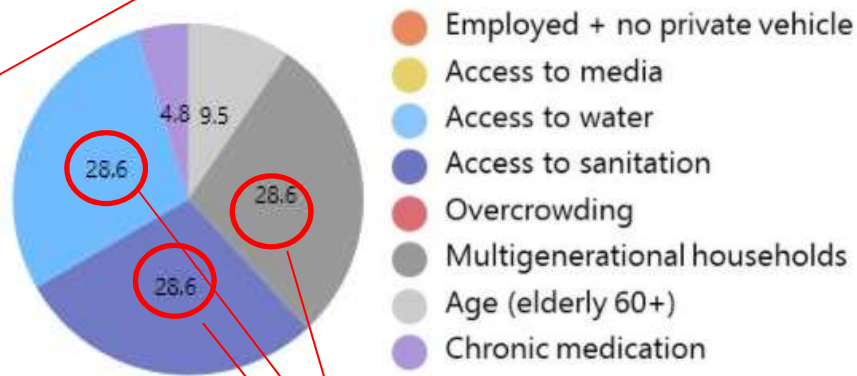
The selected EA has the highest Vindex ranking at 5

Vindex = 5

Headcount
100.0
Intensity
43.8
Index contributions

Intensity = the average proportion of indicators in which multi-dimensionally vulnerable persons are deemed vulnerable

The intensity is 43.8% meaning that on average these persons are vulnerable in 43.8% of the eight indicators



The indicators that contribute the most to the vulnerability are access to water and sanitation, as well as multi-generational households



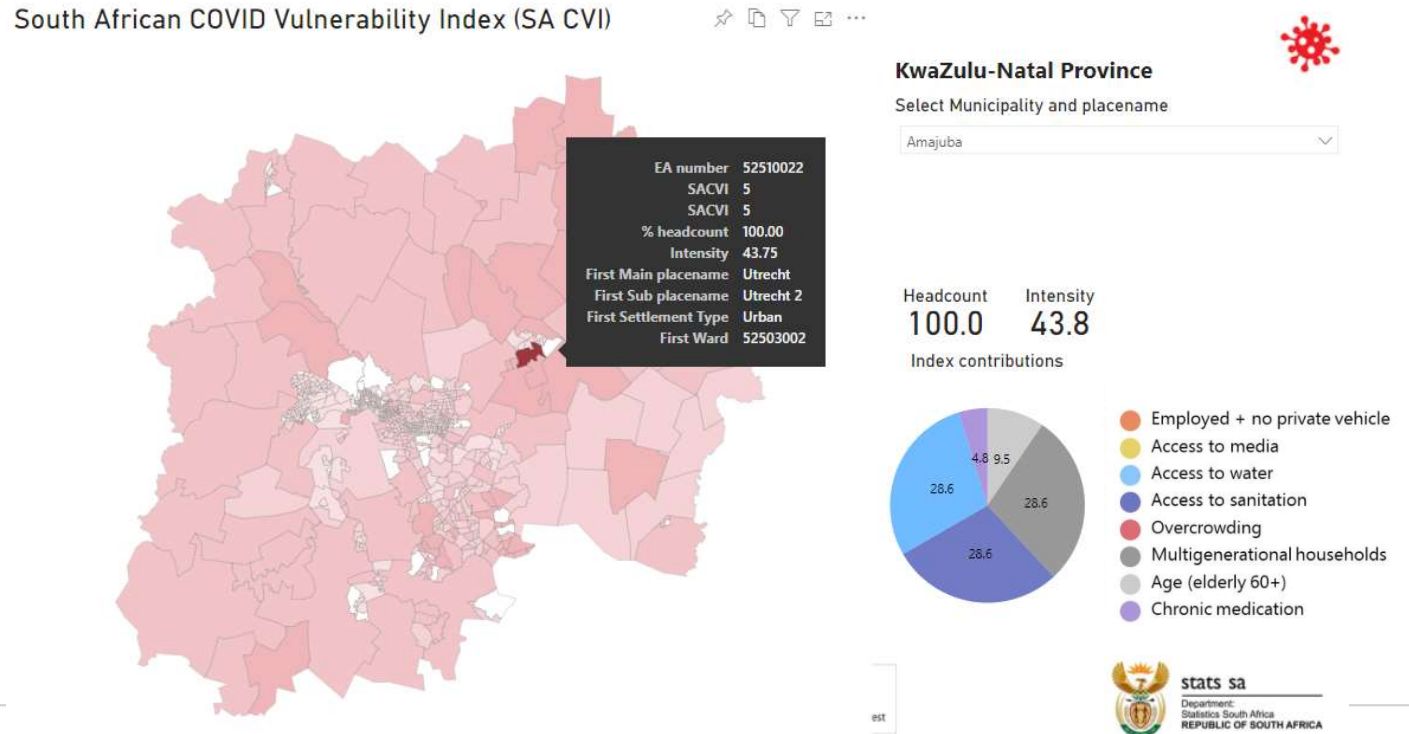
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How to interpret the Vindex

The selected EA has a high Vindex ranking at 5, the headcount is 100% which indicates that all persons residing in the EA are vulnerable to some extent and the intensity is 43.8% meaning that on average these persons are vulnerable in 43.8% of the eight indicators used to compile the index. The pie chart shows which of the indicators contribute the most to the vulnerability. It can also be seen that the biggest contributor to vulnerability is access to water and sanitation (28.6% respectively).



What are the limitations to the index?

Data

The index makes use of 2011 Enumeration Areas and 2011 Census data, this data is almost 10 years old and there have been changes in living circumstances, population movements and growth which are not reflected. EA classifications have also changed over time.

Methodology

There are many criticisms to the approach of aggregating a selective group of indicators into a single index. Although it is multidimensional, the index cannot take everything that is important into account.



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