



# South African COVID-19 Modelling Consortium

## Long term planning: COVID-19 in SA

Presentation to Department of Correctional Services  
Strategic Planning Meeting

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**NATIONAL INSTITUTE FOR  
COMMUNICABLE DISEASES**

Division of the National Health Laboratory Service

# Overview

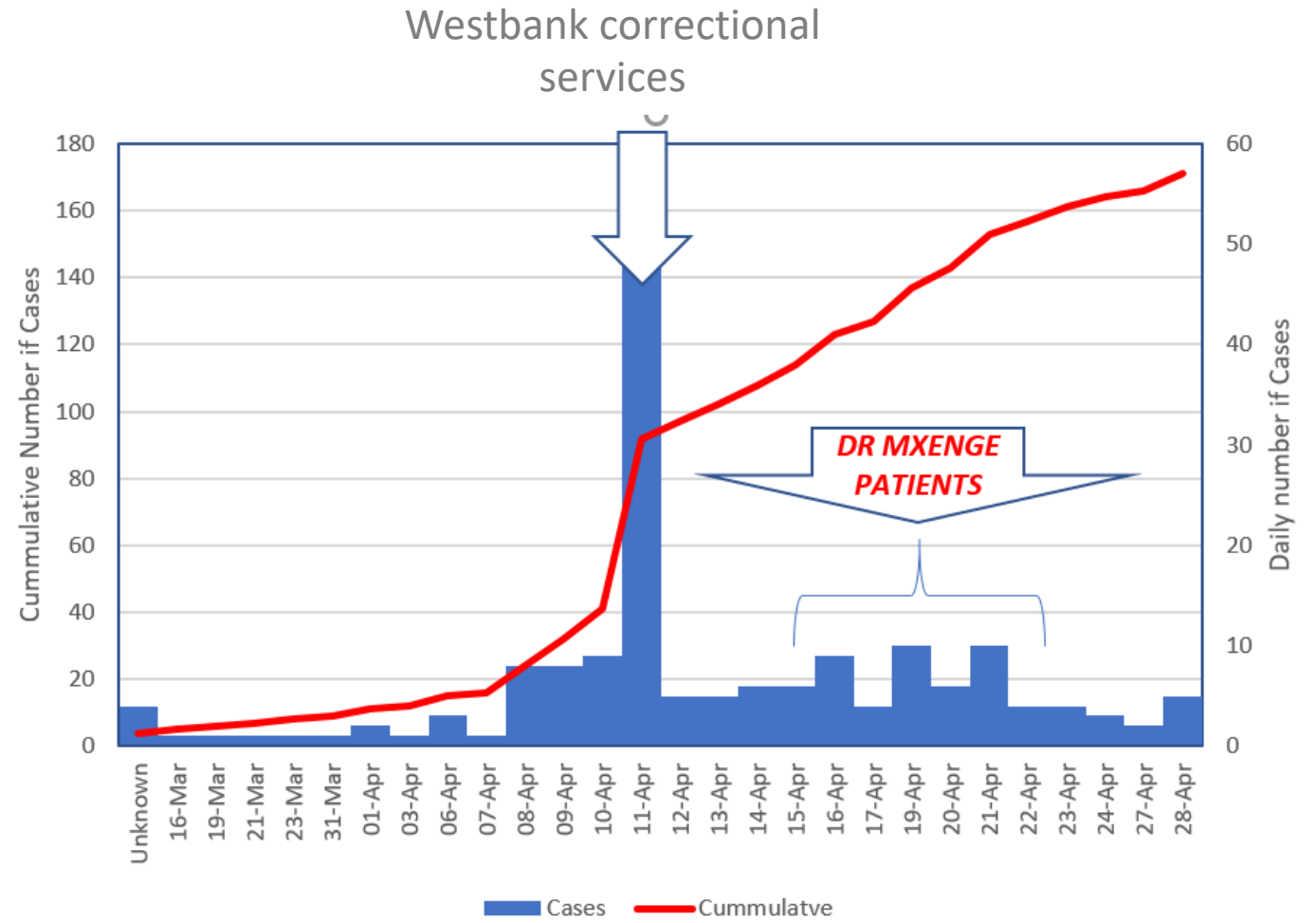
- Impact of COVID-19 in correctional services facilities
- General principles of COVID prevention and response
- Current Assessment: Eastern Cape
- COVID-19 Scenarios
- Platform for Resurgence Monitoring



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# Impact of COVID-19 in correctional services facilities

- COVID-19 epidemiological assessment at end April 2020 in Buffalo City Metro
  - Westbank Correctional Services Facility outbreak
    - Index case was a warder who visited funeral in Majola village
    - Initial 35 symptomatic persons were tested, followed by screening of entire facility
  - Outbreak in rooms of a prominent local GP who tested positive
    - Over 140 contacts were identified
    - 5 positive cases in his office



\*Dr Mxenge made his name known to the public and became an advocate for early testing and destigmatising of COVID-19



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# Impact of COVID-19 in correctional services facilities

- Westbank A (female)–
  - at least 3 deaths, over 75 cases in inmates and over 20 amongst warders
  - One warder took COVID-19 home to her mother who passed away
- Westbank B – (male, long term)
  - Over 180 cases in all cells
  - 'uncontainable'
- Correctional services facilities are impacted by COVID-19 in the community, and act as COVID-19 amplifiers – sending COVID-19 back into the community



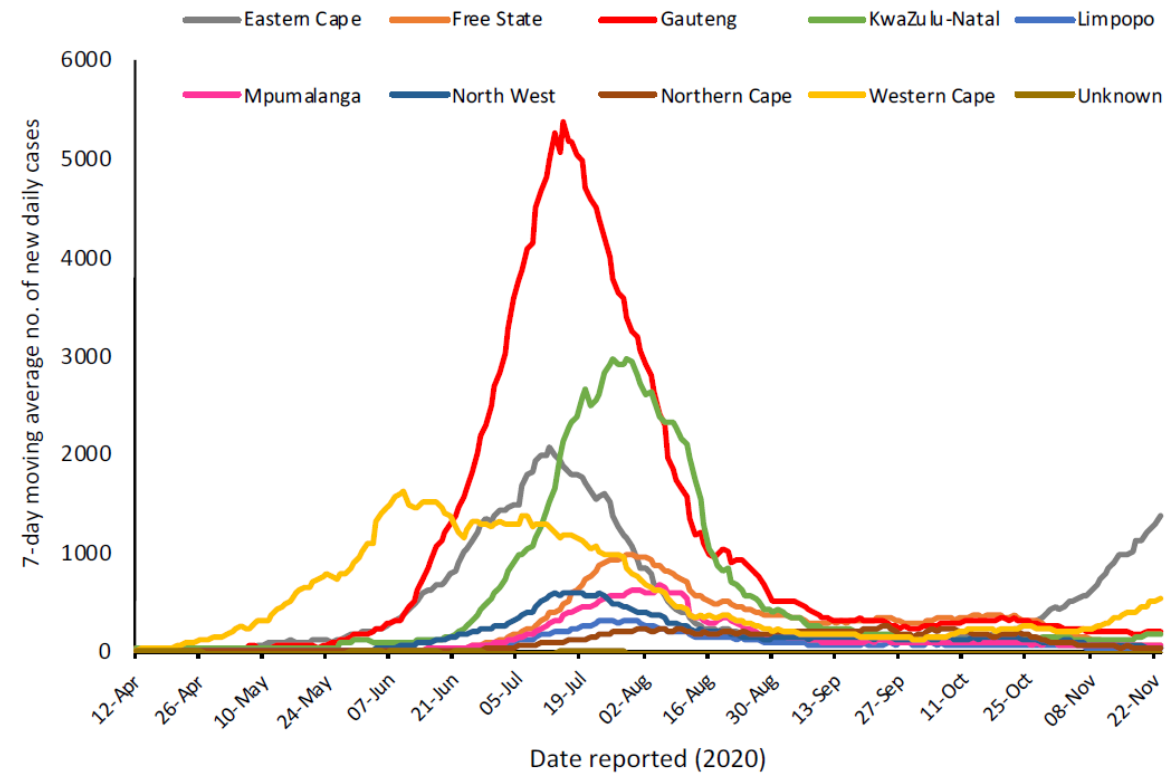
# General principles of COVID prevention and response in correctional service facilities

- Prevent COVID-19 from entering facility
  - Sensitization of warders
  - Screening by temperature of visitors, warders on entry to work,
  - Social distancing and hand washing
  - Quarantine if warders' families acquire COVID
- Early detection amongst warders and inmates
  - Testing if symptomatic
  - Consider intermittent testing of warders
- Pre-emptive containment measures
  - Limit contact between inmates of different sections of the facility
  - Observe social distancing (e.g. reduce number of persons at meals or in exercise)
  - Identify vulnerable persons and place them in 'protected' areas
- Rapid response and containment
  - Early identification of affected cells
  - Testing of likely contacts amongst inmates and warders
  - Isolation of affected cells (prevent contact with inmates from different sections of the facility)



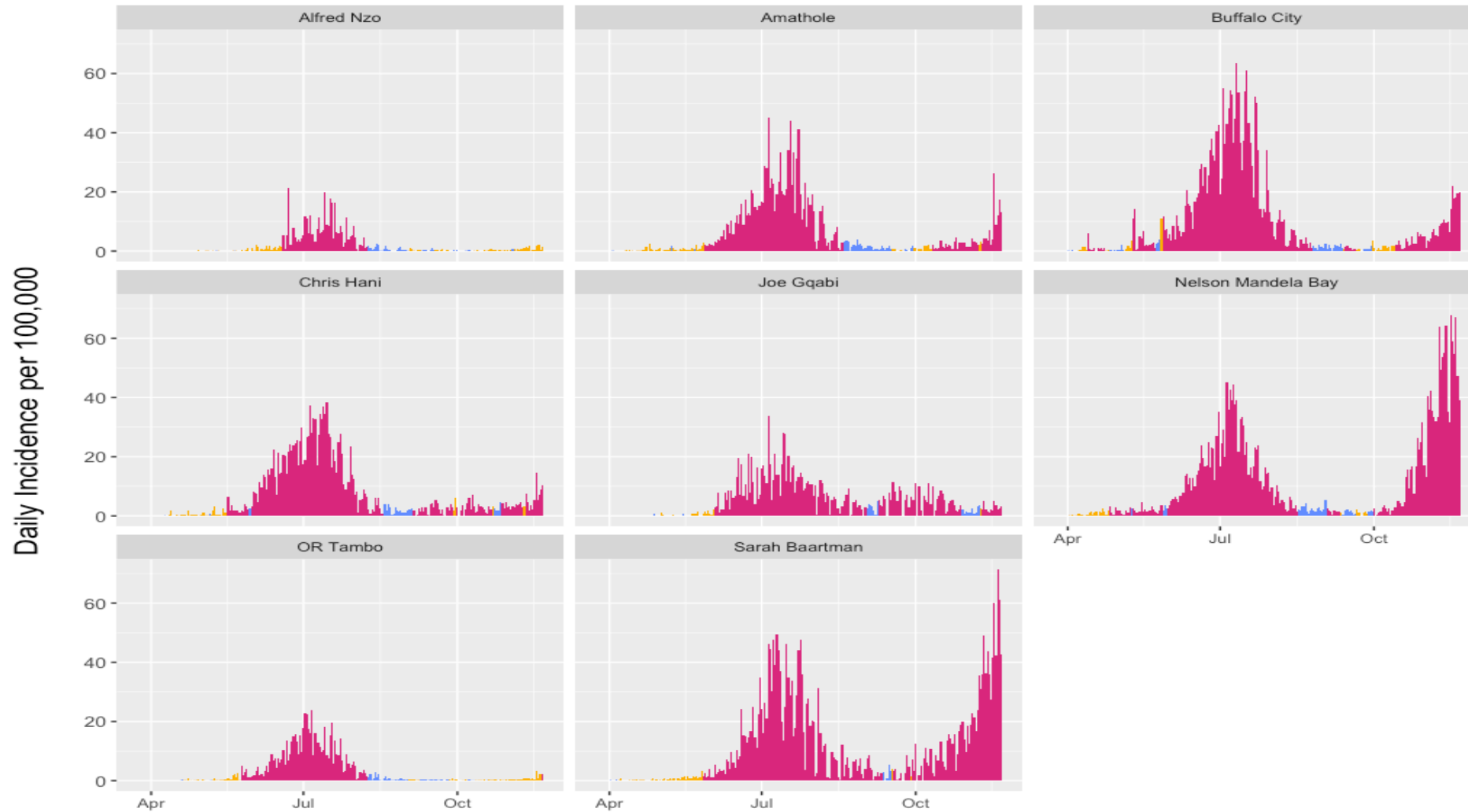
# COVID-19 – the broader epidemiological context in RSA

- Current epidemiology
  - First 'wave' May-September in most provinces
  - Second 'wave' – commencing in WCP and EC – driven by Nelson Mandela Metro



7-day moving average number of new cases by province and date of reporting, 12 April to date (23 November 2020), South Africa

# Current Assessment: Eastern Cape



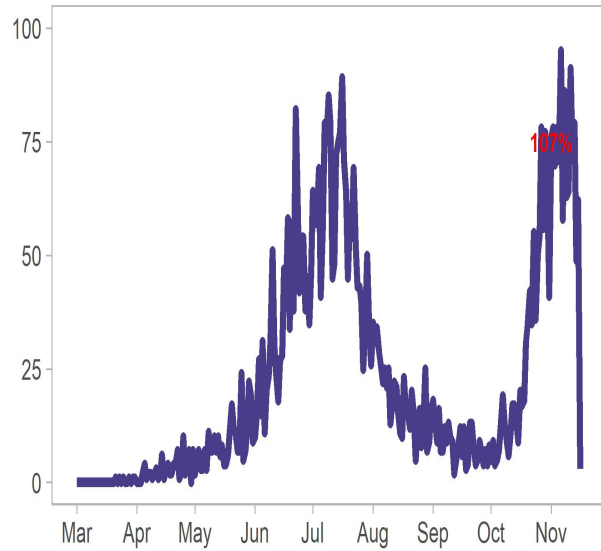
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# Eastern Cape: Hospital admissions and Use

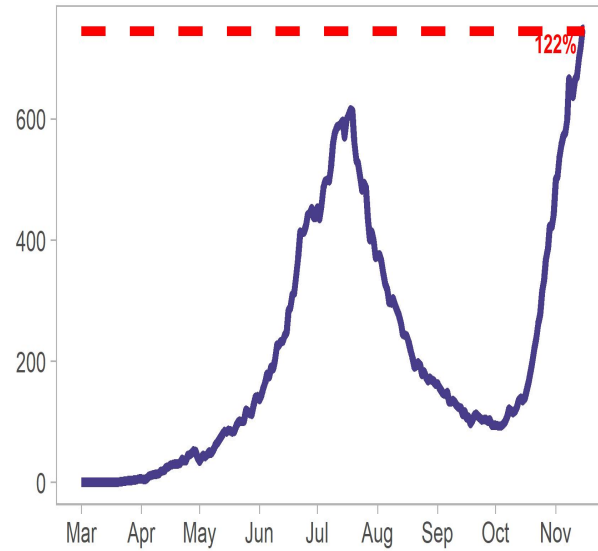
## Daily Admissions

### Nelson Mandela Bay



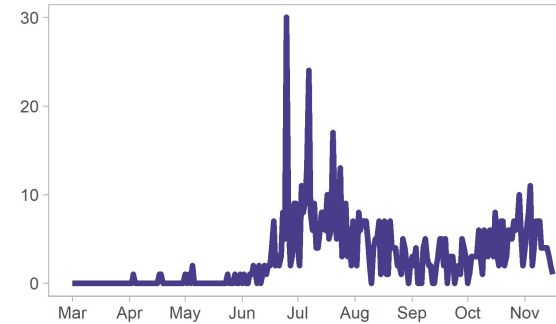
## Current Admissions

### Nelson Mandela Bay



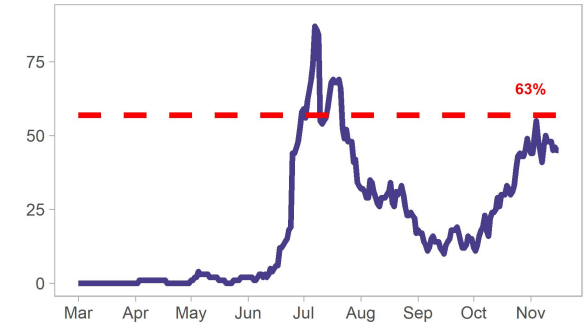
## Daily Admissions

### Sarah Baartman

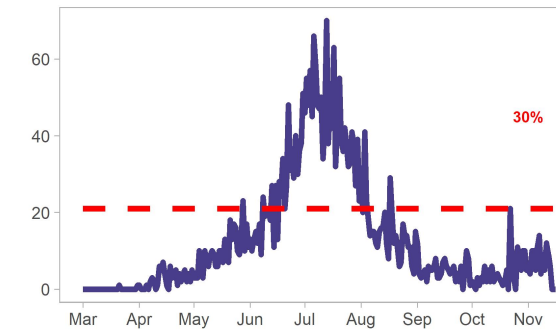


## Current Admissions

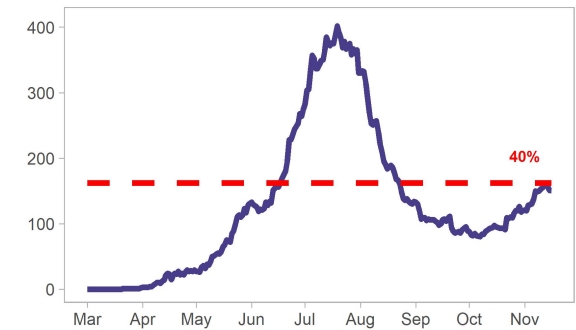
### Sarah Baartman



### Buffalo City



### Buffalo City



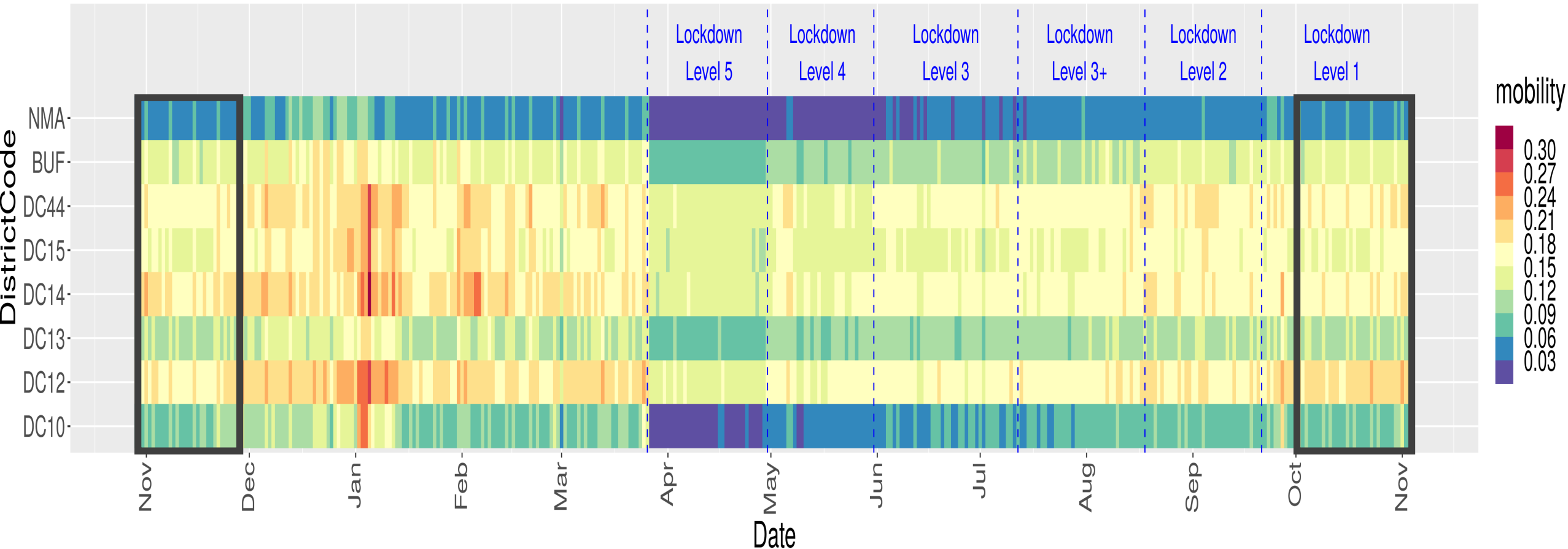
Updated 2020-11-16



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## Eastern Cape mobility data with lockdown levels (Outgoing)



Source: Vodacom  
Event Data

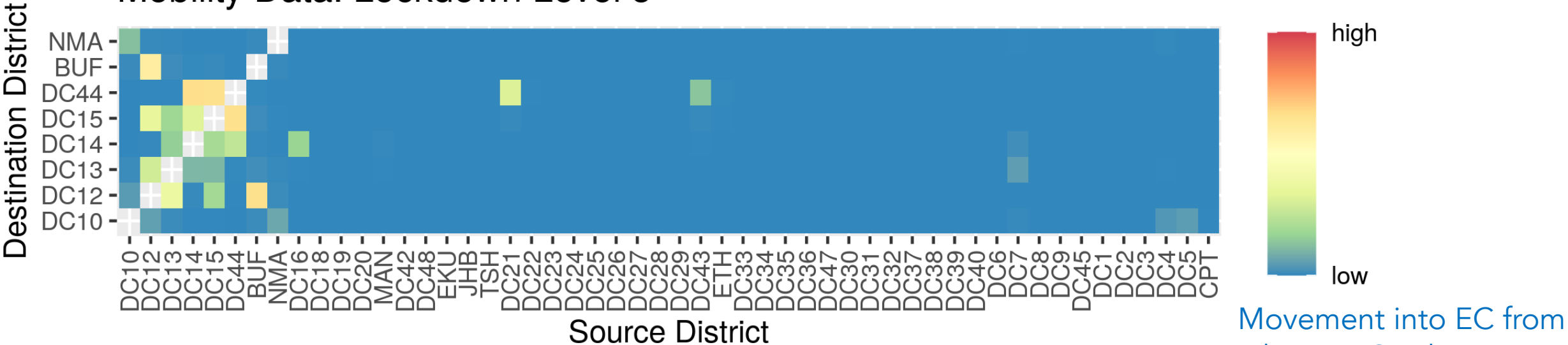
- How likely you are to be seen outside your home ward from Nov '19 – Nov '20 (red - highly likely, blue – not very likely)
- Travel outside home ward is similar to Nov 2019



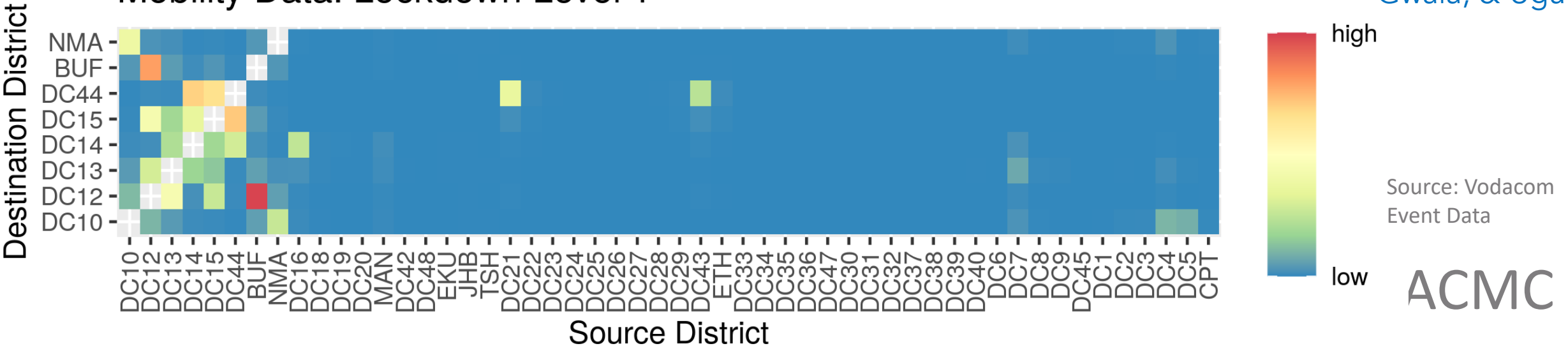
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# Inflow into Eastern Cape districts from other districts in SA

## Mobility Data: Lockdown Level 5

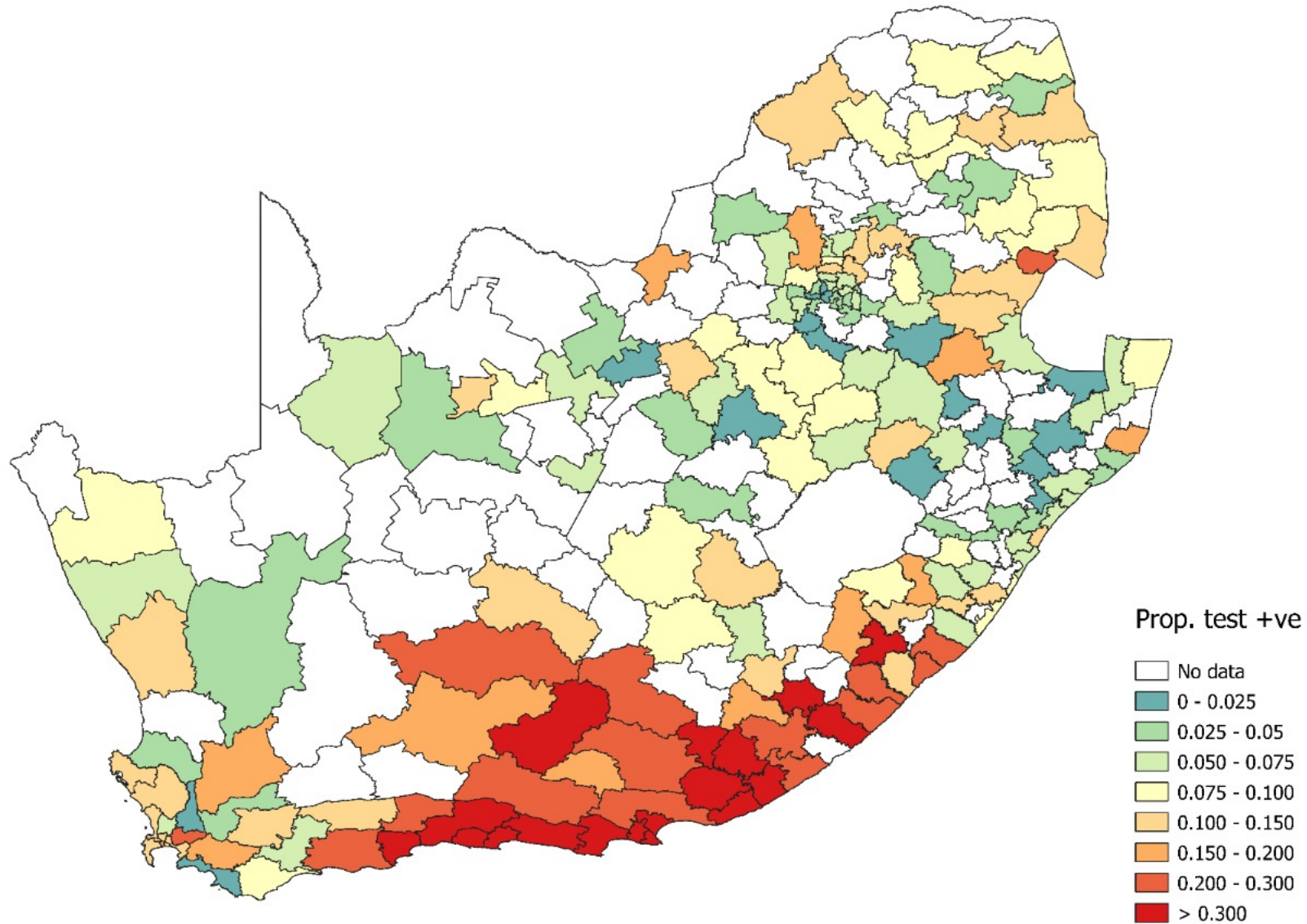


## Mobility Data: Lockdown Level 1



# Proportion testing positive in districts of SA

Data updated 20 Nov '20



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# COVID-19 Scenarios: Current Assessment

- Resurgence in EC meets SACMC criteria for a second wave\*
- Proportion testing positive, cases, hospital admissions and excess mortality have all increased
- However, the relative amplitudes of the first and second waves may not be directly comparable as a result of possible differences in under-detection / under-reporting
- Cases have already spread from the Eastern Cape into the Western Cape and areas in Southern KwaZulu Natal are on alert.
- With increased inter-provincial movement expected over the holiday season, it is likely that infection will spread to other provinces.

\* Second wave is not a term currently used by NICD / NDoH



# COVID-19 Scenarios: Future Planning

- Recent news on outcome of Vaccine Trials
  - Vaccine regulations, purchasing and implementation still to occur
  - Though uncertain, a vaccine could be available in SA by end 2021
- Plans should also reflect situation of no vaccine in 2021
- Scenario for 2021
  - It is likely that the holiday season (start of 2021) will result in increases in cases in many parts of the country
  - We may once again experience increases in cases during the winter of 2021
  - But there is considerable uncertainty with respect to the duration of immunity of those who have already been infected and the extent to which the population was infected in the first wave (seroprevalence)



# COVID-19 Scenarios: Future Planning

- Scenario for 2022
  - Vaccine availability will not lead to the immediate eradication of cases.
  - Priority populations such as healthcare workers and the elderly are likely to be targeted for vaccines first.
  - Sufficient coverage will need to be achieved before the whole population can benefit from reduced infection.
  - When this happens (could be within a few years), it is likely that COVID-19 could become a seasonal occurrence of a smaller size.
- UNCERTAINTY: The immune response to SARS-CoV-2 and long-term effectiveness of vaccination are not well understood



# Resurgence Planning Support

- DOH: Resurgence Workplan
- Metrics updated regularly

SACMC Epidemic Explorer

Welcome

Resurgence Analysis

Mobility

Maps

Funders

Collaborators

Contact

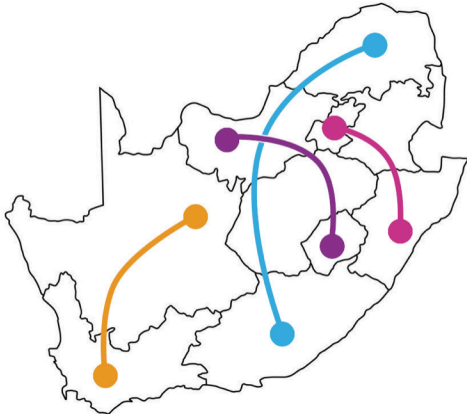
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Epidemic Explorer


The is an interactive app built by the South African COVID-19 Modelling Consortium (SACMC) to explore the COVID-19 epidemic in South Africa, resurgence risk and response alert triggers to prepare for future outbreaks.

*The SACMC Epidemic Explorer and the data it contains is confidential. It is intended for planning purposes by the South African government.*

Date of last update: 10 Nov 2020



SACMC Epidemic Explorer



Please log in to continue

Username:

Password:

Login

For any queries, please [contact SACMC](#)



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# National Resurgence Plan: Updated Resurgence Threshold



Under control	<ul style="list-style-type: none"><li>Does not meet the criteria for <i>Alert</i> or <i>Definitive Action</i>.</li></ul>
Alert	<ul style="list-style-type: none"><li>Greater than or equal to <b>10% increase</b> in new COVID-19 cases compared to 7 days prior (based on the 7-day moving average) <b>AND</b> Between a <b>total of 10 and 30 cases per 100 000 population</b> in the last 7 days.</li><li>OR</li><li>Greater than or equal to <b>20% increase</b> in new COVID-19 cases compared to 7 days prior (based on the 7-day moving average)</li></ul>
Response	<ul style="list-style-type: none"><li>Greater than or equal to <b>20% increase</b> in new COVID-19 cases compared to 7 days prior (based on the 7-day moving average)</li><li>OR</li><li>Greater than or equal to a <b>total of 30 cases per 100 000 population</b> in the last 7 days.</li><li>There must have been a minimum total of <b>10 cases per 100 000 population</b> in the last 7 days</li></ul>



Set of actions outlined  
in Resurgence Plan



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### Comparison of metrics for resurgence risk and alert-response triggers

The comparison table shows the alert and action triggers created using different metrics for monitoring resurgence risk at the district level.

For more information on each metric, please click on the relevant tab.

District	Date	Dept of Health	Upticks	Upswing	Cases Threshold	Percentage Change
<b>Eastern Cape</b>						
Sarah Baartman	2020-11-10	Action	Alert	Alert	Action	Action
O.R.Tambo	2020-11-10	Alert	Control	Alert	Control	Action
Nelson Mandela Bay Metro	2020-11-10	Action	Alert	Alert	Action	Action
Joe Gqabi	2020-11-10	Alert	Alert	Control	Control	Action
Chris Hani	2020-11-10	Control	Control	Control	Control	Alert
Buffalo City Metro	2020-11-10	Action	Alert	Alert	Alert	Action
Amathole	2020-11-10	Alert	Control	Alert	Control	Action
Alfred Nzo	2020-11-10	Alert	Control	Control	Control	Action
<b>Free State</b>						
Xhariep	2020-11-08	Control	Control	Control	Action	Control
Thabo Mofutsanyane	2020-11-10	Control	Control	Control	Control	Control
Mangaung Metro	2020-11-10	Control	Control	Control	Action	Control
Lejweleputswa	2020-11-10	Control	Control	Control	Alert	Control
Fezile Dabi	2020-11-10	Control	Control	Control	Control	Control
<b>Gauteng</b>						
West Rand	2020-11-10	Control	Control	Control	Control	Alert
Sedibeng	2020-11-10	Control	Control	Control	Control	Control
Ekurhuleni Metro	2020-11-10	Control	Control	Control	Control	Alert
City of Tshwane Metro	2020-11-10	Control	Control	Control	Control	Control
City of Johannesburg Metro	2020-11-10	Control	Control	Control	Control	Control
<b>KwaZulu-Natal</b>						
Zululand	2020-11-10	Control	Control	Control	Control	Control
Uthungulu	2020-11-10	Control	Control	Control	Control	Control
Uthukela	2020-11-10	Control	Control	Control	Control	Control

\*Example Table

- Compare status on different metrics



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## Location Selection

View Province

Eastern Cape ▼

View District

All Eastern Cape ▼

Comparison

Dept of Health

Upticks

Upswing

Cases Threshold

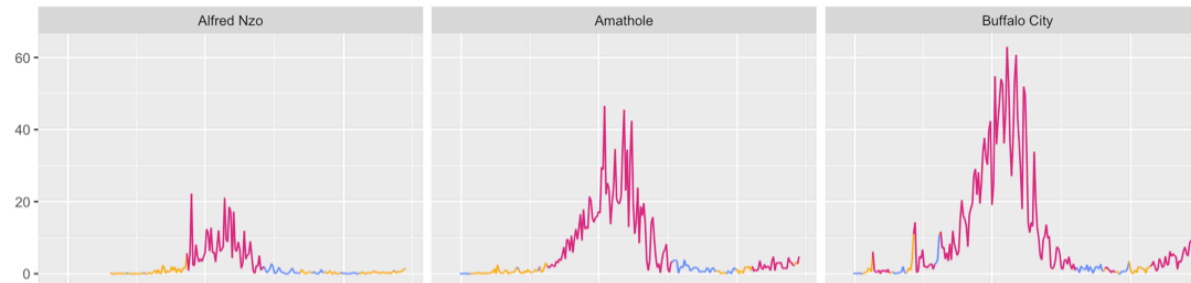
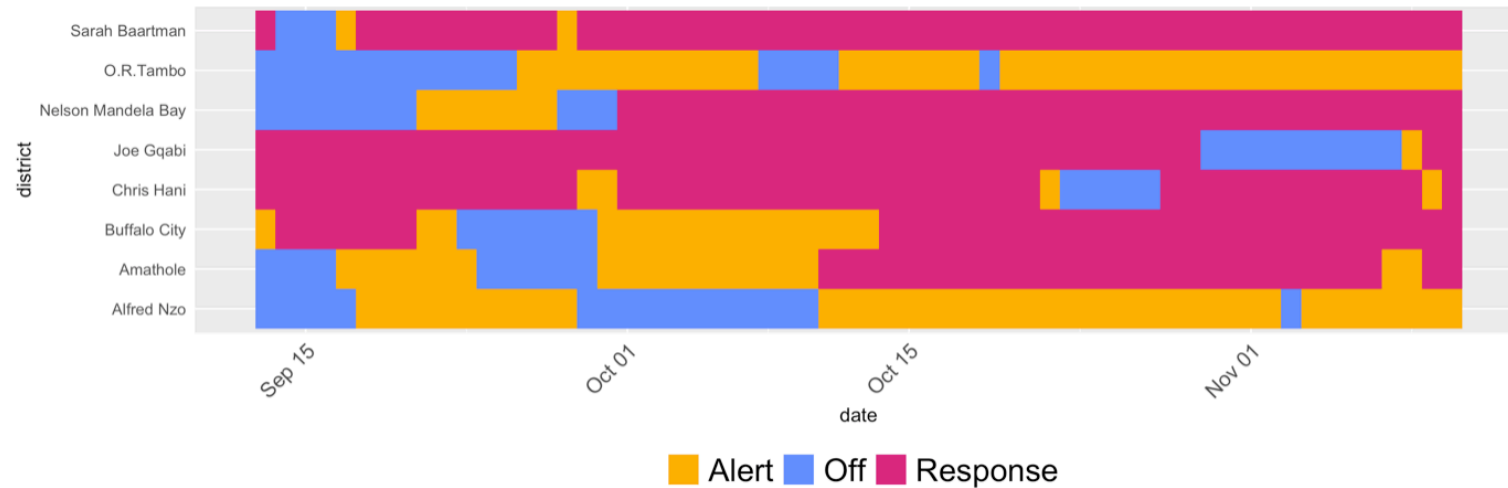
Percentage Change

Sustained Increase Monitoring

### Metric 1: Department of Health primary metric

This is the primary metric used by the National Department of Health in South Africa. It reflects a combination of percentage increases in new cases and number of new cases per week per 100,000 population in a geographic area.

Please note: Metric analyses are currently restricted to the district level only. If you select a particular district, all districts in the relevant province will still be shown.



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- Compare metrics by province and district

## Location Selection

View Province

Eastern Cape

View District

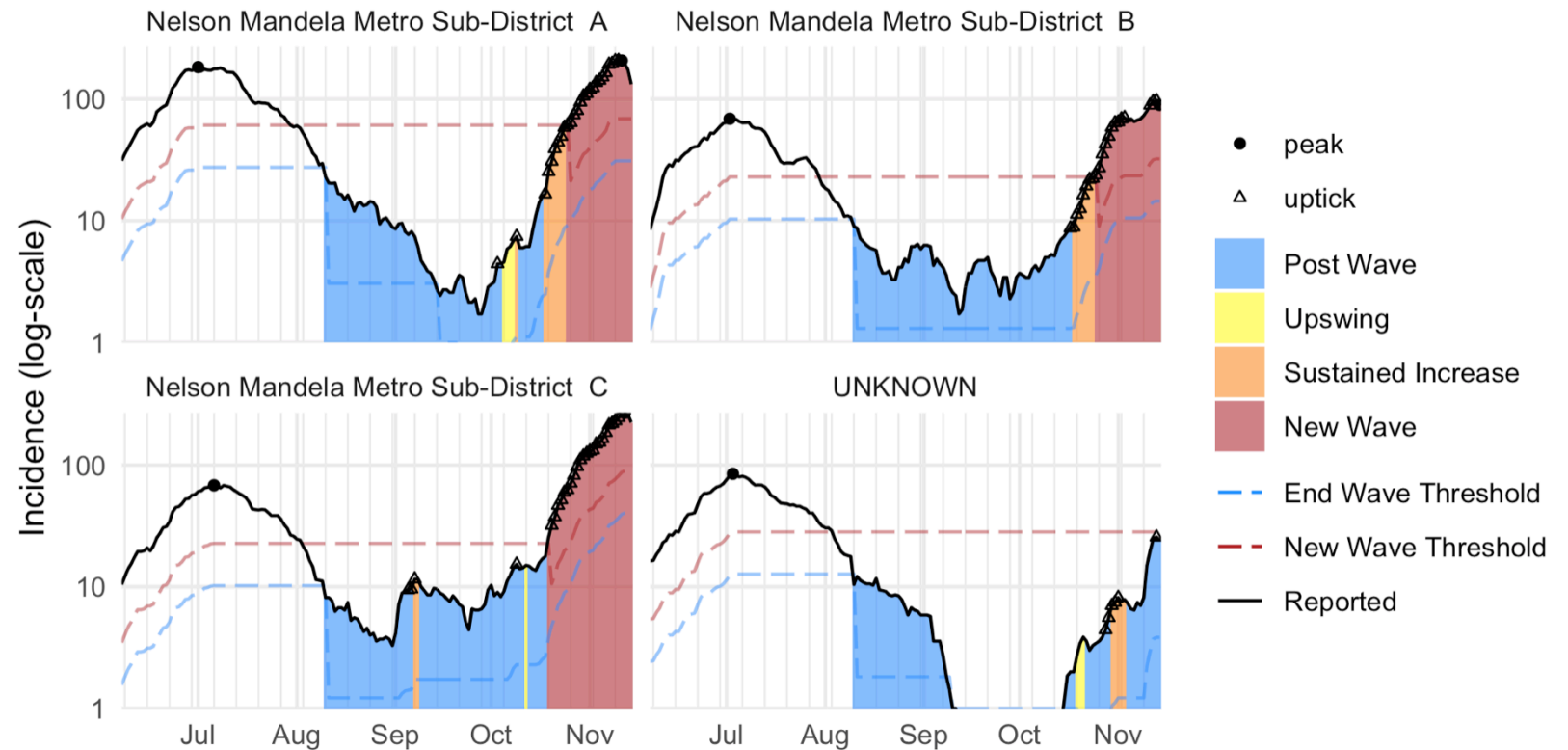
Nelson Mandela Bay

[Comparison](#)[Dept of Health](#)[Upticks](#)[Upswing](#)[Cases Threshold](#)[Percentage Change](#)[Sustained Increase Monitoring](#)

### Sustained Increase Monitoring

These plots are used for monitoring sustained increases in case numbers and the current incidence level relative to the incidence level at the time of the most recent peak. Relevant definitions are included below the plots.

Please note that incidence is shown on a log scale.



- Province/District/Subdistrict Epi Curve Analysis



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# Summary

- Uncertainty with respect to seroprevalence and behaviour prohibits robust projections for the next two years
- Resurgence analysis
  - Monitor epidemic at Province/District/Subdistrict
  - Regular snapshots of hospital admissions and usage
  - Insight into mobility patterns
- Access to a Resurgence Dashboard for regular monitoring
  - Access to NDoH first
  - Followed by Provinces and Partners
- Continually reassess the situation as new data becomes available

