

# Impact of Real-Time Containment Measures on COVID-19 Pandemic Outcomes in African Countries

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## BACKGROUND

- Real-time containment measures have played a crucial role in shaping the outcomes of the COVID-19 pandemic in African countries.
- The impact of these measures varied across countries due to differences in healthcare infrastructure, government responses, socio-economic factors, and population density.
- Despite their importance for controlling the COVID-19 pandemic, implementation and compliance with containment measures have posed challenges, particularly in African countries.

## OBJECTIVES

- This study examined the impact of real-time containment policies as an intervention to reduce the number of COVID-19 infections and deaths in African countries.

## METHODS

### Study Population:

- Africa, the second largest and most populous continent
- 1.39B people, population density of 45.30 persons/km<sup>2</sup>

### Data Source

- Data used in this study were obtained from "Our World in Data" and Oxford COVID-19 Government Response Tracker from 2000-2022.

### Study variables

- Country name, population, and geographical region
- Daily COVID-19 confirmed cases and Daily confirmed deaths due to COVID-19; COVID-19 containment and health index (CHI)<sup>1</sup> was categorized as 0-49 (less stringent) and 50-100 (more stringent).

### Measures

- CHI was derived from thirteen policy response indicators (PRI).<sup>1</sup>
- Including school closures, workplace closures, travel bans, testing policy, contact tracing, face coverings, and vaccine policy.

### Statistical Analysis

- Descriptive and inferential statistics were performed on the CHI to examine its relationship with selected independent factors:
- Chi-square test
- Analysis of Variance
- Correlation Analysis

### Reference:

<sup>1</sup>Thomas Hale, Noam Angrist, Rafael Goldszmidt, Beatriz Kira, Anna Petherick, Toby Phillips, Samuel Webster, Emily Cameron-Blake, Laura Hallas, Saptarshi Majumdar, and Helen Tatlow. (2021). "A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker)." Nature Human Behaviour. <https://doi.org/10.1038/s41562-021-01079-8>.

## RESULTS

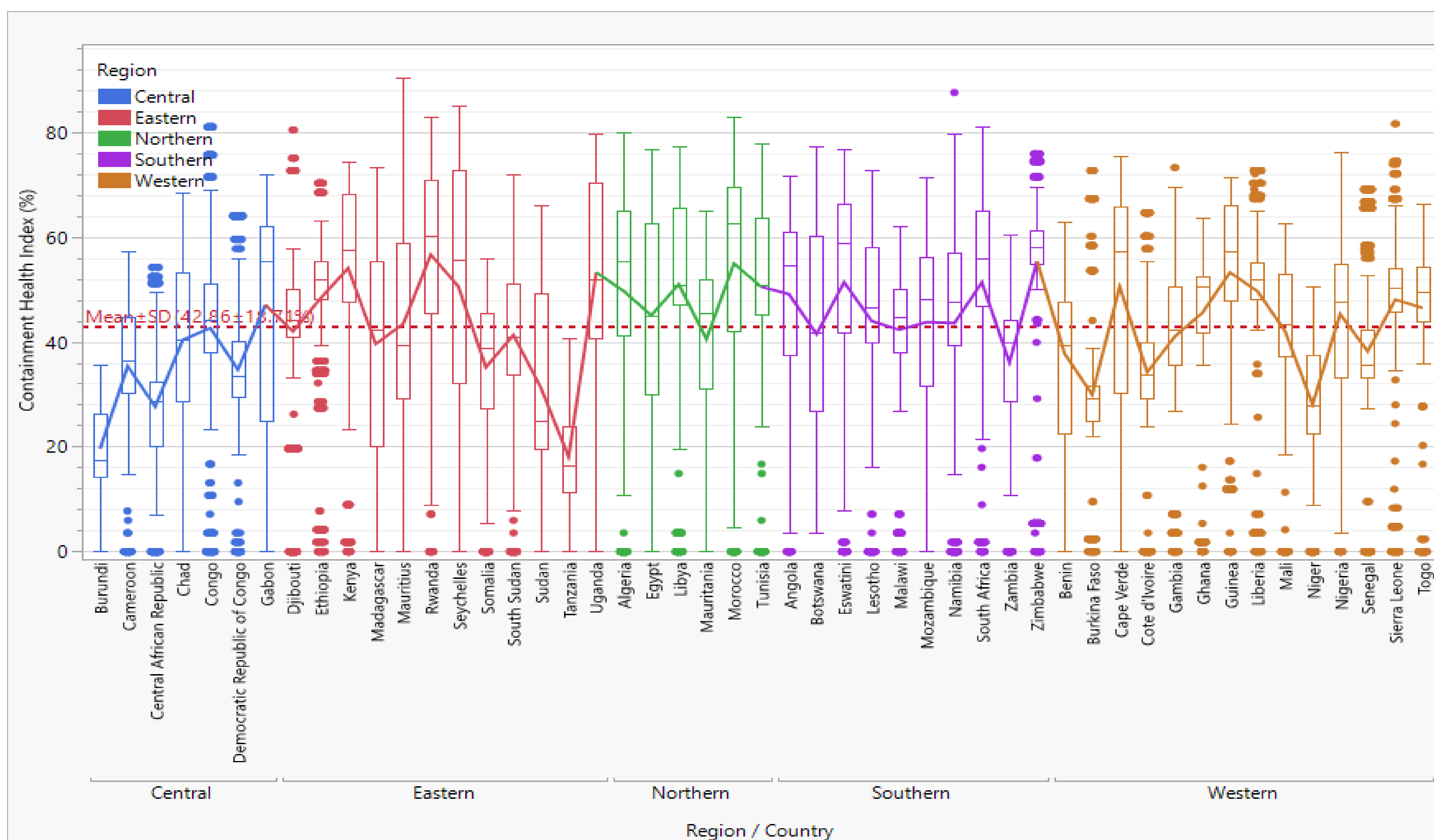


Figure 1: Containment and Health Index of COVID-19 Pandemic in Africa by Country within Regions

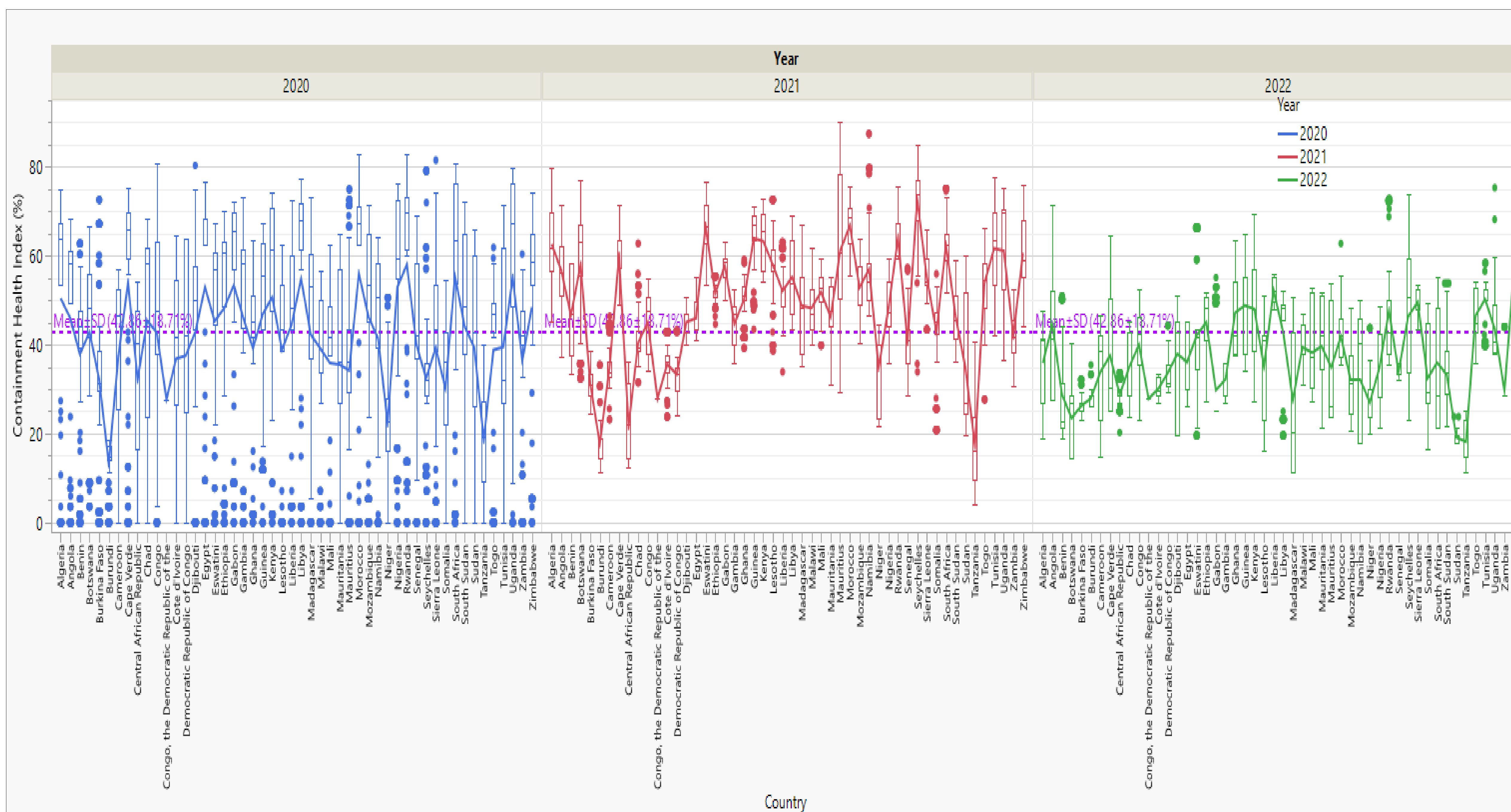


Figure 2: Containment and Health Index of COVID-19 Pandemic by Country within Year, 2020-2022

## RESULTS CONT'D

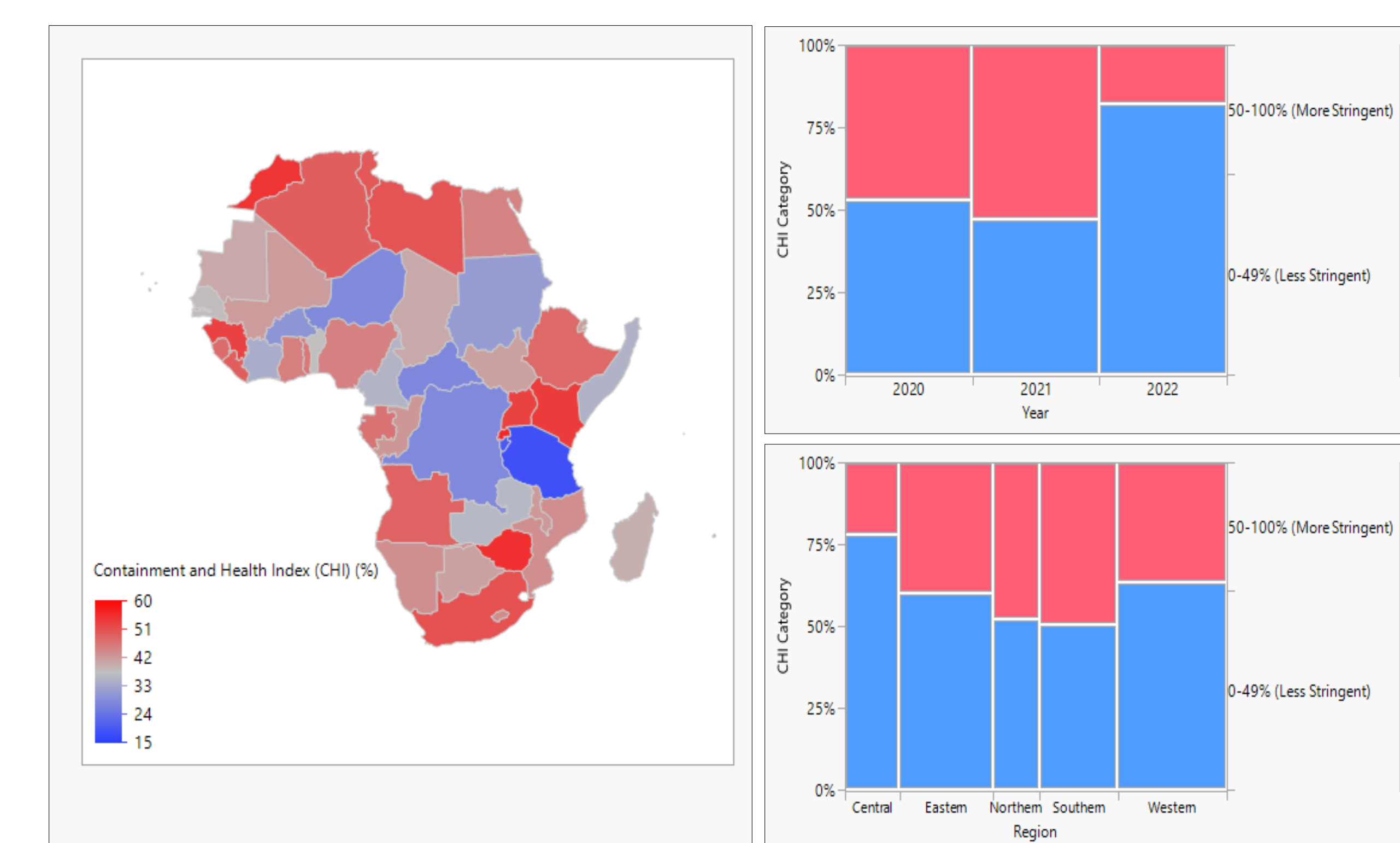


Figure 3: COVID-19 Pandemic Containment Stringency Category by Year and Region in Africa Union, 2020-2022

- The overall mean CHI for the African continent was less stringent (42.86±18.71%) and ranged from 18.08±9.21% (Tanzania) to 56.60±17.76% (Rwanda).
- The majority of African countries (60.79%) had less stringent containment measures compared to those with more stringent containment measures (39.21%) (p<0.0001).
- The CHI was correlated with daily confirmed cases of COVID-19 (r=0.40, 0.39-0.41, p<.0001) and deaths (r=0.39, 95%0.38-0.40, p<.0001).
- Daily confirmed COVID-19 cases were highly correlated with deaths (r=0.80, 95%CI 0.79-0.80, p<.0001).
- The northern region had the highest CHI of 48.59%, while the central region recorded the lowest value, 35.32% (p<.0001).
- Comparatively, a reduced number of COVID-19 cases and deaths were reported in African countries where the containment measures were less stringent compared to countries with more stringent containment measures.

## CONCLUSIONS

- Findings indicate that African country's containment policies were, on average, less stringent with significant heterogeneity. Although the containment policies aim to protect public health and healthcare systems, a complex and dynamic relationship seems to exist across multiple fronts. Consequently, more stringent containment policies may not necessarily transform into disease control, as reported in our current study.
- Our findings provide additional evidence that can inform policymakers' decisions on introducing and relaxing the different containment measures and their timings.