

COVID-19 mitigation policies by governments and changes in behaviour across WHO Africa Region

08/10/2020

Produced by the TIBA COVID-19 Pandemic Response Unit



Executive Summary

The TIBA Pandemic Response Unit has created a new data set recording government mitigation responses to COVID-19 for WHO Africa Region.

We provide graphical representations of timelines of responses for each country in the region (Section 1).

We compare the timelines of responses with Google mobility data, an indicator of changes in behaviour (Section 2).

The report captures the variation in the stringency and timing of responses across the region and compares the extent of behavioural responses over the same period.

The data are freely available; a link is provided on page 8.

Further analyses of these data are ongoing and will reported in due course.

Further details are provided in the report. Please contact info@tiba-partnership.org with any questions.

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Section 1: Government responses in the WHO Africa Region

Introduction

There are several publicly available data sets on government measures in response to the COVID-19 pandemic, including the Assessment Capacities Project (ACAPS, <https://www.acaps.org/covid19-government-measures-dataset>), the Oxford Coronavirus Government Response Tracker (OxCGRT, <https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker>), and the African Centres for Disease Control and Prevention (ACDC) dataset (<https://africacdc.org/download/covid-19-scientific-and-public-health-policy-update-16-june-2020/>). However, inconsistencies and variation in accuracy of these datasets limit their usage in scientific research. This motivated us to independently collect a separate dataset containing all government measures implemented for the 47 countries in the WHO Africa Region.

Methods

Government websites for each country in the WHO Africa Region were searched, either manually or using web scraping programs. These websites included the official government websites, state house websites, individual websites of the prime minister or president, ministry of health websites, official social media pages, and foreign embassy websites pertaining to the country in question (e.g. the U.S. embassy in Nigeria). If information was missing from official sources, multiple corroborating media reports were used to determine a timeline of measure implementation. Source quality was graded and recorded in three categories below (Table 1.1).

Table 1.1 Verification source quality grading categories

Source Type	Source Quality
Official Government Documents/Press releases from government website	1
Multiple media reports	2
Single media report	3

Data was recorded in a spreadsheet with the following columns and input types. The timeline of measures recorded was compared to three existing third-party datasets (ACDC, ACAPS and OxCGRT).

- Country (string from list of options)
- Measure (free text)
- Implementation Date (string from list of options)
- Category (string from list of options)
- Subcategory (string from list of options)
- Easing/Strengthening Lockdown (string from list of options)
- Verification Source Quality (integer 1-3)

Following the ACAPS methods, the measures fall into 5 categories and 14 subcategories (Table 1.2). Customised strictness scales were devised for each of the 14 categories using similar logic to the OxCGRT

stringency scales (Table 1.2). The strictness scores were then normalised by dividing all the strictness scores for each subcategory by the maximum possible value for that category.

Table 1.2 Measure subcategories and their strictness scales

Category	Subcategory	Strictness Level	Score	
Governance and socio-economic measures	Emergency administrative structures activated or established	None	0	
		In place	1	
Lockdown	Full lockdown	No lockdown	0	
		Citizens required to stay at home nationwide	1	
		Partial lockdown only in targeted areas of the country	2	
	Partial lockdown	No partial lockdown	0	
		Relaxed/Non-strict nationwide lockdown	1	
		Full lockdown only in targeted areas of the country	2	
Movement restrictions	Border closure	Borders open as normal	0	
		Borders shut to some targeted countries, but not all affected countries	1	
		Borders shut to all affected countries or a large list of countries	2	
		Borders closed completely (except for repatriation, cargo and aid)	3	
	Curfews	No specific curfew present	0	
		Targeted curfew for some areas after 8pm	1	
		Targeted curfew for some areas before 8pm	2	
		Nationwide curfew after 8pm	3	
		Nationwide curfew before 8pm	4	
	Domestic travel restrictions	Able to travel freely throughout the whole country	0	
		Very long-distance travel (e.g. domestic flights) suspended	1	
		Long distance travel (e.g. between provinces) suspended	2	
		Medium distance travel (outside your city) suspended	3	
		Short distance travel (the next town/village) suspended	4	
	Public health measures	Isolation and quarantine policies	No policy	0
Travellers from affected countries			1	
All travellers			2	
Any possible exposure			3	
Public health recommendations		None	0	
		Recommendations in place	1	
Requirement to wear protective gear in public		No requirement	0	
		Requirement for specific places only	1	
Surveillance and testing		Requirement for most public places	2	
		Surveillance and testing	No surveillance and monitoring	0
			Targeted/infrequent population surveillance	1
Mass population surveillance			2	
Border health checks		Mass population testing	3	
		Border health checks	No border health checks	0
			Basic test (e.g. temperature) for those from affected countries	1
	Basic (e.g. temperature) for all arrivals		2	
	Advanced test for those from specific countries/Health document required from specific countries		3	
Advanced test for all arrivals/Health document required from all arrivals	4			
Social distancing	Closure of businesses and public services	No closures	0	
		Some businesses/services limited in hours	1	
		Entertainment based businesses/services closed	2	
		Entertainment based businesses/services closed, others limited in hours	3	
		Entertainment and Hospitality closed	4	
		Entertainment and Hospitality closed, others limited in hours	5	
		All non-essential businesses closed	6	
	Limit public gatherings	No limit on public gatherings	0	
		Gatherings over 1000 suspended	1	
		Gatherings over 100 suspended	2	
		Non-religious gatherings over 50 suspended	3	
		Gatherings over 50 suspended	4	
		Non-religious gatherings over 10 suspended	5	
		Gatherings over 10 suspended	6	
	Restriction on gatherings less than 10	7		
	Schools closure	All schools open	0	
		Some levels of school closed	1	
		All levels of school closed with exceptions for examinations	2	
		All levels of school closed	3	

Based on these normalised strictness values, the stringency index representing policies on containment and closure was calculated using the OxCGRT methods. Stringency index is the average normalised strictness values of 12 subcategories of measures, excluding the governance and socio-economic measures and surveillance and testing from public health measures. The stringency index was compared with the Google mobility data (available at <https://www.google.com/covid19/mobility/>) in Section 2.

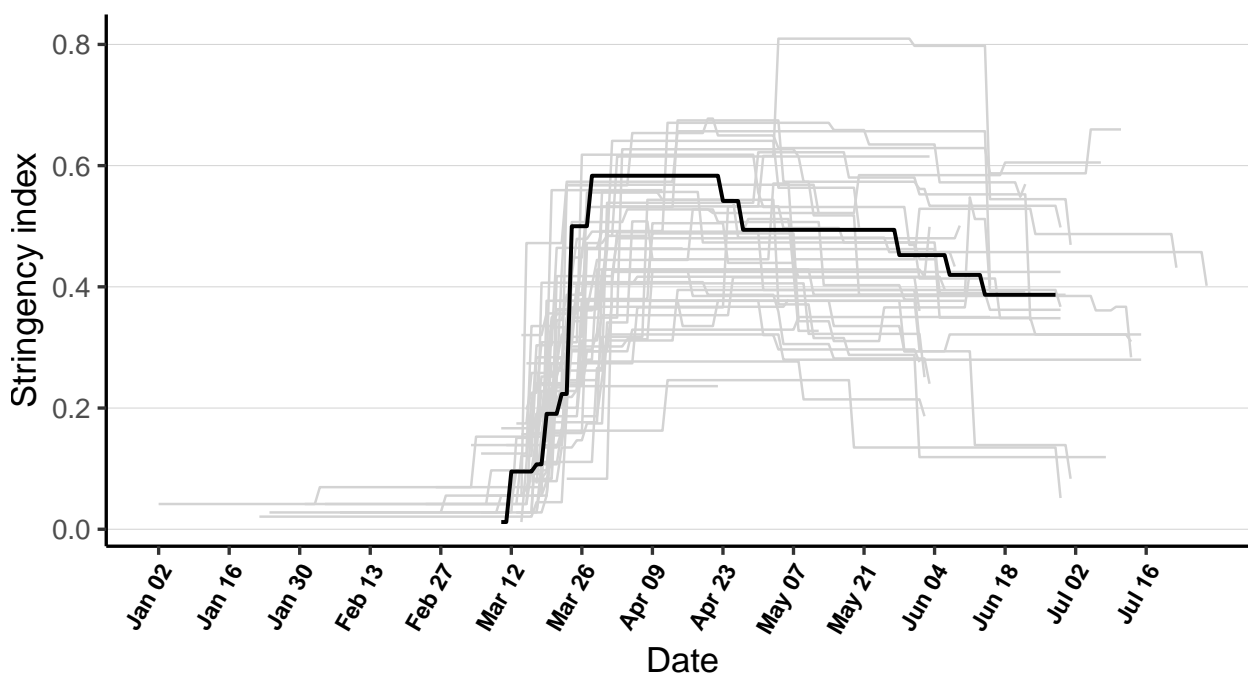
Results

A data set of 1,014 measures was collected, giving an average of 22 measures per country in the WHO Africa Region. Eighty-five percent of measures were collected solely from government sources, 14% were collected from multiple media reports and 1% from single media reports. The raw dataset is available at https://git.ecdf.ed.ac.uk/epigroup/covid-19/tiba_pru_measures/blob/master/TIBA_PRU_measures.xlsx. These data are currently complete only up to 28/07/20 but will be updated in the coming weeks.

Stringency index — the average score of 12 subcategories of measures (excluding the governance and socio-economic measures and surveillance and testing from public health measures) — ranges from 0.01 to 0.81.

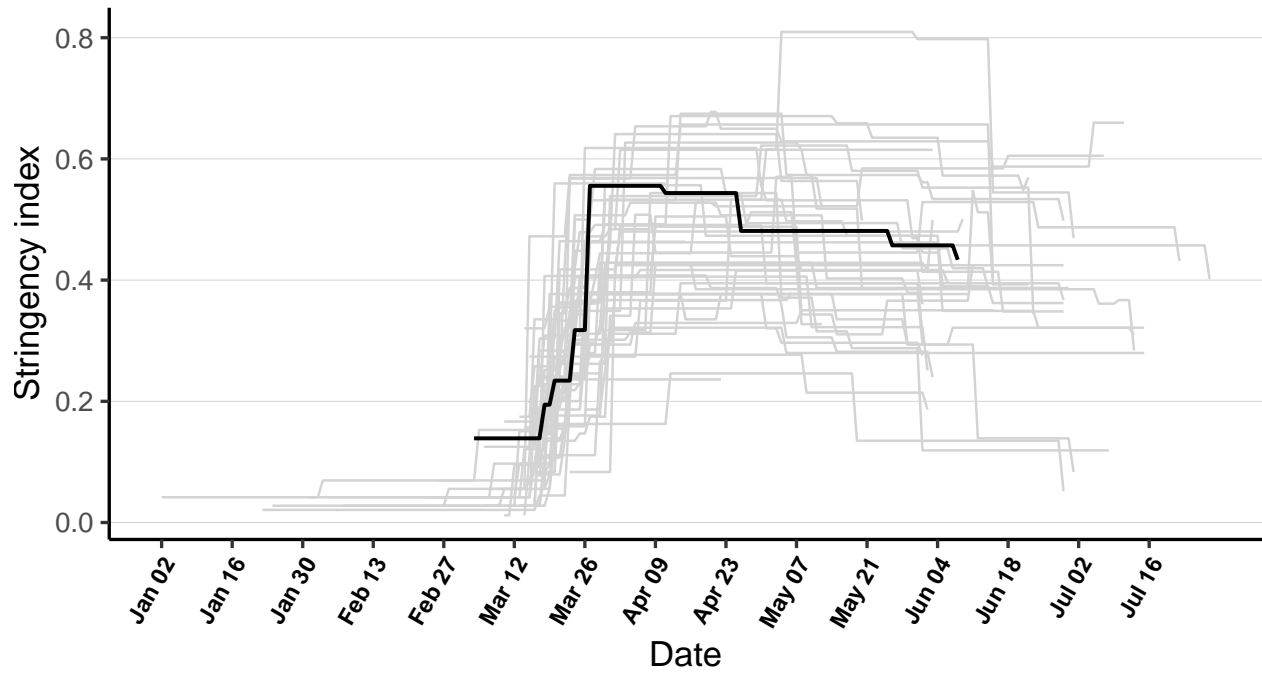
Stringency index was plotted for each country as below. In each individual country plot, the dark lines indicate stringency index in that country and the grey lines indicate the index in the remaining 46 countries.

Algeria



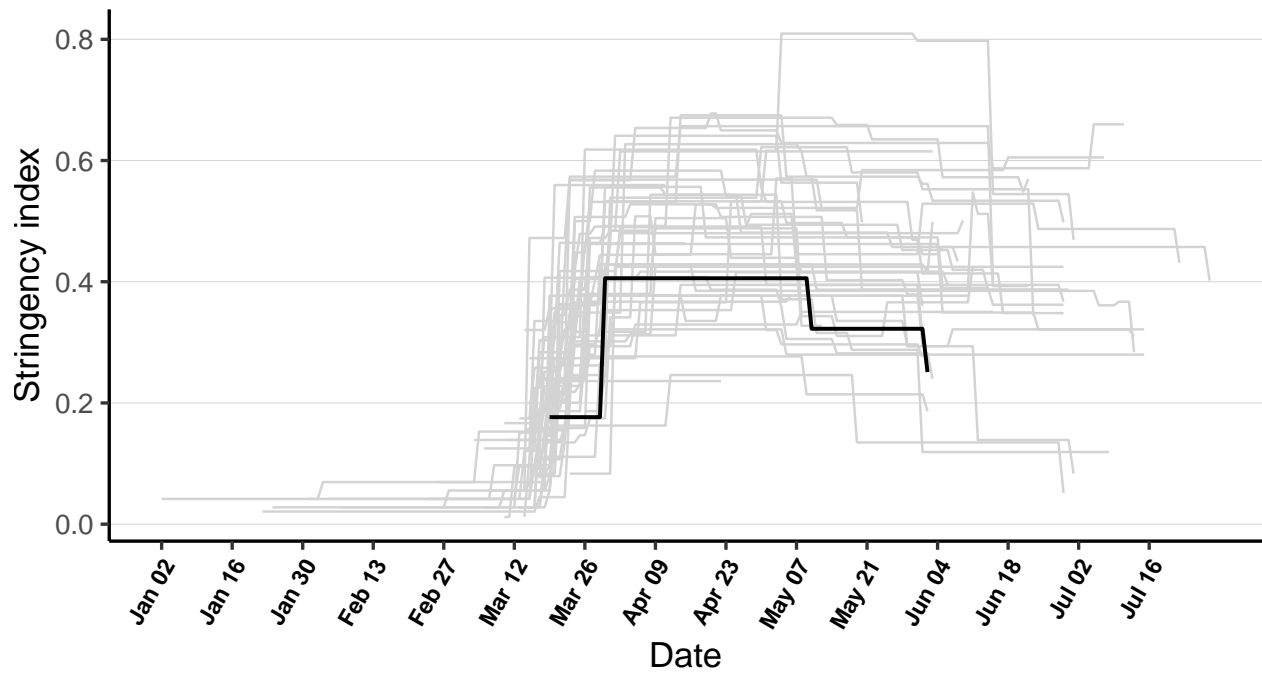
Algeria has a maximum stringency index of 0.583 (12th in the region).

Angola



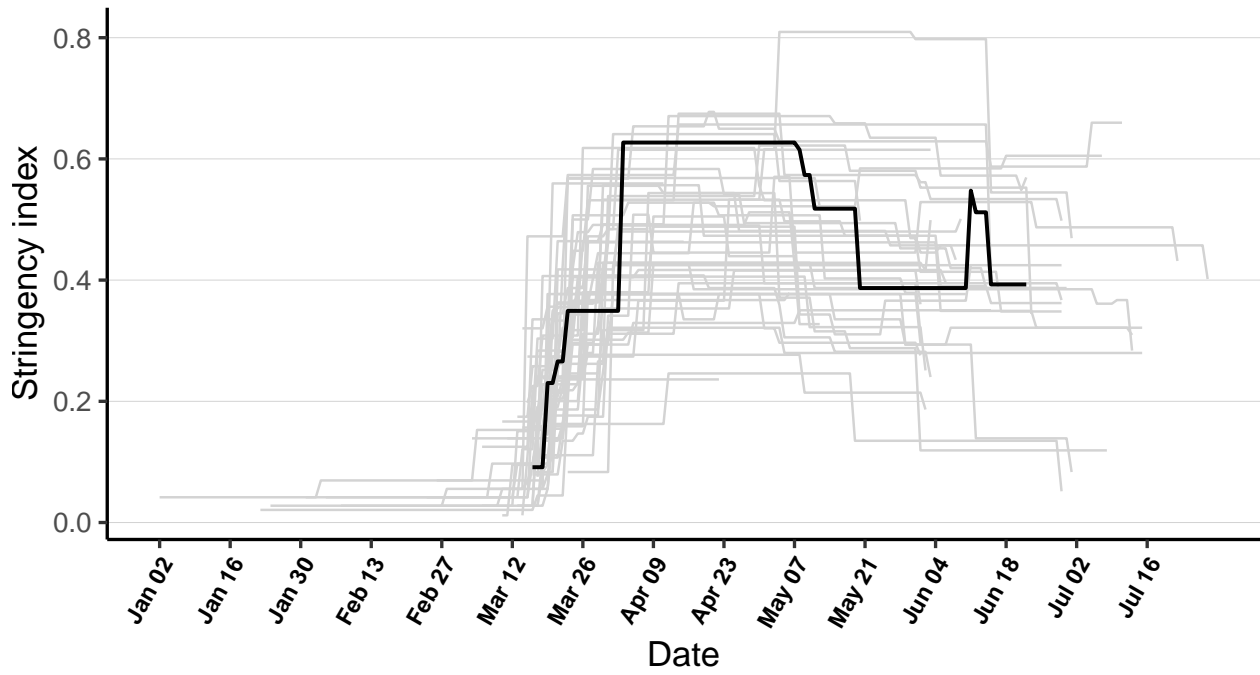
Angola has a maximum stringency index of 0.556 (17th in the region).

Benin



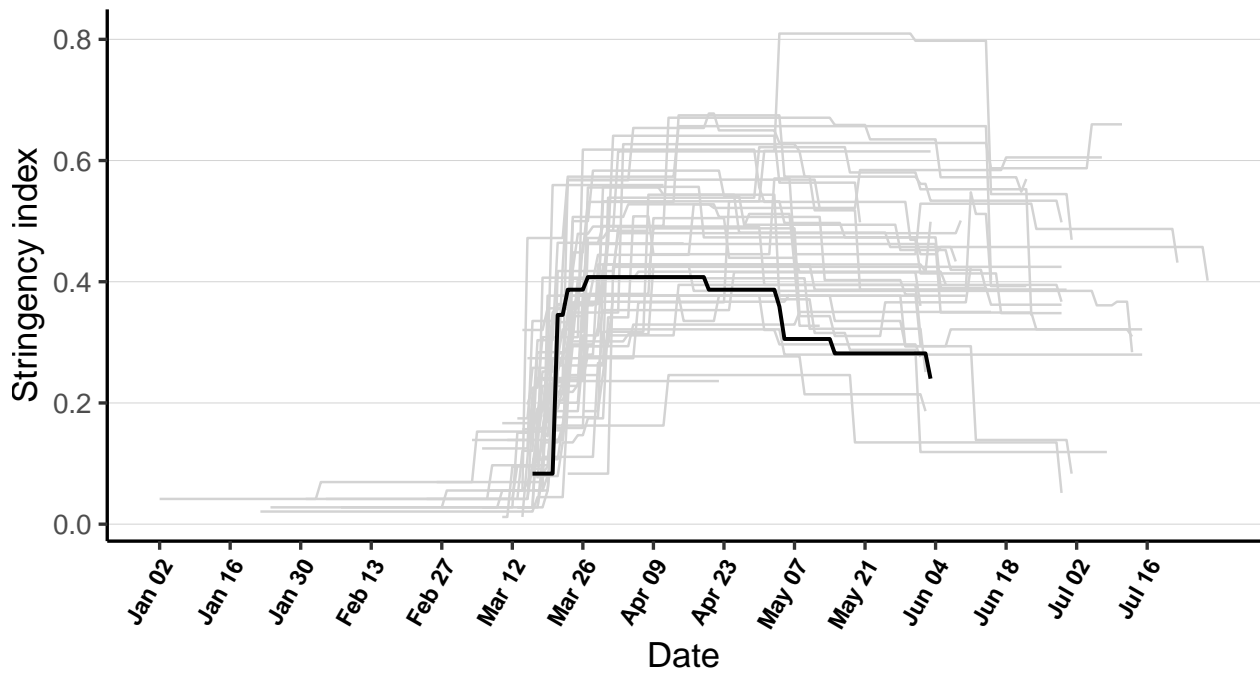
Benin has a maximum stringency index of 0.406 (36th in the region).

Botswana



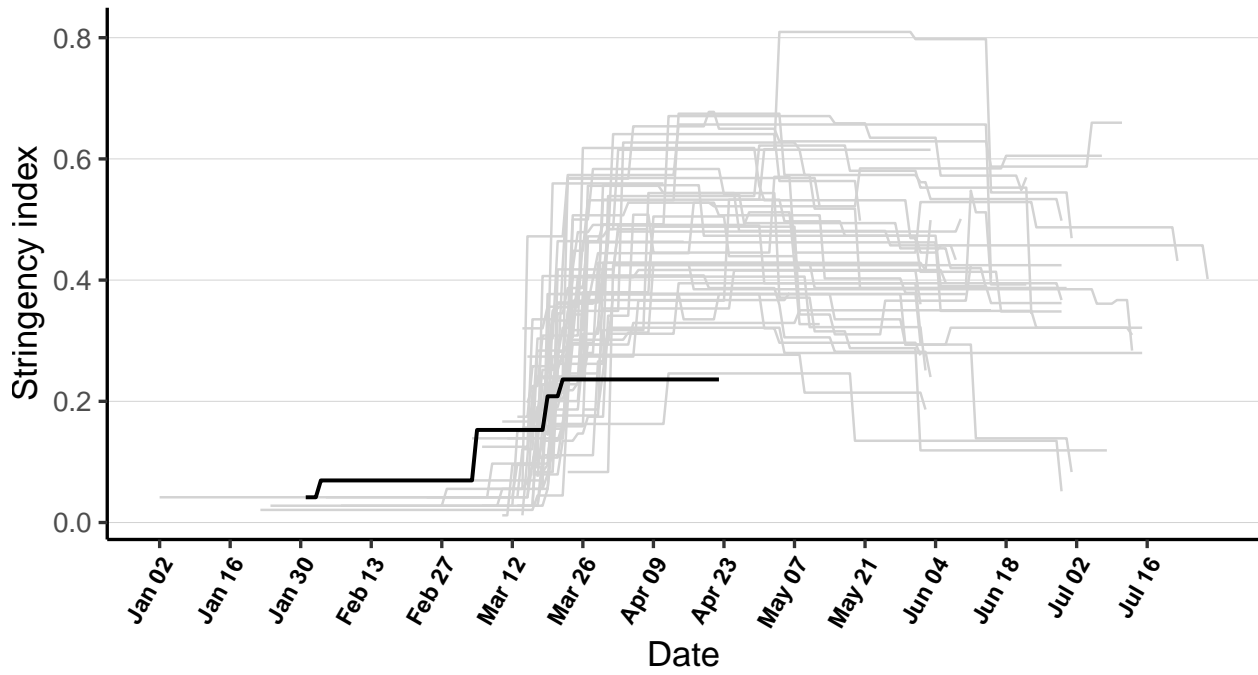
Botswana has a maximum stringency index of 0.627 (7th in the region).

Burkina Faso



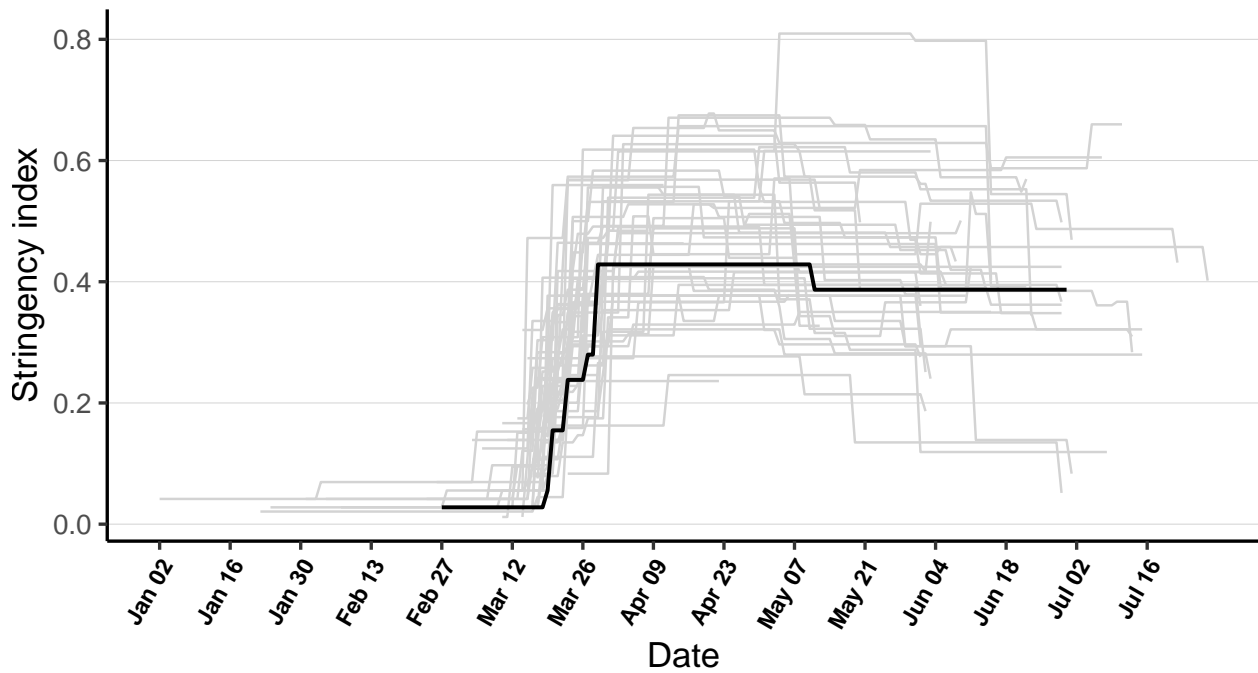
Burkina Faso has a maximum stringency index of 0.408 (35th in the region).

Burundi



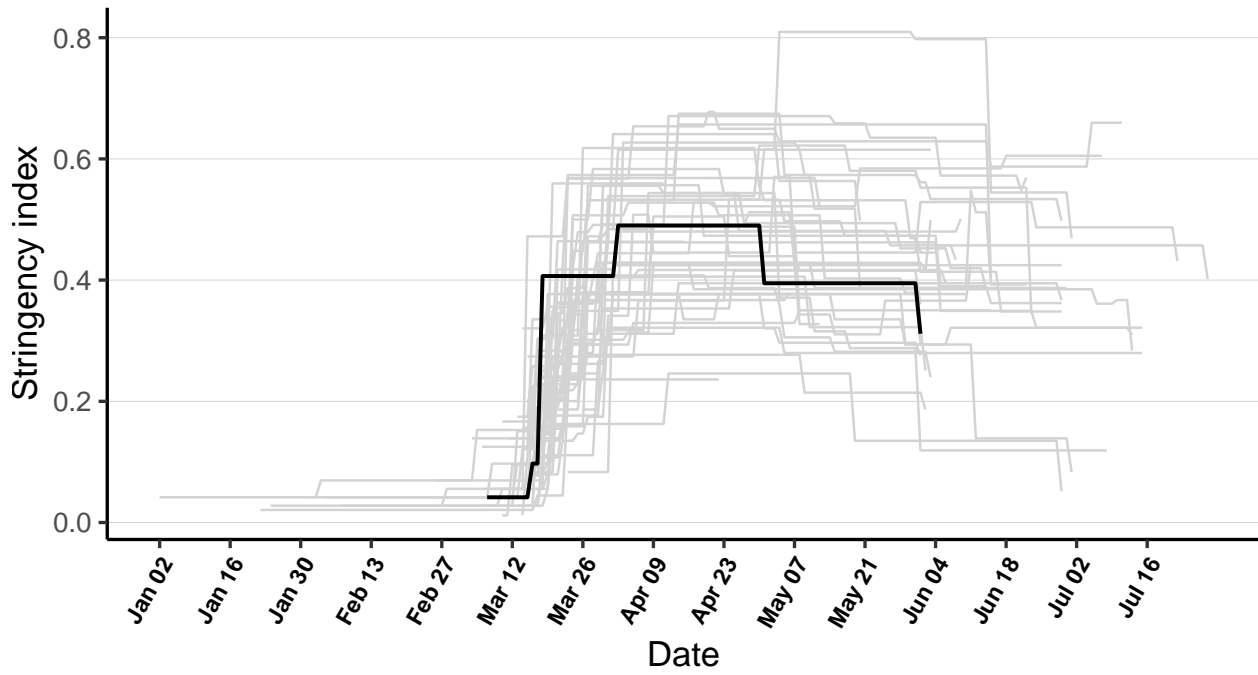
Burundi has a maximum stringency index of 0.236 (47th in the region).

Cape Verde



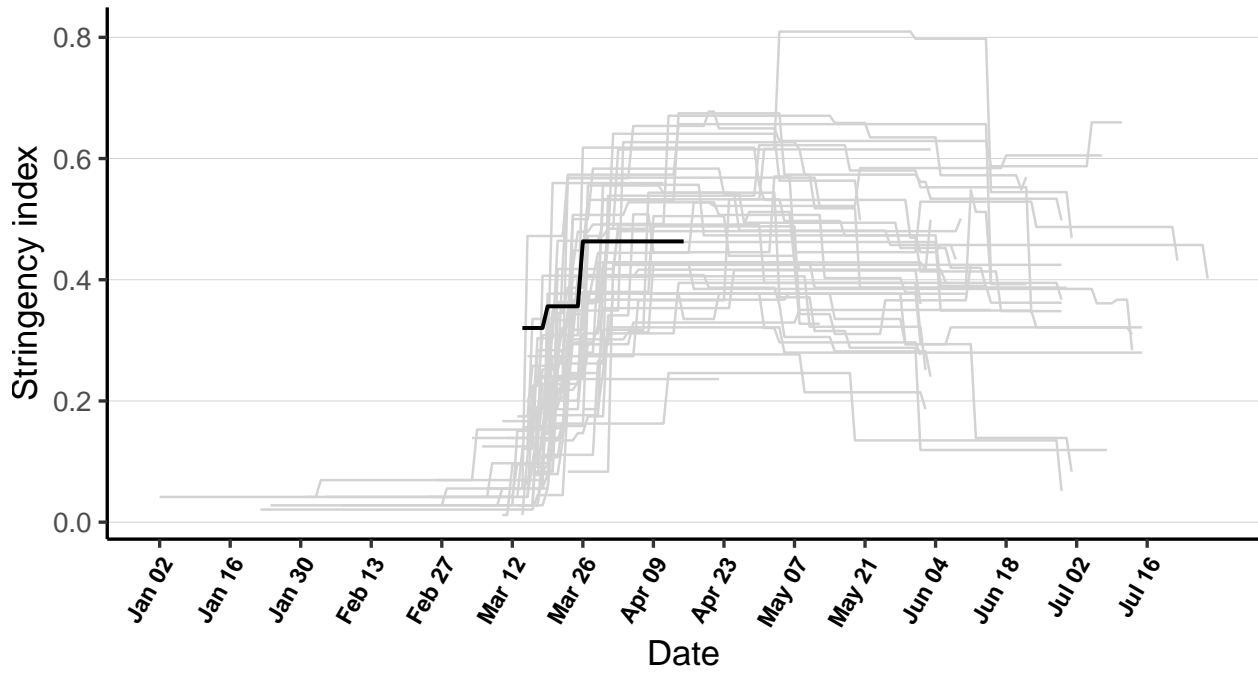
Cape Verde has a maximum stringency index of 0.429 (30th in the region).

Cameroon



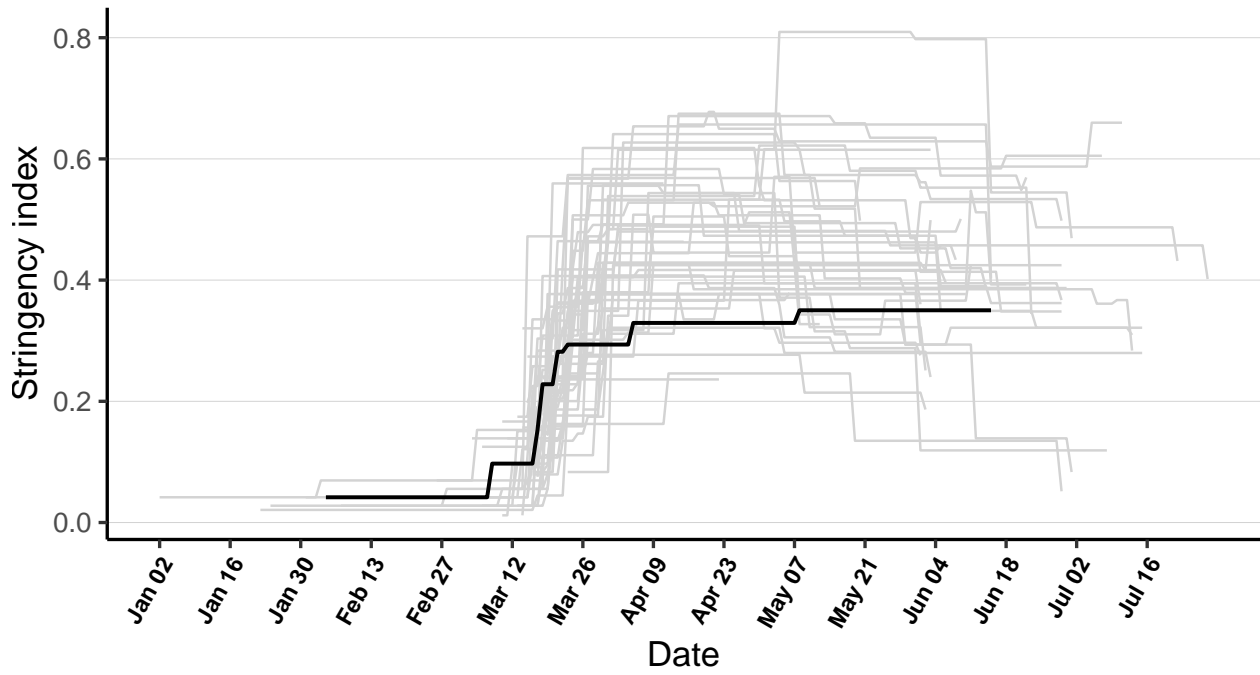
Cameroon has a maximum stringency index of 0.49 (25th in the region).

Central African Republic



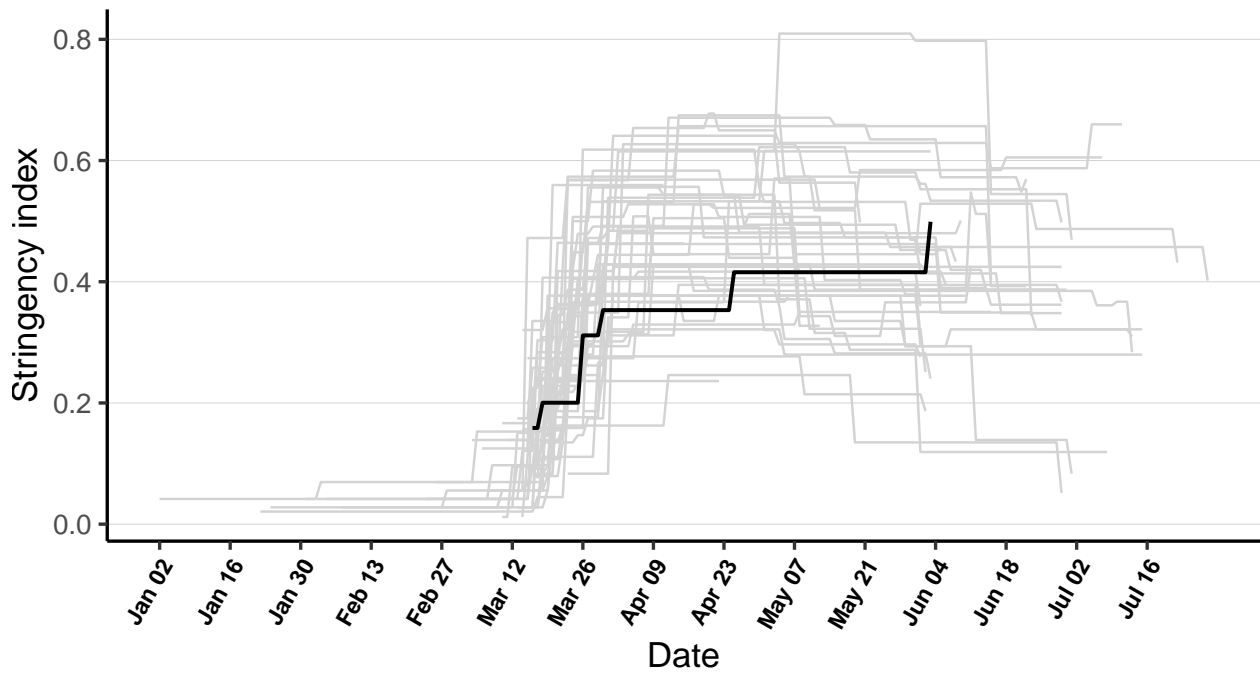
Central African Republic has a maximum stringency index of 0.463 (28th in the region).

Chad



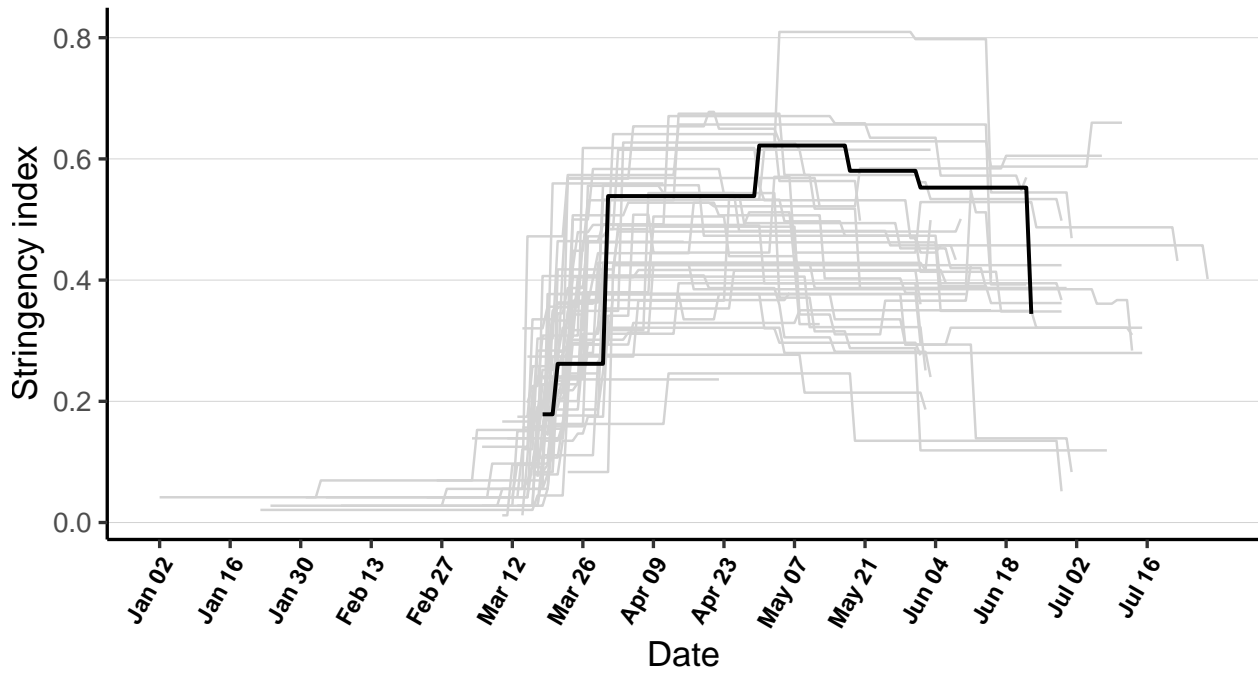
Chad has a maximum stringency index of 0.35 (43rd in the region).

Comoros



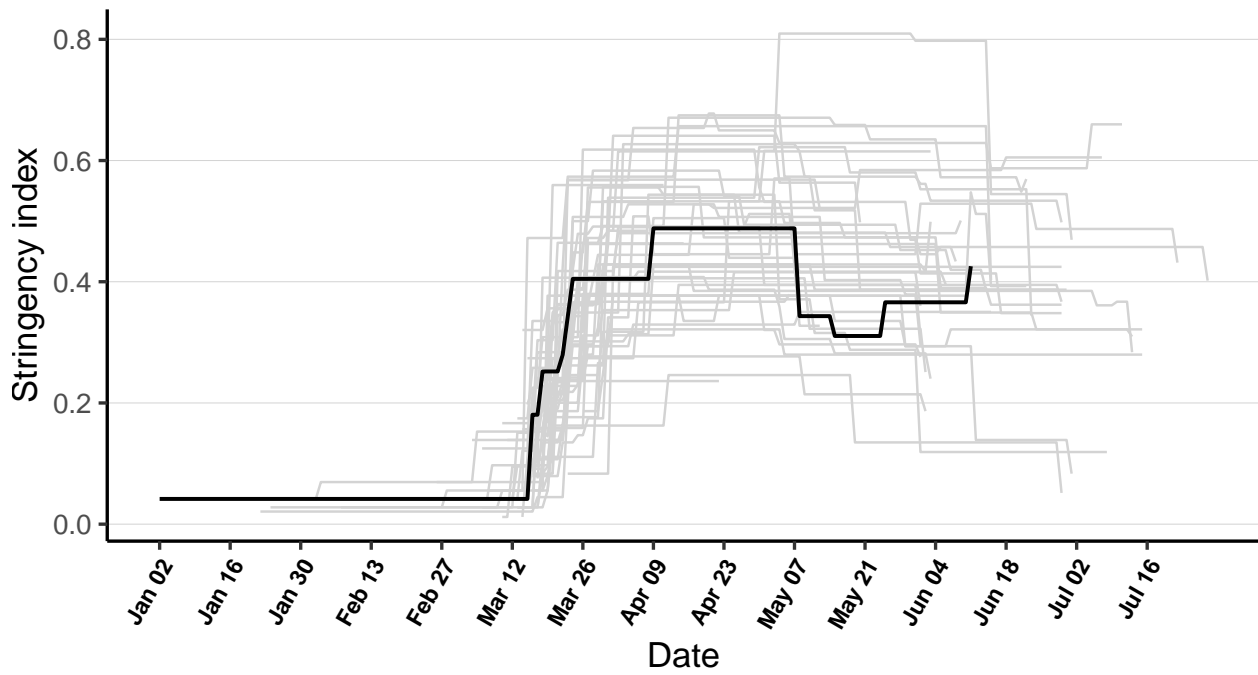
Comoros has a maximum stringency index of 0.499 (24th in the region).

Congo



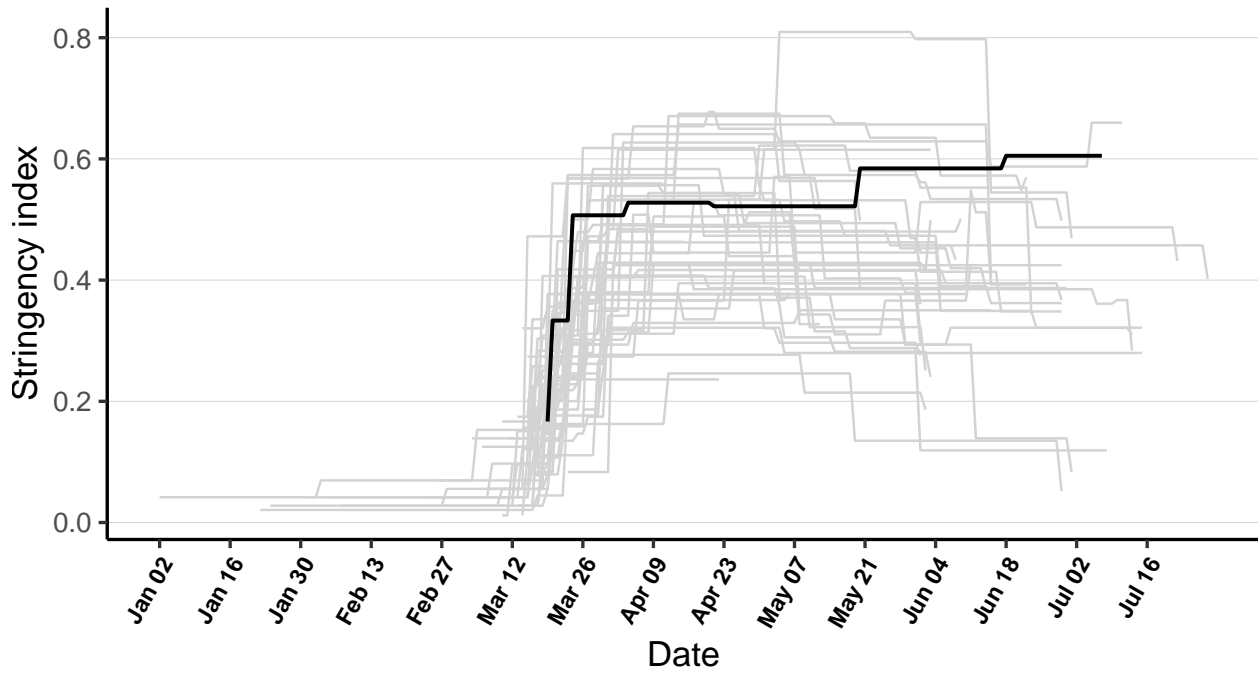
Congo has a maximum stringency index of 0.622 (8th in the region).

Côte d'Ivoire



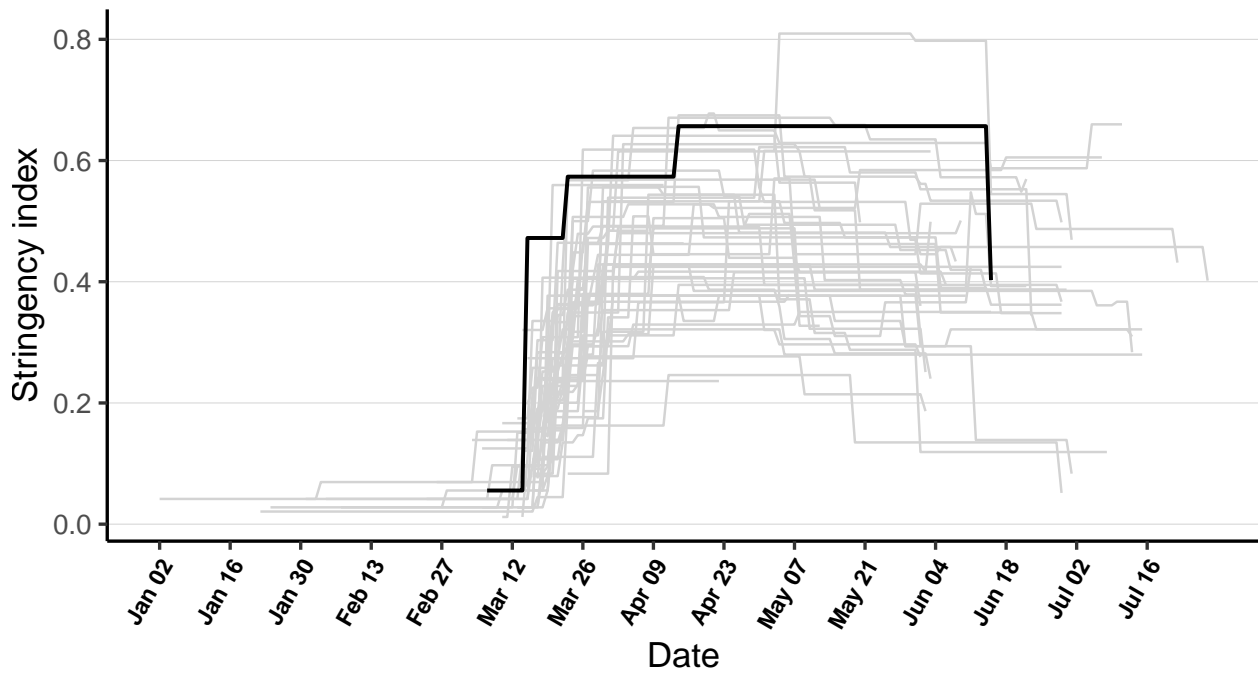
Côte d'Ivoire has a maximum stringency index of 0.488 (26th in the region).

Democratic Republic of Congo



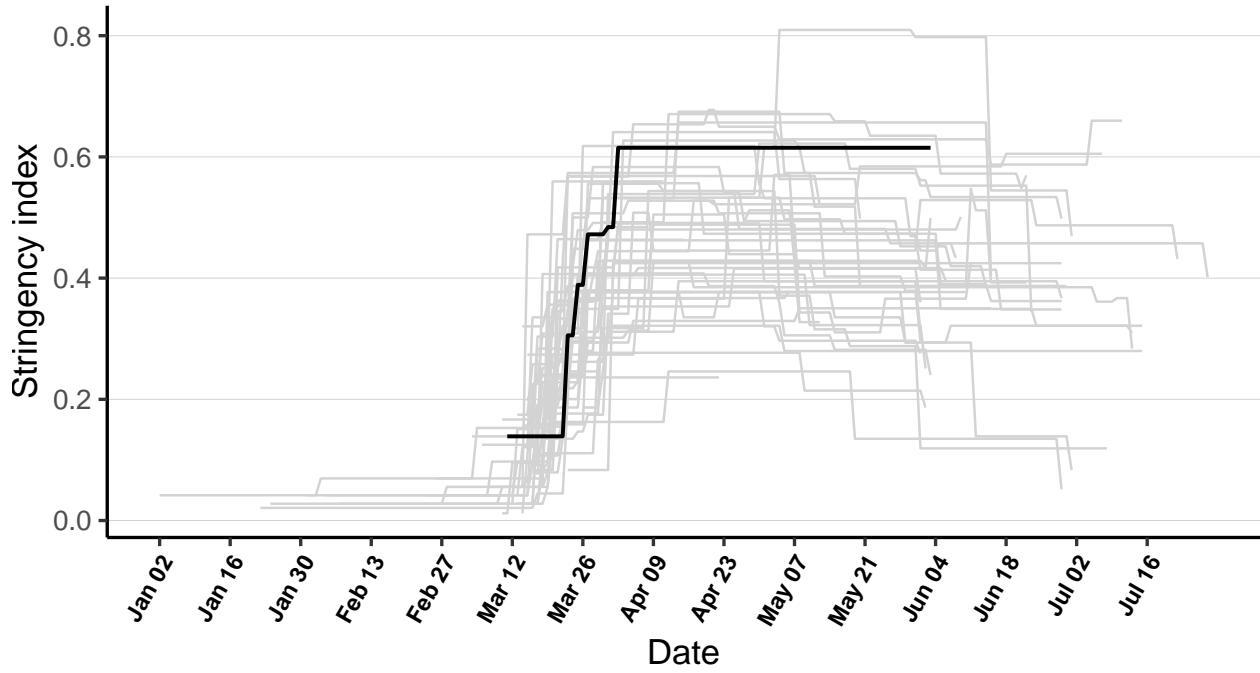
Democratic Republic of Congo has a maximum stringency index of 0.605 (11th in the region).

Equatorial Guinea



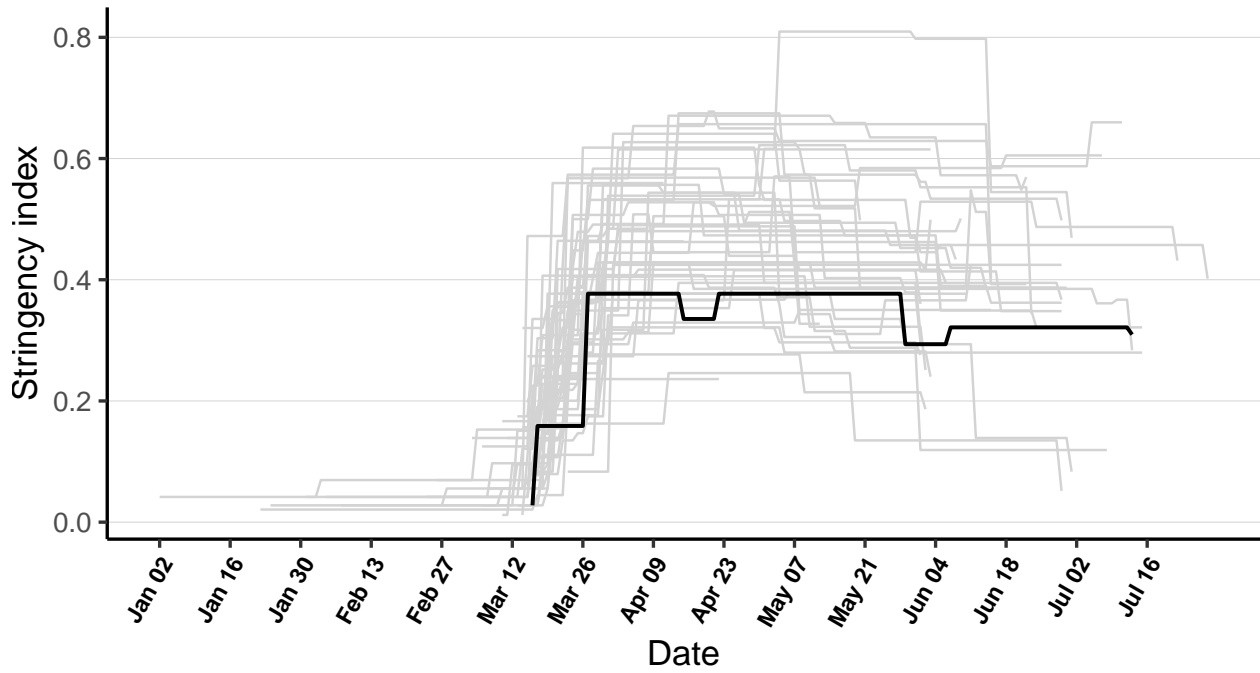
Equatorial Guinea has a maximum stringency index of 0.657 (5th in the region).

Eritrea



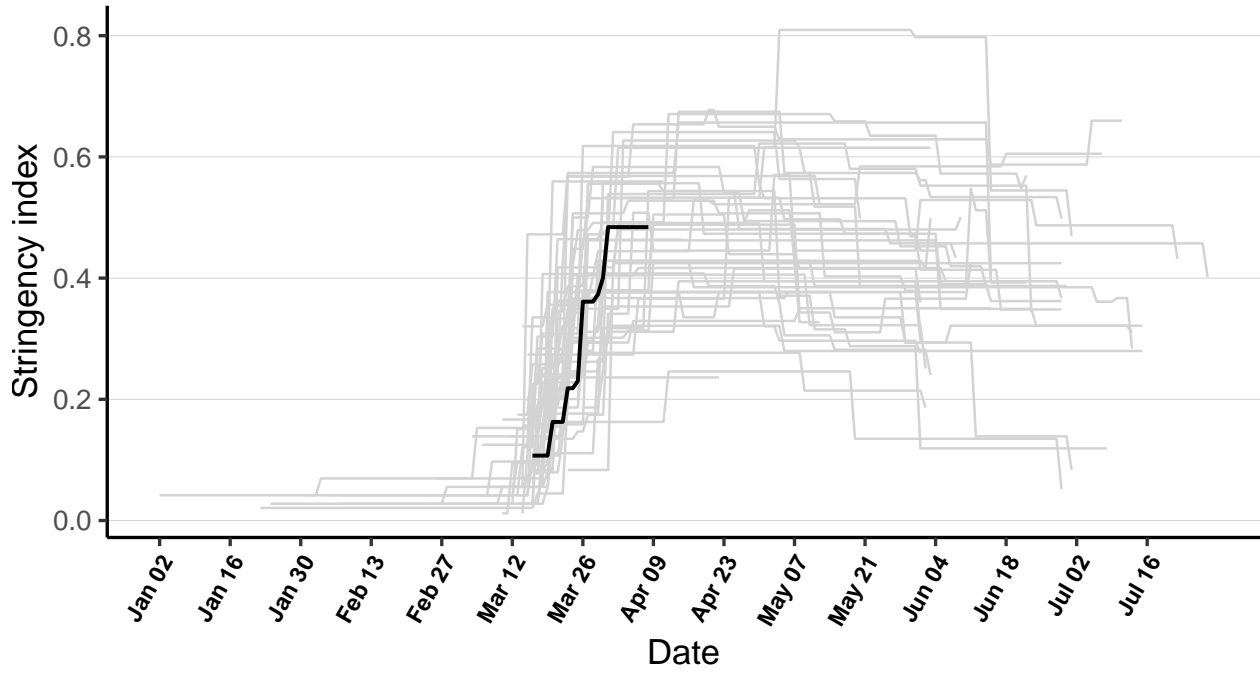
Eritrea has a maximum stringency index of 0.615 (10th in the region).

Eswatini



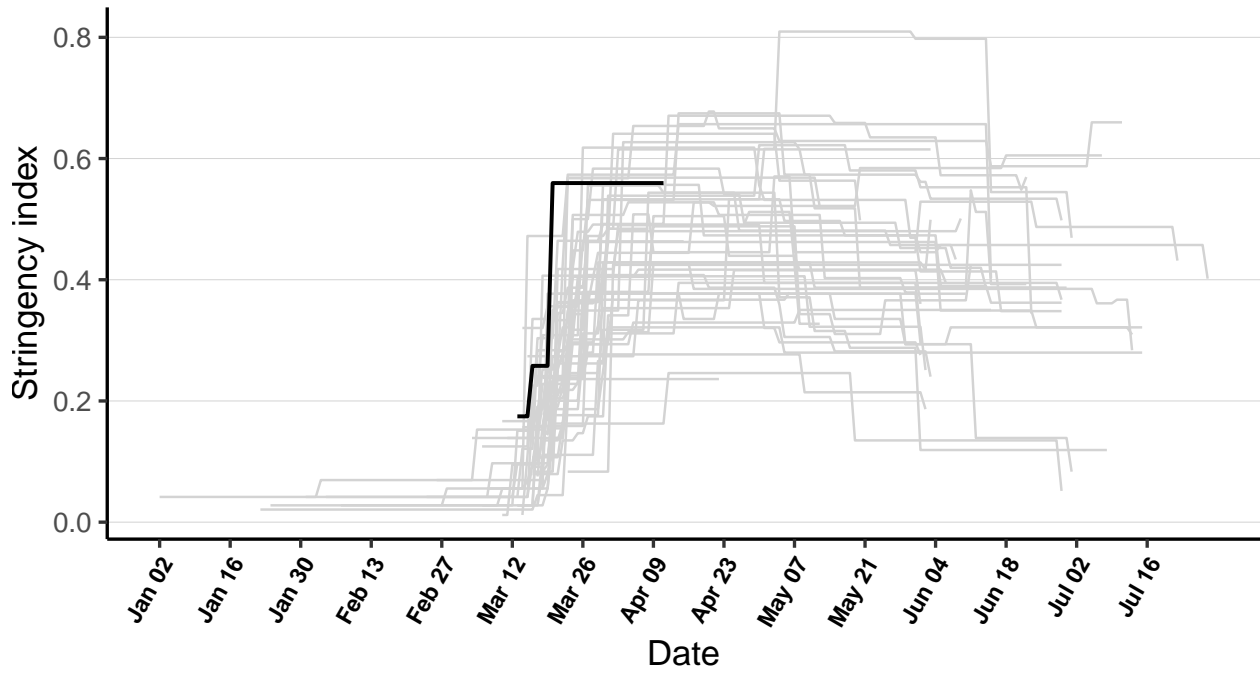
Eswatini has a maximum stringency index of 0.377 (39th in the region).

Ethiopia



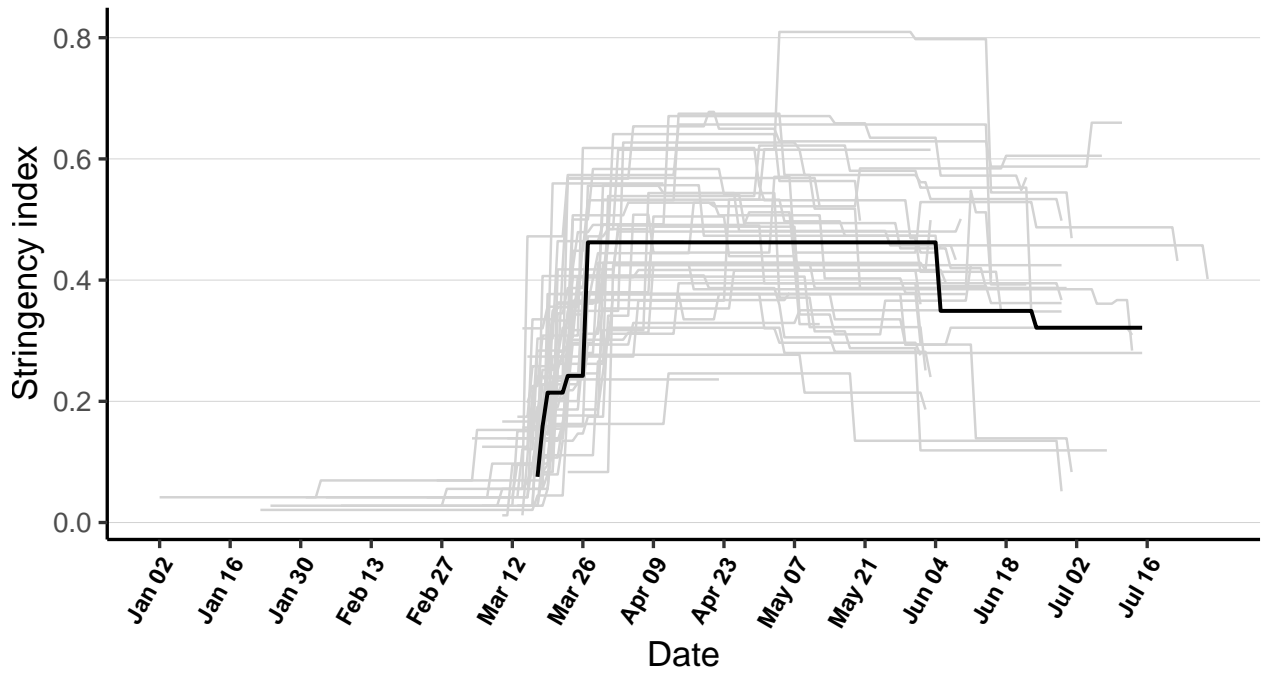
Ethiopia has a maximum stringency index of 0.484 (27th in the region).

Gabon



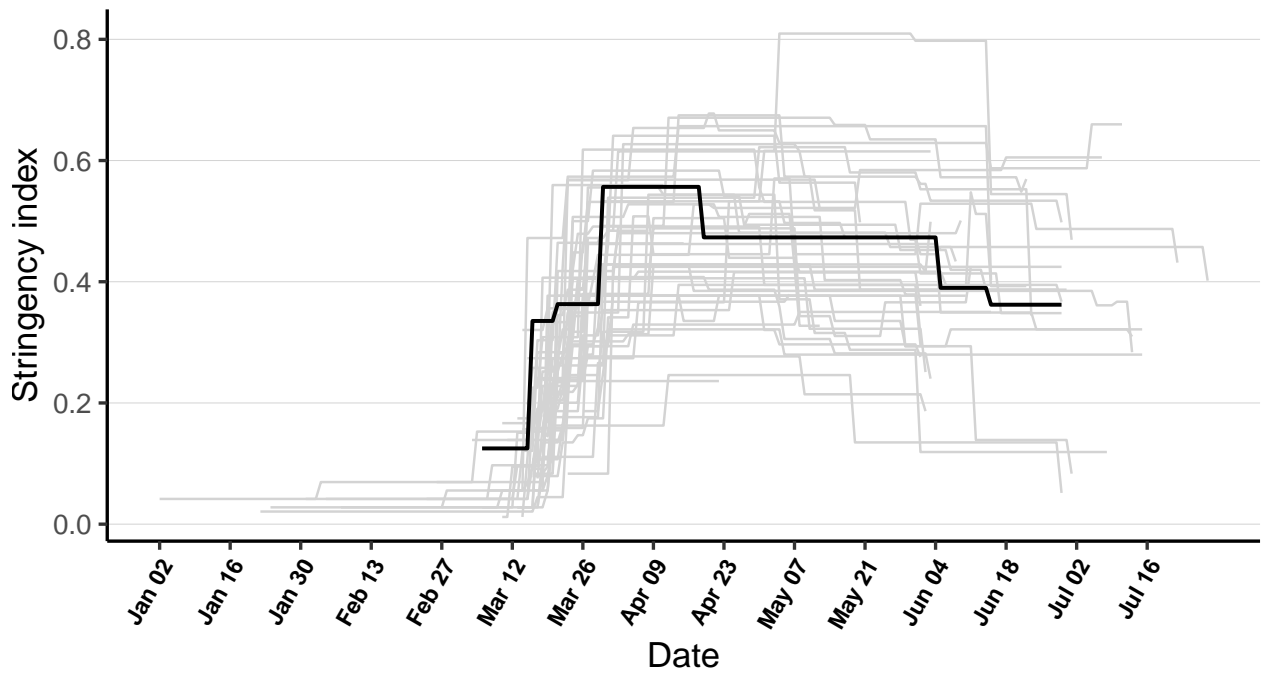
Gabon has a maximum stringency index of 0.56 (15th in the region).

Gambia



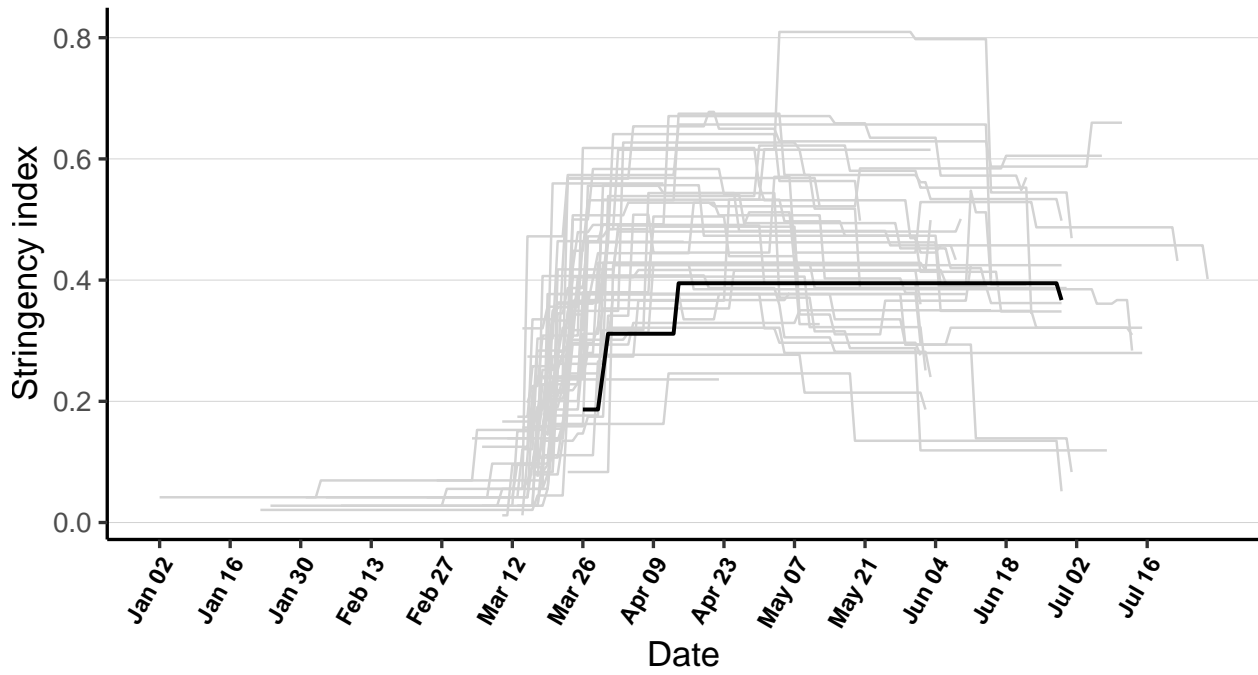
Gambia has a maximum stringency index of 0.462 (29th in the region).

Ghana



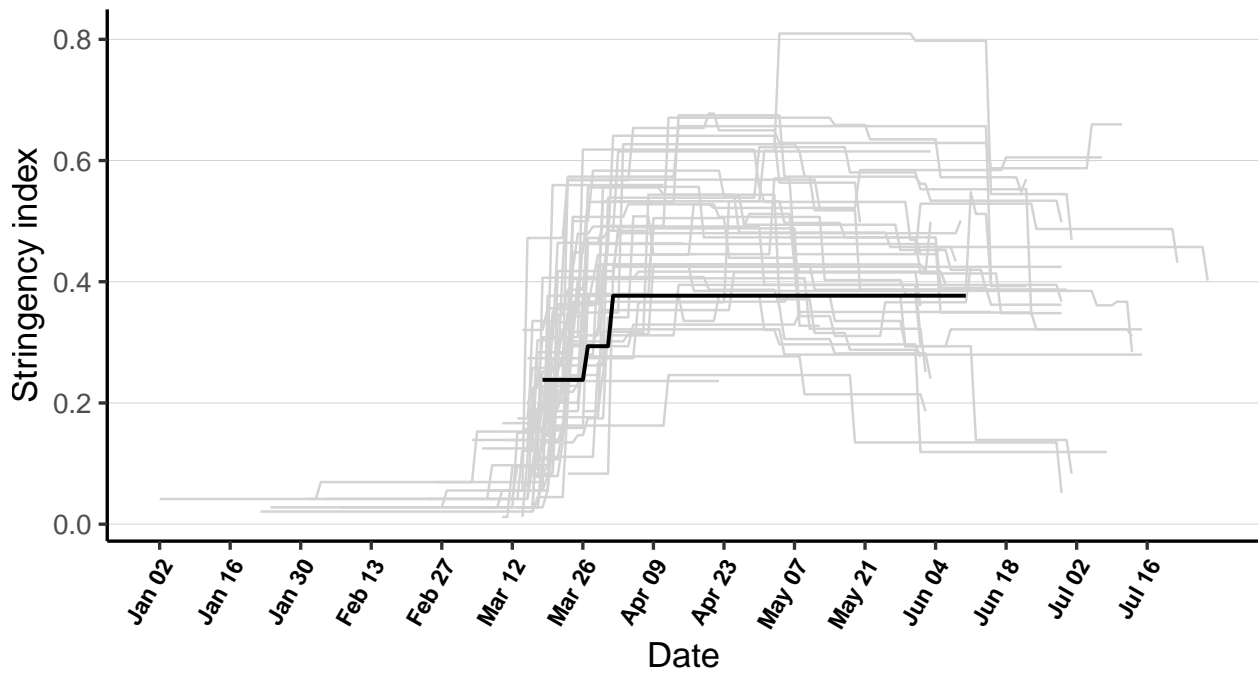
Ghana has a maximum stringency index of 0.557 (16th in the region).

Guinea



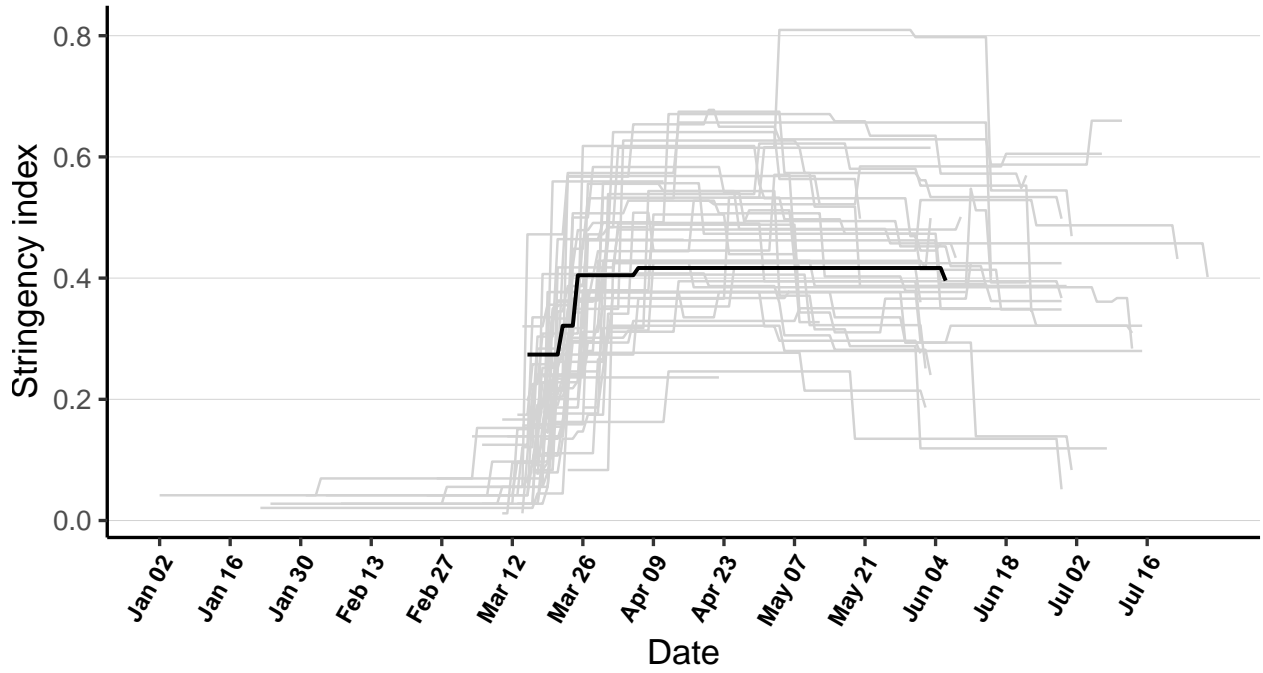
Guinea has a maximum stringency index of 0.395 (37th in the region).

Guinea-Bissau



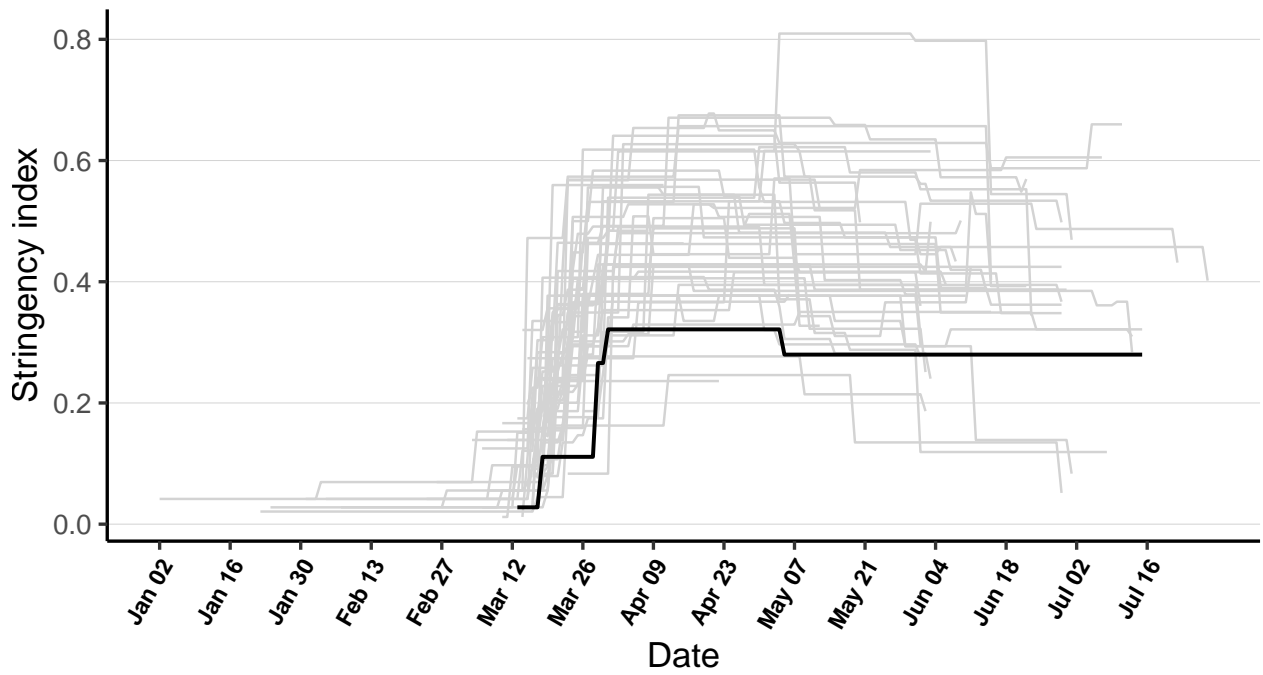
Guinea-Bissau has a maximum stringency index of 0.377 (40th in the region).

Kenya



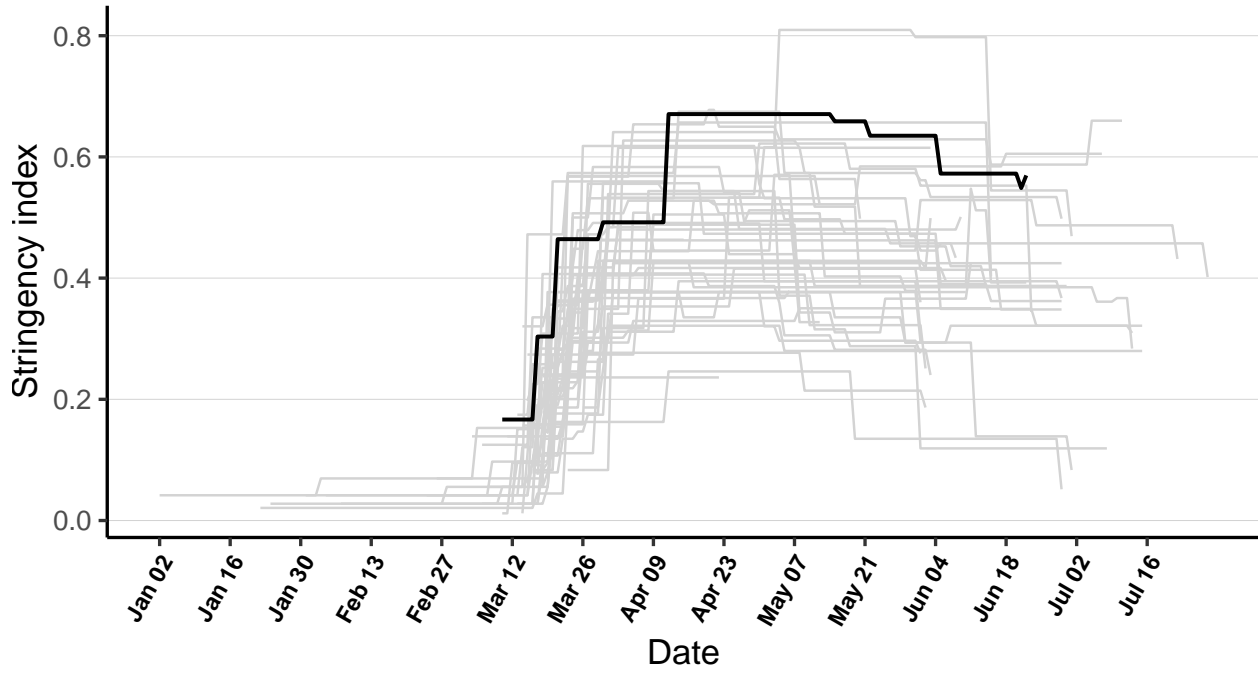
Kenya has a maximum stringency index of 0.417 (34th in the region).

Lesotho



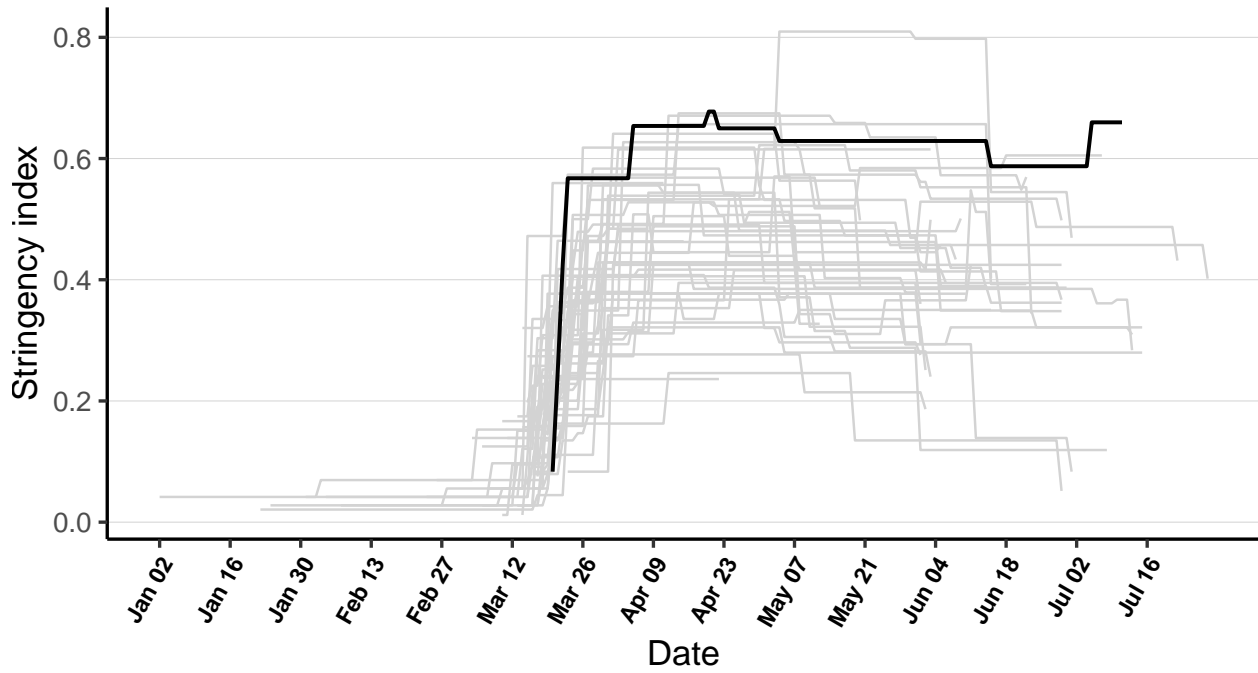
Lesotho has a maximum stringency index of 0.321 (44th in the region).

Liberia



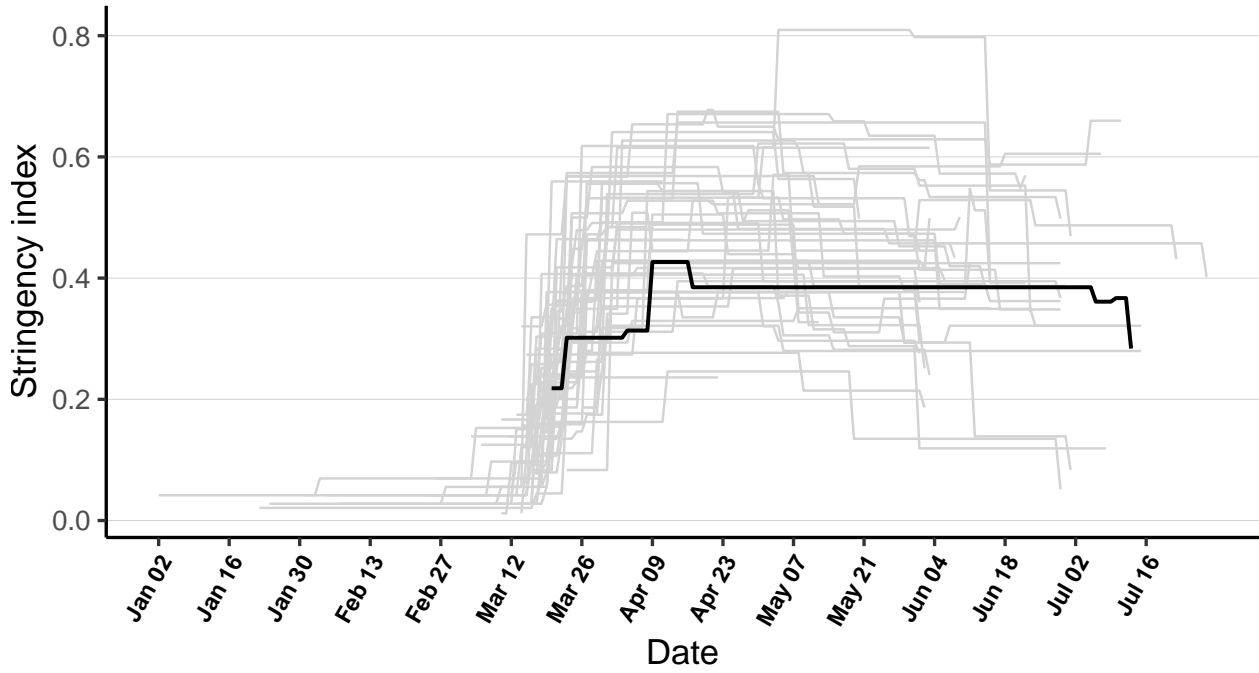
Liberia has a maximum stringency index of 0.671 (4th in the region).

Madagascar



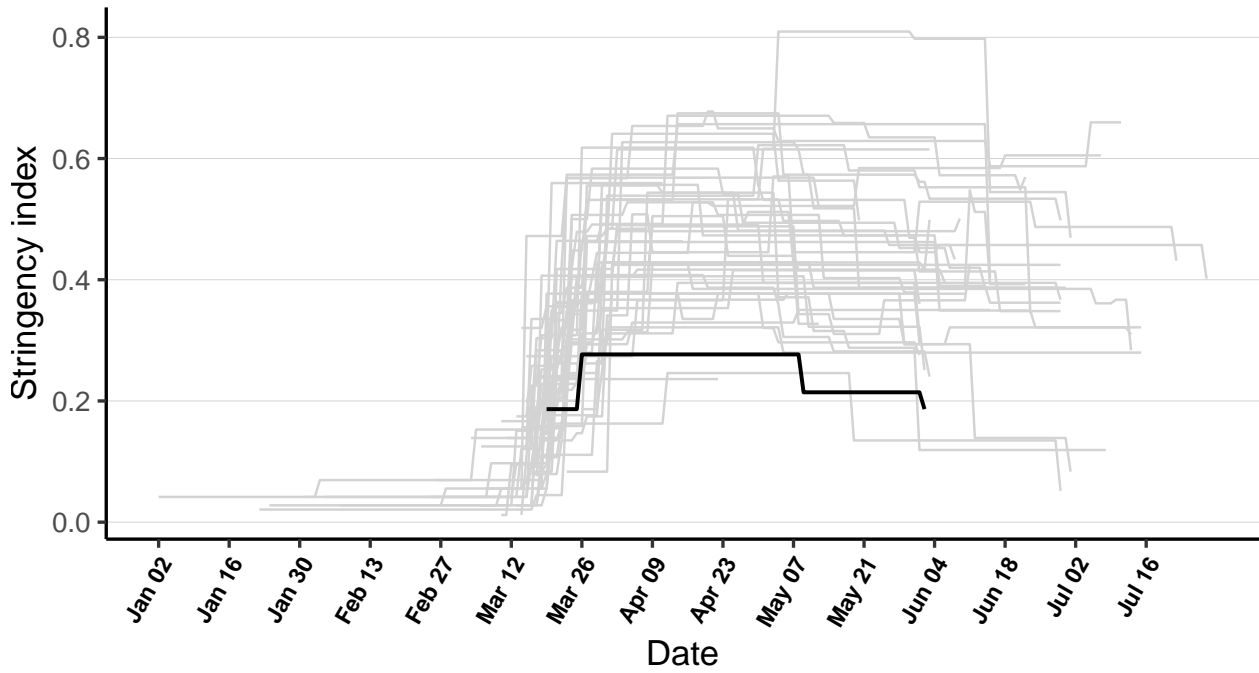
Madagascar has a maximum stringency index of 0.678 (2nd in the region).

Malawi



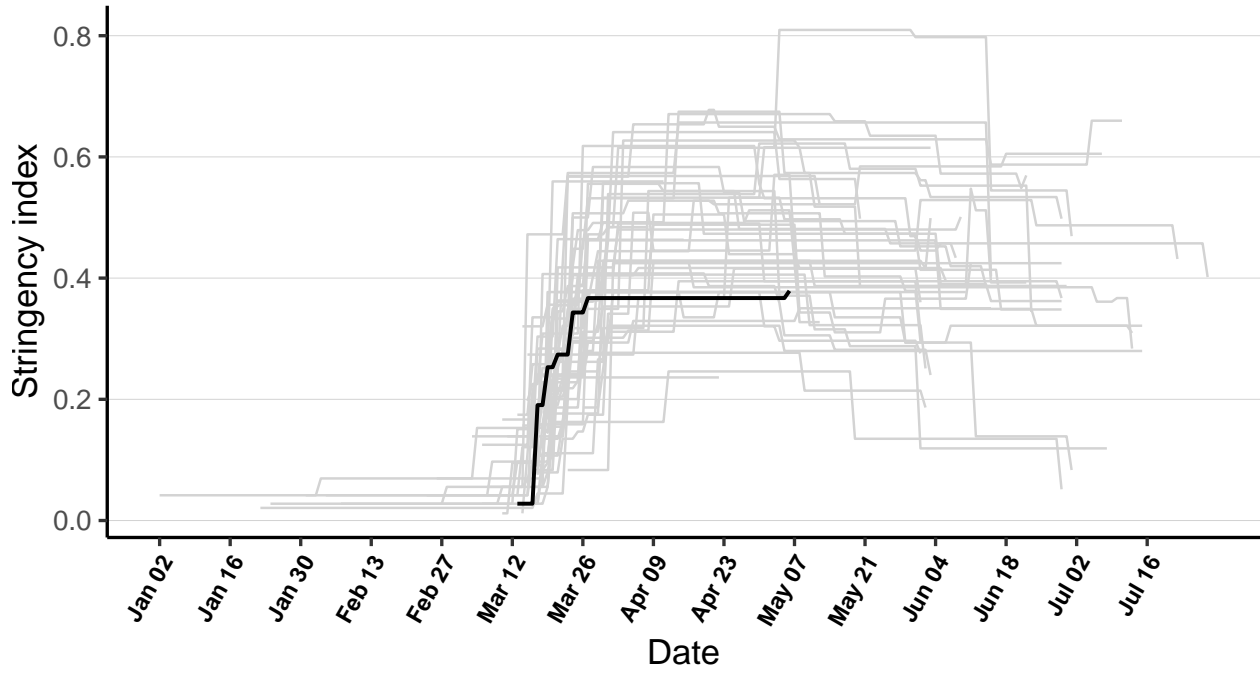
Malawi has a maximum stringency index of 0.427 (32nd in the region).

Mali



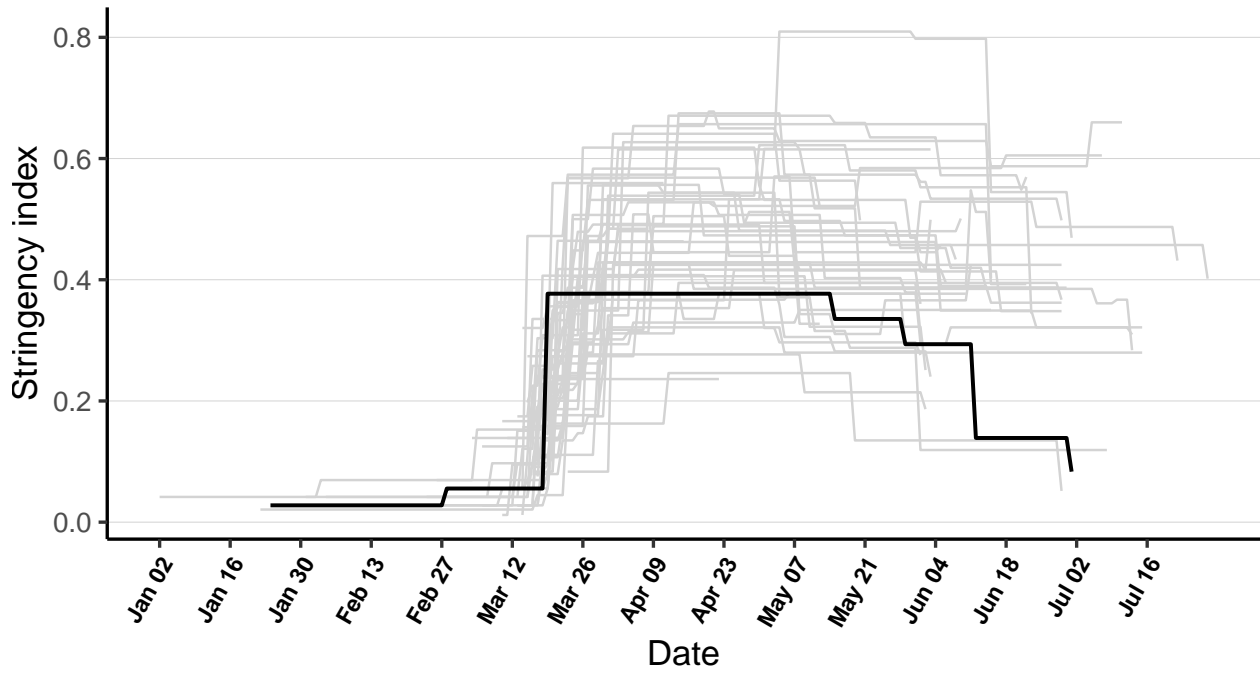
Mali has a maximum stringency index of 0.277 (45th in the region).

Mauritania



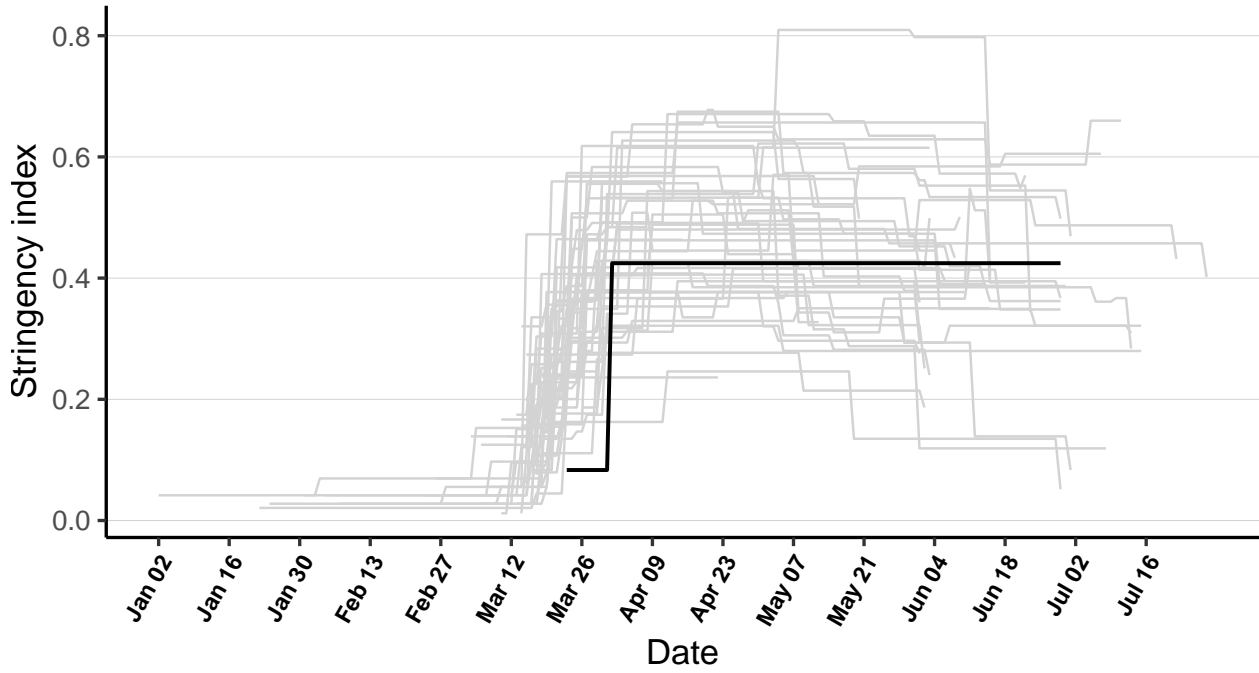
Mauritania has a maximum stringency index of 0.379 (38th in the region).

Mauritius



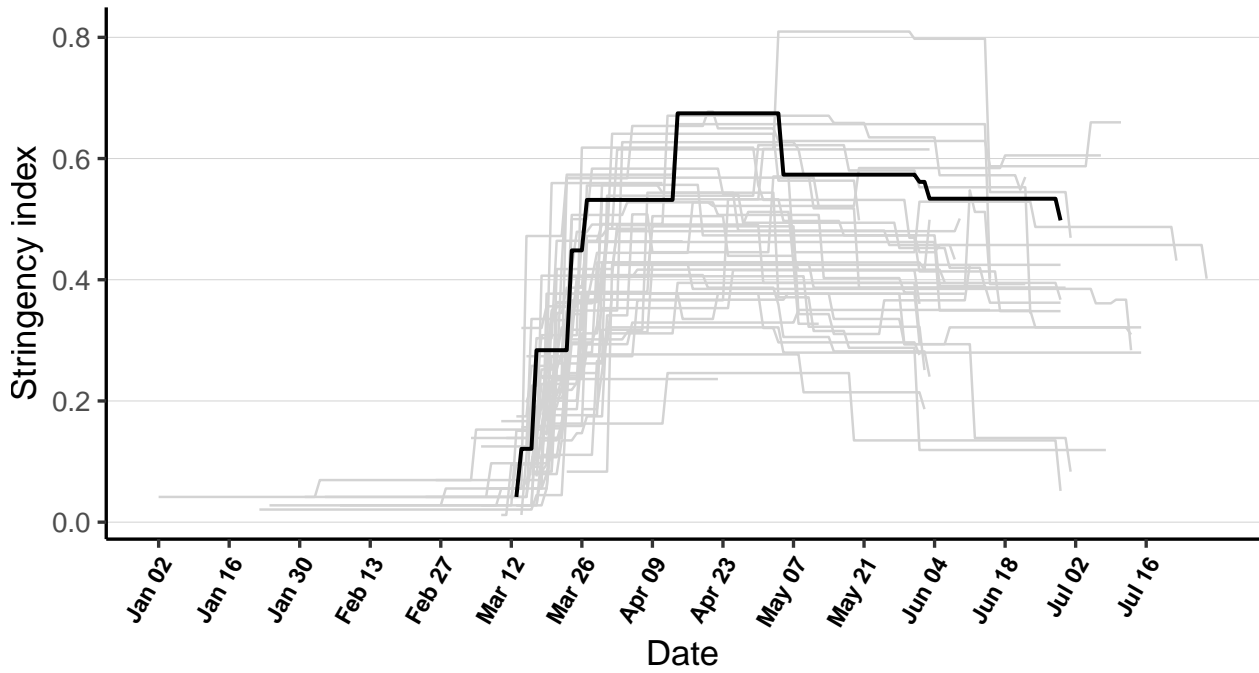
Mauritius has a maximum stringency index of 0.377 (41st in the region).

Mozambique



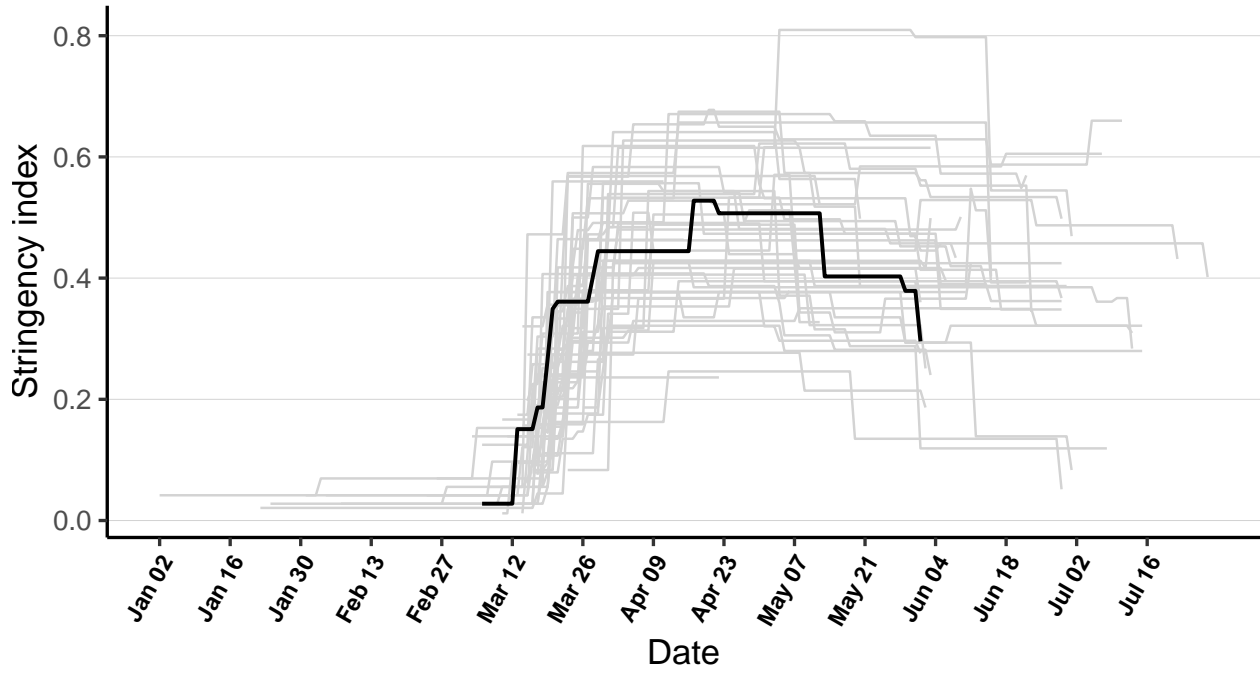
Mozambique has a maximum stringency index of 0.425 (33rd in the region).

Namibia



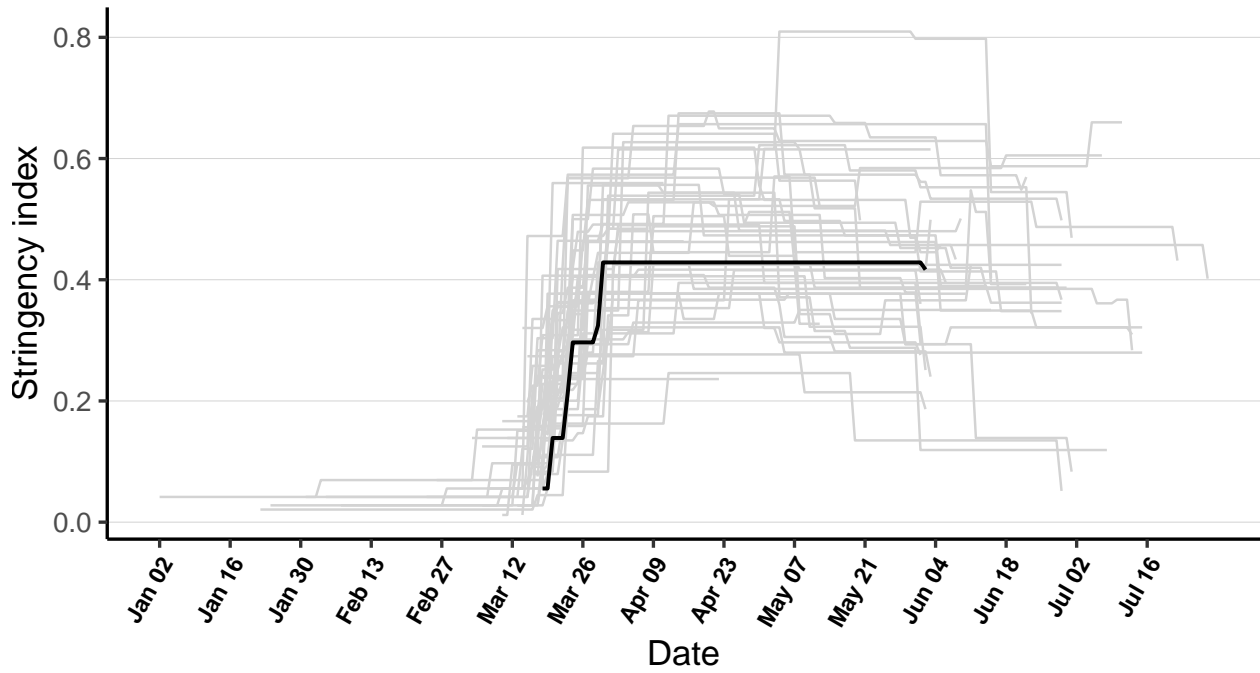
Namibia has a maximum stringency index of 0.675 (3rd in the region).

Niger



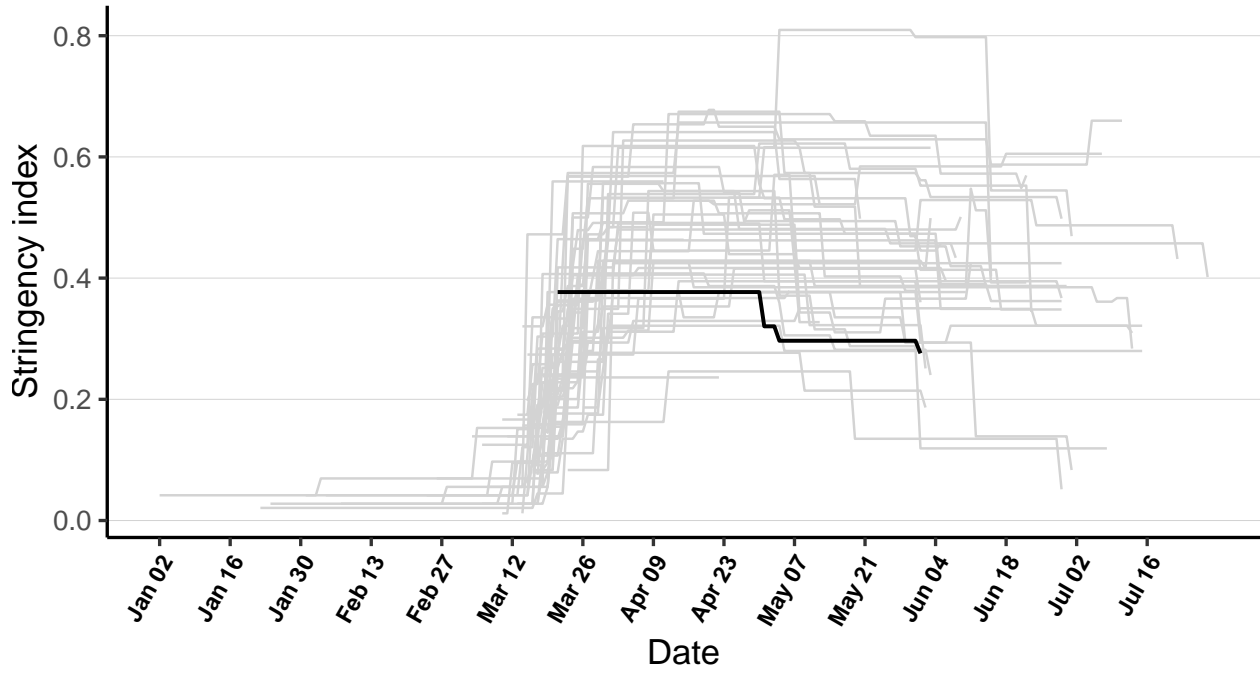
Niger has a maximum stringency index of 0.528 (20th in the region).

Nigeria



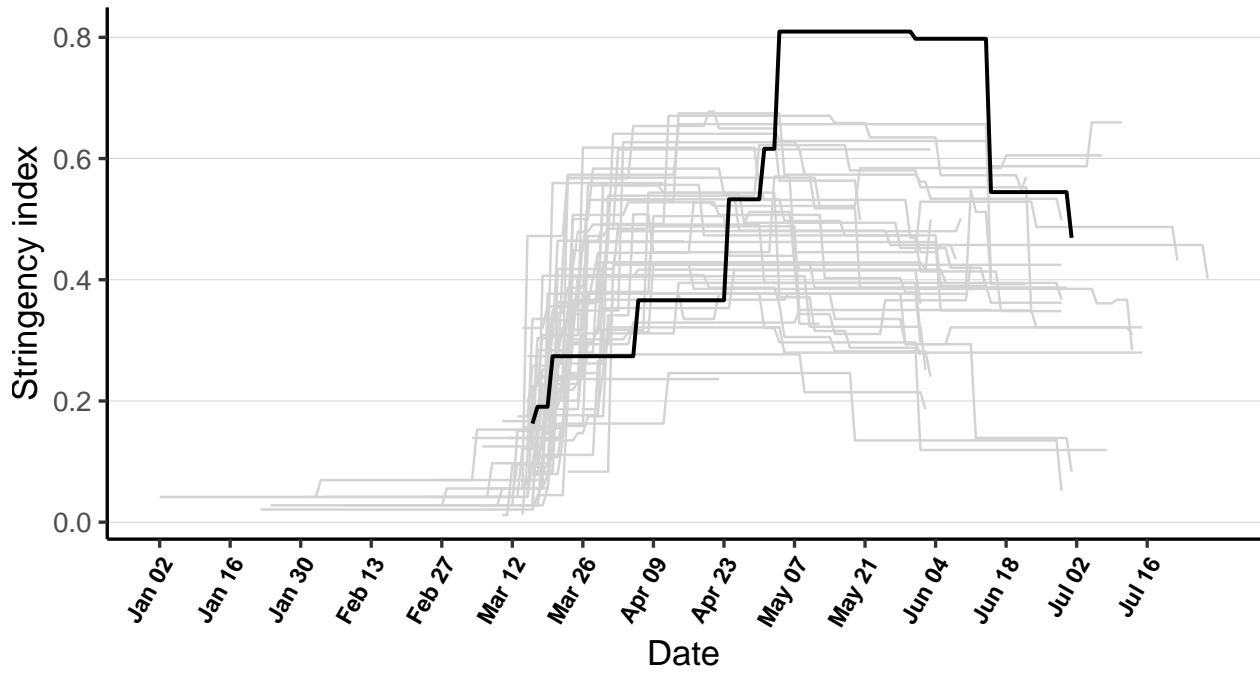
Nigeria has a maximum stringency index of 0.429 (31st in the region).

Rwanda



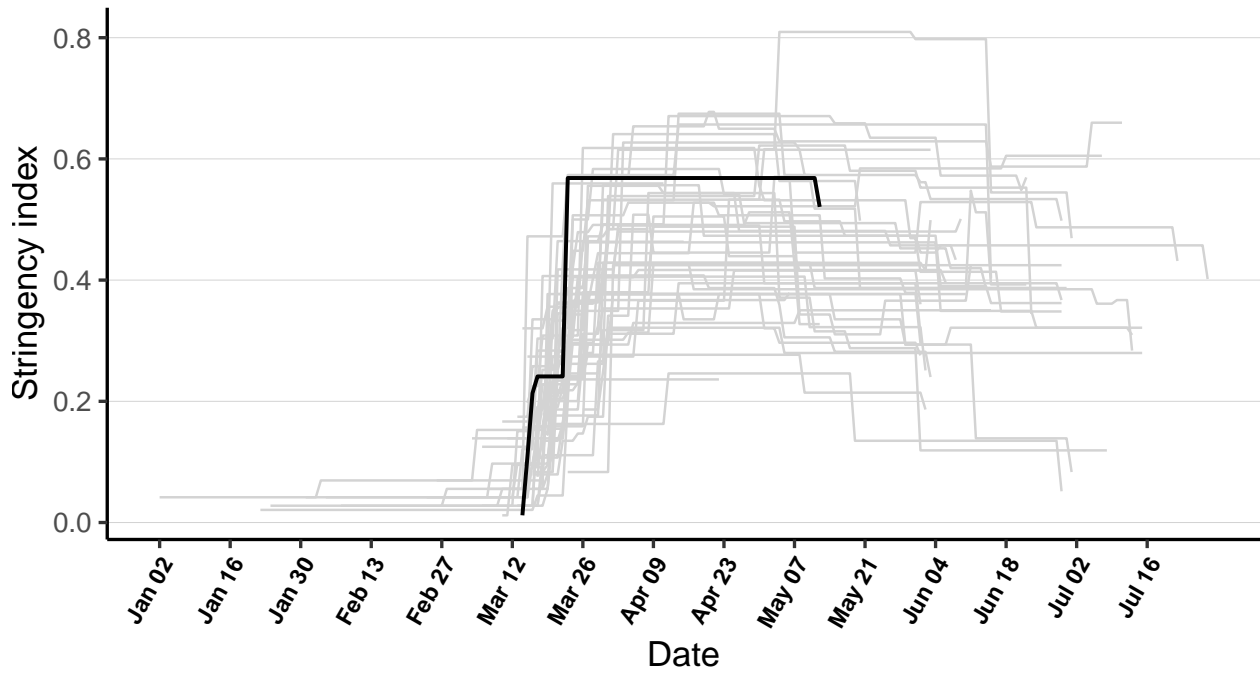
Rwanda has a maximum stringency index of 0.377 (42nd in the region).

Sao Tome and Principe



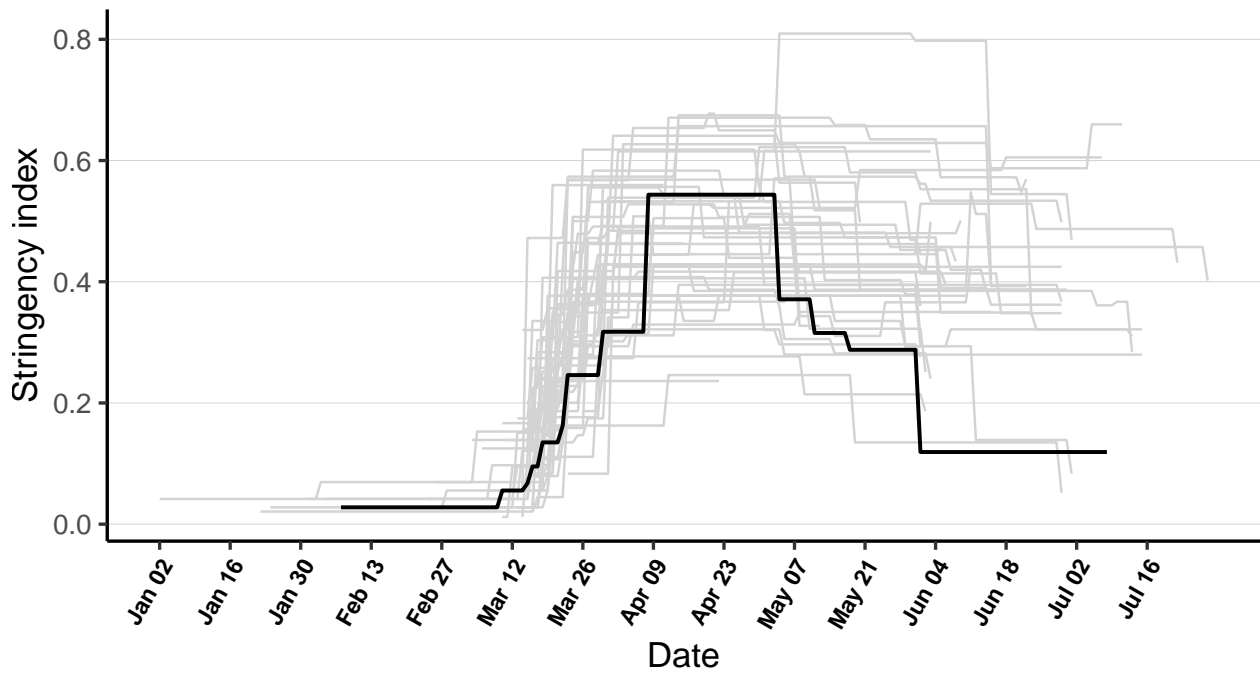
Sao Tome and Principe has a maximum stringency index of 0.81 (1st in the region).

Senegal



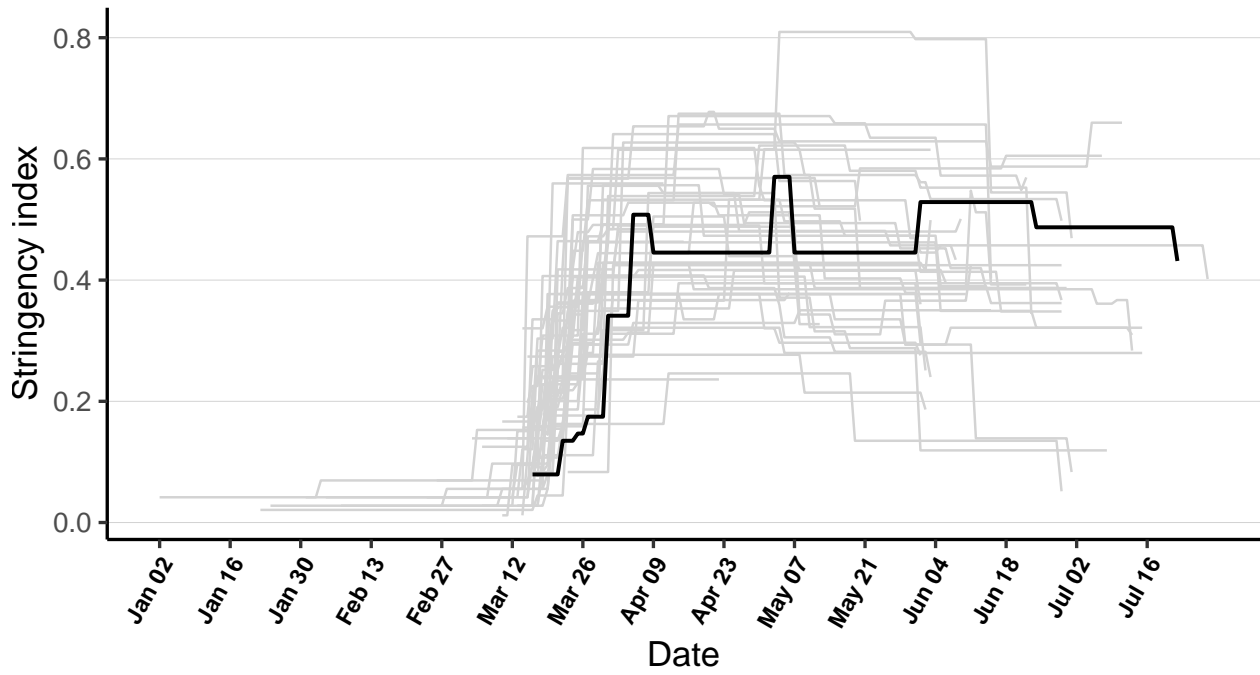
Senegal has a maximum stringency index of 0.568 (14th in the region).

Seychelles



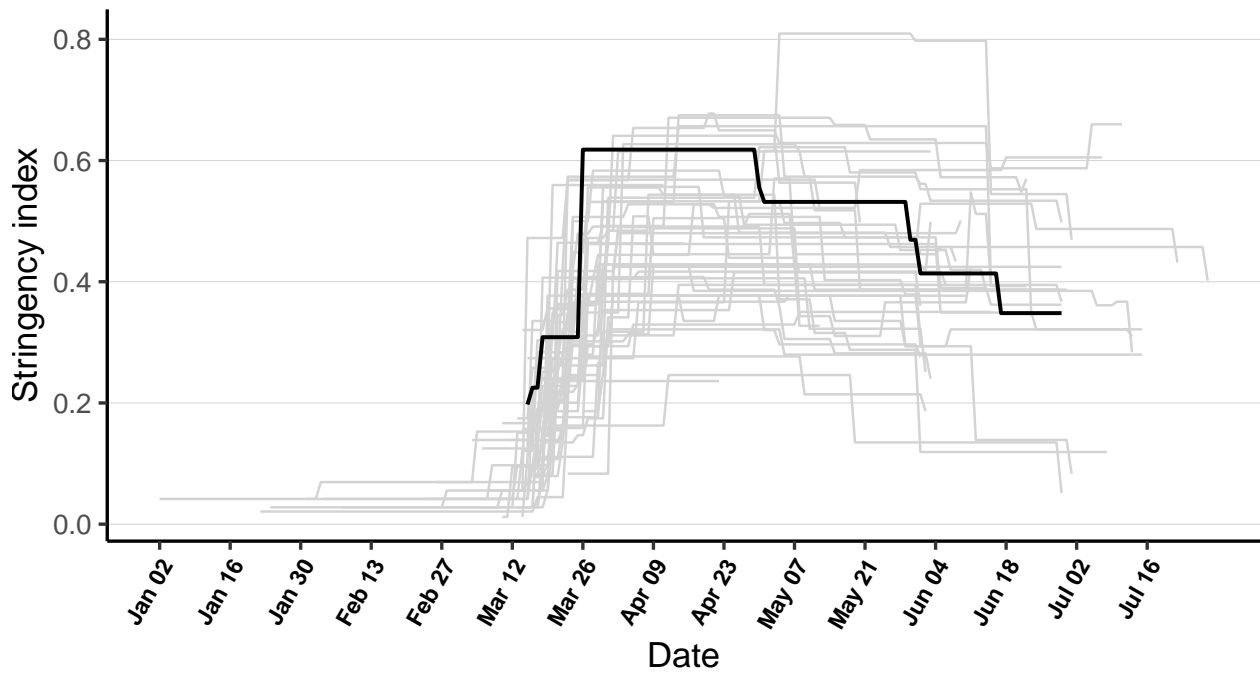
Seychelles has a maximum stringency index of 0.544 (18th in the region).

Sierra Leone



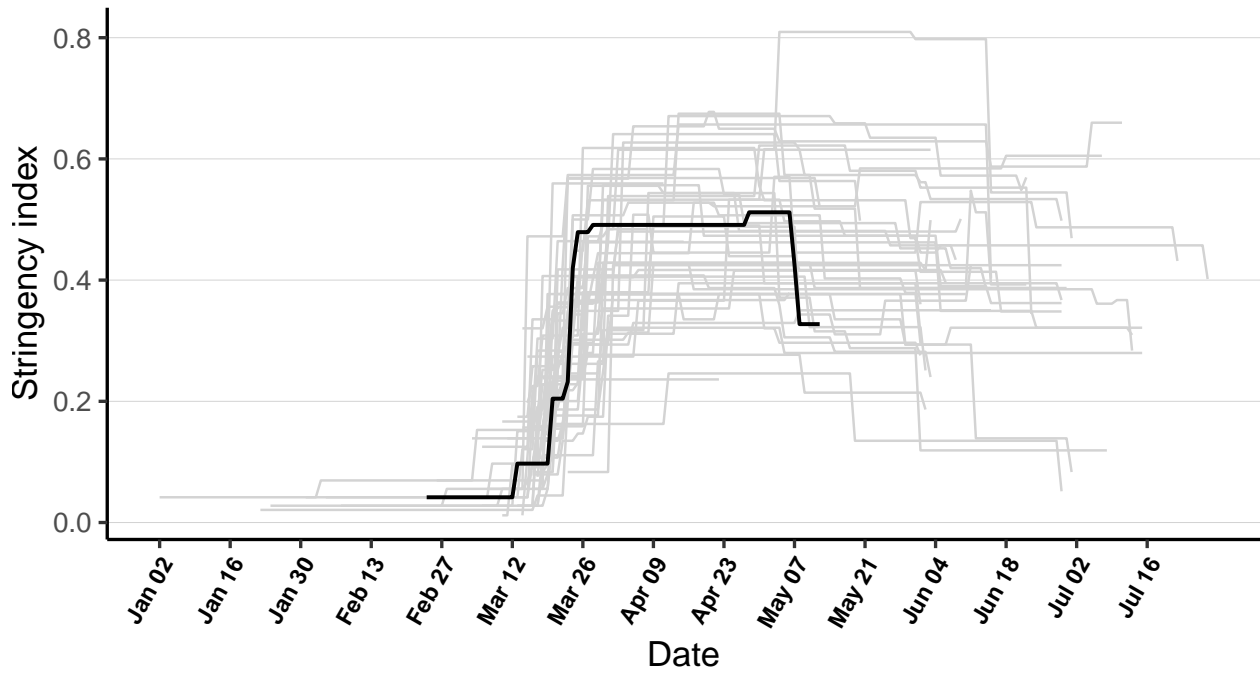
Sierra Leone has a maximum stringency index of 0.57 (13th in the region).

South Africa



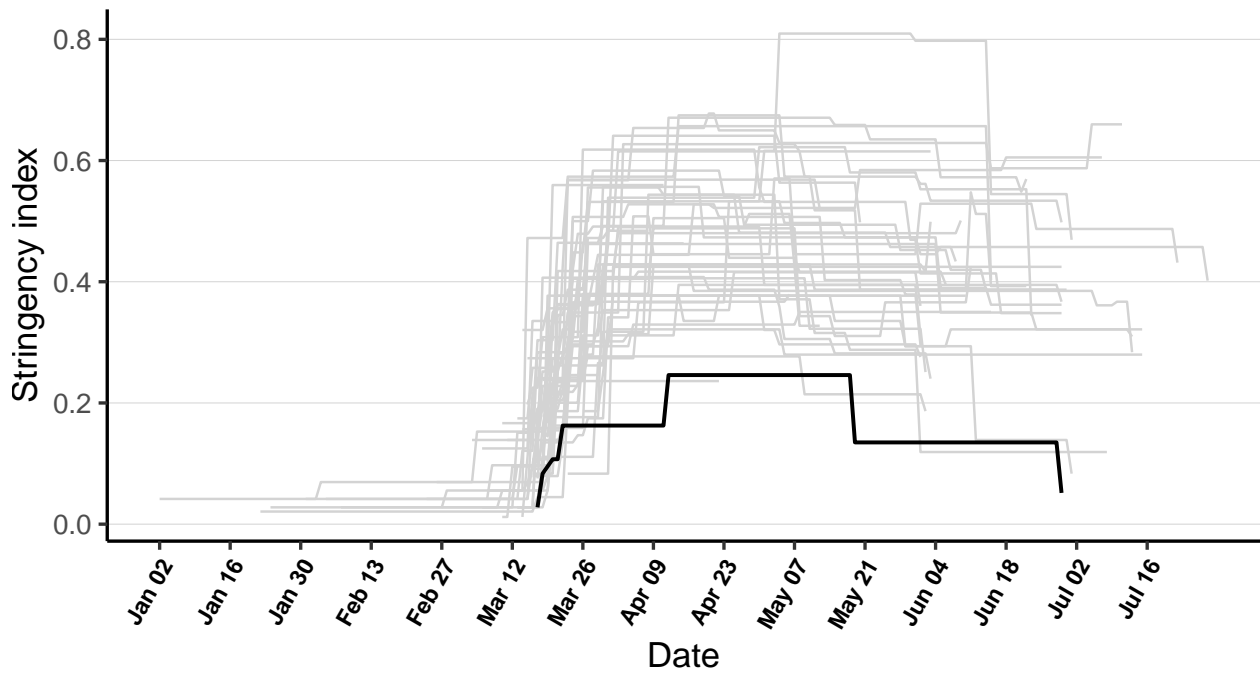
South Africa has a maximum stringency index of 0.618 (9th in the region).

South Sudan



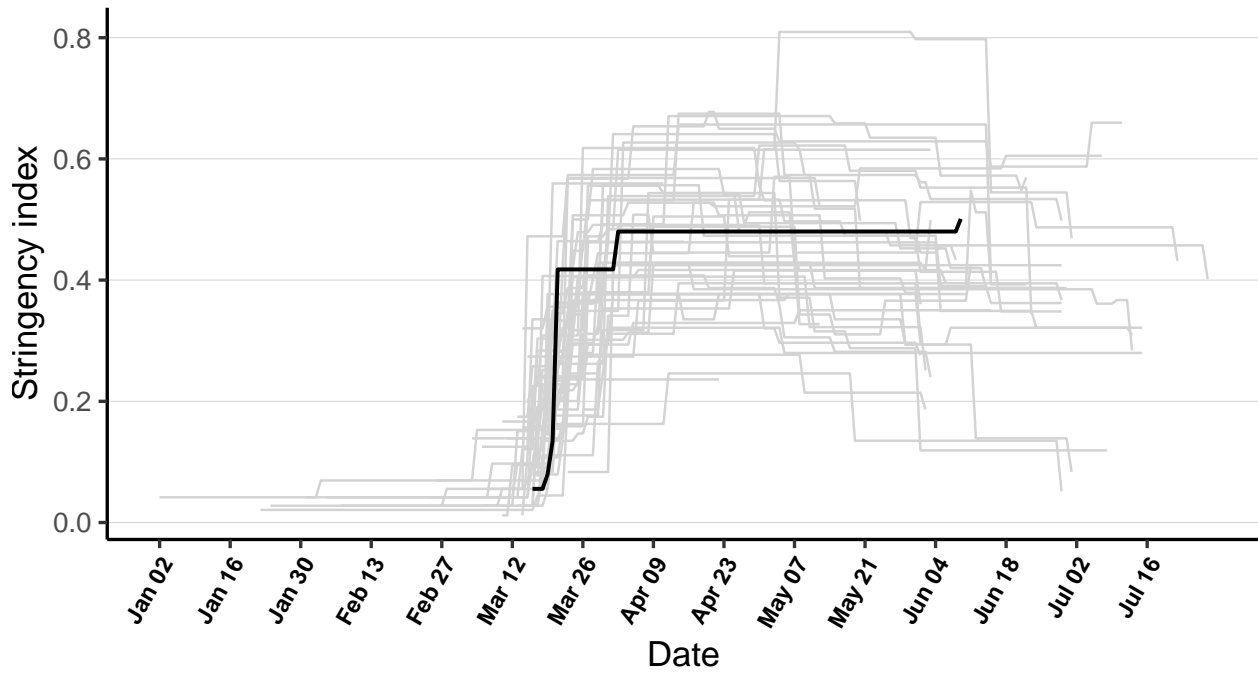
South Sudan has a maximum stringency index of 0.512 (21st in the region).

Tanzania



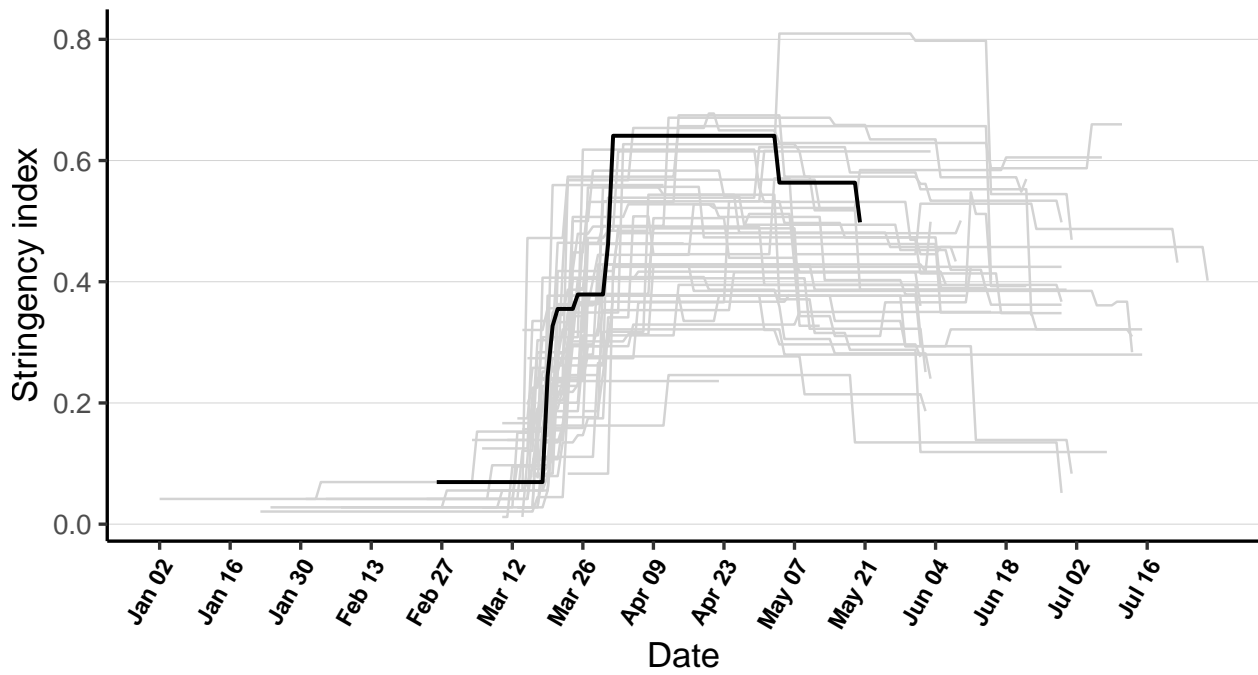
Tanzania has a maximum stringency index of 0.246 (46th in the region).

Togo



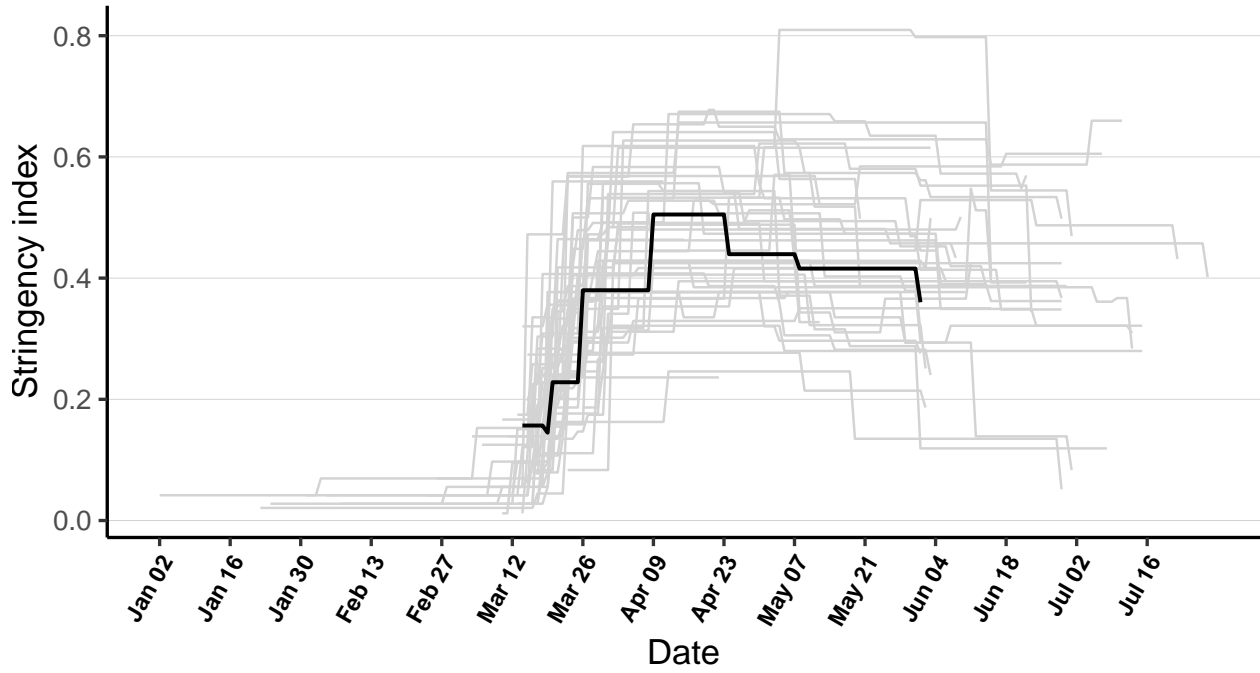
Togo has a maximum stringency index of 0.501 (23rd in the region).

Uganda



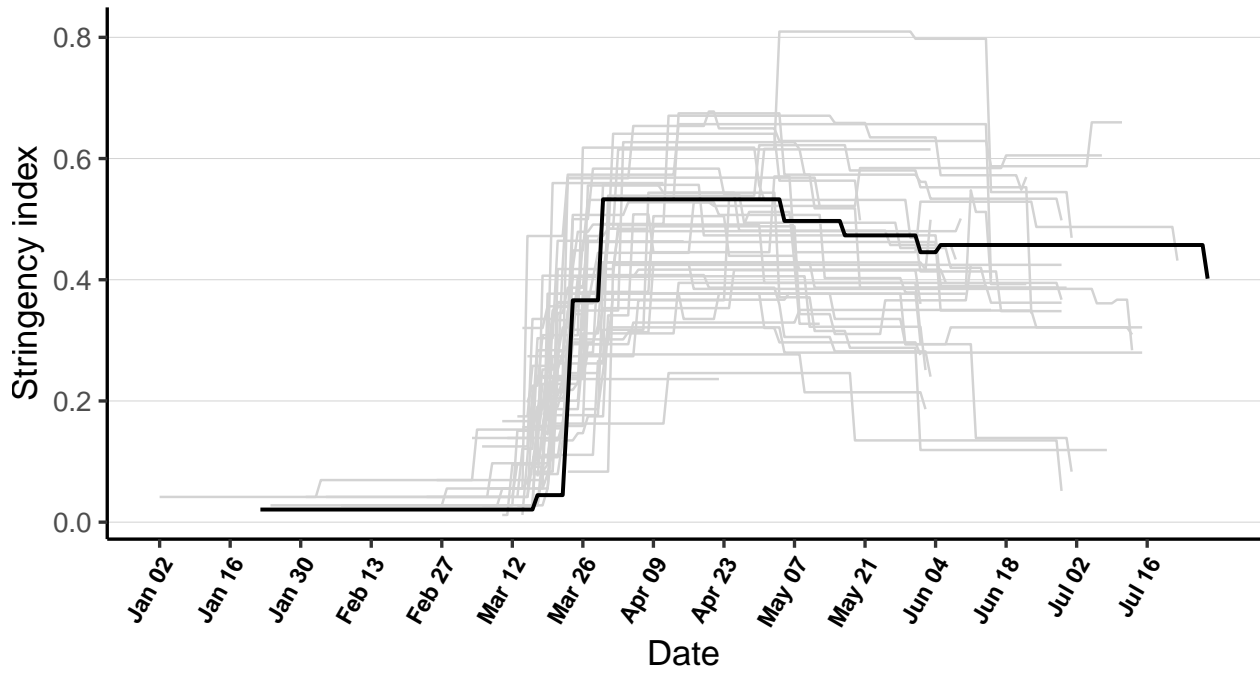
Uganda has a maximum stringency index of 0.641 (6th in the region).

Zambia



Zambia has a maximum stringency index of 0.505 (22nd in the region).

Zimbabwe



Zimbabwe has a maximum stringency index of 0.533 (19th in the region).

Section 2: Comparison with the Google mobility data

In this section we compare our government response data with Google mobility data. Google mobility data (available at <https://www.google.com/covid19/mobility/>), as a proxy measure for social distancing, help public health workers understand changes in mobility patterns in response to various non-pharmaceutical interventions policies during the COVID-19 pandemic, including bans on large gatherings, school and university closures, domestic mobility restrictions and physical isolation etc. It provides information on percent change of movement over time compared to a baseline by geography (either by country or by sub-region), as well as by a number of specific categories including retail and recreation, groceries and pharmacies, parks, transit stations, workplaces, and residential. The baseline is the median value for the corresponding day of the week during the 5-week period Jan 3 – Feb 6, 2020. Of note, the location accuracy and the understanding of categorized places varies across regions, so it is not recommended to use this data to compare changes between countries, or between regions with different characteristics (e.g. rural versus urban areas).

As of 13 September 2020, 25 out of 47 WHO Africa countries had data for mobility (Figure 2.1), which are mostly concentrated in the southern and western regions.

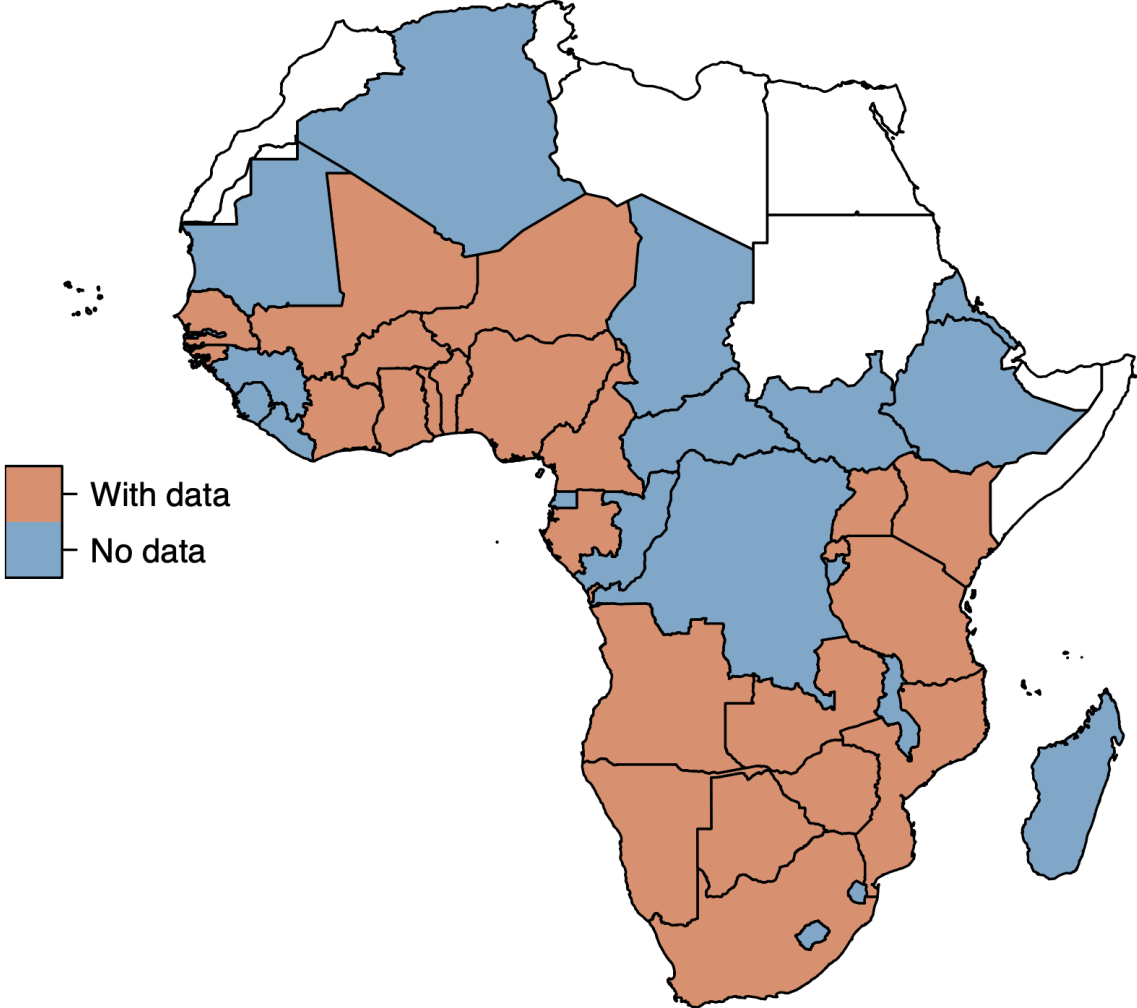


Figure 2.1 Data availability (orange - with data, blue- no data)

The validation is realized by plotting the values of stringency index against the percent change in visits to one of the six categories of places — residential in each country. The residential category represents well the level of mobility. It has a high correlation coefficient with the other five categories of mobility (Figure 2.2). Residential mobility is available for 24 out of the 25 countries (except Guinea-Bissau).

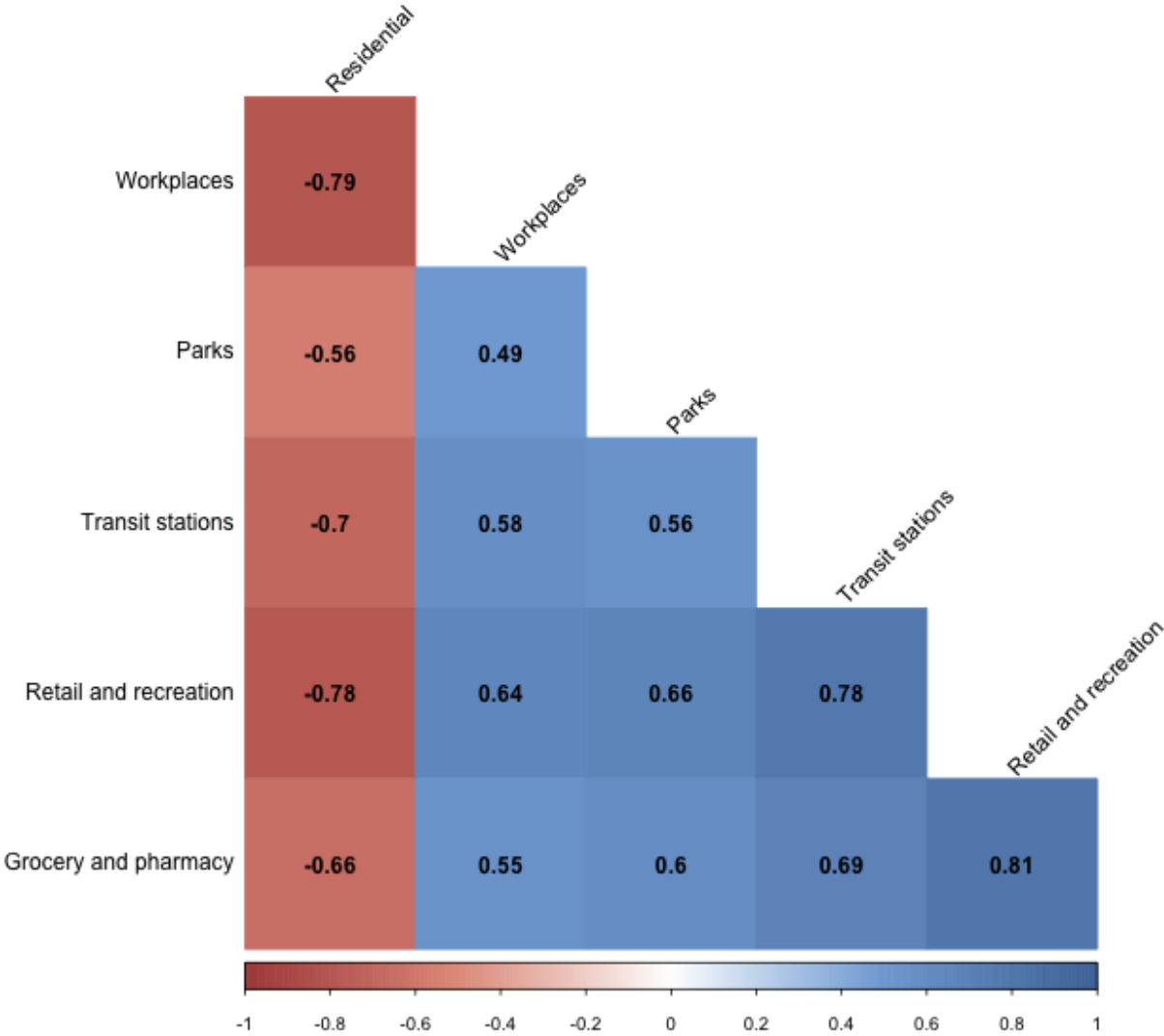
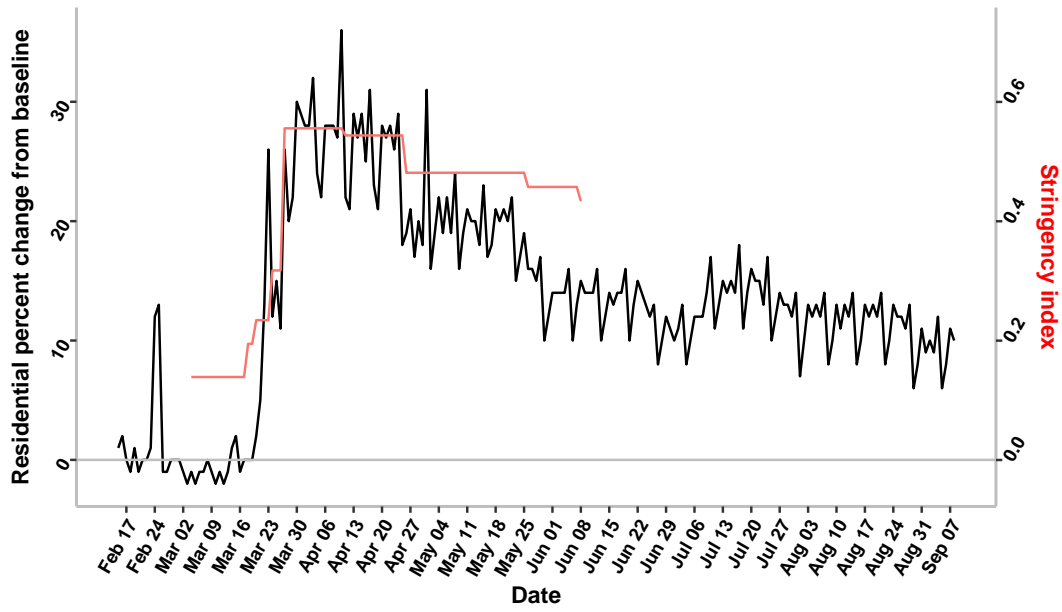


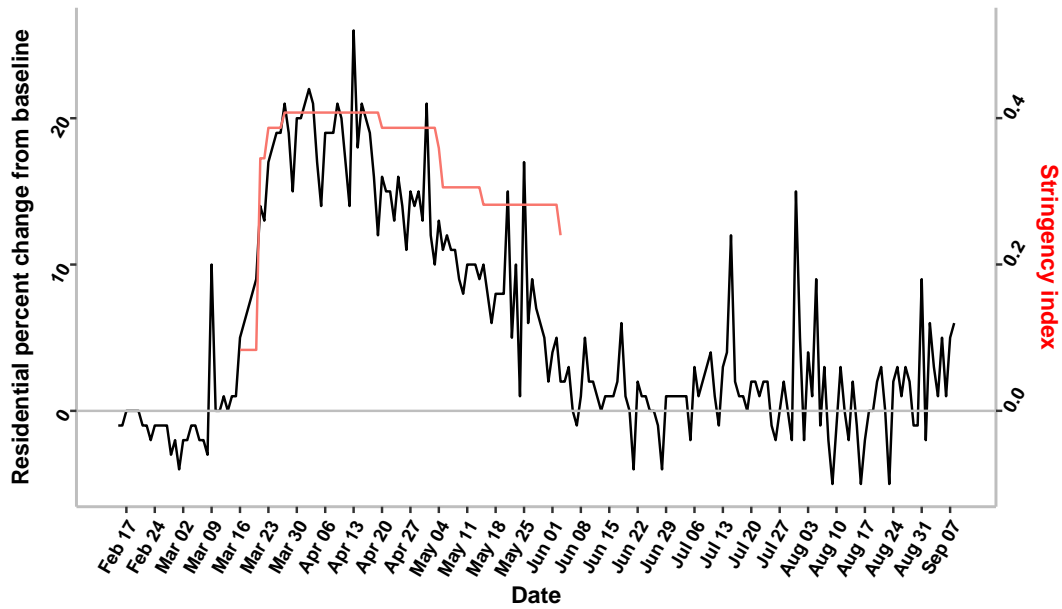
Figure 2.2 Correlation matrix for the six categories of mobility

There is a good consistency between the stringency index and residential percent change of mobility in the figures below (the black curve denotes the residential percent change of mobility and the red curve denotes the stringency index). These comparisons suggest that in many African countries government responses (as captured in our data set) do correlate with changes in behaviour (as captured by Google mobility data).

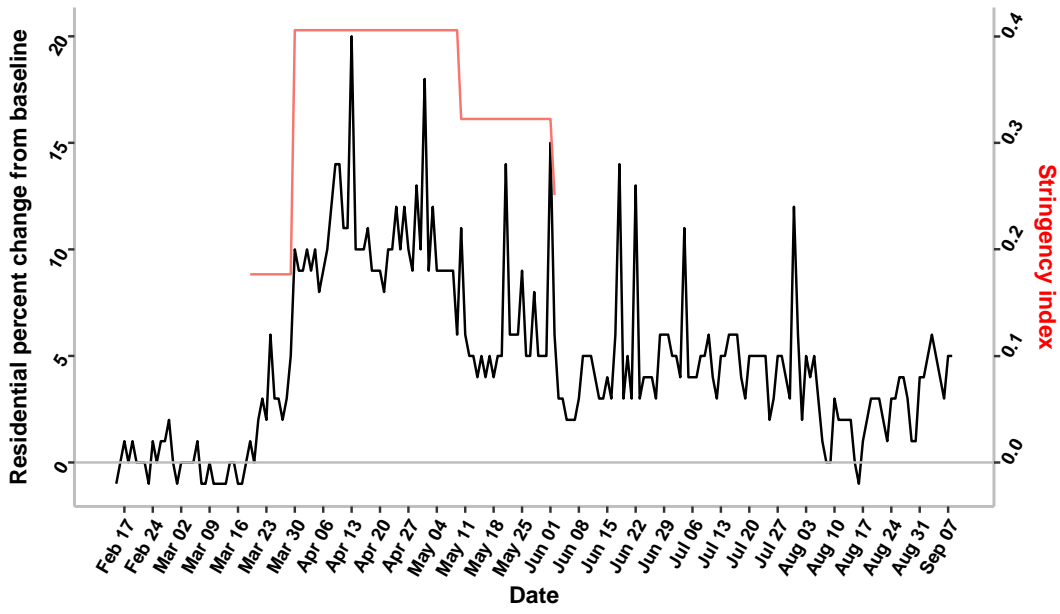
Angola



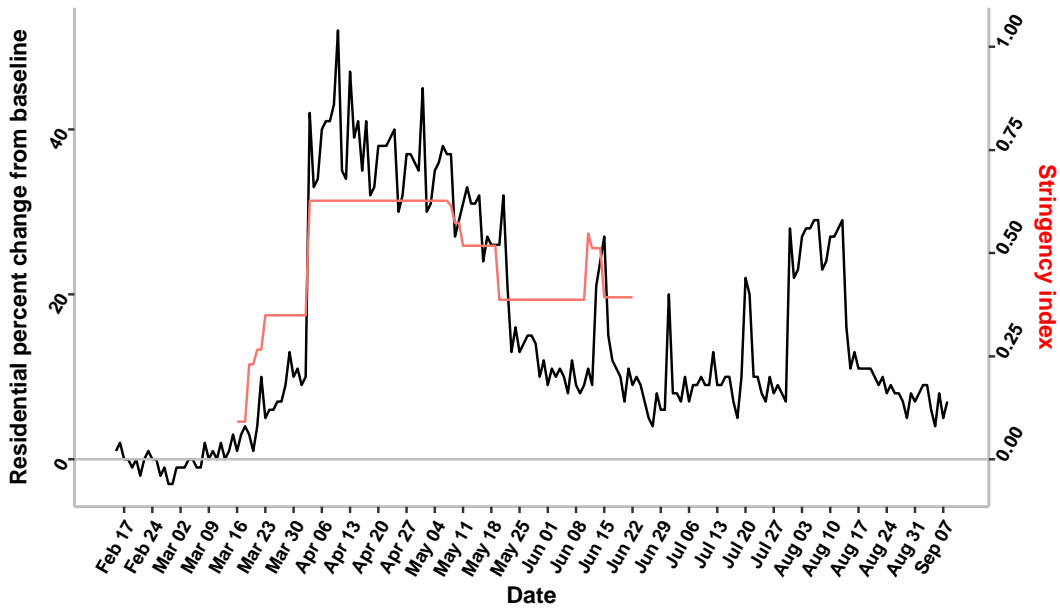
Burkina Faso



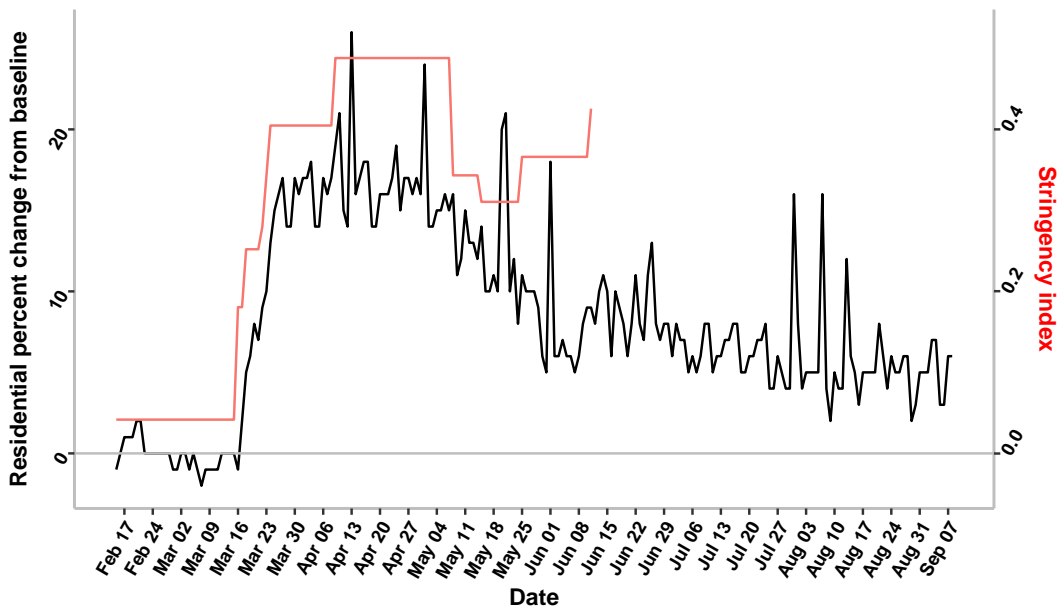
Benin



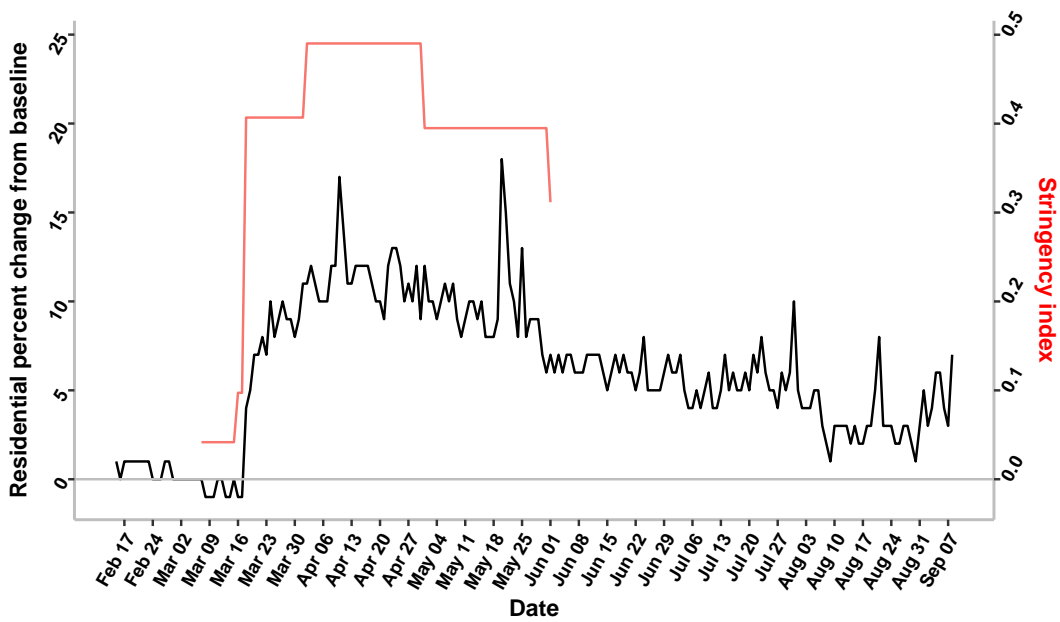
Botswana



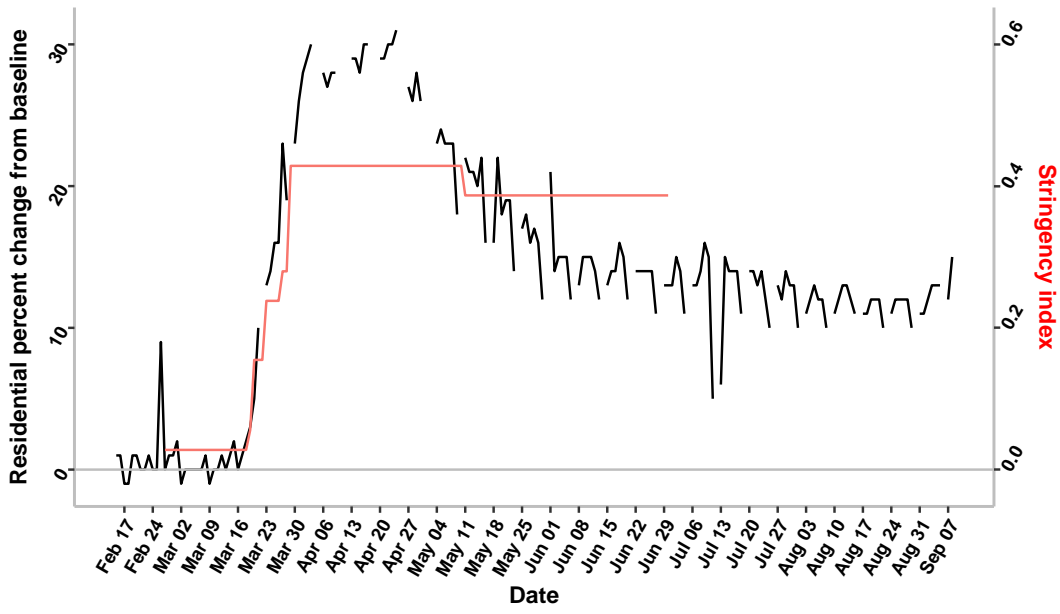
Côte d'Ivoire



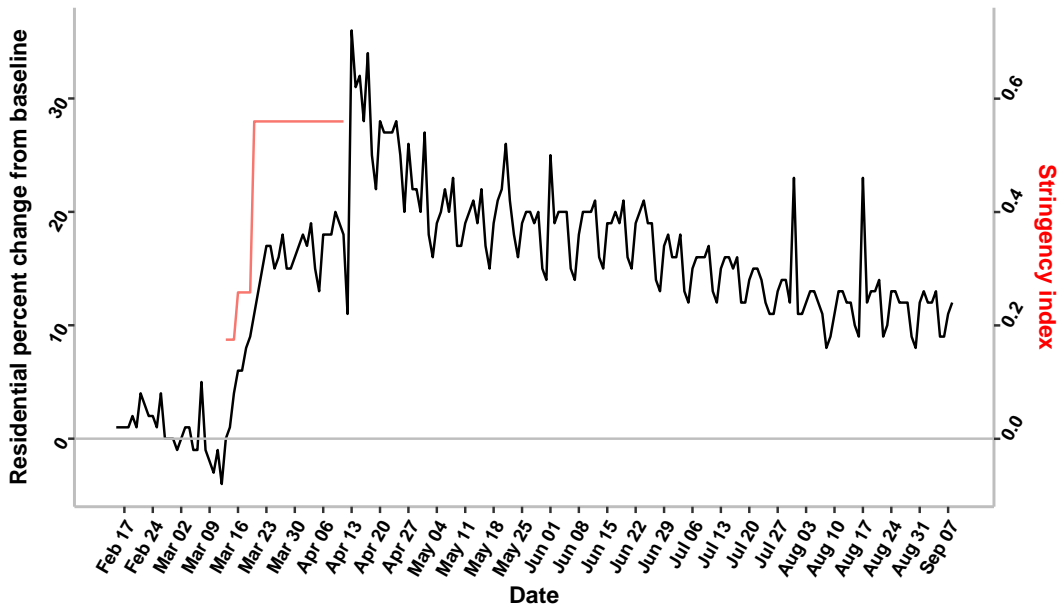
Cameroon



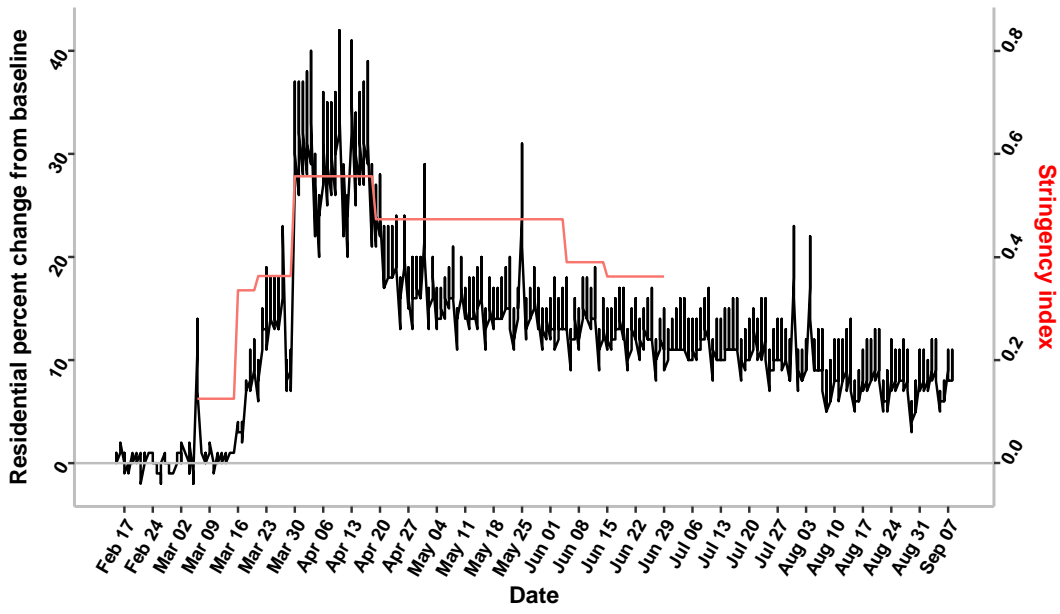
Cape Verde



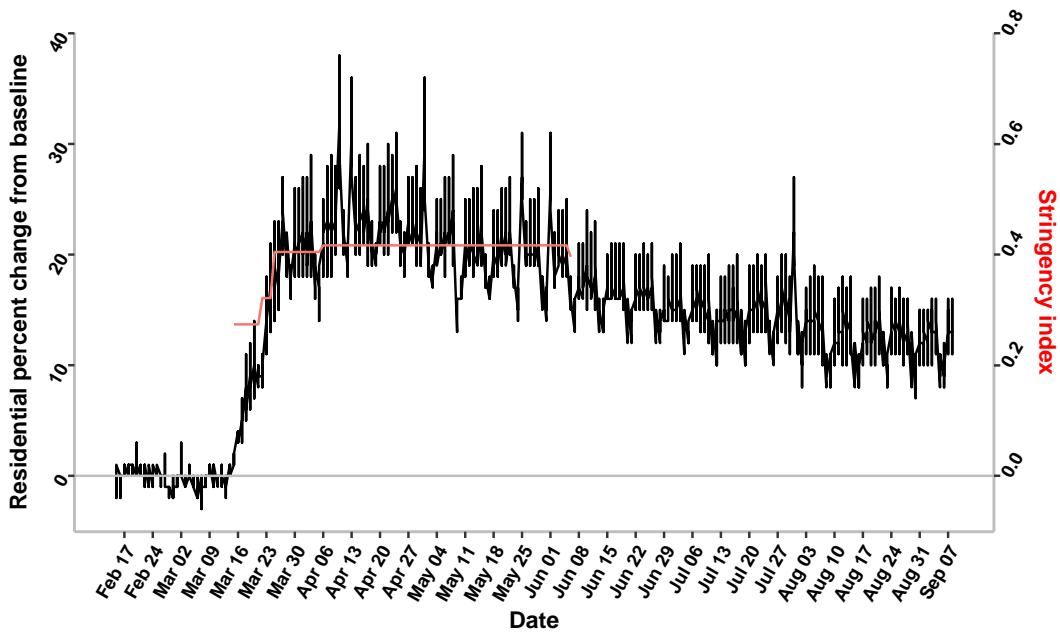
Gabon



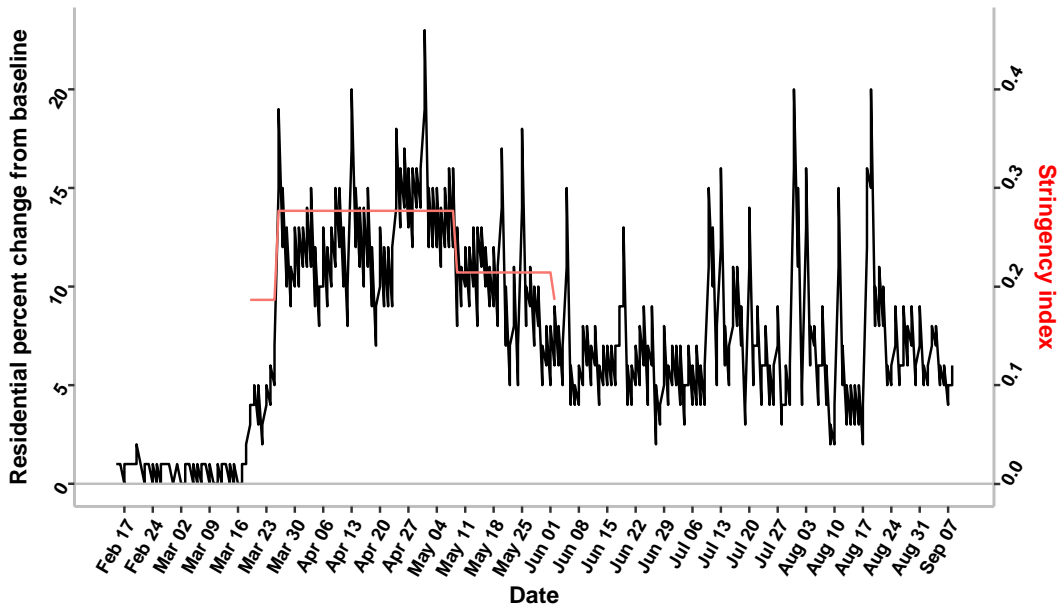
Ghana



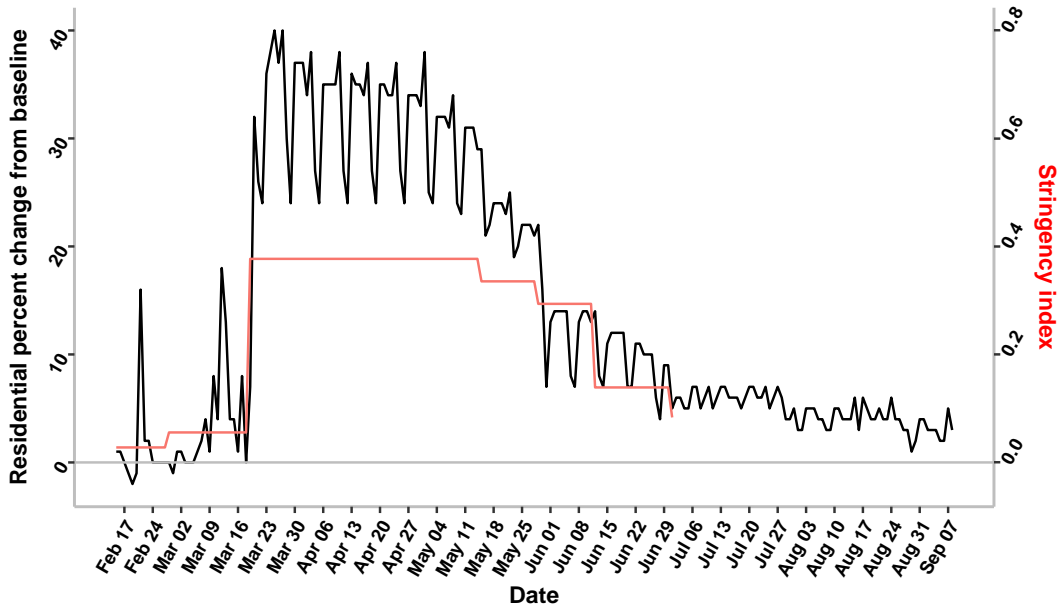
Kenya



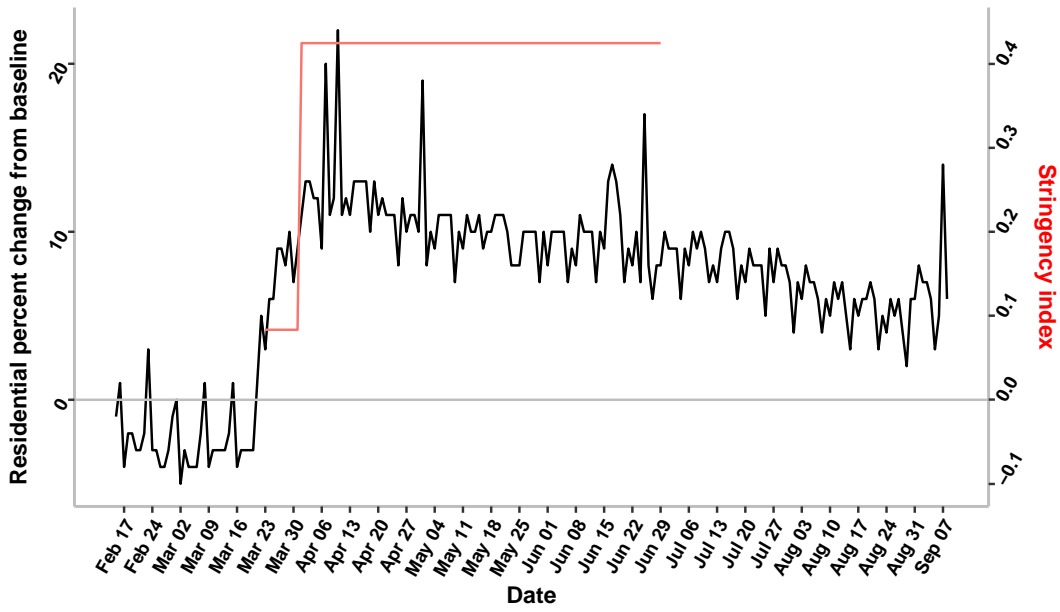
Mali



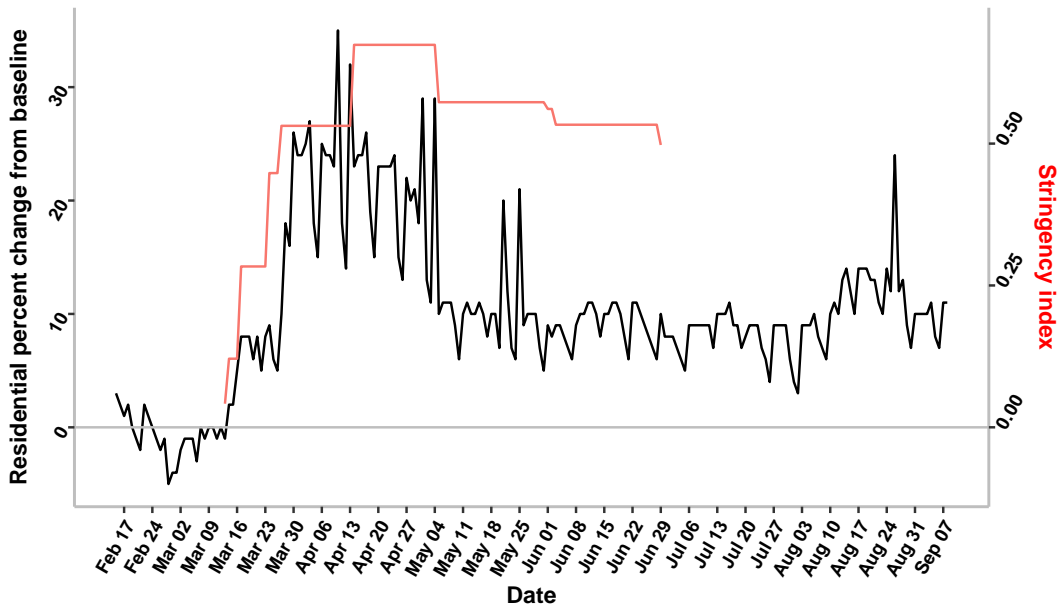
Mauritius



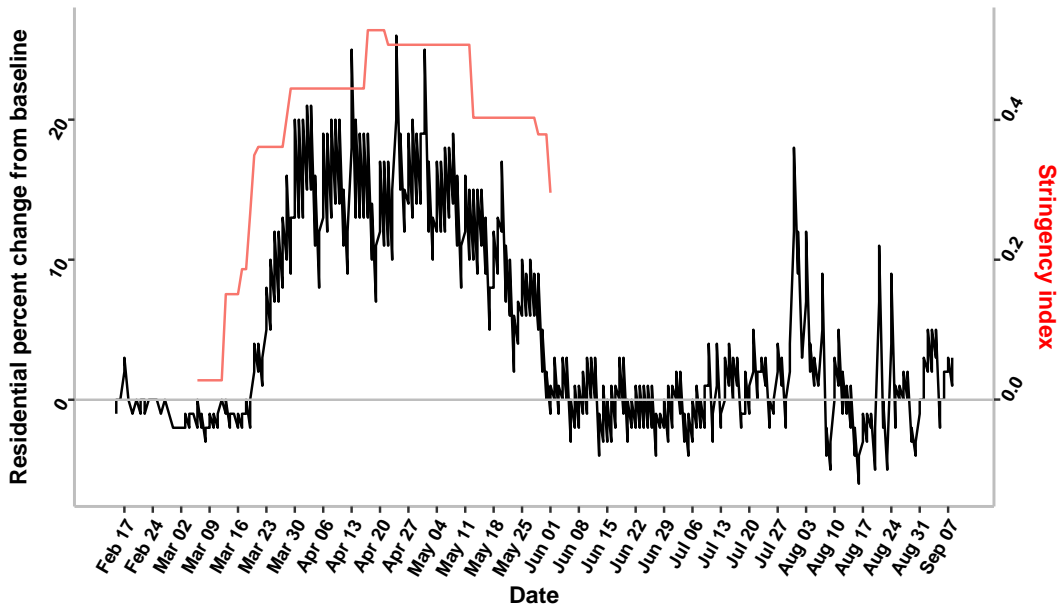
Mozambique



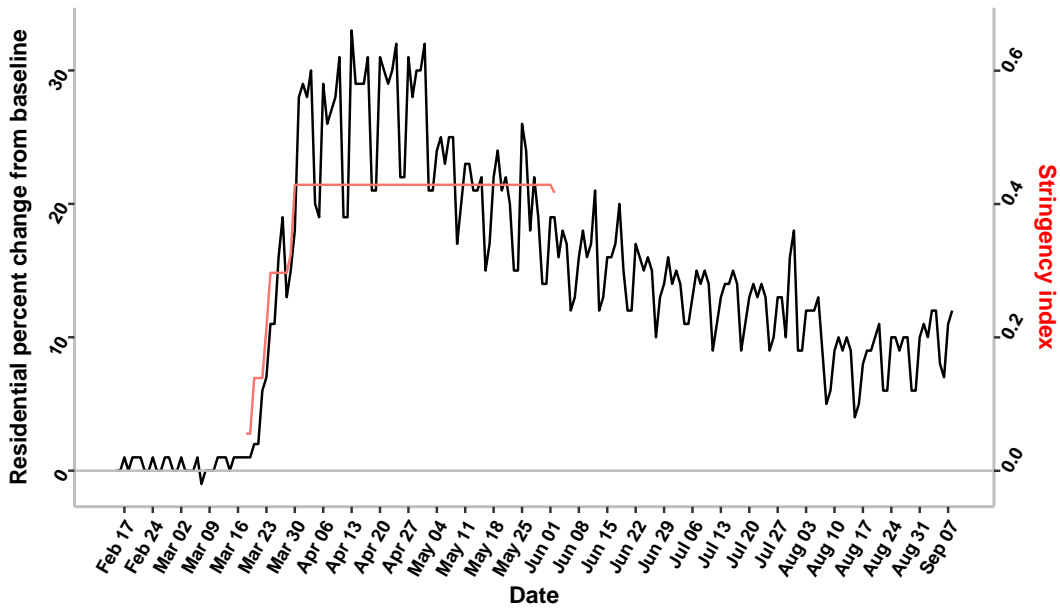
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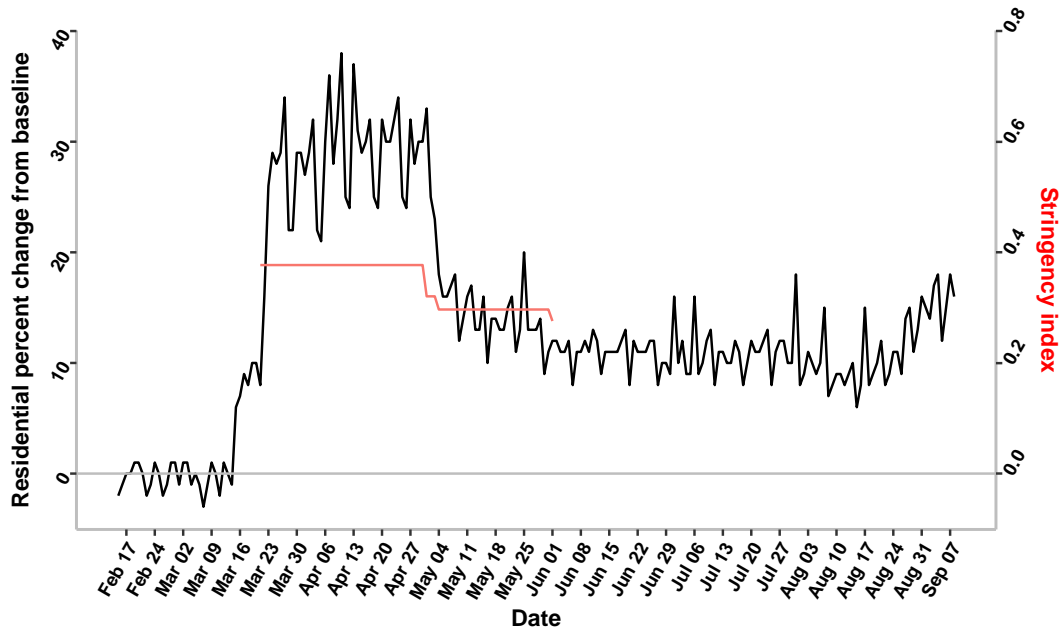
Niger



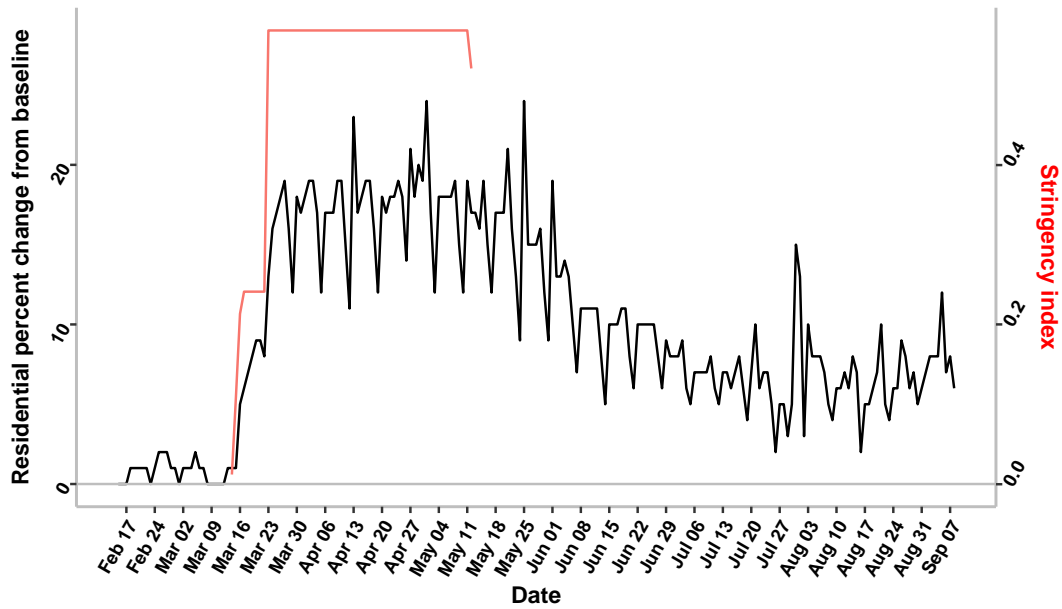
Nigeria



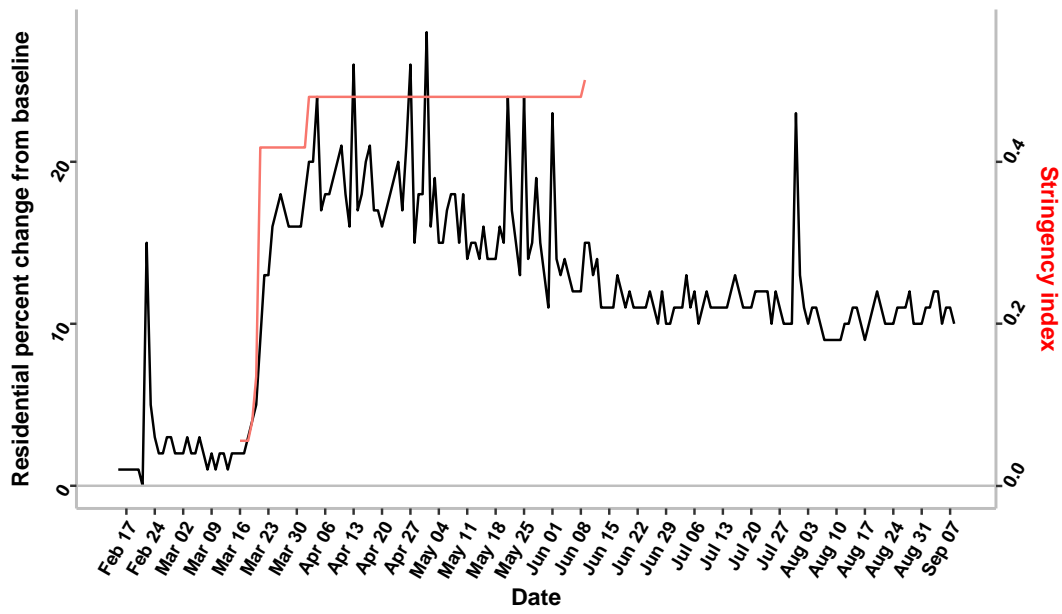
Rwanda



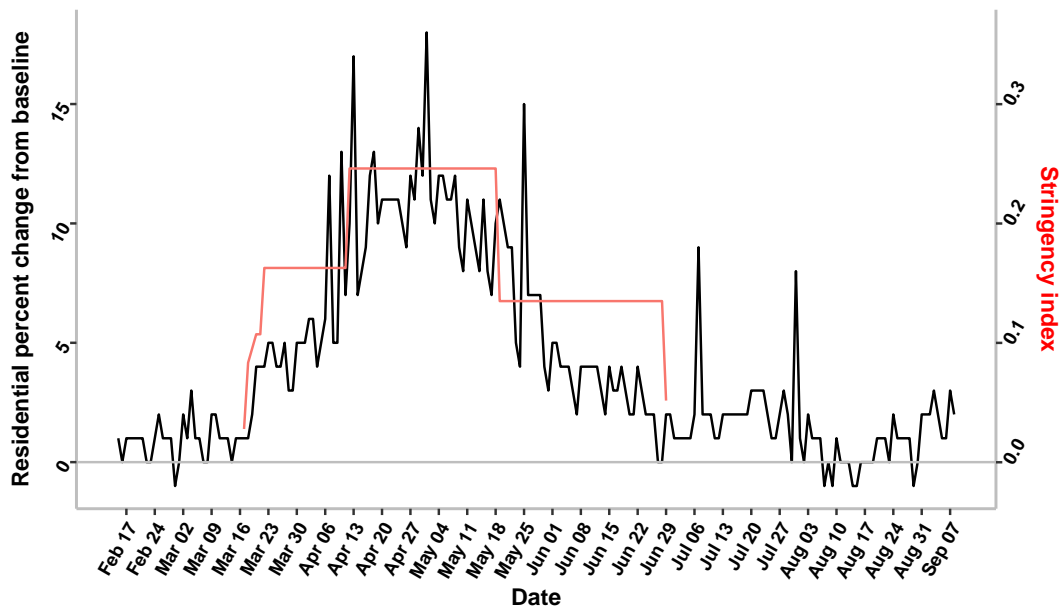
Senegal



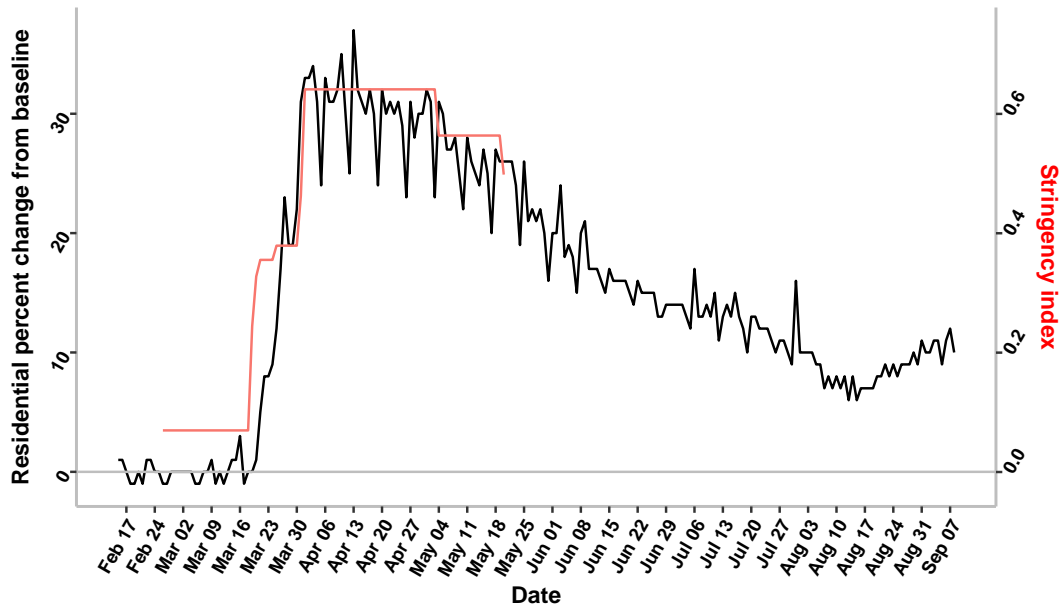
Togo



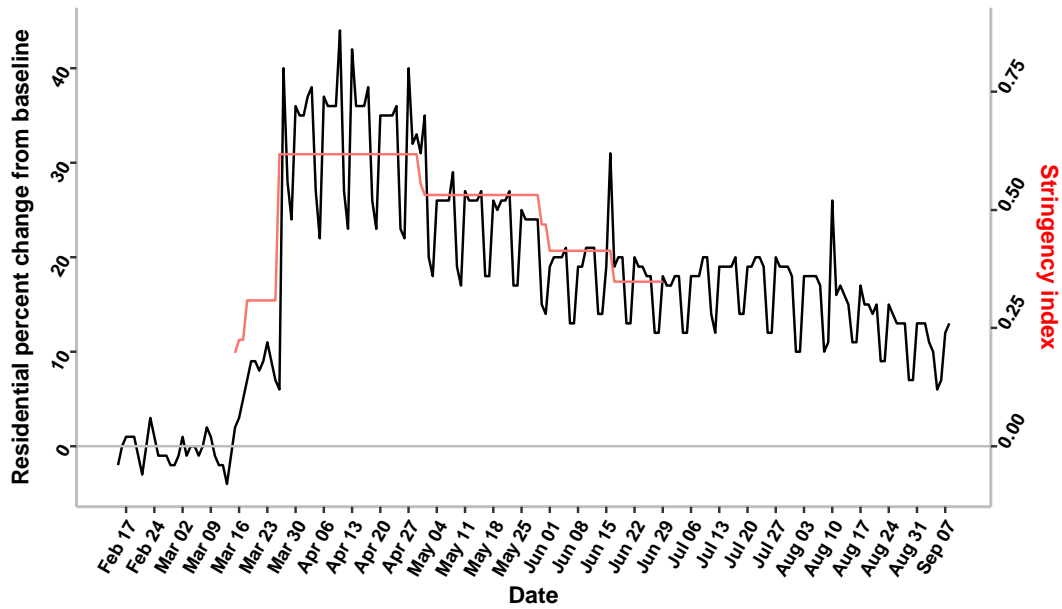
Tanzania



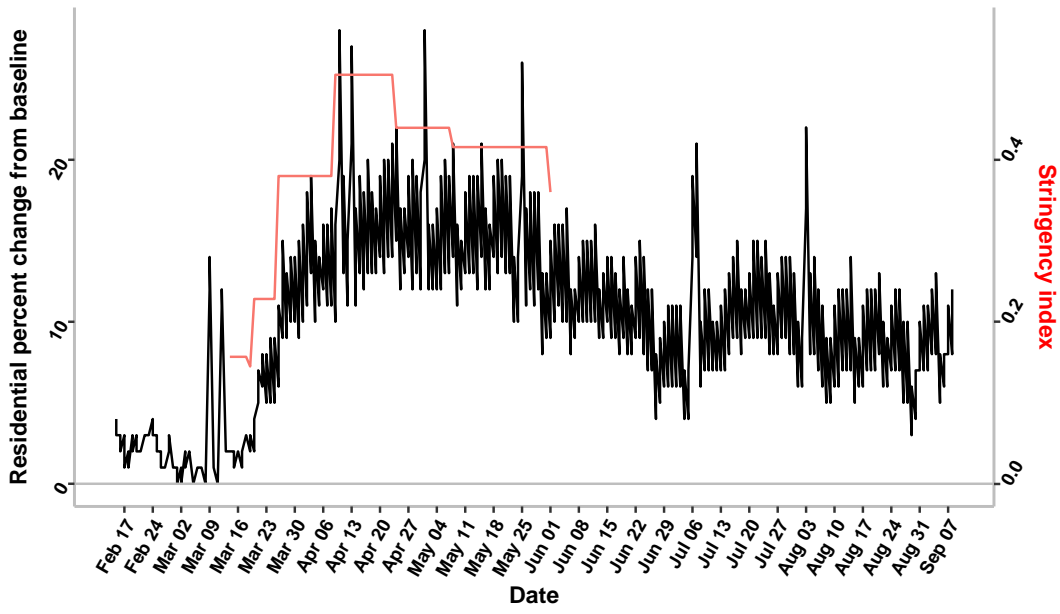
Uganda



South Africa



Zambia



Zimbabwe

