

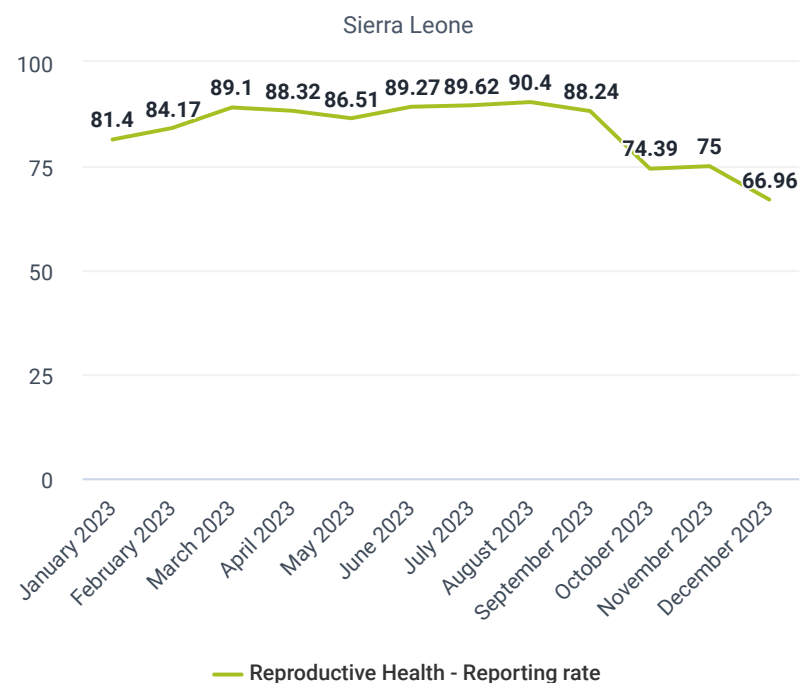
## Group5 Dashboard

## Section-1: Exploring Reproductive Health Trends

Here, we analyze reproductive health reporting rates across Sierra Leone in 2023, highlighting seasonal trends, challenges, and their impact on maternal health data.

[https://colab.research.google.com/drive/1TQAAB6\\_d7NM5eCdMusp=sharing](https://colab.research.google.com/drive/1TQAAB6_d7NM5eCdMusp=sharing)

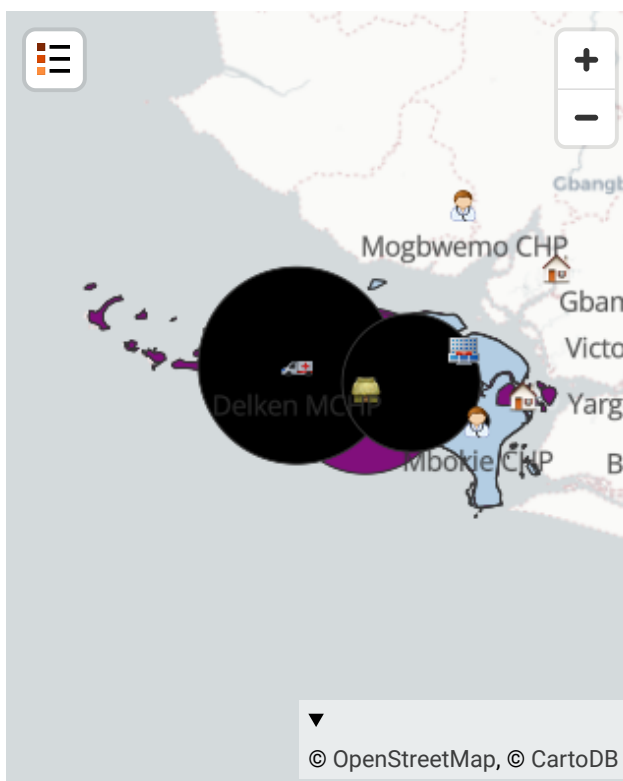
### Reproductive Health Reporting Rate 2023



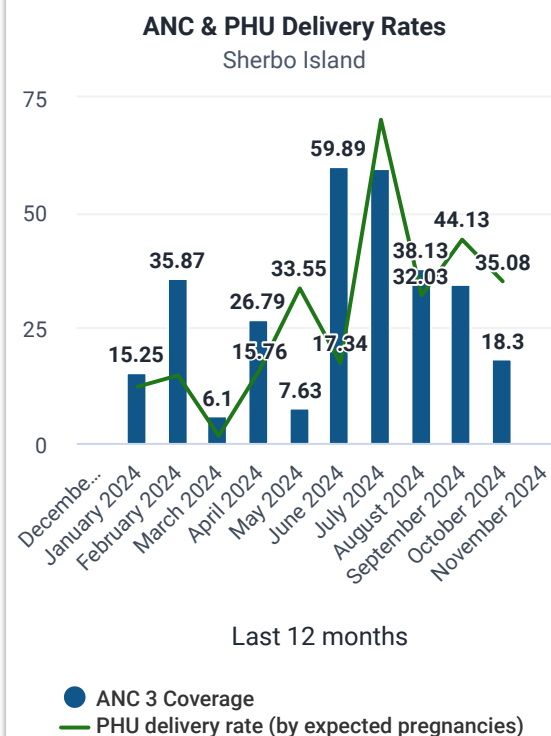
## Section-2: Antenatal Care and Maternal Health

Through a choropleth map and bar-line chart, we observe higher ANC 3 Coverage but comparatively lower PHU delivery rates on Sherbro Island, highlighting gaps in translating antenatal care into facility-based deliveries and the need for targeted interventions.

### ANC3 & PHU Delivery Rates (Chloropleth)



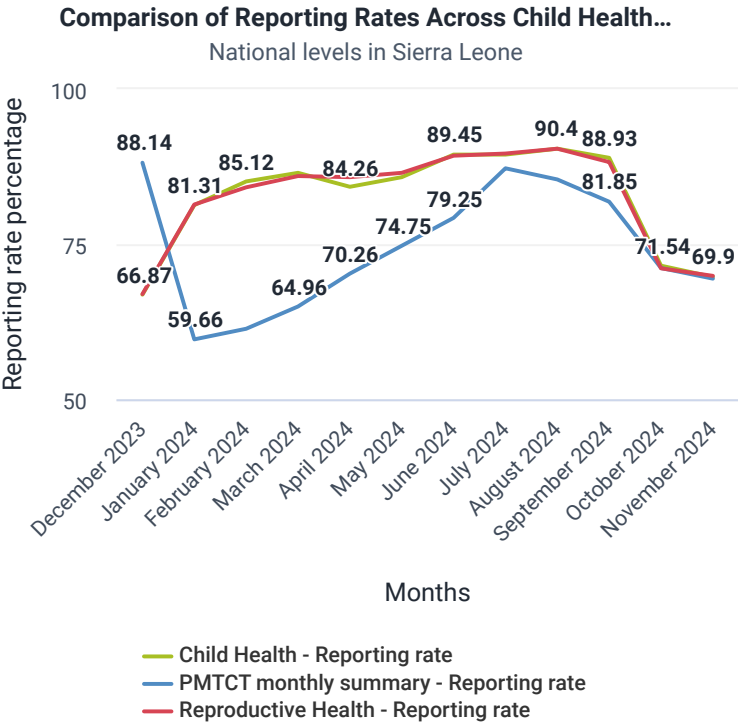
### ANC-3 & PHU Delivery Rates on Sherbo Island (last 12 months)



Section-3: Connecting Maternal and Infant Health

Here in this line graph comparing reporting rates for Reproductive Health, Child Health, and PMTCT monthly summaries. This analysis bridges maternal health insights with PMTCT efforts, emphasizing the role of maternal care in preventing mother-to-child HIV transmission and safeguarding infant health.

Reporting Rates Comparison (Last 12 Months)

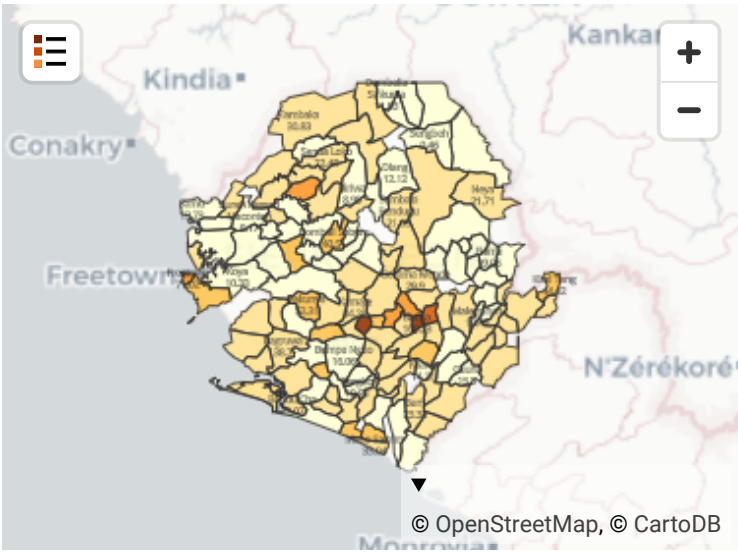


Section-4: Vaccination Coverage  
(Focus on Infants <1 Year Old)

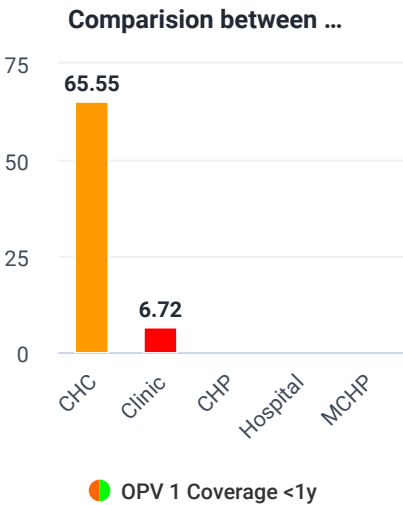
As part of our exploration of child health, this visualization highlights OPV1 vaccination coverage across Sierra Leone's chiefdoms for infants under 1 year, showcasing regions with high immunization rates over the past 12 months and identifying areas that may require targeted support.

As we delve deeper into child health, this visualization compares OPV1 coverage for infants under 1 year across facilities in Sherbro Island and its surrounding coastal region, highlighting significant disparities in immunization rates

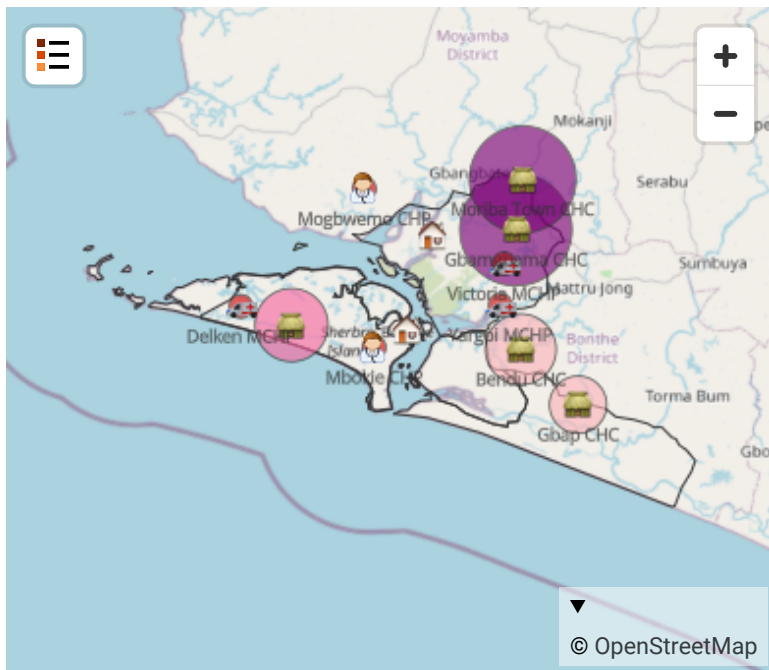
OPV1 coverage(<1y) in Sierra Leone over the past 12 months



Comparison between various facility types in Sherbro island for OPV1(<1yr) coverage

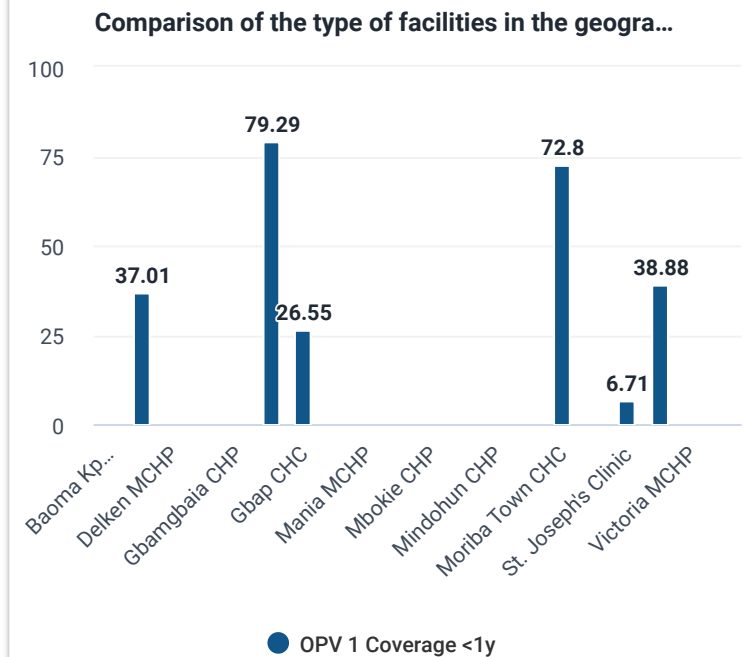


### Comparison of the type of facilities in the geographical region of Sherbro Island for OPV1 coverage <1yr



As we delve into infant health and vaccination, we focus on Sherbro Island, an isolated region, comparing facility-level OPV1 coverage. Using a choropleth map and bar chart, we identify the types of facilities with the highest and lowest vaccination rates for infants under 1 year. Notably, the facility with the lowest coverage is near the mainland, which works out as families may still access healthcare services more easily on the mainland, highlighting the interplay between geography and service utilization in this unique area.

### Comparison of different facilities in Sherbro island area for OPV1 coverage



### Section-5: Childhood Illnesses and Interventions

As we shift to childhood illnesses, this analysis focuses on the 'Diarrhea <5y Incidence Rate' indicator, which consists of three components: diarrhea cases with blood (dysentery), severe dehydration follow-ups, and the total population under 5 years. A pivot table provides district-level insights, showcasing how these components constitute the indicator over the past year.

Through a detailed pivot table and bar chart analysis, we identified the Western Area as having the highest average rate of diarrhea cases under 5 years. Using this insight, we forecasted the minimum ORS stock required to meet treatment needs effectively.

[https://colab.research.google.com/drive/1uJU6TkG4uvTla2\\_JSfj83l0s9Pzxug1?usp=sharing](https://colab.research.google.com/drive/1uJU6TkG4uvTla2_JSfj83l0s9Pzxug1?usp=sharing)

Minimum ORS stock required for Freetown for the next year (5 days per case): 36730

Minimum ORS stock required for Rural Western Area for the next year (5 days per case): 26730

Total minimum ORS stock required for the district for the next year (5 days per case): 63460

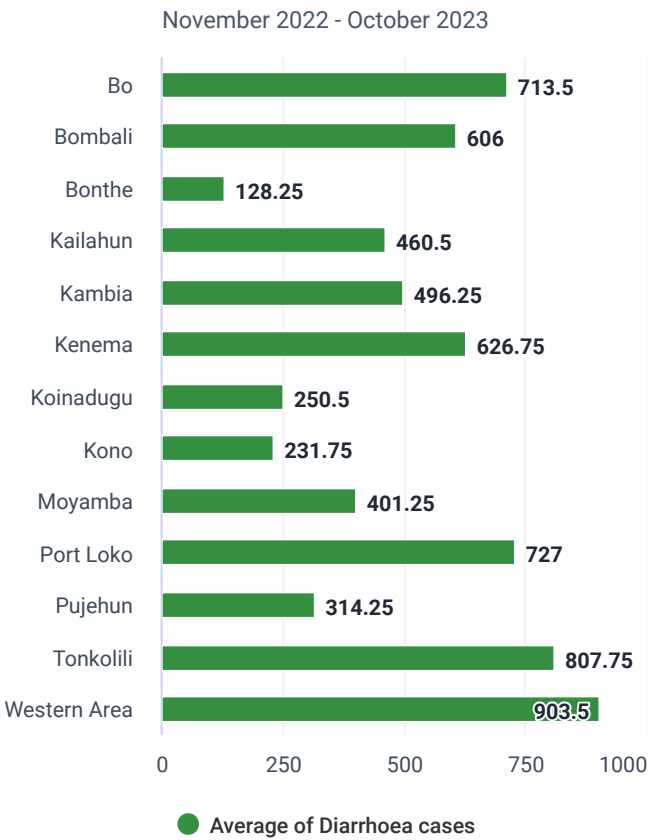
Incidence of diarrhea over the past 12 Months

Incidence of Diarrhea and its components in Seirra Leone				
December 2023, January 2024, February 2024, March 2024, April 2024, ...				
	Diarrhoea <5 y incidence rate (%)	Diarrhoea with blood (Dysentery) new	Diarrhoea with severe dehydration follow-up	Total population < 5 years
Bo	5.21	3 899	600	86 101.66
Bombali	3.95	2 662	345	76 006.53
Bonthe	1.82	234	265	27 317.37
Kailahun	4.63	2 875	288	68 105.92
Kambia	4.75	1 942	490	51 079.19
Kenema	4.37	3 687	458	94 594.28
Koinadugu	4.02	1 753	252	49 753.18
Kono	2.26	1 203	255	64 322.87
Moyamba	3.06	1 435	104	50 091.18
Port Loko	3.01	1 962	683	87 638.69
Pujehun	3.09	1 151	217	44 164.6
Tonkolili	6.56	3 683	670	66 214.4
Western Area	3.22	3 668	1 093	147 438

Average Rate of Diarrhea Cases in Children Under 5 by District

November 2022 - October 2023			
	Diarrhoea with blood (Dysentery) new 0-11m	Diarrhoea with blood (Dysentery) new 12-59m	Diarrhoea with severe dehydration new 0-11m
Bo	583	1 018	
Bombali	617	892	
Bonthe	52	77	
Kailahun	463	782	
Kambia	373	695	
Kenema	595	914	
Koinadugu	119	464	
Kono	201	408	
Moyamba	331	565	
Port Loko	231	725	
Pujehun	217	377	
Tonkolili	599	1 223	
Western Area	727	996	

Average rate of Diarrhea in <5 year olds



Section-6: Referral Trends and Forecasting

We began by creating a pivot table to summarize the referral trends and patient characteristics at Ngelehun CHC and Jembe CHC over 12 months. This was followed by side-by-side bar charts to compare the total referrals and delve into the causes behind these referrals, offering insights into disparities in patient care and resource allocation. Continuing our analysis, we began by using a bar chart to compare referral causes between Ngelehun CHC and Jembe CHC, identifying disparities in service needs. Building on this, we utilized stacked bar charts to explore patient demographics and referral statuses, uncovering patterns that reflect differences in healthcare access and outcomes across the facilities

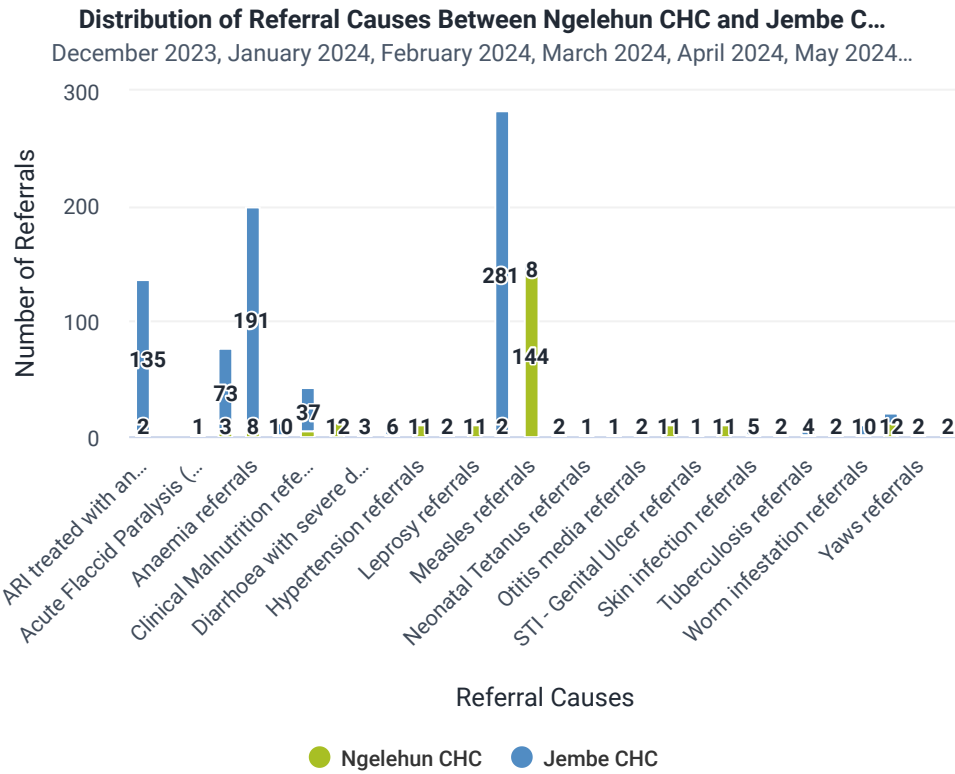
Monthly Patient Referrals from Ngelehun CHC and Jembe CHC (Last 12 Months)

Monthly Patient Referrals from Ngelehun CHC and Jembe CHC (Last 12 Months)		
ARI treated with antibiotics (pneumonia) referrals		
	Ngelehun CHC	Jembe CHC
December 2023		
January 2024	119	
February 2024	6	
March 2024	17	
April 2024	7	
May 2024	13	
June 2024	14	
July 2024	13	
August 2024	7	
September 2024	14	
October 2024	51	
November 2024		

Comparison of Total Patient Referrals: Ngelehun CHC vs. Jembe CHC (Last 12 Months)



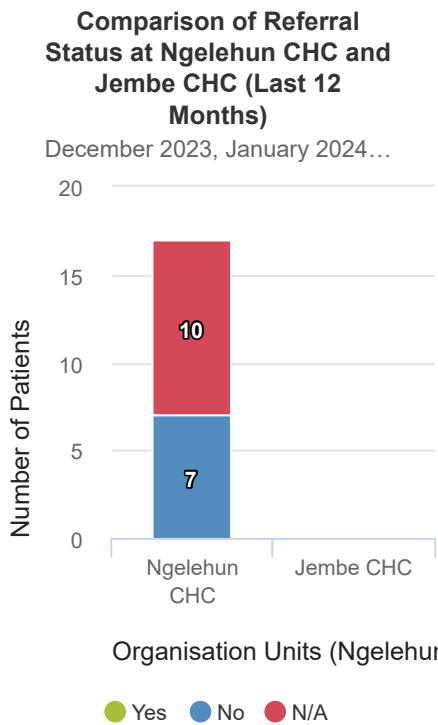
Distribution of Referral Causes Between Ngelehun CHC and Jembe CHC (Last 12 Months)



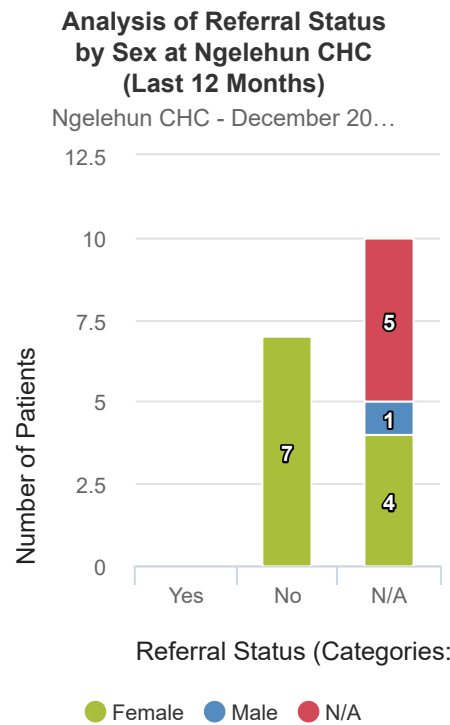
Monthly Patient Referrals from Ngelehun CHC and Jembe CHC (Jan 2023 – Dec 2024)

Monthly Patient Referrals from Ngelehun CHC and Jembe CHC (Jan 2023 – Dec 2024)		
ARI treated with antibiotics (pneumonia) referrals		
	Ngelehun CHC	Jembe CHC
January 2023	119	48
February 2023		48
March 2023	3	89
April 2023		49
May 2023	2	42
June 2023	2	71
July 2023	2	101
August 2023	1	64
September 2023		87
October 2023		55
November 2023		66
December 2023		52
January 2024	119	48
February 2024	6	48
March 2024	17	49
April 2024	7	89
May 2024	13	42
June 2024	14	71
July 2024	13	101
August 2024	7	64
September 2024	14	87
October 2024	51	66

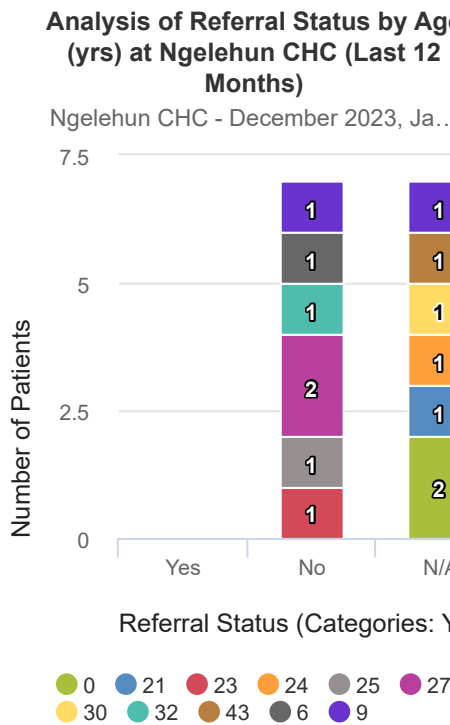
Group5\_1a\_3rd\_part\_visualization\_1



Group5\_1a\_3rd\_part\_visualization\_2



Group5\_1a\_3rd\_part\_visualization\_3



Building on our exploration of referrals, we expanded our analysis to forecast referral patterns using SES Holt-Winters predictive model. These forecasts, derived from referral data across Ngelehun and Jembe CHCs, provide actionable insights to enhance resource planning and service delivery. By predicting patient referral trends for the next 12 months, we enable health administrators to address critical gaps in maternal and child healthcare, ensuring timely interventions and resource allocation. This effort not only reinforces proactive healthcare delivery in the region but also sets a precedent for leveraging data to optimize maternal and child health outcomes on a broader scale.

[https://colab.research.google.com/drive/1-XC5MgoX47xNJPCBoLO5BA72AkM3aal\\_?usp=sharing](https://colab.research.google.com/drive/1-XC5MgoX47xNJPCBoLO5BA72AkM3aal_?usp=sharing)

## Resources

- group5 - question2 - Analysis of Reporting Rates in Reproductive Health Across Sierra Leone Districts: Trends and Time Series Components for 2023
- Forecasting Diarrhea cases under 5 yrs using Autoarima
- group5 - Question1b - decomposition of Jembe CHC and Ngelehun CHC time series.
- group5 - question1b - 12-Month Referral Forecast for Jembe CHC and Ngelehun CHC (2025).

**Topic and Sentiment Analysis:** [https://colab.research.google.com/drive/1dUQ\\_duDEKGLUcw800jxdSiFBscog6ogU?usp=sharing](https://colab.research.google.com/drive/1dUQ_duDEKGLUcw800jxdSiFBscog6ogU?usp=sharing)

**Topic Analysis for question 2:**

[http://jtay.me/question\\_2\\_topics\\_9.html](http://jtay.me/question_2_topics_9.html)

**Topic Analysis for question 8:**

[http://jtay.me/question\\_8\\_topics.html](http://jtay.me/question_8_topics.html)