HIV Treatment Continuity Amidst Crisis: A Lorenz Curve Analysis of Interruption in Treatment (IIT) in Haiti, 2022-2024

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Background

In recent years, Haiti has faced escalating civil unrest characterized by a complex mix of political crises and internal conflicts. This instability has significantly disrupted healthcare services, including HIV treatment programs.

The situation has compromised the ability of healthcare workers to provide services, reducing the overall capacity of the healthcare system to respond effectively and exacerbating the vulnerability of already marginalized groups. Interruption in Treatment (IIT) poses a severe risk to people living with HIV (PLHIV), increasing the potential for higher HIV-related morbidity, mortality, and transmission.

This analysis aimed to describe IIT trends within PEPFAR-supported HIV programs from 2022 to 2024, focusing on subnational variability, including regions heavily impacted by socio-political crises

Methods

We utilized site level aggregated program data reported quarterly to PEPFAR's Panorama platform to examine IIT trends across eight quarters, from Fiscal Year (FY) 2022 Q4 to FY 2024 Q3, summed to Subnational Units (SNUs).

IIT was defined as no clinical contact or antiretroviral therapy (ART) pick-up for more than 28 days since the last expected encounter. We calculated the percentage of IIT for each quarter, by SNUs.

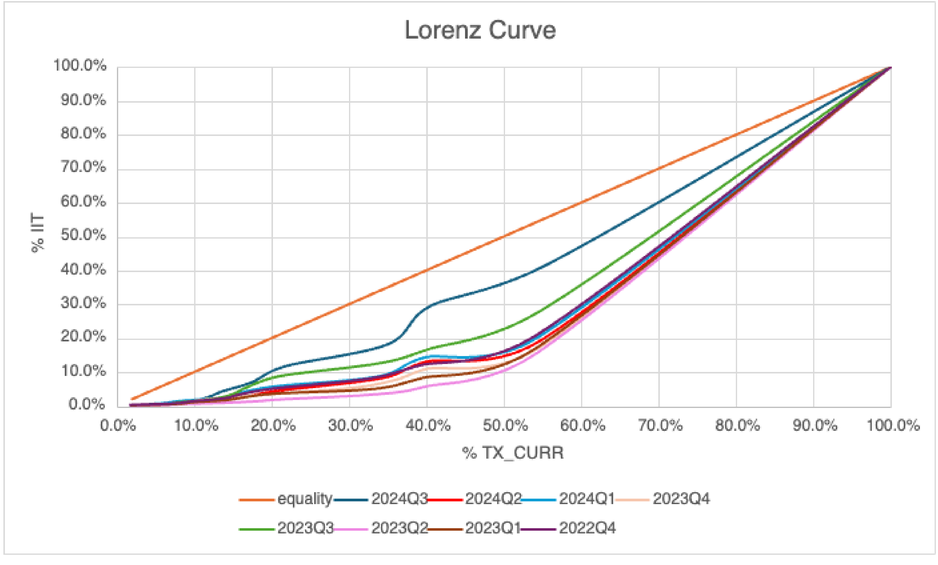
Lorenz curves were employed to assess inequalities in the distribution of IIT relative to the cumulative number of PLHIV on ART, and Gini coefficients were calculated to quantify disparities.

Figure. 1. Interruption in Treatment (IIT) Trend Across PEPFAR-Supported Subnational Units in Haiti (2022–2024)

Sub National Unit	IIT Trend
Sud-Est	
Centre	
Nippes	
Nord-Est	
Grande-Anse	
Nord-Ouest	
Nord	
Sud	
Artibonite	
Ouest	

Sociopolitical instability has significantly disrupted ART continuity in Haiti, with higher IIT rates in larger treatment cohorts. The variability in IIT rate decline across regions suggests that strategies to address treatment interruptions may have mitigated differences.

Figure. 3. Lorenz Curve of Interruption in Treatment (IIT) Inequality Across PEPFAR-Supported Subnational Units in Haiti (2022–2024)



Results

During the study period, Haiti's HIV treatment cohort expanded from 115,895 to 123,639 individuals. Across all SNUs, the average quarterly IIT was 2.1%, with the greatest absolute IIT occurring in FY 2024 Q2.

Figure. 2. Number on Treatment and Interrupting Treatment Across PEPFAR-Supported Subnational Units in Haiti (2022–2024)

Sub National Unit	# Interrupting Treatment (IIT)			# On ART		% IIT/ART		
	FY2022 Q4	FY2024 Q3	%change	FY2022 Q4	FY2024 Q3	FY2022 Q4	FY2024 Q3	%change
Sud-Est	21	12	-42.9%	2416	2763	0.9%	0.4%	-50.0%
Centre	25	47	88.0%	7530	9035	0.3%	0.5%	56.7%
Nippes	38	51	34.2%	3461	3829	1.1%	1.3%	21.3%
Nord-Est	51	128	151.0%	5502	5222	0.9%	2.5%	164.4%
Grande-Anse	69	94	36.2%	2826	3039	2.4%	3.1%	26.7%
Nord-Ouest	95	222	133.7%	5649	5796	1.7%	3.8%	127.8%
Nord	174	309	77.6%	16958	18206	1.0%	1.7%	65.4%
Sud	222	540	143.2%	8546	7637	2.6%	7.1%	172.2%
Artibonite	500	567	13.4%	19959	20335	2.5%	2.8%	11.3%
Ouest	4554	2,754	-39.5%	61639	60568	7.4%	4.5%	-38.5%
Total	5749	4,724	-17.8%	134486	136430	4.3%	3.5%	-19.0%

IIT rates across SNUs varied between 0.1% and 10.9%; Lorenz curves demonstrated variability in IIT distribution, with significantly less inequality across SNUs at the end of the study period compared to the start (FY 2024 Q3 Gini coefficient = 0.18 vs. FY 2022 Q1 Gini coefficient = 0.40; Z-score 4.5, p-value <0.0001).

Conclusions

Implications for Policy and Programming:

1. **Targeted Interventions:** Larger treatment cohorts require tailored support to prevent IIT during crises.
2. **Sustainability:** Strengthening subnational health system resilience is critical to sustaining gains in HIV care.
3. **Monitoring Gaps:** Using Gini coefficients and Lorenz curves can enhance programmatic monitoring of differences in coverage.

Limitations:

Silent Migration: PLHIV moving between SNUs without formal reporting could lead to misclassification of IIT.

Data Scope: This analysis focuses on program-reported data; additional qualitative insights are needed to understand individual barriers.

Crisis-Specific Challenges: The interplay between civil unrest and healthcare disruption may require new indicators for future evaluations.

Future Directions:

- Evaluate program adaptations during crises, such as decentralized ART distribution models.
- Explore strategies to improve access and retention across SNUs.