

Caribbean Region HIV Data Analysis

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Analysis of the “UNAIDS 2024 estimates”, for the year 2023 of the Caribbean Region on the Number of people living with HIV who know their HIV status and Number of people living with HIV on antiretroviral treatment”

I. Initial Data

	X	X.1	X.2	X.3	X.4	X.5	X.6	X.7	X.8	X.9	X.10	X.11
1	Ccode	Country	Total	Children	Men	Women	Adult	TotalA	ChildrenA	MenA	WomenA	AdultA
2	UNACAR	Caribbean	290 000	4700	150 000	130 000	280 000	240 000	4100	120 000	110 000	230 000
3	BHS	Bahamas	3807	...	1766	2002	3768	2831	32	1301	1498	2799
4	BRB	Barbados	1938	4	785	1149	1934	1430	3	600	827	1427
5	BLZ	Belize	3100	39	1512	1549	3061	1766	29	851	886	1737
6	CUB	Cuba	32769	37	6605	26127	32732	28405	35	6048	22322	28370
7	DOM	Dominican Republic	...	...	...	...	...	51775	514	26261	25000	51261
8	GUY	Guyana	...	87	4518	...	...	6765	58	3651	3056	6707
9	HTI	Haiti	122831	3435	73856	45540	119396	117761	3231	71379	43151	114530
10	JAM	Jamaica	...	...	...	...	...	14735	133	8077	6525	14602
11	SUR	Suriname	3908	51	2027	1830	3857	3361	34	1762	1565	3327
12	TTO	Trinidad and Tobago	...	...	...	...	...	...	...	...	...	...

II. Data Analysis and Cleaning Report

Based on the initial inspection, the following issues were identified:

I. Missing values:

_Bahamas: No data available for children

_Dominican Republic: No data available for people living with HIV who know their HIV Status.

_Guyana: Missing values in Total, No data available for Women and Adults

_Jamaica: No data available for people living with HIV who know their HIV Status.

_Trinidad and Tobago: No data available

II. Data type issues:

_Some columns have character values instead of numeric values.

Cleaning Strategy:

I. Handling Missing Values:

_Bahamas: Assumed Zero for the Missing portion

_Dominican Republic: Due to a logical error in the unavailability of data for people living with HIV who know their HIV Status along with the number of people living with HIV on antiretroviral treatment, I Removed the row.

_Guyana: Assumed women were zero for both categories and calculated the total by adding men and children.

_Jamaica: Due to a logical error in the unavailability of data for people living with HIV who know their HIV Status along with the number of people living with HIV on antiretroviral treatment, I Removed the row.

_Trinidad and tobacco: Assumed Zero to all.

II. Validating Data Consistency:

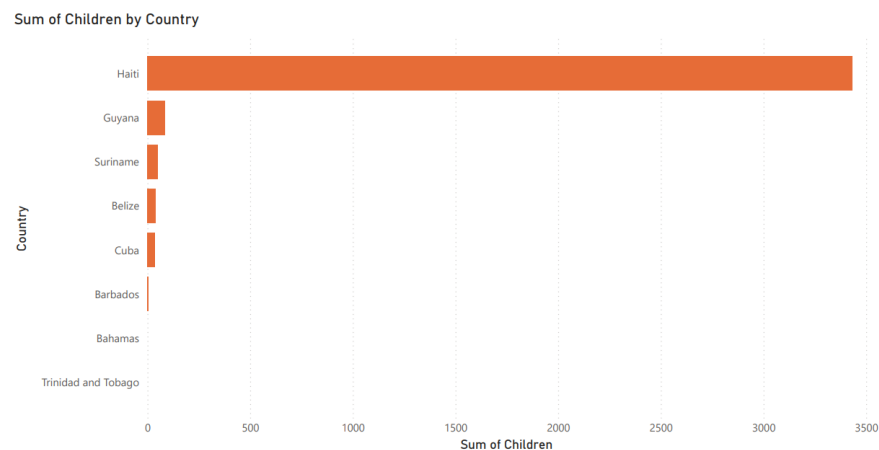
Removed the column Adult, which is a sum of women and men to ensure data consistency.

Character Values are replaced with Zero or omitted.

III. Data Exploration and Visualisations

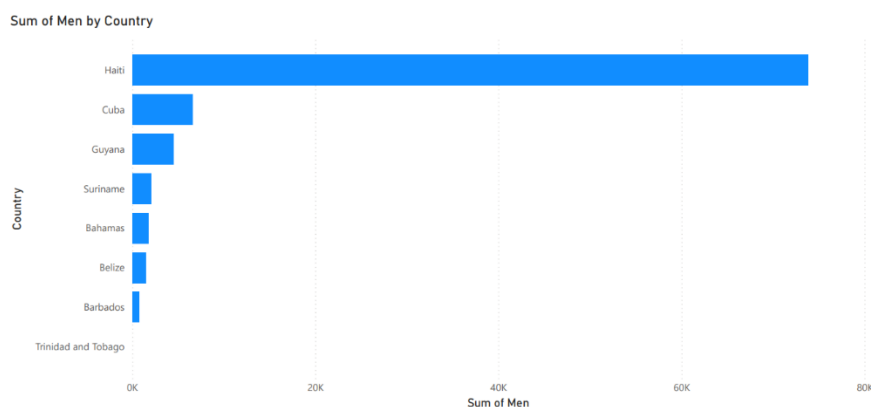
i. Distribution of Single Variables

➤ Country-wise children who know their HIV status.



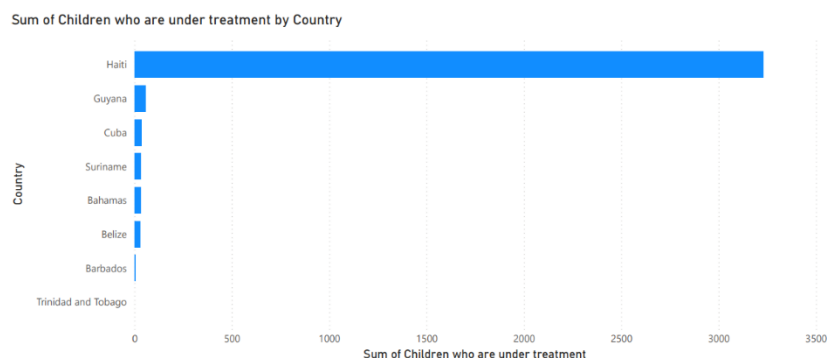
This bar chart illustrates the distribution of children who know their HIV status across different countries in the Caribbean region. Haiti has the greatest number of children who know their HIV status, with a count exceeding 3000, making it significantly more populous than the other countries. The third and second classes, on the other hand, have relatively smaller counts, each covering less than 500 Children. This distribution suggests a strong skew towards Haiti, which could indicate a larger representation of children who know their HIV status

➤ Country Men who know their HIV status.



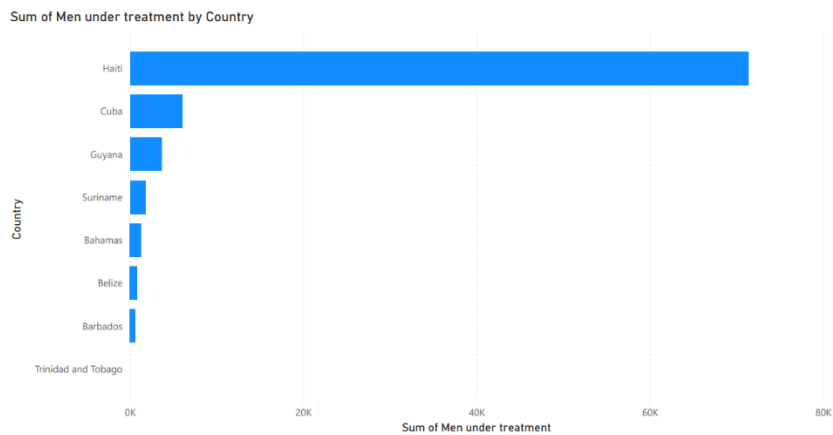
This bar chart illustrates the distribution of Men who know their HIV status across different countries in the Caribbean region. It is clear that Haiti has the greatest number of Men who know their HIV status, with a count of nearly 80000, making it significantly more populous than the other countries. The third and second classes, on the other hand, have relatively smaller counts, each covering less than 20000 Men. This distribution suggests a strong skew towards Haiti, which could indicate a larger representation of Men who know their HIV status.

➤ Country Children who are under treatment



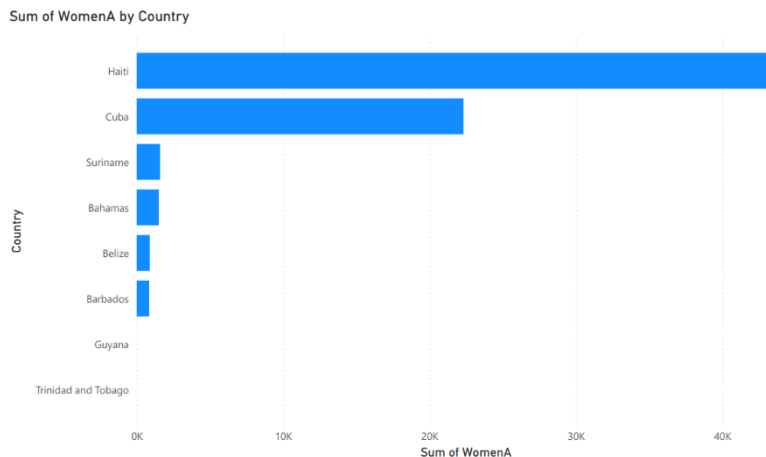
This bar chart illustrates the distribution of children living with HIV on antiretroviral treatment across different countries in the Caribbean region. It is clear that Haiti has the greatest number of children living with HIV on antiretroviral treatment, with a count exceeding 3000, making it significantly more populous than the other countries. The third and second classes, on the other hand, have relatively smaller counts, each covering less than 500 Children. This distribution suggests a strong skew towards Haiti, which could indicate a larger representation of children who live with HIV on antiretroviral treatment.

➤ Country wise Men who are under treatment



This bar chart illustrates the distribution of Male living with HIV on antiretroviral treatment across different countries in Caribbean region. It is clear that Haiti has the greatest number of children who living with HIV on antiretroviral treatment, with a count exceeding 60000, making it significantly more populous than the other countries. The third and second classes, on the other hand, have relatively smaller counts, each covering less than 20000 Men. This distribution suggests a strong skew towards Haiti, which could indicate a larger representation of Men who living with HIV on antiretroviral treatment.

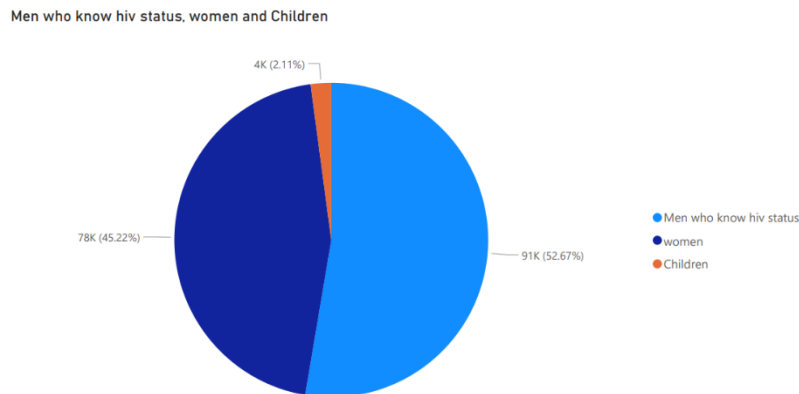
➤ Country wise Women who are under treatment



This bar chart illustrates the distribution of Women living with HIV on antiretroviral treatment across different countries in Caribbean region. It is clear that Haiti has the greatest number of children who living with HIV on antiretroviral treatment, with a count exceeding 40000, making it significantly more populous than the other countries. The second country Cuba, on the other hand, have relatively smaller count, covering less than 30000 Women. This distribution suggests a strong skew towards Haiti, which could indicate a larger representation of women who living with HIV on antiretroviral treatment.

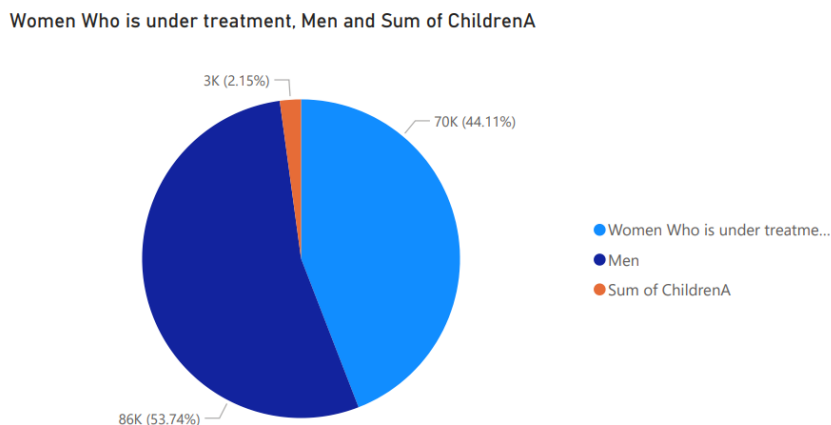
ii. Relationship between variables

- Percentage of Men, women and children who know their HIV status in Caribbean region.



This Pie chart illustrates the distribution of Men, women and children who know their HIV status across different countries in Caribbean region. It is clear that men are the largest category who know their HIV status, 52.67 per cent making it significantly more populous than the other categories. The children category, only have relatively smaller counts, each covering less than 2.11 per cent.

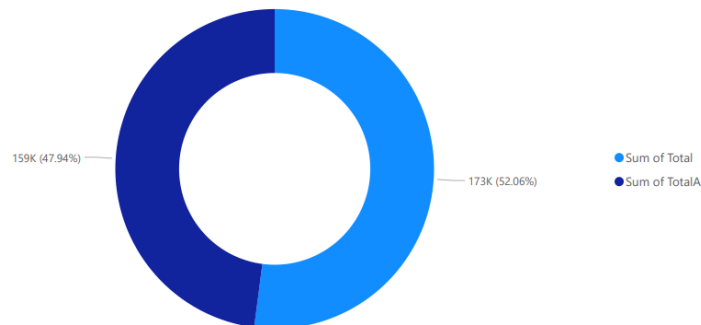
- Percentage of Men, women and children living with HIV on antiretroviral treatment



This Pie chart illustrates the distribution of Men, women and children living with HIV on antiretroviral treatment across different countries in Caribbean region. It is clear that men are the largest category who know their HIV status, 52.67 per cent making it significantly more populous than the other categories. The children category, only have relatively smaller counts, each covering less than 2.11 per cent.

- Percentage wise distribution of Men, women and children who know their HIV status and living with HIV on antiretroviral treatment in Caribbean region.

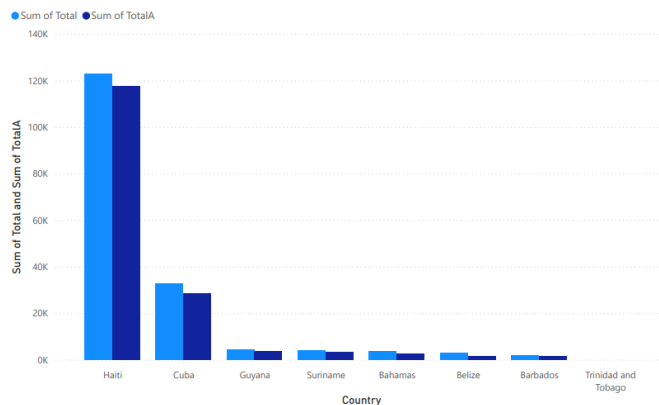
Sum of Total and Sum of TotalA



This donut chart illustrates Percentage wise distribution of Men, women and children who know their HIV status and living with HIV on antiretroviral treatment in Caribbean region. It is clear that only 47.94 per cent of people have taken treatment. 2.06 per cent of people are living with HIV untreated.

- Country wise distribution of Men, women and children who know their HIV status and living with HIV on antiretroviral treatment in Caribbean region.

Sum of Total and Sum of TotalA by Country



This compound bar chart illustrates Country wise distribution of Men, women and children who know their HIV status and living with HIV on antiretroviral treatment in Caribbean region. It is clear that, there is only a nominal difference between Men, women and children who know their HIV status and living with HIV on antiretroviral treatment in every country. Haiti is the country having most number of Men, women and children who know their HIV status and living with HIV on antiretroviral treatment. Cuba and Guyana followed Haiti.

III. Statistical Analysis.

- iii. Summary of Total number of people living with HIV who know their HIV status and persons living with HIV on antiretroviral treatment in the Caribbean region.

Summary (Total number of people living with HIV who know their HIV status)

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
0	2810	3858	21620	11646	122831

Summary (Total number of persons living with HIV on antiretroviral treatment)

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
0	1682	3096	19908	9883	117761

- iv. Welch Two Sample t-test

data: f\$Total and f\$TotalA

$t = 0.082642$, $df = 13.978$, $p\text{-value} = 0.9353$

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-42722.16 46145.91

sample estimates:

mean of x mean of y

21619.75 19907.88

Result: There is no statistically significant difference between the means of X and Y.