

Wright State University

CORE Scholar

---

Scholarship in Medicine - All Papers

Scholarship in Medicine

---

2020

## Universal Health Coverage and HIV in Hispanic America

Jenna Frantz

Wright State University - Main Campus, [frantz.36@wright.edu](mailto:frantz.36@wright.edu)

Follow this and additional works at: [https://corescholar.libraries.wright.edu/scholarship\\_medicine\\_all](https://corescholar.libraries.wright.edu/scholarship_medicine_all)



Part of the [Public Health Commons](#)

---

### Repository Citation

Frantz, J. (2020). Universal Health Coverage and HIV in Hispanic America. Wright State University. Dayton, Ohio.

This Article is brought to you for free and open access by the Scholarship in Medicine at CORE Scholar. It has been accepted for inclusion in Scholarship in Medicine - All Papers by an authorized administrator of CORE Scholar. For more information, please contact [library-corescholar@wright.edu](mailto:library-corescholar@wright.edu).

# Universal Health Coverage and HIV in Hispanic America

Jenna Frantz

Jeannette Manger, Ph.D., Department of Medical Education at Wright State University

Public Health, Population Health and Global Health

Scholarship in Medicine Proposal

**By checking this box, I indicate that my mentor has read and reviewed my draft proposal prior to submission**

## **Abstract**

*Objective:* This study analyzes differences between HIV statistics in Hispanic American countries that have passed UHC legislation versus those that have not passed UHC legislation. In 2017, 0.4% of the population of Latin America and 1.2% of the population of the Caribbean was living with Human Immunodeficiency Virus (HIV).<sup>1</sup> Because of these high rates of HIV in Hispanic America, as well as the lethality of HIV if untreated, HIV statistics and treatment outcomes in Hispanic America are of great concern. Relationships between HIV statistics and Universal Health Coverage (UHC) legislation could serve as a metric for UHC performance in Hispanic American countries. *Methods:* The HIV statistics analyzed are HIV prevalence, HIV incidence, number of acquired immune deficiency syndrome (AIDS) related deaths, percent of people with HIV receiving anti-retroviral therapy (ART), 12-month retention on ART, mother-to-child HIV transmission rate, percent of people living with HIV whose deaths were averted due

to ART, and percent of people living with HIV who have suppressed viral loads. HIV/AIDS data for this study was found from UNAIDS,<sup>1</sup> and the UHC legislation data was found from WHO's Global Health Observatory.<sup>2</sup> Data was analyzed with independent t-tests to compare HIV statistics in countries that have passed UHC legislation versus those that have not passed UHC legislation. *Results:* Countries that have passed UHC legislation have significantly higher prevalence ( $p = .04$ ) and incidence ( $p = .02$ ) of HIV than countries that have not passed UHC legislation. Countries that have passed UHC legislation have significantly less deaths due to AIDS ( $p = .03$ ).

**Key Words:**

*Human immunodeficiency virus (HIV), acquired immune deficiency syndrome (AIDS), Hispanic America, universal health coverage (UHC)*

## Introduction/Literature Review

In Latin America, 1,900,000 people [1,500,000-2,300,000], or 0.4% [0.3%-0.5%] of the population, were living with HIV in 2017.<sup>1</sup> In the Caribbean in 2017, 330,000 people [280,000-390,000], or 1.2% [1.0%-1.4%] of the population, were living with HIV.<sup>1</sup> Because of these high rates of HIV in Hispanic America, as well as the lethality of HIV if untreated, HIV rates and treatment outcomes in Hispanic America are of great concern. HIV causes a decrease in the number of CD4+ T cells, which leads to increased risk of infections and cancer.<sup>3</sup> Opportunistic infections that take place among HIV patients with decreased CD4+ counts are often the cause of death for HIV patients, but opportunistic infections and AIDS-related deaths are often preventable with modern antiretroviral therapy (ART).

Upon review of the literature, we did not find any studies examining the relationship between UHC legislation and HIV outcomes; as such, this study bridges a gap in our understanding of the relationship between HIV outcomes and universal health coverage legislation. Nonetheless, related research indicates that increased insurance coverage and government spending on health lead to improved outcomes. Use of medical services increases among people with higher level of insurance coverage.<sup>4-6</sup> Increased use of medical services may improve patient outcomes due to increased consultation and intervention from healthcare professionals, as well as preventative care. In a study on a health insurance program for impoverished Colombians, increased use of preventative care through the program led to fewer sick days and fewer ill symptoms in pediatric patients.<sup>7</sup> UHC allows for improved access to preventative care, so UHC legislation may produce similar results as the Colombian health insurance program study. In addition, population health outcomes tend to be better in countries with higher government spending and increased pooled health financing,<sup>8-10</sup> suggesting that UHC could improve population health outcomes. Therefore,

we hypothesized that countries that have passed UHC legislation would have more favorable HIV outcomes, such as lower HIV prevalence and incidence, fewer AIDS-related deaths, higher percent of HIV patients receiving ART, higher retention in ART, lower mother-to-child transmission rate, more deaths averted due to ART, and a higher percent of patients with suppressed viral load.

### **Hypothesis/Specific Aims/Research Questions**

The eight research questions addressed in this project are listed below.

1. How does UHC legislation in Hispanic American countries affect the percent of population living with HIV?
2. How does UHC legislation in Hispanic American countries affect incidence of HIV?
3. How does UHC legislation in Hispanic American countries affect the percent people living with HIV that die AIDS-related deaths?
4. How does UHC legislation in Hispanic American countries affect the number of people on ART?
5. How does UHC legislation in Hispanic American countries affect 12-month retention on antiretroviral therapy?
6. How does UHC legislation in Hispanic American countries affect mother-to-child HIV transmission rate?
7. How does UHC legislation in Hispanic American countries affect number of deaths averted due to ART?
8. How does UHC legislation in Hispanic American countries affect percent of people living with HIV who have suppressed viral loads?

## Methods

### *Context*

HIV/AIDS data for this study was found from UNAIDS,<sup>1</sup> and the Universal Health Coverage data was found from WHO's Global Health Observatory.<sup>2</sup> Due to data being derived from publicly available data sets, IRB approval was not required.

UNAIDS develops their HIV/AIDS estimates with teams consisting of epidemiologists, demographers, monitoring and evaluation specialists, and technical partners.<sup>11</sup> The software used by UNAIDS to create estimate models are Spectrum from Avenir Health and the Estimates and Projections Package from East-West Center.<sup>11</sup> In countries of high rates of HIV transmission, HIV prevalence estimates are gathered from nationally representative population-based surveys and antenatal clinic attendance surveillance. In countries of low-level HIV epidemic, estimates are gathered from empirical data about high-risk populations. Surveys and data of pregnant women who attend antenatal clinics are used for determining estimates of HIV prevalence among low-risk populations within these low-level HIV epidemic countries. Countries in Latin America and the Caribbean have insufficient antenatal clinic surveillance data and population-based survey data, so data is gathered from registration and disease reporting systems. In these countries, HIV case reports and data on AIDS-related deaths are used directly to determine estimates.<sup>11</sup>

The WHO Global Health Observatory data on countries that have passed UHC legislation was gathered from a 2013 study by Feigl and Ding.<sup>12</sup> This study used databases and legal healthcare documents to collect data. Feigl and Ding developed a new indicator to classify countries with universal health coverage and called this indicator "evidenced formal coverage"

(EFC). Countries qualified as having EFC if they had legislated UHC, had a formal coverage rate of  $\geq 85\%$ , and had  $\geq 90\%$  access to skilled attendance at birth.<sup>12</sup> This study considers the first passage of any UHC legislation to be the marker of UHC coverage, but most countries do not convert to a completely UHC health system with the passage of the first UHC-related legislation. Percent of population with healthcare coverage was determined from two International Labor Office reports.<sup>12</sup> To determine whether countries had passed UHC legislation, Feigl and Ding searched databases and healthcare legal documents of governments of the countries studied. If the legislation included language that indicated that all citizens were covered by the health plan, the researchers determined that the country had legal coverage.<sup>12</sup>

### *Data Collection*

We chose to analyze the HIV statistics and UHC legislation in Hispanic America. Hispanic America consists of the predominantly Spanish-speaking countries of Latin America and the Caribbean. These countries include Argentina, Bolivia, Chile, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Uruguay, and Venezuela.

Not all countries included in the study had complete data for every variable. Any country that lacked a data point for a given variable was excluded from analysis of that variable. Puerto Rico lacked data for all variables and was excluded from the entire study. Nineteen countries were included in this study.

### *Data Analysis*

We conducted independent t-tests for each of the eight research questions to compare HIV statistics in Hispanic American countries that have passed UHC legislation versus those

that have not passed UHC legislation. The independent variables were presence or absence of UHC legislation, so countries were split into groups “yes” (those that have passed UHC legislation) and “no” (those that have not passed UHC legislation). The dependent variables were HIV prevalence (%), HIV incidence (per 1000 population), percent of those living with HIV who died AIDS-related deaths, percent of people living with HIV whose deaths were averted due to ART, percent of people living with HIV receiving ART, mother-to-child transmission rate, 12-month retention on ART (%), and percent of people living with HIV who have suppressed viral load. Hispanic American countries that have passed UHC legislation are Argentina, Bolivia, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Panama, El Salvador, Uruguay, and Venezuela. Hispanic American countries that have not passed UHC legislation are Guatemala, Honduras, Mexico, Nicaragua, Peru, and Paraguay.

## Results

The mean prevalence was significantly higher in countries that have passed UHC legislation (Table; mean “yes UHC” 0.527%; mean “no UHC” 0.317%;  $p = .04$ ). The mean incidence of HIV diagnoses per 1000 people in the population was also significantly higher in countries that have passed UHC legislation (Table; mean “yes UHC” 0.346; mean “no UHC” 0.173;  $p = .02$ ). The mean percent of people living with HIV who died due to AIDS-related deaths was significantly lower in countries that have passed UHC (Table; mean “yes UHC” 0.019; mean “no UHC” 0.033;  $p = .03$ ).



<b>Table: HIV Outcomes and UHC Legislation</b>					
	UHC legislation*	N**	Mean	Std. Deviation	P value
<b>HIV Prevalence (%)</b>	Yes	11	0.527***	0.205	.04
	No	6	0.317	0.117	
<b>HIV Incidence per 1000 Population</b>	Yes	11	0.346***	0.151	.02
	No	6	0.173	0.077	
<b>Percent of People Living with HIV who Died AIDS-Related Deaths</b>	Yes	9	0.019***	0.007	.03
	No	5	0.033	0.015	
<b>Percent of People Living with HIV whose Deaths were Averted due to ART</b>	Yes	9	0.033	0.008	.85
	No	5	0.032	0.012	
<b>Percent of People Living with HIV Receiving ART</b>	Yes	11	51.82	8.097	.66
	No	6	49.67	11.501	
<b>Mother-to-Child Transmission Rate</b>	Yes	10	12.103	6.363	.12
	No	6	17.630	6.774	
<b>12 Month Retention on ART (%)</b>	Yes	6	81.670	15.629	.36
	No	5	71.600	18.929	
<b>Percent of People Living with HIV with Suppressed Viral Load</b>	Yes	5	35.800	7.887	.76
	No	4	37.750	10.436	

**Legend for Table:**

\* UHC legislation, Yes: countries that have passed UHC legislation; UHC legislation, No: countries that have not passed UHC legislation  
 \*\* N: Number of countries included for analysis  
 \*\*\* Significantly different from countries with no UHC legislation ( $p < .05$ )  
 Data adapted from UNAIDS<sup>2</sup> and WHO's Global Health Observatory<sup>2</sup>

## **Discussion**

There was a statistically significant difference in mean HIV prevalence, incidence, and AIDS-related deaths in Hispanic American countries that have passed UHC legislation compared

to Hispanic American countries that have not passed UHC legislation. Two of the three statistically significant results refuted our hypothesis that countries that have passed UHC legislation would have more favorable HIV outcomes. We hypothesized that countries that had passed UHC legislation would have lower prevalence and incidence of HIV than countries that have not passed UHC legislation, but the data refute this hypothesis. Instead, countries that have passed UHC legislation have statistically significantly higher prevalence and incidence of HIV (Table). The data support our hypothesis that there are fewer AIDS-related deaths among HIV patients in countries that have passed UHC legislation (Table). No statistically significant differences were found for mean deaths averted due to ART, percent of people living with HIV receiving ART, mother-to-child transmission rate, 12-month retention on ART, or percent of people living with HIV who have suppressed viral load (Table). Further research is needed to understand why Hispanic American countries with UHC legislation had higher prevalence and incidence of HIV. One potential consideration for decreased prevalence and incidence of HIV in countries without UHC legislation may be that decreased insurance coverage and healthcare access leads to decreased rates of testing for HIV, resulting in underreported prevalence and incidence of HIV.

The data suggest that universal health coverage legislation does not have a positive impact on HIV outcomes, except that it may lead to decreased AIDS-related deaths among HIV patients. Our findings contradict the current literature, which suggests that increased insurance coverage leads to increased medical service use, fewer sick days, and improved public health outcomes.<sup>4,7,8</sup>

A major limitation faced in this study was lack of availability of data. Some countries did not have data available for various data points. Venezuela had a lack of data for many of the research

questions investigated in this study. Although there were 19 countries included in this study, only as many as 17 countries had data on a given statistic, such as prevalence, and as few as only 9 of the 19 countries had available data for percent of HIV patients with suppressed viral load. Another limitation faced in this study was an incomplete understanding of universal health coverage in each country. The study that we used to provide UHC legislation data considered a country to have UHC if there had been any legislation indicating any level of UHC; there is likely a discrepancy in amount of coverage between countries. It was not feasible to quantify ease of access in each country, percent of the population that had coverage through each country's UHC plan, or what medical services that the UHC plan covered.

Future research should further investigate the relationship between UHC legislation and HIV outcomes, since the results from this study and findings from other studies about increased insurance coverage are contradictory. Other related future directions include investigating HIV outcomes compared to prevalence of homophobia and HIV stigma in various locations worldwide.

## **Conclusion**

Countries with UHC legislation have significantly fewer deaths due to AIDS ( $p = .03$ ), but prevalence and incidence of HIV are significantly higher in countries with UHC legislation ( $p = .04$  and  $p = .02$ , respectively). Some research indicates improved health outcomes with increased insurance coverage or government health spending,<sup>4,7,8</sup> suggesting a potential link between UHC legislation and health outcomes. Since HIV is highly prevalent in Hispanic America, investigating the relationship between UHC legislation and HIV outcomes could serve as a metric for performance of UHC legislation. This could shape health policymaking, but more investigation is needed.

## References

1. AIDSinfo | UNAIDS. Accessed February 1, 2020. <https://aidsinfo.unaids.org/>
2. Countries that have passed legislation on Universal Health Coverage (UHC). Accessed March 10, 2020. [https://www.who.int/data/gho/data/indicators/indicator-details/GHO/countries-that-have-passed-legislation-on-universal-health-coverage-\(uhc\)](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/countries-that-have-passed-legislation-on-universal-health-coverage-(uhc))
3. About HIV/AIDS | HIV Basics | HIV/AIDS | CDC. Accessed February 1, 2020. <https://www.cdc.gov/hiv/basics/whatishiv.html>
4. Card D, Dobkin C, Maestas N. The impact of nearly universal insurance coverage on health care utilization: Evidence from medicare. *American Economic Review*. 2008;98(5):2242-2258. doi:10.1257/aer.98.5.2242
5. Yörük BK. Health insurance coverage and health care utilization: Evidence from the Affordable Care Act's dependent coverage mandate. *Forum for Health Economics and Policy*. 2018;21(2). doi:10.1515/fhpe-2017-0032
6. Pilotto LM, Celeste RK. The relationship between private health plans and use of medical and dental health services in the Brazilian health system. *Ciência & Saúde Coletiva*. 2019;24(7):2727-2736. doi:10.1590/1413-81232018247.24112017
7. Miller G, Pinto D, Vera-Hernández M. *Risk Protection, Service Use, and Health Outcomes Under Colombia's Health Insurance Program for the Poor.*; 2009. doi:10.3386/w15456
8. Moreno-Serra R, Smith PC. Does progress towards universal health coverage improve population health? *The Lancet*. 2012;380(9845):917-923. doi:10.1016/S0140-6736(12)61039-3
9. mac McCullough J, Leider JP. The Importance of Health and Social Services Spending to Health Outcomes in Texas, 2010-2016. *Southern Medical Journal*. 2019;112(2):91-97. doi:10.14423/SMJ.0000000000000935
10. McCullough J mac, Singh SR, Leider JP. The Importance of Governmental and Nongovernmental Investments in Public Health and Social Services for Improving Community Health Outcomes. *Journal of Public Health Management and Practice*. 2019;25(4):348-356. doi:10.1097/PHH.0000000000000856
11. Unaid. *Methods for Deriving UNAIDS Estimates 2 1*. Accessed January 16, 2020. [www.eastwestcenter.org](http://www.eastwestcenter.org)
12. Feigl AB, Ding EL. Evidenced formal coverage index and universal healthcare enactment: A prospective longitudinal study of economic, social, and political predictors of 194 countries. *Health Policy*. 2013;113(1-2):50-60. doi:10.1016/j.healthpol.2013.06.009