ZAMBIA POPULATION-BASED HIV IMPACT ASSESSMENT
ZAMPHIA 2016

The Zambia Population-Based HIV Impact Assessment (ZAMPHIA), a household-based national survey, was conducted between March and August 2016 in order to measure the status of Zambia's national HIV response. ZAMPHIA offered HIV counseling and testing with return of results, and collected information about uptake of care and treatment services. This survey is the first in Zambia to measure national HIV incidence, pediatric HIV prevalence, and viral load suppression (VLS). The results provide information on national and subnational progress toward control of the HIV epidemic.

ZAMPHIA was led by the Government of Zambia through the Ministry of Health (MOH), conducted with funding from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and technical assistance through the U.S. Centers for Disease Control and Prevention (CDC). The survey was implemented by ICAP at Columbia University in collaboration with international and local partners, including the Central Statistical Office (CSO), the Tropical Disease Research Center (TDRC), the University Teaching Hospital (UTH), and the University of Zambia.

KEY FINDINGS

HIV Indicator	Female	95% CI	Male	95% CI	Total	95% CI
Annual incidence (%)						
15–49 years	1.00	0.64-1.37	0.28	0.07-0.49	0.64	0.42-0.86
15–59 years	0.93	0.60-1.26	0.29	0.08-0.50	0.61	0.40-0.81
Prevalence (%)						
15–49 years	14.3	13.4-15.1	8.3	7.6-9.0	11.4	10.7-12.0
15–59 years	14.6	13.8-15.5	9.3	8.5-9.9	12.0	11.3-12.7
0-14 years	1.0	0.7-1.3	1.3	0.9-1.7	1.1	0.9-1.4
Viral load suppression (%)						
15–59 years	60.4	57.6-63.2	57.2	53.1-61.3	59.2	56.6-61.7

95% confidence intervals (CIs) are ranges calculated such that if the survey were repeated multiple times, the resulting range would include the true population value 95% of the time. Viral load suppression is defined as HIV RNA <1,000 copies per ml of plasma among HIV-positive adults.

Annual incidence[1] of HIV among adults ages 15 to 59 years in Zambia is 0.61 percent: 0.93 percent among females and 0.29 percent among males. This corresponds to approximately 43,000 new cases of HIV annually among adults ages 15 to 59 years in Zambia.

Prevalence[2] of HIV among adults ages 15 to 59 years in Zambia is 12.0 percent: 14.6 percent among females and 9.3 percent among males. This corresponds to approximately 961,000 people living with HIV (PLHIV) ages 15 to 59 years in Zambia. Prevalence of VLS among HIV-positive adults ages 15 to 59 years in Zambia is 59.2 percent: 60.4 percent among females and 57.2 percent among males.
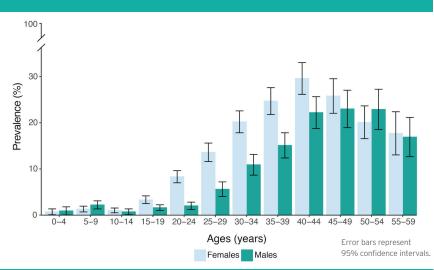
[1] HIV incidence is the measure of new infections of HIV per year. A laboratory-based HIV recent-infection testing algorithm was used to distinguish recent from long-term infection.
[2] HIV prevalence is a measure of the proportion of the population currently infected with HIV.
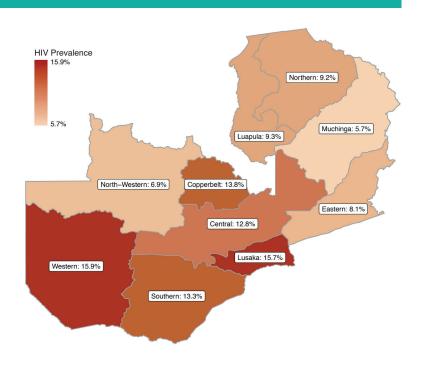
HIV PREVALENCE, BY AGE AND SEX

HIV prevalence peaks at 29.6 percent among females ages 40 to 44 years, as compared to 23.0 percent among males ages 45 to 49 years. The disparity in HIV prevalence by sex is most pronounced among young adults: HIV prevalence among 20- to 24-year-olds is four times as high among females (8.3 percent) than males (2.0 percent).

Ages (years)

Error bars represent 95% confidence intervals.

Females   Males

HIV PREVALENCE AMONG ADULTS, BY PROVINCE

Among adults ages 15 to 59 years, prevalence of HIV varies geographically across Zambia, ranging from 5.7 percent in Muchinga Province to 15.9 percent in Western Province and 15.7 percent in Lusaka.
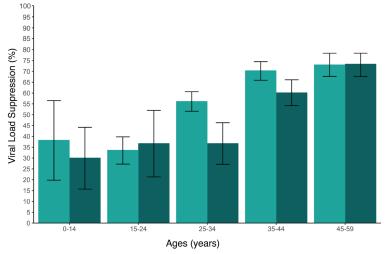
Province	HIV Prevalence	95% CI
Central	12.8	10.4-15.2
Copperbelt	13.8	12.3-15.3
Eastern	8.1	5.9-10.3
Luapula	9.3	6.7-11.7
Lusaka	15.7	14.1-17.3
Muchinga	5.7	3.9-7.5
Northern	9.2	7.2-11.2
North-Western	6.9	5.6-8.1
Southern	13.3	11.5-15.0
Western	15.9	11.9-19.9

HIV Prevalence
15.9%

5.7%

Northern: 9.2%
Muchinga: 5.7%
Luapula: 9.3%
North-Western: 6.9%
Copperbelt: 13.8%
Eastern: 8.1%
Central: 12.8%
Lusaka: 15.7%
Western: 15.9%
Southern: 13.3%

VIRAL LOAD SUPPRESSION AMONG HIV-POSITIVE PEOPLE, BY AGE AND SEX

Prevalence of VLS among HIV-positive people in Zambia is highest among older adults: 73.0 percent among HIV-positive females and 73.3 percent among HIV-positive males ages 45 to 59 years. In contrast, prevalence of VLS is distinctly lower among younger adults: 33.6 percent among HIV-positive females and 36.7 percent among HIV-positive males ages 15 to 24 years.

Females

Males

Error bars represent 95% confidence intervals.
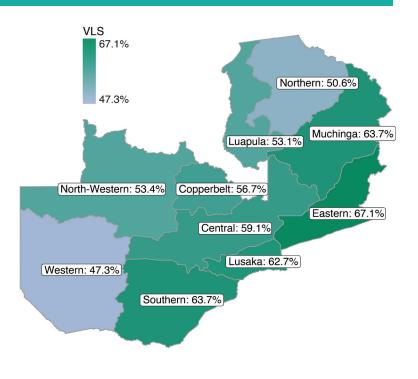

Ages (years)

VIRAL LOAD SUPPRESSION AMONG HIV-POSITIVE ADULTS, BY PROVINCE

Among HIV-positive adults ages 15 to 59 years, prevalence of VLS varies geographically across Zambia, ranging from 47.3 percent in Western Province to 67.1 percent in the Eastern Province.

Province	VLS Prevalence	95% CI
Central	59.1	52.0-66.3
Copperbelt	56.7	51.7-61.7
Eastern	67.1	58.8-75.4
Luapula	53.1	37.9-68.2
Lusaka	62.7	58.0-67.3
Muchinga	63.7	55.0-72.5
Northern	50.6	32.5-68.6
North-Western	53.4	46.7-60.2
Southern	63.7	56.3-71.1
Western	47.3	35.2-59.5

VLS
67.1%

47.3%

Northern: 50.6%
Muchinga: 63.7%
Luapula: 53.1%
North-Western: 53.4%
Copperbelt: 56.7%
Eastern: 67.1%
Central: 59.1%
Lusaka: 62.7%
Western: 47.3%
Southern: 63.7%

ACHIEVEMENT OF THE 90-90-90 GOALS AMONG HIV-POSITIVE ADULTS, BY SEX

90-90-90: an ambitious treatment target to help end the AIDS epidemic
By 2020, 90 percent of all PLHIV will know their HIV status; 90 percent of all people with diagnosed HIV infection will receive sustained antiretroviral therapy (ART); and 90 percent of all people receiving ART will have viral suppression.

Diagnosed
In Zambia, 71.4 percent of PLHIV ages 15 to 59 years are aware of their HIV status: 72.6 percent of HIV-positive females and 69.2 percent of HIV-positive males know their HIV status. Awareness is defined as self-reporting HIV positive and/or having detectable antiretroviral (ARV) in the blood.
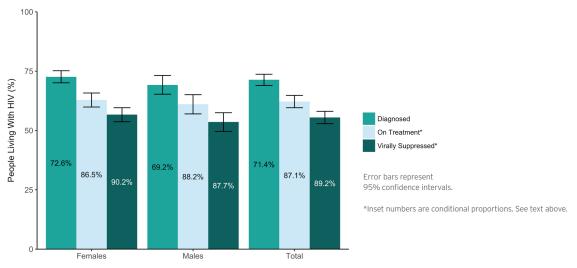
On Treatment
Among PLHIV ages 15 to 59 years who know their HIV status, 87.1 percent are currently on ART: 86.5 percent of

HIV-positive females and 88.2 percent of HIV-positive males who know their HIV status are currently on ART. Being on ART is defined as self-reporting current use of ART and/or having a detectable ARV in the blood.

Virally Suppressed
Among PLHIV ages 15 to 59 years who self-report current use of ART and/or had a detectable ARV in their blood, 89.2 percent are virally suppressed: 90.2 percent of HIV-positive females and 87.7 percent of HIV-positive males are virally suppressed.

Diagnosed
On Treatment*
Virally Suppressed*

Error bars represent
95% confidence intervals.

*Inset numbers are conditional proportions. See text above.

PREVALENCE OF HEPATITIS B VIRUS INFECTION, BY SEX, AGE AND HIV STATUS

Among adults ages 15 to 59 years, prevalence of acute or chronic infection with hepatitis B virus (HBV) is higher among HIV-positive (7.1%) than HIV- negative (5.4%) adults. Among children ages 0 to 14 years, HBV infection is more prevalent among HIV-positive (5.9%) than HIV-negative (1.2%) children. Prevalence of HBV infection is especially high among HIV-positive males ages 15 to 59 years (10.2%).

Hepatitis B testing was conducted in each household using a serological hepatitis B surface antigen (HBsAg) rapid diagnostic test, which indicates either acute or chronic infection.

HIV Status and Age	Female		Male		Total	
	Prevalence of Hepatitis B	95% CI	Prevalence of Hepatitis B	95% CI	Prevalence of Hepatitis B	95% CI
HIV Positive						
0-14	9.2	2.8-15-5	3.4	0-8.6	5.9	1.9-9.9
15-59	5.2	4.0-6.4	10.2	7.8-12.7	7.1	5.8-8.3
0-59	5.4	4.3-6.5	9.4	7.2-11.7	7.0	5.8-8.1
HIV Negative						
0-14	1.1	0.8-1.4	1.3	0.9-1.8	1.2	1.0-1.5
15-59	3.9	3.5-4.3	6.9	6.1-7.6	5.4	4.9-5.8
0-59	2.5	2.2-2.8	4.1	3.6-4.5	3.3	3.0-3.6
Total						
0-14	1.2	0.9-1.5	1.4	0.9-1.8	1.3	1.0-1.6
15-59	4.1	3.7-4.5	7.2	6.4-7.9	5.6	5.2-6.0
0-59	2.7	2.4-3.0	4.4	3.9-4.8	3.5	3.3-3.8

CONCLUSIONS

• Since 2004, Zambia's HIV interventions have resulted in progress toward the United Nations' Joint Programme on HIV/AIDS targets of 90-90-90 (71-87-89).

• Incidence among women remains unacceptably high.

• With the goal of an AIDS-free generation by 2030, continued expansion of HIV testing and treatment, especially for men and young women will play a central role.

• Beyond this summary sheet, further analysis will shed light on HIV behaviors, services and treatment outcomes.

RESPONSE RATES AND HIV TESTING METHODS

Of 12,193 eligible households, 89.1 percent completed a household interview. Of 13,317 eligible women and 11,346 eligible men ages 15 to 59 years, 82.4 percent of women and 71.8 percent of men were both interviewed and tested for HIV. Of 11,646 eligible children ages 0 to 14 years, 68.8 percent were tested for HIV.

HIV prevalence testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Zambia's national guidelines. Laboratory confirmation of seropositive samples was obtained using a supplemental assay. A laboratory-based incidence testing algorithm (HIV-1 LAg avidity plus viral load and ARV results) was used to distinguish recent from long-term infection, and incidence estimates were obtained using the formula recommended by the World Health Organization Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays, with time cutoff (T)=1.0 year and residual proportion false recent (PFR)=0.00. Survey weights are utilized for all estimates.

The PHIA Project is a multi-country project funded by PEPFAR to conduct national HIV-focused surveys that describe the status of the HIV epidemic. Results will measure important national and regional HIV-related parameters, including progress toward 90-90-90 goals, and will guide policy and funding priorities. ICAP at Columbia University is implementing the PHIA Project in close collaboration with CDC and other partners.

See phia.icap.columbia.edu for more details.