

# A Positive Deviance Approach to Understanding HIV Risk and Testing

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## BACKGROUND & SIGNIFICANCE

Despite an overall increase in HIV testing, rates of infection still remain elevated in many African Countries<sup>1</sup>. In addition, HIV testing is particularly lower in men than in women, who typically receive testing as part of their antenatal care<sup>2</sup>. HIV testing is an important prevention strategy as it can encourage increased protection and preventative measures against HIV infection. However, it is vital to understanding the factors associated with the adoption of HIV testing in order to encourage routine testing in at-risk individuals and groups.

Positive deviance – sometimes referred to as resiliency – describes the process in which individuals achieve a goal despite their disadvantaged surroundings. There remains little research surrounding the application of positive deviance, and there is even less research concerning sexual and reproductive health in particular. Applied to HIV testing, positive deviants would be men who test routinely for HIV in an environment of low testing and where cultural norms are against testing.

## THEORETICAL FRAMEWORK

It has been well documented that where a person lives influences their behavior. Positive deviance theory attempts to uncover the factors that make individuals more inclined to testing, even in a country that have a high rate of HIV infection, or in a culture that is opposed to or not knowledgeable about HIV testing.

## PURPOSE AND AIMS

The purpose of this study is to examine the rates of positive deviance among different communities. The specific aims of this study are the following:

1. Highlight the reasons for testing among Sub-Saharan African men
2. Compare the reasons for testing in different communities and the differences from the individual
3. Compare the rates of positive deviance between countries of high and low HIV infection rate.

## METHODS

Survey data from the Demographic health Survey (DHS) was collected from six African countries. We determined individual variables that could play a role in whether someone decides to test for HIV.

### Individual Variables

1. Age at sexual debut
2. Socioeconomic status and place of residency
3. Average years of education
4. Stigma towards HIV and people who have HIV infection
5. Knowledge about HIV pathology and transmission
6. Marital status
7. Number of sex partners

Community variables are then calculated by the means of the individuals primary sampling unit. We then subtracted the individual from the community to determine a positive deviance variable. We finally compared the individual and positive deviance variables against testing within 12 months.

## SAMPLE & SETTING

The sample in this study included over 37,000 Sub-Saharan men. Women's data was not used in the sample size because of mandatory HIV testing, which undermines a study on reasons to test. The six African countries used were Cameroon, Ghana, Malawi, Lesotho, Swaziland and Zambia. HIV infection rates range from 1.3% in Ghana to 27.4% in Swaziland<sup>1</sup>.

## DATA ANALYSIS

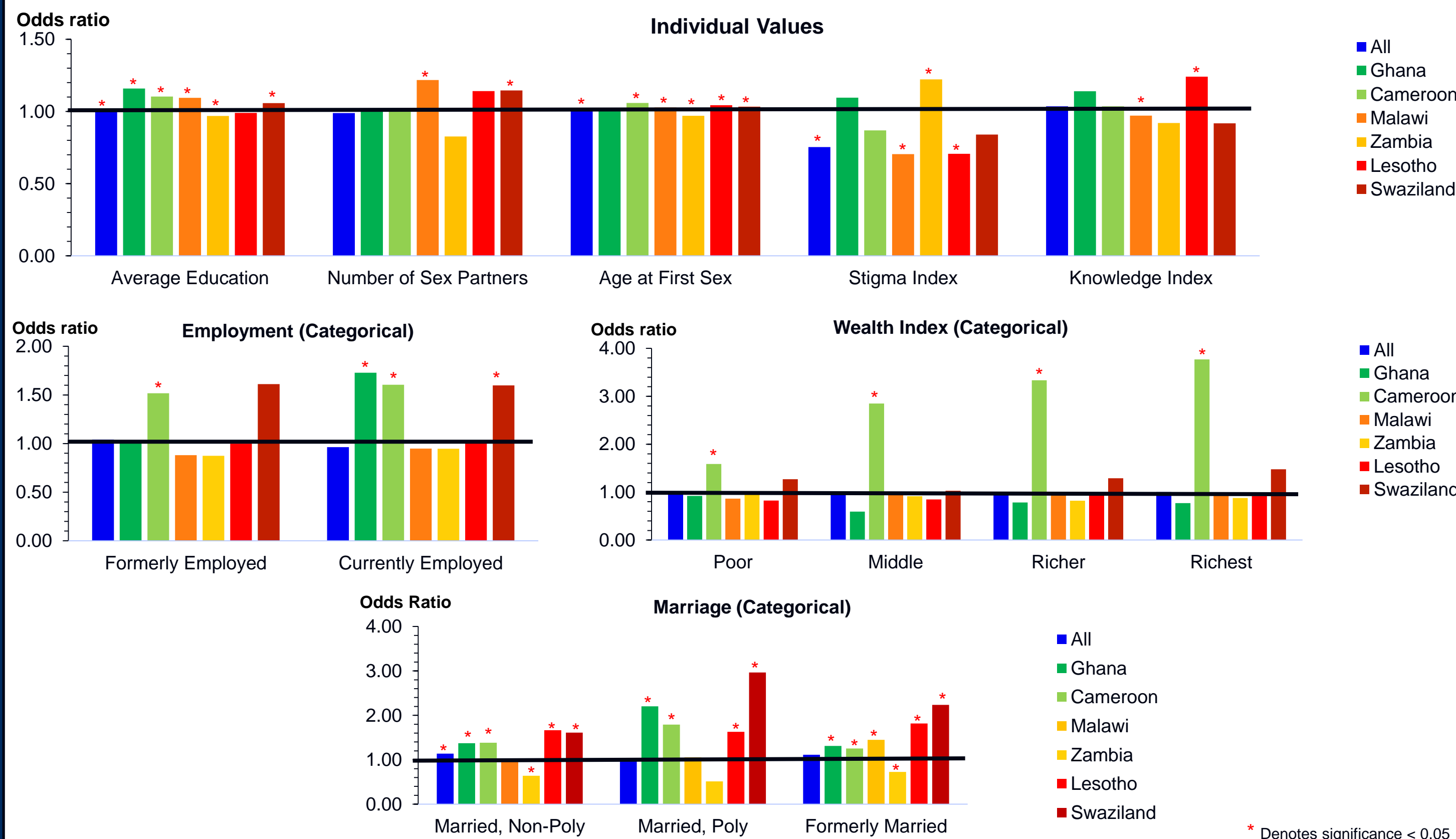
Data analysis was done with linear regression using models in SataSE14. In analyzing DHS, data our aims were the following:

1. Gather individual variables and community variables
2. Create positive deviance variables to compare the individual to the community
3. Run linear regression models to compare individual and positive deviance variables
4. Determine if as more people positively change in a variable compared to their community, they also end up testing more

## RESULTS

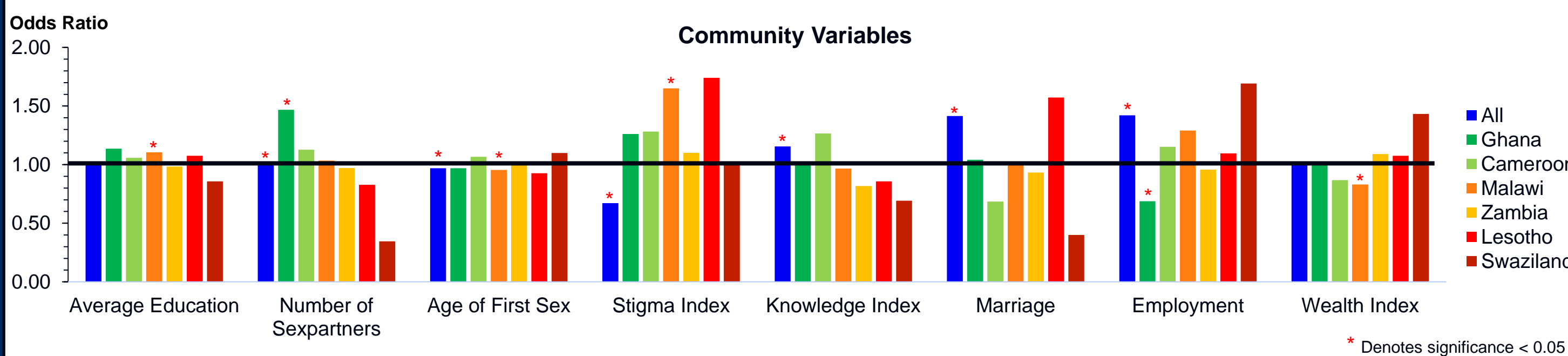
### Key Finding One: Individual Variables

These graphs display the individual values across the X axis with the corresponding odds ratio of testing for HIV along the Y axis. We see a significant influence of education on odds ratios of testing in four countries and the global sample. We also see significant increases in testing as age at sexual debut increases, though the odds ratios are only slightly elevated over baseline. Many countries had significant changes in odds ratios when examining marriage. Lastly, we see odds ratios of testing increase dramatically when progressing across levels of wealth in Cameroon.



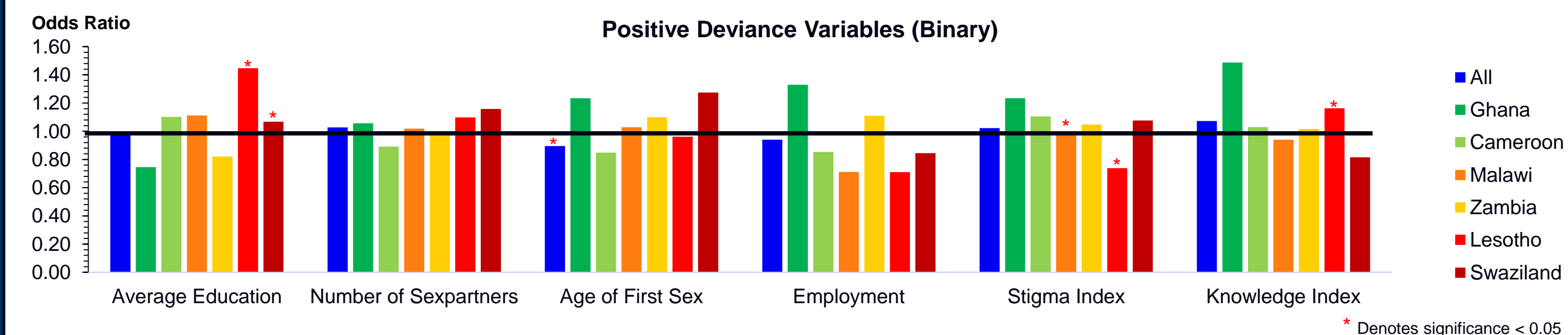
### Key Finding Two: Community Variables

These graphs display average community variables across the X axis with the resulting odds ratio of testing for HIV along the Y axis. We see higher odds ratios associated with increased community stigma, and decreased odds ratios with increasing community knowledge index. There are also odds ratios that trend downward across increasing country rates of infection. In the global sample, there are significant increases in the odds ratios when examining community marital and employment status.



### Key Finding Three: Positive Deviance Variables

These graphs show the odds ratios for HIV testing in individuals who were positive deviants from their community. In Lesotho, education, stigma and knowledge index played a role in influencing odds ratios of testing. Age of sexual debut decreased odds ratios significantly in the global sample. Lastly, there is a statistically significant, albeit minimal increase in odds ratio for positive deviants of stigma in Malawi.



## DISCUSSION

The many connections between the individual, community and positive deviance variables lead to interesting discussion. We see some individual values influence odds of testing more than others, such as age at first sex, marriage and years of education. Employment also seems to play a large factor when influencing rates of testing in Cameroon. Wealth index was a particularly strong predictor of testing in Cameroon, with many statistically significant results. Furthermore, age at first sex did not appear to influence testing across any country.

In addition, it appears that having the same mean score from country to country does not influence HIV testing rates. This is apparent for HIV knowledge scores; when moving from a lower infection rate into a higher rate, the odds ratio still relatively decrease even though the averages remain consistent across countries. It may be cultural differences between each countries that influence whether someone tests beyond the knowledge that they may have.

For the positive deviant variables, we found decreased amounts of statistically significant odds ratios in comparison to the previous data groups. It may be the case that those who are positive deviants in their community are still pressured not to test for HIV. There do not appear to be consistent trends with the positive deviance variables like we see with the individual variables, because of the aforementioned social pressure that positive deviants may experience. The high levels of variation may highlight these trends.

## LIMITATIONS

The limitations of this study were:

1. Women's data was not used from the DHS. Women in Africa receive mandatory HIV screening as part of maternal health, so it would have influenced our search for reasons to test voluntarily.
2. We also could have expanded the number of countries used in the study to increase representation. At the same time, cultural differences may separate countries too much.
3. We could have explored more individual variables, such as ethnicity and religious preference. These variables are more difficult to standardize across countries

## IMPLICATIONS AND FUTURE RESEARCH

There are some variables that appear to be better predictors of one's tendency to test for HIV. Some variables include marital status, education, stigma score and knowledge score. We also see some trends among the individual variables when examining across countries. Age at first sex appeared to be a variable that had little impact on whether someone tested or not.

However, there appears to not be enough consistent results when examining the reasons to test across countries. It would seem that there are other outstanding factors at play that may influence the differences seen in the odds ratios. More research is indicated to understand how the cultures of certain countries may influence positive deviants against testing, and why for some countries this may not be a factor. There is evidence to support that changing the culture surrounding the individual may be vital in influencing more people to test for HIV<sup>4</sup>.

Future research in this project will involve deeper examination of the context that affects whether someone tests for HIV. An individual case study of one country may be more thorough and enlightening. We will also try to include more individual variables that are more difficult to standardize among multiple countries, such as ethnicity, region and religious affiliation.

## REFERENCES

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