Determinants of HIV

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December 4th, 2014

Presentation Outline

- Research Question & Motivation
- Theoretical Framework
- Methodology
- Descriptive Statistics
- Findings
- Conclusion & Limitations

Research Question & Motivation

Research Question: Are community level factors significant determinants of HIV/AIDS incidence rates?

1. Understand why some countries failed to achieve MDG 6A

   - *MDG 6: "Combat HIV/AIDS, Malaria and other diseases"*
   - *Target 6A: "Have halted by 2015 and begun to reverse the spread of HIV/AIDS"*

2. Explore disease-specific determinants of health
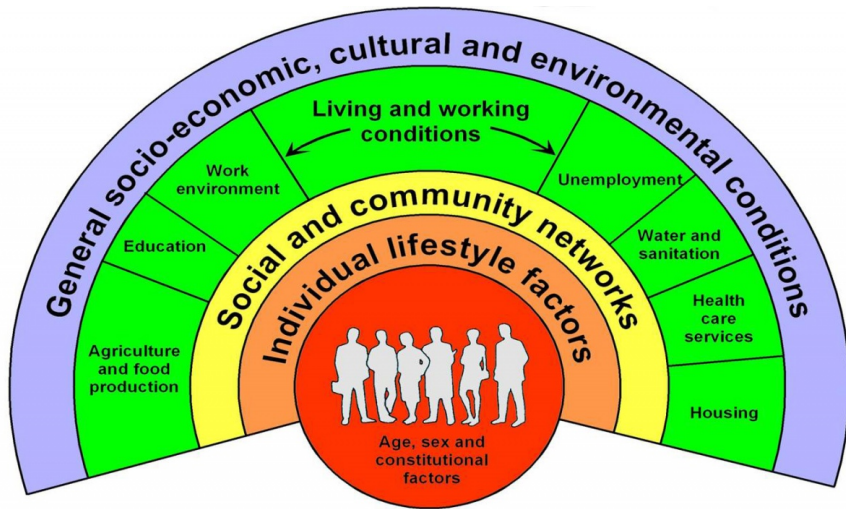
Source: Dahlgren and Whitehead, 1991

Methodology

Model

$$I_{it} = \beta_0 + \beta_1 SE_{it} + \beta_2 WLC_{it} + \beta_3 SCN_{it} + \beta_4 ILF_{it} + \epsilon_{it}$$
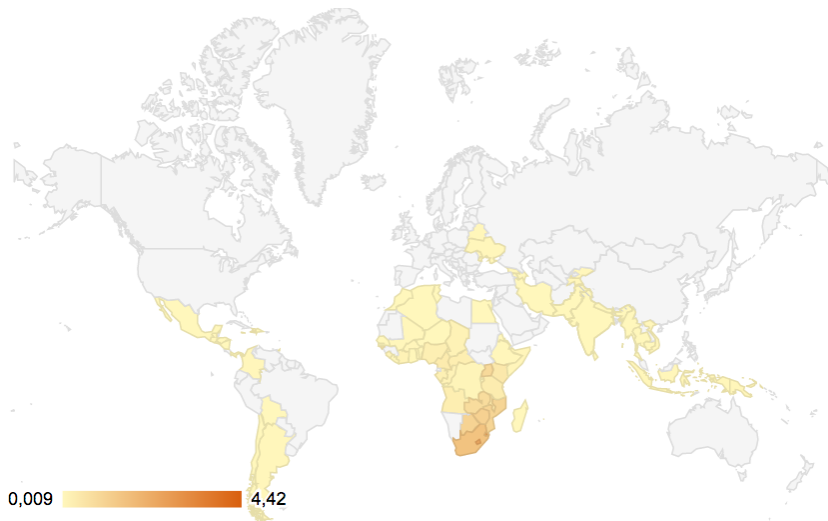
Datasets

- We will use the World Development Indicators (WDI) for the independent variables and a dataset from UNAIDS for the HIV/AIDS prevalence rate.
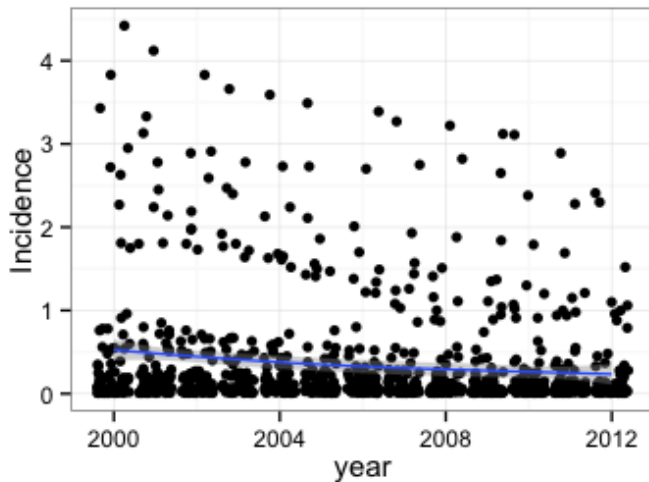
Methodology

- Model 1: Logistic Regression & Predicted Probabilities
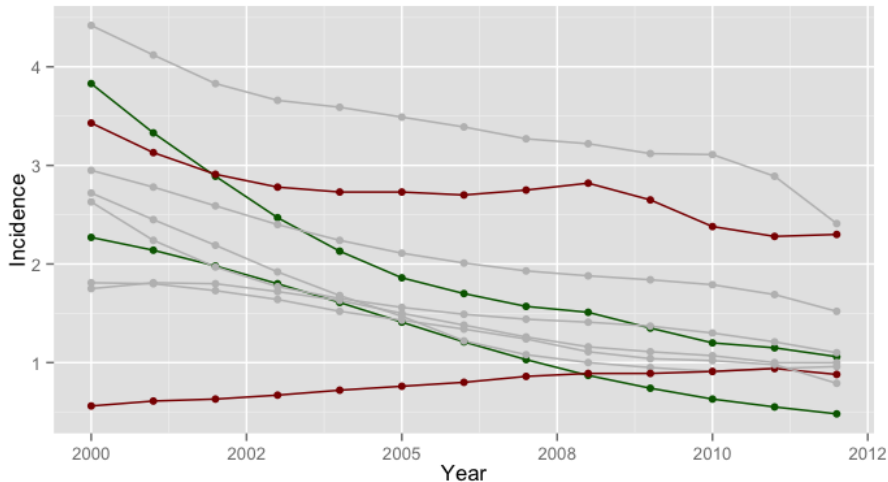- Model 2: Pooled OLS Regression (with robust stand. Errors)

Distribution of HIV Incidence Rates
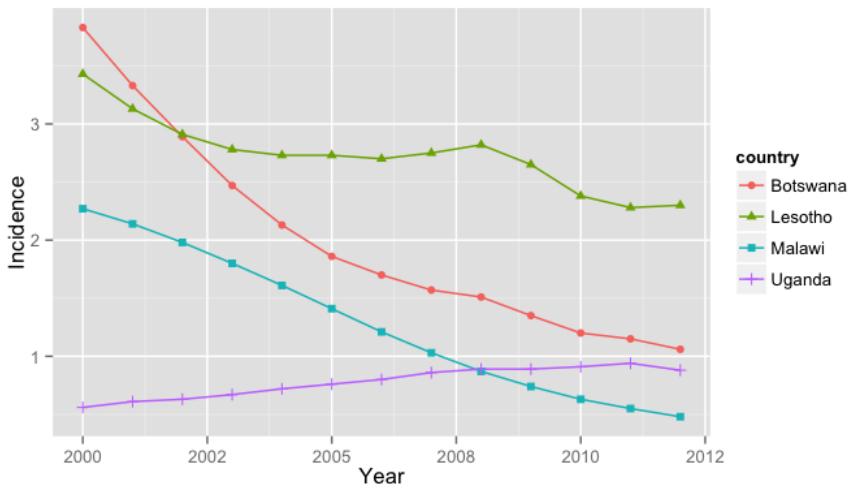

0,009   4,42
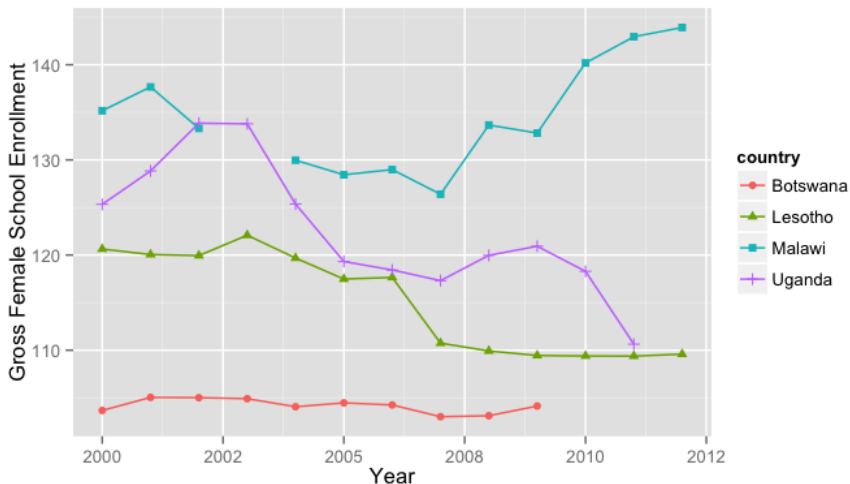
HIV Incidence Rates over Time

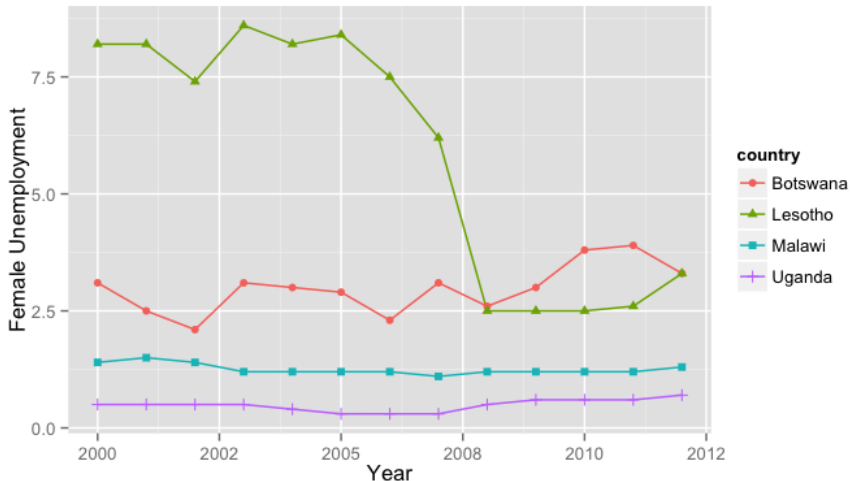# Selecting interesting Cases for Changes in HIV/AIDS Incidence

Case Studies

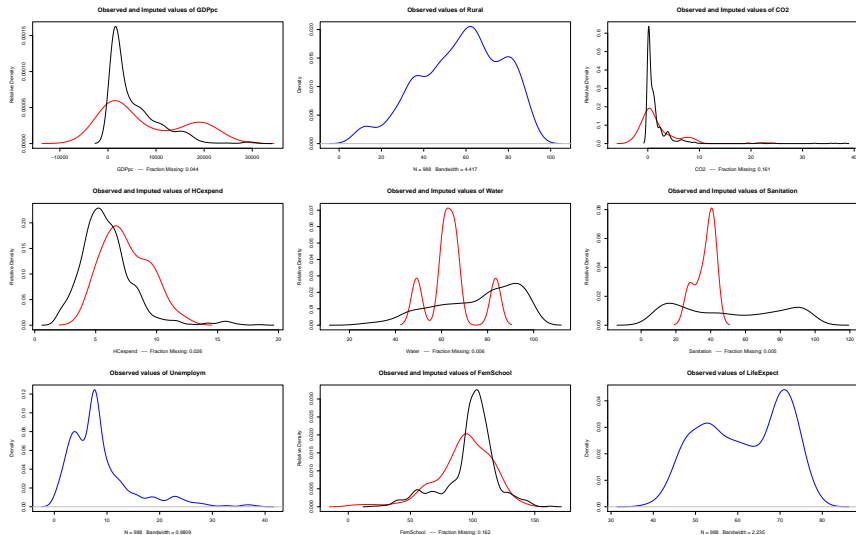# Female School Enrollment in Selected Countries

Female Unemployment compared to Total Unemployment in Selected Countries

Imputed Missing Values

Logistic Regression Results – Model 1

Predicted Probabilities for Female School Enrollment

Table 1: Logistic Regression Results of Model 1

Variables	Coefficients	Std. Error	T-Statistic	P-V...
Constant	-104.95	9.07	-11.57	
GDP per capita	-0.78	0.38	-2.05	
Share of Rural Population	-1.01	0.43	-2.37	
CO2 Emissions per capita	-1.05	0.22	-4.82	
Healthcare Expenditure	0.38	0.35	1.11	
Access to Water	0.64	0.75	0.86	
Access to Sanitation	0.21	0.25	0.84	
Life Expectancy	30.56	2.40	12.73	
Immunisation against DPT	-1.24	1.27	-0.98	
Immunisation against Measles	1.59	1.35	1.18	
Female School Enrollment	-3.71	0.54	-6.90	

Simple Linear Regression Results - Model 2

Table 2: OLS Regression Results of Model 2 with robust standard errors

Variables	Coeff.	Std. Error	T-Stat.	P-Value
Constant	15.84	1.57	10.11	0.00
GDP per capita	0.17	0.08	2.10	0.04
Rural Population	0.53	0.13	4.10	0.00
CO2 Emissions	0.12	0.05	2.63	0.01
Healthcare Expenditure	-0.11	0.10	-1.03	0.30
Water Access	0.25	0.20	1.22	0.23
Sanitation Access	0.00	0.07	0.03	0.97
Life Expectancy	-7.01	0.30	-23.74	0.00
DPT Immunisation	0.22	0.30	0.73	0.47
Measles Immunisation	-0.09	0.31	-0.28	0.78
Female School Enrollment	1.35	0.20	6.88	0.00
Female Unemployment	0.13	0.02	7.03	0.00

Conclusions & Limitations - Model 1

① **Logistic Regression Results of Model 1 (all countries)**

- Results are generally in line with hypothesis
- GDP per capital, Rural Population, CO_2 Emissions, Life Expectancy and Female School Enrollment are statistically significant
- BUT: Female Unemployment compared to total unemployment is not statistically significant

② **Predicted Probabilities of Model 1 (selected countries)**

- Direction of effect of Female School Enrollment matches initial assumptions for all case studies

Conclusions & Limitations - Model 2

3. **Linear Regression of Model 2 (countries with incidence above mean)** Significance of some variables changes:

- Female Unemployment compared to total unemployment becomes highly significant
- Effect of Female School Enrollment remains highly significant but becomes positive (!)