

# Determinants of HIV

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# Presentation Outline

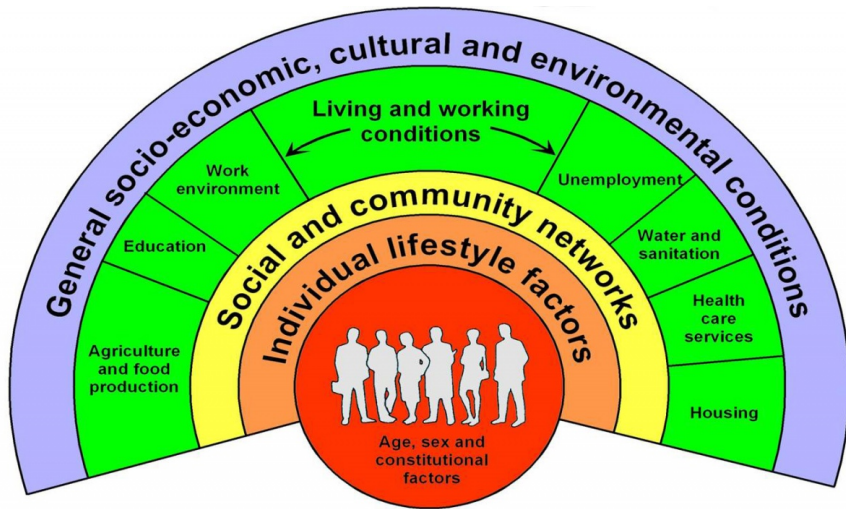
- Research Question & Motivation
- Theoretical Framework
- Methodology
- Descriptive Statistics
- Findings
- Conclusion & Limitations

# 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

# Theoretical Framework - Determinants of Health



Source: Dahlgren and Whitehead, 1991

# Methodology

## Model

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

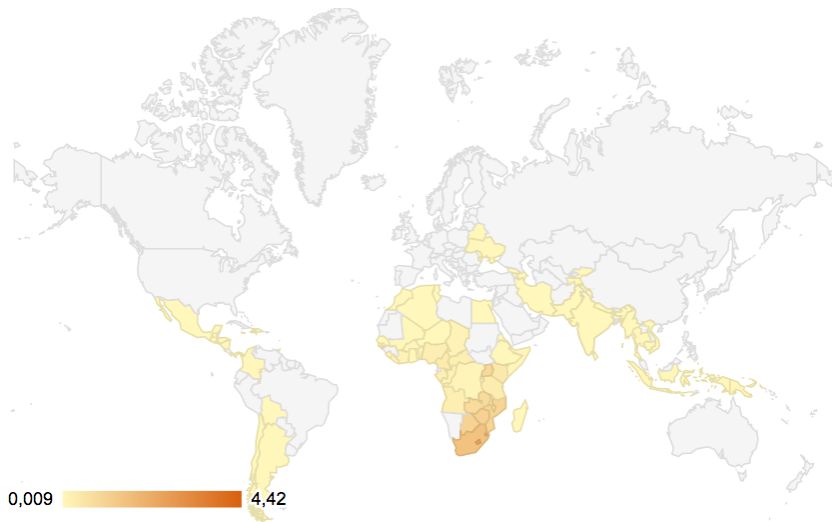
## Datasets

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

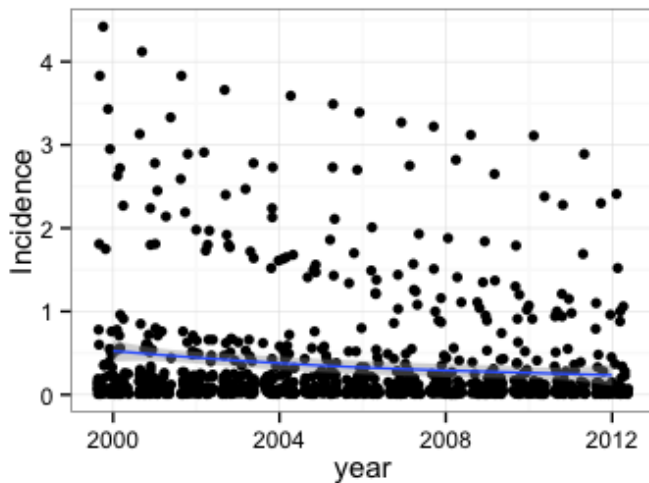
## Methodology

- Model 1: Logistic Regression & Predicted Probabilities
- Model 2: Pooled OLS Regression

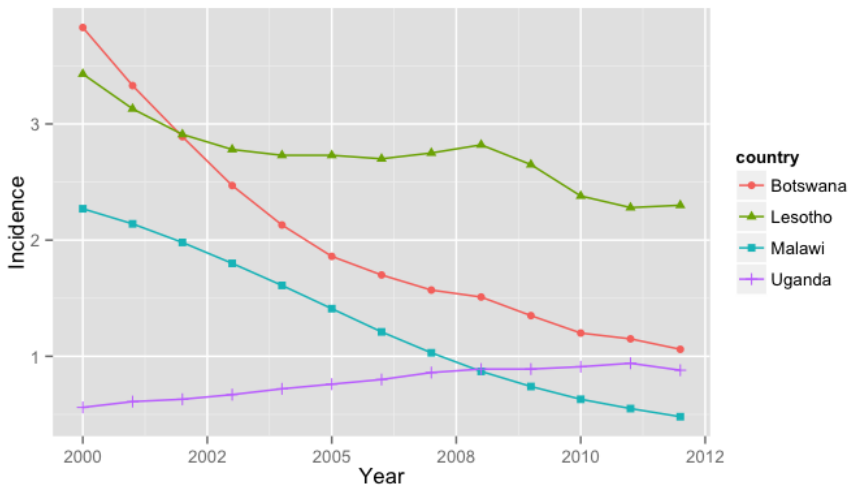
# Distribution of HIV Incidence Rates



# HIV Incidence Rates over Time

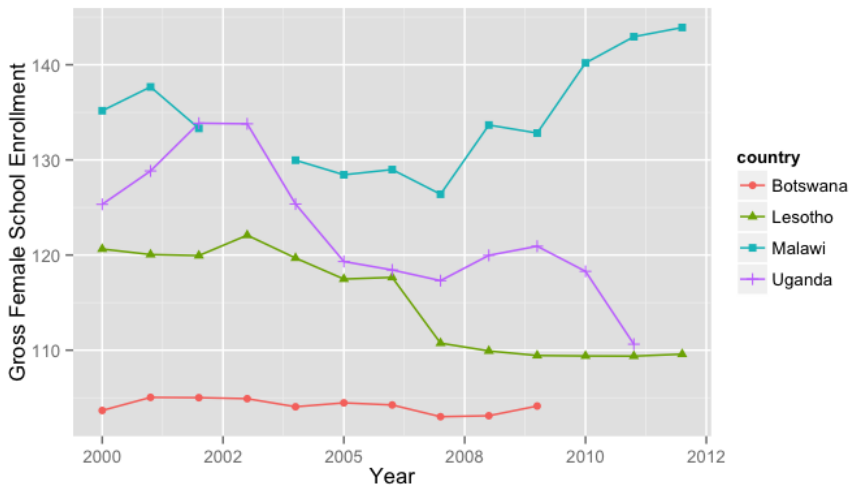


# Case Studies

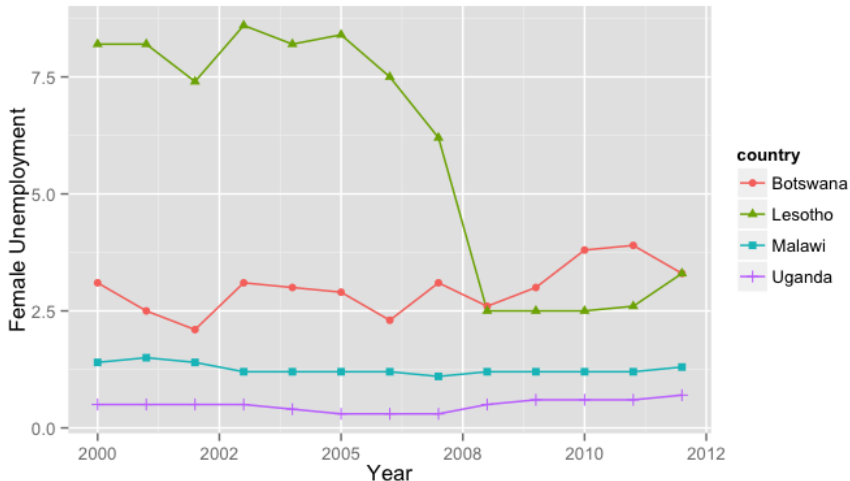




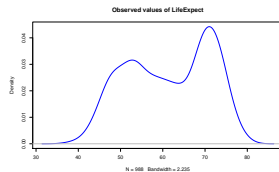
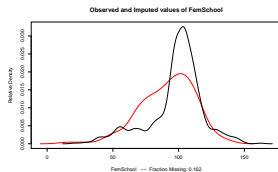
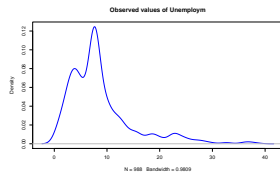
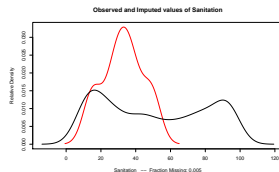
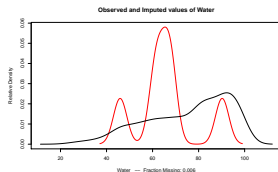
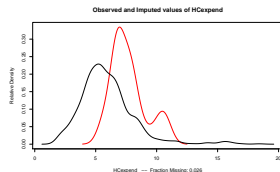
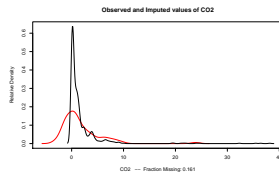
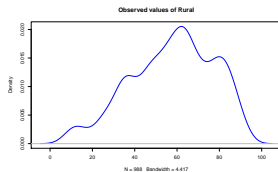
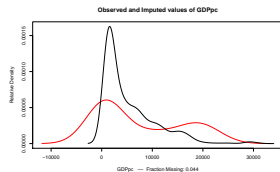
# Female School Enrollment in Selected Countries



# 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-Value
Constant	-102.54	9.48	-10.81	
GDP per capita	-0.68	0.32	-2.08	
Share of Rural Population	-0.92	0.40	-2.32	
CO2 Emissions per capita	-1.04	0.19	-5.60	
Healthcare Expenditure	0.46	0.35	1.31	
Access to Water	0.38	0.79	0.48	
Access to Sanitation	0.26	0.26	0.99	
Life Expectancy	29.72	2.42	12.26	
Immunisation against DPT	-1.02	1.24	-0.82	
Immunisation against Measles	1.32	1.32	1.01	
Female School Enrollment	-3.52	0.53	-6.71	

# Simple Linear Regression Results - Model 2

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

Variables	Coefficients	Std. Error	T-Statistic	P-Value
Constant	15.70	1.63	9.64	0.00
GDP per capita	0.14	0.08	1.87	0.06
Rural Population	0.54	0.12	4.34	0.00
CO2 Emissions	0.14	0.04	3.10	0.00
Healthcare Expenditure	-0.11	0.10	-1.14	0.26
Water Access	0.30	0.22	1.36	0.18
Sanitation Access	-0.01	0.07	-0.13	0.90
Life Expectancy	-7.01	0.29	-23.96	0.00
DPT Immunisation	0.14	0.32	0.45	0.66
Measles Immunisation	-0.05	0.34	-0.14	0.89
Female School Enrollment	1.42	0.15	9.36	0.00
Female Unemployment	0.13	0.02	6.91	0.00

# Conclusions & Limitations - Model 1

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

- Generally in line with hypothesis
- Most of the variables are statistically significant
- Only Immunisation Variables and GDP per capital are not significant

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

- Direction of effect of Female School Enrollment matches initial assumptions for all case studies
- Direction of effect of Female Unemployment does not match initial assumptions for any case study

## Conclusions & Limitations - Model 2

### ③ Linear Regression of Model 2 (countries with incidence above mean)

- Significance of some variables changes
- Female School Enrollment and Female Unemployment remain highly significant
- Effect of Female School Enrollment becomes positive (!)

### ④ Fixed Effects Regression of Model 2 (countries with incidence above mean)

- Significance of some variables changes compared to simple linear model
- Female School Enrollment and Female Unemployment become insignificant
- Immunisation rates for DPT & Measles become highly significant (!)