

# 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

# Methodology

## Model

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

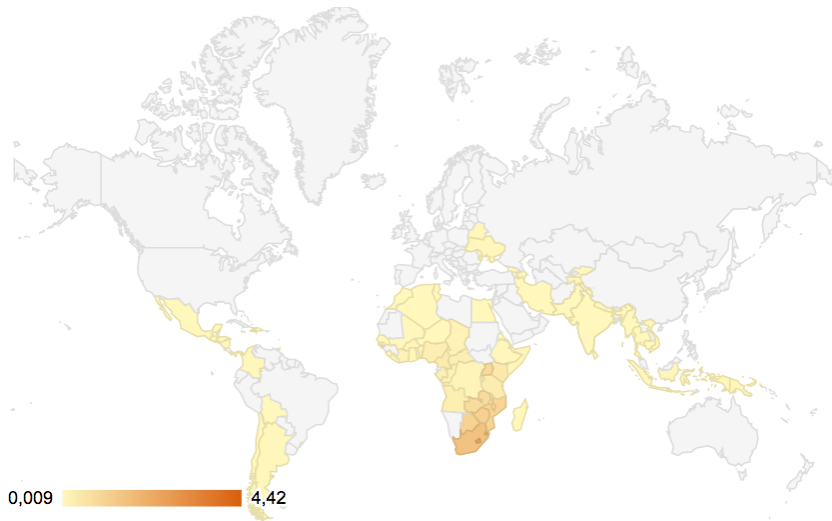
## Datasets

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

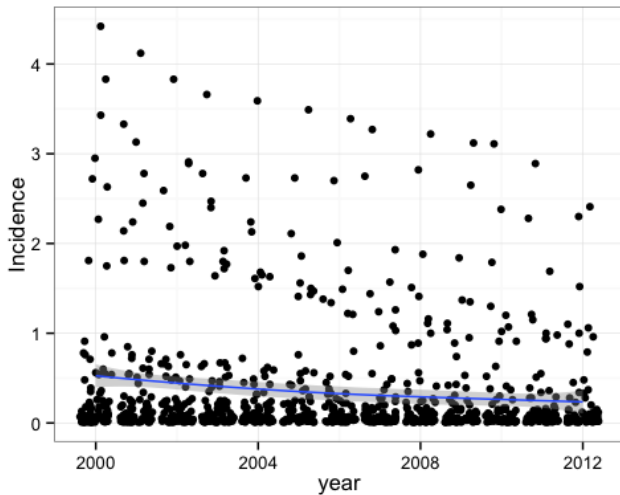
## Methodology

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

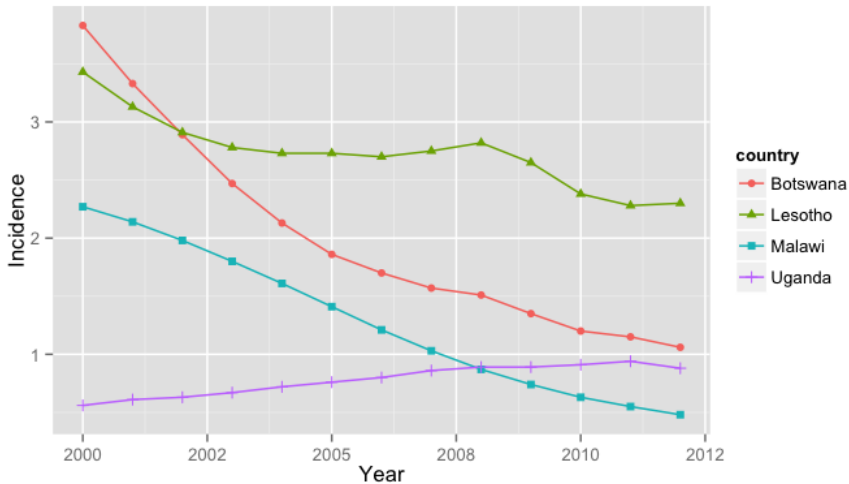
# Distribution of HIV Incidence Rates



# HIV Incidence Rates over Time

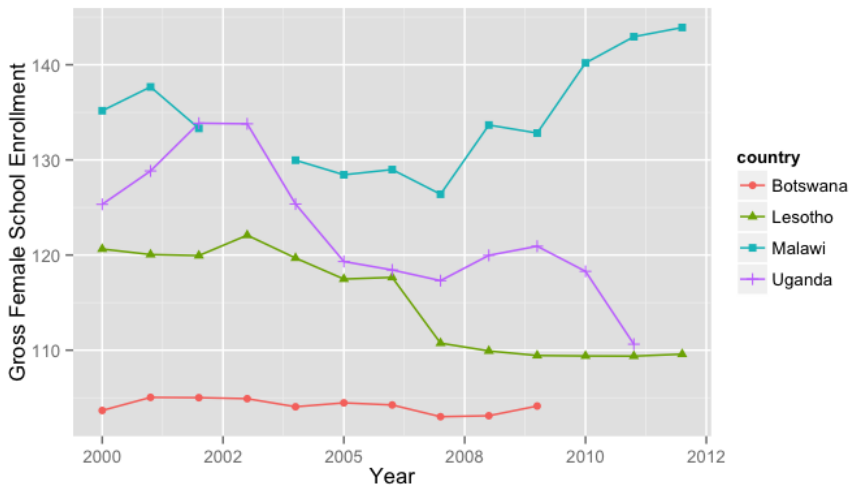


# Case Studies

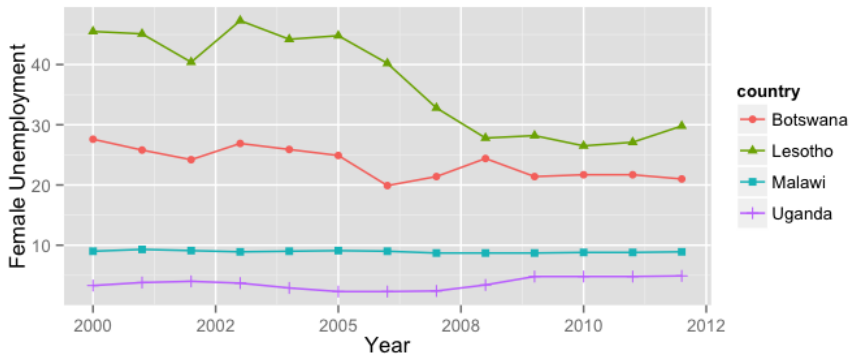




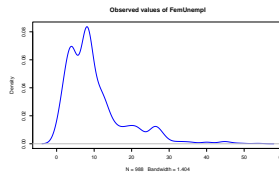
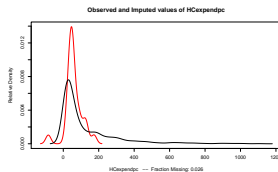
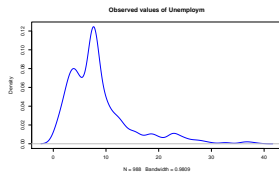
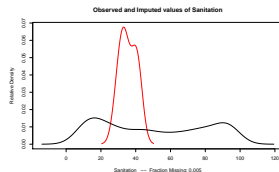
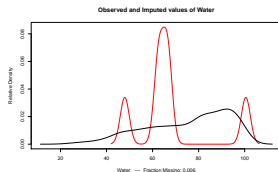
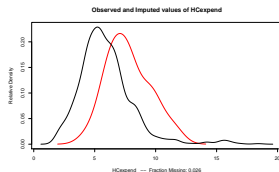
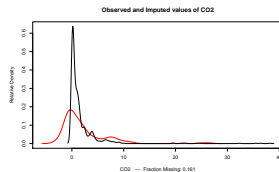
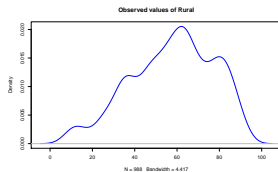
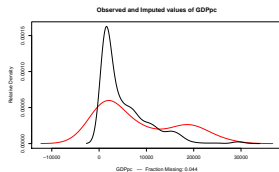
# Female Schooling in Selected Countries



# Female Unemployment in Selected Countries



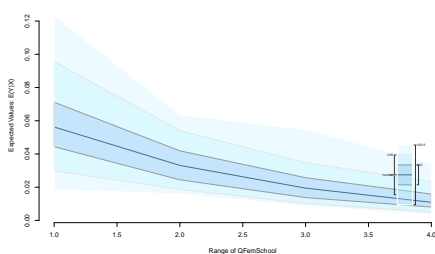
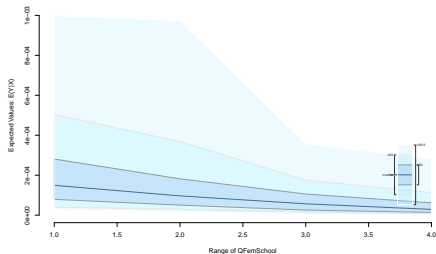
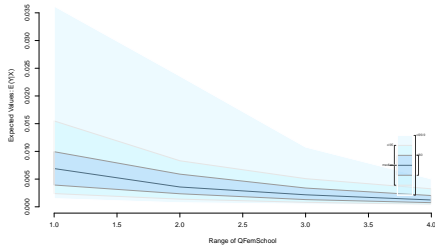
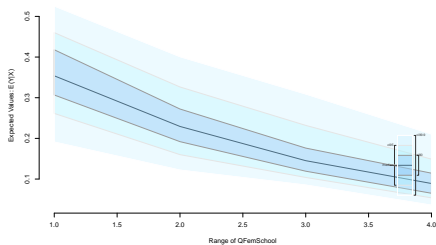
# Imputed Missing Values



# Logistic Regression Results - Model 1

	Value	Std. Error	t-stat	p-value
(Intercept)	-100.0658200	8.7731503	-11.4059165	0.0000000
IGDPpc	-0.7098597	0.2969177	-2.3907621	0.0170115
IRural	-1.0431793	0.4054256	-2.5730477	0.0100864
ICO2	-1.0124626	0.1788443	-5.6611404	0.0000000
IHCexpend	0.4799677	0.3382840	1.4188308	0.1560056
IWater	0.2669760	0.6738892	0.3961719	0.6922182
ISanitation	0.2484272	0.2324062	1.0689351	0.2852966
ILifeExpect	29.5816927	2.2998660	12.8623546	0.0000000
IDPT	-1.3036408	1.1552511	-1.1284480	0.2591872
IMeasles	1.5018580	1.2248119	1.2261949	0.2201886
IFemSchool	-3.5585553	0.5283632	-6.7350547	0.0000000

# Predicted Probabilities - Female School Enrollment



## Simple Linear Regression Results - Model 2

	Value	Std. Error	t-stat	p-value
(Intercept)	7.9671918	2.0278871	3.9288142	0.0001532
IGDPpc	0.3814097	0.0671604	5.6790884	0.0000000
IRural	0.2407790	0.1638698	1.4693309	0.1422886
ICO2	0.0421327	0.0351749	1.1978058	0.2312844
IHCexpend	0.5417560	0.1239003	4.3725163	0.0000156
IWater	-0.4904405	0.2169094	-2.2610382	0.0244338
ISanitation	-0.0522290	0.0812559	-0.6427719	0.5204834
ILifeExpect	-4.2624984	0.4202600	-10.1425270	0.0000000
IDPT	1.0234280	0.2810850	3.6409910	0.0002725
IMeasles	-0.3220961	0.2824009	-1.1405630	0.2541051
IFemSchool	0.6816933	0.1897326	3.5929156	0.0011933

# 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 Schooling 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 (!)