

Determinants of HIV

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Outline

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

Motivation and Research Question

- 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

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

Methodology and Dataset

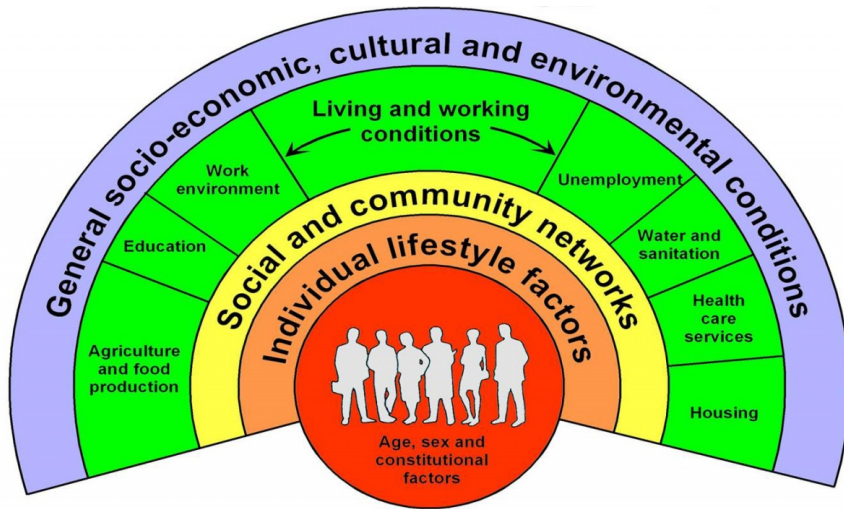
Methodology

- We will. . .

Datasets

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

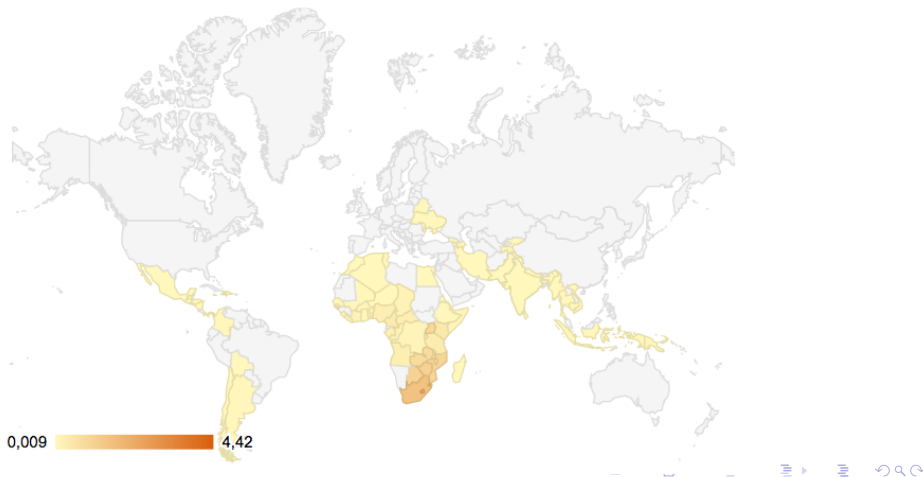
Theoretical Framework



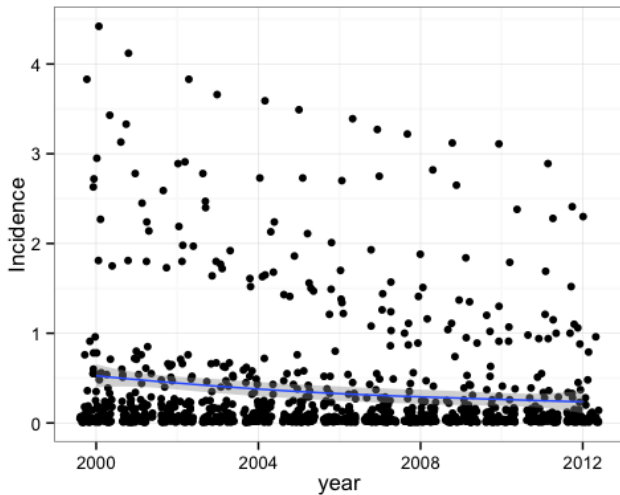
Source: Dahlgren and Whitehead, 1991

Distribution of HIV Incidence Rate Worldwide (2012)

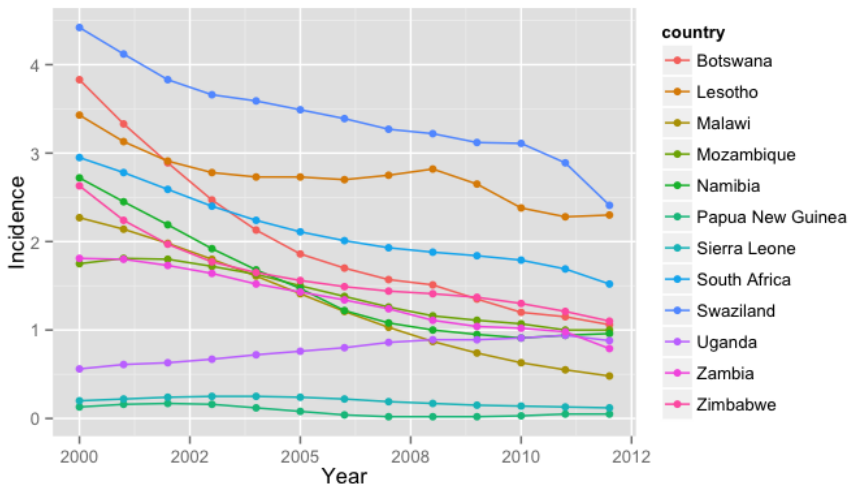
Incidence



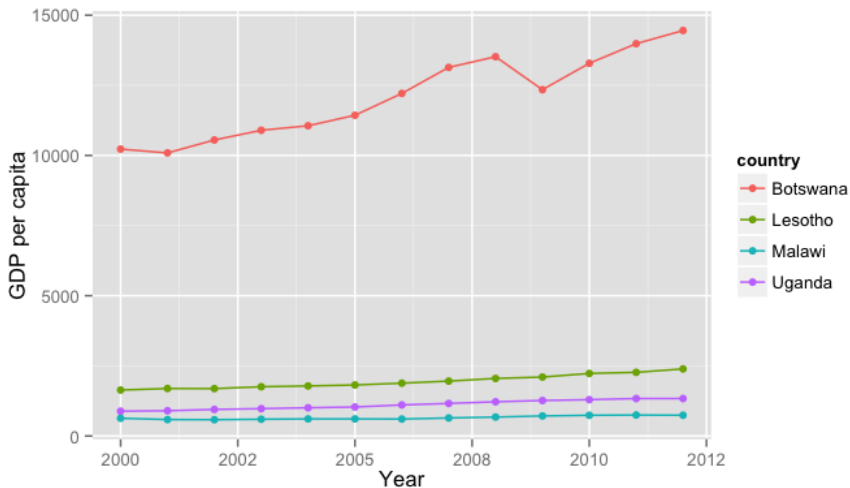
HIV Incidence Rates over Time



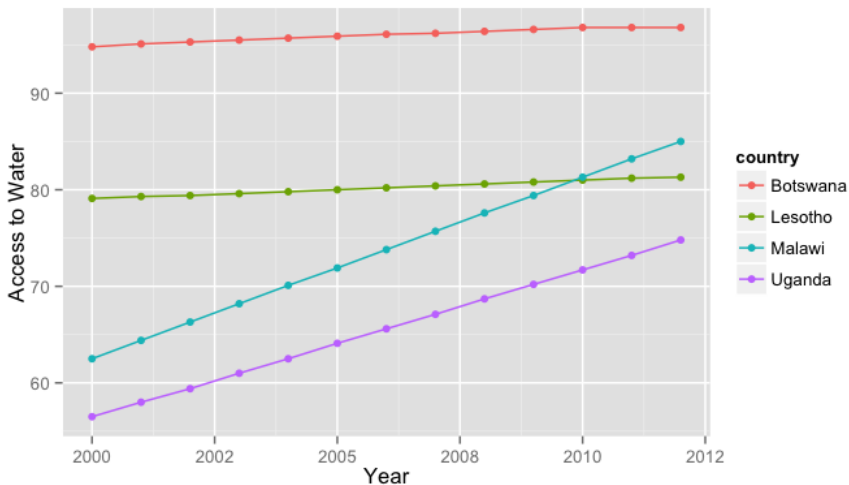
Interesting Cases for HIV Incidence Rates



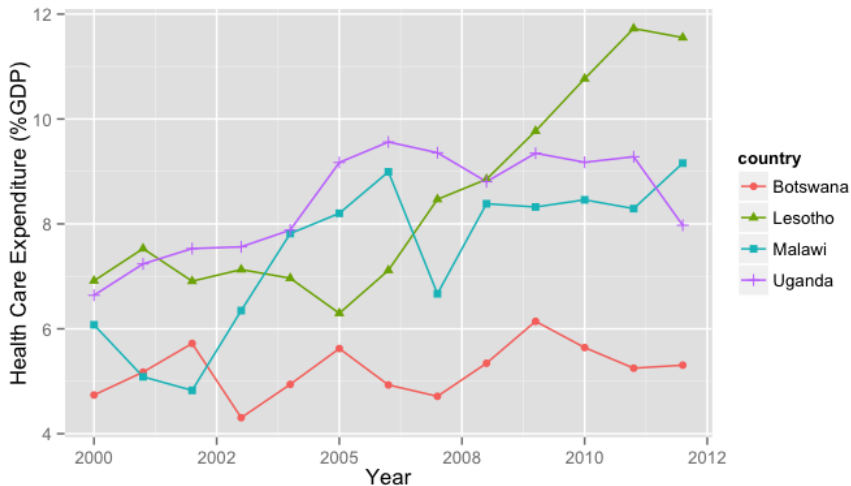
GDP per capita in Selected Countries



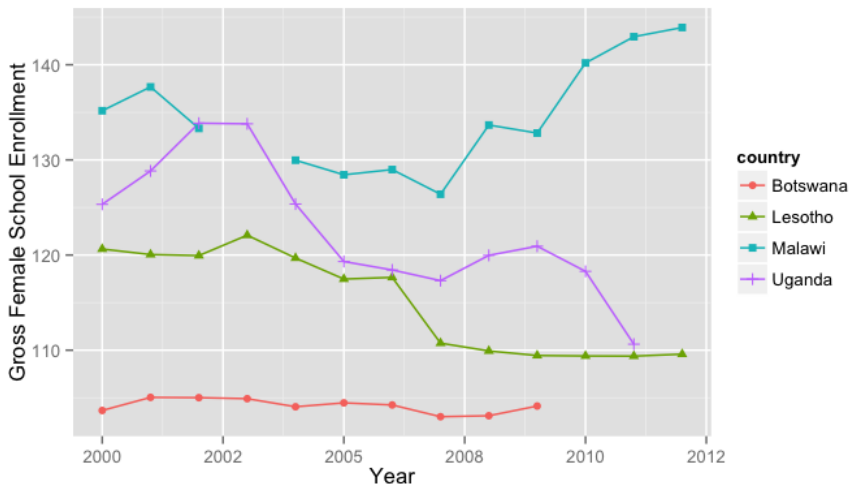
Access to Water in Selected Countries



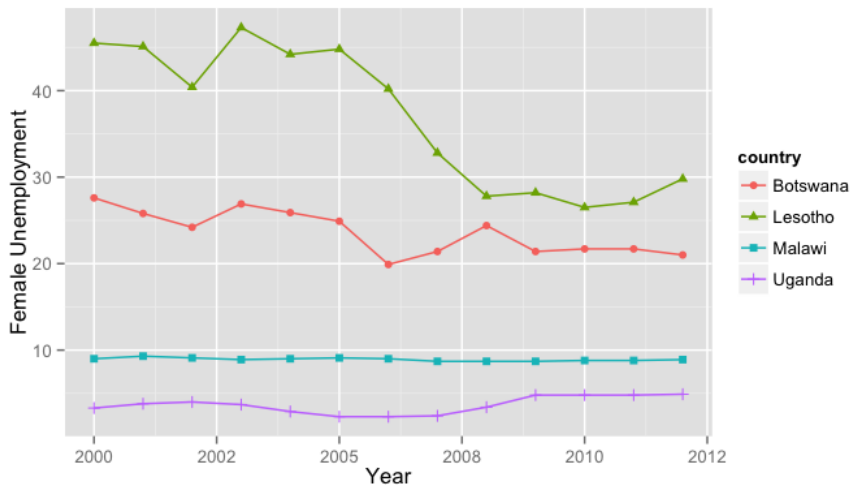
Health Care Expenditure in Selected Countries



Female School Enrollment in Selected Countries



Female Unemployment in Selected Countries



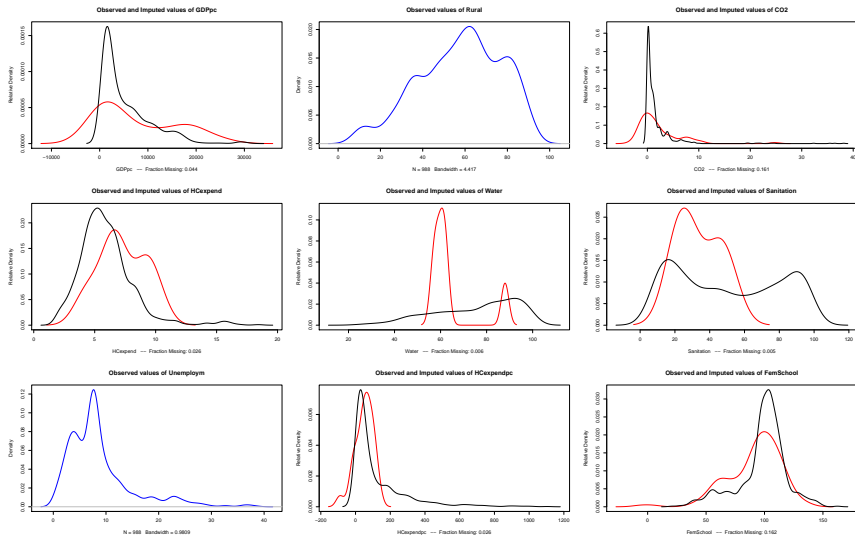
The Model

To answer our research question we will estimate the following equation:

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

Where I stands for HIV/AIDS incidence, SE stands for socioeconomic factors, WLC stands for working and living conditions, SCN stands for social and community networks and ILF stands for individual lifestyle factors.

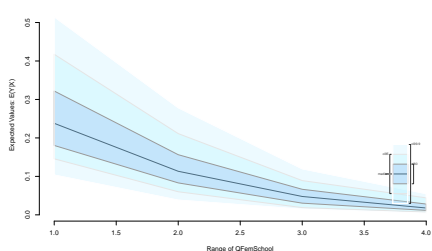
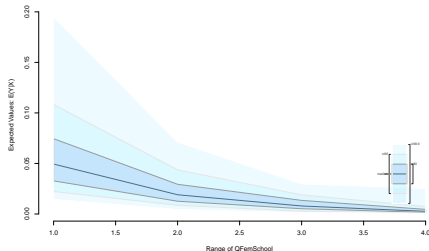
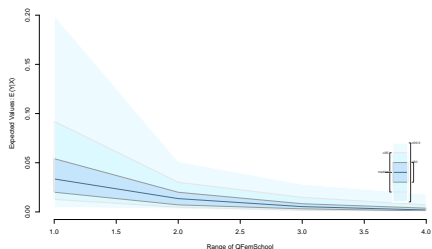
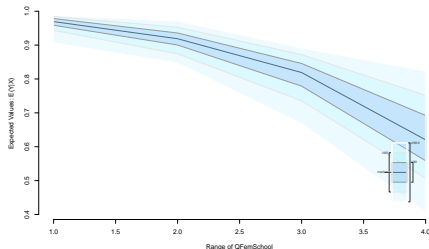
Imputed missing values



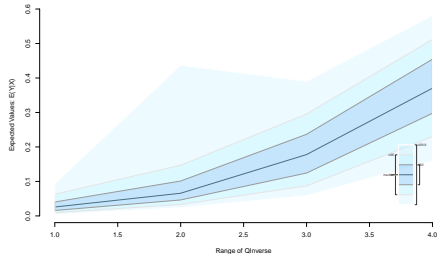
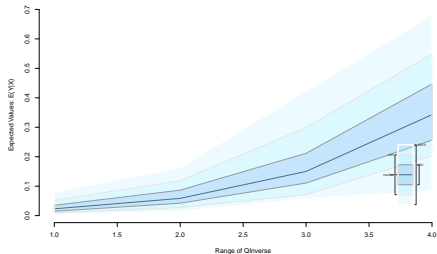
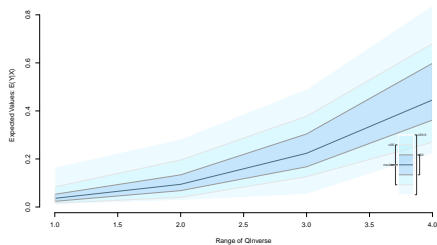
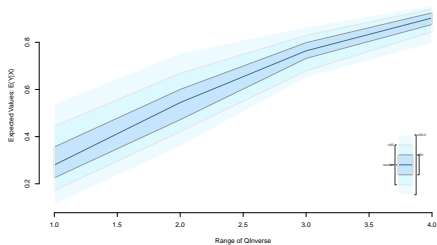
Logistic Regression Results - Model 1

	Value	Std. Error	t-stat	p-value
(Intercept)	-37.2318565	7.2097241	-5.1641166	0.0000007
IGDPpc	0.3244127	0.3608056	0.8991343	0.3716220
IRural	-2.5196137	0.5722819	-4.4027495	0.0000169
ICO2	-0.5582090	0.2200183	-2.5371027	0.0146129
IHCexpend	0.8395297	0.3920419	2.1414284	0.0328621
IWater	-2.4499604	0.8585407	-2.8536333	0.0044625
ISanitation	0.9311456	0.2853445	3.2632329	0.0011467
ILifeExpect	19.0777821	1.8387179	10.3755895	0.0000000
IDPT	-0.7711084	1.0277923	-0.7502570	0.4535281
IMeasles	1.6957236	1.1831051	1.4332823	0.1528214
Inverse	1.8459208	0.2681605	6.8836413	0.0000000
IFemSchool	-5.6413489	0.7659621	-7.3650501	0.0000000

Predicted Probabilities - Female School Enrollment



Predicted Probabilities - Female Unemployment



Simple Linear Regression Results - Model 2

	Value	Std. Error	t-stat	p-value
(Intercept)	7.2476138	1.5564459	4.6565152	0.0000032
IGDPpc	0.0103865	0.0739803	0.1403961	0.8883808
IRural	0.2146222	0.1404840	1.5277338	0.1271063
ICO2	0.0990638	0.0305600	3.2416198	0.0012023
IHCexpend	0.4024319	0.1166447	3.4500649	0.0009062
IWater	-0.3343705	0.1802732	-1.8547986	0.0637893
ISanitation	0.0755902	0.0706165	1.0704323	0.2845522
ILifeExpect	-3.4399751	0.3442010	-9.9940884	0.0000000
IDPT	0.5828432	0.2448527	2.3803832	0.0173016
IMeasles	-0.0773341	0.2422469	-0.3192367	0.7495504
Inverse	-0.4270600	0.0489338	-8.7273011	0.0000000
IFemSchool	0.5856315	0.1455848	4.0226145	0.0000768

Fixed Effects Regression Results - Model 2

	Value	Std. Error	
(Intercept)	-0.9337696	3.5227446	-0.26
IGDPpc	0.0419460	0.1413283	0.29
IRural	3.0654551	0.5965558	5.13
ICO2	0.0708289	0.0485942	1.45
IHCexpend	-0.0307489	0.1256203	-0.24
IWater	-1.3592691	0.3528485	-3.85
ISanitation	-0.5197999	0.3287784	-1.58
ILifeExpect	-0.7308613	0.3305467	-2.21
IDPT	0.8221747	0.2002093	4.10
IMeasles	-0.7232341	0.1947321	-3.71
Inverse	-0.1065048	0.0997376	-1.06
IFemSchool	-0.0403862	0.1643120	-0.24
as.factor(country)Burundi	-3.8278604	0.5262778	-7.27
as.factor(country)Cameroon	-1.8401554	0.2607421	-7.05
as.factor(country)Central African Republic	2.7074452	0.4208504	6.44

Conclusions and 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 and 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 (!)