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

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

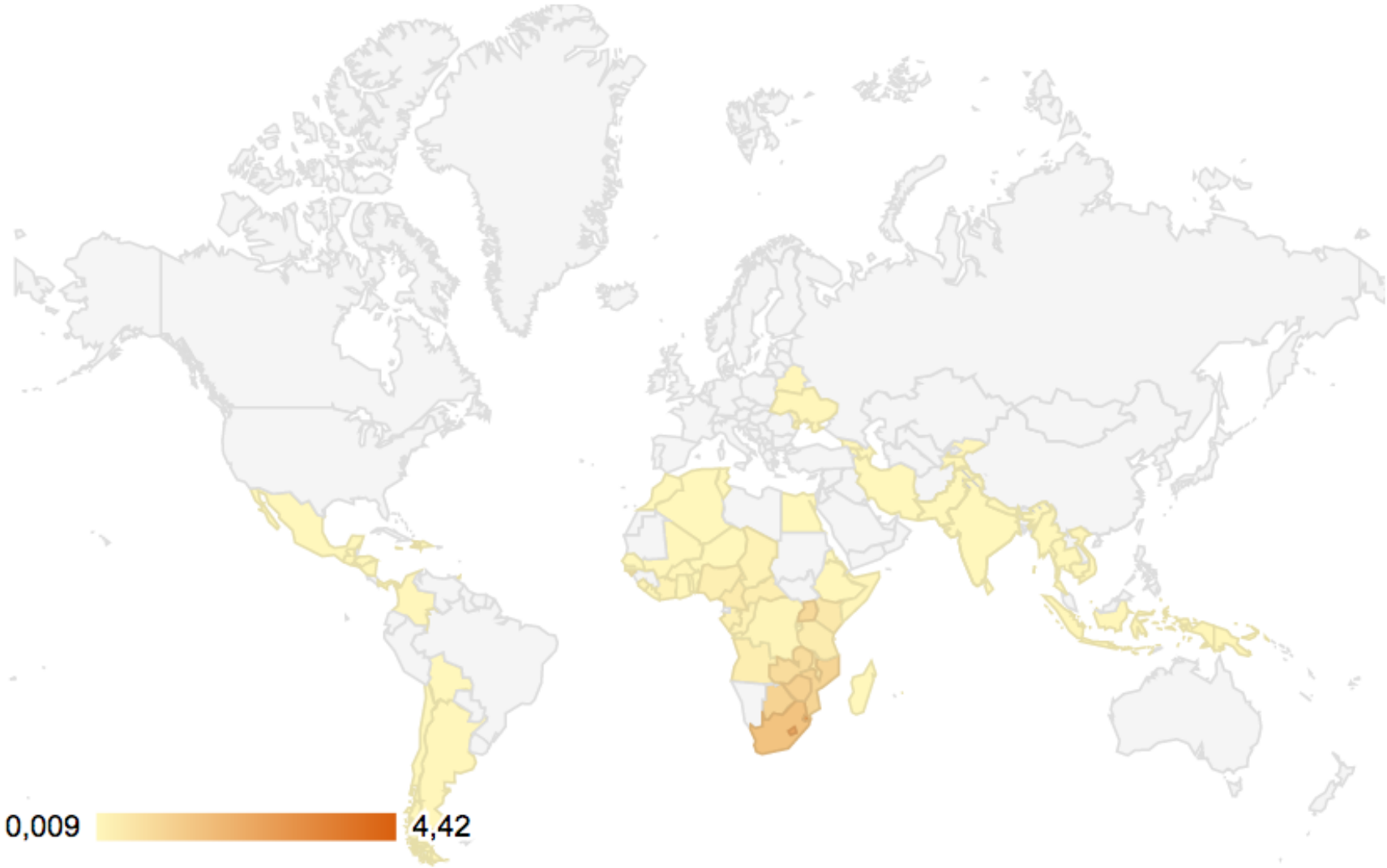
Datasets

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

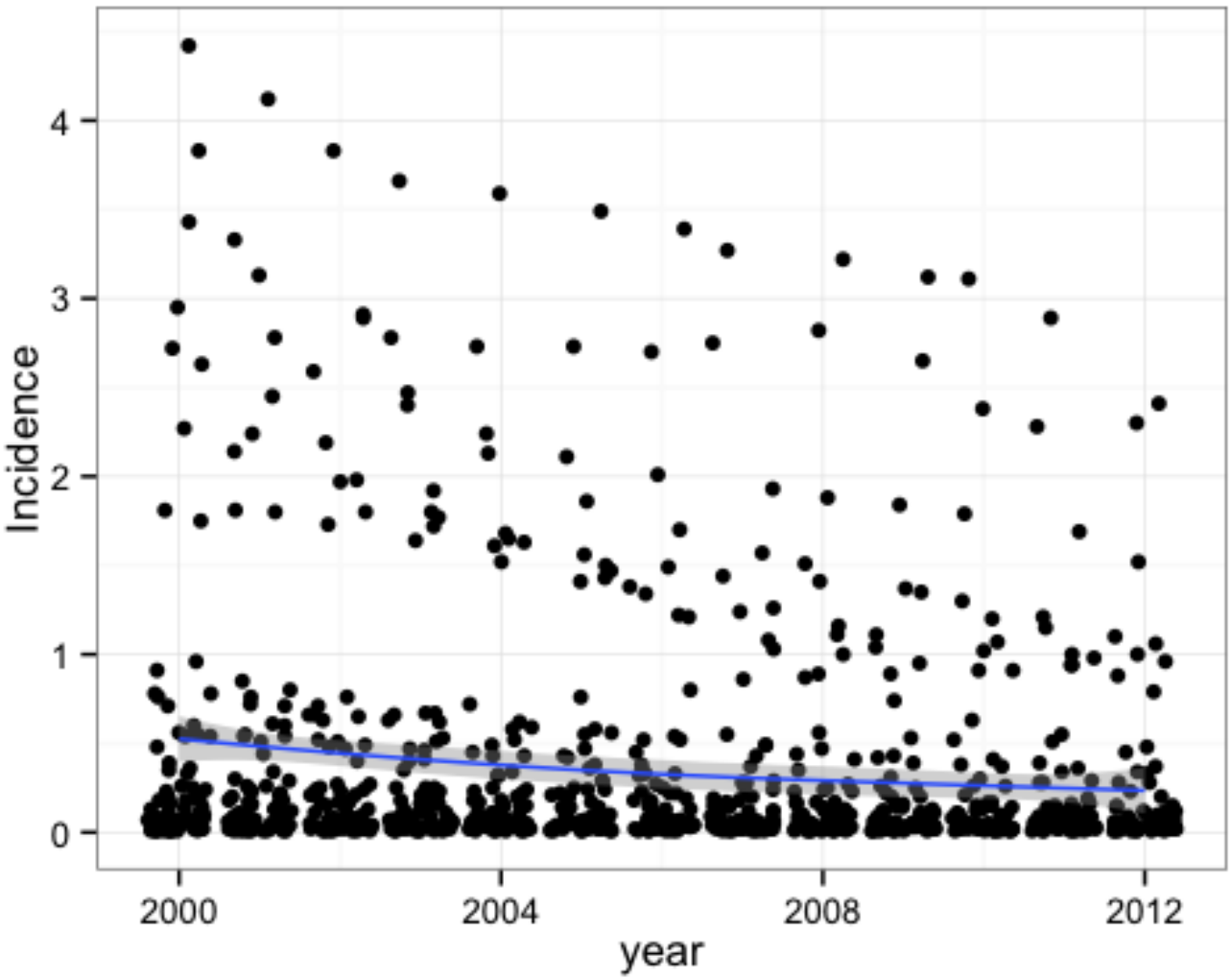
Methodology

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

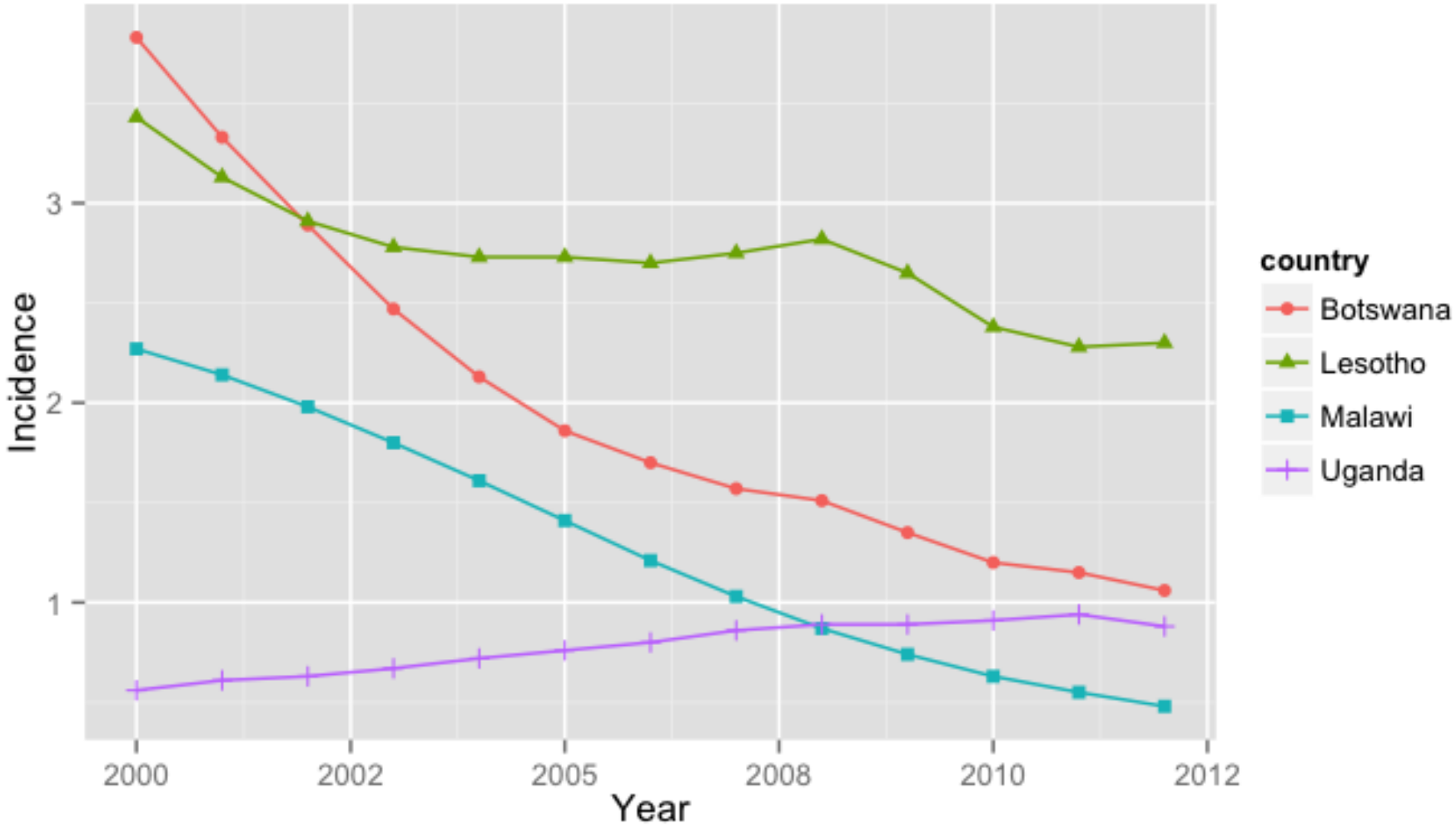
Distribution of HIV Incidence Rates



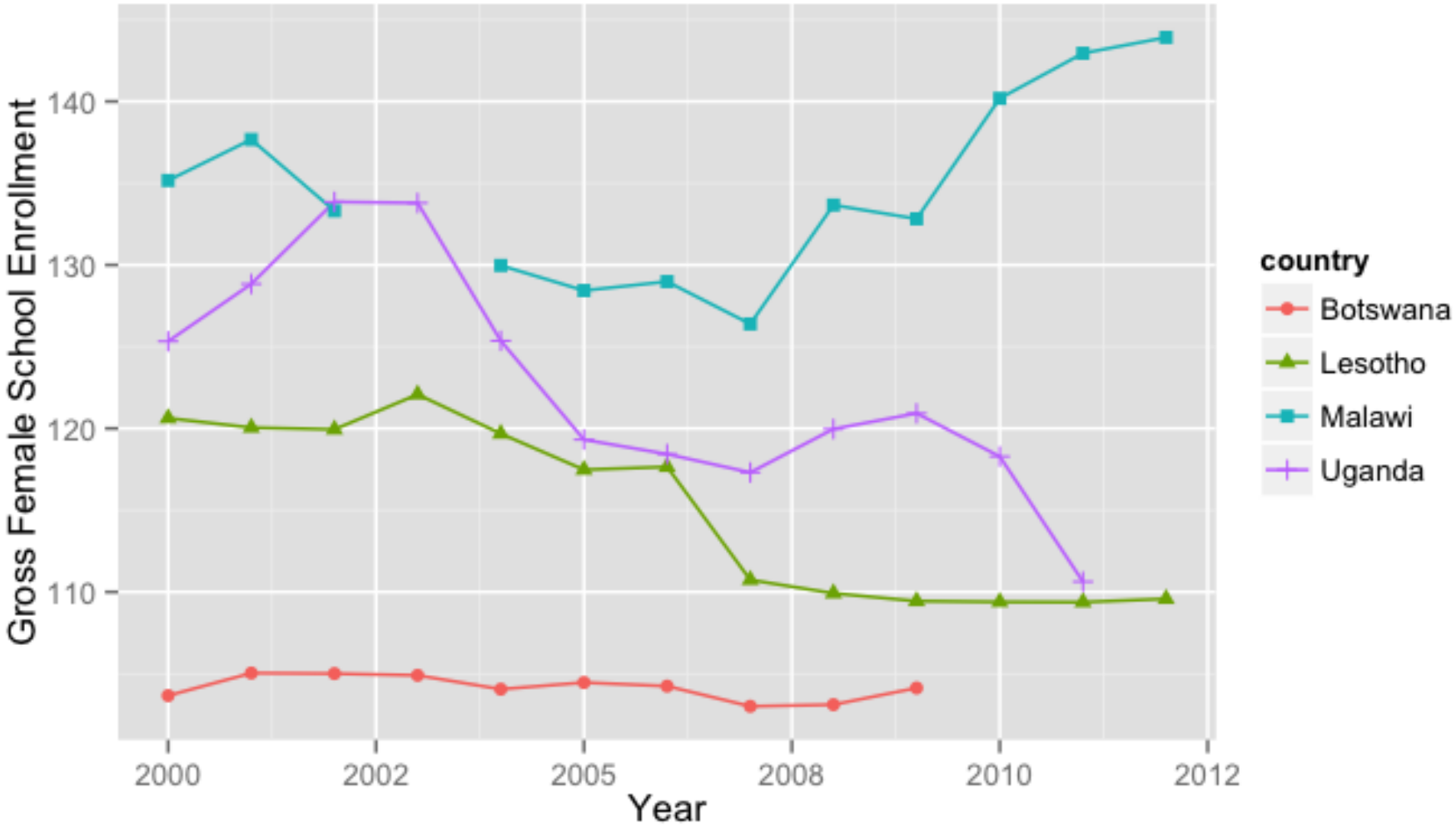
HIV Incidence Rates over Time



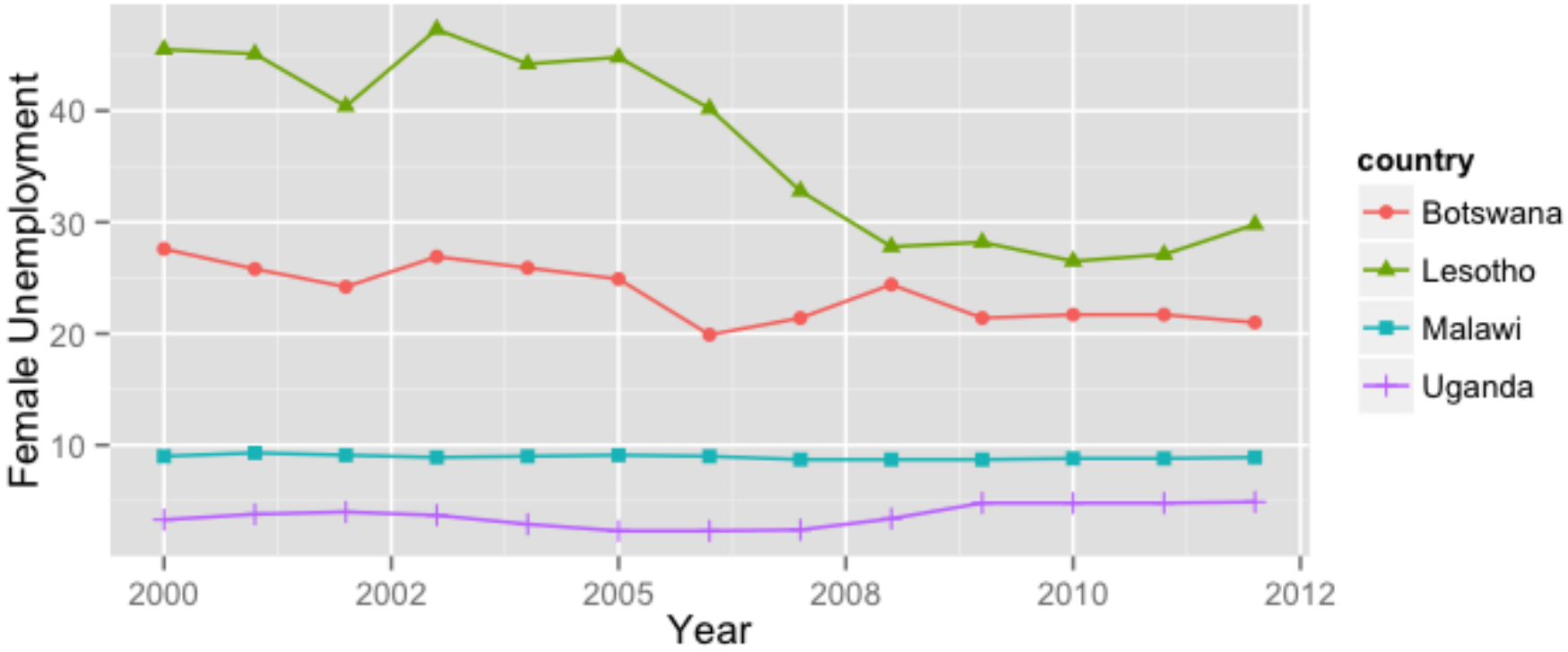
Case Studies



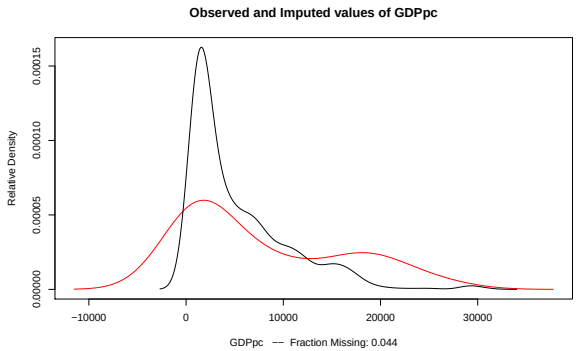
Female Schooling in Selected Countries

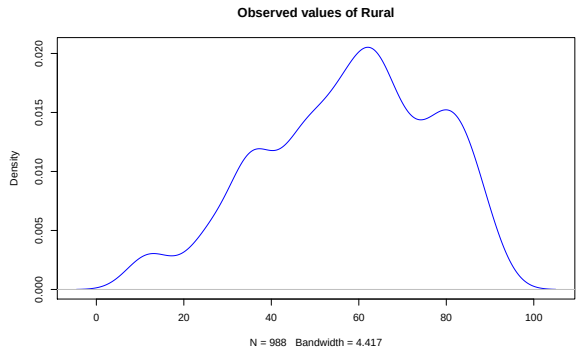


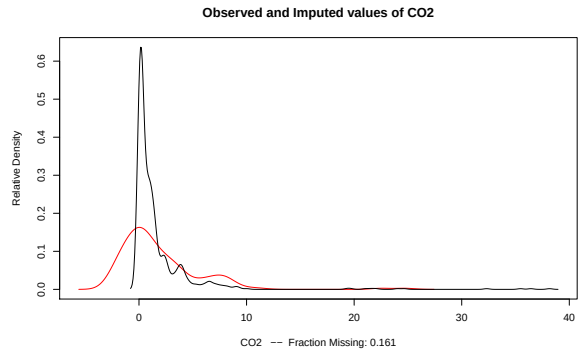
Female Unemployment in Selected Countries

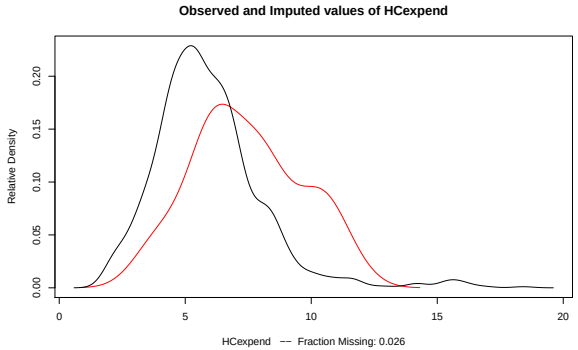


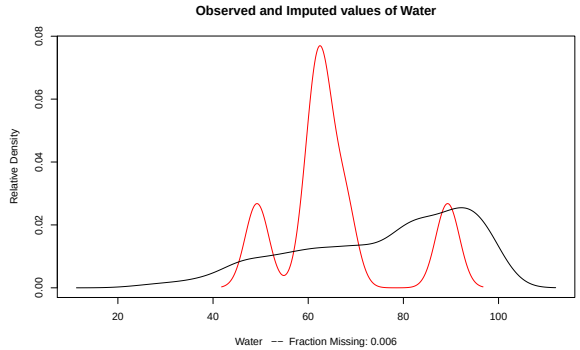
Imputed Missing Values

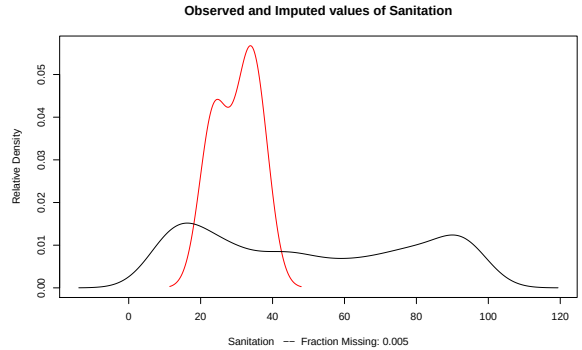


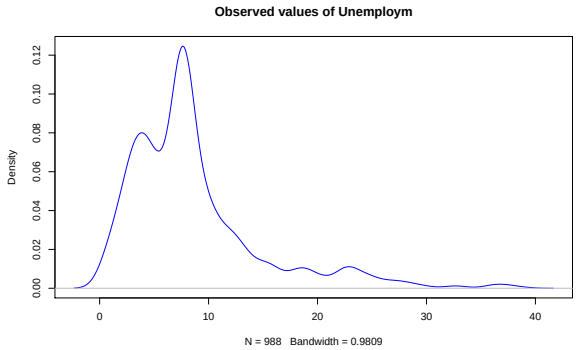


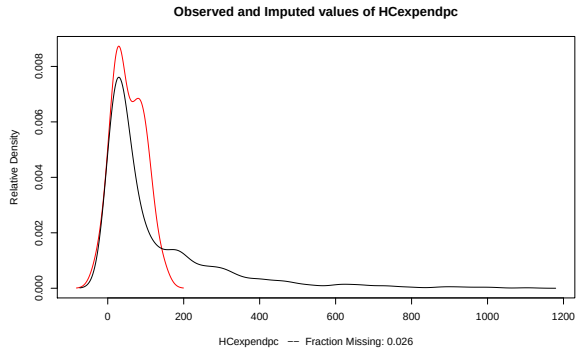


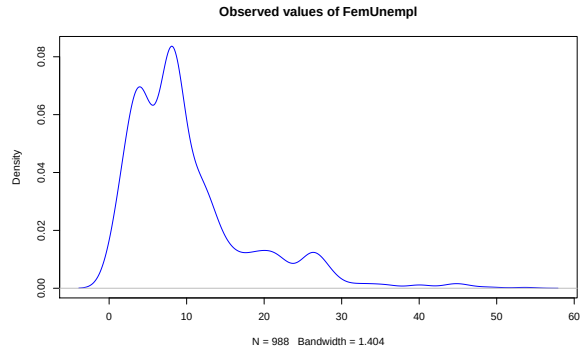








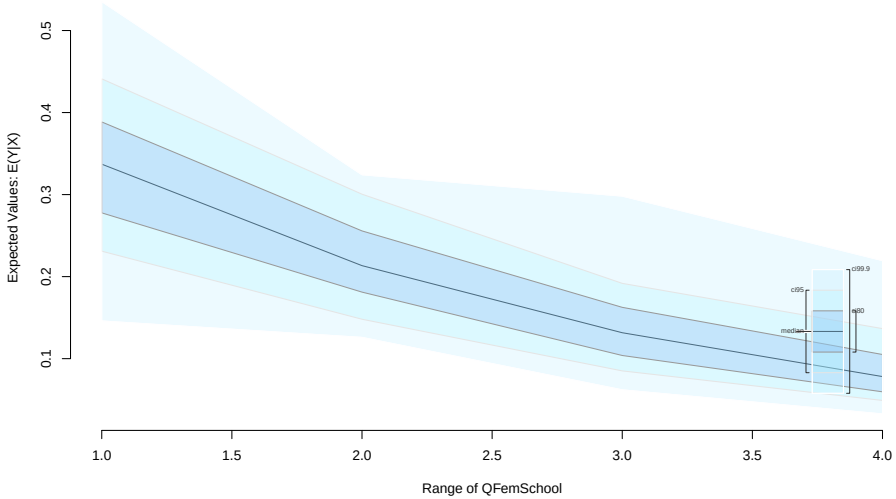


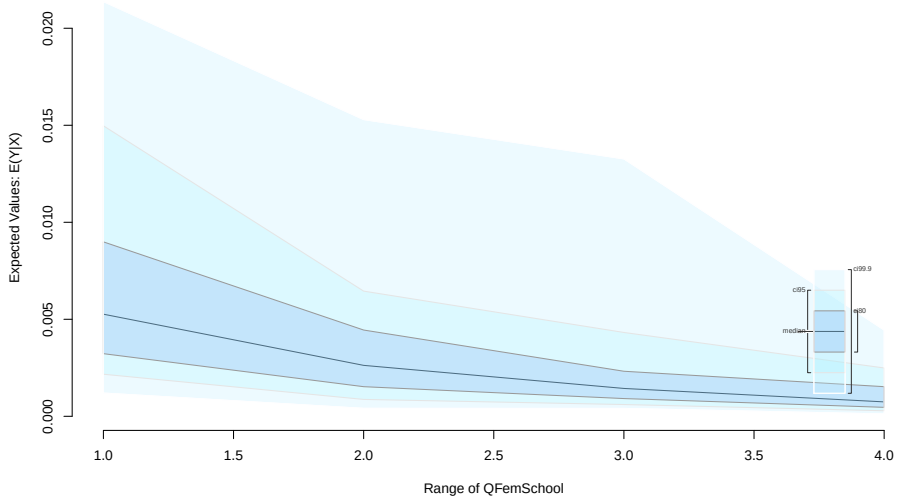


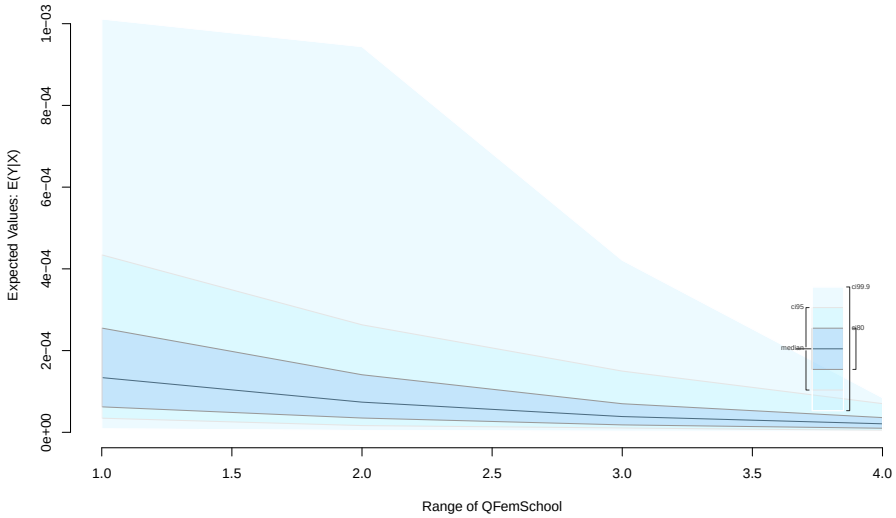
Logistic Regression Results - Model 1

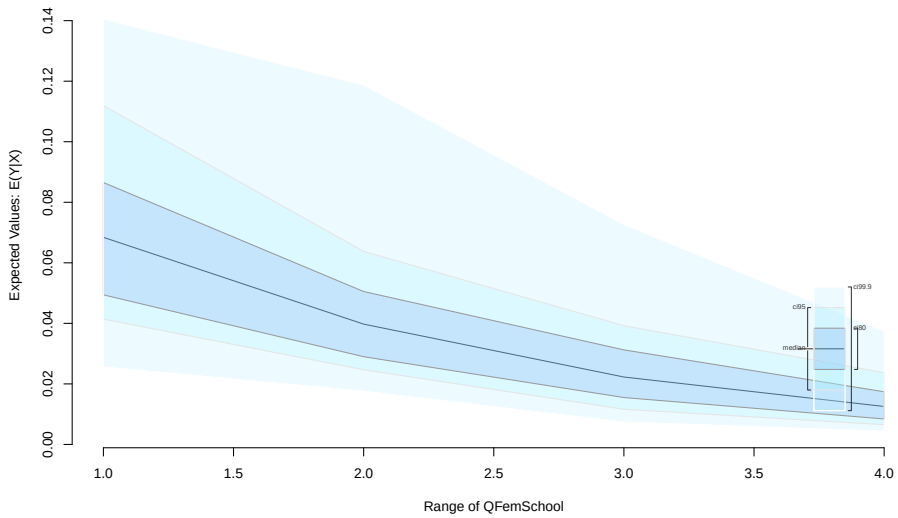
	Value	Std. Error	t-stat	p-value
(Intercept)	-102.8328896	10.1401136	-10.1411970	0.0000000
lGDPpc	-0.8666744	0.3513137	-2.4669532	0.0178921
lRural	-1.1051423	0.4220822	-2.6183108	0.0090428
lCO2	-1.0000722	0.2014524	-4.9643090	0.0000033
lHCexpend	0.4006934	0.3434944	1.1665210	0.2434682
lWater	0.6052229	0.7397699	0.8181232	0.4158279
lSanitation	0.1774050	0.2447839	0.7247414	0.4693113
lLifeExpect	30.2692083	2.5759015	11.7509184	0.0000000
lDPT	-1.1051655	1.1718517	-0.9430933	0.3457038
lMeasles	1.5530267	1.2579551	1.2345645	0.2172612
lFemSchool	-3.7192381	0.5813808	-6.3972500	0.0000001

Predicted Probabilities - Female School Enrollment









Simple Linear Regression Results - Model 2

	Value	Std. Error	t-stat	p-value
(Intercept)	8.0026290	1.8574376	4.3084241	0.0000174
lGDPpc	0.3917370	0.0736220	5.3209210	0.0000005
lRural	0.2180546	0.1618538	1.3472322	0.1781899
lCO2	0.0365209	0.0402639	0.9070371	0.3681464
lHCexpend	0.5379160	0.1219298	4.4116877	0.0000115
lWater	-0.5118382	0.2090964	-2.4478576	0.0144281
lSanitation	-0.0533250	0.0799193	-0.6672359	0.5046362
lLifeExpect	-4.2662724	0.3743450	-11.3966317	0.0000000
lDPT	1.0397149	0.2795322	3.7194818	0.0001998
lMeasles	-0.3432435	0.2798293	-1.2266174	0.2199724
lFemSchool	0.7045903	0.1627211	4.3300481	0.0000197

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 (!)