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

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

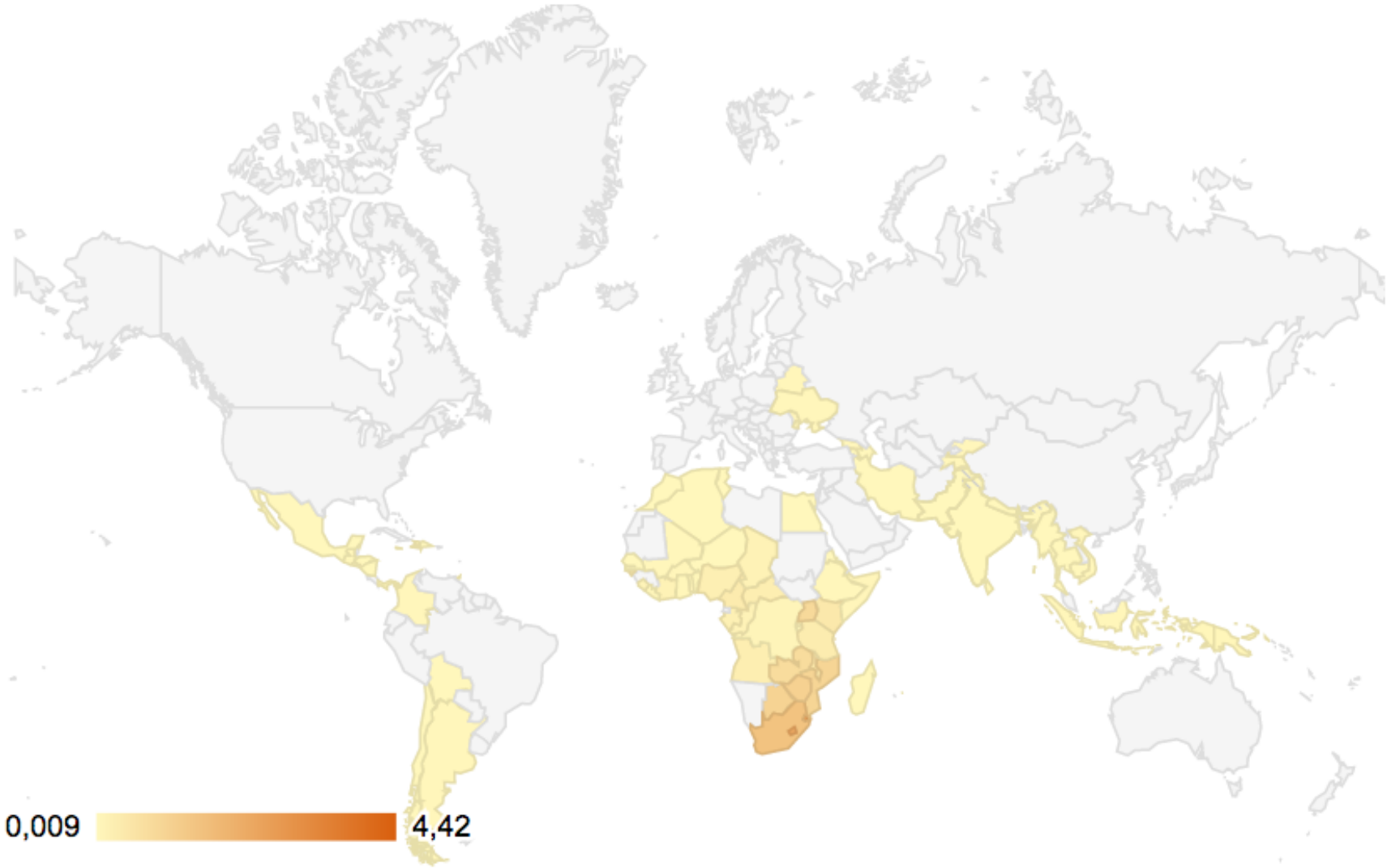
Datasets

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

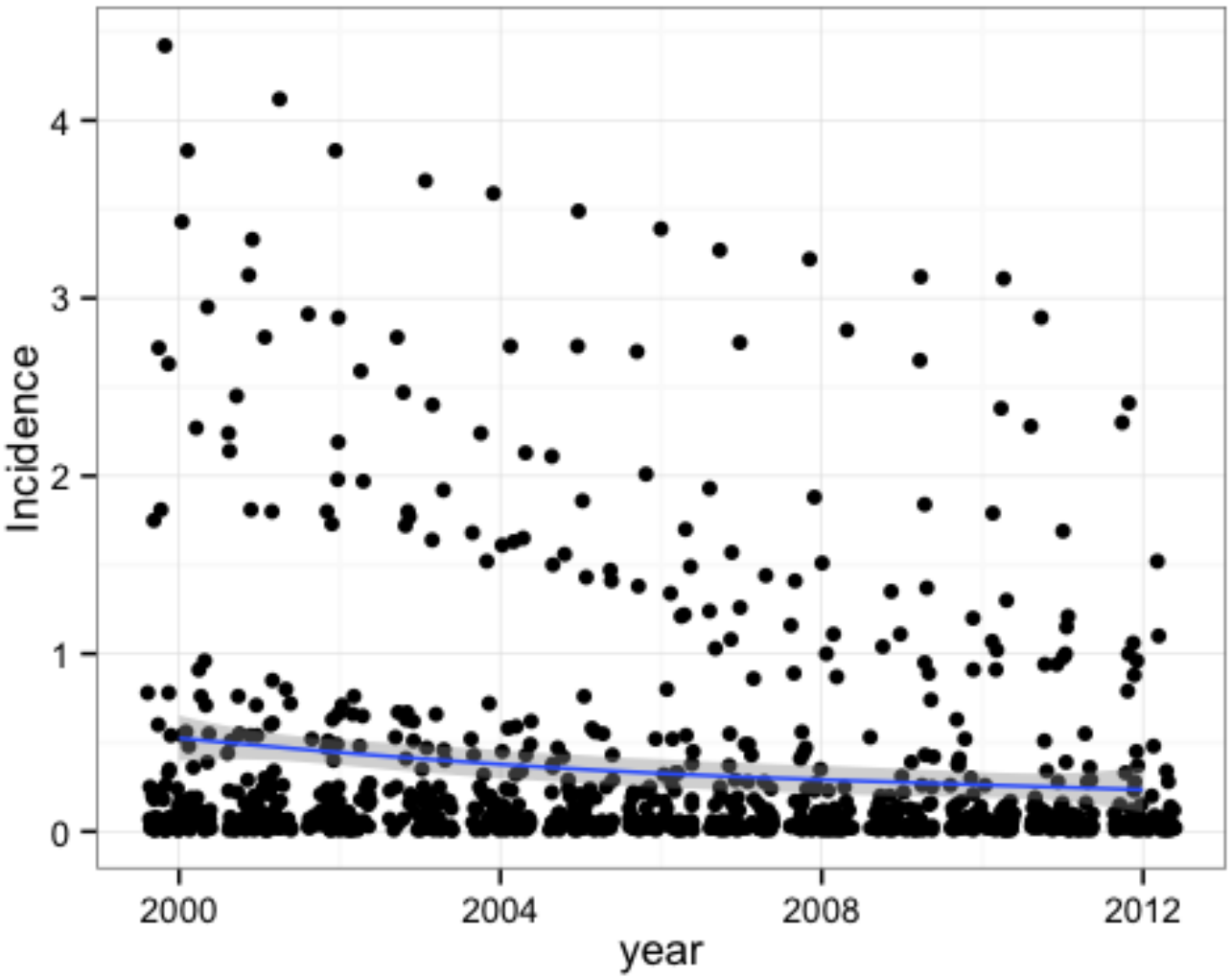
Methodology

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

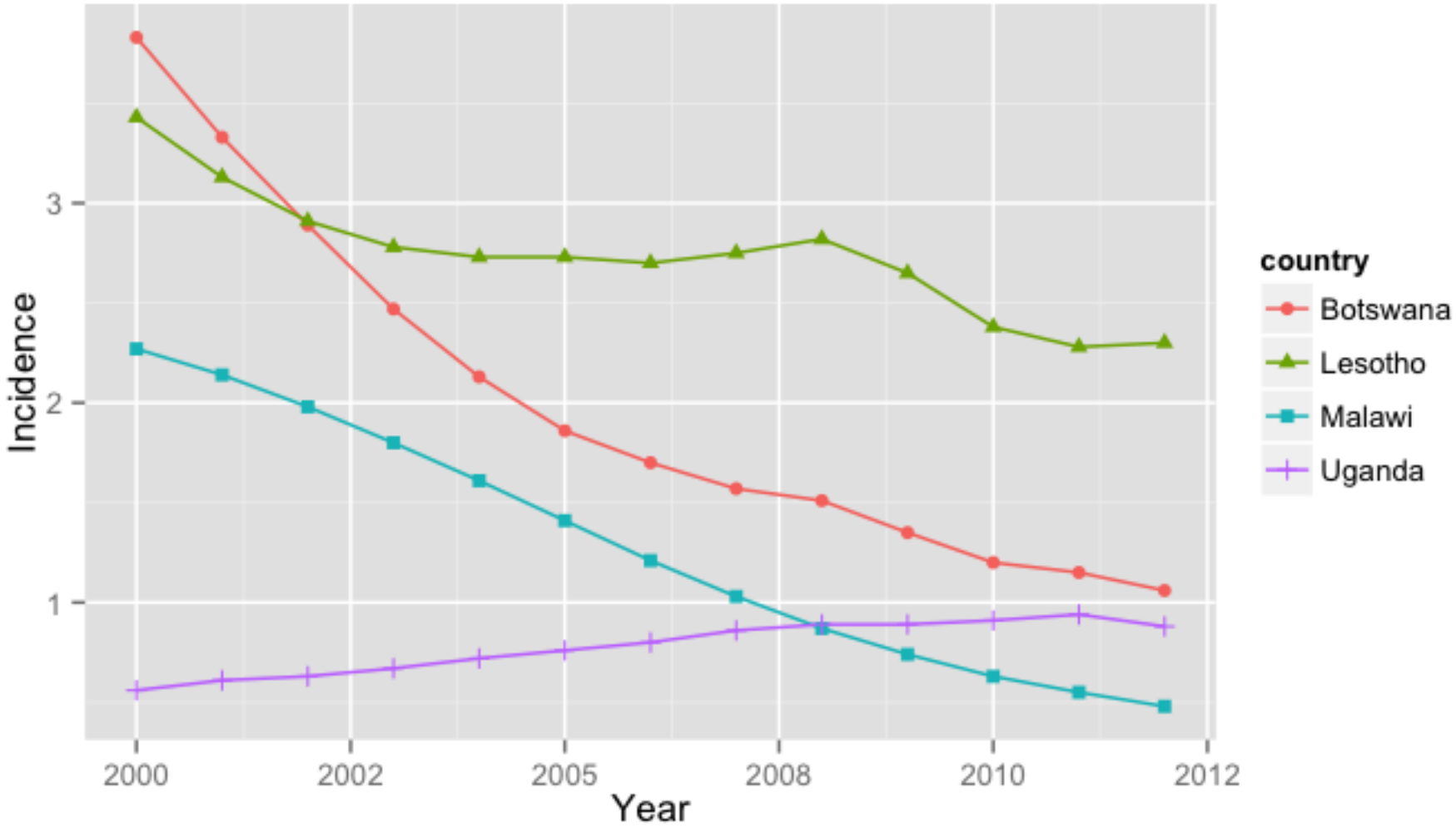
Distribution of HIV Incidence Rates



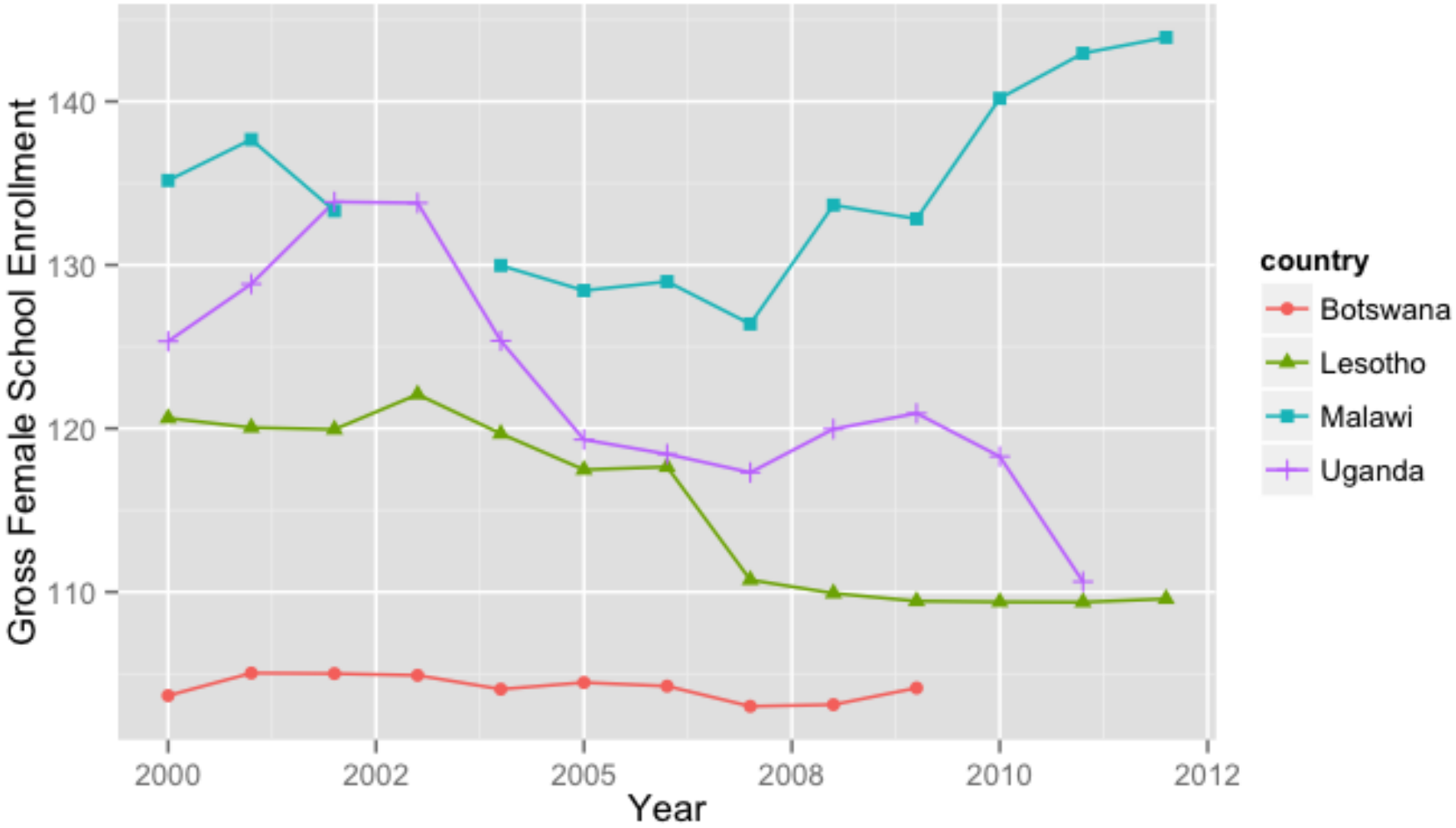
HIV Incidence Rates over Time



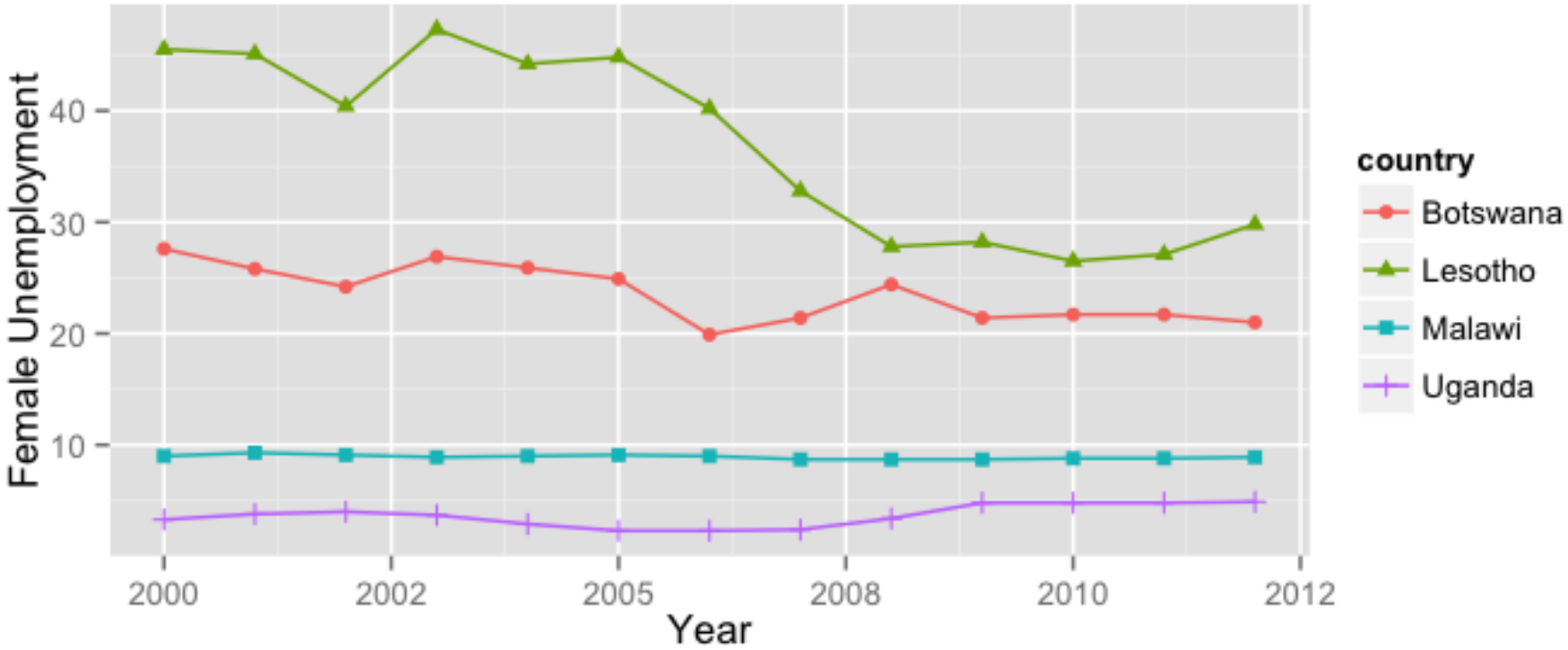
Case Studies



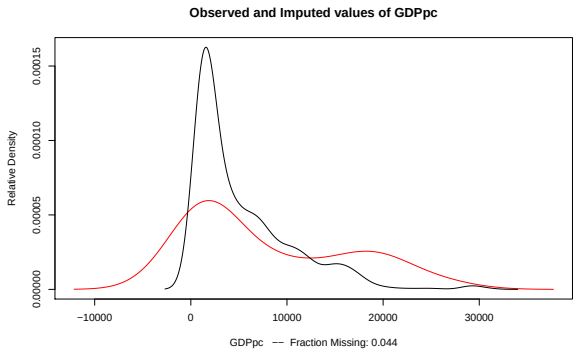
Female Schooling in Selected Countries

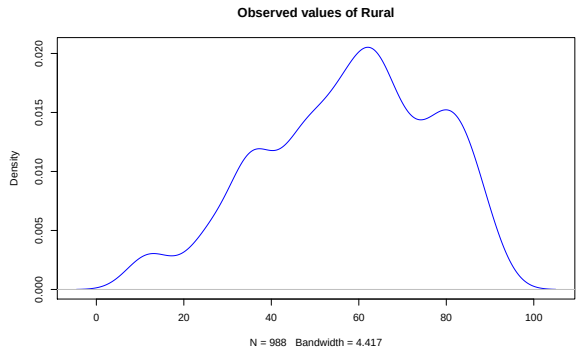


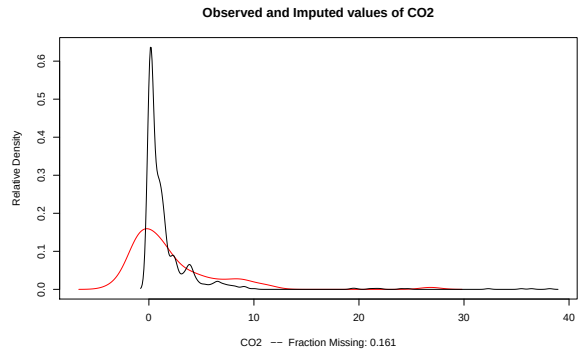
Female Unemployment in Selected Countries

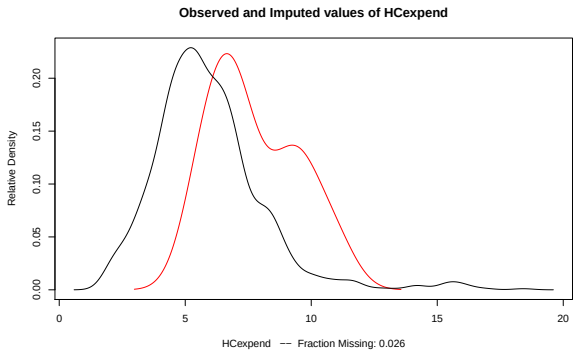


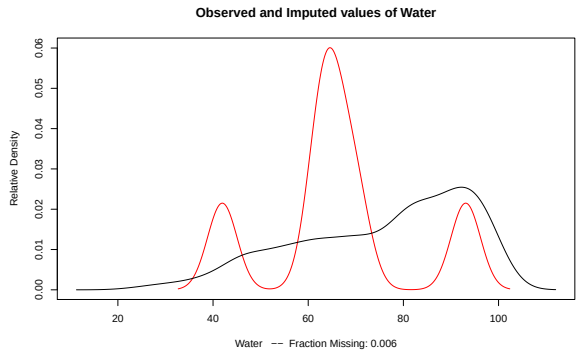
Imputed Missing Values

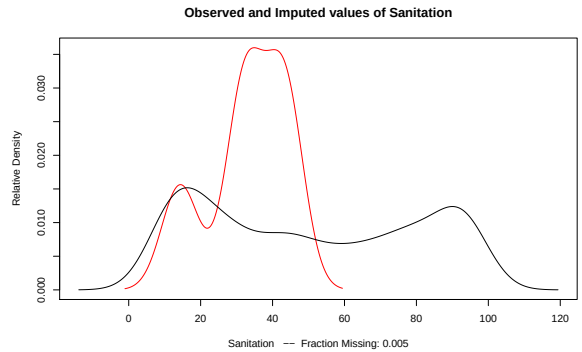


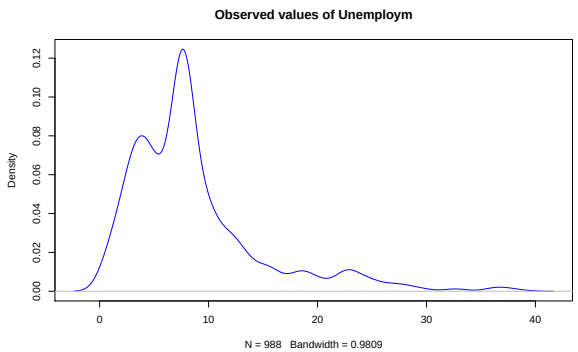


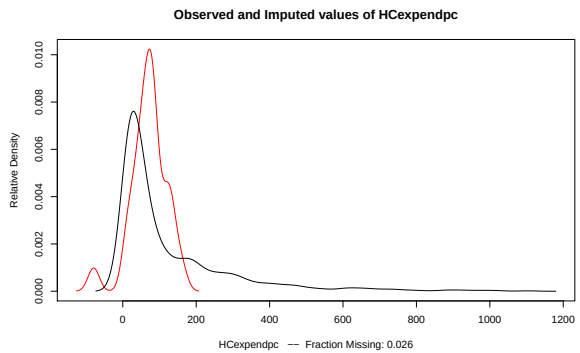


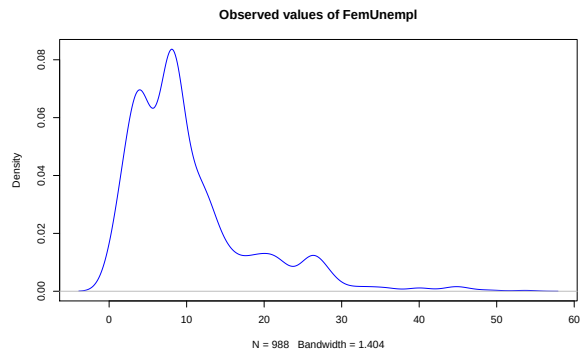








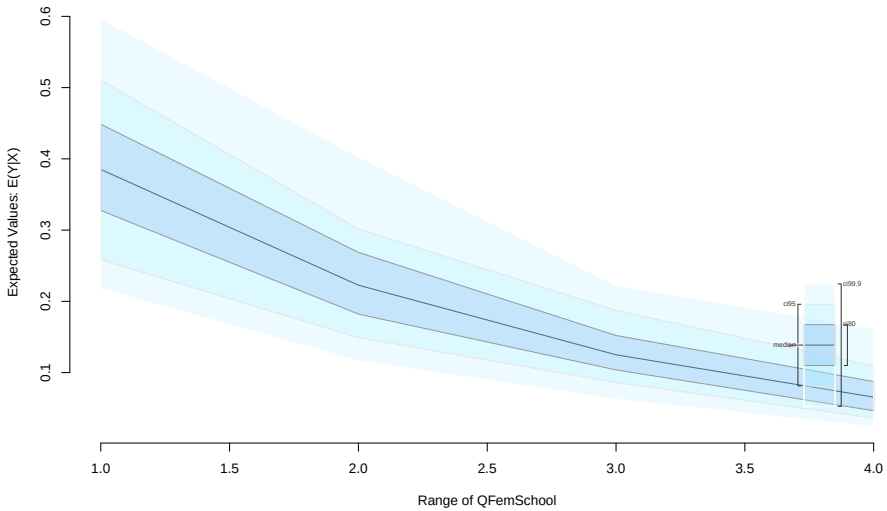


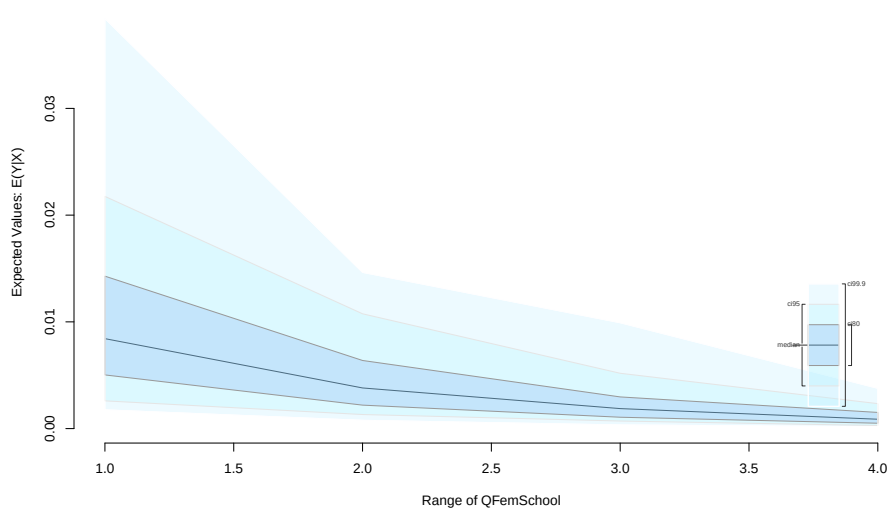


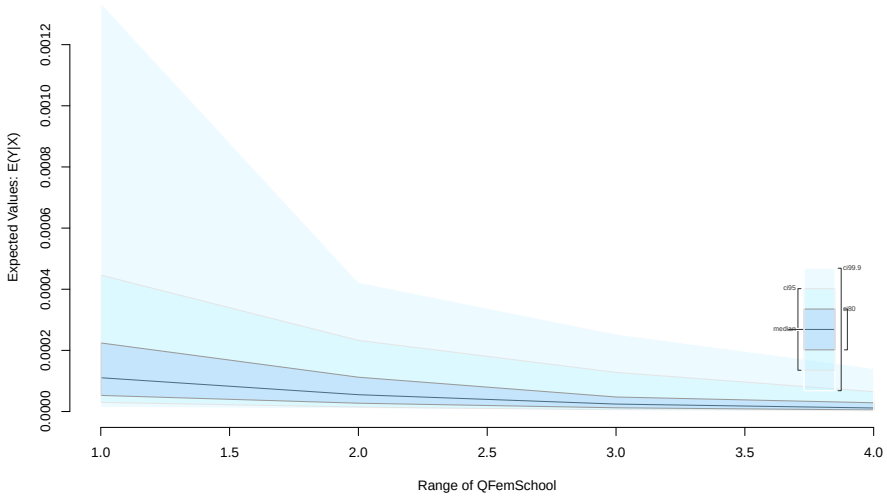
Logistic Regression Results - Model 1

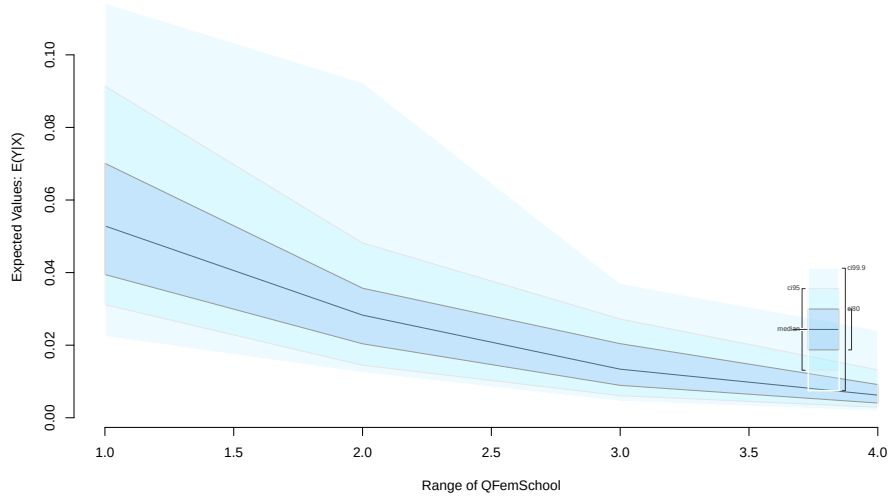
	Value	Std. Error	t-stat	p-value
(Intercept)	-102.0397297	9.4578276	-10.7889183	0.0000000
lGDPpc	-0.6699930	0.3076272	-2.1779380	0.0303540
lRural	-1.0104575	0.4098299	-2.4655536	0.0137285
lCO2	-1.0758112	0.2024771	-5.3132497	0.0000008
lHCexpend	0.4578000	0.3535326	1.2949300	0.1961185
lWater	0.3131988	0.7019157	0.4462057	0.6561631
lSanitation	0.2838809	0.2435910	1.1654000	0.2449946
lLifeExpect	29.8432178	2.4010775	12.4290939	0.0000000
lDPT	-1.4582695	1.2328074	-1.1828851	0.2379990
lMeasles	1.6754661	1.3351940	1.2548485	0.2114083
lFemSchool	-3.5526744	0.5322493	-6.6748321	0.0000000

Predicted Probabilities - Female School Enrollment









Simple Linear Regression Results - Model 2

	Value	Std. Error	t-stat	p-value
(Intercept)	7.8023880	1.8636194	4.1866853	0.0000293
lGDPpc	0.3956122	0.0729803	5.4208087	0.0000003
lRural	0.2401309	0.1602783	1.4982124	0.1341808
lCO2	0.0344542	0.0374396	0.9202598	0.3588319
lHCexpend	0.5508592	0.1221140	4.5110233	0.0000070
lWater	-0.4955591	0.2200131	-2.2524073	0.0251333
lSanitation	-0.0557990	0.0822514	-0.6783964	0.4976692
lLifeExpect	-4.2157872	0.3752004	-11.2360948	0.0000000
lDPT	1.0177117	0.2845558	3.5764924	0.0003528
lMeasles	-0.3090417	0.2848486	-1.0849335	0.2780468
lFemSchool	0.6486340	0.1779651	3.6447257	0.0005233

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 (!)