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

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

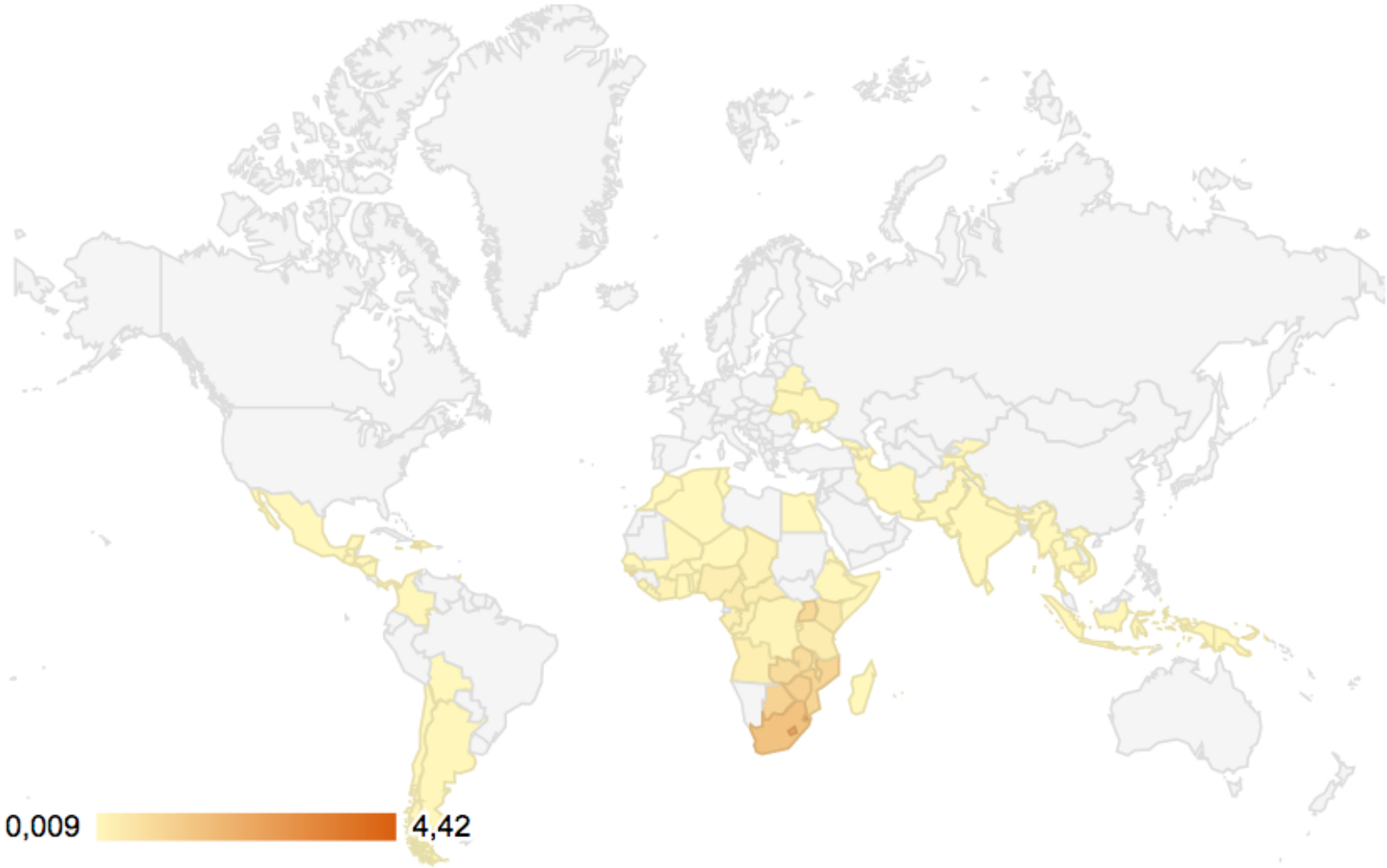
Datasets

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

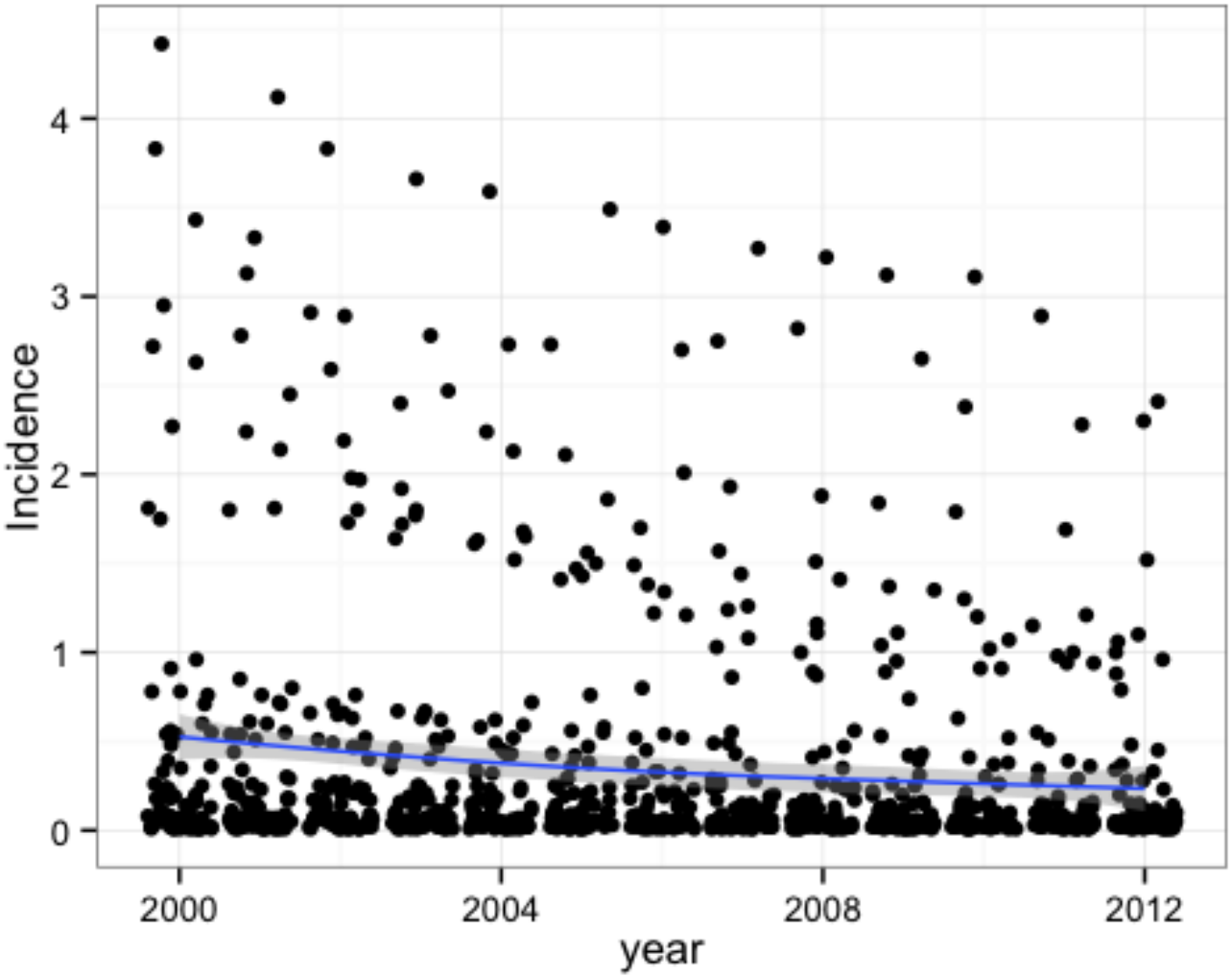
Methodology

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

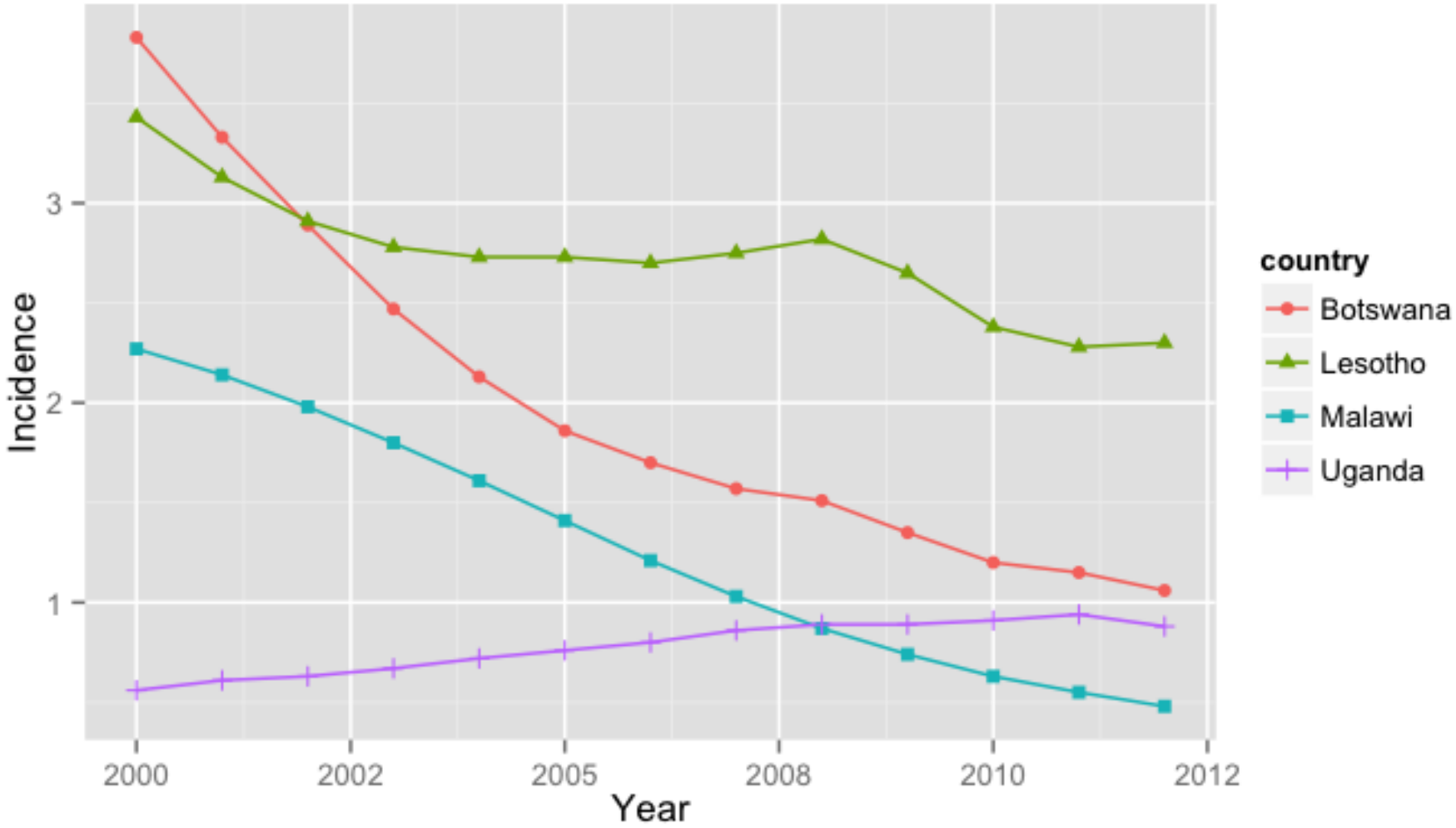
Distribution of HIV Incidence Rates



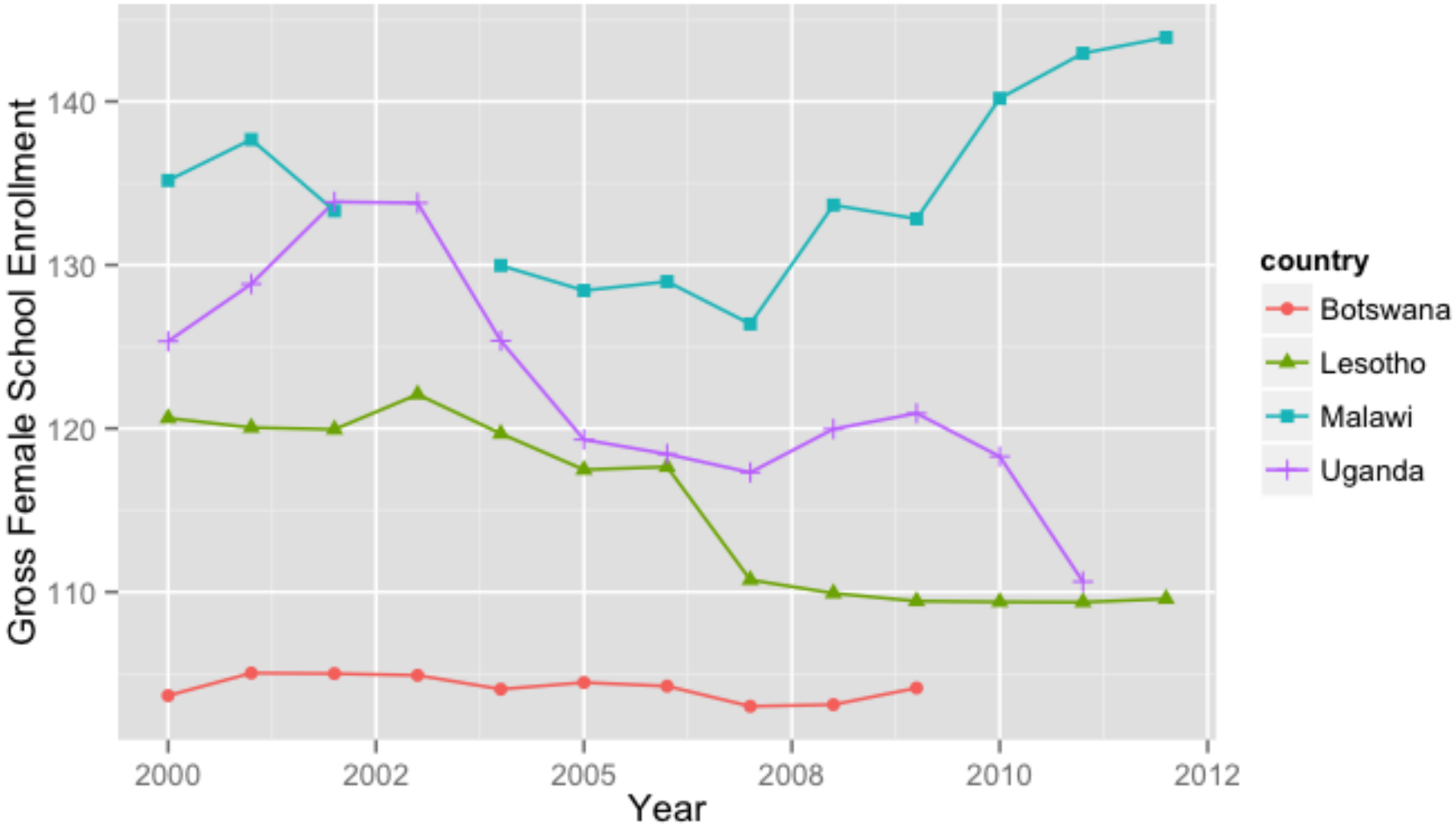
HIV Incidence Rates over Time



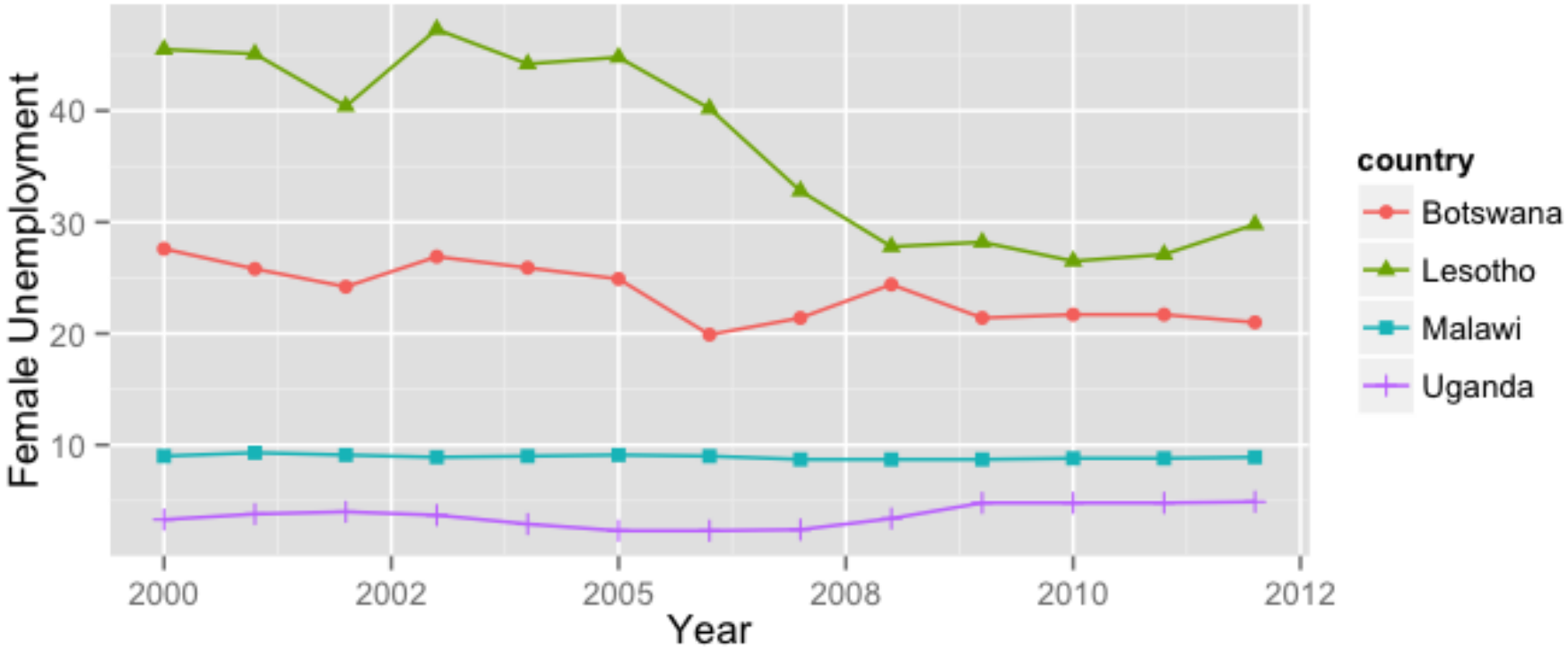
Case Studies



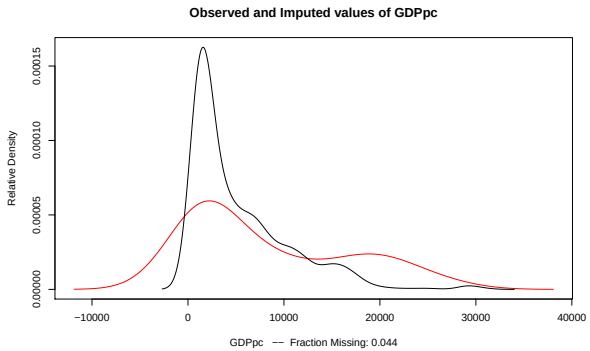
Female Schooling in Selected Countries

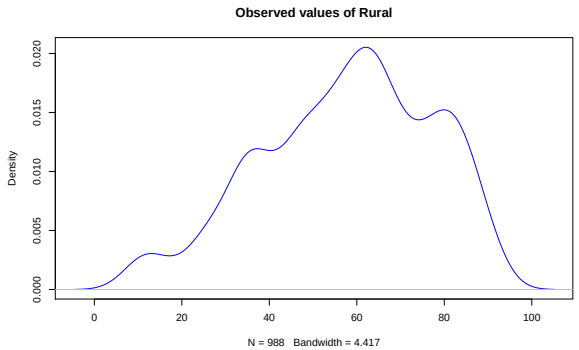


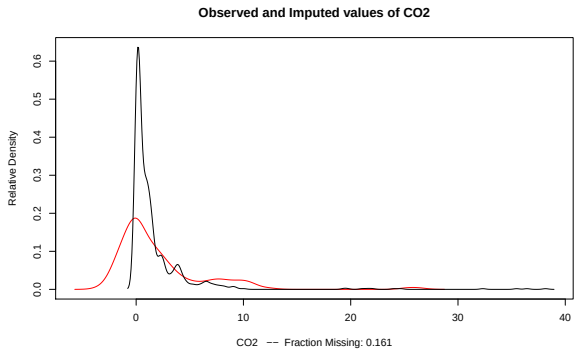
Female Unemployment in Selected Countries

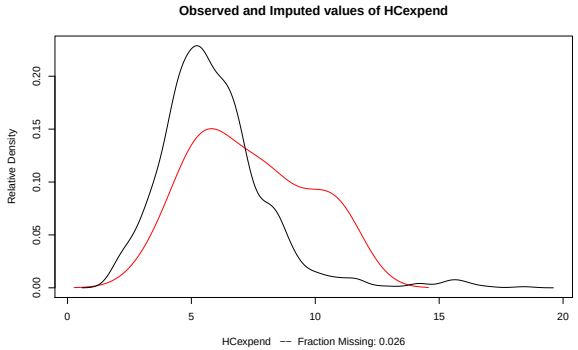


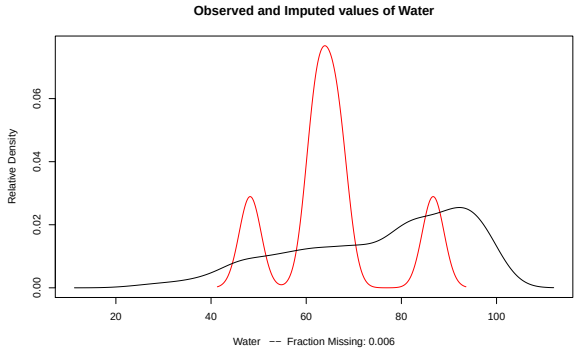
Imputed Missing Values

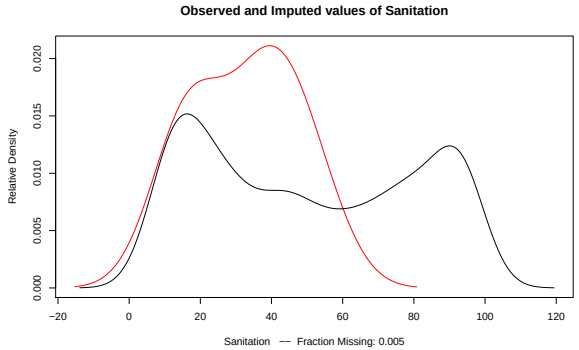


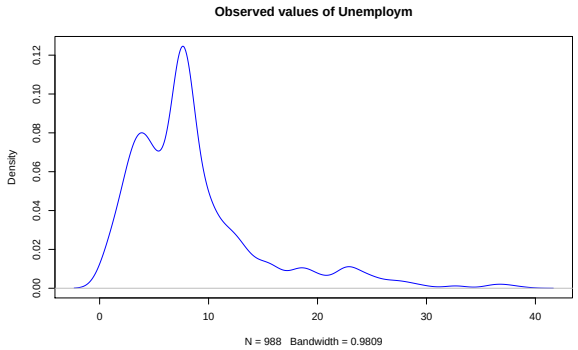


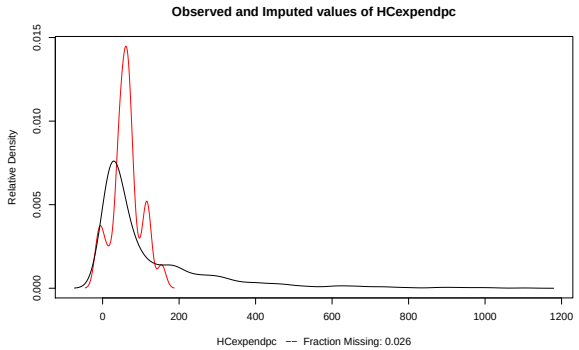


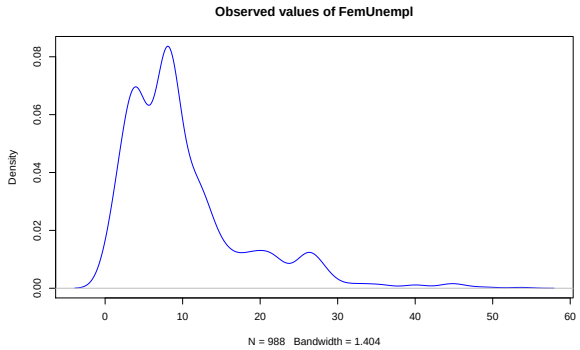








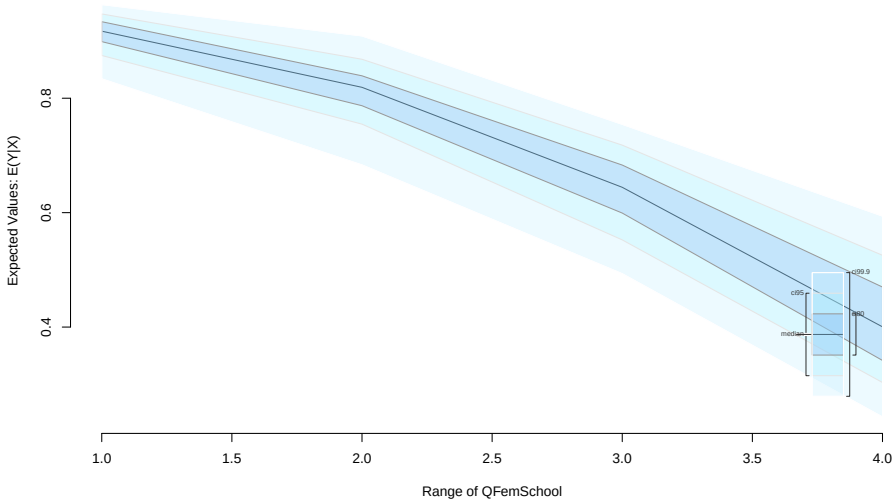


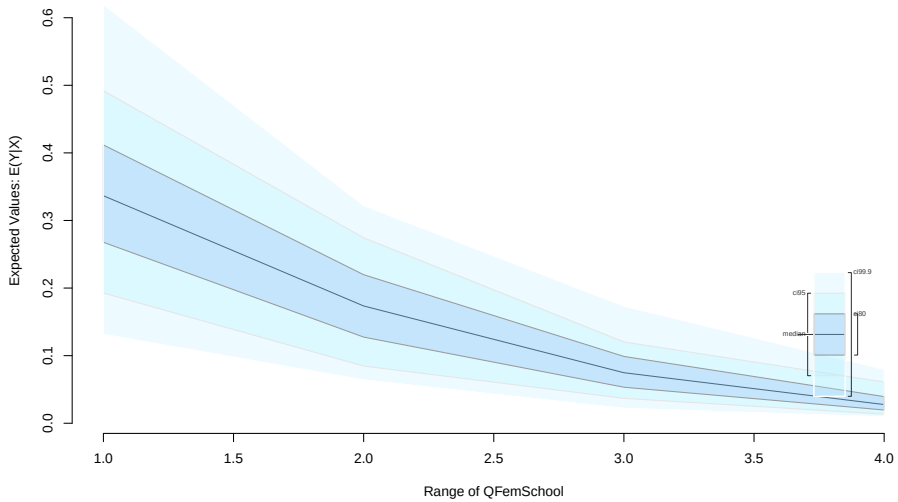


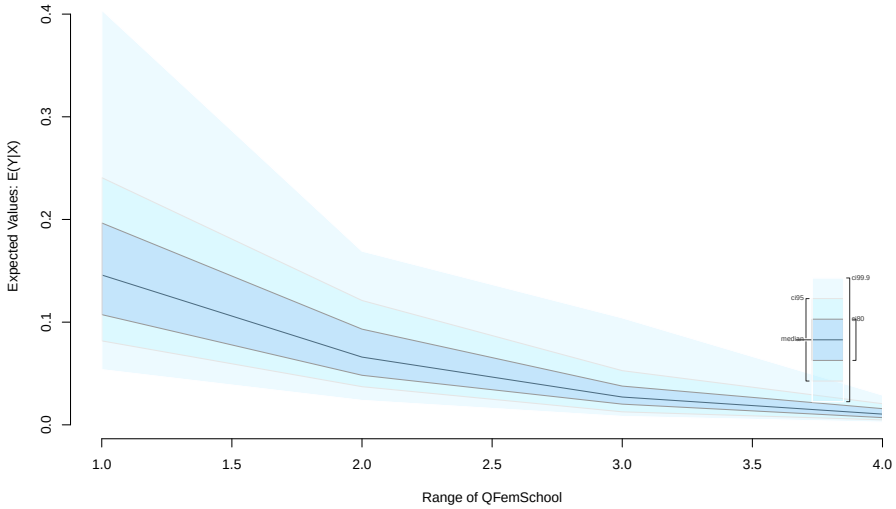
Logistic Regression Results - Model 1

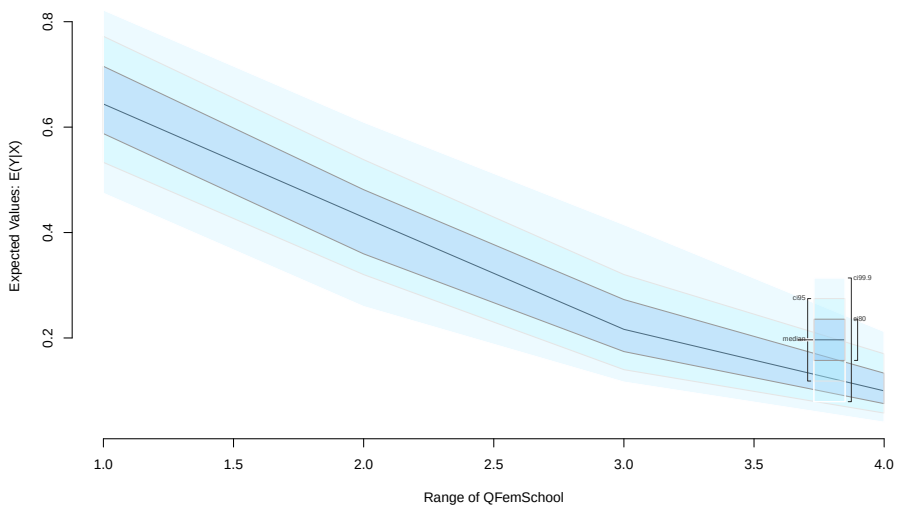
	Value	Std. Error	t-stat	p-value
(Intercept)	-37.4597224	5.6865493	-6.587426	0.0000000
lGDPpc	-0.5252791	0.2788175	-1.883953	0.0595781
lRural	-1.7318362	0.4816563	-3.595585	0.0003585
lCO2	-0.2865403	0.1589796	-1.802371	0.0715608
lHCexpend	0.5389382	0.3677523	1.465492	0.1432325
lWater	-1.2829368	0.7288340	-1.760259	0.0789181
lSanitation	0.4771016	0.2384561	2.000794	0.0454717
lLifeExpect	17.8726791	1.4148607	12.632112	0.0000000
lDPT	-0.6657261	0.9366306	-0.710767	0.4773176
lMeasles	1.6583726	1.0500019	1.579400	0.1143731
lFemSchool	-5.2329474	0.6250662	-8.371829	0.0000000

Predicted Probabilities - Female School Enrollment









Simple Linear Regression Results - Model 2

	Value	Std. Error	t-stat	p-value
(Intercept)	7.7637278	1.9309623	4.0206522	0.0000765
lGDPpc	0.4014269	0.0687518	5.8387867	0.0000000
lRural	0.2366083	0.1611287	1.4684433	0.1421033
lCO2	0.0268478	0.0353779	0.7588867	0.4482273
lHCexpend	0.5499576	0.1233522	4.4584342	0.0000097
lWater	-0.5131921	0.2176787	-2.3575666	0.0188344
lSanitation	-0.0460419	0.0819119	-0.5620910	0.5741983
lLifeExpect	-4.2376716	0.4134879	-10.2485986	0.0000000
lDPT	1.0669096	0.2828493	3.7720070	0.0001629
lMeasles	-0.3710205	0.2884037	-1.2864626	0.1984615
lFemSchool	0.6872878	0.2048105	3.3557250	0.0026478

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 (!)