Determinants of HIV

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December 4th, 2014

Presentation Outline

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

Research Question & Motivation

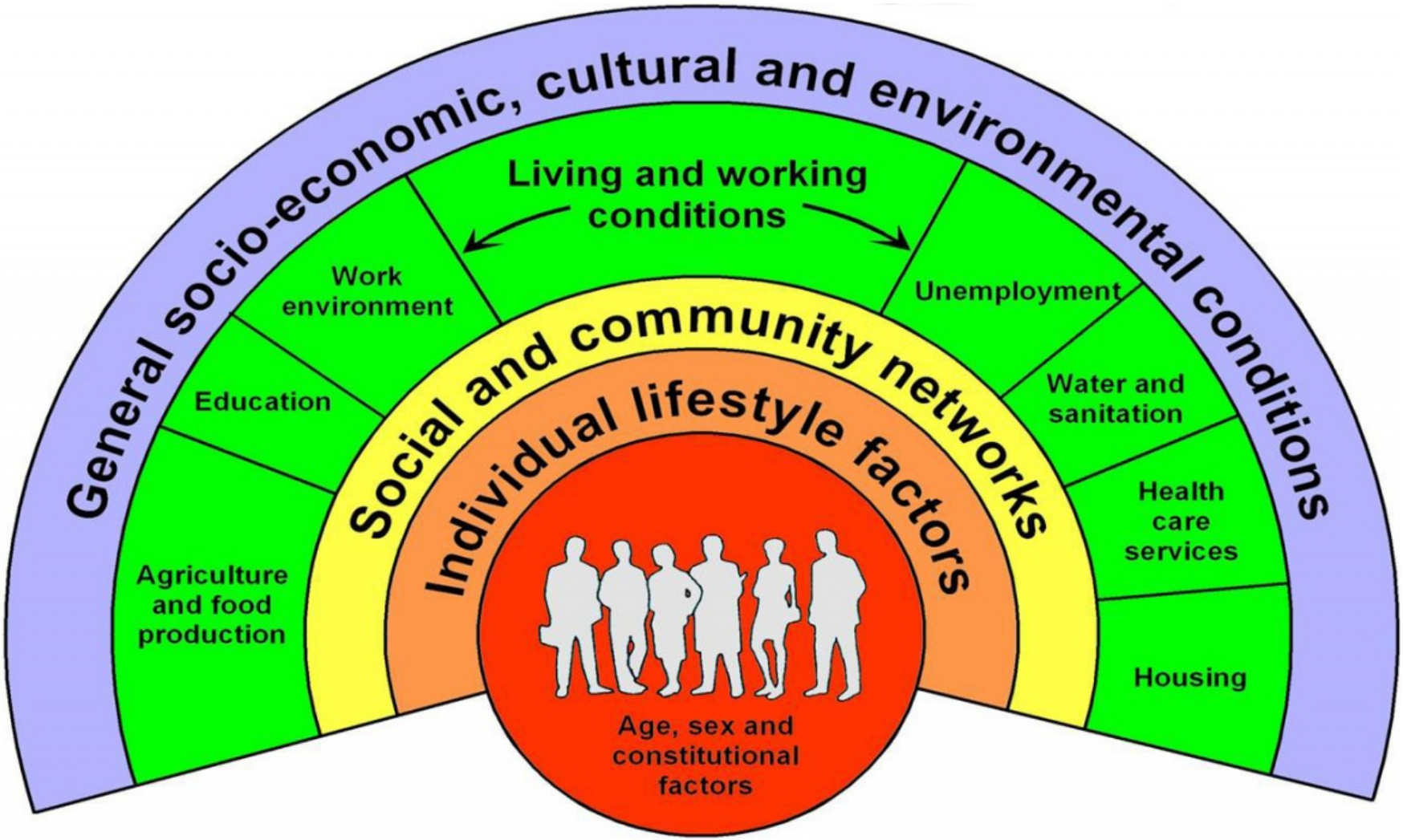
Research Question: Are community level factors significant determinants of HIV/AIDS incidence rates?

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



Source: Dahlgren and Whitehead, 1991

Methodology

Model

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

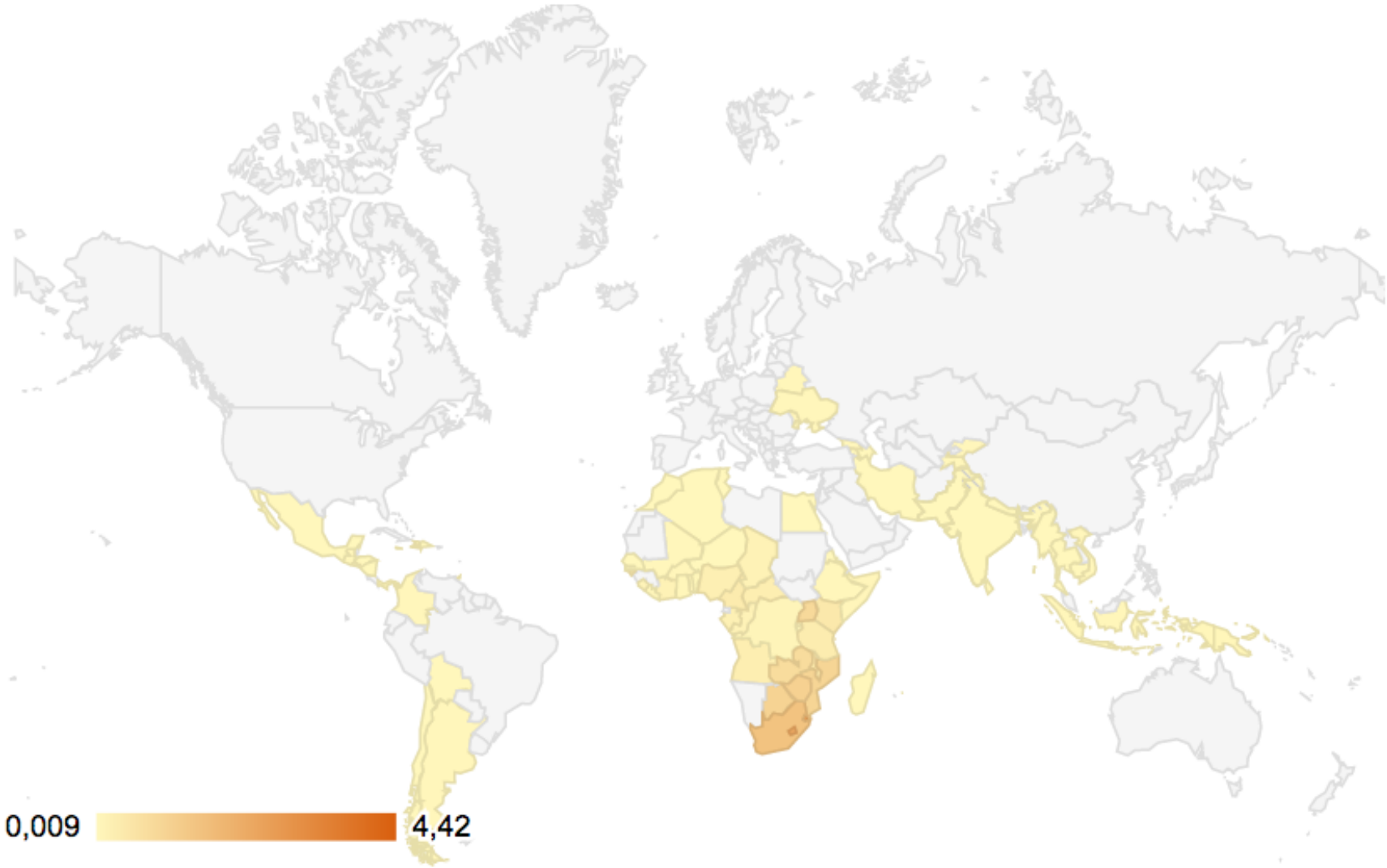
Datasets

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

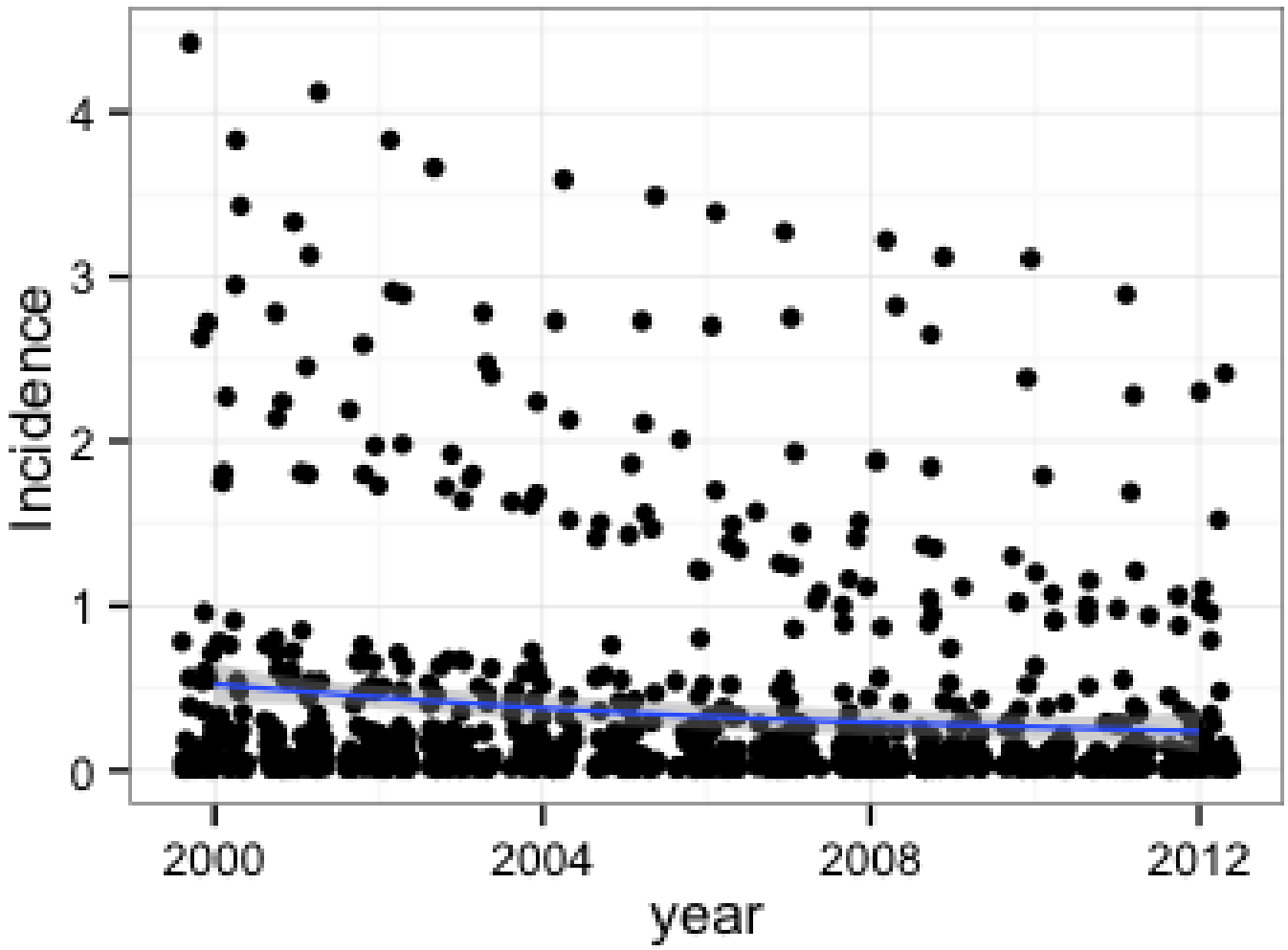
Methodology

- Model 1: Logistic Regression & Predicted Probabilities
- Model 2: Pooled OLS Regression (with robust stand. Errors)

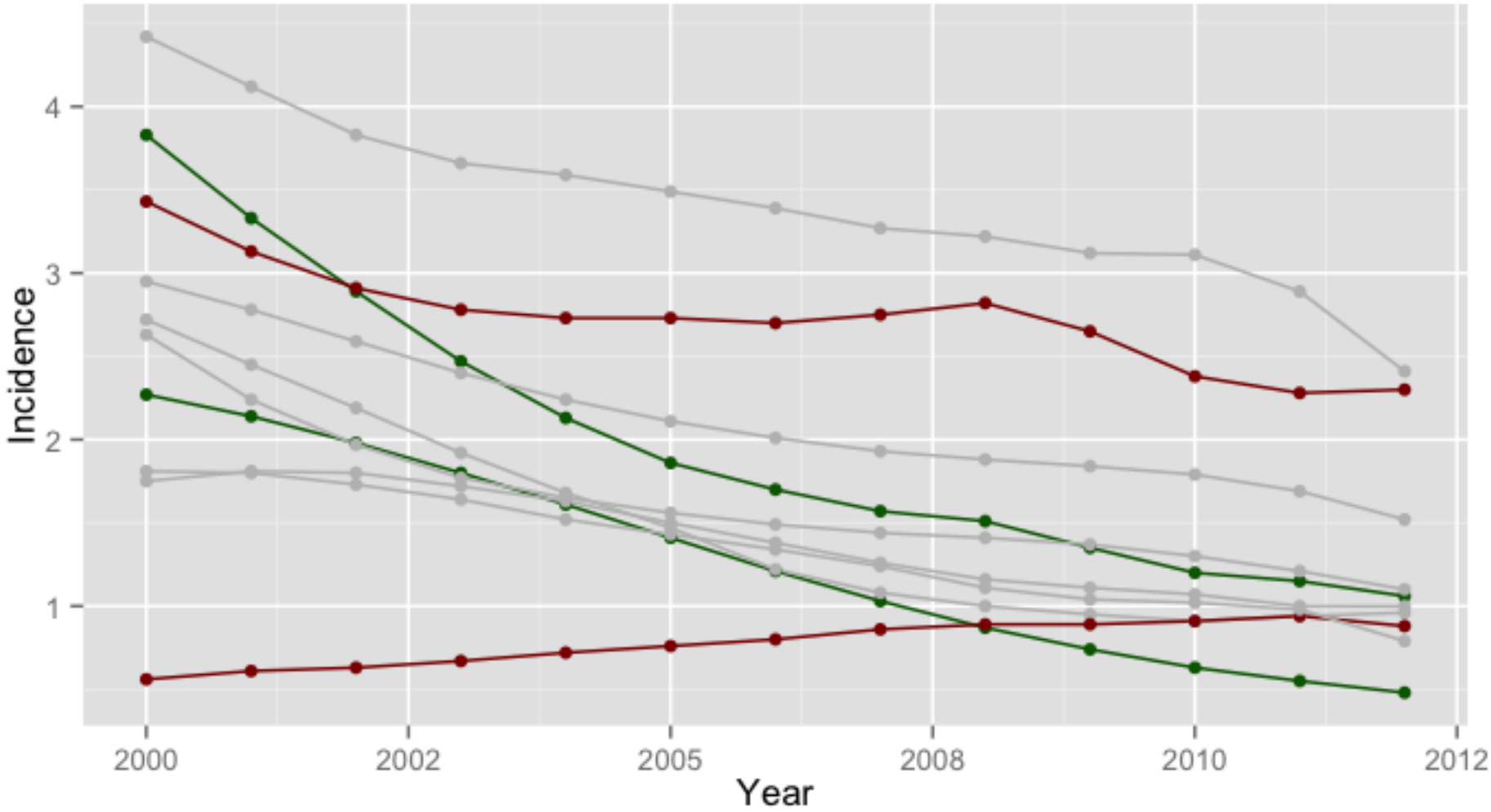
Distribution of HIV Incidence Rates



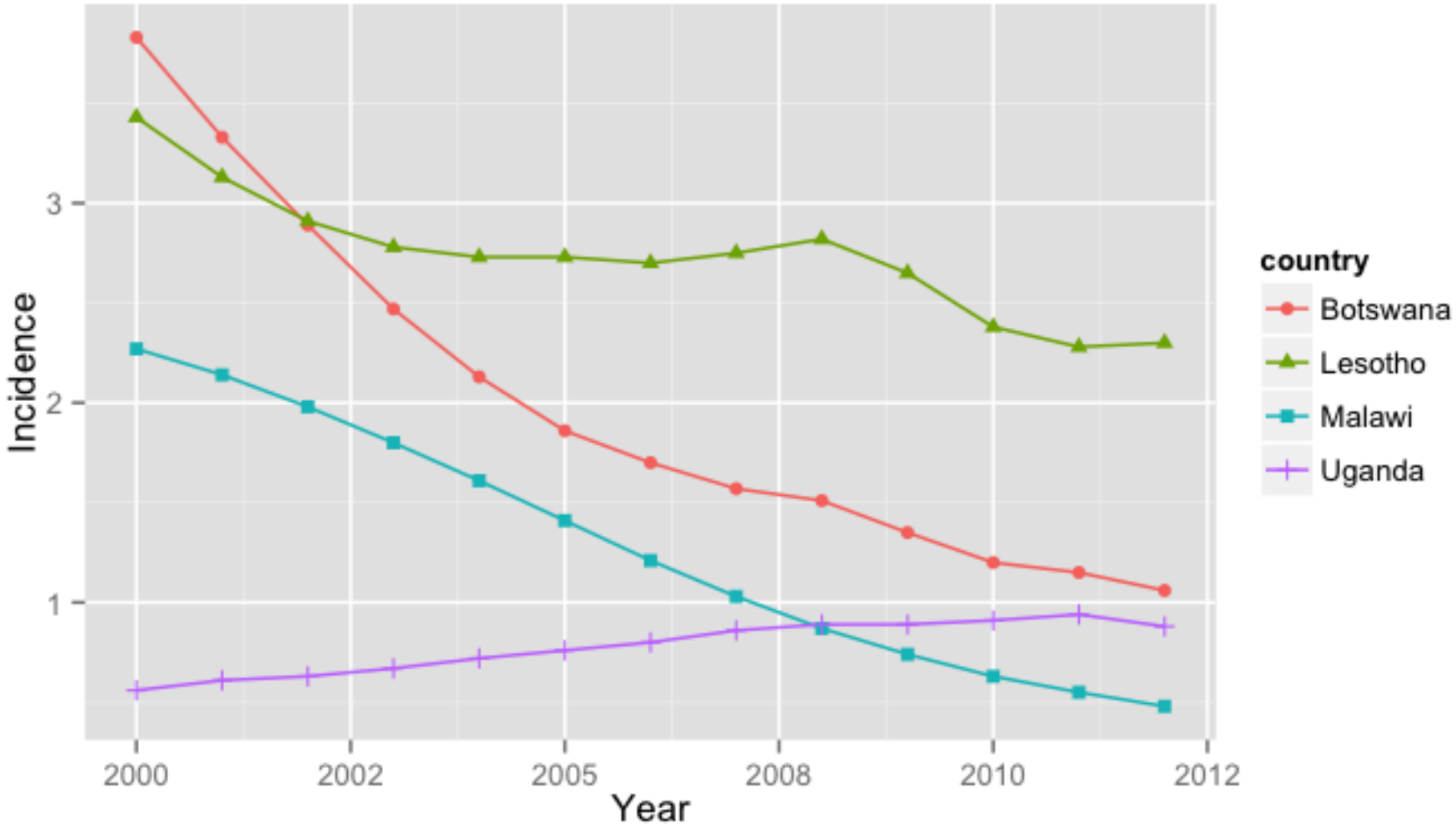
HIV Incidence Rates over Time



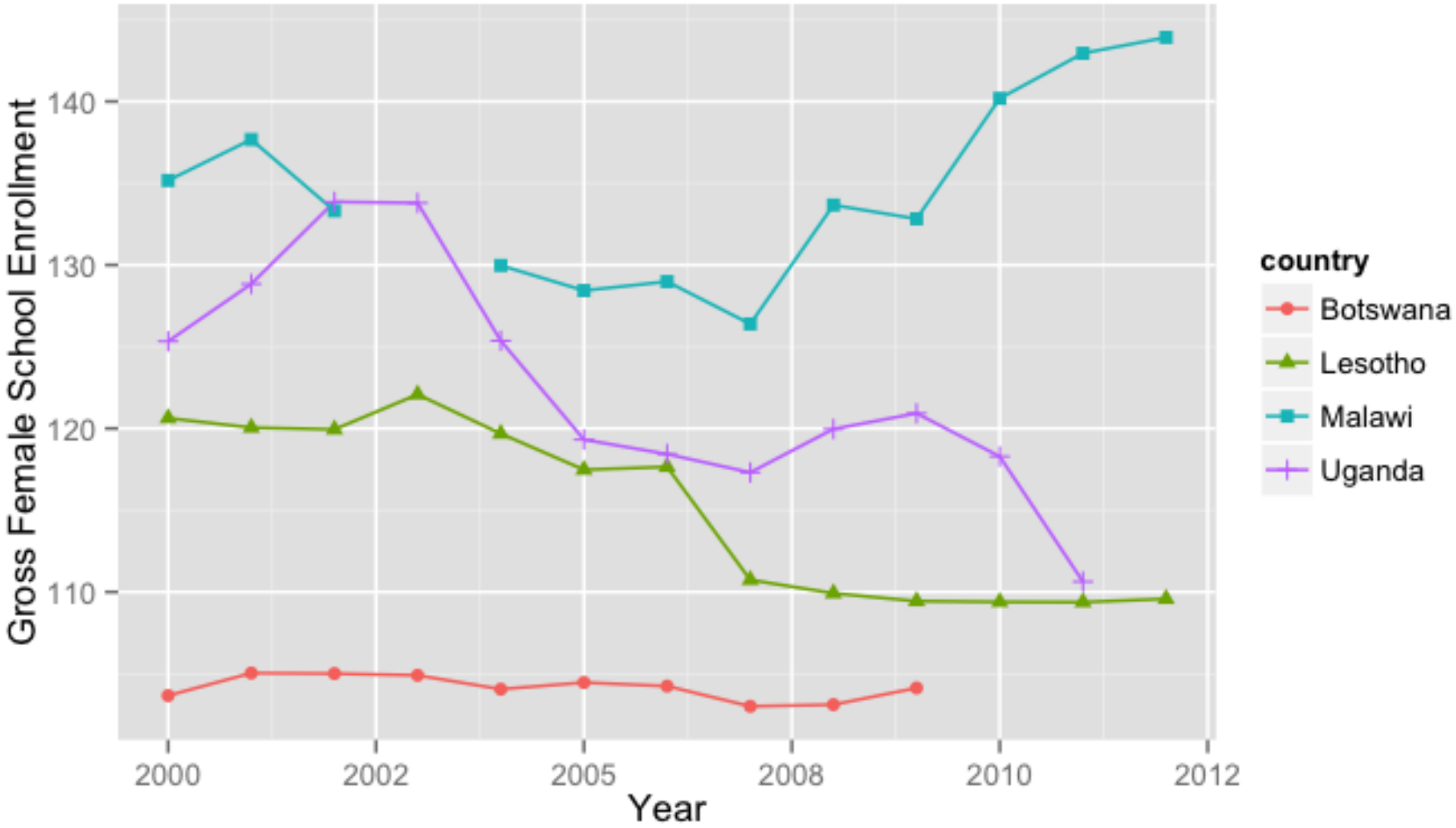
Selecting interesting Cases for Extreme Changes in HIV/AIDS Incidence Rates



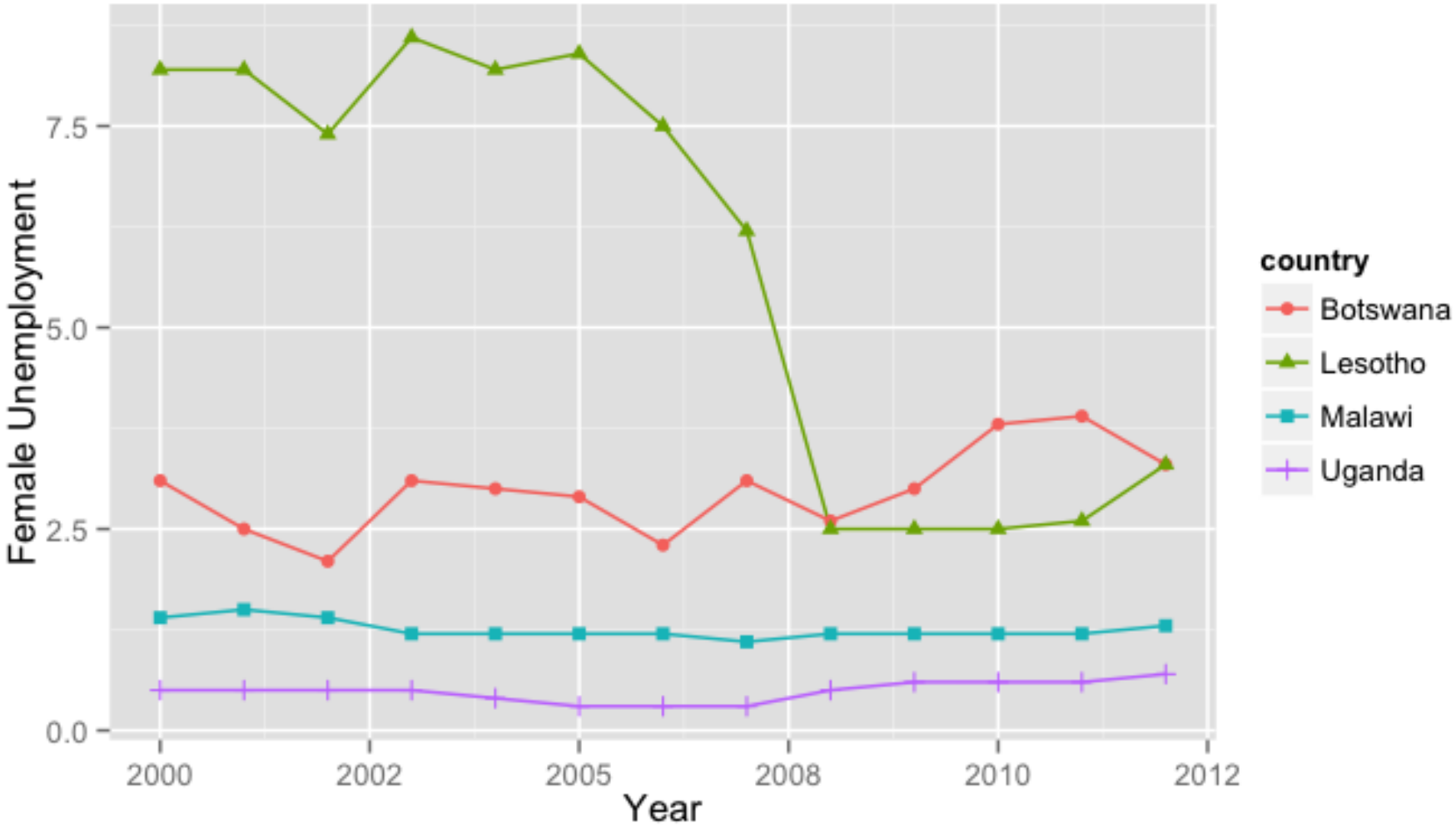
Case Studies



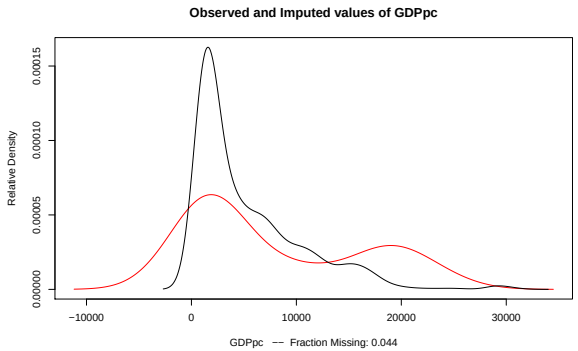
Female School Enrollment in Selected Countries

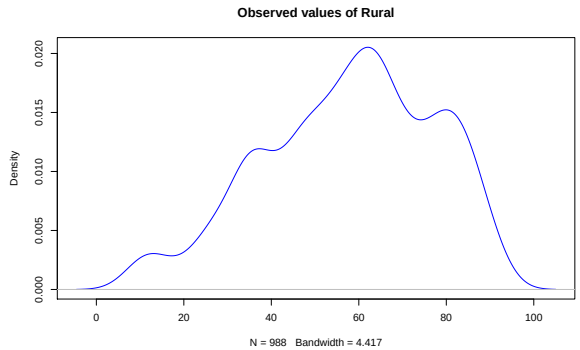


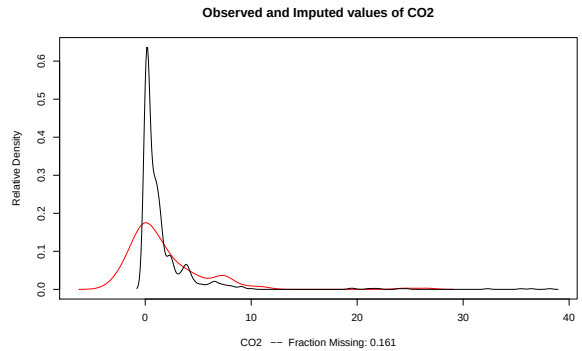
Female Unemployment compared to Total Unemployment in Selected Countries

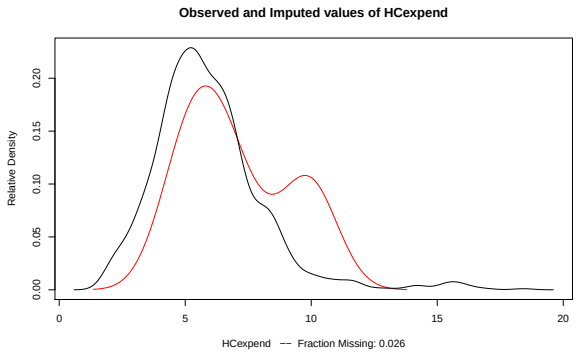


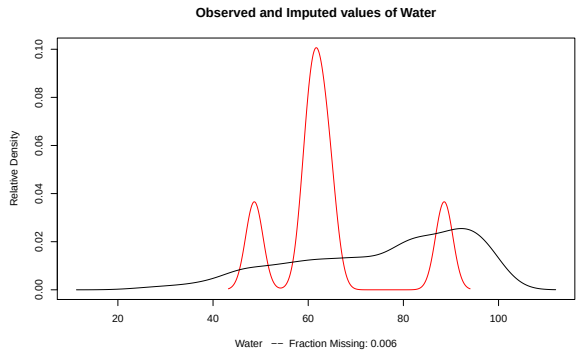
Imputed Missing Values

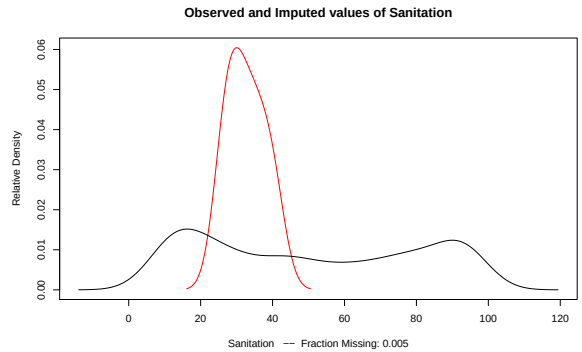


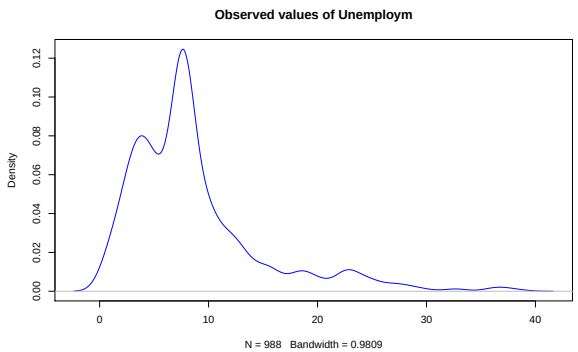


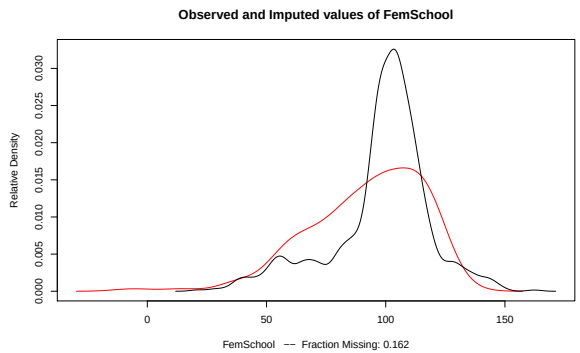


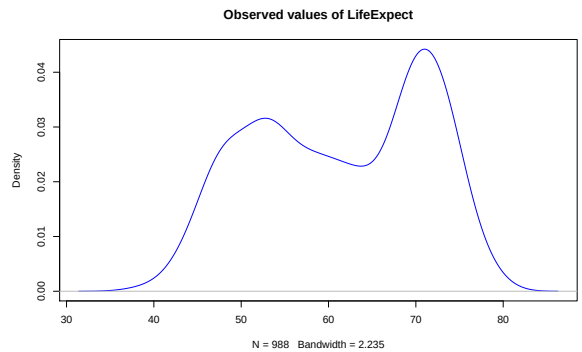










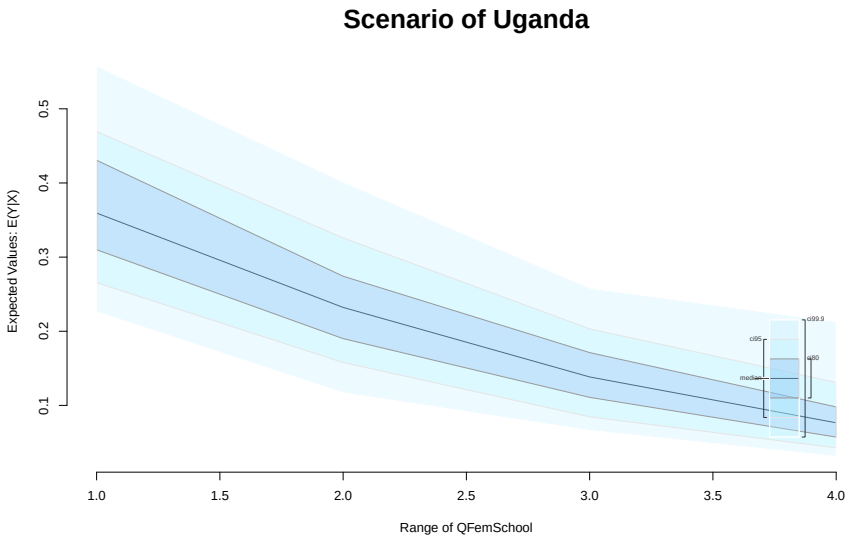


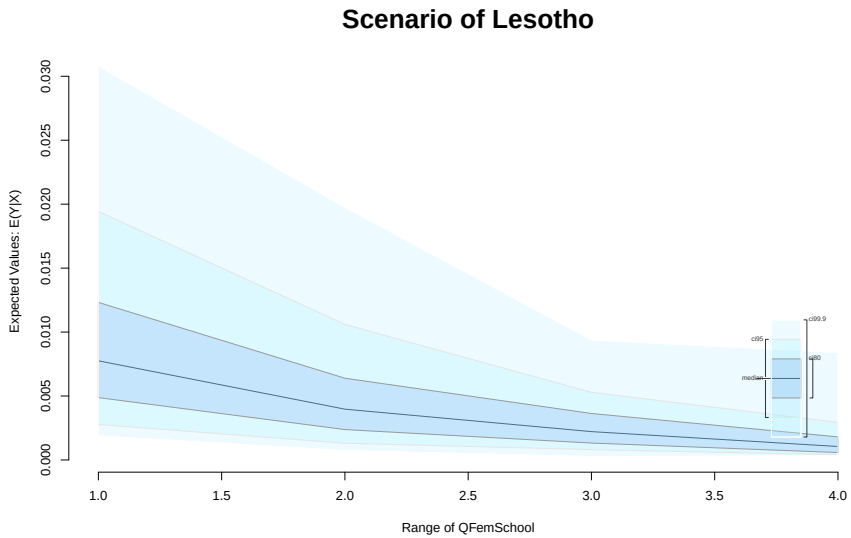
Logistic Regression Results - Model 1

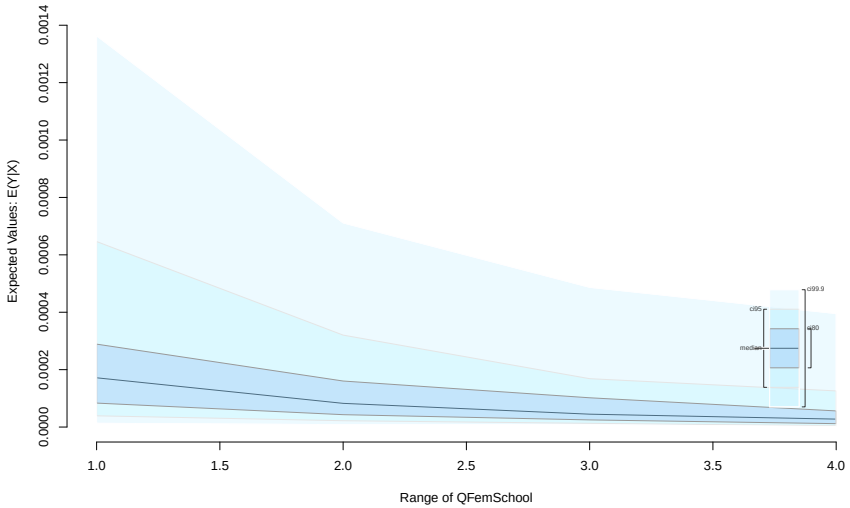
Table 1: Logistic Regression Results of Model 1

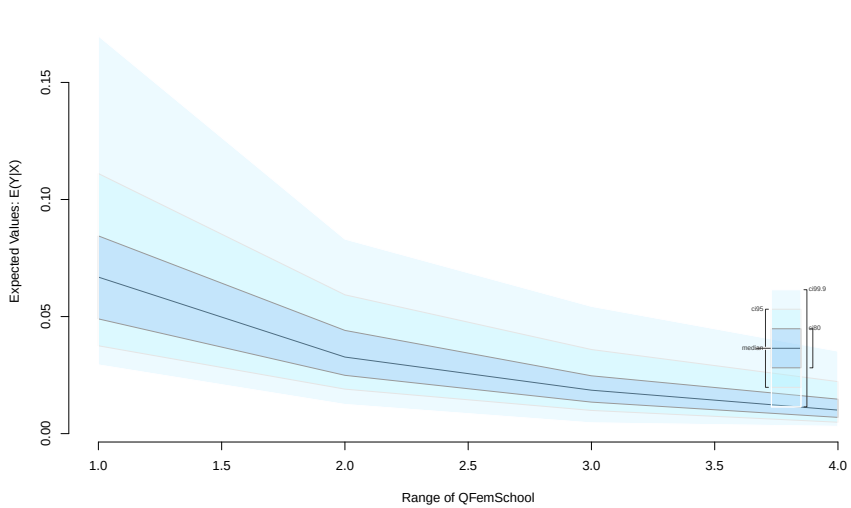
Variables	Coeff.	Std. Error	T-Stat.	P-Value
Constant	-103.29	9.81	-10.53	0.00
GDP per capita	-0.71	0.31	-2.31	0.02
Share of Rural Population	-0.97	0.40	-2.44	0.01
CO2 Emissions per capita	-1.05	0.19	-5.43	0.00
Healthcare Expenditure	0.36	0.36	0.99	0.32
Access to Water	0.49	0.74	0.67	0.51
Access to Sanitation	0.24	0.25	0.99	0.32
Life Expectancy	30.09	2.47	12.16	0.00
Immunisation against DPT	-1.32	1.22	-1.08	0.28
Immunisation against Measles	1.69	1.32	1.28	0.20
Female School Enrollment	-3.70	0.49	-7.50	0.00
Share of Female Unemployment	-0.03	0.04	-0.75	0.45

Predicted Probabilities Female School Enrollment









Simple Linear Regression Results - Model 2

Table 2:OLS Regression Results of Model 2 with robust standard errors

Variables	Coeff.	Std. Error	T-Stat.	P-Value
Constant	16.08	1.64	9.82	0.00
GDP per capita	0.16	0.08	2.08	0.04
Share of Rural Population	0.53	0.13	4.08	0.00
CO2 Emissions per capita	0.13	0.04	3.02	0.00
Healthcare Expenditure	-0.12	0.10	-1.17	0.24
Access to Water	0.26	0.19	1.39	0.16
Access to Sanitation	0.00	0.07	-0.01	0.99
Life Expectancy	-7.09	0.28	-25.07	0.00
Immunisation against DPT	0.22	0.32	0.69	0.50
Immunisation against Measles	-0.11	0.33	-0.33	0.75
Female School Enrollment	1.40	0.16	8.57	0.00
Share of Female Unemployment	0.13	0.02	6.93	0.00

Conclusions & Limitations - Model 1

1. **Logistic Regression Results of Model 1 (all countries)**

- Results are generally in line with hypothesis
- GDP per capital, Rural Population, CO2 Emissions, Life Expectancy and Female School Enrollment are statistically significant
- BUT: Female Unemployment compared to total unemployment is not statistically significant

2. **Predicted Probabilities of Model 1 (selected countries)**

- Direction of effect of Female School Enrollment matches initial assumptions for all case studies

Conclusions & Limitations - Model 2

3. **Linear Regression of Model 2 (countries with incidence above mean)** Significance of some variables changes:

- Female Unemployment compared to total unemployment becomes highly significant
- Effect of Female School Enrollment remains highly significant but becomes positive (!)