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

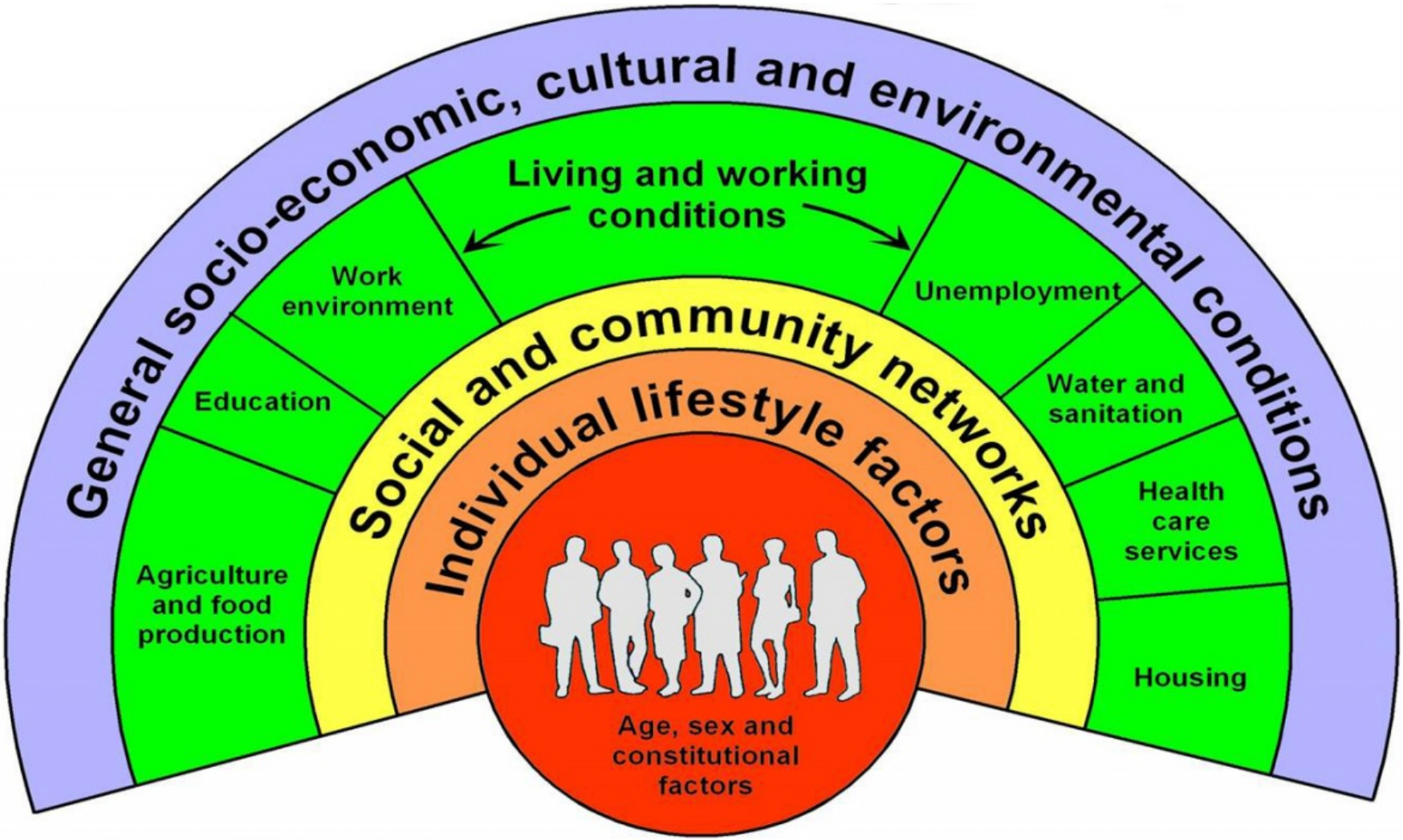
Research Question: Are community level factors significant determinants of HIV/AIDS incidence rates?

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

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

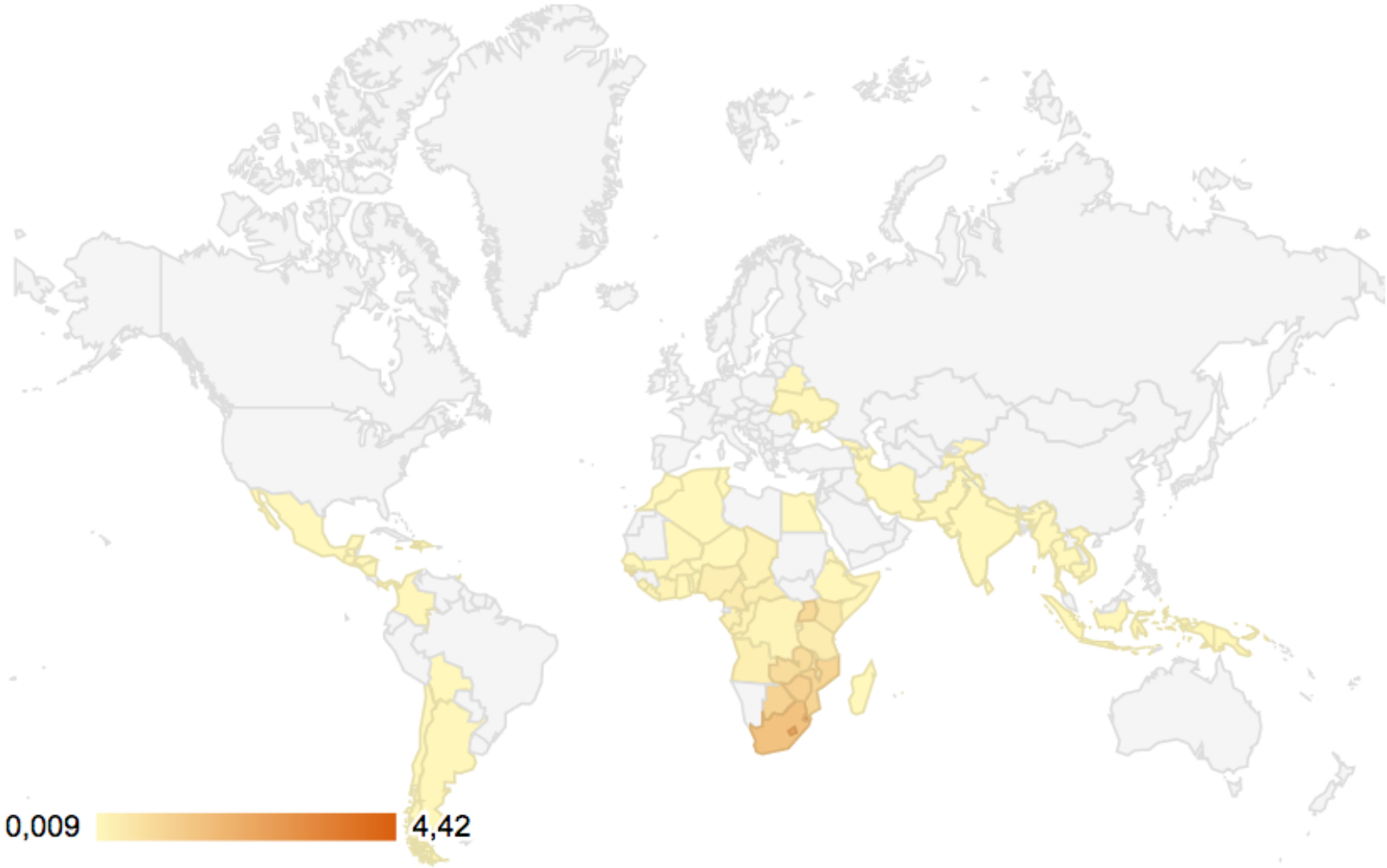
Datasets

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

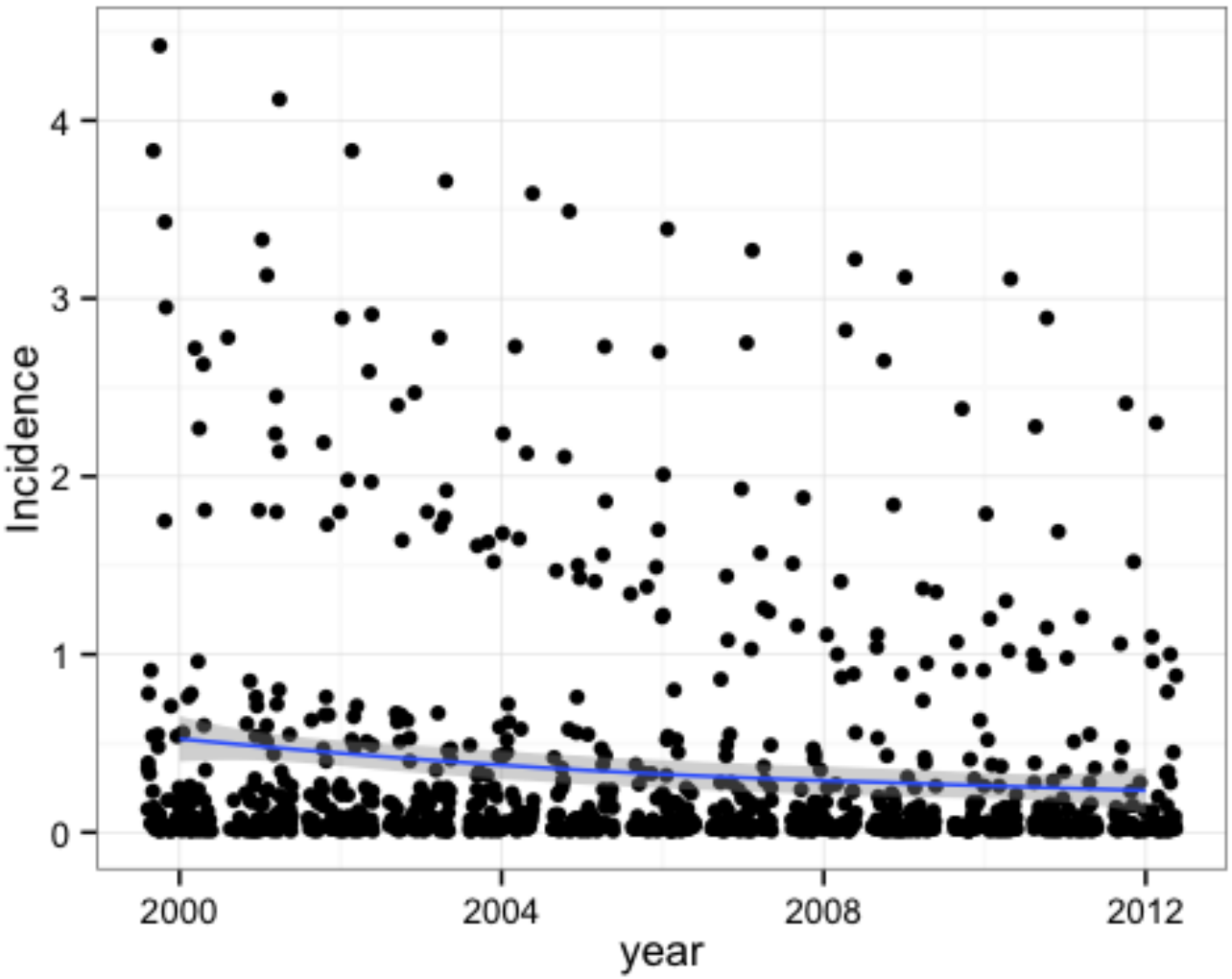
Methodology

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

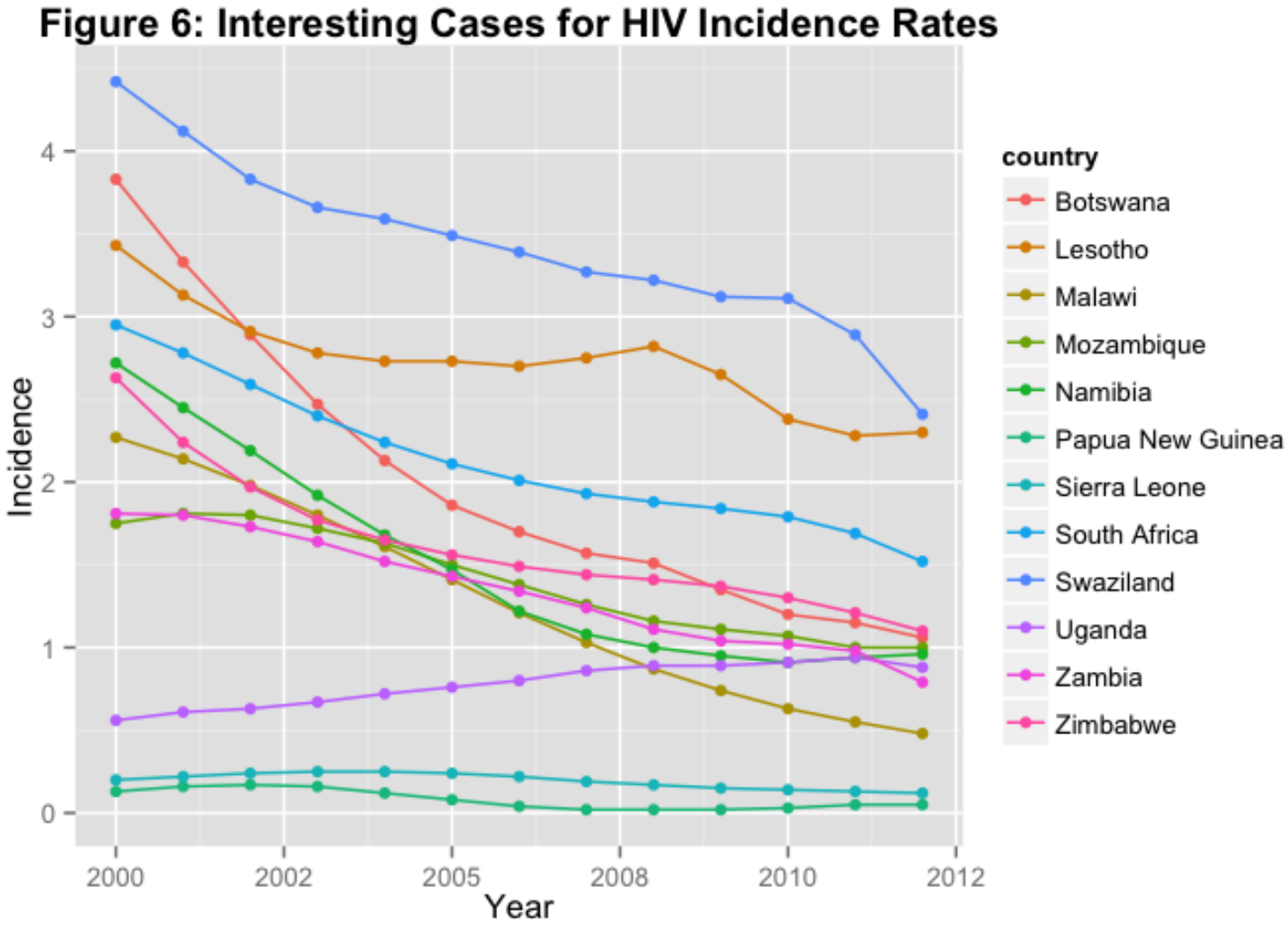
Distribution of HIV Incidence Rates



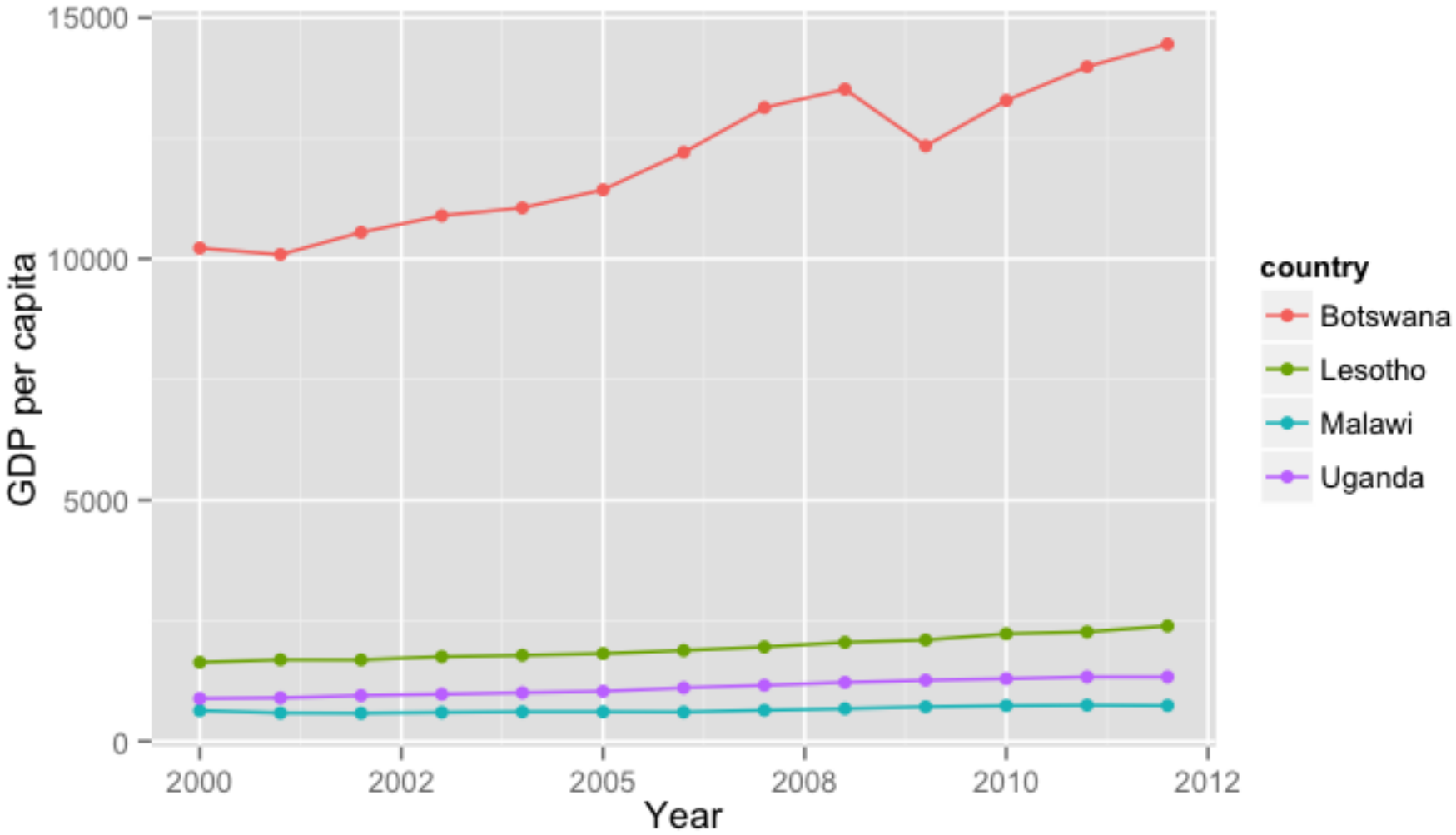
HIV Incidence Rates over Time



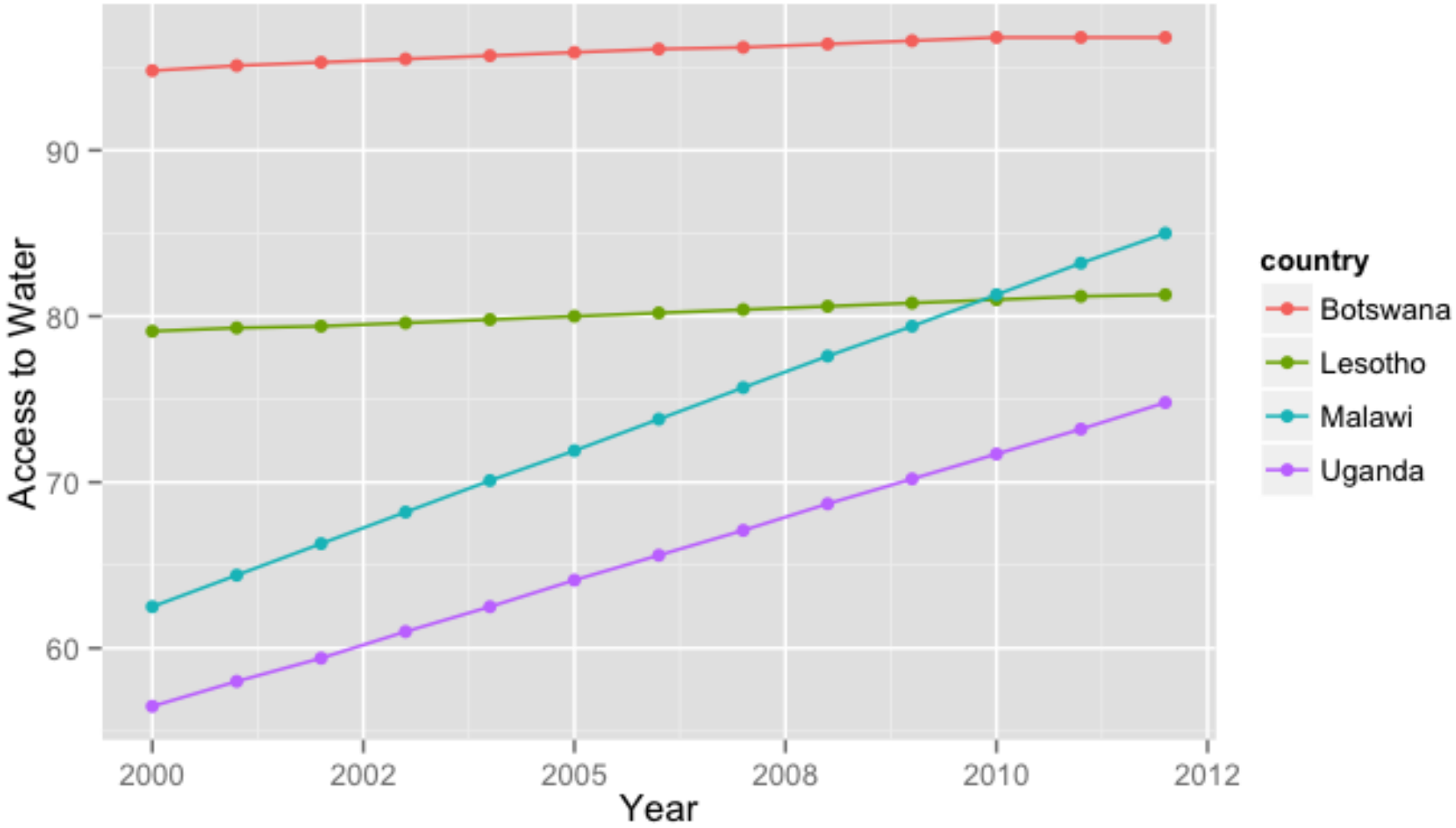
Interesting Cases for HIV Incidence Rates



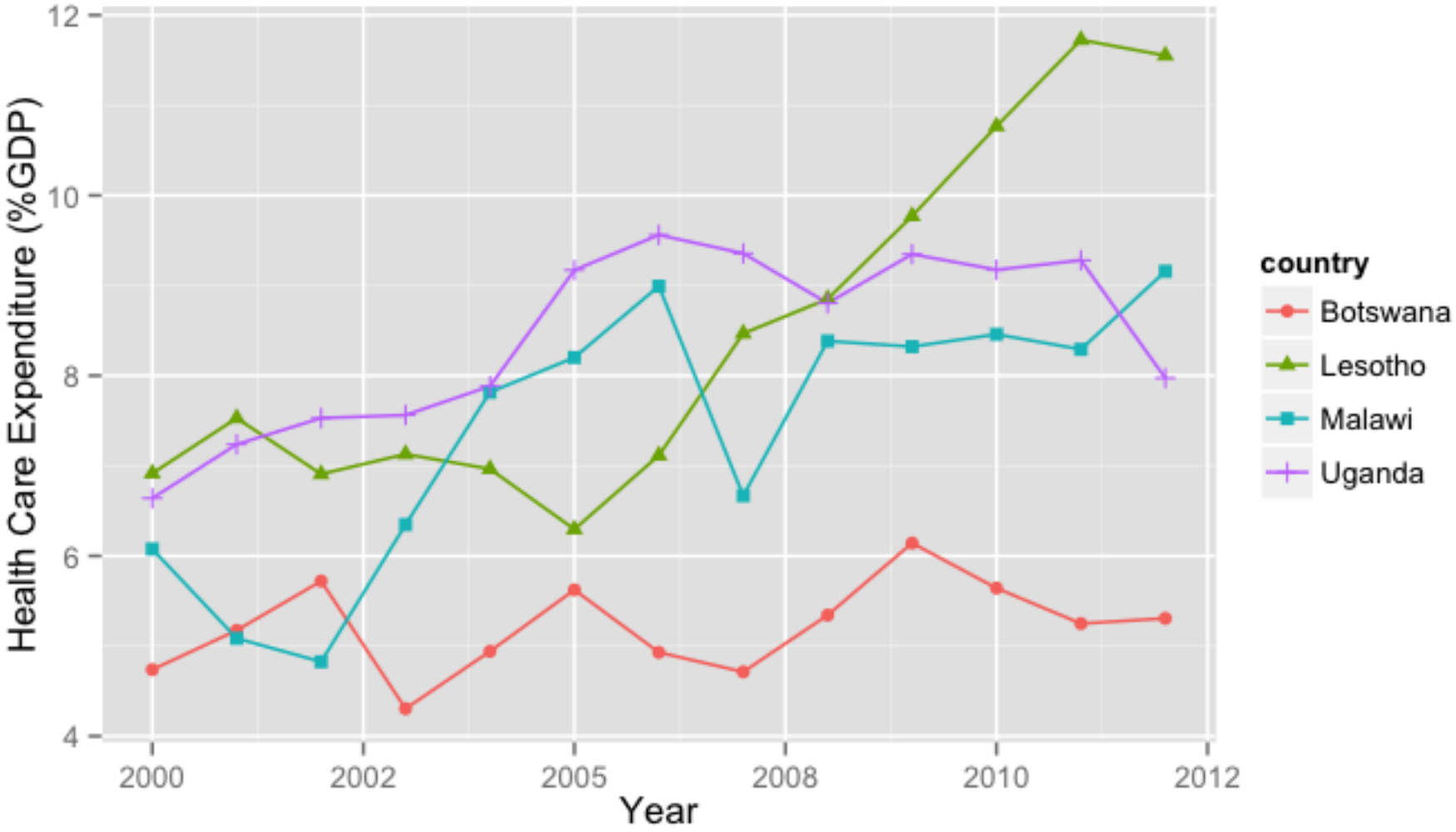
GDP per capita in Selected Countries



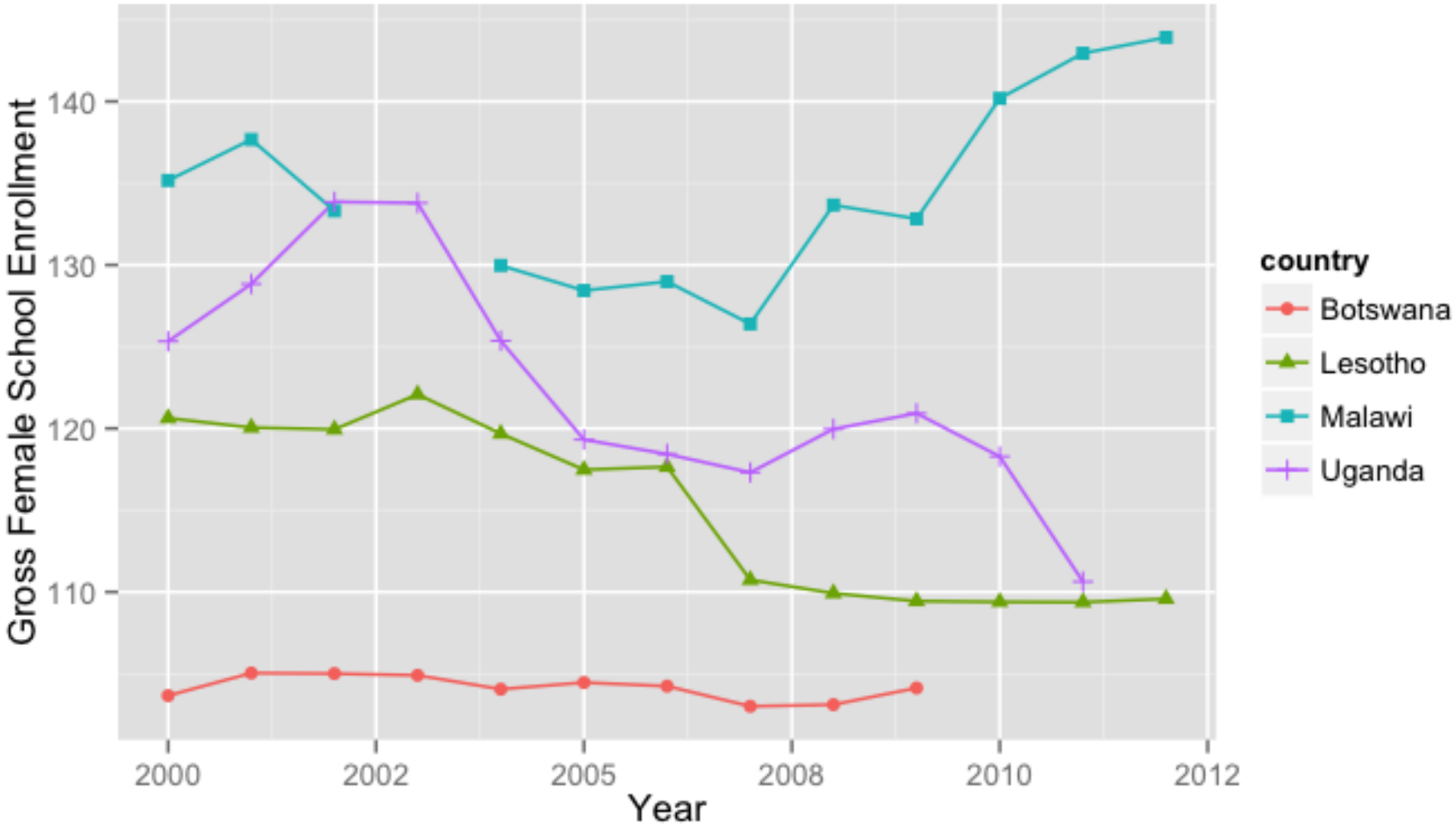
Access to Water in Selected Countries



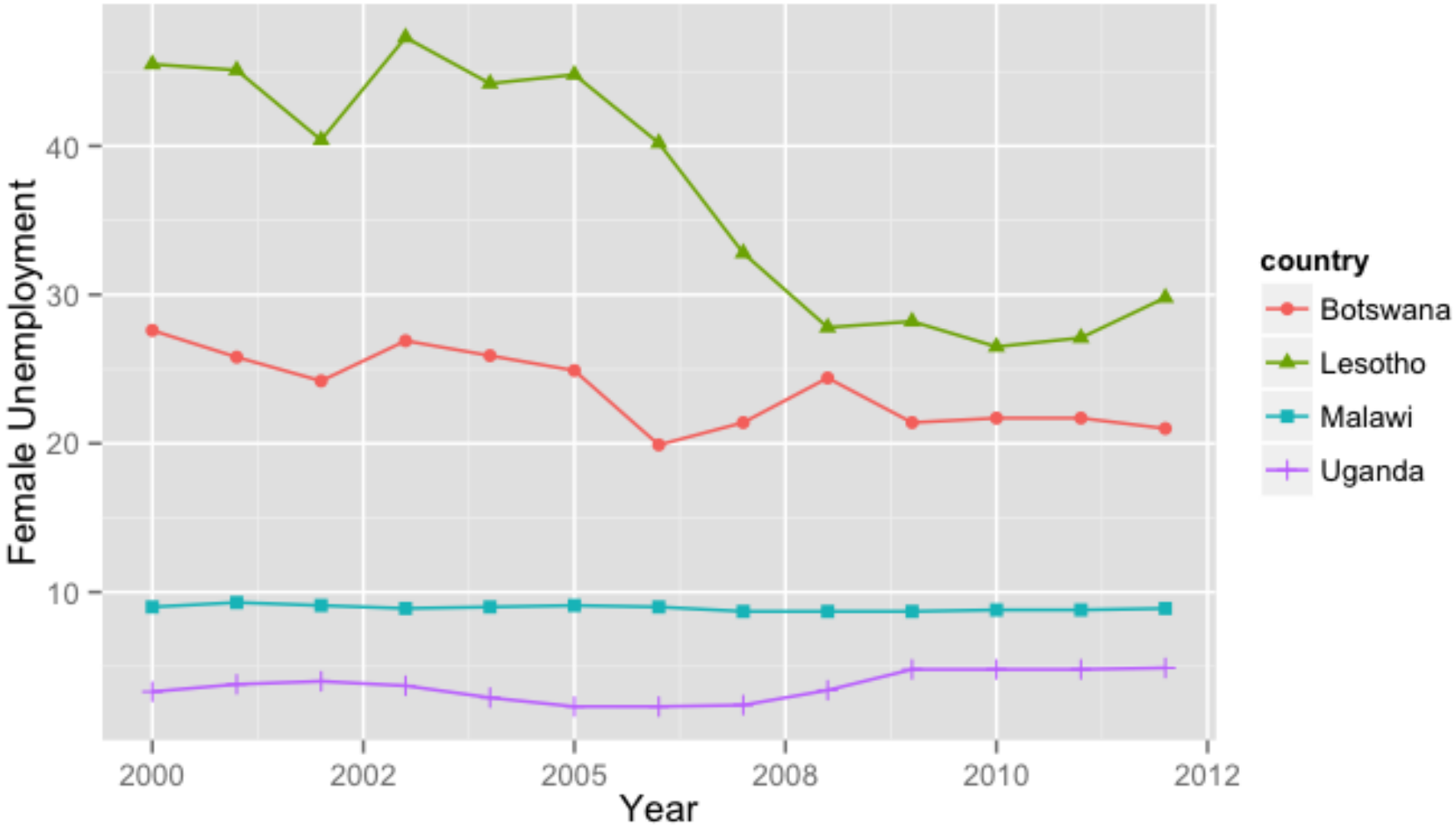
Health Care Expenditure in Selected Countries



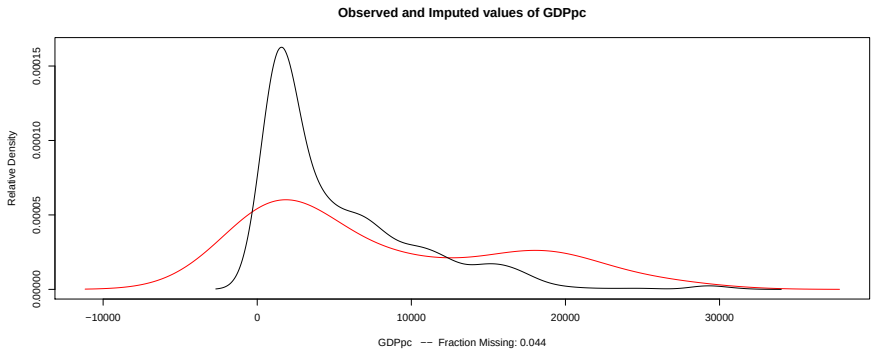
Female Schooling in Selected Countries

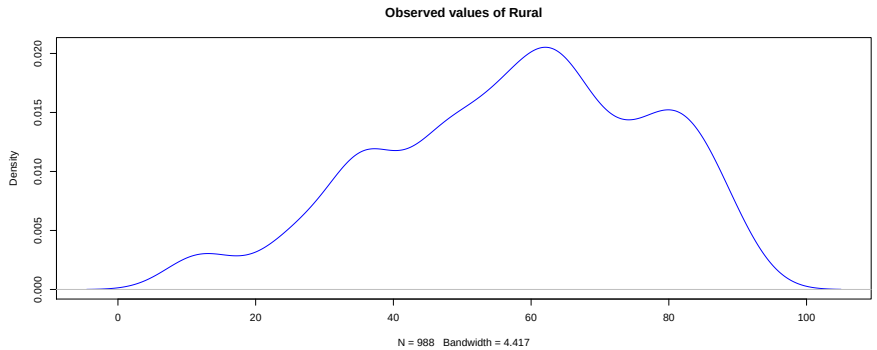


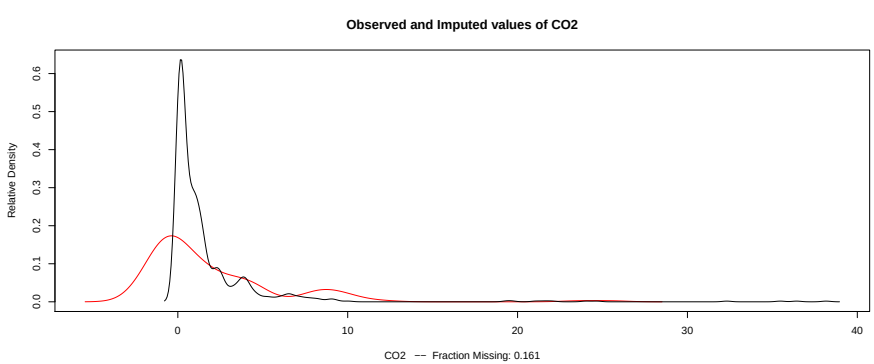
Female Unemployment in Selected Countries

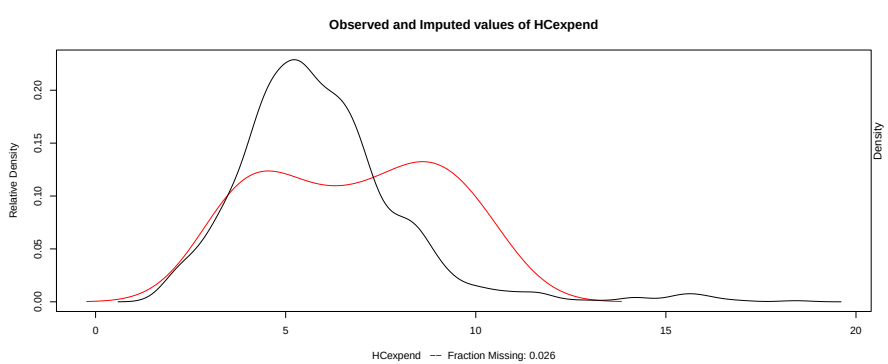


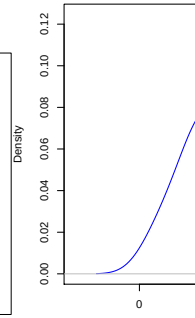
Imputed Missing Values

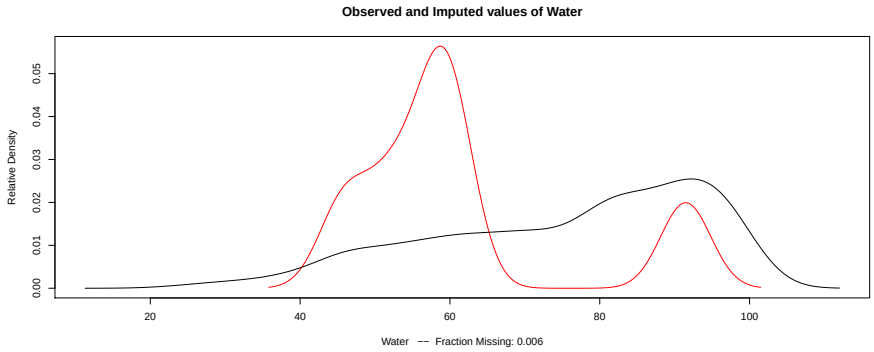


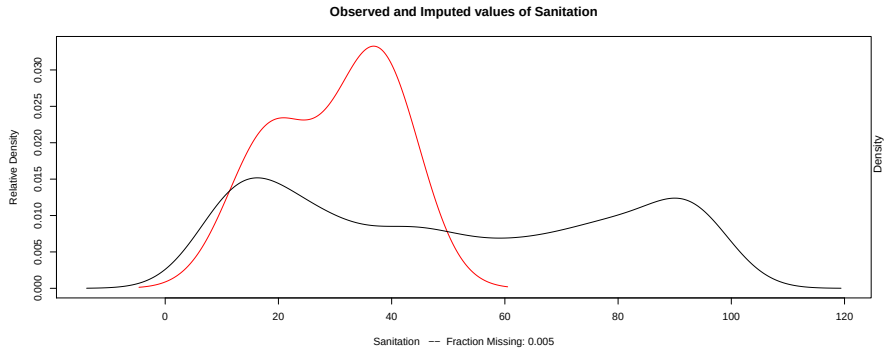


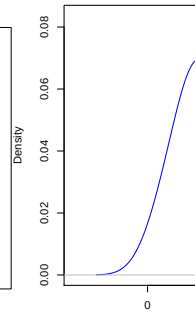








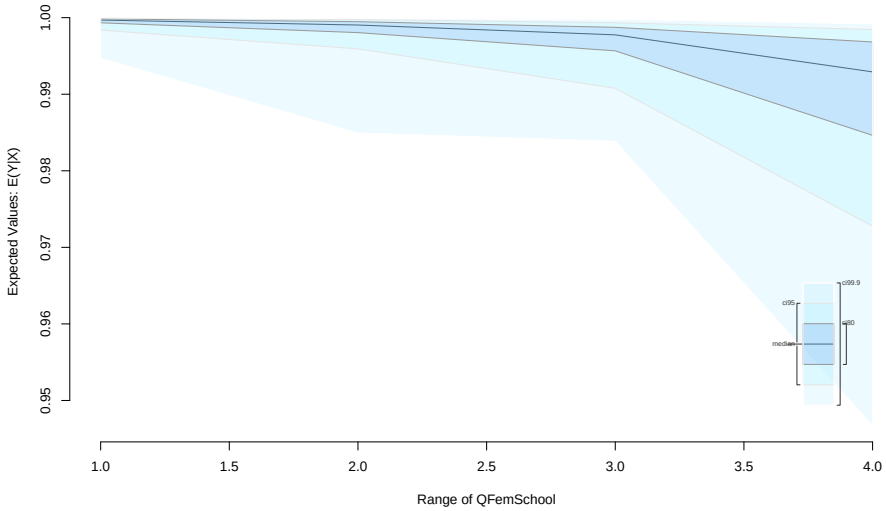


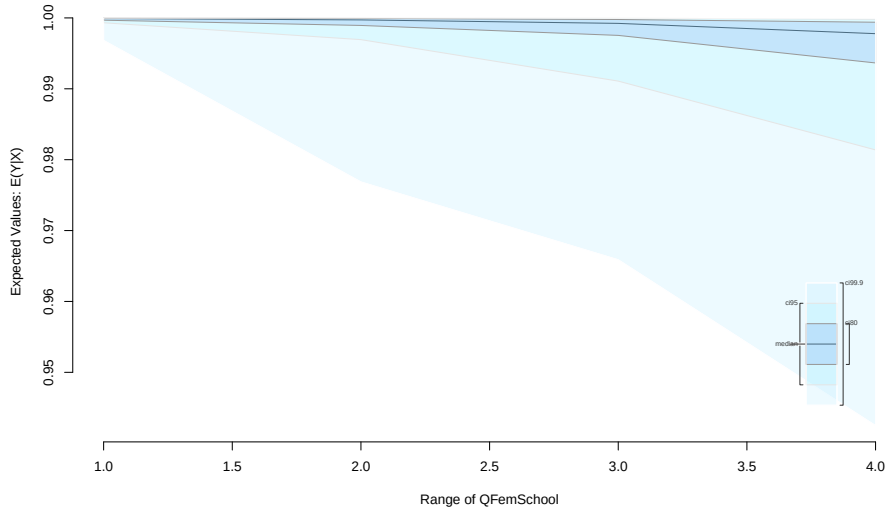


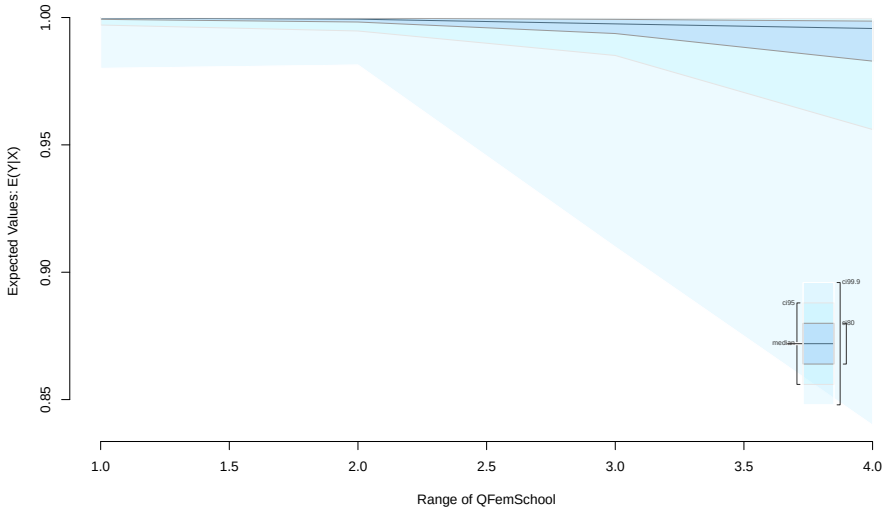
Logistic Regression Results - Model 1

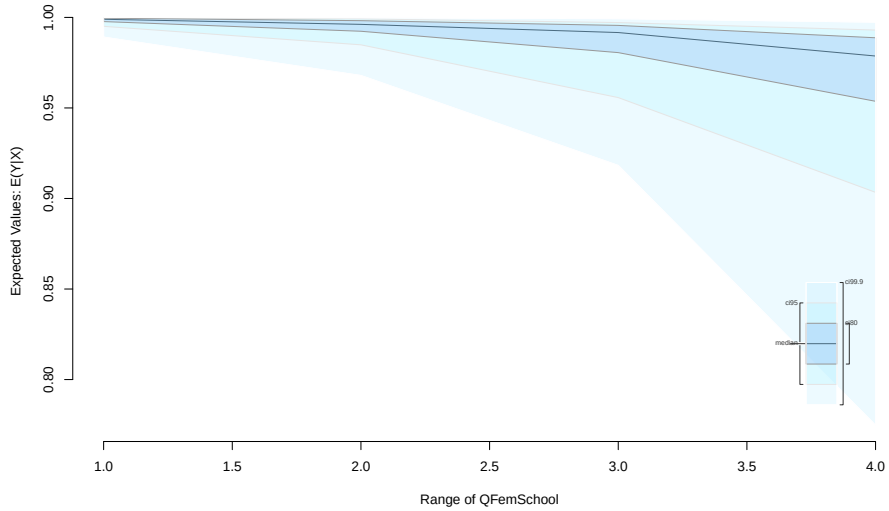
	Value	Std. Error	t-stat	p-value
(Intercept)	-37.0426608	6.7830648	-5.4610507	0.0000001
lGDPpc	0.2648217	0.3376944	0.7842052	0.4333322
lRural	-2.4784042	0.5441130	-4.5549441	0.0000054
lCO2	-0.5338952	0.1951980	-2.7351465	0.0064112
lHCexpend	0.8599121	0.4535010	1.8961639	0.0648277
lWater	-2.3932590	0.9033248	-2.6493892	0.0087853
lSanitation	0.9363974	0.2892017	3.2378697	0.0012617
lLifeExpect	19.2171019	1.6916936	11.3596825	0.0000000
lDPT	-0.8363986	1.0265952	-0.8147307	0.4156817
lMeasles	1.7808982	1.1576198	1.5384137	0.1243382
lFemUnempl	-1.8327866	0.2630857	-6.9664995	0.0000000
lFemSchool	-5.8252043	0.6943338	-8.3896309	0.0000000

Predicted Probabilities - Female School Enrollment

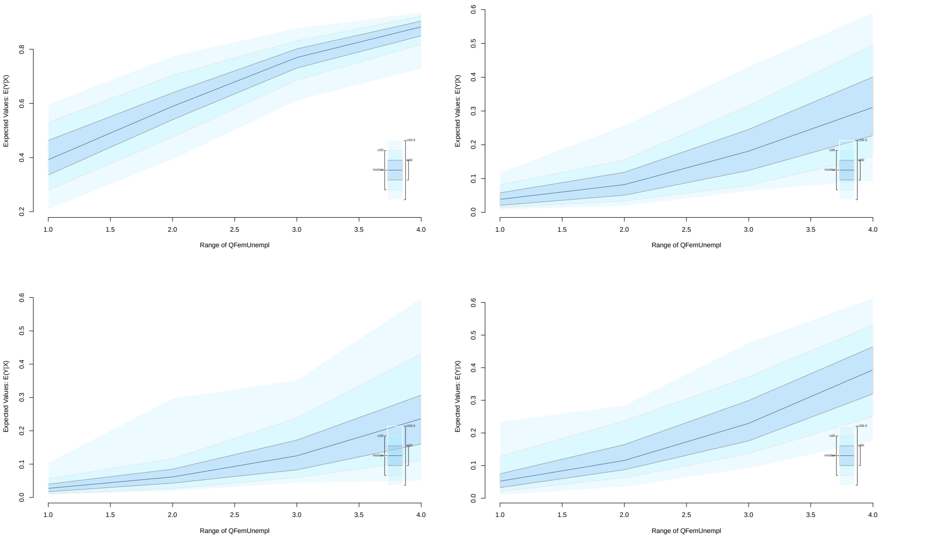








Predicted Probabilities - Female Unemployment



Simple Linear Regression Results - Model 2

	Value	Std. Error	t-stat	p-value
(Intercept)	7.4460462	1.6912559	4.4026726	0.0000197
lGDPpc	0.0151821	0.0731612	0.2075153	0.8356466
lRural	0.1965335	0.1386197	1.4177890	0.1565617
lCO2	0.1006860	0.0309310	3.2551784	0.0011665
lHCexpend	0.4007982	0.1142938	3.5067370	0.0006391
lWater	-0.3701776	0.1857766	-1.9925950	0.0469520
lSanitation	0.0686403	0.0711218	0.9651097	0.3347179
lLifeExpect	-3.4555592	0.3642652	-9.4863835	0.0000000
lDPT	0.6290522	0.2472276	2.5444252	0.0109947
lMeasles	-0.1186401	0.2474585	-0.4794342	0.6317119
lFemUnempl	0.4240839	0.0481485	8.8078279	0.0000000
lFemSchool	0.5990285	0.1594229	3.7574816	0.0004678

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 (!)