Determinants of HIV

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Presentation Outline

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

Research Question & Motivation

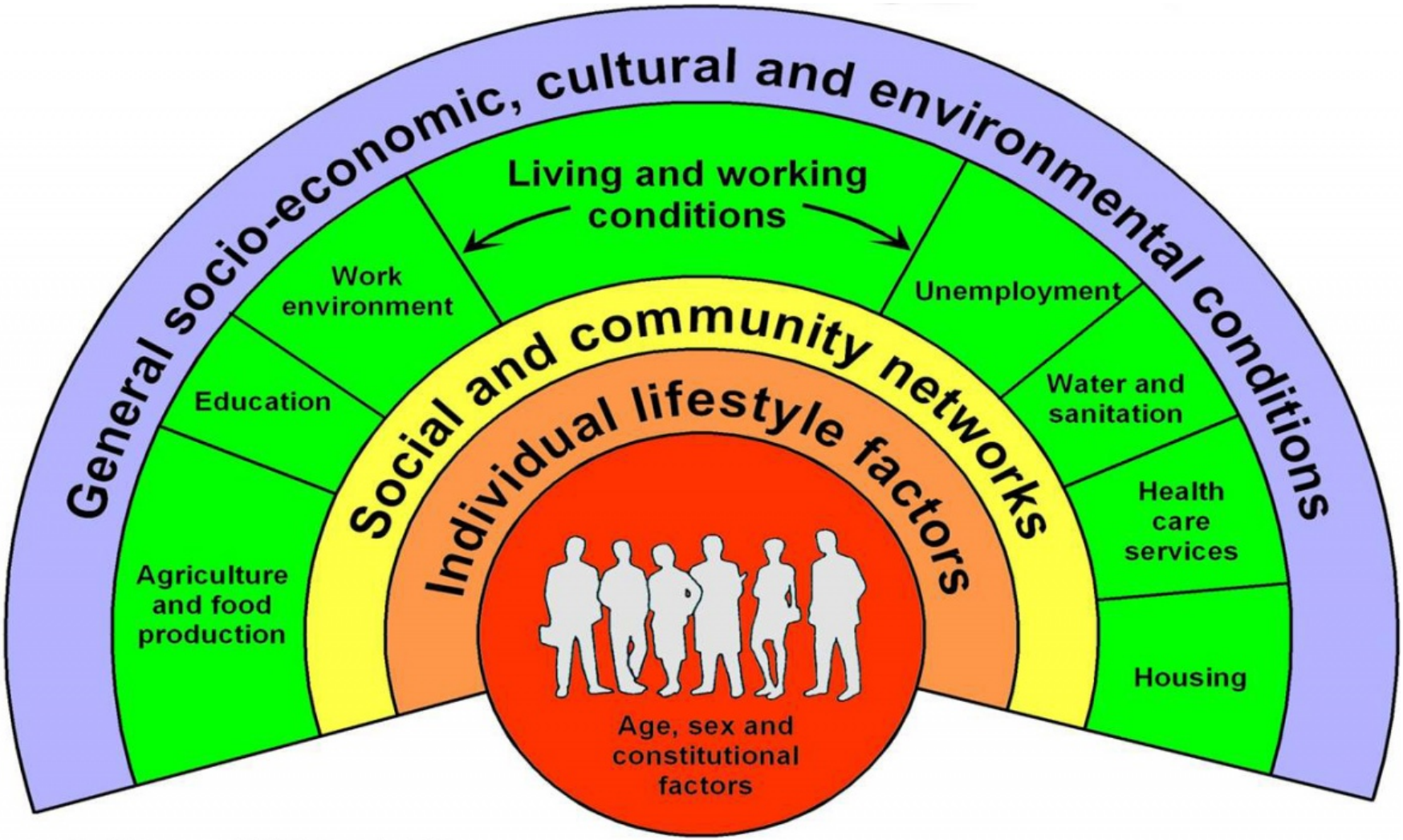
Research Question: Are community level factors significant determinants of HIV/AIDS incidence rates?

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



Source: Dahlgren and Whitehead, 1991

Methodology

Model

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

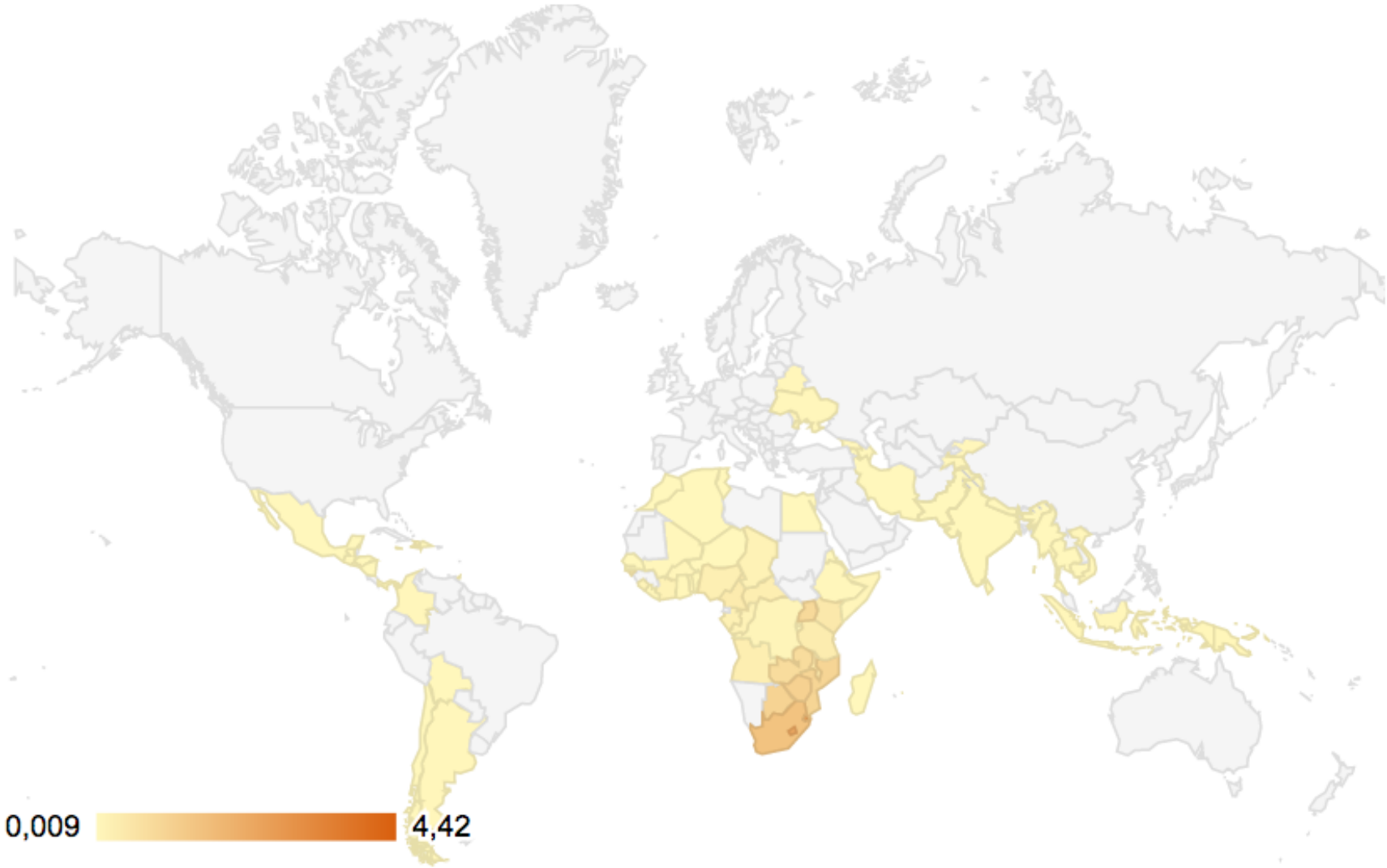
Datasets

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

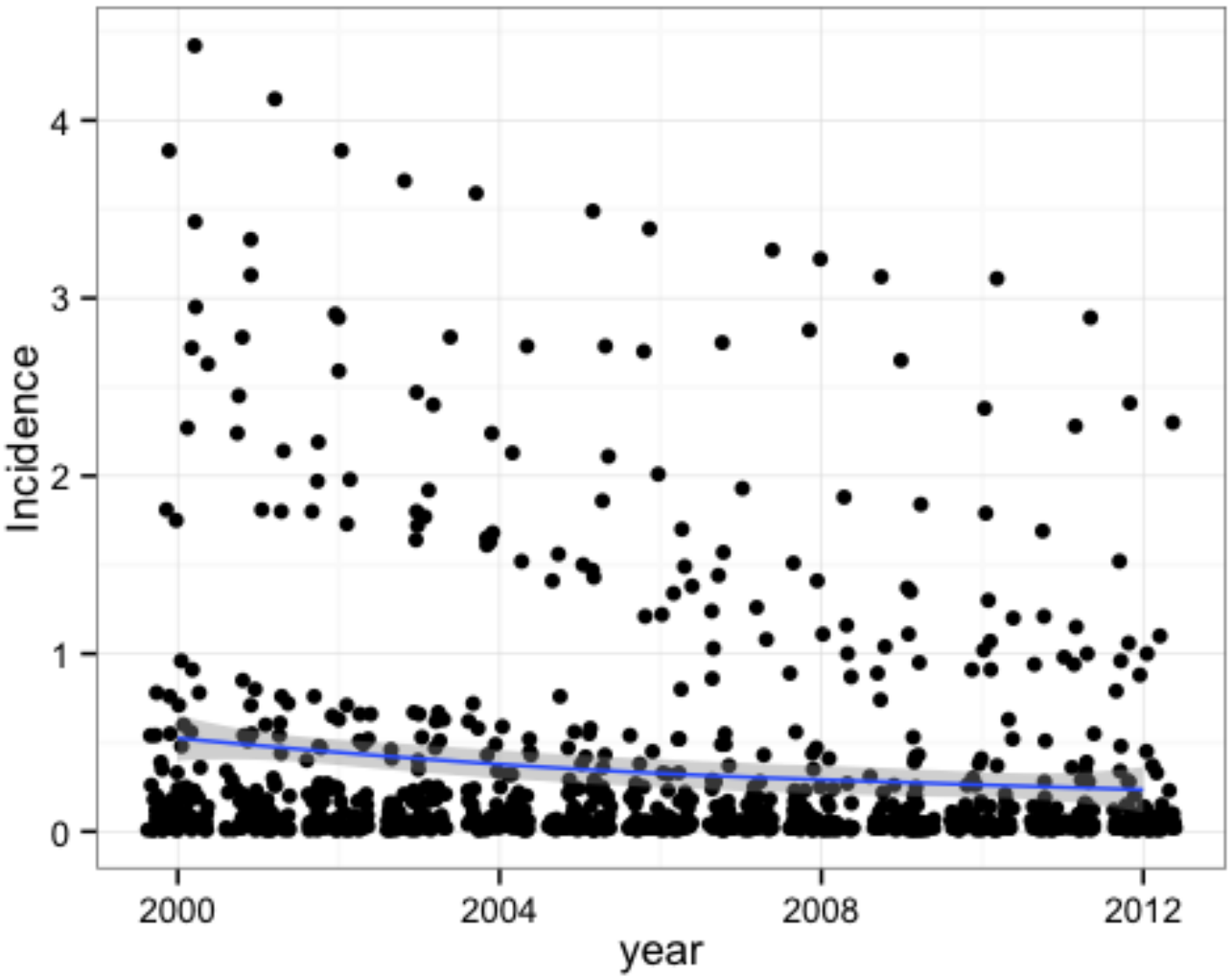
Methodology

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

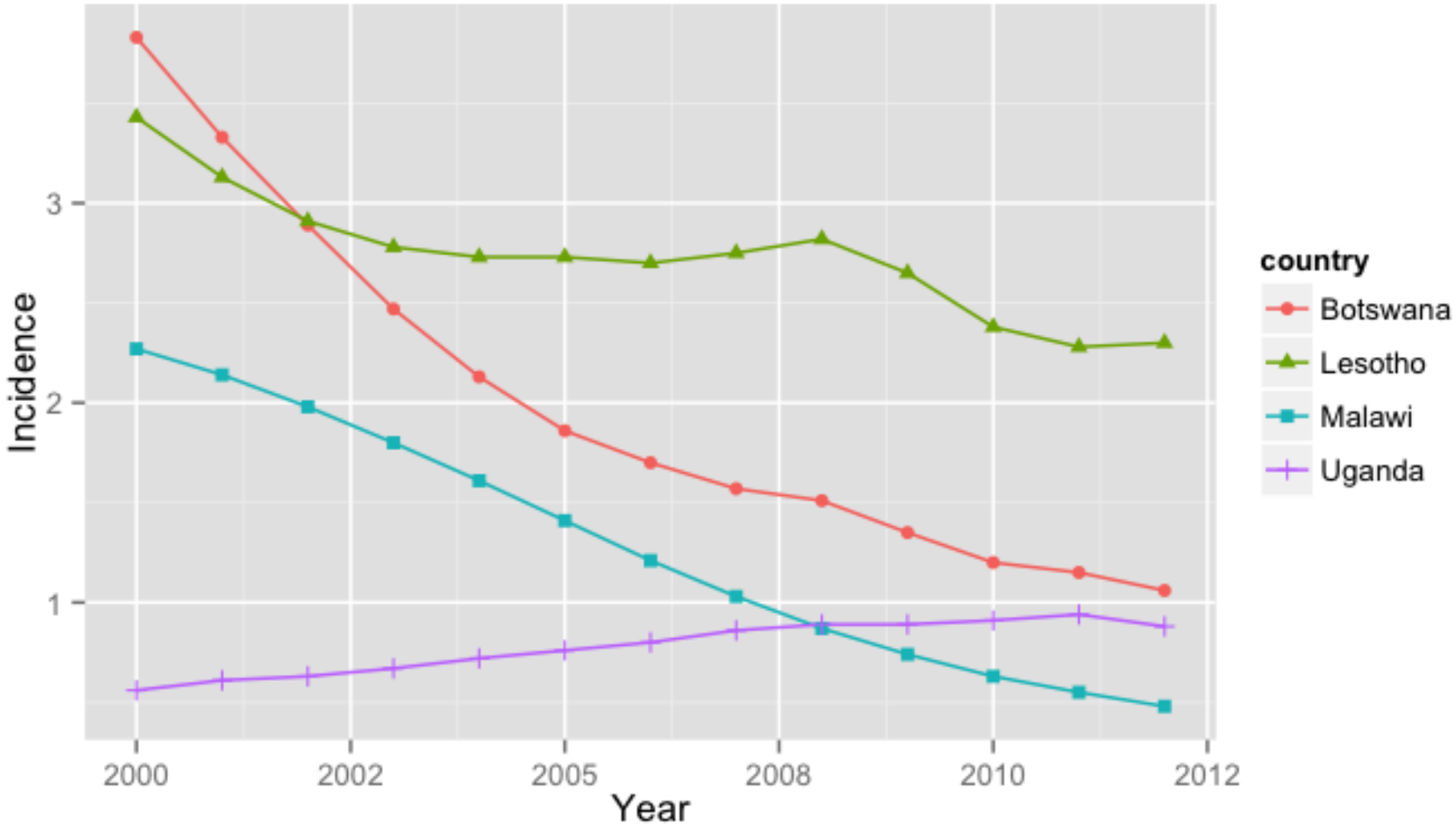
Distribution of HIV Incidence Rates



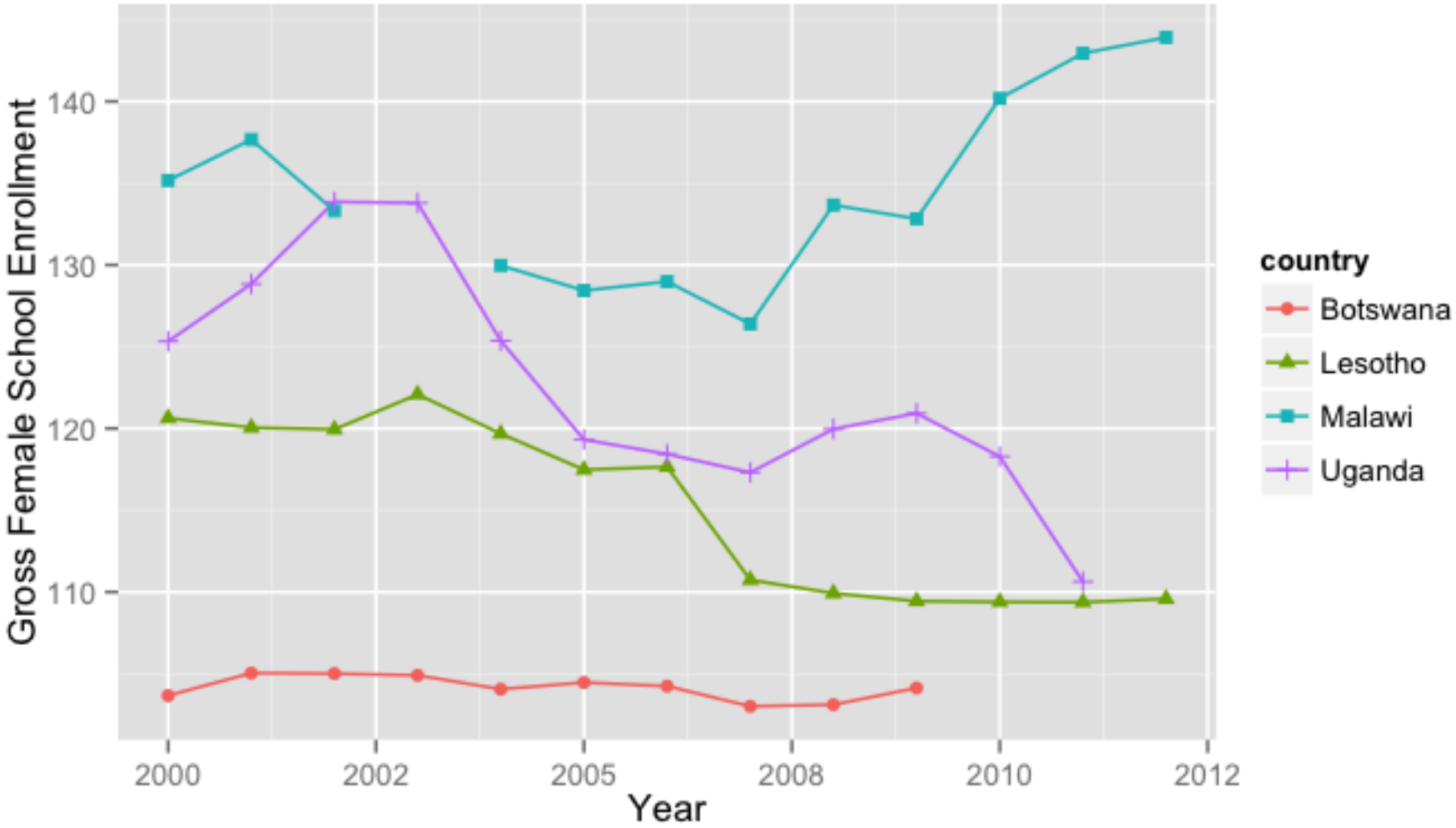
HIV Incidence Rates over Time



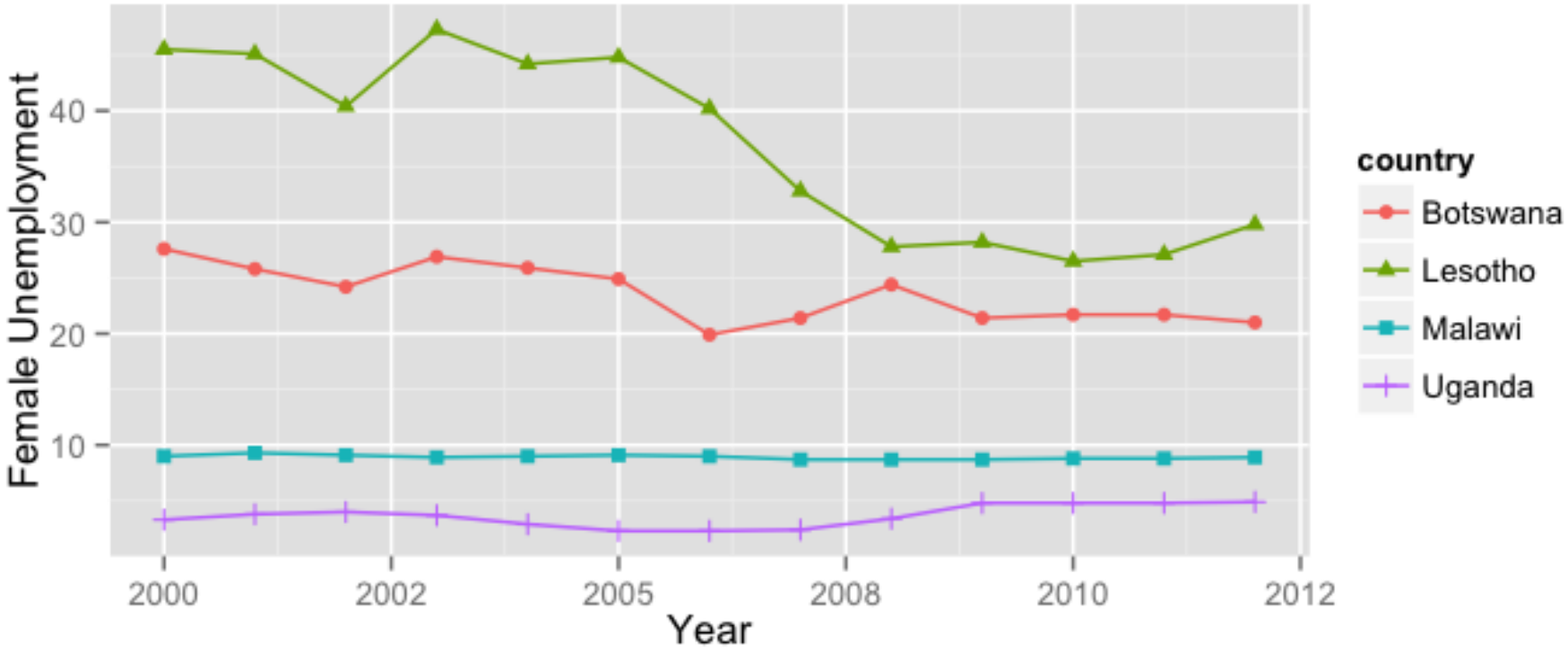
Case Studies



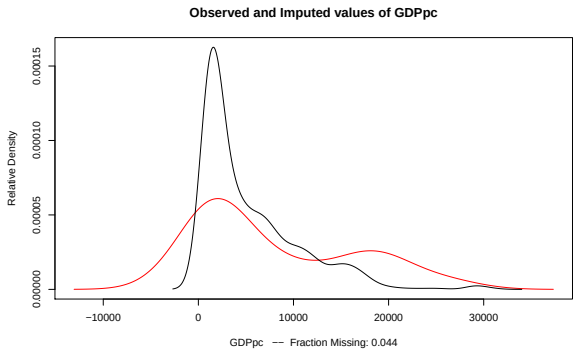
Female Schooling in Selected Countries

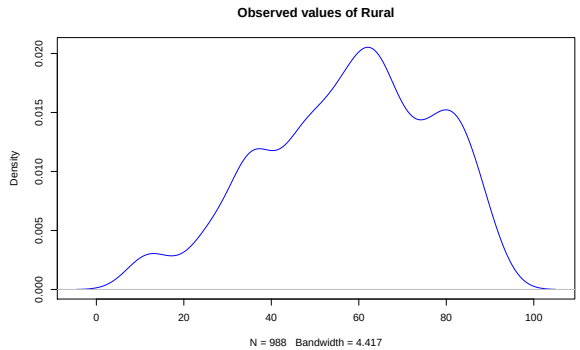


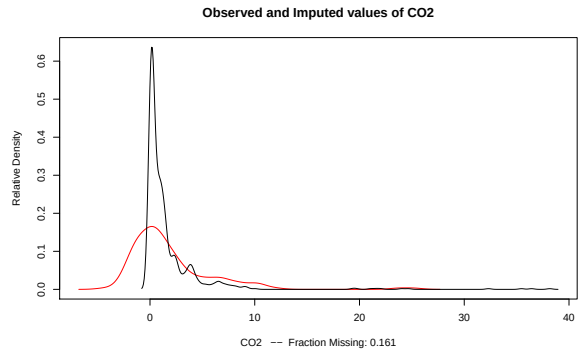
Female Unemployment in Selected Countries

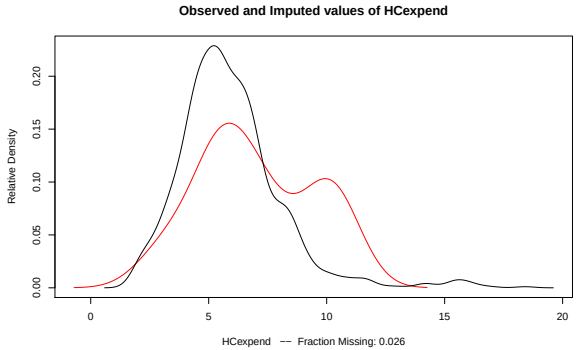


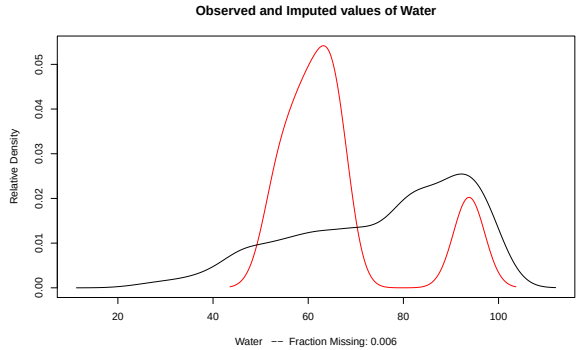
Imputed Missing Values

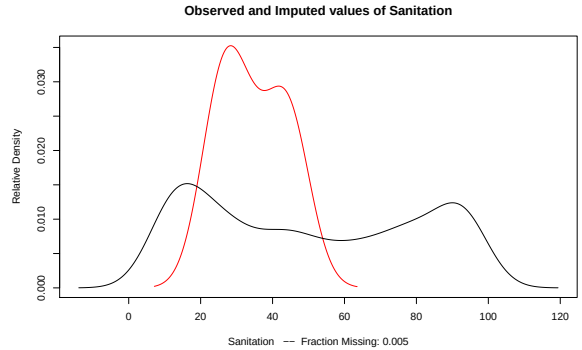


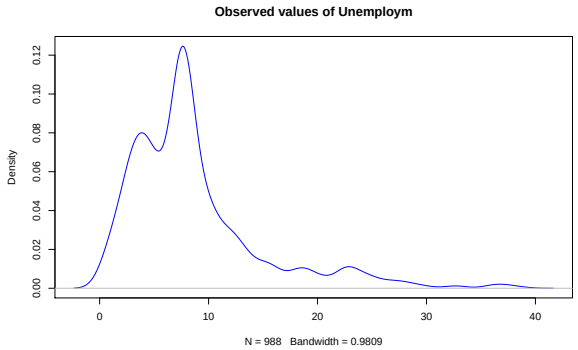


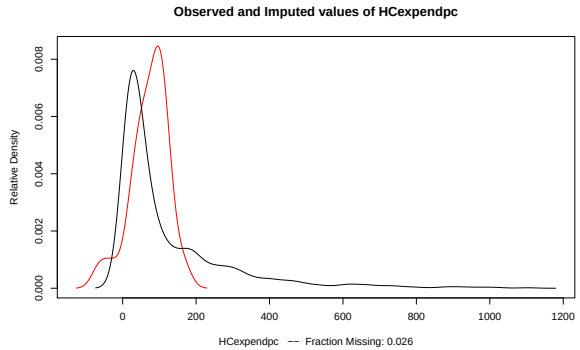


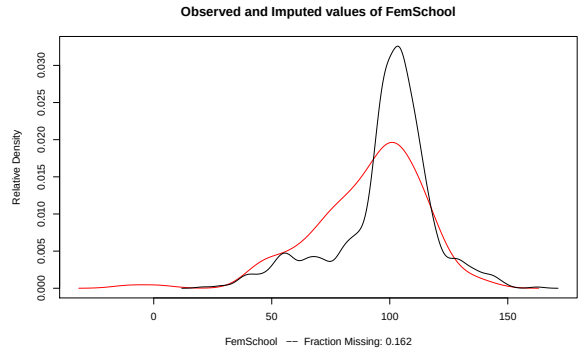








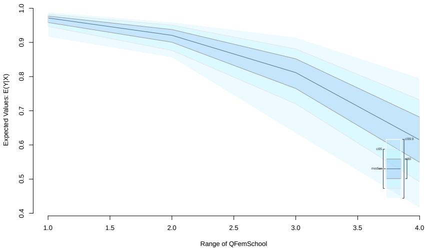


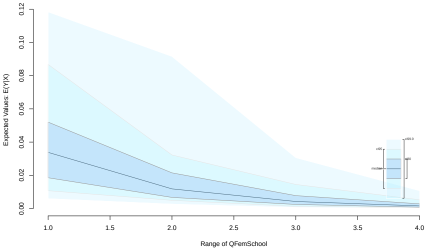


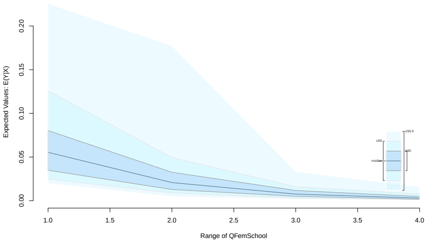
Logistic Regression Results - Model 1

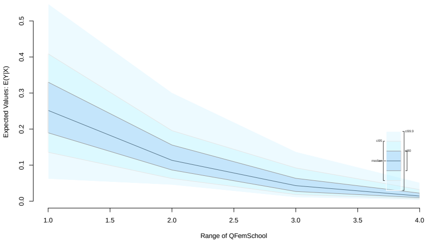
	Value	Std. Error	t-stat	p-value
(Intercept)	-37.9205013	7.5798136	-5.0028277	0.0000038
lGDPpc	0.3521672	0.3536462	0.9958178	0.3213671
lRural	-2.5039535	0.5651424	-4.4306590	0.0000128
lCO2	-0.5635354	0.2247579	-2.5072998	0.0164247
lHCexpend	0.9186442	0.4097656	2.2418772	0.0265154
lWater	-2.3113609	0.8369214	-2.7617419	0.0057591
lSanitation	0.8810417	0.2769151	3.1816312	0.0014660
lLifeExpect	19.0581500	1.9583368	9.7318040	0.0000000
lDPT	-0.6783054	1.0772661	-0.6296545	0.5297824
lMeasles	1.5831273	1.1791278	1.3426258	0.1800804
Inverse	1.8252004	0.2549095	7.1601886	0.0000000
lFemSchool	-5.6516056	0.8792243	-6.4279448	0.0000033

Predicted Probabilities - Female School Enrollment

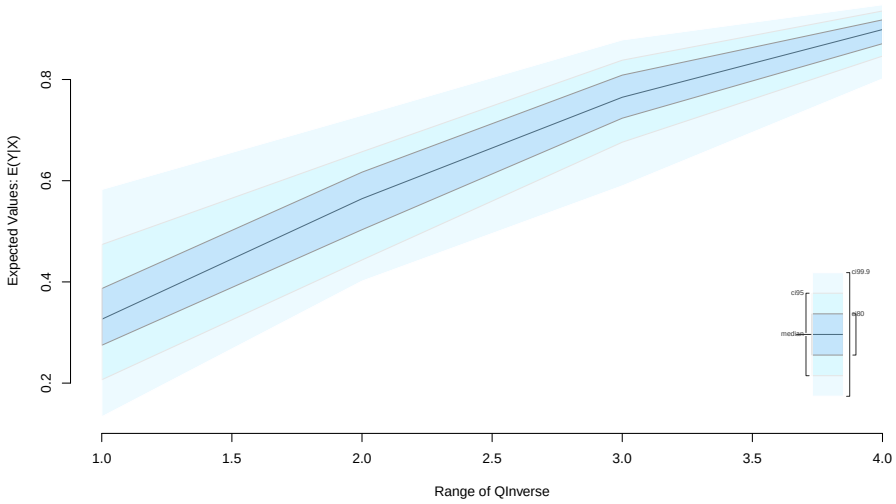


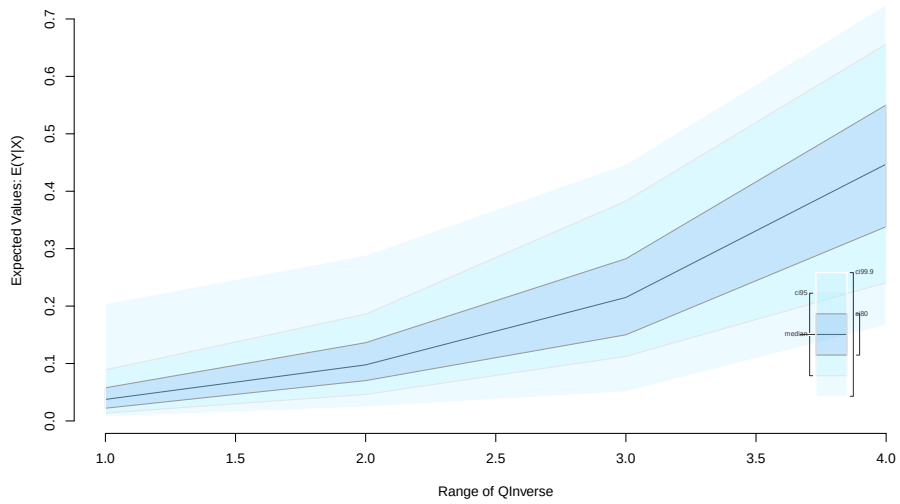


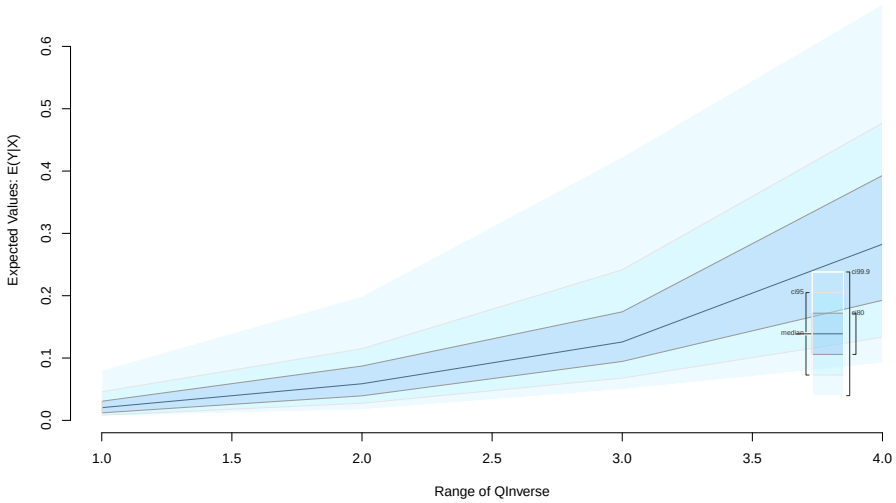


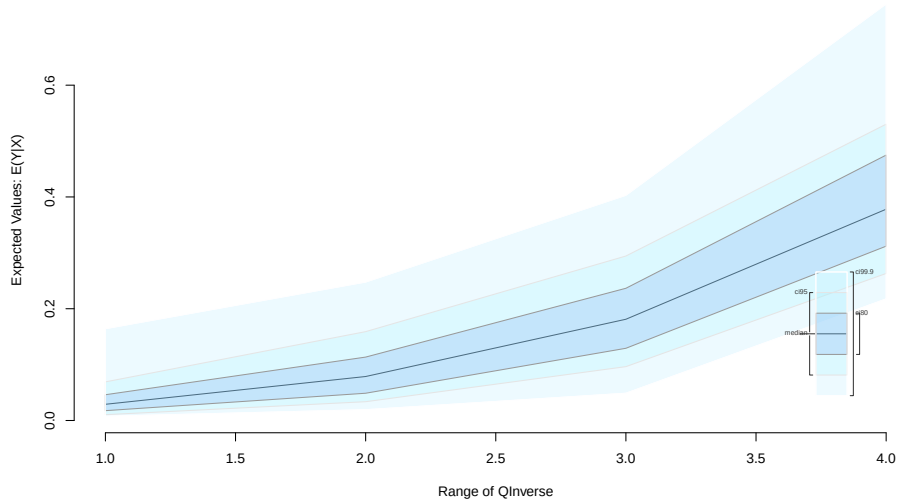


Predicted Probabilities - Female Unemployment









Simple Linear Regression Results - Model 2

	Value	Std. Error	t-stat	p-value
(Intercept)	6.9890939	1.5879762	4.4012585	0.0000113
lGDPpc	0.0029174	0.0785843	0.0371243	0.9704418
lRural	0.2290178	0.1421739	1.6108287	0.1079588
lCO2	0.1009680	0.0313909	3.2164780	0.0013345
lHCexpend	0.3881284	0.1258072	3.0851043	0.0041089
lWater	-0.3137429	0.1988502	-1.5777853	0.1181742
lSanitation	0.0825177	0.0728017	1.1334589	0.2576909
lLifeExpect	-3.3566186	0.3320269	-10.1094770	0.0000000
lDPT	0.5987168	0.2466114	2.4277737	0.0151992
lMeasles	-0.0697709	0.2461077	-0.2834977	0.7768095
Inverse	-0.4282598	0.0485740	-8.8166556	0.0000000
lFemSchool	0.5302460	0.1454724	3.6449940	0.0003575

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 (!)