

# Determinants of HIV

M. Moellenkamp and N. Rosenberg

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# Outline

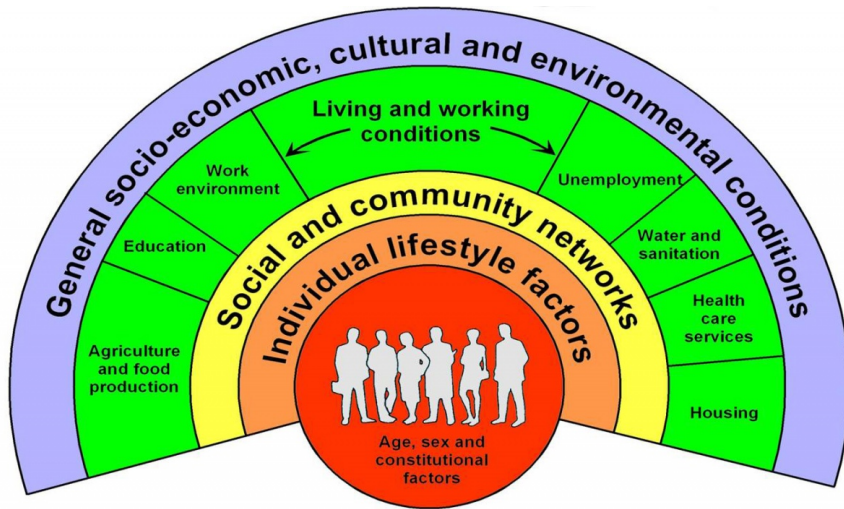
- Research Question and Motivation
- Theoretical Framework
- Methodology
- Descriptive Statistics
- Findings
- Conclusion and Limitations

# Research Question and 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



Source: Dahlgren and Whitehead, 1991

# Methodology and Dataset

## Model

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

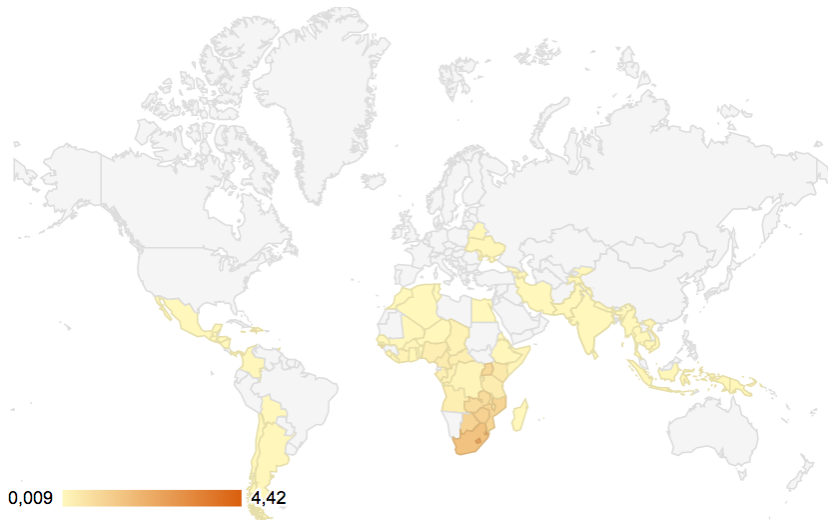
## Datasets

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

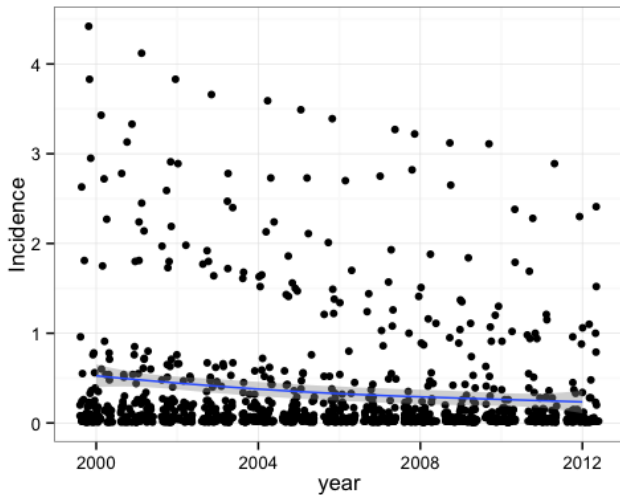
## Methodology

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

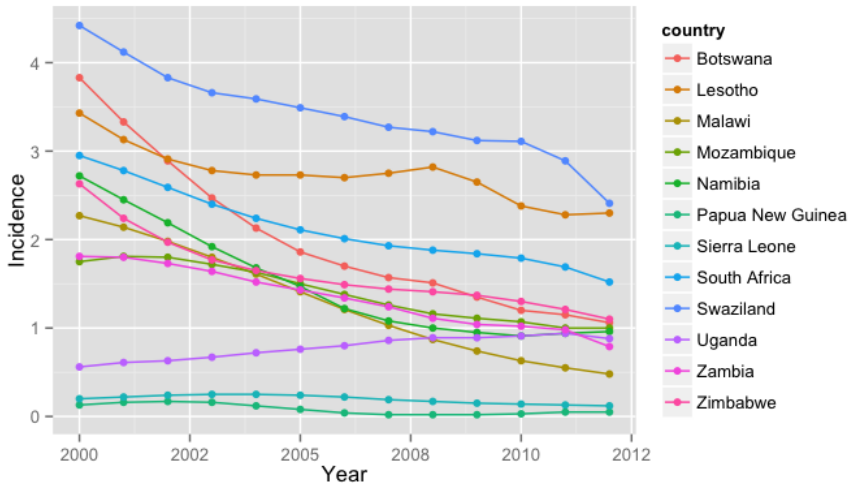
# Distribution of HIV Incidence Rates



# HIV Incidence Rates over Time

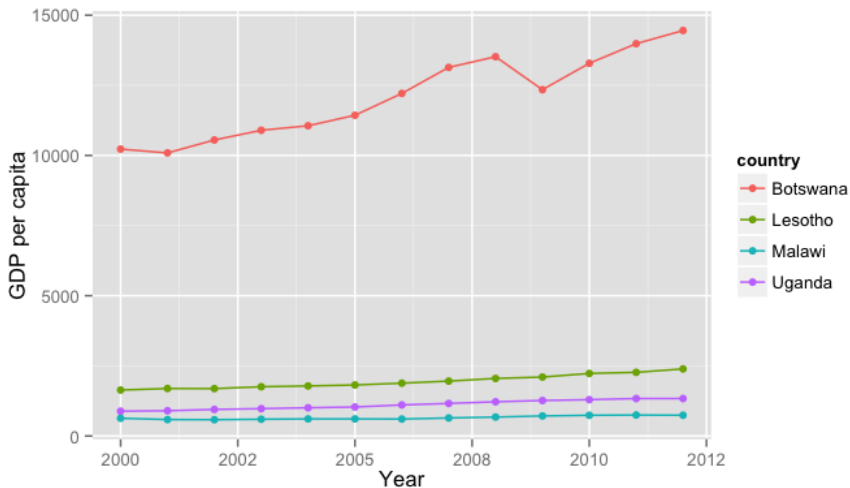


# Interesting Cases for HIV Incidence Rates

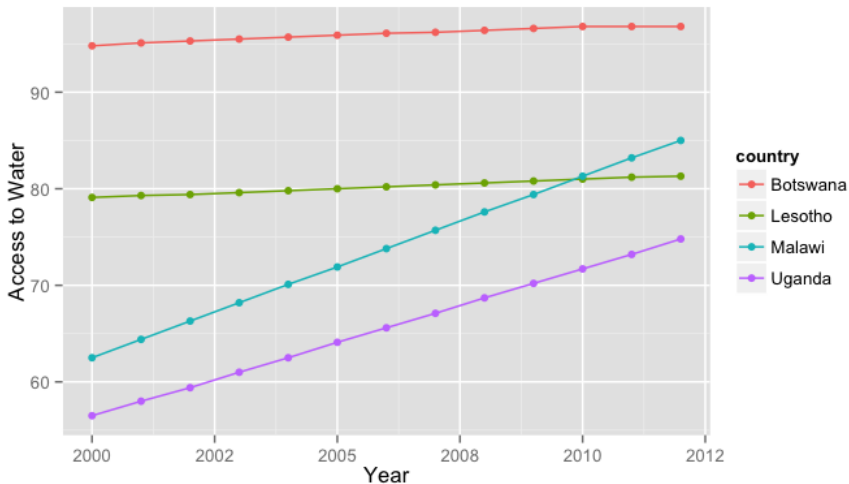




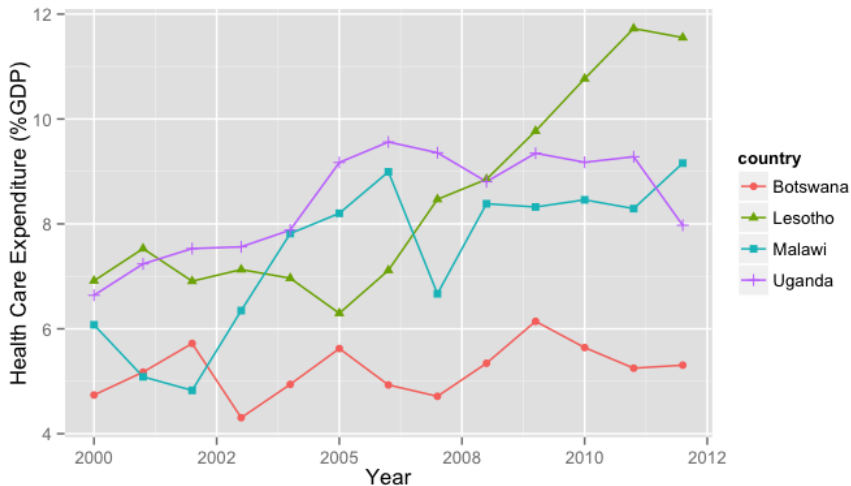
# GDP per capita in Selected Countries



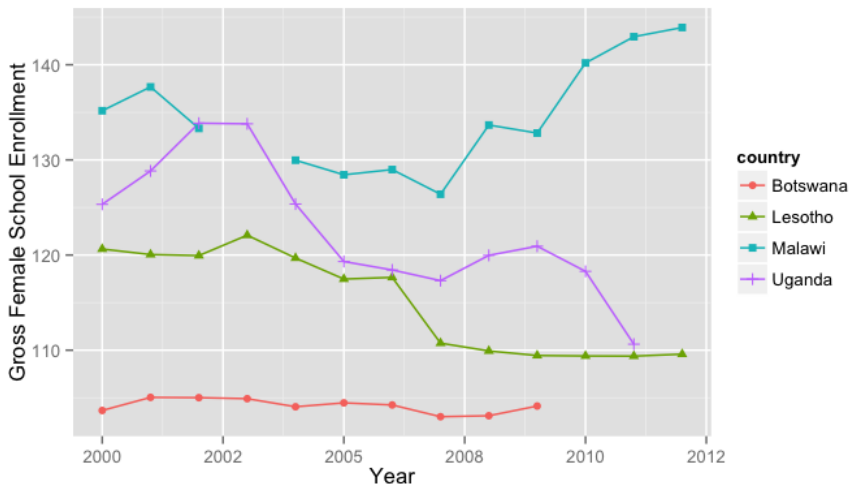
# Access to Water in Selected Countries



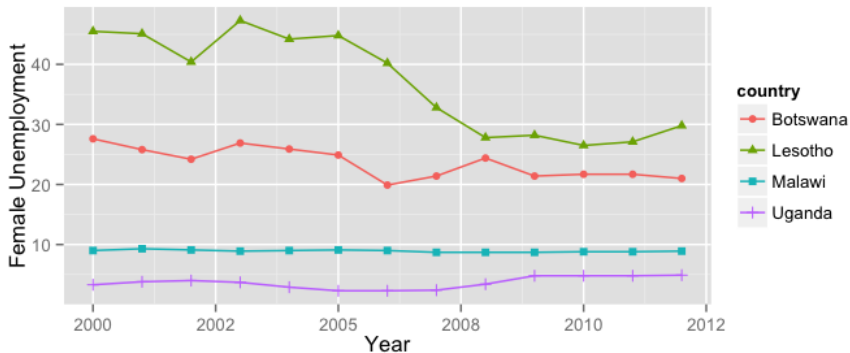
# Health Care Expenditure in Selected Countries



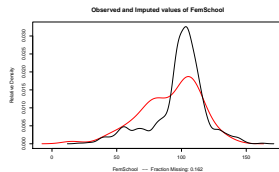
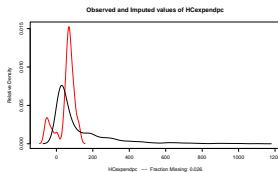
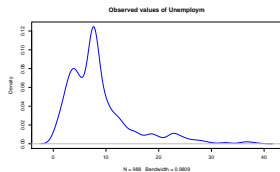
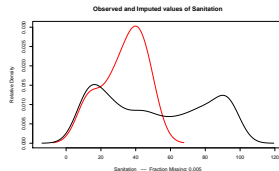
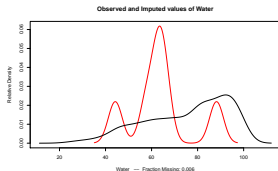
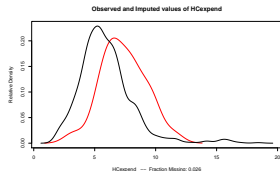
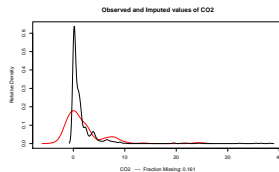
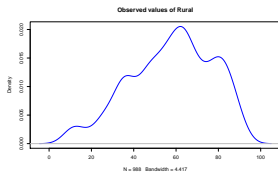
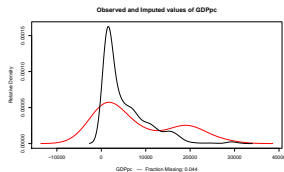
# Level of Female Schooling in Selected Countries



# Level of Female Unemployment in Selected Countries



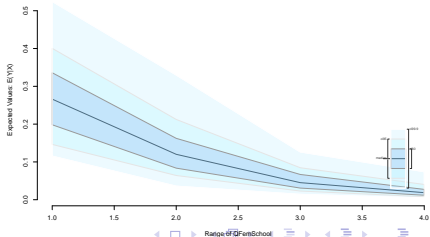
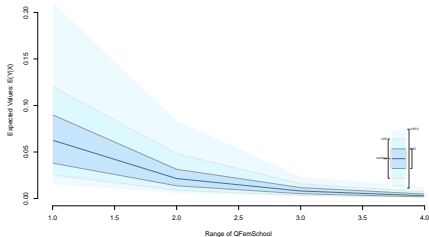
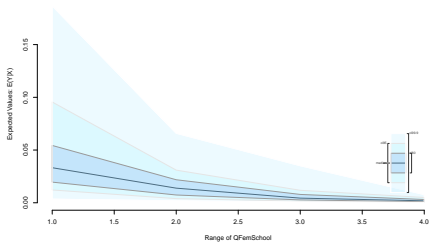
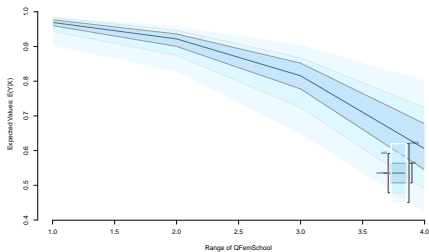
# Imputed missing values



# Logistic Regression Results - Model 1

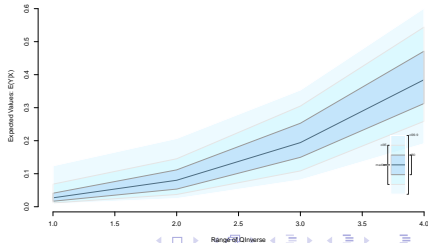
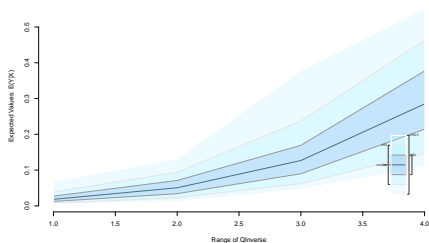
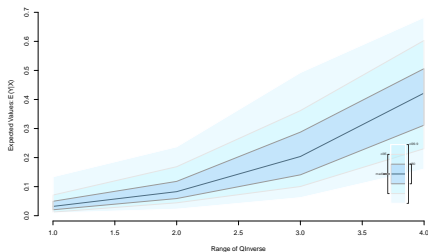
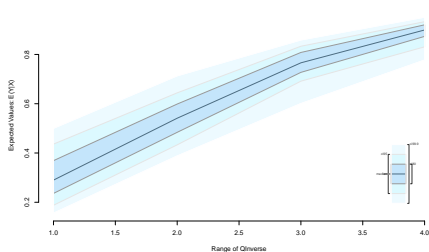
	Value	Std. Error	t-stat	p-value
(Intercept)	-38.4598842	6.8075923	-5.6495575	0.0000000
IGDPpc	0.3431464	0.3460790	0.9915261	0.3225622
IRural	-2.5503248	0.5406660	-4.7170056	0.0000024
ICO2	-0.5975568	0.2025805	-2.9497251	0.0035752
IHCexpend	0.7968381	0.4051276	1.9668817	0.0504672
IWater	-2.3811798	0.8280645	-2.8755972	0.0040358
ISanitation	0.9130005	0.2770757	3.2951300	0.0009841
ILifeExpect	19.3758031	1.7091672	11.3364002	0.0000000
IDPT	-0.5632722	1.0893919	-0.5170520	0.6059935
IMeasles	1.6122634	1.1983854	1.3453630	0.1797362
Inverse	1.8289476	0.2697358	6.7805151	0.0000000
IFemSchool	-5.8115447	0.7283378	-7.9791885	0.0000000

# Predicted Probabilities - Female School Enrollment (in Quartiles)





# Predicted Probabilities - Female Unemployment (in Quartiles)



## Simple Linear Regression Results - Model 2

	Value	Std. Error	t-stat	p-value
(Intercept)	7.4830867	1.6098736	4.6482447	0.0000037
IGDPpc	0.0028678	0.0722556	0.0396890	0.9683440
IRural	0.2125174	0.1361545	1.5608547	0.1185907
ICO2	0.1081643	0.0320581	3.3740095	0.0008188
IHCexpend	0.4127957	0.1135958	3.6338998	0.0003690
IWater	-0.3454610	0.1782058	-1.9385512	0.0525977
ISanitation	0.0728289	0.0698825	1.0421619	0.2973639
ILifeExpect	-3.4532905	0.3407310	-10.1349475	0.0000000
IDPT	0.6012523	0.2483464	2.4210226	0.0155434
IMeasles	-0.0925560	0.2476445	-0.3737453	0.7086492
Inverse	-0.4223984	0.0489681	-8.6259994	0.0000000
IFemSchool	0.5703039	0.1480741	3.8514759	0.0001852

# Conclusions and 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 and 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 (!)