



**USAID**  
FROM THE AMERICAN PEOPLE

**HEALTH POLICY  
INITIATIVE**

# Quantifying and Analyzing Health Equity

Presenter's Name

Date



Photo credits: ©iStockphoto.com/Bartosz Hadyniak/ Britta Kasholm-Tengve/ Bartosz Hadyniak

# Session Goals

## We will learn the following:

1. How to measure poverty and inequality
2. How to display findings to illustrate inequities in health
3. How to understand and address common data challenges

# Who Is Poor?

## Relative poverty

- Ranks people within the same country or region
- **Group A** is poorer/less poor than **Group B** (but we do not know by how much)
- Purchasing power/socioeconomic status (used by marketers)

## Absolute poverty

- Compares people across countries against a standardized poverty line (national poverty line, \$1/day, \$2/day, etc.)
- Quantifies absolute income or expenditures

# What Kind of Data Do We Need?

## Relative poverty

- Actual information on income or expenditures
- Household assets or durable goods
- Individual characteristics shown to correlate with income (e.g., education of head of household, occupation, and place of residence)

👉 **Analytic method for combining multiple variables into a single measure or scale**

# Demographic and Health Survey (DHS) Data

## Relative poverty: wealth quintiles or groups

- Start with data on
  - Ownership of assets, such as televisions and cars
  - Dwelling characteristics, such as flooring material and drinking water sources
- Each household is given a standardized score for each asset it owns
- Scores are summed by household
- Individuals are ranked according to the total score of their household
- Individuals are divided into population groups or quintiles

# Demographic and Health Survey

## Funded by USAID

- Wealth quintiles included in all DHS final reports since 2004
- Retroactively added to data files going back to 2000
- DHS data available for more than 40 countries; many countries have DHS series over time

**Reference link:** [www.measuredhs.com/accesssurveys/Data\\_quality\\_use.cfm](http://www.measuredhs.com/accesssurveys/Data_quality_use.cfm)

# Demographic and Health Surveys

**Table 2.10 Wealth quintiles**

Percent distribution of the jure population by wealth quintiles, according to residence and province, Zimbabwe 2005-2006

Residence/ province	Wealth quintile					Total	Number
	Lowest	Second	Middle	Fourth	Highest		
<b>Residence</b>							
Urban	na	na	1.5	37.9	58.5	100.0	13,087
Rural	29.3	29.3	28.5	11.7	1.2	100.0	28,236
<b>Province</b>							
Manicaland	16.4	21.6	31.2	22.0	8.7	100.0	5,166
Mashonaland Central	23.4	32.7	25.8	13.2	4.9	100.0	4,329
Mashonaland East	9.8	22.4	34.6	23.2	9.9	100.0	3,772
Mashonaland West	21.7	23.4	18.5	21.8	14.7	100.0	4,140
Matabeleland North	55.6	24.0	8.1	7.7	4.6	100.0	3,043
Matabeleland South	20.2	24.9	32.2	12.7	10.0	100.0	2,205

Source: 2005/06 DHS Zimbabwe.

**Table 4.2 Fertility by background characteristics**

Total fertility rate for the three years preceding the survey, percentage of women 15-49 currently pregnant, and mean number of children ever born to women age 40-49 years, by background characteristics, Zimbabwe 2005-2006

Background characteristic	Total fertility rate	Percentage currently pregnant <sup>1</sup>	Mean number of children ever born to women age 40-49
<b>Residence</b>			
Urban	2.6	4.4	4.0
Rural	4.6	8.0	5.8
<b>Province</b>			
Manicaland	4.2	7.4	5.5
Mashonaland Central	4.6	8.6	5.1
Mashonaland East	3.7	7.7	5.1
Mashonaland West	3.7	6.7	5.3
Matabeleland North	4.2	6.1	5.9
Matabeleland South	4.0	5.3	5.0
Midlands	4.2	7.3	5.7
Masvingo	4.9	8.0	6.5
Harare	2.5	5.3	4.1
Bulawayo	2.3	2.4	3.6
<b>Education</b>			
No education	5.8	2.0	6.1
Primary	4.5	7.9	5.5
Secondary	3.3	6.3	4.0
More than secondary	2.7	5.0	2.9
<b>Wealth quintile</b>			
Lowest	5.5	8.0	6.4
Second	4.8	10.0	6.1
Middle	4.0	7.1	5.5
Fourth	3.2	6.3	4.5
Highest	2.3	3.5	3.8

Source: 2005/06 DHS Zimbabwe.

# Multiple Indicator Cluster Surveys

## Coordinated by UNICEF

- MICSs are designed to track the status of children.
- MICSs use DHS methodology to create wealth quintiles.
- Standard tables include wealth quintiles as a background indicator.

## Resource link:

[www.childinfo.org/mics2\\_background.html](http://www.childinfo.org/mics2_background.html)

# Multiple Indicator Cluster Surveys

Table 11: Percentage of children of primary school age attending primary school, Cote d'Ivoire, 2000

		Sex				Total	
		Male		Female		Attending	Number
		Attending primary school		Attending primary school			
		Attending	Number	Attending	Number	Attending	Number
Wealth Index Quintiles	Poorest	44.3	1192	33.7	985	39.5	2177
	Second	55.9	1190	44.7	910	51.0	2100
	Middle	59.2	1076	46.4	1005	53.0	2081
	Fourth	72.0	988	64.3	932	68.2	1920
	Richest	85.2	814	77.9	802	81.6	1617
Region	Centre	55.2	403	47.2	342	51.5	745
	Centre Nord	60.4	501	52.4	452	56.6	953
	Nord Est	52.9	277	41.2	210	47.9	486
	Centre Est	58.9	129	58.7	126	58.8	255
	Sud (sans Abidjan)	61.0	944	53.5	865	57.4	1808
	Sud Ouest	53.6	442	36.7	401	45.6	843
	Centre Ouest	63.8	718	51.6	603	58.3	1321
	Ouest	66.3	333	51.9	286	59.6	620
	Nord Ouest	43.3	259	34.7	185	39.7	444
	Nord	45.3	337	36.9	293	41.4	630
Area	Abidjan	79.6	917	72.3	871	76.0	1788
	Urban	70.8	2385	63.2	2205	67.1	4590
	Rural	53.8	2876	42.7	2429	48.7	5304
Age	6	35.3	902	31.0	813	33.3	1716
	7	58.4	961	48.7	782	54.0	1743
	8	69.7	927	56.8	830	63.6	1756

Source: Côte D'Ivoire MICS 2000 (<http://measuredhs.com>)

# Reproductive Health Surveys

## Conducted by CDC under the MEASURE Project

- Funded by USAID
- Designed to focus on reproductive health issues
- Use DHS methodology to create wealth quintiles
- Includes standard tables using wealth quintiles as a background indicator

### Resource link:

[www.cdc.gov/reproductivehealth/surveys/SurveyCountries.htm](http://www.cdc.gov/reproductivehealth/surveys/SurveyCountries.htm)

# What Kind of Data Do We Need?

## Absolute poverty

- Actual information on income or expenditures
  - Previous surveys collecting both income and/or expenditures and household assets
- 👉 **Analytic method for comparing household assets with a determined poverty cut-off line**

# Living Standards Measurement Studies

## Conducted by the World Bank

- Detailed information on household income and expenditures and economic and social areas; 85 surveys spanning 1985–2007 on 28 topics and subjects
- Now includes progress toward achieving the Millennium Development Goals (MDGs)
- Data can measure poverty based on income and expenditures

## Resource link:

<http://go.worldbank.org/WKOXNZV3X0>

# Other Measures of Absolute Poverty

## Developed for microfinance projects

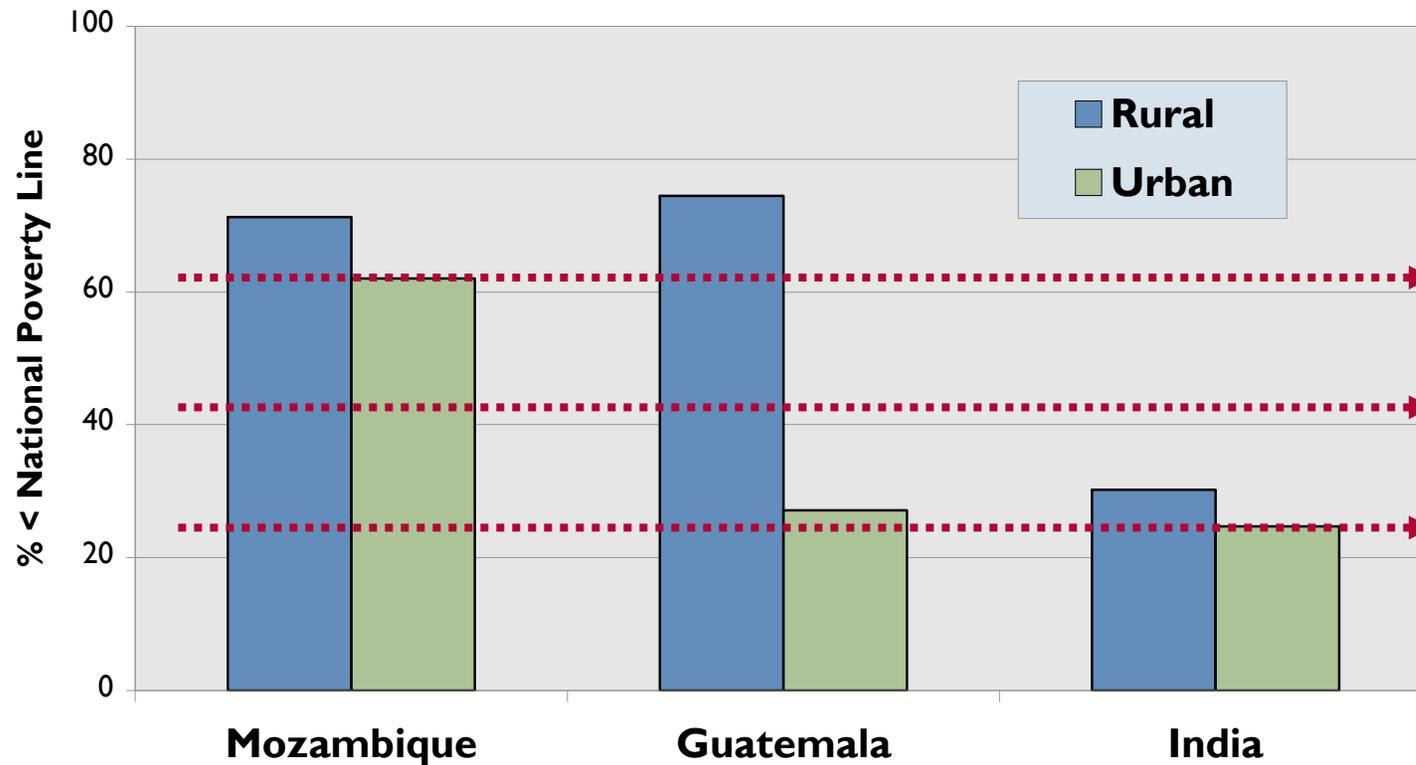
- Derived from comparisons of household assets and characteristics against national living standards surveys
- Limited number of countries available
- Can be incorporated into new surveys

## Reference Links:

[www.povertytools.org/](http://www.povertytools.org/)

[www.microfinance.com/](http://www.microfinance.com/)

# Relative vs. Absolute Poverty



People below the national poverty line could include only the poorest quintile or the bottom two quintiles—or even the bottom three quintiles!

# Session Goals

## We will learn the following:

1. How to measure poverty and inequality
2. How to display findings to illustrate inequities in health
3. How to understand and address common data challenges

## Tables Draw Attention to Values

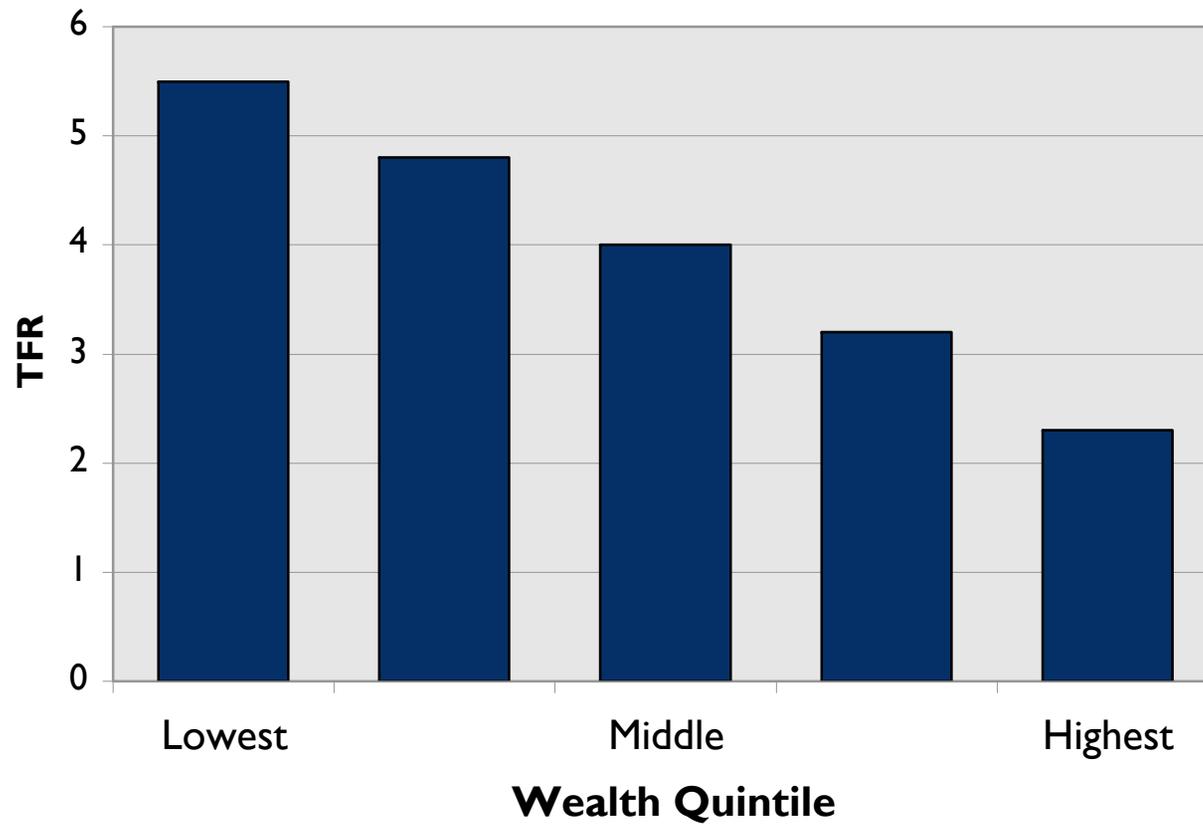
Wealth Quintile	TFR
Poorest	5.5
Lower middle	4.8
Middle	4.0
Upper middle	3.2
Wealthiest	2.3



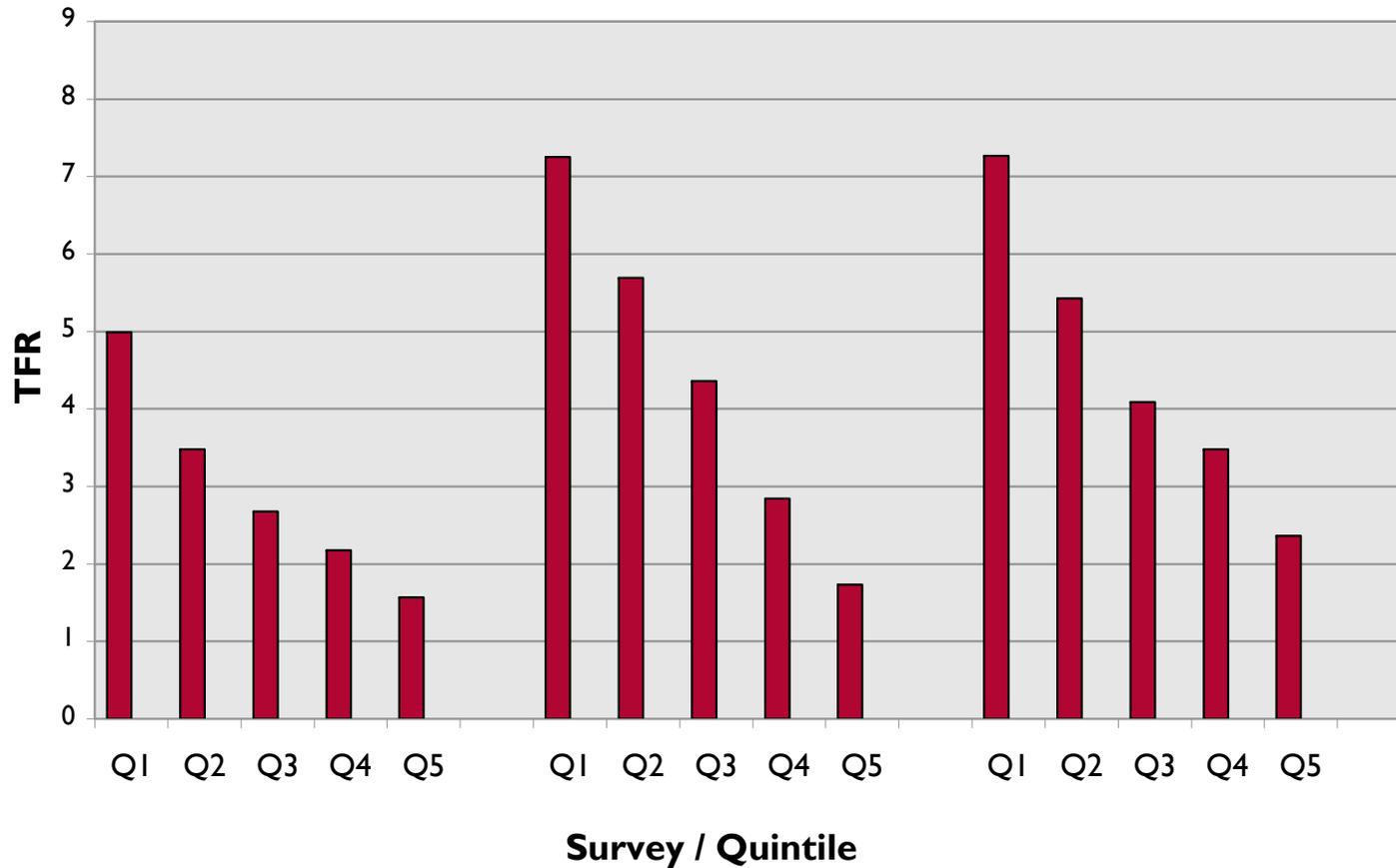
**Tables highlight numbers, especially if the data points are few.**



# Bar Charts Draw Attention to Relative Values



# Displaying Data: Multiple Bar Charts

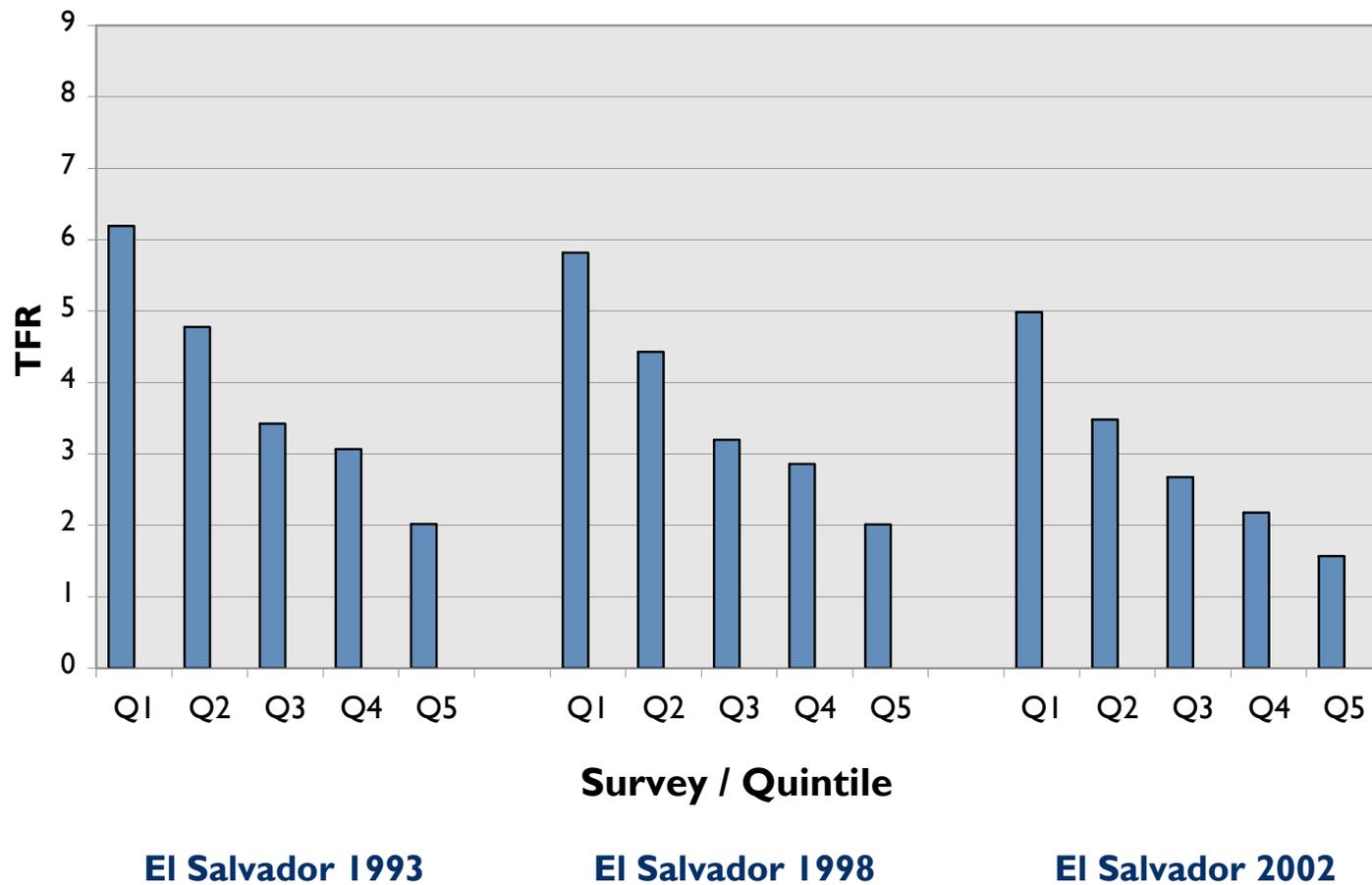


**El Salvador 2002**

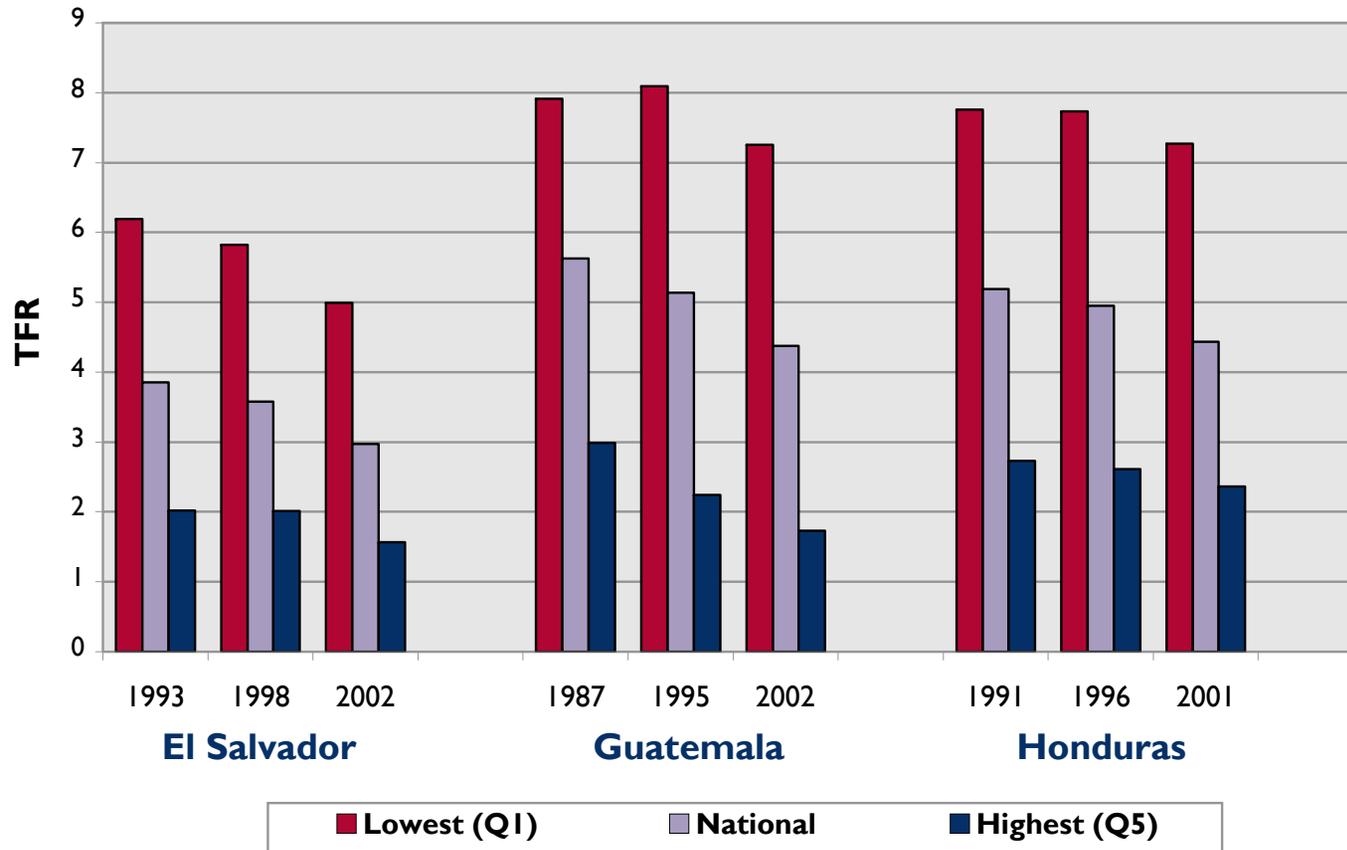
**Guatemala 2002**

**Honduras 2001**

# Bar Charts Show Trends for Specific Quintiles Over Time in a Country



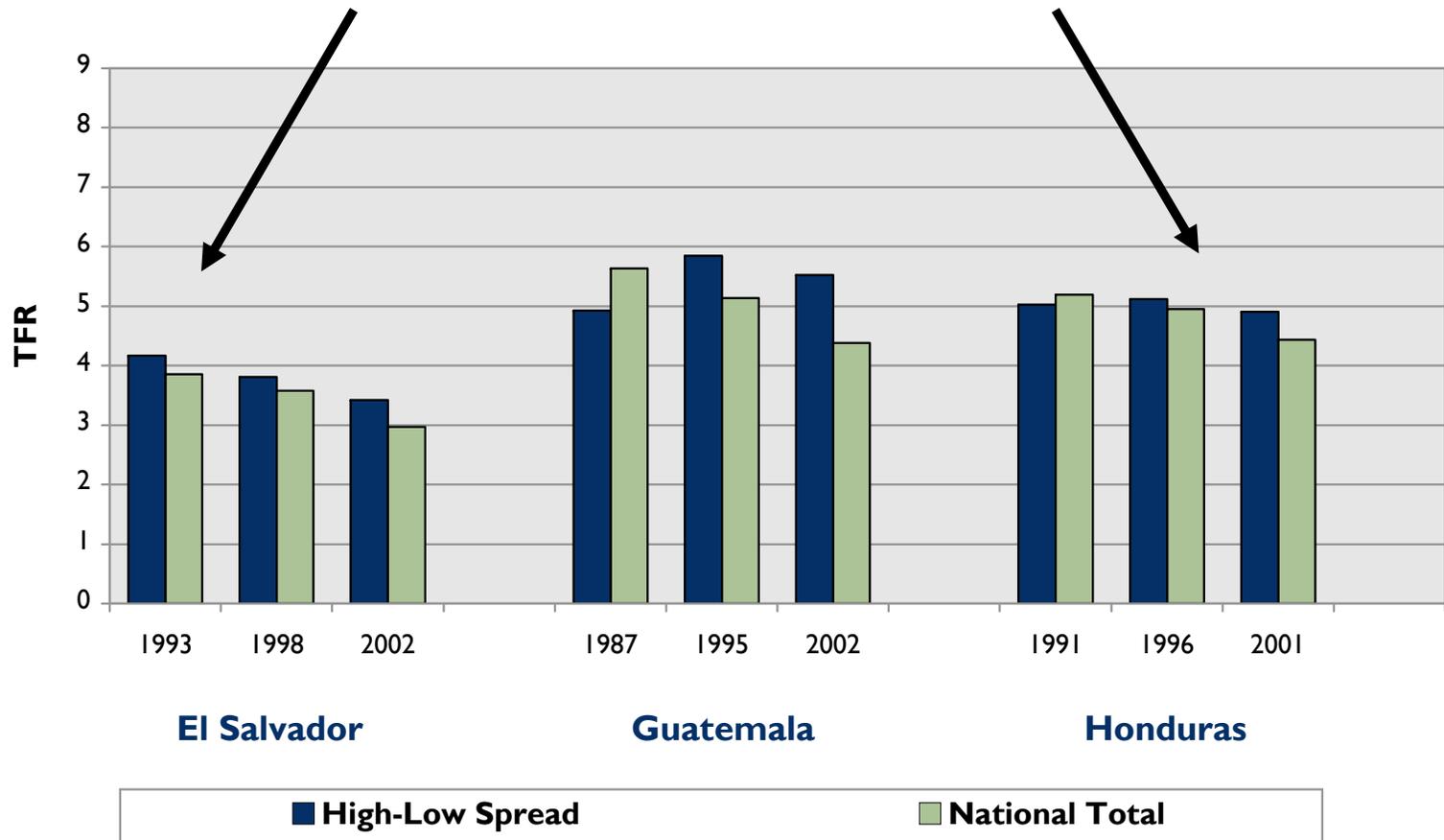
# Comparing Differences between the Poorest and Highest Quintiles



Dropping some quintiles creates space to compare TFRs in multiple years for different countries. Which countries **improved equity** over time?

# Comparing Spreads between the Highest and Lowest Quintiles

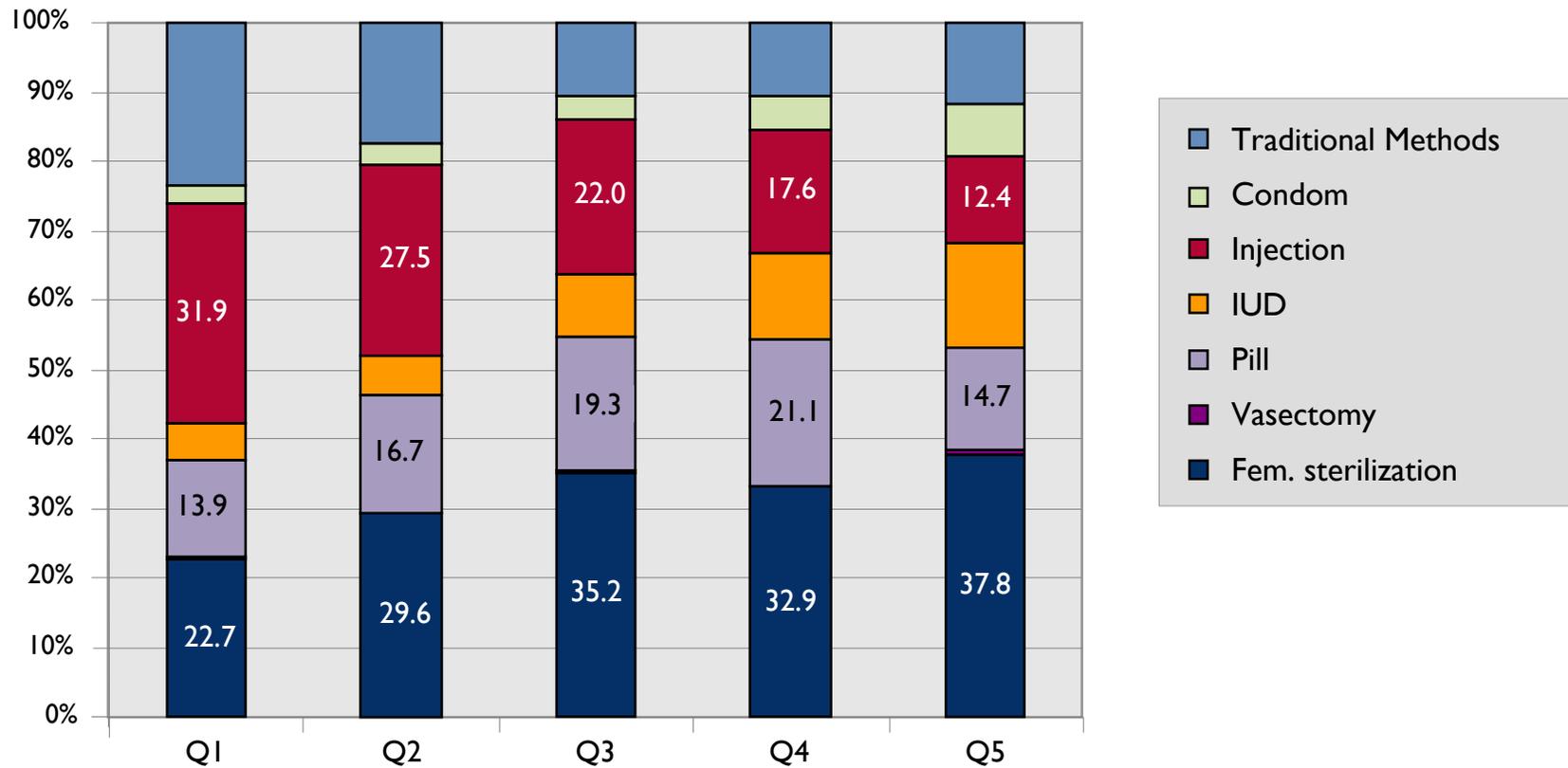
All four countries lowered TFR over time, but which two improved **equity**?



Blue bars now represent the spread between high and low quintiles.

# Comparing Contraceptive Use among Different Wealth Quintiles

## Honduras: Method Mix by Quintile



# Session Goals

## We will learn the following:

1. How to measure poverty and inequality
2. How to display findings to illustrate inequities in health
3. How to understand and address common data challenges

# Construction of Wealth Quintiles

- Each household is given a wealth index score.
- Individuals are ranked according to the total score of their household.
- The sample is then divided into population quintiles—five groups that each have 20% of the individuals in the sample.

# Who Is in the Quintile?

Wealth Quintile	Subpopulation (Tanzania DHS 2004–2005)						
	Women 15-49	Men 15-49	Children <18 years	Married women 15-49	Pregnancies in last 5 years	Births in past 5 years	Children 12-23 months
Poorest	1,840	484	5,273	1,341	1,998	1,974	409
Lower middle	1,944	504	5,014	1,424	1,898	1,857	352
Middle	1,943	516	5,085	1,380	1,889	1,866	328
Upper middle	2,004	517	5,018	1,365	1,719	1,681	327
Wealthiest	2,597	615	4,232	1,440	1,386	1,347	243

# When Describing Differences

Pay attention to the denominator. Rates are usually standardized to a common denominator.

- Age-specific fertility rate: 1,000 women in age group
- Infant mortality rate: 1,000 live births

Quintile	Children under 5 (Tanzania DHS 2004–2005 )		
	% with fever	# of children	# with fever
Poorest	25.8	1,812	467
Lower middle	25.7	1,664	428
Middle	23.5	1,688	397
Upper middle	24.1	1,561	376
Wealthiest	22.5	1,252	282

# Many Ways to Describe Differences

Percentage of Tanzanian households with at least one ITN		
Wealth Quintile	2004/5 DHS	2007/8 MIS
Poorest	5.9%	22.1%
Lower middle	10.1%	28.2%
Middle	15.0%	33.7%
Upper middle	21.9%	41.3%
Wealthiest	55.8%	66.7%

- Coverage gap between wealthiest and poorest quintiles narrowed from ~50% to ~45%.
- Relative gap fell from 10:1 in bed net ownership to 3:1.
- Ownership in poorest quintiles nearly quadrupled vs. 10% growth in wealthiest quintile.

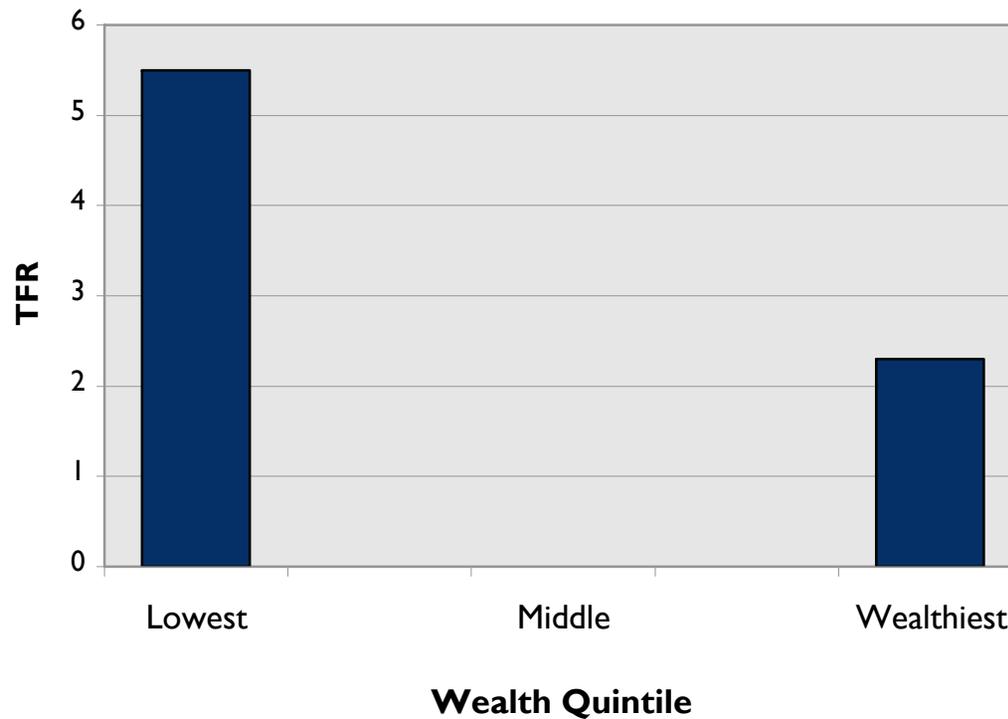


**Note:** This table does not tell us about the number of poorest and wealthiest households that own or do not own a net.

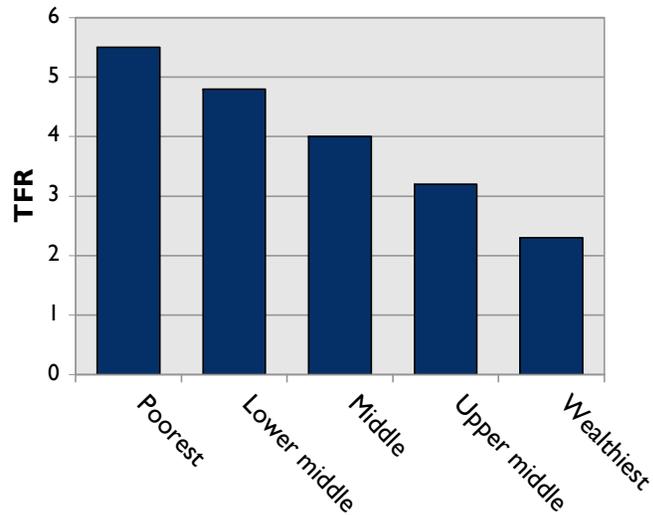


# The Middle Matters

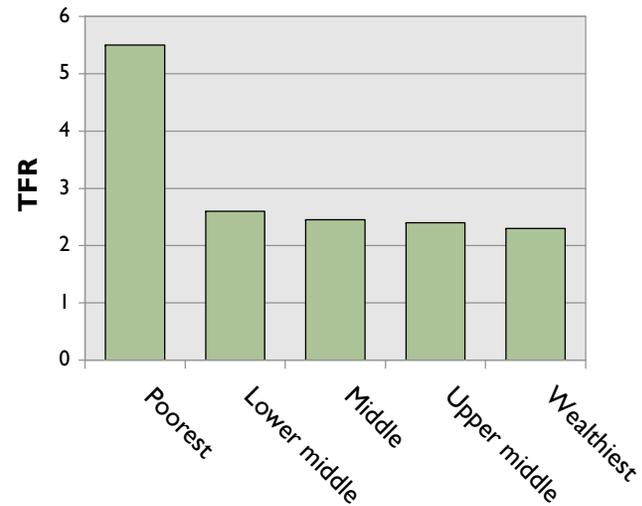
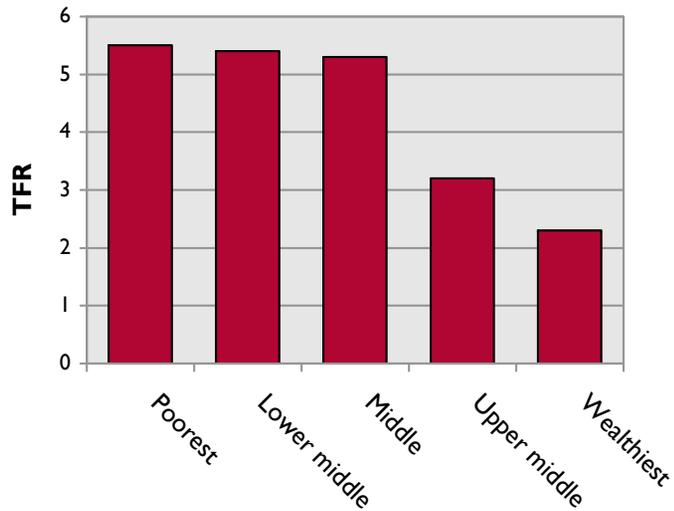
- It is tempting to compare only the extremes.
- 60% of the population belongs to Quintiles 2–4.
- What might happen if we leave out the middle?



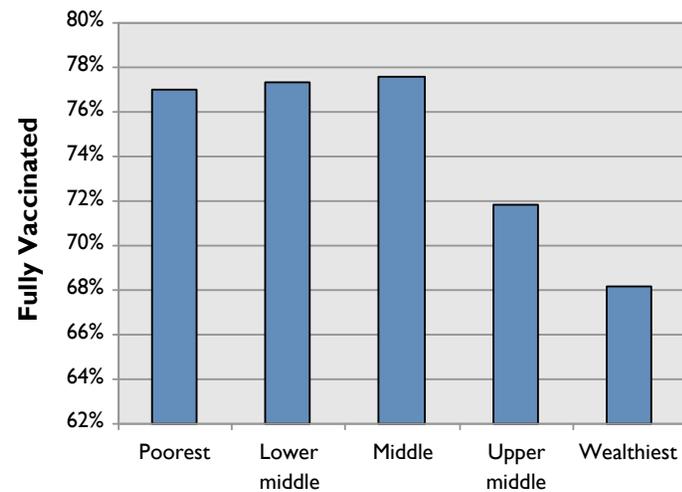
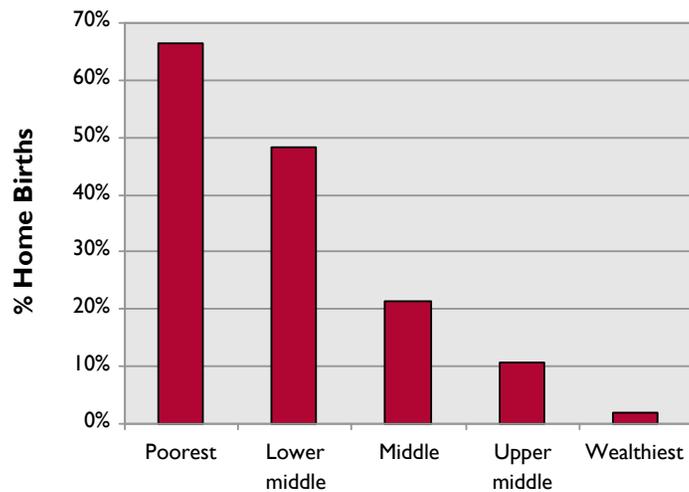
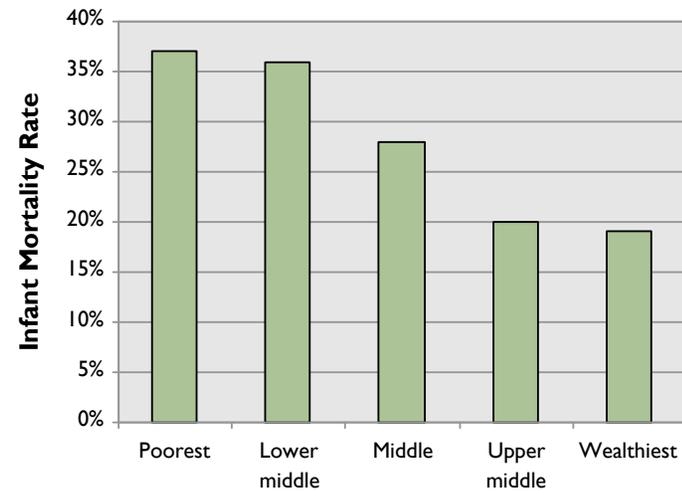
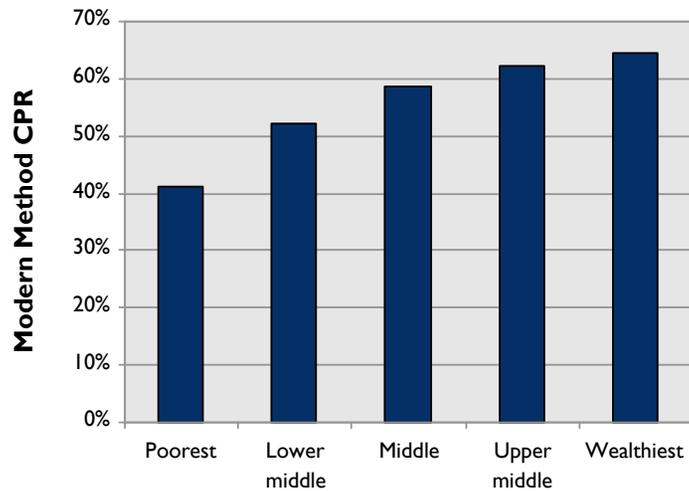
# The Middle Matters



- Which is the priority group?
- Is there only one?



# Not All Indicators Show Same Inequalities



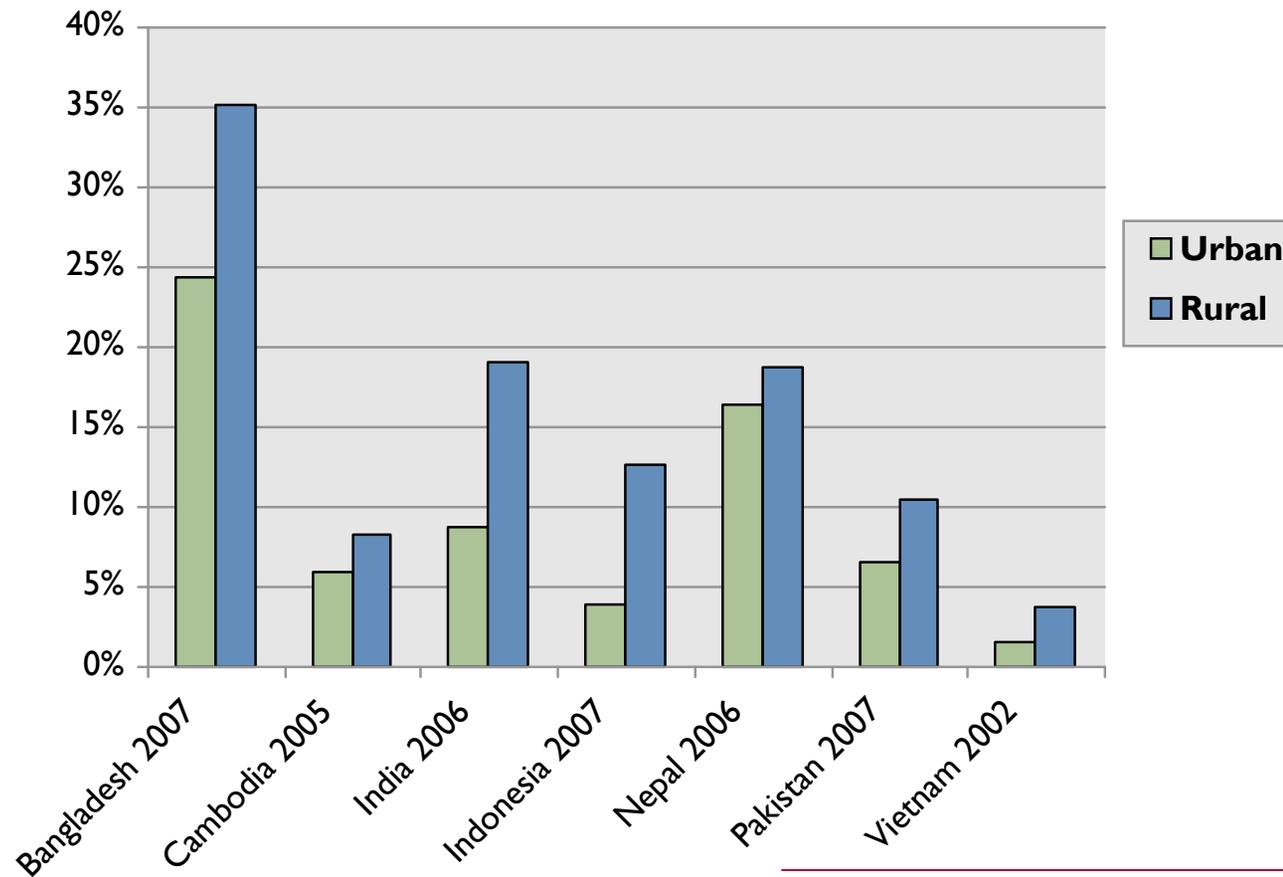
Source:  
Honduras DHS  
2005–2006

# Other Sources of Inequality

- Place of residence (urban-rural)
- Ethnicity
- Gender

# Urban-Rural Inequality

## Percentage of Adolescents Who Have Had Children or Are Currently Pregnant



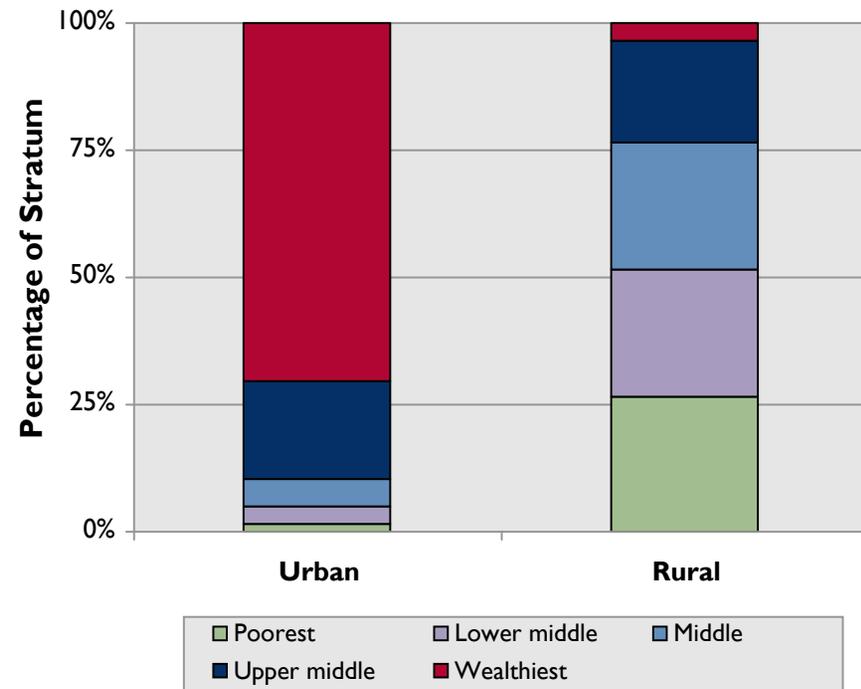
Source: Futures Group Analysis of Various DHS

# Urban-Rural Inequality

**Wealth and poverty are often strongly linked with the place of residence (urban or rural).**

Comparing the poorest quintile to the wealthiest quintile may be equivalent to comparing urban residents as a whole with the very poorest rural residents.

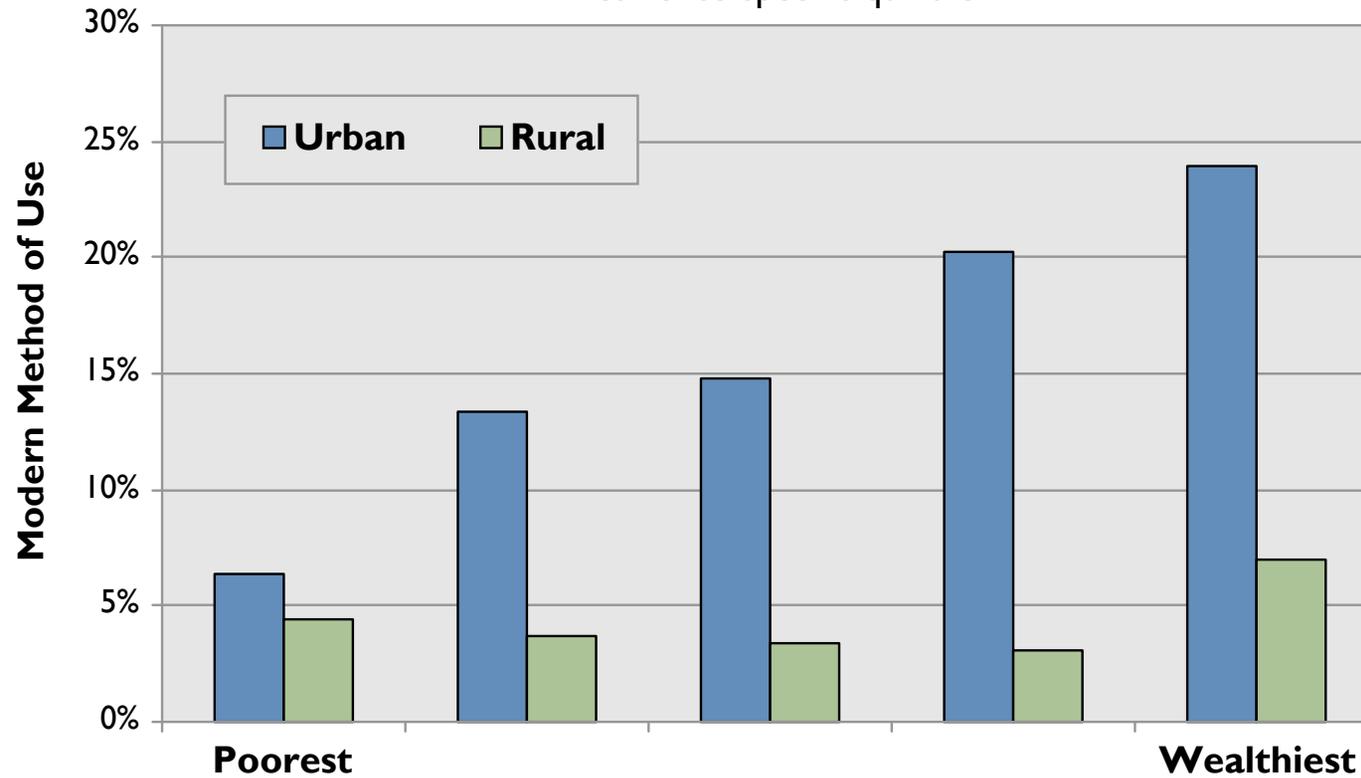
**Mali, Place of residence**



# Urban-Rural Inequality

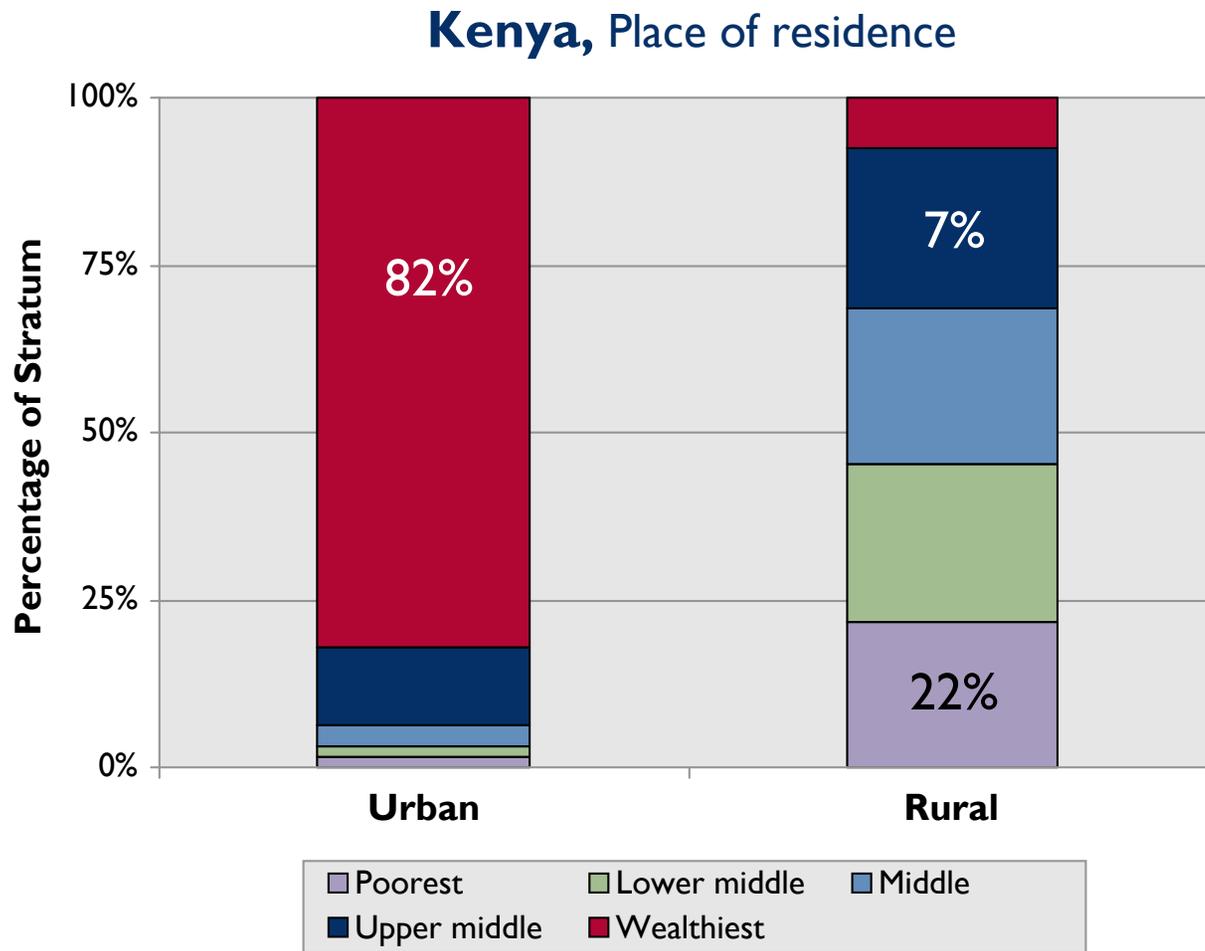
## Mali

Residence-specific quintile



Source: DHS 2006 Mali

# Urban-Rural Inequality

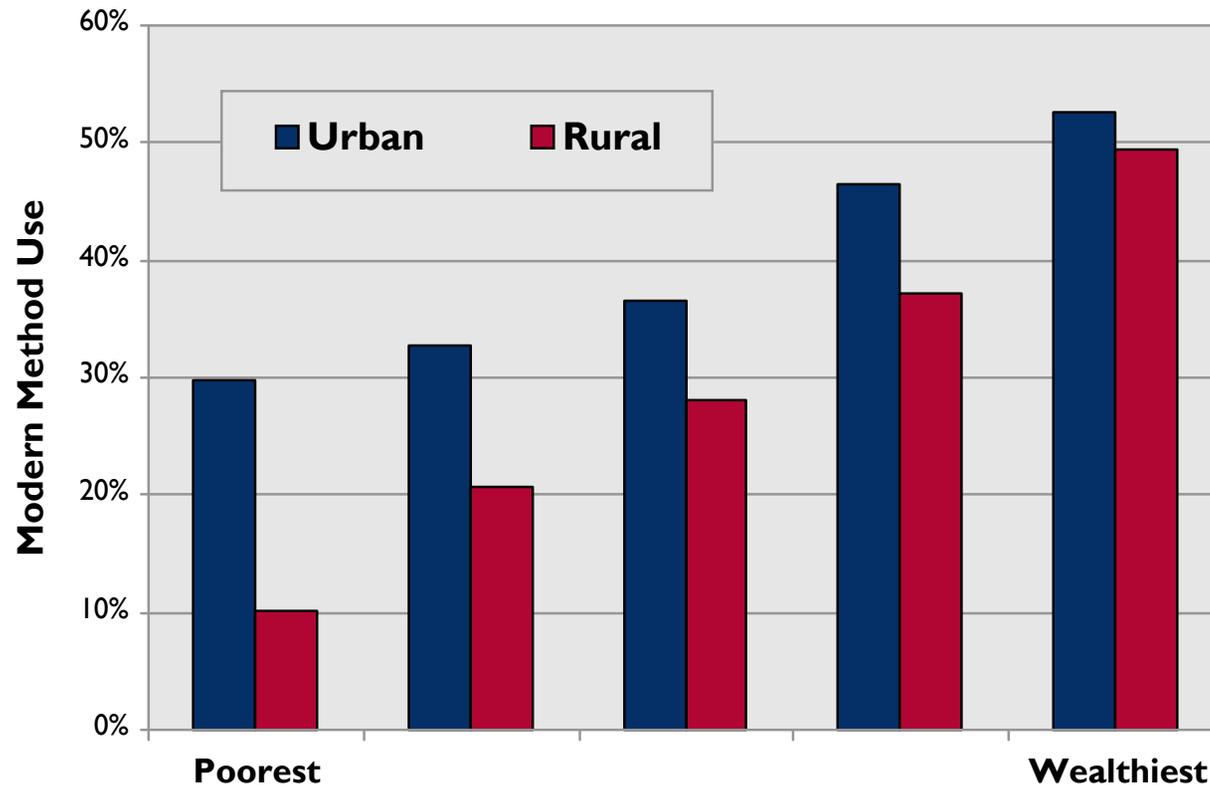


Source: DHS 2008/09 Kenya

# Urban-Rural Inequality

## Kenya

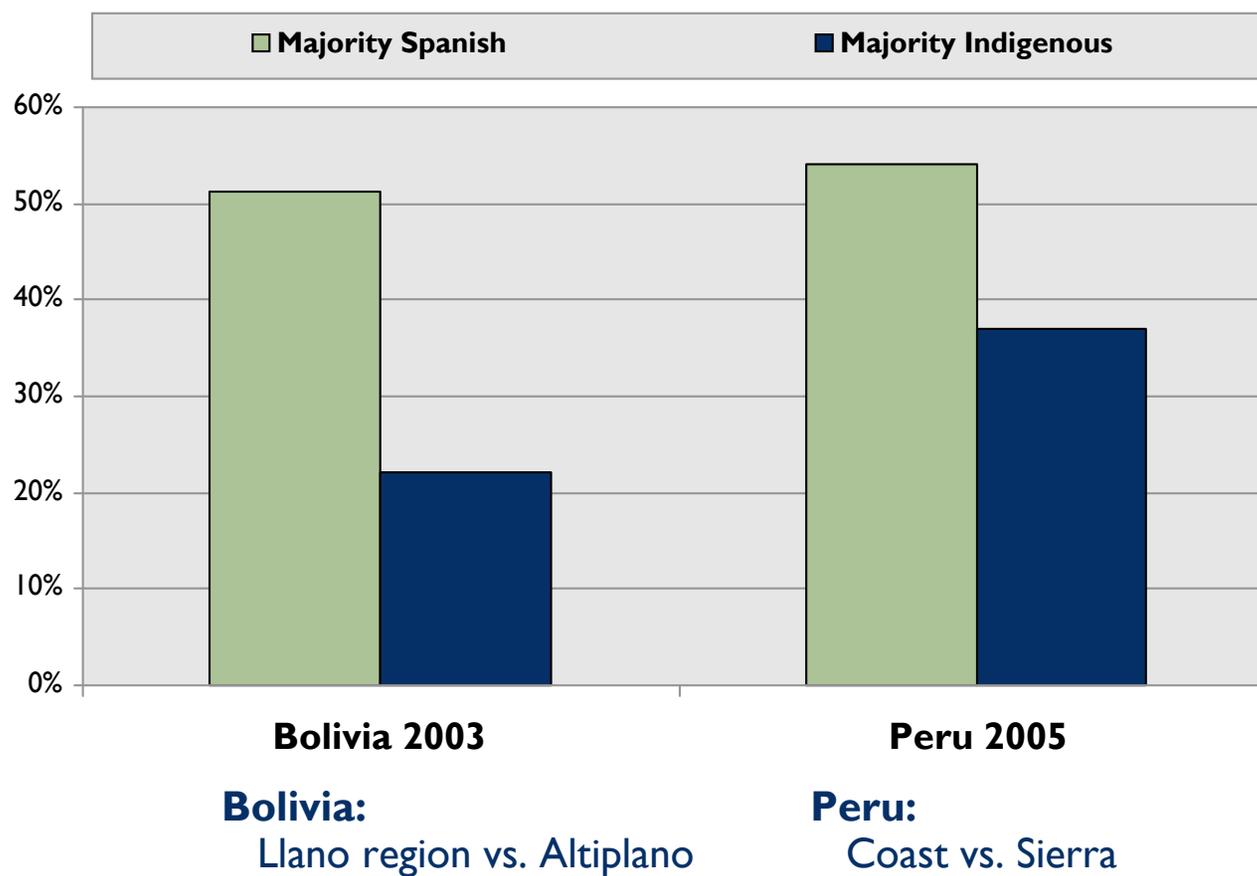
Residence-specific quintile



Source: DHS 2008/09 Kenya

# Ethnic Inequality

## Percentage of Women in Union using Modern Contraception



Source: DHS Bolivia; DHS Peru

# In Summary

## **We discussed the following:**

1. How to measure poverty
2. How to display findings to illustrate inequities in health
3. How to understand and address common data challenges