
Women's status, *education*, and access to health care: evidence from 20 years of change in Matlab, Bangladesh

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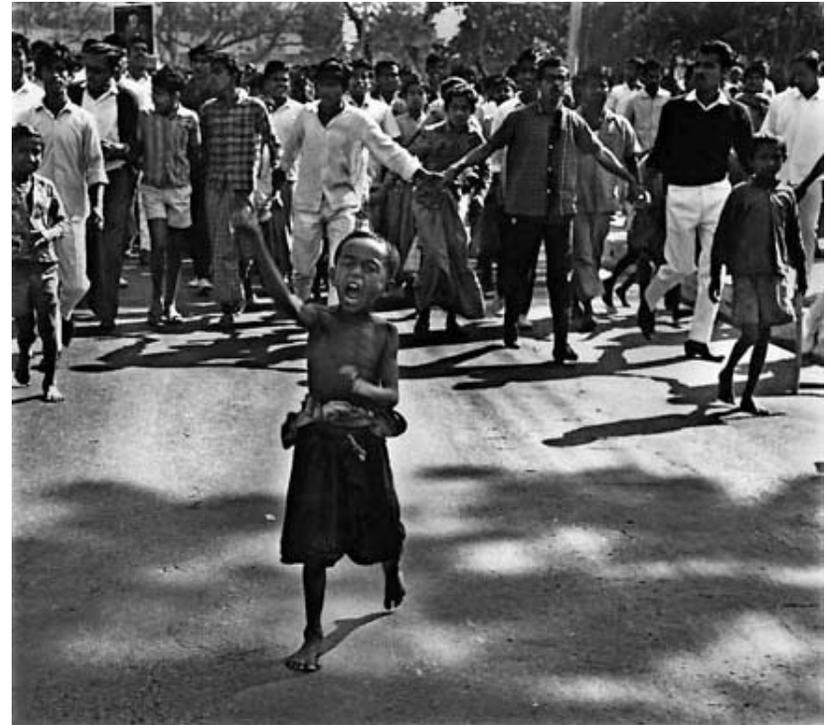
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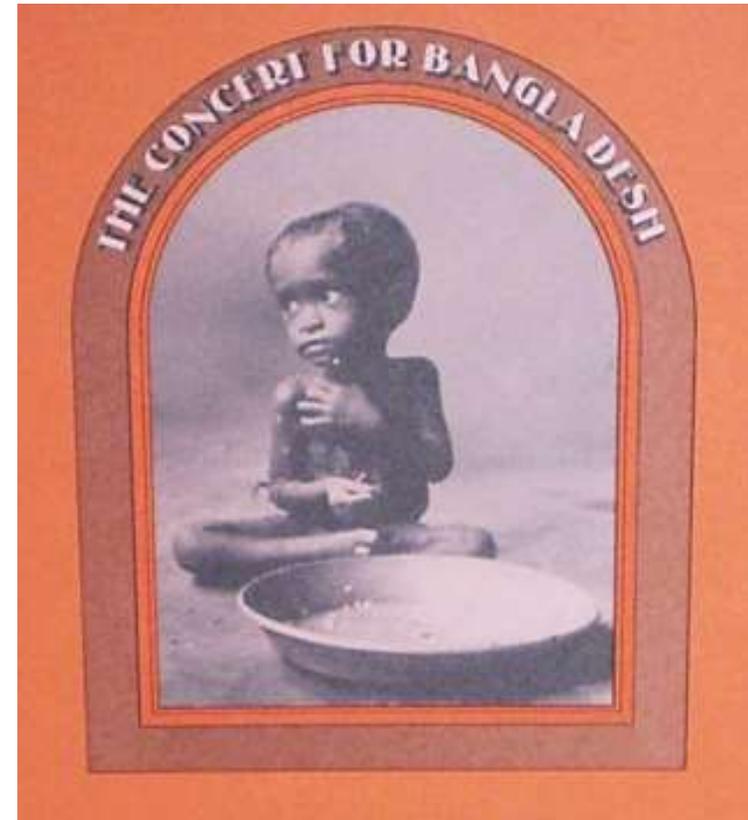
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The Bangladesh “muktijoddha”



Bangladesh the “Basketcase”



The Bangladesh “miracle”

	1970	~2011
Infant Mortality Rate	144	18
Total Fertility Rate	6.3	2.2
Measles Immunization	1%	96%
DPT Immunization	1%	96%
Primary School Attendance	45%	96%
Primary School Attendance for Girls	33%	98%
GDP per capita	\$954	\$1940



Innovations Behind the Miracle

- **Grameen Bank** – Muhammad Yunus “invents” microcredit
- **Gonoshasthaya Kendra** – Community-based health project opened pharmaceutical factory in 1981 to ensure generic high quality, essential drugs were affordable
- **Ministry of Primary And Mass Education (MoPME)** – free and compulsory primary education to all students in 1990 (Reaching Out of School Children II)
- **International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b)** - Revolutionized delivery of family planning, maternal, and child health



Creating a “counterfactual”

- Any evaluation of the impact of these programs needs to answer the ‘counterfactual’ question

What would have happened to those who received the “treatment” if we could go back in time and rerun history without the treatment?

- With a long term evaluation, we can use populations that lived before the intervention and after
 - Need a LONG timeframe



Long-term Evaluation

- Interventions intended to improve health and human capital are common in the developing world
- Few have been introduced in designs that permit full assessment of their impacts
 - Baseline data often not available
 - Comparison group frequently not followed
- Follow-up even when assessment built in
 - Long-term follow-up is rare
 - Evaluation is limited to the short or medium term



Motivation: Current Study

- Female education increases value of women's time in economic activities (Asadullah, 2003)
- Produces social gains by improving health, reducing fertility (Subbarao & Raney, 1993)
- Socio-cultural norms in Bangladesh meant women traditionally received little formal education
- Prior research has show dramatic educational gains among women after 1990, all but closing the gender gap (Chowdhury et al, 2003; Ahmed et al 2007)



Motivation

- Well known education “gradient” in both health behaviors and health status
 - NOT due to income or occupation choice (Cutler & Lleras-Muney, 2006)
 - Increasing levels of education lead to different thinking and decision-making patterns
 - Willingness to utilize health services, understanding of why it’s important



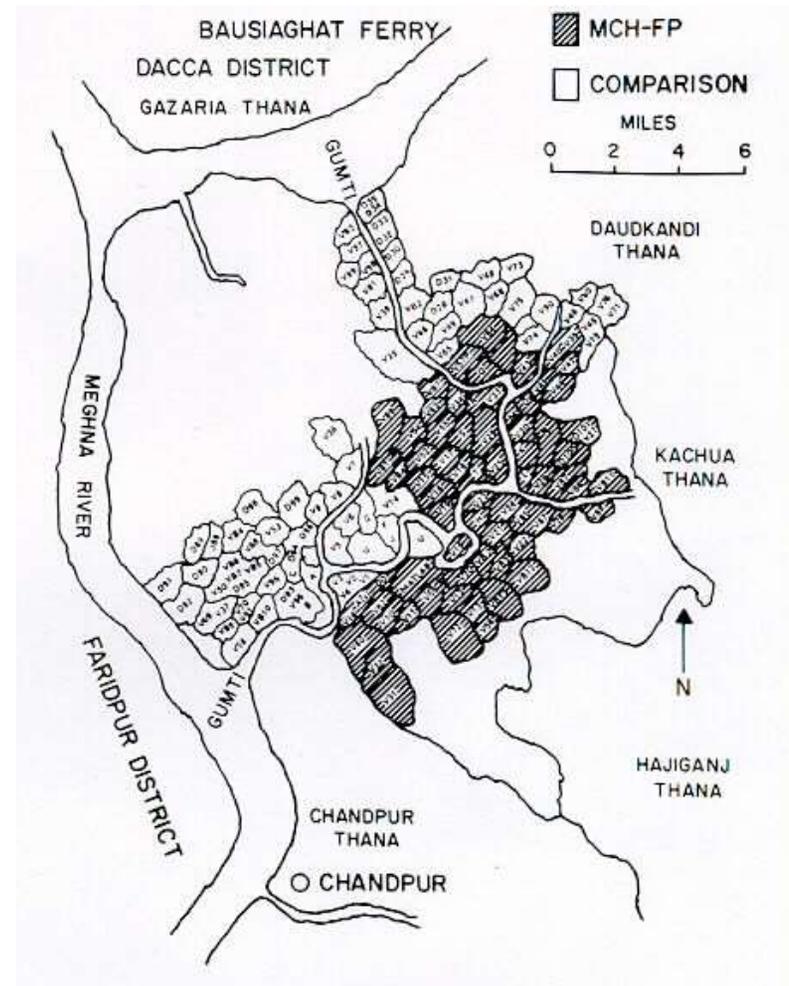
Study Questions

- Has overall health improved over time?
- Has access to and utilization of care improved over time?
- Are the gains in health and health care access the same for men and women?



Matlab Thana: icddr,b research site

- Rural area 55km SE of Dhaka
- Site of icddr,b vaccine and ORS research
- Health and Demographic Surveillance System
 - All vital events, 1966-
 - Precise estimation of ages
 - Prospective data on birth, death, migration, marriage
 - Baseline census in 1974
 - GIS data



Matlab Health and Socioeconomic Survey (MHSS1): 1996

- Representative survey of 4,700 households, 24,000 individuals in Matlab area (8% sample)
 - Detailed health, labor, SES data
 - Observed health, cognitive tests
 - Community survey data
- Allows models of programmatic effects as child beneficiaries reached adolescence and mother beneficiaries were just exiting childbearing age



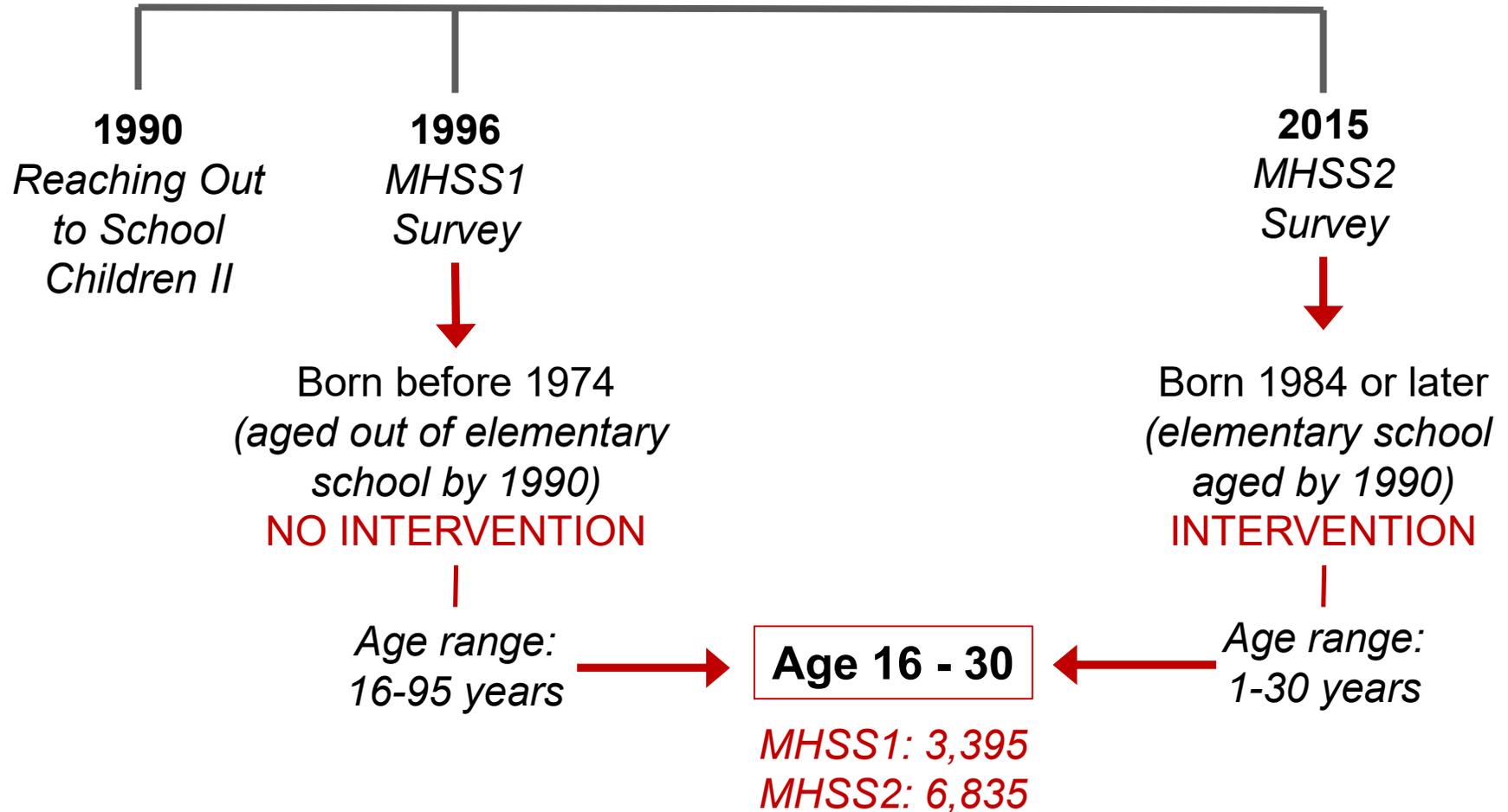
MHSS2: 2015

- Follows MHSS1 primary sample respondents + all descendants + most spouses + sample of coresidents
 - 10,500 households, 35,000 respondents
- Based on MHSS1 survey (many comparable questions) but some significant modifications
- Community, facility, market price surveys
- Archiving of program data, national facility data

Matlab Linked Database (MLD) - baseline data, retrospective weights for MHSS and representative sample of those who disappeared <1996



Creating the Counterfactual: Sample Selection



Data for current study

- Comparable questions on health, access to and utilization of health care (*more on this*)
- Person-level demographics (age, sex, religion, literacy, years of education, marital status)
- Wealth index (assets and housing quality)
- Women's status index (*more on this*)
- Health facilities availability by village



General Health:

- What is your current health status? Good, Fair, Poor
- What do you mean by fairly healthy? Better than average health or worse than average health?

Health Care Need:

- Have you ever needed health care in the last 3 years but did not get it?

Health Care Utilization:

- In the past year, have you ever stayed overnight in a hospital or health facility as a patient?
- Over the past 12 months, did you receive any health care in a hospital, health facility, clinic or doctor's office where you did not stay overnight?



Women's Status

Series of 15 questions about freedom of mobility, household decision making, money, work outside the home, etc.:

- When you go outside the *bari* how frequently do you wear a burqa? Hijab?
- How frequently do you go outside the *bari* alone for daily work?
- Do other individuals in your community seek your opinion about important matters?
- Are you consulted/asked to participate in making decisions for the household such as selling rice?



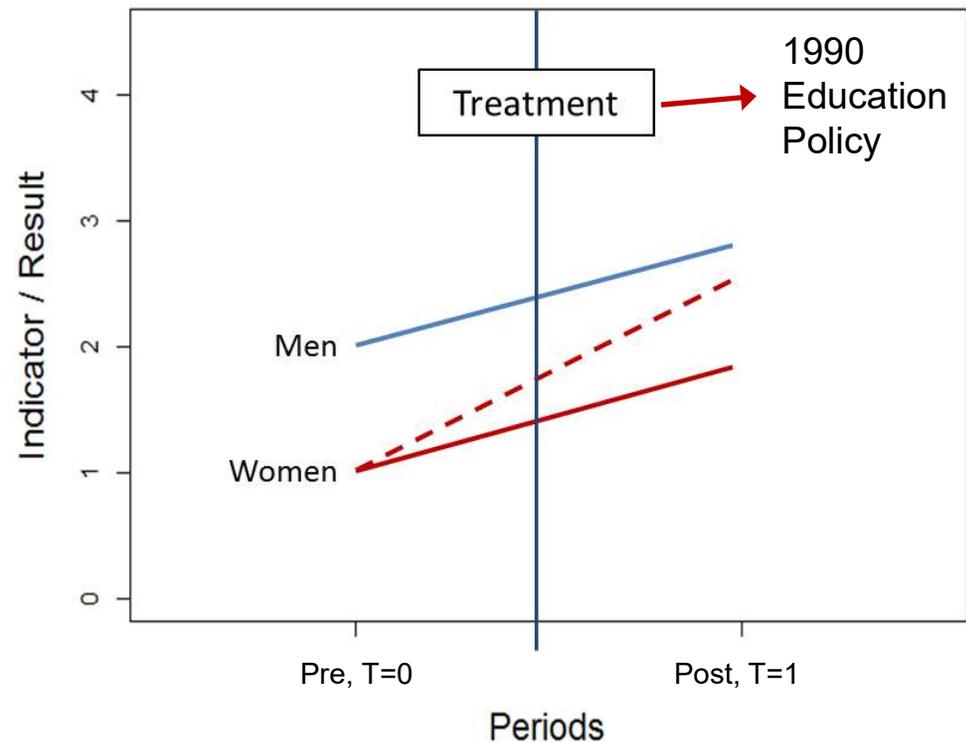
Statistical Methods

- Principle components analysis to created indices of wealth and women's status
- Examine univariate trends over time for Matlab households: 1996 vs. 2016
- Difference-in-Difference regression models to examine differences by gender over time
 - Repeated Measures GEE with intercluster correlation at household and village



Difference-in Differences

- Key assumption: the outcome in the two groups follow the same trend over time
- This does not mean that they have to have the same mean of the outcome!



- Looking for a difference in slope to see if women made greater gains over time to “catch up” with men because of education



Difference-in-Difference Models

$$Y = \mu + \gamma D + \delta T + \beta (D * T) + \varepsilon$$

	2016 (T=1)	1996 (T=0)	2016 - 1996
Men (D=1)	$\mu + \gamma + \delta + \beta$	$\mu + \gamma$	$\delta + \beta$
Women (D=0)	$\mu + \delta$	μ	δ
Men - Women	$\gamma + \beta$	γ	β



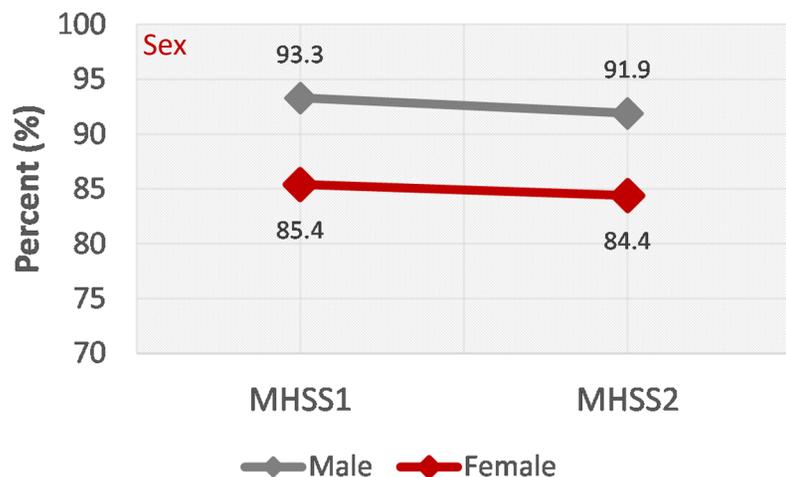
Health Status and Access to Care

	MHSS1	MHSS2	MHSS1		MHSS2	
			M	F	M	F
<i>Sample Size</i>	3,403	6,835	1,467	1,936	2,676	4,159
Health Status	88.8	87.3*	93.3	85.5	91.9	84.5
Couldn't Get Care	11.8	10.4*	11.5	12.1	4.8	13.9
Hospital Stay	1.6	8.1**	1.2	1.9	3.3	11.3
Outpatient Care	60.5	85.5**	58.6	61.9	84.2	86.3

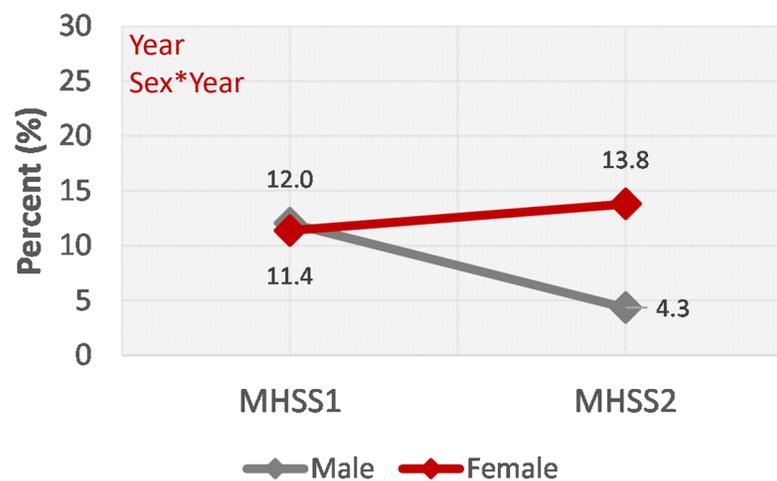
- ↓ health status
- ↓ those who couldn't get care (*only with men*)
- ↑ hospital stays (*especially among women*)
- ↑ use of outpatient care



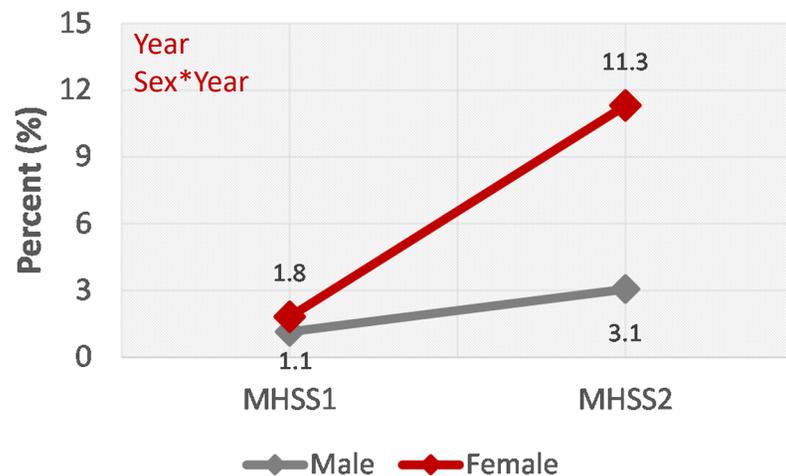
What is your current health status?



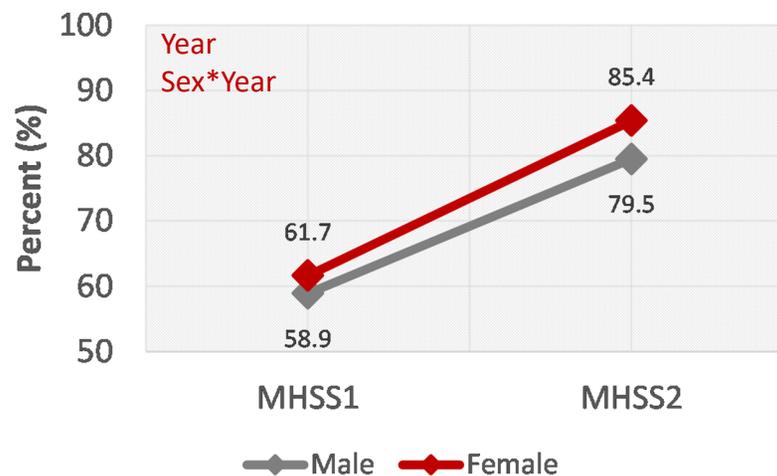
Needed health care and couldn't get it?



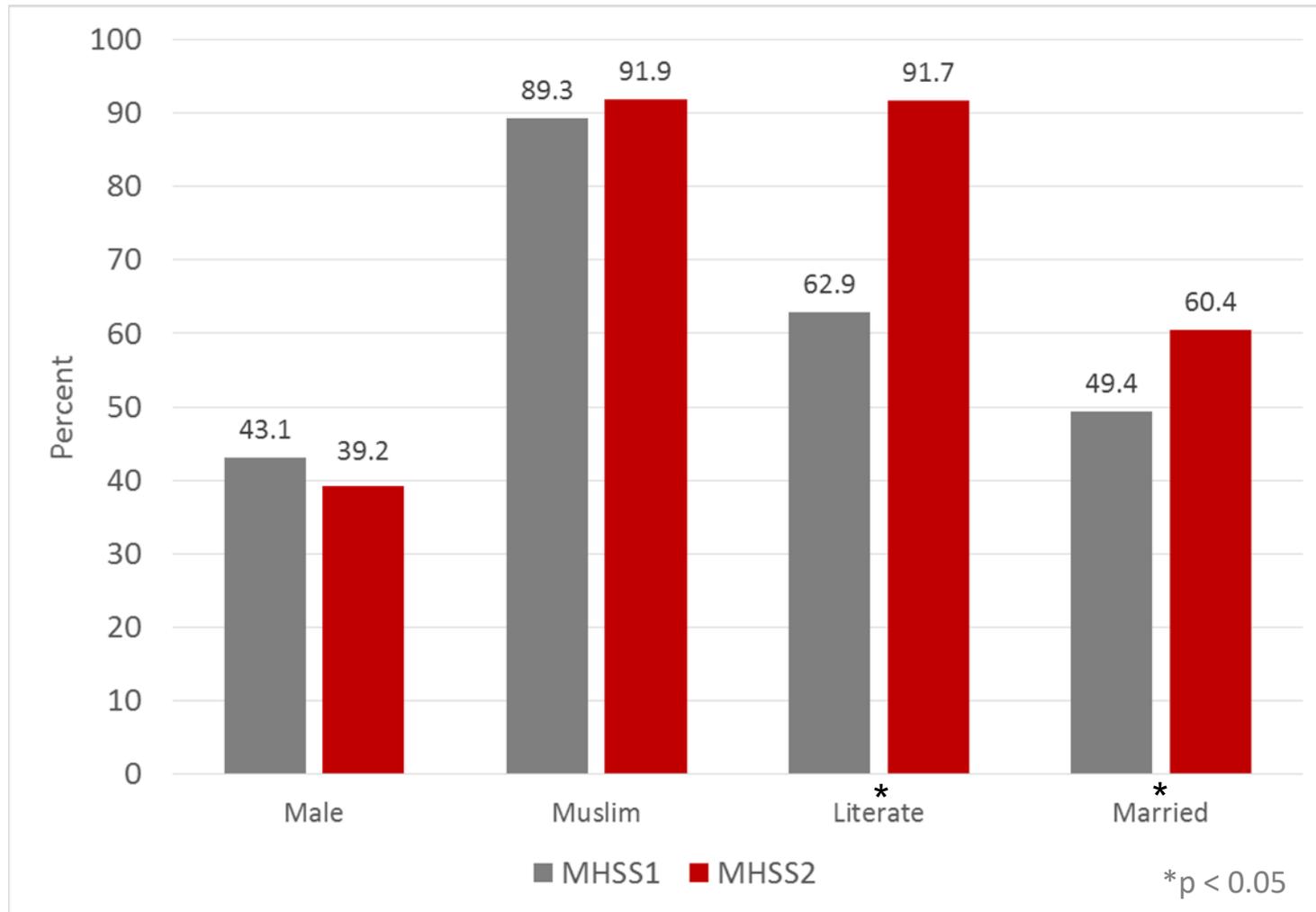
Stayed overnight in a hospital?



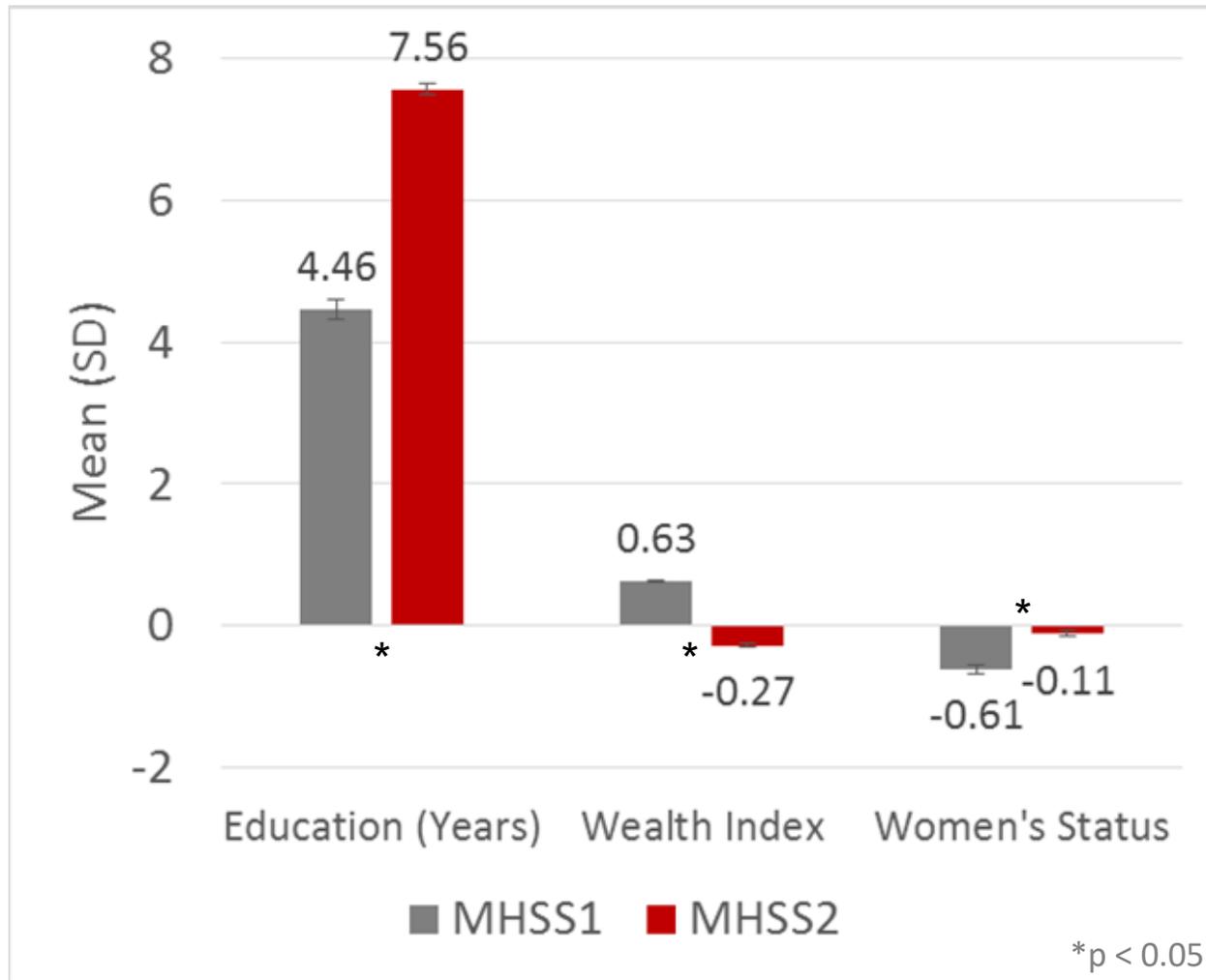
Received outpatient care?



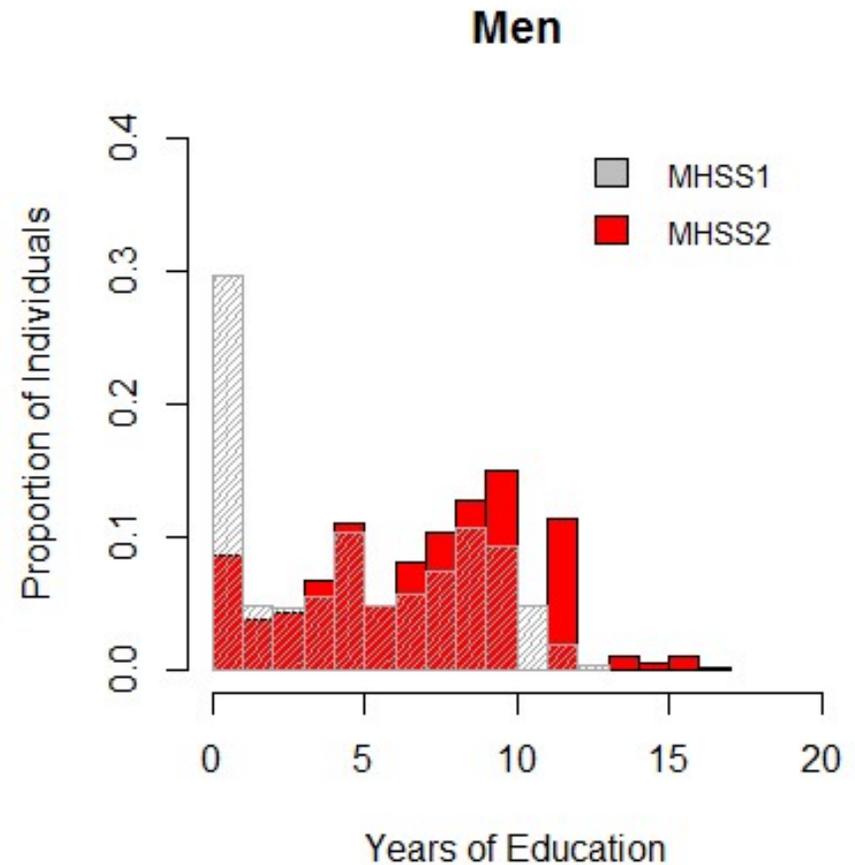
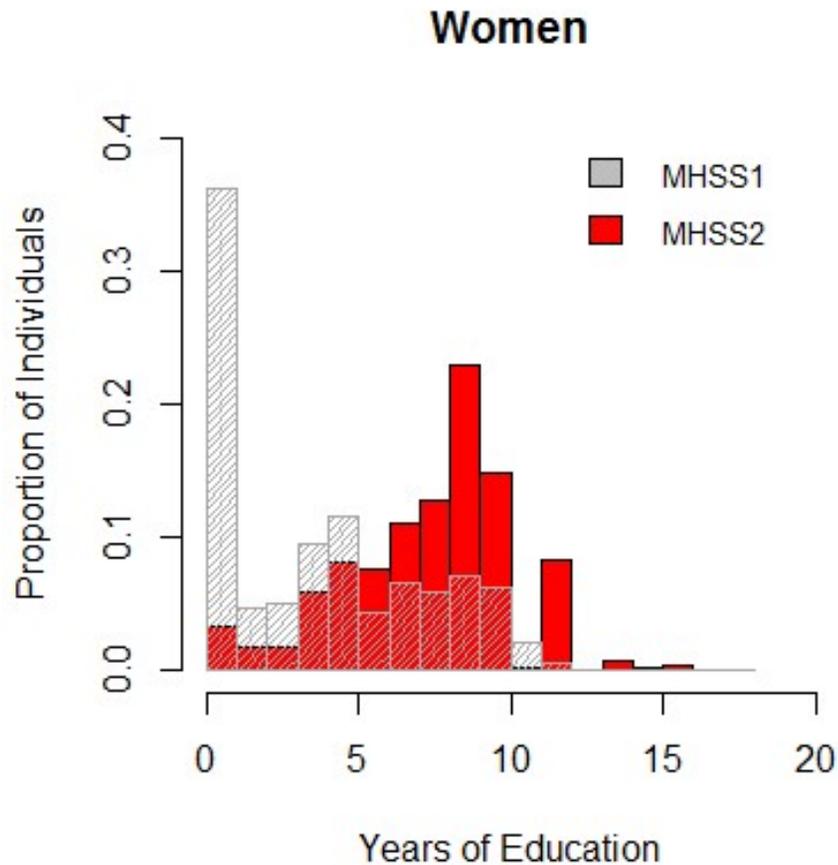
Sample Demographics



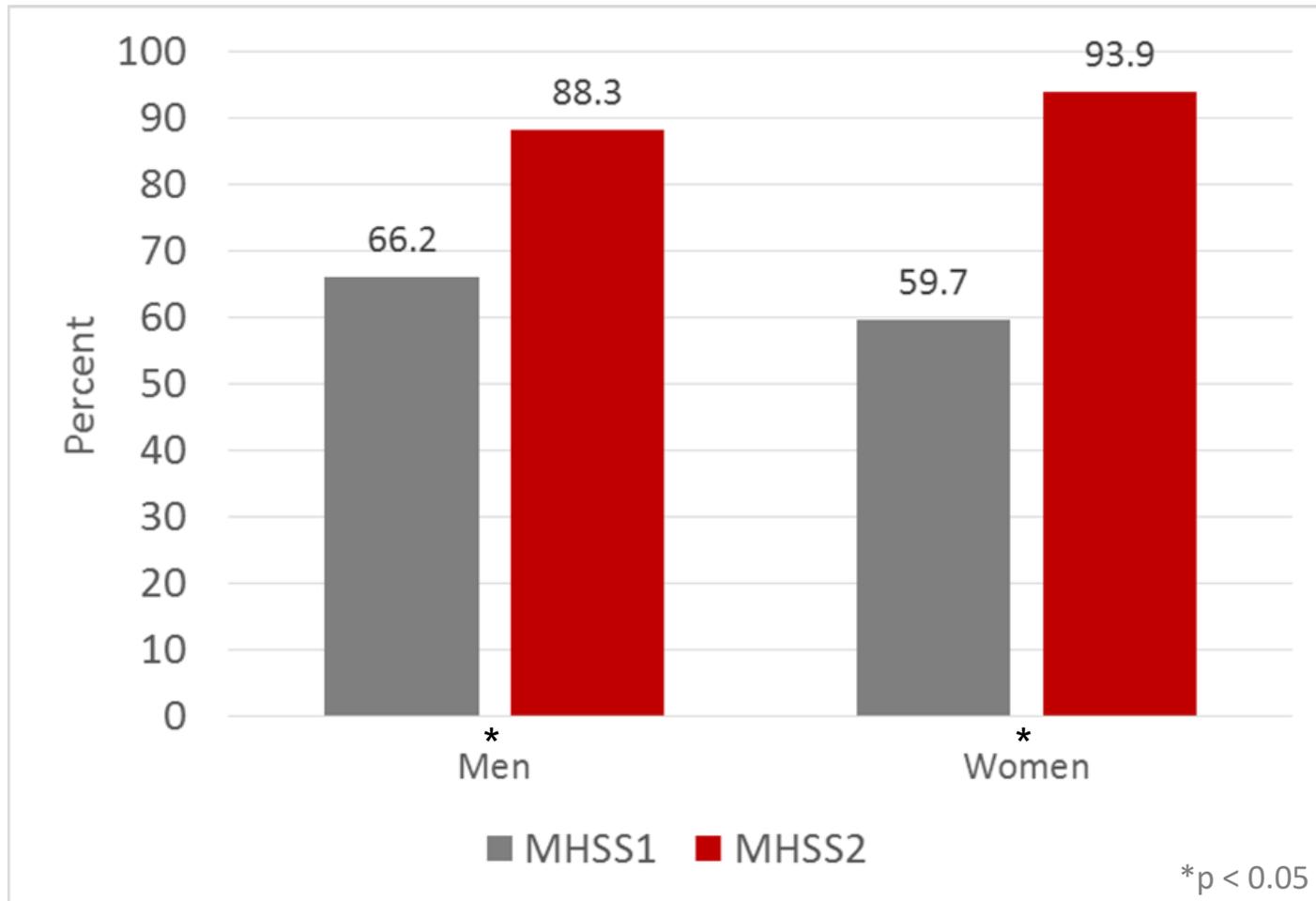
Sample Socioeconomics



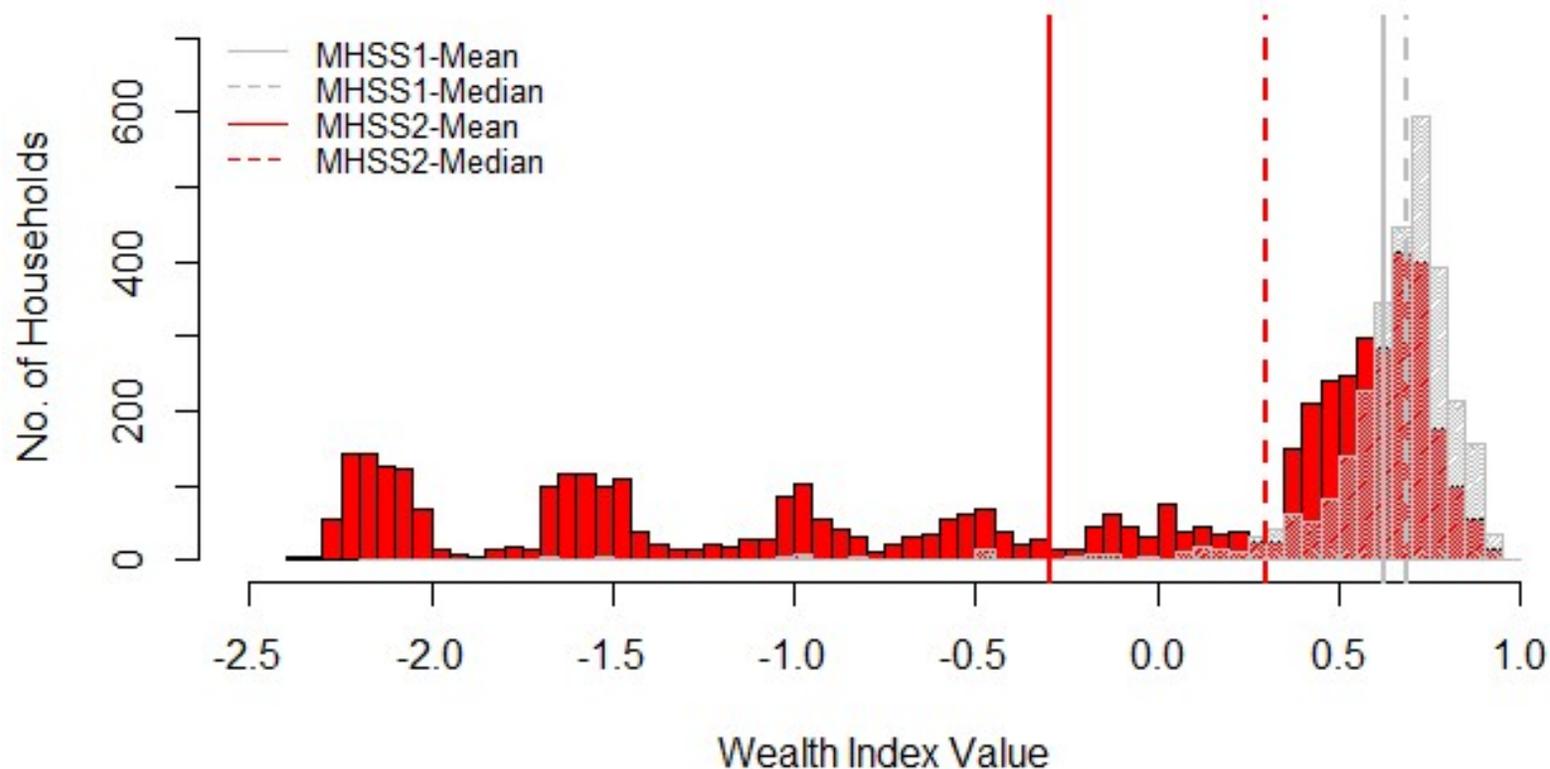
A closer look at education gains



A closer look at literacy gains



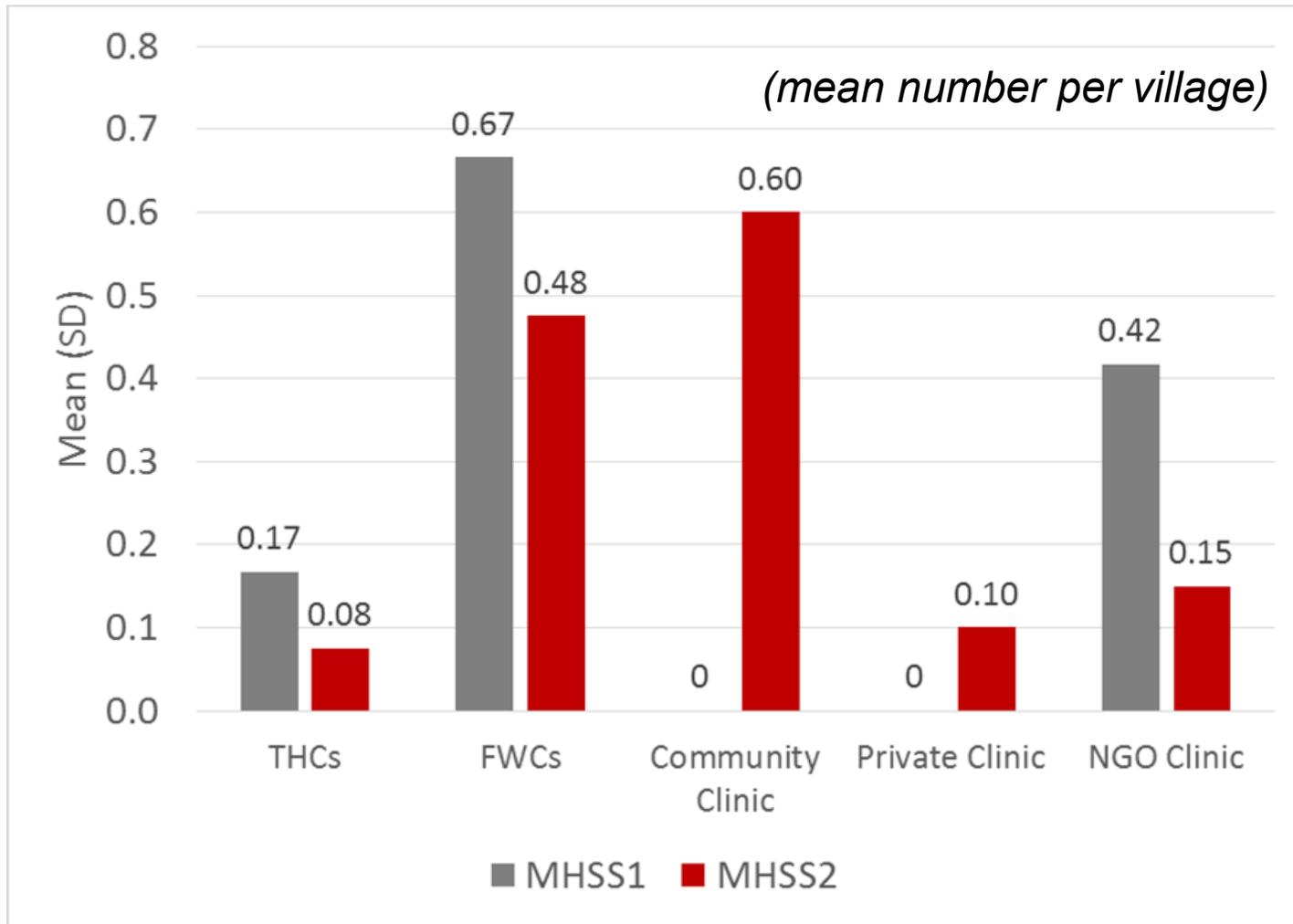
What's going on with that wealth index?

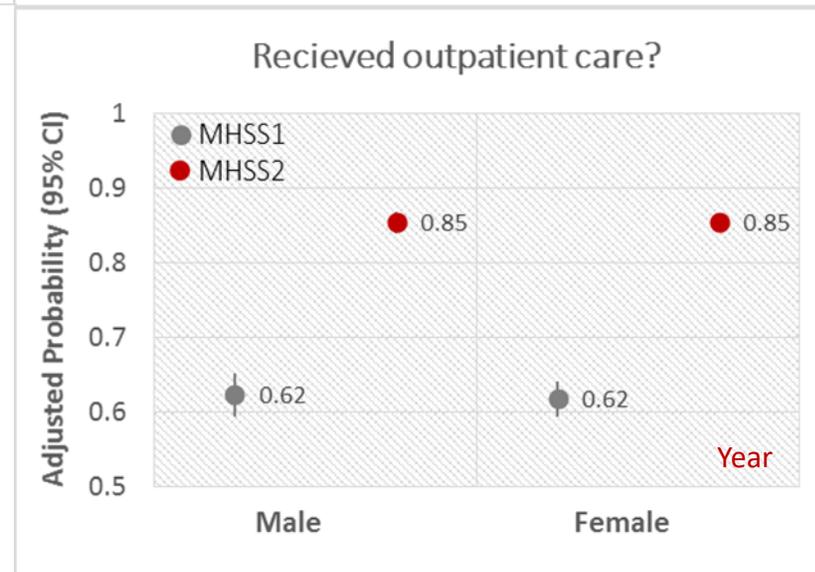
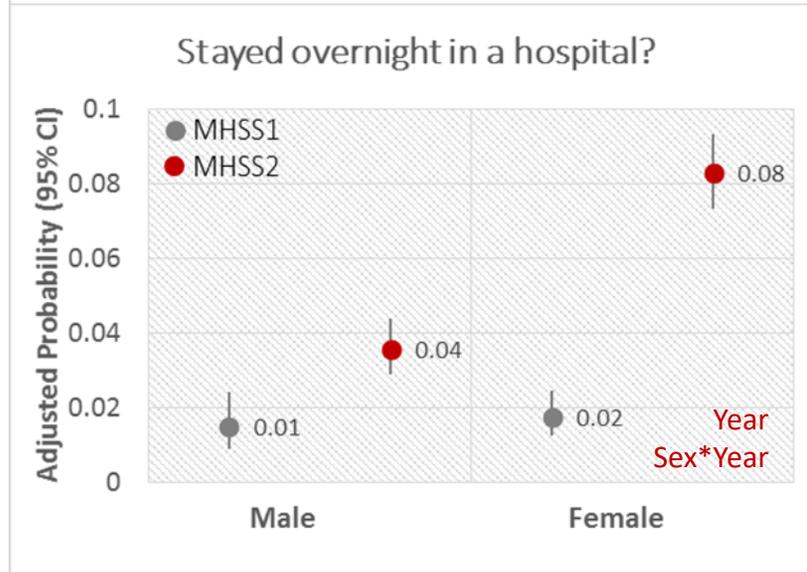
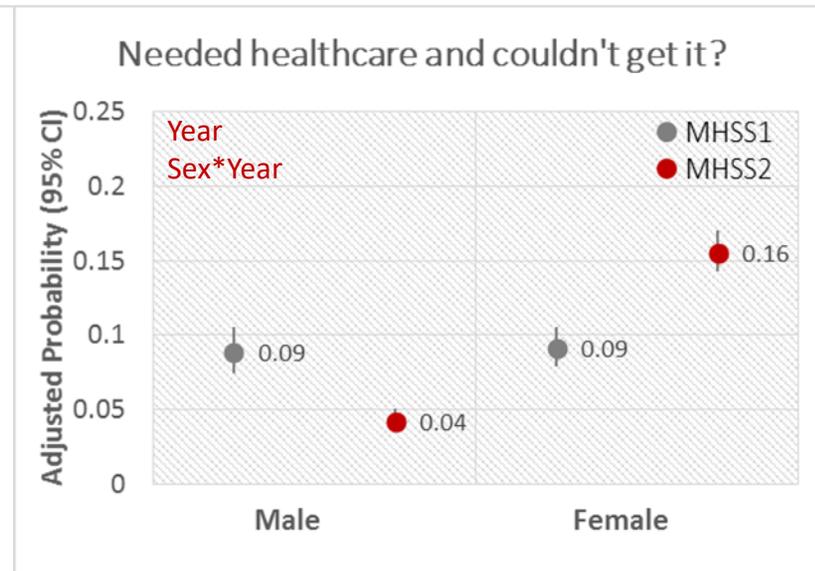
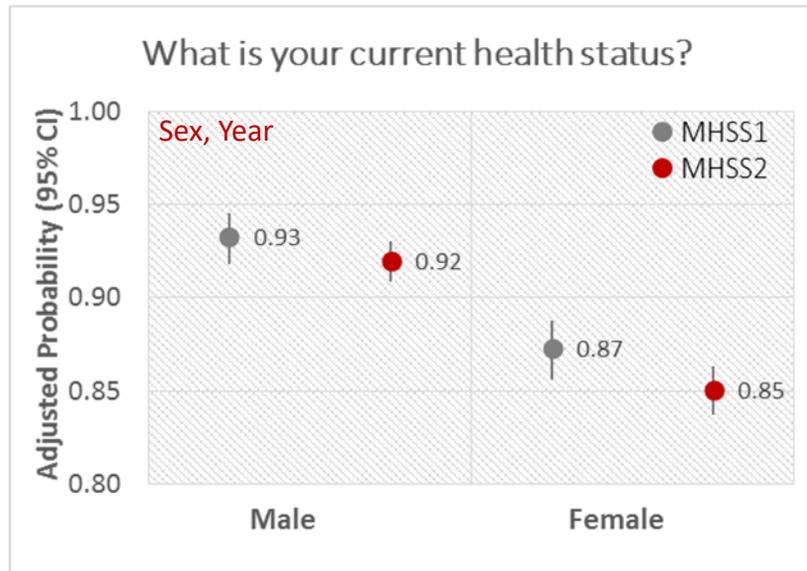


- Large increase in wage labor
- Population growth = smaller agricultural plots (inheritance laws)
- Decrease in subsistence agriculture (fewer farm animals)
- Shift in household assets (cell phones, computers, solar panels)



Changes in health services





Probabilities adjusted for age, religion, years of education, literacy, marital status, and availability of health facilities



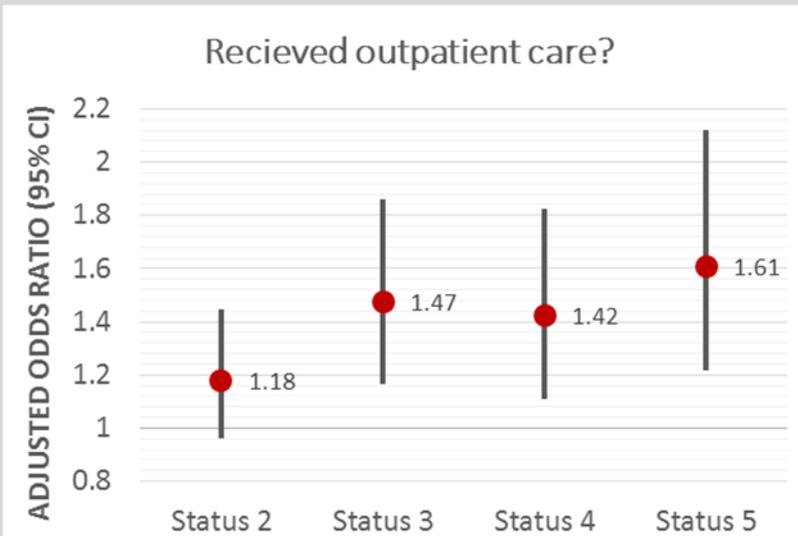
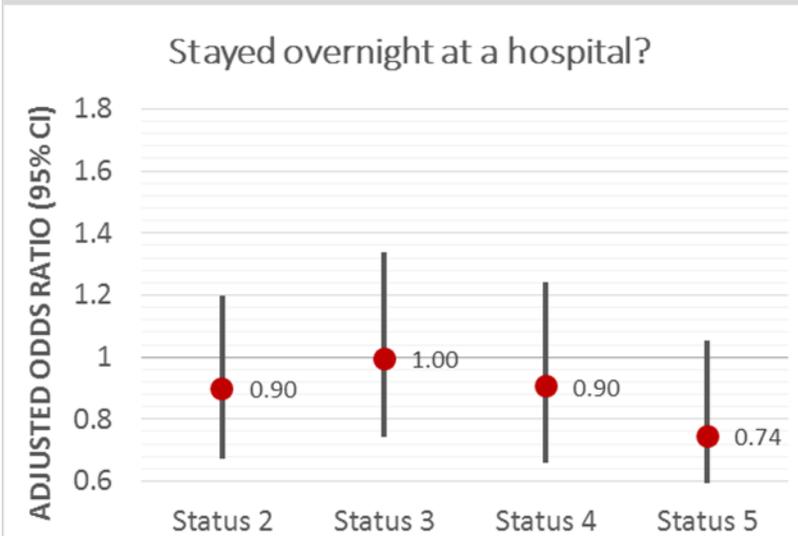
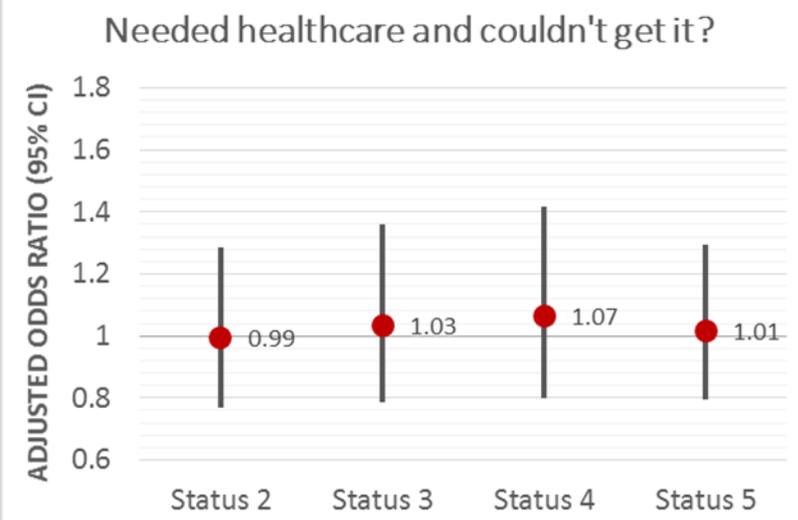
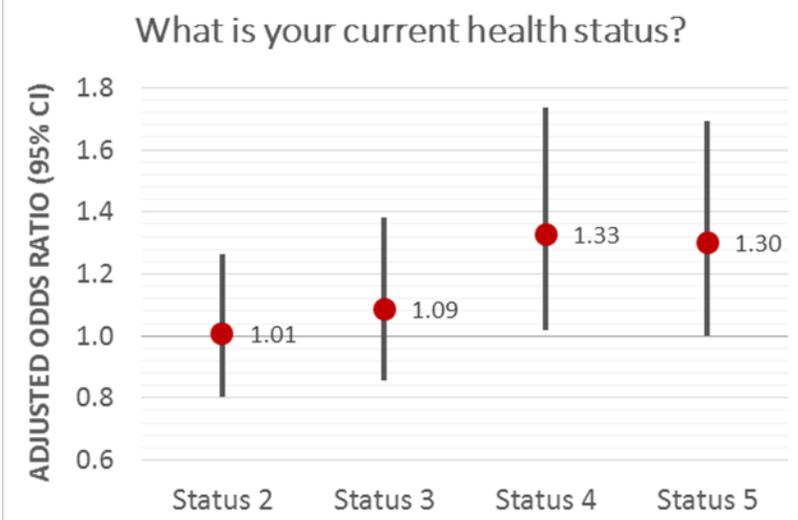
A few other interesting results

	Current Health Status	Problems getting care	Hospital Stay	Outpatient Care
<i>Age</i>	-0.08 (0.01)***	0.08 (0.01)***	-0.03 (0.01)*	0.04 (0.01)***
<i>Religion</i>	-0.16 (0.11)	0.40 (0.13)**	0.02 (0.15)	0.20 (0.08)*
<i>Education</i>	0.03 (0.01)*	-0.10 (0.01)***	0.05 (0.01)**	0.00 (0.01)
<i>Literacy</i>	0.02 (0.11)	-0.02 (0.12)	0.20 (0.20)	0.14 (0.09)
<i>Married</i>	-0.07 (0.09)	-0.43 (0.09)***	1.01 (0.13)***	0.30 (0.07)***
<i>THCs</i>	-0.09 (0.21)	-0.03 (0.22)	0.41 (0.25)	0.17 (0.15)
<i>FWCs</i>	-0.01 (0.07)	0.10 (0.07)	-0.18 (0.08)*	0.01 (0.05)
<i>Com. Clinic</i>	-0.30 (0.09)**	0.23 (0.11)*	-0.30 (0.13)*	0.00 (0.10)

Note: Coefficients and SE for full GEE models; *p<0.05; **p<0.01; ***p<0.001

- Still an education effect
- Marriage decreases problems getting care, and increases likelihood of hospital stays and outpatient care
- Increase in community clinics decreases hospital stays (others puzzling)





Final Thoughts

- Does not appear that the “treatment” (1990 education program) has led to larger gains in health/ access to care for women
 - Women still have a problem “getting in the door” (*increase in problems getting care*)
 - No gender difference in outpatient care
 - Women still report lower SRH
- Large gender difference in hospital care
 - Related to increase in hospital births and subsequent stays



Final Thoughts

- Good self-rated health appears to have decreased slightly over time
 - Expectations? Worse mental health?
- Women with higher status scores had greater odds of good SRH and use of outpatient care
 - BUT no difference over time – not the mechanism for education/health relationship?
- Need to better measure household wealth so can look at impacts of education/ wealth/women's status



Funders

- HDSS
 - icddr,b
 - Bilateral and NGO funding to icddr,b
- MHSS1
 - US National Institute on Aging (NIA)
 - National Institute for Child Health and Human Development (NICHD)
 - Penn (PSC)
- MHSS2
 - NIA
 - 3ie (International Initiative for Impact Evaluation)
 - Hewlett Foundation through Population Reference Bureau PopPov Project and Predoctoral Fellowship (Kagy)
 - NSF Predoctoral Fellowship (Jochem)
 - CU (CUPC), Brown (PSTC)



Partners

- **CU Boulder** Jane Menken, Tania Barham, Nobuko Mizoguchi, Jill Williams
- **OSU** Elisabeth Root
- **UCLA** Randall Kuhn
- **Brown** Andrew Foster
- **icddr,b** Abdur Razzaque, Abbas Bhuiya, Jena Hamadani
- **Independent University, Bangladesh** Omar Rahman
- **Graduate Students** CU Boulder: Gisella Kagy, Chris Jochem, Emily Steiner, Patrick Turner; Brown: Svetoslava Milusheva
- The Staff of **icddr,b** and of **Mitra & Associates**
- The **People of Matlab** and their families

