Appendix A: Trends in Modern CPR, Unmet Need, Demand Satisfied, and Concentration Index by Country

COUNTRY	YEAR	SURVEY	MEAN MCPR	STANDARD ERROR MCPR	MEAN UNMET NEED	STANDARD ERROR UNMET NEED	MEAN DEMAND SATISFIED	STANDARD ERROR DEMAND SATISFIED	CONCENTRATION INDEX
Bangladesh	2007	1	43.5%	0.0118	18.1%	0.0085	65.7%	0.0130	0.020
Bangladesh	2011	2	49.4%	0.0089	15.9%	0.0062	70.6%	0.0093	0.006
Bangladesh	2014	3	51.5%	0.0108	15.7%	0.0083	71.8%	0.0133	0.007
Benin	2006	1	6.9%	0.0041	16.4%	0.0052	21.4%	0.0111	0.317
Benin	2011-12	2	9.5%	0.0053	19.7%	0.0061	27.9%	0.0132	0.113
Burkina Faso	2003	1	10.3%	0.0072	16.9%	0.0069	34.3%	0.0205	0.362
Burkina Faso	2010	2	11.6%	0.0056	15.2%	0.0053	42.2%	0.0149	0.236
Cameroon	2004	1	15.0%	0.0065	12.7%	0.0055	39.8%	0.0135	0.230
Cameroon	2011	2	16.7%	0.0064	14.3%	0.0059	46.5%	0.0127	0.160
Congo	2005	1	13.9%	0.0094	14.8%	0.0090	22.8%	0.0140	0.116
Congo	2011-12	2	25.8%	0.0109	15.4%	0.0081	43.5%	0.0146	0.142
Congo, Democratic Republic	2007	1	6.7%	0.0082	20.0%	0.0107	17.5%	0.0198	0.202
Congo, Democratic Republic	2013-14	2	7.6%	0.0053	19.5%	0.0089	21.1%	0.0138	0.204
Dominican Republic	2007	1	25.3%	0.0068	10.8%	0.0045	66.8%	0.0109	-0.008
Dominican Republic	2013	2	30.9%	0.0112	13.0%	0.0084	67.0%	0.0174	-0.018
Egypt	2005	1	37.6%	0.0107	9.9%	0.0060	74.2%	0.0133	0.038
Egypt	2014	2	36.2%	0.0104	10.6%	0.0063	74.6%	0.0131	0.051
Ethiopia	2011	1	12.4%	0.0076	10.2%	0.0072	53.5%	0.0254	0.165
Ethiopia	2016	2	15.8%	0.0080	8.1%	0.0072	65.5%	0.0232	0.117
Ghana	2003	1	10.6%	0.0076	19.0%	0.0096	31.6%	0.0200	0.231
Ghana	2008	2	9.7%	0.0075	18.5%	0.0112	29.5%	0.0206	0.090
Ghana	2014	3	13.7%	0.0084	16.1%	0.0088	39.5%	0.0191	-0.011
Guinea	2005	1	8.1%	0.0075	15.7%	0.0086	28.6%	0.0210	0.219
Guinea	2012	2	7.4%	0.0062	17.8%	0.0090	27.5%	0.0207	0.211
Haiti	2005-06	1	12.6%	0.0083	19.1%	0.0085	35.7%	0.0205	0.115
Haiti	2012	2	15.1%	0.0072	19.7%	0.0064	42.3%	0.0147	0.063
Honduras	2005-06	1	19.8%	0.0052	10.7%	0.0041	59.2%	0.0099	0.071
Honduras	2011-12	2	24.7%	0.0054	7.9%	0.0033	68.6%	0.0094	0.014
Indonesia	2002-03	1	56.5%	0.0125	8.9%	0.0064	84.4%	0.0107	0.010
Indonesia	2007	2	57.6%	0.0111	9.9%	0.0064	83.6%	0.0096	0.004
Indonesia	2012	3	57.0%	0.0105	8.0%	0.0055	86.2%	0.0088	0.012
Jordan	2007	1	30.0%	0.0196	14.4%	0.0150	54.1%	0.0290	0.086
Jordan	2012	2	28.5%	0.0206	11.5%	0.0144	52.0%	0.0290	0.027

Appendix A: Trends in Modern CPR, Unmet Need, Demand Satisfied, and Concentration Index by Country (*Continued*)

COUNTRY	YEAR	SURVEY	MEAN MCPR	STANDARD ERROR MCPR	MEAN UNMET NEED	STANDARD ERROR UNMET NEED	MEAN DEMAND SATISFIED	STANDARD ERROR DEMAND SATISFIED	CONCENTRATION INDEX
Kenya	2003	1	10.6%	0.0063	17.1%	0.0079	34.2%	0.0170	0.173
Kenya	2008-09	2	14.1%	0.0088	14.8%	0.0083	45.1%	0.0199	0.161
Kenya	2014	3	23.8%	0.0064	10.4%	0.0056	64.8%	0.0144	0.077
Lesotho	2004	1	17.9%	0.0083	16.0%	0.0079	52.2%	0.0180	0.156
Lesotho	2009	2	22.7%	0.0095	14.2%	0.0075	60.6%	0.0154	0.085
Lesotho	2014	3	35.4%	0.0109	11.2%	0.0083	75.3%	0.0158	0.026
Liberia	2007	1	10.5%	0.0087	34.3%	0.0113	22.4%	0.0158	0.277
Liberia	2013	2	21.2%	0.0145	30.9%	0.0119	39.9%	0.0217	0.100
Malawi	2004	1	15.7%	0.0068	21.4%	0.0066	40.2%	0.0132	0.090
Malawi	2010	2	20.5%	0.0062	16.1%	0.0053	53.3%	0.0120	0.041
Malawi	2015-16	3	30.5%	0.0066	13.4%	0.0047	68.8%	0.0096	0.007
Mali	2006	1	5.2%	0.0041	21.5%	0.0075	18.4%	0.0139	0.268
Mali	2012-13	2	8.1%	0.0065	18.5%	0.0101	30.0%	0.0220	0.198
Namibia	2006-07	1	36.7%	0.0113	9.5%	0.0052	77.9%	0.0115	0.064
Namibia	2013	2	39.5%	0.0099	11.3%	0.0067	77.1%	0.0123	0.053
Nepal	2006	1	23.2%	0.0153	34.7%	0.0128	38.4%	0.0208	0.119
Nepal	2011	2	20.9%	0.0120	39.3%	0.0137	32.0%	0.0156	0.042
Niger	2006	1	5.6%	0.0057	11.0%	0.0063	31.6%	0.0242	-0.018
Niger	2012	2	7.9%	0.0061	12.8%	0.0060	36.1%	0.0211	0.108
Nigeria	2003	1	7.6%	0.0061	11.3%	0.0088	34.3%	0.0226	0.199
Nigeria	2008	2	8.6%	0.0037	12.1%	0.0037	35.6%	0.0121	0.216
Nigeria	2013	3	8.7%	0.0039	9.2%	0.0031	42.8%	0.0131	0.248
Pakistan	2006-07	1	8.8%	0.0081	25.2%	0.0115	23.1%	0.0191	0.249
Pakistan	2012-13	2	13.1%	0.0091	19.3%	0.0115	34.3%	0.0211	0.097
Peru	2009	1	19.9%	0.0063	7.1%	0.0036	58.9%	0.0126	0.085
Peru	2012	2	22.2%	0.0062	5.9%	0.0031	62.5%	0.0109	0.085
Philippines	2003	1	7.6%	0.0042	8.4%	0.0043	39.0%	0.0169	0.040
Philippines	2008	2	8.0%	0.0046	8.0%	0.0040	40.1%	0.0173	0.020
Philippines	2013	3	8.8%	0.0041	7.2%	0.0036	41.8%	0.0152	0.003
Rwanda	2010	1	9.8%	0.0046	6.1%	0.0034	59.8%	0.0166	0.030
Rwanda	2014-15	2	10.5%	0.0052	6.5%	0.0035	59.2%	0.0182	-0.033

Appendix A: Trends in Modern CPR, Unmet Need, Demand Satisfied, and Concentration Index by Country (*Continued*)

				STANDARD	MEAN	STANDARD ERROR	MEAN	STANDARD ERROR	
COUNTRY	YEAR	SURVEY	MEAN MCPR	ERROR MCPR	UNMET NEED		DEMAND SATISFIED	DEMAND SATISFIED	CONCENTRATION INDEX
Senegal	2005	1	3.3%	0.0030	15.4%	0.0059	17.1%	0.0134	0.247
Senegal	2010-11	2	3.9%	0.0034	14.4%	0.0073	20.8%	0.0178	0.215
Senegal	2015	3	6.9%	0.0053	10.8%	0.0065	38.0%	0.0248	0.156
Sierra Leone	2008	1	7.9%	0.0066	23.0%	0.0105	23.8%	0.0174	0.283
Sierra Leone	2013	2	23.7%	0.0112	17.9%	0.0073	55.5%	0.0179	0.096
Uganda	2006	1	10.8%	0.0063	19.1%	0.0082	33.2%	0.0174	0.257
Uganda	2011	2	12.1%	0.0067	18.1%	0.0078	38.4%	0.0176	0.147
Zambia	2007	1	17.5%	0.0079	16.2%	0.0076	47.3%	0.0162	0.056
Zambia	2013-14	2	20.5%	0.0066	15.1%	0.0056	56.1%	0.0124	0.077
Zimbabwe	2005-06	1	25.5%	0.0091	8.1%	0.0068	74.8%	0.0182	0.055
Zimbabwe	2010-11	2	26.7%	0.0087	9.2%	0.0052	73.5%	0.0124	0.018
Zimbabwe	2015	3	28.0%	0.0094	6.2%	0.0047	81.2%	0.0124	0.011

Source: ICF, Demographic and Health Surveys from 33 countries.

LATIN AMERICAN AND THE CARRIBEAN

DOMINICAN REPUBLIC

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

HONDURAS

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

WESTERN AFRICA

BENIN

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



HAITI



Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



PERU

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

BURKINA FASO

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

WESTERN AFRICA (CONTINUED)

GHANA



Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



LIBERIA

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

NIGER

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



GUINEA



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

MALI

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

NIGERIA

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

WESTERN AFRICA (CONTINUED)

SENEGAL



Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile

Source: PRB analysis of DHS data from 76 surveys in 33 countries.

EASTERN AFRICA

ETHIOPIA

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

MALAWI

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



SIERRA LEONE

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

KENYA

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

RWANDA

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

ZAMBIA

EASTERN AFRICA (CONTINUED)

UGANDA





Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

Source: PRB analysis of DHS data from 76 surveys in 33 countries.

ZIMBABWE

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

SOUTHERN AFRICA

LESOTHO

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



NAMIBIA

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

MIDDLE AFRICA

CAMEROON

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



CONGO, REPUBLIC OF THE

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

Source: PRB analysis of DHS data from 76 surveys in 33 countries.

DEMOCRATIC REPUBLIC OF THE CONGO

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

MIDDLE EAST AND NORTH AFRICA

EGYPT

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



JORDAN



Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile

Source: PRB analysis of DHS data from 76 surveys in 33 countries.

SOUTH ASIA

BANGLADESH

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

PAKISTAN

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



Source: PRB analysis of DHS data from 76 surveys in 33 countries.

INDONESIA

Proportion of Demand Satisfied for Modern Family Planning by Wealth Quintile



NEPAL





PHILIPPINES





Source: PRB analysis of DHS data from 76 surveys in 33 countries.

Appendix C: Detailed Methodology

SURVEY SELECTION

In order to examine trends in equity and levels of demand satisfied over time among young women, we selected nationally representative surveys from the Demographic and Health Survey (DHS) from 33 countries conducted between 2003 and 2016. Within these surveys, we extracted data for young women in 15 to24 age group, which includes the 15 to 19 and 20 to 24 age cohorts.

With the goal of ensuing comparability and accuracy of the data, we developed selection criteria to identify the surveys that would be eligible for us to use. First, because we were interested in looking at trends over time, we only considered countries that had at least two surveys with data on wealth quintile, contraception use, and unmet need for modern family planning. The indicator on wealth quintile was introduced into the DHS beginning in 2002. The original criteria therefore were that the first survey be from 2007 or earlier and the most recent survey be from 2010 or later. This approach led to a sample of 36 countries with 86 surveys.

However, since we were only looking at the 15 to 19 and 20 to 24 age groups, sample size became a limiting factor. We had to reject surveys with sample that did not have at least one individual in each strata in our analysis (as grouped by region and urban v. rural location). This step resulted in rejecting surveys from three countries: Armenia, Colombia, and Tanzania. We also had to reject the first survey from Ethiopia and another survey from Rwanda due to the same sampling constraints. This left us with a final sample of 33 countries and 76 surveys.

POOLING DATA

The next step was to aggregate the 76 surveys to create a pooled dataset. We included data on age, education, use of family planning, unmet need (using the 2012 DHS updated definition), marital status, wealth quintile, and year of the survey. To properly account for sample design, we also included the individual weights provided by the DHS, unique survey ID, a unique country ID, as well as unique IDs for the primary sampling unit, the region, the type of residence (urban/rural), and the strata. We restricted each survey to female respondents between the ages of 15 and 24.

ANALYSIS

Given that the primary research question was to assess the impact of wealth quintile on demand satisfied for modern family planning among young women and how this changed over time, the most appropriate analysis was multilevel mixed effects logistic regression to determine the likelihood of demand for modern family planning being satisfied based on wealth quintile and other dependent control variables. The multilevel nature of the analysis relates to the fact that the surveys are ordered both at the country level and at the survey level (in other words, by year). To account for the complex survey design, we weighted each sample by the sample size of the survey and weighted each individual by the individual weights provided by the DHS. We also accounted for clustering by strata for each survey and by country.

We ran the regressions at three different levels. First, we analyzed the entire pooled dataset to ascertain the combined impact of wealth quintile on demand satisfied for family planning over time. We then looked at the same analysis by region to see whether there were significant differences by region. Finally, we repeated the analysis for each country. After the global logistic regression model, we used a predicted marginal probability model to calculate the predicted value of demand satisfied by wealth quintile and other independent variables, taking into account all factors in the model.

Sensitivity analyses were conducted with age as a continuous instead of a categorical variable, with wealth quintile as a factor variable, and with an interaction term for wealth quintile and most recent survey. None of these analyses were found to change the overall results, and therefore they are not presented.

To supplement the regressions, we also produced graphs to show demand satisfied for modern family planning by wealth quintile for each country and region as well as the concentration curve for demand satisfied for modern family planning by wealth quintile. The concentration index is a measure of inequality that can range between -1 and 1, with 0 representing perfect equality. In our case, a concentration index value of 1 would indicate all demand satisfied being concentrated among the wealthiest individuals, whereas any negative concentration index value would indicate that demand satisfied is concentrated among poorer individuals.

Appendix D: Pooled Regressions

	MODEL 1 DEMAND SATISFIED	MODEL 2 DEMAND SATISFIED	MODEL 3 DEMAND SATISFIED		
DEMAND SATISFIED	REGRESSION COEFFICIENTS	REGRESSION COEFFICIENTS	REGRESSION COEFFICIENTS		
first survey (reference)	0	0	0		
	(.)	(.)	(.)		
second survey	0.367	0.496	0.393**		
	(1.21)	(1.59)	(3.00)		
third survey	0.996*	1.397**	1.045***		
	(2.51)	(3.02)	(4.69)		
wealth index	0.243***	0.321***	0.265***		
	(17.64)	(5.45)	(4.96)		
2002-2006		0	0		
		(.)	(.)		
2007-2011		0.296*	0.174		
		(2.28)	(1.63)		
2012-2016		0.141	0.166		
		(0.88)	(1.12)		
survey X wealth		-0.0893**	-0.0851**		
		(-2.81)	(-2.81)		
age in 5-year groups		0.376***	0.370***		
		(13.73)	(13.44)		
highest level of education		0.271***	0.264***		
		(17.04)	(16.39)		
ever married		-0.369***	-0.362***		
		(-7.58)	(-7.41)		
urban (reference)			0		
			(.)		
rural			-0.294***		
			(-8.57)		
Bangladesh (reference)			0		
			(.)		
Burkina Faso			-1.227***		
			(-12.11)		
Benin			-2.106***		
			(-15.70)		
Congo, Democratic Republic			-2.644***		
			(-20.33)		
Congo			-1.867***		
- Congo			(-5.57)		
Cameroon			-1.357***		
			(-13.70)		
Dominican Republic			-0.268*		
			(-2.07)		
Egypt			0.454		
-314-			(1.91)		
Ethiopia			0.0794		
Lanopiu			(0.33)		
Ghana			-1.869***		
Girand			(-10.75)		
			(-10.73)		

Appendix D: Pooled Regressions (Continued)

	MODEL 1	MODEL 2	MODEL 3		
DEMAND SATISFIED	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS		
Guinea			-1.813***		
			(-7.93)		
Honduras			-0.104		
			(-0.99)		
Haiti			-1.407***		
			(-14.38)		
Indonesia			1.014***		
			(4.79)		
Jordan			-0.969***		
Jordan			(-5.85)		
Kenya			-1.162***		
кенуа					
Liberia			(-7.34) -2.059***		
Liberia					
			(-4.61)		
Lesotho			-0.403**		
			(-2.74)		
Mali			-1.874***		
			(-8.51)		
Malawi			-0.679**		
			(-3.27)		
Nigeria			-1.641***		
			(-10.62)		
Niger			-1.185***		
			(-11.79)		
Namibia			0.182		
			(0.94)		
Nepal			-1.249***		
			(-3.77)		
Peru			-0.628***		
			(-6.68)		
Philippines			-1.559***		
			(-7.73)		
Pakistan			-1.656***		
			(-9.83)		
Rwanda			-0.103		
			(-0.56)		
Sierra Leone			-1.889**		
			(-3.27)		
Senegal			-1.946***		
-			(-9.94)		
Uganda			-1.405***		
<u> </u>			(-13.50)		
Zambia			-0.825***		
			(-6.11)		
Zimbabwe			0.339*		
LINDADWE					
			(2.02)		

Appendix D: Pooled Regressions (Continued)

	MODEL 1	MODEL 2	MODEL 3
DEMAND SATISFIED	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS
Constant	-1.209***	-1.989***	-0.476**
	(-6.67)	(-7.70)	(-2.82)
var(_cons[survey_new])			
Constant	0.829***	0.772***	0.0429***
	(11.28)	(9.15)	(7.62)
var(_cons[survey_new>psu])			
Constant	0.429***	0.392***	0.390***
	(14.61)	(15.30)	(14.63)
Observations	135975	135968	135968

t statistics in parentheses

Appendix E: Regional Regressions

LATIN AMERICA AND CARIBBEAN

	MODEL 1	MODEL 2	MODEL 3	
	DEMAND SATISFIED	DEMAND SATISFIED	DEMAND SATISFIED	
DEMAND SATISFIED	REGRESSION COEFFICIENTS	REGRESSION COEFFICIENTS	REGRESSION COEFFICIENTS	
irst survey (reference)	0	0	0	
	(.)	(.)	(.)	
second survey	0.426	0.258	0.430	
	(0.74)	(0.38)	(1.21)	
wealth index	0.136**	0.249	0.211	
	(5.08)	(1.19)	(1.10)	
2002-2006 (reference)		0	0	
		(.)	(.)	
2007-2011		0.878	0.265**	
		(2.30)	(5.62)	
2012-2016		0.730	0.119	
		(1.91)	(1.51)	
survey X wealth		-0.0740	-0.0733	
		(-0.52)	(-0.54)	
age in 5-year groups			0.318**	
			(5.09)	
ural residence			-0.0283	
			(-0.33)	
highest level of education			0.147	
			(2.74)	
ever married			0.135*	
aver mameu			(3.05)	
Dominican Republic (reference)			0	
Jonninican Republic (reference)				
les dune			(.)	
londuras			-0.00559	
			(-0.06)	
Haiti			-1.098***	
			(-14.40)	
Peru			-0.326**	
			(-5.46)	
Constant	-0.365	-0.836	-0.810*	
	(-1.05)	(-1.92)	(-3.56)	
var(_cons[survey_new])				
Constant	0.288*	0.203	4.63e-36	
	(4.35)	(2.54)	(0.15)	
var(_cons[survey_new>psu])				
Constant	0.238**	0.234**	0.240***	
	(7.39)	(8.33)	(9.85)	
Observations	21716	21716	21716	
t statistics in parentheses				
r p<0.05, ** p<0.01, *** p<0.001				

WESTERN AFRICA

WESTERN AFRICA			
	MODEL 1	MODEL 2	MODEL 3
	DEMAND SATISFIED	DEMAND SATISFIED	DEMAND SATISFIED
DEMAND SATISFIED	REGRESSION COEFFICIENTS	REGRESSION COEFFICIENTS	REGRESSION COEFFICIENTS
first survey (reference)	0	0	0
	(.)	(.)	(.)
second survey	0.404*	0.867*	1.094
	(2.78)	(2.23)	(1.50)
third survey	0.838***	1.776**	1.729
	(6.78)	(3.17)	(1.89)
wealth index	0.381***	0.609***	0.352**
	(8.78)	(5.10)	(3.62)
2002-2006 (reference)		0	0
		(.)	(.)
2007-2011		0.156	-0.500
		(0.37)	(-0.60)
2012-2016		-0.0238	-0.380
		(-0.06)	(-0.44)
survey X wealth		-0.132	-0.122
		(-1.89)	(-2.01)
age in 5-year groups			0.438***
			(7.10)
rural residence			-0.367***
			(-6.15)
highest level of education			0.437***
			(19.91)
ever married			-0.851***
			(-8.77)
Burkina Faso (reference)			0
			(.)
Benin			-1.188***
			(-6.51)
Ghana			-0.913***
			(-5.82)
Guinea			-0.833**
			(-3.02)
Liberia			-0.899
			(-1.55)
Mali			-0.716**
			(-3.37)
Nigeria			-0.735***
			(-5.93)
Niger			0.150
			(1.04)
Sierra Leone			-0.571
Seneral			(-0.79) -0.690**
Senegal			
	0.504***	0.04.4***	(-3.84)
Constant	-2.531***	-2.914***	-1.300***
	(11.81)	(-8.78)	(-6.40)

WESTERN AFRICA (Continued)

	MODEL 1	MODEL 2	MODEL 3	
DEMAND SATISFIED	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS	
var(_cons[survey_new])				
Constant	0.111**	0.137	0.0290	
	(3.41)	(1.81)	(0.78)	
var(_cons[survey_new>psu])				
Constant	0.647***	0.628***	0.530***	
	(8.20)	(9.18)	(9.01)	
Observations	32576	32576	32574	

t statistics in parentheses

EASTERN AFRICA

	MODEL 1	MODEL 2	MODEL 3	
DEMAND SATISFIED	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS	
first survey (reference)	0	0	0	
	(.)	(.)	(.)	
second survey	0.335	0.125	0.668**	
	(0.72)	(0.28)	(3.45)	
third survey	1.369*	0.969	1.682**	
	(3.15)	(2.19)	(4.32)	
wealth index	0.222***	0.367**	0.283*	
	(9.10)	(3.48)	(3.09)	
2002-2006 (reference)		0	0	
		(.)	(.)	
2007-2011		0.447	-0.152	
		(0.87)	(-0.53)	
2012-2016		0.977	-0.315	
		(2.22)	(-0.62)	
urvey X wealth		-0.0751	-0.0720	
		(-1.41)	(-1.43)	
ige in 5-year groups			0.472***	
			(10.14)	
ural residence			-0.239**	
			(-3.36)	
nighest level of education			0.312***	
5			(6.17)	
ever married			0.456***	
			(7.40)	
Ethiopia (reference)			0	
			(.)	
Kenya			-1.315***	
			(-6.51)	
Aalawi			-0.968**	
			(-4.45)	
Rwanda			-0.00394	
Iwanda			(-0.02)	
Jganda			-1.553***	
- 941 . 444			(-8.66)	
Zambia			-0.650**	
			(-4.40)	
Zimbabwe			0	
			(.)	
Constant	-0.788*	-1.140*	-1.087**	
Sonotant	(-2.92)	(-2.31)	(-3.53)	
var(_cons[survey_new])	(-2.32)	(-2.01)	(-0.00)	
	0.378**	0.376*	0.0201*	
Constant		11.11.11		

EASTERN AFRICA (Continued)

	MODEL 1	MODEL 2	MODEL 3
DEMAND SATISFIED	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS
var(_cons[survey_new>psu])			
Constant	0.288***	0.284***	0.285***
	(7.43)	(8.44)	(8.59)
Observations	28977	28977	28975
t statistics in parentheses			

SOUTHERN AFRICA

	MODEL 1	MODEL 2	MODEL 3
DEMAND SATISFIED	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS
ïrst survey (reference)	0	0	0
	(.)	(.)	(.)
second survey	0.190	0.103	0.619***
	(0.28)	(0.26)	(14.07)
third survey	0.536	0.431	2.139***
	(1.22)	(1.01)	(21.79)
wealth index	0.315*	0.565***	0.436**
	(5.79)	(18.43)	(9.12)
2002-2006 (reference)		0	0
		(.)	(.)
2007-2011		0.122	0.0995**
		(1.64)	(6.65)
2012-2016		0.959**	-0.304***
		(11.89)	(-15.27)
survey X wealth		-0.136**	-0.146**
		(-12.74)	(-9.72)
age in 5-year groups			0.390*
			(5.45)
ural residence			-0.293
			(-2.03)
nighest level of education			0.310**
			(7.22)
ever married			-0.576*
			(-4.66)
_esotho (reference)			0
			(.)
Namibia			0.824**
			(9.64)
Constant	-0.322	-0.698	-0.986
	(-0.62)	(-1.44)	(-1.90)
/ar(_cons[survey_new])			
Constant	0.209	0.127	5.03e-37
	(2.56)	(1.22)	(0.04)
/ar(_cons[survey_new>psu])			
Constant	0.279**	0.262**	0.248*
	(5.99)	(5.90)	(4.47)
Observations	7573	7573	7572

t statistics in parentheses

MIDDLE AFRICA

	MODEL 1	MODEL 2	MODEL 3	
DEMAND SATISFIED	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS	
first survey (reference)	0	0	0	
	(.)	(.)	(.)	
second survey	0.684	1.096	0.0249	
	(1.45)	(2.12)	(0.06)	
wealth index	0.381**	0.321	0.0943	
	(10.96)	(1.31)	(0.50)	
2002-2006 (reference)		0	0	
		(.)	(.)	
2007-2011		-0.746*	0.450***	
		(-3.54)	(28.03)	
2012-2016		-0.831*	0.456***	
		(-5.32)	(13.72)	
survey X wealth		0.0391	0.0491	
		(0.28)	(0.44)	
age in 5-year groups			0.0742	
			(0.78)	
rural residence			-0.303	
			(-2.00)	
highest level of education			0.602*	
			(5.44)	
ever married			-0.536*	
			(-4.29)	
Congo, Democratic Republic (reference)			0	
			(.)	
Congo			0.844**	
			(8.64)	
Cameroon			1.407**	
			(6.42)	
Constant	-2.527**	-2.228***	-2.943**	
	(-11.54)	(-17.03)	(-7.69)	
var(_cons[survey_new])				
Constant	0.217*	0.137	0.0195*	
	(3.26)	(1.75)	(3.42)	
var(_cons[survey_new>psu])				
Constant	0.387	0.388	0.334*	
	(3.04)	(3.06)	(3.50)	
Observations	12935	12935	12935	
t statistics in parentheses				

MIDDLE EAST NORTH AFRICA

	MODEL 1	MODEL 2	MODEL 3
DEMAND SATISFIED	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS
first survey (reference)	0	0	0
	(.)	(.)	(.)
second survey	-0.137	-0.623	0.157*
	(-0.25)	(-3.19)	(9.50)
vealth index	0.220	0.311***	0.284*
	(3.94)	(39.05)	(6.28)
2002-2006 (reference)		0	0
		(.)	(.)
007-2011		-0.904***	0.150*
		(-62.38)	(4.75)
012-2016		0	0
		(.)	(.)
urvey X wealth		-0.0610	-0.0621**
		(-1.69)	(-29.19)
ige in 5-year groups			0.199
			(0.89)
rural residence			-0.250
			(-1.85)
ighest level of education			0.0359
			(0.61)
ver married			0
			(.)
gypt (reference)			0
			(.)
ordan			-1.233**
			(-13.93)
Constant	-0.0983	0.475*	0.552
	(-0.25)	(6.58)	(1.87)
ar(_cons[survey_new])			•
Constant	0.194**	0.112	7.49e-32
	(10.57)	(1.33)	(0.74)
rar(_cons[survey_new>psu])		. *	
Constant	0.415*	0.401*	0.375
	(5.04)	(4.75)	(4.18)
	()		
Observations	5143	5143	5143
statistics in parentheses			

SOUTH ASIA

MODEL 3 DEMAND SATISFIED REGRESSION COEFFICIENT
REGRESSION COEFFICIENT
0
(.)
0.245
(1.69)
0.315
(1.29)
0.266
(2.45)
0
(.)
0.252
(0.77)
0.796
(2.59)
-0.115
(-2.28)
0.403***
(10.68)
-0.430**
(-5.61)
0.0320
(0.73)
0
(.)
0
(.)
-1.332**
(-4.73)
-2.123***
(-13.06)
0.196
(0.67)
()
0.0117
(0.93)
()
0.404**
(4.82)
(
14398
14398
14398

SOUTHEAST ASIA

	MODEL 1	MODEL 2	MODEL 3 DEMAND SATISFIED REGRESSION COEFFICIENTS	
DEMAND SATISFIED	DEMAND SATISFIED REGRESSION COEFFICIENTS	DEMAND SATISFIED REGRESSION COEFFICIENTS		
first survey (reference)	0	0	0	
	(.)	(.)	(.)	
second survey	-0.0359	0.0434	0.0325	
	(-0.03)	(0.03)	(1.12)	
third survey	-0.330	-0.171	0.284*	
	(-0.24)	(-0.13)	(3.86)	
wealth index	0.0545*	0.107**	0.117*	
	(3.31)	(6.01)	(3.64)	
2002-2006 (reference)		0	0	
		(.)	(.)	
2007-2011		0	0	
		(.)	(.)	
2012-2016		0	0	
		(.)	(.)	
survey X wealth		-0.0288	-0.0155	
		(-2.24)	(-1.38)	
age in 5-year groups			0.367*	
			(3.42)	
ural residence			0.0899	
			(0.62)	
nighest level of education			-0.0756	
			(-0.96)	
ever married			0.878**	
			(8.58)	
ndonesia (reference)			0	
			(.)	
Philippines			-2.263***	
			(-33.64)	
Constant	0.534	0.470	-0.00307	
	(0.64)	(0.56)	(-0.01)	
var(_cons[survey_new])				
Constant	1.344**	1.344**	2.15e-34	
	(6.93)	(6.94)	(0.10)	
var(_cons[survey_new>psu])	()	<u> </u>	\/	
Constant	0.640**	0.642**	0.661**	
	(6.19)	(6.19)	(5.24)	
	(()	(·)	
Observations	12656	12656	12655	
000017400110	12000	,2000	,2000	

Appendix F. Predicted Probabilities

PREDICTED PROBABILITIES BASE MODEL

svy: melogit demand_satisfied i.survey_num i.wealth_quint i.year_cat survey_num#wealth_quint i.age_cat i.urban_rural i.education i.ever_married i.country_new || survey_ new: || psu: (running melogit on estimation sample)

Survey: Mixed-effects logistic regression Number of strata = 33 Number of PSUs = 76 Number of obs = 135,968 Population size = 143,741.1 Design df = 43

DEMAND SATISFIED	COEF.	LINEARIZED STD. ERR.	t	P>iti	95% CONF. INTERVAL LOW	95% CONF. INTERVAL HIGH
survey number (ref. = first survey)						
second survey	0.286	0.135	2.11	0.04	0.013	0.558
third survey	0.817	0.165	4.96	0	0.485	1.150
wealth quintile (ref. = poorest)						
Poorer	0.178	0.048	3.75	0.001	0.082	0.274
Middle	0.263	0.065	4.05	0	0.132	0.394
Richer	0.448	0.073	6.18	0	0.302	0.595
Richest	0.770	0.099	7.79	0	0.571	0.970
year_cat (ref. = 2002-2006)						
2007-2011	0.170	0.105	1.63	0.111	-0.041	0.381
2012-2016	0.165	0.146	1.13	0.266	-0.130	0.459
survey_num#wealth_quint (ref. = first survey)						
second survey#Poorer	-0.068	0.074	-0.92	0.363	-0.218	0.081
second survey#Middle	-0.148	0.113	-1.31	0.196	-0.376	0.079
second survey#Richer	-0.175	0.143	-1.23	0.227	-0.463	0.113
second survey#Richest	-0.343	0.178	-1.92	0.061	-0.702	0.017
third survey#Poorer	-0.094	0.068	-1.37	0.179	-0.232	0.044
third survey#Middle	-0.150	0.123	-1.21	0.232	-0.399	0.099
third survey#Richer	-0.459	0.154	-2.98	0.005	-0.769	-0.148
third survey#Richest	-0.707	0.222	-3.18	0.003	-1.155	-0.258
age_cat (ref. = 15-19)						
20-24	0.395	0.028	14.24	0	0.339	0.451
urban_rural (ref. = urban)						
rural	-0.277	0.035	-7.84	0	-0.349	-0.206
education (ref. = no education)						
Primary	0.425	0.031	13.77	0	0.363	0.487
Secondary	0.703	0.038	18.72	0	0.627	0.778
Higher	0.594	0.049	12.21	0	0.496	0.692
ever_married (ref. = never married)						
Has been married/in union	-0.364	0.049	-7.46	0	-0.463	-0.266

PREDICTED PROBABILITIES BASE MODEL (Continued)

DEMAND SATISFIED	COEF.	LINEARIZED STD. ERR.	t	P>iti	95% CONF. INTERVAL LOW	95% CONF. INTERVAL HIGH
country (ref. = Bangladesh)						
Burkina Faso	-1.174	0.098	-11.94	0	-1.372	-0.976
Benin	-2.088	0.137	-15.26	0	-2.364	-1.812
Congo, Democratic Republic	-2.662	0.125	-21.28	0	-2.914	-2.409
Congo	-1.889	0.343	-5.50	0	-2.581	-1.196
Cameroon	-1.371	0.096	-14.24	0	-1.565	-1.177
Dominican Republic	-0.238	0.120	-1.98	0.054	-0.481	0.004
Egypt	0.466	0.245	1.90	0.064	-0.028	0.960
Ethiopia	-0.158	0.230	-0.69	0.496	-0.622	0.306
Ghana	-1.884	0.176	-10.73	0	-2.239	-1.530
Guinea	-1.782	0.230	-7.74	0	-2.246	-1.317
Honduras	-0.123	0.101	-1.22	0.228	-0.326	0.080
Haiti	-1.429	0.095	-14.99	0	-1.621	-1.236
Indonesia	0.975	0.209	4.67	0	0.554	1.397
Jordan	-0.943	0.164	-5.76	0	-1.274	-0.613
Kenya	-1.188	0.159	-7.45	0	-1.509	-0.866
Liberia	-2.072	0.446	-4.64	0	-2.972	-1.172
Lesotho	-0.437	0.147	-2.97	0.005	-0.734	-0.140
Mali	-1.837	0.220	-8.35	0	-2.280	-1.393
Malawi	-0.709	0.204	-3.48	0.001	-1.119	-0.298
Nigeria	-1.628	0.151	-10.79	0	-1.932	-1.324
Niger	-1.113	0.102	-10.93	0	-1.318	-0.908
Namibia	0.168	0.186	0.90	0.374	-0.208	0.544
Nepal	-1.232	0.329	-3.75	0.001	-1.895	-0.569
Peru	-0.584	0.091	-6.42	0	-0.768	-0.401
Philippines	-1.514	0.198	-7.66	0	-1.913	-1.115
Pakistan	-1.601	0.164	-9.75	0	-1.932	-1.270
Rwanda	-0.373	0.162	-2.30	0.026	-0.699	-0.046
Sierra Leone	-1.882	0.574	-3.28	0.002	-3.040	-0.724
Senegal	-1.912	0.190	-10.07	0	-2.295	-1.529
Uganda	-1.433	0.099	-14.43	0	-1.633	-1.232
Zambia	-0.845	0.127	-6.66	0	-1.101	-0.589
Zimbabwe	0.297	0.166	1.79	0.081	-0.038	0.632
_cons	-0.043	0.134	-0.32	0.75	-0.312	0.226
survey_new						
var(_cons)	0.043	0.006			0.033	0.056
survey_new>psu						
var(_cons)	0.384	0.026			0.334	0.441

PREDICTED PROBABILITIES FOR ALL COVARIATES

margins i.survey_num i.wealth_quint i.year_cat survey_num#wealth_quint i.age_cat i.urban_rural i.education i.ever_married i.country_new, vce(unconditional)

Predictive Margins

Numbers of obs = 135,968 Expression : Marginal predicted mean, predict()

	MARGIN	LINEARIZED STD. ERR.	t	P>iti	95% CONF. INTERVAL LOW	95% CONF. INTERVAL HIGH
survey_num						
first survey	0.475	0.015	30.69	0	0.444	0.506
second survey	0.500	0.012	41.99	0	0.476	0.524
third survey	0.573	0.041	13.99	0	0.490	0.655
wealth_quint						
Poorest	0.452	0.013	35.83	0	0.426	0.477
Poorer	0.477	0.013	36.87	0	0.451	0.503
Middle	0.485	0.013	38.69	0	0.460	0.510
Richer	0.511	0.013	39.63	0	0.485	0.537
Richest	0.552	0.012	45.45	0	0.527	0.576
year_cat						
2002-2006	0.475	0.020	23.46	0	0.435	0.516
2007-2011	0.508	0.012	41.31	0	0.483	0.532
2012-2016	0.507	0.015	33.81	0	0.476	0.537
survey_num#wealth_quint						
first survey#Poorest	0.408	0.016	25.12	0	0.376	0.441
first survey#Poorer	0.442	0.016	27.28	0	0.409	0.474
first survey#Middle	0.458	0.020	23.38	0	0.418	0.497
first survey#Richer	0.493	0.024	20.78	0	0.445	0.541
first survey#Richest	0.554	0.021	26.28	0	0.512	0.597
second survey#Poorest	0.462	0.020	23.40	0	0.422	0.502
second survey#Poorer	0.483	0.015	32.04	0	0.453	0.513
second survey#Middle	0.484	0.014	33.68	0	0.455	0.513
second survey#Richer	0.514	0.015	35.06	0	0.485	0.544
second survey#Richest	0.544	0.015	36.29	0	0.513	0.574
third survey#Poorest	0.563	0.027	20.58	0	0.508	0.618
third survey#Poorer	0.579	0.037	15.67	0	0.505	0.654
third survey#Middle	0.585	0.045	12.87	0	0.493	0.676
third survey#Richer	0.561	0.051	11.06	0	0.459	0.664
third survey#Richest	0.575	0.072	7.96	0	0.429	0.721
age_cat						
15-19	0.447	0.010	43.24	0	0.426	0.468
20-24	0.522	0.011	48.23	0	0.500	0.543
urban_rural						
urban	0.528	0.011	47.70	0	0.506	0.550
rural	0.476	0.011	43.18	0	0.453	0.498

PREDICTED PROBABILITIES FOR ALL COVARIATES (Continued)

	MARGIN	LINEARIZED STD. ERR.	t	P>iti	95% CONF. INTERVAL LOW	95% CONF. INTERVAL HIGH
education						
No Education	0.401	0.012	32.75	0	0.377	0.426
Primary	0.482	0.012	40.52	0	0.458	0.506
Secondary	0.536	0.010	53.74	0	0.516	0.556
Higher	0.515	0.019	26.76	0	0.476	0.554
ever_married						
Never married/in union	0.549	0.014	39.89	0	0.522	0.577
Has been married/in union	0.481	0.012	41.80	0	0.458	0.504
country						
Bangladesh	0.685	0.013	51.19	0	0.658	0.712
Burkina Faso	0.441	0.011	39.65	0	0.419	0.463
Benin	0.262	0.018	14.37	0	0.226	0.299
Congo, Democratic Republic	0.175	0.015	11.48	0	0.145	0.206
Congo	0.298	0.027	11.00	0	0.243	0.352
Cameroon	0.400	0.012	34.09	0	0.376	0.423
Dominican Republic	0.639	0.026	24.48	0	0.586	0.691
Egypt	0.766	0.054	14.21	0	0.657	0.875
Ethiopia	0.655	0.081	8.12	0	0.492	0.817
Ghana	0.298	0.033	8.97	0	0.231	0.366
Guinea	0.318	0.039	8.23	0	0.240	0.395
Honduras	0.661	0.010	67.23	0	0.642	0.681
Haiti	0.388	0.011	35.13	0	0.365	0.410
ndonesia	0.838	0.011	73.15	0	0.815	0.861
Jordan	0.490	0.064	7.66	0	0.361	0.619
Kenya	0.438	0.088	5.00	0	0.261	0.615
Liberia	0.265	0.020	13.34	0	0.225	0.305
_esotho	0.598	0.021	28.14	0	0.555	0.641
Mali	0.307	0.038	8.15	0	0.231	0.383
Malawi	0.541	0.020	27.40	0	0.501	0.581
Vigeria	0.347	0.023	15.39	0	0.302	0.393
Niger	0.454	0.019	24.11	0	0.416	0.492
Namibia	0.716	0.018	38.85	0	0.678	0.753
Vepal	0.429	0.023	18.71	0	0.382	0.475
Peru	0.567	0.014	39.41	0	0.538	0.596
Philippines	0.370	0.040	9.28	0	0.290	0.451
Pakistan	0.353	0.052	6.85	0	0.249	0.457
Rwanda	0.611	0.029	21.27	0	0.553	0.669
Sierra Leone	0.299	0.106	2.83	0.007	0.086	0.512
Senegal	0.293	0.085	3.43	0.001	0.121	0.466
Jganda	0.387	0.011	35.69	0	0.365	0.409
Zambia	0.511	0.030	17.07	0	0.451	0.572
Zimbabwe	0.738	0.014	51.53	0	0.709	0.767

PREDICTED PROBABILITIES FOR FIRST V. MOST RECENT SURVEYS

margins i.wealth_quint if most_recent!=., over(most-recent)

Predictive Margins Numbers of obs = 115,856 Model VCE: Linearized Expression : Marginal predicted mean, predict() over: most_recent

	DELTA-METHOD			95% CONF.	95% CONF.	
	MARGIN	STD. ERR.	t	P>iti	INTERVAL LOW	INTERVAL HIGH
most_recent# (0=First Survey; 1=Most Recent)						
0#Poorest	0.384	0.011	34.01	0	0.361	0.407
0#Poorer	0.417	0.012	34.40	0	0.392	0.441
0#Middle	0.433	0.011	37.92	0	0.410	0.456
0#Richer	0.467	0.009	52.66	0	0.450	0.485
0#Richest	0.528	0.012	43.90	0	0.504	0.553
1#Poorest	0.486	0.012	40.57	0	0.462	0.511
1#Poorer	0.506	0.010	49.46	0	0.485	0.527
1#Middle	0.508	0.011	44.34	0	0.485	0.531
1#Richer	0.524	0.013	39.57	0	0.497	0.551
1#Richest	0.550	0.012	44.21	0	0.525	0.575