

Online Appendix to

“The Price of Labor: Evaluating the Impact of Eliminating User Fees on Maternal and  
Infant Health Outcomes”

by Anne Fitzpatrick

**Appendix Table A: Summary of Policy Changes**

Country	Policy Change	Policy Summary	DHS Survey Years	Source
Benin	April 2009	Free caesarean sections	2006, 2011-12	Witter et al., 2016
Burundi	May 2006	Free deliveries	2010	Nimpagaritse and Bertone (2011)
Ghana	2003, 2005, 2008	Free deliveries in five provinces (2003); whole country (2005); integration in national health insurance (2008)	1998, 2008	Penfold et al., (2007); Witter et al., (2007)
Kenya	June 2013	All maternity services are free at public facilities starting in June 2013	2003, 2008, 2014	Njugana et al., (2013); Kenya MOH 2015
Liberia	April 2006	All user fees at public facilities eliminated	2007, 2013	Downie 2012
Mali	August 2005	Elimination of user fees for casearean sections	2001, 2006, 2012	MOH Announcement "Décret 05-350 Gratuité césarienne" 2005; Arsenult et al., (2005)
Senegal	2005, 2006	Free deliveries in five regions then national (except Dakar)	1997, 2005, 2010	Witter et al., 2016
Sierra Leone	May 2010	Free services for pregnant women and young children	2008, 2013	UNICEF 2011
Uganda	March 2001	All user fees at public facilities eliminated	2000, 2006, 2011	Xu et al., 2006
Zambia	April 2006	Eliminated user fees in 54 rural districts (out of 72 total districts)	2007, 2013	Masiye et al., 2010; Lepin et al., 2017

Notes: Country and policy description taken from Meessen et al., (2011) and augmented with additional background research as noted above. Note that Madagascar also eliminated user fees in 2003 after a political crisis, but is not included in this analysis. Ghana and Senegal first implemented their policy in sub-nationally. For Ghana I use September 2003 and for Senegal I use January 2005 as the implementation date. Sierra Leone's implementation date was April 27, 2010 which I round to be May 2010. South Africa eliminated user fees for pregnant women and children under six in 1994 and for all primary care services in 1997 (Ensor and Ronoh 2005). Burkina Faso reduced fees so that mothers only paid 80% of the cost with indigent women exempted, but this country is not included. Morocco eliminated user fees in January 2009 but data were not available for the post-period. Tanzania also has had an unevenly enforced policy of free births and deliveries, but a reliable date could not be found. Lesotho reduced fees in 2008 but the price remained positive. Surveys listed are for the main birth outcomes analysis; all available DHS surveys after the policy date are used for the maternal mortality analysis.

**Appendix Table B: Summary Statistics of Births in DHS  
Data**

<b>Demographic Characteristic</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
Maternal Age	210,008	28.84	6.88
HH Head=Male	210,008	0.81	0.39
Distance is Big Problem	183,965	0.45	0.50
Mother Has Any Education	209,992	0.48	0.50
Mother is Married	210,004	0.90	0.30
Child is Boy	210,008	0.51	0.50
Wealth Index	186,834	2.75	1.40
<b>Delivery Location</b>			
Public Facility	210,008	0.48	0.50
Own Home	210,008	0.38	0.48
Private Facility	210,008	0.08	0.27
<b>Survival and Birth Method</b>			
Survived First Week	210,005	0.97	0.16
Survived First Month	210,008	0.97	0.18
Survived First Year	210,008	0.94	0.25
C-Section	206,021	0.04	0.19
<b>Attended Delivery</b>			
Skilled Birth Attendant	209,744	0.56	0.50
Traditional Birth Attendant	209,744	0.24	0.42
Friend/Relative	209,744	0.17	0.37
No One	209,744	0.06	0.23

Notes: Data are from all births in the sample, conditional on having a non-missing value for delivery location. In the full sample, there are 210,008 observations. Sample size per variable differs due to missing values.

**Appendix Table C: Selection In The Event Study**

VARIABLES	Born After Policy	Born After Policy
	(1)	(2)
Age First Birth	0.002 (0.003)	0.003 (0.003)
Household Head is Male	-0.023 (0.026)	-0.023 (0.026)
Distance is a Big Problem	-0.018 (0.024)	-0.018 (0.024)
Any Education	0.049** (0.024)	0.050** (0.025)
Wealth Index		-0.004 (0.012)
Married	-0.056** (0.027)	-0.058** (0.028)
Child is a Boy	0.001 (0.019)	0.001 (0.019)
Constant	0.524*** (0.062)	0.555*** (0.070)
Observations	7,256	7,014
R-squared	0.524	0.505

Notes: Sample is all first births that occurred within 12 months of the policy and excludes observations with missing values. The outcome variable in each regression is whether the birth occurred before or after the policy change. All regressions also include a control for the household cluster within each survey. Wealth index was not consistently asked in all surveys. Robust standard errors in parentheses.\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Appendix Table D: Other Outcomes Using A Maternal Fixed Effect**

VARIABLES	--Delivery Location--			--Delivery Attendant--			--Survival--	
	Home (1)	Private Facility (2)	TBA (3)	Friend (4)	No One (5)	Through First Week (6)	Through First Year (7)	
Born After Policy	-0.008 (0.006)	0.001 (0.003)	-0.005 (0.005)	-0.003 (0.005)	-0.002 (0.003)	-0.009*** (0.003)	-0.012*** (0.004)	
Birth Order	-0.010*** (0.003)	0.003* (0.002)	-0.012*** (0.002)	-0.003 (0.002)	0.006*** (0.002)	0.015*** (0.002)	0.019*** (0.002)	
Constant	0.419*** (0.009)	0.065*** (0.005)	0.284*** (0.008)	0.184*** (0.007)	0.037*** (0.005)	0.924*** (0.006)	0.898*** (0.007)	
Observations	210,008	210,008	209,744	209,744	209,744	210,005	210,008	
R-squared	0.884	0.879	0.895	0.886	0.86	0.64	0.635	
Mean of Dep Variable, Pre-Period	0.422	0.0815	0.253	0.196	0.068	0.972	0.963	

Notes: Sample is all births and excludes observations with missing data. All specifications are linear probability models and include a maternal fixed effect. Home refers to the respondent's home, not the attendant's home. Private facility includes all private, non-home providers, including private hospitals, private clinics and mission/charitable hospitals. TBA stands for Traditional Birth Attendant. Robust standard errors in parentheses, clustered at the respondent level. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Appendix Table E: Other Outcomes Using An Event Study**

VARIABLES	--Delivery Location--			--Delivery Attendant --			--Survival--	
	Home (1)	Private Facility (2)	TBA (3)	Friend (4)	No One (5)	Through First Week (6)	Through First Year (7)	
Born After Policy	-0.043*** (0.012)	-0.008 (0.008)	-0.020* (0.012)	-0.032*** (0.011)	0.005 (0.005)	0.002 (0.007)	0.001 (0.007)	
Constant	0.255*** (0.008)	0.098*** (0.005)	0.206*** (0.007)	0.147*** (0.007)	0.014*** (0.003)	0.967*** (0.004)	0.959*** (0.005)	
Observations	8,324	8,324	8,319	8,319	8,319	8,324	8,324	
R-squared	0.65	0.623	0.65	0.589	0.485	0.464	0.463	
Mean of Dep Variable, Pre-Period	0.245	0.101	0.205	0.143	0.015	0.968	0.96	

Notes: Sample is all first births that occurred within 12 months of the policy and excludes observations with missing values. All regressions are linear probability models and include a control for the household cluster within each survey. Home refers to the respondent's home, not the attendant's home. Private facility includes all private, non-home providers, including private hospitals, private clinics and mission/charitable hospitals. TBA stands for Traditional Birth Attendant. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Appendix Table F: Maternal Mortality Estimates**

VARIABLES	Within 5 Years of Implementation					
	----All Observations----		Probit (Marg. Eff)		Logit (Marg. Eff)	
	(1)	(2)	(3)	(4)	(5)	(6)
Died After Policy	-0.004 (0.004)	-0.010** (0.004)	-0.010*** (0.004)	-0.003 (0.005)	-.009** (0.004)	-.009** (0.004)
Fixed Effect Type		Survey Cluster	Country and Year	Country and Year	Country and Year	Country and Year
Observations	54,440	54,440	54,440	20,338	54,440	54,440
R-squared	0.227	0.023	0.023	0.033		

Notes: To measure maternal mortality, the survey asks female respondents about all siblings and whether they are alive or dead. For deceased sisters, additional questions were asked whether the death was related to her pregnancy. Sample is all deaths of the sisters of respondents age 16-45 at the time of death. The outcome variable is whether or not the death is related to pregnancy (died while pregnant, in childbirth, or within 2 months of her pregnancy/childbirth). All regressions include a control for the age of death. For probit and logit specifications, marginal effects at the mean of all independent variables reported with standard errors calculated with the delta method. Survey cluster fixed effect is a large dummy variable group for the smallest geographic area within a given survey. Survey fixed effects indicate a large dummy variable group for each survey in the sample. Country and year fixed effects indicate two sets of dummy variables, one for country and one for the survey year. The mean of the dependent variable in all specifications is 0.099, except for column 4 where it is 0.103. Robust standard errors reported, clustered at the respondent level. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1