The Value of Socialized Medicine: The Impact of Universal Primary Healthcare Provision on Birth and Mortality Rates in Turkey

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INTRODUCTION

- About 1.3 billion people in the world lack effective and affordable medical care (WHO).
- Most of these people live in developing countries, which have limited:
  - Trained healthcare personnel
  - Infrastructure
  - Financial resources
- *"I regard universal health coverage as the single most powerful concept that public health has to offer. It is inclusive. It unifies services and delivers them in a comprehensive and integrated way, based on primary healthcare."*
  - Dr. Margaret Chan, WHO Director-General (December 2015)

Healthcare Reforms in Developing Countries

- A number of developing countries reformed their healthcare systems to expand health insurance coverage and improve healthcare quality.

- Demand side interventions:
  - Demand side reforms primarily aim to increase the insurance take-up rates.

- Supply side interventions:
  - Supply side interventions either provide incentives to producers of medical care or assume the direct provision of medical care.

Reforms with Greater Emphasis on Coverage Expansions

- Japan in 1956: Health insurance coverage expansion
  - Healthcare utilization increased but no effect on age specific mortality (Kondo and Shigeoka 2013)
- China in 2003: New Cooperative Medical Scheme aims to reduce the un-insured rates among the poor in rural areas.
  - No effect on health (Lei and Lin 2009)
- Costa Rica in 1973: Insurance expansion for the poor
  - No effect on child mortality (Dow and Schmeer, 2003)
- Peru in 2001: coverage to individuals employed outside the formal labor market
  - Positive effect on healthcare utilization but no effect on health (Bernal et al., 2014)
- Taiwan 1993:
  - While access to health insurance increases utilization, it does not appear to lead to improved health (Chen et al., 2007)

Reforms with Greater Emphasis on Coverage Expansions

- Colombia in 1993: Means tested health insurance expansion for the poor.
  - Receiving subsidized health insurance increased the likelihood of medical care utilization and reduced the incidence of low birth weight (Camacho and Conover, 2013).
- Mexico in 2001: Insurance coverage expansion for the uncovered
  - The Seguro Popular program improved access to healthcare and the likelihood of blood glucose control among poor adults with diabetes, and it might have also had a positive effect on the management of other chronic health conditions. (Sosa-Rubi et al. (2009).
 - The program led to a reduction in infant mortality (Pfutze, 2014).

Predominantly Supply Side Interventions

- Thailand in 2001: Increased reimbursement and reduced copays.
  - The 30 Baht program lead to an equalization of the infant mortality in different provinces (Gruber et al., 2013).
- Brazil in 1994: Programa Saùde de Familia (PSF), as a community-based healthcare intervention, aims to provide basic health and preventive services through healthcare teams directly intervening at the community level
  - Favorable effects on infant mortality, fertility, adult labor supply and school enrollment (Rocha and Soares, 2010)

The Family Medicine Program

- We use one of the largest supply side interventions that took place in a middle-income country, The Republic of Turkey.

- The Family Medicine Program (FMP) initiated in one province in 2005 and gradually expanded to all of the 81 provinces by 2010.

- It is fully funded by the central government and individual provinces do not have a discretion over when the FMP is implemented and how it is managed.

  – Turkey has a highly centralized governmental system.

- The FMP covers everyone as opposed to targeting a segment of the population, such as the poor.

- The FMP provides free and conveniently accessible primary care.

The Expansion of the Family Medicine Program
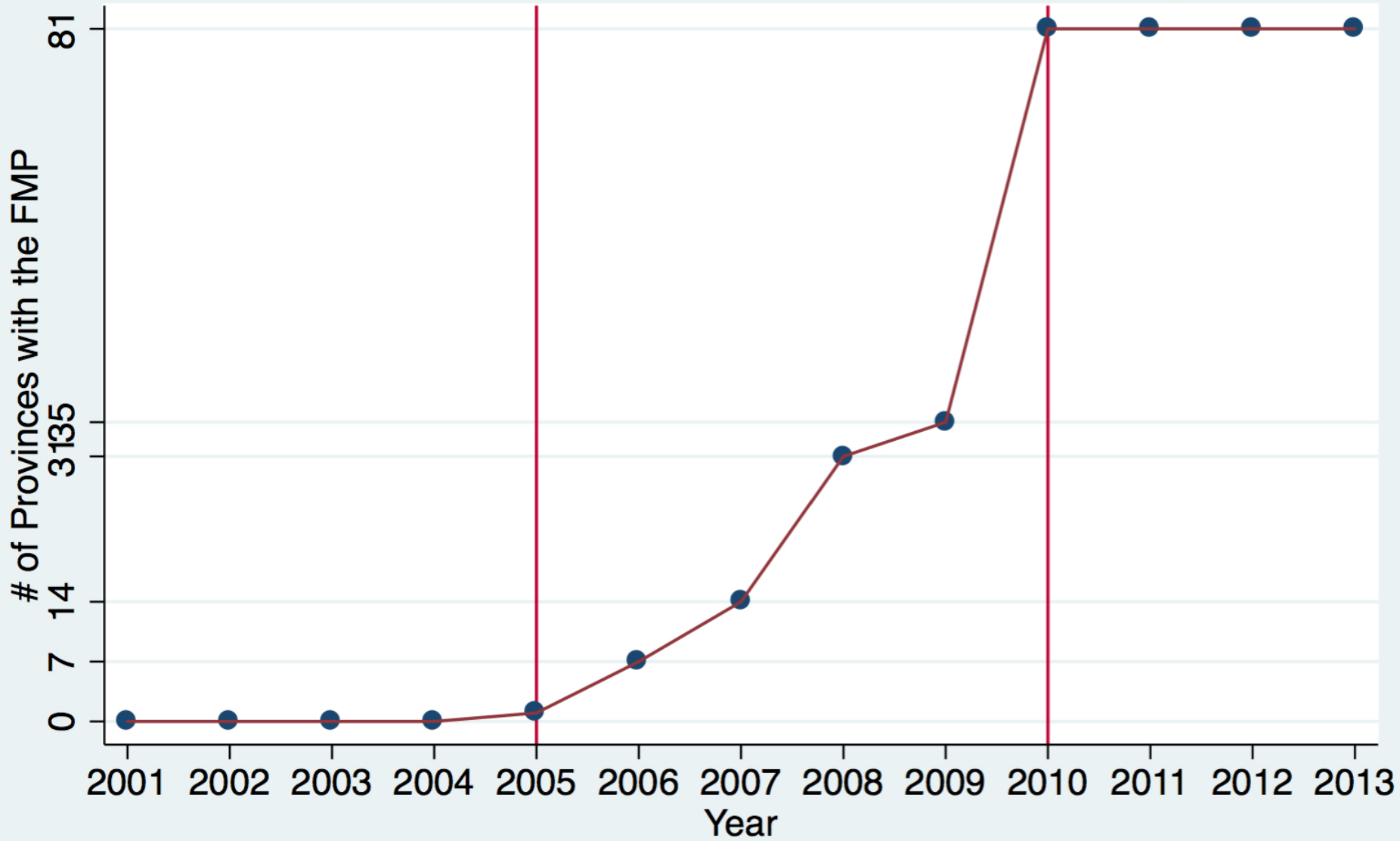
The Republic of Turkey has 81 provinces. The FMP was initiated in 2005 and it was expanded to all of the 81 provinces in 2010.

Family Physicians

- Regardless of the income level and health insurance coverage status, each citizen is assigned to a family physician.
- The Ministry of Health aggressively implemented the program:
  - The Ministry of Health aims to provide one physician per 3500 people on each province.
  - While this target rate may vary based on the needs of the province, it is achieved soon after the implementation of the program.
- Family physicians are state employees, who work full time in the Family Health Centers.

Family Health Centers

- Family physicians are employed at the Family Health Centers.
  - Family physicians lead the health teams, including nurses and midwives, staffed in these centers.
- Family Health Centers serve as walk-in-clinics.
  - Located in conveniently accessible areas.
  - Patients can show up at the family health center they are registered without making an appointment and get a number of services free of charge.
- The logistical support to the Family Health Centers are administered through Community Health Centers.
- In rural areas, family physicians provide mobile services through routine visits.

The Healthcare System Prior to the FMP

- Prior to the FMP, the delivery of primary healthcare services had been managed through a highly hierarchical and fragmented system, which was difficult for patients to understand and navigate through.
- Patients had relied on hospitals to seek treatment
  - The proximity of these hospitals to patients presented an additional challenge in terms of access to basic services.
  - Furthermore, physician and laboratory services tend to cluster in neighborhoods adjacent to hospitals and this usually creates further obstacles in access to healthcare (Currie and Reagan, 2003).
- With the FMP, primary care became conveniently available to a large number of individuals.

How May the Family Medicine Program May Affect Birth and Mortality Rates

- The FMP provides a number of primary care services free of charge to every citizen.
- The health needs of pregnant women, infants, children and the elderly are given a high priority by the program.
- Birth Rates:
  - Contraceptive services
  - Education on reproductive health
- Mortality Rates:
  - Screening services for:
    - Mothers,
    - Infants, and children
    - Elderly
  - Vaccinations
  - Nutrition assistant for the children

Our Contribution

- We examine the impact of free, universal and conveniently accessible primary care availability on public health.
    - Age specific birth rates
    - Age specific mortality rates
- The FMP provides a novel experiment.
    - Started as a pilot and expanded to the whole country.
        - Difference-in-differences empirical set up.
    - The program was aggressively implemented.
    - Universal coverage as opposed to a targeting certain populations.
    - More importantly, it is an example of a *single payer system with direct provision of primary healthcare services.*

Data

- Province level annual data from Turkey for the period 2001 to 2013.
  - 81 provinces & 13 years. Sample size: 13*81=1053
- Data on the expansion of the FMP come from the Public Health Institute of Turkey.
- Data on outcome measures and control variables come from the Turkish Statistical Institute (TurkStat).
  - Outcome measures: (1) birth rates by mother's age; death rates by age
    - Age composition of the population
      - Data are available for 2000 and the 2007-2013 period. Data for the period 2001 to 2006 are linearly interpolated.
  - Control variables
    - Unemployment Rate, Motor Vehicles Per Capita, GDP Per Capita in Turkish Lira, Percent High School, Students Per Teacher in Primary Schools, Percent College, Percent Share of Governing Party Seats in Parliament.

Outcome Measures

- Log birth rates by the age of mother (per 1000 women)
  - Birth rate among 15 to 19
  - Birth rate among 20 to 24
  - Birth rate among 25 to 29
  - Birth rate among 30 to 39
- Log mortality rates by age (per 1000 populations)
  - All Age Mortality (AMR)
    - (total deaths/population)*1000
  - Infant Mortality Rate (IMR)
    - (infant deaths/births)*1000
  - Child Mortality Rate (CMR)
    - (deaths ages 1 to 4/children ages 1 to 4)*1000
  - Elderly Mortality Rate (EMR)
    - (deaths ages 60+/population ages 60+)*1000

Econometric Framework is Difference-in-Differences with Aggregate (Province Level) Data

- $Y_{pt} = \beta_0 + X_{pt}\beta_1 + \beta_2\, FMP_{pt} + \delta_{rt} + \lambda_p + \varphi_p\, t + \varphi_p\, t^2 + \varepsilon_{pt},$ **(1)**
  - Y: outcome measures including birth and mortality.

  - *FMP: Binary Family Medicine Program indicator.*
  - δ: Region-by-year fixed effects
  - $\varphi_p\, t + \varphi_p\, t^2$: Province specific linear and quadratic trends.
  - X: is a vector of time varying controls
- $Y_{pt} = \beta_0 + X_{pt}\beta_1 + \beta_2\, Years\_since\_FMP_{pt} + \delta_{rt} + \lambda_p + \varphi_p\, t + \varphi_p\, t^2 + \varepsilon_{pt}.$ **(2)**
  - *Years since the introduction of the FMP accounts for the dynamics in program implementation.*
- $Y_{pt} = \beta_0 + X_{pt}\beta_1 + k{=}15{+}\beta kk\_years\_since\_FMPp + \delta_{rt} + \lambda_p + \varphi_p\, t + \varphi_p\, t^2 + \varepsilon_{pt}.$ **(3)**
  - *Non-parametric specification of the years since the program implentation.*

Table 1A. Summary Statistics for Rates of Birth and Mortality
(Rates Per 1000 Related Populations)

	Full Sample
Birth Rate of Women Ages 15 to 19	36.429
	(13.724)
Birth Rate of Women Ages 20 to 25 l	118.528
	(31.379)
Birth Rate of Women Ages 25 to 29	121.741
	(30.682)
Birth Rate of Women Ages 30 to 39	63.203
	(29.828)
	[1,053]
All-Age Mortality	3.633
	(1.681)
	[1,053]
Infant Mortality	10.552
	(5.290)
	[1,041]
Mortality Rate of Ages 1 to 4	0.607
	(0.441)
	[999]
Mortality Rate of Ages 60 and Older	28.071
	(9.995)
	[1,053]

Table 1B. Summary Statistics for Control Variables

	Full Sample
Unemployment Rate	10.962
	(3.717)
Motor Vehicles Per Capita	0.177
	(0.077)
GDP Per Capita in Turkish Lira	11,083.300
	(5,087.874)
Percent High School	27.270
	(8.018)
Students Per Teacher in Primary Schools	23.781
	(6.189)
Percent College	9.023
	(4.089)
Percent Share of Governing	0.625
Party Seats in Parliament	(0.175)
	[1,053]

Evidence on the Exogeneity of the FMP to Time Varying Observable Province Characteristics

- If the Family Medicine Program implementation is correlated with the province characteristics, the results may be biased.
  - The bias may stem from different sources.
    - ….
    - ….
- We provide descriptive tests of whether the province characteristics are related to the implementation of the FMP program.
  - Estimate time-varying observable province characteristics on the *FMP* as well as *Years Since the FMP Implementation*.
  - Estimate the *FMP* as well as *Years Since the FMP Implementation* on jointly specified time-varying observable province characteristics .
- These falsification exercises test the degree to which the FMP are related to province level time varying characteristics conditional on fixed effects and trends.

Table 2A: Estimates of Province Time Varying Characteristics on Family Medicine Program Indicator

Dependent Variable	(1)	(2)	(3)	(4)	(5)
Log Unemployment Rate	-0.084**	0.076	-0.011	-0.007	0.024
	(0.035)	(0.058)	(0.056)	(0.061)	(0.046)
Log Per-capita Vehicles	0.402***	0.083	-0.019	-0.012	-0.017
	(0.041)	(0.063)	(0.018)	(0.015)	(0.012)
Log Per-capita GDP	0.365***	0.072*	0.003	0.002	0.005
	(0.052)	(0.042)	(0.006)	(0.004)	(0.006)
Log Percent High School	0.125***	0.117**	0.029	0.026	0.029
	(0.032)	(0.050)	(0.025)	(0.026)	(0.020)
Log Percent College	0.313***	0.164**	0.057	0.052	0.052
	(0.058)	(0.077)	(0.045)	(0.053)	(0.038)
Log Students Per Teacher	-0.061***	-0.083**	-0.013	-0.009	0.008
	(0.013)	(0.038)	(0.010)	(0.011)	(0.010)
Log Percent Share of Governing Party Seats in Parliament	-0.027**	-0.007	-0.013	-0.012	0.001
	(0.011)	(0.030)	(0.012)	(0.011)	(0.015)
	[1,053]	[1,053]	[1,053]	[1,053]	[1,053]
Controls for					
Region by Year Fixed Effects	No	Yes	Yes	Yes	Yes
Province Fixed Effects	No	No	Yes	Yes	Yes
Province Linear Trends	No	No	No	Yes	Yes
Province Quadratic Trends	No	No	No	No	Yes

Note: Each coefficient and standard error pair corresponds to a separate regression.

Table 2B: Estimates of Province Time Varying Characteristics
on *Years since the Family Medicine Program Implemented*

Dependent Variable	(1)	(2)	(3)	(4)	(5)
Log Unemployment Rate	-0.031**	0.032	-0.002	-0.015	0.007
	(0.014)	(0.028)	(0.020)	(0.043)	(0.036)
Log Per-capita Vehicles	0.106***	0.034	-0.007	-0.008	-0.010
	(0.011)	(0.023)	(0.016)	(0.012)	(0.011)
Log Per-capita GDP	0.125***	0.026	-0.005	-0.006	-0.004
	(0.024)	(0.016)	(0.005)	(0.005)	(0.005)
Log Percent High School	0.038***	0.040**	0.010	-0.000	-0.009
	(0.009)	(0.017)	(0.009)	(0.029)	(0.025)
Log Percent College	0.077***	0.050*	0.005	0.005	-0.003
	(0.016)	(0.026)	(0.019)	(0.058)	(0.061)
Log Students Per Teacher	-0.025***	-0.035***	-0.013***	0.008	0.011
	(0.004)	(0.013)	(0.004)	(0.009)	(0.010)
Log Percent Share of Governing	-0.006*	0.003	0.003	0.012	0.010
Party Seats in Parliament	(0.003)	(0.011)	(0.006)	(0.017)	(0.015)
	[1,053]	[1,053]	[1,053]	[1,053]	[1,053]
Controls for					
Region by Year Fixed Effects	No	Yes	Yes	Yes	Yes
Province Fixed Effects	No	No	Yes	Yes	Yes
Province Linear Trends	No	No	No	Yes	Yes
Province Quadratic Trends	No	No	No	No	Yes

Note: Each coefficient and standard error pair corresponds to a separate regression.

Estimates of Family Medicine Program Indicator on *Jointly Specified* Time Varying Province Level Observable Characteristics

	(1)	(2)	(3)	(4)	(5)
Log of Unemployment Rate	-0.024	0.055	-0.001	0.015	-0.006
	(0.069)	(0.048)	(0.056)	(0.083)	(0.087)
Log of Vehicles Per Capita	-0.037	-0.017	-0.093	-0.236	-0.280
	(0.031)	(0.032)	(0.092)	(0.205)	(0.211)
Log of GDP	0.498***	-0.001	0.072	0.080	-0.108
	(0.073)	(0.097)	(0.093)	(0.109)	(0.122)
Log of High school Rate	-0.697***	0.070	0.036	0.033	0.067
	(0.175)	(0.061)	(0.056)	(0.081)	(0.065)
Log of College Rate	0.247***	0.040	0.045	0.067	0.063
	(0.083)	(0.046)	(0.046)	(0.063)	(0.069)
Log of Students Per Teacher	-0.079	-0.222**	-0.144	-0.118	0.084
	(0.164)	(0.098)	(0.104)	(0.129)	(0.109)
Log Percent Share of Governing	-0.050	0.040	-0.028	-0.053	0.031
Party Seats in Parliament	(0.169)	(0.122)	(0.089)	(0.108)	(0.216)
Observations	1,053	1,053	1,053	1,053	1,053
R-squared	0.516	0.865	0.886	0.888	0.918
F-test	18.39	2.020	1.547	1.228	0.627
F-test P-value	0.000	0.0625	0.164	0.298	0.732
Controls for					
Region by Year Fixed Effects	No	Yes	Yes	Yes	Yes
Province Fixed Effects	No	No	Yes	Yes	Yes
Province Linear Trends	No	No	No	Yes	Yes
Province Quadratic Trends	No	No	No	No	Yes

Estimates of Years Since Time of Family Medicine Program Implementation on *Jointly Specified* Time Varying Province Level Observable Characteristics

|	(1)	(2)	(3)	(4)	(5)
Log of Unemployment Rate	0.112	0.458*	0.123	-0.082	-0.073
	(0.300)	(0.233)	(0.181)	(0.112)	(0.139)
Log of Vehicles Per Capita	-0.109	-0.042	-0.303	-0.114	-0.235
	(0.112)	(0.177)	(0.640)	(0.260)	(0.377)
Log of GDP	1.256***	-0.399	-0.366	0.002	-0.015
	(0.246)	(0.413)	(0.235)	(0.110)	(0.190)
Log of High school Rate	-1.662***	0.659*	0.572**	-0.040	-0.057
	(0.567)	(0.393)	(0.278)	(0.090)	(0.105)
Log of College Rate	0.447	0.102	0.048	0.001	0.016
	(0.311)	(0.230)	(0.164)	(0.070)	(0.139)
Log of Students Per Teacher	-1.138**	-1.497***	-1.279***	0.185	0.244
	(0.514)	(0.560)	(0.446)	(0.179)	(0.225)
Log Percent Share of Governing	-0.116	0.575	0.487	0.192	0.273
Party Seats in Parliament	(0.695)	(0.724)	(0.474)	(0.285)	(0.435)
Observations	1,053	1,053	1,053	1,053	1,053
R-squared	0.654	0.855	0.917	0.986	0.987
Joint F-test	8.735	2.144	1.748	0.632	0.696
Joint F-test P-value	0.000	0.048	0.110	0.728	0.675
Controls for					
Region by Year Fixed Effects	No	Yes	Yes	Yes	Yes
Province Fixed Effects	No	No	Yes	Yes	Yes
Province Linear Trends	No	No	No	Yes	Yes
Province Quadratic Trends	No	No	No	No	Yes

Falsification Tests

- The above "exogeneity" tests suggest that, conditional on a set of fixed effects and trends, the variation in FMP is plausibly exogenous.

Event Study Graphs

- To see if there are pre-existing trends in birth and mortality rates, we estimated log birth and log mortality rates on "years before and after the FMP" program implementation, controlling for province and time fixed effects.

  – The year before the implementation year constitute the omitted category.

Event Study Figures for Birth Rates
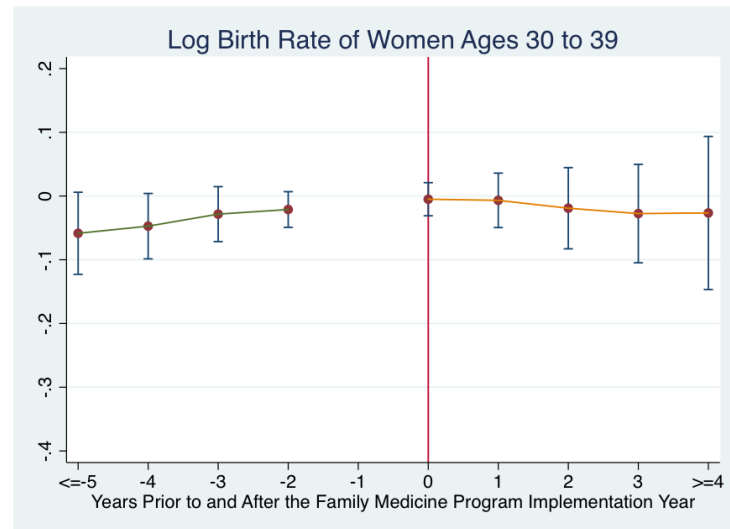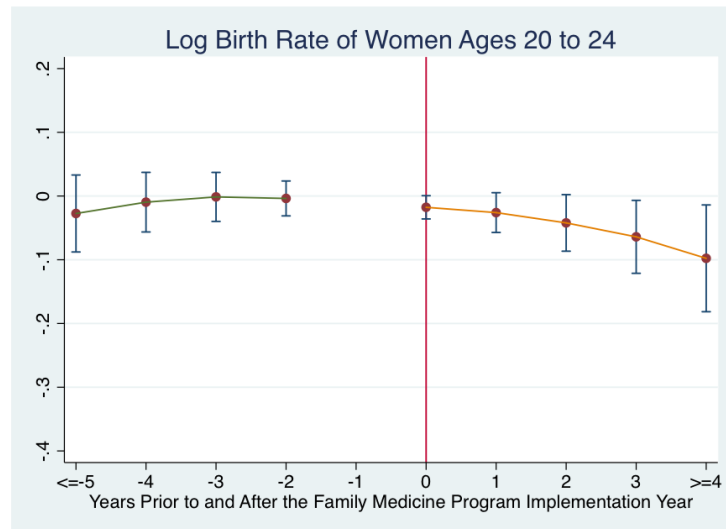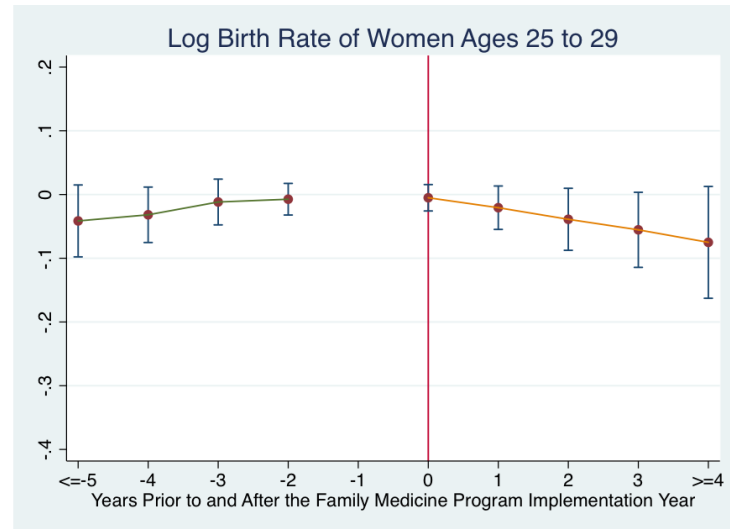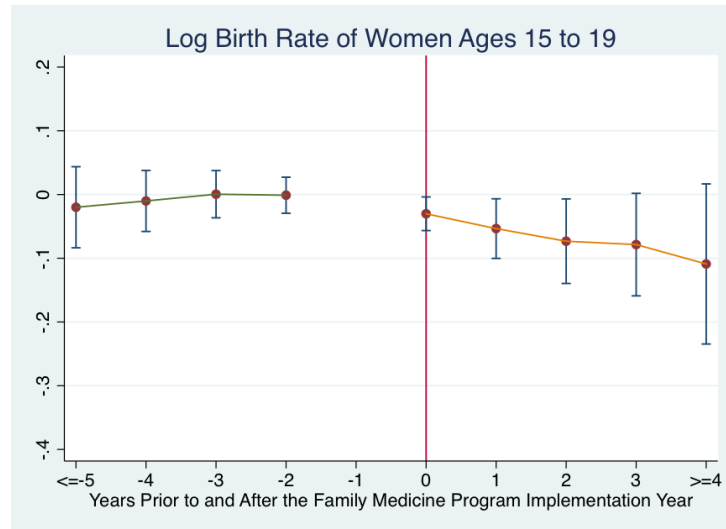
Notes: The figure displays the estimates and 95% confidence intervals. The reference category is "one year prior to the implementation of the FMP."

Event Study Figures for Mortality Rates
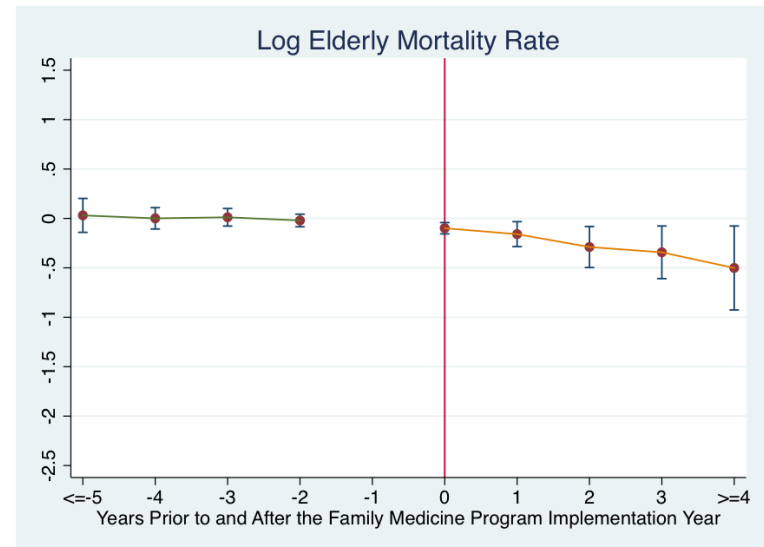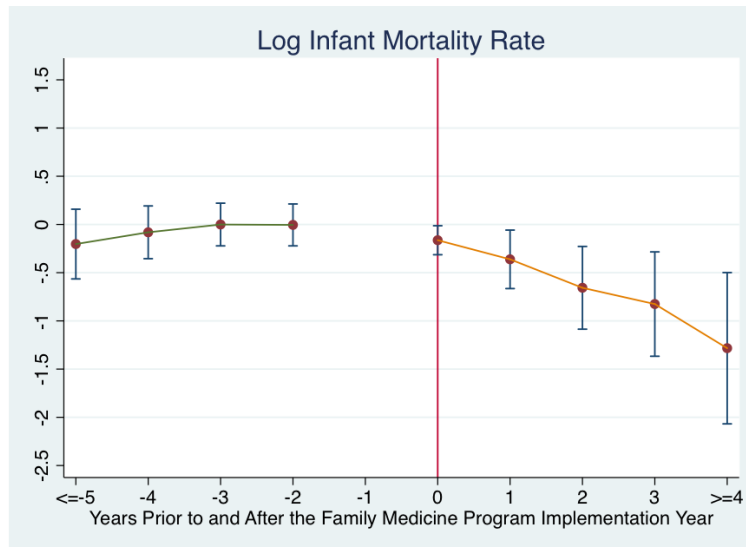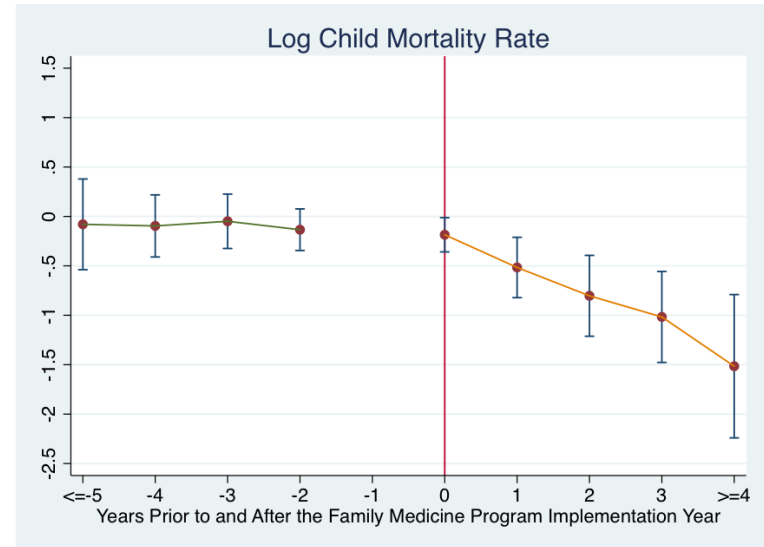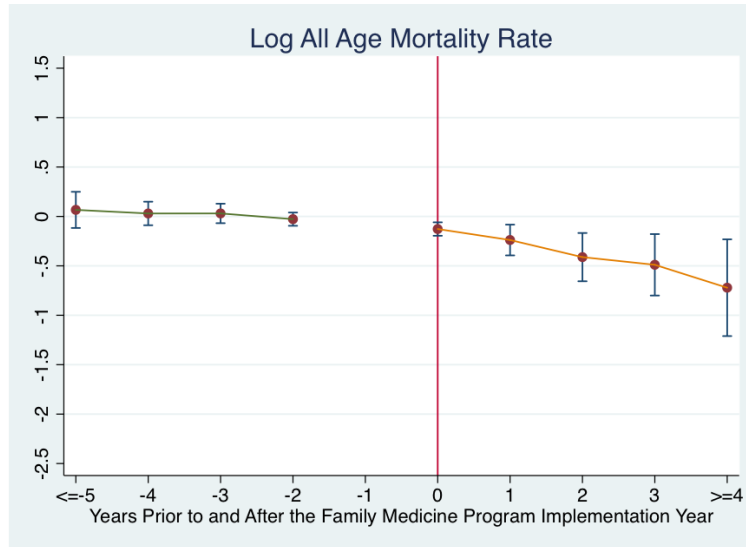
Notes: The figure displays the estimates and 95% confidence intervals. The reference category is "one year prior to the implementation of the FMP."

Table 3: The Impact of the
Family Medicine Program on Logarithm of Birth Rate

	(1) Birth Rate 15 to19	(2) Birth Rate 20 to 24	(3) Birth Rate 25 to 29	(4) Birth Rate 30 to 39
Panel A. Controls for Region-by-year Fixed Effects				
FMP	-0.213***	-0.141***	-0.039	-0.023
	(0.072)	(0.042)	(0.029)	(0.042)
Panel B: Panel A + Province Fixed Effects				
FMP	-0.036**	-0.014	-0.007	-0.002
	(0.014)	(0.012)	(0.012)	(0.015)
Panel C: Panel B + Province-Specific Linear and Quadratic Trends				
FMP	-0.036**	-0.014	-0.012	-0.013
	(0.015)	(0.013)	(0.012)	(0.014)
Panel D: Panel C + Time Varying Province Characteristics				
FMP	-0.030**	-0.007	-0.007	-0.006
	(0.012)	(0.009)	(0.009)	(0.011)
N	1,053	1,053	1,053	1,053

Notes: Regressions are weighted with mean province populations for the associated age group. Standard errors, corrected for clustering on the province, are in parentheses. *, **, and *** indicate statistical significance at 10%, 5% and 1%, respectively. Time varying province characteristics include log of unemployment rate, log of vehicles per capita, log of per capita GDP, log of percent high school, log of percent of college, log of students per teacher in primary schools.

Table 4: The Impact of the Years Since Family Medicine Program Implementation on Logarithm of Birth Rate

	(1)	(2)	(3)	(4)
	Birth Rate 15 to19	Birth Rate 20 to 24	Birth Rate 25 to 29	Birth Rate 30 to 39
Panel A: Estimates of Log Birth Rates on Years Since the FMP Implementation				
Years Since the FMP Implementation	-0.025*	-0.011	-0.022**	-0.023**
	(0.015)	(0.013)	(0.011)	(0.010)
Panel B: Estimates of Log Birth Rates on Years Since the FMP Implementation				
FMP Year 1	-0.024**	-0.008	-0.006	-0.010
	(0.011)	(0.009)	(0.010)	(0.011)
FMP Year 2	-0.045*	-0.009	-0.024	-0.024
	(0.022)	(0.018)	(0.016)	(0.015)
FMP Year 3	-0.055*	-0.015	-0.039*	-0.045**
	(0.029)	(0.027)	(0.022)	(0.022)
FMP Year 4	-0.054	-0.028	-0.052*	-0.061**
	(0.039)	(0.035)	(0.030)	(0.027)
FMP Year 5+	-0.047	-0.008	-0.039	-0.061
	(0.051)	(0.048)	(0.040)	(0.037)
Observations	1,053	1,053	1,053	1,053

Notes: Regressions are weighted with mean province populations for the associated age group. Standard errors, corrected for clustering on the province, are in parentheses. *, **, and *** indicate statistical significance at 10%, 5% and 1%, respectively. All of the models include the full set of control variables that are specified in the Panel D of Table 3.

Appendix Table 3. The Impact of the *Family Medicine Program* on Birth Rates By Baseline Birth Rates

	(1) Birth Rate 15 to19	(2) Birth Rate 20 to 24	(3) Birth Rate 25 to 29	(4) Birth Rate 30 to 39
Family Medicine Program	-0.03113	0.04228	0.04950	-0.00003
	(0.03400)	(0.05119)	(0.03848)	(0.02241)
(Baseline 15 to 19 Birth Rate)*FMP	0.00003			
	(0.00087)			
(Baseline 20 to 24 Birth Rate)*FMP		-0.00043		
		(0.00043)		
(Baseline 25 to 29 Birth Rate)*FMP			-0.00048	
			(0.00032)	
(Baseline 39 to 39 Birth Rate)*FMP				-0.00011
				(0.00033)
Observations	1,053	1,053	1,053	1,053
R-squared	0.954	0.908	0.892	0.940
F-test of joint significance	3.185	0.789	1.454	0.242
F-test P-value	0.046	0.458	0.240	0.786

Notes: Regressions are weighted with mean province populations for the associated age group. Standard errors, corrected for clustering on the province, are in parentheses. *, **, and *** indicate statistical significance at 10%, 5% and 1%, respectively. All of the models include the full set of control variables that are specified in the Panel D of Table 3.

Summary of The Impact of the Family Medicine Program on Birth Rates

- The Family Medicine Program has a negative effect on teen birth rates.

- The effect gets larger over time.

- Simulating the effect size for birth rate of women ages 15 to 19:
  - baseline mean = 39.6 per 1000 women
  - effect size of 3%
  - $(39.6)*(0.03) = 1.2$ fewer babies per 1000 women ages 15 to 19.

- The impact of the FMP does not vary based on initial birth rates.

Table 5. The Impact of the Family Medicine Program on Logarithm of Mortality Rates

	(1) All Age Mortality	(2) Infant Mortality	(3) Child Mortality	(4) Elderly Mortality
Panel A. Controls for Region-by-year Fixed Effects				
FMP	0.176**	0.254*	0.208	0.070
	(0.085)	(0.131)	(0.156)	(0.085)
Panel B: Panel A + Province Fixed Effects				
FMP	-0.087***	-0.152**	-0.108	-0.065**
	(0.030)	(0.058)	(0.076)	(0.025)
Panel C: Panel B + Province-Specific Linear and Quadratic Trends				
FMP	-0.065**	-0.151**	-0.080	-0.059**
	(0.028)	(0.065)	(0.076)	(0.025)
Panel D: Panel C + Time Varying Province Characteristics				
FMP	-0.058**	-0.153**	-0.062	-0.053**
	(0.028)	(0.066)	(0.077)	(0.025)
N	1,053	1,041	999	1,053

Notes: Regressions are weighted with mean province populations for the associated age group. *, **, and *** indicate statistical significance at 10%, 5% and 1%, respectively. Time varying province characteristics include log of unemployment rate, log of vehicles per capita, log of per capita GDP, log of percent high school, log of percent of college, log of students per teacher in primary schools.

Table 6: The Impact of the Years Since Family Medicine Program Implementation on Logarithm of Mortality Rate

	(1) All Age Mortality	(2) Infant Mortality	(3) Child Mortality	(4) Elderly Mortality
Panel A: Estimates of Log Mortality Rates on Years Since the FMP Implementation				
Years Since FMP	-0.106**	-0.260**	-0.282***	-0.084*
Implementation	(0.049)	(0.113)	(0.104)	(0.044)
Panel B: Estimates of Log Mortality Rates on Years Since the FMP Implementation				
FMP Year 1	-0.054**	-0.172**	-0.057	-0.059**
	(0.026)	(0.074)	(0.077)	(0.026)
FMP Year 2	-0.114**	-0.331**	-0.336**	-0.090*
	(0.056)	(0.151)	(0.142)	(0.048)
FMP Year 3	-0.216**	-0.543**	-0.512**	-0.181*
	(0.102)	(0.216)	(0.232)	(0.092)
FMP Year 4	-0.236*	-0.662**	-0.654**	-0.200*
	(0.126)	(0.274)	(0.273)	(0.113)
FMP Year 5+	-0.177	-0.603*	-0.629*	-0.161
	(0.168)	(0.315)	(0.366)	(0.146)
N	1,053	1,041	999	1,053

Notes: Regressions are weighted with mean province populations for the associated age group. *, **, and *** indicate statistical significance at 10%, 5% and 1%, respectively. All of the models include the full set of control variables that are specified in the Panel D of Table 5.

Appendix Table 4. The Impact of the *Family Medicine Program* on Mortality By Baseline Mortality Rates

	(1) All Age Mortality	(2) Infant Mortality	(3) Child Mortality	(4) Elderly Mortality
Family Medicine Program	0.231**	0.688***	0.429***	0.248***
	(0.093)	(0.170)	(0.133)	(0.084)
(Baseline AMR)*FMP	-0.091***			
	(0.025)			
(Baseline IMR)*FMP		-0.086***		
		(0.016)		
(Baseline CMR)*FMP			-0.952***	
			(0.213)	
(Baseline EMR)*FMP				-0.015***
				(0.003)
Observations	1,053	1,041	986	1,053
R-squared	0.951	0.821	0.825	0.947
F-test of joint significance	9.789	15.25	11.02	13.78
F-test P-value	0.000	0.000	0.000	0.000

Regressions are weighted with mean province populations for the associated age group. Standard errors, corrected for clustering on the province, are in parentheses. *, **, and *** indicate statistical significance at 10%, 5% and 1%, respectively. All of the models include the full set of control variables that are specified in the Panel D of Table 5.

Summary of The Impact of the Family Medicine Program on Mortality Rates

- The FMP lead to large declines in mortality rates.
- The effect sizes increase over time.
- The effect sizes are the greatest among the infants and elderly.
  - 0.16 fewer deaths per 1000 people
  - 1.43 fewer deaths per 1000 infants
  - 1.06 fewer deaths per 1000 elderly
- The FMP had a larger negative impact on provinces with greater initial mortality rates.
  - The marginal effects are negative at the mean initial mortality levels: "$(FMP*Baseline)+FMP<0$"

Conclusions & Discussion

- We examined the impact of one of largest supply side primary healthcare interventions in a developing country.
- We find that the availability of universal and conveniently accessible primary care led to large declines in mortality rates as well as teen birth rates.
- The provinces with higher initial mortality rates experienced larger declines in mortality rates.
- Our findings provide evidence in favor of the view that "supply side interventions" may be effective in improving public health in developing countries.
- Not being able to pin down the mechanisms is a weakness.
  - Without access to (longitudinal) micro-data with province identifiers, it's a challenge to identify the exact pathways.
- Are these findings applicable to other countries?
  - ...