

Online Appendix:  
Provider Supply, Utilization, and Infant Health:  
Evidence from a Physician Distribution Policy\*

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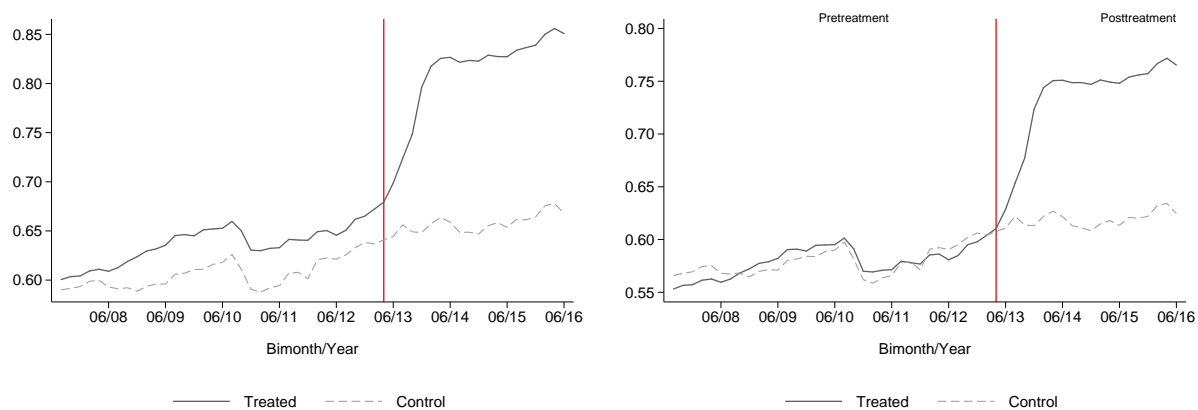
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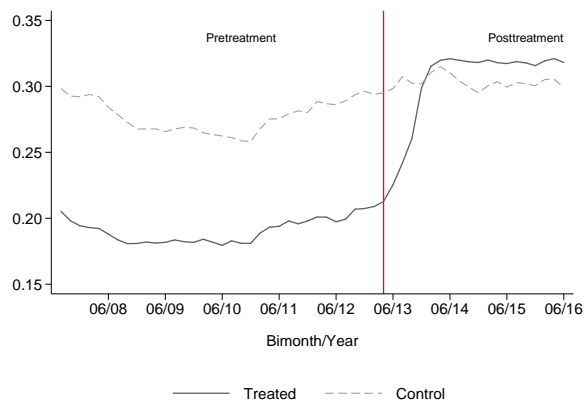
# A APPENDIX

Figure A.1: Trends in physician supply



(a) Physicians

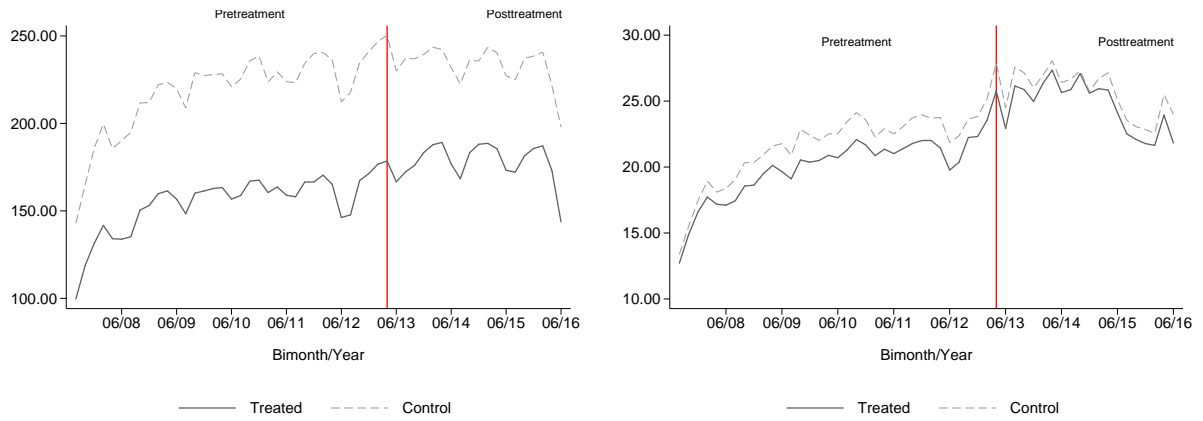
(b) Public physicians



(c) BHU physicians

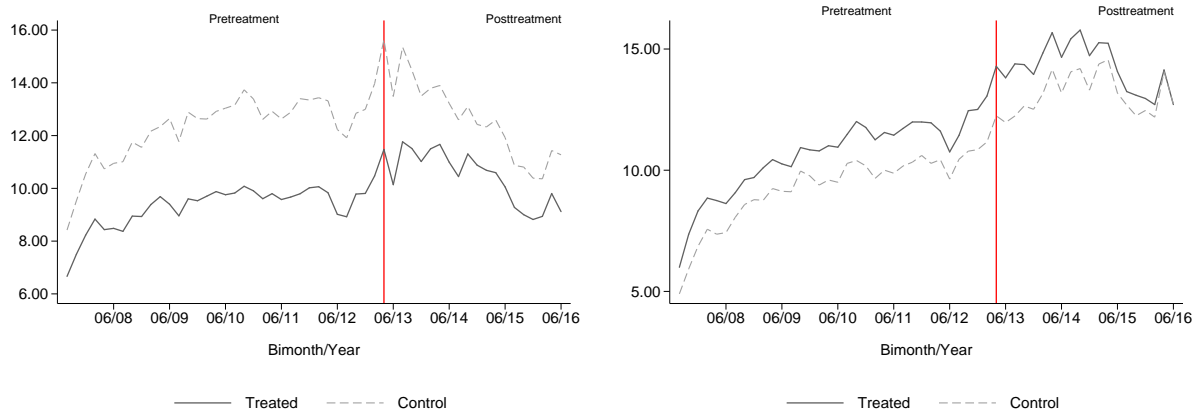
*Notes.* These variables are measured per 1,000 residents.

Figure A.2: Trends in health care utilization



(a) Doctor visits

(b) Prenatal visits

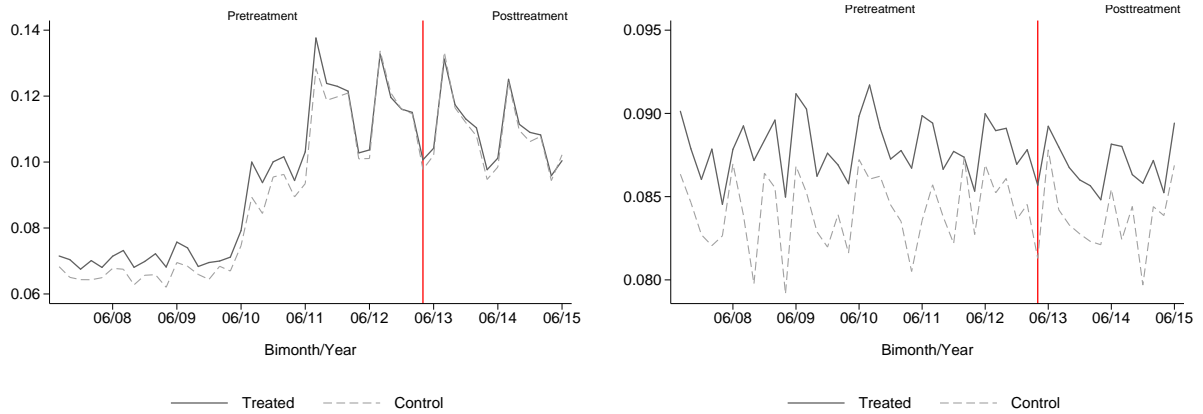


(c) Prenatal visits by physicians

(d) Prenatal visits by nurses

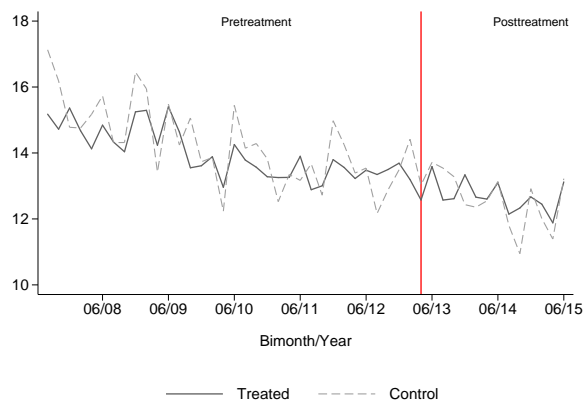
*Notes.* These variables are measured per 1,000 residents.

Figure A.3: Trends in infant health outcomes



(a) Fraction preterm births

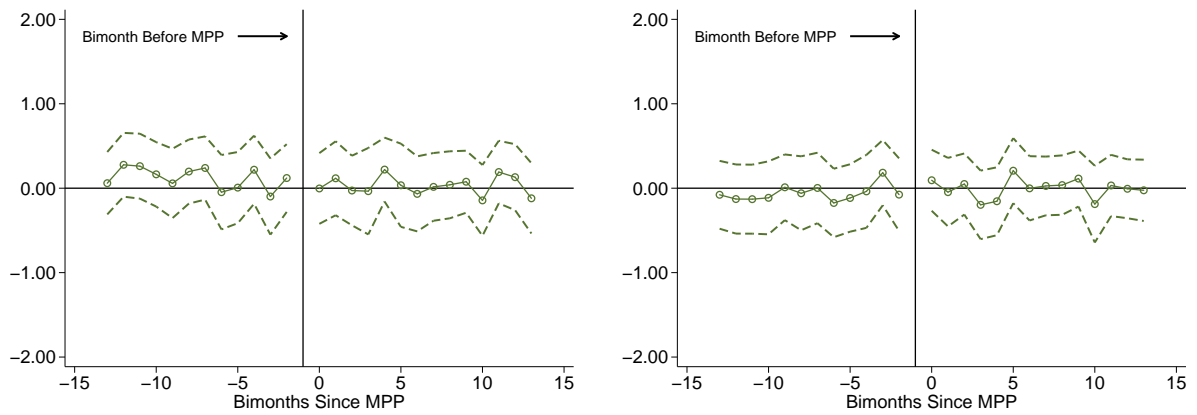
(b) Fraction low birth weight



(c) Infant mortality rate

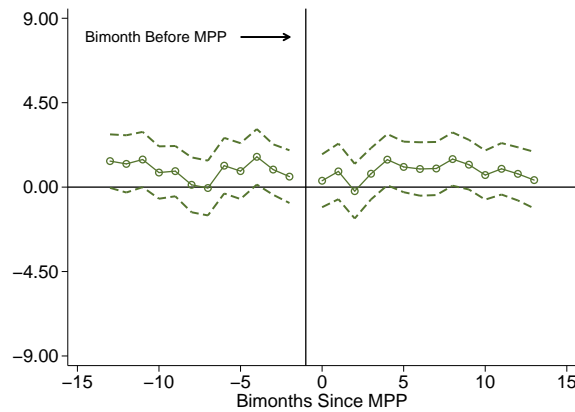
*Notes.* Infant mortality rate is the number of infant deaths per 1,000 live births

Figure A.4: Effects of MPP on infant mortality by cause of death

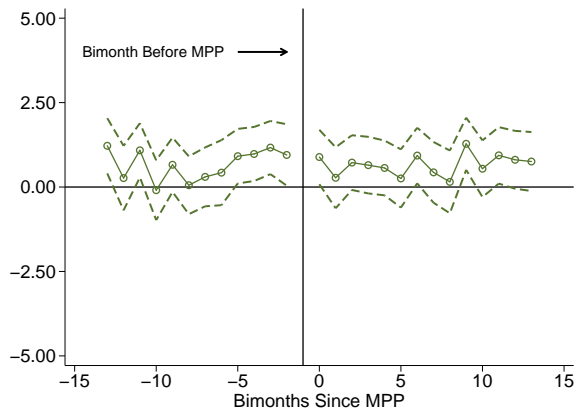


(a) Infectious and parasitic diseases

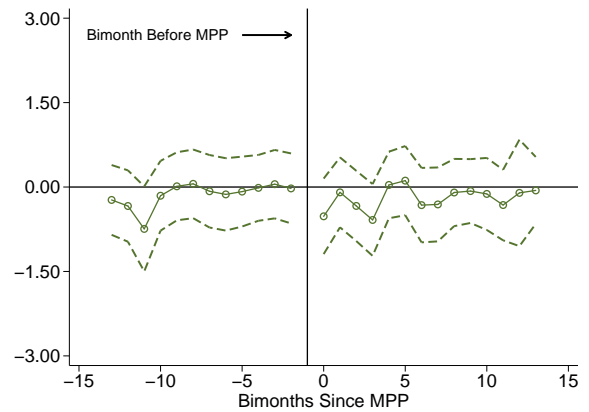
(b) Respiratory diseases



(c) Perinatal conditions



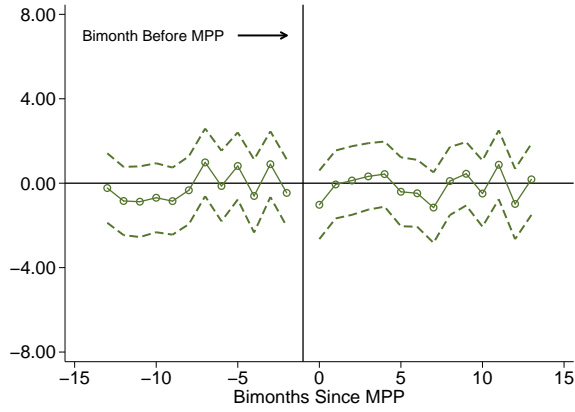
(d) Congenital abnormalities



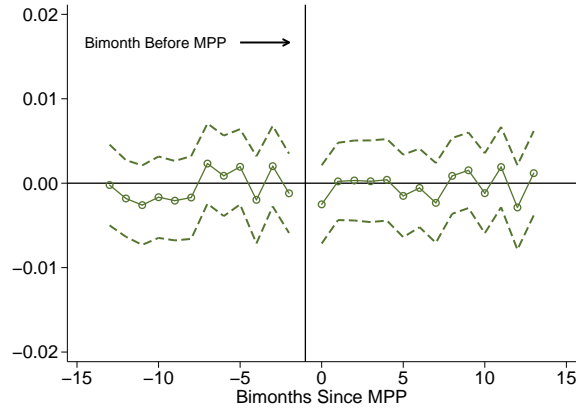
(e) Other diagnoses

*Notes.* These are event studies for infant mortality by cause of death. The coefficients are estimates of  $\beta_{pre}^k$  and  $\beta_{post}^k$  of equation (2). The controls include bimonth-by-year fixed effects, municipality fixed effects, maternal characteristics, state linear time trends and the full set of municipality characteristics interacted with linear trends. The observations are weighted by the number of births. The dashed lines represent 95 percent confidence intervals, where robust standard errors are clustered at the municipality-level. The bimonth in which the MPP was introduced is normalized to zero. The omitted category is -1.

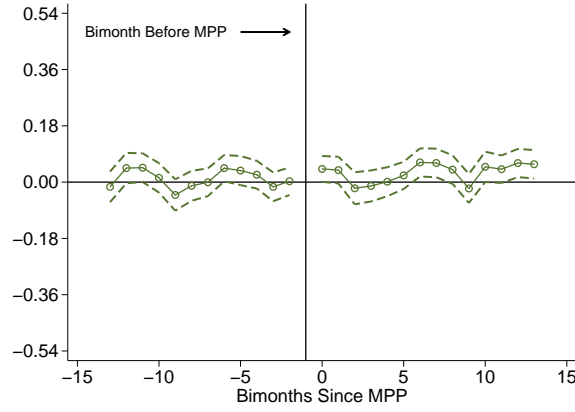
Figure A.5: Effects of MPP on fetal deaths, births and sex ratio



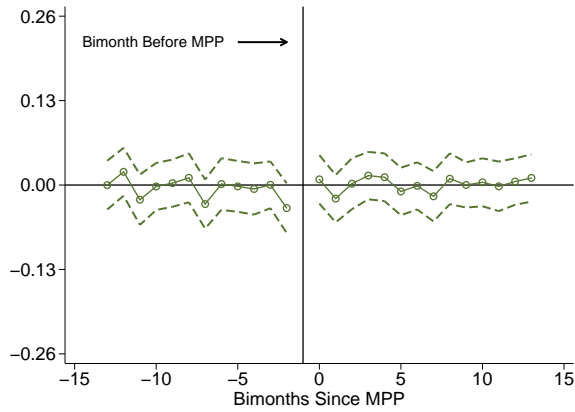
(a) (Fetal death)/(Fetal deaths + births)



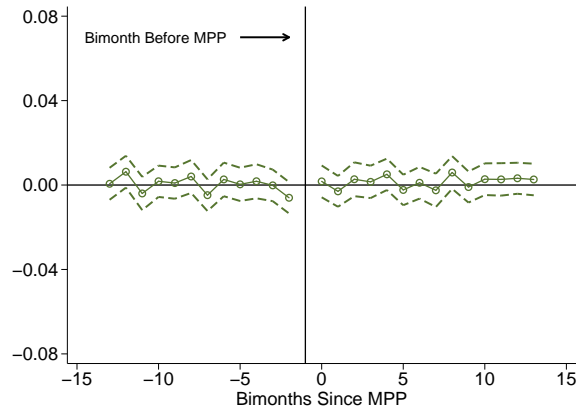
(b) Fetal deaths per 1,000 residents



(c) Births per 1,000 residents



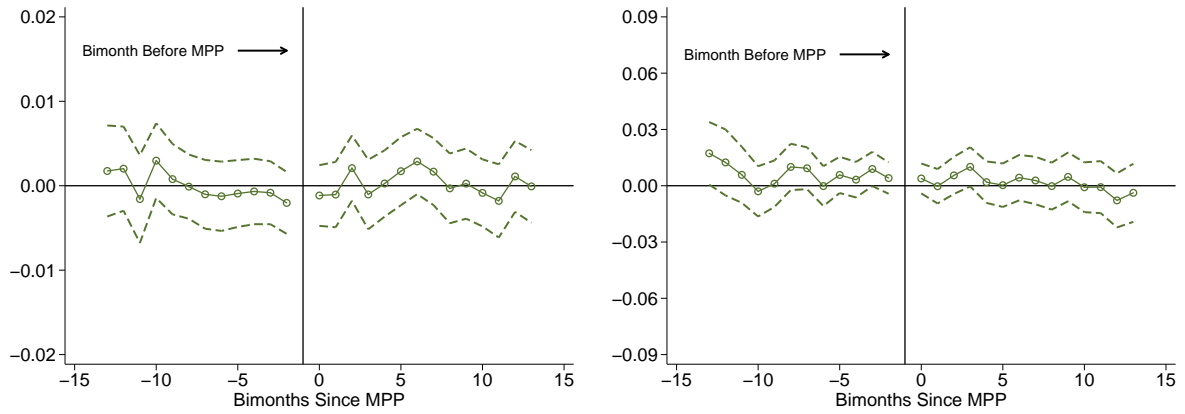
(d) Sex ratio at birth



(e) Fraction male births

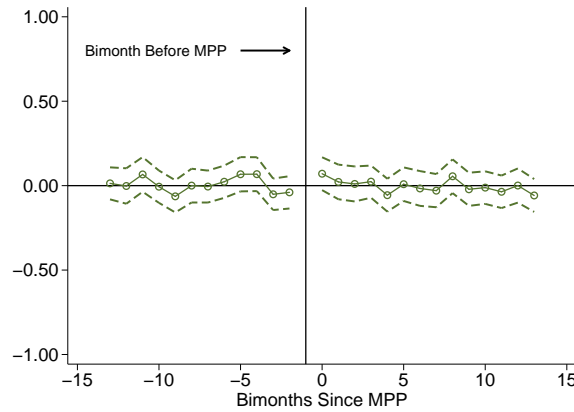
*Notes.* These are event studies for fetal deaths, birth rate and sex ratio. The coefficients are estimates of  $\beta_{pre}^k$  and  $\beta_{post}^k$  of equation (2). The controls include bimonth-by-year fixed effects, municipality fixed effects, maternal characteristics, state linear time trends and the full set of municipality characteristics interacted with linear trends. The observations are weighted by the number of births. The dashed lines represent 95 percent confidence intervals, where robust standard errors are clustered at the municipality-level. The bimonth in which the MPP was introduced is normalized to zero. The omitted category is -1.

Figure A.6: Effects of MPP on maternal characteristics



(a) Proportion education < 4 years

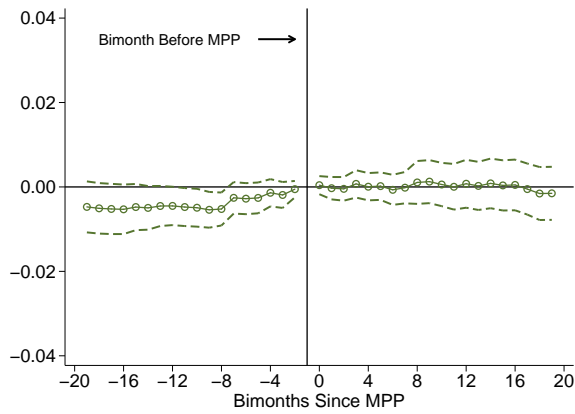
(b) Proportion unmarried



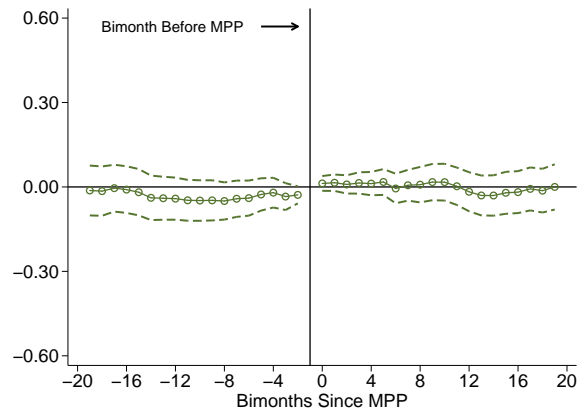
(c) Average age

*Notes.* These are event studies for maternal characteristics. The coefficients are estimates of  $\beta_{pre}^k$  and  $\beta_{post}^k$  of equation (2). The controls include bimonth-by-year fixed effects, municipality fixed effects, state linear time trends and the full set of municipality characteristics interacted with linear trends. The observations are weighted by the number of births. The dashed lines represent 95 percent confidence intervals, where robust standard errors are clustered at the municipality-level. The bimonth in which the MPP was introduced is normalized to zero. The omitted category is -1.

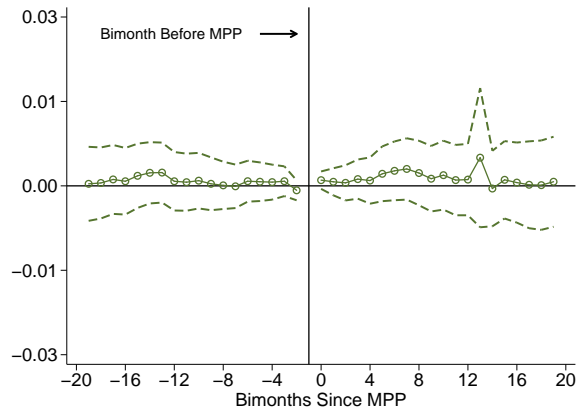
Figure A.7: Effects of MPP on local health resources



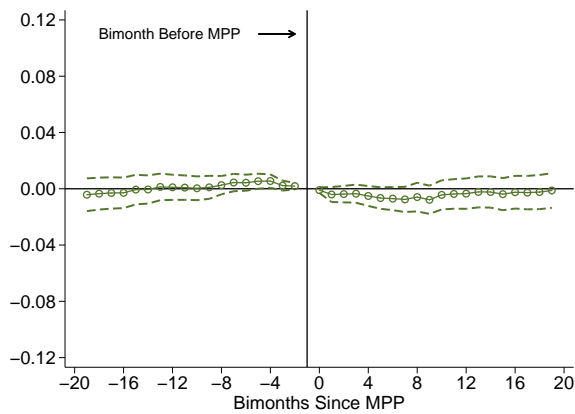
(a) Hospitals



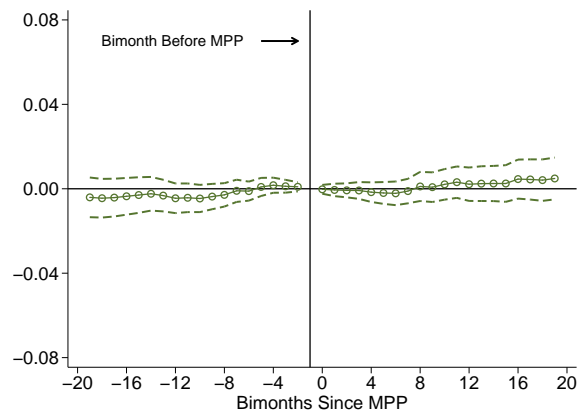
(b) Hospital beds



(c) Ultrasound machines



(d) Complete dental equipments

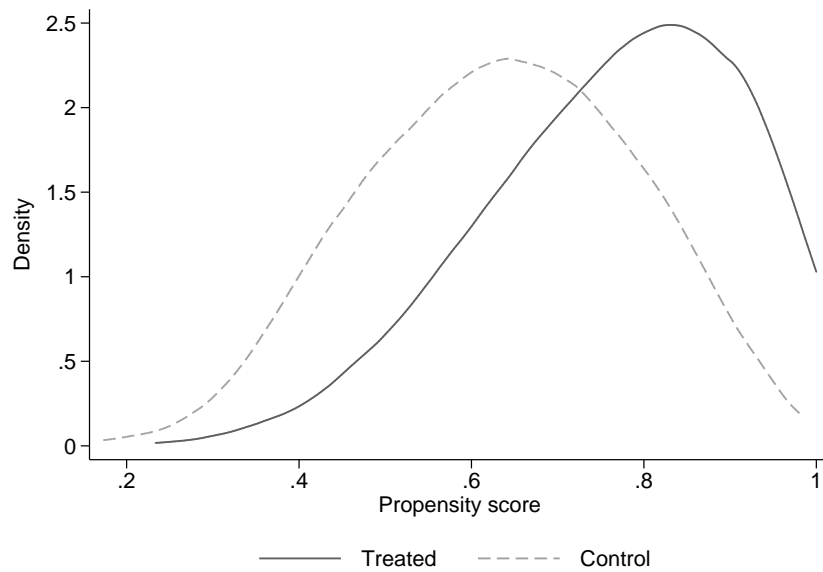


(e) X-ray machines

*Notes.* These are event studies for local health resources. The coefficients are estimates of  $\beta_{pre}^k$  and  $\beta_{post}^k$  of equation (2). The controls include bimonth-by-year fixed effects, municipality fixed effects, state linear time trends and the full set of municipality characteristics interacted with linear trends. The dashed lines represent 95 percent confidence intervals, where robust standard errors are clustered at the municipality-level. The bimonth in which the MPP was introduced is normalized to zero. The omitted category is -1.



Figure A.8: Propensity score distributions



*Notes.* Figure shows kernel density estimates Epanechnikov kernel for the full estimation sample. The bandwidth is 0.046 for untreated and treated municipalities. We construct propensity scores by estimating a probit model with the binary dependent variable equal 1 if a municipality implemented the MPP using the following pretreatment covariates: BHU physicians, log of per capita GDP, log of population, illiteracy rate, indigenous population rate, Gini Index, unemployment rate, rural population rate, municipality area; altitude, distance to capita; temperature, log of rainfall, Legal Amazon dummy indicator, semiarid area dummy indicator, log of per capita spending on Bolsa Familia, log of per capita spending on education, and log of per capita spending on health. This yields estimates of the propensity of treatment,  $p_i = P(Treatment = 1|X_i)$ .

Table A.1: Sources of data

Data	Source	Coverage
Physician records	Brazilian Ministry of Health	2008-2016
Ambulatory visit records	Brazilian Ministry of Health	2008-2016
Birth and death records	Brazilian Ministry of Health	2008-2015
Fetal deaths	Brazilian Ministry of Health	2008-2015
<i>Local hospital capacity</i>		
Number of hospital		
Number of hospital beds	Brazilian Ministry of Health	2008-2016
Number of ultrasound machines		
Number of complete dental equipments		
Number of X-ray machines		
<i>Socioeconomic characteristics</i>		
Population		
Illiteracy rate		
Indigenous population rate	Demographic Census	2010
Rural population rate		
Gini index		
Unemployment rate		
<i>Other socioeconomic characteristics</i>		
Spending on Bolsa Familia		2007-2012
Spending on education	IPEA	2007-2011
Spending on health		2007-2011
Gross Domestic Product (GDP)		2007-2010
<i>Time-invariant characteristics</i>		
Municipality area		
Altitude		
Distance to capital		
Temperature	IPEA	
Rainfall		
Legal Amazon region		
Semiarid region		

Table A.2: Summary statistics

	Mean	Standard Deviation	N
<i>Physician outcomes:</i>			
Physicians	0.67	0.63	300024
Public physicians	0.62	0.54	300024
Private physicians	0.13	0.23	120096
BHU Physicians	0.24	0.27	
Non-BHU Physicians	0.43	0.60	295758
<i>Medical care outcomes:</i>			
Doctor visits	179.33	144.31	300510
Prenatal visits	22.06	18.90	300510
Prenatal visits by physicians	10.45	11.05	300510
Prenatal visits by nurses	11.62	13.95	300510
<i>Infant outcomes:</i>			
Births	87.12	517.89	268560
Fraction prematurity	0.09	0.047	266720
Fraction low birth weight	0.08	0.034	266720
Infant mortality rate	13.61	19.39	268560
<i>Maternal characteristics:</i>			
Fraction education years < 4	0.05	0.07	266720
Fraction unmarried	0.49	0.18	266720
Age	25.83	1.47	266703
<i>Municipality characteristics:</i>			
Municipality area	1542.69	5714.71	5505
Altitude	4.12	2.92	5505
Distance to capital	253.19	163.63	5505
Temperature	22.51	2.99	5465
Ln(Rainfall)	4.7	0.34	5465
Fraction legal Amazon region	0.13	0.34	5597
Fraction semiarid region	0.2	0.4	5597
Ln(population)	9.41	1.15	5565
Illiteracy rate	15.81	9.75	5565
Indigenous population, (%)	0.72	4.34	5565
Gini Index	0.5	0.06	5565
Unemployment rate, (%)	6.34	3.67	5549
Rural population, (%)	36.62	21.8	5497
Ln(per capita spending on Bolsa Familia)	1.21	0.82	27821
Ln(per capita spending on education)	5.34	0.36	20472
Ln(per capita spending on health)	5.08	0.48	20450
Ln(per capita GDP)	1.39	0.7	22256

Notes. Physician, doctor visit and prenatal visit outcomes are measured per 1,000. residents.

Table A.3: Determinants of MPP adoption (OLS models)

	(1)	(2)	(3)	(4)	(5)
BHU physicians	-0.2307 (0.0297)	-0.0887 (0.0296)	-0.0867 (0.0301)	-0.0934 (0.0308)	-0.0848 (0.0313)
Ln(per capita GDP)		-0.0701 (0.0134)	-0.0612 (0.0138)	-0.0608 (0.0143)	-0.0348 (0.0168)
Ln(population)		0.115 (0.0053)	0.1192 (0.0065)	0.1216 (0.0068)	0.1143 (0.0079)
Illiteracy rate		0.0042 (0.0012)	0.0026 (0.0013)	0.0024 (0.0013)	0.001 (0.0014)
Indigenous population rate			0.0013 (0.0012)	0.0013 (0.0015)	0.0018 (0.0016)
Gini Index			0.1758 (0.1212)	0.1361 (0.1250)	0.0669 (0.1304)
Unemployment rate			0.002 (0.0019)	0.002 (0.0020)	0.001 (0.0020)
Rural population rate			0.0011 (0.0004)	0.0012 (0.0004)	0.001 (0.0004)
Municipality area				0.0000 (0.0000)	0.0000 (0.0000)
Altitude				-0.0031 (0.0031)	-0.0034 (0.0031)
Distance to capital				0.0000 (0.0000)	0.0000 (0.0000)
Temperature				-0.0018 (0.0054)	-0.0013 (0.0054)
Ln(Rainfall)				-0.0367 (0.0375)	-0.0335 (0.0376)
Legal Amazon region				0.2396 (0.0814)	0.2292 (0.0822)
Semiarid region				0.0009 (0.0278)	0.0064 (0.0280)
Ln(per capita spending on Bolsa Familia)					0.0359 (0.0169)
Ln(per capita spending on education)					0.0246 (0.0256)
Ln(per capita spending on health)					-0.0731 (0.0188)
$R^2$	0.088	0.151	0.151	0.153	0.155
$N$	5462	5461	5380	5290	5264

Notes. All regressions include state fixed effects. Robust standard errors are reported in parenthesis. BHU Physician is measured per 1,000 residents.

Table A.4: Determinants of MPP adoption (probit models)

	(1)	(2)	(3)	(4)	(5)
BHU physicians	-0.6539 (0.0879)	-0.1546 (0.0879)	-0.1572 (0.0890)	-0.1722 (0.0914)	-0.1601 (0.0928)
Ln(per capita GDP)		-0.2348 (0.0453)	-0.2033 (0.0466)	-0.2186 (0.0482)	-0.1584 (0.0580)
Ln(population)		0.4397 (0.0233)	0.445 (0.0266)	0.4348 (0.0283)	0.4201 (0.0343)
Illiteracy rate		0.0133 (0.0045)	0.0082 (0.0048)	0.0069 (0.0050)	0.001 (0.0053)
Indigenous population rate			0.0086 (0.0078)	0.0056 (0.0073)	0.0066 (0.0073)
Gini Index			0.5111 (0.4089)	0.3002 (0.4230)	0.0313 (0.4418)
Unemployment rate			0.0058 (0.0067)	0.0061 (0.0069)	0.0021 (0.0070)
Rural population rate			0.0032 (0.0013)	0.0033 (0.0013)	0.0026 (0.0014)
Municipality area				0.0000 (0.0000)	0.0000 (0.0000)
Altitude				-0.0089 (0.0109)	-0.0103 (0.0110)
Distance to capital				-0.0001 (0.0002)	-0.0001 (0.0002)
Temperature				0.0006 (0.0189)	0.0029 (0.0190)
Ln(Rainfall)				-0.1613 (0.1465)	-0.1655 (0.1473)
Legal Amazon region				0.8522 (0.2542)	0.819 (0.2552)
Semiarid region				-0.0013 (0.1033)	0.0081 (0.1042)
Ln(per capita spending on Bolsa Familia)					0.1309 (0.0556)
Ln(per capita spending on education)					0.1608 (0.0925)
Ln(per capita spending on health)					-0.2436 (0.0813)
$R^2$	0.0769	0.1407	0.1398	0.1443	0.1464
$N$	5381	5380	5299	5240	5214

Notes. All regressions include state fixed effects. Robust standard errors are reported in parenthesis. BHU Physician is measured per 1,000 residents.

Table A.5: The effect of MPP on infant health - Allowing the effects to vary over time

	Prematurity (1)	Low birth weight (2)	Infant mortality rate (3)
$\mathbf{1}(\text{2014 year}) \times \text{Treatment}$	0.0003 (0.0014)	-0.0002 (0.0008)	-0.07 (0.2959)
$\mathbf{1}(\text{2015 year}) \times \text{Treatment}$	0.0003 (0.0016)	0.0000 (0.0008)	0.239 (0.2997)
$N$	252665	252665	252665

*Notes.* Each coefficient is from a different regression. All regressions control for municipality and bimonth-by-year fixed effects. Regressions include also maternal characteristics, state linear time trends and the full set of interactions between municipality characteristics and a linear time trend. The term  $\mathbf{1}(\cdot)$  represents an indicator for year. The observations are weighted by the number of births. Robust standard errors (reported in parenthesis) are clustered at the municipality level.

Table A.6: The effect of MPP on infant health - municipality-by-year data

	Prematurity (1)	Low birth weight (2)	Infant mortality rate (3)
$\mathbf{1}(\text{2014 year}) \times \text{Treatment}$	0.0004 (0.0015)	0.0000 (0.0009)	0.0046 (0.2921)
$\mathbf{1}(\text{2015 year}) \times \text{Treatment}$	0.0007 (0.0017)	0.0000 (0.0008)	0.242 (0.2908)
$N$	42120	42120	42120

*Notes.* Each coefficient is from a different regression. All regressions control for municipality and year fixed effects. Regressions include also maternal characteristics, state linear time trends and the full set of interactions between municipality characteristics and a linear time trend. The term  $\mathbf{1}(\cdot)$  represents an indicator for year. The observations are weighted by the number of births. Analysis is based on municipality-by-year panel data covering the 2008 through 2015 period. Robust standard errors (reported in parenthesis) are clustered at the municipality level.

Table A.7: The effect of MPP on fetal deaths, births and sex ratio

	(1)	(2)	(3)	(4)	(5)	(6)
	1000*(Fetal deaths)/ (Fetal deaths + births)	Fetal deaths per 1,000 residents	(Fetal + infant deaths)/ (fetal deaths + births)	Births per 1,000 residents	Sex ratio	Fraction male births
Post × Treatment	-0.112 (0.208)	-0.001 (0.001)	-0.124 (0.3239)	-0.008 (0.012)	0.007 (0.004)	0.001 (0.001)
Pre-MPP mean	10.74	0.03	24.56	2.63	1.08	0.51
<i>N</i>	252665	252665	252665	252665	248919	252665

*Notes.* Each coefficient is from a different regression. All regressions control for municipality and bimonth-by-year fixed effects. Regressions include also maternal characteristics, state linear time trends and the full set of interactions between municipality characteristics and a linear time trend. The observations are weighted by the number of births. Robust standard errors (reported in parenthesis) are clustered at the municipality level.

Table A.8: The effect of MPP on maternal characteristics

	Proportion education < 4 years	Proportion unmarried	Average Age
	(1)	(2)	(3)
Post × Treatment	-0.0006 (0.0011)	0.0002 (0.0064)	-0.0098 (0.0144)
Pre-MPP mean	0.068	0.531	25.695
<i>N</i>	252001	252001	252001

*Notes.* Each coefficient is from a different regression. All regressions control for municipality and bimonth-by-year fixed effects. Regressions include also state linear time trends as well as the full set of interactions between municipality characteristics and a linear time trend. Observations are weighted by the number of births. Robust standard errors (reported in parenthesis) are clustered at the municipality level.

Table A.9: The effect of MPP on physician supply - Matching estimations

	Baseline	Mahalanobis matching	Nearest neighbors based on propensity score	Kernel Matching	Inverse propensity score weighted estimates	Entropy balancing weighted estimates
	(1)	(2)	(3)	(4)	(5)	(6)
Post × Treatment	0.116 (0.009)	0.112 (0.011)	0.114 (0.009)	0.114 (0.009)	0.125 (0.009)	0.095 (0.009)
<i>N</i>	285012	222534	241218	241326	241326	285012

*Notes.* Dependent variable is the total number of physicians per 1,000 residents. Each coefficient is from a different regression. All regressions control for municipality and bimonth-by-year fixed effects, state linear time trends and the full set of interactions between municipality characteristics and a linear time trend. Columns (2)-(3) weight control observations by the frequency with which the observation is used as a match. Column (4) weights control observations by the overall weight given to the matched observations. Column (5) weights the observations by  $(\text{treatment} / \text{propensity score}) + (1 - \text{treatment} / 1 - \text{propensity score})$  (DiNardo et al. 1996; Heckman et al. 1998). Column (6) weights the control group observations using entropy-balancing weights (Hainmueller 2012). Columns (2)-(5) trim the sample to those with estimated propensity scores between 0.1 and 0.9 (Crump et al. 2009). Robust standard errors (reported in parenthesis) are clustered at the municipality level.



Table A.10: The effect of MPP on utilization of medical care - Matching estimations

	Baseline	Mahalanobis matching	Nearest neighbors based on propensity score	Kernel Matching	Inverse propensity score weighted estimates	Entropy balancing weighted estimates
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel (a): Doctor visits</i>						
Post × Treatment	11.280 (2.825)	11.304 (3.158)	9.131 (2.673)	9.166 (2.662)	9.227 (2.871)	10.018 (2.715)
<i>N</i>	285012	222534	241218	241326	241326	285012
<i>Panel (b): Prenatal visits</i>						
Post × Treatment	0.114 (0.443)	0.580 (0.620)	-0.039 (0.502)	-0.039 (0.502)	0.001 (0.475)	-0.315 (0.568)
<i>N</i>	285012	222534	241218	241326	241326	285012
<i>Panel (c): Prenatal visits by physicians</i>						
Post × Treatment	0.625 (0.246)	0.445 (0.325)	0.454 (0.259)	0.457 (0.258)	0.472 (0.256)	0.488 (0.273)
<i>N</i>	285012	222534	241218	241326	241326	285012
<i>Panel (d): Prenatal visits by nurses</i>						
Post × Treatment	-0.514 (0.303)	0.128 (0.424)	-0.501 (0.354)	-0.504 (0.355)	-0.479 (0.331)	-0.827 (0.442)
<i>N</i>	285012	222534	241218	241326	241326	285012

*Notes.* Dependent variable in each column is measured per 1,000 residents. Each coefficient is from a different regression. All regressions control for municipality and bimonth-by-year fixed effects, state linear time trends and the full set of interactions between municipality characteristics and a linear time trend. Columns (2)-(3) weight control observations by the frequency with which the observation is used as a match. Column (4) weights control observations by the overall weight given to the matched observations. Column (5) weights the observations by  $(\text{treatment} / \text{propensity score}) + (1 - \text{treatment} / 1 - \text{propensity score})$  (DiNardo et al. 1996; Heckman et al. 1998). Column (6) weights the control group observations using entropy-balancing weights (Hainmueller 2012). Columns (2)-(5) trim the sample to those with estimated propensity scores between 0.1 and 0.9 (Crump et al. 2009). Robust standard errors (reported in parenthesis) are clustered at the municipality level.

Table A.11: The effect of MPP on infant health - Matching estimations

	Baseline	Mahalanobis matching	Nearest neighbors based on propensity score	Kernel Matching	Inverse propensity score weighted estimates	Entropy balancing weighted estimates
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel (a): Prematurity</i>						
Post $\times$ Treatment	0.000 (0.001)	-0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.000 (0.001)	0.001 (0.001)
<i>N</i>	252665	197324	213750	213841	213841	252665
<i>Panel (b): Low birth weight</i>						
Post $\times$ Treatment	-0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
<i>N</i>	252665	197324	213750	213841	213841	252665
<i>Panel (c): Infant mortality</i>						
Post $\times$ Treatment	-0.000 (0.237)	0.081 (0.467)	0.426 (0.380)	0.422 (0.380)	0.557 (0.431)	0.503 (0.344)
<i>N</i>	252665	197324	213750	213841	213841	252665

*Notes.* Dependent variables in panel (a) and (b) are proportion of preterm births and proportion of low birth weight babies, respectively. Dependent variable in panel (c) is the number of infant deaths per 1,000 live births. Each coefficient is from a different regression. All regressions control for municipality and bimonth-by-year fixed effects, maternal characteristics, state linear time trends and the full set of interactions between municipality characteristics and a linear time trend. Columns (2)-(3) weight control observations by the frequency with which the observation is used as a match. Column (4) weights control observations by the overall weight given to the matched observations. Column (5) weights the observations by (treatment/propensity score)+(1-treatment/1-propensity score) (DiNardo et al. 1996; Heckman et al. 1998). Column (6) weights the control group observations using entropy-balancing weights (Hainmueller 2012). Columns (2)-(5) trim the sample to those with estimated propensity scores between 0.1 and 0.9 (Crump et al. 2009). Robust standard errors (reported in brackets) are clustered at the municipality level.

Table A.12: The effect of MPP on physician supply - Alternative specifications

	Baseline	Mesoregion time trends	Microregion time trends	State $\times$ bimonth $\times$ year FE
	(1)	(2)	(3)	(4)
Post $\times$ Treatment	0.116 (0.009)	0.114 (0.008)	0.112 (0.008)	0.118 (0.008)
<i>N</i>	285012	285012	285012	285012

*Notes.* Dependent variable is the total number of physicians per 1,000 residents. All regressions control for municipality and bimonth-by-year fixed effects. Column (1) includes also state linear time trends as well as the full set of interactions between municipality characteristics and a linear time trend. Columns (2)-(4) use different type of region-specific time trends instead of state linear time trends. Robust standard errors (reported in parenthesis) are clustered at the municipality level.

Table A.13: The effect of MPP on medical care- Alternative specifications

	Baseline	Mesoregion time trends	Microregion time trends	State $\times$ bimonth $\times$ year FE
	(1)	(2)	(3)	(4)
<i>Panel (a): Doctor visits</i>				
Post $\times$ Treatment	11.280 (2.825)	11.804 (2.787)	11.744 (2.713)	10.760 (2.883)
$N$	285012	285012	285012	285012
<i>Panel (b): Prenatal visits</i>				
Post $\times$ Treatment	0.114 (0.443)	0.221 (0.438)	0.383 (0.423)	0.012 (0.449)
$N$	285012	285012	285012	285012
<i>Panel (c): Prenatal visits by physicians</i>				
Post $\times$ Treatment	0.625 (0.246)	0.652 (0.246)	0.672 (0.242)	0.558 (0.251)
$N$	285012	285012	285012	285012
<i>Panel (d): Prenatal visits by nurses</i>				
Post $\times$ Treatment	-0.514 (0.303)	-0.433 (0.298)	-0.291 (0.285)	-0.555 (0.307)
$N$	285012	285012	285012	285012

*Notes.* Dependent variable in each column is measured per 1,000 residents. Each coefficient is from a different regression. All regressions control for municipality and bimonth-by-year fixed effects. Column (1) includes also state linear time trends and the full set of interactions between municipality characteristics and a linear time trend. Columns (2)-(4) use different type of region-specific time trends instead of state linear time trends. Robust standard errors (reported in parenthesis) are clustered at the municipality level.

Table A.14: The effect of MPP on infant health- Alternative specifications

	Baseline	Mesoregion time trends	Microregion time trends	State $\times$ bimonth $\times$ year FE
	(1)	(2)	(3)	(4)
<i>Panel (a): Prematurity</i>				
Post $\times$ Treatment	0.000 (0.001)	-0.0005 (0.0013)	-0.0008 (0.0012)	0.0006 (0.0013)
<i>N</i>	252665	252665	252665	252665
<i>Panel (b): Low birth weight</i>				
Post $\times$ Treatment	-0.000 (0.001)	-0.0004 (0.0007)	-0.0002 (0.0006)	-0.0003 (0.0007)
<i>N</i>	252665	252665	252665	252665
<i>Panel (c): Infant mortality</i>				
Post $\times$ Treatment	-0.000 (0.237)	0.0649 (0.2351)	0.1029 (0.2407)	-0.0217 (0.2375)
<i>N</i>	252665	253344	253344	253344

*Notes.* Dependent variables in panel (a) and (b) are proportion of preterm births and proportion of low birth weight babies, respectively. Dependent variable in panel (c) is the number of infant deaths per 1,000 live births. Each coefficient is from a different regression. All regressions control for municipality and bimonth-by-year fixed effects. Column (1) includes also maternal characteristics, state linear time trends and the full set of interactions between municipality characteristics and a linear time trend. Columns (2)-(4) use different type of region-specific time trends instead of state linear time trends. Observations are weighted by the number of births. Robust standard errors (reported in parenthesis) are clustered at the municipality level.

Table A.15: The effect of MPP on local health resources

	Hospitals	Hospital beds	Ultrasound machines	Complete dental machines	X-ray machines
	(1)	(2)	(3)	(4)	(5)
Post $\times$ Treatment	0.004 (0.003)	0.007 (0.042)	0.002 (0.003)	-0.004 (0.006)	0.005 (0.005)
Pre-MPP mean	0.06	2.61	0.12	0.52	0.25
$N$	98388	198126	202770	284958	223398

*Notes.* Dependent variable in each column is measured per 1,000 residents. Each coefficient is from a different regression. All regressions control for municipality and bimonth-by-year fixed effects, state linear time trends and the full set of interactions between municipality characteristics and a linear time trend. The number of observations differ across outcomes because municipalities with zero values during the entire period are excluded from the regression estimation. Robust standard errors (reported in parenthesis) are clustered at the municipality level.



Table A.17: The effect of MPP on medical care - heterogeneity

	Gini Index	Unemployment rate	Illiteracy rate	Rural population rate	Population size	GDP (per capita)	BHU physicians (per capita)	Spending on Bolsa Familia (per capita)	Spending on education (per capita)	Spending on health (per capita)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Dependent variable:</i>										
Doctor visits	Low 10.001 (5.077)	14.430 (5.251)	12.153 (4.703)	7.082 (4.298)	13.422 (5.392)	12.713 (4.591)	12.950 (5.004)	15.708 (4.958)	4.507 (4.145)	9.823 (4.333)
	High 10.842 (5.179)	12.521 (4.637)	12.618 (4.361)	17.636 (4.930)	6.076 (4.465)	14.767 (5.174)	13.458 (5.129)	11.901 (4.434)	10.376 (5.360)	15.358 (5.434)
Prenatal visits	Low -0.146 (0.658)	-0.385 (0.718)	-1.250 (0.633)	-0.753 (0.684)	0.555 (0.741)	1.789 (0.905)	1.133 (0.898)	-1.217 (0.625)	-0.246 (0.699)	0.757 (0.889)
	High 1.068 (0.968)	1.442 (0.840)	2.655 (0.903)	0.813 (0.822)	-0.751 (0.858)	-0.978 (0.689)	-0.589 (0.678)	2.628 (0.941)	-0.683 (0.764)	-0.310 (0.707)
Prenatal visits by physicians	Low 0.266 (0.406)	0.267 (0.435)	0.010 (0.393)	-0.019 (0.373)	0.615 (0.448)	1.390 (0.415)	1.181 (0.470)	-0.140 (0.371)	0.193 (0.379)	0.791 (0.398)
	High 1.234 (0.490)	1.314 (0.404)	1.942 (0.413)	0.801 (0.454)	0.176 (0.394)	-0.025 (0.417)	0.020 (0.417)	2.009 (0.429)	0.261 (0.436)	0.236 (0.434)
Prenatal visits by nurses	Low -0.407 (0.436)	-0.644 (0.468)	-1.261 (0.415)	-0.744 (0.475)	-0.072 (0.488)	0.409 (0.657)	-0.054 (0.619)	-1.087 (0.412)	-0.445 (0.476)	0.022 (0.660)
	High -0.118 (0.670)	0.135 (0.601)	0.714 (0.668)	0.057 (0.570)	-0.945 (0.622)	-0.965 (0.448)	-0.616 (0.443)	0.621 (0.690)	-0.945 (0.528)	-0.542 (0.465)

*Notes.* Dependent variable in each column is measured per 1,000 residents. Each coefficient is from a different regression. All regressions control for municipality and bimonth-by-year fixed effects, state linear time trends and the full set of interactions between municipality characteristics and a linear time trend. Low and High characteristics represent, respectively, the first and third tertiles of the distribution of the municipality characteristics. Robust standard errors (reported in parenthesis) are clustered at the municipality level.

Table A.18: The effect of MPP on infant health - heterogeneity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Gini Index	Unemployment rate	Illiteracy rate	Rural population rate	Population size	GDP (per capita)	BHU physicians (per capita)	Spending on Bolsa Familia (per capita)	Spending on education (per capita)	Spending on health (per capita)
<i>Dependent variable:</i>										
Prematurity	0.001 (0.002)	-0.001 (0.002)	-0.004 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	-0.002 (0.002)	-0.000 (0.002)	-0.000 (0.002)
	High	0.001 (0.002)	0.003 (0.002)	0.000 (0.002)	-0.001 (0.002)	0.000 (0.002)	-0.000 (0.002)	0.001 (0.002)	0.000 (0.002)	0.001 (0.002)
Low birth weight	Low	-0.002 (0.002)	-0.003 (0.002)	-0.001 (0.001)	-0.003 (0.002)	-0.000 (0.002)	-0.001 (0.002)	-0.003 (0.002)	-0.001 (0.001)	0.001 (0.001)
	High	0.001 (0.002)	0.001 (0.002)	-0.000 (0.002)	-0.000 (0.001)	0.000 (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.002 (0.002)	-0.003 (0.002)
Infant mortality	Low	1.120 (0.777)	1.312 (0.745)	0.751 (0.613)	1.134 (0.629)	0.282 (0.721)	-0.066 (0.789)	0.934 (0.675)	0.702 (0.598)	0.556 (0.672)
	High	0.556 (0.832)	-0.276 (0.715)	0.635 (0.725)	1.133 (0.859)	0.784 (0.725)	1.074 (0.770)	0.670 (0.709)	1.636 (0.824)	0.895 (0.858)

*Notes.* Dependent variables are proportion of preterm births, proportion of low birth weight babies and number of infant deaths per 1,000 live births. Each coefficient is from a different regression. All regressions control for municipality and bimonth-by-year fixed effects, maternal characteristics, state linear time trends and the full set of interactions between municipality characteristics and a linear time trend. Low and High characteristics represent, respectively, the first and third tertiles of the distribution of the municipality characteristics. Observations are weighted by the number of births. Robust standard errors (reported in parenthesis) are clustered at the municipality level.



Table A.19: The effect of MPP on physician and infant health - Municipality-specific seasonal variation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Physicians	Doctor visits	Prenatal visits	Prenatal visits by physicians	Prenatal visits by nurses	Prematurity	Low birth weight	Infant mortality
Post × Treatment	0.116 (0.009)	11.326 (2.985)	0.135 (0.468)	0.638 (0.260)	-0.504 (0.319)	0.0004 (0.0015)	-0.0003 (0.0007)	-0.039 (0.2495)
<i>N</i>	285012	285012	285012	285012	285012	252665	252665	252665

*Notes.* Each coefficient is from a different regression. Physician and visit outcomes are measured per 1,000 residents. Dependent variables in columns (6)-(8) are proportion of preterm births, proportion of low birth weight babies and the number of infant deaths per 1,000 live births, respectively. These regressions show the robustness of the main results to the inclusion of municipality-by-bimonth fixed effects. The regressions also control for state linear time trends as well as the full set of interactions between municipality characteristics and a linear time trend. For birth and infant death outcomes, the regressions control in addition for maternal characteristics and weight the observations by the number of births. Robust standard errors (reported in parenthesis) are clustered at the municipality level.

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