Supplementary online appendix

Table A1: Five-state sample: Data summary

Year	AZ	CA	MD	NJ	NY	Total
1991	0	1,430	0	0	0	1,430
1992	0	1,428	0	0	0	1,428
1993	0	1,346	0	0	0	1,346
1994	0	1,410	0	0	0	1,410
1995	0	1,365	251	433	921	2,970
1996	0	1,400	232	372	797	2,801
1997	0	1,317	212	408	838	2,775
1998	0	1,380	211	412	772	2,775
1999	0	1,333	259	649	882	3,123
2000	0	1,387	237	395	842	2,861
2001	138	1,380	245	383	0	2,146
2002	176	1,352	249	393	0	2,170
2003	184	0	271	404	0	859
2004	262	0	250	409	0	921
2005	271	0	249	385	0	905
2006	325	0	293	397	0	1,015
Total	1,356	16,528	2,959	5,040	5,052	30,935

Notes: Table displays years for which each of our state data sets are available, and the relevant sample sizes for births within 3 ounces of 1500 grams.

Table A2: Selected covariate comparison (controlling for trends in birth weight)

	adjusted mean below threshold (1)	raw mean above threshold (2)	p-value[1] (3)	p-value[2] (4)
Fewer than 7 Prenatal visits	0.3212	0.3172	(0.310)	(0.702)
First birth	0.4109	0.4149	(0.418)	(0.503)
Mother's Age	26.67	26.43	(0.000)**	(0.339)
Mother's Education: <High School	0.2473	0.2503	(0.518)	(0.577)
Mother's Education: High School	0.3338	0.3358	(0.710)	(0.876)
Mother's Education: Some College	0.1784	0.1734	(0.132)	(0.239)
Mother's Education: College+	0.1521	0.1501	(0.489)	(0.769)
Mother's Education: Missing	0.0875	0.0905	(0.204)	(0.721)
Mother born outside state	0.4139	0.4079	(0.166)	(0.650)
Mother's Race: White	0.4483	0.4493	(0.773)	(0.920)
Mother's Race: African American	0.2549	0.2539	(0.816)	(0.906)
Mother's Race: Hispanic	0.1399	0.1279	(0.000)**	(0.537)
Father's Age	30.03	29.87	(0.037)*	(0.440)
Missing Father's Age	0.2390	0.2434	(0.267)	(0.549)
Father's Education: <High School	0.1284	0.1274	(0.813)	(0.834)
Father's Education: High School	0.2642	0.2652	(0.854)	(0.927)
Father's Education: Some College	0.0997	0.0987	(0.811)	(0.806)
Father's Education: College+	0.1051	0.1071	(0.672)	(0.689)
Father's Education: Missing	0.4026	0.4016	(0.901)	(0.953)
Male	0.5004	0.5024	(0.720)	(0.752)
Gestational Age	32.29	32.47	(0.000)**	(0.003)**
Singleton Birth	0.7372	0.7452	(0.054)	(0.316)
Twin Birth	0.2229	0.2189	(0.236)	(0.298)
Multiple (non-twin) Birth	0.0389	0.0359	(0.060)	(0.439)
Vaginal Birth	0.4582	0.4662	(0.147)	(0.267)
Obstetric Procedures: Amnioscentesis	0.0520	0.0510	(0.616)	(0.762)
Obstetric Procedures: Induction	0.1048	0.0978	(0.037)*	(0.381)
Obstetric Procedures: Stimulation	0.0682	0.0642	(0.125)	(0.387)
Obstetric Procedures: Tocolysis	0.1296	0.1166	(0.000)**	(0.298)
Obstetric Procedures: Ultrasound	0.6607	0.6497	(0.035)*	(0.369)
Obstetric Procedures: Other	0.0690	0.0630	(0.022)*	(0.641)
Year of Birth	1993.61	1993.03	(0.000)**	(0.409)
Predicted 1-year Mortality	0.0551	0.0575	(0.000)**	(0.391)

Notes: Data is NCHS birth cohort linked birth/infant death files, 1983-1991 and 1995-2003, as described in the text. For most covariates, the number of observations is 341,140. Delivery method is available for 229,843 births; obstretric procedures are available for 229,175 births. * significant at 5%; ** significant at 1%. Column (3) reports p-values calculated from heteroskedastic-robust standard errors; column (4) reports p-values calculated from standard errors clustered at the gram level.

Table A3: Bandwidth sensitivity

A. NCHS Nationwide Data

Dependent variable:	**1-year Mortality**				
Bandwidth	30	60	90	120	150
Birth weight < 1500g	-0.0267	-0.0162	-0.0114	-0.00911	-0.00865
	(0.00382)**	(0.00269)**	(0.0022)**	(0.00190)**	(0.00170)**
Mean of dependent variable above cutoff:	0.0607	0.0562	0.0545	0.0532	0.0515
Observations	72937	163415	233880	304630	376400

Dependent variable:	**28-Day Mortality**				
Bandwidth	30	60	90	120	150
Birth weight < 1500g	-0.0228	-0.0146	-0.0101	-0.00828	-0.00773
	(0.00322)**	(0.00227)**	(0.00185)**	(0.00160)**	(0.00143)**
Mean of dependent variable above cutoff:	0.0431	0.0390	0.0377	0.0367	0.0352
Observations	72937	163415	233880	304630	376400

B. 5-State Sample

Dependent variable:	**Hospital Charges**				
Bandwidth	30	60	90	120	150
Birth weight < 1500g	7670	8380	9290	8070	6490
	(4300)*	(3210)**	(2630)**	(2270)**	(2030)**
Mean of dependent variable above cutoff:	83890	81527	80235	79092	77158
Observations	10533	21404	31990	42012	52471

Dependent variable:	**Hospital Costs**				
Bandwidth	30	60	90	120	150
Birth weight < 1500g	4460	3620	3970	3410	2580
	(1880)*	(1390)**	(1140)**	(985)**	(881)**
Mean of dependent variable above cutoff:	41063	39321	38572	38028	37094
Observations	10533	21404	31990	42012	52471

Dependent variable:	**Length of Stay**				
Bandwidth	30	60	90	120	150
Birth weight < 1500g	2.38	1.84	1.91	1.53	1.14
	(0.743)**	(0.536)**	(0.439)**	(0.379)**	(0.340)**
Mean of dependent variable above cutoff:	25.7	24.8	24.3	24.0	23.5
Observations	11254	22877	34183	44868	56067

Notes: All models are local linear regressions, estimated on the specified bandwidth of grams above and below VLBW threshold. All models include linear gram-trend variables and our "main controls," which vary by the sample used and are described in the notes in the previous tables. Some observations have missing charges, as described in the text. * significant at 5%; ** significant at 1%. Heteroskedastic-robust standard errors in parentheses.

Table A4: Polynomial order sensitivity

A. NCHS Nationwide Data

Dependent variable:	**1-year Mortality**			
Polynomial of order:	1	2	3	4
Birth weight < 1500g	-0.0072	-0.0103	-0.0143	-0.0144
	(0.0022)**	(0.0038)**	(0.0062)*	(0.0082)
	[0.0040]	[0.0067]	[0.0099]	[0.0122]
Mean of dependent variable above cutoff:	0.0553			
Observations	202071			

B. 5-State Sample

Dependent variable:	**Hospital Charges**			
Polynomial of order:	1	2	3	4
Birth weight < 1500g	9,065	4,809	2,350	6,688
	(2,297)**	(3,363)	(4,442)	(5,879)
	[5,094]	[7,099]	[9,325]	[12,508]
Mean of dependent variable above cutoff:	81566			
Observations	28928			

Notes: All models are OLS, estimated on a sample within 3 ounces above and below VLBW threshold. All models include the gram-trend variables of the stated polynomial order and our "main controls," which vary by the sample used and are described in the notes in the previous tables. Some observations have missing charges, as described in the text. * significant at 5%; ** significant at 1%. Heteroskedastic-robust standard errors in parentheses; standard errors clustered at the gram level in brackets.

Table A5: Coefficients on selected covariates

	Sample: NCHS Nationwide Data Dependent variable: 1-year mortality		Multi-State Sample hospital charges
Birth weight < 1500g	-0.0072 (0.0022)**	Birth weight < 1500g	9,065 (2,297)**
Birth weight < 1500g * Grams from cutoff (100s)	-0.0111 (0.0032)**	Birth weight < 1500g * Grams from cutoff (100s)	617 (3,463)
Birth weight >= 1500g * Grams from cutoff (100s)	-0.0184 (0.0029)**	Birth weight >= 1500g * Grams from cutoff (100s)	-7,951 (2,823)**
Prenatal Visits: 7-10	-0.0063 (0.0014)**	=1 if newborn is male and not missing	11,611 (1,145)**
Prenatal Visits: >=11	-0.0065 (0.0015)**	Pre-term birth	22,958 (1,688)**
Mother born outside state	-0.0012 (0.0011)	Mother's Race/Ethnicity: African American	1,827 (1,481)
First Birth	0.0191 (0.0012)**	Mother's Race/Ethnicity: Other	4,533 (1,600)**
Mother's Age: 31-35 (compared to <16)	-0.0129 (0.0049)**	Twin birth	3,405 (1,346)*
Mother's Age: 36-40	-0.0118 (0.0051)*	Multiple (non-twin) birth	11,835 (2,354)**
Mother's Age: 41+	-0.0007 (0.0065)	Cesarean Section	2,770 (1,199)*
Mother's Education: High School	0.0004 (0.0015)	Arizona (compared to MD)	-1,653 (2,484)
Mother's Education: Some College	-0.0025 (0.0017)	California	101,580 (1,805)**
Mother's Education: College+	0.0037 (0.0019)	New Jersey	87,235 (1,608)**
Moher's Education: missing	0.0177 (0.0028)**	New York	60,591 (1,500)**
Father's Age: 31-35 (compared to <16)	-0.0009 (0.0188)	Year = 1991 (compared to 2003)	-92,968 (4,690)**
Father's Age: 36-40	-0.0012 (0.0188)	Year = 2006	3,937 (4,694)
Father's Age: 41+	-0.0041 (0.0188)	Constant	31,557 (4,237)**
Father's Age: missing	0.0020 (0.0187)		
Male	0.0144 (0.0010)**		
Gestational Age: 37 weeks (compared to <31)	0.0256 (0.0038)**		
Gestational Age: 40 weeks	0.0124 (0.0053)*		
Gestational Age: 42+ weeks	0.0081 (0.0052)		
Mother's Race/Ethnicity: African American	-0.0191 (0.0014)**		
Mother's Race/Ethnicity: Hispanic	-0.0035 (0.0019)		
Singleton birth	0.0442 (0.0018)**		
Twin birth	0.0113 (0.0017)**		
Year = 2002 (compared to 1984)	-0.0354 (0.0035)**		
Constant	0.0489 (0.0243)*		
Mean of dependent variable above cutoff:	0.0553		81566
Observations	202071		28928

Notes: All models are OLS, estimated on a sample within 3 ounces above and below VLBW threshold. Charges are in $2006. Some observations have missing charges, as described in the text. We only show a sub-set of the coefficients on these covariates in order to keep the table to one page. Five states include AZ, CA, MD, NY, and NJ (various years) * significant at 5%; ** significant at 1%. Heteroskedastic-robust standard errors in parentheses.

Table A6: Alternative first stage outcomes

Dependent variable:	hospital costs	hospital costs	log(hospital costs)	log (hospital charges)	median regression hospital charges	log(length of stay)
Birth weight < 1500g	4189	3795	0.263	0.263	9415	0.140
	(1066)**	(1030)	(0.106)**	(0.035)**	(1593)**	(0.0272)**
	[2610]	[2399]	[0.1060]*	[0.1059]*	CI: [1485, 21526]**	[0.0713]
Sample	5-State	5-State	5-State	5-State	5-State	5-State
Controls	No	Yes	Yes	Yes	Yes	Yes
Mean of dependent variable above cutoff:	39410	39410	9.91	10.58	81566	2.78
Observations	28928	28928	28769	28769	28928	30935

Dependent variable:	hospital transfer	hospital charges including transfers	hospital costs including transfers	log(charges) including transfers	log(length of stay) including transfers
Birth weight < 1500g	-0.011	7297	2872	0.223	0.1088
	(0.0067)	(4313)	(1776)	(0.045)**	(0.0319)**
	[0.0128]	[6,021]	[2,529]	[0.0707]**	[0.0388]**
Sample	5-State	California	California	California	California
Controls	Yes	Yes	Yes	Yes	Yes
Mean of dependent variable above cutoff:	0.100	109421	45141	11.0	2.99
Observations	30935	14560	14560	14560	16528

Notes: All models are OLS except the median regression, and all are estimated on a sample within 3 ounces above and below VLBW threshold. All models include the gram-trend variables and our "main controls," which are listed in Table A5, as well as indicators for each year. Charges are in 2006 dollars. Some observations have missing or zero charges, as described in the text. Five states include AZ, CA, MD, NY, and NJ (various years). * significant at 5%; ** significant at 1%. Heteroskedastic-robust standard errors in parentheses; standard errors clustered at the gram level in brackets. The 95% confidence interval reported for the median regression was bootstrapped, with 500 samples clustered by birth weight.

Table A7: Results by year and for overlap of NCHS/five-state data

A. NCHS Nationwide Data

					In-hospital births only	
Dependent variable:	1-year mortality				Five states, all NCHS years	Five states, years in NCHS and multi-state data
	Years:					
	1983-1987	1988-1991	1995-1998	1999-2002	1983-2002 (available years)	1991; 1995-2002
Birth weight < 1500g	-0.0144	-0.0076	-0.0006	-0.0070	-0.0104	-0.0074
	(0.0051)**	(0.0048)	(0.0038)	(0.0035)*	(0.0042)	(0.0051)
	[0.0052]**	[0.0063]	[0.0056]	[0.0037]	[0.0077]	[0.0063]
Mean of dependent variable above cutoff:	0.0813	0.0622	0.0410	0.0378	0.054	0.039
Observations	50947	47545	49989	53590	49399	23698

B. Multi-State Sample

					In-hospital births only	
Dependent variable:	hospital charges	hospital charges	hospital charges	hospital charges	hospital charges	hospital costs
	Years:				Years in NCHS and multi-state data	
	1991-1994	1995-1998	1999-2002	2003-2006	1991; 1995-2002	1991; 1995-2002
Birth weight < 1500g	12055.25	3514.89	16985.481	582.315	10108	4553
	(4,538)**	(3,167)	(4,930)**	(6,151)	(2738)**	(1242)**
	[4,799]*	[5,426]	[7,998]*	[7,149]	[5,947]	[2,791]
Mean of dependent variable above cutoff:	69566	71392	93717	96124	80721	39946
Observations	5018	10711	9504	3695	21479	21479

Notes: All models are OLS, estimated on a sample within 3 ounces above and below VLBW threshold. All models include the gram-trend variables. The first four columns include our "main controls," which vary by the sample used and are described in the notes in the previous tables. The last two columns include common covariates across samples: indicators for whether the baby is male, preterm, black,"other" race, a twin, or a non-twin multiple birth, as well as state indicators and year indicators. Although in theory the births included in the NCHS birth records in the state-years available in our multi-state sample should be the same as the births included in the multi-state sample, in practice the samples are slightly different (as evidenced by the difference in sample size), largely due to 300-400 fewer births in the discharge data in each year from 2000-2002. Some observations have missing charges, as described in the text. * significant at 5%; ** significant at 1%. Robust standard errors in parentheses.

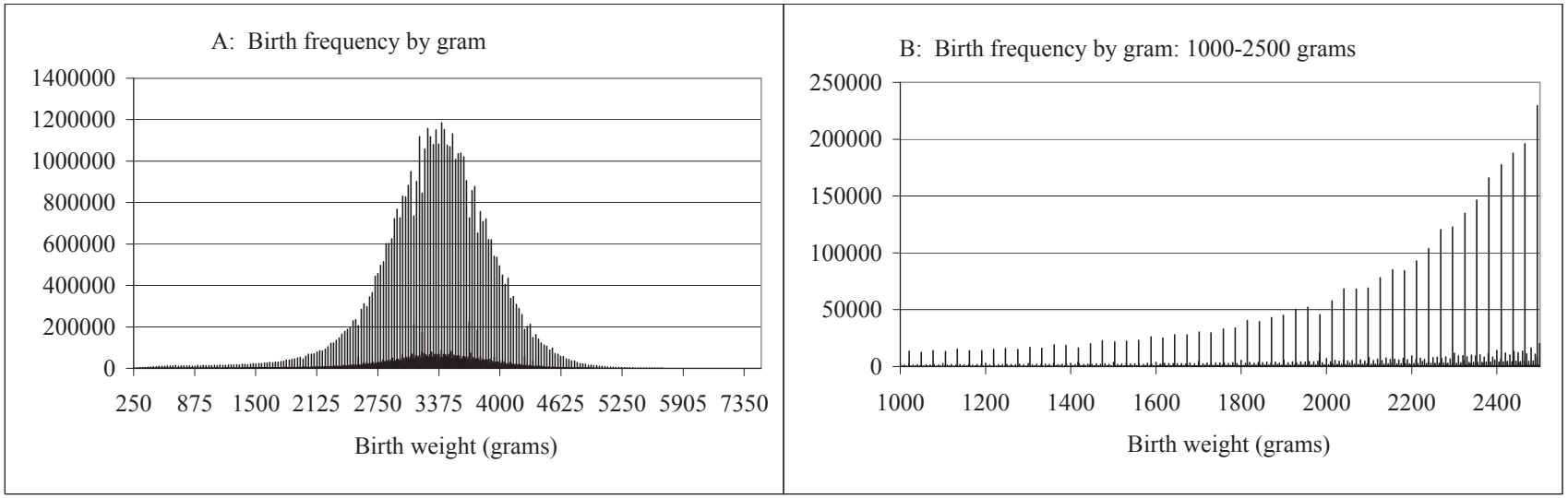
Table A8: One-year mortality results by cause of death

	one-year mortality, partitioned by broad cause-of-death categories									
Dependent variable:	infectious and parasitic diseases	neoplasms	endocrine, nutritional, metabolic, immunity, blood disorders	nervous system, sense organ disorders	respiratory system disorders	digestive system disorders	congenital anomalies	perinatal conditions	symptoms, signs, ill-defined conditions	other
Model:	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Birth weight < 1500g	-0.0026	0.0009	0.0024	-0.0141	0.0015	-0.0003	0.0022	-0.0206	0.0185	0.0121
	(0.0055)	(0.0025)	(0.0031)	(0.0050)**	(0.0071)	(0.0051)	(0.0178)	(0.0179)	(0.0107)	(0.0093)
	[0.0061]	[0.0018]	[0.0028]	[0.0041]**	[0.0057]	[0.0035]	[0.0102]	[0.0156]	[0.0084]*	[0.0060]*
Trend controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Main controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean of dependent variable above cutoff:	0.0222	0.0034	0.0050	0.0199	0.0334	0.0151	0.4164	0.3410	0.0850	0.0585

	one-year mortality, by selected individual causes of death (not a partition)				
Dependent variable:	"external" cause	respiratory distress syndrome (RDS)	sudden infant death syndrome (SIDS)	jaundice	meningitis
Model:	OLS	OLS	OLS	OLS	OLS
Birth weight < 1500g	0.0042	0.0008	0.0166	-0.0030	-0.0021
	(0.0048)	(0.0106)	(0.0093)	(0.0018)	(0.0030)
	[0.0034]	[0.0085]	[0.0068]*	[0.0011]**	[0.0036]
Trend controls	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes
Main controls	Yes	Yes	Yes	Yes	Yes
Mean of dependent variable above cutoff:	0.0139	0.0802	0.0617	0.0025	0.0050
Observations	11090				

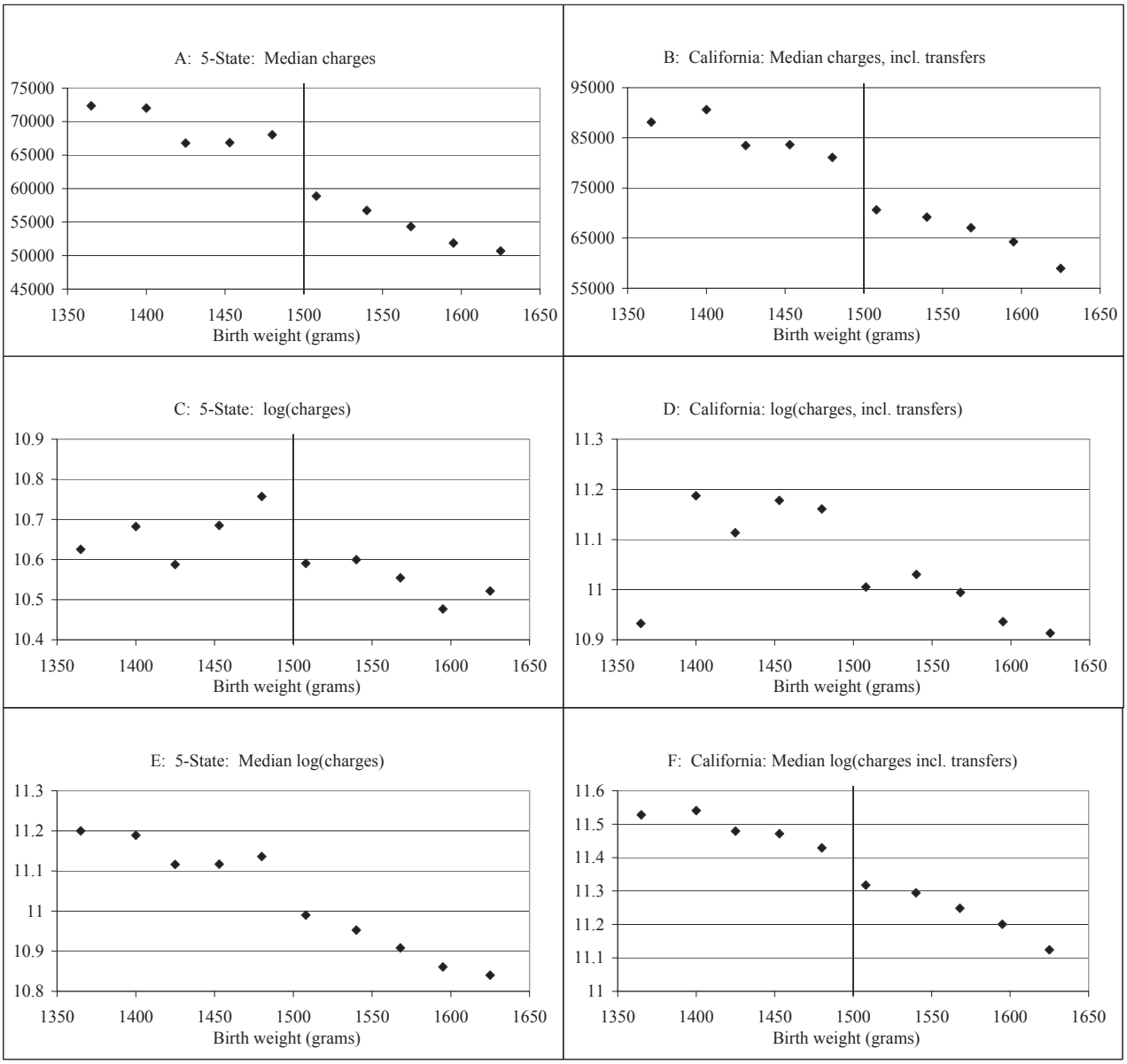
Notes: This table presents results by cause of death among infants who died within one year of birth (that is, the sample is *not* all infants but rather all infants who died within one year of birth). The ten cause of death classifications (other than all cause mortality) in the first row were constructed to be categories which could be defined consistently over time, across a change in cause of death coding which occurs partway through our sample; these broad categories partition non-missing causes of death. The second row extracts some individual causes of death from these broad categories. We exclude observations with missing information on the timing or cause of death. OLS models estimated on a sample within 3 ounces above and below the VLBW threshold. All models include the gram-trend variables. * significant at 5%; ** significant at 1%. Heteroskedastic-robust standard errors in parentheses; standard errors clustered at the gram level in brackets.

Figure A1: Birth frequencies for wider bandwidths



Notes: NCHS birth cohort linked birth/infant death files, 1983-1991 and 1995-2003, as described in the text.

Figure A2: Alternative first stage outcomes



Notes: Data are all births in the five-state sample (AZ, CA, MD, NY, and NJ), as described in the text. Some observations have missing or zero charges, as described in the text. Charges are in 2006 dollars. Points represent gram-equivalents of ounce intervals, with births grouped into one-ounce bins radiating from 1500 grams; the estimates are plotted at the median birth weight in each bin. *Discussion*: The upward slope for log charges in Panel C is largely driven by newborns with few charges. The upward slope disappears when the sample is restricted to newborns with greater the $3,000 in charges. A plot of an indicator that the newborn accrued charges of less than $3,000 against birth weight revealed a fairly noisy series. Further, when data from hospitals where newborns were transferred are included using the longitudinal data from California (panel D), log charges are relatively flat at 11.17 in the one-ounce bins just before the threshold and drop to 11.00 after the threshold. Panels E and F report similar estimates to the main results when median log charges are compared in both the five-state sample and in the California sample.