After Midnight:

A Regression Discontinuity Design in Length of Postpartum Hospital Stays

WEB APPENDIX

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Table A1: Table of Means

		All Years			Before 1997 Law Change			After 1997 Law Change		
		Before Midnight	After Midnight	p-value	Before Midnight	After Midnight	p-value	Before Midnight	After Midnight	p-value
Pregnancy Characteristics	At least one pregnancy complication	0.585	0.589	(0.264)	0.544	0.546	(0.598)	0.657	0.661	(0.482)
	<9 prenatal visits	0.199	0.204	(0.052)	0.225	0.232	(0.058)	0.153	0.156	(0.393)
	9-15 prenatal visits	0.695	0.689	(0.043)*	0.675	0.669	(0.105)	0.729	0.723	(0.222)
	>15 prenatal visits	0.088	0.089	(0.655)	0.084	0.083	(0.568)	0.095	0.099	(0.233)
	Prenatal visits missing	0.019	0.019	(0.850)	0.017	0.018	(0.338)	0.022	0.021	(0.413)
Mother's Characteristics	Born in California	0.390	0.391	(0.753)	0.381	0.378	(0.485)	0.404	0.411	(0.175)
	Born outside U.S.	0.472	0.475	(0.411)	0.469	0.475	(0.155)	0.478	0.476	(0.681)
	1st Birth	0.400	0.394	(0.047)*	0.396	0.394	(0.673)	0.407	0.393	(0.009)**
	Age	26.817	26.789	(0.489)	26.666	26.566	(0.048)*	27.085	27.168	(0.222)
	High school drop out	0.355	0.356	(0.652)	0.371	0.376	(0.186)	0.325	0.321	(0.418)
	High school	0.287	0.288	(0.684)	0.289	0.288	(0.694)	0.283	0.287	(0.374)
	Some College	0.184	0.181	(0.250)	0.183	0.18	(0.303)	0.187	0.185	(0.672)
	College+	0.164	0.164	(0.907)	0.149	0.149	(0.949)	0.190	0.191	(0.858)
	Missing education data									
Father's Characteristics	Age	29.755	29.725	(0.529)	29.531	29.444	(0.142)	30.155	30.202	(0.559)
	High school drop out	0.302	0.303	(0.848)	0.316	0.321	(0.222)	0.277	0.271	(0.229)
	High school	0.287	0.285	(0.465)	0.292	0.285	(0.056)	0.278	0.284	(0.231)
	Some College	0.156	0.155	(0.650)	0.156	0.156	(0.993)	0.155	0.153	(0.525)
	College+	0.181	0.181	(0.898)	0.172	0.171	(0.774)	0.197	0.197	(0.909)
	Missing education data	0.075	0.078	(0.086)	0.064	0.067	(0.104)	0.093	0.095	(0.534)
Newborn Characteristics	Boy	0.509	0.507	(0.530)	0.510	0.509	(0.767)	0.508	0.505	(0.537)
	White	0.544	0.537	(0.029)*	0.477	0.469	(0.063)	0.657	0.648	(0.071)
	African American	0.065	0.066	(0.570)	0.069	0.069	(0.818)	0.059	0.061	(0.445)
	Hispanic	0.186	0.188	(0.443)	0.295	0.3	(0.173)	0.000	0	(.)
	Asian	0.092	0.094	(0.198)	0.089	0.092	(0.168)	0.098	0.1	(0.580)
Birth Characteristics	Birthweight bottom quartile	0.197	0.196	(0.803)	0.199	0.197	(0.459)	0.193	0.196	(0.499)
	Birthweight 2nd quintile	0.212	0.22	(0.003)**	0.211	0.221	(0.004)**	0.212	0.217	(0.271)
	Birthweight 3rd quintile	0.216	0.217	(0.740)	0.214	0.216	(0.502)	0.221	0.219	(0.685)
	Birthweight 4th quintile	0.194	0.19	(0.166)	0.194	0.19	(0.227)	0.194	0.192	(0.641)
	Birthweight Top quintile	0.182	0.177	(0.068)	0.183	0.177	(0.073)	0.180	0.176	(0.336)
	Gestational age < 37 weeks	0.088	0.09	(0.190)	0.086	0.089	(0.203)	0.090	0.092	(0.570)
	Gestational age 37 <= weeks < 40	0.424	0.434	(0.003)**	0.410	0.423	(0.001)**	0.449	0.452	(0.616)
	Gestational age 40 <= weeks < 42	0.382	0.369	(0.000)**	0.390	0.376	(0.001)**	0.368	0.359	(0.081)
	Gestational age weeks >=42	0.076	0.075	(0.716)	0.082	0.078	(0.087)	0.064	0.068	(0.103)
	Gestational age missing	0.031	0.032	(0.298)	0.032	0.034	(0.217)	0.029	0.029	(0.912)
	Vaginal birth after C-section	0.025	0.026	(0.353)	0.027	0.029	(0.124)	0.021	0.02	(0.437)
	Forceps or vacuum	0.099	0.095	(0.022)*	0.102	0.097	(0.027)*	0.093	0.091	(0.493)
	Less than 3 hours	0.018	0.019	(0.228)	0.019	0.019	(0.843)	0.015	0.018	(0.051)
	More than 20 hours	0.007	0.006	(0.310)	0.007	0.007	(0.550)	0.007	0.006	(0.447)
	Labor stimulated	0.119	0.115	(0.053)	0.106	0.104	(0.375)	0.141	0.133	(0.036)*
	Labor induced	0.099	0.095	(0.065)	0.092	0.089	(0.289)	0.111	0.105	(0.072)
	Admitted on Sunday	0.116	0.117	(0.572)	0.118	0.119	(0.772)	0.112	0.114	(0.616)
	Admitted on Monday	0.155	0.153	(0.346)	0.154	0.15	(0.150)	0.157	0.158	(0.705)
	Admitted on Tuesday	0.153	0.152	(0.648)	0.154	0.149	(0.102)	0.151	0.156	(0.188)
	Admitted on Wednesday	0.151	0.146	(0.023)*	0.148	0.145	(0.257)	0.155	0.146	(0.026)*
	Admitted on Thursday	0.152	0.15	(0.427)	0.151	0.15	(0.703)	0.152	0.149	(0.435)
	Admitted on Friday	0.147	0.146	(0.735)	0.147	0.147	(0.916)	0.147	0.145	(0.534)
	Admitted on Saturday	0.120	0.121	(0.761)	0.121	0.122	(0.717)	0.117	0.118	(0.852)
	Missing admission day	0.008	0.017	(0.000)**	0.007	0.019	(0.000)**	0.008	0.013	(0.000)**
Primary Payer	Medicaid	0.463	0.463	(0.898)	0.473	0.48	(0.091)	0.445	0.432	(0.017)*
	Self pay/unknown	0.041	0.039	(0.182)	0.046	0.046	(0.862)	0.033	0.029	(0.056)
	Private	0.480	0.482	(0.458)	0.463	0.457	(0.161)	0.509	0.525	(0.004)**
	Other	0.016	0.016	(0.727)	0.017	0.016	(0.387)	0.013	0.014	(0.515)
	Government	0.223	0.227	(0.147)	0.237	0.244	(0.062)	0.199	0.199	(0.935)
Hospital Characteristics	Private nonprofit	0.634	0.636	(0.554)	0.616	0.616	(0.936)	0.664	0.668	(0.414)
	Private for-profit	0.142	0.136	(0.012)*	0.147	0.14	(0.018)*	0.135	0.131	(0.256)
	Observations	45807	47046		28898	29477		16637	17283	

Estimates from the 40 minute sample, which includes births from 11:37pm-11:55pm & 12:05am-12:24am. Additional variables used the main analysis (not shown) include mother age indicators, father age indicators, year of birth indicators and month of birth indicators. ** = significant at 1%; * = significant at 5%.

Table A2: Selected Covariates: 40 Minute Pooled Sample, 1991-2002

	Dependent Variable:	Additional Midnights	28-Day Readmission
		(1)	(2)
	Birth After Midnight	0.255	0.0023
		(0.025)**	(0.0026)
	Birth After Midnight * Minute from cutoff	0.001	0.0001
		(0.002)	(0.0002)
	Birth Prior to Midnight* Minute from cutoff	-0.002	-0.0001
		(0.002)	(0.0002)
Pregnancy	At least one pregnancy complication	0.021	-0.0006
Characterisitics		(0.014)	(0.0014)
	9-15 prenatal visits	-0.073	-0.0022
(<9 omitted)		(0.020)**	(0.0017)
	>15 prenatal visits	0.055	0.0019
		(0.029)	(0.0027)
	Prenatal visits missing	0.060	0.0042
		(0.060)	(0.0051)
Mother's	Born in California	0.023	0.0005
Characteristics		(0.021)	(0.0021)
	Born outside U.S.	0.028	-0.0047
		(0.023)	(0.0024)*
	1st Birth	0.232	0.0063
		(0.016)**	(0.0016)**
(Age<18 omitted)	Age = 20	-0.057	0.0028
		(0.046)	(0.0047)
	Age = 30	0.219	0.0026
		(0.053)**	(0.0051)
	Age = 40	0.315	0.0119
		(0.071)**	(0.0075)
(College+ omitted)	High school drop out	0.034	0.0011
		(0.027)	(0.0031)
	High school	0.004	-0.0005
		(0.023)	(0.0027)
	Some College	0.009	0.0013
		(0.021)	(0.0026)
	Missing education data	0.147	0.0016
		(0.091)	(0.0074)
Father's	Age = 20	0.080	0.0071
Characterisitcs		(0.076)	(0.0084)
	Age = 30	0.083	0.0041
(Age<18 omitted)		(0.074)	(0.0080)
	Age = 40	0.183	0.0055
		(0.075)*	(0.0080)
	Age Missing	0.203	0.0044
		(0.075)**	(0.0076)
	High school drop out	0.007	-0.0026
(College+ omitted)		(0.026)	(0.0029)
	High school	0.014	-0.0030
		(0.023)	(0.0025)
	Some College	-0.038	0.0019
		(0.021)	(0.0026)
	Missing education data	0.052	0.0014
		(0.044)	(0.0040)
	Mean of Dependent Variable	1.10	0.044
	Observations	92853	92853

Additional characteristics included month, year, day of the week, mother's age, and father's age indicators. ** = significant at 1%; * = significant at 5%.

Table A2 (continued): Selected Covariates: 40 Minute Pooled Sample, 1991-2002

	Dependent Variable:	Additional Midnights	28-Day Readmission
		(1)	(2)
Newborn Characterisitcs	Boy	0.095	0.0090
		(0.013)**	(0.0013)**
	White	-0.070	-0.0018
		(0.022)**	(0.0022)
	African American	0.148	-0.0061
		(0.038)**	(0.0030)*
	Hispanic	-0.024	-0.0032
		(0.029)	(0.0028)
	Asian	-0.058	0.0011
		(0.030)	(0.0031)
Birth Characterisitics	Birthweight 2nd quintile	-0.747	-0.0090
		(0.023)**	(0.0018)**
	Birthweight 3rd quintile	-0.732	-0.0115
		(0.023)**	(0.0018)**
	Birthweight 4th quintile	-0.718	-0.0108
		(0.023)**	(0.0019)**
	Birthweight Top quintile	-0.636	-0.0106
		(0.024)**	(0.0019)**
(Gestational Age <37 weeks omitted)	Gestational age 37 <= weeks < 40	-1.511	-0.0251
		(0.049)**	(0.0020)**
	Gestational age 40 <= weeks < 42	-1.500	-0.0303
		(0.048)**	(0.0020)**
	Gestational age weeks >=42	-1.465	-0.0259
		(0.051)**	(0.0018)**
	Gestational age missing	-1.472	-0.0214
		(0.056)**	(0.0025)**
	Vaginal birth after C-section	0.058	0.0068
		(0.040)	(0.0046)
	Forceps or vacuum	0.109	0.0088
		(0.021)**	(0.0025)**
	Less than 3 hours	-0.018	0.0035
		(0.056)	(0.0051)
	More than 20 hours	0.262	0.0062
		(0.086)**	(0.0084)
	Labor stimulated	0.003	-0.0007
		(0.020)	(0.0021)
	Labor induced	-0.029	0.0042
		(0.021)	(0.0024)
(Sat. omitted)	Admitted on Wednesday	0.061	0.0010
		(0.025)*	(0.0026)
	Missing admission day	0.148	0.0045
		(0.067)*	(0.0065)
Primary Payer (private omitted)	Medicaid	0.143	0.0102
		(0.017)**	(0.0018)**
	Self pay/unknown	-0.250	-0.0138
		(0.031)**	(0.0030)**
	Other	0.315	-0.0012
		(0.072)**	(0.0055)
Hospital Characterisitcs (for-profit omitted)	Government	0.439	-0.0018
		(0.020)**	(0.0022)
	Private nonprofit	0.080	-0.0041
		(0.016)**	(0.0020)*
	Mean of Dependent Variable	1.10	0.044
	Observations	92853	92853

Additional characteristics included month, year, day of the week, mother's age, and father's age indicators. ** = significant at 1%; * = significant at 5%.

Table A3: Time of Birth and Infant Readmissions

Dependent Variable: 7-Day Readmission

A. Before 1997 Law Change

Model:	Local linear	Probit	Probit	Probit	IV Probit	IV Probit
	(1)	(2)	(3)	(4)	(5)	(6)
Birth After Midnight	0.00038	0.00188	0.00174	0.00134		
	(0.0028)	(0.0028)	(0.0025)	(0.0015)		
Birth After Midnight * 100 Minutes from cutoff		0.018	0.018	-0.00050		
		(0.027)	(0.015)	(0.0033)		
Birth Prior to Midnight* 100 Minutes from cutoff		-0.026	-0.023	0.0033		
		(0.018)	(0.016)	(0.0033)		
Length of Stay					0.0017	0.0025
					(0.0054)	(0.0050)
					[-1.12, 2.86]	[-1.15, 2.83]
Full Controls	No	No	Yes	Yes	No	Yes
Sample	40 minute	40 minute	40 minute	2 hour	2 hour	2 hour
Observations	60398	58365	58365	162791	162821	162821
Mean of Dep. Variable Before Midnight	0.027	0.027	0.027	0.026	0.042	0.042

B. After1997 Law Change

Model:	Local linear	Probit	Probit	Probit	IV Probit	IV Probit
	(1)	(2)	(3)	(4)	(5)	(6)
Birth After Midnight	0.00040	-0.00052	-0.00035	0.00142		
	(0.0038)	(0.0036)	(0.0032)	(0.0020)		
Birth After Midnight * 100 Minutes from cutoff		0.0023	-0.00008	-0.0009		
		(0.022)	(0.019)	(0.0044)		
Birth Prior to Midnight* 100 Minutes from cutoff		-0.0042	-0.0042	-0.0038		
		(0.023)	(0.021)	(0.0045)		
Length of Stay					0.0015	0.0015
					(0.0054)	(0.0042)
					[-0.88, 2.75]	[-1.04, 2.69]
Full Controls	No	No	Yes	Yes	No	Yes
Sample	40 minute	40 minute	40 minute	2hour	2hour	2hour
Observations	35736	33920	33920	94879	94879	94879
Mean of Dep. Variable Before Midnight	0.028	0.028	0.028	0.029	0.046	0.046

40 minute sample includes births from 11:37pm-11:55pm & 12:05am-12:24am; 2 hour sample includes births from 11:02pm-11:55pm & 12:05am to 12:59am. Column (1) reports the difference in local linear regression estimates just above and below the discontinuity using a triangle kernel and a bandwidth of 20 minutes. Asymptotic standard errors in parentheses. Columns (2)-(4) report marginal effects evaluated at the mean of the covariates with robust standard errors reported in parentheses. Full controls include the controls listed in Appendix Table A1, as well as indicators for the mother's age, the father's age, the year of birth and the month of birth. Columns (5) and (6) report marginal effects from models that include a quartic in the residual from a regression of length of stay on the same variables that are included in this table. Robust standard errors in parentheses, 95% confidence interval of the bootstrapped t-statistics (500 replications) in brackets.

Table A4: Time of Birth and 1-Year Mortality

Dependent Variable: 1-Year Mortality

A. Before 1997 Law Change

Model:	Local linear	Probit	Probit	Probit	IV Probit	IV Probit
	(1)	(2)	(3)	(4)	(5)	(6)
Birth After Midnight	0.000003	0.00127	0.00026	0.000013		
	(0.0013)	(0.00126)	(0.000465)	(0.00035)		
Birth After Midnight * 100 Minutes from cutoff		-0.0079	-0.0013	-0.0002		
		(0.0076)	(0.0029)	(0.0008)		
Birth Prior to Midnight* 100 Minutes from cutoff		-0.0078	-0.0029	-0.0002		
		(0.0082)	(0.0030)	(0.0008)		
Length of Stay					-0.00059	-0.00051
					(0.0028)	(0.0015)
					[-2.28, 1.99]	[-2.31, 2.05]
Full Controls	No	No	Yes	Yes	No	Yes
Sample	40 minute	40 minute	40 minute	2 hour	2 hour	2 hour
Observations	60398	58365	58365	162791	162791	162791
Mean of Dep. Variable Before Midnight	0.0058	0.0056	0.0056	0.0055	0.0055	0.0055

B. After1997 Law Change

Model:	Local linear	Probit	Probit	Probit	IV Probit	IV Probit
	(1)	(2)	(3)	(4)	(5)	(6)
Birth After Midnight	0.00083	0.00077	0.00028	0.000016		
	(0.0015)	(0.0014)	(0.00030)	(0.00029)		
Birth After Midnight * 100 Minutes from cutoff		-0.0019	-0.0005	0.0005		
		(0.0087)	(0.0018)	(0.0007)		
Birth Prior to Midnight* 100 Minutes from cutoff		-0.0033	-0.0022	-0.0013		
		(0.0096)	(0.0019)	(0.0006)		
Length of Stay					-0.00092	0.000033
					(0.0025)	(0.0011)
					[-1.68, 2.21]	[-1.99, 2.13]
Full Controls	No	No	Yes	Yes	No	Yes
Sample	40 minute	40 minute	40 minute	2hour	2hour	2hour
Observations	35736	33157	33157	94761	94761	94761
Mean of Dep. Variable Before Midnight	0.0043	0.0041	0.0041	0.0048	0.0048	0.0048

40 minute sample includes births from 11:37pm-11:55pm & 12:05am-12:24am; 2 hour sample includes births from 11:02pm-11:55pm & 12:05am to 12:59am. Column (1) reports the difference in local linear regression estimates just above and below the discontinuity using a triangle kernel and a bandwidth of 20 minutes. Asymptotic standard errors in parentheses. Columns (2)-(4) report marginal effects evaluated at the mean of the covariates with robust standard errors reported in parentheses. Full controls include the controls listed in Appendix Table A1, as well as indicators for the mother's age, the father's age, the year of birth and the month of birth. Columns (5) and (6) report marginal effects from models that include a quartic in the residual from a regression of length of stay on the same variables that are included in this table. Robust standard errors in parentheses, 95% confidence interval of the bootstrapped t-statistics (500 replications) in brackets.

Table A5: Characteristics of Compliers

		Before Law Change			After Law Change		
		40-minute Sample		24-hour	40-minute Sample		24-hour
		Complier Mean	Overall Mean	Population Mean	Complier Mean	Overall Mean	Population Mean
Pregnancy Characteristics	At least one pregnancy complication	0.546	0.545	0.565	0.683	0.659	0.664
	<9 prenatal visits	0.202	0.228	0.208	0.129	0.155	0.137
	9-15 prenatal visits	0.699	0.672	0.685	0.696	0.726	0.734
	>15 prenatal visits	0.078	0.083	0.091	0.147	0.097	0.109
	Prenatal visits missing	0.021	0.017	0.016	0.028	0.021	0.021
Mother's Characteristics	Born in California	0.380	0.380	0.391	0.396	0.407	0.414
	Born outside U.S.	0.482	0.472	0.455	0.490	0.476	0.460
	1st Birth	0.385	0.395	0.391	0.414	0.400	0.387
	Age	26.2	26.6	27.1	28.3	27.1	27.8
	High school drop out	0.387	0.374	0.346	0.297	0.323	0.298
	High school	0.274	0.289	0.291	0.237	0.285	0.282
	Some College	0.177	0.181	0.191	0.198	0.186	0.193
	College+	0.156	0.149	0.165	0.252	0.191	0.213
	Missing education data	0.006	0.007	0.007	0.015	0.015	0.014
Father's Characteristics	Age	28.9	29.5	29.9	31.4	30.2	30.7
	High school drop out	0.312	0.319	0.299	0.232	0.274	0.256
	High school	0.259	0.289	0.290	0.253	0.281	0.276
	Some College	0.176	0.156	0.163	0.160	0.154	0.162
	College+	0.169	0.171	0.187	0.254	0.198	0.220
	Missing education data	0.083	0.065	0.061	0.100	0.094	0.086
Newborn Characteristics	Boy	0.496	0.509	0.510	0.482	0.506	0.510
	White	0.466	0.473	0.508	0.615	0.652	0.681
	African American	0.073	0.069	0.069	0.075	0.060	0.060
	Hispanic	0.299	0.298	0.260	.	.	
	Asian	0.091	0.091	0.091	0.124	0.098	0.095
Birth Characteristics	Low birthweight (<2500g)	0.005	0.048	0.059	0.029	0.047	0.061
	Full Term (>=37 weeks)	0.927	0.909	0.898	0.915	0.906	0.896
	Vaginal birth after C-section	0.035	0.028	0.022	0.023	0.021	0.015
	Forceps or vacuum	0.077	0.099	0.083	0.102	0.092	0.072
	Less than 3 hours	0.019	0.020	0.014	0.016	0.016	0.011
	More than 20 hours	0.002	0.007	0.008	0.009	0.006	0.007
	Labor stimulated	0.085	0.105	0.097	0.124	0.137	0.116
	Labor induced	0.089	0.091	0.087	0.101	0.108	0.109
	Admitted on a weekend	0.266	0.243	0.228	0.261	0.233	0.216
Primary Payer	Medicaid	0.489	0.477	0.457	0.425	0.439	0.417
	Self pay/unknown	0.038	0.046	0.045	0.009	0.031	0.027
	Private	0.459	0.460	0.481	0.550	0.517	0.540
	Other	0.014	0.016	0.018	0.016	0.014	0.016
	Government	0.222	0.241	0.215	0.264	0.200	0.183
Hospital Characteristics	Private nonprofit	0.644	0.616	0.630	0.585	0.666	0.666
	Private for-profit	0.134	0.143	0.153	0.152	0.133	0.149
Excluded Characteristics	Cesarean Section	.	.	0.215	.	.	0.240
	Observations	58375		3455661	33920		2561629

Compliers are newborns who are induced into having a longer stay due to a post-midnight births, where longer stays are defined as at least one additional midnight prior to the law change and at least 2 additional midnights after the law change. The means are then calculated as described in the text. The 40-minute sample is the analysis sample used in Table 3. The 24-hour population includes all births in California hospitals. The estimated fraction of compliers in the 40-minute sample is 16% prior to the law change and 17% after the law change.

Appendix Table A6: Characteristics of Compliers for the Law Change

		January-August: 1997 vs. 1998		January-August: 1997 vs. 1999	
		Complier Mean	Overall Mean	Complier Mean	Overall Mean
Pregnancy	At least one pregnancy complication	0.712	0.629	0.716	0.641
Characte	<9 prenatal visits	0.091	0.155	0.075	0.150
	9-15 prenatal visits	0.797	0.720	0.785	0.722
	>15 prenatal visits	0.109	0.105	0.125	0.106
	Prenatal visits missing	0.003	0.019	0.015	0.022
Mother's	Born in California	0.475	0.418	0.454	0.418
Charact	Born outside U.S.	0.355	0.445	0.388	0.446
	1st Birth	0.419	0.384	0.445	0.387
	Age	28.7	27.5	28.7	27.6
	High school drop out	0.167	0.312	0.188	0.309
	High school	0.261	0.285	0.262	0.285
	Some College	0.227	0.195	0.214	0.195
	College+	0.321	0.194	0.323	0.199
	Missing education data	0.024	0.014	0.013	0.012
Father's	Age	31.6	30.4	31.6	30.4
Characte	High school drop out	0.142	0.258	0.162	0.256
	High school	0.256	0.278	0.261	0.280
	Some College	0.193	0.165	0.180	0.165
	College+	0.339	0.208	0.331	0.211
	Missing education data	0.070	0.092	0.065	0.089
Newborn	Boy	0.509	0.510	0.518	0.510
Charact	White	0.722	0.692	0.717	0.692
	African American	0.058	0.064	0.057	0.063
	Hispanic	.		.	
	Asian	0.124	0.089	0.125	0.090
Birth	Low birthweight (<2500g)	0.027	0.061	0.024	0.060
Characte	Full Term (>=37 weeks)	0.928	0.893	0.930	0.893
	Vaginal birth after C-section	0.025	0.021	0.017	0.020
	Forceps or vacuum	0.118	0.085	0.088	0.081
	Less than 3 hours	0.017	0.013	0.010	0.012
	More than 20 hours	0.008	0.008	0.007	0.007
	Labor stimulated	0.161	0.120	0.142	0.119
	Labor induced	0.161	0.115	0.140	0.113
	Admitted on a weekend	0.221	0.217	0.224	0.218
Primary P	Medicaid	0.193	0.415	0.266	0.415
	Self pay/unknown	0.016	0.034	0.014	0.032
	Private	0.776	0.539	0.696	0.539
	Other	0.015	0.012	0.024	0.015
	Government	0.152	0.181	0.153	0.180
Hospital	Private nonprofit	0.743	0.665	0.701	0.663
Charact	Private for-profit	0.103	0.152	0.145	0.156
Excluded Characteristics	Cesarean Section	0.117	0.216	0.137	0.221
	Observations	558620		553139	

Law change ocurred in August 1997, but exempted (some) Medicaid patients. Medicaid patients were covered by a law

Table A7: Maternal Length of Stay & Outcomes

	Before 1997 Law Change		After 1997 Law Change	
Dependent Variable:	Additional Midnights	28-Day Readmission	Additional Midnights	28-Day Readmission
	(1)	(2)	(3)	(4)
Birth After Midnight	0.297	-0.0006	0.229	0.0015
	(0.086)	(0.0012)	(0.045)	(0.0015)
Birth After Midnight * Minute from cutoff	0.0004	-0.00002	-0.0005	-0.00004
	(0.0077)	(0.00007)	(0.0020)	(0.0001)
Birth Prior to Midnight* Minute from cutoff	-0.0008	0.0000	0.0022	-0.0002
	(0.0025)	(0.00008)	(0.0018)	(0.00009)
Observations	57599	57597	33560	32869
Mean of Dep. Variable Before Midnight	0.685	0.008	0.968	0.008

Analyses uses the "40 minute" sample, which includes births from 11:37pm-11:55pm & 12:05am to 12:24am. Columns (1) and (3) are estimated with by OLS, and Columns (2) and (4) report estimates that are marginal effects from a probit model, evaluated at the mean of the covariates. All models include full controls. Robust standard errors reported in parentheses.

Appendix Table A8: Infant Outcomes Across Patient Groups

A. Before the Law Change

	Additional Midnights			28-Day Readmission			1-year Mortality			
	Coeff. On After Midnight	S.E.	Mean of Dep. Var.	Marginal effect of After Midnight	S.E.	Mean of Dep. Var.	Marginal effect of After Midnight	S.E.	Mean of Dep. Var.	Obs.
Subgroup:										
Medicaid Patient	0.25831	(0.02984)**	1.10	0.00414	(0.00294)	0.047	-0.00013	(0.00054)	0.0062	77272
Unmarried	0.25165	(0.0360)**	1.09	0.00146	(.000332)	0.044	0.00017	(0.00063)	0.0060	56440
For-Profit Hospital	0.23857	(0.03859)**	0.79	-0.00138	(0.00493)	0.044	0.00009	(0.00039)	0.0041	19765
Cesarean Section	0.23909	(0.06236)**	2.87	0.00376	(0.00428)	0.049	-0.00208	(0.00089)*	0.0094	34442
Birthweight < 3000g	0.22649	(0.07206)**	1.71	0.00654	(0.00479)	0.060	-0.00024	(0.00148)	0.0183	34675
High P(Readmission|X)	0.21937	(0.03615)**	1.25	0.00285	(0.00318)	0.055	0.00019	(0.00060)	0.00944	77012
Low P(Readmission|X)	0.21634	(0.01584)**	0.72	0.00264	(0.00237)	0.031	-0.00022	(0.00039)	0.00191	85319
Low Maternal Education	0.18903	(0.03297)**	1.07	0.00375	(0.00317)	0.043	-0.00065	(0.00063)	0.0060	60403
Kaiser Hospital	0.18820	(0.05150)**	0.91	0.00768	(0.00510)	0.035	0.0005	(0.00062)	0.0062	19616
Friday/Saturday Midnight	0.186953	(0.064019)**	1.29361	-0.001307	(0.007888)	0.04622	-0.003232	(0.002233)	0.00479	11666
Any Labor Complication	0.18372	(0.02364)**	0.97	0.00549	(0.00236)*	0.042	0.00018	(0.00039)	0.0060	108265
Scheduled Birth	0.16825	(0.05151)**	0.75	-0.00064	(0.00608)	0.049	0.00008	(0.00021)	0.0037	15225
Any Pregnancy Complication	0.16427	(0.02678)**	0.98	0.00455	(0.00263)	0.044	0.00030	(0.00045)	0.0063	88955
All Data	0.13561	(0.05248)**	1.81	0.00210	(0.00163)	0.043	-0.00025	(0.00033)	0.0065	229554

B. After the Law Change

	Additional Midnights			28-Day Readmission			1-year Mortality			
	Coeff. On After Midnight	S.E.	Mean of Dep. Var.	Coeff. On After Midnight	S.E.	Mean of Dep. Var.	Coeff. On After Midnight	S.E.	Mean of Dep. Var.	Obs.
Subgroup:										
Medicaid Patient	0.26693	(0.03925)**	1.35	0.00464	(0.00415)	0.049	0.00027	(0.00046)	0.0051	41412
Unmarried	0.24456	(0.07785)**	1.28	0.00486	(0.00735)	0.050	-0.00019	(0.00032)	0.0076	6374
For-Profit Hospital	0.31748	(0.05329)**	1.07	-0.00175	(0.00661)	0.052	-0.00021	(0.00027)	0.0086	5547
Cesarean Section	0.22570	(0.08319)**	3.14	0.00909	(0.00570)	0.052	-0.00027	(0.00083)	0.0074	20777
Birthweight < 3000g	0.09485	(0.09228)	2.05	0.00836	(0.00636)	0.063	-0.00026	(0.00129)	0.0168	19937
High P(Readmission|X)	0.26061	(0.04092)**	1.49	-0.00017	(0.00397)	0.057	-0.00026	(0.00037)	0.00756	51520
Low P(Readmission|X)	0.22471	(0.02251)**	1.01	-0.00214	(0.00332)	0.033	0.00077	(0.00052)	0.00226	27239
Low Maternal Education	0.24245	(0.04515)**	1.29	0.00656	(0.00459)	0.045	0.00061	(0.00042)	0.0044	29431
Kaiser Hospital	0.08651	(0.05824)	1.15	-0.00559	(0.00538)	0.034	-0.000002	(0.00014)	0.0057	11176
Any Labor Complication	0.24057	(0.02893)**	1.27	-0.00004	(0.00305)	0.046	0.00010	(0.00031)	0.0050	69767
Scheduled Birth	0.27764	(0.04104)**	1.21	0.00201	(0.00419)	0.041	0.00050	(0.00044)	0.0038	30303
Any Pregnancy Complication	0.23126	(0.03095)**	1.28	-0.00033	(0.00325)	0.048	0.00001	(0.00037)	0.0055	62285
All Data	0.29971	(0.06152)**	2.10	0.00020	(0.00196)	0.045	0.00029	(0.00031)	0.0055	162427

Analyses use the 2 hour sample, which includes births from 11:02pm-11:55pm & 12:05am to 12:59am. The additional midnight models are estimated by OLS, and the readmission and mortality columns report marginal effects from a probit model, evaluated at the mean of the covariates. Models for unmarried do not include missing observations and only include 2 years in the post-law change period. Robust standard errors reported in parentheses. All models include full controls listed in Appendix Table A1, as well as mother age indicators, father age indicators, year of birth indicators and month of birth indicators. Number of observations listed is for the mortality model, which is a lower bound on the number of observations in that row, as some cells have zero deaths. ** = significant at 1%; * = significant at 5%.

Figure A1A: Low Birthweight vs. Minute of Birth:
Before the Law Change

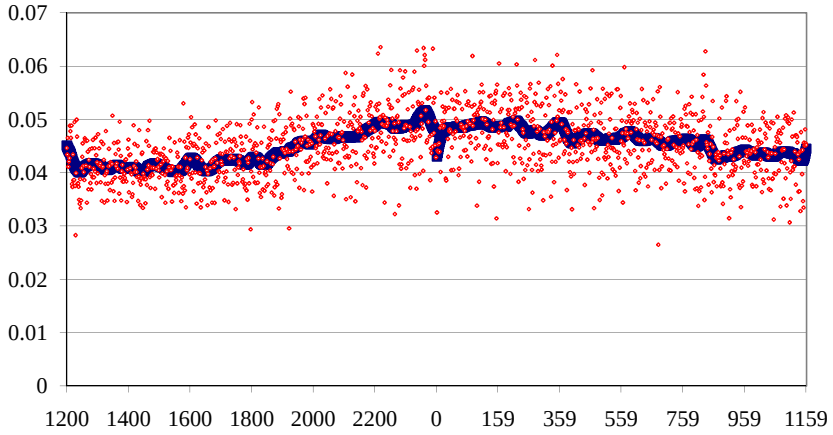


Figure A1B: P(28-Day Readmission|X) vs. Minute of Birth:
Before the Law Change

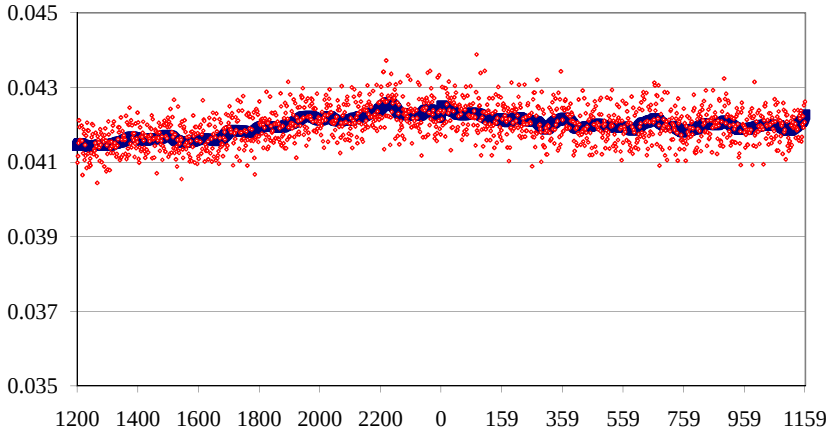


Figure A1C: Low Birthweight vs. Minute of Birth:
After the Law Change

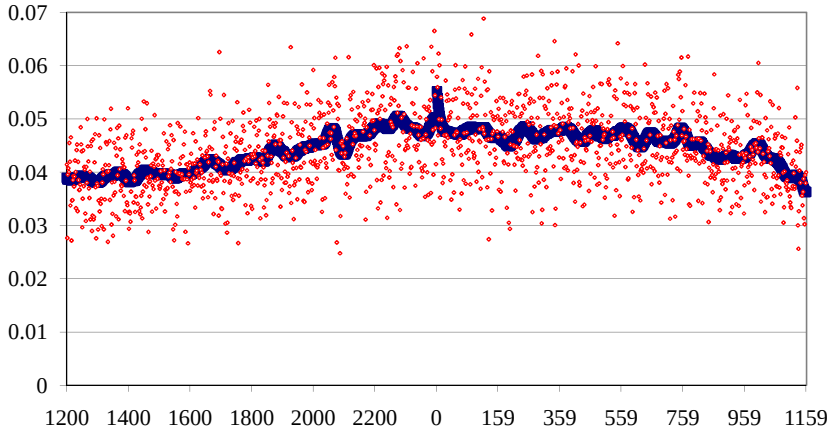
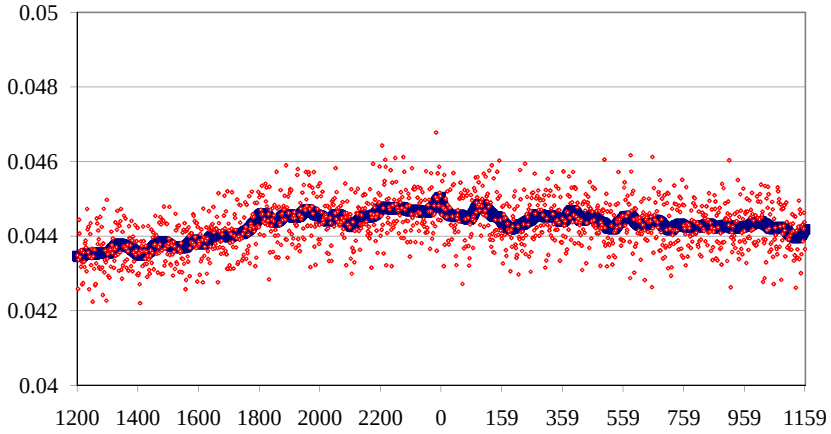


Figure A1D: P(28-Day Readmission|X) vs. Minute of Birth:
After the Law Change



Cell minute means are shown in red; local linear regression estimates (with a bandwidth of 20) are shown in blue. Predicted P(28-day readmission) used a probit model and full controls.

Figure A2A: Raw Length of Stay: Before 1997 Law Change

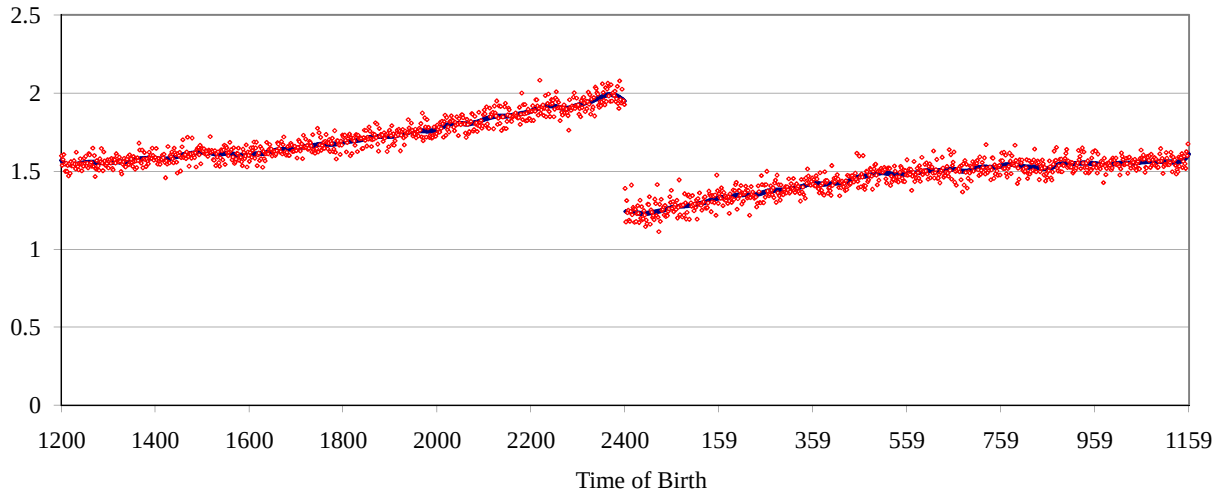
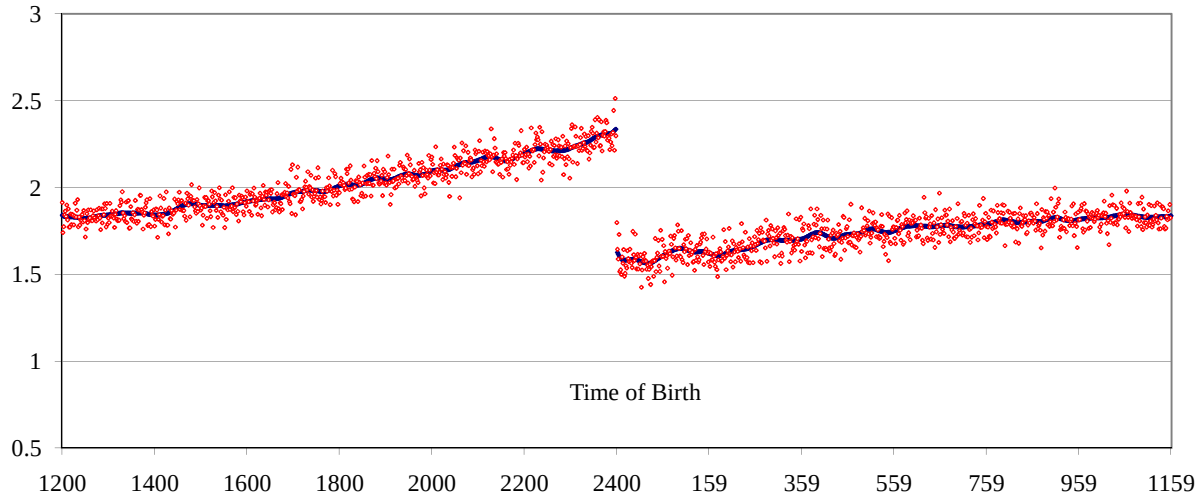


Figure A2B: Raw Length of Stay: After 1997 Law Change



Raw length of stay is the number of midnights in care. Points represent means within 1-minute intervals from 12:00 noon to 11:59am. Lines represent local linear regressions, h=20. The intercepts between Figures A2A and A2B differ so that they have the same scale.

Figure A3A: Bandwidth of 10:
Additional Midnights Before Law Change

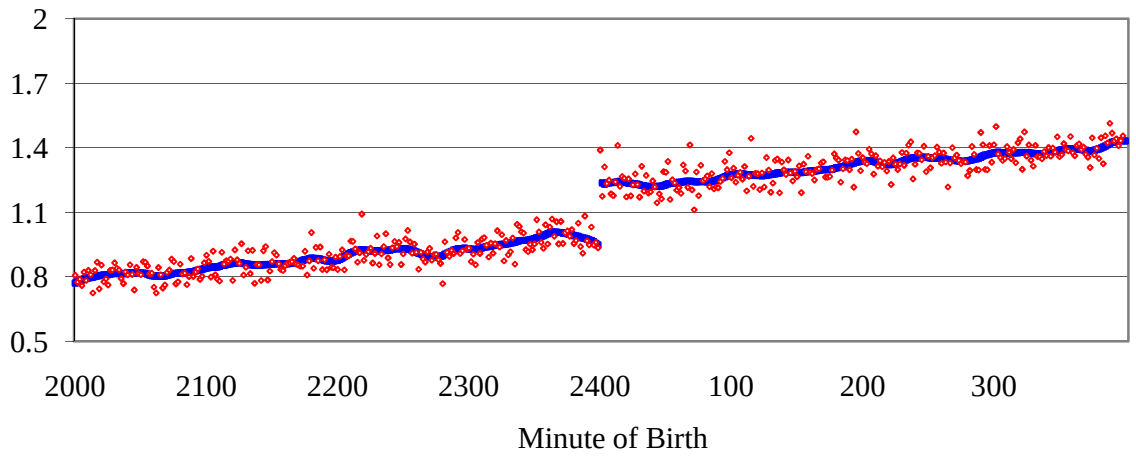


Figure A3B: Bandwidth of 10:
Additional Midnights After Law Change

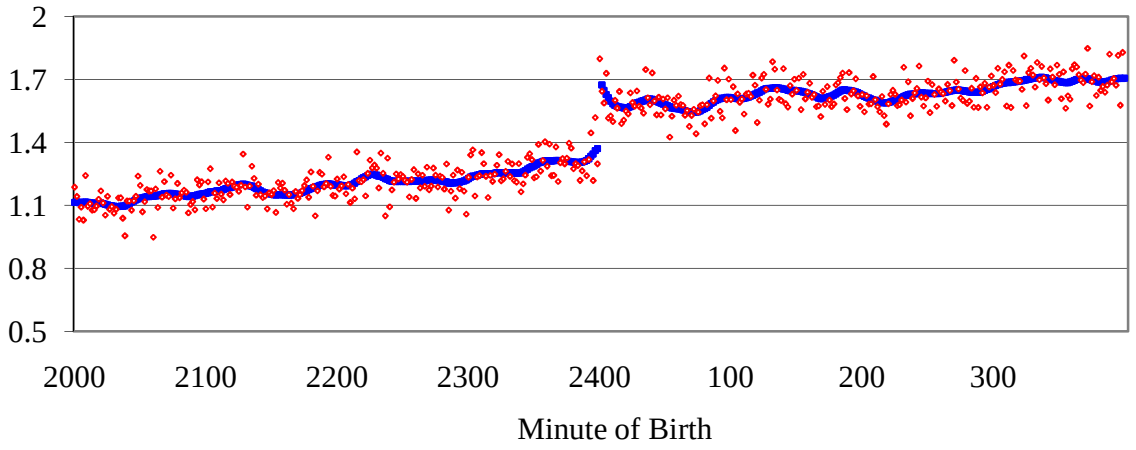


Figure A4A: 1 or More Additional Midnights: Before Law Change

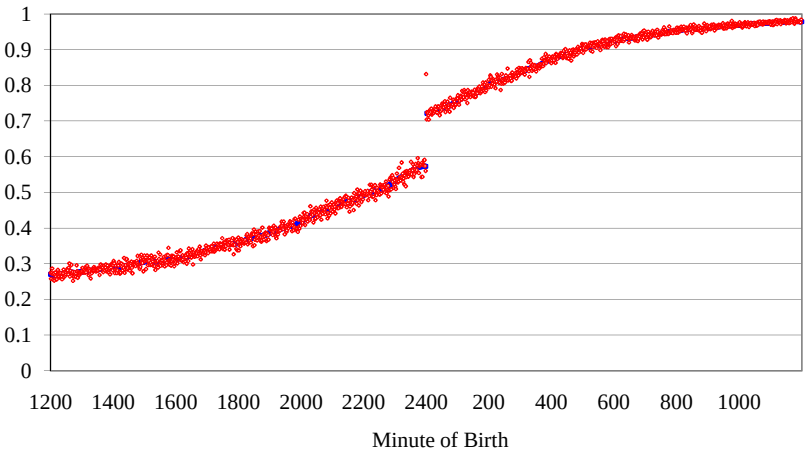


Figure A4B: 2 or More Additional Midnights: Before Law Change

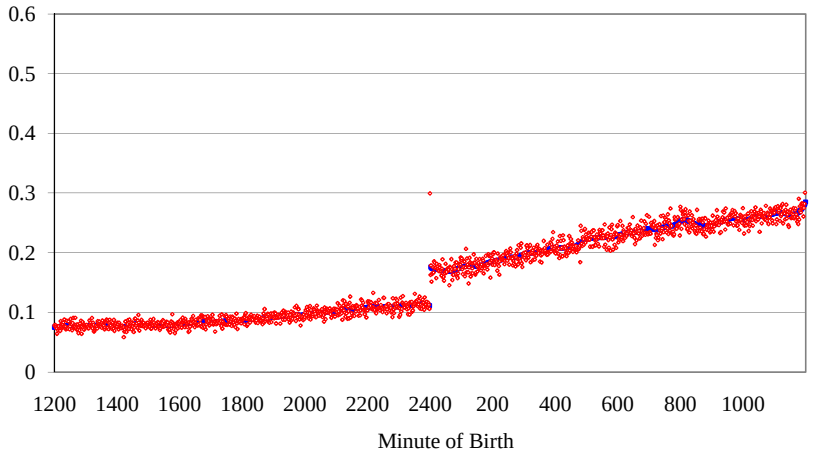


Figure A4C: 1 or More Additional Midnights: After Law Change

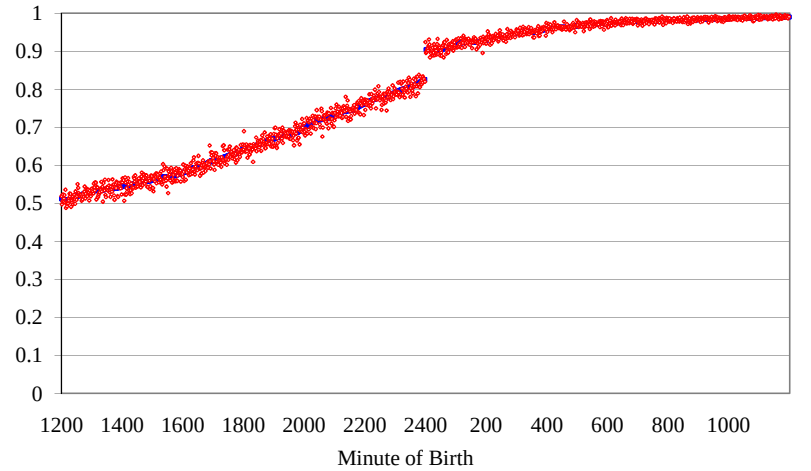
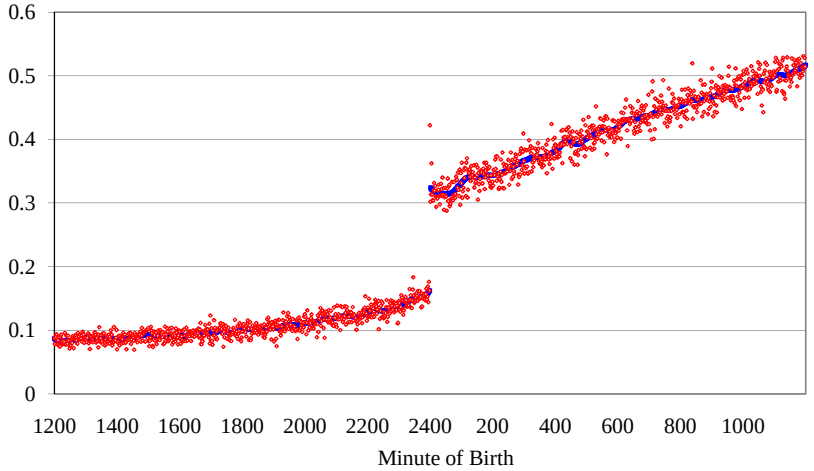


Figure A4D: 2 or More Additional Midnights: After Law Change



Number of additional midnights is the number of midnights for those born on or after midnight and before noon, while the number of additional midnights is measured as the number of midnights minus one for children born after noon and before midnight. Points represent means within 1-minute intervals from 12:00 noon to 11:59am. Lines represent local linear regressions, h=20

Figure A5A: 7-Day Readmission Rate: Before Law Change

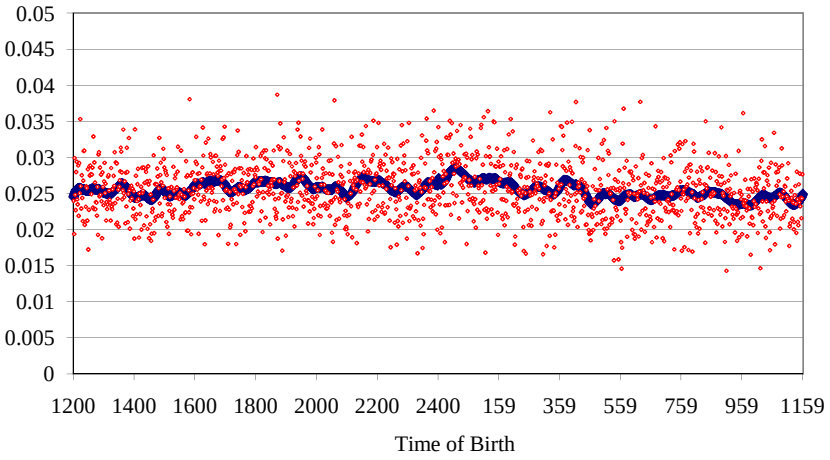


Figure A5B: Infant Mortality Rate: Before Law Change

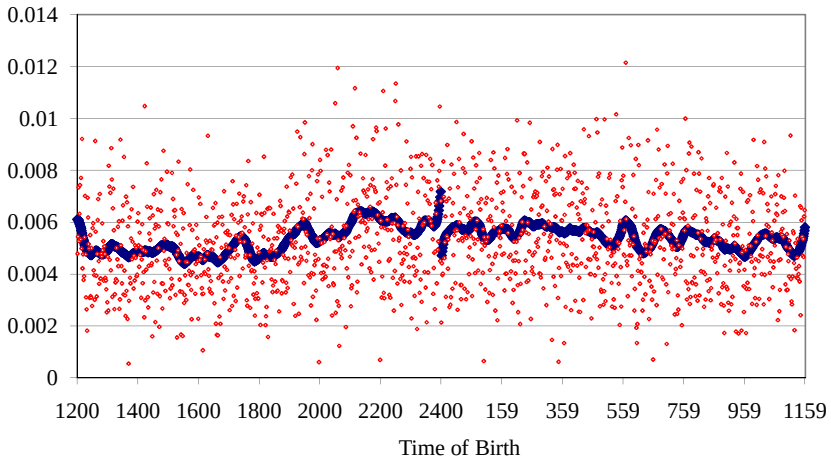


Figure A5C: 7-Day Readmission Rate: After Law Change

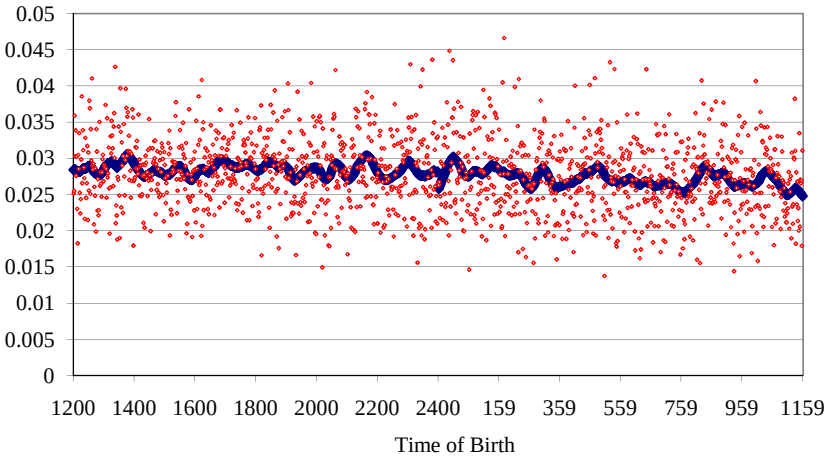
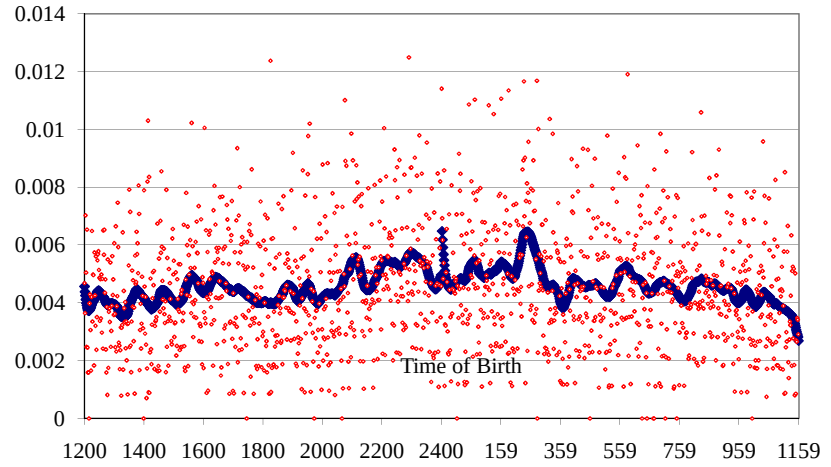


Figure A5D: Infant Mortality Rate: After Law Change



7-day measures consider 7 days since the midnight prior to those born between midnight and noon, and 7 days since the following midnight for those born between noon and midnight. Points represent means within 1-minute intervals from 12:00 noon to 11:59am. Lines represent local linear regressions, h=20

Figure A6A: Bandwidth of 10:
7-Day Readmission Rate Before Law Change

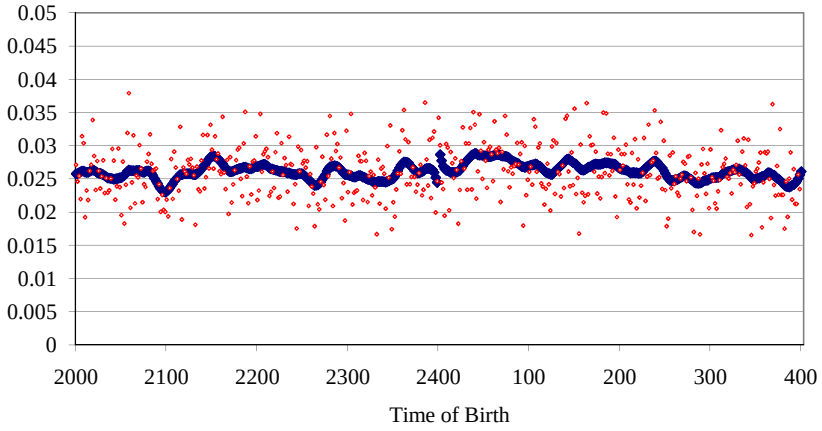


Figure A6B: Bandwidth of 10:
Infant Mortality Rate: Before Law Change

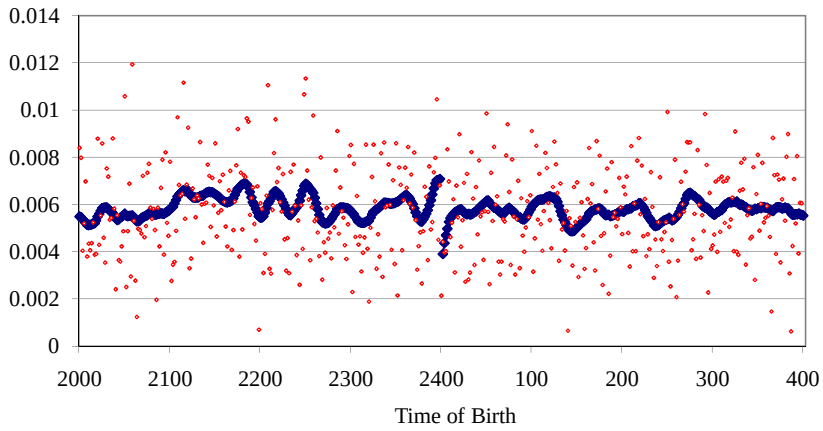


Figure A6C: Bandwidth of 10:
28-Day Readmission Rate: Before Law Change

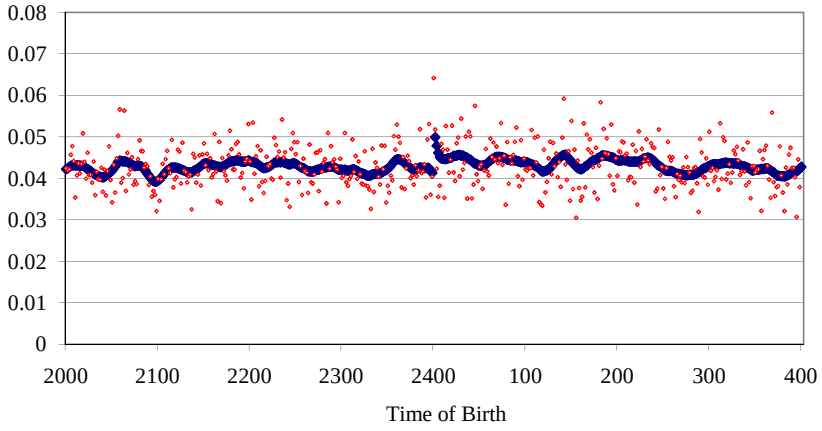


Figure A6D: Bandwidth of 10:
28-Day Mortality Rate: Before Law Change

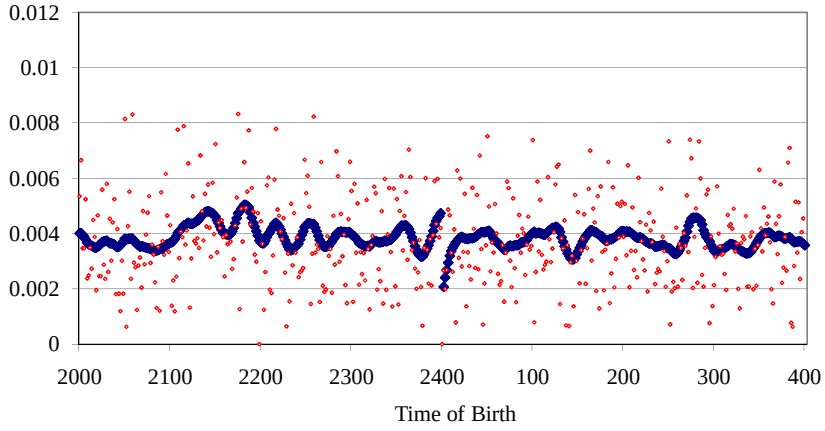


Figure A7A: Bandwidth of 10:
7-Day Readmission Rate: After Law Change

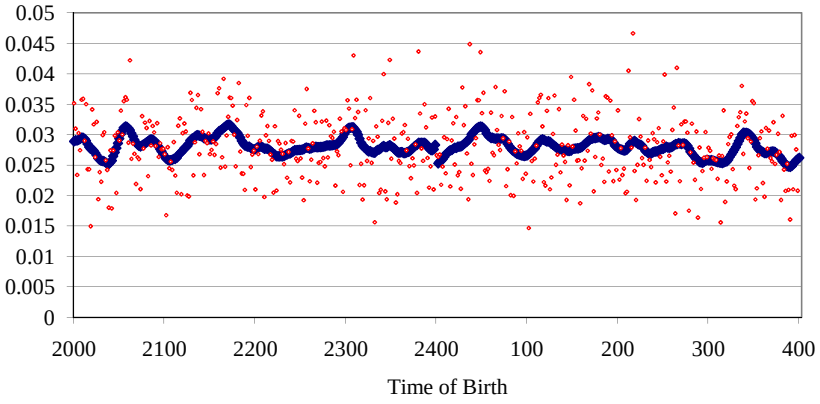


Figure A7B: Bandwidth of 10:
Infant Mortality Rate: After Law Change

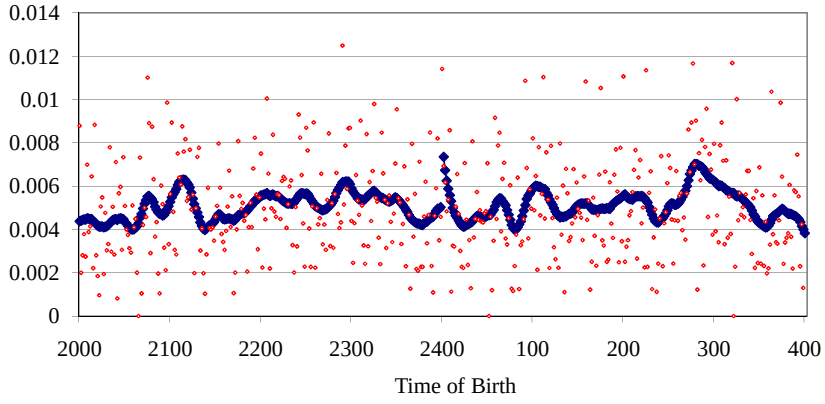


Figure A7C: Bandwidth of 10:
28-Day Readmission Rate: After Law Change

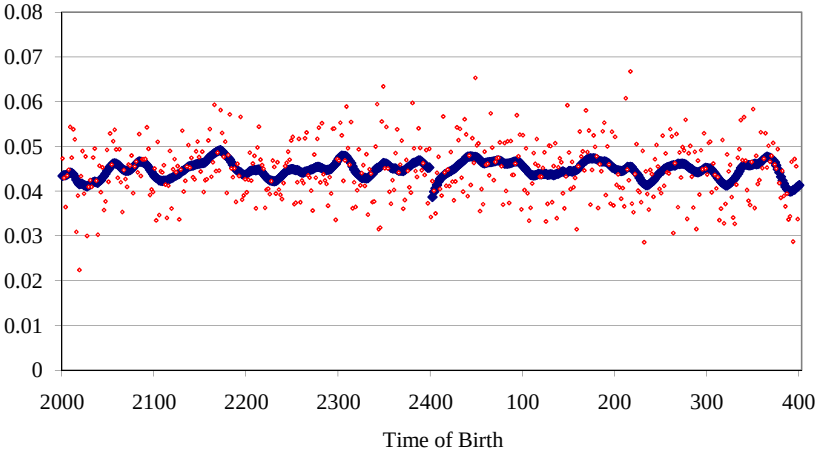
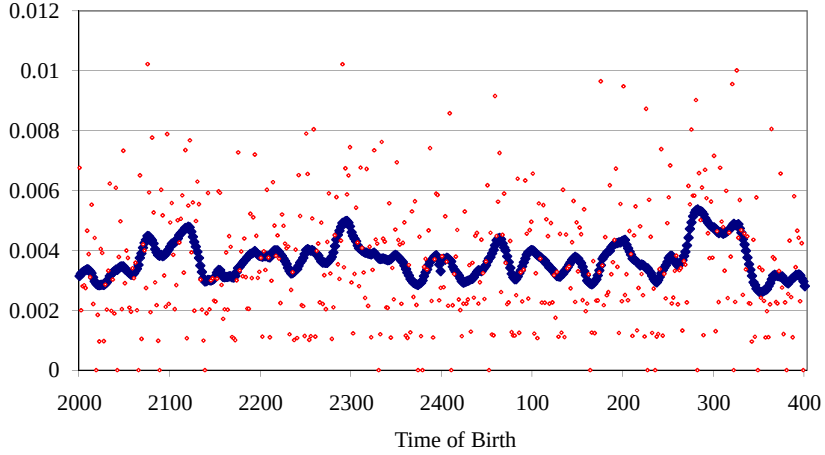


Figure A7D: Bandwidth of 10:
28-Day Mortality Rate: After Law Change



28-day measures consider 28 days since the midnight being compared. Points represent means within 1-minute intervals, lines represent local linear regressions, h=10

Figure A8A: 3-28 Day Readmissions vs. Minute of Birth:
Before the Law Change

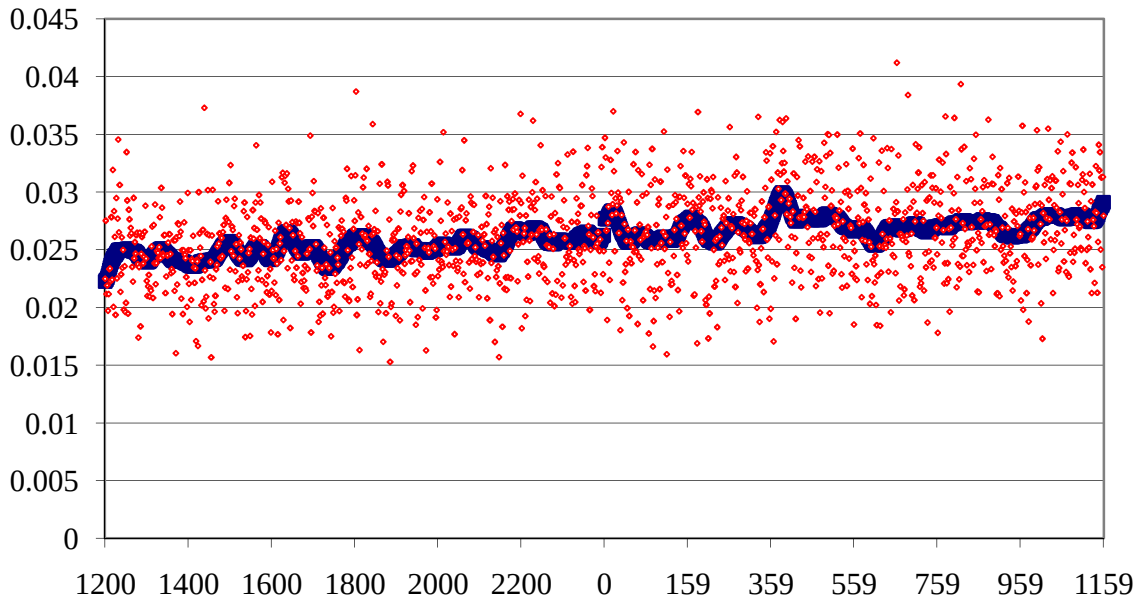
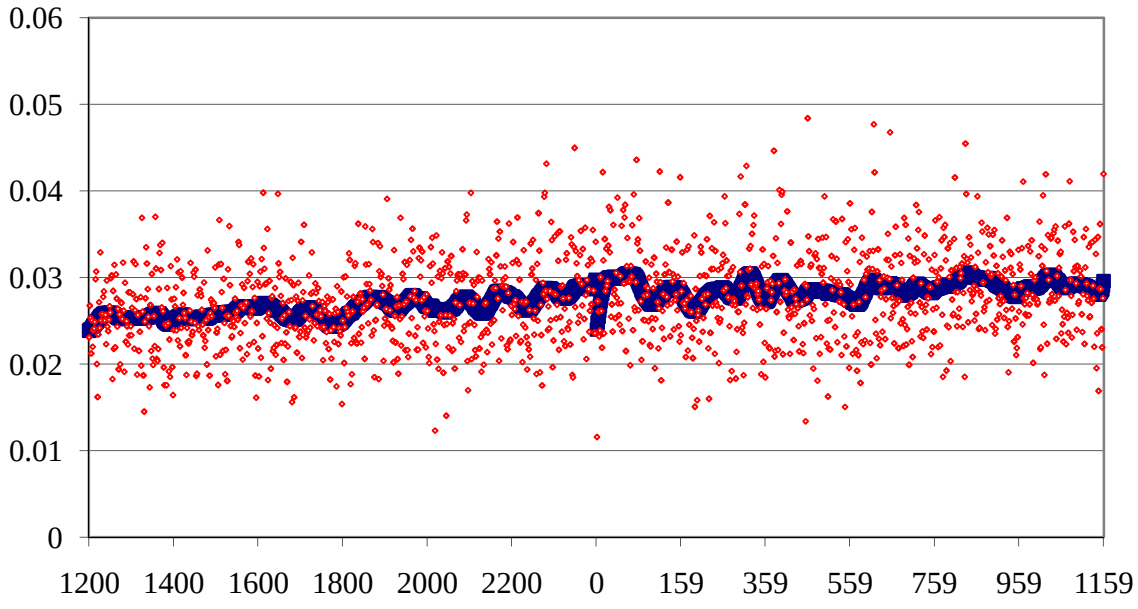


Figure A8B: 3-28 Day Readmissions vs. Minute of Birth:
After the Law Change



28-day measures consider 28 days since the midnight being compared. Points represent means within 1-minute intervals, lines represent local linear regressions, h=20