

Online Appendix for
"Parental Time Allocation and Gender Disparities: The Role
of Child Tax Credit Reform"

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Appendix. Figures and Tables

Table A1: Summary Statistics

	Observations	Mean	Std. Dev.	Min.	Max.
Dependent Variables					
<i>Probability of Engaging in a Specific Activity</i>					
Prob_Housework	15782	0.880	0.325	0	1
Prob_Leisure	15782	1.000	0.000	1	1
Prob_Work	15782	0.500	0.500	0	1
Prob_Childcare	15782	0.656	0.475	0	1
Prob_Others	15782	0.080	0.271	0	1
<i>Amount of Time Spent in a Specific Activity</i>					
Home Production	15782	186.732	171.647	0	1320
Leisure	15782	912.119	242.256	15	1440
Work	15782	237.398	283.595	0	1350
Childcare	15782	95.352	125.558	0	1140
Others	15782	8.399	45.967	0	955
Independent Variables					
Female	15782	0.566	0.496	0	1
Age	15782	40.015	8.896	18	65
Married	15782	0.730	0.444	0	1
Spouse Present	15782	0.713	0.452	0	1
Number of Children	15782	1.931	0.953	1	9
Age of the Youngest Child	15782	6.765	5.081	0	17
Household Size	15782	3.946	1.230	2	15
Whether in Labor Force	15782	0.834	0.372	0	1
Weekend	15782	0.495	0.500	0	1
<i>Race Indicator</i>					
White	15782	0.796	0.403	0	1
Black	15782	0.100	0.300	0	1
Hispanics	15782	0.007	0.085	0	1
Asian	15782	0.079	0.270	0	1
Other Race	15782	0.017	0.131	0	1
<i>Education Levels</i>					
Less than High School	15782	0.095	0.294	0	1
High School Graduate	15782	0.208	0.406	0	1
Some College	15782	0.259	0.438	0	1
Bachelor's Degree	15782	0.268	0.443	0	1
Postgraduate	15782	0.170	0.376	0	1

Data Source: American Time Use from 2008 to 2021.

Table A2: Activity Categories

Category	Subcategory	Activity	ATUS Activity Code
Work and Work-related Activity		Work, the main job	05.XXXX
		Travel related to working	18.05.XX
		Physical care for household children	03.01.01
Child Care	Basic Child Care	Talking with or listening to household children	03.01.06
		Helping or teaching household children (not related to education) (2003)	03.01.07
		Organization and planning for household children	03.01.08
		Looking after household children (as a primary activity)	03.01.09
		Waiting for or with household children	03.01.11
		Picking up or dropping off household children	03.01.12
		Caring for and helping household children, n.e.c.	03.01.99
		Activities related to Children's Health	03.03.XX
		Physical care for non-household children	04.01.01
		Talking with or listening to non-household children	04.01.06
		Helping or teaching non-household children (not related to education) (2003)	04.01.07
		Organization and planning for non-household children	04.01.08
		Looking after non-household children (as primary activity)	04.01.09
		Waiting for or with non-household children	04.01.11
		Dropping off or picking up non-household children	04.01.12
		Caring for and helping non-household children, n.e.c.	04.01.99
		Activities Related to Nonhousehold Children's Health	04.03.XX
		Childcare services (Paid)	08.01.XX
		Travel related to caring for & helping hh children, inclusive	18.03.01
		Travel related to caring for & helping hh children	18.03.02
		Travel related to hh children's health	18.03.04
		Travel related to using childcare services	18.08.01
	Educational Child Care	Reading to or with household children	03.01.02
		Activities related to Household Children's education	03.02.XX
		Reading to or with non-household children	04.01.02
		Activities Related to Non-household Children's Education	04.02.XX
	Recreational Child Care	Travel related to household children's education	18.03.03
		Playing with household children, not sports	03.01.03
		Arts and crafts with household children	03.01.04
		Playing sports with household children	03.01.04
		Attending household children's events	03.01.10
		Playing with non-household children, not sports	04.01.03
		Arts and crafts with non-household children	04.01.04
		Playing sports with non-household children	04.01.05
Housework		Attending non-household children's events	04.01.10
		Housework	02.01.XX
		Food & Drink Preparation, Presentation, & Clean-up	02.02.XX
		Interior Maintenance, Repair & Decoration	02.03.XX
		Exterior Maintenance, Repair & Decoration	02.04.XX
		Lawn, Garden, and Houseplants	02.05.XX
		Vehicles	02.07.XX
		Appliances, Tools, and Toys	02.08.XX
		Household Management	02.09.XX
		Household activities, n.e.c.	02.99.XX
		Caring for Household Adults	03.04.XX
		Helping Household Adults	03.05.XX
		Caring For & Helping HH Members, n.e.c.	03.99.XX
		Caring For Nonhousehold Adults	04.04.XX
		Helping Nonhousehold Adults	04.05.X
		Caring for and Helping Nonhousehold Members	04.99.X
		Grocery shopping	07.01.XX
		Comparison shopping	07.02.XX
		Security Procedures Related to Consumer Purchases	07.03.XX
		Government Services and Civic Obligations	10.XXXX
		Religious and Spiritual Activities	14.XXXX
		Volunteer Activities	15.XXXX

Category	Subcategory	Activity	ATUS Activity Code
Housework		Medical and Care Services	08.04.XX
		Financial Services and Banking	08.02.XX
		Legal Services	08.03.XX
		Medical and Care Services	08.04.XX
		Personal Care Services	08.05.XX
		Real Estate	08.06.XX
		Veterinary Services (excluding grooming)	08.07.XX
		Security Procedures Related to Professional/Personal Services	08.08.XX
		Professional and Personal Services, not elsewhere classified	08.99.XX
		Household Services	09.XXXX
		Travel related to housework	18.02.XX
		Travel related to caring for hh adults	18.03.05
		Travel related to helping hh adults	18.03.06
		Travel related to caring for and helping household adults (2003, 2004)	18.03.07
		Travel rel. to caring for & helping hh members, n.e.c.	18.03.99
		Travel Related to Caring For and Helping Nonhousehold Members	18.04.XX
		Travel related to grocery shopping	18.07.XX
		Travel related to using financial services and banking	18.08.02
		Travel related to using legal services	18.08.03
		Travel related to using medical services	18.08.04
		Travel related to using real estate services	18.08.06
		Travel related to using veterinary services	18.08.07
		Travel related to using household services	18.09.XX
Leisure		Personal Care Activities	01.XXXX
		Animals and Pets	02.06.XX
		Eating and Drinking	11.XXXX
		Socializing and Communicating	12.XXXX
		Sports, Exercise, and Recreation	13.XXXX
		Telephone Calls	16.XXXX
		Travel related to personal care	18.01.XX
		Travel related to using personal care services	18.08.05
		Travel rel. to using professional. & personal care services.	18.08.99
		Travel related to eating and drinking	18.11.XX
		Travel Related to Socializing, Relaxing, and Leisure	18.12.XX
		Travel Related to Sports, Exercise, & Recreation	18.13.XX
		Travel Related to Phone Calls	18.16.XX

Table A3: CTC Expansion's Impact on Parental Time With Children (Probability)

	Total Child Care (1)	Basic Child Care (2)	Educational Child Care (3)	Recreational Child Care (4)
intensity $\times$ post	-0.2892** (0.1449)	-0.3366*** (0.1266)	-0.0362 (0.1293)	0.1882* (0.1101)
Observations	15,782	15,782	15,782	15,782
R-squared	0.2930	0.2938	0.1679	0.2080
Individual Controls	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Month FE	✓	✓	✓	✓
Weekend FE	✓	✓	✓	✓
County FE	✓	✓	✓	✓
State-Year FE	✓	✓	✓	✓

Notes: The dependent variable is binary and equals one if the parent spends time on childcare (total, basic, educational, or recreational), and zero otherwise. Thus, if a parent spent time feeding, bathing, physically attending to health needs, or putting a child to sleep, they were coded as engaging in basic care. Educational care includes reading to or with children or any other educational activity directly related to children. Recreational care includes playing with children, arts and crafts, or attending children's events. Individual controls include gender, age, race, marital status, educational attainment, labor force participation, age of the youngest child, family size, and year, county, and state-year fixed effects. All regressions are weighted by ATUS weights, and standard errors in parentheses are clustered on the county level. Source: ATUS 2008 to 2021. *significant at 10%; **significant at 5%; ***significant at 1%.

Table A4: Robustness Checks: Impact of CTC Reform on Fertility and Marriage Decision

	Probability of Having Children			Number of Children			Probability of Getting Married		
	All (1)	Men (2)	Women (3)	All (4)	Men (5)	Women (6)	All (7)	Men (8)	Women (9)
Panel A: All Years									
intensity $\times$ post	0.0492 (0.0566)	0.0854 (0.0779)	-0.0073 (0.0759)	0.1885 (0.1618)	0.3653* (0.2158)	-0.0785 (0.2264)	-0.0575 (0.0993)	0.1002 (0.1405)	-0.1487 (0.1237)
Observations	32,939	15,666	17,240	32,939	15,666	17,240	32,939	15,666	17,240
R-squared	0.6774	0.6973	0.6937	0.5812	0.6116	0.6023	0.2711	0.3438	0.2615
Panel B: Excluding 2021 (Pandemic Baby)									
intensity $\times$ post	0.0106 (0.0646)	0.0207 (0.0952)	0.0058 (0.0847)	-0.0045 (0.1647)	0.1574 (0.2577)	-0.1616 (0.2120)	-0.0329 (0.1027)	0.1574 (0.1362)	-0.0832 (0.1387)
Observations	31,038	14,737	16,267	31,038	14,737	16,267	31,038	14,737	16,267
R-squared	0.6753	0.6967	0.6912	0.5811	0.6137	0.6012	0.2707	0.3458	0.2599
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Month FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Weekend FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
State-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: All regressions are weighted by ATUS weights, and standard errors in parentheses are clustered on the county level. Individual controls include gender, age, race, marital status, number of children under 17, labor force participation, age of the youngest child, family size, as well as year, county, and state-year fixed effects. Source: ATUS 2008 to 2021. *significant at 10%; **significant at 5%; ***significant at 1%.

Table A5: Robustness Checks: Impact of CTC Reform on Migration Decision

	Moving Within Same County			Moving Within Same State			Moving Across States		
	All	Fathers	Mothers	All	Fathers	Mothers	All	Fathers	Mothers
Panel A: All Years									
intensity $\times$ post	-0.0649 (0.0558)	-0.1804*** (0.0691)	0.0557 (0.0470)	0.0049 (0.0160)	0.0336* (0.0195)	-0.0183 (0.0284)	0.0084 (0.0112)	0.0062 (0.0154)	-0.0091 (0.0167)
Observations	15,782	6,816	8,899	15,782	6,816	8,899	15,782	6,816	8,899
R-squared	0.1427	0.2139	0.1860	0.0996	0.1630	0.1867	0.1054	0.1712	0.1608
Panel B: Excluding 2020 & 2021 (Pandemic Moving)									
intensity $\times$ post	-0.0821 (0.0782)	-0.2216** (0.0943)	0.0407 (0.0658)	0.0030 (0.0290)	0.0425* (0.0240)	-0.0237 (0.0584)	-0.0002 (0.0110)	-0.0061 (0.0164)	-0.0147 (0.0147)
Observations	14,238	6,132	8,044	14,238	6,132	8,044	14,238	6,132	8,044
R-squared	0.1471	0.2181	0.1978	0.1080	0.1761	0.1987	0.1145	0.1769	0.1700
Individual controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Month FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Weekend FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
State-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: All regressions are weighted by ATUS weights, and standard errors in parentheses are clustered on the county level. Individual controls include gender, age, race, marital status, number of children under 17, labor force participation, age of the youngest child, family size, as well as year, county, and state-year fixed effects. Source: ATUS 2008 to 2021. *significant at 10%; **significant at 5%; ***significant at 1%.

Table A6: CTC's Impact on Parental Time Allocation (Excluding Impact of School Closure)

	Probability					Minutes Per Day				
	Housework (1)	Leisure (2)	Work (3)	Childcare (4)	Others (5)	Housework (6)	Leisure (7)	Work (8)	Childcare (9)	Others (10)
Panel A: All Parents										
intensity $\times$ post	-0.2429** (0.1068)		-0.1460 (0.1096)	-0.2147 (0.1589)	0.0784 (0.1132)	-70.882 (44.814)	67.481 (64.011)	14.494 (76.608)	-15.938 (30.768)	4.844 (9.588)
Observations	15,047		15,047	15,047	15,047	15,047	15,047	15,047	15,047	15,047
R-squared	0.1449		0.4956	0.2890	0.0870	0.253	0.326	0.488	0.284	0.063
Panel B: Mothers										
intensity $\times$ post	-0.067 (0.101)		-0.287* (0.163)	-0.352* (0.202)	0.073 (0.137)	-56.767 (58.394)	172.925** (80.740)	-85.399 (89.331)	-33.314 (43.650)	2.554 (17.944)
Observations	8,484	8,484	8,484	8,484	8,484	8,484	8,484	8,484	8,484	8,484
R-squared	0.116		0.488	0.308	0.130	0.245	0.342	0.453	0.339	0.088
Panel C: Fathers										
intensity $\times$ post	-0.454** (0.196)		-0.031 (0.159)	-0.001 (0.218)	0.024 (0.155)	-106.060 (74.419)	-24.735 (109.868)	117.889 (125.621)	20.457 (58.595)	-7.550 (11.255)
Observations	6,498	6,498	6,498	6,498	6,498	6,498	6,498	6,498	6,498	6,498
R-squared	0.173		0.460	0.304	0.170	0.230	0.380	0.453	0.240	0.132
Individual Controls	✓		✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓		✓	✓	✓	✓	✓	✓	✓	✓
Weekend FE	✓		✓	✓	✓	✓	✓	✓	✓	✓
Month FE	✓		✓	✓	✓	✓	✓	✓	✓	✓
County FE	✓		✓	✓	✓	✓	✓	✓	✓	✓
State-Year FE	✓		✓	✓	✓	✓	✓	✓	✓	✓

Notes: The outcome variable in Columns 1 to 5 is the probability of engaging in a specific activity. Since leisure is a universal activity, it is impossible to estimate the probability of participation in Column (2). In contrast, the dependent variable in Columns 6 to 10 is the amount of time spent on each activity. Individual controls include gender, age, race, marital status, educational attainment, labor force participation, age of the youngest child, presence of a spouse, family size, and weekend, year, county, and state-year fixed effects. ATUS weights are included in all regressions, and standard errors in parentheses are clustered on the county level. Source: ATUS 2008 to 2021. *significant at 10%; **significant at 5%; ***significant at 1%.

Table A7: CTC's Impact on Parental Time Allocation - Alternative Measurement (Probability)

	Housework (1)	Leisure (2)	Work (3)	Childcare (4)	Others (5)
Panel A: All Parents					
intensity $\times$ post	-0.0202 (0.0271)		-0.0532 (0.0383)	0.0188 (0.0254)	0.0127 (0.0278)
Observations	33,886	33,886	33,886	33,886	33,886
R-squared	0.0697		0.3433	0.2297	0.0273
Panel B: Mothers					
intensity $\times$ post	-0.0296* (0.0172)		-0.1251*** (0.0268)	-0.0170 (0.0485)	0.0261 (0.0302)
Observations	19,054	19,054	19,054	19,054	19,054
R-squared	0.0227		0.3654	0.2205	0.0276
Panel C: Fathers					
intensity $\times$ post	-0.0001 (0.0486)		0.0411 (0.0812)	0.0508 (0.0616)	0.0010 (0.0301)
Observations	14,832	14,832	14,832	14,832	14,832
R-squared	0.0263		0.2553	0.1785	0.0317
Individual Controls	✓		✓	✓	✓
Year FE	✓		✓	✓	✓
Month FE	✓		✓	✓	✓
Weekend FE	✓		✓	✓	✓
State FE	✓		✓	✓	✓

Notes: The outcome variable in this table measures the probability of engaging in a specific activity. Since leisure is a universal activity, it is impossible to estimate the probability of participation in Column (2). The treatment intensity represents the childcare expenditure relative to the total childcare-related expenses within a state. Individual controls include gender, age, race, marital status, educational attainment, labor force participation, age of the youngest child, presence of a spouse, family size and year, and state-fixed effects. ATUS weights are included in all regressions, and standard errors in parentheses are clustered on the state level. Data Source: 2008 - 2016 Consumer Expenditure Survey. *significant at 10%; **significant at 5%; ***significant at 1%.

Table A8: CTC Expansion's Impact on Maternal Time Allocation

	Probability					Minutes Per Day				
	Housework (1)	Leisure (2)	Work (3)	Childcare (4)	Others (5)	Housework (6)	Leisure (7)	Work (8)	Childcare (9)	Others (10)
Panel A: All Mothers intensity × post	-0.1244 (0.0898)		-0.2244 (0.1567)	-0.3770** (0.1851)	0.1033 (0.1611)	-114.509* (58.244)	134.506* (72.381)	-42.063 (87.579)	-7.468 (41.236)	29.534 (31.936)
Observations	8,899	8,899	8,899	8,899	8,899	8,899	8,899	8,899	8,899	8,899
R-squared	0.1184		0.4858	0.3127	0.1349	0.250	0.340	0.450	0.342	0.123
Panel B: Mothers with One Child intensity × post	0.399** (0.161)		-0.810*** (0.276)	-0.226 (0.301)	-0.120 (0.265)	-16.626 (87.236)	364.908** (177.464)	-391.273** (186.430)	-17.255 (69.906)	60.247 (59.342)
Observations	3,315	3,315	3,315	3,315	3,315	3,315	3,315	3,315	3,315	3,315
R-squared	0.259		0.540	0.403	0.251	0.322	0.441	0.534	0.434	0.212
Panel C: Mothers with Multiple Children intensity × post	-0.315*** (0.111)		-0.007 (0.203)	-0.400* (0.238)	0.190 (0.177)	-153.422** (77.219)	-2.676 (93.997)	81.194 (125.653)	48.108 (53.835)	26.797 (36.924)
Observations	5,466	5,466	5,466	5,466	5,466	5,466	5,466	5,466	5,466	5,466
R-squared	0.196		0.534	0.357	0.207	0.306	0.379	0.494	0.382	0.201
Individual Controls	✓		✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓		✓	✓	✓	✓	✓	✓	✓	✓
Weekend FE	✓		✓	✓	✓	✓	✓	✓	✓	✓
Month FE	✓		✓	✓	✓	✓	✓	✓	✓	✓
County FE	✓		✓	✓	✓	✓	✓	✓	✓	✓
State-Year FE	✓		✓	✓	✓	✓	✓	✓	✓	✓

Notes: The outcome variable in Columns 1 to 5 is the probability of engaging in a specific activity. Since leisure is a universal activity, it is impossible to estimate the probability of participation in Column (2). In contrast, the dependent variable in Columns 6 to 10 is the amount of time spent on each activity. Individual controls include gender, age, race, marital status, educational attainment, labor force participation status, age of the youngest child, presence of a spouse, family size, and weekend, year, county, and state-year fixed effects. ATUS weights are included in all regressions, and standard errors in parentheses are clustered on the county level. Source: ATUS 2008 to 2021. *significant at 10%; **significant at 5%; ***significant at 1%.

Table A9: CTC Expansion's Impact on Parental Time Allocation by Family Income

	Probability					Minutes Per Day				
	Housework (1)	Leisure (2)	Work (3)	Childcare (4)	Others (5)	Housework (6)	Leisure (7)	Work (8)	Childcare (9)	Others (10)
Panel A: Family Annual Income 50,000 or More intensity × post	-0.1781 (0.1250)		-0.1775 (0.1288)	-0.1781 (0.2127)	0.1703 (0.1120)	-132.284** (65.116)	167.339** (74.846)	-26.184 (89.558)	-48.523 (39.354)	39.652*** (14.268)
Observations	9,838	9,838	9,838	9,838	9,838	9,838	9,838	9,838	9,838	9,838
R-squared	0.1666		0.4751	0.3402	0.1290	0.283	0.333	0.474	0.318	0.110
Panel B: Family Annual Income Below 50,000 intensity × post	-0.122 (0.211)		-0.234 (0.221)	-0.634** (0.292)	0.081 (0.165)	6.880 (89.299)	-0.032 (103.592)	-24.976 (128.325)	21.820 (67.391)	-3.693 (21.102)
Observations	5,834	5,834	5,834	5,834	5,834	5,834	5,834	5,834	5,834	5,834
R-squared	0.240		0.499	0.340	0.186	0.290	0.362	0.474	0.346	0.191
Individual Controls	✓		✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓		✓	✓	✓	✓	✓	✓	✓	✓
Weekend FE	✓		✓	✓	✓	✓	✓	✓	✓	✓
Month FE	✓		✓	✓	✓	✓	✓	✓	✓	✓
County FE	✓		✓	✓	✓	✓	✓	✓	✓	✓
State-Year FE	✓		✓	✓	✓	✓	✓	✓	✓	✓

Notes: The outcome variable in Columns 1 to 5 is the probability of engaging in a specific activity. Since leisure is a universal activity, it is impossible to estimate the probability of participation in Column (2). In contrast, the dependent variable in Columns 6 to 10 is the amount of time spent on each activity. Individual controls include gender, age, race, marital status, educational attainment, labor force participation status, age of the youngest child, presence of a spouse, family size, and weekend, year, county, and state-year fixed effects. ATUS weights are included in all regressions, and standard errors in parentheses are clustered on the county level. Source: ATUS 2008 to 2021. *significant at 10%; **significant at 5%; ***significant at 1%.

We show the plausibility of the common trend assumption using two-way fixed-effect regressions with leads and lags of treatment, as shown in the following equation:

$$Y_{icdy} = \sum_{t=2008}^{2016} \gamma_t Intensity_c \times Lead_t + \sum_{t=2018}^{2021} \gamma_t Intensity_c \times Lag_t + \theta X_{icdy} + Weekend_{icdy} + Month_{icdy} + \lambda_y + \lambda_c + \lambda_{sy} + \varepsilon_{icdy}. \quad (1)$$

The test sample contains nine pre-reform (2008 – 2016) and four post-reform (2018 – 2021) years and sets the year before CTC reform (2017) to be zero. The interaction terms between a specific year and *Intensity* test for differences between regions with varying treatment intensity, conditional on a full set of county and time effects, and include all covariates. This experiment not only provides compelling evidence in support of our DD estimation but also enhances our understanding of how time allocations to childcare vary over time.

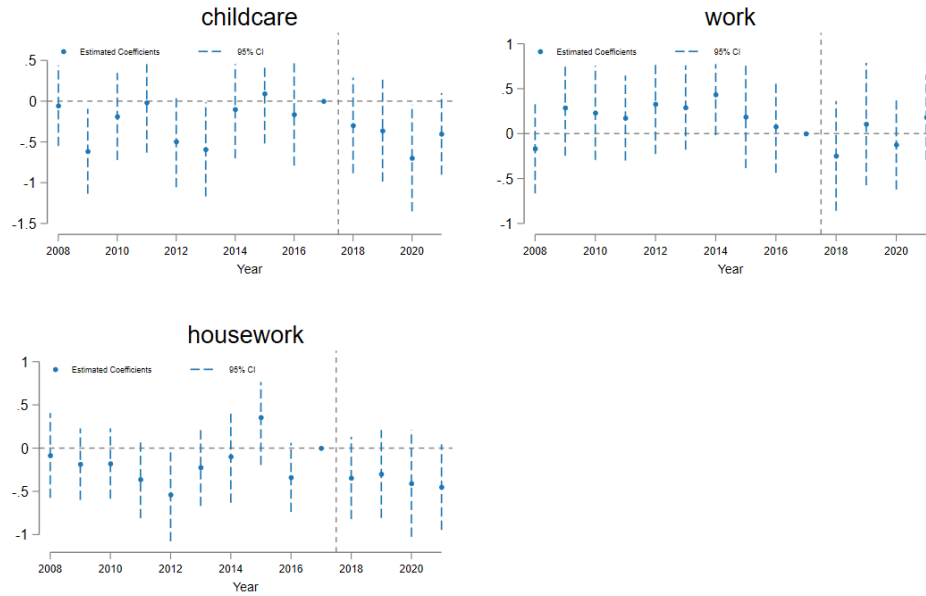
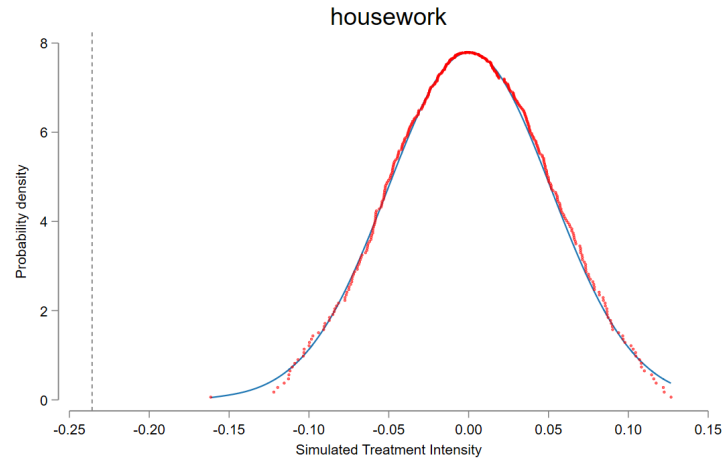
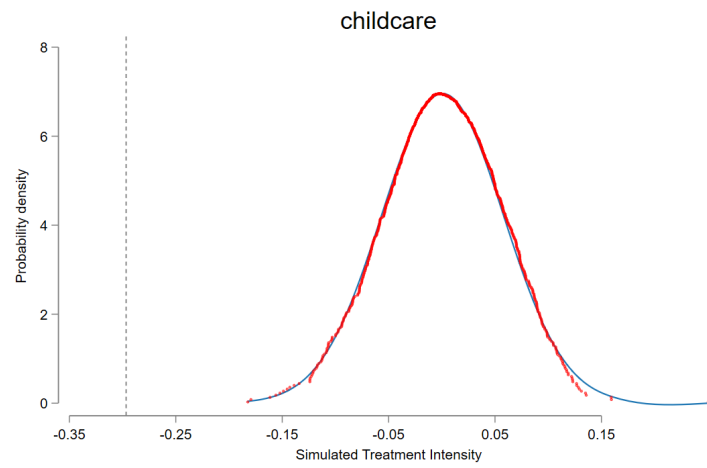


Figure A1: Event Study Results

Note: Time Use diary is from ATUS. The dependent variables are the probability of engaging in childcare, housework, and paid work-related activities. Equation 1 is estimated for various activities, and the coefficients γ_t for 9 periods before the reform and 4 periods after reform are reported. We also report the 95% confidence interval.



(a) Housework



(b) Childcare

Figure A2: Placebo Treatment Intensity: Distribution of Estimation Coefficients
Note: The density of the estimated coefficients from 500 simulations using false date of randomizing assignment of treatment intensity for all counties.