Medical expenditure after marginal cut of cash benefit among public assistance recipients in Japan: Natural experimental evidence

Supplementary Files

Table S1. Characteristics of the study households migrating in/out public assistance and those on public assistance throughout the study period.

Character	Category	Households migrating in/out of the public assistance program (n=413)	Households on the public assistance program throughout the study period (n=63)
Observed months			
	Mean (SD)	10.3 (8.6)	30 (0)
Number of households			
	Mean (SD)	3.3(1.3)	3.4 (1.4)
Types of Households			
	With single parent	41(65.1%)	256(62.0%)
	With disabled person	1(1.6%)	7(1.7%)
	With older people	5(7.9%)	53(12.8%)
	Others	16(25.4%)	97(23.5%)
Municipality			
	A	15(3.6%)	2(3.2%)
	B	3(0.7%)	0(0)
	C	37(9.0%)	4(6.3%)
	D	167(40.4%)	29(46.0%)
	E	191(46.2%)	28(44.4%)

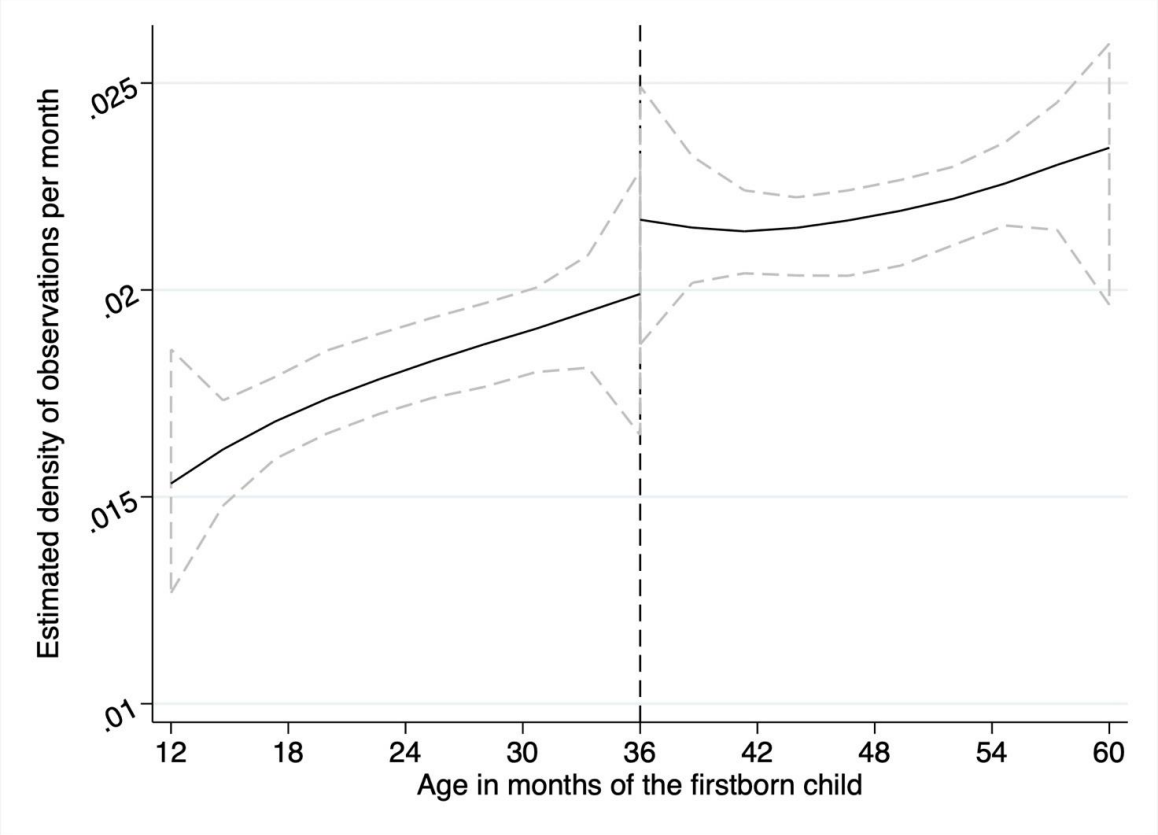
The characteristics of the households were similar between the households migrated in/out and those on public assistance throughout the study periods.

Table S2. Results of the continuity tests regarding household characteristics.

Characters	Categories	RD Estimator	p-value	95% CI	
Number of people in each household		0.03	0.91	-0.49	0.56
Proportion of households					
	with single parent	-0.04	0.58	-0.17	0.09
	with disabled person	-0.01	0.72	-0.06	0.04
	with older people	-0.01	0.92	-0.11	0.10
Municipalities					
	A	0.02	0.64	-0.05	0.08
	B	0.05	0.32	-0.04	0.14
	C	-0.06	0.48	-0.22	0.10
	D	0.03	0.63	-0.08	0.13
	E	-0.03	0.74	-0.18	0.13

The basic characteristics of the study households were sufficiently continuous around the cutoff month.

Figure S1. Results of the density test: Trend of the estimated density of observations in terms of the firstborn child's age in months.



We failed to reject the null hypothesis of a smooth density across the threshold (p = 0.70).

Table S3. Results of the continuity-based analysis of placebo cutoffs.

Alternative Cutoff (months-age)	RD Estimator	p-value	95% CI	
24	512.6	0.10	-100.3	1125.5
25	-70.6	0.84	-762.7	621.5
26	-546.3	0.29	-1547.2	454.6
27	266.7	0.17	-114.9	648.2
28	361.9	0.07	-27.9	751.7
29	167.9	0.21	-96.3	432.1
30	-102.6	0.48	-388.6	183.4
31	-126.1	0.45	-449.5	197.4
32	-142.1	0.48	-539.9	255.6
33	156.1	0.37	-183.4	495.6
34	-176.1	0.25	-477.2	125.0
35	116.9	0.23	-72.0	305.8
36 (Default)	248.6	0.03	25.4	471.7
37	232.3	0.14	-74.8	539.4
38	-88.6	0.68	-503.5	326.2
39	-309.8	0.13	-709.9	90.3
40	-234.6	0.15	-551.5	82.2
41	283.2	0.15	-99.3	665.7
42	172.8	0.29	-149.2	494.8
43	-110.7	0.67	-624.7	403.4
44	-218.1	0.41	-733.9	297.7
45	-26.2	0.88	-354.5	302.1
46	433.9	0.07	-23.9	843.9
47	-245.4	0.35	-759.2	268.3
48	-356.1	0.12	-802.0	89.9

Continuity-based analysis of placebo cutoffs indicated that the intervention assignment was exogenous.

Table S4. Results of the continuity-based analysis of donut hole tests.

Donut hole radius (months)	RD Estimator (USD)	p-value	95% CI	
0 (Default)	248.6	0.03	25.4	471.7
1	396.7	0.02	69.2	724.1
2	704.1	0.03	59.2	1348.9

Continuity-based analysis with the donut hole approach showed no systematic bias caused by non-random behavioral changes close to the threshold.

Table S5. Results of sensitivity analyses featuring several bandwidths.

Bandwidth (month)	RD Estimator (USD)	p-value	95% CI	
6	163.2	0.31	-149.7	476.0
11.4 (optimal, default)	248.6	0.03	25.4	471.7
12	227.3	0.03	20.2	434.5
18	195.3	0.03	15.2	375.4
24	220.0	0.01	51.5	388.5

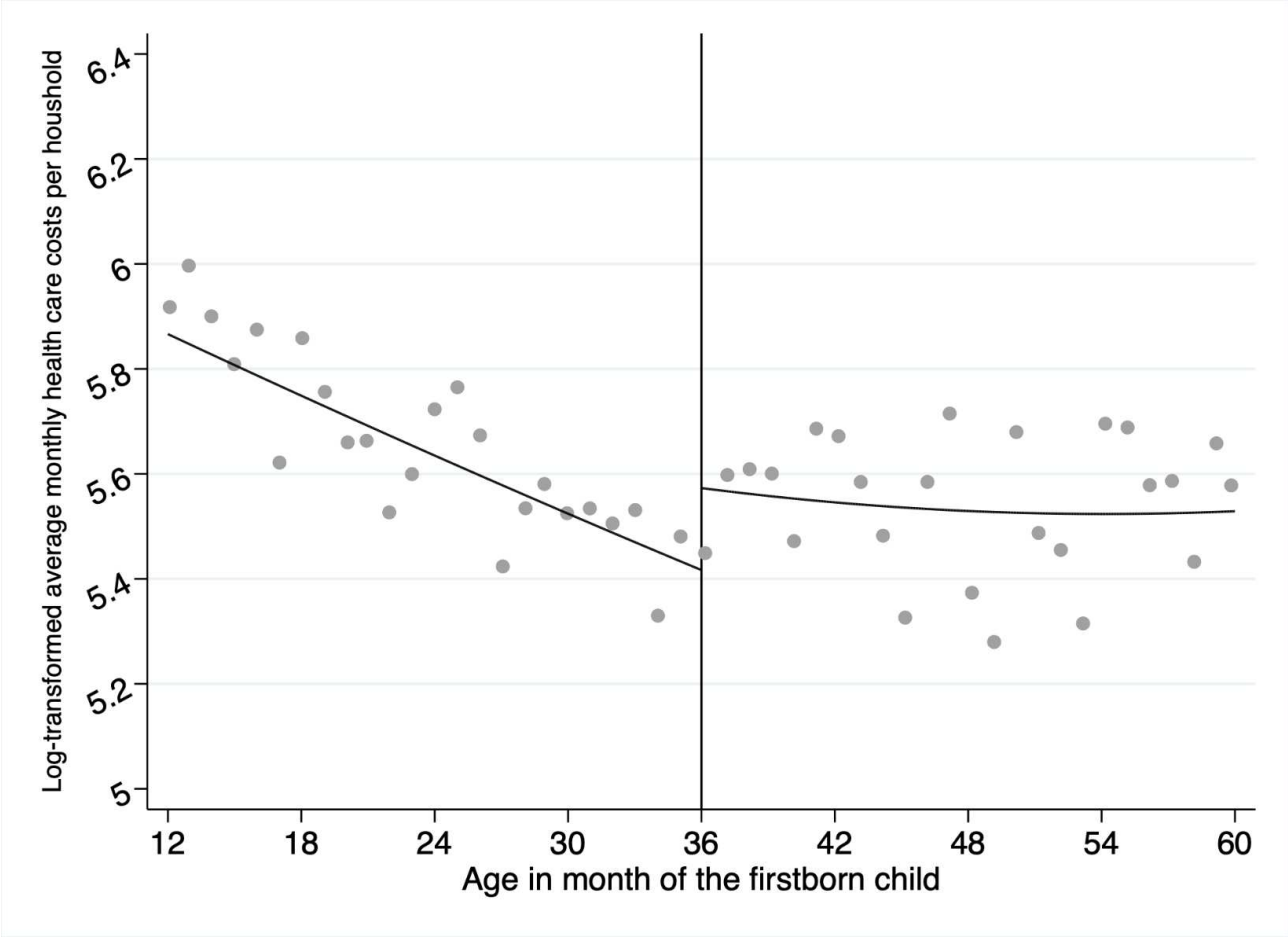
Continuity-based analysis featuring several bandwidth choices returned similar results.

Table S6. Results of sensitivity analyses featuring several different specifications of the running variables.

Polynomial orders	RD Estimator (USD)	p-value	95% CI	
Linear	213.0	0.01	55.5	370.5
Quadratic (Default)	248.6	0.03	25.4	471.7
Cubic	264.4	0.04	12.2	516.5
Quartic	246.0	0.16	-94.9	586.9

Continuity-based analysis featuring several polynomial orders returned similar results.

Figure S2. Log-transformed average monthly medical expenditure per household in terms of the firstborn child's age in months.



After considering the skewness of the health care costs, a significant upward jump in medical expenditure (coef. 0.15, 95%CI 0.02-0.28) was also observed when the firstborn child reached 36 months (the time at which income reduction occurs).

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Table S7. Brief characteristics of the study municipalities in the study period.

Municipality	Approximate number of populations	Proportion of people receiving public assistance (%)	Proportion of older people (%)	Unemployment rate (%)
A	50000	1.34%	28.5%	6.1%
B	80000	1.07%	35.8%	5.7%
C	100000	1.68%	24.9%	7.8%
D	190000	2.32%	22.8%	7.6%
E	200000	2.69%	25.9%	6.9%