Part 3 Estimation Strategy

- 3.1 ACA extension
- 3.2 Life of young adults with/without insurance
- 3.3 Estimation framework

3.3 Estimation framework

- RDD estimator (coefficient of interest)

$$\gamma = \frac{\lim_{c \downarrow c_0} E\left[Y_i | c_i = c\right] - \lim_{c \uparrow c_0} E\left[Y_i | c_i = c\right]}{\lim_{c \downarrow c_0} E\left[D_i | c_i = c\right] - \lim_{c \uparrow c_0} E\left[D_i | c_i = c\right]} = \frac{\hat{\beta}_{reduced}}{\hat{\alpha}_{first}} = \hat{\gamma}_{RD}$$

- Reduced form

$$D_i = \alpha I\left[c_i \geq c_0\right] + g\left(c_i\right) + \mu_i,$$

and the reduced-form is

$$Y_i = \beta I\left[c_i \geq c_0\right] + f\left(c_i\right) + \varepsilon_i,$$

3.3 Estimation framework

- Parametric approach equation specification

$$Y_i = \theta_0 + \theta_1 X_i + \rho D_i + \gamma_1 D_i X_i + \eta_i$$

- Notes:

  D_i (= I [$X_i \geq 0$]) It's fuzzy RDD

  treatment effect at cutoff X_0 : ρ

  X_0 $(cutoff)$: just reached 26 years old in Jan. 2014

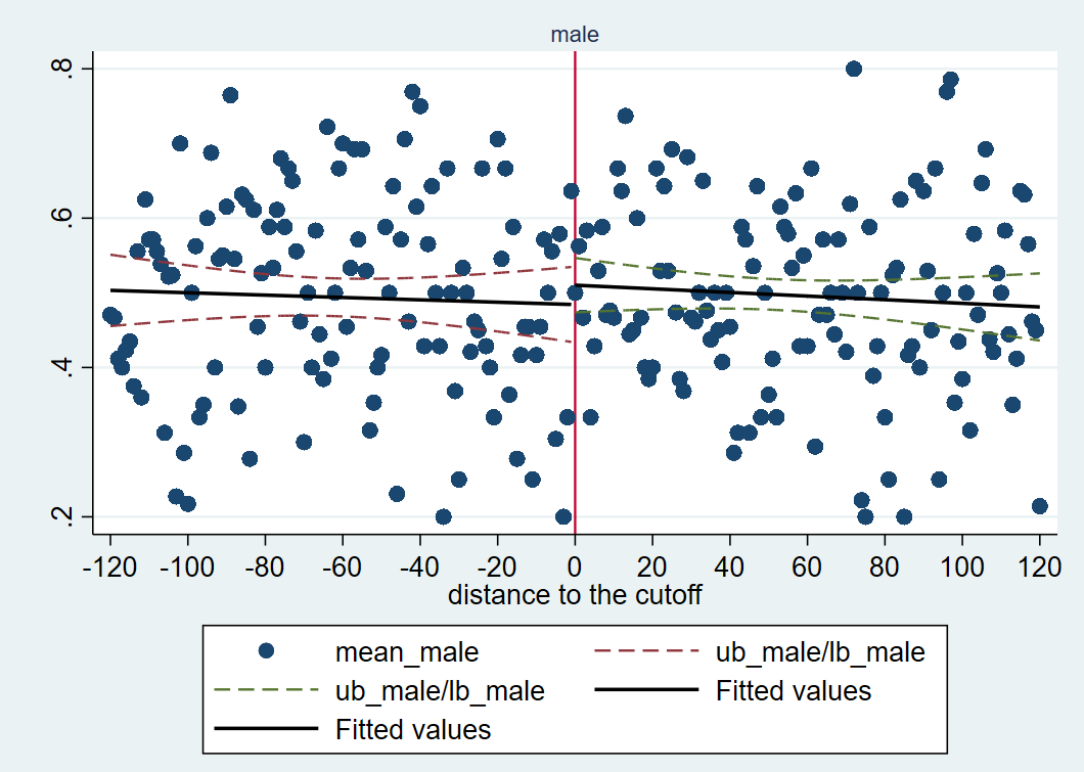
  Clustered at cohort level (same year same month)

Part 4 Empirical Results

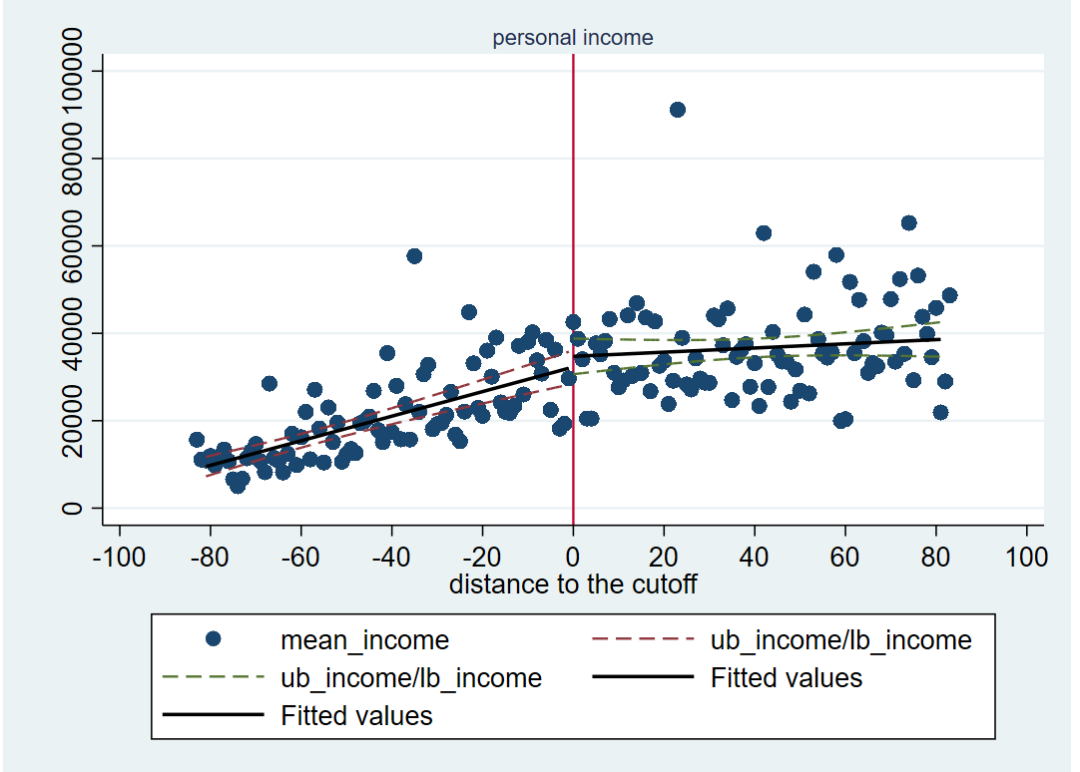
- 4.1 Potential Manipulation
  - Goal: all predetermined socioeconomic characteristics are balanced between treatment and control groups
- 4.2 Extension policy and birth cohorts (first stage result)
  - Goal: significant at cutoff
- 4.3 Results
- 4.4 Robustness check

4.1 Potential Manipulation - graph

1. Gender, smooth

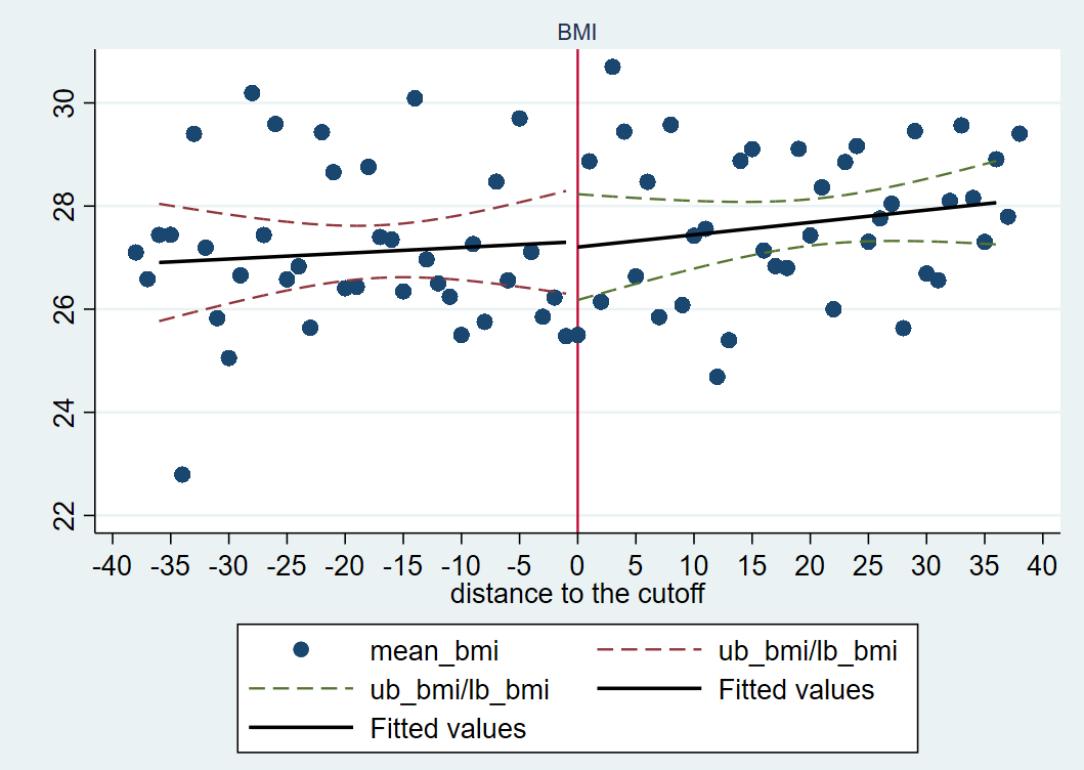


2. Personal income, smooth

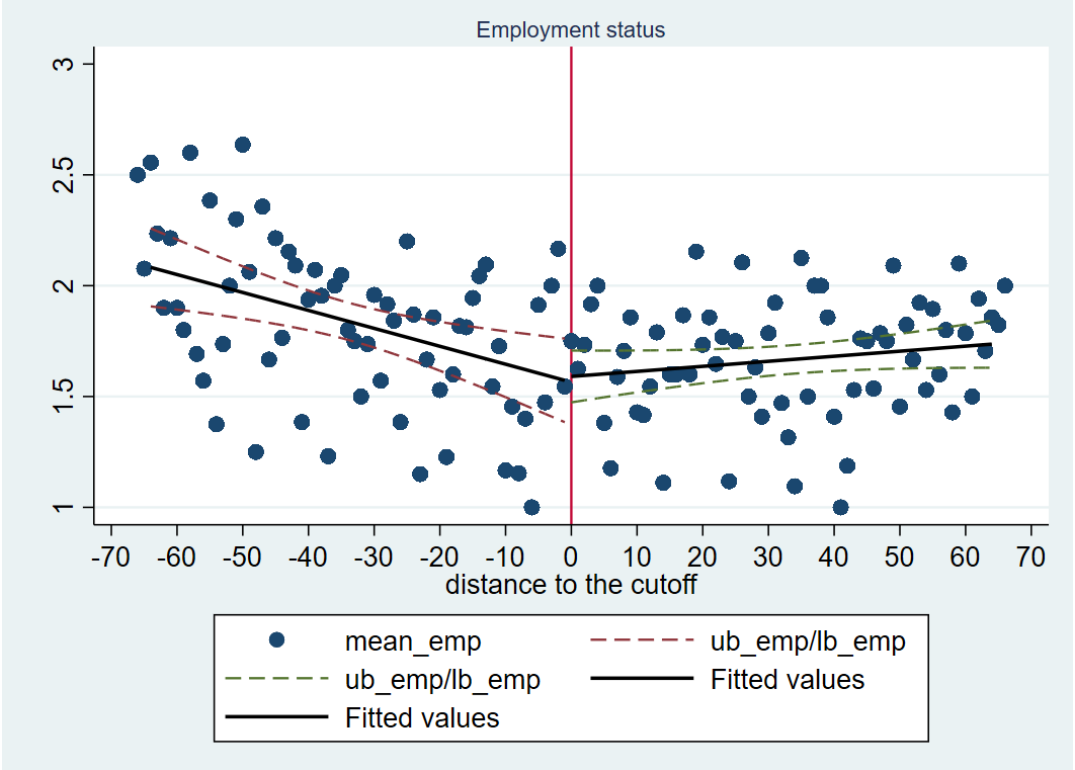


4.1 Potential Manipulation - graph

3. BMI, smooth

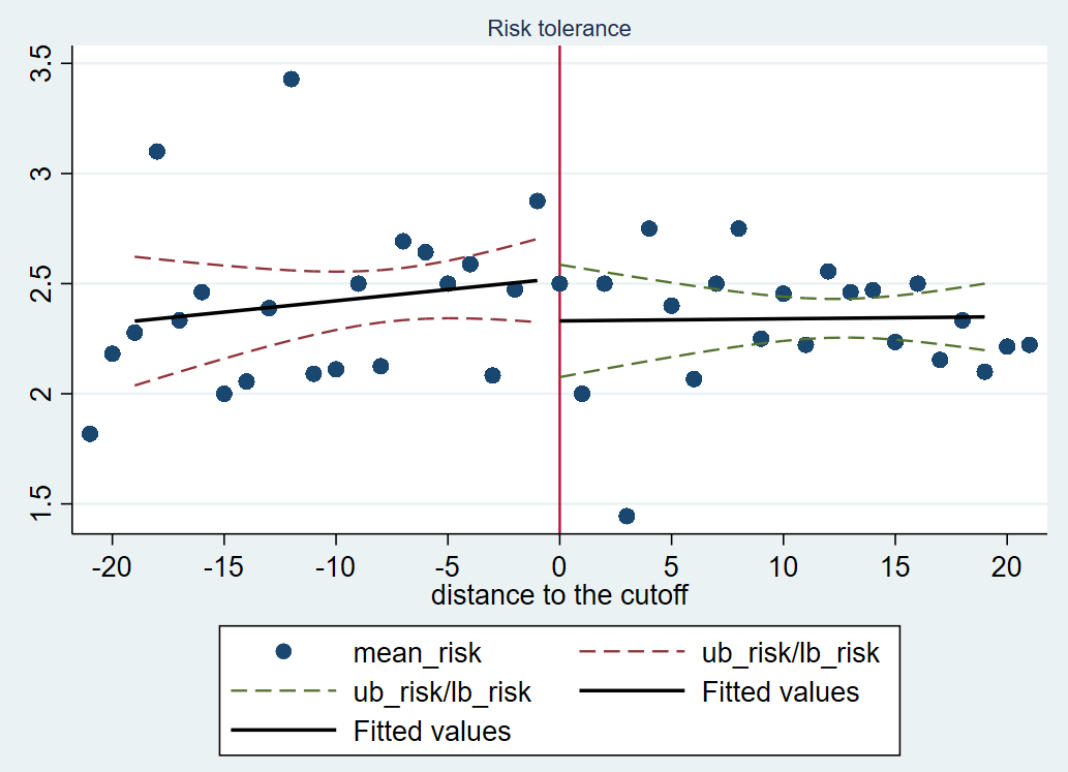


4. Employment, smooth

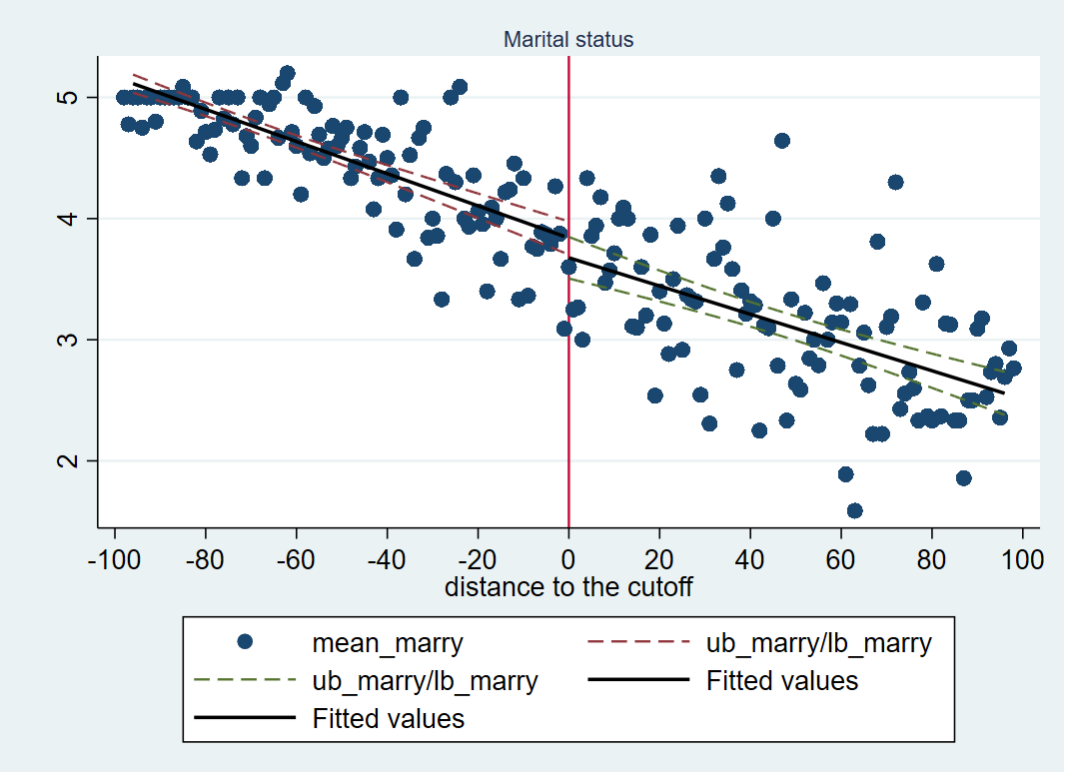


4.1 Potential Manipulation - graph

5. Risk tolerance, smooth



6. Marital status, smooth



4.1 Potential Manipulation – regression results

Locally, RDD is a randomization

VARIABLES	(1) Gender	(2) Personal Income	(3) BMI	(4) Employment Status	(5) Risk Tolerance	(6) Marital Status
D	0.026	2,435.355	-0.105	0.026	-0.137	-0.163
	(0.032)	(2,854.375)	(0.746)	(0.115)	(0.119)	(0.112)
X	-0.000	281.209***	0.011	-0.008***	0.004	-0.013***
	(0.000)	(32.167)	(0.027)	(0.003)	(0.003)	(0.001)
DX	-0.000	-233.351***	0.013	0.010***	-0.003	0.002
	(0.000)	(53.597)	(0.035)	(0.003)	(0.005)	(0.002)
Constant	0.484***	32,290.837***	27.309***	1.565***	2.449***	3.840***
	(0.026)	(1,953.004)	(0.532)	(0.099)	(0.083)	(0.070)
Observations	4,048	2,675	1,154	2,085	1,131	3,150
R-squared	0.000	0.060	0.003	0.011	0.001	0.168

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

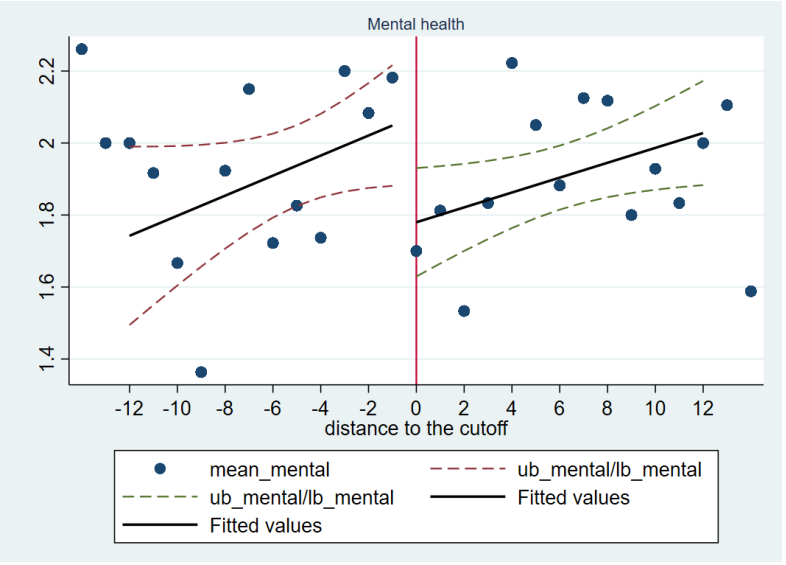
4.2 Extension policy and birth cohorts (first stage result)

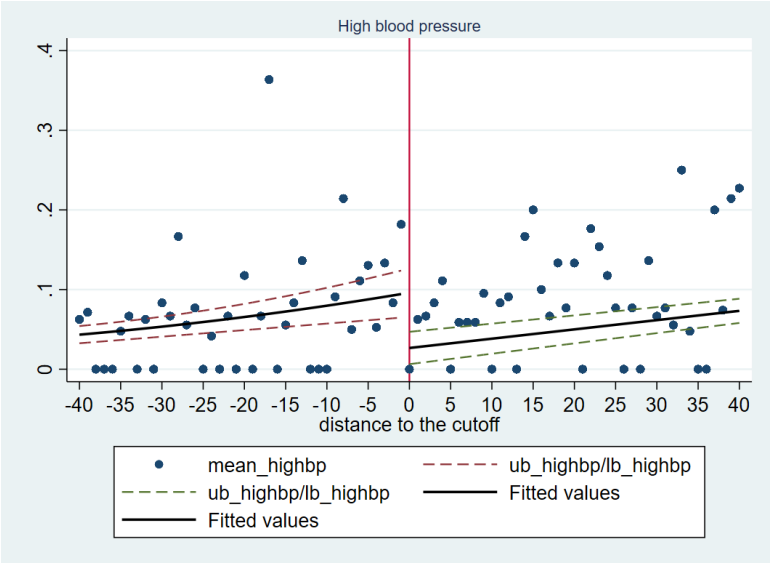
Significant FS within different cohorts.

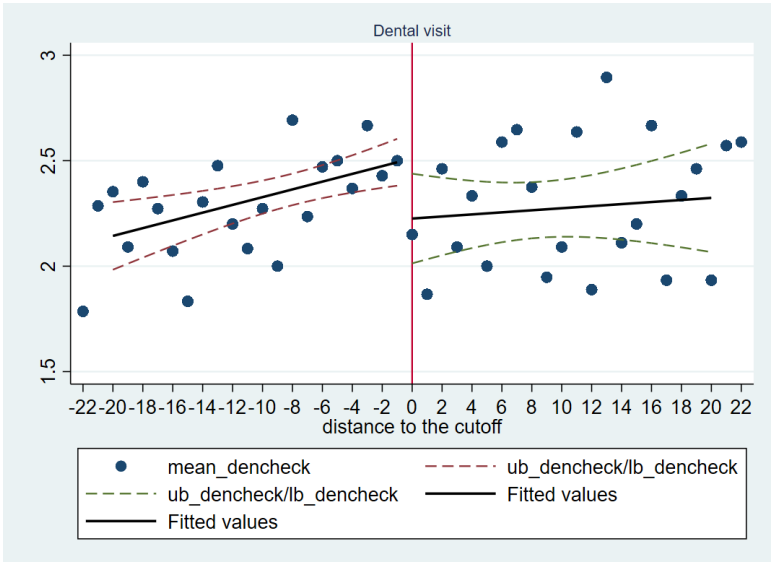
VARIABLES	(1) Insured	(2) Insured	(3) Insured
D	-0.139***	-0.138**	-0.164***
	(0.017)	(0.054)	(0.062)
X	0.001***	-0.009***	-0.013**
	(0.000)	(0.003)	(0.005)
X2			-0.000**
			(0.000)
DX	-0.001***	0.007*	0.008
	(0.000)	(0.004)	(0.007)
DX2			0.000**
			(0.000)
Constant	0.529***	0.452***	0.442***
	(0.013)	(0.042)	(0.049)
Cohort	1968-2008	1981-1995	1987-1989
Observations	14,944	8,812	1,599
R-squared	0.032	0.009	0.005

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.3 Results – Nonparametric, graph







4.3 Results – Nonparametric, table

VARIABLES	(1) totexp	(2) oop	(3) inpexp	(11) dencheck	(12) check
D	1,355.981	0.021	2,588.888	-0.285**	-0.017
	(1,521.347)	(0.037)	(1,939.271)	(0.125)	(0.162)
X	-50.565	0.000	-81.335	0.018***	0.001
	(50.644)	(0.000)	(77.827)	(0.006)	(0.004)
DX	89.219	-0.000	82.218	-0.013	-0.005
	(55.681)	(0.001)	(79.103)	(0.012)	(0.005)
Constant	3,026.195**	0.139***	-129.635	2.511***	2.122***
	(1,263.440)	(0.025)	(1,832.218)	(0.061)	(0.115)
Observations	2,675	2,953	2,410	1,639	1,542
R-squared	0.002	0.001	0.002	0.006	0.001

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(4) mental	(6) distress	(7) genhealth	(8) highbp	(9) diabetes
D	-0.297**	0.114	-0.053	-0.069***	-0.001
	(0.125)	(0.340)	(0.053)	(0.019)	(0.011)
X	0.028*	-0.001	0.002***	0.002***	-0.000
	(0.016)	(0.013)	(0.000)	(0.000)	(0.000)
DX	-0.007	0.015	-0.001	-0.001	0.001
	(0.019)	(0.018)	(0.001)	(0.001)	(0.001)
Constant	2.077***	2.536***	2.101***	0.096***	0.006
	(0.098)	(0.247)	(0.041)	(0.016)	(0.007)
Observations	388	907	4,544	11,031	1,078
R-squared	0.008	0.002	0.021	0.246	0.002

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.4 Robustness check – Polynomial order (2^{nd})

- Parametric approach equation specification

$$Y_i = \theta_0 + \theta_1 X_i + \theta_2 X_i^2 + \rho D_i + \gamma_1 D_i X_i + \gamma_2 D_i\, X_i^2 + \eta_i$$

- Notes:

  D_i (= I [$X_i \geq 0$]) It's fuzzy RDD

  treatment effect at cutoff X_0 : ρ

  X_0 $(cutoff)$: just reached 26 years old in Jan. 2014

  Clustered at cohort level (same year same month)

4.4 Robustness check – Polynomial order (2nd)

	Expenditure			Preventative care	
VARIABLES	(1) Total expenditure	(2) OOP	(3) Inpatient expenditure	(4) Dental visit	(5) Routine checkup
D	622.852	0.017	1,564.559	-0.345***	-0.053
	(1,564.546)	(0.047)	(1,306.069)	(0.092)	(0.147)
X	-41.955	0.001	-69.224	-0.001	-0.000
	(74.904)	(0.001)	(69.196)	(0.002)	(0.004)
X2	-0.348	0.000	-0.581	-0.000***	-0.000
	(0.559)	(0.000)	(0.515)	(0.000)	(0.000)
DX	95.022	-0.001	70.496	0.000	-0.001
	(81.972)	(0.002)	(73.166)	(0.003)	(0.005)
DX2	0.074	-0.000	0.614	0.000**	0.000
	(0.616)	(0.000)	(0.550)	(0.000)	(0.000)
Constant	3,668.834***	0.146***	822.487	2.303***	2.118***
	(1,315.809)	(0.035)	(1,113.777)	(0.058)	(0.110)
Observations	4,628	4,628	4,628	4,436	4,075
R-squared	0.002	0.001	0.001	0.036	0.008

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	Mental Health		Physical health		
VARIABLES	(1) mental	(2) distress	(3) overall	(4) blood pressure	(5) diabetes
D	-0.177***	-0.579**	-0.037	-0.229***	0.005
	(0.076)	(0.327)	(0.079)	(0.022)	(0.009)
X	-0.001	-0.007	0.001	0.002***	-0.000
	(0.002)	(0.009)	(0.002)	(0.000)	(0.000)
X2	-0.000	-0.000	-0.000	0.000***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DX	0.003	0.004	0.002	-0.001	0.001*
	(0.003)	(0.012)	(0.003)	(0.001)	(0.000)
DX2	0.000	0.000	0.000	-0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	1.935***	2.392***	2.065***	0.096***	0.004
	(0.057)	(0.225)	(0.061)	(0.016)	(0.005)
Observations	4,556	3,392	4,557	4,410	4,410
R-squared	0.007	0.002	0.021	0.028	0.009

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.4 Robustness check – inclusion of predetermined characteristics

VARIABLES	(1) totexp	(2) oop	(3) inpexp	(9) dencheck	(10) check
D	1,700.030	0.054	3,127.139	-0.252**	0.063
	(1,829.250)	(0.039)	(2,412.699)	(0.133)	(0.163)
X	-74.435	-0.000	-97.909	0.019**	0.002
	(62.538)	(0.000)	(93.188)	(0.008)	(0.004)
DX	106.578	-0.000	82.744	-0.019	-0.008
	(69.640)	(0.001)	(92.113)	(0.012)	(0.005)
male	-3,908.244**	-0.098***	-944.815	0.234**	0.748***
	(1,921.715)	(0.019)	(2,066.543)	(0.105)	(0.097)
income	0.027***	-0.000	0.010*	-0.000***	-0.000**
	(0.010)	(0.000)	(0.006)	(0.000)	(0.000)
emp	2,378.916**	0.016*	2,168.877**	0.000	-0.032
	(995.891)	(0.009)	(1,039.634)	(0.047)	(0.041)
marry	-314.804	0.004	-346.760*	0.010	0.011
	(227.860)	(0.007)	(179.464)	(0.025)	(0.020)
bmi	185.735	0.008***	39.937	0.017**	-0.005
	(168.053)	(0.002)	(171.672)	(0.007)	(0.005)
risk	-701.243	0.018*	-545.162	0.018	0.062*
	(761.945)	(0.010)	(773.539)	(0.039)	(0.035)
Constant	-2,518.802	-0.118	-2,280.184	1.978***	1.887***
	(4,121.446)	(0.087)	(3,663.895)	(0.260)	(0.224)
Observations	2,027	2,229	1,837	1,501	1,227
R-squared	0.018	0.027	0.011	0.063	0.069

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(4) mental	(5) distress	(6) genhealth	(7) highbp	(8) diabetes
D	-0.284*	0.319	-0.017	-0.069***	-0.002
	(0.184)	(0.362)	(0.062)	(0.019)	(0.009)
X	0.018	-0.011	0.003***	0.002***	-0.000
	(0.024)	(0.014)	(0.001)	(0.000)	(0.000)
DX	-0.009	0.025	-0.001	-0.001	0.001**
	(0.029)	(0.019)	(0.001)	(0.001)	(0.001)
male	-0.149	-0.239	-0.088**	-0.003	-0.001
	(0.116)	(0.281)	(0.034)	(0.008)	(0.008)
income	-0.000	0.000	-0.000***	0.000	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
emp	0.053	0.360**	0.039***	-0.002	-0.002
	(0.050)	(0.151)	(0.014)	(0.024)	(0.004)
marry	0.038	-0.012	0.005	0.011	0.001
	(0.023)	(0.075)	(0.009)	(0.029)	(0.002)
bmi	0.001	0.054*	0.037***	0.002	0.002*
	(0.007)	(0.030)	(0.003)	(0.003)	(0.001)
risk	0.014	0.117	-0.014	-0.000	-0.000
	(0.039)	(0.114)	(0.013)	(0.017)	(0.003)
Constant	1.774***	0.096	1.136***	0.096***	-0.041
	(0.316)	(1.012)	(0.112)	(0.016)	(0.028)
Observations	298	2,869	3,190	11,031	820
R-squared	0.033	0.026	0.098	0.246	0.021

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1