

Supplementary Online Content

Wisk LE, Peltz A, Galbraith AA. Changes in health care–related financial burden for US families with children associated with the Affordable Care Act. *JAMA Pediatr*. Published online September 28, 2020. doi:10.1001/jamapediatrics.2020.3973

eTable 1. Characteristics of Marketplace Insurance Plans Among Families With Children

eFigure 1. Time Trends in Financial Burden by ACA Eligibility Group

eTable 2. Unadjusted and Adjusted Changes in Premium Unaffordability Index and Multivariable Difference-in-Differences Estimator

eFigure 2. Predictive Margins for Family Premium Unaffordability Index Pre- and Post-ACA

eTable 3. Sensitivity Analysis for Changes in Financial Burden Using an Alternative Pre-Period

eTable 4. Sensitivity Analysis for Changes in Financial Burden Using Refined ACA Exposure Groups

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Characteristics of Marketplace Insurance Plans among Families with Children

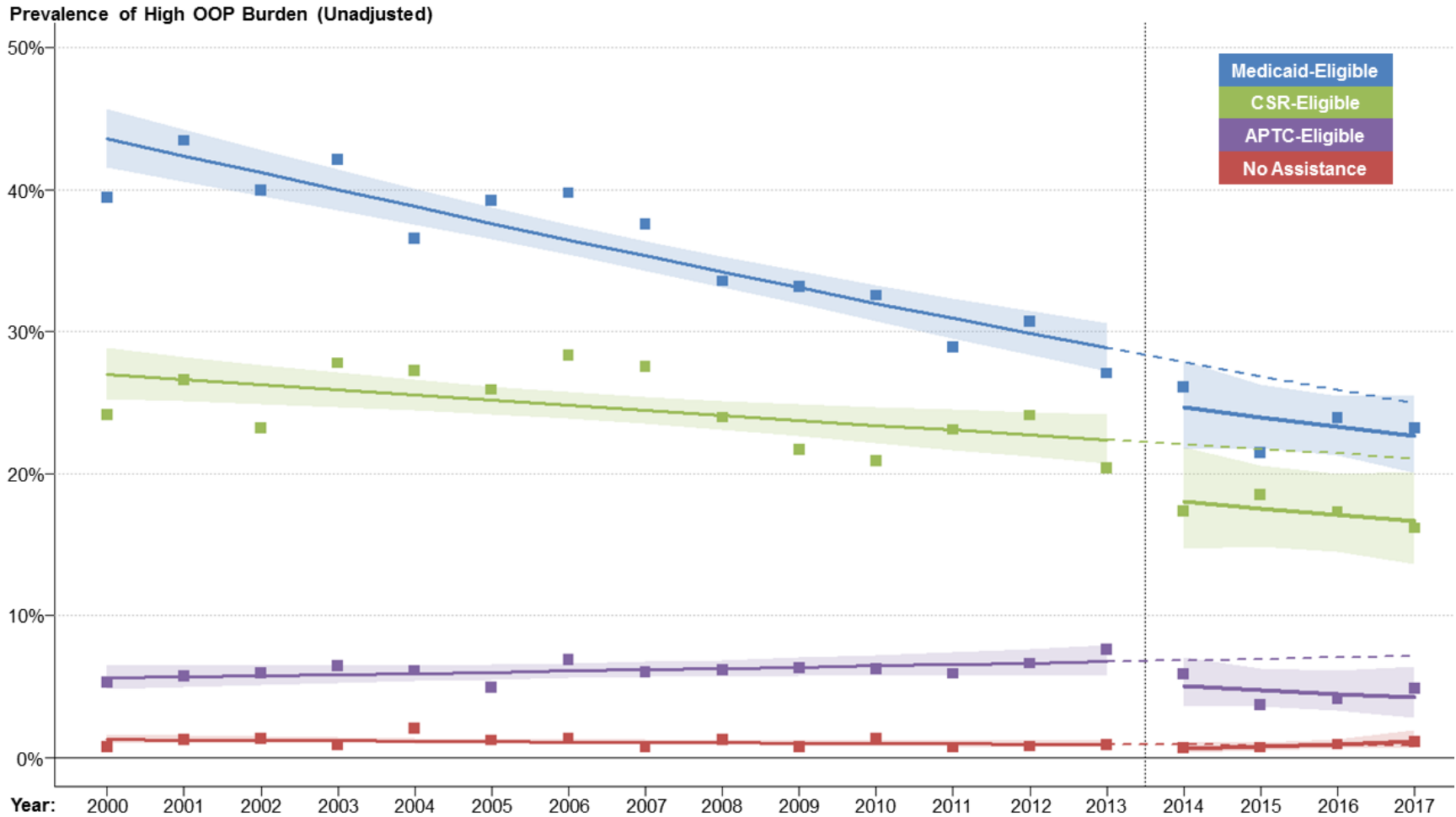
	Total N (unweighted)	Total % (weighted)
Total Person-Plan-Years	2,271	100%
Coverage Type		
Single	867	34.7%
Family	1,404	65.3%
Plan Metal Level ^a		
Platinum	95	8.1%
Gold	62	7.4%
Silver	558	52.0%
Bronze	241	19.9%
Catastrophic	43	2.7%
Something else	99	9.8%
Don't know / Unknown	893	--
Plan Premium		
Any (>\$0)	1,451	65.1%
None (\$0)	820	34.9%
Premium is Subsidized		
Yes	1,913	81.4%
No	291	18.6%
Don't know / Unknown	67	--
Monthly Premium (2017 US\$) ^b		
Mean		\$349.37
Median		\$244.11
Annual Deductible		
No deductible	409	24.1%
< \$1350 (Single) / \$2700 (Family)	555	30.6%
≥\$1350 (Single) / \$2700 (Family)	559	45.3%
Don't know / Unknown	748	--

Unit of analysis is the person-plan-year (one observation for each year of Marketplace coverage reported per person); N=2,271 person-plan-years among members of families with children with plans where actuarial characteristics were reported (Source: MEPS Person Round Plan Files from 2014 to 2017).

- a. Variable available for 2015 to 2017 only. All health plans offered through the Marketplace must meet the requirements of “qualified health plans” but plans vary based on actuarial value (the percent of health care costs paid by the carrier on average), described as the metal tier (Bronze, Silver, Gold, Platinum). Bronze plans have the lowest actuarial value with higher deductibles and other cost sharing, while Platinum plans have the highest actuarial value and lowest deductibles and cost sharing.
- b. Premium amount among plans with non-zero premiums.

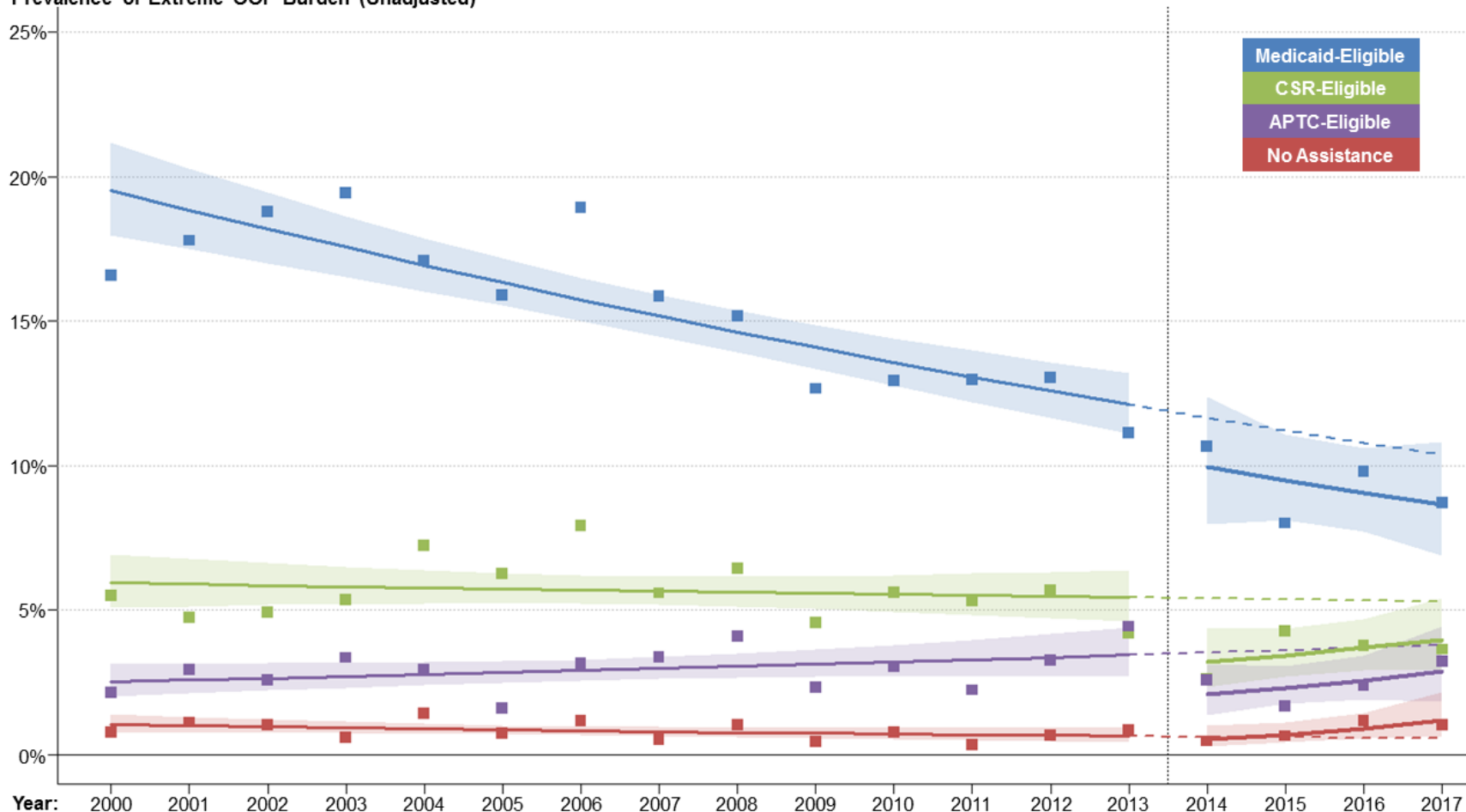
eFigure 1. Time Trends in Financial Burden by ACA Eligibility Group

A. High Out-of-Pocket Burden. Figure shows unadjusted prevalence (points) and annual trends (lines, with 95% confidence intervals) for the probability of high out-of-pocket (OOP) financial burden by Affordable Care Act (ACA) eligibility groups [Medicaid-eligible: ≤138% federal poverty level (FPL); Cost-sharing reduction (CSR) eligible: 139-250% FPL; Advanced Premium Tax Credit (APTC) eligible: 251-400% FPL; No assistance: >400% FPL]. Unadjusted annual trends were estimated separately for the pre- and post-ACA periods (solid lines) and the pre-ACA trend was projected forward (dashed line).

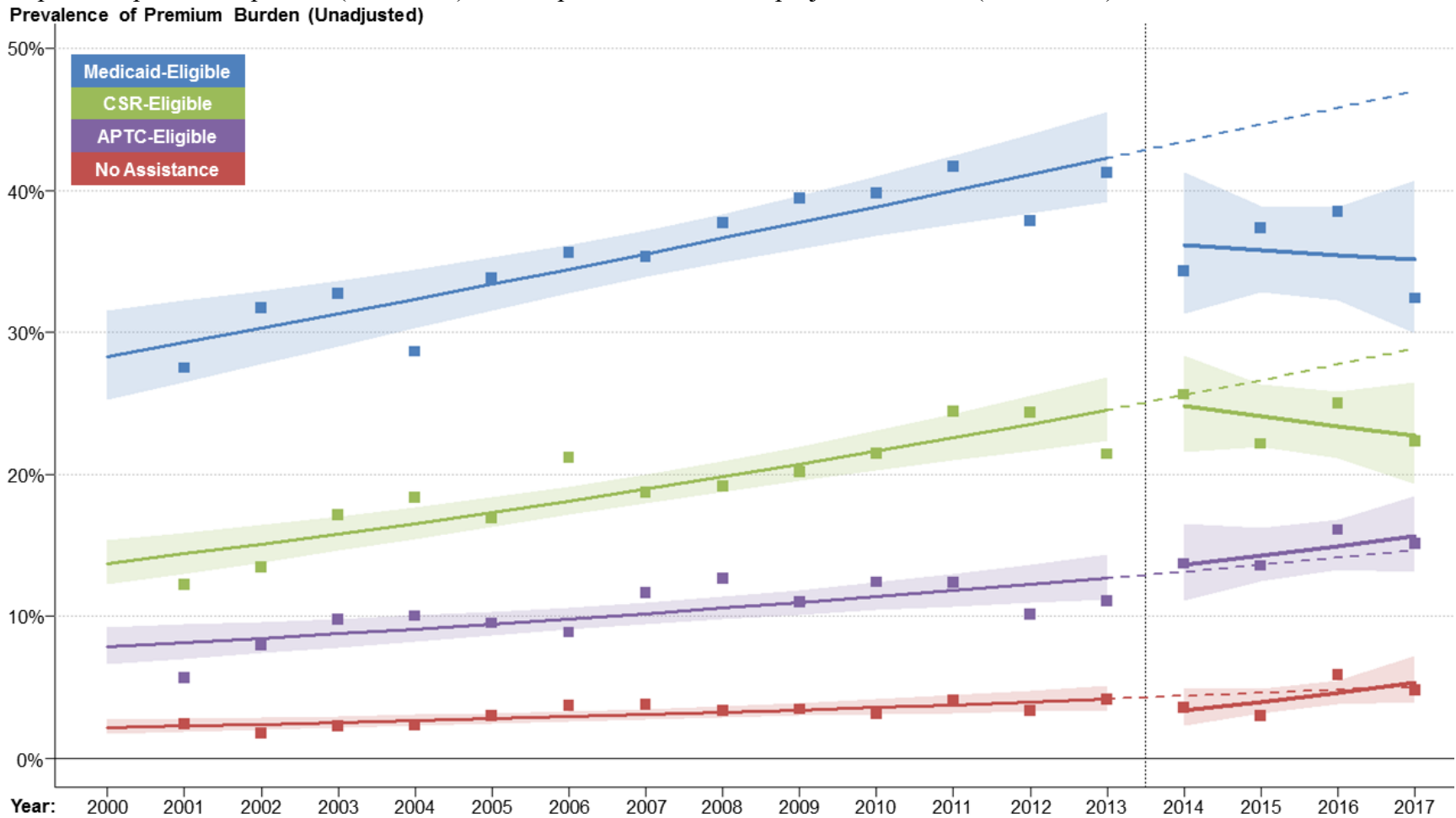


B. Extreme Out-of-Pocket Burden. Figure shows unadjusted prevalence (points) and annual trends (lines, with 95% confidence intervals) for the probability of extreme out-of-pocket (OOP) financial burden by Affordable Care Act (ACA) eligibility groups [Medicaid-eligible: $\leq 138\%$ federal poverty level (FPL); Cost-sharing reduction (CSR) eligible: 139-250% FPL; Advanced Premium Tax Credit (APTC) eligible: 251-400% FPL; No assistance: $>400\%$ FPL]. Unadjusted annual trends were estimated separately for the pre- and post-ACA periods (solid lines) and the pre-ACA trend was projected forward (dashed line).

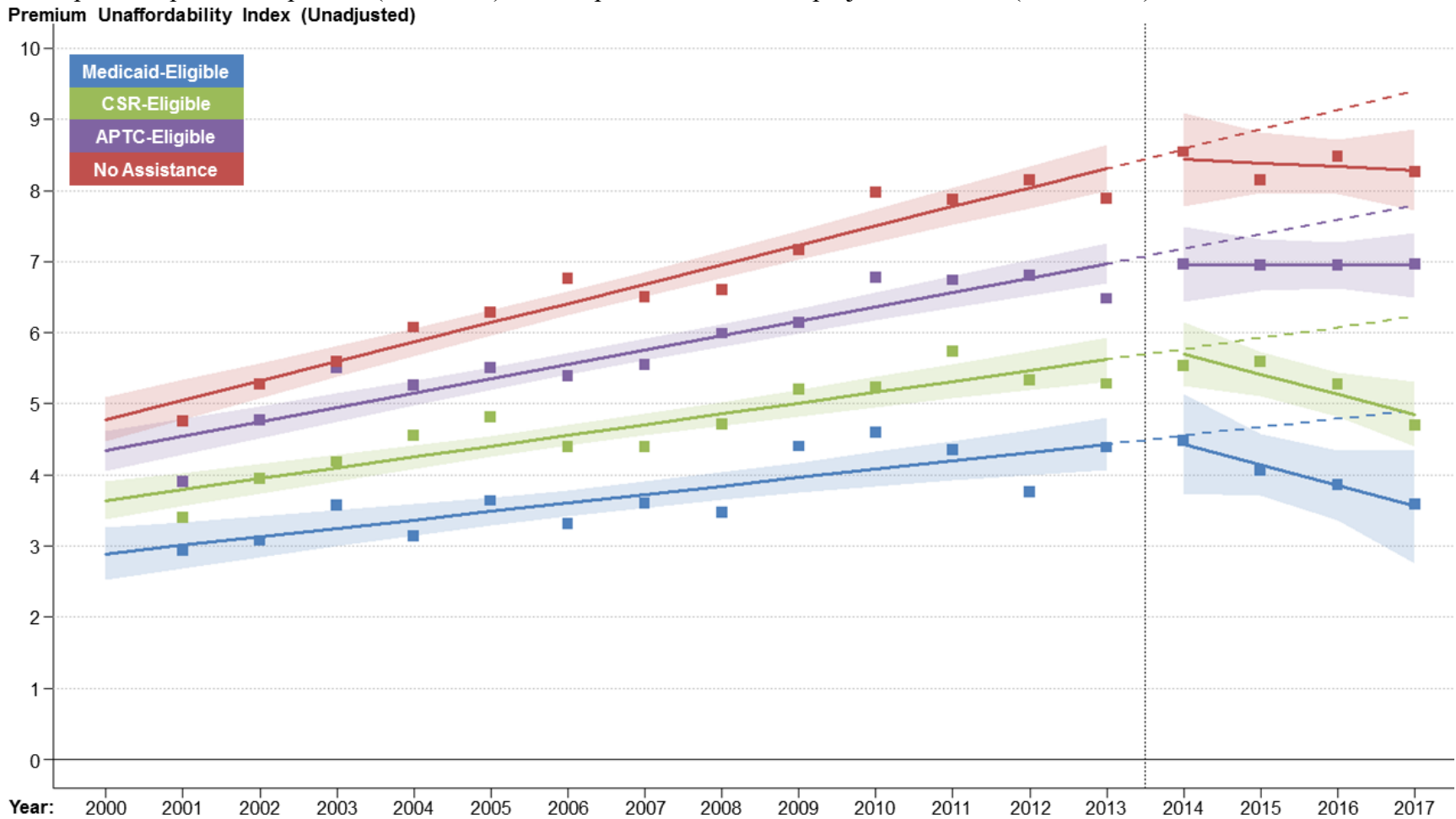
Prevalence of Extreme OOP Burden (Unadjusted)



C. Premium Burden. Figure shows unadjusted prevalence (points) and annual trends (lines, with 95% confidence intervals) for the probability of premium burden by Affordable Care Act (ACA) eligibility groups [Medicaid-eligible: $\leq 138\%$ federal poverty level (FPL); Cost-sharing reduction (CSR) eligible: 139-250% FPL; Advanced Premium Tax Credit (APTC) eligible: 251-400% FPL; No assistance: $>400\%$ FPL] among families who reported any private coverage. Unadjusted annual trends were estimated separately for the pre- and post-ACA periods (solid lines) and the pre-ACA trend was projected forward (dashed line).



D. Premium Unaffordability Index. Figure shows unadjusted mean (points) and annual trends (lines, with 95% confidence intervals) for the premium unaffordability index by Affordable Care Act (ACA) eligibility groups [Medicaid-eligible: $\leq 138\%$ federal poverty level (FPL); Cost-sharing reduction (CSR) eligible: 139-250% FPL; Advanced Premium Tax Credit (APTC) eligible: 251-400% FPL; No assistance: $>400\%$ FPL] among families who reported any private coverage. Unadjusted annual trends were estimated separately for the pre- and post-ACA periods (solid lines) and the pre-ACA trend was projected forward (dashed line).



eTable 2. Unadjusted and Adjusted Changes in Premium Unaffordability Index and Multivariable Difference-in-Differences Estimator

Premium Unaffordability Index	Unadjusted Post vs Pre				Adjusted Post vs Pre		Difference-in-Differences	
	Pre-ACA	Post-ACA	Difference	95% CI	Difference	95% CI	Est	95% CI
<i>Overall</i>	5.70	6.95	1.25	(1.03, 1.47)	-	-	-	-
Medicaid-Eligible	3.72	4.02	0.29	(-0.15, 0.73)	0.32	(-0.10, 0.74)	-1.32	(-1.90, -0.74)
CSR-Eligible	4.70	5.28	0.59	(0.26, 0.92)	0.56	(0.24, 0.89)	-1.08	(-1.60, -0.57)
APTC-Eligible	5.72	6.95	1.23	(0.90, 1.57)	1.08	(0.75, 1.40)	-0.57	(-1.06, -0.08)
No Assistance	6.66	8.36	1.69	(1.29, 2.09)	1.64	(1.25, 2.04)	<i>Reference</i>	

ACA – Affordable Care Act; CSR – Cost-Sharing Reductions; APTC – Advanced Premium Tax Credits.

Overall and ACA eligibility group-specific estimates and 95% confidence intervals (CI) for the unadjusted and adjusted post-ACA (2014-2017) vs pre-ACA (2001-2013) change in premium unaffordability index among families who reported any private coverage. Premium unaffordability index is determined by dividing a family’s total annual premium contributions by U.S. median household income for a given year; higher values indicate a greater degree of premium burden as the index this represents the percentage of an ‘average’ family’s income that would be devoted to health insurance premiums. Adjusted post vs pre change were estimated from a fully adjusted multivariable model including a difference-in-differences estimator and controlling for number of children in the family, number of adults in the family, infants in the family, seniors (ages ≥65) in the family, interview language, sex of the family respondent, race/ethnicity of the family respondent, marital status of the family respondent, highest educational attainment within the family, region of residence, family members in fair/poor physical health, and family members in fair/poor mental health. The difference-in-differences estimator shows the adjusted relative change in the unaffordability index for each eligibility group compared to families who were not eligible for assistance.

eFigure 2. Predictive Margins for Family Premium Unaffordability Index Pre- and Post-ACA

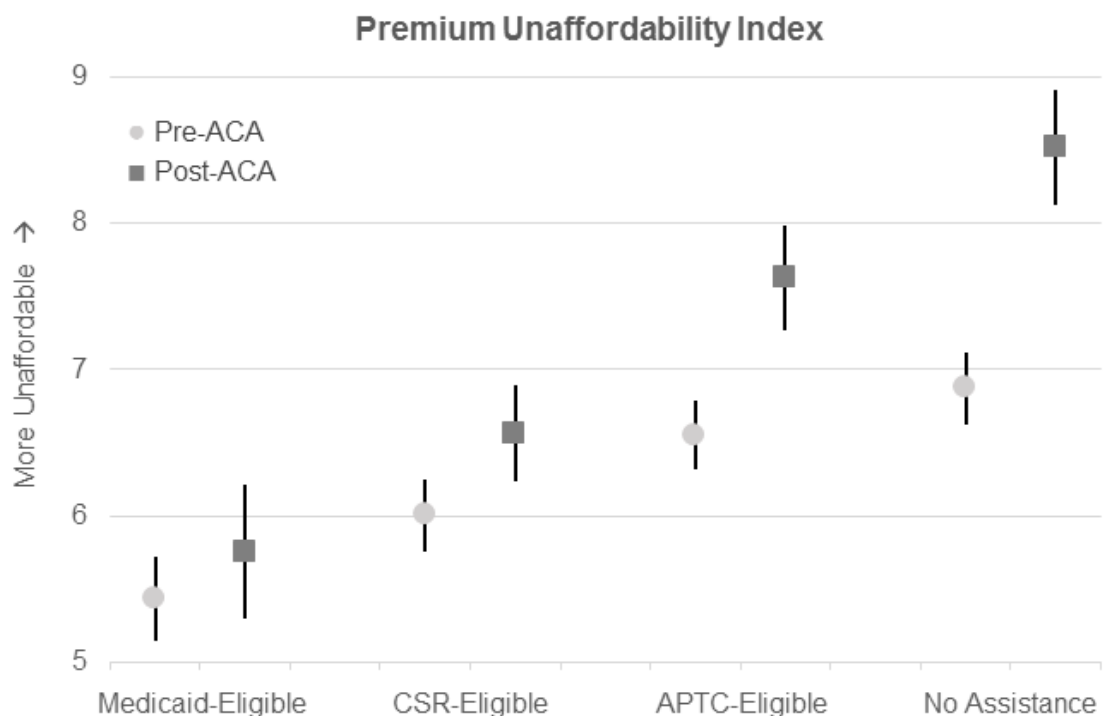


Figure shows pre-ACA (light circle) vs post-ACA (dark square) adjusted marginal mean premium unaffordability index (with 95% confidence intervals) by ACA eligibility group, output from fully adjusted multivariable models including a difference-in-differences estimator and controlling for number of children in the family, number of adults in the family, infants in the family, seniors (ages ≥ 65) in the family, interview language, sex of the family respondent, race/ethnicity of the family respondent, marital status of the family respondent, highest educational attainment within the family, region of residence, family members in fair/poor physical health, and family members in fair/poor mental health. ACA – Affordable Care Act; CSR – Cost-Sharing Reductions; APTC – Advanced Premium Tax Credits.

eTable 3. Sensitivity Analysis for Changes in Financial Burden using an Alternative Pre-Period

	Unadjusted Post vs Pre				Adjusted Post vs Pre		Difference-in-Differences	
	Pre-ACA	Post-ACA	Difference	95% CI	Difference	95% CI	Est	95% CI
High OOP Burden								
Medicaid-Eligible	38.3%	23.7%	-14.6%	(-16.7%, -12.5%)	-14.4%	(-16.3%, -12.4%)	-14.1%	(-16.1%, -12.1%)
CSR-Eligible	25.6%	17.3%	-8.3%	(-10.2%, -6.3%)	-8.2%	(-10.1%, -6.3%)	-7.9%	(-9.9%, -6.0%)
APTC-Eligible	6.0%	4.6%	-1.3%	(-2.4%, -0.3%)	-1.4%	(-2.5%, -0.2%)	-1.1%	(-2.2%, 0.1%)
No Assistance	1.2%	0.9%	-0.3%	(-0.7%, 0.1%)	-0.3%	(-0.8%, 0.2%)	<i>Reference</i>	
Extreme OOP Burden								
Medicaid-Eligible	16.7%	9.3%	-7.4%	(-8.8%, -6.0%)	-7.3%	(-8.6%, -6.0%)	-7.2%	(-8.6%, -5.9%)
CSR-Eligible	5.9%	3.6%	-2.3%	(-3.2%, -1.4%)	-2.3%	(-3.2%, -1.4%)	-2.2%	(-3.2%, -1.2%)
APTC-Eligible	2.9%	2.4%	-0.4%	(-1.2%, 0.4%)	-0.5%	(-1.3%, 0.3%)	-0.4%	(-1.3%, 0.5%)
No Assistance	0.9%	0.8%	0.0%	(-0.5%, 0.4%)	-0.1%	(-0.5%, 0.4%)	<i>Reference</i>	
Premium Burden								
Medicaid-Eligible	33.6%	35.6%	2.1%	(-1.4%, 5.6%)	2.7%	(-0.7%, 6.1%)	1.2%	(-2.3%, 4.7%)
CSR-Eligible	17.4%	23.8%	6.3%	(3.8%, 8.8%)	6.7%	(4.1%, 9.2%)	5.2%	(2.6%, 7.7%)
APTC-Eligible	9.7%	14.6%	4.9%	(3.0%, 6.8%)	5.1%	(3.1%, 7.0%)	3.6%	(1.6%, 5.6%)
No Assistance	2.9%	4.3%	1.4%	(0.6%, 2.3%)	1.5%	(0.6%, 2.3%)	<i>Reference</i>	
Premium Unaffordability								
Medicaid-Eligible	3.47	4.02	0.55	(0.09, 1.01)	0.57	(0.13, 1.01)	-1.63	(-2.23, -1.03)
CSR-Eligible	4.39	5.28	0.89	(0.56, 1.22)	0.86	(0.53, 1.18)	-1.35	(-1.86, -0.84)
APTC-Eligible	5.34	6.95	1.62	(1.26, 1.98)	1.45	(1.10, 1.80)	-0.75	(-1.24, -0.26)
No Assistance	6.10	8.36	2.26	(1.84, 2.68)	2.20	(1.80, 2.61)	<i>Reference</i>	

ACA – Affordable Care Act; CSR – Cost-Sharing Reductions; APTC – Advanced Premium Tax Credits; OOP – Out-of-Pocket. Estimates and 95% confidence intervals (CI) for the unadjusted and adjusted post-ACA (2014-2017) vs pre-ACA (2000-2009) change in financial burden measures are presented by group; adjusted post vs pre change were estimated from fully adjusted multivariable models including a difference-in-differences estimator and controlling for number of children in the family, number of adults in the family, infants in the family, seniors (ages ≥65) in the family, interview language, sex of the family respondent, race/ethnicity of the family respondent, marital status of the family respondent, highest educational attainment within the family, region of residence, family members in fair/poor physical health, and family members in fair/poor mental health. The difference-in-differences estimator shows the adjusted relative change in burden for each eligibility group compared to families who were not eligible for assistance. Premiums are among families who reported any private coverage from 2001 on (N=57,442).

eTable 4. Sensitivity Analysis for Changes in Financial Burden using Refined ACA Exposure Groups

	Unadjusted Post- vs Pre-ACA				Adjusted Post- vs Pre-ACA		Difference-in-Differences	
	Pre	Post	Diff	95% CI	Diff	95% CI	Est	95% CI
High OOP Burden								
Medicaid-Eligible w/ Medicaid/CHIP	31.5%	21.5%	-10.0%	(-11.9%, -8.1%)	-9.8%	(-11.6%, -8.1%)	-9.8%	(-11.6%, -8.0%)
Medicaid-Eligible w/o Medicaid/CHIP	54.9%	45.7%	-9.2%	(-16.0%, -2.4%)	-9.1%	(-15.9%, -2.3%)	-9.1%	(-15.9%, -2.3%)
CSR-Eligible w/o ESI offered	29.0%	19.3%	-9.7%	(-13.7%, -5.8%)	-10.0%	(-13.7%, -6.4%)	-10.0%	(-13.7%, -6.3%)
CSR-Eligible w/ ESI offered	23.3%	16.7%	-6.6%	(-8.6%, -4.5%)	-6.0%	(-8.1%, -4.0%)	-6.0%	(-8.1%, -3.9%)
APTC-Eligible w/o ESI offered	10.8%	7.4%	-3.4%	(-7.3%, 0.6%)	-3.2%	(-6.9%, 0.6%)	-3.1%	(-6.9%, 0.6%)
APTC-Eligible w/ ESI offered	5.6%	4.3%	-1.3%	(-2.3%, -0.3%)	-1.1%	(-2.2%, 0.1%)	-1.0%	(-2.2%, 0.1%)
No Assistance w/o ESI offered	2.5%	1.5%	-1.0%	(-2.7%, 0.7%)	-1.4%	(-3.5%, 0.6%)	-1.4%	(-3.5%, 0.7%)
No Assistance w/ ESI offered	1.0%	0.8%	-0.2%	(-0.5%, 0.2%)	0.0%	(-0.5%, 0.4%)	<i>Reference</i>	
Extreme OOP Burden								
Medicaid-Eligible w/ Medicaid/CHIP	13.0%	8.2%	-4.8%	(-6.0%, -3.6%)	-4.8%	(-5.9%, -3.6%)	-4.9%	(-6.2%, -3.7%)
Medicaid-Eligible w/o Medicaid/CHIP	26.6%	20.5%	-6.1%	(-12.4%, 0.2%)	-6.0%	(-12.3%, 0.2%)	-6.2%	(-12.5%, 0.1%)
CSR-Eligible w/o ESI offered	8.3%	5.0%	-3.3%	(-5.3%, -1.3%)	-3.4%	(-5.4%, -1.4%)	-3.6%	(-5.6%, -1.5%)
CSR-Eligible w/ ESI offered	4.9%	3.1%	-1.8%	(-2.7%, -0.9%)	-1.6%	(-2.5%, -0.7%)	-1.7%	(-2.8%, -0.7%)
APTC-Eligible w/o ESI offered	5.6%	3.3%	-2.3%	(-5.1%, 0.4%)	-2.3%	(-5.0%, 0.4%)	-2.4%	(-5.1%, 0.3%)
APTC-Eligible w/ ESI offered	2.6%	2.3%	-0.3%	(-1.0%, 0.5%)	-0.3%	(-1.0%, 0.5%)	-0.4%	(-1.3%, 0.5%)
No Assistance w/o ESI offered	2.1%	0.9%	-1.1%	(-2.6%, 0.3%)	-1.3%	(-2.9%, 0.2%)	-1.5%	(-3.1%, 0.1%)
No Assistance w/ ESI offered	0.7%	0.8%	0.1%	(-0.3%, 0.5%)	0.1%	(-0.3%, 0.6%)	<i>Reference</i>	
Premium Burden								
Medicaid-Eligible w/ Medicaid/CHIP	28.0%	29.4%	1.3%	(-2.3%, 5.0%)	1.7%	(-1.8%, 5.3%)	0.6%	(-3.1%, 4.3%)
Medicaid-Eligible w/o Medicaid/CHIP	50.4%	60.0%	9.5%	(2.3%, 16.8%)	9.2%	(2.0%, 16.3%)	8.1%	(0.9%, 15.2%)
CSR-Eligible w/o ESI offered	30.2%	27.0%	-3.2%	(-11.1%, 4.7%)	-3.3%	(-10.9%, 4.4%)	-4.4%	(-12.1%, 3.3%)
CSR-Eligible w/ ESI offered	18.1%	23.4%	5.3%	(2.7%, 7.9%)	5.7%	(3.1%, 8.3%)	4.6%	(2.0%, 7.2%)
APTC-Eligible w/o ESI offered	23.2%	25.9%	2.7%	(-7.2%, 12.6%)	3.4%	(-6.3%, 13.1%)	2.3%	(-7.5%, 12.1%)
APTC-Eligible w/ ESI offered	9.5%	13.8%	4.3%	(2.5%, 6.1%)	4.5%	(2.6%, 6.3%)	3.4%	(1.4%, 5.3%)
No Assistance w/o ESI offered	10.3%	14.2%	3.9%	(-3.7%, 11.6%)	3.9%	(-3.7%, 11.5%)	2.8%	(-4.9%, 10.5%)
No Assistance w/ ESI offered	2.8%	3.9%	1.1%	(0.2%, 1.9%)	1.1%	(0.3%, 1.9%)	<i>Reference</i>	

	Unadjusted Post- vs Pre-ACA				Adjusted Post- vs Pre-ACA		Difference-in-Differences	
	Pre	Post	Diff	95% CI	Diff	95% CI	Est	95% CI
Premium Unaffordability								
Medicaid-Eligible w/ Medicaid/CHIP	2.83	3.31	0.48	(0.04, 0.91)	0.46	(0.03, 0.89)	-1.15	(-1.72, -0.58)
Medicaid-Eligible w/o Medicaid/CHIP	5.46	6.75	1.29	(-0.00, 2.58)	1.10	(-0.13, 2.34)	-0.51	(-1.79, 0.77)
CSR-Eligible w/o ESI offered	5.80	5.33	-0.48	(-1.70, 0.75)	-0.62	(-1.80, 0.56)	-2.24	(-3.48, -0.99)
CSR-Eligible w/ ESI offered	4.59	5.28	0.69	(0.35, 1.03)	0.66	(0.32, 1.00)	-0.95	(-1.46, -0.44)
APTC-Eligible w/o ESI offered	7.75	8.45	0.71	(-1.40, 2.81)	0.51	(-1.47, 2.48)	-1.11	(-3.12, 0.91)
APTC-Eligible w/ ESI offered	5.61	6.85	1.24	(0.91, 1.57)	1.08	(0.76, 1.40)	-0.53	(-1.03, -0.03)
No Assistance w/o ESI offered	10.67	12.80	2.13	(-0.44, 4.71)	2.08	(-0.45, 4.61)	0.47	(-2.10, 3.04)
No Assistance w/ ESI offered	6.49	8.15	1.66	(1.26, 2.06)	1.61	(1.23, 2.00)	<i>Reference</i>	

ACA – Affordable Care Act; CSR – Cost-Sharing Reductions; APTC – Advanced Premium Tax Credits; ESI – Employer Sponsored Insurance; CHIP – Children’s Health Insurance Program; OOP – Out-of-Pocket.

Estimates and 95% confidence intervals (CI) for the unadjusted and adjusted post-ACA (2014-2017) vs pre-ACA (2000-2013) change in financial burden measures are presented by group; adjusted post vs pre change were estimated from fully adjusted multivariable models including a difference-in-differences estimator and controlling for number of children in the family, number of adults in the family, infants in the family, seniors (ages ≥65) in the family, interview language, sex of the family respondent, race/ethnicity of the family respondent, marital status of the family respondent, highest educational attainment within the family, region of residence, family members in fair/poor physical health, and family members in fair/poor mental health. The difference-in-differences estimator shows the adjusted relative change in burden for each eligibility group compared to families who were not eligible for assistance but who had ESI offered. Premiums are among families who reported any private coverage from 2001 on (N=57,442).