



Appendix: Evaluating the Potential Consequences of Terminating Direct Federal Cost-Sharing Reduction (CSR) Funding

The following is an Appendix to “Evaluating the Potential Consequences of Terminating Direct Federal Cost-Sharing Reduction (CSR) Funding,” a paper by UCLA researchers Wesley Yin, Ph.D., and Richard Domurat, Ph.D. candidate.

RESULTS APPENDIX

As a supplementary analysis, we modeled the market impact of loading the CSR premium adjustment onto all plans, not just Silver plans. We modeled the premium adjustment as an 11.3% increase in the gross premiums of all plans. We find that:

- In the subsidized exchange market (Appendix Table 1), the gross premiums for plans in all tiers rise; however, net premiums of Bronze plans decrease slightly. For Silver plans, net premiums remain stable; and for Gold and Platinum plans they increase slightly. For these plans, the increase in APTC provides an incomplete offset to the increase in gross premium.
- As a result, the combined share of Platinum and Gold plans decreases slightly from 8% to 7%, the share of Silver remains the same, while the share of Bronze plans increases slightly, from 28% to 29%. Overall, there is a substitution to lower generosity plans, but the movements are small.
- Above 400% FPL, we estimate as an upper bound that 1% of enrollees will leave the market. Among the <400 FPL group, the increase in the net premiums of Silver, Gold and Platinum plans, results in a decline in total Exchange enrollment by less than 0.5%.
- In the off-exchange market (Appendix Table 2), gross premiums rise for plans in all metal tiers, but no APTC exists to offset premium increases. Moreover, the proportional premium increases means that absolute premiums rise more for Gold and Platinum plans, and least for Bronze plans. Consequently, we anticipate the share of Gold and Platinum plans declining from 25% to 23%, the share of Silver to remain stable, and the share of Bronze increasing 1.5 percentage points.
- Because rates are rising for all plans, exit rates are the most notable in this scenario for the off-exchange market. As an upper bound, we estimate that 3% of the off-exchange market may exit.
- Total market APTC increases by \$687 million/year, which is less than the approximately \$750 million in actuarial value loss due to the defunding of the CSR subsidy. The \$687 million accounts for the \$24 million/year in APTC forfeited by Bronze plan enrollees who pay the minimum net premium.

In summary, loading the actuarial value of the CSR onto the premiums of all plans results in an increase in total market APTC by \$687 million/year, less than \$750 million lost subsidy from defunding the CSR. Designing the premium adjustment across all plans induces relatively little switching across the tiers, but leads to approximately 3% disenrollment from the off-exchange market.

MODEL APPENDIX

Discrete Choice Model

We use 2015-2016 enrollment data to estimate a discrete choice regression model. This has advantages over product-by-product regression analysis in that it allows for the estimation of own-product as well as cross-product price elasticities. This framework not only permits us to estimate how the increase in the price of one plan may lead to disenrollment in that plan, but also allows us to model precisely how consumers substitute to other available plans.

The model generates parameter estimates for how individuals value characteristics of each product, including price, plan type and carrier. In addition, our model also allows for the valuations of these product characteristics to vary by the characteristics of the enrollees themselves. For instance, lower-income consumers may perceive greater disutility from a higher price than a higher-income consumer. Similarly, a person with a higher risk score, or who is older, may place greater value on a PPO (vs an HMO) than a younger, healthier consumer.

With these parameter estimates, we simulate enrollment and plan choices given counterfactual policies. Specifically, we modeled the two scenarios described in the memo: 1) an 11.3% increase in the gross premiums of all plans, or 2) a 16.6% increase in the gross premiums of Silver plans only, assuming all other aspects of the 2016 plan year remain fixed. For example, we continue to hold fixed the composition of new (~500,000) and returning (~1,000,000) enrollees observed in 2016, an important assumption given markedly different price sensitivities across the two consumer groups.

Assumptions of the Off-Exchange Market

We do not have data on the Off-Exchange market. To model the Off-Exchange market, we simulated the market, based on summary statistics of that market provided to us by Covered California. Specifically, Covered California provided us with the market share across metal tiers, separately for the <400 FPL and >400 FPL segments of the market. Covered California also provided us with an estimate of the total Off-Exchange market size of 750,000.

With this information, we weighted individuals from the on-Exchange market to match the enrollment size and joint distribution of income and tier choice observed in the off-exchange market (based on data provided by Covered California, as described above). Under the plausible assumption that the elasticities estimated for observationally similar individuals in the on-exchange market reflect behavioral responses of consumers in the off-exchange market, then our simulated sample and discrete choice model allow for reasonable simulations of choice behavior in the off-exchange market in response to premium adjustments.

Extensive Margin Enrollment Elasticities

While the choice model estimates own- and cross-price elasticities, we draw on Tebaldi (2016) for extensive margin elasticities — that is, the effect of an increase on all plan prices on any coverage, not just disenrollment from any one plan. In particular, Tebaldi (2016) estimates this extensive margin semi-elasticity using Covered California Exchange data. Our analyses generated estimates consistent with those reported. We apply the semi-elasticity corresponding to the average market age of enrollees to the changes in premiums estimated by our model, separately for each income bracket reported in the results tables. For >400 FPL consumers, we use a semi-elasticity of -3.12 (a \$100 increase in the premiums of all plans results in a 3.125% decline market coverage. For consumers <400 FPL, who are more price sensitive, we assume a semi-elasticity of -10.0. Note that this is not directly comparable to typical own-price elasticities, given that semi-elasticities reflect the choice to leave the market entirely, not just switch out of a particular plan. (As a reference, the same study also estimated own-price elasticities in the Covered California, which range from -1.0 to -3.0, reflecting the high price sensitivity of consumers in this market.)

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Table 1. On-Exchange Market: Adjustment to Silver, Only

Panel 1. All 2016 Members

Metal-Tier	Enrollment		Market Shares		Net Premiums		APTC		Avg PMPM Net Premiums	
	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver
Catastrophic	10,753	10,715	1%	1%	1,870,487	1,852,886	-	-	173.95	172.92
Bronze	378,814	434,226	28%	31%	41,498,985	33,207,516	85,749,688	111,404,806	109.55	76.48
Silver	866,668	796,612	63%	57%	109,565,374	99,289,330	265,389,658	304,756,055	126.42	124.64
Gold	61,731	80,908	5%	6%	18,687,343	19,658,271	10,027,674	19,540,498	302.72	242.97
Platinum	49,951	64,019	4%	5%	18,242,470	19,750,804	7,842,257	14,673,572	365.21	308.52
Overall	1,367,917	1,386,480	100%	100%	189,864,661	173,758,807	369,009,277	450,374,931		

0.014

Panel 2. <150 FPL

Metal-Tier	Enrollment		Market Shares		Net Premiums		APTC		Avg PMPM Net Premiums	
	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver
Catastrophic	88	83	0%	0%	14,919	14,212	-	-	170.11	170.31
Bronze	20,275	21,909	9%	9%	251,444	55,762	5,946,420	6,570,794	12.40	2.55
Silver	206,225	202,182	90%	88%	11,663,366	11,664,045	73,361,384	85,636,472	56.56	57.69
Gold	1,813	3,413	1%	1%	204,997	222,566	588,747	1,375,824	113.07	65.20
Platinum	1,816	3,096	1%	1%	280,690	360,211	656,329	1,266,513	154.55	116.34
Overall	230,217	230,684	100%	100%	12,415,416	12,316,797	80,552,880	94,849,603		

0.002

Panel 3. 150-200 FPL

Metal-Tier	Enrollment		Market Shares		Net Premiums		APTC		Avg PMPM Net Premiums	
	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver
Catastrophic	650	564	0%	0%	110,733	96,062	-	-	170.44	170.37
Bronze	86,506	97,791	19%	22%	2,599,782	980,730	24,728,647	29,395,509	30.05	10.03
Silver	347,197	329,372	77%	73%	31,159,194	29,649,198	120,462,925	139,310,709	89.74	90.02
Gold	7,423	12,737	2%	3%	1,219,127	1,355,058	2,220,555	4,924,593	164.23	106.38
Platinum	6,908	11,282	2%	2%	1,526,473	1,861,795	2,086,952	4,251,146	220.98	165.03
Overall	448,684	451,746	100%	100%	36,615,308	33,942,843	149,499,079	177,881,957		

0.007

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Panel 4. 200-250 FPL

Metal-Tier	Enrollment		Market Shares		Net Premiums		APTC		Avg PMPM Net Premiums	
	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver
Catastrophic	1,123	891	0%	0%	197,907	155,684	-	-	176.26	174.80
Bronze	84,264	97,076	37%	41%	5,771,210	3,041,094	23,742,976	30,473,572	68.49	31.33
Silver	126,765	111,866	55%	48%	19,139,550	16,861,070	39,889,963	44,736,685	150.98	150.73
Gold	10,168	14,530	4%	6%	2,405,994	2,467,829	2,696,659	5,213,177	236.63	169.85
Platinum	7,724	10,851	3%	5%	2,406,822	2,643,323	1,990,684	3,783,797	311.61	243.60
Overall	230,044	235,214	100%	100%	29,921,483	25,169,001	68,320,283	84,207,230		

0.022

Panel 5. 250-400 FPL

Metal-Tier	Enrollment		Market Shares		Net Premiums		APTC		Avg PMPM Net Premiums	
	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver
Catastrophic	3,551	3,380	1%	1%	611,830	573,636	-	-	172.28	169.74
Bronze	137,318	161,313	42%	48%	16,910,673	11,321,245	31,331,644	44,964,931	123.15	70.18
Silver	140,933	117,380	43%	35%	30,452,813	25,604,320	31,675,386	35,072,189	216.08	218.13
Gold	25,007	31,276	8%	9%	7,473,630	7,466,983	4,521,713	8,026,904	298.87	238.74
Platinum	18,990	22,998	6%	7%	6,909,878	7,095,680	3,108,293	5,372,116	363.86	308.54
Overall	325,800	336,347	100%	100%	62,358,823	52,061,863	70,637,036	93,436,140		

0.032

Panel 6. > 400 FPL

Metal-Tier	Enrollment		Market Shares		Net Premiums		APTC		Avg PMPM Net Premiums	
	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver
Catastrophic	5,341	5,798	4%	4%	935,099	1,013,291	-	-	175.07	174.77
Bronze	50,450	56,137	38%	42%	15,965,877	17,808,685	-	-	316.47	317.24
Silver	45,548	35,812	34%	27%	17,150,451	15,510,696	-	-	376.54	433.11
Gold	17,320	18,951	13%	14%	7,383,596	8,145,835	-	-	426.30	429.83
Platinum	14,513	15,792	11%	12%	7,118,608	7,789,796	-	-	490.49	493.29
Overall	133,172	132,490	100%	100%	48,553,631	50,268,304	-	-		

(0.005)

Appendix: Evaluating the Potential Consequences of Terminating Direct Federal Cost-Sharing Reduction (CSR) Funding

Table 2. Off-Exchange Market: Adjustment to Silver, Only

Panel 1. All 2016 Members

Metal-Tier	Enrollment		Market Shares		Gross Premiums		Avg PMPM Net Premiums	
	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver
Bronze	399,891	416,937	54%	57%	133,405,250	139,006,644	333.60	333.40
Silver	160,578	130,812	22%	18%	65,271,063	61,723,711	406.47	471.85
Gold	99,980	103,676	13%	14%	45,566,926	47,308,019	455.76	456.31
Platinum	82,077	84,836	11%	12%	42,017,669	43,463,668	511.93	512.32
Overall	742,527	736,261	100%	100%	286,260,908	291,502,042		

(0.008)

Panel 2. 250-400 FPL

Metal-Tier	Enrollment		Market Shares		Gross Premiums		Avg PMPM Net Premiums	
	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver
Bronze	189,819	198,474	53%	56%	66,706,596	69,704,309	351.42	351.20
Silver	83,964	67,075	23%	19%	36,354,774	33,816,262	432.98	504.15
Gold	50,725	52,651	14%	15%	24,677,646	25,643,666	486.50	487.05
Platinum	35,654	36,913	10%	10%	19,662,045	20,368,214	551.46	551.78
Overall	360,162	355,114	100%	100%	147,401,060	149,532,452		

(0.014)

Panel 3. >400 FPL

Metal-Tier	Enrollment		Market Shares		Gross Premiums		Avg PMPM Net Premiums	
	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver	Baseline	Sim Silver
Bronze	210,073	218,463	55%	57%	66,698,655	69,302,335	317.50	317.23
Silver	76,615	63,736	20%	17%	28,916,290	27,907,449	377.42	437.86
Gold	49,255	51,024	13%	13%	20,889,280	21,664,353	424.10	424.59
Platinum	46,422	47,923	12%	13%	22,355,624	23,095,454	481.57	481.93
Overall	382,365	381,147	100%	100%	138,859,848	141,969,590		

(0.003)

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Appendix Table 1. On-Exchange Market: Adjustment to All Tiers

Panel 1. All 2016 Members

Metal-Tier	Enrollment		Market Shares		Net Premiums		APTC		Avg PMPM Net Premiums	
	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All
Catastrophic	10,753	10,477	1%	1%	1,870,487	2,015,508	-	-	173.95	192.37
Bronze	378,814	393,911	28%	29%	41,498,985	43,283,743	85,749,688	103,613,057	109.55	109.88
Silver	866,668	861,502	63%	63%	109,565,374	111,116,762	265,389,658	303,583,529	126.42	128.98
Gold	61,731	56,856	5%	4%	18,687,343	18,317,564	10,027,674	10,864,208	302.72	322.17
Platinum	49,951	44,215	4%	3%	18,242,470	17,247,589	7,842,257	8,186,345	365.21	390.09
Overall	1,367,917	1,366,961	100%	100%	189,864,661	191,981,166	369,009,277	426,247,138		

(0.001)

Panel 2. <150 FPL

Metal-Tier	Enrollment		Market Shares		Net Premiums		APTC		Avg PMPM Net Premiums	
	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All
Catastrophic	88	71	0%	0%	14,919	13,405	-	-	170.11	188.59
Bronze	20,275	20,704	9%	9%	251,444	235,008	5,946,420	6,793,989	12.40	11.35
Silver	206,225	206,100	90%	90%	11,663,366	11,829,821	73,361,384	82,693,961	56.56	57.40
Gold	1,813	1,682	1%	1%	204,997	198,335	588,747	614,752	113.07	117.92
Platinum	1,816	1,642	1%	1%	280,690	263,109	656,329	677,086	154.55	160.24
Overall	230,217	230,199	100%	100%	12,415,416	12,539,678	80,552,880	90,779,788		

Panel 3. 150-200 FPL

Metal-Tier	Enrollment		Market Shares		Net Premiums		APTC		Avg PMPM Net Premiums	
	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All
Catastrophic	650	522	0%	0%	110,733	98,523	-	-	170.44	188.68
Bronze	86,506	89,005	19%	20%	2,599,782	2,407,764	24,728,647	28,775,683	30.05	27.05
Silver	347,197	346,156	77%	77%	31,159,194	31,265,364	120,462,925	137,003,425	89.74	90.32
Gold	7,423	6,852	2%	2%	1,219,127	1,167,101	2,220,555	2,340,473	164.23	170.34
Platinum	6,908	6,078	2%	1%	1,526,473	1,397,922	2,086,952	2,120,391	220.98	230.00
Overall	448,684	448,612	100%	100%	36,615,308	36,336,674	149,499,079	170,239,972		

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Panel 4. 200-250 FPL

Metal-Tier	Enrollment		Market Shares		Net Premiums		APTC		Avg PMPM Net Premiums	
	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All
Catastrophic	1,123	909	0%	0%	197,907	177,036	-	-	176.26	194.69
Bronze	84,264	87,268	37%	38%	5,771,210	5,487,293	23,742,976	28,407,240	68.49	62.88
Silver	126,765	125,676	55%	55%	19,139,550	19,048,194	39,889,963	46,123,835	150.98	151.57
Gold	10,168	9,275	4%	4%	2,405,994	2,269,197	2,696,659	2,876,792	236.63	244.65
Platinum	7,724	6,714	3%	3%	2,406,822	2,188,770	1,990,684	2,037,337	311.61	326.00
Overall	230,044	229,843	100%	100%	29,921,483	29,170,490	68,320,283	79,445,204		

Panel 5. 250-400 FPL

Metal-Tier	Enrollment		Market Shares		Net Premiums		APTC		Avg PMPM Net Premiums	
	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All
Catastrophic	3,551	3,340	1%	1%	611,830	632,865	-	-	172.28	189.46
Bronze	137,318	144,551	42%	44%	16,910,673	16,733,030	31,331,644	39,636,145	123.15	115.76
Silver	140,933	139,022	43%	43%	30,452,813	30,355,687	31,675,386	37,762,308	216.08	218.35
Gold	25,007	22,932	8%	7%	7,473,630	7,098,350	4,521,713	5,032,191	298.87	309.54
Platinum	18,990	16,830	6%	5%	6,909,878	6,399,086	3,108,293	3,351,531	363.86	380.23
Overall	325,800	326,675	100%	100%	62,358,823	61,219,017	70,637,036	85,782,175		

Panel 6. > 400 FPL

Metal-Tier	Enrollment		Market Shares		Net Premiums		APTC		Avg PMPM Net Premiums	
	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All
Catastrophic	5,341	5,634	4%	4%	935,099	1,093,680	-	-	175.07	194.11
Bronze	50,450	52,384	38%	40%	15,965,877	18,420,648	-	-	316.47	351.65
Silver	45,548	44,548	34%	34%	17,150,451	18,617,697	-	-	376.54	417.92
Gold	17,320	16,115	13%	12%	7,383,596	7,584,581	-	-	426.30	470.65
Platinum	14,513	12,951	11%	10%	7,118,608	6,998,702	-	-	490.49	540.39
Overall	133,172	131,633	100%	100%	48,553,631	52,715,307	-	-		

(0.012)

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Appendix Table 2. Off-Exchange Market: Adjustment to All Tiers

Panel 1. All 2016 Members

Metal-Tier	Enrollment		Market Shares		Gross Premiums		Avg PMPM Premiums	
	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All
Bronze	399,891	398,398	54%	55%	133,405,250	147,430,207	333.60	370.06
Silver	160,578	154,217	22%	21%	65,271,063	69,524,574	406.47	450.82
Gold	99,980	93,820	13%	13%	45,566,926	47,339,593	455.76	504.58
Platinum	82,077	75,896	11%	11%	42,017,669	42,953,455	511.93	565.95
Overall	742,527	722,330	100%	100%	286,260,908	307,247,829		

(0.03)

Panel 2. 250-400 FPL

Metal-Tier	Enrollment		Market Shares		Gross Premiums		Avg PMPM Net Premiums	
	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All
Bronze	189,819	184,984	53%	54%	66,706,596	72,206,161	351.42	390.34
Silver	83,964	79,036	23%	23%	36,354,774	38,024,554	432.98	481.10
Gold	50,725	47,270	14%	14%	24,677,646	25,483,718	486.50	539.11
Platinum	35,654	32,844	10%	10%	19,662,045	20,053,505	551.46	610.56
Overall	360,162	344,134	100%	100%	147,401,060	155,767,938		

(0.04)

Panel 3. >400 FPL

Metal-Tier	Enrollment		Market Shares		Gross Premiums		Avg PMPM Net Premiums	
	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All	Baseline	Sim All
Bronze	210,073	213,414	55%	56%	66,698,655	75,224,046	317.50	352.48
Silver	76,615	75,181	20%	20%	28,916,290	31,500,020	377.42	418.99
Gold	49,255	46,550	13%	12%	20,889,280	21,855,874	424.10	469.52
Platinum	46,422	43,052	12%	11%	22,355,624	22,899,951	481.57	531.92
Overall	382,365	378,196	100%	100%	138,859,848	151,479,891		

(0.01)