

SUPPLEMENTARY MATERIALS

Table S1. MHPAEA Study Sampling Strategy for Parity Grant.

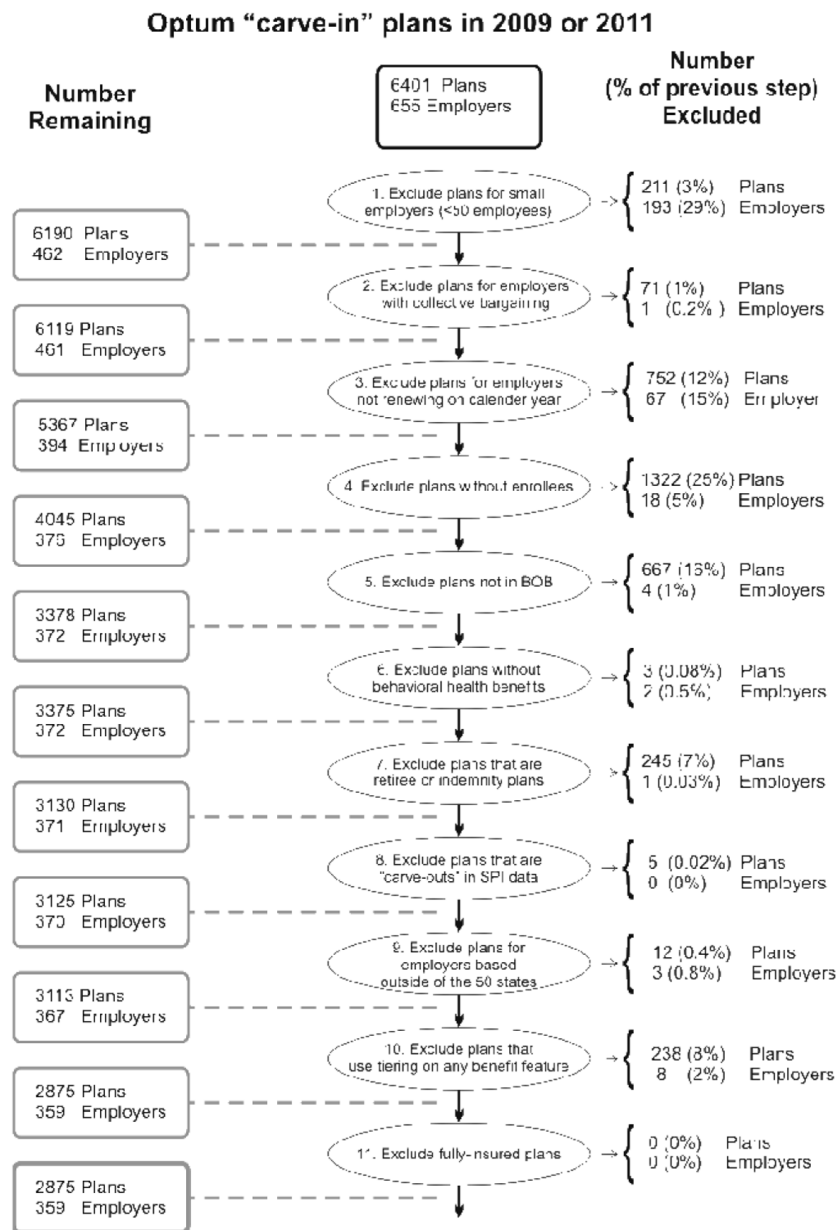
Start with all of the employer groups and plans in the BOB database provided to us by Optum Behavioral and then impose the following inclusion and exclusion criteria:

Inclusion/Exclusion Criteria:

- Employer groups that have *only* EAP plans, EAP-WL or Unknown will be excluded from the sample, regardless of size, continuity of enrollment, or carve-out status
- Employer groups that have duplicate plans for which SBC status cannot be determined will be excluded from the sample, regardless of size, continuity of enrollment, or carve-out status
- Employer groups with any carve-out plans will be included in the sample, regardless of size or continuity of enrollment
- Of the remaining employer groups, we will consider including those who are either in the BOB during 2009 or in the BOB during 2010 or in the BOB for at least one year pre- and at least one year post-parity
- Among those meeting one of these eligibility requirements, we will include the large groups (those subject to parity) and small groups (those not subject to parity) and we will exclude indeterminate groups (those for which we cannot determine whether they are subject to parity)

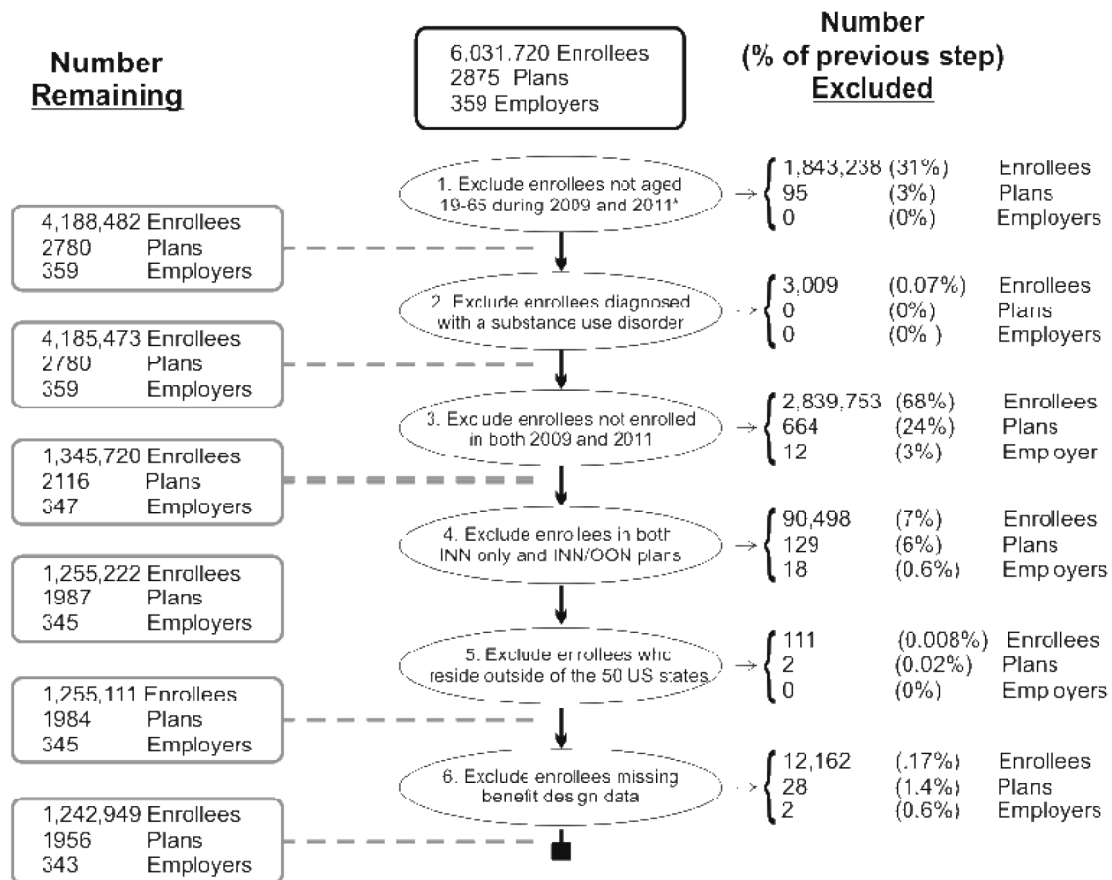
BOB: Book of Business; EAP-WL: Employee assistance plan-work life; SBC: Summary of Benefits and Coverage

Table S2. Sample-size Flow Chart for Employer and Plan Characteristics.



BOB: Book of Business, a data file from Optum containing employer and plan characteristics. SPI: Special processing instructions, a separate data file from Optum with additional plan information.

Table S3. Sample-size Flow Chart for Enrollee Characteristics.



INN: Plans that only cover in-network services. INN/OON: Plans that cover both in-network and out-of-network services. *A small number of enrollees are missing a date of birth in the enrollment file, and are excluded in this step because their age cannot be confirmed to be in the required age interval.

Table S4. Marginal Effects[†] of Changes in Benefit Features on Changes in OON Individual Psychotherapy Utilization and Expenditures, Enrollees in INN/OON Plans (n=1,058,474).

	Individual psychotherapy visits	Individual psychotherapy, total expenditure	Individual psychotherapy, patient out-of-pocket expenditures
	Coefficients [‡] (Robust Standard Error)		
Change in out-of-network benefits			
Cost sharing from coinsurance [‡]	0.00010 (0.00009)	0.00755 (0.01194)	0.00375 (0.00420)
Deductible	-0.00001* (0.000005)	-0.00145 (0.00080)	-0.00020 (0.00016)
Elimination of limit	0.01765 (0.02192)	3.49712 (3.14384)	0.83919 (0.85281)
Cost sharing from copayment and coinsurance penalty	-0.000007 (0.00002)	-0.00044 (0.00264)	0.00063 (0.00087)
Change in in-network benefits			
Copayment	0.00077 (0.00056)	0.12330 (0.08970)	0.05009 (0.02145)
Coinsurance	0.00081 (0.00047)	0.15844 (0.14311)	0.03961 (0.03422)
Coinsurance penalty	-0.00055 (0.00047)	-0.06539 (0.06881)	-0.01286 (0.01258)
Y-intercept	0.03482	4.51522	0.84637
R-squared	0.0001	0.0001	0.0001
Range of variance inflation factors	1.02-1.27	1.02-1.27	1.02-1.27

* p<0.05 ** p<0.01 *** p<0.001

[†] Coefficients represent marginal effects. These were estimated using a linear regression on change scores, which, for continuous variables, was the 2011 value minus the 2009 value. Change score for elimination of limits was coded = 1 if plan eliminated limit, = 0 if plan never had a limit. Standard errors were calculated using GEE with an independent correlation matrix to adjust for clustering at the employer level.

[‡] Out-of-network services do not require a copayment, so this benefit feature only incorporates changes in cost sharing due to coinsurance.

Table S5. Marginal Effects[†] of Changes in Benefit Features on Changes in OON Inpatient Utilization and Expenditures, Enrollees in INN/OON Plans (n=1,058,474).

	Inpatient days	Inpatient, total expenditure	Inpatient, patient out-of-pocket expenditures
	Coefficients [†] (Robust Standard Error)		
Change in out-of-network benefits			
Cost sharing from coinsurance [‡]	0.00010* (0.00005)	0.05023 (0.03606)}	0.01045 (0.00625)1
Deductible	-0.00000002 (0.0000002)	-0.00009 (0.00009)}	-0.000009 (0.00001)
Elimination of limit	0.00007 (0.00045)	-0.02034 (0.60312)	-0.04282 (0.09684)
Cost sharing from copayment and coinsurance penalty	-0.0000003 (0.0000005)	-0.00021 (0.00045)	-0.00002 (0.00012)
Change in in-network benefits			
Copayment	-0.000002 (0.000002)	-0.00458 (0.00263) }	-0.00021 (0.00040)
Coinsurance	-0.00007* (0.00004)	-0.02168 (0.03217)}	-0.00846 (0.00646)
Deductibles	-0.0000004 (0.0000003)	-0.00013 (0.00015)	0.00002 (0.00003)
Y-intercept	0.00046	0.42892}	0.11400
R-squared	0.0000	0.0000	0.0000
Range of variance inflation factors	1.01-1.20	1.01-1.20	1.01-1.20

* p<0.05 ** p<0.01 *** p<0.001

† Coefficients represent marginal effects. These were estimated using a linear regression on change scores, which, for continuous variables, was the 2011 value minus the 2009 value. Change score for elimination of limits was coded = 1 if plan eliminated limit, = 0 if plan never had a limit. Standard errors were calculated using GEE with an independent correlation matrix to adjust for clustering at the employer level.

‡ Out-of-network services do not require a copayment, so this benefit feature only incorporates changes in cost sharing due to coinsurance.

Table S6. Marginal Effects of Changes in Benefit Features on Changes in INN Individual Psychotherapy Utilization and Expenditures, Enrollees in INN/OON Plans Who Do Not Change Plans between 2009 and 2011 (n = 827,752).

	Individual psychotherapy visits	Individual psychotherapy, total expenditure	Individual psychotherapy, patient out-of-pocket expenditures
	Coefficients [†] (Robust Standard Error)		
Change in in-network benefits			
Cost sharing from copayment and coinsurance	-0.00010* (0.00004)	-0.00759** (0.00262)	-0.00080 (0.00173)
Deductible	-0.000009 (0.00001)	0.00111 (0.00123)	0.00038 (0.00037)
Elimination of limit	0.11164* (0.04667)	7.50094* (2.91800)	3.52533* (1.78641)
Cost sharing from copayment and coinsurance penalty	-0.00002 (0.00002)	-0.00150 (0.00161)	0.00073 (0.00081)
Outpatient provider network [‡]	-0.00262 (0.00419)	-0.01000 (0.27129)}	0.00406 (0.10820)
Change in out-of-network benefits			
Coinsurance	0.00234 (0.00285)	0.19494 (0.19721)	0.00199 (0.10312)
Coinsurance penalty	0.00100 (0.00091)	0.06822 (0.05550)	0.00809 (0.03363)
Y-intercept	-0.07797	-6.14760	-3.76300
R-squared	0.0004	0.0004}	0.0004
Range of variance inflation factors	1.00-1.16	1.00-1.16	1.00-1.16

* p<0.05 ** p<0.01 *** p<0.001

[†] Coefficients represent marginal effects. These were estimated using a linear regression on change scores, which, for continuous variables, was the 2011 value minus the 2009 value. Change score for elimination of limits was coded = 1 if plan eliminated limit, = 0 if plan never had a limit. Standard errors were calculated using GEE with an independent correlation matrix to adjust for clustering at the employer level.

[‡] Number of PhD and MSWs in Optum Behavioral networks per 1,000 Optum enrollees in state.

Table S7. Marginal Effects of Changes in Benefit Features on Changes in INN Inpatient Utilization and Expenditures, Enrollees in INN/OON Plans Who Do Not Change Plans between 2009 and 2011 (n = 827,752).

	Inpatient days	Inpatient, total expenditure	Inpatient, patient out-of-pocket expenditures
	Coefficients [†] (Robust Standard Error)		
Change in in-network benefits			
Cost sharing from copayment and coinsurance	-0.00001 (0.00001)	-0.01198 (0.01026)	-0.00021 (0.00092)
Deductible	0.000002 (0.000002)	0.00028 (0.00187)	0.00071* (0.00033)
Elimination of limit	0.00379 (0.00321)	3.22519 (2.55671)	0.43126 (0.29567)
Cost sharing from copayment and coinsurance penalty	0.000004 (0.000002)	0.00264 (0.00212)	0.00039 (0.00027)
Change in out-of-network benefits			
Coinsurance	-0.00015 (0.00026)	-0.22215 (0.23028)	0.00907 (0.02305)
Deductible	0.0000007* (0.0000003)	0.00082 (0.00028)	0.00013 (0.00007)
Y-intercept	-0.00165	-2.34336	-0.44969
R-squared	0.0000	0.0000	0.0000
Range of variance inflation factors	1.00-1.23	1.00-1.23	1.00-1.23

* p<0.05 ** p<0.01 *** p<0.001

[†] Coefficients represent marginal effects. These were estimated using a linear regression on change scores, which, for continuous variables, was the 2011 value minus the 2009 value. Change score for elimination of limits was coded = 1 if plan eliminated limit, = 0 if plan never had a limit. Standard errors were calculated using GEE with an independent correlation matrix to adjust for clustering at the employer level.

Table S8. Marginal Effects of Changes in Benefit Features on Changes in OON Individual Psychotherapy Utilization and Expenditures, Enrollees in INN/OON Plans Who Do Not Change Plans between 2009 and 2011 (n = 827,752).

	Individual psychotherapy visits	Individual psychotherapy, total expenditure	Individual psychotherapy, patient out-of-pocket expenditures
	Coefficients [†] (Robust Standard Error)		
Change in out-of-network benefits			
Cost sharing from coinsurance [‡]	0.00024 (0.00013)	0.02308 (0.01886)	0.00566 (0.00850)
Deductible	-0.000004 (0.000004)	-0.00049 (0.00057)	-0.00007 (0.00010)
Elimination of limit	0.01623 (0.01917)	2.56111 (2.69227)	1.02145 (0.81224)
Cost sharing from copayment and coinsurance penalty	0.00001 (0.00002)	0.00242 (0.00277)	.00177 (0.00128)
Change in in-network benefits			
Copayment	0.00059 (0.00040)	0.06656 (0.05604)	0.03944 (0.01351)
Coinsurance	0.00029 (0.00036)	0.05057 (0.05564)	0.01631 (0.01681)
Coinsurance penalty	-0.00059 (0.00050)	-0.07538 (0.07363)	-0.01408 (0.01273)
Y-intercept	0.02220	2.99315	0.02986
R-squared	0.0001	0.0001	0.0001
Range of variance inflation factors	1.02-1.26	1.02-1.26	1.02-1.26

* p<0.05 ** p<0.01 *** p<0.001

Coefficients represent marginal effects. These were estimated using a linear regression on change scores, which, for continuous variables, was the 2011 value minus the 2009 value. Change score for elimination of limits was coded = 1 if plan eliminated limit, = 0 if plan never had a limit. Standard errors were calculated using GEE with an independent correlation matrix to adjust for clustering at the employer level.

[‡] Out-of-network services do not require a copayment, so this benefit feature only incorporates changes in cost sharing due to coinsurance.

Table S9. Marginal Effects of Changes in Benefit Features on Changes in OON Inpatient Utilization and Expenditures, Enrollees in INN/OON Plans Who Do Not Change Plans between 2009 and 2011 (n = 827,752).

	Inpatient days	Inpatient, total expenditure	Inpatient, patient out-of-pocket expenditures
	Coefficients [†] (Robust Standard Error)		
Change in out-of-network benefits			
Cost sharing from coinsurance [‡]	0.00006 (0.00003)	0.06120 (0.03941)	.0181162 (0.01208)
Deductible	-0.0000001 (0.0000001)	-0.00013 (0.00014)	-0.00004 (0.00003)
Elimination of limit	0.00025 (0.00050)	0.09818 (0.78385)	-0.03104 (0.12328)
Cost sharing from copayment and coinsurance penalty	-0.0000006 (0.0000007)	-0.00045 (0.00069)	-0.00003 (0.00018)
Change in in-network benefits			
Copayment	-1.000002 (0.000003)	-0.00457 (0.00455)	-0.00056 (0.00072)
Coinsurance	-0.00018* (0.00008)	-0.12710 (0.06692)	-0.02816 (0.01019)
Deductible	-0.0000003 (0.0000004)	0.00035 (0.00050)	0.00003 (0.00011)
Y-intercept	0.00036	0.37707	0.12399
R-squared	0.0000	0.0000	0.0000
Range of variance inflation factors	1.00-1.36	1.00-1.36	1.00-1.36

* p<0.05 ** p<0.01 *** p<0.001

[†] Coefficients represent marginal effects. These were estimated using a linear regression on change scores, which, for continuous variables, was the 2011 value minus the 2009 value. Change score for elimination of limits was coded = 1 if plan eliminated limit, = 0 if plan never had a limit. Standard errors were calculated using GEE with an independent correlation matrix to adjust for clustering at the employer level.

[‡] Out-of-network services do not require a copayment, so this benefit feature only incorporates changes in cost sharing due to coinsurance.

Table S10. Marginal Effects of Changes in Benefit Features on Changes in INN Individual Psychotherapy Utilization and Expenditures, Enrollees in INN/OON Plans Sponsored by Employers Who Only Offer INN/OON Plans (n = 371,423).

	Individual psychotherapy visits	Individual psychotherapy, total expenditure	Individual psychotherapy, patient out-of-pocket expenditures
	Coefficients [†] (Robust Standard Error)		
Change in in-network benefits			
Cost sharing from copayment and coinsurance	-0.00006 (0.00006)	-0.00471 (0.00409)	-0.00198 (0.00177)
Deductible	-0.00001 (0.00001)	-0.00006 (0.00126)	0.00058 (0.00034)
Elimination of limit	0.12770*** (0.03724)	10.04904*** (2.82044)	2.73210 (2.24324)
Cost sharing from copayment and coinsurance penalty	-0.00007* (0.00002)	-0.00441* (0.00181)	0.00034 (0.00140)
Outpatient provider network [‡]	-0.00263 (0.00790)	0.03278 (0.58806)	-0.09865 (0.28746)
Change in out-of-network benefits			
Coinsurance	0.00345 (0.00251)	0.25751 (0.18418)	0.03428 (0.07080)
Coinsurance penalty	0.00182* (0.00071)	0.12478* (0.05187)	0.01151 (0.02510)
Y-intercept	-0.05779	-5.89855	-2.77060
R-squared	0.0005	0.0005	0.0003

* p<0.05 ** p<0.01 *** p<0.001

[†] Coefficients represent marginal effects. These were estimated using a linear regression on change scores, which, for continuous variables, was the 2011 value minus the 2009 value. Change score for elimination of limits was coded = 1 if plan eliminated limit, = 0 if plan never had a limit. Standard errors were calculated using GEE with an independent correlation matrix to adjust for clustering at the employer level.

[‡] Number of PhD and MSWs in Optum Behavioral networks per 1,000 Optum enrollees in state.

Table S11. Marginal Effects of Changes in Benefit Features on Changes in INN Inpatient Utilization and Expenditures, Enrollees in INN/OON Plans Sponsored by Employers Who Only Offer INN/OON Plans (n = 371,423).

	Inpatient days	Inpatient, total expenditure	Inpatient, patient out-of-pocket expenditures
	Coefficients [†] (Robust Standard Error)		
Change in in-network benefits			
Cost sharing from copayment and coinsurance	0.000003 (0.00001)	0.00589 (0.01510)	0.00032 (0.00081)
Deductible	0.000005* (0.000002)	0.00317 (0.00178)	0.00056*** (0.00013)
Elimination of limit	0.00294 (0.00284)	3.38517 (2.84574)	0.02522 (0.22597)
Cost sharing from copayment and coinsurance penalty	0.000005 (0.000004)	0.00421 (0.00386)	0.00009 (0.00026)
Change in out-of-network benefits			
Coinsurance	-0.00049 (0.00031)	-0.59986* (0.28455)	-0.00307 (0.01808)
Deductible	-0.000002 (0.000001)	-0.00088 (0.00082)	-0.00012 (0.01808)
Y-intercept	0.00357	1.84020	0.15006
R-squared	0.0000	0.0000	0.0000

* p<0.05 ** p<0.01 *** p<0.001

[†] Coefficients represent marginal effects. These were estimated using a linear regression on change scores, which, for continuous variables, was the 2011 value minus the 2009 value. Change score for elimination of limits was coded = 1 if plan eliminated limit, = 0 if plan never had a limit. Standard errors were calculated using GEE with an independent correlation matrix to adjust for clustering at the employer level.

Table S12. Marginal Effects of Changes in Benefit Features on Changes in OON Individual Psychotherapy Utilization and Expenditures, Enrollees in INN/OON Plans Sponsored by Employers Who Only Offer INN/OON Plans (n = 371,423).

	Individual psychotherapy visits	Individual psychotherapy, total expenditure	Individual psychotherapy, patient out-of-pocket expenditures
	Coefficients [†] (Robust Standard Error)		
Change in out-of-network benefits			
Cost sharing from coinsurance [‡]	0.00012 (0.00011)	0.00302 (0.01359)	-0.00157 (0.00373)
Deductible	-0.00002 (0.00001)	-0.00340 (0.00203)	-0.00061 (0.00039)
Elimination of limit	0.02569 (0.04033)	5.99041 (6.11090)	1.19937 (1.53276)
Cost sharing from copayment and coinsurance penalty	-0.00005 (0.00004)	-0.00653 (0.00549)	-0.00071 (0.00136)
Change in in-network benefits			
Copayment	0.00113 (0.00188)	0.24973 (0.31915)	0.07834 (0.07581)
Coinsurance	0.00173 (0.00245)	0.38634 (0.43935)	0.09405 (0.10109)
Coinsurance penalty	-0.00047 (0.00051)	-0.05269 (-0.07256)	-0.01422 (0.02153)
Y-intercept	0.04651	6.008058	1.77491
R-squared	0.0003	0.0004	0.0001

* p<0.05 ** p<0.01 *** p<0.001

[†] Coefficients represent marginal effects. These were estimated using a linear regression on change scores, which, for continuous variables, was the 2011 value minus the 2009 value. Change score for elimination of limits was coded = 1 if plan eliminated limit, = 0 if plan never had a limit. Standard errors were calculated using GEE with an independent correlation matrix to adjust for clustering at the employer level.

[‡] Out-of-network services do not require a copayment, so this benefit feature only incorporates changes in cost sharing due to coinsurance.

Table S13. Marginal Effects of Changes in Benefit Features on Changes in OON Inpatient Utilization and Expenditures, Enrollees in INN/OON Plans Sponsored by Employers Who Only Offer INN/OON Plans (n = 371,423).

	Inpatient days	Inpatient, total expenditure	Inpatient, patient out-of-pocket expenditures
	Coefficients [†] (Robust Standard Error)		
Change in out-of-network benefits			
Cost sharing from coinsurance [‡]	0.00003 (0.00004)	0.02656 (0.04217)	0.01216 (0.01119)
Deductible	0.0000002 (0.0000002)	0.00006 (0.00024)	-0.00003 (0.00003)
Elimination of limit	0.00080 (0.00052)	0.44307 (1.12198)	0.05200 (0.13384)
Cost sharing from copayment and coinsurance penalty	-0.000001 (0.000001)	-0.00169 (0.00161)	-0.00033 (0.00045)
Change in in-network benefits			
Copayment	0.00000007 (0.000002)	-0.00716 (0.0051179)	0.00008 (0.00032)
Coinsurance	-0.00006 (0.00004)	-0.05297 (0.04532)	-0.00696 (0.00439)
Deductible	-0.0000005 (0.0000004)	-0.00021 (0.00057)	0.00004 (0.00007)
Y-intercept	-0.00011	0.11642	0.07526
R-squared	0.0000	0.0000	0.0000

* p<0.05 ** p<0.01 *** p<0.001

[†] Coefficients represent marginal effects. These were estimated using a linear regression on change scores, which, for continuous variables, was the 2011 value minus the 2009 value. Change score for elimination of limits was coded = 1 if plan eliminated limit, = 0 if plan never had a limit. Standard errors were calculated using GEE with an independent correlation matrix to adjust for clustering at the employer level.

[‡] Out-of-network services do not require a copayment, so this benefit feature only incorporates changes in cost sharing due to coinsurance.