



**Report to the New Hampshire Insurance Department:  
Copayments for Chiropractic Care and Physical Therapy  
Services**

Prepared for the  
State of New Hampshire Insurance Department  
January 5, 2018

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## 1.0 Executive Summary

The state of New Hampshire passed legislation that set patients' out-of-pocket costs for chiropractic care and physical therapy services equal to out-of-pocket costs for primary care services with the goal of lowering patients' costs and increasing their access to these services. The initial study<sup>1</sup> conducted in December 2014 analyzed the New Hampshire Comprehensive Health Care Information System (NH CHIS) dataset in an effort to better understand this legislation, with a primary focus on the likely effects of changes in member cost. The purpose of this report is to follow up on the original study using the most complete data available. Using an updated version of the NH CHIS dataset containing roughly 230,000 commercial patients in calendar year 2016, BerryDunn performed several analyses to determine the effects of the legislation and update the original study's findings around the relationship between copayment level and use of chiropractic and physical therapy services.

The first analytical focus was on the changes over time, comparing before and after the implementation of the law. BerryDunn identified three primary findings:

- **After passage of the law, cost sharing equalized.** As expected, BerryDunn found that the legislation had a strong equalizing effect on the levels of member cost sharing, with large changes in the agreement between the empirically derived copayment levels for primary care services and the derived copayment levels of chiropractic care and physical therapy services in the populations affected by the legislation.
- **This was accomplished largely through increasing cost sharing on primary care.** BerryDunn also observed much larger secular trends away from lower-cost-sharing plans towards higher-cost-sharing plans, which produced large increases in measured cost sharing for primary care and other services. These market-wide shifts make it more difficult to discern whether the legislation had the expected effects on cost and utilization for chiropractic care and physical therapy services in the population targeted by the law.
- **Chiropractic cost sharing declined slightly and utilization increased.** Descriptive data for this population show a decline in average cost sharing and an increase in utilization for chiropractic care, but not for physical therapy. It is not feasible to establish causality about these effects, particularly given that a significant portion of the equalization in cost sharing levels between these services and other health services stem from increases to the other services' cost sharing levels, creating difficulty in

ascribing statistical significance to the small absolute changes in chiropractic care and physical therapy cost sharing levels.

The second analytical focus examined the relationship between the cost sharing level and the utilization of services within a given time period for chiropractic and PT services.

- **Lower cost sharing is associated with higher utilization for PT and chiropractic services.** The general findings from the updated analysis around the relationship between copayment level and the use of chiropractic care and physical therapy services were broadly consistent with both the findings from the first study and the landmark RAND Health Insurance Experiment (RAND HIE). Lower levels of cost sharing are associated with higher overall cost and utilization.

There is a negative and statistically significant relationship between the copayment level and the use of chiropractic care or physical therapy services. The analysis confirmed that lower copayment levels are associated with both increased likelihood of any service use during the year, and increased amount of services per patient for patients with any service use.

The study also examined the relationships between spending on chiropractic services and both spending on total services and spending on all non-chiropractic services in that same year. The study examined this same set of relationships for PT services.

- **After risk adjustment, an increase in spending on chiropractic services is associated with an increase in total spending. There was no statistically significant relationship between spending on chiropractic services and spending on non-chiropractic services.**

Similar to the original study this suggests that when considering all conditions for which chiropractic care is used, there is not enough of a reduction in other services to make up for the increase in chiropractic services spending. This results in an overall increase in total spending.

- **After risk adjustment, \$1 of PT services is associated with an increase of more than \$1 of non-PT services, though no direction of causality is established.**

This effect is much more likely to be related to unmeasured underlying morbidity for the condition being treated by physical therapy for which the model has not accounted than for an increase caused by the physical therapy services.

The third area of analytical focus was to examine the relationship between the use of chiropractic care and outcomes measures, specifically opioid use within a given year.

- **There is an association, not statistically significant, between use of chiropractic care and lower opioid use.** Similar to the initial study, there is evidence that increased

use of chiropractic care is associated with lower opioid use, however, likely due to small sample size there were no statistically significant results when analyzing the sub-population specifically affected by the legislation.

It is important to reiterate that changes in the composition and mix of the derived copayment levels used in the analysis did limit the observed effects and overall significance of the updated analyses. The market-wide shifts towards higher cost sharing across policies and plans make it difficult to draw meaningful conclusions without detailed benefit design data.

## 2.0 Introduction

New Hampshire House Bill 1281 required the New Hampshire Insurance Department to study the relationship of insurance copayments with use of chiropractic and physical therapy services:

“The commissioner shall compile available data and prepare reports concerning member cost sharing and the impact on utilization of services for physical therapy and chiropractic care. The first report shall...analyze all New Hampshire Insurance markets and identify differences in cost sharing and utilization of health services for the purpose of determining if there is a statistical association between the use of physical therapy and chiropractic care services and copayment amounts. The commissioner shall also seek to determine whether the overall costs of patients that utilize chiropractic care or physical therapists are less when the patient has lower copayment amounts for these services, and if any observed lower overall patient costs are caused by reductions in other health care services and better health care outcomes, not patient health status.”

NHID retained Compass Health Analytics, Inc. to perform the study, which was completed in December 2014. Additionally, the Bill required a follow up study to be done three years later using the most recently available, complete data. NHID retained BerryDunn (formerly Compass Health Analytics, Inc.) to complete the second version of the report.

The primary goal of the follow up study is to understand the impact of the legislation on member cost sharing, utilization, and overall cost for chiropractic care and physical therapy services. Additionally, the updated report re-analyzes the relationship between copayment level and use of these services.

## 3.0 Methods

There are four major sections of the updated study: (1) evaluation of the impacts of the legislation on copayment level for chiropractic and physical therapy services (2) evaluation of the relationship between copayment level for chiropractic and physical therapy services and use of these services, (3) evaluation of the relationship between copayment level and overall cost in patients who utilize chiropractic or physical therapy services, and (4) assessment of the relationship between use of chiropractic or physical therapy services and selected outcome measures.

The methods used in these sections other than for (1) are similar to the methods used in the original study. As such, this report provides only a brief overview for each section except in cases where there were significant methodological changes. The original report contains the complete description of each method.

### **3.1 Effect of the Legislation on Copayment Level for Chiropractic and PT Services**

To evaluate the effects of the legislation on copayment level for chiropractic and physical therapy services BerryDunn compared the levels of agreement between primary care copayment levels and chiropractic and physical therapy copayment levels from the original study (i.e., 2013 data) to the same levels of agreement using the 2016 data. BerryDunn performed this comparison for the population overall as well as the relevant subsets, some of which were affected by the legislation and some of which were not. First BerryDunn separated out the self-funded and fully insured groups. Next BerryDunn parsed the fully insured population into individual policies, small groups, and large groups. The legislation applied to just the individual and small group markets.

BerryDunn used the same general approach for empirically assigning copayment levels as the first study. This methodology is described in more detail in the “Data” section of this report.

### **3.2 Relationship Between Copayment Level and Use of Chiropractic and PT Services**

To evaluate the relationship between copayment level and the use of chiropractic or physical therapy services, BerryDunn used the same two-part model approach used in the first study which was similar to the methodology used in the evaluation of chiropractic services in the RAND HIE. The first part of the model uses a logistic regression to predict the likelihood of using any services, and the second part of the model evaluates the cost of services given any use of services.

BerryDunn constructed a patient-level dataset containing copayment level and cost variables for chiropractic care, physical therapy services, and overall medical and pharmacy. All cost variables were based on allowed cost, which was constructed by summing the plan paid, copayment, coinsurance, and deductible amount fields from the NH CHIS. The dataset contained data from calendar year 2016 and was limited to patients who had continuous medical eligibility and continuous enrollment in a single copayment level throughout the year.

One notable difference in methodology from the first study was around risk adjustment for patient health status. The first study used CMS’s publicly available HCC software<sup>2</sup> to assign hierarchical condition categories based on concurrent medical claims data (i.e., 2013 in the first study). The CMS HCCs are intended primarily for use in a Medicare population so were adequate but not optimal. Since the publication of the initial report, there have been several changes in the way the CMS HCCs are calculated. Annual versions of the software have resulted in changes to some of the categories. Additionally, the transition from ICD-9 diagnosis to ICD-10 diagnosis coding in October 2015 resulted in further changes to the categorizations. Since the updated study could not use exactly the same list of HCCs from the first report,



BerryDunn used HHS's publicly available HCC software<sup>3</sup> to assign concurrent hierarchical condition categories (i.e., based on concurrent medical claims). BerryDunn did not have access to this software during the initial study. These HCCs are conceptually similar to the CMS HCCs used previously but have the advantage of having been created for a commercial population. There is broad but not complete overlap in the categories, along with general but not complete agreement between the patient-level assignments. Using the HHS HCCs accomplishes the same goals as the first study and overall represents a methodological improvement.

The methods used in the modeling, including the use of HCCs and the transformations between log dollars and nominal dollars, were the same as the methods from the original study. The one exception is that BerryDunn did not attempt to do a longitudinal year-over-year analysis in this report since the approach was ineffective in the first study.

The final methodology difference is that in this report BerryDunn ran these models on both the full population and the population affected by the legislation.

### **3.3 Relationship Between Use of Chiropractic and PT Services and Overall Cost**

To evaluate the relationship between chiropractic and physical therapy costs and overall costs BerryDunn used the final methodologies from the first study (i.e., BerryDunn did not replicate direct modeling attempts that were discarded due to the technical statistical problem of collinearity in the data). This general approach uses both the general copayment level and chiropractic and physical therapy costs as independent variables. The first study verified that these have a correlation but that there was not enough collinearity to invalidate the estimated effects from the models. A similar pattern occurred during this study with an even stronger effect due to the increased level of correlation between the general copayment levels and the chiropractic and physical therapy copayment levels. As was done in the first study, BerryDunn ran models with and without combinations of these independent variables and observed reasonably stable estimates. It is unlikely that the collinearity from these terms is significantly affecting the estimates from these models, but it is possible.

### **3.4 Assessment of the Relationship Between Use of Chiropractic or PT Services and Selected Outcome Measures**

BerryDunn used the same general methods as the prior study for evaluating the relationship between chiropractic and physical therapy care and opioid use. As was the case in the first study, there are differences in the way the use of chiropractic care and the use of physical therapy services relate to opioid use, so BerryDunn modeled them separately.

The HHS HCCs contain a category for "Rheumatoid Arthritis and Specified Autoimmune Disorders" that BerryDunn used in place of the rheumatoid arthritis CMS HCC in the first study.

## 4.0 Data

The data source used in this study is the New Hampshire multi-payer claims database, the New Hampshire Comprehensive Health Care Information System (NH CHIS). The version of the NH CHIS data provided to BerryDunn contains detailed claims and eligibility information for individuals with Commercial or Medicaid insurance from 2014 through 2016. For this study, BerryDunn limited the sample to calendar year 2016. BerryDunn did an initial data review to limit the data only to payers that did not have obviously incomplete data (i.e., payers with plausible PMPMs and no missing paid or incurred months). Like the original study, this included removing patients eligible for Medicaid or Medicare.

Due to known discrepancies in the coverage of medical behavioral health services across payers and plans as well as concerns about the completeness and reliability of the behavioral health indicator on the medical eligibility files, BerryDunn excluded medical behavioral health payers and services (but not pharmacy claims) from the study.

As in the original study, BerryDunn used the “person\_key” field within the NH CHIS data as the unit of analysis. This field is the single ID that aggregates patients who have membership in multiple plans or across multiple payers. Revisions to the available data in the 2016 CHIS allowed us to calculate an improved measure of copayment.<sup>1</sup>

Investigation showed reasonably good consistency of copayment levels within a single group for a selected set of services. BerryDunn summarized claim lines to the claim level and examined all groups for which there were at least 10 claims of interest in the period and then used the following methodology to assign copayment levels:

- Average copayment level of \$0 was assigned to ‘Other CS’
- Average copayment of greater than \$0 and up to \$10 was assigned to ‘Low Copay’
- Average copayment of greater than \$10 and up to \$20 was assigned to ‘Med Copay’
- Average copayment of greater than \$20 was assigned to ‘High Copay’

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<sup>1</sup> Unlike the original study, BerryDunn was able to use multiple fields when empirically assigning copayment levels. Like the prior study, the “group\_id” field in the NH CHIS data was the primary field used, although the values assigned to this field changed between versions of the NH CHIS preventing longitudinal analyses at the group\_id level. The 2016 version of the NH CHIS data also contains other fields that are particularly relevant to the individual policies. These fields which include “hios\_plan\_id,” “exchange\_indicator,” and “high\_deductible\_health\_plan” are reasonably complete and provide additional information, including high deductible classification and an indicator for whether they are exchange plans. BerryDunn was able to use these newly available fields to more accurately assign copayment levels to the individual policies, specifically using the combination of “group\_id” and “hios\_plan\_id” for assigning copayment levels rather than “group\_id” alone. Additionally, BerryDunn used the “high\_deductible\_health\_plan” field to classify policies as ‘a) Zero Copay’ since those represent an alternative form of cost-sharing.

BerryDunn used this same method and criteria for assigning a 'Chiropractic and PT Copay Level,' 'Primary Care Copay Level,' and a 'General Copay Level' which took into account all professional services.

The correlations between copayment levels are discussed in more detail in the Results section of this report.

One major change in the underlying NH CHIS data has to do with the presence of self-funded groups. Per the 2016 U.S. Supreme Court decision, self-insured groups no longer have to submit data to state agencies.<sup>2</sup> The result of this is that there is significantly less data available for reproducing the information from the original report. This affects the ability to draw statistically significant conclusions about the relationships between copayment level and cost and utilization.

As described above, for risk adjustment BerryDunn downloaded and implemented mappings and logic for creating HHS's HCCs.<sup>1</sup> BerryDunn used the primary diagnosis from the available medical claims data to assign binary flags for the HCCs at the patient level.

## 5.0 Results

Results for each of the four study areas are presented below.

### 5.1 Effect of the Legislation on Copayment Level for Chiropractic and PT Services

There is significant evidence that the legislation caused greater alignment between the copayment level for chiropractic and physical therapy services and the copayment level for primary care services. There is also very strong evidence of market-wide shifts away from lower cost sharing plans into higher cost sharing plans.

There is evidence that across the full population of New Hampshire, the second effect is stronger resulting in higher levels of chiropractic and physical therapy cost sharing for individuals and small groups along with lower utilization and costs, so much of this realignment stems from increasing other cost sharing rather than decreasing cost sharing for physical therapy and chiropractic services, making it more difficult than anticipated to estimate the effects of these statutory requirements on physical therapy and chiropractic services.

In the population affected by the legislation (individuals and small groups), physical therapy copayment levels and changes in cost and utilization align with the statewide effects, but despite the challenges noted, there is suggestive evidence that the effects from the legislation

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<sup>2</sup> Gobeille v. Liberty Mut. Ins. Co., 577 U.S. \_\_\_\_ (2016)

outweigh the secular trends for chiropractic care resulting in lower cost sharing and increased access.

As shown in Exhibit 1, for the population affected by the legislation there was a 14.5% increase in the percentage of members with an observed level of agreement between the chiropractic and physical therapy copayment level and the primary care copayment level.

*Exhibit 1*

**For Members Affected by the Legislation, Percent with Primary Care Copay Higher, Equal to, and Lower than Chiro/PT Copay, by Year**

Copay Level Relationship	2013	2016	Change
Primary Care Higher Than Chiropractic/PT	15.8%	3.0%	-12.8%
Primary Care Equal To Chiropractic/PT	82.0%	96.5%	14.5%
Primary Care Lower Than Chiropractic/PT	2.2%	0.5%	-1.7%

The population affected by the legislation also shows significant changes in the mix of copayment levels, with a shift towards plans with either higher copayment levels or into plans with alternative cost-sharing mechanisms. The plans with alternative cost sharing mechanisms appear to have higher cost sharing due to coinsurance and deductibles.

*Exhibit 2*

**Crosstab of Chiro/PT Copay Level vs. Primary Care Visits Copay Level:  
Fully Insured Continuously Eligible Members w/ Assigned Copay Levels  
Individual<sup>1</sup> and Small Group<sup>2</sup> Policies  
Calendar Year 2013**

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	12,499	16	371	14	12,900
	Low	0	25	2,737	942	3,704
	Medium	1	10	7,191	458	7,660
	High	3	20	602	3,892	4,517
	Total	12,503	71	10,901	5,306	28,781

**Crosstab of Chiro/PT Copay Level vs. Primary Care Visits Copay Level:  
Fully Insured Continuously Eligible Members w/ Assigned Copay Levels  
Individual<sup>1</sup> and Small Group<sup>2</sup> Policies  
Calendar Year 2016**

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	43,614	420	78	370	44,482
	Low	5	335	56	106	502
	Medium	11	118	2,707	714	3,550
	High	54	32	86	9,692	9,864
	Total	43,684	905	2,927	10,882	58,398

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	43%	0%	1%	0%	45%
	Low	0%	0%	10%	3%	13%
	Medium	0%	0%	25%	2%	27%
	High	0%	0%	2%	14%	16%
	Total	43%	0%	38%	18%	100%

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	75%	1%	0%	1%	76%
	Low	0%	1%	0%	0%	1%
	Medium	0%	0%	5%	1%	6%
	High	0%	0%	0%	17%	17%
	Total	75%	2%	5%	19%	100%

<sup>1</sup>All policies sold and issued directly to individuals including group conversion policies

<sup>2</sup>All policies sold and issued directly to employers having between 1 and 50 employees

It is important to note that the “Other CS” category represents plans with alternative forms of member cost sharing mechanisms such as deductibles and coinsurance. In the original study

this category was called the “Zero” copayment level which can be misleading. This category is a heterogeneous mixture of plan types but generally appears to represent higher levels of cost sharing that occur through high deductibles and coinsurance rather than copayments.

It is also worth noting that changes in the way copayment levels are assigned for individual policies based on the new fields in the NH CHIS mean that the “Other CS” copay levels from 2013 are probably understated. However, this does not affect the agreement between primary care and chiropractic/PT copayment levels. It also does not affect the clear finding that there are very few members in 2016 in the affected population who have low or even medium copay chiropractic and physical therapy cost sharing, despite the near perfect alignment with primary care copayment levels.

One of the key findings is that the effect of the legislation on the individual and small group policies appears to be greater than the effect of the general secular trends towards greater cost sharing for chiropractic services. This comes in part from the fact that prior to the legislation there were very high cost sharing levels in the affected population.

*Exhibit 3*

**Comparison of Key Measures for the Affected Population**

		Number of Mbrs	% of Mbrs w/ Svcs	Mean Cost <sup>1</sup>	Mean Cost per Util Mbr <sup>2</sup>	Member Share % on Claims w/in Service Type <sup>3</sup>
Chiropractic or PT Services	2013	28,781	9.0%	\$62	\$687	50%
	2016	58,398	10.9%	\$60	\$551	51%
Chiropractic Services	2013	28,781	4.5%	\$17	\$379	73%
	2016	58,398	7.2%	\$25	\$342	58%
PT Services	2013	28,781	4.9%	\$45	\$902	41%
	2016	58,398	4.4%	\$35	\$805	47%

<sup>1</sup>Cost is defined as the allowed cost for the services specified in the first column (i.e., chiropractic and PT services, chiropractic services, PT services)

<sup>2</sup>Mean Cost per Util Mbr is defined as the allowed cost divided by the total number of members who had any cost in the period

<sup>3</sup>Member Share % on Claims is defined as the sum of the copay amount, coinsurance amount, and deductible amount on the claim divided by the allowed amount of the claim

The change in cost sharing levels on chiropractic care claims are associated with higher levels of utilization indicating greater access to these services. It is worth noting that substantial

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changes in the population size and health status mix could be affecting this result, but there is a strong suggestion that the legislation had the intended effect around access to chiropractic care.

The effect on physical therapy services in the individual and small group segments aligns with the secular trends seen for both chiropractic and physical therapy services in the full population, which generally show increases in cost sharing within copayment levels for both chiropractic and physical therapy services. However, Exhibit 3 makes it clear that overall cost sharing, as measured by “member share of payment,” was much higher for chiropractic than for physical therapy before the law was implemented, and the law had a much larger effect on reducing member out of pocket payments. The change in patient cost exposure for physical therapy was much smaller, and so any effects may be outweighed by other secular trends affecting physical therapy use, for example, accountable care delivery models. Physical therapy services are much more likely to be within the sphere of influence of accountable care organizations than chiropractors. In addition, under New Hampshire law, members have the option of self-referral for chiropractic services<sup>4</sup>.

In Exhibit 4, which displays the results for the overall population, we see that cost sharing went up very significantly for chiropractic care, and while the percentage of members using services remained largely unchanged the cost per member using service dropped dramatically. Changes in cost sharing and effects on utilization and cost for physical therapy were, again, smaller.

Exhibit 4

Comparison of Key Measures for the Full Population

		Chiropractic/ PT Copay Level	Number of Mbrs	% of Mbrs w/ Svcs	Mean Cost <sup>1</sup>	Mean Cost per Util Mbr <sup>2</sup>	Median Cost per Util Mbr	Member Share % on Claims w/in Service Type <sup>3</sup>
Chiropractic or PT Services	2013	Other CS	67,527	8.9%	\$53	\$600	\$379	44%
		Low	59,346	16.9%	\$214	\$1,264	\$445	8%
		Medium	104,312	12.9%	\$74	\$578	\$359	27%
		High	79,079	10.2%	\$55	\$537	\$337	57%
		<b>Total</b>	<b>310,264</b>	<b>12.1%</b>	<b>\$92</b>	<b>\$756</b>	<b>\$381</b>	<b>25%</b>
Chiropractic or PT Services	2016	Other CS	59,272	9.9%	\$55	\$558	\$372	50%
		Low	33,165	15.9%	\$108	\$676	\$400	20%
		Medium	73,441	14.1%	\$81	\$578	\$353	27%
		High	66,706	10.8%	\$55	\$508	\$344	58%
		<b>Total</b>	<b>232,584</b>	<b>12.3%</b>	<b>\$71</b>	<b>\$574</b>	<b>\$363</b>	<b>37%</b>
Chiropractic Services	2013	Other CS	67,527	5.6%	\$22	\$385	\$253	54%
		Low	59,346	13.0%	\$156	\$1,205	\$338	7%
		Medium	104,312	9.5%	\$35	\$371	\$263	36%
		High	79,079	5.4%	\$26	\$365	\$238	69%
		<b>Total</b>	<b>310,264</b>	<b>8.7%</b>	<b>\$53</b>	<b>\$608</b>	<b>\$271</b>	<b>25%</b>
Chiropractic Services	2016	Other CS	59,272	6.6%	\$22	\$328	\$246	60%
		Low	33,165	11.8%	\$48	\$409	\$274	20%
		Medium	73,441	10.7%	\$38	\$360	\$252	34%
		High	66,706	7.7%	\$27	\$351	\$252	61%
		<b>Total</b>	<b>232,584</b>	<b>8.9%</b>	<b>\$32</b>	<b>\$361</b>	<b>\$255</b>	<b>42%</b>
PT Services	2013	Other CS	67,527	3.7%	\$32	\$856	\$619	36%
		Low	59,346	5.1%	\$58	\$1,121	\$732	11%
		Medium	104,312	4.1%	\$39	\$946	\$665	19%
		High	79,079	3.6%	\$29	\$791	\$592	46%
		<b>Total</b>	<b>310,264</b>	<b>4.1%</b>	<b>\$38</b>	<b>\$936</b>	<b>\$657</b>	<b>25%</b>
PT Services	2016	Other CS	59,272	3.9%	\$33	\$858	\$644	43%
		Low	33,165	5.4%	\$60	\$1,096	\$735	19%
		Medium	73,441	4.3%	\$43	\$986	\$692	21%
		High	66,706	3.7%	\$28	\$750	\$561	54%
		<b>Total</b>	<b>232,584</b>	<b>4.2%</b>	<b>\$38</b>	<b>\$917</b>	<b>\$653</b>	<b>32%</b>

<sup>1</sup>Cost is defined as the allowed cost for the services specified in the first column (i.e., chiropractic and PT services, chiropractic services, PT services)

<sup>2</sup>Mean Cost per Util Mbr is defined as the allowed cost divided by the total number of members who had any cost in the period

<sup>3</sup>Member Share % on Claims is defined as the sum of the copay amount, coinsurance amount, and deductible amount on the claim divided by the allowed amount of the claim

The original study focused on the relationship between the general copayment level and the copayment level for chiropractic and physical therapy services. The legislation tied the chiropractic and physical therapy copayment levels to primary care copayment levels rather than the general plan level. Investigation determined that the general plan and primary care copayment levels are correlated but not equivalent. Appendix A contains the full results of the analysis. It also breaks out the agreement levels by self-funded and fully insured, which clearly demonstrates the reduced data for the self-funded populations. Finally, Appendix A shows the detailed data for the copayment agreement levels for individuals, small groups, and large groups. Those tables show a much greater change in alignment between the primary care and chiropractic/PT copayment levels for the population affected by the legislation than the population not affected.

One additional finding is that the chiropractic and physical therapy copayment levels assigned in the 2016 data showed less variation than those assigned in 2013. The effect was stronger for chiropractic claims than for physical therapy claims. This suggests a shift towards more standardized copayment levels for these services. It also makes it more difficult to draw meaningful conclusions from the available data due to less distinction between the assigned plan levels. There were large reductions in the difference between the average copayment costs for low and high copayment levels. The 2016 copayment assignments for chiropractic and physical therapy services show higher average copayments in the “Low” copayment groups and lower average copayments in the “High” copayment groups.

*Exhibit 5*

**Evaluation of Mean Copay Changes by Assigned Chiropractic and PT Copay Level**

		2013	2016	Diff	% Diff
Chiropractic and Physical Therapy Claims	Low	\$4.60	\$7.16	\$2.56	
	High	\$38.57	\$36.48	-\$2.09	
	Range Low to High	\$33.97	\$29.32	-\$4.65	-14%
Chiropractic Claims	Low	\$5.53	\$8.98	\$3.45	
	High	\$37.67	\$34.80	-\$2.87	
	Range Low to High	\$32.14	\$25.82	-\$6.32	-20%
Physical Therapy Claims	Low	\$2.90	\$5.32	\$2.42	
	High	\$40.70	\$39.43	-\$1.27	
	Range Low to High	\$37.80	\$34.11	-\$3.69	-10%

The full set of updated tables shown in the original report can be found in Appendix B.



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## 5.2 Relationship Between Copayment Level and Use of Chiropractic and Physical Therapy Services

The updated study confirms the findings of the original report with regard to the relationship between copayment level and use of chiropractic and physical therapy services. For the overall population, both the unadjusted and the modeled results are very similar. The only noteworthy difference is around a reduction in the magnitude of the relationships for chiropractic services. Specifically, the odds ratio for the likelihood of using chiropractic services for members in a low copay plan compared to members in a high copay plan dropped from 1.884 to 1.532. Similarly, of the members who used chiropractic services in a year, the estimated costs for members in a low copay plan were 49% higher than for those of members in a high copay plan in the original study but only 12% higher in the updated study. Both sets of results were still highly significant ( $p < 0.001$ ). One possible explanation is that large reductions in the range between the low and high copayment levels shown in the previous section mean there is less distinction between the copayment levels.

The findings for the population affected by the legislation generally agree with the relationships seen in the full population. However, the smaller sample size, particularly with regard to the number of members in low copayment plans, resulted in estimates that were not statistically significant. Nevertheless, given the relationships as a whole it is highly likely that the general relationship around lower cost sharing leading to increased use of services is true for the population affected by the legislation.

The following tables show the updated unadjusted results for both the full population and the population affected by the legislation.

Exhibit 6

**Unadjusted Results of Chiropractic and PT Services  
All Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2016**

		Chiropractic /PT Copay Level	Number of Mbrs	% of Mbrs w/ Svcs	Mean Cost <sup>1</sup>	Mean Cost per Util Mbr <sup>2</sup>	Median Cost per Util Mbr	Mean Cost per Util Mbr in 98% Subsample
Chiropractic or PT Services	Chiropractic / PT Copay Level	Other CS	59,272	9.9%	\$55	\$558	\$372	\$528
		Low	33,165	15.9%	\$108	\$676	\$400	\$583
		Medium	73,441	14.1%	\$81	\$578	\$353	\$533
		High	66,706	10.8%	\$55	\$508	\$344	\$503
		Total	232,584	12.3%	\$71	\$574	\$363	\$534
Chiropractic Services	Chiropractic / PT Copay Level	Other CS	59,272	6.6%	\$22	\$328	\$246	\$324
		Low	33,165	11.8%	\$48	\$409	\$274	\$367
		Medium	73,441	10.7%	\$38	\$360	\$252	\$344
		High	66,706	7.7%	\$27	\$351	\$252	\$337
		Total	232,584	8.9%	\$32	\$361	\$255	\$343
PT Services	Chiropractic / PT Copay Level	Other CS	59,272	3.9%	\$33	\$858	\$644	\$808
		Low	33,165	5.4%	\$60	\$1,096	\$735	\$965
		Medium	73,441	4.3%	\$43	\$986	\$692	\$934
		High	66,706	3.7%	\$28	\$750	\$561	\$741
		Total	232,584	4.2%	\$38	\$917	\$653	\$861

<sup>1</sup>Cost is defined as the allowed cost for the services specified in the first column (i.e., chiropractic and PT services, chiropractic services, PT services)

<sup>2</sup>Mean Cost per Util Mbr is defined as the allowed cost divided by the total number of members who had any cost in the period

Exhibit 7

**Unadjusted Results of Chiropractic and PT Services  
Not Self Funded Continuously Eligible Members w/ Assigned Copay Levels  
Individual and Small Group Policies  
Calendar Year 2016**

		Chiropractic /PT Copay Level	Number of Mbrs	% of Mbrs w/ Svcs	Mean Cost <sup>1</sup>	Mean Cost per Util Mbr <sup>2</sup>	Median Cost per Util Mbr	Mean Cost per Util Mbr in 98% Subsample
Chiropractic or PT Services	Chiropractic / PT Copay Level	Other CS	44,482	9.2%	\$49	\$536	\$396	\$510
		Low	502	22.1%	\$138	\$622	\$475	\$602
		Medium	3,550	18.8%	\$103	\$548	\$422	\$521
		High	9,864	14.9%	\$88	\$590	\$432	\$564
		Total	58,398	10.9%	\$60	\$551	\$396	\$526
Chiropractic Services	Chiropractic / PT Copay Level	Other CS	44,482	6.1%	\$19	\$317	\$247	\$312
		Low	502	16.1%	\$56	\$344	\$282	\$344
		Medium	3,550	13.2%	\$48	\$361	\$308	\$346
		High	9,864	9.9%	\$40	\$399	\$297	\$359
		Total	58,398	7.2%	\$25	\$342	\$266	\$327
PT Services	Chiropractic / PT Copay Level	Other CS	44,482	3.7%	\$30	\$807	\$636	\$772
		Low	502	9.6%	\$82	\$857	\$867	\$857
		Medium	3,550	7.1%	\$55	\$780	\$619	\$740
		High	9,864	6.0%	\$49	\$806	\$692	\$779
		Total	58,398	4.4%	\$35	\$805	\$643	\$772

<sup>1</sup>Cost is defined as the allowed cost for the services specified in the first column (i.e., chiropractic and PT services, chiropractic services, PT services)

<sup>2</sup>Mean Cost per Util Mbr is defined as the allowed cost divided by the total number of members who had any cost in the period

The following tables show the updated results for the two-part models for both the full population and the population affected by the legislation.

The odds ratios show statistically significant variation between the copayment levels.

*Exhibit 8*

**Estimated Difference Between Low and High Chiropractic/PT Copay Level**  
All Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2013

	P-Value	Odds Ratio	Odds Ratio 95% CI
Chiropractic or PT	< 0.0001	1.748	(1.693,1.804)
Chiropractic Only	< 0.0001	1.884	(1.817,1.954)
PT Only	< 0.0001	1.389	(1.318,1.464)

**Estimated Difference Between Low and High Chiropractic/PT Copay Level**  
All Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2016

	P-Value	Odds Ratio	Odds Ratio 95% CI
Chiropractic or PT	< 0.0001	1.506	(1.449,1.565)
Chiropractic Only	< 0.0001	1.532	(1.466,1.601)
PT Only	< 0.0001	1.440	(1.438,1.441)

The population affected by the legislation shows similar results.

*Exhibit 9*

**Estimated Difference Between Low and High Chiropractic/PT Copay Level**  
**Not Self Funded Continuously Eligible Members w/ Assigned Copay Levels**  
**Individual and Small Group Policies**  
Calendar Year 2016

	P-Value	Odds Ratio	Odds Ratio 95% CI
Chiropractic or PT	0.0008	1.457	(1.169,1.815)
Chiropractic Only	0.0003	1.589	(1.240,2.037)
PT Only	0.0149	1.472	(1.078,2.008)

The estimated likelihood of using services is similar to the original report.

*Exhibit 10*

**Estimated Likelihood of Using Services by Chiropractic/PT Copay Level**  
All Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2013

	Chiropractic or Physical Therapy Services	Chiropractic Services	Physical Therapy Services
Other Cost Sharing	8.6%	5.6%	3.7%
Low Copay	16.6%	12.7%	5.1%
Medium Copay	13.0%	9.6%	4.2%
High Copay	10.2%	7.3%	3.6%

**Estimated Likelihood of Using Services by Chiropractic/PT Copay Level**  
All Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2016

	Chiropractic or Physical Therapy Services	Chiropractic Services	Physical Therapy Services
Other Cost Sharing	8.6%	5.8%	3.4%
Low Copay	14.8%	10.9%	5.2%
Medium Copay	13.6%	10.4%	4.2%
High Copay	10.4%	7.4%	3.6%

The estimated likelihood of using services shows the same general pattern in the population affected by the legislation.

*Exhibit 11*

**Estimated Likelihood of Using Services by Chiropractic/PT Copay Level**  
**Not Self Funded Continuously Eligible Members w/ Assigned Copay Levels**  
**Individual and Small Group Policies**  
**Calendar Year 2016**

	Chiropractic or Physical Therapy Services	Chiropractic Services	Physical Therapy Services
Other Cost Sharing	8.6%	5.7%	3.4%
Low Copay	20.7%	15.1%	8.6%
Medium Copay	19.5%	13.6%	7.2%
High Copay	15.2%	10.1%	6.0%

The second part of the two-part model (cost) shows similar results to the original report. For chiropractic services there is much less difference between the low and high copayment levels which is likely due in part to the smaller differences between the average copay levels in those categories.

*Exhibit 12*

**Estimated Cost Differences of Utilizing Members by Chiropractic/PT Copay Level**  
**All Continuously Eligible Members w/ Assigned Copay Levels**  
**Calendar Year 2013**

	Chiropractic or Physical Therapy Services	Chiropractic Services	Physical Therapy Services
Zero Copay	\$681	\$489	\$861
Low Copay	\$874	\$706	\$1,057
Medium Copay	\$656	\$497	\$942
High Copay	\$628	\$474	\$820
Low - High	\$246	\$232	\$237
% Diff Low/High	39%	49%	29%
Diff P-Value	< 0.0001	< 0.0001	< 0.0001

**Estimated Cost Differences of Utilizing Members by Chiropractic/PT Copay Level**  
**All Continuously Eligible Members w/ Assigned Copay Levels**  
**Calendar Year 2016**

	Chiropractic or Physical Therapy Services	Chiropractic Services	Physical Therapy Services
Zero Copay	\$511	\$304	\$789
Low Copay	\$586	\$354	\$967
Medium Copay	\$520	\$330	\$886
High Copay	\$487	\$317	\$714
Low - High	\$99	\$37	\$253
% Diff Low/High	20%	12%	35%
Diff P-Value	< 0.0001	< 0.0001	< 0.0001

However, there are no statistically significant results in the population affected by the legislation.

*Exhibit 13*

**Estimated Cost Differences of Utilizing Members by Chiropractic/PT Copay Level**  
**All Continuously Eligible Members w/ Assigned Copay Levels**  
**Individual and Small Group Policies**  
**Calendar Year 2016**

	Chiropractic or Physical Therapy Services	Chiropractic Services	Physical Therapy Services
Other Cost Sharing	\$514	\$305	\$773
Low Copay	\$642	\$332	\$882
Medium Copay	\$559	\$354	\$775
High Copay	\$593	\$365	\$819
Low - High	\$49	-\$33	\$63
% Diff Low/High	8%	-9%	8%
Diff P-Value	0.4325	0.3727	0.5892

### **5.3 Relationship Between Use of Chiropractic and Physical Therapy Services and Overall Cost**

The updated analysis shows reasonably good agreement with the prior analysis for both the full population and the population affected by the legislation. Higher use of chiropractic services in patients with any chiropractic services is statistically significantly related ( $p < 0.0001$ ) to higher overall cost after controlling for age, gender, health status, and plan design. However, unlike the original study, there was no statistically significant relationship between the amount of use of chiropractic services used by patients who had any chiropractic care and the non-chiropractic costs of those patients. This difference between the two studies could be the result of the changes in the copayment levels. Taken together, the likely conclusion is that an increase in chiropractic care will lead to higher overall costs and that any substitution effects will not completely offset the cost of the chiropractic services.

As was seen in the prior study, administrative claims data do not have the information necessary to support risk-adjusted analyses of the effect of physical therapy on overall cost. General health status adjustments from claims data without clinical information, such as functional status or severity indexes, do not accurately capture the underlying morbidity for the specific condition that led the patient to utilize physical therapy services. The HCCs were designed to capture a wide range of conditions that contribute to overall cost. The HCCs set up hierarchies within some conditions in order to account for increased severity of related illnesses, but not all of the conditions have these hierarchies and it's possible that more detailed clinical information than is available in administrative claims data would be needed in order to accurately assign severity levels to all conditions. For example, rheumatoid arthritis is a single HCC but is a disease that tends to progress to other functional areas and result in joint damage over time, and costs per patient would be expected to have a wide range of severity within this category. Controlling for age, gender, and general health status the analysis finds that increased use of physical therapy services in patients with any physical therapy is statistically significantly related to both higher overall costs and higher non-physical therapy costs (both  $p < 0.0001$ ). Examination of the results again shows an increase of \$1 in physical therapy cost corresponds to an increase in overall cost far greater than \$1. This correlation does not establish causation. An effect that large is much more likely to be related to unmeasured underlying morbidity for the condition being treated by physical therapy for which the model has not accounted than for an increase caused by the physical therapy services.

### **5.4 Relationship Between Use of Chiropractic and PT Services and Outcomes**

Like the original report, the updated analysis focuses on the relationship between chiropractic and physical therapy services and opioid use and again analyzes chiropractic care and physical therapy services separately. The analysis examined four opioid use outcomes in patients with a diagnosis of rheumatoid arthritis: any opioid use, opioid use for 30+ days, opioid use for 90+

days, and the total days for patients who had any days of opioid use. BerryDunn ran these analyses for both the full population and the subset of the population affected by the legislation.

The results for the full population generally align with the results from the original study. In all four outcomes, either the use of chiropractic services or the amount of chiropractic services received were nominally related to reductions in the outcomes of interest. However, there were lower levels of statistical significance across these outcomes. Neither of the opioid use models were significant. The opioid use for 30+ days models had p-values of 0.1308 and 0.0518 for use of chiropractic services and amount of chiropractic services respectively. The opioid use for 90+ days models had p-values of 0.0991 and 0.0398 for use of chiropractic services and amount of chiropractic services respectively. The total days for patients who had any days of opioid use models had p-values of 0.0177 and <0.0001 for use of chiropractic services and amount of chiropractic services respectively.

For the full population the use of physical therapy services and the amount of physical therapy services used were both statistically significantly related to an increased likelihood of any opioid use and long-term opioid use, with p-values ranging from < 0.0001 to 0.0544. There was no statistically significant relationship between either use of physical therapy services ( $p = 0.91$ ) or the amount of physical therapy services ( $p = 0.82$ ) used and the total days of opioid use in patients who had any opioid use.

There were no statistically significant results when analyzing only the population affected by the legislation.

The analysis uses a health status risk adjustment that is based only on administrative claims data and does not have access to clinical information. The analysis assumes homogeneity of severity/patient risk within patients with a diagnosis of rheumatoid arthritis, but the observed associations between chiropractic care and opioid use and physical therapy and opioid use could be the result of underlying population differences for which the analysis has not controlled.

## 6.0 Conclusions

The results of the updated study show that the legislation did result in a significantly greater alignment between the primary care copayment levels and the chiropractic and physical therapy copayment levels. The study also showed that market trends have shifted most plans, especially those in the affected population, away from lower cost sharing plans and towards higher cost sharing plans. This effect appears to be larger than the effect of the legislation, with the result that very few members have what the first study classified as “low” chiropractic and physical therapy costs. These large changes make the impact of the legislation on member cost and utilization unclear.

The results of the follow-up study confirm the findings from the original study that there is a negative and statistically significant relationship between the copayment level and the use of chiropractic care or physical therapy services. The analysis confirmed that lower copayment levels are associated with both increased likelihood of using the services and increased amount of services used for patients with any service use. This is true for both chiropractic care and physical therapy services and is true after controlling for age, gender, and health status.

The study also confirmed that an increase in either chiropractic care costs or an increase in physical therapy costs is statistically significantly related to increases in overall costs. It is possible that chiropractic care has partial substitution effects for medical services. There is strong evidence that risk adjustment using information not available through administrative claims data is needed in order to determine if physical therapy costs offset other medical or pharmacy costs.

Similarly, the outcome measures evaluated in this study may require additional risk adjustment. There is evidence that increased use of chiropractic care is associated with lower opioid use and that increased use of physical therapy services is associated with increased opioid use, but it is unclear whether these differences are due to underlying differences in patient severity.

Overall, in the commercially insured population in New Hampshire, lower copayment levels for chiropractic and physical therapy services are associated with increased likelihood of using and increased amount of use of those services as well as higher overall patient costs. Through the evaluation of the 'Other CS' plans, there is evidence that cost sharing through mechanisms such as coinsurance and deductibles to some extent behave similarly.

It is important to note that although this analysis shows a relationship between lower copayment for chiropractic and physical therapy services and increased use of and cost of both these services and overall medical and pharmacy costs, it is a cross-sectional study that shows correlation not causation. There could be selection bias effects (i.e., patients more likely to use services self-select into plans with lower copayment levels). This study also only analyzes direct costs, and does not consider other societal benefits such as reduced worker absenteeism. Finally, the value proposition for medical services needs to consider costs, both direct and indirect, but also quality, patient outcomes, and patient satisfaction. The research literature supports significant patient outcome benefits and patient satisfaction in use of both chiropractic and physical therapy services.



## Appendix A

The following tables show the results of the copayment level analyses and comparisons.

Update to original analysis showing fairly good agreement.

**Crosstab of Chiro/PT Copay Level vs. Professional Services Copay Level:**  
All Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2013

		General Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	36,111	26,359	4,120	937	67,527
	Low	0	45,633	12,093	1,620	59,346
	Medium	0	26,409	77,800	103	104,312
	High	0	5,199	61,608	12,272	79,079
	Total	36,111	103,600	155,621	14,932	310,264

		General Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	12%	8%	1%	0%	22%
	Low	0%	15%	4%	1%	19%
	Medium	0%	9%	25%	0%	34%
	High	0%	2%	20%	4%	25%
	Total	12%	33%	50%	5%	100%

**Crosstab of Chiro/PT Copay Level vs. Professional Services Copay Level:**  
All Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2016

		General Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	53,121	4,491	1,483	177	59,272
	Low	0	31,737	1,344	84	33,165
	Medium	0	19,276	53,895	270	73,441
	High	0	2,075	51,077	13,554	66,706
	Total	53,121	57,579	107,799	14,085	232,584

		General Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	23%	2%	1%	0%	25%
	Low	0%	14%	1%	0%	14%
	Medium	0%	8%	23%	0%	32%
	High	0%	1%	22%	6%	29%
	Total	23%	25%	46%	6%	100%

There was a significant reduction in the size of the self-funded population.

**Crosstab of Chiro/PT Copay Level vs. Professional Services Copay Level:**  
Self Funded Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2013

		General Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	17,231	22,161	2,473	879	42,744
	Low	0	41,414	8,341	1,596	51,351
	Medium	0	24,335	56,068	60	80,463
	High	0	3,939	22,850	779	27,568
	Total	17,231	91,849	89,732	3,314	202,126

		General Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	9%	11%	1%	0%	21%
	Low	0%	20%	4%	1%	25%
	Medium	0%	12%	28%	0%	40%
	High	0%	2%	11%	0%	14%
	Total	9%	45%	44%	2%	100%

**Crosstab of Chiro/PT Copay Level vs. Professional Services Copay Level:**  
Self Funded Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2016

		General Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	3,632	269	214		4,115
	Low	0	28,750	351		29,101
	Medium	0	15,990	41,966		57,956
	High	0	849	8,222	202	9,273
	Total	3,632	45,858	50,753	202	100,445

		General Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	4%	0%	0%	0%	4%
	Low	0%	29%	0%	0%	29%
	Medium	0%	16%	42%	0%	58%
	High	0%	1%	8%	0%	9%
	Total	4%	46%	51%	0%	100%

The fully-insured population is more comparable.

**Crosstab of Chiro/PT Copay Level vs. Professional Services Copay Level:**  
Fully Insured Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2013

		General Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	18,880	4,198	1,647	58	24,783
	Low		4,219	3,752	24	7,995
	Medium		2,074	21,732	43	23,849
	High		1,260	38,758	11,493	51,511
	Total		18,880	11,751	65,889	11,618

		General Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	17%	4%	2%	0%	23%
	Low	0%	4%	3%	0%	7%
	Medium	0%	2%	20%	0%	22%
	High	0%	1%	36%	11%	48%
	Total	17%	11%	61%	11%	100%

**Crosstab of Chiro/PT Copay Level vs. Professional Services Copay Level:**  
Fully Insured Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2016

		General Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	49,489	4,222	1,269	177	55,157
	Low		2,987	993	84	4,064
	Medium		3,286	11,929	270	15,485
	High		1,226	42,855	13,352	57,433
	Total		49,489	11,721	57,046	13,883

		General Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	37%	3%	1%	0%	42%
	Low	0%	2%	1%	0%	3%
	Medium	0%	2%	9%	0%	12%
	High	0%	1%	32%	10%	43%
	Total	37%	9%	43%	11%	100%

The chiropractic/PT copayment level shows much stronger agreement with the primary care copayment level than with the general copayment level.

**Crosstab of Chiro/PT Copay Level vs. Primary Care Visits Copay Level:**  
Fully Insured Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2013

		Primary Care Visit Copay Level					
		Other CS	Low	Medium	High	Total	
Chiropractic / PT Copay Level	Other CS	22,412	403	1,623	345	24,783	
	Low		1,270	5,375	1,350	7,995	
	Medium		1	468	21,808	1,572	23,849
	High		18	20	5,330	46,143	51,511
	Total		22,431	2,161	34,136	49,410	108,138

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	21%	0%	2%	0%	23%
	Low	0%	1%	5%	1%	7%
	Medium	0%	0%	20%	1%	22%
	High	0%	0%	5%	43%	48%
	Total	21%	2%	32%	46%	100%

**Crosstab of Chiro/PT Copay Level vs. Primary Care Visits Copay Level:**  
Fully Insured Continuously Eligible Members w/ Assigned Copay Levels  
Calendar Year 2016

		Primary Care Visit Copay Level					
		Other CS	Low	Medium	High	Total	
Chiropractic / PT Copay Level	Other CS	52,717	671	616	1,153	55,157	
	Low		9	2,490	1,307	258	4,064
	Medium		11	619	12,092	2,763	15,485
	High		93	130	2,424	54,786	57,433
	Total		52,830	3,910	16,439	58,960	132,139

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	40%	1%	0%	1%	42%
	Low	0%	2%	1%	0%	3%
	Medium	0%	0%	9%	2%	12%
	High	0%	0%	2%	41%	43%
	Total	40%	3%	12%	45%	100%

As expected, there is very strong agreement between the primary care and the chiropractic/PT copayment level in the individual policies population.

**For Individual Policies, Percent with Primary Care Copay Higher, Equal to, and Lower than Chiro/PT Copay, by Year**

Copay Level Relationship	2013	2016	Change
Primary Care Higher Than Chiropractic/PT	18%	2%	-16%
Primary Care Equal To Chiropractic/PT	81%	98%	17%
Primary Care Lower Than Chiropractic/PT	1%	0%	-1%

**Crosstab of Chiro/PT Copay Level vs. Primary Care Visits Copay Level:**  
Fully Insured Continuously Eligible Members w/ Assigned Copay Levels  
Individual Policies<sup>1</sup>  
Calendar Year 2013

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	10,382				10,382
	Low			2,648	899	3,547
	Medium			6,558	410	6,968
	High			162	1,042	1,204
	Total	10,382	0	9,368	2,351	22,101

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	47%	0%	0%	0%	47%
	Low	0%	0%	12%	4%	16%
	Medium	0%	0%	30%	2%	32%
	High	0%	0%	1%	5%	5%
	Total	47%	0%	42%	11%	100%

**Crosstab of Chiro/PT Copay Level vs. Primary Care Visits Copay Level:**  
Fully Insured Continuously Eligible Members w/ Assigned Copay Levels  
Individual Policies<sup>1</sup>  
Calendar Year 2016

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	40,544	389	47	164	41,144
	Low			331		331
	Medium			535	275	810
	High				3,347	3,347
	Total	40,544	720	582	3,786	45,632

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	89%	1%	0%	0%	90%
	Low	0%	1%	0%	0%	1%
	Medium	0%	0%	1%	1%	2%
	High	0%	0%	0%	7%	7%
	Total	89%	2%	1%	8%	100%

<sup>1</sup>All policies sold and issued directly to individuals including group conversion policies

There is also strong agreement in the small group population.

**For Small Groups, Percent with Primary Care Copay Higher, Equal to, and Lower than Chiro/PT Copay, by Year**

Copay Level Relationship	2013	2016	Change
Primary Care Higher Than Chiropractic/PT	9%	7%	-2%
Primary Care Equal To Chiropractic/PT	84%	91%	7%
Primary Care Lower Than Chiropractic/PT	7%	2%	-5%

**Crosstab of Chiro/PT Copay Level vs. Primary Care Visits Copay Level:**  
Fully Insured Continuously Eligible Members w/ Assigned Copay Levels  
Small Group Policies<sup>1</sup>  
Calendar Year 2013

		Primary Care Visit Copay Level					
		Other CS	Low	Medium	High	Total	
Chiropractic / PT Copay Level	Other CS	2,117	16	371	14	2,518	
	Low		25	89	43	157	
	Medium		1	10	633	48	692
	High		3	20	440	2,850	3,313
	Total	2,121	71	1,533	2,955	6,680	

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	32%	0%	6%	0%	38%
	Low	0%	0%	1%	1%	2%
	Medium	0%	0%	9%	1%	10%
	High	0%	0%	7%	43%	50%
	Total	32%	1%	23%	44%	100%

**Crosstab of Chiro/PT Copay Level vs. Primary Care Visits Copay Level:**  
Fully Insured Continuously Eligible Members w/ Assigned Copay Levels  
Small Group Policies<sup>1</sup>  
Calendar Year 2016

		Primary Care Visit Copay Level					
		Other CS	Low	Medium	High	Total	
Chiropractic / PT Copay Level	Other CS	3,070	31	31	206	3,338	
	Low		5	4	56	106	
	Medium		11	118	2,172	439	2,740
	High		54	32	86	6,345	6,517
	Total	3,140	185	2,345	7,096	12,766	

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	24%	0%	0%	2%	26%
	Low	0%	0%	0%	1%	1%
	Medium	0%	1%	17%	3%	21%
	High	0%	0%	1%	50%	51%
	Total	25%	1%	18%	56%	100%

<sup>1</sup>All policies sold and issued directly to employers having between 1 and 50 employees

There is a smaller shift and less overall agreement in the large group population.

**For Large Groups, Percent with Primary Care Copay Higher, Equal to, and Lower than Chiro/PT Copay, by Year**

Copay Level Relationship	2013	2016	Change
Primary Care Higher Than Chiropractic/PT	7%	7%	0%
Primary Care Equal To Chiropractic/PT	86%	89%	3%
Primary Care Lower Than Chiropractic/PT	7%	4%	-3%

**Crosstab of Chiro/PT Copay Level vs. Primary Care Visits Copay Level:**  
Fully Insured Continuously Eligible Members w/ Assigned Copay Levels  
Large Group Policies<sup>1</sup>  
Calendar Year 2013

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	9,661	314	513	248	10,736
	Low		1,237	2,638	387	4,262
	Medium		451	14,191	1,114	15,756
	High		15	4,406	38,782	43,203
	Total		9,676	2,002	21,748	40,531

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	13%	0%	1%	0%	15%
	Low	0%	2%	4%	1%	6%
	Medium	0%	1%	19%	2%	21%
	High	0%	0%	6%	52%	58%
	Total	13%	3%	29%	55%	100%

**Crosstab of Chiro/PT Copay Level vs. Primary Care Visits Copay Level:**  
Fully Insured Continuously Eligible Members w/ Assigned Copay Levels  
Large Group Policies<sup>1</sup>  
Calendar Year 2016

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	9,093	251	538	783	10,665
	Low	4	2,155	1,251	152	3,562
	Medium		501	9,385	2,049	11,935
	High	39	98	2,338	45,061	47,536
	Total		9,136	3,005	13,512	48,045

		Primary Care Visit Copay Level				
		Other CS	Low	Medium	High	Total
Chiropractic / PT Copay Level	Other CS	12%	0%	1%	1%	14%
	Low	0%	3%	2%	0%	5%
	Medium	0%	1%	13%	3%	16%
	High	0%	0%	3%	61%	65%
	Total	12%	4%	18%	65%	100%

<sup>1</sup>All policies sold and issued directly to employers having more than 50 employees

## Appendix B

### Evaluation of Copay on Chiropractic and PT Claims by Assigned Chiropractic and PT Copay Level Calendar Year 2016

		N	Copay Mode	Copay Quartile1	Copay Median	Copay Quartile3	Copay Mean	Coins Mean	Deduct Mean
Chiropractic / PT Copay Level	Other CS	26,952	\$0.00	\$0.00	\$0.00	\$0.00	\$3.70	\$1.22	\$31.00
	Low	63,635	\$0.00	\$0.00	\$5.00	\$10.00	\$7.16	\$0.49	\$3.64
	Medium	87,308	\$20.00	\$15.00	\$15.00	\$20.00	\$16.69	\$0.24	\$1.29
	High	51,302	\$25.00	\$25.00	\$36.01	\$50.00	\$36.48	\$0.14	\$1.22
	Total	229,197	\$0.00	\$0.00	\$15.00	\$25.00	\$16.70	\$0.45	\$7.30

### Evaluation of Copay on Chiropractic Claims by Assigned Chiropractic and PT Copay Level Calendar Year 2016

		N	Copay Mode	Copay Quartile1	Copay Median	Copay Quartile3	Copay Mean	Coins Mean	Deduct Mean
Chiropractic / PT Copay Level	Other CS	13,350	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.81	\$35.49
	Low	36,583	\$0.00	\$0.00	\$5.00	\$10.00	\$8.98	\$0.39	\$7.96
	Medium	53,009	\$20.00	\$15.00	\$20.00	\$20.00	\$18.38	\$0.22	\$1.19
	High	31,476	\$25.00	\$25.00	\$30.00	\$40.00	\$34.80	\$0.12	\$1.00
	Total	134,418	\$0.00	\$5.00	\$15.00	\$25.00	\$17.84	\$0.30	\$6.39

### Evaluation of Copay on Physical Therapy Claims by Assigned Chiropractic and PT Copay Level Calendar Year 2016

		N	Copay Mode	Copay Quartile1	Copay Median	Copay Quartile3	Copay Mean	Coins Mean	Deduct Mean
Chiropractic / PT Copay Level	Other CS	13,602	\$0.00	\$0.00	\$0.00	\$0.00	\$0.03	\$1.64	\$36.39
	Low	27,052	\$0.00	\$0.00	\$0.00	\$10.00	\$5.32	\$1.06	\$8.81
	Medium	34,299	\$20.00	\$0.00	\$15.00	\$20.00	\$14.65	\$0.26	\$1.56
	High	19,826	\$50.00	\$25.00	\$40.00	\$50.00	\$39.43	\$0.16	\$1.38
	Total	94,779	\$0.00	\$0.00	\$10.00	\$20.00	\$15.07	\$0.66	\$8.59

**Evaluation of Copay on Chiropractic and PT Claims by Assigned Chiropractic and PT Copay Level**

Calendar Year 2013

Chiropractic / PT Copay Level		N	Copay Mode	Copay Quartile1	Copay Median	Copay Quartile3	Copay Mean	Coins Mean	Deduct Mean
		Other CS	49,329	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Low	96,011	\$0.00	\$0.00	\$0.00	\$0.00	\$5.00	\$4.60	\$1.64	\$4.14
Medium	110,998	\$20.00	\$10.00	\$15.00	\$20.00	\$20.00	\$16.43	\$0.62	\$1.94
High	60,815	\$50.00	\$25.00	\$38.39	\$50.00	\$50.00	\$38.57	\$0.32	\$1.82
Total	317,153	\$0.00	\$0.00	\$10.00	\$20.00	\$20.00	\$14.54	\$1.36	\$14.54

**Evaluation of Copay on Chiropractic Claims by Assigned Chiropractic and PT Copay Level**

Calendar Year 2013

Chiropractic / PT Copay Level		N	Copay Mode	Copay Quartile1	Copay Median	Copay Quartile3	Copay Mean	Coins Mean	Deduct Mean
		Other CS	24,976	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Low	62,488	\$0.00	\$0.00	\$5.00	\$10.00	\$5.53	\$1.42	\$3.22	
Medium	67,840	\$20.00	\$15.00	\$15.00	\$20.00	\$17.44	\$0.63	\$1.55	
High	35,966	\$25.00	\$25.00	\$38.02	\$45.00	\$37.67	\$0.35	\$1.76	
Total	191,270	\$0.00	\$0.00	\$10.00	\$20.00	\$15.08	\$1.19	\$5.64	

**Evaluation of Copay on Physical Therapy Claims by Assigned Chiropractic and PT Copay Level**

Calendar Year 2013

Chiropractic / PT Copay Level		N	Copay Mode	Copay Quartile1	Copay Median	Copay Quartile3	Copay Mean	Coins Mean	Deduct Mean
		Other CS	24,353	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Low	33,523	\$0.00	\$0.00	\$0.00	\$5.00	\$2.90	\$2.07	\$5.93	
Medium	43,158	\$20.00	\$10.00	\$15.00	\$20.00	\$15.01	\$0.61	\$2.58	
High	24,849	\$50.00	\$25.00	\$40.00	\$50.00	\$40.70	\$0.28	\$1.95	
Total	125,883	\$0.00	\$0.00	\$5.00	\$20.00	\$13.92	\$1.66	\$8.26	

**Evaluation of Copay on Professional Claims by General Copay Level**

Calendar Year 2013

Chiropractic / PT Copay Level		N	Copay Mode	Copay Quartile1	Copay Median	Copay Quartile3	Copay Mean	Coins Mean	Deduct Mean
		Other CS	58,750	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	\$4.91
Low	211,947	\$0.00	\$0.00	\$0.00	\$10.00	\$4.97	\$1.75	\$15.73	
Medium	294,927	\$0.00	\$0.00	\$15.00	\$20.00	\$13.83	\$1.04	\$8.22	
High	26,594	\$25.00	\$0.00	\$25.00	\$30.00	\$22.69	\$0.35	\$14.57	
Total	592,218	\$0.00	\$0.00	\$0.00	\$20.00	\$9.68	\$1.64	\$16.40	

## Endnotes

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<sup>1</sup> The original study can be found on the New Hampshire Insurance Department's website:  
[https://www.nh.gov/insurance/reports/documents/chiro\\_pt\\_copay.pdf](https://www.nh.gov/insurance/reports/documents/chiro_pt_copay.pdf)

<sup>2</sup> HCCs are created by and are the property of CMS and are publicly available on their website:  
<http://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors-Items/Risk2013.html?DLPage=1&DLSort=0&DLSortDir=descending>

<sup>3</sup> HCCs are created by and are the property of HHS and are publicly available on their website:  
<https://www.cms.gov/CCIIO/Resources/Regulations-and-Guidance/Downloads/DIY-Instructions-2017-RA-7-20-17.pdf>

<sup>4</sup> Per New Hampshire law, members are allowed to self-refer for chiropractic services:  
<http://www.gencourt.state.nh.us/rsa/html/XXXVII/420-J/420-J-6-b.htm>