

Health Insurance Design and Conservative Therapy for Low Back Pain

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Low back pain (LBP) is among the most common medical conditions in the United States, with 70% of people experiencing symptoms at least once in their lifetime.¹⁻³ The high prevalence of LBP translates into high healthcare costs for treatment, as well as considerable indirect costs associated with lost productivity.^{4,5} Current guidelines for treating LBP recommend noninvasive conservative management and avoiding more aggressive and costlier options during earlier stages of care.⁶⁻⁸

Prior studies have found that patterns of care, including initial provider and timing of treatment, affect the cost of medical care for LBP. Patients with new-onset LBP who were referred to a physical therapist within 3 days⁹ or 4 weeks¹⁰ of onset had lower LBP-related healthcare utilization and costs during the following year. A similar study found lower follow-up costs over a 2-year period.¹¹ Chiropractic care also was relatively cost-effective for treatment of chronic LBP.¹²⁻¹⁴ However, evidence is inconsistent. Results of a randomized clinical trial indicate that compared with referral to physical therapy from a primary care physician (PCP) after several weeks of persistent LBP, early utilization of physical therapy was associated with increased costs.¹⁵ A study of care management of LBP in a managed care organization found chiropractic management to be less costly than medical management when care extended beyond primary care but not when compared with primary care alone.¹⁶

Despite the availability of clinical practice guidelines for treating LBP, the current US healthcare system often fails to successfully engage patients and their providers in adherence to those guidelines.¹⁷ The relative value of different treatment options may be realized only over the course of an extended episode of illness and often is not aligned with patient cost-sharing policies imposed by payers. At the point of new symptom onset, patient preference for provider type may be strongly influenced by out-of-pocket (OOP) costs, which may be higher for patients who choose conservative therapy that involves repeated visits to a physical therapist or chiropractor. Hence, it is possible that financial barriers deter patients from seeking early conservative therapy despite its high value relative to other available treatment options.⁸

ABSTRACT

OBJECTIVES: To determine the association of health insurance benefit design features with choice of early conservative therapy for patients with new-onset low back pain (LBP).

STUDY DESIGN: Observational study of 117,448 commercially insured adults 18 years or older presenting with an outpatient diagnosis of new-onset LBP between 2008 and 2013 as recorded in the OptumLabs Data Warehouse.

METHODS: We identified patients who chose a primary care physician (PCP), physical therapist, or chiropractor as their entry-point provider. The main analyses were logistic regression models that estimated the likelihood of choosing a physical therapist versus a PCP and choosing a chiropractor versus a PCP. Key independent variables were health plan type, co-payment, deductible, and participation in a health reimbursement account (HRA) or health savings account (HSA). Models controlled for patient demographic and clinical characteristics.

RESULTS: Selection of entry-point provider was moderately responsive to the incentives that patients faced. Those covered under plan types with greater restrictions on provider choice were less likely to choose conservative therapy compared with those covered under the least restrictive plan type. Results also indicated a general pattern of higher likelihood of treatment with physical therapy at lower levels of patient cost sharing. We did not observe consistent associations between participation in HRAs or HSAs and choice of conservative therapy.

CONCLUSIONS: Modification of health insurance benefit designs offers an opportunity for creating greater value in treatment of new-onset LBP by encouraging patients to choose noninvasive conservative management that will result in long-term economic and social benefits.

Am J Manag Care. 2019;25(6):e182-e187

Health insurers offer a range of benefit designs with embedded financial incentives affecting patient choice.¹⁸ One feature is limitations on access to providers. Health maintenance organizations (HMOs) and exclusive provider organizations (EPOs) are the most restrictive plan types, providing coverage only for providers included in network. HMOs and EPOs also require a designated PCP for each enrollee and PCP referrals to specialists. Preferred provider organizations (PPOs) are the least restrictive, generally offering a wide range of providers, with out-of-network coverage subject to higher cost sharing. Point of service (POS) plans are hybrid plans offering varying blends of HMO and PPO plan characteristics. We hypothesized that lower restrictions on provider access would be associated with higher likelihood of choosing conservative therapy for new-onset LBP.

Financial incentives also are present in patient OOP cost sharing at the point of service. Most health insurance plans have a deductible, which requires that a patient pay a fixed amount per calendar year before plan payment begins. Depending on the amount of the deductible and the amount already used at the time of a new episode of care, the deductible can require high patient OOP cost, strongly influencing patient choice of provider. A patient who does not expect to exhaust the deductible during the period of coverage faces full cost at the point of service and may be disinclined to choose conservative therapy involving multiple visits to a physical therapist or chiropractor.

Patient OOP costs also are affected by co-payments, which are fixed amounts charged to the patient, and/or by coinsurance, which varies as a percentage of the overall payment. Co-payments and coinsurance vary across health plans, and in the case of co-payments, there may be variation within plans across provider types. Relatively high co-payments or coinsurance for visits to physical therapy or chiropractic care present disincentives for patients with new-onset LBP to seek early conservative therapy, particularly if patients anticipate a number of visits requiring repeated charges.

The strongest financial incentives facing patients are encompassed in the growing system of consumer-driven healthcare, which couples high-deductible health plans with health reimbursement accounts (HRAs) or health savings accounts (HSAs).¹⁹ Premiums on these plans cost less, but the patient pays the full cost of care up to the level of the deductible using a prefunded spending account subsidized by employer contributions and/or consumer savings. The rationale behind consumer-driven healthcare is to provide patients with incentives to make high-value decisions about the healthcare they receive by managing their own healthcare budgets. Consumer-driven healthcare is a relatively new form of health insurance and evidence is mixed; however, although high-deductible health plans are associated with lower costs, this comes from reduction in inappropriate services but also in reduced utilization of appropriate preventive care and medication adherence.²⁰

TAKEAWAY POINTS

Current guidelines for management of low back pain recommend early conservative treatment, such as physical therapy or chiropractic care, but patient choice of first-line treatment may be influenced by health insurance features. We examined the choice of a physical therapist or a chiropractor compared with a primary care physician as the entry-point provider for a large sample of commercially insured adults who received diagnoses of new-onset low back pain.

- ▶ Patients covered under plan types with greater restrictions on provider choice were less likely to choose conservative therapy.
- ▶ Higher patient out-of-pocket cost was associated with lower likelihood of choosing conservative therapy.

In order to better understand the impact of health insurance benefit design on provider choice, we examined the relationship between common features of commercial health insurance plans and patient selection of PCP versus physical therapist or chiropractor as first-line provider for new-onset LBP.

METHODS

Study Population

We studied commercially insured adults 18 years or older with an outpatient diagnosis of new-onset LBP during 2008-2013 as recorded in claims from the OptumLabs Data Warehouse.²¹ (See [eAppendix A](#) [eAppendices available at [ajmc.com](#)].) Inclusion criteria required 24 months of continuous enrollment before and following the index event with no prior diagnosis of LBP or back procedures, including spinal surgery, spinal injections, or spinal cord stimulators, and no filled opioid prescriptions during the 12 months prior to the index event. Also excluded were those with any neoplasm diagnosis in the 12 months prior to and 3 months on or following the index date and, additionally, in the 3 months on or following that date, LBP-related diagnoses that would typically not be amenable to conservative therapy (ie, spinal fractures, vertebral dislocations, inflammatory spondyloarthropathies, intraspinal abscess).

Based on the index LBP date, we selected 117,448 patients whose entry-point providers were characterized as a physical therapist, chiropractor, or PCP and for whom benefit design information was available. (The benefit design criteria excluded Medicare Advantage enrollees.) PCPs included family medicine practitioners, pediatricians, internists, obstetricians, gynecologists, hospitalists, and geriatricians. We focused on 2 samples: (1) 82,052 patients whose first encounter was with either a PCP or a physical therapist and (2) 115,144 patients whose first encounter was with either a PCP or a chiropractor (see [eAppendix B](#)).

Descriptive Analysis

Descriptive statistics were reported as counts and proportions for categorical variables representing plan type (POS, EPO, HMO, PPO), co-payment, deductible, and consumer-driven health plan (CDHP) by sample. We included the number and percent of patients whose entry-point provider was a physical therapist or a chiropractor

TABLE. Benefit Design Descriptive Statistics

	PCP vs Physical Therapy Sample		PCP vs Chiropractic Care Sample	
	Number of Patients in Sample	Number (%) Seeing Physical Therapist First	Number of Patients in Sample	Number (%) Seeing Chiropractor First
Total	82,052	2304 (2.8)	115,144	35,396 (30.7)
Plan type				
POS	59,706	1706 (2.9)	84,664	26,664 (31.5)
EPO	15,389	356 (2.3)	20,591	5558 (27.0)
HMO	1632	35 (2.1)	2070	473 (22.9)
PPO/indemnity ^a	5325	207 (3.9)	7819	2701 (34.9)
Co-payment (\$)				
0	25,619	790 (3.1)	36,573	11,744 (32.1)
1-20	31,413	992 (3.2)	43,907	13,486 (30.7)
21-30	20,743	466 (2.2)	28,750	8473 (29.5)
>30	4277	56 (1.3)	5914	1693 (28.6)
Deductible (\$)				
0	18,531	650 (3.5)	25,384	7503 (29.6)
1-200	5521	196 (3.6)	7865	2540 (32.3)
201-300	10,511	316 (3.0)	15,109	4914 (32.5)
301-500	16,139	418 (2.6)	22,908	7187 (31.4)
501-1000	12,517	237 (1.9)	17,718	5438 (30.7)
1001-1500	9028	229 (2.5)	12,791	3992 (31.2)
>1500	9805	258 (2.6)	13,369	3822 (28.6)
CDHP				
HRA	10,267	229 (2.2)	14,499	4461 (30.8)
HSA	6254	232 (3.7)	8927	2905 (32.5)
Neither	65,310	>1832 (>2.8) ^b	91,431	27,960 (30.6)

CDHP indicates consumer-driven health plan; EPO, exclusive provider organization; HMO, health maintenance organization; HRA, health reimbursement account; HSA, health savings account; PCP, primary care physician; POS, point of service; PPO, preferred provider organization.

^aPatients with indemnity plan type numbered fewer than 11 (<0.2% of row total for physical therapy; <0.1% for chiropractic care). Small cell was collapsed based on data vendor's cell suppression policy.

^bCell suppressed due to small number (<11) with missing CDHP type.

overall and by category within each benefit design feature. We omitted analysis of coinsurance; more than 95% of patients had no coinsurance for 90 days following the index date, with little variation among patients who did.

Statistical Analysis

Our main analyses consisted of 2 sets of multivariable logistic regressions. The dependent variable in the first set was physical therapist versus PCP as entry-point provider. We estimated 4 logistic regressions with this dependent variable, 1 for each benefit design feature: plan type, co-payment, deductible, and CDHP. The key independent variables were categorical variables measuring the benefit design feature, and reference groups were POS plan type, zero co-payment, zero deductible, and neither type of CDHP. The second set of 4 logistic regressions was structured similarly, with the dependent variable being choice of chiropractor versus PCP as entry-point provider. For all logistic models, we calculated adjusted odds ratios with 95% Wald CIs. We also evaluated overall model fit, model discrimination (C

statistic), and calibration (Hosmer–Lemeshow test) for all logistic models (see [eAppendix C](#)).

Although our main interest was in the association of benefit design features with the likelihood of patients choosing a physical therapist or a chiropractor as entry-point provider, all regression models included a broad range of covariates. Patient demographic characteristics included age, gender, race/ethnicity, and US region. (Race and ethnicity are based on imputation and are not separately defined in the OptumLabsData Warehouse.²¹ The specified categories are black, Hispanic, Asian, and white.) We included a modified Elixhauser index (in which mental health conditions were excluded) to account for physical comorbidities, treated as a continuous variable.²² We also included 9 binary variables to control for individual mental health comorbidities, 8 selected from the CMS list of chronic health conditions²³ and a single condition representing fibromyalgia, chronic pain, and fatigue. For the physical therapy regressions, we also included a categorical variable that measured the level of direct access to physical therapy afforded to insured patients according to various state regulations, as categorized by the American Physical Therapy Association: limited, provisional, or unrestricted.²⁴ Other covariates are listed in [eAppendix D Tables 1 to 8](#).

RESULTS

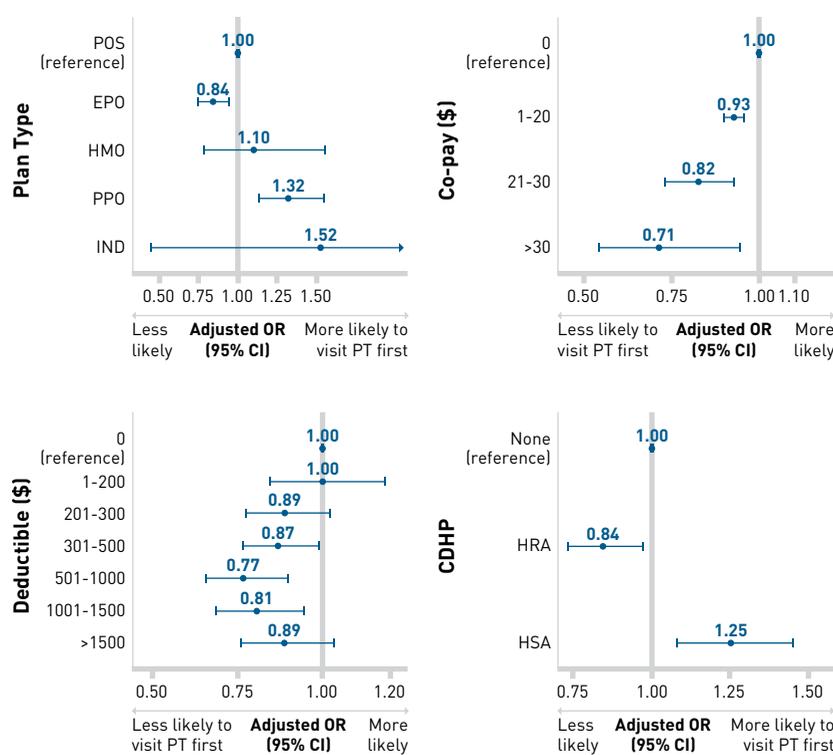
In the [Table](#), we present descriptive data on the distribution of benefit features and choice of entry-point provider for the 117,448 patients included in the analyses. Of the 82,052 patients in the PCP versus physical therapist sample, 2.8% chose the latter provider. POS was the dominant plan type, followed by EPO, PPO, and HMO. Approximately 31% of patients in this sample had zero co-payments and 23% had zero deductibles. Patients in CDHPs made up only about 20% of the total. Regression results for all logistic models are contained in [eAppendix D Tables 1 to 8](#).

Choice of conservative therapy was higher for the 115,144 patients in the chiropractor versus PCP sample; 31% of patients chose a chiropractor as their entry-point provider. The distribution among plans differed little, with the largest portion also enrolled in a POS plan, followed by EPO, PPO, and HMO plans. The percentages of patients with zero co-payments, zero deductibles, or CDHP participation were similar to those in the previous sample.

Physical Therapy

[Figure 1](#) depicts odds ratios generated from results of the physical therapy logistic regressions. Among plan types, PPO plans were

FIGURE 1. Odds of Physical Therapist as Entry-Point Provider (compared with PCP)



CDHP indicates consumer-driven health plan; EPO, exclusive provider organization; HMO, health maintenance organization; HRA, health reimbursement account; HSA, health savings account; IND, indemnity plan; OR, odds ratio; PCP, primary care physician; POS, point of service; PPO, preferred provider organization; PT, physical therapist.

associated with the highest odds of seeing a physical therapist first; PPO patients had a 32% higher likelihood of seeing a physical therapist than a patient enrolled in a POS plan. EPO plans were associated with the lowest odds; these patients were 16% less likely than POS patients to see a physical therapist first.

The odds of seeing a physical therapist as first provider decline steadily as co-payment increases. Those in the highest category, patients with a co-payment of greater than \$30, were 29% less likely to see a physical therapist first than patients whose co-payment was zero. The association of physical therapist first with OOP costs is also observed with deductibles, for which we observe a general decline in the odds of seeing a physical therapist first as the deductible increases. In the deductible range of \$1001 to \$1500, the odds are 19% lower than for zero deductible, and for deductibles greater than \$1500, the odds are 11% lower. The regressions that included CDHPs produced mixed results. Patients with HRAs are 16% less likely to see a physical therapist first compared with patients without CDHPs; however, those with HSAs are 25% more likely.

Chiropractic Care

We present odds ratios obtained from the results of the logistic regressions in which the outcome variable was chiropractor versus

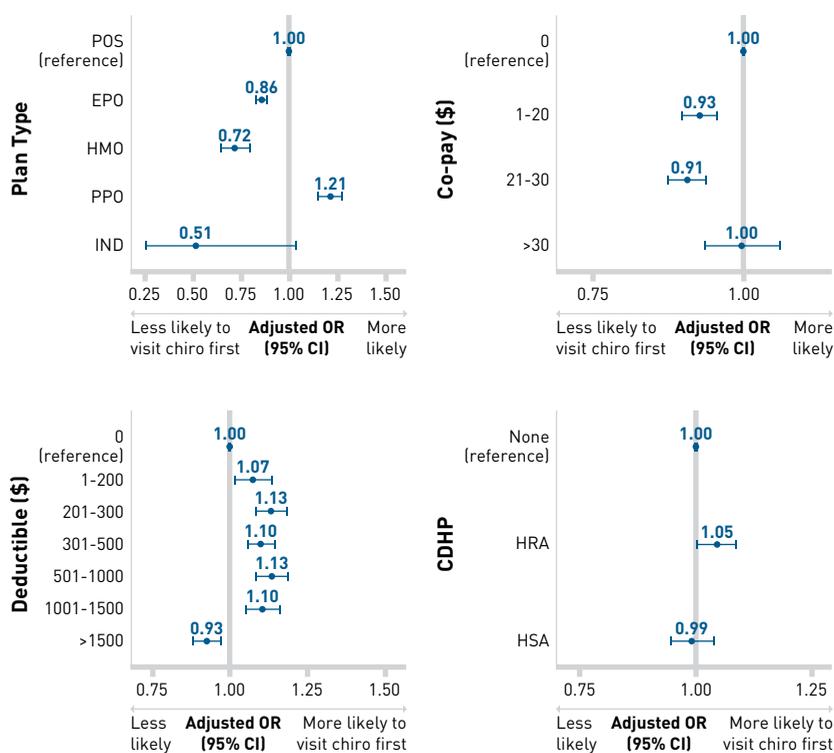
PCP in **Figure 2**. With regard to plan design, there are some similarities to the physical therapist regression results. Patients in PPO plans had the highest likelihood of seeing a chiropractor first; the odds were 21% higher than for those in POS plans. As was the case for the analysis of physical therapists versus PCPs, EPO patients are less likely to choose chiropractors; the odds were 14% lower than for POS patients. However, unlike the analyses for physical therapists versus PCPs, HMO patients also were less likely to choose chiropractors; the odds ratio is the lowest, indicating a 28% lower likelihood of choosing such providers.

Results reveal little association between co-payments and choice of chiropractor first. Relative to \$0 co-payment, the odds were only slightly lower for the categories of \$1 to \$20 and \$21 to \$30 and were not different for the highest co-payment category (>\$30). Except for the highest category of deductibles (>\$1500), other categories, relative to a \$0 deductible, actually showed a slightly higher likelihood of seeing a chiropractor. Patients with a deductible of greater than \$1500 were 7% less likely to choose a chiropractor as entry-point provider. With regard to CDHPs, those with HRAs, in comparison with those without CDHPs, had slightly higher odds of seeing a chiropractor, whereas there was no significant association for HSAs.

DISCUSSION

The study involves a retrospective analysis of claims data from the OptumLabs Data Warehouse,²¹ which includes deidentified claims data for privately insured and Medicare Advantage enrollees in a large, private US health plan. The database contains longitudinal health information on enrollees, representing a diverse mix of ages, ethnicities, and geographical regions across the United States. The health plan provides comprehensive full insurance coverage for physician, hospital, and prescription drug services. Overall, findings demonstrate that patients' selection of entry-point provider was responsive to the incentives that they faced. Patients covered under health plans with the most restrictions on provider choice were less likely to choose a physical therapist or chiropractor over a PCP, and those under the least restrictive plan type were more likely. We also observed a pattern indicating that the likelihood of choosing a physical therapist declined as patient OOP cost increased. This result was less evident for choice of chiropractor. Results exploring the relationship between choice of conservative therapy and participation in a CDHP were largely inconclusive.

FIGURE 2. Odds of Chiropractor as Entry-Point Provider (compared with PCP)



CDHP indicates consumer-driven health plan; chiro, chiropractor; EPO, exclusive provider organization; HMO, health maintenance organization; HRA, health reimbursement account; HSA, health savings account; IND, indemnity plan; OR, odds ratio; PCP, primary care physician; POS, point of service; PPO, preferred provider organization.

CDHP designs couple high-deductible plans with health spending accounts and have become increasingly prevalent since the 2000s. The rationale is that requiring patients to shoulder a greater share of the cost of their care will encourage them to reduce unnecessary utilization. However, studies have shown that reductions in spending are not necessarily accompanied by improvement in value, particularly if patients bypass routine care that would prevent higher downstream costs.^{20,25} Patients who were enrolled in HRAs were somewhat less likely to choose physical therapy, but those enrolled in HSAs were more likely. It may be that incentives placed by HRAs, which are accounts funded by employer contributions, differ from those placed by HSAs, which are funded by both consumers' personal savings and employer contributions. Consumer sensitivity to the cost of care may be higher when their personal contributions are at stake. Affordability may also play a role, as individuals in HSAs may have higher available income compared with individuals in HRAs.²⁶ Future studies that explore these possibilities would be a useful direction for research on consumer-driven healthcare.

In designing insurance products, managed care organizations make use of various financial incentives and management strategies aimed at controlling expenditures. These range from supply-side controls that place restrictions on utilization to looser demand-side

approaches that affect patient OOP costs. Of late, under pressure to reduce growing healthcare expenditures, health insurers and employers have been increasing the level of patient cost sharing at the point of service, elevating the role of benefit design in shaping patient preferences. This development is part of a larger movement toward redesigning benefits in order to encourage patient decision making that aligns the prices of medical services with the value of those services.^{27,28} Value-based insurance design is based on the notion that the value of a treatment to a patient depends not only on the perceived therapeutic effect but also on the price of the treatment relative to other options.¹⁸ In this scenario, a patient with new-onset LBP covered under a health plan with a relatively low or zero OOP cost for physical therapy or chiropractic care may be more likely to choose early conservative therapy, in harmony with the clinical guidelines.

In addition to the economic value of potentially avoided downstream costs, policies that encourage patients with LBP to choose early conservative therapy may have a particular social advantage. Mounting evidence suggests that initial conservative treatment of LBP by a physical therapist, chiropractor, or acupuncturist decreases the odds of early and long-term opioid use.^{11,29,30} Hence, we postulate that benefit redesign that is successful in realizing initial conservative treatment for LBP may also indirectly have a positive bearing on restraining the growing problem of overprescribed opioids.

Limitations

This study analyzed only patients who sought medical care for LBP and whose entry-point provider was either a physical therapist, a chiropractor, or a PCP. We did not consider patients who chose other providers for first-line treatment, and we had no information on severity of the patients' pain, their incomes, or other sociodemographic information that might affect provider choice. Although selection effects of providers cannot be ruled out, we attempted to mitigate the risk of observed effects being driven by selection through stringent exclusionary criteria. Still, the conclusions drawn are associations between benefit design and first provider, and they do not demonstrate a causal connection.

Finally, we examined benefit design features individually, but there may be complex interactions among features that could confound our results. A useful future research direction aimed toward improving the value embedded in health insurance plans would be to investigate the joint impact of various features of benefit designs.

CONCLUSIONS

Evidence-based guidelines for treatment of LBP recommend early conservative therapy with referral to other providers for patients who do not improve within a few weeks.³¹ Yet many patients experiencing a new episode of LBP turn to other nonconservative, first-line treatments that may involve greater cost and/or advanced testing and medications such as opioids. Our study has demonstrated that patients experiencing LBP are moderately responsive to network restrictions and cost sharing in their choice of entry-point provider. This suggests that innovative modifications to insurance benefits offer an opportunity for increased alignment with clinical practice guidelines and greater value. To date, incentive-based insurance benefit design has been applied mainly to prescription drug pricing through mechanisms such as tiered formularies and, more recently, through the Affordable Care Act, requirement of zero cost sharing for preventive services covered by insurance sold on the exchanges.^{18,32} Moving forward, benefit managers and regulators need to advance such principles more broadly by developing new designs and policies aimed at encouraging behaviors that will result in the largest long-term economic and social benefits. ■

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Source of Funding: This project was supported by United Healthcare, OptumLabs, and the American Physical Therapy Association.

Author Disclosures: The authors report no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

Authorship Information: Concept and design (KC, OA, JR, CM, RS, LK); acquisition of data (OA, LK); analysis and interpretation of data (KC, OA, BG, JR, HC, CM, MS, RS, LK); drafting of the manuscript (KC, OA, HC, MS, RS); critical revision of the manuscript for important intellectual content (KC, OA, BG, JR, HC, CM, MS, RS, LK); statistical analysis (OA, HC); obtaining funding (RS, LK); administrative, technical, or logistic support (BG, LK); and supervision (LK).

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eAppendix A. Included Low Back Pain Diagnosis Codes

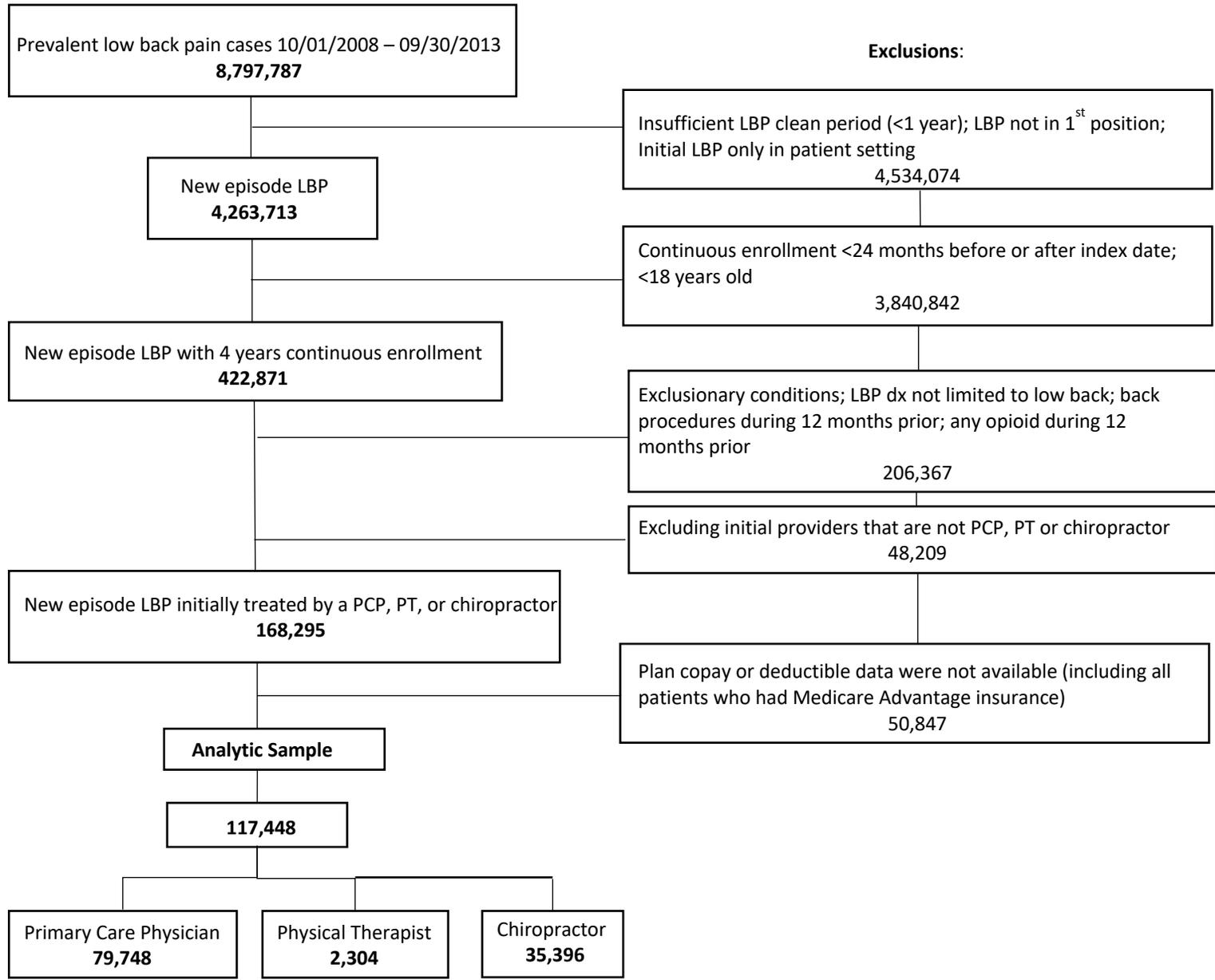
We identified low back pain cases treated between 10/01/2008 and 09/30/2013 according to the following ICD9 codes:

ICD-9 code	Type	Description
353.4	Largely location-specific LBP diagnoses (lumbar or sacral)	Lumbosacral root lesions, not elsewhere classified
721.3	Largely location-specific LBP diagnoses (lumbar or sacral)	Lumbosacral spondylosis without myelopathy
721.42	Largely location-specific LBP diagnoses (lumbar or sacral)	Spondylosis with myelopathy, lumbar region
722.1	Largely location-specific LBP diagnoses (lumbar or sacral)	Displacement of thoracic or lumbar intervertebral disc without myelopathy
722.32	Largely location-specific LBP diagnoses (lumbar or sacral)	Schmorl nodes, lumbar region
722.51	Largely location-specific LBP diagnoses (lumbar or sacral)	Degeneration of thoracic or lumbar intervertebral disc
722.52	Largely location-specific LBP diagnoses (lumbar or sacral)	Degeneration of lumbar or lumbosacral intervertebral disc
722.93	Largely location-specific LBP diagnoses (lumbar or sacral)	Other and unspecified disc disorder of lumbar region
724.2	Largely location-specific LBP diagnoses (lumbar or sacral)	Lumbago
724.3	Largely location-specific LBP diagnoses (lumbar or sacral)	Sciatica
724.4	Largely location-specific LBP diagnoses (lumbar or sacral)	Thoracic or lumbosacral neuritis or radiculitis, unspecified
724.5	Largely location-specific LBP diagnoses (lumbar or sacral)	Unspecified backache
724.6	Largely location-specific LBP diagnoses (lumbar or sacral)	Disorders of sacrum
739.3	Largely location-specific LBP diagnoses (lumbar or sacral)	Non-allopathic lesion of lumbar region, not elsewhere classified
739.4	Largely location-specific LBP diagnoses (lumbar or sacral)	Non-allopathic lesion of sacral region, not elsewhere classified
846.0	Largely location-specific LBP diagnoses (lumbar or sacral)	Sprain and strain of lumbosacral (joint) (ligament)
846.1	Largely location-specific LBP diagnoses (lumbar or sacral)	Sprain and strain of sacroiliac (ligament)
846.2	Largely location-specific LBP diagnoses (lumbar or sacral)	Sprain and strain of sacrospinatus (ligament)
846.3	Largely location-specific LBP diagnoses (lumbar or sacral)	Sprain and strain of sacrotuberous (ligament)
846.8	Largely location-specific LBP diagnoses (lumbar or sacral)	Other specified sites of sacroiliac region sprain and strain
846.9	Largely location-specific LBP diagnoses (lumbar or sacral)	Unspecified site of sacroiliac region sprain and strain
847.2	Largely location-specific LBP diagnoses (lumbar or sacral)	Lumbar sprain and strain
847.3	Largely location-specific LBP diagnoses (lumbar or sacral)	Sprain and strain of sacrum
847.4	Largely location-specific LBP diagnoses (lumbar or sacral)	Sprain and strain of coccyx
722.10	Largely location-specific LBP diagnoses (lumbar or sacral)	Displacement of lumbar intervertebral disc without myelopathy
722.73	Largely location-specific LBP diagnoses (lumbar or sacral)	Intervertebral disc herniation Intervertebral disc disorder with myelopathy lumbar region
724.02	Largely location-specific LBP diagnoses (lumbar or sacral)	Spinal stenosis, lumbar region, without neurogenic claudication

724.03	Largely location-specific LBP diagnoses (lumbar or sacral)	Spinal stenosis, lumbar region, with neurogenic claudication
756.11	Largely location-specific LBP diagnoses (lumbar or sacral)	Spondylolysis, lumbosacral region (congenital)
721.5	Non-location-specific diagnoses	Kissing spine
721.6	Non-location-specific diagnoses	Ankylosing vertebral hyperostosis
721.7	Non-location-specific diagnoses	Traumatic spondylopathy
721.8	Non-location-specific diagnoses	Other allied disorders of spine
721.90	Non-location-specific diagnoses	Spondylosis of unspecified site without mention of myelopathy
721.91	Non-location-specific diagnoses	Spondylosis of unspecified site with myelopathy
722.30	Non-location-specific diagnoses	Schmorl nodes, unspecified region
722.90	Non-location-specific diagnoses	Other and unspecified disc disorder of unspecified region
724.8	Non-location-specific diagnoses	Other symptoms referable to back
724.9	Non-location-specific diagnoses	Other unspecified back disorders
847.9	Non-location-specific diagnoses	Sprain and strain of unspecified site of back
722.2	Non-location-specific diagnoses	Displacement of intervertebral disc, site unspecified, w/o myelopathy
722.6	Non-location-specific diagnoses	Degeneration of intervertebral disc site unspecified
724.00	Non-location-specific diagnoses	Spinal stenosis of unspecified region
724.09	Non-location-specific diagnoses	Spinal stenosis of other region
738.4	Non-location-specific diagnoses	Acquired spondylolisthesis
738.5	Non-location-specific diagnoses	Other acquired deformity of back or spine
756.12	Non-location-specific diagnoses	Spondylolisthesis (congenital)
806.0- 806.9	Exclusionary diagnoses	Fracture of vertebral column with spinal cord injury
805.0-805.9	Exclusionary diagnoses	Fracture of vertebral column without mention of spinal cord injury
733.1x	Exclusionary diagnoses	Pathologic fractures
839.00–839.59	Exclusionary diagnoses	Vertebral dislocations
720.0–720.9	Exclusionary diagnoses	Inflammatory spondyloarthropathies
324.1	Exclusionary diagnoses	Intraspinal abscess
140–239.9	Exclusionary diagnoses	Cancer/neoplasms
730–730.99	Exclusionary diagnoses	Osteomyelitis
353.2	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Cervical root lesions, not elsewhere classified
353.3	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Thoracic root lesions, not elsewhere classified
721.0	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Cervical spondylosis without myelopathy
721.1	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Cervical spondylosis with myelopathy
721.2	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Thoracic spondylosis without myelopathy
721.41	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Spondylosis with myelopathy, thoracic region
722.0	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Displacement of cervical intervertebral disc without myelopathy
722.11	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Displacement of thoracic intervertebral disc without myelopathy
722.4	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Degeneration of cervical intervertebral disc
722.71	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Intervertebral disc disorder with myelopathy, cervical region

722.72	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Intervertebral disc disorder with myelopathy, thoracic region
722.81	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Postlaminectomy syndrome, cervical region
722.82	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Postlaminectomy syndrome, thoracic region
722.91	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Other and unspecified disc disorder, cervical region
722.92	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Other and unspecified disc disorder, thoracic region
723.0	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Spinal stenosis in cervical region
723.4	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Brachial neuritis or radiculitis NOS
724.01	Exclusion diagnoses if in primary position (Cervical, Thoracic)	Spinal stenosis, thoracic region

eAppendix B. Construction of Analytic Sample



eAppendix C. Logistic Regression – Statistical Test Results

Benefit Design Feature	Provider	c-statistic*	Hosmer-Lemeshow Statistics**		
			Chi-Square	DF	p-value
<i>Plan Type</i>	Physical Therapy	0.740	10.05	8	0.262
	Chiropractor	0.648	3.69	8	0.884
<i>Copayment</i>	Physical Therapy	0.739	7.88	8	0.445
	Chiropractor	0.646	5.96	8	0.652
<i>Deductible</i>	Physical Therapy	0.739	7.28	8	0.506
	Chiropractor	0.647	6.82	8	0.556
<i>CDHP</i>	Physical Therapy	0.738	14.26	8	0.075
	Chiropractor	0.645	7.97	8	0.437

* The c-statistic, the area under the receiver-operating characteristic (ROC) curve, is a goodness-of-fit measure that assesses the ability of the variables in the model to discriminate between those in each category of the dependent variable, with a null value of 0.5 and a maximum value of 1.0.

** The Hosmer-Lemeshow statistic is a measure of the goodness-of-fit of the model that together with its associated hypothesis test assess the calibration of the model. P-values greater than or equal to 0.05 indicate a model that has adequate calibration.

eAppendix D. Logistic Regression Results – Parameter Estimates and Odds Ratios

Table 1. Physical Therapy: Plan Type

Variable	Levels	Estimate	Wald Chi-Square	Pr > Chi-Square	OR (95% CI)
<i>Plan Type</i>	EPO vs POS	-0.17	7.86	0.01	0.84 (0.75,0.95)
	HMO vs POS	0.10	0.31	0.58	1.10 (0.78,1.56)
	IND vs POS	0.42	0.45	0.50	1.52 (0.44,5.24)
	PPO vs POS	0.28	12.03	0.00	1.32 (1.13,1.55)
<i>Age</i>	45-65 vs 18-44	0.01	0.06	0.81	1.01 (0.92,1.11)
	65-74 vs 18-44	0.13	0.57	0.45	1.14 (0.81,1.59)
	75+ vs 18-44	-	-	-	-
<i>Gender</i>	Female vs Male	0.14	9.36	0.00	1.15 (1.05,1.26)
<i>Race/Ethnicity</i>	Asian vs White	0.07	0.60	0.44	1.07 (0.90,1.28)
	Black vs White	-0.40	17.17	<.0001	0.67 (0.55,0.81)
	Hispanic vs White	-0.41	27.20	<.0001	0.67 (0.57,0.78)
<i>Region</i>	Midwest vs Northeast	0.80	120.33	<.0001	2.23 (1.93,2.57)
	South vs Northeast	-0.17	6.97	0.01	0.84 (0.74,0.96)
	West vs Northeast	0.75	108.99	<.0001	2.11 (1.83,2.42)
<i>Elixhauser Index</i>		-0.10	19.75	<.0001	0.91 (0.87,0.95)
<i>Anxiety</i>		-0.05	0.39	0.53	0.95 (0.82,1.11)
<i>Bipolar</i>		-0.57	6.22	0.01	0.57 (0.36,0.89)
<i>Depression</i>		-0.08	1.07	0.30	0.92 (0.79,1.08)
<i>Dementia</i>		-11.08	0.00	0.95	-
<i>Attention Deficit Hyperactivity Disorder</i>		0.45	9.90	0.00	1.56 (1.18,2.06)
<i>Alcohol use disorder</i>		-0.06	0.06	0.81	0.95 (0.60,1.49)
<i>Substance use disorder</i>		-0.13	0.18	0.67	0.88 (0.47,1.62)
<i>Psychotic Disorder</i>		-0.02	0.00	0.97	0.99 (0.40,2.45)
<i>Chronic Pain & Fibromyalgia & Fatigue</i>		0.37	19.36	<.0001	1.44 (1.23,1.70)
<i>Physical therapy state access</i>	Provisional vs Limited	0.19	6.28	0.01	1.21 (1.04,1.39)
	Unlimited vs Limited	0.50	31.98	<.0001	1.65 (1.38,1.95)
<i>Opioid use 13-24 months back</i>		-0.26	19.25	<.0001	0.77 (0.69,0.87)
<i>Physical therapy any 1-24 months back</i>		1.62	740.00	<.0001	5.07 (4.51,5.70)
<i>Chiropractor any 1-24 months back</i>		0.37	11.98	0.00	1.45 (1.18,1.80)
<i>Acupuncture any 1-24 months back</i>		0.62	8.13	0.00	1.85 (1.21,2.83)
<i>LBP 13-24 months back</i>		0.25	3.66	0.06	1.29 (0.99,1.66)
<i>Pregnancy 1-12 months before LBP visit</i>		1.77	448.18	<.0001	5.86 (4.97,6.90)
<i>Accidents 1-12 months before LBP visit</i>		-0.31	5.10	0.02	0.73 (0.56,0.96)
<i>Month of index visit</i>	2 vs 1	-0.10	0.99	0.32	0.90 (0.73,1.11)
	3 vs 1	-0.07	0.44	0.51	0.94 (0.77,1.14)
	4 vs 1	-0.09	0.76	0.38	0.91 (0.75,1.12)
	5 vs 1	-0.11	1.17	0.28	0.89 (0.73,1.10)
	6 vs 1	-0.09	0.77	0.38	0.91 (0.75,1.12)
	7 vs 1	-0.01	0.02	0.90	0.99 (0.81,1.20)
	8 vs 1	-0.02	0.03	0.87	0.98 (0.81,1.20)
	9 vs 1	-0.02	0.05	0.82	0.98 (0.80,1.20)
	10 vs 1	-0.22	4.43	0.04	0.80 (0.65,0.99)
	11 vs 1	-0.03	0.09	0.77	0.97 (0.79,1.19)
	12 vs 1	-0.16	2.23	0.14	0.85 (0.69,1.05)
	<i>Year</i>		0.04	6.05	0.01

Table 2. Physical Therapy: Copayment

Variable	Levels	Estimate	Wald Chi-Square	Pr > Chi-Square	OR (95% CI)
<i>Copayment</i>	1-20 vs 0	-0.01	0.07	0.79	0.99 (0.89,1.09)
	21-30 vs 0	-0.19	10.07	0.00	0.83 (0.73,0.93)
	>30 vs 0	-0.34	5.54	0.02	0.71 (0.54,0.95)
<i>Age</i>	45-65 vs 18-44	0.03	0.29	0.59	1.03 (0.94,1.13)
	65-74 vs 18-44	0.17	1.02	0.31	1.19 (0.85,1.66)
	75+ vs 18-44	-	-	-	-
<i>Gender</i>	Female vs Male	0.14	9.55	0.00	1.15 (1.05,1.26)
<i>Race/Ethnicity</i>	Asian vs White	0.03	0.11	0.75	1.03 (0.86,1.23)
	Black vs White	-0.41	17.66	<.0001	0.67 (0.55,0.81)
	Hispanic vs White	-0.41	28.00	<.0001	0.66 (0.57,0.77)
<i>Region</i>	Midwest vs Northeast	0.81	123.79	<.0001	2.24 (1.95,2.59)
	South vs Northeast	-0.16	6.29	0.01	0.85 (0.75,0.97)
	West vs Northeast	0.73	104.66	<.0001	2.07 (1.80,2.38)
<i>Elixhauser Index</i>		-0.10	19.08	<.0001	0.91 (0.87,0.95)
<i>Anxiety</i>		-0.04	0.32	0.57	0.96 (0.82,1.11)
<i>Bipolar</i>		-0.56	6.04	0.01	0.57 (0.37,0.89)
<i>Depression</i>		-0.08	1.02	0.31	0.92 (0.79,1.08)
<i>Dementia</i>		-	-	-	-
<i>Attention Deficit Hyperactivity Disorder</i>		0.44	9.79	0.00	1.56 (1.18,2.06)
<i>Alcohol use disorder</i>		-0.05	0.05	0.82	0.95 (0.60,1.49)
<i>Substance use disorder</i>		-0.14	0.19	0.66	0.87 (0.47,1.61)
<i>Psychotic Disorder</i>		-0.04	0.01	0.94	0.97 (0.39,2.40)
<i>Chronic Pain & Fibromyalgia & Fatigue</i>		0.37	19.84	<.0001	1.45 (1.23,1.70)
<i>Physical therapy state access</i>	Provisional vs Limited	0.19	6.34	0.01	1.21 (1.04,1.40)
	Unlimited vs Limited	0.48	30.33	<.0001	1.62 (1.37,1.93)
<i>Opioid use 13-24 months back</i>		-0.26	19.33	<.0001	0.77 (0.69,0.87)
<i>Physical therapy any 1-24 months back</i>		1.62	740.18	<.0001	5.07 (4.51,5.70)
<i>Chiropractor any 1-24 months back</i>		0.38	12.12	0.00	1.46 (1.18,1.80)
<i>Acupuncture any 1-24 months back</i>		0.60	7.72	0.01	1.82 (1.19,2.78)
<i>LBP 13-24 months back</i>		0.25	3.63	0.06	1.29 (0.99,1.66)
<i>Pregnancy 1-12 months before LBP visit</i>		1.76	443.05	<.0001	5.80 (4.92,6.83)
<i>Accidents 1-12 months before LBP visit</i>		-0.31	4.92	0.03	0.74 (0.56,0.97)
<i>Month of index visit</i>	2 vs 1	-0.11	1.01	0.32	0.90 (0.73,1.11)
	3 vs 1	-0.07	0.49	0.48	0.93 (0.77,1.14)
	4 vs 1	-0.09	0.76	0.38	0.91 (0.75,1.12)
	5 vs 1	-0.11	1.19	0.28	0.89 (0.73,1.10)
	6 vs 1	-0.09	0.80	0.37	0.91 (0.75,1.12)
	7 vs 1	-0.02	0.03	0.87	0.98 (0.81,1.20)
	8 vs 1	-0.02	0.03	0.87	0.98 (0.81,1.20)
	9 vs 1	-0.02	0.04	0.84	0.98 (0.80,1.20)
	10 vs 1	-0.23	4.52	0.03	0.80 (0.65,0.98)
	11 vs 1	-0.03	0.11	0.74	0.97 (0.79,1.19)
	12 vs 1	-0.16	2.31	0.13	0.85 (0.69,1.05)
	<i>Year</i>		0.04	5.90	0.02

Table 3. Physical Therapy: Deductible

Variable	Levels	Estimate	Wald Chi-Square	Pr > Chi-Square	OR (95% CI)
<i>Deductible</i>	1-200 vs 0	0.00	0.00	0.99	1.00 (0.85,1.19)
	201-300 vs 0	-0.12	2.66	0.10	0.89 (0.77,1.02)
	301-500 vs 0	-0.14	4.35	0.04	0.87 (0.76,0.99)
	501-1000 vs 0	-0.26	10.68	0.00	0.77 (0.66,0.90)
	1001-1500 vs 0	-0.22	6.91	0.01	0.81 (0.69,0.95)
	>1500 vs 0	-0.12	2.28	0.13	0.89 (0.76,1.04)
<i>Age</i>	45-65 vs 18-44	0.03	0.33	0.56	1.03 (0.94,1.13)
	65-74 vs 18-44	0.18	1.05	0.31	1.19 (0.85,1.67)
	75+ vs 18-44	-	-	-	-
<i>Gender</i>	Female vs Male	0.14	9.76	0.00	1.15 (1.06,1.26)
<i>Race/Ethnicity</i>	Asian vs White	0.02	0.04	0.83	1.02 (0.86,1.21)
	Black vs White	-0.41	17.50	<.0001	0.67 (0.55,0.81)
	Hispanic vs White	-0.42	28.92	<.0001	0.66 (0.56,0.77)
<i>Region</i>	Midwest vs Northeast	0.79	112.71	<.0001	2.19 (1.90,2.53)
	South vs Northeast	-0.17	6.80	0.01	0.84 (0.74,0.96)
	West vs Northeast	0.72	102.43	<.0001	2.06 (1.79,2.37)
<i>Elixhauser Index</i>		-0.10	20.29	<.0001	0.90 (0.87,0.95)
<i>Anxiety</i>		-0.04	0.33	0.57	0.96 (0.82,1.11)
<i>Bipolar</i>		-0.56	6.02	0.01	0.57 (0.37,0.89)
<i>Depression</i>		-0.08	1.11	0.29	0.92 (0.79,1.08)
<i>Dementia</i>		-	-	-	-
<i>Attention Deficit Hyperactivity Disorder</i>		0.44	9.72	0.00	1.56 (1.18,2.05)
<i>Alcohol use disorder</i>		-0.06	0.07	0.79	0.94 (0.60,1.48)
<i>Substance use disorder</i>		-0.13	0.17	0.68	0.88 (0.48,1.63)
<i>Psychotic Disorder</i>		-0.03	0.00	0.95	0.97 (0.39,2.41)
<i>Chronic Pain & Fibromyalgia & Fatigue</i>		0.37	19.34	<.0001	1.44 (1.23,1.70)
<i>Physical therapy state access</i>	Provisional vs Limited	0.20	6.89	0.01	1.22 (1.05,1.41)
	Unlimited vs Limited	0.50	32.15	<.0001	1.65 (1.39,1.96)
<i>Opioid use 13-24 months back</i>		-0.26	19.47	<.0001	0.77 (0.69,0.87)
<i>Physical therapy any 1-24 months back</i>		1.62	735.83	<.0001	5.05 (4.49,5.68)
<i>Chiropractor any 1-24 months back</i>		0.38	12.11	0.00	1.46 (1.18,1.80)
<i>Acupuncture any 1-24 months back</i>		0.60	7.70	0.01	1.82 (1.19,2.79)
<i>LBP 13-24 months back</i>		0.25	3.72	0.05	1.29 (1.00,1.67)
<i>Pregnancy 1-12 months before LBP visit</i>		1.75	441.33	<.0001	5.78 (4.91,6.81)
<i>Accidents 1-12 months before LBP visit</i>		-0.30	4.74	0.03	0.74 (0.56,0.97)
<i>Month of index visit</i>	2 vs 1	-0.11	1.05	0.30	0.90 (0.73,1.10)
	3 vs 1	-0.07	0.46	0.50	0.93 (0.77,1.14)
	4 vs 1	-0.09	0.77	0.38	0.91 (0.75,1.12)
	5 vs 1	-0.12	1.23	0.27	0.89 (0.73,1.09)
	6 vs 1	-0.09	0.80	0.37	0.91 (0.75,1.12)
	7 vs 1	-0.02	0.04	0.84	0.98 (0.80,1.19)
	8 vs 1	-0.01	0.02	0.89	0.99 (0.81,1.20)
	9 vs 1	-0.02	0.04	0.84	0.98 (0.80,1.20)
	10 vs 1	-0.23	4.50	0.03	0.80 (0.65,0.98)
	11 vs 1	-0.03	0.09	0.77	0.97 (0.79,1.19)
	12 vs 1	-0.16	2.15	0.14	0.85 (0.69,1.06)
	<i>Year</i>		0.05	8.20	0.00

Table 4. Physical Therapy: Consumer-Directed Health Plan

Variable	Levels	Estimate	Wald Chi-Square	Pr > Chi-Square	OR (95% CI)
CDHP	HRA vs neither HRA nor HSA	-0.17	5.32	0.02	0.85 (0.73,0.98)
	HSA vs neither HRA nor HSA	0.23	9.11	0.00	1.25 (1.08,1.45)
Age	45-65 vs 18-44	0.02	0.27	0.60	1.03 (0.93,1.13)
	65-74 vs 18-44	0.17	1.03	0.31	1.19 (0.85,1.66)
	75+ vs 18-44	-	-	-	-
Gender	Female vs Male	0.14	9.70	0.00	1.15 (1.05,1.26)
Race	Asian vs White	0.04	0.23	0.63	1.04 (0.88,1.24)
	Black vs White	-0.39	16.14	<.0001	0.68 (0.56,0.82)
	Hispanic vs White	-0.41	27.02	<.0001	0.67 (0.57,0.78)
Region	Midwest vs Northeast	0.84	132.82	<.0001	2.33 (2.02,2.69)
	South vs Northeast	-0.17	6.34	0.01	0.85 (0.75,0.96)
	West vs Northeast	0.75	110.96	<.0001	2.12 (1.85,2.44)
Elixhauser Index		-0.10	18.95	<.0001	0.91 (0.87,0.95)
Anxiety		-0.05	0.38	0.54	0.95 (0.82,1.11)
Bipolar		-0.56	5.95	0.01	0.57 (0.37,0.90)
Depression		-0.08	0.91	0.34	0.93 (0.79,1.08)
Dementia		-	-	-	-
Attention Deficit Hyperactivity Disorder		0.43	9.12	0.00	1.54 (1.16,2.04)
Alcohol use disorder		-0.05	0.05	0.83	0.95 (0.61,1.50)
Substance use disorder		-0.13	0.18	0.67	0.87 (0.47,1.62)
Psychotic Disorder		-0.03	0.00	0.96	0.97 (0.39,2.42)
Chronic Pain & Fibromyalgia & Fatigue		0.37	19.74	<.0001	1.45 (1.23,1.70)
Physical therapy state access	Provisional vs Limited	0.19	6.45	0.01	1.21 (1.04,1.40)
	Unlimited vs Limited	0.47	28.80	<.0001	1.61 (1.35,1.91)
Opioid use 13-24 months back		-0.26	19.25	<.0001	0.78 (0.69,0.87)
Physical therapy any 1-24 months back		1.62	739.86	<.0001	5.07 (4.51,5.70)
Chiropractor any 1-24 months back		0.38	12.39	0.00	1.46 (1.18,1.81)
Acupuncture any 1-24 months back		0.62	8.10	0.00	1.85 (1.21,2.83)
LBP 13-24 months back		0.26	3.85	0.05	1.29 (1.00,1.68)
Pregnancy 1-12 months before LBP visit		1.76	445.76	<.0001	5.83 (4.95,6.86)
Accidents 1-12 months before LBP visit		-0.31	5.02	0.03	0.73 (0.56,0.96)
Month of index visit	2 vs 1	-0.10	0.96	0.33	0.90 (0.73,1.11)
	3 vs 1	-0.07	0.49	0.48	0.93 (0.77,1.14)
	4 vs 1	-0.10	0.90	0.34	0.91 (0.74,1.11)
	5 vs 1	-0.13	1.60	0.21	0.88 (0.71,1.08)
	6 vs 1	-0.10	0.88	0.35	0.91 (0.74,1.11)
	7 vs 1	-0.02	0.05	0.83	0.98 (0.80,1.19)
	8 vs 1	-0.02	0.04	0.85	0.98 (0.80,1.20)
	9 vs 1	-0.03	0.07	0.79	0.97 (0.80,1.19)
	10 vs 1	-0.23	4.81	0.03	0.79 (0.64,0.98)
	11 vs 1	-0.04	0.13	0.72	0.96 (0.79,1.18)
	12 vs 1	-0.17	2.45	0.12	0.84 (0.68,1.04)
	Year		0.03	3.54	0.06

Table 5. Chiropractor: Plan Type

Variable	Levels	Estimate	Wald Chi-Square	Pr > Chi-Square	OR (95% CI)
<i>Plan Type</i>	EPO vs POS	-0.16	71.57	<.0001	0.86 (0.83,0.89)
	HMO vs POS	-0.33	36.46	<.0001	0.72 (0.64,0.80)
	IND vs POS	-0.67	3.45	0.06	0.51 (0.26,1.04)
	PPO vs POS	0.19	51.03	<.0001	1.21 (1.15,1.28)
<i>Age</i>	45-65 vs 18-44	-0.22	231.06	<.0001	0.81 (0.78,0.83)
	65-74 vs 18-44	-0.26	21.07	<.0001	0.77 (0.69,0.86)
	75+ vs 18-44	-1.16	13.67	0.00	0.31 (0.17,0.58)
<i>Gender</i>	Female vs Male	-0.17	154.77	<.0001	0.84 (0.82,0.87)
<i>Race/Ethnicity</i>	Asian vs White	-0.38	121.41	<.0001	0.68 (0.64,0.73)
	Black vs White	-0.72	649.70	<.0001	0.49 (0.46,0.51)
	Hispanic vs White	-0.45	377.98	<.0001	0.64 (0.61,0.67)
<i>Region</i>	Midwest vs Northeast	-0.12	25.85	<.0001	0.88 (0.84,0.93)
	South vs Northeast	-0.13	60.59	<.0001	0.88 (0.85,0.91)
	West vs Northeast	0.01	0.44	0.51	1.01 (0.97,1.06)
<i>Elixhauser Index</i>		-0.10	205.90	<.0001	0.91 (0.89,0.92)
<i>Anxiety</i>		-0.12	24.27	<.0001	0.89 (0.84,0.93)
<i>Bipolar</i>		-0.07	1.42	0.23	0.93 (0.83,1.05)
<i>Depression</i>		-0.04	2.45	0.12	0.96 (0.92,1.01)
<i>Dementia</i>		-0.32	1.49	0.22	0.72 (0.43,1.22)
<i>Attention Deficit Hyperactivity Disorder</i>		0.00	0.00	0.98	1.00 (0.91,1.10)
<i>Alcohol use disorder</i>		-0.05	0.44	0.51	0.95 (0.83,1.10)
<i>Substance use disorder</i>		-0.20	4.46	0.03	0.82 (0.68,0.99)
<i>Psychotic Disorder</i>		0.12	0.80	0.37	1.13 (0.87,1.47)
<i>Chronic Pain & Fibromyalgia & Fatigue</i>		-0.11	12.37	0.00	0.90 (0.84,0.95)
<i>Opioid use 13-24 months back</i>		-0.17	95.19	<.0001	0.84 (0.81,0.87)
<i>Physical therapy any 1-24 months back</i>		0.11	11.43	0.00	1.12 (1.05,1.20)
<i>Chiropractor any 1-24 months back</i>		1.94	4001.54	<.0001	6.93 (6.53,7.36)
<i>Acupuncture any 1-24 months back</i>		0.34	9.29	0.00	1.40 (1.13,1.74)
<i>LBP 13-24 months back</i>		-0.17	13.13	0.00	0.84 (0.77,0.92)
<i>Pregnancy 1-12 months before LBP visit</i>		0.57	175.13	<.0001	1.77 (1.63,1.93)
<i>Accidents 1-12 months before LBP visit</i>		-1.02	329.53	<.0001	0.36 (0.32,0.40)
<i>Month of index visit</i>	2 vs 1	-0.03	1.03	0.31	0.97 (0.91,1.03)
	3 vs 1	-0.02	0.51	0.48	0.98 (0.92,1.04)
	4 vs 1	0.02	0.48	0.49	1.02 (0.96,1.09)
	5 vs 1	-0.03	0.69	0.41	0.97 (0.92,1.04)
	6 vs 1	0.03	0.64	0.42	1.03 (0.96,1.09)
	7 vs 1	0.02	0.32	0.57	1.02 (0.96,1.08)
	8 vs 1	0.00	0.02	0.89	1.00 (0.94,1.07)
	9 vs 1	-0.12	13.95	0.00	0.89 (0.83,0.94)
	10 vs 1	-0.09	7.37	0.01	0.92 (0.86,0.98)
	11 vs 1	-0.03	0.94	0.33	0.97 (0.91,1.03)
	12 vs 1	-0.15	18.90	<.0001	0.86 (0.81,0.92)
	<i>Year</i>		0.02	10.84	0.00

Table 6. Chiropractor: Copayment

Variable	Levels	Estimate	Wald Chi-Square	Pr > Chi-Square	OR (95% CI)
Copayment	1-20 vs 0	-0.08	22.24	<.0001	0.93 (0.90,0.96)
	21-30 vs 0	-0.10	30.29	<.0001	0.91 (0.88,0.94)
	>30 vs 0	0.00	0.02	0.89	1.00 (0.93,1.06)
Age	45-65 vs 18-44	-0.21	220.12	<.0001	0.81 (0.79,0.83)
	65-74 vs 18-44	-0.26	20.18	<.0001	0.78 (0.69,0.87)
	75+ vs 18-44	-1.21	15.17	<.0001	0.30 (0.16,0.55)
Gender	Female vs Male	-0.17	161.49	<.0001	0.84 (0.82,0.86)
Race/Ethnicity	Asian vs White	-0.39	129.58	<.0001	0.68 (0.63,0.72)
	Black vs White	-0.73	666.26	<.0001	0.48 (0.46,0.51)
	Hispanic vs White	-0.45	381.81	<.0001	0.64 (0.61,0.67)
Region	Midwest vs Northeast	-0.11	20.93	<.0001	0.89 (0.85,0.94)
	South vs Northeast	-0.15	84.86	<.0001	0.86 (0.83,0.89)
	West vs Northeast	0.00	0.02	0.89	1.00 (0.96,1.05)
Elixhauser Index		-0.10	206.78	<.0001	0.91 (0.89,0.92)
Anxiety		-0.12	24.16	<.0001	0.89 (0.84,0.93)
Bipolar		-0.07	1.51	0.22	0.93 (0.83,1.05)
Depression		-0.04	2.26	0.13	0.96 (0.92,1.01)
Dementia		-0.35	1.71	0.19	0.71 (0.42,1.19)
Attention Deficit Hyperactivity Disorder		0.00	0.00	1.00	1.00 (0.91,1.10)
Alcohol use disorder		-0.05	0.39	0.53	0.96 (0.83,1.10)
Substance use disorder		-0.20	4.48	0.03	0.82 (0.68,0.99)
Psychotic Disorder		0.11	0.66	0.42	1.12 (0.86,1.45)
Chronic Pain & Fibromyalgia & Fatigue		-0.11	11.39	0.00	0.90 (0.85,0.96)
Opioid use 13-24 months back		-0.18	96.87	<.0001	0.84 (0.81,0.87)
Physical therapy any 1-24 months back		0.12	11.63	0.00	1.12 (1.05,1.20)
Chiropractor any 1-24 months back		1.94	4006.95	<.0001	6.93 (6.53,7.36)
Acupuncture any 1-24 months back		0.34	9.41	0.00	1.40 (1.13,1.74)
LBP 13-24 months back		-0.17	12.59	0.00	0.85 (0.77,0.93)
Pregnancy 1-12 months before LBP visit		0.57	174.10	<.0001	1.77 (1.62,1.92)
Accidents 1-12 months before LBP visit		-1.01	326.80	<.0001	0.36 (0.33,0.41)
Month of index visit	2 vs 1	-0.03	1.02	0.31	0.97 (0.91,1.03)
	3 vs 1	-0.02	0.59	0.44	0.98 (0.92,1.04)
	4 vs 1	0.02	0.47	0.49	1.02 (0.96,1.09)
	5 vs 1	-0.03	0.74	0.39	0.97 (0.91,1.04)
	6 vs 1	0.03	0.63	0.43	1.03 (0.96,1.09)
	7 vs 1	0.02	0.29	0.59	1.02 (0.96,1.08)
	8 vs 1	0.01	0.03	0.86	1.01 (0.95,1.07)
	9 vs 1	-0.12	13.95	0.00	0.89 (0.83,0.94)
	10 vs 1	-0.09	7.78	0.01	0.91 (0.86,0.97)
	11 vs 1	-0.04	1.22	0.27	0.96 (0.90,1.03)
	12 vs 1	-0.15	19.58	<.0001	0.86 (0.81,0.92)
	Year		0.01	8.56	0.00

Table 7. Chiropractor: Deductible

Variable	Levels	Estimate	Wald Chi-Square	Pr > Chi-Square	OR (95% CI)
<i>Deductible</i>	1-200 vs 0	0.07	5.98	0.01	1.07 (1.01,1.14)
	201-300 vs 0	0.12	28.45	<.0001	1.13 (1.08,1.18)
	301-500 vs 0	0.09	20.23	<.0001	1.10 (1.06,1.15)
	501-1000 vs 0	0.13	30.01	<.0001	1.13 (1.08,1.19)
	1001-1500 vs 0	0.10	15.66	<.0001	1.10 (1.05,1.16)
	>1500 vs 0	-0.08	9.27	0.00	0.93 (0.88,0.97)
<i>Age</i>	45-65 vs 18-44	-0.21	213.19	<.0001	0.81 (0.79,0.84)
	65-74 vs 18-44	-0.25	19.80	<.0001	0.78 (0.70,0.87)
	75+ vs 18-44	-1.22	15.23	<.0001	0.30 (0.16,0.55)
<i>Gender</i>	Female vs Male	-0.17	160.20	<.0001	0.84 (0.82,0.86)
<i>Race/Ethnicity</i>	Asian vs White	-0.39	125.02	<.0001	0.68 (0.64,0.73)
	Black vs White	-0.73	662.15	<.0001	0.48 (0.46,0.51)
	Hispanic vs White	-0.45	384.70	<.0001	0.64 (0.61,0.67)
<i>Region</i>	Midwest vs Northeast	-0.11	19.46	<.0001	0.90 (0.85,0.94)
	South vs Northeast	-0.17	106.25	<.0001	0.84 (0.81,0.87)
	West vs Northeast	-0.01	0.26	0.61	0.99 (0.95,1.03)
<i>Elixhauser Index</i>		-0.10	213.64	<.0001	0.90 (0.89,0.92)
<i>Anxiety</i>		-0.12	24.39	<.0001	0.89 (0.84,0.93)
<i>Bipolar</i>		-0.07	1.53	0.22	0.93 (0.83,1.04)
<i>Depression</i>		-0.04	2.37	0.12	0.96 (0.92,1.01)
<i>Dementia</i>		-0.34	1.66	0.20	0.71 (0.42,1.19)
<i>Attention Deficit Hyperactivity Disorder</i>		0.00	0.01	0.94	1.00 (0.91,1.10)
<i>Alcohol use disorder</i>		-0.04	0.38	0.54	0.96 (0.83,1.10)
<i>Substance use disorder</i>		-0.20	4.33	0.04	0.82 (0.68,0.99)
<i>Psychotic Disorder</i>		0.11	0.72	0.40	1.12 (0.86,1.46)
<i>Chronic Pain & Fibromyalgia & Fatigue</i>		-0.11	11.95	0.00	0.90 (0.85,0.95)
<i>Opioid use 13-24 months back</i>		-0.18	100.89	<.0001	0.84 (0.81,0.87)
<i>Physical therapy any 1-24 months back</i>		0.12	12.18	0.00	1.13 (1.05,1.20)
<i>Chiropractor any 1-24 months back</i>		1.94	4005.76	<.0001	6.93 (6.53,7.36)
<i>Acupuncture any 1-24 months back</i>		0.34	9.69	0.00	1.41 (1.14,1.75)
<i>LBP 13-24 months back</i>		-0.17	12.48	0.00	0.85 (0.77,0.93)
<i>Pregnancy 1-12 months before LBP visit</i>		0.57	172.85	<.0001	1.76 (1.62,1.92)
<i>Accidents 1-12 months before LBP visit</i>		-1.01	326.85	<.0001	0.36 (0.33,0.41)
<i>Month of index visit</i>	2 vs 1	-0.03	1.08	0.30	0.97 (0.91,1.03)
	3 vs 1	-0.03	0.66	0.42	0.98 (0.92,1.04)
	4 vs 1	0.02	0.43	0.51	1.02 (0.96,1.09)
	5 vs 1	-0.03	0.87	0.35	0.97 (0.91,1.03)
	6 vs 1	0.02	0.54	0.46	1.02 (0.96,1.09)
	7 vs 1	0.02	0.33	0.56	1.02 (0.96,1.08)
	8 vs 1	0.01	0.03	0.86	1.01 (0.95,1.07)
	9 vs 1	-0.12	14.05	0.00	0.88 (0.83,0.94)
	10 vs 1	-0.09	7.80	0.01	0.91 (0.86,0.97)
	11 vs 1	-0.04	1.14	0.29	0.97 (0.91,1.03)
	12 vs 1	-0.15	19.01	<.0001	0.86 (0.81,0.92)
	<i>Year</i>		0.02	10.88	0.00

Table 8. Chiropractor: Consumer-Driven Health Plan

Variable	Levels	Estimate	Wald Chi-Square	Pr > Chi-Square	OR (95% CI)
<i>CDHP</i>	HRA vs neither HRA nor HSA	0.04	4.83	0.03	1.05 (1.01,1.09)
	HSA vs neither HRA nor HSA	-0.01	0.13	0.71	0.99 (0.94,1.04)
<i>Age</i>	45-65 vs 18-44	-0.21	213.85	<.0001	0.81 (0.79,0.84)
	65-74 vs 18-44	-0.24	17.98	<.0001	0.79 (0.70,0.88)
	75+ vs 18-44	-1.16	13.97	0.00	0.31 (0.17,0.58)
<i>Gender</i>	Female vs Male	-0.17	157.58	<.0001	0.84 (0.82,0.86)
<i>Race</i>	Asian vs White	-0.39	131.14	<.0001	0.67 (0.63,0.72)
	Black vs White	-0.73	661.22	<.0001	0.48 (0.46,0.51)
	Hispanic vs White	-0.46	395.11	<.0001	0.63 (0.60,0.66)
<i>Region</i>	Midwest vs Northeast	-0.11	20.71	<.0001	0.89 (0.85,0.94)
	South vs Northeast	-0.15	86.07	<.0001	0.86 (0.83,0.89)
	West vs Northeast	0.00	0.03	0.87	1.00 (0.96,1.05)
<i>Elixhauser Index</i>		-0.10	208.47	<.0001	0.91 (0.89,0.92)
<i>Anxiety</i>		-0.12	24.30	<.0001	0.89 (0.84,0.93)
<i>Bipolar</i>		-0.07	1.46	0.23	0.93 (0.83,1.05)
<i>Depression</i>		-0.04	2.50	0.11	0.96 (0.91,1.01)
<i>Dementia</i>		-0.34	1.68	0.19	0.71 (0.42,1.19)
<i>Attention Deficit Hyperactivity Disorder</i>		0.00	0.00	1.00	1.00 (0.91,1.10)
<i>Alcohol use disorder</i>		-0.05	0.45	0.50	0.95 (0.83,1.10)
<i>Substance use disorder</i>		-0.20	4.39	0.04	0.82 (0.68,0.99)
<i>Psychotic Disorder</i>		0.10	0.52	0.47	1.10 (0.85,1.44)
<i>Chronic Pain & Fibromyalgia & Fatigue</i>		-0.11	11.38	0.00	0.90 (0.85,0.96)
<i>Opioid use 13-24 months back</i>		-0.18	97.17	<.0001	0.84 (0.81,0.87)
<i>Physical therapy any 1-24 months back</i>		0.12	12.15	0.00	1.13 (1.05,1.20)
<i>Chiropractor any 1-24 months back</i>		1.93	3984.17	<.0001	6.90 (6.50,7.33)
<i>Acupuncture any 1-24 months back</i>		0.35	9.82	0.00	1.41 (1.14,1.76)
<i>LBP 13-24 months back</i>		-0.17	12.63	0.00	0.85 (0.77,0.93)
<i>Pregnancy 1-12 months before LBP visit</i>		0.57	173.06	<.0001	1.76 (1.62,1.92)
<i>Accidents 1-12 months before LBP visit</i>		-1.01	326.63	<.0001	0.36 (0.33,0.41)
<i>Month of index visit</i>	2 vs 1	-0.03	0.94	0.33	0.97 (0.91,1.03)
	3 vs 1	-0.03	0.72	0.40	0.97 (0.92,1.04)
	4 vs 1	0.02	0.43	0.51	1.02 (0.96,1.09)
	5 vs 1	-0.03	0.88	0.35	0.97 (0.91,1.03)
	6 vs 1	0.02	0.59	0.44	1.03 (0.96,1.09)
	7 vs 1	0.02	0.30	0.58	1.02 (0.96,1.08)
	8 vs 1	0.00	0.02	0.90	1.00 (0.94,1.07)
	9 vs 1	-0.12	13.92	0.00	0.89 (0.83,0.94)
	10 vs 1	-0.09	7.69	0.01	0.92 (0.86,0.97)
	11 vs 1	-0.04	1.18	0.28	0.97 (0.91,1.03)
	12 vs 1	-0.15	19.87	<.0001	0.86 (0.81,0.92)
	<i>Year</i>		0.01	8.99	0.00