California Workers' Compensation Institute

Research Note

Changes in Medical Treatment Trends After 20 Years of Incremental Workers' Compensation Reform

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Executive Summary

It has been eight years since Governor Brown signed SB 863 into law, triggering significant changes in the California workers' compensation system. Many of the statutory changes included in SB 863 were intended to address issues that had been unresolved or aggravated by previous legislation. Included in earlier reforms (SB 228 in 2003, SB 899 in 2004) were provisions that curtailed the primary treating physician's presumption of correctness, introduced evidence-based medicine for medical necessity determinations, implemented a 24-visit cap on physical therapy and chiropractic manipulation, enabled employers to establish Medical Provider Networks, and mandated Medicare-based fee schedules.

This study examines the changes in the volume and reimbursement of workers' compensation medical services by medical service category in the first 24 months following an injured worker's initial treatment. The authors' intent is to identify the shifts that occurred in medical service patterns in the wake of the various statutory and regulatory changes enacted over an extended period, so the claim sample for the study included indemnity claims in which the initial treatment was rendered within an 18-year span (2000 through 2017). However, because the study focuses on medical services within the first 24 months of treatment, there are years in which the results were influenced by reforms from multiple periods, so the analyses in this report highlight changes in medical treatment utilization and payments for claims in which the initial service was rendered during one of three distinct non-transitional periods:

- 2000 to 2001 – Pre-2004 reforms;
- 2004 to 2010 – Post implementation of SB 228 and SB 899;
- 2013 to 2017 – Post implementation of SB 863, AB 1244, and AB 1124.

In looking at the changes in treatment patterns by service, there are some obvious correlations with the statutory and regulatory reforms, while other changes were most likely influenced by other factors. In most cases, the major impact of reforms was to increase consistency in treatment across injured workers. Among key findings from this study:

- a sharp decline in the number of physical medicine visits beginning with claims in which the initial treatment was in 2004 – after the 24-visit cap took effect. The impact was most apparent for the 5 percent of claims with the highest number of physical medicine visits in the first 24 months, as the 95th percentile dropped from 167 visits in 2001 to 47 visits in 2005;
- a reduction in regional variation in physical medicine utilization – which ranged from 36.8 to 56.5 visits in 2000 and 2001 to a more limited range of 16.7 to 18.7 visits in 2013 through 2017;

- a reduction in the percent of claims with major surgery following the elimination of the duplicate payments for spinal surgery hardware in 2014; an FBI sting operation that led to the closure of the Pacific Hospital of Long Beach (which had been involved in 20 percent of the state's workers' compensation spinal fusions); tighter utilization controls following the adoption of the Medical Treatment Utilization Schedule (MTUS), Utilization Review (UR), and Independent Medical Review (IMR); and the increased reliance on Medical Provider Networks (MPNs);
- a steady increase in mental health visits within the first 24 months, beginning with claims in which the initial medical service was in 2005, followed by a sharp drop beginning in 2013 and 2014 after a change in the criteria for adding psych injuries onto a claim as a supplemental injury; and
- an increase in the percentage of claims with clinical laboratory services (primarily drug testing), which rose from 24.0 percent in 2005 to 36.5 percent in 2011 before declining to 18.8 percent in 2017 – moves that corresponded with the rise and subsequent fall in opioid use and major changes in billing rules.

Background

Over the past 30 years, California lawmakers have enacted a number of major legislative reforms that resulted in significant structural changes impacting the delivery of medical benefits to injured workers. Efforts to reform workers' compensation medical care began in earnest in the late 1980s and early 1990s when certain managed care principles were adopted within workers' compensation in an effort to contain rising medical costs without compromising the quality of care or access to treatment. Among those managed care mechanisms were unit price controls (fee schedules), UR and bill review programs, and preferred provider organization (PPO) discounts.

Even with the introduction of these managed care concepts, by the year 2000 rapid escalation of workers' compensation medical costs led to a call for further reforms to address a multitude of cost drivers. For example, Institute research from 2002 documented that during this period there was a significant increase in medical utilization – including both the average number of visits and procedures per claim – as well as increases in the extent and duration of treatment.[1] Additional studies linked increased medical costs and utilization to the enhanced role of the primary treating physician (PTP) which began with the passage of 1993 legislation (AB 110) that attached a rebuttable presumption of correctness to the PTP's opinion for the purpose of calculating permanent disability, and subsequent case law (*Minniear*) which expanded the presumption to include all medical issues, including the appropriateness of any given medical treatment.[2] Because the *Minniear* decision limited payors' ability to question or object to medical utilization, the PTP's opinion could only be challenged if it could be proved that the opinion was not supported by the medical literature. This standard was rarely overcome in the appeals process, even when it was clear that a given treatment was not curative, which led to a sustained increase in workers' compensation medical costs. Workers' Compensation Insurance Rating Bureau of California (WCIRB) data from this era

[1] Gardner, L.B. and Swedlow, A. California Workers' Compensation Medical Payments, Litigation and Claim Duration – A Post-Reform Report Card. *CWCI Research Note*. May 2002.

[2] *Minniear v. Mt. San Antonio Community College District*, (1996) 61 CCC 1055 (en banc).

showed medical costs rose at an unprecedented rate, with estimated average medical payments per indemnity claim more than doubling between accident year 1995 and accident year 2000.[3]

Passage of AB 749 in 2002 was the first step in the ultimate repeal of the PTP's presumption of correctness on medical treatment issues, while subsequent legislation in 2003 (SB 228) and 2004 (SB 899) introduced a number of significant changes that impacted workers' compensation medical utilization, including:

- Repeal of the PTP presumption for all dates of injury;
- Implementation of a 24-visit cap for physical therapy and chiropractic services;
- Introduction of the evidence-based medical treatment utilization schedule (MTUS);
- Mandatory UR programs;
- Establishment of Medical Provider Networks (MPN); and
- Payment of incurred medical costs up to $10,000 while a claim is under investigation.

In addition to addressing medical service utilization based on the appropriateness of care, legislative reforms also sought to bring costs associated with medical services under greater control. Effective January 1, 2004 several new Medicare-based fee schedules were implemented:

- the Pathology and Clinical Laboratory Fee Schedule;
- the DMEPOS Fee Schedule;
- the Inpatient Hospital Fee Schedule;
- the Hospital Outpatient Departments and Ambulatory Surgical Centers Fee Schedule;
- the Ambulance Fee Schedule; and
- a new Medi-Cal-based Pharmaceuticals and Pharmacy Services Fee Schedule.

More recently, passage of SB 863 in 2012 created a new IMR process, replacing administrative judges with physicians as the final arbiters in disputes over the necessity of medical treatment. SB 863 also included significant provisions impacting medical service fee schedules by repealing duplicative payments for devices implanted during spinal fusion surgeries and mandating a phased-in Medicare-based fee schedule for physician and non-physician services. Expanding on the 24-visit cap on chiropractic care that had been introduced in 2004, SB 863 also limited the ability of a chiropractor to serve as a PTP on a claim to 24 visits.

In addition, SB 863 contained a provision mandating an Independent Bill Review (IBR) process to resolve disputes over fee schedule payment amounts. Taken together, IMR and IBR provided defined mechanisms to resolve disputes over medical service utilization and payment amounts. Historically, many of these disputes had resulted in the filing of liens with the Workers' Compensation Appeals Board (WCAB) for dispute resolution. According to The California Commission on Health and Safety and Workers' Compensation (CHSWC) 2011 *Liens Report,*[4] medical liens accounted for "60 percent of liens filed and 80 percent of the dollars in dispute."

Describing the scope of the lien problem, CHSWC stated "The volume of liens provides an environment where indefensible delays and denials by claims administrators and fraud and abuse by lien claimants can

[3] Gardner, Swedlow, California Workers' Compensation Medical Payments, Litigation and Claim Duration, 2.
[4] The California Commission on Health and Safety and Workers' Compensation. *Liens Report*, January 5, 2011. https://www.dir.ca.gov/chswc/Reports/2011/CHSWC_LienReport.pdf

thrive, side by side."[5] To address these problems, SB 863 contained provisions imposing new lien filing requirements which included lien filing and activation fees[6] as well as strict limits on the assignment of liens.[7] However, the new lien filing fees did not take effect until 2013, so the number of lien filings surged from 469,190 in 2011 to 1,236,704 in 2012 (+164 percent) as providers scrambled to submit their liens before the January 1, 2013 effective date. Lien filings then dropped sharply in 2013 (206,858 filed), though over the next three years lien volume climbed steadily, and by 2016 the number of liens filed was back up to 426,792 -- more than double the 2013 low, and approaching the pre-SB 983 level from 2011.[8] Anecdotal reports from claims administrators suggest that since 2013, there has been a change in the mix of providers filing liens, with a higher proportion of the liens now involving copy services and translation services, rather than medical care providers who accounted for a larger proportion of the liens prior to the imposition of the filing fees.

Recent anti-fraud efforts also have helped curb the number of medical liens in the system by removing hundreds of high-volume lien filers who have been convicted of fraud or abuse from the workers' compensation system. Anti-fraud measures enacted in 2016 included SB 1160, which requires the Division of Workers' Compensation (DWC) to stay liens filed by or on behalf of criminally charged providers, with the stays remaining in effect until the criminal case is resolved. If a provider is convicted, all of their liens are consolidated for a special proceeding where there is a rebuttable presumption that they are fraudulent, and under a provision in another 2016 bill (AB 1244), it is presumed that they arose from the same activities that gave rise to the conviction. SB 1160 also requires the DWC to suspend convicted providers, as well as those who have surrendered or otherwise lost their license to practice medicine, from practicing in workers' compensation. Many of the providers removed from the system by these reforms had filed thousands of liens, so their removal had a significant and immediate impact, with WCIRB data documenting a 40 percent drop in the average number of liens filed immediately following the implementation of SB 1160 and AB 1244 in 2017.[9]

Since the evidence-based treatment guidelines were initially adopted in 2002, the Legislature has passed several additional reforms to augment the MTUS. One of the most significant was AB 1124, enacted in 2015, which authorized the DWC Administrative Director to create an evidence-based drug formulary, which was subsequently implemented on January 1, 2018. The intent of the formulary was threefold:

1. to improve the quality of care rendered to injured workers by ensuring that drugs provided to them meet evidence-based medicine standards in terms of frequency, duration, strength, and appropriateness;
2. to reduce the amount spent on drugs in the system; and
3. to reduce delays and frictional costs associated with prescription drug disputes.

The MTUS formulary adopted by the administrative director classifies drugs as exempt from prospective utilization review, and others as non-exempt drugs, which are subject to prospective UR. Drugs that are not on either list ("Not Listed") are allowed if the treating physician can show that their use for the

[5] Ibid, p. 1
[6] Labor Code §4903.06
[7] Labor Code §4903.8
[8] California Commission on Health and Safety and Workers' Compensation. *CHSWC 2016 Annual Report*. December 2016. https://www.dir.ca.gov/chswc/Reports/2016/CHSWC_AnnualReport2016.pdf
[9] Workers' Compensation Insurance Rating Bureau, WCIRB December 31, 2017 Quarterly Experience Report, April 2018.

specific injury is supported by the MTUS or other applicable guidelines. The formulary also established "special fill" and "perioperative fill" rules for a subset of non-exempt drugs, including several commonly used opioids and musculoskeletal drugs. In the wake of these changes, there was a dramatic shift in the mix of drugs used to treat injured workers in California. CWCI research found that enforcement of the MTUS treatment guidelines and the formulary via the IMR process was associated with a 34 percent decline in the number of opioid prescriptions in 2017 from a high point in 2009, with concurrent growth in the use of and payments for anti-inflammatories, anticonvulsants, and other therapeutic drug groups.[10]

Objective

The primary objective of this study is to examine changes in treatment patterns, including both utilization and payment trends for various medical services, following the implementation of major medical reforms in California workers' compensation over the past two decades. The study measures medical services provided during the first 24 months of treatment, and the payments related to those services.

Methodology

Study Sample

The study uses medical service payment data from CWCI's Industry Research Information System (IRIS) database valued through December 2019 for indemnity claims. Claims had to have at least one Evaluation and Management (E&M) service to be included in the analyses. The first date an injured worker received a service marks the beginning of medical treatment for the injury.

Visit Rates & Medical Service Payments by Service Category

For purposes of this study, a visit was defined as a group of services performed for an individual patient on the same day, with the same provider, within the same service category. Service categories generally track with those found in the Official Medical Fee Schedule (OMFS). Services falling in the Surgery category were subdivided into Major or Minor Surgery using the global surgery package developed by CMS.[11] Mental Health services were broken out from the Medicine section of the OMFS for analysis.

Physical Therapy, Chiropractic, and Acupuncture visits were combined into the Physical Medicine category for purposes of reporting. Some costs associated with injured workers' medical care (*i.e.*, for inpatient and outpatient facility services, home health care, interpreter services, copy services, med-legal evaluations, and medical lien payments) were excluded from the analysis of visit rates and payments.

The availability of pharmaceutical data is less consistent across the study period than for other medical services. Therefore, when looking at payments across services, the study sample was examined in two

[10] Hayes, S. and Swedlow, A. California Workers' Comp Pharmaceutical Utilization & Reimbursement Part 2: Emerging Outcomes Under the MTUS Formulary. *CWCI Spotlight Report.* March 2019.

[11] The global surgical package (aka global surgery), includes all necessary services normally provided by a surgeon, or a member of the surgeon's group practice, before, during, and after a procedure. The three types of surgical packages (0-day, 10-day, 90-day) are based on the number of post-operative days included in payment for the surgical procedure. Centers for Medicare & Medicaid Services. Medicare Learning Network. Global Surgery Booklet. September 2018. https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/Downloads/GloballSurgery-ICN907166.pdf

ways: first, excluding pharmaceuticals and using all claims; and then including pharmaceuticals but using a subset of the claims that have both E&M and pharmaceutical payment data.

Cumulative trauma claims often involve significant time lags between the reported date of injury and the first date of treatment, and because they are so prevalent in California workers' compensation, the authors used the first date of treatment rather than the injury date as the starting point in determining visit rates and average amounts paid. This allowed more consistent comparisons of practice patterns over time. To provide uniform data for comparing post-reform results from multiple periods, the study sample was limited to medical data from indemnity claims that had at least one indemnity payment within 24 months of the first medical service, with both the visit rates and payments measured at 24 months from the first treatment date. Because the study examines utilization for the first 24 months of treatment, there are years in which the results were influenced by reforms from multiple periods, so the analyses focus on changes in medical treatment utilization and payments during three distinct non-transitional periods:

- 2000 to 2001 – Pre-2004 reforms;
- 2004 to 2010 – Post implementation of SB 228 and SB 899;
- 2013 to 2017 – Post implementation of SB 863, AB 1244, and AB 1124.

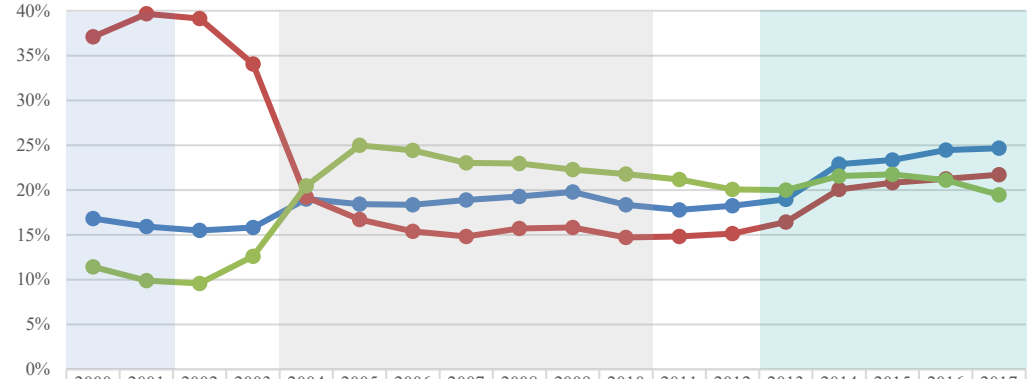
Results

Exhibit 1 shows the distribution of medical service payments at 24 months for the top 3 medical service categories over time. These three categories (E&M, Physical Medicine, and Major Surgery) represent 66 percent of the total medical service payments under study for claims with a first date of service in 2017.

The most significant long-term change has been the decline in Physical Medicine's share of the total medical expenditures, which fell from a high of 40 percent for claims with treatment beginning in 2001 to about 15 percent after the 2003-2004 reforms took effect. As Physical Medicine's share of the workers' compensation expenditures began to drop in 2003, other service categories saw their share of the payments increase. Most notably, payments for Major Surgery – which include everything from knee and shoulder arthroscopies to spinal fusions – increased from 13 percent of the medical dollars in 2003 to 25 percent by 2005.

For nearly a decade after that, Major Surgery's share of the total medical payments edged down slowly, though Major Surgery remained the number one medical category in terms of total payments until 2014. It was at that point that the state began the 4-year transition to the Resource-Based Relative Value Scale (RBRVS) fee schedule, which was intended to redistribute payments away from medical specialties and toward E&M and Physical Medicine services, reflecting the increased importance that was placed on primary care services that account for the bulk of the treatment provided to injured workers.[12,13] By 2017, the final year of the 4-year transition to the RBRVS fee schedule, both E&M services and Physical Medicine had surpassed Major Surgery in terms of total medical reimbursements, accounting for 25 percent and 22 percent of the total payments respectively. During this period, payments for some non-surgical services increased considerably and the volume of Major Surgery services had declined, so Major Surgery's share of the aggregate medical dollars fell to 19 percent -- a 14-year low.

Exhibit 1: Top 3 Major Categories % of Total Spend by Year of First Date of Service



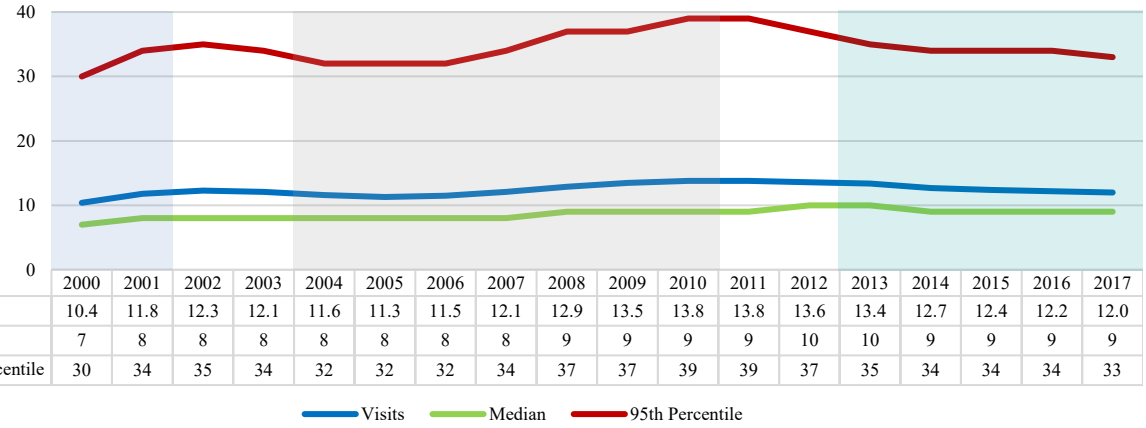
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Evaluation & Management	17%	16%	15%	16%	19%	18%	18%	19%	19%	20%	18%	18%	18%	19%	23%	23%	24%	25%
Physical Medicine	37%	40%	39%	34%	19%	17%	15%	15%	16%	16%	15%	15%	15%	16%	20%	21%	21%	22%
Major Surgery	11%	10%	10%	13%	20%	25%	24%	23%	23%	22%	22%	21%	20%	20%	22%	22%	21%	19%

[12] Jones, S.L. Impact of the RBRVS Fee Schedule on California Workers' Comp Physician & Non-Physician Practitioner Service Payments. *CWCI Report to the Industry*. August 2016.
[13] Jones, S. Trends in the Utilization and Reimbursement of California Workers' Compensation Professional Medical Services, 2013 – 2018. *CWCI Research Update*. February 2020.

Evaluation & Management

The mean and median number of encounters for E&M services, including initial and follow-up office visits, emergency room visits and inpatient consultations during the first 24 months of treatment, varied over the study period (Exhibit 2). The relative stability in service delivery after the 2013 reforms is not surprising since very few of these services are modified or denied during UR and IMR.[14]

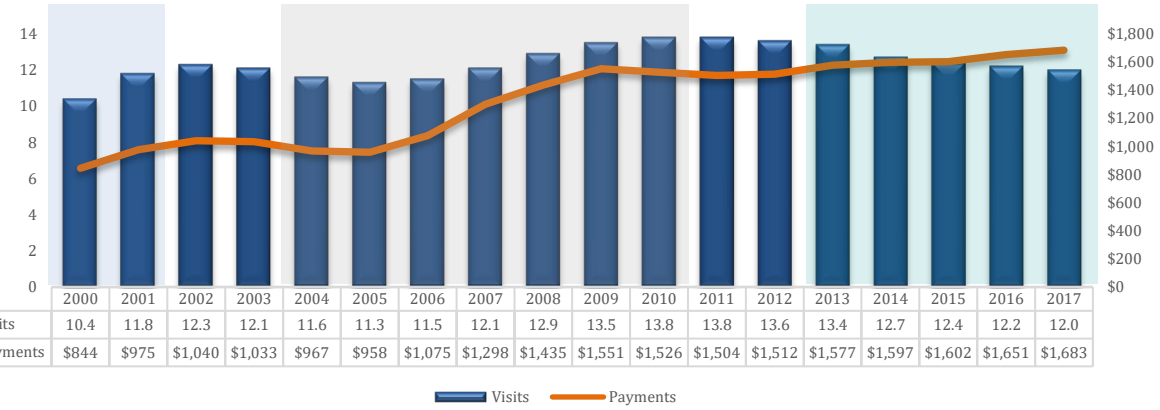
Exhibit 2: Number of Visits for E&M Services per Claim - First 24 Months of Treatment



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Visits	10.4	11.8	12.3	12.1	11.6	11.3	11.5	12.1	12.9	13.5	13.8	13.8	13.6	13.4	12.7	12.4	12.2	12.0
Median	7	8	8	8	8	8	8	8	9	9	9	9	10	10	9	9	9	9
95th Percentile	30	34	35	34	32	32	32	34	37	37	39	39	37	35	34	34	34	33

Total E&M payments per claim at 24 months of treatment have generally increased since 2006 (Exhibit 3). Relative stability in the median number of E&M services between 2008 and 2017 suggests the payment trend was primarily attributable to fee schedule changes in 2004[15] and 2014. Prior CWCI studies have analyzed the cost impact of the transition to the Medicare RBRVS-based fee schedule.[16,17]

Exhibit 3: Mean Amount Paid per Claim for E&M Services, First 24 Months of Treatment



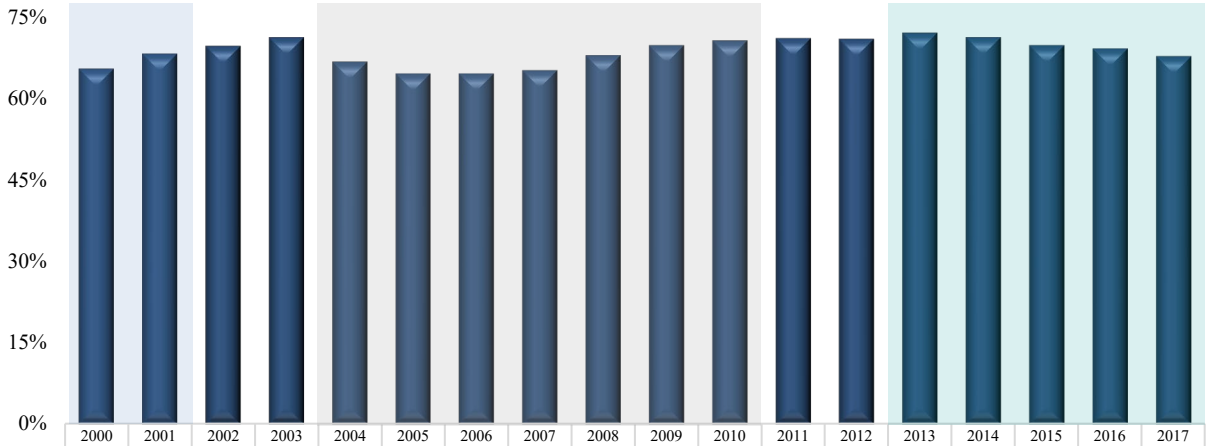
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Visits	10.4	11.8	12.3	12.1	11.6	11.3	11.5	12.1	12.9	13.5	13.8	13.8	13.6	13.4	12.7	12.4	12.2	12.0
Payments	$844	$975	$1,040	$1,033	$967	$958	$1,075	$1,298	$1,435	$1,551	$1,526	$1,504	$1,512	$1,577	$1,597	$1,602	$1,651	$1,683

[14] David, R., Bullis, R., Jones, S., and Young, B. Post-Reform Medical Service Approval Rates in California Workers' Compensation. *CWCI Research Update*. October 2019.
[15] The conversion factor for E&M services increased 18%.
[16] Jones, S.L., Impact of the RBRVS Fee Schedule on California Workers' Comp Physician & Non-Physician Practitioner Service Payments. *CWCI Report to the Industry*. August 2016.
[17] Jones, S. Trends in the Utilization and Reimbursement of California Workers' Compensation Professional Medical Services, 2013 – 2018. *CWCI Research Update.* February 2020.

Physical Medicine Services

Exhibit 4 shows the percent of indemnity claims that had at least one physical medicine service in the first 24-month treatment period. The percent of claims receiving physical medicine within the initial 24 months dropped to a low of 64.6 percent for 2005 indemnity claims after the 24-visit cap was eliminated and reached as high as 72.1 percent for 2013 indemnity claims with the values in the most recent year declining to 67.8 percent.

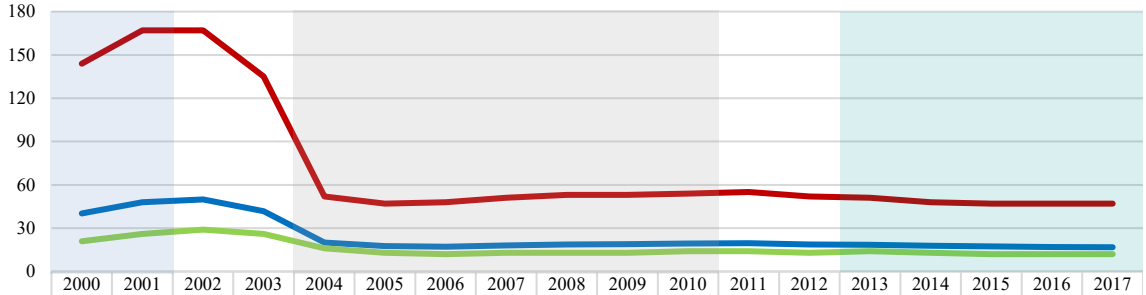
Exhibit 4: Percentage of Claims with Physical Medicine Service w/in 24 Months of 1st Treatment



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
65.5%	68.3%	69.7%	71.3%	66.8%	64.6%	64.6%	65.2%	68.0%	69.8%	70.7%	71.1%	71.0%	72.1%	71.3%	69.8%	69.2%	67.8%

Exhibit 5 shows the mean and median number of physical medicine visits occurring within the first 24 months of treatment for those receiving physical medicine services. Both the mean and median visit rates dropped sharply following implementation of the 24-visit cap in January 2004, from a median of 29 visits in 2002 (the last 24-month period before the reform) to 16 visits in 2004 and have been relatively stable since then. The change in the number of visits for the extreme outliers dropped more dramatically with the 95th percentile decreasing from 167 visits in 2002 down to 52 visits in 2004. The gap between the median and 95th percentile has remained consistent since 2004.

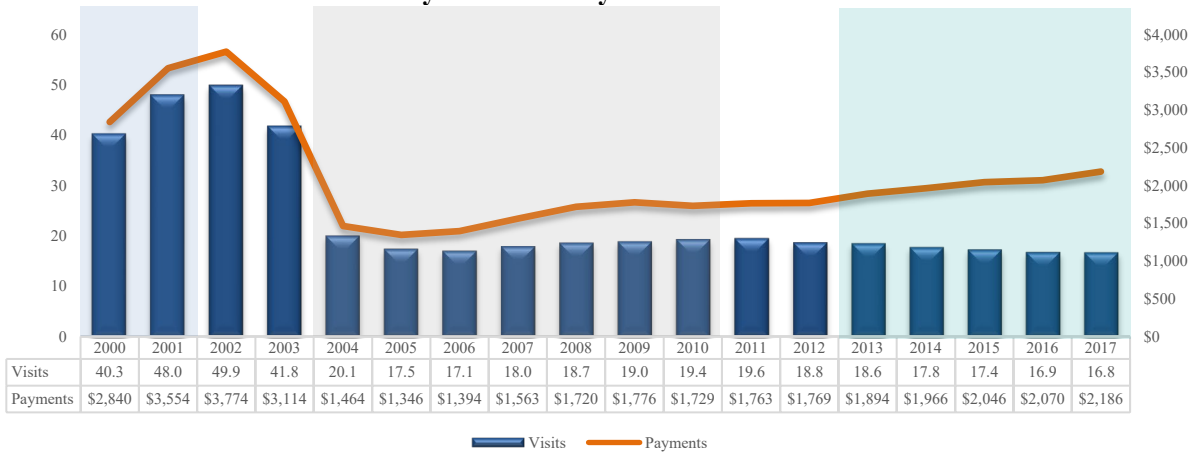
Exhibit 5: Number of Physical Medicine Visits per Claim - First 24 Months of Treatment



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Visits	40.3	48.0	49.9	41.8	20.1	17.5	17.1	18.0	18.7	19.0	19.4	19.6	18.8	18.6	17.8	17.4	16.9	16.8
Median	21	26	29	26	16	13	12	13	13	13	14	14	13	14	13	12	12	12
95th Percentile	144	167	167	135	52	47	48	51	53	53	54	55	52	51	48	47	47	47

Payments for Physical Medicine services represented 23 percent of payments for the non-pharmaceutical medical services under study. Although the average number of physical medicine visits declined beginning in 2004, after an initial decrease, payments for those services rose over time. Between 2005 and 2010 the average amount paid per claim for physical medicine grew 28.5 percent, then increased further beginning with the 2014 fee schedule changes, increasing 26.4 percent between 2010 and 2017 (Exhibit 6).

Exhibit 6: Per Claim Cumulative Payments for Physical Medicine w/in 24 Months of 1st Treatment

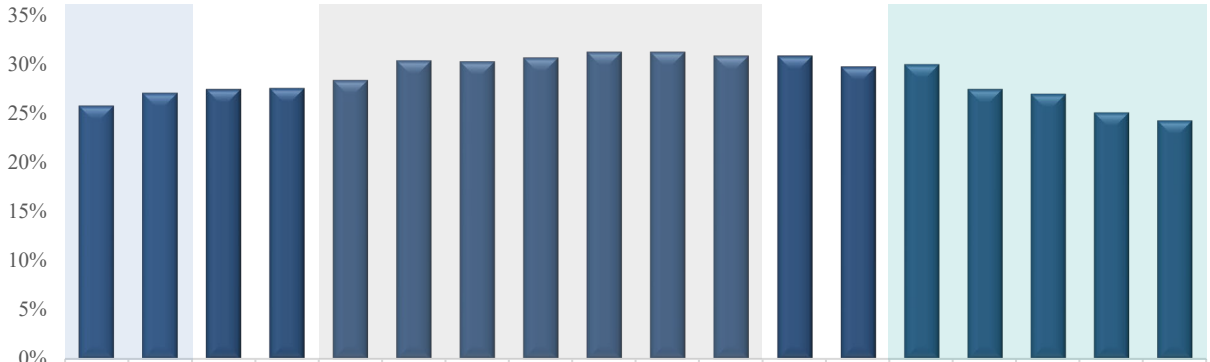


	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Visits	40.3	48.0	49.9	41.8	20.1	17.5	17.1	18.0	18.7	19.0	19.4	19.6	18.8	18.6	17.8	17.4	16.9	16.8
Payments	$2,840	$3,554	$3,774	$3,114	$1,464	$1,346	$1,394	$1,563	$1,720	$1,776	$1,729	$1,763	$1,769	$1,894	$1,966	$2,046	$2,070	$2,186

Major Surgery

The percent of injured workers with major surgery in the first 24 months of treatment rose from 25.8 percent in 2000 to a high of 31.3 percent in 2008 and remained at that level until 2012. The decrease in the percent of claims with major surgery within 24 months of initial treatment, beginning with 2014 claims – dropping to 25.1 percent in 2016 – coincides with implementation of IMR in 2013.

Exhibit 7: Percent of Claims with Major Surgery w/in 24 Months of 1st Treatment

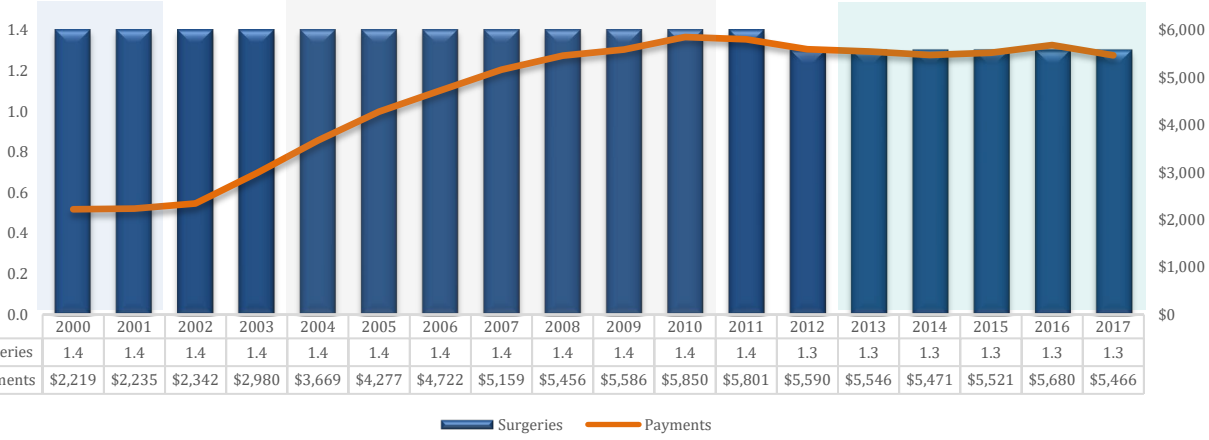


2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
25.8%	27.1%	27.5%	27.6%	28.4%	30.4%	30.3%	30.7%	31.3%	31.3%	30.9%	30.9%	29.8%	30.0%	27.5%	27.0%	25.1%	24.3%

Although major surgeries comprise only a small proportion of the overall volume of services, the major surgery category is one of the top 3 service categories based on total payments per claim, even when excluding associated facility (hospital and ambulatory surgery center) payments. The mean payments for major surgery increased starting in 2002 but the steepest rise occurred during the 2004 through 2012 non-transition years (see Exhibit 8).

One factor influencing the relative cost associated with different major surgical procedures is the prevalence of more complex procedures, such as spinal fusions. Beginning with the Inpatient Fee Schedule implemented in 2004, providers were allowed to charge additional fees for implanted spinal hardware, exceeding the DRG reimbursement amount.[18] Despite attempts to rein in the duplicative payments that resulted from this loophole, the duplicative payments remained in place until the passage of SB 863 led to their elimination. These excess payments were limited in 2013 and totally eliminated effective January 1, 2014.[19] This led to a dramatic decline in spinal surgeries. CWCI's 2019 study of statewide OSHPD[20] data revealed that workers' compensation inpatient spinal surgeries, performed between service years 2010 and 2018 dropped by 45.9 percent.[21]

Exhibit 8: Major Surgery Events and Payments per Claim - First 24 Months of Treatment



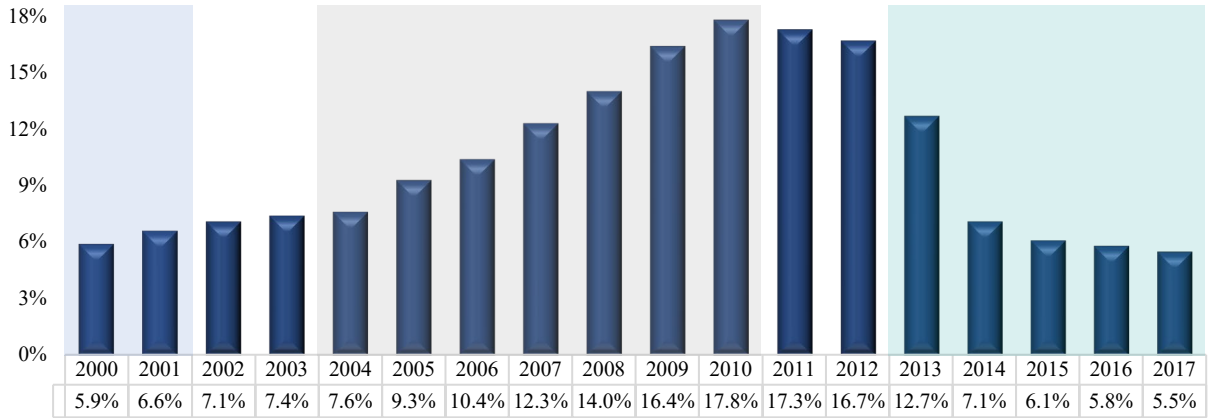
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Surgeries	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3
Payments	$2,219	$2,235	$2,342	$2,980	$3,669	$4,277	$4,722	$5,159	$5,456	$5,586	$5,850	$5,801	$5,590	$5,546	$5,471	$5,521	$5,680	$5,466

[18] The Inpatient Hospital Fee Schedule adopted in 2004 is based on Diagnostic-Related Groups (DRGs) – a standardized system for classifying inpatient hospital cases developed by the Health Care Financing Administration for hospitals and payers.
[19] Title 8, California Code of Regulations § 9789.22(g)(2).
[20] The Office of Statewide Health Planning and Development (OSHPD) compiles annual inpatient data submitted by facilities under the Health Data and Advisory Council Consolidation Act.
[21] Jones, S.L. California Workers' Compensation Inpatient Hospitalization Trends, 2010-2018. *CWCI Research Updates*. September 2019.

Mental Health Services

The percent of claims with mental health services (*e.g.*, psychotherapy, psychological testing) increased by 9 percentage points after the 2004 reforms, from 7.6 percent in 2004 to 17.8 percent in 2010 (Exhibit 9). Post-SB 863, the percent of claims with mental health services declined precipitously beginning in 2013, falling to pre-SB 899 levels by 2015.

Exhibit 9: Percent of Claims with Mental Health Services w/in 24 Months of 1st Treatment

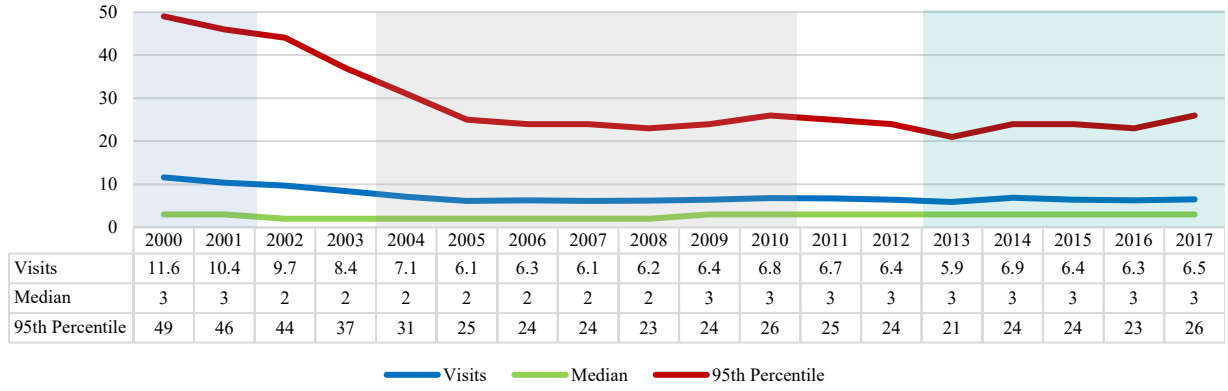


2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
5.9%	6.6%	7.1%	7.4%	7.6%	9.3%	10.4%	12.3%	14.0%	16.4%	17.8%	17.3%	16.7%	12.7%	7.1%	6.1%	5.8%	5.5%

The rise of mental health services corresponds to changes to permanent disability rating rules and guidelines under the 2004 reform, as noted in the legislative bill analysis for SB 863, an unintended consequence of provisions in SB 899 was in increase in "add-on" disorders to increase permanent disability impairment ratings.[22] With disability payments increasing under the provisions of SB 863, and seeing no need for their continuance,[23] the Legislature removed the "add-on" for psychiatric disorders.[24]

Among claims with mental health services there has been little change in the median number of mental health visits in the first 24 months following the initial treatment (Exhibit 10). The gap between the mean and median number of mental health visits decreased after the 2004 reforms; a mean of 11.6 compared to a median of 3 in 2000, and a mean of 7.1 compared to a median of 2 in 2004.

Exhibit 10: Number of Mental Health Visits per Claim - First 24 Months of Treatment

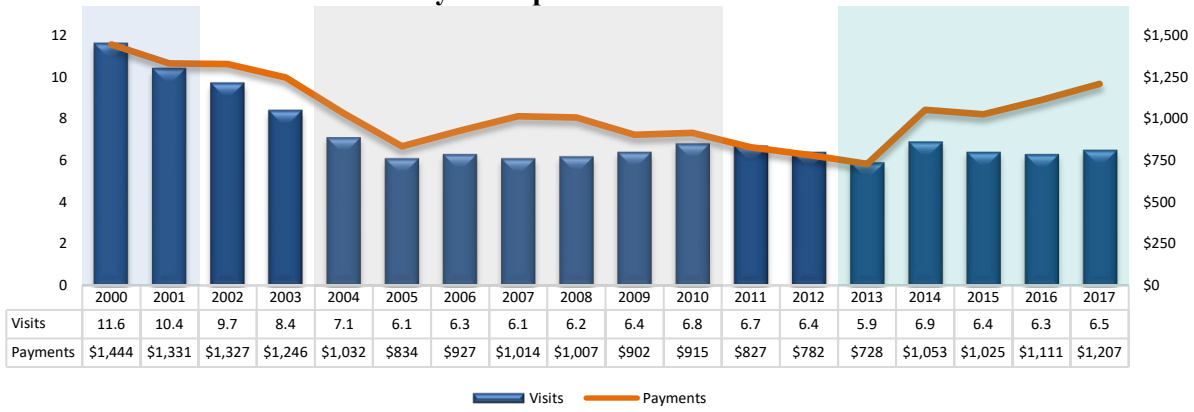


	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Visits	11.6	10.4	9.7	8.4	7.1	6.1	6.3	6.1	6.2	6.4	6.8	6.7	6.4	5.9	6.9	6.4	6.3	6.5
Median	3	3	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3
95th Percentile	49	46	44	37	31	25	24	24	23	24	26	25	24	21	24	24	23	26

[22] Office of Senate Floor Analyses. Senate Rules Committee. August 30, 2012. http://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill_id=201120120SB863
[23] Ibid
[24] L.C. §4660.1(c)(1)

Exhibit 11 shows the mean cumulative 24-month payments for mental health encounters compared to the average number of visits. Average payments increased 44.6 percent from 2013 to 2014 after implementation of fee schedule changes.

Exhibit 11: Mental Health Service Payments per Claim - First 24 Months of Treatment

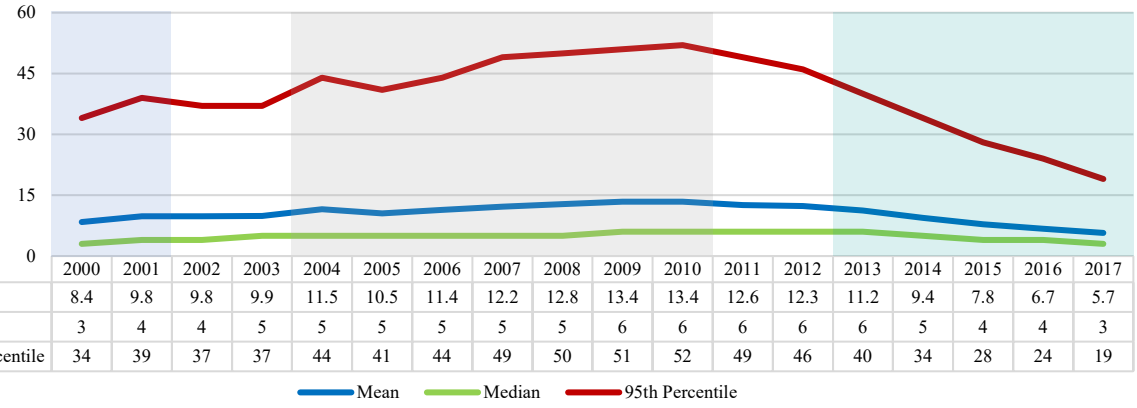


	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Visits	11.6	10.4	9.7	8.4	7.1	6.1	6.3	6.1	6.2	6.4	6.8	6.7	6.4	5.9	6.9	6.4	6.3	6.5
Payments	$1,444	$1,331	$1,327	$1,246	$1,032	$834	$927	$1,014	$1,007	$902	$915	$827	$782	$728	$1,053	$1,025	$1,111	$1,207

Pharmacy

The number of prescriptions per claim with pharmaceutical costs has dropped significantly in recent years, falling from a high of 13.4 scripts within the first 24 months of treatment in 2010 to 5.7 in 2017 (see Exhibit 12). The median declined by 50 percent and the 95th percentile dropped even more.

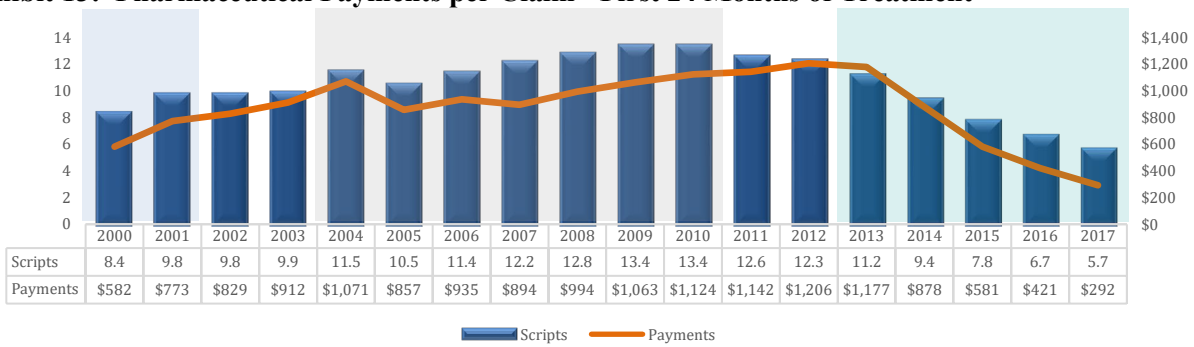
Exhibit 12: Number of Scripts per Claim - First 24 Months of Treatment



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mean	8.4	9.8	9.8	9.9	11.5	10.5	11.4	12.2	12.8	13.4	13.4	12.6	12.3	11.2	9.4	7.8	6.7	5.7
Median	3	4	4	5	5	5	5	5	5	6	6	6	6	6	5	4	4	3
95th Percentile	34	39	37	37	44	41	44	49	50	51	52	49	46	40	34	28	24	19

Total 24-month per-claim pharmaceutical payments experienced a more significant decrease – peaking at $1,206 in 2012, dropping to $878 in 2014, and decreasing further to a low of $292 in 2017 (Exhibit 13).

Exhibit 13: Pharmaceutical Payments per Claim - First 24 Months of Treatment



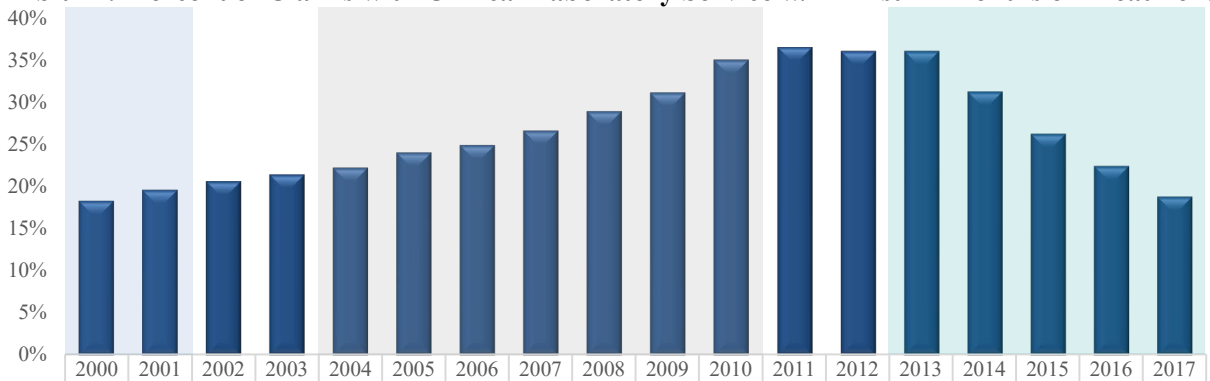
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Scripts	8.4	9.8	9.8	9.9	11.5	10.5	11.4	12.2	12.8	13.4	13.4	12.6	12.3	11.2	9.4	7.8	6.7	5.7
Payments	$582	$773	$829	$912	$1,071	$857	$935	$894	$994	$1,063	$1,124	$1,142	$1,206	$1,177	$878	$581	$421	$292

In addition to decreases in the volume of prescriptions per claim, changes in fee schedule payments also fueled the steep drop in the average total payments made in the first 24 months of treatment. Beginning in April 2016, the Medi-Cal based pharmaceutical fee schedule adopted Federal Upper Limit values as a component of the reimbursement formula, resulting in reduced payments for many generic drugs.

Clinical Laboratory

Clinical laboratory services consist primarily of urine drug testing (UDT) to determine medication adherence or the presence of non-prescribed or illegal drugs. In 2015, CWCI reported on UDT utilization and cost trends.[25,26] The rise and fall in the percentage of claims with drug testing – which increased from 18.3 percent of indemnity claims in 2000 to a high of 36.5 percent of claims in 2011, then dropped back down to 18.8 percent in 2017 – tracks with changes in opioid use, the introduction of the Medicare-based fee schedule, and changes in the technology used to perform these tests.

Exhibit 14: Percent of Claims with Clinical Laboratory Service w/in First 24 Months of Treatment

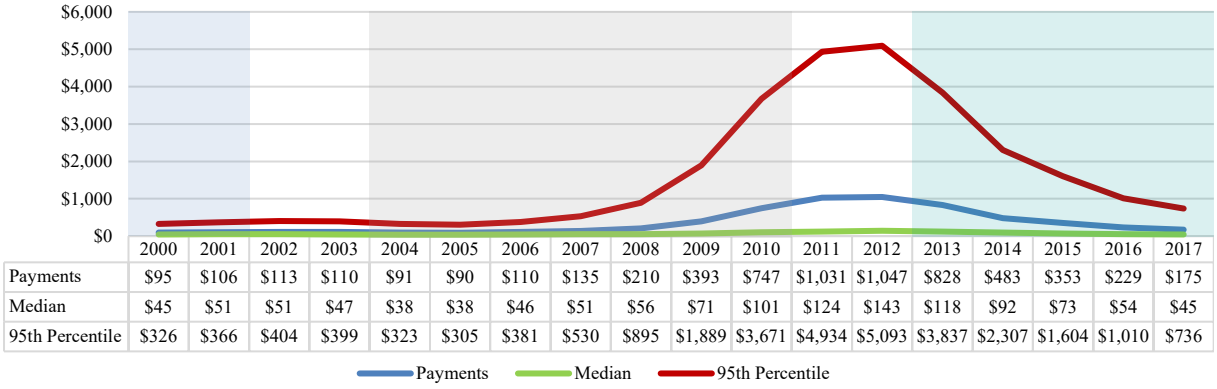


2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
18.3%	19.6%	20.6%	21.4%	22.2%	24.0%	24.9%	26.6%	28.9%	31.1%	35.0%	36.5%	36.0%	36.0%	31.2%	26.2%	22.4%	18.8%

[25] Jones, S. Trends in the Utilization and Reimbursement of California Workers' Compensation Professional Medical Services, 2013 – 2018. *CWCI Research Update.* February 2020.
[26] Jones, S.L. Utilization & Cost of Drug Testing in the California Workers' Compensation. *CWCI Report to the Industry*. October 2015.

Average cumulative payments for clinical laboratory services reached their highest levels in 2012 claims, driven primarily by claims within the top 5 percent. These claims averaged $5,093 in laboratory expenses in the first two years of treatment, pulling up the mean payment amounts (Exhibit 15).

Exhibit 15: Clinical Laboratory Payments per Claim - First 24 Months of Treatment



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Payments	$95	$106	$113	$110	$91	$90	$110	$135	$210	$393	$747	$1,031	$1,047	$828	$483	$353	$229	$175
Median	$45	$51	$51	$47	$38	$38	$46	$51	$56	$71	$101	$124	$143	$118	$92	$73	$54	$45
95th Percentile	$326	$366	$404	$399	$323	$305	$381	$530	$895	$1,889	$3,671	$4,934	$5,093	$3,837	$2,307	$1,604	$1,010	$736

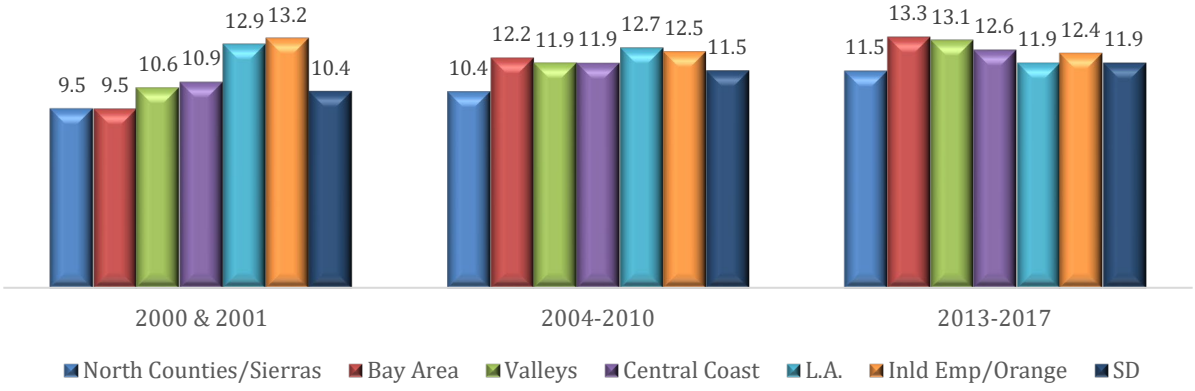
Additional Service Categories

Appendices 1-3 contain detail on all service categories under study including Minor Surgery, Non-Surgical Procedures, Injection, Major Radiology, X-ray, Diagnostic Tests, and DME. Measures include percent of indemnity claims with service types, as well as service rate and payment statistics for non-transition time periods.

Geographic Variation

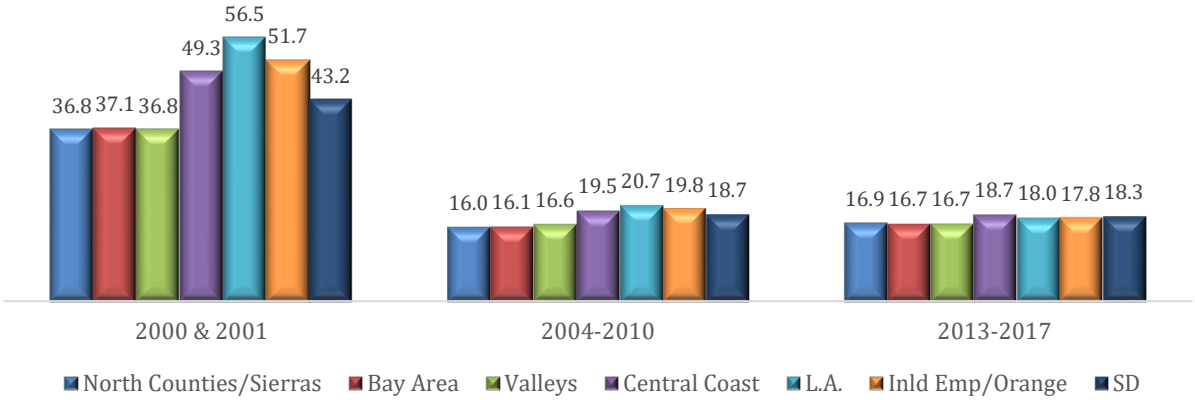
Exhibit 16 shows the regional variation in the mean number of E&M visits per claim during the first 24 months of treatment for each of the non-transitional time periods. The most significant change in service volume occurred in the Bay Area, which experienced a 40.0 percent increase in the mean number of visits from 2000/2001 to 2013/2017. This change is contrasted with a decrease of 7.8 percent for Los Angeles, which historically had the highest mean number of E&M visits.

Exhibit 16: Mean E&M Medicine Visits by Region



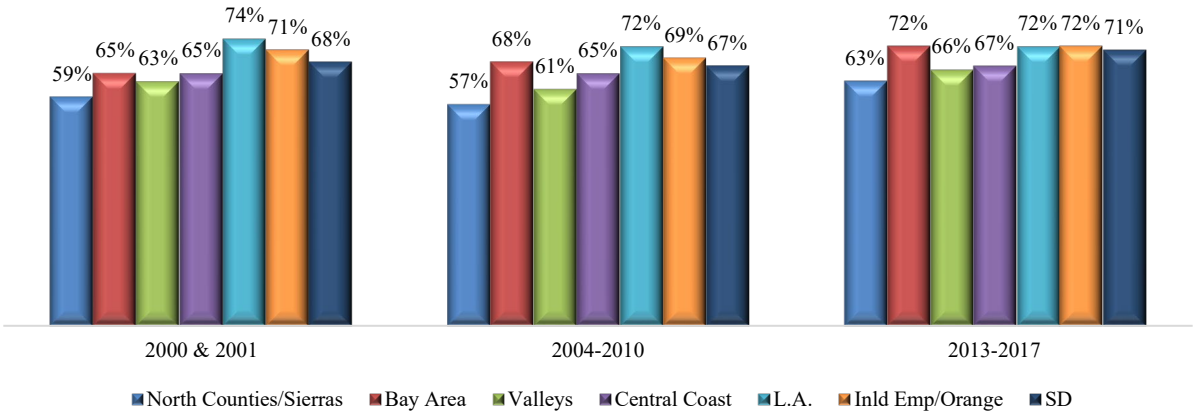
The regional variation for Physical Medicine visits was more pronounced in the early study years. Exhibit 17 shows that the mean number of visits was significantly higher prior to the 2003/2004 reforms, with the Los Angeles area experiencing the highest numbers and the Inland Empire/Orange County regions following closely behind (56.5 and 51.7 visits respectively). The rates dropped sharply during the 2004-2010 time period, and the regional variability began to diminish. The 2013-2017 data show very similar utilization rates for Physical Medicine visits across all regions in the post-SB 863 era.

Exhibit 17: Mean Physical Medicine Visits by Region



The percentage of claims with at least one Physical Medicine service within 24 months of first medical treatment varied by region across each of the non-transitional time periods, with the more rural North Counties and Central Coast areas consistently lower than more metropolitan areas (Exhibit 18).

Exhibit 18: Percent of Claims with Physical Medicine Service by Region



Claim Characteristics

Medical service utilization may be influenced by overlapping factors, including injured worker characteristics, such as age and occupation, as well as injury severity. Multiple factors that may influence medical service utilization were analyzed including:

- Opioid Use
- Major Surgery
- The age of the injured worker on the date of injury
- Industry

Opioid Use

A previous CWCI study that examined the relationship between opioid utilization and medical costs documented increased medical costs for claims with dispensed opioids.[27] A more detailed analysis of medical services within the first 24 months of treatment shows increased E&M and Physical Medicine visits, as well as higher average prescriptions for claims with acute or chronic[28] opioid use compared to claims without opioids.

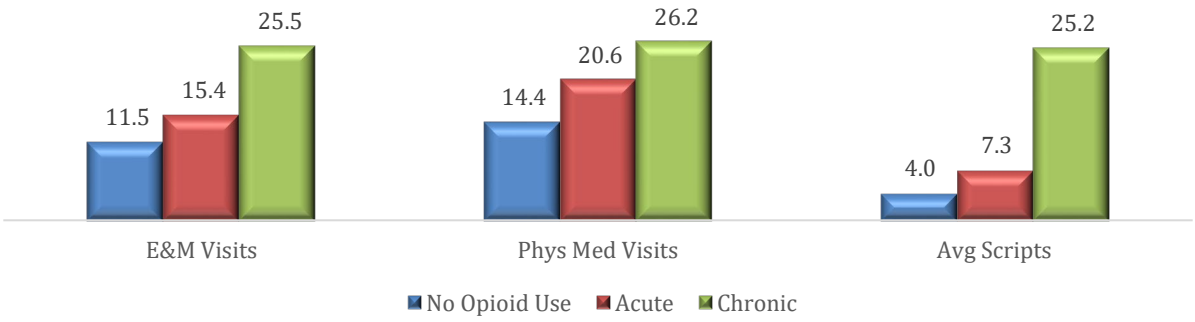
The authors focused on the most recent post-reform time frame (2013-2017) and, as shown in Exhibit 19, found that:

- the mean number of E&M visits was 34 percent higher for claims with acute opioid use (15.4 visits) compared to claims with no opioid prescriptions (11.5 visits), and 122 percent higher when chronic use was identified (25.5 visits).

- Physical Medicine visit rates followed a similar pattern; the mean number of physical medicine visits was 43 percent higher for claims with acute opioid use (20.6 visits) than for claims with no opioid use (14.4 visits), while chronic opioid use claims averaged 26.2 physical medicine visits, 82 percent more than claims with no opioid prescriptions.

- the biggest difference in medical service utilization was in the average number of prescriptions dispensed. Claims with acute opioid use averaged 7.3 prescriptions per claim, 84 percent more than claims without opioids (which averaged 4 prescriptions), while chronic opioid use claims averaged 25.2 prescriptions in the first 24 months of treatment, 530 percent more than those in which no opioids were prescribed.

Exhibit 19: Mean Service Utilization Rates for 2013-2017 Claims – Non-Opioid & Opioid Users

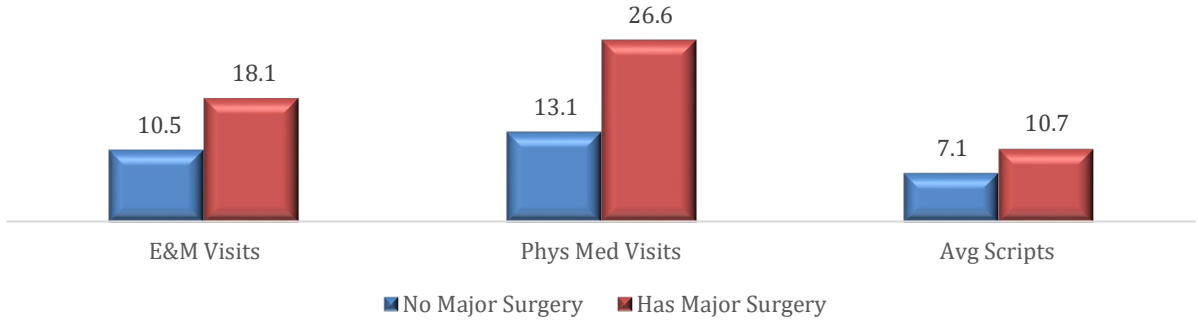


[27] Hayes, S., Smith, K., and Swedlow, A. The Impact of Declining Opioid Use on Lost-Time Claim Development & Outcomes in California Workers' Compensation. *A Report to the Industry*. November 2019.
[28] Chronic opioid use claims are identified as those that had three or more opioid prescriptions, each filled at least three weeks apart, and all filled within a period of four consecutive months.

Major Surgery

The presence of a major surgery event also was correlated with higher utilization of E&M and Physical Medicine services, and to a lesser extent, Pharmaceuticals. Exhibit 20 shows that the mean number of E&M visits was 72.4 percent higher for major surgery claims compared to claims without major surgery within 24 months of initial treatment (18.1 vs. 10.5 visits), and the mean number of Physical Medicine visits was twice as high (26.6 vs. 13.1 visits). The difference in drug utilization was more muted, with major surgery claims averaging 50.7 percent more prescriptions than non-major surgery claims (10.7 vs. 7.1 prescriptions).

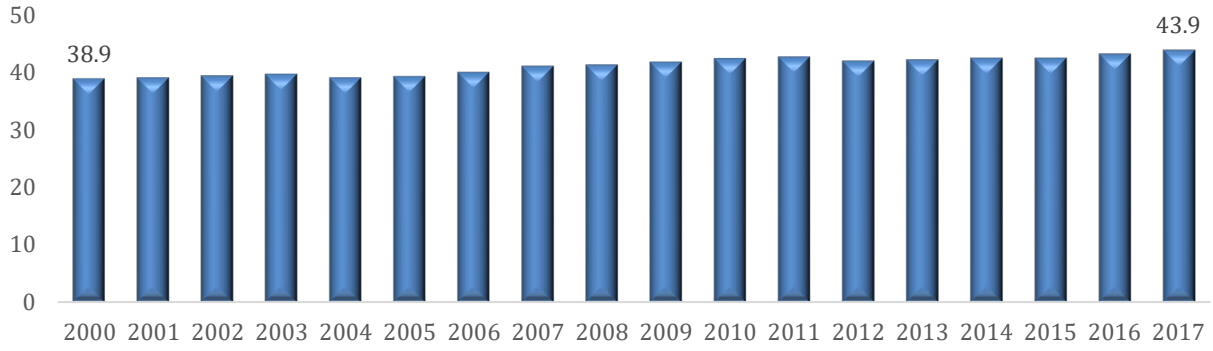
Exhibit 20: Mean Service Utilization Rates for 2013-2017 Claims w Major Surgery



Average Age at Injury Date

With more workers aged 55 and older continuing full-time employment into their later years,[29] it is not surprising that the average age of an injured worker at the time of injury has increased from 38.9 in 2000 to 43.9 in 2017 (Exhibit 21).

Exhibit 21: Average Age of Injured Worker at Time of Injury by Year of Initial Treatment

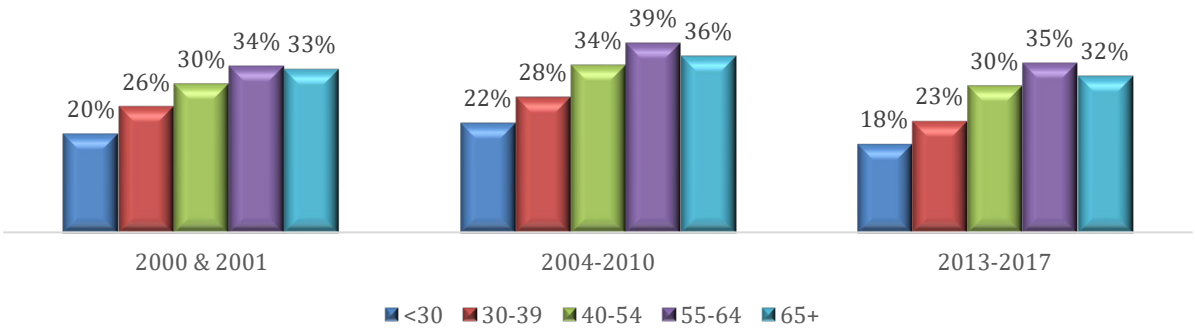


Because the likelihood of having major surgery within the first 24 months of treatment increases with age, the aging of the workforce has contributed to an increase in the percentage of workers' compensation claims that involve a major surgery within two years of the initial treatment visit. As noted earlier, there was an increase in surgeries in the period from 2004 to 2010 and a subsequent decline in the post 2013

[29] White, M.S., Burns, C., and Conlon, H.A. The Impact of an Aging Population in the Workplace. *Workplace Health & Safety*, 66 (10). March 5, 2018. https://journals.sagepub.com/doi/full/10.1177/2165079917752191

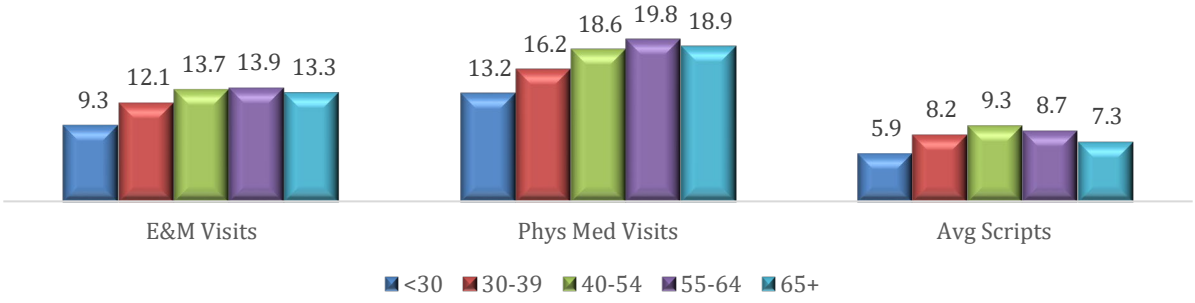
reform period when the elimination of the duplicate payments for spinal hardware led to a dramatic decline in spinal fusions. As seen in Exhibit 22, the impact appears consistent across age groups.

Exhibit 22: Percent of Claims by Age Group with Major Surgery



Injured workers who were 40 years old or older on the date of injury had higher E&M and Physical Medicine visit rates, while workers under 30 received the lowest number of E&M visits; averaging four fewer visits than workers over 40 during the initial 24 months of treatment (Exhibit 23). The mean number of Physical Medicine visits ranged from a low of 13.2 for injured workers under 30 to a high of 19.8 for workers between the ages of 55 and 64. Injured workers between the age of 40 to 54 had the highest pharmaceutical utilization, based on the number of prescriptions dispensed in the first 24 months of treatment (9.3), while those under 30 had the lowest (5.9).

Exhibit 23: Mean Service Utilization Rates for 2013-2017 Claims by Age Group



Industry

The final variable examined by the authors was the primary industry classification of the injured workers' employer. Exhibit 24 shows the distribution of claims that involved Physical Medicine services within 24 months of initial treatment by Industry, as well as the mean visit rates.

The data show fairly consistent results across all industries, with only minor changes in the proportion of claims that involved Physical Medicine. Across all three time periods studied, Physical Medicine services were used in at least two-thirds of all claims overall, though the use of these services has edged up slightly to 70 percent of all claims in the post-SB 863 era. Physical Medicine utilization has consistently been lower among agriculture and food service workers, two industries with a high proportion of low wage jobs, so here the lack of services may be based on financial need and an inability to lose time off work. The most notable result of this analysis is the sharp drop in the average number of physical medicine visits that occurred in the aftermath of the 2002-2004 reforms that eliminated the physician's presumption of correctness, introduced the evidence-based medical utilization schedule and capped chiropractic manipulation and physical therapy visits at 24 visits unless additional visits were approved by the claims administrator. Following those reforms, the average number of physical medicine visits declined by at least 50 percent across all sectors during the 2004-2010 period and have remained stable in the post-SB 863 era.

Exhibit 24: Percent of Claims w/ Physical Medicine Services and Mean Visit Rates by Industry

	Percent with Physical Medicine			Mean Physical Medicine Visits		
Industry	2000 & 2001	2004-2010	2013-2017	2000 & 2001	2004-2010	2013-2017
Accommodation	71%	69%	74%	52	18	18
Admin and Support	67%	72%	73%	47	20	18
Agriculture	61%	57%	62%	47	19	18
Construction	62%	62%	71%	43	19	19
Education	72%	72%	73%	41	17	18
Food Services	61%	62%	60%	46	18	16
Health Care	72%	71%	74%	41	17	17
Manufacturing	70%	68%	71%	52	20	18
Retail Trade	66%	67%	70%	44	17	16
Transportation	70%	71%	77%	36	18	20
Wholesale Trade	70%	71%	72%	46	18	16
Other/Unknown	70%	68%	71%	45	18	17
Mean	67%	67%	70%	45	19	18

Discussion

Legislative action in workers' compensation is usually reactionary - put into place to address a real or perceived inadequacy, need or abuse. The series of reforms bookending the medical services examined in this study were no exception, beginning with the unwinding of the presumption issues created by AB 110 and the subsequent *Minniear* decision, in 2002 (AB 749), 2003 (SB 228), and 2004 (SB 899). Implementation of Medicare-based fee schedules for a variety of services, and the introduction of evidence-based medicine UR, followed by IMR, impacted both the delivery and cost of medical services.

The analyses of different types of medical care reveal the impact of reforms on the prevalence of medical services, utilization patterns, and associated payments. The most impactful utilization rule was the implementation of the 24-visit cap for physical therapy and chiropractic manipulation that took effect for injuries on or after January 1, 2004. Exhibits 6 and 7 illustrate the dramatic decline in Physical Medicine services, which in the top five percent of cases exceeded 167 visits in the first 24 months of treatment. Implementation of evidence-based IMR enforcing utilization review provided additional consistency in the provision of Physical Medicine services as seen in the equalizing of regional variation historically experienced with the Los Angeles and Inland Empire/Orange County regions far surpassing other regions in visit rates during the early study years. The 2004 reform unintentionally led to an increase in "add-on" psychiatric disorders, which is revealed in the rise of mental health services beginning in 2004, peaking in 2010 and then dropping beginning in 2013 after they were removed by SB 863.

As documented in prior CWCI studies,[30,31] UR, IMR and more recently the MTUS Drug Formulary, along with fee schedule changes have resulted in fewer dispensed medications and dramatic cost reductions. This study has revealed that claims with chronic opioid use within the first two years of treatment show higher utilization of E&M and Physical Medicine services, as well as more prescription drugs. This finding supports the previously cited CWCI study that linked declining opioid use with less temporary disability and lower claim costs.[32]

The decline in major surgery events beginning in 2013 and continuing to their lowest level in 2017 may be the result of inappropriate surgery requests failing to meet evidence-based standards. Although most requests for surgery are approved (94 percent), requests for spinal fusion have a lower approval rate (53.9 percent).[33] As was seen with the impact of opioid usage, medical care of one type may influence medical care of another type; data shows that major surgery claims experience increased Physical Medicine visits, which is likely associated with both pre-surgical treatment and post-surgical rehabilitation.

While many of the workers' compensation reforms enacted over the past three decades have led to unintended consequences that have had to be addressed in the courts, through regulation, or through additional legislation, the system has endured and continues to meet the statutory promise to deliver safe and appropriate medical care to injured workers. Further changes can and will be made, but this report provides evidence that overall, reforms that have shifted the California workers' compensation system to an evidence-based medicine model, provided the means to enforce the MTUS guidelines through UR and IMR, reduced lien filing abuse and costs, and created a means to remove physicians convicted of fraud or criminal activity, have led to greater consistency in the types and quantity of services delivered and reduced unnecessary costs.

[30] Young, B. and Hayes, S. California Workers' Compensation Prescription Drug Utilization & Payment Distributions, 2009-2018: Part 1. *CWCI Research Update*. February 2019.
[31] California Workers' Comp Pharmaceutical Utilization & Reimbursement Part 2: Emerging Outcomes Under the MTUS Formulary. *CWCI Spotlight Report*. March 2019.
[32] Hayes, S., Smith, K. and Swedlow, A. The Impact of Declining Opioid Use on Lost-Time Claim Development & Outcomes in California Workers' Compensation. November 2019.
[33] David, R., Bullis, R., Jones, S. and Young, B. Post-Reform Medical Service Approval Rates in California Workers' Compensation. *CWCI Research Update*. October 2019.

Appendix 1

Percent of Indemnity Claims with Service Category

Service Type	2000 & 2001	2004-2010	2013-2017
Evaluation/Management	100%	100%	100%
Physical Medicine	67%	67%	70%
Surgery – Major	27%	30%	27%
Mental Health	6%	12%	7%
Surgery – Minor	26%	33%	26%
Non-Surgical Procedure	10%	12%	14%
Injection	16%	20%	27%
Diag Test & Measurement	30%	37%	32%
MRI/CT/PET	39%	42%	46%
Other Radiology (X-ray)	76%	77%	76%
Laboratory	19%	27%	27%
DMEPOS	19%	52%	56%

Appendix 2

24-Month Service Level Statistics by Service Category

	Mean Service Count			Median Service Count			95th Percentile Count		
Service Type	2000-2001	2004-2010	2013-2017	2000-2001	2004-2010	2013-2017	2000 - 2001	2004-2010	2013-2017
Evaluation/Management	11	12	13	7	8	9	33	34	34
Physical Medicine	45	19	18	24	13	13	159	51	48
Surgery - Major	1	1	1	1	1	1	3	3	3
Mental Health	11	6	6	3	2	3	47	25	23
Surgery - Minor	2	2	2	1	1	1	4	4	4
Non-Surgical Procedure	2	2	2	1	1	1	4	5	4
Injection	3	2	2	2	1	1	7	5	4
Diag Test & Measurement	2	2	2	1	1	1	6	6	5
MRI/CT/PET	2	2	2	1	1	1	4	4	4
Other Radiology	3	3	3	2	2	2	8	8	7
Laboratory	2	2	2	1	1	1	4	5	6
DMEPOS	3	4	3	1	2	2	8	11	8
Pharmaceutical	9	12	8	4	5	4	38	47	30

Appendix 3

24-Month Payment Statistics by Service Category

	Mean Payments			Median Payments			95th Percentile Payments		
Service Type	2000 & 2001	2004-2010	2013-2017	2000 & 2001	2004-2010	2013-2017	2000 & 2001	2004-2010	2013-2017
Evaluation/Management	$924	$1,206	$1,620	$518	$741	$1,122	$3,010	$3,660	$4,475
Physical Medicine	$3,281	$1,544	$2,027	$1,459	$963	$1,321	$12,565	$4,431	$5,526
Surgery - Major	$2,229	$4,813	$5,538	$1,530	$3,558	$4,201	$6,468	$13,380	$14,651
Mental Health	$1,373	$949	$971	$552	$420	$427	$5,425	$3,529	$3,694
Surgery - Minor	$615	$650	$670	$111	$122	$231	$3,344	$3,001	$2,512
Non-Surgical Procedure	$140	$250	$243	$46	$59	$100	$306	$643	$628
Injection	$791	$700	$404	$230	$113	$97	$3,060	$3,138	$1,795
Diag Test & Measurement	$921	$858	$524	$559	$395	$277	$3,102	$3,106	$1,651
DMEPOS	$541	$826	$725	$117	$126	$172	$2,584	$3,669	$3,061
MRI/CT/PET	$1,067	$1,064	$752	$725	$676	$507	$2,785	$2,787	$1,931
Other Radiology	$233	$238	$209	$118	$122	$121	$827	$816	$663
Laboratory	$102	$239	$462	$49	$50	$76	$352	$1,035	$2,099
Pharmaceutical	$711	$979	$681	$161	$192	$112	$3,177	$4,529	$3,025

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California Workers' Compensation Institute

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