Research Report

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Examining the Impact of Senate Bill 1160 on Utilization Review and Medical Treatment in California Workers' Compensation

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About This Report

This report examines the impact of Senate Bill (SB) 1160 (2016) on utilization review (UR) processes and medical treatment in California's workers' compensation system. SB 1160 reduced prospective UR requirements for the first 30 days following a work-related injury for injuries occurring on or after January 1, 2018, with the goals of reducing administrative burden on providers and improving the timeliness and quality of care for injured workers. Drawing on data from (1) two large claims administrators, (2) the California Workers' Compensation Information System (WCIS), and (3) the Independent Medical Review (IMR) database, the authors assess whether the law achieved these goals by analyzing UR approval and denial rates, patterns in receipt of guideline-concordant medical care, and time to treatment before and after the law's implementation. The findings and policy recommendations are intended to inform ongoing efforts by the California Department of Industrial Relations (DIR) and the broader workers' compensation community to refine and improve UR policy.

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Summary

The California workers' compensation system provides medical care to workers injured on the job, with medical treatment accounting for 54 percent of total system expenditures, or approximately $5.2 billion, in 2024 (Workers' Compensation Insurance Rating Bureau of California, 2025). The system uses utilization review (UR) as one tool to ensure that treatment is medically necessary and consistent with evidence-based guidelines. Treatment is evaluated against the Medical Treatment Utilization Schedule (MTUS) to determine whether it is "reasonable and necessary." In California workers' compensation, all employers or their claims administrators are required by law to have a UR process that governs authorization, modification, and denial of medical treatment for work-related injuries (Cal. Lab. Code 4610; 8 California Code of Regulations [CCR] 9792.6 et seq.). Although all employers are required to have a UR process, the details can vary across employers. Each employer or claims administrator is required to detail its UR processes in a UR plan. UR may be conducted by the employer or claims administrator or by an independently contracted utilization review organization (URO).

UR serves several purposes: promoting appropriate, effective care; controlling costs; preventing fraud and overuse; and holding providers accountable to a common standard of care. Despite these goals, UR has long been a source of tension in workers' compensation. Challenges with UR include increased administrative burden for providers, potential delays in care, and potential denials of medically necessary treatment.

In 2016, California enacted Senate Bill (SB) 1160, which reduced prospective UR requirements (e.g., requirements for UR prior to the delivery of care) for certain treatments provided in the first 30 days following a work-related injury. Before the law went into effect on January 1, 2018, all treatment was required to undergo UR if indicated in the employer's UR plan. Under SB 1160, select treatment provided during the first 30 days for compensable injuries[1] that is consistent with the MTUS and provided within an employer's medical provider network no longer requires prospective UR approval. Treatment no longer requiring prospective UR shall be considered automatically authorized, but employers can perform retrospective UR on these treatments, solely for the purpose of determining whether the treatment was consistent with the MTUS. If these retrospective reviews find that a provider consistently provides treatment inconsistent with the MTUS, that provider may no longer be allowed to provide treatment without prospective UR. In practice, the law covered many common treatments, such as physical therapy (PT), X-rays, and specialist consultations. However, other treatment categories, including surgery, pharmaceuticals, imaging, and psychological services, were

[1] A *compensable injury or illness* is one that arises in and out of the course of employment, where the employment was a main contributor to the injury or illness.

excluded from SB 1160 and remain subject to prospective UR even in the first 30 days. The law was intended to reduce administrative burden on providers and improve the timeliness and quality of early care while preserving UR oversight for treatments where it is most likely to be effective in eliminating unnecessary care.

This report provides the first empirical examination of whether SB 1160 achieved these goals. We draw on multiple data sources—including audit data from the California Division of Workers' Compensation, individual-level request for authorization (RFA) data from two large claims administrators, a statewide Independent Medical Review (IMR) database, and medical claims from the California Workers' Compensation Information System (WCIS)—to address the following questions:

- Did UR approval rates for treatment requests in the first 30 days change after SB 1160?
- Did rates of guideline-concordant medical treatment in the first 30 days increase after the law?
- Did injured workers receive covered treatments more quickly after SB 1160?
- What are the policy implications of changes in these outcomes after SB 1160?

The answers to these questions have direct implications for the California Department of Industrial Relations (DIR) and the broader workers' compensation community as they consider further reforms to UR policy. Understanding whether and how SB 1160 changed outcomes can inform future policy design to improve timely and appropriate medical care for injured workers while maintaining appropriate oversight of medical care.

Approach

To assess whether SB 1160 changed UR outcomes and medical treatment patterns in the first 30 days after injury, our approach combined a review of statutes, regulations, and policies related to UR with quantitative analyses of multiple data sources. The study period spans January 2017 through January 2024, covering one full year before SB 1160 took effect and six years after.

We reviewed the statutory and regulatory framework governing UR in California workers' compensation, including the specific provisions of SB 1160, the role of the MTUS as the evidence base for UR decisions, and the UR timeline and appeal requirements established by prior reforms. We also reviewed publicly available UR plans from claims administrators to document the prevalence and scope of prior authorization programs and to assess how these programs may interact with the law's provisions.

To examine trends in UR approval, modification, and denial rates, we drew on DIR audits of selected RFAs, individual-level databases of RFA activity from two large claims administrators, and data on all IMRs. We plotted trends in RFA approval rates over time from each of these data sources, examining trends both in the aggregate and after stratifying by treatment types and injury types. We used interrupted time series (ITS) models to formally test whether approval

rates changed significantly after SB 1160 took effect on January 1, 2018, controlling for preexisting trends.

To assess whether SB 1160 improved the receipt of guideline-concordant care, we used WCIS medical billing data. We reviewed relevant clinical practice guidelines from the American College of Occupational and Environmental Medicine guidelines that form the basis of the MTUS, focusing on guidelines applicable to musculoskeletal injuries in the acute phase of care. We also focused our analysis on treatment types observable in billing data (e.g., excluding treatments commonly available over the counter). This review led us to focus on four main types of treatment that are likely to occur during the first 30 days and that are not exempt from SB 1160: PT, acupuncture, immobilizers, and X-rays. We then identified corresponding International Classification of Diseases, 10th Revision (ICD-10) diagnosis codes and procedure codes to classify treatment as guideline-concordant, guideline-discordant, or exempt from SB 1160's provisions. We also examined magnetic resonance imaging (MRI) use among workers with musculoskeletal diagnoses as a comparison treatment not subject to the law's reduced UR requirements.

For each diagnosis-treatment pair, we examined trends from 2017 to 2024 in receipt of treatment and time to first treatment during the first 30 days after injury. We also estimated ITS models testing for changes in the rate of treatment receipt and time to first treatment within 30 days of injury before and after the law's implementation.

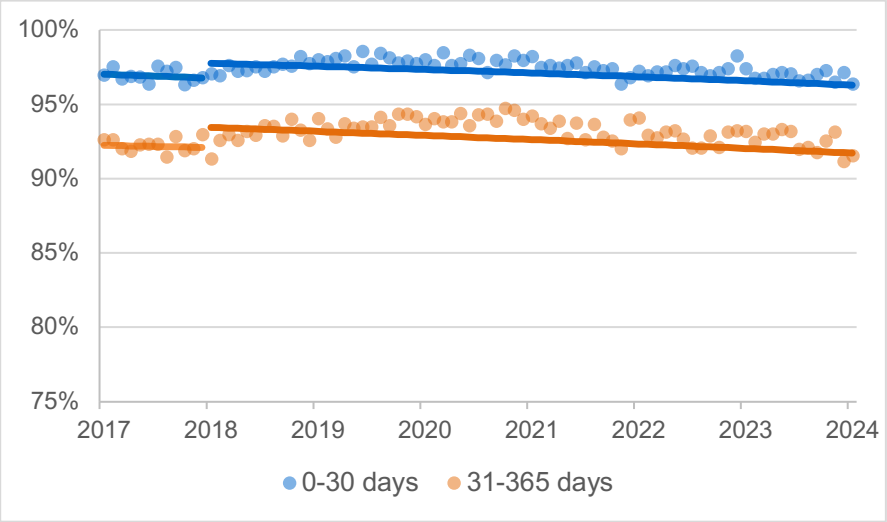
Key Findings

Utilization Review Approval Rates in Our Analytic Sample Consistently Exceed 90 Percent During the First 30 Days After Injury Both Before and After Senate Bill 1160

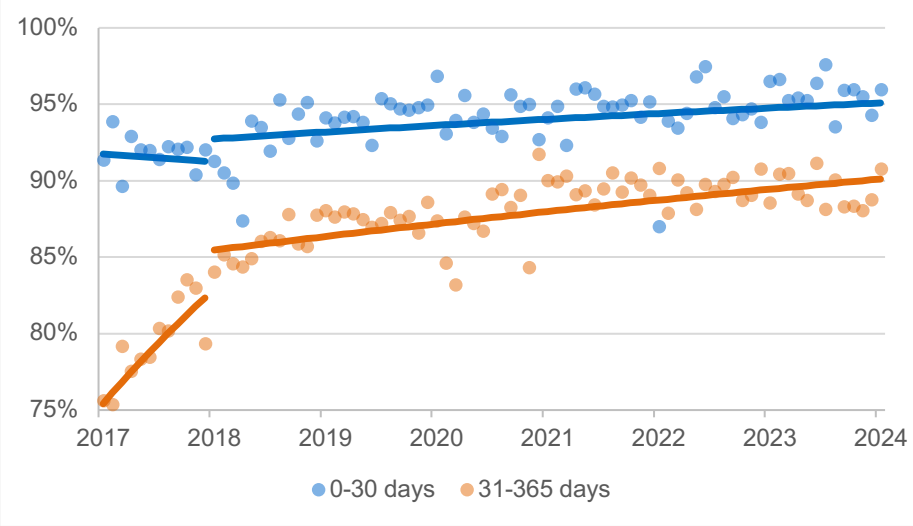
In our analysis of RFA outcomes from claims administrators, approval rates for treatment requests submitted in the first 30 days after injury were consistently high across both claims administrators throughout the study period, typically exceeding 90 percent and showing no significant change after SB 1160 took effect (Figure S.1). These rates calculated from two claims administrators are higher than the rates observed in audit data, which include only a small number of randomly selected RFAs drawn from claims administrators at any point in time after the date of injury.

Figure S.1. Approval Rates Over Time Comparing First 30 Days After Injury to Later Dates

Panel A. Claims Administrator A



Panel B. Claims Administrator B



SOURCE: Contains data provided by individual claims administrators.
NOTE: Approval rate was calculated as the number of RFAs that were approved divided by the number of RFAs with a decision (approved, modified, or denied) in a given month. Analysis was restricted to RFAs submitted within the first year after the date of injury.

The high approval rates are consistent across treatment types and injury categories. Approval rates for RFAs submitted during the first 30 days after injury exceed 90 percent in the data from both claims administrators across such categories as PT, pharmacy, imaging, consultations, surgeries, durable medical equipment (DME), occupational therapy, acupuncture, chiropractic care, immobilizers (braces, splints), and X-rays (Table S.1). Some treatment categories had meaningfully lower approval rates from one or both claims administrators, including imaging

(70–80 percent from one claims administrator), psychiatry or psychology services (78–93 percent across both claims administrators), and injections (77–89 percent across both claims administrators). However, all of the treatment categories with lower approval are all explicitly excluded from SB 1160's provisions and remain subject to prospective UR. Approval rates by injury type show the same pattern: Across sprains and strains, fractures or tears, contusions, and overuse injuries and pain, approval rates in the first 30 days also exceed 90 percent and were generally stable before and after SB 1160.

Table S.1. Approval Rates for Requests in the First 30 Days by Treatment Request Category, Before and After Senate Bill 1160

Treatment/Injury Type	Claims Administrator A: Pre–SB 1160	Claims Administrator A: Post–SB 1160	Claims Administrator B: Pre–SB 1160	Claims Administrator B: Post–SB 1160
Overall	96.9%	97.4%	91.8%	94.4%
Physical therapy[a]	**98.7%**	**99.1%**	**98.6%**	**99.5%**
Pharmacy	91.1%	95.3%	91.9%	94.2%
Imaging	94.2%	96.4%	70.6%	79.5%
Consultation	97.7%	98.4%	97.4%	99.6%
Other	93.8%	94.3%	85.1%	91.4%
Surgery	96.3%	96.8%	94.9%	93.4%
DME (other)	93.9%	96.5%	89.4%	90.4%
Occupational therapy	98.3%	99.0%	93.2%	97.2%
Acupuncture[a]	**93.0%**	**94.9%**	**97.7%**	**98.4%**
Chiropractic	90.1%	96.7%	97.5%	99.5%
Psychiatry or psychology services	95.2%	93.5%	77.8%	93.3%
Immobilizers[a]	**97.8%**	**99.3%**	**97.1%**	**96.6%**
X-ray[a]	**100.0%**	**98.4%**	**96.5%**	**98.5%**
Injection	77.8%	85.1%	88.9%	88.5%

SOURCE: Contains data provided by individual claims administrators.
NOTE: Analysis was restricted to RFAs submitted within the first year after the date of injury.
[a] These rows indicate treatment categories that are most likely to be subject to reduced UR requirements under SB 1160.

It is worth emphasizing, however, that data from two claims administrators are not necessarily generalizable to the UR approval rates from all claims administrators. For example, approval rates in the audit data were lower (65–74 percent) than the data received from our two claims administrators. While the RFAs were randomly selected and multiple claims administrators are represented in the audits, the small sample sizes and changing selection of claims administrators shown in the audits per year also present limitations in interpreting the trends. Therefore, the detail of the RFA data, despite its limitations in generalizability, enable more careful and detailed analyses of patterns on subsets of RFAs likely to be affected by SB

1160 and enable comparisons with RFAs not affected by SB 1160, due to either the timing (submitted after the first 30 days) or the treatment type.

In reviewing employers' UR plans, we found that it was common for employers to establish a process in which providers under certain conditions are authorized to provide treatment without the provider submitting an RFA. DIR refers to these programs as *prior authorization* programs. Our review of UR plans also revealed that prior authorization programs are common. While the Labor Code does not discuss prior authorization in the context of workers' compensation treatment,[2] the regulations explicitly allow employers to approve treatment through prior authorization.[3] In our review, prior authorization programs often include standard treatments provided soon after an injury: These types of treatments frequently had overlap with the types of care covered by SB 1160. These findings suggest that, for the treatments targeted by the law, UR was rarely a barrier to treatment authorization even before the reform took effect.

Guideline-Concordant Physical Therapy Increased During the First 30 Days After Injury After Senate Bill 1160 Implementation

In our analysis of guideline-concordant care in the WCIS, we observe a modest but statistically significant increase in receipt of guideline-concordant PT in the first 30 days after injury following SB 1160 implementation (Figure S.2). Among injured workers with diagnoses for which PT is recommended, the odds of receiving PT within 30 days were 13 percent higher in the post-implementation period than before the law took effect. Among those who received PT in the first 30 days, time to the first visit also declined by approximately one day on average after implementation.

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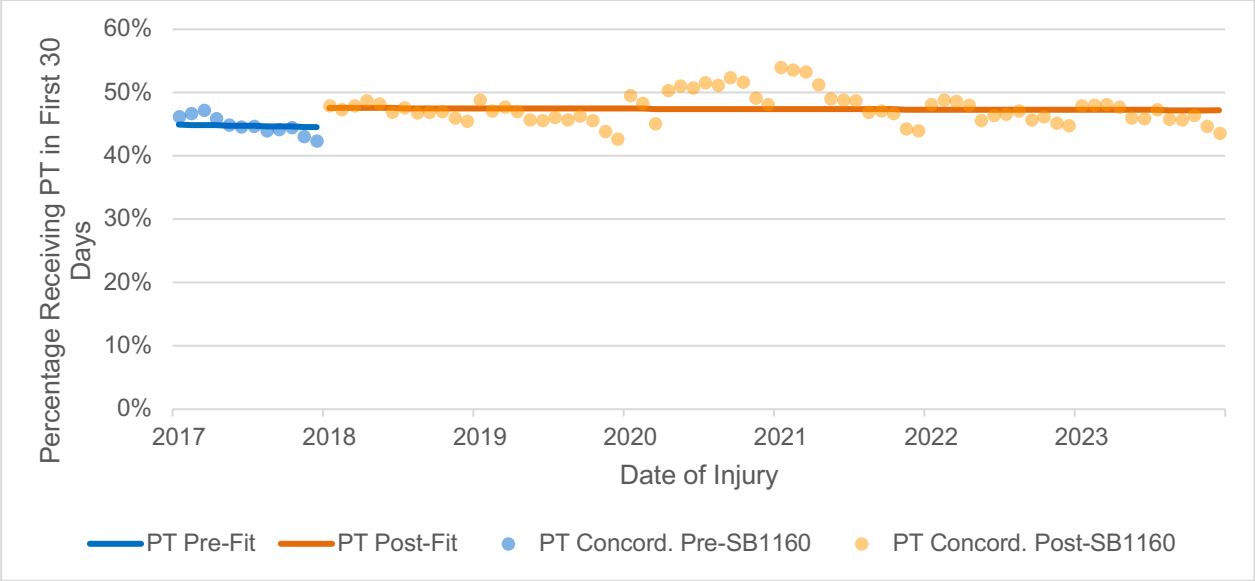
[2] The Labor Code does mention that in the context of workers with health care coverage for nonoccupational illness or injuries, the insurer may require prior approval of any nonemergency treatment or diagnostic service and may conduct reasonably necessary UR (Cal. Lab. Code 4600[d][5]).

[3] 8 CCR § 9792.6.1(aa): "'Utilization review process' means utilization management functions that prospectively, retrospectively, or concurrently review and approve, modify, or deny, based in whole or in part on medical necessity to cure or relieve, treatment recommendations by physicians, as defined in Labor Code section 3209.3, prior to, retrospectively, or concurrent with the provision of medical treatment services pursuant to Labor Code section 4600. The utilization review process begins when the completed request for authorization, or a request for authorization accepted as complete under section 9792.9.1(b), is first received by the claims administrator, or in the case of prior authorization, when the treating physician satisfies the conditions described in the utilization review plan for prior authorization."

Figure S.2. Receipt of Guideline-Concordant Physical Therapy, 2017–2023



SOURCE: Authors' analysis of WCIS data.
NOTE: *N* = 816,414 injured workers with a claim within 30 days of injury that includes a diagnosis for which PT is recommended. Points represent observed monthly percentages of workers with qualifying diagnosis who received PT within 30 days of injury. Fit lines represent predicted values with the calendar month held constant at June for ease of interpretation.

Senate Bill 1160 Was Also Associated with Small Changes in Other Guideline-Concordant and Guideline-Discordant Care

Changes in other guideline-concordant treatments were smaller. The odds of receiving guideline-concordant braces or immobilizers within 30 days increased by 8 percent following SB 1160, but time to first treatment for these items did not change significantly. Receipt of guideline-concordant X-rays showed no significant change, which is consistent with evidence that many claims administrators already had prior authorization processes approving X-rays before the law took effect, leaving limited room for improvement.

There was a small but statistically significant increase in receipt of guideline-discordant acupuncture during the first 30 days after injury following the law's implementation. The odds of receiving acupuncture among injured workers for whom it is not recommended were 24 percent higher after SB 1160 than before. As noted above, providers can be penalized if retrospective UR reveals that they were providing guideline-discordant care. For this reason, we hypothesized that SB 1160 would have no effect on guideline-discordant care. The finding that guideline-discordant care *increased* may reflect an unintended consequence of reduced UR requirements, because acupuncture is typically not recommended in the early, acute phase of treatment. However, overall rates of guideline-discordant acupuncture remained low throughout the study period—below 3 percent—and there was no corresponding reduction in time to first acupuncture, suggesting that the practical significance of this increase is limited. Additionally,

after the initial increase in receipt of acupuncture following SB 1160, rates gradually decreased again, although this change was not statistically significant.

We also observed a small but statistically significant decline in MRI use in the first 30 days after injury following SB 1160, with the odds of receiving an MRI among injured workers with musculoskeletal diagnoses falling by 7 percent. This is notable because MRI is explicitly excluded from SB 1160's reduced UR requirements and should not have been directly affected by the law. The decline in MRI use may reflect ongoing secular trends in treatment utilization, preexisting administrative changes by some claims administrators, or disruptions related to the COVID-19 pandemic in the later years of the study period. This pattern reinforces the need for caution in interpreting any of the post-implementation changes as direct causal effects of SB 1160.

Together, these findings suggest that SB 1160 produced its clearest effects on PT, although the modest size of the effects across all treatment types likely reflects that common early treatments were already being approved and delivered in a timely manner before the law's implementation.

Recommendations

Document and Standardize Prior Authorization Exemptions Across Claims Administrators

Our review of UR plans found that many claims administrators have established prior authorization programs that exempt certain routine treatments from UR without an RFA, often covering the same treatments targeted by SB 1160. These programs vary substantially across claims administrators in their scope, the treatments covered, and whether they apply to all providers or only specific providers. This variation means that which treatments require UR and which are preapproved depends on the claims administrator handling a given claim, creating inconsistencies in the treatment access experience for injured workers and added administrative complexity for providers who work across multiple claims administrators.

DIR should systematically document which UR plans include prior authorization processes, which treatments are covered, and under what conditions. This could be incorporated into the existing audit process or as part of the planned UR database. Collecting this information would provide a foundation for identifying where practices are well-aligned and where variation could warrant additional regulatory attention.

Examine Whether Utilization Review Reforms Should Extend Beyond the First 30 Days or Target Specific Treatments

SB 1160's provisions were limited to the first 30 days after injury, but our findings show that the majority of UR activity occurs later in the course of a workers' injury. Denial rates are also

higher for treatment requests submitted after the first 30 days, and several treatment types excluded from SB 1160 (particularly imaging and psychiatry or psychology services) have substantially lower approval rates than treatments affected by the law. This finding suggests the treatments and time window in which UR most constrains access to care may not be those addressed by SB 1160.

DIR should examine whether streamlined UR frameworks could be extended to a longer post-acute window (perhaps during the first three months) or applied more selectively based on treatment type and strength of clinical evidence rather than being based on time since injury alone. Treatments with strong MTUS evidence and consistently high approval rates may be candidates for reduced UR requirements; treatments with weaker evidence bases or higher denial rates could be better candidates for continued oversight.

Invest in Utilization Review Data Infrastructure

Our ability to evaluate SB 1160's impact was constrained by the absence of systemwide data on RFAs and UR decisions. DIR is currently developing a UR decision database, and our experience working with data from two claims administrators with different formats, code sets, and internal processes offers several lessons for that database's design. DIR should require standardized reporting of all UR decisions, using the existing RFA form as a starting point. At a minimum, the database should capture standardized treatment and diagnosis codes (ICD-10 and the Healthcare Common Procedure Coding System), key dates (date of injury, RFA submission, and UR decision), and claim identifiers that enable linkage to the WCIS. Without standardized codes, variation across claims administrators will make it difficult to draw systemwide conclusions from the data. DIR should also consider requiring claims administrators to report treatments approved outside the formal RFA process—including those covered by prior authorization programs. These approvals are currently invisible in any data source, making it impossible to measure the full scope of UR activity or estimate true systemwide approval rates.

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Chapter 1. Introduction and Policy Background

The California workers' compensation system provides workers who are injured on the job with all medical care necessary to treat their work-related injuries and illnesses. As in other states, injured workers with approved workers' compensation claims receive necessary medical care without any patient cost-sharing. In 2024, medical care was 54 percent of all workers' compensation expenditures, amounting to $5.2 billion dollars in total (Workers' Compensation Insurance Rating Bureau of California, 2025). In an environment without cost-sharing, the workers' compensation system must rely on other tools to ensure that these dollars are spent efficiently and effectively. One important tool for achieving these goals is utilization review (UR).

UR is a process of evaluating the medical necessity, appropriateness, and efficiency of health care services, procedures, and treatment plans. There are multiple goals of UR, including to ensure that patients receive appropriate, effective care (and thus eliminating unnecessary or excessive care that is unlikely to improve outcomes); to control overall medical costs; to prevent fraud and abuse through unnecessary or excessive treatments; to hold providers and claims administrators accountable to a given medical standard of care; and to enhance system consistency and integrity by holding all providers to the same standard of care. To achieve these goals, providers are typically required to submit documentation about health services to claims administrators before the treatment is provided, while it is being provided, or after it is provided. Treatment is evaluated by medical experts against evidence-based clinical guidelines to determine whether the care is appropriate and medically necessary.

Despite these goals, however, many challenges arise in implementing a UR process. For example, the nuances of patient complexity or needs may not always fit the explicit criteria outlined in standardized guidelines, leading to a risk of necessary care being denied if UR reviewers lack information that providers have about a patient's needs. These denials could be particularly consequential for conditions where urgent or timely care is needed to prevent symptoms from worsening. UR also increases administrative burden and costs on both providers and claims administrators, and these UR administrative tasks may be felt inequitably across the system, posing a particularly large burden on smaller practices.

The pros and cons of UR remain an active debate, as does the effectiveness of UR in workers' compensation and in the broader health care system. Early reviews of UR in workers' compensation found evidence of modest cost savings despite relatively low denial rates but were inconclusive on the impact on quality of care (Wickizer, Lessler, and Franklin, 1999). Over time, stronger best practices for UR were developed, including a stronger reliance on evidence-based, scientifically grounded treatment guidelines as the basis of decisionmaking (Bean et al., 2020; Franklin et al., 2015; Glass et al., 2017; Wickizer and Lessler, 2002). More-recent studies after

the adoption of more-rigorous guidelines have found higher rates of claim denial (Wickizer et al., 2004). For example, Graves et al. (2018) found that prospective UR for low back pain in Washington state's workers' compensation system was associated with significant reductions in treatments, including magnetic resonance imaging (MRI) and injections, and reductions in cost and disability durations. These findings suggest that UR was effective at improving patient outcomes while reducing low-value care. Other studies similarly have found that adherence to clinical guidelines is associated with lower costs (Castillo et al., 2020; Graves et al., 2014).

In the California workers' compensation system, Labor Code Section 4610 requires all employers to establish a UR process that "prospectively, retrospectively, or concurrently review(s) and approve(s), modif(ies), or den(ies), based in whole or in part on medical necessity to cure and relieve, treatment recommendations by physicians, prior to, retrospectively, or concurrent with providing medical treatment services" (California Labor Code [Cal. Lab. Code], 4610[a]). The Medical Treatment Utilization Schedule (MTUS), which is based on treatment guidelines developed by the American College of Occupational and Environmental Medicine (ACOEM), is used to presumptively determine what constitutes reasonable and necessary care (Cal. Lab. Code 4604.5; 8 California Code of Regulations [CCR] § 9792.20–9792.27.23). While all employers are required to have a UR process, the details can vary across employers. Each employer or claims administrator is required to detail its UR processes in a UR plan. UR may be conducted by the employer or claims administrator or by an independently contracted utilization review organization (URO).

Before the law went into effect, all treatment was required to undergo UR if indicated in the employer's UR plan. In an attempt to eliminate some of the issues and barriers associated with UR while maintaining UR processes in places where those processes can be effective in improving outcomes, the California Legislature passed Senate Bill (SB) 1160 in 2016. The bill, among other things, reduced UR requirements for prospective review for select treatments in the first 30 days after a work-related injury for injuries occurring on or after January 1, 2018. In particular, it stated that treatment provided during the first 30 days following a work injury will be authorized without prospective UR if the treatment (1) is for a compensable condition (e.g., arising out of and in the course of employment); (2) is consistent with the MTUS; and (3) is provided by a member of the medical provider network (MPN), health care organization, or other provider approved by the employer. SB 1160 also lists several types of treatment that are not subject to this exemption and still may be subject to prospective review during the first 30 days, including nonemergency surgeries, home health care, psychological treatment, certain imaging, and certain durable medical equipment (DME).

Related Policy Background

UR in California's workers' compensation system was first introduced in 2003 by SB 228, which also directed the California Division of Workers' Compensation (DWC) to develop an

evidence-based MTUS. In 2012 California enacted several major reforms to medical care in workers' compensation, including UR; those reforms provide important context for the overall policy landscape during the period of analysis for this study. A reform package enacted in 2012 (SB 863) set forth specific timelines for UR, established Independent Medical Review (IMR) for UR appeals, overhauled the Official Medical Fee Schedule (OMFS), established Independent Bill Review (IBR) systems for medical bill disputes, and made far-reaching changes to the MPN and qualified medical examiner (QME) processes. While the major provisions of SB 863 were largely implemented prior to the time frame of this study, subsequent legislation resulted in some changes that occurred simultaneously with the SB 1160 UR reforms. Most notably, a drug formulary, which was mandated in 2015 with the enactment of Assembly Bill (AB) 1124, was first implemented on January 1, 2018, and was integrated into UR in SB 1160. Shortly after SB 1160 was enacted, SB 489 waived SB 1160's requirement that providers submit bills within 30 days of care to ensure that such care is exempt from prospective UR in the first 30 days. This waiver applied only to emergency care treatment.

Several reforms that took effect on January 1, 2017, were focused on long-standing issues with fraudulent providers and abuse of the medical lien process. AB 1244 provided for the suspension from the California workers' compensation system of providers who were convicted of fraud, who had surrendered their license, or who were suspended from the Medicare or Medicaid programs. SB 1160 also contained a number of provisions effective in 2017 that were designed to address long-standing issues with medical care liens. Examples included (1) requiring that a provider filing a lien for care provided to an injured worker provide a declaration under penalty of perjury stating that conditions for the lien to be legitimate are satisfied and (2) requiring that liens filed by providers who have been charged with workers' compensation or other health care fraud be automatically stayed pending the outcome of the provider's criminal proceedings. These reforms were effective prior to the January 1, 2018, effective date of the SB 1160 UR provisions.

Another important context for this study was the coronavirus disease 2019 (COVID-19) pandemic, which had dramatic impacts on the workers' compensation system. COVID-19 claims entered the workers' compensation system in large numbers while other claims declined sharply, and California made rapid policy changes to address challenges posed by COVID-19 in the workers' compensation system. Most notably, SB 1159 created a set of presumptions (one of which was first established by an executive order) making it easier for workers to receive workers' compensation for COVID-19, while emergency regulations adopted by DWC facilitated access to telehealth, including for medical-legal evaluations. Although COVID-19 claim volumes have receded from the levels reached between 2020 and 2022, impacts of the COVID-19 pandemic and California's policy response may still have had interactions with the composition of claims affected by SB 1160.

Against this backdrop of ongoing UR reform, complex policy interactions, and an evolving evidence base, this report provides insight into whether SB 1160 succeeded in promoting its

goals of improving timeliness and quality of care while maintaining appropriate oversight of medical treatment decisions. This study provides the first examination of how SB 1160 affected UR processes and medical treatment during the first 30 days after injury. As we describe below, we integrated data from multiple sources—including California Department of Industrial Relations (DIR) audit data, the IMR database, and request for authorization (RFA) databases from two claims administrators—to examine patterns in UR approval, modification, and denial. We used the Workers' Compensation Information System (WCIS) to analyze whether the provisions of SB 1160 affected quality of care and timelines of care. Finally, we integrated findings from both analyses to make policy recommendations for the UR system in California workers' compensation.

The remainder of this report proceeds as follows. Chapter 2 provides legal and process background on UR in California workers' compensation, as well as context from UR processes in other states' workers' compensation systems. Chapter 3 describes our data and methods. Chapter 4 presents results with respect to UR requests and approval rates. Chapter 5 presents evidence on how SB 1160 affected medical treatment. Chapter 6 discusses policy recommendations, and Chapter 7 concludes the report. Appendix A provides details on criteria and methodology, and Appendix B provides supplemental tables and figures.

Chapter 2. Legal and Regulatory Framework

This chapter provides an overview of the legal and regulatory framework governing UR in California workers' compensation. We begin with a description of the origins and requirements of UR in California, including the role of the MTUS as the evidence-based standard against which treatment requests are evaluated. We then describe the UR process in detail, including the types of UR, the roles and qualifications of UR reviewers, and the timelines governing UR decisions. We next describe the IMR process, which provides a mechanism for resolving disputes over UR decisions, and the enforcement and audit mechanisms that provide oversight of UR programs. We then turn to a description of SB 1160, the 2016 reform that is the central focus of this report, including its key provisions and the categories of treatment that remain subject to prospective UR even within the first 30 days after injury. Finally, we describe the various pathways through which treatment may be authorized outside of the formal UR process, including prior authorization programs, and present findings from our review of publicly available UR plans. Where relevant, we also provide context on how California's UR framework compares to those in other states.

Background on Utilization Review

As noted above, UR was introduced in California workers' compensation in 2003 (DWC, 2016, p. 3 and p. 43; Cal. Lab. Code 5307.27; Cal. Lab. Code 77.5[a]; the MTUS is found at 8 CCR 9792.20–9792.27.23). All employers[4] or their workers' compensation claims administrators are required by law to have a UR process that governs authorization, modification, and denial of medical treatment for work-related injuries, although the details and requirements of those programs vary across administrators (Cal. Lab. Code 4610; 8 CCR 9792.6 et seq.). UR may be conducted by the employer or claims administrator or by an independently contracted URO. Employers must provide the details and parameters of their UR processes in a UR plan. The plan should dictate the details of the employers' UR process; indicate clear guidelines that are used to approve, modify, or deny medical treatment and ensure the timeliness of UR decisions; describe medical material used as the basis for the decisions; and describe the process for consultation and appeals.

UR can occur at three points in time relative to the time of treatment. The employer is permitted to require *prospective UR* (prior to the delivery of care) for certain treatment or diagnostic services. Before the implementation of SB 1160, the employer was permitted to

[4] In this discussion, the term *employer* will be understood to include an employer's claims representative, whether self-insured or through third-party insurance.

require prospective UR for any nonemergency treatment or diagnostic service. Emergency medical treatment is treatment that, in the absence of immediate medical attention, could reasonably be expected to place the patient's health in serious jeopardy or result in serious impairment of a body function or serious dysfunction of a body part or organ.[5]

An employer may choose to perform *retrospective UR* (after the delivery of care) for treatment when prospective UR was not already given (8 CCR 9792.6.1[v]). Providers always have the choice of rendering treatment and then seeking retrospective UR, but they risk not getting paid if the treatment is not found to be medically necessary. Retrospective UR can also include cases exempt from the need for prospective review under SB 1160 and cases in which the employer initially disputed liability for the injury but is now liable. For treatment exempt from prospective UR under SB 1160, retrospective UR may be done solely for the purpose of determining whether the treatment is consistent with the MTUS. If this retrospective UR finds that the physician is engaging in a pattern and practice of not providing care consistent with the MTUS, the employer may petition that the physician be removed from the MPN or otherwise not be permitted to provide care to its employees in the first 30 days without prospective UR (Cal. Lab. Code 4610[f]).

Concurrent UR (while care is ongoing) concerns treatment requests for a current inpatient stay (for example, for continuation of a hospital stay, specialist consultations, ongoing rehabilitation, or additional tests during an inpatient stay). During a concurrent review, medical care may not be discontinued until the worker's physician has been notified of the decision and a care plan has been agreed upon by the physician. The employer or insurer is liable for those services determined medically necessary to cure and relieve the worker (Cal. Lab. Code 4610[i][4]).

Treatment Guidelines

California employees are entitled to "reasonable and necessary" medical care related to their work-related injuries (DIR, 2025). The MTUS is used to determine what presumptively constitutes reasonable and necessary care (Cal. Lab. Code § 4604.5; 8 CCR §§ 9792.20–9792.27.23). This presumption may be controverted by a preponderance of the scientific medical evidence (Cal. Lab. Code 4604.5[a]; 8 CCR 9792.8[a]). Treatment may not be denied solely because the treatment is not addressed by the MTUS (8 CCR 9792.8[a]). If a condition or injury

[5] Cal. Lab. Code 4610(d) provides that "emergency treatment services" means treatment for an emergency medical condition defined in subdivision (b) of Section 1317.1 of the Health and Safety Code and provided in a licensed general acute care hospital. According to Cal. Health and Safety Code 1317.1 (b): "'Emergency medical condition' means a medical condition manifesting itself by acute symptoms of sufficient severity (including severe pain) such that the absence of immediate medical attention could reasonably be expected to result in any of the following:

(1) Placing the patient's health in serious jeopardy.

(2) Serious impairment to bodily functions.

(3) Serious dysfunction of any bodily organ or part."

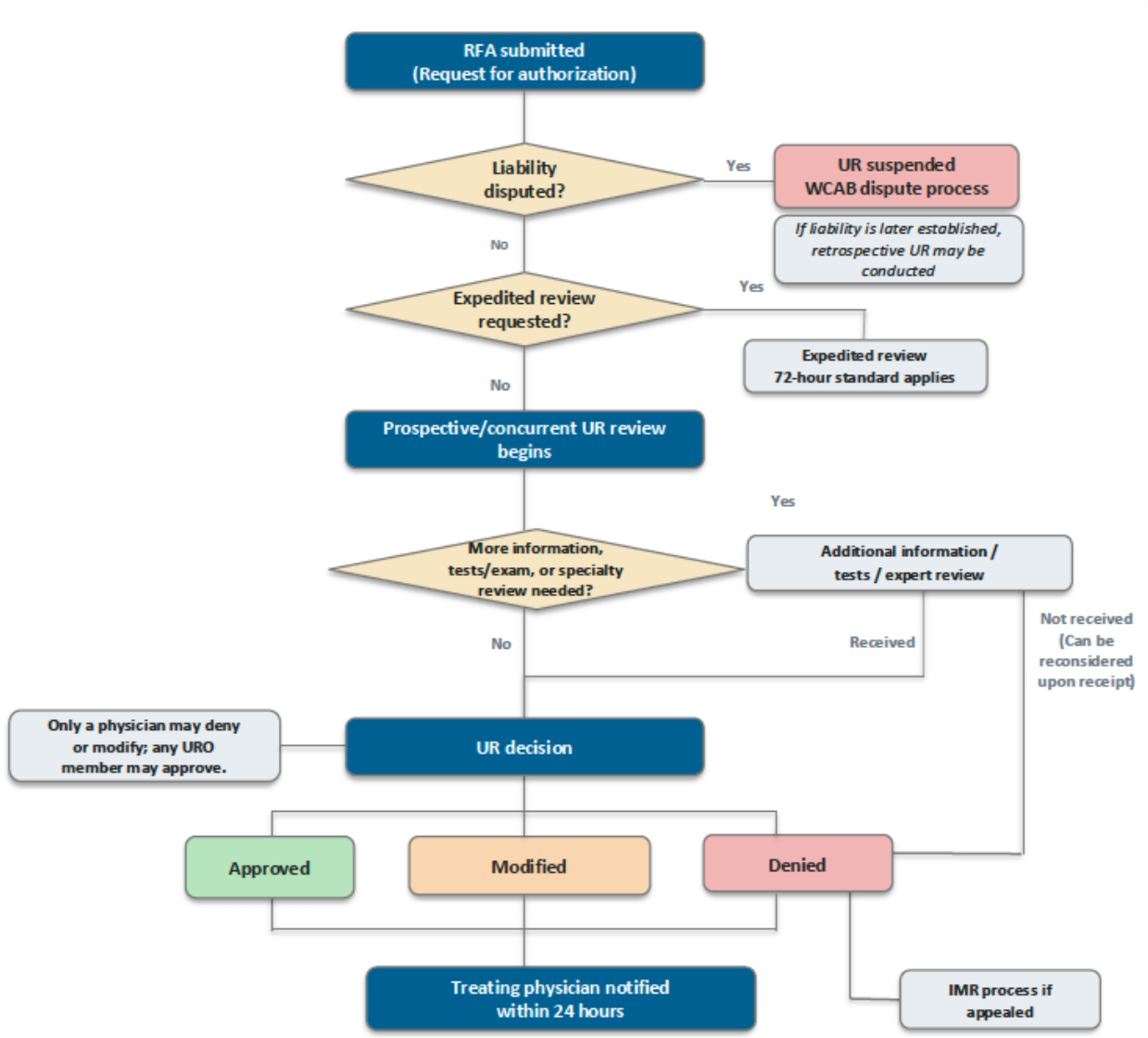
is not addressed by the MTUS, it must be in accordance with other evidence-based medical treatment guidelines that are generally recognized and scientifically based (8 CCR 9792.8[a]).

The MTUS is organized by clinical topics that encompass different body parts (e.g., shoulder disorders, knee disorders), diseases (e.g., occupational interstitial lung disease, COVID-19), and therapies (e.g., opioids, cannabis). Guidelines typically specify recommended diagnostic and treatment pathways depending on characteristics of the occupational injury or disease. Many guidelines related to occupational injury also specify which phase of injury (e.g., acute, chronic) is relevant for the recommendations, the strength of the recommendation (e.g., strongly recommended, moderately recommended), and the level of evidence supporting the recommendation.

Utilization Review Processes

Figure 2.1 provides a schematic of the stages of the UR process, which we describe below. The UR process begins when requests for treatment are submitted on the DWC RFA form. The requested treatment must be consistent with a credible diagnosis. The claims administrator or its contracted URO evaluates the RFA to determine whether to authorize treatment based on the MTUS (Cal. Lab. Code § 4610; 8 CCR § 9792.6 et seq.; DWC, 2016, p. 39). UR may result in a request for treatment being approved, denied, or modified until additional information, tests/exams, or expert review is obtained. While the composition of reviewers likely varies across UROs and employers, the first-level UR reviews are typically conducted by non-physicians (e.g., nurses) (Glass et al., 2017). Any member of a URO may approve a request for treatment, but only a physician may deny or modify it. Non-physician reviewers, however, may request clarifying or supportive information from the requesting physician (Cal. Lab. Code 4610[g]; 8 CCR 9792.7[b]). Employers or their plan representatives may also accept certain claims outside of the UR process through a process known as *prior authorization* (sometimes known as *fast track*). A reviewing physician does not have to match the specialty of the physician requesting treatment so long as the reviewing physician is otherwise qualified to evaluate the request. However, according to the DIR Physician's Guide, a chiropractor or acupuncturist may only review treatment requests of other chiropractors or acupuncturists or tests or treatments that fall within their scope of practice (DWC, 2016, p. 46).

Figure 2.1. Utilization Review Decision Process



SOURCE: Author visualization of UR processes.
NOTE: WCAB = Workers' Compensation Appeals Board. Treatment that was approved via prior authorization as indicated in the UR plan would not submit an RFA and would not undergo this process.

Timelines

In 2013, SB 863 implemented strict timelines and standards for dispute resolution for UR. These provisions give reviewers five working days after the RFA is received to make a decision or request clarifying information (unless the request is retrospective; see Table 2.1). The treating physician must be informed of a decision within 24 hours (Cal. Lab. Code 4610[i][4]). Decisions or requests for additional information for retrospective requests must be done within 30 working days. If clarifying information is needed to support the decision, the UR reviewer may deny the RFA if the information is not provided within 14 calendar days from the original receipt of the

RFA (30 days for retrospective review). Such a denial must state that the request will be reconsidered upon receipt of the requested information (8 CCR 9792.9.6[c]). The URO may also request additional tests/exams or specialty consultations by an expert reviewer (selected by the URO) when reasonably needed to make a determination. If the additional test/exam result or expert review is not received within 30 days of the original receipt of the RFA, the reviewer must deny the request with the stated condition that the request will be reconsidered upon receipt of the results of the additional test/exam or expert review. If the UR reviewer receives the requested information, test results, or expert review, the reviewer must make a decision on the request within five business days of receipt of the new information (30 days for retrospective review) and notify the physician within 24 hours of the decision.

Table 2.1. Utilization Review Timelines

Timeline	Description
Standard prospective/ concurrent review	Description
5 days	Decision or request for additional information is issued within 5 working days of receipt
24 hours	Treating physician is notified within 24 hours of decision
14 days	If clarifying information is not received, denial may be issued after 14 calendar days from original RFA receipt
30 days	If tests, exam results, or expert review are not received, denial may be issued after 30 days from original RFA receipt
5 days	If requested information is later received, decision is issued within 5 business days of receipt
Expedited review	Description
72 hours	Decision is issued within 72 hours
72 hours	If added information, tests, or expert review are needed, decision is issued within 72 hours after receipt
Retrospective review	Description
30 days	30-day review window applies

If the injured worker's health is in imminent danger or the normal UR time frame would risk their life, health, or permanent recovery, the treatment request can be expedited. In such cases, UR review timeline must not exceed 72 hours after receipt of the request (Cal. Lab. Code 4610.6[d][1][C]). If response to the treatment request requires clarifying information, additional tests, or expert review, the decision must be made within 72 hours of receiving such information, test results, or expert review (8 CCR 9792.9.6[d]).

Subject to Labor Code Section 5402, UR is not required while the employer is disputing liability for an injury (Cal. Lab. Code 5402). The time frames may be suspended in the event of a dispute (Cal. Lab. Code 4610[l]; 8 CCR 9792.9.1[b]). The dispute is through the dispute

resolution process of the Workers' Compensation Appeals Board (WCAB), rather than UR (8 CCR 9792.9.2). If an employer properly defers UR because it disputes liability and is later found liable for the injury, it may then conduct retrospective UR (Arteaga v. Starcrest Products of California, Inc., ADJ16637235 [WCAB Panel Oct. 1, 2024]).[6]

Independent Medical Review/Appeal

If a UR decision is not made and properly communicated within the required time frames described above, it is invalid and not subject to IMR. Legal issues regarding the timeliness of a UR decision are resolved by the WCAB. All other disputes regarding a UR decision must be resolved by IMR (Jose Dubon v. World Restoration Inc and SCIF, 79 Cal. Comp. Cases 313 [en banc Oct. 6, 2014]).

A denial or modification of a treatment request must provide a clinical rationale and cite appropriate sections of the MTUS or other relevant treatment guidelines. A UR decision that denies or modifies a treating physician's request for medical treatment because the treatment is not deemed medically necessary must provide information on appeal rights. The injured employee may ask for a review of that decision through the IMR process (Cal. Lab. Code §§ 4610.5–4610.6; see regulations at 8 CCR 9768.1–9768.17 and 9792.10.1–9792.15). A QME is a physician certified to evaluate disability and cause of injury in workers' compensation cases. Prior to 2012, QMEs also resolved treatment disputes, but SB 863 established IMR to handle treatment disputes. IMR decisions may be appealed by filing a petition before a WCAB judge (DWC, 2016, p. 51). The costs of IMR are borne by claims administrators (8 CCR 9792.10.8).

Enforcement, Audit, and Transparency of Utilization Review

Insurers, employers, UROs, and third-party administrators are audited at least once every five years by DWC (Cal. Lab. Code 129). DWC may also perform targeted investigations in response to credible information indicating a potential violation of the UR or IMR process (8 CCR 9792.11).

If DIR has reason to believe that an employer, insurer, or other entity subject to the Labor Code has failed to meet any of the UR or IMR requirements, it may issue a penalty (8 CCR 9792.12). It does this by first issuing a show cause order. The claims administrator or URO has 30 days to respond and has a right to a hearing (8 CCR 9792.11–9792.15).

Senate Bill 1160

SB 1160 was enacted on September 30, 2016. Most of its provisions became effective on January 1, 2018. Pursuant to SB 1160, certain medical treatment rendered within the first 30 days

[6]See also Hough v. CooperVision, 83 Cal. Comp. Cases 1466 (2018 panel decision).

following the initial date of injury is deemed authorized without prospective UR. SB 1160 indicates that the requirements for this exception are that the treatment:

> Is for a body part or condition that is accepted as compensable by the employer, is addressed by the medical treatment utilization schedule (MTUS), and is rendered by:
>
> – a member of the employer's medical provider network (MPN), or
> – by a physician predesignated or otherwise selected by the employer.

The treating physician is required to submit an RFA retrospectively within five days following the employee's initial visit and evaluation (Cal. Lab. Code 4610[b]). The employer or representative may conduct retrospective review to consider whether the medical treatment was, in fact, consistent with the MTUS (Cal. Lab. Code 4610[f]).

As amended by SB 1160, Labor Code Section 4610 states that all employers must have a UR plan filed with the DWC Administrative Director for approval and posted on the public website of the employer, the claims administrator, or the URO (Cal. Lab. Code 4610[g][5]; 8 CCR 9792.7). Labor Code Section 4610 was also amended to indicate that UR plans as described in the plan must be accredited by an independent, nonprofit organization to certify that the UR process meets specified criteria, including, but not limited to, timeliness in issuing a UR decision, the scope of medical material used in issuing a UR decision, and a policy preventing financial incentives to doctors and other providers based on the UR decision (Cal. Lab. Code 4610[g][4] [added by SB 1160]). The criteria or guidelines used in the UR process to determine whether to approve, modify, or deny medical treatment services must be available to the public upon request. However, only that portion of the UR process that modifies or denies requests for authorization of medical treatment must be accredited and approved by DIR (Cal. Lab. Code 4600[g][4]). Criteria or guidelines used to modify or deny requested services must be disclosed to the physician and the employee (Cal. Lab. Code 4610[f]).

SB 1160 exempted many standard treatments from UR during the first 30 days after injury, such as physical therapy (PT) and initial X-rays. However, many other services are not subject to this 2018 exemption and may still be subject to prospective UR if specified by an employer's UR plan, even if rendered within the first 30 days. The list of services that are exempt from SB 1160's provisions during the first 30 days includes the following:

1. Pharmaceuticals, to the extent they are neither expressly exempted from prospective review nor authorized by the drug formulary adopted pursuant to Section 5307.27.
2. Nonemergency inpatient and outpatient surgery, including all presurgical and postsurgical services.
3. Psychological treatment services.
4. Home health care services.
5. Imaging and radiology services, excluding x-rays.
6. All durable medical equipment, whose combined total value exceeds two hundred fifty dollars ($250), as determined by the official medical fee schedule.

7. Electrodiagnostic medicine, including, but not limited to, electromyography and nerve conduction studies.
8. Any other service designated and defined through rules adopted by the administrative director (Cal. Lab. Code 4610[c]). (At the time this report was written, the following had been designated: spinal injections including therapeutic medial branch nerve block injections; facet joint injections; intradiscal injections; epidural injections; and sacroiliac joint injections.)

In addition to exempting certain treatment from prospective UR, SB 1160 potentially impacted UR in other ways as well. SB 1160

- permitted DIR to update the MTUS without going through certain formal administrative procedures
- required UR processes that modify or deny treatment requests to be accredited by an independent nonprofit (which must certify that the process meets certain criteria [including timeliness] in issuing a UR decision, the scope of medical material used in issuing a UR decision, and maintaining policies on financial conflicts of interest)
- required UR processes that modify or deny treatment requests to be approved by DIR
- required certain notices to injured workers following denial of a claim
- prohibited financial incentives for UR denials/modifications
- required employers to post their UR process on a public website
- made a number of changes to IMR, including the submission of evidence and the timelines
- permitted employers to remove a physician from the ability to provide care exempt from UR within the first 30 days if it determines that the physician has a pattern of providing care inconsistent with the MTUS.

Treatments That May Be Approved Without Utilization Review

While the statute does not expressly state that employers may approve treatment outside of the UR process, it does not prohibit it, thus implying that employers may approve some treatments without UR. For instance, when Cal. Lab. Code 4610(c) describes the list of treatments that still require UR even in the first 30 days, it says that these treatments are subject to UR "unless authorized by the employer," meaning that the employer may authorize them without requiring that they go through the UR process. Outside of the new provisions in SB 1160, there are other ways in which injured workers may receive treatment that did not need to go through UR in the California workers' compensation system. Below are some examples of treatment that may be customarily approved without UR.

Treatment statutorily exempt from prospective UR. As indicated above, emergency treatment services are required to be authorized without prospective UR, although retrospective UR may occur.

Predesignation. If the employee has health care coverage for nonoccupational injuries or illnesses on the date of injury, and the employer is properly notified of the employee's desire to utilize this coverage before the date of injury, and certain other criteria are met, medical

treatment, access to treatment, and UR are governed by the provisions in the Health Code governing health insurance plans, rather than by the Labor Code (Cal. Lab. Code 4600[d][3] and [4]; see Cal. Health and Safety Code Chapter 2.2 for the applicable provisions). In some situations, the insurer may conduct reasonably necessary UR pursuant to the Labor Code (Cal. Lab. Code 4600[d][5]).

Ongoing treatment. Employers may in some cases approve certain ongoing medical services without a new RFA. Once medical services are initially authorized, the employer may choose to approve continued services without requiring a new RFA. Until recently, some case law discouraged the employer from requiring a new RFA in this circumstance and suggested that the employer had a burden to show that the continued provision of the services is no longer reasonably required because of a change in the injured worker's condition or circumstances. While the case law has relaxed this requirement, some employers may continue to follow this practice of authorizing continued treatment without a new RFA (Patterson v. The Oaks Farm [WCAB], 79 Cal. Comp. Cases 910 [2014] [concerning the ongoing services of a nurse case manager]).[7]

Deemed approved by payment. If an RFA is submitted along with a medical bill, and the employer pays the medical bill on time without explicitly approving the RFA, it is deemed a retrospective approval (8 CCR 9792.9.4[b][2]). This situation might be considered an approval outside of the formal UR process, even though an RFA is submitted.

Prior authorization. Prior authorization is an alternate process within UR that allows an employer to authorize treatment without an RFA when the treating physician satisfies the conditions described in the UR plan for prior authorization. While the Labor Code does not discuss prior authorization in the context of workers' compensation treatment,[8] the regulations explicitly allow employers to approve treatment through prior authorization.[9] The employer must describe its prior authorization process in its UR plan.[10]

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[7] This case was not en banc and thus served as only persuasive authority, not binding precedent, and has since been circumscribed by Illinois Midwest Ins. Agency v. WCAB ("Rodriguez") (Nov. 2025), which held that an employer may require UR for ongoing care. The Illinois Midwest Ins. Agency case is currently pending before the California Supreme Court.

[8] The Labor Code does mention that in the context of workers with health care coverage for nonoccupational illness or injuries, the insurer may require prior authorization of any nonemergency treatment or diagnostic service and may conduct reasonably necessary UR (Cal. Lab. Code 4600[d][5].

[9] 8 CCR § 9792.6.1(aa): "'Utilization review process' means utilization management functions that prospectively, retrospectively, or concurrently review and approve, modify, or deny, based in whole or in part on medical necessity to cure or relieve, treatment recommendations by physicians, as defined in Labor Code section 3209.3, prior to, retrospectively, or concurrent with the provision of medical treatment services pursuant to Labor Code section 4600. The utilization review process begins when the completed request for authorization, or a request for authorization accepted as complete under section 9792.9.1(b), is first received by the claims administrator, or in the case of prior authorization, when the treating physician satisfies the conditions described in the utilization review plan for prior authorization."

[10] 8 CCR 9792.7(a): ". . . Each utilization review process shall be set forth in a utilization review plan which shall contain: . . . (5), A description of the claims administrator's practice, if applicable, of any prior authorization process,

Review of Utilization Review Plans

We conducted a review of publicly available UR plans to assess how common prior authorization programs are and to get a sense of which treatments are commonly covered by these plans. As indicated above, employers, claims administrators, or UROs are required to post their UR plans publicly on their website. Therefore, we searched the websites of the employers, claims administrators, and UROs that are currently on DIR's list of approved plans to find UR plans. For any given employer, claims administrator, or URO, we searched for the plan by searching for the name of the entity that had filed the plan with DIR (usually claims administrators). If the claims administrator itself did not post the plan, but the employer posted it, it still should show up in the search unless the plan was posted without any searchable text that includes the claims administrator's name. We did not attempt to determine which employers might use that claims administrator and manually search those employers' websites for links to the claims administrator's plan that might exist without searchable text.

Out of 48 approved plans on DIR's list, this search identified 15 plans on administrators' websites. We then conducted a review of these plans for discussion of prior authorization policies (see Appendix A for details on search terms). Thirteen of the 15 identified plans mentioned having a prior authorization program, and eight plans provided specific details about the terms or scope of the program. Some administrators only offer prior authorization to specific providers, while others do not specify who is eligible to use prior authorization—implying that it is available to all providers.

Five plans that we reviewed offered specific lists of the treatments covered under prior authorization. In general, treatments covered under prior authorization tend to be common, initial treatments that apply to a wide range of injuries and often are provided as an initial stage or early treatment (see Appendix Table B.1 for the full list of treatments and the number of plans covering them). PT (ranging from six to 40 visits), initial X-rays, low-cost DME, and specialty referral/consultations were listed in all five plans. Other common treatments included over-the-counter (OTC) medications such as nonsteroidal anti-inflammatory drugs (NSAIDs), non-narcotic pain medications, and muscle relaxants. Four plans also included short-term prescriptions for a predetermined list of opioids. Three plans only preapproved initial prescriptions, but two plans also approved follow-ups and refills for up to 90 days or six months, so long as they were consistent with the MTUS. Other common treatments included other diagnostic imaging (initial or post-op MRIs, electromyography (EMG), ultrasounds), pre-op laboratory testing, drug screening, and corticosteroid injections. A few plans even approved other treatments, including specified surgeries and hospital stays.

Importantly, many of these treatment types overlap with those covered under SB 1160. While it is unclear whether these treatments are subject to prior authorization in other UR plans, this

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including but not limited to, where authorization is provided without the submission of the request for authorization."

review suggests that many treatments affected by SB 1160 were already exempt from UR for certain claims administrators under preexisting policies. The current UR plans do not provide insight into how long these prior authorization policies have been in place, but prior authorization has been authorized since 2005 (8 CCR § 9792.7[a][5]).

Chapter 3. Data Sources and Methods

This chapter describes the data sources and methods used to evaluate the impact of SB 1160 on UR outcomes and medical treatment patterns during the first 30 days following a work-related injury. Our methodological approach followed two paths, according to the research objectives:

1. to examine trends in UR approval, modification and denial rates over the study period
2. to determine whether SB 1160 improves the quality of care and affects unnecessary delays in treatment.

Answering these questions requires integrating multiple data sources, because no single source captures the full picture of UR activity and treatment utilization in the California workers' compensation system. In this chapter, we describe our approach and data considerations for both sets of analyses.

The "Data Sources and Methodology for Utilization Review Outcomes (Objective 1)" section in this chapter describes the data and methods used to examine UR outcomes, including approval, modification, and denial rates. This analysis draws on three complementary data sources: individual-level RFA data obtained from two large claims administrators, statewide IMR data provided by DIR, and UR audit data compiled from auditor reports published on DIR's website. Together, these sources allow us to examine UR trends over time, across treatment types, and at different stages of the UR and appeals process.

The "Data Sources and Methodology for Medical Treatment (Objective 2)" section in this chapter describes the data and methods used to evaluate whether SB 1160 was associated with changes in the receipt of guideline-concordant medical care, drawing on WCIS medical billing data and clinical practice guidelines from ACOEM, which form the basis of the MTUS.

For each section, we describe the relevant data sources, key analytic decisions, and the empirical strategy used to assess the effects of SB 1160. Where possible, we construct outcome measures and methodologies in the same way across the two analyses in order to integrate the findings from both the UR process and medical treatment perspectives.

Data Sources and Methodology for Utilization Review Outcomes (Objective 1)

Data on Utilization Review Outcomes

We conducted a thorough review of possible data sources with information about UR approval, modification, and denial rates. This process involved a review of potential data sources, reports and multiple conversations with claims administrators, DIR staff, and independent workers' compensation research organizations to learn about where data on UR

decisions and activity are housed and what information is available. The main conclusion from this effort was that data held by employers or claims administrators are the best source for calculating approval, modification, and denial rates.

We determined that the WCIS would not be a suitable data source to analyze UR decision patterns for several reasons. First, we did not find any fields in the medical billing data or other parts of the WCIS with information about RFAs or UR outcomes. Second, prospective treatment requests that were denied likely would not result in treatment or generate a claim, so the WCIS would be an incomplete source of UR activity even if it contained information about UR outcomes. Similarly, our review of the Electronic Adjudication Management System did not identify any information related to UR approvals, modifications, or denials. One exception to this is there were a few fields related to IMR appeals. We subsequently had meetings with DIR regarding the IMR data, which is housed at DIR, and determined that the IMR data would be a better source and were feasible to incorporate into the analyses for this project. As a result, our review of UR outcomes incorporated several data sources, discussed below.

Utilization Review Data from Claims Administrators

To examine trends in UR approval and treatment patterns, RAND sought individual-level data on the outcome of RFAs from claims administrators in the state. We reached out to six large claims administrators through existing RAND and DIR networks to discuss UR systems and request RFA-level data for the study. Ultimately, we obtained individual-level RFA data on the outcome of RFAs from two large claims administrators that cover workers in both Northern and Southern California. Because of data confidentiality requirements, we do not reveal either the identities of the claims administrators who provided data or any information that could reveal their identities, such as overall volume of RFAs or covered sectors.

Despite the size and reach of these claims administrators, the trends in UR outcomes measured in these data are not representative of the entire California workers' compensation system. Furthermore, because participation was voluntary, it is possible that claims administrators who were willing to provide data are systematically different than others, perhaps with better-performing systems than other claims administrators. Notwithstanding these limitations, trends observed across two large claims administrators over a multi-year period spanning the implementation of SB 1160 provide a useful foundation for understanding how UR activity and treatment patterns have evolved in the acute phase of workers' compensation claims and offer a starting point for more-comprehensive data collection efforts in the future. We compare the trends from these data with other sources, including the URA audits and prior research, to put the results in broader context.

Both datasets include details on date of injury, the date the RFA was received by the claims administrator, the outcome of the RFA (approved, approved with modification, denied, or pending), the types of treatment requested, and the injury. Both datasets include all RFAs submitted to the claims administrator from 2017 to 2024. Importantly, however, both claims

administrators also had prior authorization programs for many treatment types. Treatments approved under these prior authorization programs are not included in the datasets because no RFAs were submitted. Therefore, while the datasets capture all UR activity from these claims administrators, they do not include all treatments approved by these claims administrators.

Classifying Treatment Requests and Injury Types

We standardized treatments into 14 groups across the two claims administrators. A treatment categorization system included in one claims administrator's data served as the foundation of our treatment categories, which we further refined. First, we combined some categories to align with those used in our WCIS claims analysis (described below) or broader groups of related treatments (e.g., we created an "imaging" category including MRIs, computed tomography [CT] scans and ultrasounds). Second, we created additional categories where UR is historically common or treatment requests are often heavily scrutinized (e.g., surgery). The second claims administrator provided treatment requests in the form of International Classification of Diseases, 10th Revision (ICD-10) procedure codes, which we mapped into these categories. We also categorized injury types by grouping text fields and ICD-10 codes to reflect five common injury types in workers' compensation: sprains and strains, fractures or tears, contusions, overuse injuries and pain, and multiple injuries. Appendix Table A.1 provides more detail on the final treatment and injury categorization.

The details of the treatment request in the RFA data do not consistently provide the same level of detail as in claims data, making it impossible for us to map all treatments neatly onto types of treatment that are and are not affected by SB 1160. Four categories cleanly cover treatments that would likely be covered by SB 1160: PT, X-rays, acupuncture, and immobilizers (typically low-cost DME such as braces, supports, and boots). These treatments are also the focus of the claims data analyses. Other categories are likely to be excluded from SB 1160, including non-X-ray imaging (MRIs, ultrasounds, CT scans), surgery, pharmacy, injections, other (non-immobilizer) DME, and psychiatry or psychology services. The remaining categories may include some treatments that are affected by SB 1160 and others that are not. We focus our analysis of trends in Chapter 4 on treatment categories that are most likely to include only treatments affected by SB 1160 but provide information on approval, modification, and denial rates for other categories as context.

Independent Medical Review Data

We also examine data from the IMR system, which covers the universe of UR decisions appealed to IMR. DIR provided a dataset including details on the date of injury, date of (initial) UR decision, date of the IMR decision, and IMR outcome (upheld or overturned), as well as the treatment request, the MTUS chapter that formed the basis of the decision, a clinical summary, geographic region, and details of the provider state where the provider is licensed and board certification specialty of provider. We restricted the dataset to IMRs with dates of injury

occurring during the study period, from 2017 to 2023. In total, this yielded 276,119 IMRs in the analytic dataset.

The IMR process and UR process are not the same, and the IMR data contain only a selected subset of cases where a party pursued IMR after an initial UR determination. Because no systemwide data are available on the total volume of RFAs or denials, the IMR data cannot be used to estimate the appeal rate among initially denied RFAs. Still, the data provide information about the composition of IMR requests, offering context for the study's primary findings about UR outcomes at earlier stages.

Utilization Review Audit Data

Claims administrators are subject to routine audits, and UR activity is reviewed as part of this process. At the time of the audit, claims adjusters submit information about their current UR plan and a list of all RFAs submitted during the three months prior to the audit. Auditors review a random selection of these RFAs and include the results in audit reports available on DIR's website.[11] The data in the reports are aggregated and do not provide many details about the date or nature of request, which means that we cannot use them to examine differences in UR rates during the first 30 days versus later in the claim or to compare UR rates between different types of treatments and injuries. However, the random selection of UR requests provides an unbiased estimate of overall approval, modification, and denial rates for each audited entity during the year covered by the audit. The audit data include RFAs with decisions and RFAs pending a decision. These data can be useful as a high-level benchmark and point of comparison with the other data with individual-level RFAs discussed above. DIR helped to provide archived information about the audit results so that we could examine approval and denial rates from 2017 to 2024. Over the study period, between 1,450 and 3,000 RFAs were audited every year.

Thus, while each dataset separately has strengths and weaknesses, together they provide insight into rates of UR approval, modification, and denial across the workers' compensation system (audit data); provide detailed understanding of variation in those rates across claims administrators, treatment types, and over time (data from claims administrators); and make possible a comparison with UR requests that were initially appealed (IMR data). We use all these sources to provide new information about the rates of approval, modification, and denial at various stages of the UR process.

Analysis

Our analytic approach aggregates UR approval, modification, and denial rates across data sources to compare annual trends from the UR audit data and the RFA data among the subset of RFAs in the RFA data (including those with pending outcomes).

[11] See DIR (2026) for more details.

Using the individual-level RFA data from the claims administrators, we also generate monthly rates of approval, modification, and denial. We generate these rates for RFAs overall, separately for RFAs occurring within 30 days of injury versus later in the claim, and separately by treatment type. These analyses are conducted in a restricted dataset of RFAs with a decision (excluding pending claims) and compare RFAs in the first 30 days to RFAs occurring later in the first year after the date of injury. RFAs occurring after the first year of injury are excluded from the analysis to ensure a consistent time window after the date of injury for all injury dates in our analysis.

After presenting overall monthly approval, modification, and denial rates, we present stratified rates for specific types of treatment. Each claims administrator tracks data on treatment slightly differently, but most categories are fairly broad (e.g., consultation, surgeries) and are likely to be comparable across claims administrators. Examining rates by these subgroups will provide further insight into differential patterns of UR outcomes for types of treatment that are likely and unlikely to be affected by SB 1160, before and after implementation in 2018. Finally, we examine the characteristics of decisions ending up in IMR, including the treatment requests and timing of the initial UR decision relative to the date of injury, to assess the extent to which RFAs ending up in UR could have been affected by the provisions in SB 1160. We will also present annual and monthly IMR volumes and rates of overturn, stratified by initial UR decision.

After examining descriptive trends in the data, we estimate interrupted time series (ITS) models and formally test whether the rates and trends of UR approval, modification, and denial are significantly different before and after SB 1160. (See Appendix A for further details on the model specification.)

Data Sources and Methodology for Medical Treatment (Objective 2)

Data Sources

To evaluate changes in the receipt of guideline-concordant care, we used WCIS data. The WCIS includes the first report of injury data, with information on characteristics of the injured worker and injury information as initially reported. The WCIS also has medical billing data, which includes more-detailed information on billed and paid procedures and accompanying diagnoses. Procedures were identified by the Healthcare Common Procedure Coding System (HCPCS), which includes Current Procedure Terminology (CPT) codes, and by ICD-10 procedure codes. We also used ICD-10 diagnosis codes to identify specific diagnoses for which guidelines either recommended or did not recommend procedures of interest.

Because the UR requirement changes in SB 1160 applied to DME in the first 30 days that is less than $250 total, per California's OMFS, we separately analyzed injured workers with DME below this threshold. California's OMFS for DME sets the maximum reimbursement at 120 percent of Medicare's DME fee schedule (8 CCR § 9789.60). Thus, to identify injured workers

with DME spending below the threshold, we merged WCIS claims by HCPCS code and modifier (where relevant) to the relevant quarter from Medicare's DME fee schedule, then multiplied the California rate by 1.2 (Centers for Medicare & Medicaid Services [CMS], 2024).

Guideline Inclusion Criteria

To determine whether there were changes in MTUS guideline-concordant care during the first 30 days following injury before and after SB 1160 went into effect, we first needed to select an appropriate set of clinical practice guidelines to include in our assessment. We sought to include guidelines that address the most common and/or costly injuries in the California workers' compensation system, involve treatments with reduced prospective UR requirements during the first 30 days under SB 1160, and involve treatments likely to be observed in claims.

We reviewed clinical practice guidelines developed by ACOEM, which form the basis of the MTUS (ACOEM, 2025; DIR, 2025).[12] In consultation with DIR and an occupational medicine physician on our team who practices in California, we identified guidelines that met the following criteria:

- **Are relevant to musculoskeletal injuries:** Prior research has demonstrated that musculoskeletal injuries are the most common and costly in workers' compensation (Mroz et al., 2014; Heins et al., 2013). To identify clinical practice guidelines for the treatment of musculoskeletal injuries, we searched guidelines with an ACOEM categorization of "Hip and Groin Disorders," "Cervical and Thoracic Spine Disorders," "Shoulder Disorders," "Elbow Disorders," "Hand, Wrist, and Forearm Disorders," "Low Back Disorders," "Knee Disorders," or "Ankle and Foot Disorders." We determined that all other ACOEM categories were unrelated to musculoskeletal conditions.
- **Have a "recommended" or "not recommended" designation:** Treatments covered by SB 1160 with an ACOEM designation of "recommended" for specified diagnoses would be exempt from prospective UR. Treatments with an ACOEM designation of "not recommended" for specified diagnoses would not be exempt from prospective UR. ACOEM guidelines may also have a "no recommendation" designation, which would also likely not be exempt from prospective UR. However, we chose to focus on those with "recommended" and "not recommended" designations because these two categories provide the clearest implications as to whether a treatment is exempt from prospective UR.
- **Are relevant to the types of treatment provided within the first 30 days after a work injury:** While ACOEM does not define specific time frames for each guideline, the acute phase of treatment generally refers to the time immediately after an injury occurs, so we included guidelines designated by ACOEM as "acute." The *subacute* phase of injury refers to the time following the acute phase. Time frames associated with the subacute phase also vary in the academic literature but may sometimes

[12] Login information, which the authors obtained for this study, is required to use the ACOEM guideline search and filtering functions (ACOEM, 2025). However, all relevant guideline text is publicly available in PDF format through the DIR website (DIR, 2025).

include time frames within 30 days following injury (Lindenhovius, Jupiter, and Ring, 2008; Knight, 2008), so we also reviewed guidelines designated by ACOEM as applying to the "subacute" phase. Ultimately, we did not identify any guidelines for our treatments of interest that were designated as applying to the subacute but not the acute phase. We also included those where no phase of treatment was specified, but the specific guideline text or supporting studies indicated that the guideline could apply to treatment within the first 30 days. Guidelines that applied to only "chronic" or "post-operative" phases of treatment were not included because these are generally not relevant to treatment within 30 days following injury. We also excluded guidelines that only focused on injury prevention.

- **Involved X-rays, PT, immobilizers, or acupuncture:** We focused on guidelines that involved one of these four treatment types because these are common treatments that can be observed in WCIS data within the first 30 days.
- **Were likely to generate a claim:** For example, guidelines that discussed ACE wraps as immobilizers were removed because these are often provided in a doctor's office or purchased OTC, typically not generating separate claims.

We used the online search function of ACOEM's recommendations (ACOEM, 2025) to identify guidelines meeting the above criteria. Specific search terms, following structured terms used by ACOEM, were selected in consultation with the occupational medicine physician on our team and are specified in Table 3.1. We used ACOEM's advanced search filters to filter by guidelines with "Recommended" or "Not Recommended" designations. We manually removed records that were not related to musculoskeletal disorders or that were only related to the chronic or post-operative phases, as defined above. Additionally, we reviewed each set of guidelines within the musculoskeletal condition categories listed above and within the "Diagnostic recommendations" and "Treatment recommendations" guideline categories to ensure that we did not miss any relevant guidelines.

Table 3.1. Guideline Search Terms

Treatment Type	Search Terms
X-ray	X-ray, x ray, radiograph, roentgenograms
Physical therapy	Physical therapy, PT, exercise, stretching, strengthening
Immobilizers	Immobilization, splint, cast, sling, support, brace, wrap
Acupuncture	Acupuncture

Guideline Abstraction

For each guideline, we abstracted information on the specific diagnosis (e.g., distal forearm fracture), applicable stages (e.g., acute), specific treatment (e.g., cast immobilization or external fixation), recommendation, level of evidence (according to ACOEM's rating system), level of confidence (as determined by ACOEM), and the recommendation summary, along with relevant details on indication or rationale. Our final list included 195 ACOEM guidelines, which are summarized in Appendix A, Table A.3. Some types of closely related specific treatments (e.g.,

PT and strengthening exercises) and some types of injuries with similar treatment pathways (e.g., metacarpal and phalangeal fractures) were combined for ease of analysis and interpretation, as specified in Tables A.4 and A.5.

Identification of Relevant Billing Codes

Each guideline included a set of diagnoses to which the treatment recommendation applies. For each included guideline, we identified an initial list of relevant diagnostic codes and procedure codes to identify the specific diagnoses and treatments, respectively, in the guidelines. We also identified procedure codes corresponding to MRI, which is a treatment that does *not* have reduced prospective UR requirements during the first 30 days under SB 1160, to serve as a comparator in our analysis.

A health services researcher with extensive experience working with workers' compensation medical billing codes developed the list of ICD-10 codes through reviews of the World Health Organization's comprehensive list of ICD-10 codes (World Health Organization, 2019); the CMS list of CPT and HCPCS, which cover procedure codes for most common procedures paid for by California workers' compensation insurers (CMS, 2026a); coding resources from the American Academy of Professional Coders (AAPC) (Codify by AAPC, 2026); and policy documents for specific California workers' compensation insurers. The list was reviewed by the occupational medicine physician on our team. The full lists of diagnosis codes and procedure codes used to operationalize each guideline are available in Tables A.2 and A.3, respectively. To ensure that we did not exclude any common, relevant codes, we also examined a list of the ten most common diagnosis codes and procedure codes for individuals without any of the listed diagnoses and procedures, respectively.

Hypotheses and Evaluation Strategy

We examined the rates of use of different categories of treatment and time until first use of those categories of treatment over time. We hypothesized (as summarized in Table 3.2) that, within the first 30 days of injury:

1. For treatments that *have reduced prospective UR requirements* and *are concordant with MTUS guidelines* given diagnoses observed in the claims data, there will be *increased use of treatment and decreased time to first treatment* following SB 1160. This would indicate that the policy improved timely access to quality care.
2. For treatments that *have reduced prospective UR requirements* but *are discordant with MTUS guidelines*, there will be no change in use of treatment or time to first treatment following SB 1160. We hypothesize no change because there is still a penalty for providers who are found to use guideline-discordant care in retrospective review. However, if increases in the use of discordant care occur following SB 1160, that could indicate that the policy does not sufficiently deter providers from bypassing prospective UR for non-recommended care.

3. For treatments that *do not have reduced prospective UR requirements*, regardless of whether the care is MTUS concordant, there will be no change in use of treatment or time to first treatment following SB 1160.

Table 3.2. Summary of Hypothesis Types

SB 1160 Reduced Prospective UR Requirements?	MTUS Concordant in Population?	Hypothesis
Yes	Concordant	H1: Increased treatment, decreased time to first treatment
Yes	Discordant	H2: No change in use of treatment or time to first treatment
No	N/A	H3: No change in use of treatment or time to first treatment

Specific populations, treatment outcomes, and corresponding hypothesis type are summarized in Table 3.3.

Table 3.3. Evaluations and Corresponding Hypotheses

Population	Treatment Outcomes in First 30 Days	Hypothesis
Dx for which immobilization is recommended in acute phase	Use of immobilizers <$250, time to receipt of first immobilizer <$250	H1
Dx for which PT is recommended in acute phase	Use of PT, time to receipt of first PT	H1
Dx for which X-ray is recommended in acute phase	Use of X-ray, time to receipt of first X-ray	H1
Dx for which immobilization is not recommended in acute phase (with no dx for which immobilization is recommended)	Use of immobilizers <$250, time to receipt of first immobilizer <$250	H2
Dx for which acupuncture is not recommended in acute phase (with no dx for which acupuncture is not recommended)	Use of acupuncture, time to first acupuncture treatment	H2
Dx for musculoskeletal conditions	Use of MRI, time to receipt of first MRI	H3

NOTE: Dx = diagnoses.
NOTE: Populations and treatments are defined in detail in Tables A.4 and A.5, respectively.

We note that there were no "not recommended" guidelines for PT or X-ray meeting our search criteria, so these treatments are only listed under the MTUS concordant care hypothesis (H1). While acupuncture was recommended in some guidelines applying only to the chronic stage of injury, it was rarely recommended in the acute stage of injury. Thus, we only analyzed rates of guideline-discordant care for acupuncture. Additionally, we note that we do not differentiate between guideline-concordant and guideline-discordant use of MRIs in our analysis because MRIs are excluded from the reduced prospective UR requirements in SB 1160. Instead of specific diagnoses, our population of interest is injured workers with any musculoskeletal diagnosis, defined as ICD-10 range M00–M99.

For each of the population and treatment outcome pairs specified in Table 3.3, we plotted the percentages of injured workers in that population (i.e., who had a claim with a relevant diagnosis) who received a corresponding treatment within the first 30 days by injury month from 2017 to 2023. While January 2024 was used to observe diagnoses and treatments from injured workers with an injury in December 2023, we did not include injuries from January 2024 in plots

because not all of these injured workers had a full 30 days of observation. We similarly plotted the time to treatment for each relevant treatment among those with a corresponding diagnosis who received the treatment.

We then conducted ITS analyses that tested for breaks in the trends of these outcomes before and after implementation of the UR provisions of SB 1160 on January 1, 2018 (see Appendix A for more details). We used logistic regression to test for changes in receipt of treatment within the first 30 days and ordinary least squares regression to test for time to receipt of first treatment among those who received the treatment.

We note that there was a slight seasonality to the percentages of injured workers who received treatment, with slightly higher percentages receiving treatment in earlier calendar months. Thus, we controlled for calendar month in our analyses. We also noted in the time-to-treatment analyses that there were longer times to first treatment beginning in April 2020, near the start of the COVID-19 public health emergency (PHE). Thus, we conducted sensitivity time-to-treatment analyses that dropped 2020 observations. We also included sensitivity analyses that excluded dates of injuries in December 2017 because the 30-day window for some injured workers included time both before and after SB 1160.

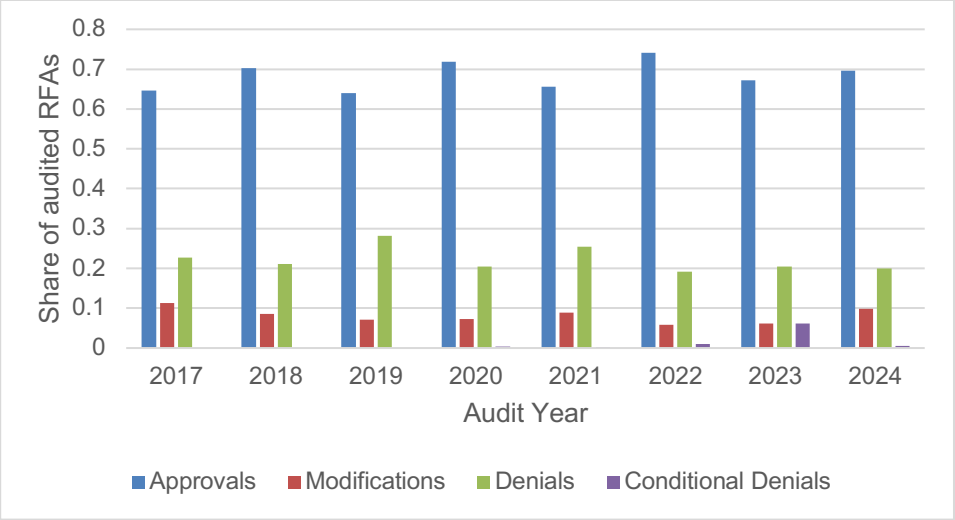
Chapter 4. Findings: Utilization Review Patterns and Approval Rates

This chapter presents findings on UR outcomes in California workers' compensation before and after the implementation of SB 1160. Drawing on the three complementary data sources described in Chapter 3—audit data from DIR, individual-level RFA data from two large claims administrators, and statewide IMR data—we examine trends in approval, modification, and denial rates across the study period from 2017 to 2024. Each data source offers a different vantage point on UR activity in the system, and together they allowed us to build a comprehensive picture of how UR outcomes have evolved over time and whether the provisions of SB 1160 appear to have meaningfully changed the way treatment requests are evaluated and decided during the critical first 30 days after a work-related injury.

Overall Utilization Review Outcome Trends

To establish a baseline, we first examine approval, modification, and denial rates from the audit data. While these data do not distinguish between approval rates by treatment request or time relative to date of injury, they do provide a representative picture of randomly selected RFAs from across claims administrators in the workers' compensation system, and they can provide a useful reference when analyzing data from the two UR claims administrators in subsequent figures. Figure 4.1 shows that, overall, approval rates ranged between approximately 65 and 74 percent over the study period. Among RFAs that were not approved, 6 to 11 percent were modified, while approximately 19 to 28 percent were denied. Other outcomes, including pending claims, make up a very small share (less than 1 percent) of all possible outcomes.

Figure 4.1. Utilization Review Outcomes in Audit Data

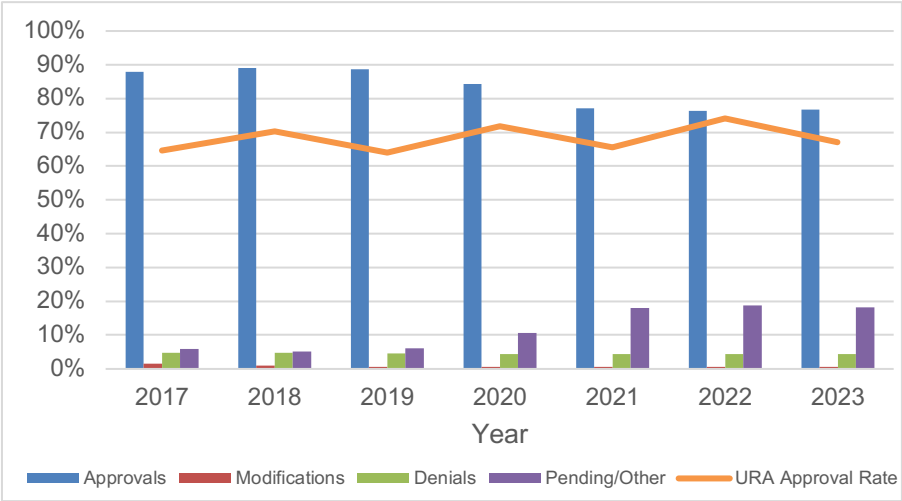


SOURCE: Contains data from DIR Audit and Enforcement Unit annual reports (DIR, 2026).
NOTE: This figure shows a subsample of RFAs from insurance companies, self-insured employers, and third-party administrators that were selected by DIR to be audited in a given year. Each bar represents the share of all audited RFAs with a given outcome.

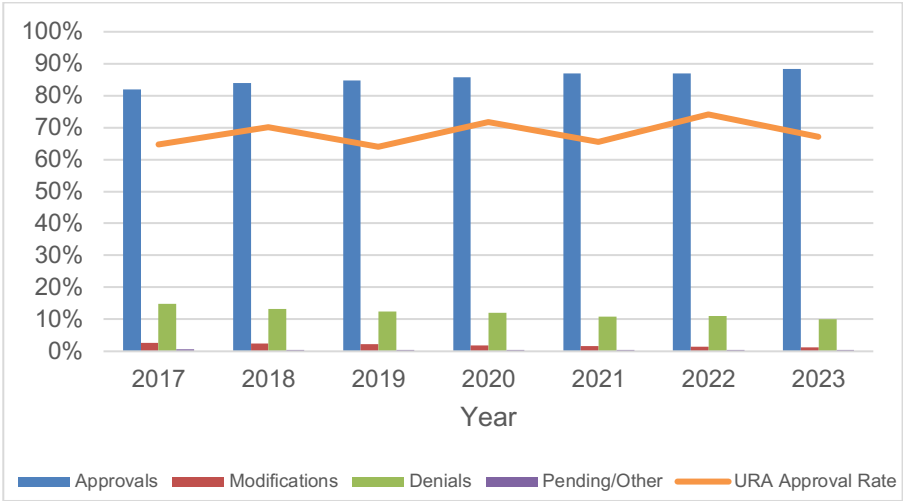
For context, we compared outcomes in the RFA data from claims administrators before any additional sample restrictions or stratifications by treatment timing or treatment type. Figure 4.2 shows overall approval, modification, and denial rates from the two claims administrators and overlays the approval rate from the audit data (which is the orange line shown in both panels). These figures show that overall approval rates from the claims administrators are slightly higher (ranging between 80 and 90 percent) than the random selection in the audits. In the sample from Claims Administrator A, the approval rates declined slightly in later years of the analysis because of an increase in the share of RFAs pending final decisions. It is worth noting that while the audit data of RFAs are randomly selected, not all claims administrators are audited every year, so each year includes only a subset of claims administrators from across the workers' compensation system. Additionally, we observe the audit year from audits, which may not always correspond to the year the RFA was submitted (which is what we observe in the data from claims administrators).

Figure 4.2. Overlaying Utilization Review Outcomes in Audit Data and Request for Authorization Data

Panel A. Claims Administrator A



Panel B. Claims Administrator B



SOURCE: Contains data provided by individual claims administrators and DIR Audit and Enforcement Unit annual reports (DIR, 2026).
NOTE: "Pending/Other" includes pending to submit to peer review, withdrawals, deferrals, and referrals, depending on claims administrator. Data from the two claims administrators are not restricted to 365 days after the date of injury, unlike elsewhere in this report, to better compare against the audit data. The "URA Approval Rate" represents a subsample of RFAs from insurance companies, self-insured employers, and third-party administrators that were selected by DIR to be audited in a given year.

Request for Authorization–Level Utilization Review Patterns

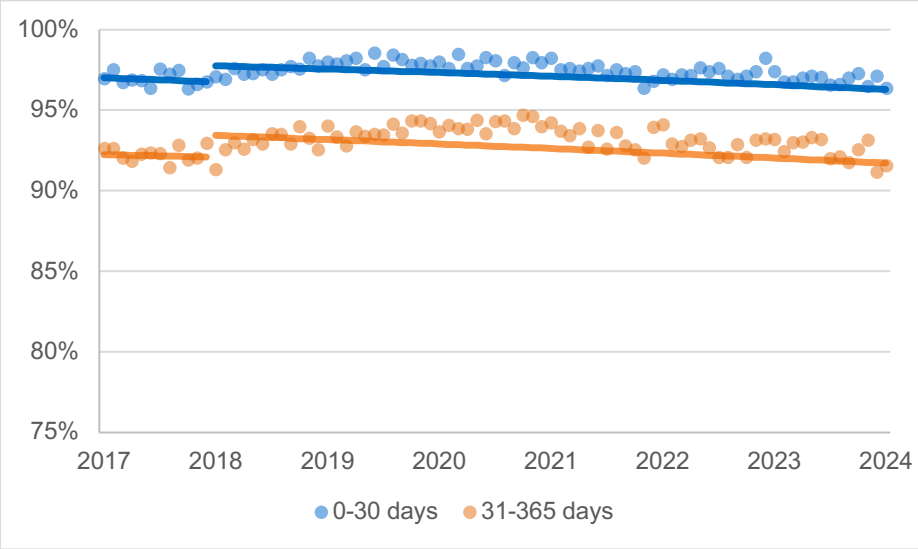
We present results from analysis of UR patterns in the RFA data, focusing on RFAs submitted within the first year of injury. Of course, SB 1160 only applies to treatment requests in

the first 30 days, but we also examined RFAs submitted during the remainder of the first year after injury (31–365 days) for comparison. After making this restriction to RFAs submitted in the first year of injury, we examined the distribution of the timing of requests within the first year. The share of all RFAs submitted in the first 30 days varied across the two datasets: 39 percent were submitted in the first 30 days from one claims administrator, and 16 percent were submitted in the first 30 days from the other claims administrator. Despite the variation between the two claims administrators, the majority of the UR activity occurs after the first 30 days.

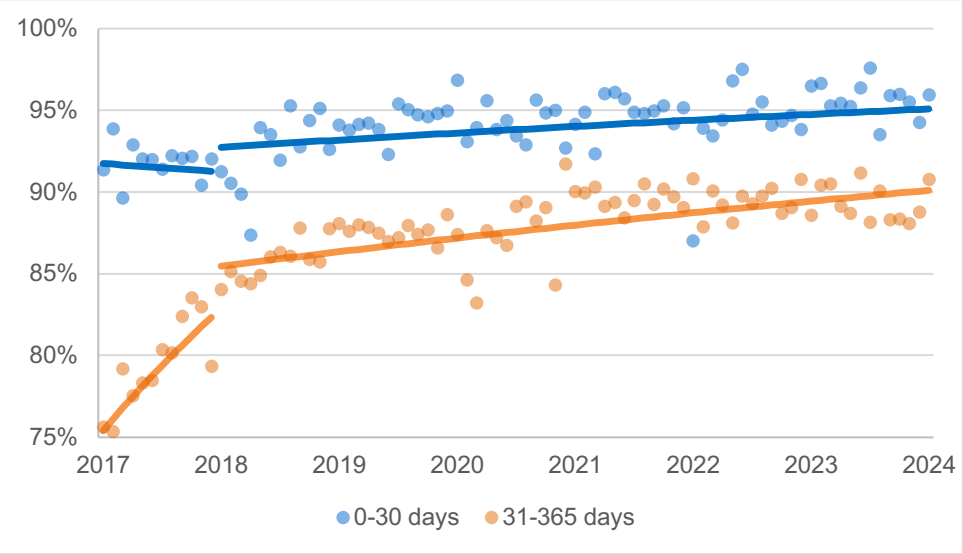
The blue plots in Figure 4.3 show monthly average approval rates in the first 30 days, and the orange plots show approval rates for RFAs submitted 31–365 days after injury. Across the two claims administrators, approval rates for RFAs submitted in the first 30 days are quite high, consistently exceeding 90 percent over the entire study period. In our ITS analysis, we found no significant difference in approval rates before and after implementation SB 1160 during the first 30 days (see Appendix Tables B.2 and B.3). Approval rates for RFAs submitted after the first 30 days are slightly lower: In Claims Administrator A, approval rates are approximately 4–5 percentage points lower, consistently, over the study period. Approval rates for RFAs 31–365 days after injury are approximately 15 percentage points lower at the beginning of the study period for Claims Administrator B but reach similar rates as for Claims Administrator A by later years (2021 and later).

Figure 4.3. Approval Rates Over Time Comparing First 30 Days to Later Dates

Panel A. Claims Administrator A



Panel B. Claims Administrator B



SOURCE: Contains data provided by individual claims administrators.
NOTE: Approval rate was calculated as the number of RFAs that were approved divided by the number of RFAs with a decision (approved, modified, or denied) in a given month. Analysis was restricted to RFAs submitted within the first year after the date of injury.

Appendix Tables B.4 and B.5 show that, consistent with the trend shown in Figure 4.3, there is a significant increase in approval rates over time for RFAs submitted between 31 and 365 days for Claims Administrator B, although the rate of increase levels off after the implementation of SB 1160. While SB 1160 provisions apply to RFAs during the first 30 days after injury, it is

possible that there could have been some spillovers to approval rates in later periods. One possible spillover could occur if providers shifted the timing of some RFAs that would have been submitted after 30 days to before 30 days. We would expect this to mostly affect RFAs submitted soon after the first 30 days. However, we analyzed this trend separately for subgroups (31–60 days, 61–180 days, 181–365 days) and saw similar patterns during the pre-period even in later periods unlikely to be affected by spillover claims. Another possibility is that removing prospective UR for RFAs during the first 30 days could have freed up resources for reviewers or providers to submit more complete RFAs after the policy was in effect. In this case, we might not expect to see the increasing trend prior to the policy implementation, because RFAs during the first 30 days were still required during this time. While we cannot rule out potential spillovers, the increasing trend during the pre-period could also reflect other changes in the composition of submitted RFAs or internal practices that we cannot measure in our analysis. This reflects a common limitation in many ITS analyses.

Utilization Review Activity and Approval Rates by Treatment Categories

Approval rates may also vary by treatment requests. Table 4.1 shows the distribution of treatment types included in the RFA databases provided by both claims administrators. PT and pharmacy were the most common treatment types requested. PT represented 24 to 39 percent of all treatment requests during the first 30 days, and pharmacy requests composed 15 to 26 percent of requests during the first 30 days. Other common requests during the first 30 days included imaging (10–13 percent) and consultations (10–11 percent). Together, these four categories compose over 70 percent of requests in the first 30 days from both claims administrators. These treatment requests also were common among RFAs submitted after the first 30 days, although the rates varied.

On the other hand, other early treatments (such as X-rays, immobilizers, and other injections) compose a very small share (less than 5 percent each) of treatment requests in both datasets during both the first 30 days and 31–365 days after injury. However, as shown below in Chapter 5, these treatments are very common during the first 30 days after injury. As mentioned above, both of the claims administrators that provided data have prior authorization programs that preclude these common treatments from UR. As we show in Chapter 5, these treatments commonly occur in the first 30 days but likely are not generating RFAs because of the prior authorization programs, which means that they would not be included in the UR datasets.

Table 4.1. Distribution of Treatment Request Categories, First 30 Days vs. Later in the Claim

	Claims Administrator A		Claims Administrator B	
	0–30 Days	31–365 Days	0–30 Days	31–365 Days
Physical therapy[a]	**39.0%**	**27.9%**	**23.9%**	**13.5%**
Pharmacy	15.0%	10.3%	26.4%	23.2%
Imaging	12.9%	15.4%	10.4%	8.4%
Consultation	11.2%	14.4%	9.7%	9.5%
Other	6.8%	9.4%	7.6%	14.7%
Surgery	3.2%	4.0%	3.2%	5.2%
DME (other)	3.2%	2.7%	5.3%	7.1%
Occupational therapy	2.6%	3.4%	2.0%	1.6%
Acupuncture[a]	**1.9%**	**6.6%**	**1.0%**	**3.1%**
Chiropractic	1.4%	2.8%	2.6%	2.7%
Psychiatry or psychology services	1.3%	0.7%	0.9%	1.9%
Immobilizers[a]	**0.7%**	**0.7%**	**2.2%**	**1.7%**
X-ray[a]	**0.6%**	**0.2%**	**3.7%**	**2.9%**
Injection	0.2%	1.5%	1.1%	4.5%

SOURCE: Contains data provided by individual claims administrators.
NOTE: Analysis was restricted to RFAs submitted within the first year after the date of injury.
[a] These rows indicate treatment categories that are most likely to be cleanly affected by SB 1160.

It is also worth noting that many of these treatment categories are explicitly excluded from the relaxed UR provisions under SB 1160. Labor Code Section 4610 excludes pharmaceuticals (not authorized by the formulary), non-emergency surgery (including pre- and post-surgical services), psychological treatment, imaging and radiology excluding treatment, and DME exceeding $250. Based on the distribution of treatment requests shown above, we estimate (by summing pharmacy, imaging, surgery, psychiatry and psychology services, and DME) that a minimum of 30–40 percent of treatment requests would not be affected by SB 1160 based on these exclusions.

We next examined approval, modification, and denial rates by treatment types. Table 4.2 presents approval rates before and after the implementation of SB 1160 for all treatment types, stratified to focus only on RFAs submitted in the first 30 days after injury. Both before and after SB 1160, the majority of treatment types have approval rates exceeding 90 percent for requests made in the first 30 days for both claims administrators. There are a few exceptions: Imaging approval rates were lower (ranging between 70 and 80 percent) from one claims administrator, and psychiatry and psychology services had lower approval rates prior to SB 1160 from the same claims administrator. Approval rates for injections were also lower (ranging between 77 and 89 percent) from both claims administrators. It is worth noting, however, that these categories of treatments with lower approval rates were all excluded from the SB 1160 provisions, so any

changes in approval rates for these categories reflect other dynamics in the workers' compensation system not attributable to SB 1160.

Table 4.2. Approval Rates for Requests in the First 30 Days by Treatment Request Category, Before and After Senate Bill 1160

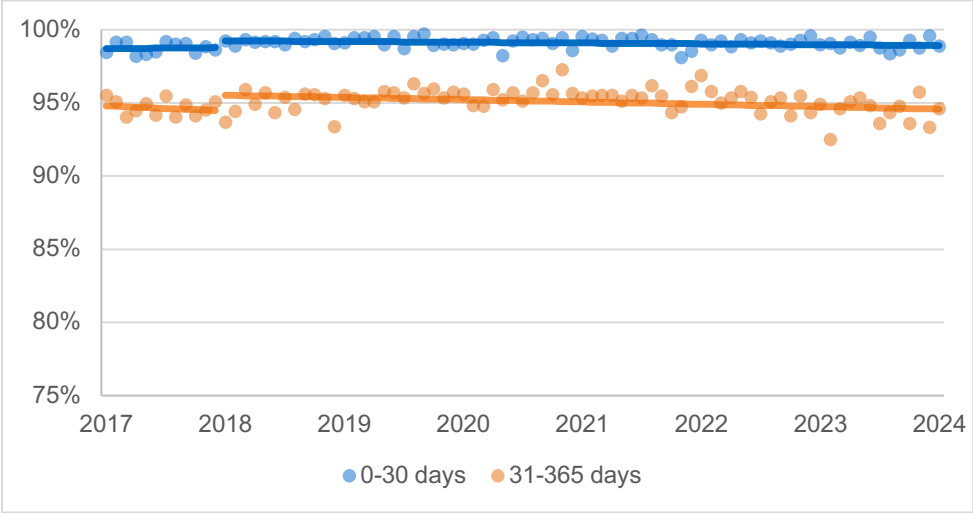
	Claims Administrator A		Claims Administrator B	
Treatment	**Pre–SB 1160**	**Post–SB 1160**	**Pre–SB 1160**	**Post–SB 1160**
Overall	96.9%	97.4%	91.8%	94.4%
By treatment type				
Physical therapy[a]	**98.7%**	**99.1%**	**98.6%**	**99.5%**
Pharmacy	91.1%	95.3%	91.9%	94.2%
Imaging	94.2%	96.4%	70.6%	79.5%
Consultation	97.7%	98.4%	97.4%	99.6%
Other	93.8%	94.3%	85.1%	91.4%
Surgery	96.3%	96.8%	94.9%	93.4%
DME (other)	93.9%	96.5%	89.4%	90.4%
Occupational therapy	98.3%	99.0%	93.2%	97.2%
Acupuncture[a]	**93.0%**	**94.9%**	**97.7%**	**98.4%**
Chiropractic	90.1%	96.7%	97.5%	99.5%
Psychiatry or psychology services	95.2%	93.5%	77.8%	93.3%
Immobilizers[a]	**97.8%**	**99.3%**	**97.1%**	**96.6%**
X-ray[a]	**100.0%**	**98.4%**	**96.5%**	**98.5%**
Injection	77.8%	85.1%	88.9%	88.5%

SOURCE: Contains data provided by individual claims administrators.
NOTE: Analysis was restricted to RFAs submitted within the first year after the date of injury.
[a] These rows indicate treatment categories that are most likely to be cleanly affected by SB 1160.

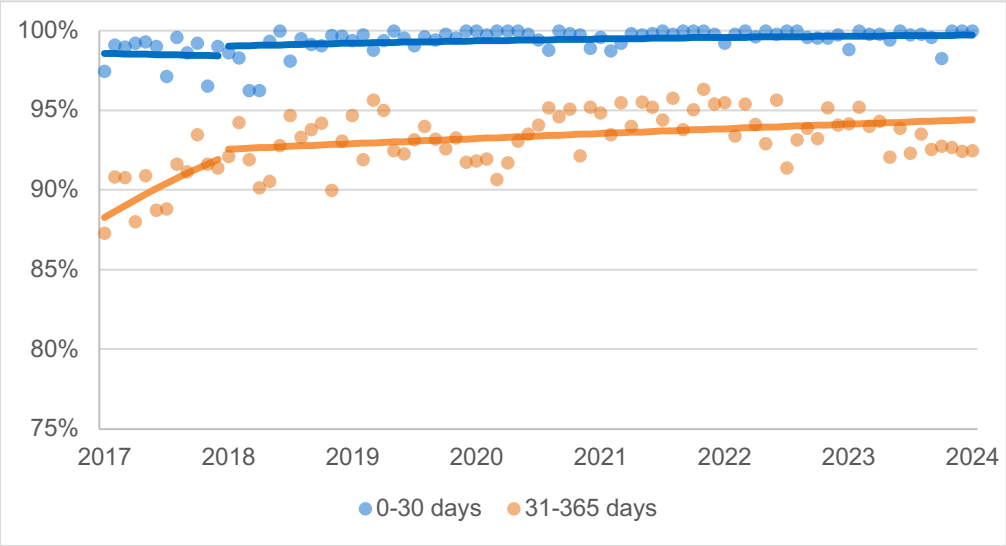
Approval rates for the four categories of treatment most likely to be affected by SB 1160 (PT, acupuncture, immobilizers, and X-rays) are shown in bold and indicated by a superscript letter. All of these approval rates are consistently high and show little change before and after implementation of SB 1160. Additionally, as shown in Table 4.1, immobilizers, acupuncture, and X-rays represent a very small share of all treatment requests during the first 30 days (ranging between the two claims administrators from 0.6 to 3.7 percent of all treatment requests). PT, on the other hand, was the most common request type. Therefore, we examine trends in monthly approval rates for PT requests in Figure 4.4. Consistent with the annual rates shown in Table 4.2 and the overall approval rates shown in Figure 4.3, approval rates for PT requests in the first 30 days of injury exceed 95 percent, consistently before and after the implementation of SB 1160. Using an ITS regression analysis, we tested whether the rate varied significantly before and after SB 1160 and, unsurprisingly, did not find evidence of a significant change in approval rates of PT requests. Approval rates for PT requests later in the first year after injury are slightly lower but still remain above 90 percent consistently over the study period.

Figure 4.4. Approval Rates Over Time for Physical Therapy (30 Days vs. Later)

Panel A. Claims Administrator A



Panel B. Claims Administrator B



SOURCE: Contains data provided by individual claims administrators.
NOTE: Approval rate was calculated as the number of RFAs that were approved divided by the number of RFAs with a decision (approved, modified, or denied) in a given month. Analysis was restricted to RFAs submitted within the first year after the date of injury.

Utilization Review Activity and Approval Rates by Injury Types

Table 4.3 shows the distribution of RFAs by injury type, separately during the first 30 days and later in the first year of the claim. Sprains and strains are the most common injury type, involved in 34–38 percent of requests in the first 30 days and 22–31 percent of requests during 31–365 days. Other common categories in the first 30 days include injuries related to overuse or

pain (13–16 percent), fractures or tears (13–15 percent), and contusions (8–9 percent). Together, these four categories are related to 70–80 percent of RFAs during the first 30 days after injury. Overuse injuries and pain and the other/unspecified category compose a larger share of requests during 31–365 days after injury.

Table 4.3. Distribution of Injury Types, First 30 Days vs. Later in the First Year

	Claims Administrator A		Claims Administrator B	
	0–30 Days	31–365 Days	0–30 Days	31–365 Days
Sprains and strains	37.6%	31.0%	33.6%	21.7%
Other	20.9%	23.9%	28.6%	40.7%
Overuse or pain	16.0%	19.9%	13.2%	22.9%
Fractures or tears	12.9%	13.3%	15.3%	11.3%
Contusions	8.1%	6.0%	9.2%	3.3%
Multiple	4.5%	5.9%	0.1%	0.1%

SOURCE: Contains data provided by individual claims administrators.
NOTE: Each cell represents the percentage of RFAs from that claims administrator and days category that were classified as a particular injury type. Columns sum to 100%. Analysis was restricted to RFAs submitted within the first year after the date of injury.

Table 4.4 shows approval rates by injury type in the first 30 days after injury versus later in the first year. Again, approval rates are consistently high for treatment requests during the first 30 days across all injury types, both before and after SB 1160. One exception is in the multiple injury category, which represents a very small share of injury types for Claims Administrator B and only approximately 5–6 percent of injury types for Claims Administrator A, which means that the average approval rate for requests during the first 30 days is more sensitive to small changes in the number of approvals and denials.

Table 4.4. Approval Rates for Requests in the First 30 Days by Injury Type, Before and After Senate Bill 1160

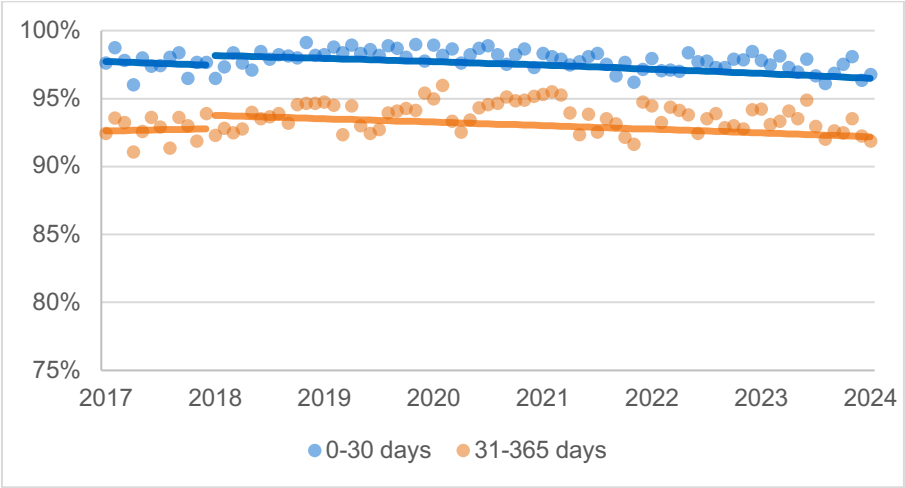
	Claims Administrator A		Claims Administrator B	
Injury Type	Pre–SB 1160	Post–SB 1160	Pre–SB 1160	Post–SB 1160
Overall	96.9%	97.4%	91.8%	94.4%
By injury type				
Sprains and strains	97.6%	97.8%	93.1%	94.7%
Other	93.8%	94.3%	85.1%	91.4%
Overuse or pain	95.6%	96.5%	90.0%	92.0%
Fractures or tears	97.0%	97.9%	92.6%	94.7%
Contusions	98.0%	97.6%	93.3%	95.6%
Multiple	95.9%	96.9%	33.3%	82.5%

SOURCE: Contains data provided by individual claims administrators.
NOTE: Each cell represents the RFA approval rate by claims administrator, injury type, and whether the injury occurred before or after SB 1160. Analysis was restricted to RFAs submitted within the first year after the date of injury.

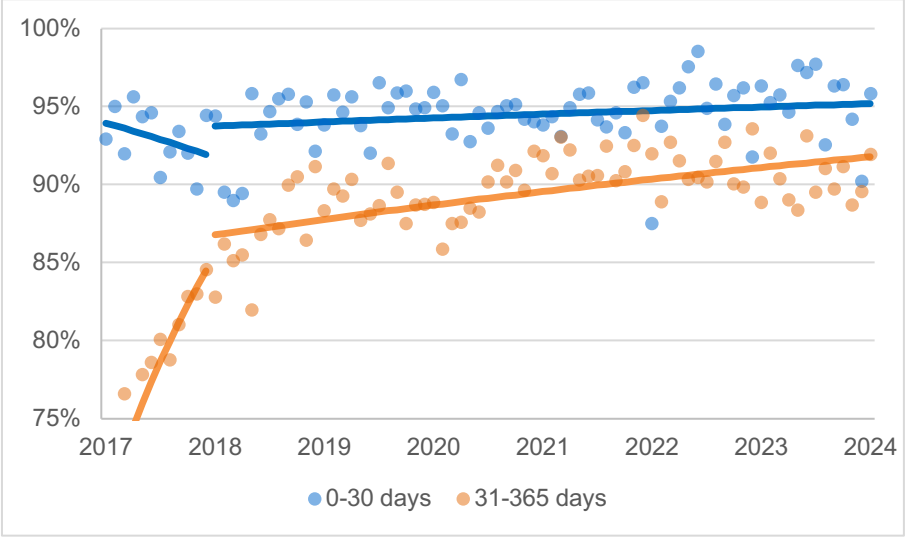
To get a closer look at trends by injury type, we examined monthly approval rates for the most common injury type (sprains and strains) over the study period. Figure 4.5 again shows that the trends for strains and sprains are very similar to the overall approval rates shown in Figure 4.3. We did not find significant changes in approval rates for sprains and strains after the implementation of SB 1160, except for Administrator B for the 31–365 days post-injury category (Appendix Tables B.4–B.7).

Figure 4.5. Approval Rates Over Time for Sprains and Strains (30 Days vs. Later)

Panel A. Claims Administrator A



Panel B. Claims Administrator B



SOURCE: Contains data provided by individual claims administrators.
NOTE: Approval rate was calculated as the number of RFAs that were approved divided by the number of RFAs with a decision (approved, modified, or denied) in a given month. Analysis was restricted to RFAs submitted within the first year after the date of injury.

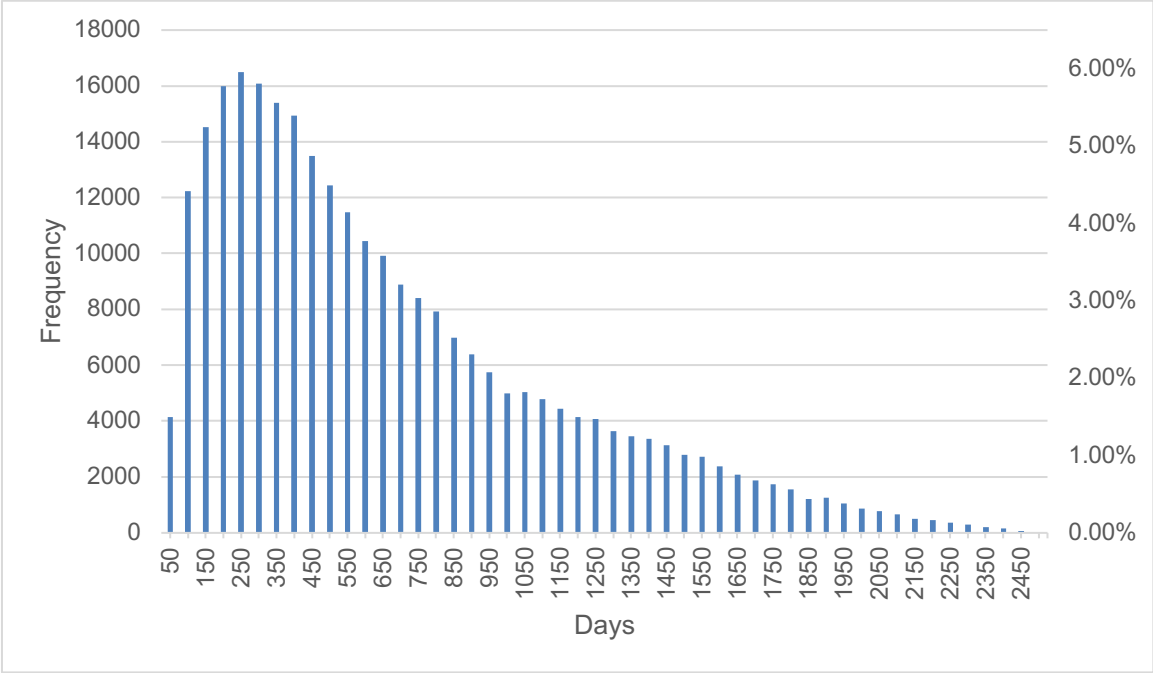
Independent Medical Review Patterns

Finally, we examine IMR outcomes of UR requests that reached the later stages of the process by resulting in an IMR during the study period. To assess how SB 1160 may have changed IMR activity, we first examine the distribution of time from date of injury to the date of the UR decision to assess what share of IMRs result from treatment requests that occurred during the first 30 days. While we did not observe the UR request date directly in the data, we can infer which cases could have resulted from requests in the first 30 days by subtracting the standard review times (i.e., five business days for a standard request, 15–20 days if more information is requested, or 30 days for a retrospective review; see Chapter 2) from the decision date. When adding on review times, in most cases, UR decisions on requests during the first 30 days should be made within 35 days if it is a standard request and no additional information is needed, within 45–50 days of the date of injury if additional information is required, or within 30 days for retrospective requests.

Figure 4.6 shows that between 2017 and 2024, approximately 4,100 requests, or 1.5 percent of the IMR caseload, had initial decisions within 50 days of the date of injury. On the other hand, 94 percent of the IMR caseload had initial UR decisions more than 100 days after the date of injury, suggesting that the majority of the IMR caseload likely resulted from treatment requests occurring much later in the claim.[13] We infer from this that likely only a small share of the IMR caseload relates to requests during the first 30 days, meaning that the provisions of SB 1160 likely had little impact on the composition or outcome of requests under appeal in IMR.

[13] However, it is worth noting that we cannot distinguish between decisions made long after the claim that resulted from requests submitted later and requests that were submitted earlier and took a long time to get a decision.

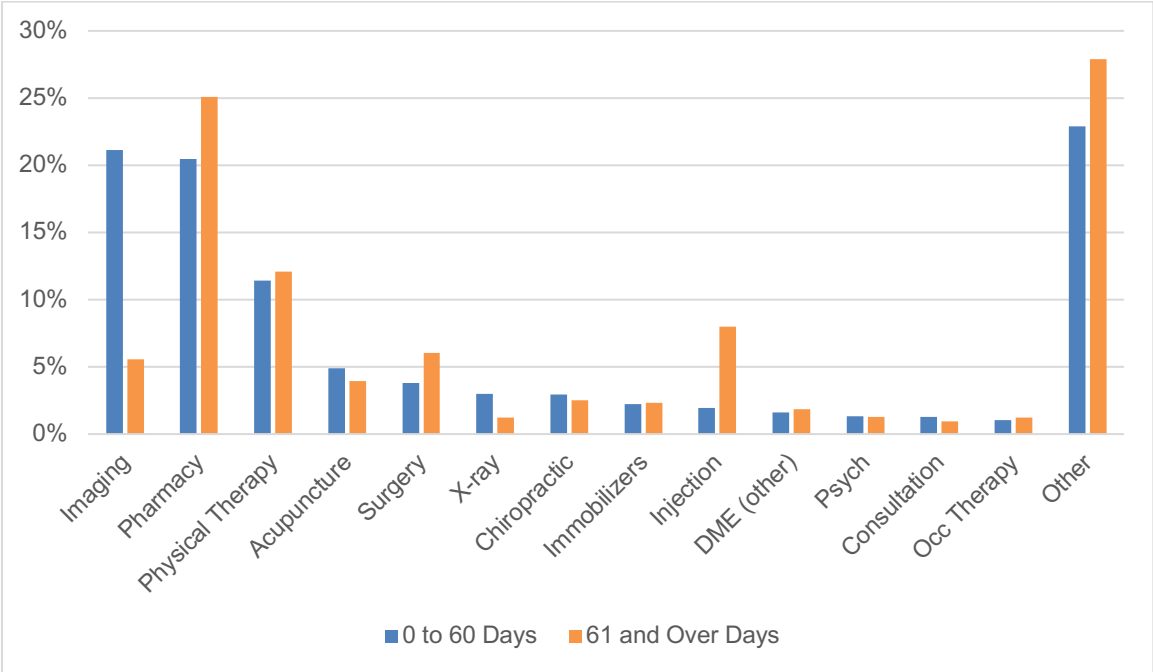
Figure 4.6. Distribution of Duration Between Date of Injury and Initial Utilization Review Decision



SOURCE: Contains data from DIR IMR database.
NOTE: The figures shows the frequency of number of days between injury and initial UR decision in the IMR data.

We also examined the distribution of treatment requests from IMR activity resulting from UR requests most likely have occurred during the first 30 days versus later in the claim. Figure 4.7 shows that among the specified categories, imaging is the most common treatment request ending up in IMR from requests occurring during the first 60 days (21 percent), followed closely by pharmacy (20 percent). These top two categories of treatment are both explicitly excluded from SB 1160. Other injuries are the largest share of any category (23 percent during the first 60 days and 28 percent after the first 60 days).

Figure 4.7. Distribution of Treatment Requests in Independent Medical Review, Comparing Those in the First 60 Days vs. Those After the First 60 Days



SOURCE: Contains data from DIR IMR database.
NOTE: In the IMR data, this figure compares treatment requests for which a UR decision was made within 60 days from the date of injury and requests for which the UR decision was made 61 days or more after the date of injury.

Discussion and Limitations

Our analysis of UR approval and denial rates yielded several key findings. Approval rates from the two claims administrators for which we had data were consistently high, typically exceeding 90 percent. The high approval rates persisted when examining patterns across several dimensions: timing of requests (during the first 30 days and later), across treatment types, and across injury types. We observed little change in approval rates for treatment requests during the first 30 days before and after the implementation of SB 1160, both overall in the system and when restricting to treatments likely to be affected by the law's provisions. The RFAs included in data from the claims administrators did not include treatments that were approved without generating an RFA via prior authorization programs. However, the datasets do reflect actual UR activity in the system, and any estimate of approval rates for a given type of treatment likely reflects a lower bound, because any treatment without a corresponding RFA was presumably approved.

We reiterate, however, that data were provided voluntarily by two claims administrators and may not be generalizable to the UR approval rates from all claims administrators. For example, approval rates in the audit data were lower (65–74 percent) than the data received from our two claims administrators. While the RFAs were randomly selected and multiple claims

administrators are represented in the audits, the small sample sizes and changing selection of claims administrators shown in the audits per year also present limitations in interpreting the trends. Therefore, the details of the RFA data, despite its limitations in generalizability, enable more careful and detailed analyses of patterns on subsets of RFAs likely to be affected by SB 1160 and enable comparisons with RFAs not affected by SB 1160, either due to the timing (submitted after the first 30 days) or the treatment type.

Finally, our examination of the IMR dataset (which was comprehensive, including all IMRs) revealed that a very small minority of requests that ultimately end up in IMR were initiated during the first 30 days after injury. Therefore, it is very unlikely that SB 1160 had any meaningful effect on the IMR timelines or approval rates because of the small share of requests affected.

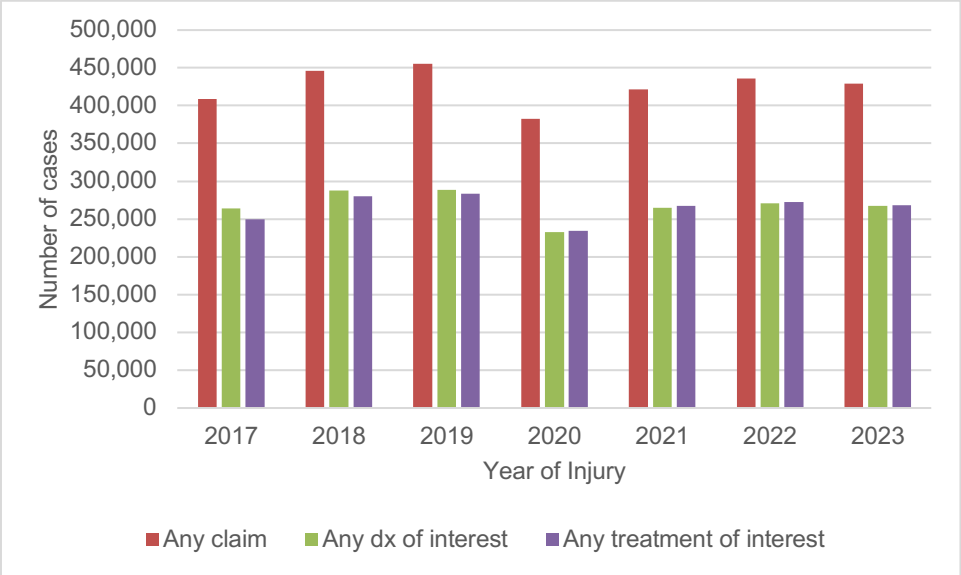
Chapter 5. Findings: Receipt and Timing of Treatment

To evaluate whether SB 1160 improved the quality of care and reduced unnecessary delays in treatment, we examined rates of MTUS guideline-concordant and guideline-discordant care in the first 30 days for specific diagnosis and treatment combinations. As a point of comparison, we examined use of MRI—a treatment not subject to reduced UR requirements—among injured workers with any musculoskeletal diagnosis within the first 30 days. We hypothesized that SB 1160 would increase rates of guideline-concordant care involving treatment types subjected to reduced UR requirements. We hypothesized that there would be no change in rates of guideline-discordant care or in treatment types not subject to reduced UR requirements (see the "Data Sources and Methodology for Medical Treatment (Objective 2)" section in Chapter 3 for detailed discussion of our hypotheses). Similarly, we examined time to first treatment for each treatment type among those who received treatment within the first 30 days following injury.

Scope of Treatment and Diagnoses Examined

As noted previously, we focused on a subset of common musculoskeletal diagnoses and treatment types that would allow us to examine the possible effects of SB 1160. Figure 5.1 shows the number of injured workers with any diagnosis or procedure of interest (defined in the "Data Sources and Methodology for Medical Treatment (Objective 2)" section in Chapter 3) within 30 days of injury date, compared with the total number of injured workers with any WCIS medical claim.

Figure 5.1. Injured Workers with Treatments and Diagnoses of Interest Within 30 Days of Injury

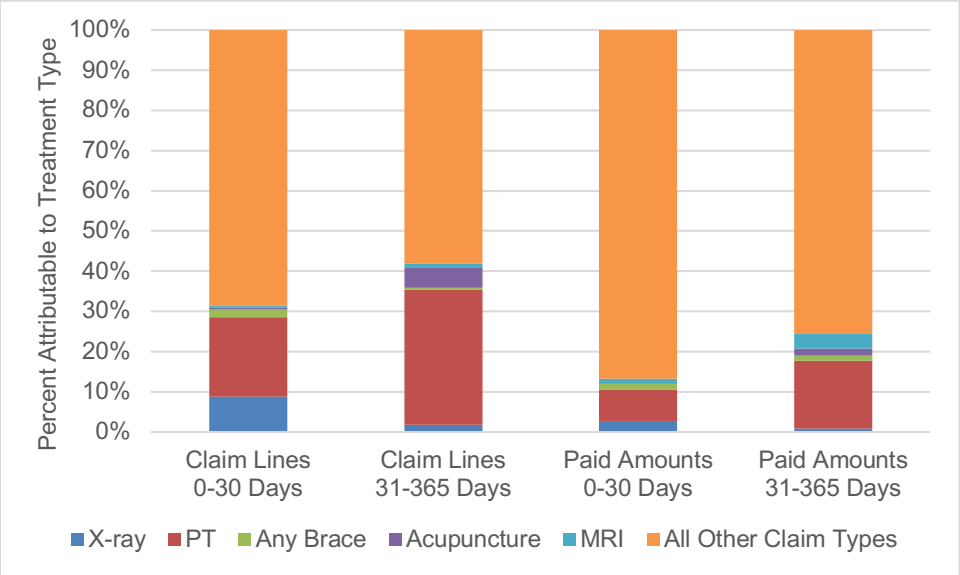


SOURCE: Authors' analysis of WCIS data, 2017–2024.
NOTE: *N* = 2,980,025 injured workers with at least one medical claim within 30 days of injury dates of January 1, 2017–December 31, 2023. Dx = diagnosis.

More than half of injured workers had a diagnosis of interest, and more than half had a procedure of interest, indicating that the majority of injured workers with a medical claim within 30 days of injury were included in at least one analysis. Injured workers with no musculoskeletal or related injury diagnoses were excluded from analyses. Common diagnoses among injured workers not in our analyses included infectious diseases (such as COVID-19) and exposure to potentially hazardous bodily fluids (e.g., needlesticks in a health care setting). Common procedures in the first 30 days of injury not included in our analyses were for various types of office visits (which are an initial care step for most occupational injuries and rarely have specific MTUS guidelines) and emergency department visits (which did not require prospective UR prior to SB 1160).

While most injured workers had a treatment of interest within 30 days of injury date, these services make up less than half of total claim lines and paid amounts both in the first 30 days and first year after injury. Figure 5.2 shows the relative contribution of each treatment type examined to total claim lines and total paid amount within the first year of injury. X-rays and PT, both of which have reduced prospective UR requirements under SB 1160, make up approximately 30 percent of claim lines in the first 30 days of injury but just 10 percent of total paid amounts in the first 30 days. Many expensive procedures, such as surgeries, are not eligible for reduced prospective UR under SB 1160 and would contribute to the "All Other Claim Types" category in Figure 5.2.

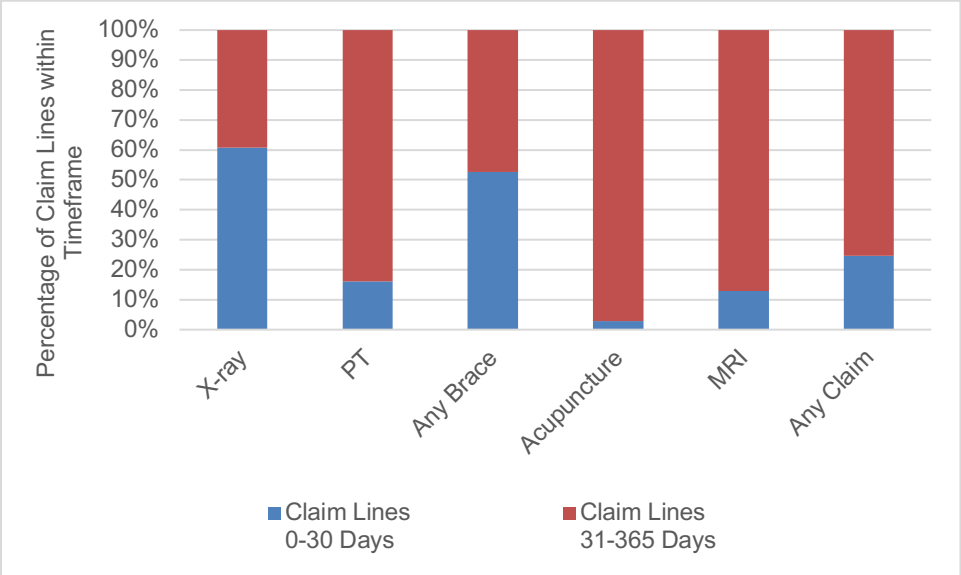
Figure 5.2. Relative Contribution of Treatment Types to Total Claim Lines and Payment Amounts



SOURCE: Authors' analysis of WCIS data, 2017–2023.
NOTE: *N* = 295,729,675 claim lines within one year of injury dates of January 1, 2017–December 31, 2022.

Figure 5.3 shows the percentage of claim lines for each procedure type with service dates within 30 days of injury and within 31–365 days of injury to provide additional context on the extent of SB 1160's potential impact. While most claim lines for some types of treatment, such as X-rays and braces or immobilizers, are observed within 30 days of injury, claim lines for other treatment types, such as PT and acupuncture, mostly occur after 30 days, limiting the potential impact of SB 1160. Although we looked at treatment within the first year of injury in these analyses, injuries can incur medical costs for several years. These injuries may require complex medical treatment and oversight, outside the scope of the present analyses.

Figure 5.3. Percentage of Claim Lines with Service Dates Within 30 Days by Treatment Type



SOURCE: Authors' analysis of WCIS data, 2017–2023.
NOTE: *N* = 295,729,675 claim lines within one year of injury dates of January 1, 2017–December 31, 2022.

Overall Rates of Treatment for Diagnoses and Treatments of Interest

The overall share of injured workers with a qualifying diagnosis who received each treatment type within the first 30 days is presented in Table 5.1. The average time to treatment among workers who received the treatment in the first 30 days is also shown in Table 5.1. In general, during the first 30 days, the share of workers who received a recommended treatment based on their diagnoses (H1, guideline-concordant) was higher than those who received a treatment that was not recommended based on their diagnoses (H2, guideline-discordant). For example, 62 percent of injured workers with diagnoses for which an X-ray was recommended received one during the first 30 days after injury. Forty-seven percent of injured workers who had injuries for which PT was recommended received it during the first 30 days, and 26 percent of injured workers with injuries for which a brace or other immobilizer was recommended received one during the first 30 days. By contrast, only 13 percent of those with injuries for which braces were *not* recommended received one during the first 30 days, and only 2 percent of injured workers with injuries for which acupuncture was not recommended received it during the first 30 days.

Table 5.1. Percentage of Injured Workers with Qualifying Diagnoses Receiving Different Treatment Types in First 30 Days

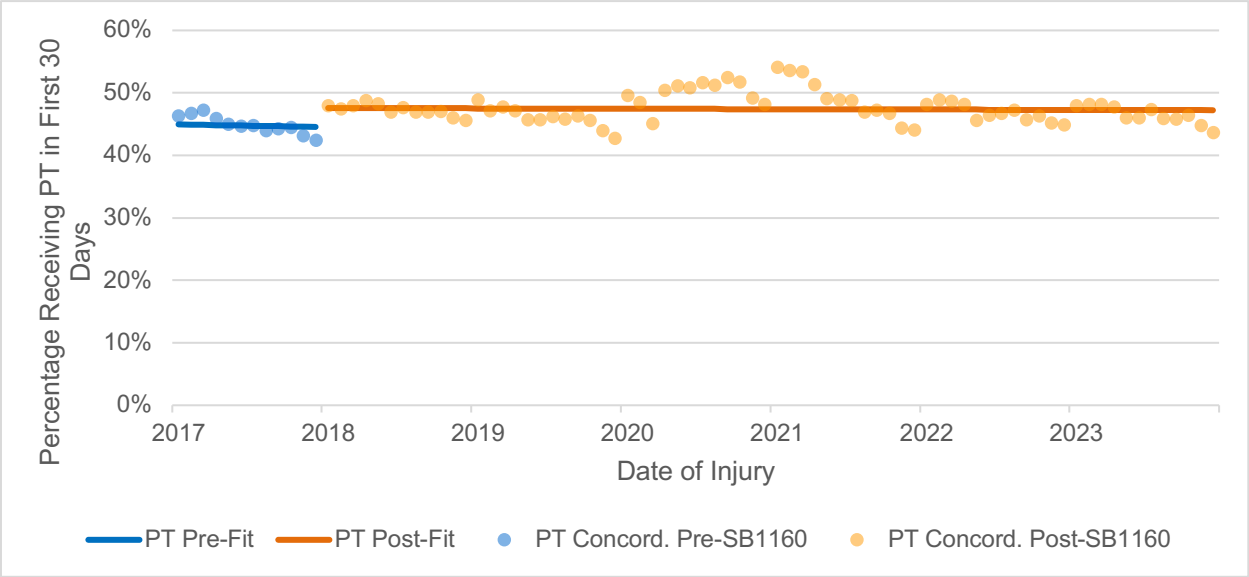
Treatment	*N*	Received Treatment in First 30 Days, *N* (%)	Time to First Treatment Among Those Receiving Treatment in First 30 Days, Mean (Standard Deviation)
H1: Concordant X-ray	1,670,212	1,036,310 (62.0%)	3.55 (6.0)
H1: Concordant PT	816,414	385,385 (47.2%)	12.12 (8.7)
H1: Concordant brace/immobilizer	272,498	70,519 (25.9%)	6.12 (7.8)
H2: Discordant brace/immobilizer	827,804	110,734 (13.4%)	4.54 (6.2)
H2: Discordant acupuncture	718,316	15,023 (2.1%)	19.14 (6.2)
H3: MRI	1,003,277	89,064 (8.9%)	16.66 (7.5)

SOURCE: Authors' analysis of WCIS data, January 1, 2017–December 30, 2024.
NOTE: In rows labeled H1, *N* is the number of injured workers with a diagnosis in the first 30 days for which the treatment is recommended. In rows labeled H2, *N* is the number of injured workers with a diagnosis in the first 30 days for which the treatment is not recommended. In rows labeled H3, *N* is the number of injured workers with any diagnosis for a musculoskeletal condition. All rows are restricted to those with injury dates of January 1, 2017–December 31, 2023.

Interrupted Time Series Results

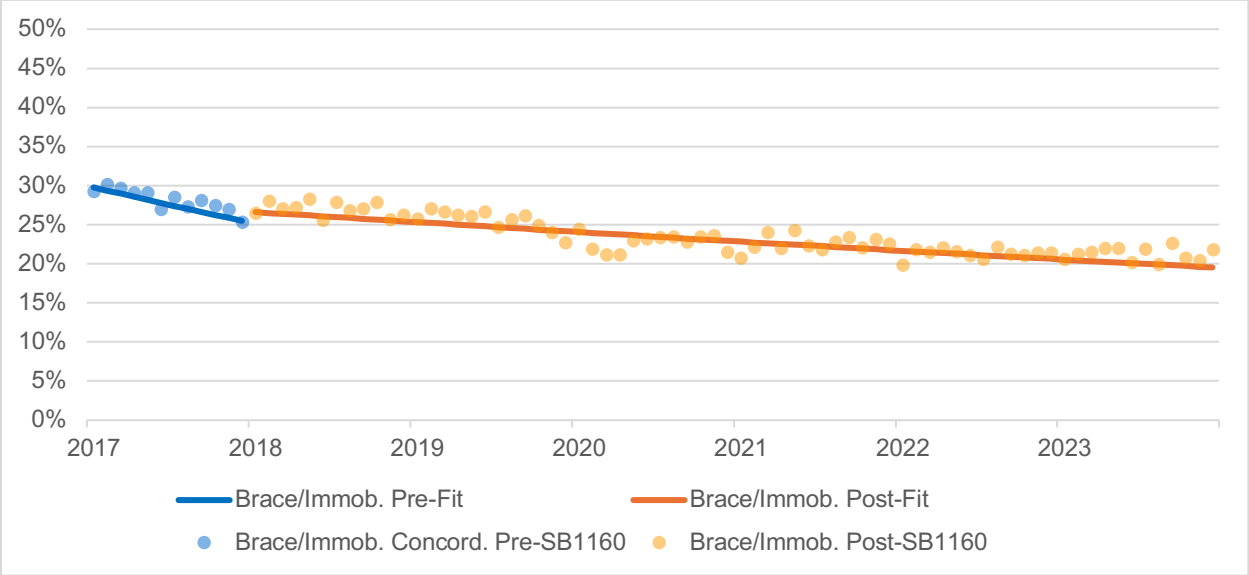
Next, we analyzed trends in receipt of treatment and time to first treatment for each of the selected treatments in our hypotheses. Overall treatment rates and time to treatment were mostly consistent before and after SB 1160; however, receipt of treatment did change by a small amount for a few treatments. In support of Hypothesis 1, receipt of guideline-concordant PT increased from an average of 45 percent for injuries prior to 2018 to 48 percent for injuries after SB 1160 implementation in 2018 (Figure 5.4). There was also a slight increase in the receipt of guideline-concordant braces and immobilizers after SB 1160 implementation, and this increase was statistically significant (Figure 5.5). We did not find any change in the rate of guideline-concordant X-rays before or after SB 1160. We also noted some small but statistically significant pre–SB 1160 and post–SB 1160 trends in receipt of guideline-concordant X-rays and guideline-concordant braces or immobilizers, which are summarized in Appendix Table B.8.

Figure 5.4. Receipt of Guideline-Concordant Physical Therapy, 2017–2023



SOURCE: Authors' analysis of WCIS data.
NOTE: *N* = 816,414 injured workers with a claim within 30 days of injury that includes a diagnosis for which PT is recommended. Points represent observed monthly percentages of workers with qualifying diagnosis who received PT within 30 days of injury. Fit lines represent predicted values with calendar month held constant at June for ease of interpretation.

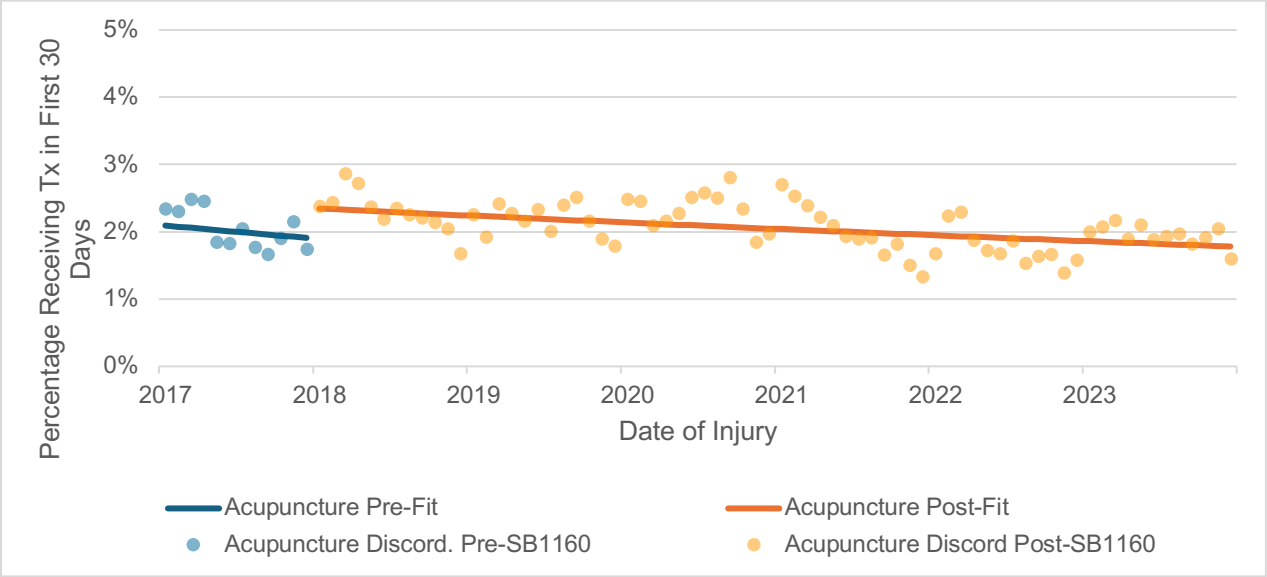
Figure 5.5. Receipt of Guideline-Concordant Braces and Immobilizers, 2017–2023



SOURCE: Authors' analysis of WCIS data.
NOTE: *N* = 272,498 injured workers with a claim within 30 days of injury that includes a diagnosis for which braces or immobilizers are recommended and had <$250 in DME as determined by the OMFS in the first 30 days. Points represent observed monthly percentages of workers with qualifying diagnosis who received brace or immobilizers within 30 days of injury. Fit lines represent predicted values with calendar month held constant at June for ease of interpretation.

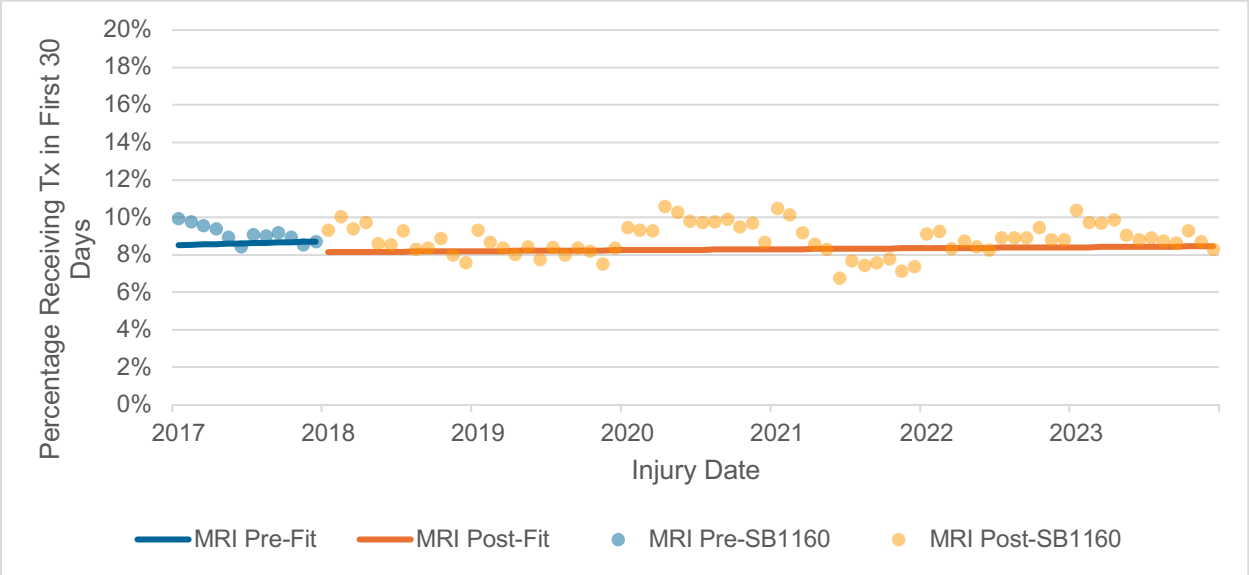
On the other hand, there were also some small changes in guideline-discordant treatments. Figure 5.6 shows there was a small but statistically significant increase in guideline-discordant acupuncture after SB 1160 implementation (from 2.0 to 2.1 percent). Interestingly, there was also a slight decline in receipt of MRIs during the first 30 days after injury, even though this treatment was exempt from SB 1160 (Figure 5.7). We did not find any significant change in the receipt of guideline-discordant braces or immobilizers.

Figure 5.6. Receipt of Guideline-Discordant Acupuncture, 2017–2023



SOURCE: Authors' analysis of WCIS data.
NOTE: *N* = 718,316 injured workers with a claim within 30 days of injury that includes a diagnosis for which acupuncture is not recommended and had no diagnosis for which it was recommended. Points represent observed monthly percentages of workers with qualifying diagnosis who received acupuncture within 30 days of injury. Fit lines represent predicted values with calendar month held constant at June for ease of interpretation.

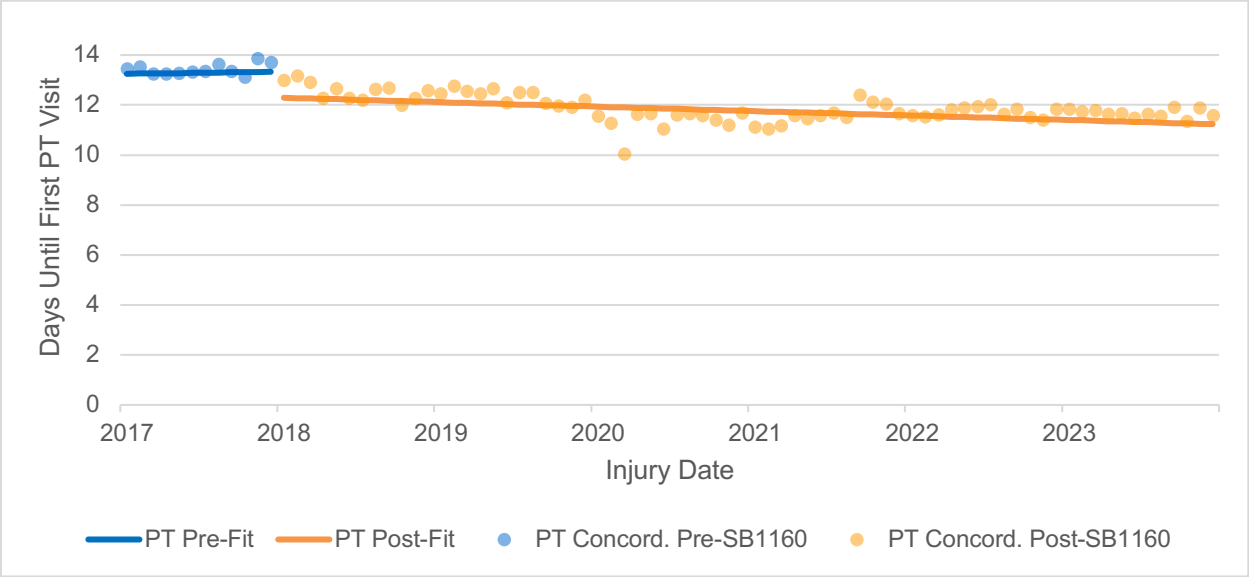
Figure 5.7. Receipt of MRI, 2017–2023



SOURCE: Authors' analysis of WCIS data.
NOTE: *N* = 1,003,277 injured workers with a claim within 30 days of injury that includes a diagnosis for a musculoskeletal condition. Points represent observed monthly percentages of workers with qualifying diagnosis who received MRI within 30 days of injury. Fit lines represent predicted values with calendar month held constant at June for ease of interpretation.

In most cases, time to first treatment did not change before and after SB 1160. However, Figure 5.8 shows that there was a reduction in the time to the first PT visit in the first 30 days, from an average of 13.4 days prior to SB 1160 to 11.9 days in the post–SB 1160 period. The full ITS results, including for pre– and post–SB 1160 trends, none of which were statistically significant, are presented in Appendix Table B.9.

Figure 5.8. Time to First Guideline-Concordant Physical Therapy, 2017–2023



SOURCE: Authors' analysis of WCIS data.
NOTE: *N* = 385,385 injured workers with a claim that includes a diagnosis for which PT is recommended and who received PT within 30 days of injury. Fit lines represent predicted values with calendar month held constant at June for ease of interpretation.

We conducted an ITS analysis to determine cases in which there were statistically significant changes in the early receipt of guideline-concordant care after the implementation of SB 1160. We found modest but statistically significant increases in the receipt of both some types of guideline-concordant and -discordant care following SB 1160. The odds of receiving PT in the first 30 days given a diagnosis for which it was indicated were 13 percent higher following SB 1160 relative to before SB 1160. Similarly, the odds of receiving guideline-concordant braces or immobilizers were 11 percent higher, and the odds of receiving guideline-discordant acupuncture were 24 percent higher. By contrast, the odds of receiving an MRI given a musculoskeletal diagnosis were 7 percent lower following SB 1160. Among injured workers who received a given treatment within the first 30 days of injury, only time to concordant PT experienced a reduction in time to first treatment. A summary of the ITS analyses are presented in Table 5.2.

Table 5.2. Interrupted Time Series Analysis Results

Treatment	Odds of Receiving Treatment Post–SB 1160 Relative to Pre–SB 1160 (95% CI)	Difference in Days to Receipt of Treatment Post–SB 1160 Relative to Pre–SB 1160 (95% CI)
H1: Concordant X-ray	0.980 (0.950, 1.011)	–0.03 (–0.11, 0.05)
H1: Concordant PT	**1.131 (1.076, 1.189)***	**–1.05 (–1.39, –0.71)***
H1: Concordant brace/immobilizer	**1.109 (1.068, 1.152)***	–0.28 (–0.61, 0.05)
H2: Discordant brace/immobilizer	1.089 (0.967, 1.227)	–0.01 (–0.21, 0.20)
H2: Discordant acupuncture	**1.244 (1.053, 1.469)***	–0.25 (–1.14, 0.65)
H3: MRI	**0.928 (0.880, 0.979)***	–0.34 (–0.87, 0.20)

SOURCE: Authors' analysis of WCIS data.
NOTE: CI = confidence interval. * = $p < 0.05$.

Sensitivity Analyses

We also tested whether our ITS analyses were robust to alternate specifications. In our analyses to test whether the percentage of injured workers receiving specific treatments changed following SB 1160, we tested dropping injured workers with injury dates in December 2017, because their 30-day treatment window partially included the post–SB 1160 period. We also tested versions of the ITS analysis examining changes in time to first treatment date that excluded observations after 2019, because time to treatment may have been impacted by the COVID-19 PHE. In general, our results were robust to these alternate specifications, summarized in Table B.10. The one exception was receipt of guideline-discordant braces or immobilizers, which showed a statistically significant increase after SB 1160 in sensitivity analyses.

Summary of Findings

We hypothesized that SB 1160 would increase the use of guideline-concordant care involving treatments subject to reduced UR requirements—an intended outcome of the legislation. Our analyses noted modest but statistically significant increases in receipt of two of three types of guideline-concordant treatment within the first 30 days following injury. The clearest trends were in receipt of guideline-concordant PT. Following SB 1160, injured workers with diagnoses for which PT was recommended had 13 percent higher odds of receiving PT. Among those who received guideline-concordant PT within the first 30 days, the time to their first session decreased by just over a day on average following SB 1160. Receipt of guideline-concordant braces and immobilizers in the first 30 days also increased, but there was no corresponding decrease in time to first treatment. There were no changes in the receipt of guideline-concordant X-rays. However, we note that rates of guideline concordant X-ray use were already high prior to SB 1160, and, as we learned through discussions with claims administrators and review of UR claims administrator policies, many claims administrators may have already had streamlined approvals for X-rays prior to SB 1160 through prior authorization programs, possibly leaving little room for improvement.

We hypothesized that there would be no change in receipt of guideline-discordant care following SB 1160. Contrary to this hypothesis, we observed a small but statistically significant increase in the receipt of guideline-discordant acupuncture—a possible unintended consequence of the legislation, because acupuncture is typically not recommended early in the course of treatment. However, we also note that there was no significant change in time to receipt of first acupuncture and that, even after SB 1160, rates of acupuncture in the first 30 days remained low, under 3 percent for the entire 2017–2023 period.

Finally, we note that, contrary to our hypothesis, there was a statistically significant decrease in the receipt of MRIs (a treatment not eligible for reduced UR requirements) following SB 1160. This result suggests that other ongoing trends in treatment or access may also contribute to the changes in treatment observed after SB 1160 implementation. As a limitation, we note that we only had one year of data prior to SB 1160 in which to observe baseline trends.

Chapter 6. Policy Recommendations

Standardize Claims Administrator Prior Authorization Exemptions

Our review of UR plans revealed that many plans include prior authorization processes in which the claims administrator indicates that certain types of treatment are preapproved and do not require UR. The variation in existence and scope of prior authorization processes implies that which treatments require UR and which may be preapproved varies across claims within the workers' compensation system, introducing differences and potential inequities in the process and experience of accessing treatment. For providers who see patients covered by different claims administrators, the differences in UR policies across claims administrators also introduce complexity and confusion.

In many cases, we were also unable to find claims administrators' UR plans publicly posted on their websites using standard search methods, despite the statutory requirement that these plans be posted publicly. It is therefore unclear how many claims administrators are in compliance with posting their UR plans and, among those, how many have existing prior authorization processes.

Among the publicly posted plans that we identified, the details of their prior authorization processes, if any, varied across claims administrators: Some UR plans only offer prior authorization for certain providers, while other UR plans offer it to all providers. The specific treatments eligible for prior authorization also varied across plans, although most covered routine treatments that often occur at the beginning of the claim (e.g., X-rays, consultations, initial PT, occupational therapy, or acupuncture visits; see Appendix Table B.1 for more details). While most UR plans we reviewed did include prior authorization processes, some explicitly indicated that there was not any such prior authorization, while others mentioned a prior authorization process but did not provide details.

Many of the treatments covered by SB 1160 may have also been covered under prior authorization processes already in place in UR plans, making them exempt from UR. This redundancy is likely an important factor in explaining why the results show little change in approval rates, treatment rates, or treatment timing after the implementation of the law. In some respects, SB 1160 brought greater alignment across claims administrators by eliminating the need for prospective review on certain treatments among claims administrators that did not have a prior authorization process, bringing their processes closer to the standard in place with claims administrators that did have such policies in place. However, some differences remain: For example, SB 1160 still permits a limited retrospective review for covered treatments, while prior authorization processes are often silent on what retrospective review, if any, may apply. Claims

administrators could also, and sometimes do, include other treatments in their prior authorization policies that are not covered by SB 1160, so some inconsistencies may remain.

A first step toward eliminating these inconsistencies would be to keep track of which UR plans have prior authorization processes in place and for which types of treatment. Documenting these patterns will shed light on areas where claims administrators are well aligned and treatments bear relatively little burden from UR (and thus potentially little impact of further reforms or legislation) and on areas where UR policies vary substantially across claims administrators and plans. Areas with variation in existing UR policies could be ripe for additional UR reform generally; or, more specifically, those areas could inform regulations related to prior authorization across claims administrators. It is worth noting that because prior authorization is optional, DIR may not always be apprised of changes in claims administrators' processes.

As part of DWC's current audit process (8 CCR § 9792.7[a]), DWC verifies that each URO has established a UR plan on file with the administrative director. However, there is no specific audit criterion to verify whether the UR plan is publicly available online, as is required by California Labor Code 4610. DWC could explicitly add this requirement to 8 CCR § 9792.7 and verify that the UR plan is publicly posted as part of URO audits. Additionally, the audit process is supposed to assess whether the UR plan includes all of the requirements described in 8 CCR § 9792.7, including describing prior authorization processes and when authorization is given without submitting an RFA (8 CCR § 9792.12). This regulation could be clarified to specifically require that UR plans include a description of the circumstances for which the prior authorization processes apply.

Other strategies for collecting UR plan data might be drawn from other systems with similar requirements, including Medicare Advantage (MA), in which CMS requires MA plans to submit annual data describing their UR plans. Each record in this data submission is a combination of a policy document (similar to a UR plan), a service name, the geographic applicability of the policy, and entities (e.g., UROs) that apply the UR standards (CMS, 2026b). Prior RAND research on alternative payment mechanisms in workers' compensation also explored the possibility of a centralized program that would exempt providers meeting defined performance standards from prospective UR and prior authorization requirements across all claims administrators (Quigley et al., 2023). While this approach would require a significant resource investment and cannot be accomplished without regulatory changes, it may offer relevant context for DIR as it evaluates options for standardizing UR exemption practices.

Explore Extending Utilization Review Reforms to Care Beyond 30 Days Post-Injury or to Other Treatment Types

Our analyses found only modest increases in some types of guideline-concordant treatment following SB 1160. In general, the types of treatments subject to reduced UR requirements are

narrow in part because the bill explicitly excludes many common treatments (e.g., imaging other than X-rays). We also found that the majority of UR activity and IMR cases relate to treatment occurring after the first 30 days and have higher denial rates, further limiting the potential impact of SB 1160 on UR. Finally, as noted above, many insurers already had automatic or streamlined approval processes for common procedures. By contrast, other categories, such as advanced imaging (MRI, CT, and ultrasound), were generally excluded from SB 1160's provisions but had higher denial rates. Therefore, reduced UR requirements may have had minimal impact on rates or time to approvals of several types of procedures.

To improve timely access to guideline-concordant care, reduced UR requirements could be expanded to other types of guideline-concordant treatment and to treatment beyond the 30-day window. For example, several other types of treatments, such as advanced imaging and post-surgical care, have specific MTUS recommendations. Reduced UR requirements could be considered for these types of care, provided that they are guideline-concordant. Similarly, many MTUS recommendations address care related to the chronic phase of injury, and treatments with these recommendations may be appropriate for reduced UR requirements beyond the 30-day window. For example, while ACOEM generally does not recommend acupuncture in the acute phase of injury, it does recommend it for some chronic pain conditions. Importantly, any changes to UR requirements for other types of treatment or treatment beyond the 30-day window would require legislative action.

Of course, higher denial rates do not necessarily reflect problems with UR but could also reflect UR working efficiently to screen out ineffective treatments that would not be medically necessary. Other policies, such as the drug formulary, already help to target specific types of treatment for faster approval rates. Therefore, expansions of relaxed UR requirements should be considered with care, or streamlined approvals could be extended incrementally (e.g., extending to three months or including the first diagnostic MRI). Several additional analyses could inform these decisions. For example, examining associations between care outcomes and UR for these other treatment types or treatment timelines could inform treatments that would be good candidates for reduced UR requirements. Further review of existing treatments approved under UR plans' prior authorization policies (Recommendation 6.1) could provide further insight into the types of treatment that are viewed as standard and necessary, regardless of whether they occur during the first 30 days or not.

Deepen Understanding of Utilization Review Pain Points

The most common critiques of UR are the increased administrative requirements for providers and administrators and the risk of potential delays or denials of needed treatment. Our analysis of SB 1160 shows that there was no change in treatment rates or time to treatment for the selected treatments we analyzed that were subject to the UR requirement changes during the first 30 days after injury. Analysis of the RFA datasets also indicated that approval rates are quite

high (exceeding 90 percent) during the first 30 days after injury, leaving little room for significant changes in approval rates after the implementation of SB 1160. While our analyses did not cover every possible treatment and claims administrator that was subject to the changes in UR requirements, together, the analyses suggest that standard treatments during the first 30 days after injury were broadly being received in a timely manner and were being approved by UR even before SB 1160, and there was little notable change in these patterns after implementation of the law. There could, however, have been other impacts of the law on administrative outcomes that were outside the scope of our analysis. Outstanding questions include the following:

- How were providers made aware of the changes under SB 1160?
- How did medical practices adapt their administrative processes to accommodate the potential retrospective review rather than prospective requirements?
- Do providers feel that these changes increased or decreased the administrative burden (e.g., time spent doing paperwork) associated with UR?
- Did the change affect providers' decisionmaking about care choices?

DIR should explore further research to understand the answers to these questions—not only with respect to the provisions in SB 1160 but also to understand the pain points in UR more systematically in order to target further policy action. Such research might take the form of qualitative interviews with a sample of providers, rather than data-gathering from all providers. Legislative action may be needed only if necessary to fund the study.

Strengthen Data Collection Requirements for Utilization Review

Our ability to understand the operation of UR in California workers' compensation was hampered by the lack of systemwide data on RFAs and UR decisions. DIR is currently developing a UR database format, another requirement mandated by SB 1160. When operational, this UR decision database covering all claims administrators and UROs will provide a clearer and more comprehensive picture of UR's role in the workers' compensation system. Our experience investigating UR in California and working with UR from several claims administrators may offer some lessons that could improve the development of this database.

DIR should balance considerations of important UR information to collect against the additional burden that this data collection may impose on claims administrators. A good starting point for identifying potential data fields is the RFA form, which already contains much of the information that would be helpful to capture in a UR database. For example, the RFA form includes direct employee and claim identifiers, information about the requesting physician, key information about the requested treatment (including dates of request, ICD-10 codes, and HCPCS codes), and information about the decision. Including identifying information for the claim and provider (such as jurisdiction claim number [JCN] or other claim identifiers enabling lookup of the JCN or, in the case of providers, National Provider Identifier [NPI]) would be

incredibly valuable to enable linkages to other databases (such as WCIS) to more directly examine the impact of UR processes on care outcomes. Standardized treatment information, such as use of ICD-10 and HCPCS codes, would also enable consistent recording of information across claims administrators.

Collection of this information would allow DIR or other analysts to answer currently unanswerable questions about the volume of RFAs (which could be informative about the administrative burden on providers), the impact of UR on timeliness or quality of medical care, and the frequency of denials or modifications. Claims administrators also vary in their internal UR processes: Some keep the entire UR process internal, and others work with external UROs at various parts of the process. However, all RFAs must start the process with the claims administrator with the RFA form, so this makes the claims administrator the right point of contact for collecting information consistently across the process.

What we learned in our analysis of UR data supplied by claims administrators, however, is that the information collected in the RFA form may not match what claims administrators track in their internal systems. Comparison of the data provided by two claims administrators showed that while much of the same information was tracked by both claims administrators, there was variation in the categories used to record essentially all information except key dates (date of injury, date of the UR request, and date of the UR decision). Claims administrators used different types of fields and code sets to describe both the medical condition and the requested treatment. Even descriptions of UR decisions were recorded with different terminology across the two claims administrators. With 48 active UR plans, standardization of information not contained in the RFA may be a challenge for claims administrators and UROs. Additionally, neither of the claims administrators reported justifications for any claim denials or modifications. It would be beneficial for future research to require reporting a clinical rationale and citing appropriate sections of the MTUS or other relevant treatment guidelines for any claim denial or modification.

Our work with claims administrators also showed that an unknown quantity of care may be approved or exempted from UR without submission of an RFA. To the extent that such care is actually provided and billed to workers' compensation, the bills should be captured in the WCIS; recording this care in a UR database might be seen as duplicative by claims administrators. As discussed above, an additional form of UR reporting that might be considered would be for DIR to request standardized data on UR exemptions. The lack of standardization in UR exemptions across claims administrators increases complexity in the system and likely adds to provider administrative burden.

As a point of comparison, we examined mandatory reporting of UR policies in the Medicare Advantage and Part D programs. CMS requires insurers in both programs to report aggregated statistics on the number of *organization determinations and reconsiderations* (which includes prior authorization) decided in each year. The reporting is at the *contract* level (an aggregation of plans offered by a single insurer), and there is no disaggregation by the medical condition,

service, or type of drug requested. This information is more than DIR currently collects and would provide an accurate accounting of the total volume of RFAs and rates of outcomes. However, this type of aggregated information would not allow analysis of variation in UR frequency and outcomes across injury types, groups of workers, types of providers, or types of services or drugs, and more extensive data collection (at the RFA level) would be preferable to address the current policy debate over UR in workers' compensation.

Chapter 7. Conclusions

This report examines the impact of SB 1160 on UR processes and medical treatment patterns in California workers' compensation. SB 1160, enacted in 2016 and effective for injuries on or after January 1, 2018, reduced prospective UR requirements for treatment requests made in the first 30 days after injury, with the stated goals of reducing administrative burden on providers and improving the timeliness and quality of care for injured workers. Drawing on audit data from DWC, RFA data from two large claims administrators, the statewide IMR database, and medical data from the WCIS, we analyzed UR outcomes and treatment patterns before and after the law's implementation to assess whether it achieved these goals.

Key Findings

Our analysis of UR approval and denial rates yielded a consistent finding: Approval rates for treatment requests in the first 30 days after injury were already high before SB 1160 and showed little measurable change after implementation of the law. Among the two claims administrators that provided individual-level RFA data, approval rates consistently exceeded 90 percent throughout the study period, with no statistically significant change after SB 1160. This pattern generally persisted across treatment types and injury categories, including the treatments most directly affected by the law—PT, acupuncture, immobilizers, and X-rays—which had approval rates above 95 percent in both the pre– and post–SB 1160 periods.

A key contextual factor that helps explain this finding is the widespread use of prior authorization programs by claims administrators. Our review of UR plans revealed that many claims administrators had already established programs exempting certain routine early treatments from prospective UR review, often covering the same categories of treatment targeted by SB 1160. The law may therefore have formalized or extended practices already common among administrators with prior authorization programs. While this brings some standardization of practices across claims administrators, some inconsistencies remain: SB 1160 still requires retrospective review for covered treatments, while treatments covered under a prior authorization plan would not require any retrospective review, meaning that some administrative burden remains even for treatments nominally exempt from prospective UR.

Our analysis of the IMR database found that the overwhelming majority of IMR cases (94 percent) involved UR decisions made more than 100 days after the date of injury, indicating that IMR activity is driven almost entirely by later-stage treatment disputes rather than by treatment requests occurring in the first-30-day window affected by SB 1160. The most common treatments among early-window IMR cases—imaging and pharmacy—are both explicitly excluded from SB 1160's provisions.

There were some small changes in receipt of medical treatments following SB 1160 implementation. We observed a 13 percent increase in the odds of receipt of guideline-concordant PT during the first 30 days after injury and reductions in the time to first guideline-concordant PT visit as compared with before SB 1160. There was also a small increase in the likelihood that injured workers received braces or other immobilizers when these treatments were guideline-concordant for their injuries. On the other hand, there were also small increases in the likelihood that injured workers received guideline-discordant acupuncture, although the overall rate of guideline-discordant acupuncture during the first 30 days was very low (approximately 2 percent). We also observed a small reduction in the rate of MRI receipt during the first 30 days, even though this treatment should not have been affected by SB 1160. While we did find breaks in the patterns of care, we caution against interpreting these results as causal, because these patterns were not assessed against a control group and may also reflect secular trends in treatment utilization, preexisting administrative streamlining by some claims administrators, or potential COVID-19-related disruptions in the later years of the study period.

Assessment of Senate Bill 1160's Impact on Intended Goals

The intended goal of SB 1160 was to reduce some of the administrative burden associated with UR and to improve injured workers' access to timely, quality care. Taken together, our findings suggest that while the implementation of SB 1160 is associated with some improvements in receipt of timely, guideline-concordant PT, the law to date has had limited measurable impact on the UR outcomes and small effects on other treatment patterns. The treatments that were at the focus of the law are generally straightforward and common treatments received early in the course of care, and, generally, these treatments were being received in a timely manner and approved (either via UR or prior authorization) even before implementation of SB 1160. However, some UR practices (including prior authorization, UR review, and approval processes) vary across claims administrators and remain opaque, because many administrators do not post their UR plans on their websites as required by the law. This variation in administrative practices across claims administrators could introduce complexities and confusion for providers who work across multiple claims administrators. In this context, SB 1160 may have served an important standardizing function by establishing a floor of reduced prospective UR requirements across administrators that lacked such policies, even if it produced little aggregate change in measurable outcomes.

It is also possible that the law had other effects on the administrative experiences of providers and claims administrators. The shift from prospective to retrospective review for affected treatments could have changed internal workflows, documentation practices, and the time that physicians and staff devote to UR-related tasks, and these potential impacts were not the focus of this study. Whether the law affected physicians' treatment decisions or perceptions

of administrative burden remains an open empirical question, and understanding these dynamics is important for evaluating both SB 1160 and future UR reforms.

The reduced UR requirements in SB 1160 only apply to care that is concordant with MTUS guidelines. However, in our review of guidelines, we found that many treatments had no associated recommendation. Where recommendations existed, they were frequently based on expert consensus as opposed to randomized controlled trials or observational studies. The lack of a strong evidence base for many treatment guidelines leads to increased subjectivity in treatment and UR decisions. This ambiguity may result in scenarios in which it is difficult to gain approval for potentially necessary treatment or, conversely, in which treatments with weak evidence base are approved. When a condition is not specifically addressed by MTUS, 8 CCR § 9792.21.1 specifies that the Official Disability Guidelines, other evidence-based medical treatment guidelines, and peer-reviewed studies should be consulted in sequence. Although alternatives to MTUS exist and may be used, gaps in MTUS's coverage may still limit the potential impact of SB 1160 if providers are unsure as to what types of care are guideline-concordant—a requirement for reduced prospective UR requirements.

Open Questions for Future Research

This study points to several areas where additional research and data collection would sharpen our understanding of UR policy in California workers' compensation. First, the most consequential challenges in UR appear to lie not in the first 30 days but later in the claim, where denial rates are higher, IMR activity is concentrated, and treatment types excluded from SB 1160's provisions show substantially lower approval rates. Examining whether streamlined UR frameworks could be extended to a longer post-acute window or targeted more precisely by treatment category warrants policy attention.

Second, the variation in prior authorization practices across claims administrators creates structural inconsistencies that may be more consequential for equity and administrative burden than the UR changes directly targeted by SB 1160. While prior authorization is optional and UROs do not always share updates of their processes with DIR, careful documentation of which treatments are covered under prior authorization, and under what conditions, would provide a foundation for aligning practices across the system.

Finally, the development of a comprehensive UR decision database by DIR represents an important opportunity to answer currently unanswerable questions about the volume, patterns, and outcomes of UR activity across the full workers' compensation system. Investments in this data infrastructure, paired with ongoing monitoring of treatment outcomes and quality of care, will be essential to evaluating future UR reforms and ensuring that California workers' compensation fulfills its core commitment to timely and appropriate medical care for injured workers.

Appendix A. Details on Criteria and Methodology

Search Process for Utilization Review Plans

We searched for UR plans from all entities listed by DWC as having UR plans on file as of January 2025. These may include employers, claims administrators, and UROs. We searched for each entity's website using all known names, particularly in cases of mergers, acquisitions, or those entities operating under a "Doing Business As" name. Once found, we searched the website for information about UR, a UR plan, or other relevant documents, including documents that described a prior authorization plan. When duplicate versions existed, we used the most recent version. We downloaded all identified UR plans and reviewed using specific search terms to extract relevant information about prior authorization plans. Search terms included "Fast" (for fast track), "passport", "prior auth*", and "pre-". If the search terms did not clarify whether prior authorization processes were allowed, we then conducted a manual review.

Interrupted Time Series Models

To assess whether there were breaks in trends for UR approval rates, receipt of treatment, or time to first treatment, we estimated ITS models of the following form:

$$y_t = \alpha + \beta Post1160_t + \lambda t + \delta t * Post1160_t + \varepsilon_t$$

where y_t is an outcome of interest (e.g., approval of UR request, receipt of a given treatment, or time to first treatment in the first 30 days after injury), *t* is the month-time index, and $Post1160_t$ is an indicator for events occurring after the implementation of SB 1160 in January 2018. The monthly time trend is also interacted with the indicator for post–SB 1160 to allow for different trends before and after implementation of the law. Essentially, this model uses the pre-period trend as a counterfactual that would reflect what the trend would be in the post-period. The models for treatment outcomes also included seasonal adjustment to account for unrelated, cyclical patterns in utilization. Binary outcomes were run with both linear probability models and logistic regression, yielding similar results. The logistic regression analysis is particularly important in analyzing trends for RFA approval rates, which are all close to the ceiling of 100 percent.

We ran models comparing the trend in the pre–SB 1160 period (2017) to the entire post–SB 1160 study period (January 2018–January 2024) and also ran supplementary models restricting the post–SB 1160 period to 2018 and 2019 to avoid conflating effects related to the COVID-19 pandemic with the effects of SB 1160. The results from these models are discussed in Chapters 4

and 5, and tables with the corresponding coefficients are shown in Appendix B. Models are estimated using individual worker or RFA level, with standard errors clustered at the month.

Injury and Treatment Categorization in Request for Authorization Data

Table A.1. Treatment Request Categories

Category Label	Included Text
X-ray	xray, x-ray, radiograph, roentgenogram
Physical therapy	physical therapy, pt, exercise, stretching, strengthening
Immobilizers	immobiliz* (e.g., immobilize, immobilization), splint, cast, sling, support, brace, wrap
Acupuncture	acupuncture
Imaging	mri, magnetic resonance imaging, ultrasound, ultra sound, ct scan
Pharmacy	pharmacy, medication, prescription, rx, prescribe, refill, mg, ml, topical, gel, patch
DME (other)	TENS (exact match, case-sensitive), dme, crutches, wheelchair, wheel chair, orthotics, scooter, walker, hospital bed
Consultation	*consult* (wildcard, case-insensitive match—e.g., consult, consultation, consultant)
Injection	*inject* (wildcard, case-insensitive match—e.g., inject, injection, injectable)
Psych	*psych* (wildcard—e.g., psych, psychology, psychiatric), *CBT* (exact case), cognitive behavioral therapy
Occupational therapy	occupational therapy, ot (“ot” followed by a space)
Surgery	surgery, replacement, hernia repair, pre-op, rotator cuff repair
Chiropractic	chiropractic
Other	All requests not matched by any of the above categories

NOTE: This table shows author categorization of text fields describing treatment requests. CBT = cognitive behavioral therapy; TENS = transcutaneous electrical nerve stimulation.

Table A.2. Injury Type Categories

Category Label	Included Text
Fractures or tears	rupture, fracture, crush, tear, dislocat* (e.g., dislocation, dislocated), lacerat* (e.g., laceration, lacerated), fx
Sprains and strains	sprain, strain, entrapment, epicond* (e.g., epicondylitis, epicondyle)
Overuse or pain	pain, arthritis, arthrosis, tendin* (e.g., tendinitis, tendinopathy, tendon), radicul* (e.g., radiculopathy, radiculitis), fasciitis
Contusions	contusion, bruis* (e.g., bruise, bruising, bruised)
Multiple	Assigned when text matches more than one of the above categories
Other	Assigned when text does not match any of the above strings

NOTE: This table shows author categorization of text fields describing injury types.

Mapping of Diagnoses and Treatments to Medical Treatment Utilization Schedule Guidelines

Table A.3. Summary of Guidelines

Diagnoses	Treatment(s)	MTUS Guideline
Achilles Bursitis or Tendinopathy; Charcot Arthropathy; Fracture, Ankle; Fracture, Calcaneus; Fracture, Forefoot (Sesamoid, Phalanges); Fracture, Metatarsal Bones; Fracture, Midfoot (Cuboid, Cuneiform, Navicular); Fracture, Talus; Fracture, Tibia or Fibula; Plantar Fasciitis; Sprains and Strains, Ankle; Fracture, Cervical Spine (Without Spinal Cord Injury); Sprains and Strains, Cervical Spine (Neck); Biceps Rupture; Biceps Tendinosis; Dislocation, Elbow; Elbow Fracture; Olecranon Bursitis; Compartment Syndrome; Crush Injury; Foreign Body; Fracture, Distal Forearm; Fracture, Distal Phalanx; Fracture, Metacarpal; Fracture, Phalangeal; Fracture, Scaphoid; Fracture, Tuft; Kienböck Disease; Lacerations (Hand, Wrist, and Forearm Disorders); Mallet Finger; Osteoarthrosis, Hand and Finger; Pain, Nonspecific (Hand, Wrist, or Forearm); Sprain, Wrist; Triangular Fibrocartilage Complex (TFCC) Tears; Fracture, Femoral Neck; Groin Pain, Adductor-Related; Groin Strain; Osteoarthrosis, Hip; Strains, Hamstring; Bursitis, Knee; Dislocation, Patella (Kneecap); Fracture, Patella; Meniscus Disorders, Knee; Osteoarthrosis, Knee; Pain, Knee; Patellar Tendinopathy; Patellofemoral Joint Syndrome; Sprains and Strains, Knee; Low Back Pain; Spondylolisthesis; Adhesive Capsulitis of Shoulder; Brachial Plexus Injury; Dislocation, Shoulder; Elbow Pain; Elbow Sprain; Fracture, Clavicular; Fracture, Shoulder; Instability, Shoulder; Labral Tear, Shoulder; Osteoarthrosis, Shoulder; Pain, Shoulder Neuropathic; Pain, Shoulder Nonspecific; Rotator Cuff Tendinopathy; Sprain, Acromioclavicular; Strain, Pectoral; Thoracic Outlet Syndrome	X-rays	Recommended

Diagnoses	Treatment(s)	MTUS Guideline
Achilles Bursitis or Tendinopathy; Achilles Tendon Rupture; Plantar Fasciitis; Neck Pain[a]; Thoracic Spine Pain[a]; Elbow Contusion; Elbow Fracture; Lateral Epicondylalgia; Medial Epicondylalgia; Fracture, Distal Forearm; Fracture, Scaphoid; Gluteus Medius Tear; Greater Trochanteric Pain Syndrome; Groin Pain, Adductor-Related; Groin Strain; Osteoarthrosis, Hip	Physical therapy; eccentric exercises; physical or occupational therapy; stretching, range of motion exercises; exercises, strengthening	Recommended
Achilles Tendon Rupture; Fracture, Ankle	Splints, braces, immobilizers, supports, boots (lower extremity)	Recommended
Biceps Rupture; Biceps Tendinosis; Elbow Dislocation; Elbow Fracture; Lateral Epicondylalgia; Medial Epicondylalgia; Olecranon Bursitis; Pronator Syndrome; Radial Nerve Entrapment (Elbow); Radial Tunnel Syndrome; Ulnar Nerve Entrapment (Elbow); Carpal Tunnel Syndrome; Crush Injury (Hand, Wrist, and Forearm); Compartment Syndrome (Hand, Wrist, and Forearm); Extensor Compartment Tenosynovitis; Flexor Tendon Entrapment; Fracture, Shoulder; Fracture, Distal Forearm; Fracture, Distal Phalanx; Fracture, Metacarpal; Fracture, Phalangeal (Hand, Wrist, and Forearm Disorders); Fracture, Scaphoid; Kienböck Disease; Mallet Finger; Osteoarthrosis, Hand and Finger; Sprain, Wrist; Triangular Fibrocartilage Complex (TFCC) Tears	Splints, slings, braces, immobilizers, supports (upper extremity)	Recommended
Lateral Epicondylalgia; Medial Epicondylalgia	Bands and straps (upper extremity)	Recommended
Fracture, Ankle	Casting (lower extremity)	Recommended
Elbow Fracture; Fracture, Distal Forearm; Fracture, Scaphoid	Casting (upper extremity)	Recommended
Sprains and Strains, Ankle (with no dx for which recommended)	Casting (lower extremity)	Not recommended
Rotator Cuff Tendinopathy; Pain, Shoulder Nonspecific; Osteoarthrosis, Shoulder (with no dx for which recommended)	Splints, slings, braces, immobilizers (upper extremity)	Not recommended
Neck Pain[a]; Thoracic Spine Pain[a]; Lower Back Pain[a]	Immobilizers (neck and back)	Not recommended
Carpal Tunnel; Neck Pain[a]; Thoracic Spine Pain[a]; Lower Back Pain[a]; Brachial Plexus Injury; Dislocation, Shoulder; Instability, Shoulder (without bicipital tendinopathy, for which acupuncture is recommended)	Acupuncture	Not recommended

SOURCE: Authors' abstraction of MTUS guidelines (DIR, 2025).
NOTE: DX = diagnosis.
[a] The MTUS guidelines for low back pain state: "More than 95% of patients have no identifiable cause for acute LBP [Low Back Pain]. . . . Some practitioners refer to these LBP patients as having incurred 'sprains' and/or 'strains'; however, these labels are not appropriate. A sprain is a disrupted ligament and a strain is a myotendious junction disruption. Both imply knowledge of the anatomic cause of LBP and a forceful mechanism of injury when the former is untrue for LBP patients and the latter may or may not be true. Use of those terms also confuses the proper use of those diagnoses elsewhere in the body, becomes problematic in determination of work-relatedness, and misdirects patients on the value of activity for early functional recovery. Low back 'strain' and 'sprain' are included in non-specific low back pain" (ACOEM, 2020, p. 16). We found common use of these sprain and strain diagnoses with no other musculoskeletal diagnoses and have classified them as non-specific low back pain for the purpose of these analyses.

Table A.4. Diagnosis Definitions

MTUS Dx Description	ICD-10 Dx Codes	ICD-10 Code Range Description
Achilles Tendon Rupture	M66.36X	Spontaneous rupture of flexor tendons, lower leg
Fracture, Ankle	S82.5X, S82.6X, S82.8X	Fracture of medial malleolus; fracture of lateral malleolus; other fractures of lower leg
Plantar Fasciitis	M72.2	Plantar fascial fibromatosis
Sprains and Strains, Ankle	S93.4X	Sprain of ankle
Tenosynovitis, Ankle	M65.07X, M65.17X, M65.87X, M65.97X	Abscess of tendon sheath, ankle and foot; other infective (teno)synovitis, ankle and foot; other synovitis and tenosynovitis, ankle and foot; unspecified synovitis and tenosynovitis, ankle and foot
Biceps Rupture	M66.82	Spontaneous rupture of other tendons, upper arm
Biceps Tendinosis	M75.2X	Bicipital tendinitis
Elbow Dislocation	S53.0X, S53.1X	Anterior subluxation and dislocation of radial head; subluxation and dislocation of ulnohumeral joint
Lateral Epicondylalgia	M77.1X	Lateral epicondylitis
Medial Epicondylalgia	M77.0X	Medial epicondylitis
Olecranon Bursitis	M70.2X	Olecranon bursitis
Pronator Syndrome; Radial Nerve Entrapment (Elbow); Radial Tunnel Syndrome; Ulnar Nerve Entrapment (Elbow)	G56.1X–G56.9X	Other lesions of median nerve; lesion of ulnar nerve; lesion of radial nerve; causalgia of upper limb; other specified mononeuropathies of upper limb; unspecified mononeuropathy of upper limb
Carpal Tunnel Syndrome	G56.0X	Carpal tunnel syndrome
Compartment Syndrome (Hand, Wrist, or Forearm)	M79.A1X, T79.A1X	Nontraumatic compartment syndrome of upper extremity; traumatic compartment syndrome of upper extremity
Crush Injury (Hand, Wrist, and Forearm Disorders)	S57.8X, S67.X	Crushing injury of elbow and forearm; crushing injury of wrist, hand, and fingers
Extensor Compartment Tenosynovitis	M65.84X	Other synovitis and tenosynovitis, hand
Flexor Tendon Entrapment	M65.3X	Trigger finger
Fracture, Distal Forearm; Elbow Fracture	S52.X	Fracture of forearm
Fracture, Distal Phalanx; Fracture, Metacarpal; Fracture, Phalangeal; Fracture, Tuft (Hand, Wrist, and Forearm Disorders)	S62.1X–S62.9X	Fracture of other and unspecified carpal bone(s); fracture of first metacarpal bone; fracture of other and unspecified metacarpal bone; fracture of thumb; fracture of other and unspecified finger(s); unspecified fracture of hand
Fracture, Scaphoid	S62.0X	Fracture of navicular [scaphoid] bone of wrist
Kienböck Disease	M93.1	Kienböck's disease of adults
Mallet Finger	M20.01X	Mallet finger
Osteoarthrosis, Hand and Finger	M19.04X, M19.14X, M19.24X	Primary osteoarthritis, hand; post-traumatic osteoarthritis, hand; secondary osteoarthritis, hand
Sprain, Wrist; Triangular Fibrocartilage Complex (TFCC) Tears	S63.5X, S63.8X	Other and unspecified sprain of wrist; sprain of other part of wrist and hand
Pain, Shoulder Nonspecific	M25.51X	Pain in shoulder
Rotator Cuff Tendinopathy	M75.1X, M75.8X, M75.9X	Rotator cuff tear or rupture; other shoulder lesions; shoulder lesion, unspecified
Fracture, Shoulder	S42.X	Fracture of shoulder and upper arm

MTUS Dx Description	ICD-10 Dx Codes	ICD-10 Code Range Description
Osteoarthrosis, Shoulder	M19.01X, M19.11X, M19.21X	Primary osteoarthritis, shoulder; post-traumatic osteoarthritis, shoulder; secondary osteoarthritis, shoulder
Achilles Bursitis or Tendinopathy	M76.6X	Achilles tendinitis
Charcot Arthropathy	A52.16	Charcôt's arthropathy
Elbow Contusion	S50.0X	Contusion of elbow
Gluteus Medius Tear	S76.01X	Strain of muscle, fascia, and tendon of hip
Greater Trochanteric Pain Syndrome	M70.6X	Trochanteric bursitis
Groin Pain, Adductor-Related; Groin Strain	S76.21X, K40X	Strain of adductor muscle, fascia, and tendon of thigh; inguinal hernia
Osteoarthrosis, Hip	M16X	Osteoarthritis of hip
Fracture, Calcaneus	S92.0X	Fracture of calcaneus
Fracture, Forefoot (Sesamoid, Phalanges); Fracture, Metatarsal Bones; Fracture, Midfoot (Cuboid, Cuneiform, Navicular); Fracture, Talus	S92.1X–S92.3X, S92.8X	Fracture of talus; fracture of other and unspecified tarsal bone(s); fracture of metatarsal bone(s); other fracture of foot, except ankle
Fracture, Cervical Spine (Without Spinal Cord Injury)	S12.X	Fracture of cervical vertebra and other parts of neck
Sprains and Strains, Cervical Spine (Neck)	S13.4X	Sprain of ligaments of cervical spine
Foreign Body (Hand, Wrist, and Forearm Disorders)	S50.85X, S60.35X, S60.45X, S60.55X, S60.85X	Superficial foreign body of forearm; superficial foreign body of thumb; superficial foreign body of other fingers; superficial foreign body of hand; superficial foreign body of wrist
Lacerations (Hand, Wrist, and Forearm Disorders)	S61.X	Open wound of wrist, hand, and fingers
Pain, Nonspecific (Hand, Wrist, or Forearm)	M79.63X, M79.64X, M25.53X	Pain in forearm; pain in hand and fingers; pain in wrist
Fracture, Femoral Neck	S72.0X	Fracture of head and neck of femur
Strains, Hamstring	S76.31X	Strain of muscle, fascia, and tendon of the posterior muscle group at thigh level
Bursitis, Knee	M70.4X, M70.5X	Prepatellar bursitis; other bursitis of the knee
Dislocation, Patella (Kneecap)	S83.0X	Subluxation and dislocation of patella
Fracture, Patella; Fracture, Tibia or Fibula	S82.0X, S82.1X, S82.2X, S82.3X, S82.4X	Fracture of patella; fracture of upper end of tibia; fracture of shaft of tibia; fracture of shaft of fibula
Meniscus Disorders, Knee	S83.2X, M23.0X–M23.3X	Tear of meniscus, current injury; cystic meniscus; derangement of meniscus due to old tear or injury; other meniscus derangements
Osteoarthrosis, Knee	M17.X	Osteoarthritis of knee
Pain, Knee	M25.56X	Pain in knee
Patellar Tendinopathy	M76.5X	Patellar tendinitis
Patellofemoral Joint Syndrome	M22.2X	Patellofemoral disorders
Sprains and Strains, Knee	S83.4X, S83.5X, S83.9X	Sprain of collateral ligament of knee; sprain of cruciate ligament of knee; sprain of other specified parts of knee; sprain of unspecified site of knee

MTUS Dx Description	ICD-10 Dx Codes	ICD-10 Code Range Description
Sprains and Strains, Back	S39.01X, S33.5X, S33.6X, S33.8X, S33.9X	Strain of muscle, fascia, and tendon of abdomen, lower back, and pelvis; sprain of ligaments of lumbar spine; sprain of sacroiliac joint; sprain of other parts of lumbar spine and pelvis; sprain of unspecified parts of lumbar spine and pelvis
Sprains and Strains, Neck	S16.1X	Strain of muscle, fascia, and tendon at neck level
Sprains and Strains, Thorax	S23.3X	Sprain of ligaments of thoracic spine
Spondylolisthesis	S43.1X	Spondylolisthesis
Adhesive Capsulitis of Shoulder	M75.0X	Adhesive capsulitis of shoulder
Brachial Plexus Injury	S14.3X	Injury of brachial plexus
Dislocation, Shoulder	S43.0X	Subluxation and dislocation of shoulder joint
Elbow Pain	M25.52X	Pain in elbow
Elbow Sprain	S53.4X	Sprain of elbow
Fracture, Clavicular	S42.0X	Fracture of clavicle
Instability, Shoulder	M25.21X, M24.31X	Flail joint, shoulder; other instability, shoulder
Labral Tear, Shoulder	S43.43X	Superior glenoid labrum lesion
Neck Pain; Back Pain	M54.X	Dorsalgia
Sprain, Acromioclavicular	S43.5X	Sprain of acromioclavicular joint
Strain, Pectoral	S29.011X	Strain of muscle and tendon of front wall of thorax
Thoracic Outlet Syndrome	G54.0	Brachial plexus disorders

SOURCE: Authors' review of CMS and AAPC coding resources.
NOTE: Diagnoses are provided as listed in the MTUS guideline. In some cases, the guideline category is in parentheses to provide more specificity (e.g., we specify the "Hand, Wrist, and Forearm Disorders" category with "Crush Injury"). Some diagnoses are combined if they share some ICD-10 codes and have the same recommended treatment in the MTUS guidelines we examined (e.g., Distal Phalanx, Metacarpal, Phalangeal, and Tuft fractures are combined). The X ICD-10 suffix indicates that all more-specific codes under the main code should be included.

Table A.5. Treatment Definitions

MTUS Treatment Description	Procedure Codes	CPT Code Range Description
Acupuncture	97810, 97811, 97813, 97814, 20560, 20561	Acupuncture
Braces, splints, immobilization, supports, boots (lower extremity)	L1810–L3214	Ankle, foot, knee, and other lower extremity orthotics
Splints (lower extremity)	29505–29515, Q4041, Q4042, Q4045, Q4046	Lower extremity application of splints, plaster and fiberglass splint supplies
Casts, casting (lower extremity)	29305–29450, Q4029, Q4030, Q4033, Q4034, Q4037, Q4038	Lower extremity application of casts, plaster and fiberglass lower extremity cast supplies
Casts, casting (upper extremity)	29000–29086, Q4003–Q4024	Body and upper extremity application of casts, plaster and fiberglass upper extremity cast supplies
Bands and straps (upper extremity)	29240, 29260, 29280	Upper extremity application of strapping
Splints, slings, braces, immobilizers (upper extremity)	L3650–L3999	Shoulder, elbow, wrist, hand, finger, and other upper extremity orthotics
Immobilizers (neck and back)	L0112–L0720, L1200–L1290	Cervical orthotics, cervical orthotics multi-post collar, thoracic rib belts, thoracic-lumbar-sacral orthotics, sacral orthotics, lumbar orthotics, lumbar-sacral orthotics, lumbar orthotics sagittal control, lumbar-sacral orthotics sagittal control, cervical-thoracic-lumbar-sacral orthotics, low-profile additions, thoracic-lumbar-sacral orthotics
PT	95851, 95852, 97039, 97110, 97112, 97113, 97116, 97140, 97150, 97161, 97162, 97163, 97164, 97165, 97166, 97167, 97168, 97530	Range of motion measurements; PT treatment; therapeutic exercises; neuromuscular reeducation; aquatic therapy/exercises; gait training therapy; manual therapy; group therapeutic procedures; PT eval low complex 20 min; PT eval mod complex 30 min; PT eval high complex 45 min; PT re-eval est plan care; OT eval low complex 30 min; OT eval mod complex 45 min; OT eval high complex 60 min; OT re-eval est plan care; therapeutic activities

MTUS Treatment Description	Procedure Codes	CPT Code Range Description
X-ray	BX0X[a], 70100, 70110, 70120, 70130, 70134, 70140, 70150, 70160, 70190, 70200, 70210, 70220, 70240, 70250, 70260, 70300, 70310, 70320, 70328, 70330, 70336, 70350, 70355, 70360, 70370, 70371, 70380, 71045, 71046, 71047, 71048, 71100, 71101, 71110, 71111, 71120, 71130, 72020, 72040, 72050, 72052, 72070, 72072, 72074, 72080, 72081, 72082, 72083, 72084, 72100, 72110, 72114, 72120, 72170, 72190, 72200, 72202, 72220, 73000, 73010, 73020, 73030, 73050, 73060, 73070, 73080, 73090, 73092, 73100, 73110, 73120, 73130, 73140, 73501, 73502, 73503, 73521, 73522, 73523, 73551, 73552, 73560, 73562, 73564, 73565, 73590, 73592, 73600, 73610, 73620, 73630, 73650, 73660, 74018, 74019, 74021, 74022, 74210, 74220, 74221, 74230, 74240, 74246, 74248, 74250, 74251, 76010, 76100	X-rays (various body parts)
MRI	BX3X[a], 70540, 70542, 70543, 70544, 70545, 70546, 70547, 70548, 70549, 70551, 70552, 70553, 70554, 70555, 71550, 71551, 71552, 71555, 72141, 72142, 72146, 72147, 72148, 72149, 72156, 72157, 72158, 72159, 72195, 72196, 72197, 72198, 73218, 73219, 73220, 73221, 73222, 73223, 73225, 73718, 73719, 73720, 73721, 73722, 73723, 73725, 74181, 74182, 74183, 74185	MRIs (various body parts)

SOURCE: Authors' review of CMS and AAPC coding resources.
NOTE: An X indicates that any procedure code with a matching first and third character should be included. All other procedure codes are HCPCS codes. OT = occupational therapy.
[a] ICD-10 procedure code.

Appendix B. Supplemental Tables and Figures

Table B.1. List of Prior Authorized Treatments Specified by Utilization Review Plans

Treatment Type	Count of Plans Excluding Treatment from UR
Physical medicine and rehabilitation	
Physical therapy (PT)	5
Occupational therapy (OT)	5
Post-operative PT/OT	3
Chiropractic	5
Post-operative chiropractic	1
Acupuncture	4
Aquatic/pool therapy	1
Massage/biofeedback/gym membership	1
Diagnostic testing	
X-rays	5
MRI	5
CT scan	4
EMG/NCV/NCS	4
Ultrasound/other imaging (non-MRI/CT)	3
Pre-operative lab testing (CBC, EKG, etc.)	5
Drug/urine testing	2
Functional capacity exam (FCE)	1
Medications	
OTC medications/NSAIDs/ibuprofen	4
Non-narcotic pain medications	3
Muscle relaxants	4
Narcotics/opioids	4
Prescription refills/long-term medications	2
Injections	
Corticosteroid injections	4
Trigger point injections	3
Epidural injections	3
Viscosupplementation (Synvisc/Supartz/hyaluronic acid)	1
Surgery	
Carpal tunnel release/surgery	2
Knee arthroscopy/meniscus repair	2
Shoulder arthroscopy/rotator cuff repair	2
Hernia repair	5
Trigger finger/DeQuervain's release	1
Other surgery (skin cancer, hardware removal, foreign body, I&D)	2
Durable medical equipment (DME)	
General DME (braces, splints, crutches, wheelchair, etc.)	5
TENS unit	5
CPM machine (continuous passive motion)	4
Prosthetics/CPAP/BiPAP/orthotics	2
Specialty consultations and other services	
Specialty consultations/referrals	4
Office visits/follow-up visits	3
Psychology/CBT/pain management	2
Home health care/skilled nursing/hospital stay	2
Ergonomic evaluation	1
Tetanus shot/vaccine	2

SOURCE: Authors' review of five publicly available UR plans that included details of treatments for which prior authorization may be made.

NOTE: BiPAP = bilevel positive airway pressure; CBC = complete blood count; CPAP = continuous positive airway pressure; EKG = electrocardiogram; I&D = incision and drainage; NCS = nerve conduction study; NCV = nerve conduction velocity.

Table B.2. Ordinary Least Squares Interrupted Time Series Regressions for Utilization Review Approval Rates During the First 30 Days

Claims Administrator A	Approval (0–30 Days)	Approval Pre-COVID-19 (0–30 Days)	Physical Therapy (0–30 Days)	Sprains and Strains (0–30 Days)
Post–SB 1160	–0.00752	–0.307	0.0773	0.0366
Post–SB 1160	(0.185)	(0.216)	(0.184)	(0.377)
Monthly trend	–0.000229	–0.000229	0.0000632	–0.000227
Monthly trend	(0.000268)	(0.000270)	(0.000266)	(0.000545)
Monthly trend × Post	0.0000260	0.000450	–0.000104	–0.0000397
Monthly trend × Post	(0.000269)	(0.000312)	(0.000266)	(0.000546)
Constant	1.127***	1.127***	0.944***	1.132**
Constant	(0.184)	(0.186)	(0.184)	(0.376)

Claims Administrator B	Approval (0–30 Days)	Approval Pre-COVID-19 (0–30 Days)	Physical Therapy (0–30 Days)	Sprains and Strains (0–30 Days)
Post–SB 1160	–0.550	–1.560	–0.178	–1.412
Post–SB 1160	(0.742)	(0.818)	(0.634)	(0.937)
Monthly trend	–0.000436	–0.000436	–0.000136	–0.00181
Monthly trend	(0.00107)	(0.00108)	(0.000920)	(0.00135)
Monthly trend × Post	0.000811	0.00224	0.000265	0.00206
Monthly trend × Post	(0.00107)	(0.00118)	(0.000921)	(0.00136)
Constant	1.216	1.216	1.078	2.181*
Constant	(0.738)	(0.744)	(0.633)	(0.932)

SOURCE: Contains data provided from two workers' compensation claims administrators.
NOTE: Standard errors are in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001. See Appendix A for details on model specification.

Table B.3. Logit Interrupted Time Series Regressions for Utilization Review Approval Rates During the First 30 Days

Claims Administrator A	Approval (0–30 Days)	Approval Pre-COVID-19 (0–30 Days)	Physical Therapy (0–30 Days)	Sprains and Strains (0–30 Days)
Post–SB 1160	0.0889	–11.71	7.196	1.010
Post–SB 1160	(6.141)	(7.868)	(14.68)	(16.25)
Monthly trend	–0.00760	–0.00760	0.00508	–0.00969
Monthly trend	(0.00886)	(0.00893)	(0.0212)	(0.0235)
Monthly trend × Post	0.000420	0.0171	–0.00967	–0.000906
Monthly trend × Post	(0.00891)	(0.0113)	(0.0212)	(0.0235)
Constant	8.682	8.682	0.861	10.39
Constant	(6.102)	(6.152)	(14.62)	(16.20)

Claims Administrator B	Approval (0–30 Days)	Approval Pre-COVID-19 (0–30 Days)	Physical Therapy (0–30 Days)	Sprains and Strains (0–30 Days)
Post–SB 1160	–8.386	–23.68*	–24.08	–22.37
Post–SB 1160	(9.658)	(10.69)	(42.77)	(14.41)
Monthly trend	–0.00562	–0.00562	–0.00913	–0.0279
Monthly trend	(0.0138)	(0.0139)	(0.0614)	(0.0207)
Monthly trend × Post	0.0123	0.0339*	0.0351	0.0326
Monthly trend × Post	(0.0140)	(0.0154)	(0.0620)	(0.0209)
Constant	6.250	6.250	10.48	21.81
Constant	(9.552)	(9.629)	(42.28)	(14.28)

SOURCE: Contains data provided from two workers' compensation claims administrators.
NOTE: Standard errors are in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001. See Appendix A for details on model specification.

Table B.4. Ordinary Least Squares Interrupted Time Series Regressions for Utilization Review Approval Rates During 31–365 Days

Claims Administrator A	Approval (31–365 Days)	Approval Pre-COVID-19 (31–365 Days)	Physical Therapy (31–365 Days)	Sprains and Strains (31–365 Days)
Post–SB 1160	0.0900	–0.331	–0.118	0.269
Post–SB 1160	(0.269)	(0.299)	(0.305)	(0.463)
Monthly trend	–0.000129	–0.000129	–0.000281	0.000135
Monthly trend	(0.000389)	(0.000392)	(0.000439)	(0.000670)
Monthly trend × Post	–0.000109	0.000484	0.000183	–0.000372
Monthly trend × Post	(0.000391)	(0.000432)	(0.000442)	(0.000672)
Constant	1.011***	1.011***	1.140***	0.834
Constant	(0.267)	(0.270)	(0.303)	(0.461)

Claims Administrator B	Approval (0–30 Days)	Approval Pre-COVID-19 (0–30 Days)	Physical Therapy (0–30 Days)	Sprains and Strains (0–30 Days)
Post–SB 1160	3.978**	3.310**	2.199*	8.869***
Post–SB 1160	(1.195)	(1.215)	(0.857)	(0.962)
Monthly trend	0.00630***	0.00630***	0.00331**	0.0134***
Monthly trend	(0.00174)	(0.00175)	(0.00124)	(0.00138)
Monthly trend × Post	–0.00568**	–0.00474*	–0.00315*	–0.0127***
Monthly trend × Post	(0.00174)	(0.00176)	(0.00124)	(0.00139)
Constant	–3.551**	–3.551**	–1.384	–8.461***
Constant	(1.194)	(1.203)	(0.855)	(0.958)

SOURCE: Contains data provided from two workers' compensation claims administrators.
NOTE: Standard errors are in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001. See the for details on model specification.

Table B.5. Logit Interrupted Time Series Regressions for Utilization Review Approval Rates During 31–365 Days

Claims Administrator A	Approval (31–365 Days)	Approval Pre-COVID-19 (31–365 Days)	Physical Therapy (31–365 Days)	Sprains and Strains (31–365 Days)
Post–SB 1160	1.387	–4.979	–2.183	4.079
Post–SB 1160	(3.727)	(4.224)	(6.043)	(6.846)
Monthly trend	–0.00179	–0.00179	–0.00553	0.00199
Monthly trend	(0.00538)	(0.00542)	(0.00868)	(0.00990)
Monthly trend × Post	–0.00170	0.00726	0.00344	–0.00563
Monthly trend × Post	(0.00541)	(0.00610)	(0.00875)	(0.00993)
Constant	3.700	3.700	6.682	1.168
Constant	(3.701)	(3.732)	(5.994)	(6.820)

Claims Administrator B	Approval (31–365 Days)	Approval Pre-COVID-19 (31–365 Days)	Physical Therapy (31–365 Days)	Sprains and Strains (31–365 Days)
Post–SB 1160	22.64**	17.39*	24.39**	49.39***
Post–SB 1160	(7.296)	(7.464)	(9.352)	(4.508)
Monthly trend	0.0380***	0.0380***	0.0376**	0.0778***
Monthly trend	(0.0106)	(0.0107)	(0.0135)	(0.00638)
Monthly trend × Post	–0.0322**	–0.0248*	–0.0349**	–0.0708***
Monthly trend × Post	(0.0106)	(0.0108)	(0.0135)	(0.00650)
Constant	–24.90***	–24.90***	–23.67*	–52.40***
Constant	(7.280)	(7.339)	(9.299)	(4.409)

SOURCE: Contains data provided from two workers' compensation claims administrators.
NOTE: Standard errors are in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001. See the "Data Sources and Methodology for Utilization Review Outcomes (Objective 1)" section in Chapter 3 for details on model specification.

Table B.6. Interrupted Time Series Regressions by Injury Category for Utilization Review Approval Rates During the First 30 Days

Claims Administrator A	Contusions	Multiple	Pain	Fractures or Tears	Sprains and Strains
Post–SB 1160	0.488	–1.628	–0.402	0.174	0.0366
Post–SB 1160	(0.923)	(0.964)	(0.684)	(0.534)	(0.377)
Monthly trend	0.000534	–0.00243	–0.000821	0.000114	–0.000227
Monthly trend	(0.00133)	(0.00139)	(0.000989)	(0.000772)	(0.000545)
Monthly trend × Post	–0.000709	0.00238	0.000607	–0.000234	–0.0000397
Monthly trend × Post	(0.00133)	(0.00140)	(0.000990)	(0.000774)	(0.000546)
Constant	0.611	2.633**	1.521*	0.891	1.132**
Constant	(0.921)	(0.960)	(0.683)	(0.533)	(0.376)

Claims Administrator B	Contusions	Multiple	Pain	Fractures or Tears	Sprains and Strains
Post–SB 1160	–2.474	115.0	1.005	–2.310*	–1.412
Post–SB 1160	(1.311)	(57.57)	(1.488)	(1.138)	(0.937)
Monthly trend	–0.00316	0.176*	0.00223	–0.00321	–0.00181
Monthly trend	(0.00190)	(0.0838)	(0.00215)	(0.00163)	(0.00135)
Monthly trend × Post	0.00360	–0.167	–0.00148	0.00337*	0.00206
Monthly trend × Post	(0.00190)	(0.0839)	(0.00216)	(0.00165)	(0.00136)
Constant	3.109*	–121.1*	–0.639	3.131**	2.181*
Constant	(1.307)	(57.48)	(1.481)	(1.128)	(0.932)

SOURCE: Contains data provided from two workers' compensation claims administrators.
NOTE: Standard errors are in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001. See the "Data Sources and Methodology for Utilization Review Outcomes (Objective 1)" section in Chapter 3 for details on model specification.

Table B.7. Logit Regressions by Injury Category for Utilization Review Approval Rates During the First 30 Days

Claims Administrator A	Contusions	Multiple	Pain	Fractures or Tears	Sprains and Strains
Post–SB 1160	22.70	–40.12	–8.753	6.851	1.010
Post–SB 1160	(43.63)	(26.44)	(16.47)	(18.10)	(16.25)
Monthly trend	0.0267	–0.0603	–0.0192	0.00387	–0.00969
Monthly trend	(0.0630)	(0.0380)	(0.0238)	(0.0261)	(0.0235)
Monthly trend × Post	–0.0330	0.0587	0.0133	–0.00918	–0.000906
Monthly trend × Post	(0.0631)	(0.0382)	(0.0238)	(0.0262)	(0.0235)
Constant	–14.57	44.71	16.32	0.792	10.39
Constant	(43.59)	(26.31)	(16.44)	(18.03)	(16.20)

Claims Administrator B	Contusions	Multiple	Pain	Fractures or Tears	Sprains and Strains
Post–SB 1160	–39.25		11.90	–33.35*	–21.78
Post–SB 1160	(20.35)		(16.40)	(16.67)	(14.35)
Monthly trend	–0.0480		0.0243	–0.0432	–0.0279
Monthly trend	(0.0294)		(0.0237)	(0.0239)	(0.0207)
Monthly trend × Post	0.0570		–0.0174	0.0485*	0.0317
Monthly trend × Post	(0.0295)		(0.0238)	(0.0241)	(0.0208)
Constant	35.70		–14.60	32.20	21.81
Constant	(20.28)		(16.31)	(16.56)	(14.27)

SOURCE: Contains data provided from two workers' compensation claims administrators.
NOTE: Standard errors are in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001. See the "Data Sources and Methodology for Utilization Review Outcomes (Objective 1)" section in Chapter 3 for details on model specification. Sample sizes were insufficient to estimate the model for multiple injuries in Claims Administrator B.

Table B.8. Full Results for Interrupted Time Series Receipt of Treatment Outcomes

	Concordant X-Ray	Concordant PT	Concordant Brace/ Immobilizer	Discordant Brace/ Immobilizer	Discordant Acupuncture	MRI
Post–SB 1160	–0.020	0.125	0.103	0.083	0.219	–0.074
	(0.016)	(0.025)***	(0.019)***	(0.060)	(0.084)**	(0.027)**
Monthly trend	0.005	–0.002	–0.013	–0.005	–0.009	0.002
	(0.002)*	(0.003)	(0.002)***	(0.007)	(0.009)	(0.003)
Monthly trend × Post	–0.005	0.002	0.007	–0.011	0.005	–0.001
	(0.002)*	(0.003)	(0.002)**	(0.007)	(0.009)	(0.003)
Constant	0.470	–0.128	–0.890	–1.477	–3.766	–2.199
	(0.017)***	(0.025)***	(0.021)***	(0.049)***	(0.047)***	(0.019)***

NOTE: This table presents logistic regression coefficients; standard errors are in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001. Models also include calendar month fixed effects to adjust for seasonality. See the "Data Sources and Methodology for Medical Treatment (Objective 2)" section in Chapter 3 for details on model specification.

Table B.9. Full Results for Interrupted Time Series Time to Treatment Outcomes

	Concordant X-Ray	Concordant PT	Concordant Brace/ Immobilizer	Discordant Brace/ Immobilizer	Discordant Acupuncture	MRI
Post–SB 1160	–0.030	–1.056	–0.282	–0.023	–0.245	–0.334
	(0.038)	(0.172)***	(0.166)	(0.102)	(0.450)	(0.269)
Monthly trend	–0.002	0.009	0.033	–0.009	0.046	0.004
	(0.005)	(0.022)	(0.021)	(0.014)	(0.071)	(0.031)
Monthly trend × Post	0.006	–0.024	–0.025	0.019	–0.035	–0.002
	(0.005)	(0.022)	(0.021)	(0.014)	(0.071)	(0.031)
Constant	3.452	13.368	6.036	4.468	18.403	17.020
	(0.047)***	(0.163)***	(0.152)***	(0.089)***	(0.555)***	(0.168)***

NOTE: This table presents ordinary least squares regression coefficients; standard errors are in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001. Models also include calendar month fixed effects to adjust for seasonality. See Data Sources and Methodology for Medical Treatment (Objective 2)" section in Chapter 3 for details on model specification.

Table B.10. Sensitivity Analyses for Interrupted Time Series for Medical Care Outcomes

Treatment	Odds of Receiving Treatment Post–SB 1160 Relative to Pre–SB 1160 (95% CI)	Difference in Days to Receipt of Treatment Post–SB 1160 Relative to Pre–SB 1160 (95% CI)
H1: Concordant X-Ray	0.986 (0.951; 1.023)	–0.04 (–0.14; 0.05)
H1: Concordant PT	**1.139 (1.076; 1.207)***	**–1.22 (–1.57; –0.87)***
H1: Concordant Brace/Immobilizer	**1.112 (1.067; 1.159)***	–0.16 (–0.69; 0.37)
H2: Discordant Brace/Immobilizer	**1.143 (1.031; 1.267)***	–0.05 (–0.35; 0.25)
H2: Discordant Acupuncture	**1.290 (1.043; 1.597)***	–0.84 (–1.77; 0.10)
H3: MRI	**0.936 (0.880; 0.996)***	0.27 (–0.43; 0.97)

SOURCE: Authors' analysis of WCIS data.
NOTE: * = p < 0.05.
NOTE: Both analyses exclude injured workers with injury dates during December 2017, and time to treatment analyses exclude injured workers with dates of injury on or after January 1, 2020.

Abbreviations

AAPC	American Academy of Professional Coders
AB	Assembly Bill
ACOEM	American College of Occupational and Environmental Medicine
BiPAP	bilevel positive airway pressure
CBC	complete blood count
CBT	cognitive behavioral therapy
CI	confidence interval
CMS	Centers for Medicare & Medicaid Services
COVID-19	coronavirus disease 2019
CPT	Current Procedure Terminology
CT	computed tomography
DIR	California Department of Industrial Relations
DME	durable medical equipment
DWC	California Division of Workers' Compensation
dx	diagnosis
EKG	electrocardiogram
EMG	electromyography
HCPCS	Healthcare Common Procedure Coding System
IBR	Independent Bill Review
ICD-10	International Classification of Diseases, 10th Revision
IMR	Independent Medical Review
ITS	interrupted time series
JCN	jurisdiction claim number
LBP	low back pain
MA	Medicare Advantage
MPN	medical provider network
MRI	magnetic resonance imaging
MTUS	Medical Treatment Utilization Schedule
NSAID	nonsteroidal anti-inflammatory drug
OMFS	Official Medical Fee Schedule
OT	occupational therapy
OTC	over-the-counter
PHE	public health emergency
PT	physical therapy
QME	qualified medical examiner

RFA	request for authorization
SB	Senate Bill
TENS	transcutaneous electrical nerve stimulation
TFCC	triangular fibrocartilage complex
UR	utilization review
URO	utilization review organization
WCAB	Workers' Compensation Appeals Board
WCIS	Workers' Compensation Information System

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