

## **V. METHODS**

As previously discussed, the purpose of this evaluation is to measure the adequacy of access to quality medical care for injured workers. To answer this question, we conducted surveys of injured workers, physicians authorized to act as the PTP for a WC case as defined by law (LC § 3209.3), and payers. This section explains the methods employed, including sampling frame and sample selection, for each of these three surveys.

### **SURVEY AND SAMPLING METHODOLOGY**

#### **Injured Worker Survey**

The survey of injured workers was conducted from May 2006 to October 2006. In this approximate six-month time period, 1,001 surveys were completed out of a sample of 5,260 claims taken from the state's Workers' Compensation Information System (WCIS), which is maintained by the DWC pursuant to LC § 138.6 and 8 Cal. Code Regulations § 9700-9704.

The WCIS claims database is a comprehensive database of nearly all California WC claims with a date of injury since March 1, 2000. It is the only database that exists containing information for nearly the complete population of state WC claims filed each year, being representative of the insured and self-insured markets as well as the private and public sectors. For the purposes of this study we used records for claims with a date of injury between April 1, 2005 and June 30, 2005. This three-month time frame yielded 170,658 active claims from non-deceased individuals when the sample was drawn on January 31, 2006, from which we obtained a randomly selected sample of 6,172 claims. After removing records with both missing or invalid employee contact information and missing or invalid social security numbers, there were 6,121 claims left in the sample. This sample was split into replicates; we did not use 861 of the sample records, leaving a final sample of 5,260.

The sample size of 5,260 claims was selected primarily to achieve a target of 1,000 respondents. This five-to-one ratio of claims to respondents was selected because the quality of the contact information contained in the WCIS claims database was unknown. A large proportion of claims were expected to have inaccurate contact information since many injured workers could have moved residence since the date of injury and may not be traceable.

We selected workers who reported injuries between April 1, 2005 and June 30, 2005 to study workers whose claims occurred after the major components of the 2003-2004 reforms had been implemented, and so that the more serious or complicated cases would have had ample time for exposure to WC medical care. We also expected the time elapsed from the date of injury to the date of the survey was sufficient to permit reporting and resolution of a large number of cases. This lag of 12 to 18 months between date of injury and participation in the survey may introduce recall bias. However, given that workplace injuries can be significant events in the lives of many individuals, and the time between date of injury and survey participation was relatively short, we assumed that the potential for recall bias in this survey would be minimal.

We used a simple random sample of claims records to obtain a representative sample of workers with all types of injuries, minor to extensive, that required anywhere from one to multiple visits to providers. At the time the sample was drawn, WCIS did not contain data on medical services utilization for claimants' injuries. Data provided by CWCI to the authors indicated that about 25 percent of injured workers have 10 or more visits during the course of treatment for their claim. Consequently, a random sample of 5,260 injured workers was expected to yield, among 1,000 respondents, an adequate representative sample of approximately 250 workers with 10 or more visits, thereby allowing examination of the experiences of injured workers with relatively high exposure to WC medical care.

The injured worker survey was designed using an exhaustive list of topic areas and questions in several existing state and national surveys on issues related to injured workers'

care.<sup>n</sup> These surveys included the 2002 Worker Injury National Survey (WINS), funded by the Robert Wood Johnson Foundation as part of the Workers' Compensation Health Initiative,<sup>102</sup> the 2000 Survey of Worker Experience with Work Related Injuries developed by the American Accreditation Commission and Utilization Review Accreditation Commission (URAC),<sup>103</sup> the UC Berkeley Workers' Compensation Patient Satisfaction Survey (1998),<sup>2</sup> the Pennsylvania Injured Worker Survey from the Pennsylvania Medical Access Study (2004),<sup>3</sup> the 2001 WCRI Worker Outcomes Survey,<sup>104</sup> and the Worker Satisfaction Survey conducted in Washington State.<sup>5</sup> In addition to selecting or modifying questions from these previous surveys, we also developed questions unique to this survey.

The final version of the UCLA/DWC Injured Worker Survey has 66 questions, allowing for both multiple choice and open-ended responses. The major sections of the survey are: (1) patient demographics, (2) injury type, recovery from injury, and duration of the claim, (3) access to medical care (first visit, referral to specialists, physical therapy, occupational therapy, and prescription medication), (4) injured worker experience with the main provider, (5) quality of medical care and satisfaction with care received, and (6) work experience, including current work status, work modifications, and return-to-work information. The majority of the questions in the survey excluded care provided by physical and occupational therapists, with the exception of the section on access to these professionals. The complete survey appears in Appendix A. The survey was offered in English and Spanish — 21% of surveys were conducted in Spanish.

Injured workers in the study sample were mailed pre-notification letters with consent information. The letter indicated a choice of completing the survey by phone, mail, or the internet using a passcode and username furnished in the letter. All sampled injured workers were contacted by telephone (a maximum of 24 calls), and respondents' identity and eligibility was confirmed prior to beginning the survey. Eligible participants were those with confirmed identity and who recalled a WC injury that occurred between April and June 2005. Each respondent was mailed a \$15 gift card after completion of the survey.

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<sup>n</sup> Copies of all surveys were obtained directly from the administering source via personal communication. When available, the survey or corresponding study results have been cited.

Of the 5,260 possible subjects in the final Injured Worker Survey sample, 2,855 were determined to be eligible for the study, while 2,124 could not be located. Because this was a telephone survey, the primary reason for being unable to locate an injured worker was inaccurate or missing telephone numbers, even after searching for phone numbers using the injured worker's address and Social Security Number. An additional 281 injured workers were not eligible because they: had a language/comprehension problem (n=53), did not have an injury during the sampled time period (n=189), were institutionalized or not adults (n=31), or were deceased (n=8). To calculate our response rate, we excluded the 281 injured workers who were found to be ineligible and the 2,124 who we were unable to locate despite additional searches of available databases. This produced an adjusted response rate of 35.1% — equal to 1,001 respondents divided by 2,855 eligible injured workers. Other surveys of injured workers reported a wide range of response rates (20% to 63%). In two surveys of WC patient satisfaction in Washington state (2000)<sup>5</sup> and California (1998)<sup>2</sup> response rates were 53% and 63%, respectively. Both of these surveys were based on a different type of sample than our injured worker survey. The Washington state survey focused on specific injury types, and targeted more recent WC claims. The sample was obtained from claims that potentially began two months before data collection, which may result in better response rates due to a lower likelihood of subject migration and greater likelihood of recall of their injury. However, this faster approach may not allow a patient to assess their injury from a long-term perspective. The California survey was focused on patients with a claim in specific HCOs, which also increased the likelihood of contact through updated administrative records. On the other end of the spectrum is the 2004 Pennsylvania Medical Access Study provider survey, which reports a much lower response rate of 20%.<sup>3</sup> The survey used a much simpler sampling methodology by randomly selecting 10,000 subjects from WC claims. This approach is similar to our survey methods because the random sample of claims was obtained from the state WCIS database without being able to validate contact or expenditure information.

The injured worker analysis dataset contains 976 records. This analysis database is based on the 1,001 surveys completed, but excludes the 25 records collected through our pre-test of

the survey instrument. Due to minor changes in the design of the survey it was necessary to exclude these pre-test cases from the analysis presented in this report.

The responses for the injured worker survey are unweighted because the sample was a simple random sample — there was no reason to stratify the claims or to over-sample. However, after survey completion, to verify that the sample was representative, we conducted analyses comparing characteristics of the sample to the overall universe of claims during the study period of April 1, 2005 to June 30, 2005. We found the sample to be entirely representative of the universe of claims on every dimension available in the WCIS administrative claims database, including age, gender, employment status, part of body injured, cause of injury, and nature of injury. We also compared characteristics of respondents to the sample of injured workers using variables reported in the WCIS claims database to determine if our respondents were representative. We found that respondents were comparable to the sample population in employment status, part of body injured, cause of injury, and nature of injury. Respondents were slightly older (41.2 years of age vs. 39.2) and more likely to be female (44.8% vs. 36.6%) relative to the sample population of injured workers.

### **Provider Survey**

The survey of providers was conducted from April 2006 to October 2006. In this seven-month time period, 1,096 surveys were completed out of a sample of 6,743. The sample for the provider survey was constructed from MPN and HCO provider lists reported to the California DWC, as required by 8 CCR § 9767.3(d)(8)(C) and § 9773(b), respectively. Both MPNs and HCOs are approved by DWC. MPNs are networks set up by insurers or employers, through direct contracting with individual doctors or a contract with one or more established provider networks. HCOs are WC managed care organizations established by HMOs, PPOs, disability insurers, insurers, or Third Party Administrators (TPAs) that have a provider network as one component.

The sample of providers in this study included those defined by California LC § 3209.3 as a physician in the California WC system. These were doctors of medicine and osteopathy (MD/DOs), chiropractors (DCs), acupuncturists (LAcS), podiatrists (DPMs), and clinical psychologists (PhDs). Although defined as physicians under the Labor Code, dentists and optometrists were excluded due to the very low-volume of WC care provided by these professionals as PTP and their potential inability to respond to the survey questions. In addition, MD/DOs primarily specialized in anesthesiology, gynecology/obstetrics, oncology, pathology, radiology, adolescent/child specialties, and geriatric care were also excluded because they were highly unlikely to act as the PTP for a WC case.

We constructed a final list of 51,363 unique providers using the WC provider network directories of MPNs and HCOs, consisting of: 1,055 acupuncturists, 1,277 podiatrists, 2,570 clinical psychologists, 4,850 chiropractors, and 41,611 MD/DOs. Among MD/DOs, our list included the following specialties: 2,404 in orthopedic surgery, 7,157 in family practice, 11,949 in internal medicine, and 20,101 in other specialties. The MPN/HCO lists used for the sampling frame were the most recent DWC had on file, ranging from March 2004 to October 2005, and included the Blue Cross MPN, Interplan MPN, Prime Advantage MPN, SCIF Preferred Provider Network, First Health MPN, First Health HCO, CompPartners HCO, Concentra HCO, and Corvel HCO.

The survey was designed to include providers who accepted and treated WC patients from 2001 until shortly prior to the date of the survey. Inclusion of these past providers of WC care was possible because the MPN/HCO lists often include providers who have not recently seen any WC patients, since providers vary greatly in the volume and frequency with which they treat WC patients. We also expected to capture at least some providers who no longer treated WC patients by the time the survey was fielded in 2006. However, the lists are not likely to be representative of the number of providers who no longer treat WC patients.

MD/DOs represented 81 percent of the providers in our final list. Drawing a simple random sample of providers for the study would have led to very small sample sizes of other physician types in the WC system, thereby limiting inferences about their experiences.

Therefore, we selected a stratified random sample of 6,743 providers, consisting of 350 podiatrists, 360 clinical psychologists, 349 acupuncturists, 691 chiropractors, 4,804 MD/DOs, and 189 pre-identified high-volume MD/DOs, described below. The sample size of 6,743 providers was selected primarily to achieve a target of 1,200 respondents. This approximate six-to-one ratio of providers to respondents was selected because the quality of the contact information for physicians was unknown and because the anticipated participation rate by physicians in surveys is generally low.

Not all providers who are contracted to provide WC care within an MPN or HCO see a high volume of WC patients, and recent reforms may have affected low- and high-volume providers differently. The available provider lists did not distinguish between low- and high-volume providers. Moreover, data available in other reports do not provide consensus on what level of patient volume should be used as a cut-off point to define high-volume providers. For example, administrative WC data collected by CWCI, primarily representing the insured market in California, could be used to approximate the number of patient visits an average WC provider would have in a week.<sup>61</sup> However, these data report medical services at the billing level, rather than the provider level, and identify the provider as a medical group or institution in a large percentage of cases. To ensure that our sample had a sufficient number of high-volume providers to draw reliable conclusions, we included a sample of 189 high-volume providers provided by one of the largest health care networks in California. This is the only component of the sample that can be considered non-random, and a weighting scheme was developed to compensate for differences between the general provider population and these pre-identified providers.

Similar to the Injured Worker Survey, a comprehensive list of topic areas and pertinent questions were identified from several existing surveys on issues related to WC providers around the country.<sup>o</sup> These surveys included the Pennsylvania Workers' Compensation Health Care Providers Survey from the ongoing Pennsylvania Medical Access Study (most recently published in 2004),<sup>3</sup> the 1998 Hawaii Legislative Reference Bureau Workers'

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<sup>o</sup> Copies of all surveys were obtained directly from the administering source via personal communication. When available, the survey or corresponding study results have been cited.

Compensation Health Care Provider Survey,<sup>105</sup> the CMA Workers' Compensation Survey,<sup>19</sup> and a non-workers' compensation survey by the California Health Care Foundation related to physician participation in Medi-Cal.<sup>106</sup> In addition to selecting or modifying questions from these previous surveys, we also developed new and unique questions for this survey.

The final version of the UCLA/DWC provider survey has a total of 46 questions, allowing for both multiple choice and open-ended responses. The major topics covered are: (1) provider demographics and practice characteristics, including specialty and size of practice, (2) current, past, and future caseloads and acceptance of WC patients, (3) reasons for recent or planned future changes in volume of WC patients, (4) physician payment, (5) time to first appointment with a new patient and ease of referrals to other providers, (6) perceived barriers and level of access to care and quality of care for injured workers, and (7) provider occupational medicine behaviors. The full survey is included in Appendix B.

Sampled providers were mailed letters with consent information along with a copy of the entire survey and a self-addressed stamped envelope. The letter indicated that the provider had three options for completing the survey: (1) via phone, (2) via mail, or (3) via internet using a passcode and username furnished in the letter. Respondents were screened via telephone for eligibility, which included provision of WC care from 2001 onwards, and type of license and specialty. Providers were contacted a maximum of 14 times, and knowledgeable office staff were allowed to respond as proxies.

Of the 6,743 individuals in the Provider Survey sample, 4,478 were determined to be eligible for the study and 1,142 had unknown eligibility status. Unknown eligibility status was mainly due to inaccurate telephone contact information or inability to reach someone at the location. Extensive efforts to conduct follow-up searches for working phone numbers for these providers proved unsuccessful. In addition, 1,123 providers were determined to be ineligible and were therefore completely removed from the sample. The reasons for ineligibility included: ineligible provider type (n=2); moved out of state (n=286); deceased (n=60); never treated WC patients (n=569); or had not treated WC patients since 2001 (n=206).

To calculate our response rate, we excluded the 1,123 providers who were found to be ineligible and 1,142 who we were unable to contact despite extensive additional searches of available databases. This produced an adjusted response rate of 24.5% — equal to 1,096 respondents divided by 4,478 eligible providers. This response rate falls within the range of other WC provider surveys. The Pennsylvania Medical Access Study reported an injured worker survey response rate of approximately 22%,<sup>3</sup> while the Hawaii Legislative Research Bureau provider survey had a response rate for MDs and chiropractors of about 30% overall.<sup>105</sup> Provider response rates in non-WC survey research have declined since 1985 to the 40-50% range.<sup>107</sup> As is the case in this survey, provider survey response rates tend to be negatively affected by long survey instruments, large sampling frames, shorter duration in the field, and absence of financial incentives.<sup>108</sup>

The analysis dataset for the provider survey excludes the pre-test responses, because the survey instrument underwent slight changes between conducting the pre-test and fielding the final version of the survey. For this reason, 19 responses are excluded from the final analysis dataset, leaving 1,077 respondents.

Due to the stratified random sample of provider types and the over-sampling of high-volume providers, the analysis dataset was re-weighted to compensate for differential response rates among acupuncturists (51.8%), chiropractors (43.3%), podiatrists (28.3%), high-volume MD/DOs (28.6%), other MD/DOs (18.2%), and clinical psychologists (19.8%). Although 81% of the sampling frame was made up of MD/DOs, a higher level of non-response for MD/DOs and clinical psychologists resulted in a differential response rate between provider types. Therefore, half of the survey responses were from MD/DOs. To correct for this, population weights were calculated using the expected sample response distribution, so that the overall proportions and averages displayed in the findings section account for the observed difference between the distribution of providers within the sample and within the respondents. For comparisons within non-MD/DO provider types, this re-weighting scheme is unnecessary, because all respondents within each non-MD/DO group receive the same weight. When considering the MD/DO weighting scheme, it was also necessary to adjust for

the 189 pre-identified high-volume MD/DO providers in the sample. This adjustment enabled the low-volume MD/DOs to be compared to high-volume MD/DOs in terms of specialties and other survey responses.

## **Payer Survey**

The survey of payers was conducted from May 2006 to October 2006. In this six-month time period, 20 surveys were completed out of a sample of 26. California WC payers were divided into three primary categories: insurers, TPAs, and self-insured, self-administered employers (SISAs). SISAs were then further sub-divided into three categories – Joint Powers Authority (JPA),<sup>p</sup> public non-JPA, and private. Because resources were limited, it was not possible to develop a random and representative sample of payers within each of these categories. Instead, we developed a convenience sampling frame designed to have some large, mid-size, and small payers in each of these categories. For insurers and TPAs, the top 5 companies in terms of total 2004 calendar year (CY) claims were first selected. Then, a company with roughly half the total claims as the 5th highest and a company with roughly a quarter of the total claims as the 5th highest were selected and added to the list. For SISAs, the top two companies based on total 2004 CY claims were selected within each of the 3 categories of SISAs. The third company in each group was selected if it had total 2004 CY claims equal to roughly half of the total claims of the second company in the group. Number of claims was determined from the DWC Annual Report of Inventory for each payer, which measures the number of new indemnity claims, medical-only claims, denied claims, and total claims for each claims adjuster for each calendar year.

Firms were mailed an introductory letter and consent language, along with a copy of the survey. Follow-up calls were made and the opportunity to receive an electronic copy of the survey or complete the survey on the phone was offered. Additional calls were made to each respondent to verify answers or complete missing data. Surveys were originally mailed out to 23 payers; 3 refused to participate and were replaced with similar firms from the same

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<sup>p</sup> A JPA is a unit of government, authorized under the State Government Code, created to jointly administer a shared power, under the terms of a joint exercise of powers agreement adopted by the public agencies that constitute the JPA.

category, resulting in a total of 26 mailed surveys. Of the 23 who did not refuse participation; 20 firms returned completed responses and 3 did not submit completed surveys prior to the final date of data collection, October 19, 2006. Of the 20 completed surveys, 6 were insurers, 5 were TPAs, and 9 were SISAs.

The payer surveys were tailored to the three organization types resulting in 54 questions for SISAs, and 53 questions to insurers and TPAs. The payer surveys contained adapted versions of questions in the 2000 and 2004 Pennsylvania Insurer Survey<sup>9</sup> from their Workers' Compensation Medical Access Study.<sup>3</sup> In addition, new questions were developed to cover issues unique to California. The survey included both multiple-choice and open-ended questions that focus on various important areas in WC, including: (1) firm characteristics and coverage locations, (2) the use of networks, (3) physician contracting, (4) physician reimbursement, (5) standards for patient access, and (6) claims management. The consolidated Insurer, TPA, and SISA Payer survey instrument can be found in Appendix C.

## **ANALYTIC METHODS**

### **Constructed Variables: Injured Worker Survey**

The geographic area and urban versus rural location of injured workers were created using the zip code of the location of injury in the WCIS database, mapping zip codes to the relevant county as well as to the United States census definitions of urban areas. Race/ethnicity of injured workers was constructed using two separate questions on race and Hispanic origin. Following the California Department of Finance definition, all individuals reporting Hispanic origin were assigned as Latino, regardless of reported race. Individuals not of Hispanic origin were assigned their reported race.

The duration of treatment for injured workers was calculated using the number of days reported. Those injured workers who reported still being in treatment at the time of

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<sup>9</sup> Copies of all surveys were obtained directly from the administering source via personal communication. When available, the survey or corresponding study results have been cited.

interview were assigned the number of days between the reported date of injury and the date of the survey interview. Thus, the maximum possible duration of treatment in the survey was between April 1, 2005 to October 19, 2006, or a total of 536 days (about one year and five months).

Similarly, the number of missed work days was calculated using self-reported data. Those injured workers who had not returned to work as of the date of the survey were assigned the maximum number of days possible, calculated from the date of injury to the date of survey interview. The maximum number of missed workdays in the survey was 536 days from April 1, 2005 to October 19, 2006.

### **Constructed Variables: Provider Survey**

Specialty categories are based on self-reported data, obtained from the survey respondents. The MD/DO respondents were assigned into four groups based on their reported primary specialty. These four groups were: family practice and internal medicine (FP/IM), orthopedic surgery, other surgical specialties (such as ophthalmology, neurosurgery, general surgery and otolaryngology), and other non-surgical specialties (such as occupational medicine, neurology, rheumatology and gastroenterology).

Past providers were identified as those who treated WC patients between January 1, 2001 and the date they completed the survey, but do not treat WC patients any longer. Current providers were defined as providers who currently accept or treat WC patients. If providers never treated WC patients, or stopped treating before January 1, 2001, they were considered ineligible.

Current WC providers were divided into low- and high-volume providers using their self-reported weekly volume of WC patients. Data on medical group and individual provider claims volume from CWCI and a major California WC provider network was used to empirically inform a definition of low- and high-volume WC providers. Providers with 5 or

more WC patients per week were considered high-volume, indicating an estimated annual WC visit load of 260 or more.

### **Statistical Tests of Significance**

All comparisons between subgroups of injured workers and providers were tested, where appropriate, for statistical significance using a minimum significance level of  $p < 0.05$ . T-tests (two-tailed) were performed to analyze significant differences in continuous variables, while chi-squared tests were performed to analyze significant differences in the distribution of individuals across categorical variables.