



California Department of Insurance

Workers' Compensation
Medical Payment Accuracy Study

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CONSULTING

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EXECUTIVE SUMMARY

Study Background

In 2003, in recognition of ongoing struggles to improve and measure the success of fraud detection efforts related to workers' compensation and to justify the cost of such efforts, the State of California authorized the Bureau of State Audits to conduct a review of the State's fraud detection program. The Bureau of State Audits released the findings of the review in a report in 2004.

In its review, the Bureau of State Audits recommended that the California Department of Insurance do research to reduce the guesswork in determining the amount of fraud in California's workers' compensation system. The California Department of Insurance's Fraud Assessment Commission and the California Department of Industrial Relations' Commission on Health and Safety and Workers' Compensation collaborated with several agencies in developing a study design to measure workers' compensation medical fraud. The study design adopted is based on a methodology developed by Malcolm Sparrow of the John F. Kennedy School of Government, Harvard University. Professor Sparrow is an expert in medical fraud, and his approach has become a widely accepted, sample-based method for measuring the level of payment accuracy and error in health care programs and identifying areas of potential fraud.

Study Purpose

The purpose of the Workers' Compensation Payment Accuracy Study is to:

- Determine the extent of workers' compensation medical overpayments and underpayments to justify and provide information on the appropriate allocation of resources to detect and evaluate suspected medical provider fraud in California.
- Provide recommendations for ongoing detection and monitoring of suspected fraud and abuse in the workers' compensation system.
- Identify potential vulnerabilities and suspected perpetrators of fraud.

The Department of Insurance issued a request for proposals and awarded a contract to Navigant Consulting, Inc., to conduct this medical payment accuracy study. This report presents the findings of our study.

This study does not directly measure the level of workers' compensation medical fraud in California because the requirements to establish criminal intent must involve the criminal

justice system and due process. However, since fraud and abuse often masquerade as “honest” errors, this study shows where opportunities to reduce potential fraud exist.

Study Findings

Our sampling strategy led to the selection of a total of 761 medical bills to review. Our intention was to examine each of these medical bills from three different perspectives. The three different types of review focused on different issues. One review examined medical documentation to test whether it supported the services and amounts billed by the provider and paid by the insurer. Another review involved surveying the injured workers to give them the opportunity to verify or deny that they received the medical services billed by the provider. A third review examined the processing of the bill to test whether the bill submitted by the provider was paid correctly and according to policy.

In an ideal situation, we would have been able to conduct all three reviews on all of the bills in our sample. However, there are a number of practical reasons why this was not possible. In relation to the medical review, the following factors limited the number of bills for which we could conduct medical reviews:

- We could not obtain medical records directly from providers because the State of California does not have such authority. Instead, we requested that insurers provide any supporting medical documentation they received from providers for the services on the sample bills.
- Insurers provided supporting medical documentation for only a portion of the bills, and for some of these, the information was insufficient to determine whether the services met medical and utilization criteria.

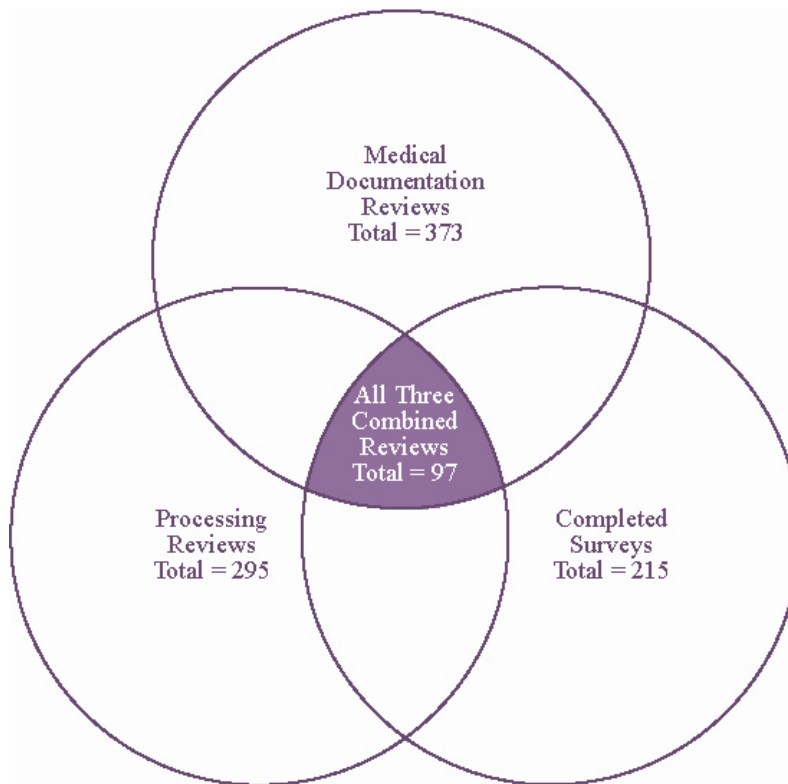
In relation to the survey, many of the injured workers’ addresses and/or telephone numbers were outdated and only a portion of the injured workers we were able to contact completed the survey. For the processing review, some of the sample bills were missing information (for example, procedure codes that describe the services) necessary to conduct a processing review.

As a result of these several limitations, we were able to conduct the number of reviews, of each type, as shown in Table 1. Figure 1 is an illustration of the relationship between these subsets.

Table 1: Injured Workers Included in Each Detailed Review Activity

Review Activity	Information	Number of Injured Worker Sample Bills
Medical review	Medical documentation reviews	373
Survey of injured workers	Completed surveys	215
Processing review	Processing reviews of bills	295
All three combined reviews	Medical documentation reviews, completed surveys and processing reviews of bills	97

Figure 1: Relationship between Sample Subsets



In addition, our sampling strategy required us to gather medical bill data for all the bills paid during a 12-month period for the sample of 761 injured workers. We recognized that conducting an electronic processing review of this large longitudinal dataset could provide valuable information about providers’ billing practices and insurers’ bill adjudication and

payment practices to augment the findings from the other reviews. Although insurers provided medical bill data for 761 injured workers during a 12-month period, a large amount of the data was missing information (for example, procedure codes) necessary to conduct the electronic processing review. As a result, data for 9,614 bills with 38,487 bill lines for 637 injured workers were usable for the electronic processing review. The 295 bills included in the processing review shown in Table 1 and Figure 1 are a subset of the 9,614 bill sample. Since this electronic processing review involved just one type of review, we expected that the payment error results of this sample would be lower than the results that involved all three types of reviews.

This report presents three different sets of findings. The bills examined with the greatest rigor are the 97 for which we were able to conduct all three types of reviews. In terms of review protocol, therefore, this set should provide the most reliable results. However, this subset is not very large, comprising 97 bills out of the total sample. Hence, we also present findings based on some of the larger samples, but that involve only one type of review.

The three sets of findings we present in summary here are:

- For all three combined reviews, 97 bills.
- For medical review only, 373 bills.
- For electronic processing review only, 9,614 bills with 38,487 bill lines.

Summary of Sample Error Rates and Estimates of Potential Payment Errors in Entire System

We analyzed the payment errors for these three samples and found the following sample payment error rates:

- 21.9 percent of the sample dollars were paid in error for the three combined reviews.
- 27.4 percent of the sample dollars were paid in error for the medical review only.
- 4.5 percent of the sample dollars were paid in error for the electronic processing only review.

Based on these sample error rate results, we estimate that total potential payment errors in the entire California workers' compensation system range:

- From \$494 million to \$1,372 million for the three combined reviews.
- From \$822 million to \$1,513 million for the medical review only.
- From \$122 million to \$261 million for the electronic processing review only.

Below, we present some details for each of these three sets of findings.

Results for Three Combined Reviews and Medical Review Only

For the three combined reviews of 97 sample bills, we found that:

- 35 percent of the bills were paid in error and all the errors were overpayments.
- These overpayments errors totaled \$4,766 and amounted to 23.1 percent of total payments in the sample.
- 71 percent of the payment errors were due to medical review errors, and these medical review errors accounted for 61 percent of the total dollar value of the errors.

Since most of the errors in the three combined reviews were medical review errors, we tested whether there might be a bias between the 97 bills included in the three combined reviews and the 373 bills for which we had documentation to conduct medical reviews. We analyzed the payment error for the 373 bills for which we conducted medical reviews and compared it with the payment error for the 97 bills for which we conducted all three reviews to determine if there was a substantially different level of error in the larger sample of bills.

We concluded that the levels of error in both samples were comparable and, therefore, that there was no bias between the larger sample of 373 bills and the subset of 97 bills:

- Payment errors represented 22.0 percent of the total value of the payments in the sample for the medical review only, compared with the 23.1 percent payment errors in the sample for the three combined reviews.
- Like for the three combined reviews, all the payment errors in the sample for the medical review only were overpayments.

Reasons for Payment Errors for Three Combined Reviews and Medical Review Only

Table 2 shows the reasons for payment errors for the three combined reviews. Medical review errors totaled \$2,892, or 61 percent of total dollar value of the errors. Most of the medical review errors were due to services that were not medically necessary.

Table 2: Reasons for Payment Errors for Three Combined Reviews

Reason for Error	Number of Sample Bills with Errors	Dollar Value of Errors
Medical Review Errors		
Service was not medically necessary	15	\$1,689
Service was not supported by the medical documentation	7	\$1,126
Diagnosis was not related to worker's injury	2	\$77
Total Medical Review Errors	24	\$2,892
Total Survey of Injured Workers Errors		
	6	\$1,537
Processing Review Errors		
Diagnosis Related Grouping (DRG) pricing	1	\$131
Duplicate billed items	1	\$105
Incorrect procedure codes	2	\$101
Total Processing Review Errors	4	\$337
Total Errors		
	34	\$4,766

Table 3 shows the reasons for the payment errors found in the medical reviews of the 373 sample bills. Like for the sample of 97 bills, the two most frequent reasons for errors in this larger sample were services that were not medically necessary and services that were not supported by the medical documentation.

Note that "fraud" is not listed among the reasons for the payment errors in Table 2 and 3; however, fraud can exist within the identified errors. Fraud involves deception, and criminal intent on the part of the perpetrator must be established to determine whether an error is fraud. This study was not designed, and the review protocol is not sufficient, to establish criminal intent. The purpose of studies such as this one is to determine, after a detailed review of the circumstances, which medical bills should not, in our best judgment, have been paid. Therefore, we do not categorize any of the payment errors as "fraudulent," but rather, classify the errors using the objective reasons listed in Tables 2 and 3.

Table 3: Reasons for Payment Errors for Medical Review Only

Reason for Error	Number of Sample Bills with Errors	Dollar Value of Errors
Service was not medically necessary	41	\$6,710
Service was not supported by the medical documentation	20	\$5,181
Medical information did not justify need for the service	8	\$2,577
No medical documentation received (for sample bills with survey errors)	5	\$1,478
Diagnosis was not related to worker's injury	3	\$928
Diagnosis was incorrect	2	\$213
Total Errors	79	\$17,087

Potential Response Bias

We acknowledge that the small number of bills for which we received medical documentation, and on which our error results are based, raises questions about potential response bias in the results. We did not receive medical documentation for many sample bills, so we were unable to conduct medical reviews for them. It is conceivable, but unlikely, that bills for which we did not obtain documentation were more error-free than the underlying error rate in the universe of bills in the entire California workers' compensation system. The reverse is more likely – that is, that the error rate for the sample bills for which we did not receive medical documentation is higher than the underlying error rate in the universe. This is because we believe that medical providers who knowingly submit bills for services that were not medically necessary or were not rendered are the providers least likely to offer supporting medical documentation. Therefore, we think any response bias likely has the effect of understating, rather than overstating, the underlying error rate in the universe.

Results for Electronic Processing Review Only

We found that 2,079 of the 38,487 bill lines had overpayment errors, i.e., the amount the insurer reported paying was greater than the amount that should have been paid, and these overpayment errors totaled \$173,801. We found 1,371 bill lines with underpayment errors, and these underpayment errors totaled \$51,993. The net value of the payment error was an overpayment of \$121,808 which represented 4.5 percent of the \$2.74 million total sample payments. As expected, the value of payment error due to the electronic processing review only was lower than the results from the three combined reviews and the medical review only.

Reasons for Payment Errors for Electronic Processing Only

Table 4 shows the reasons for the electronic processing errors. Electronic processing payment errors that point to potential fraud are incorrect or invalid procedure codes and modifiers, non-reimbursable service, duplicate billed items and unbundled services – that is, services that are billed individually but that are included in a bundled or global service fee.

Table 4: Reasons for Payment Errors for Electronic Processing Review Only

Reason for Error	Net Dollar Value of Payment Errors
Incorrect or invalid procedure codes and modifiers	\$68,233
Non-reimbursable services	\$14,533
Unbundled services	\$13,821
Physical therapy and chiropractic services that exceed visit limitations	\$13,661
Duplicate billed items	\$12,588
Multiple procedure pricing	\$3,489
Services that exceed per day or other time limits	\$2,274
Other	-\$6,791
Total net dollar value of payment errors	\$121,808

Comparison of Study Findings with Results from Other Studies

The error rates from this study are higher than those found in other studies. There are a few possible explanations for this:

- The California workers' compensation system may be especially error-prone.
- Workers' compensation programs may be more error-prone than the health insurance programs whose payment errors have been measured in similar studies.
- This study used a more rigorous review protocol than other similar studies.

The only other payment accuracy studies of workers' compensation programs that we know of are those conducted for many years by the Texas Comptroller of Public Accounts for workers'

compensation for Texas state employees. The results from the most recent two studies were published in 2003 and 2005. The overpayment error rate was 19.9 percent in the 2003 study and 13.7 percent in the 2005 study. The Texas Comptroller's office attributed the decrease in the error rate results between the 2003 and 2005 studies to cost containment efforts by the State office that administers the State employees' workers' compensation program and reimbursement changes that were implemented as a result of the 2003 study.¹

This study's error rate of 21.9 percent for the three combined reviews is not significantly higher than the results from the 2003 Texas workers' compensation study. In addition, the reasons for the overpayment errors found in the Texas study of workers' compensation are consistent with the results from this study – services that were not medically necessary were a frequent reason for payment error in the Texas study and in this study.

We further explore the possible explanations for this study's comparatively higher error rates at the end of Chapter 3 of this report.

Conclusion to Study Findings

This study is the first effort to measure payment accuracy for workers' compensation in California. It provides the baseline for additional studies in subsequent years and serves as the starting point for implementing anti-fraud program improvements, monitoring their effectiveness and success, and tracking workers' compensation medical bill payment trends.

Recommendations

Payment errors have many causes; sometime the errors are "honest" errors and sometimes the errors are fraud. Fraud involves deception, and determining and proving fraud require establishing criminal intent, which is beyond the scope of this study. Nonetheless, fraud can be within the errors we identified in this study.

The recommendations we offer below address a variety of causes of payment errors that we identified in this study, as well as ways to more directly identify potential fraud. We recommend that the State of California:

- Increase education efforts for providers, insurers and other relevant parties about appropriate courses of care per American College of Environmental Medicine (ACOEM) guidelines for the most frequent types of injuries.
- Data mine the new medical bill database in the Workers' Compensation Information System (WCIS) to identify aberrant patterns and trends in workers' compensation

¹ Office of the Texas Comptroller, Texas Health Care Claims Study, Executive Summary, March 2005. Available online: <http://www.window.state.tx.us/specialrpt/hcc2005/execsum.htm>.

medical billing fraud on a systemwide basis and focus investigative efforts. Data mining should include a range of relevant analytic and pattern-recognition techniques, including advanced techniques such as artificial intelligence.

- Consider expanding statutory authority for access by the Department of Insurance to injured workers' medical records.
- Develop a medical benefits administration best practices checklist for employers to use in evaluating their workers' compensation insurers' or third-party administrators' efforts in ensuring medical payment accuracy and preventing and detecting fraud.
- Consider requiring insurers to send Explanation of Benefit (EOB) notices to injured workers.
- Consider requiring providers to register with the State to be eligible to participate in worker's compensation.

Next Steps

To build upon this study and evaluate the feasibility of implementing these recommendations, we offer the following next steps:

- Begin analyzing the medical bill data in WCIS.
- Conduct a pilot study of the use of EOB notices for workers' compensation.
- Conduct a follow-up payment accuracy study in a few years using the WCIS medical bill database to determine if implementation of any of the above recommendations or other changes has had an effect on payment accuracy.

CHAPTER 1: INTRODUCTION

In this chapter, we provide background on the circumstances that led to the Workers' Compensation Payment Accuracy Study (this study), and the purpose of the study.

Background on California's Workers' Compensation Fraud Detection Efforts

In 2003, in recognition of ongoing struggles to improve and measure the success of fraud detection efforts related to workers' compensation and to justify the cost of such efforts, the State of California authorized the Bureau of State Audits to conduct a study of the State's fraud detection program. The Bureau of State Audits released the findings of the study in 2004 and concluded that the following key problem areas were restricting the fraud detection program.

- There are no measurements in place to determine the volume of underpayments and overpayments, which makes it impossible to assess the magnitude of the problem or allocate resources accordingly.
- While the program operates under a large budget, there is not a strategy in place for allocating anti-fraud resources, which means that program funds are not being maximized.
- Current efforts to detect fraud are inadequate and ineffective.
- There are no measures of success in place to determine if the rate of fraud is decreasing, making it impossible to assess whether the current program is cost-effective (i.e., if the program is recouping more than it is spending).
- There is a lack of cooperation among agencies, which is most likely resulting in duplication of efforts and missed opportunities.

In response to the Bureau of State Audits' report, the California Department of Insurance's Fraud Assessment Commission and the California Department of Industrial Relations' Commission on Health and Safety and Workers' Compensation have undertaken many efforts aimed at fraud and abuse in the workers' compensation system. In an effort focused on medical fraud, the California Department of Insurance's Fraud Assessment Commission and the California Department of Industrial Relations' Commission on Health and Safety and Workers' Compensation collaborated with several agencies in developing a study design to measure workers' compensation medical fraud. The study design adopted is based on a methodology developed by Malcolm Sparrow of John F. Kennedy School of Government, Harvard University. Professor Sparrow is an expert in medical fraud, and his approach has become a widely accepted, sample-based method for measuring the level of payment accuracy and error in health care programs and identifying areas of potential fraud and abuse.

Beginning a decade ago, Texas and Illinois used Professor Sparrow's methodology to study the level of payment error in their Medicaid programs. In addition, Texas also measured the level of payment error in its state employees' workers' compensation programs. Kansas, another early leader in this effort, conducted its first payment accuracy study in 2000. Drawing on these states' early efforts in 2001 the Centers for Medicare and Medicaid Services (CMS) – the federal agency that administers the Medicare program and is responsible for oversight of the Medicaid program – began testing Professor Sparrow's methodology, and adaptations of it, in a multi-year pilot study for the Medicaid program and the State Children's Health Insurance Program (SCHIP) with the voluntary participation of many states. California participated in the third year of this CMS pilot study for the State's Medi-Cal program. For federal fiscal year 2007, CMS began conducting mandatory payment error rate measurement studies of the Medicaid programs and SCHIPs in all 50 states and the District of Columbia.

In addition, the California Commission on Health and Safety and Workers' Compensation and the California Department of Insurance have undertaken other efforts in response to the 2004 California Bureau of State Audits Report. These efforts include studies by the Commission on Health and Safety and Workers' Compensation of other types of workers' compensation fraud. In 2007, the Department of Insurance formed a workers' compensation fraud focus group, as part of a Blue Ribbon Commission on Insurance Fraud in all regulated lines of insurance, identified priority issues, and made recommendations on insurer, employer, claimant and medical provider fraud.

Study Purpose – Medical Payment Accuracy and Error Detection

Expenditures for medical care in workers' compensation in California total \$4.7 to \$5.2 billion per year, depending on estimates of the size of the self-insured sector.² Policy analysts estimate that fraud represents ten percent of total health care spending in the United States, but this estimate is mostly considered guesswork given the complexity of measurement and detection.³ Even at ten percent, fraud in workers' compensation medical expenditures in California would total \$470 to \$520 million a year. In response to the Bureau of State Audits' recommendation that the California Department of Insurance do research to reduce the guesswork, the Department of Insurance issued a request for proposals and awarded a contract to Navigant Consulting, Inc., to conduct a medical payment accuracy study. The purpose of this study is to:

- Determine the extent of workers' compensation medical overpayments and underpayments to justify and provide information on the appropriate allocation of resources to detect and evaluate suspected medical provider fraud in California.

² Detailed information is available only for medical losses for the workers' compensation insured sector.

³ General Accounting Office, "Report to the Chairman, Subcommittee on Human Resources and Intergovernmental Relations, Committee on Operations, House of Representatives, Health Insurance: Vulnerable Payers Lose Billions to Fraud and Abuse" (Washington, D.C., May 1992), GAO/HRD-92-69. Available online: <http://archive.gao.gov/t2pbat6/146547.pdf>.

- Provide recommendations for ongoing detection and monitoring of suspected fraud and abuse in the workers' compensation system.
- Identify potential vulnerabilities and suspected perpetrators of fraud.

This study does not directly measure the level of workers' compensation medical fraud in California because the requirements to actually prove intent or misconduct must involve the criminal justice system and due process. However, since fraud and abuse often masquerade as "honest" errors, this study shows where opportunities to reduce potential fraud exist. In this regard, it is useful to review the terminology used in literature related to fraud, abuse and payment errors.

The National Health Care Anti-Fraud Association defines fraud as "an intentional deception or misrepresentation that the individual or entity makes knowing that the misrepresentation could result in some unauthorized benefit to the individual or entity."⁴ Abuse may result in unnecessary costs to a program, improper payment, or payment for services that fail to meet professionally recognized standards of care or that are medically unnecessary. Typically, however, the provider has not knowingly or willfully misrepresented facts to obtain payment.⁵ For example, a chiropractor may bill for more services than are necessary because he or she is unfamiliar with the clinical guidelines related to the injured worker's medical condition or the insurance carrier's guidelines regarding medical necessity. Although abuse may be less serious than fraud, abusive billing practices can have significant economic consequences, and insurers must be diligent in identifying and preventing abuse.

Errors in payment – both overpayments and underpayments – may also result from billing and processing errors. For example, an insurer or claims administrator may not have adequate internal policies and processes in place that prevent inappropriate payment. Fraud, abuse and billing and processing errors can together result in millions of dollars in incorrect payments.

As noted previously, this study uses a well-established sample-based methodology for measuring the level of payment accuracy. Sampling is a cost-effective, proven approach to provide answers or estimated answers about quantities in a universe or population. Given that this study covers a time period for which there is no centralized resource for all workers' compensation-related medical bill data, a study based on sampling is the only means of measuring the level of payment error. The sample-based nature of this study does not enable us to observe trends or compare individual providers with their peers to identify aberrant service utilization and billing patterns.

⁴ As cited in: Health Insurance Association of America, *Fraud: The Hidden Cost of Health Care* (Washington: The Health Insurance Association of America, 1996).

⁵ *Health Care Fraud and Abuse, Second Edition*, The American Medical Association.

This study focuses on the accuracy of medical payments and only addresses errors among medical providers and, to a lesser extent, insurers.⁶ Fraud can exist within the payment errors identified in this study, but we cannot determine which of the errors are due to fraud and which are due to other causes. Fraud, which involves deception and criminal intent on the part of the perpetrator, must be established to determine whether an error is fraud. This study was not designed to establish criminal intent.

It is important to note that because this study focuses on reviews of medical bills paid by insurers, it does not address potential inappropriate or abusive denial of services by insurers through their prior authorization or retrospective review processes. In addition, the study focuses only on the medical benefit portion of workers' compensation and, as such, does not address potential fraud and abuse by workers' compensation claimants, by physicians who state that claimants are temporarily disabled when the claimants could have returned to work on modified or full duty, or by employers who may under-report payroll figures to reduce premiums calculations, misrepresent business operations and locations to avoid paying proper insurance premiums, and deny justified injury claims. As noted previously, the Commission on Health and Safety and Workers' Compensation has undertaken other studies to address some of these issues.

Organization of Report

The remaining chapters of this report describe the methodology for conducting the medical payment accuracy study, present the study findings, review other states' efforts to combat fraud, and offer recommendations and next steps for the State of California's ongoing detection and monitoring of potential medical fraud and abuse in the workers' compensation system.

⁶ Throughout this report, the term "insurers" refers to both insurers and self-insured employers.

CHAPTER 2: STUDY METHODOLOGY

This chapter describes the study methodology and data sources for conducting the California Workers' Compensation Medical Payment Accuracy Study.

Description of Core Methodology

As discussed previously, the design of this study is based on a widely accepted methodology developed by Malcolm Sparrow for measuring the level of payment accuracy and error in health care programs. Briefly explained, Professor Sparrow's payment accuracy measurement methodology involves determining a level of payment error based on the combined results of three review activities for a sample of medical bills drawn from a universe of medical bills paid during a particular time period. The three review activities that comprise the methodology are:

1. Review of patients' medical records obtained from the providers of the sample services/bills to verify that the services were rendered and were medically necessary and that the diagnostic and procedure codes submitted on the sample bills and paid were correct.
2. Survey of patients to give them the opportunity to verify or deny that they received the medical services billed by the provider and paid for by the payer.
3. Review of the payer's processing of the sample medical bills to verify that they were paid correctly and according to policy.

Under this methodology, the error rate is calculated based on the combined results of all three review activities.

This methodology was developed and has been used for health insurance programs where there is one payer, such as a state's Medicaid program or an individual insurance company. However, there are hundreds of payers for workers' compensation benefits in California. This distinction has important implications for the study we conducted, and we discuss these in the next section.

Modifications to Core Methodology for California Workers' Compensation

The many insurers and self-insured employers in California that pay for workers' compensation-related medical benefits required us to make some modifications to the core methodology to adapt it for workers' compensation. Table 2.1 summarizes how the workers' compensation system in California differs from a health insurance program with one payer for purposes of the payment accuracy measurement methodology design and the modifications

these differences required us to make. Each of these modifications is discussed in greater detail following the table.

Table 2.1: Methodology Designed for a Health Insurance Program with One Payer versus California Workers’ Compensation System

Methodology Design for Health Insurance Program with One Payer	California Workers’ Compensation System	Modification Necessary for This Study
Payer has the universe of paid medical bills from which to select the sample bills to study.	Many payers, so there is no centralized resource that represents the universe of workers’ compensation-related medical bills.	<ul style="list-style-type: none"> • Use a multi-stage sampling process. • Collect paid medical bill data from many insurers and self-insured employers.
Payer has the authority to require providers to submit medical records.	Individual payers may have such authority, but State’s authority is limited.	In lieu of collecting medical records from providers, collect medical documentation from insurers that they may have obtained from providers as part of the bill adjudication and payment process.
One processor of medical bills, so there should be one consistent way of applying its fee schedule and interpreting its policy.	Many payers and bill processors present potential for varying interpretation of fee schedule policies.	Do not attribute processing review payment differences among insurers to fee schedule-pricing errors, since payment policies differ among insurers.

Sampling and Data Collection Modifications

The first modification we needed to make was in our sampling strategy. This modification was necessary because during the period of time covered for the workers’ compensation payment accuracy study, there was no centralized database that represented the universe of workers’ compensation-related paid medical bills from which to select a sample.⁷ Therefore, we used a multi-stage sampling methodology. We started by selecting a primary random sample of 5,150 injured worker claims filed from January 1, 2001, through June 30, 2006, from the Department of Industrial Relations’ Workers’ Compensation Information System (WCIS) that contains all workers’ compensation claims.⁸

⁷ This was true for the period of time covered by this study – medical bills paid during the period October 1, 2005, through September 30, 2006. Effective for bills with dates of service on or after September 22, 2006, all claims administrators that handle 150 or more total claims per year must submit medical bill payment records to the Workers’ Compensation Information System (WCIS).

⁸ We were interested in injured worker claims in WCIS that had associated medical services paid during the time period January 1, 2006, through June 30, 2006. We were assisted by the California Workers’ Compensation Institute which analyzed its Industry Claims Information System data to determine the number of workers’ compensation claims to select from each year to achieve a target sample size of 1,000. See Appendix A for more details.

We then requested that insurers identify injured workers in the primary sample who met the criterion of having a paid medical bill during the first six months of 2006. For the injured workers who met this criterion, we requested that the insurers provide medical bill data in electronic form for all bills paid during the 12-month period of October 1, 2005, through September 30, 2006. Insurers provided medical bill data for 845 injured workers; however, we found that the medical bill data for only 761 of them had the name of the provider and/or the date of service, two data elements necessary for the next stage of the multi-stage sampling process.

From this database of 12 months of medical bills, we randomly selected one bill for each injured worker claim. These 761 bills formed our tertiary sample for the medical review, injured worker survey and processing components of the study. Table 2.2 summarizes our multi-stage sampling process.

Table 2.2: Multi-Stage Sampling Process Summary

Sample Stage	Sampling Criterion	Data Source	Sample Size and Sampling Unit	Number of Insurance Carriers	Number of Self-Insured Employers
Primary	Workers' compensation claims for dates of injury from 1/1/2001 through 6/30/2006	WCIS	5,150 workers' compensation claims	155	305
Secondary	Injured workers in the primary sample for whom insurers paid medical bills from 1/1/2006 through 6/30/2006	Medical bill data collected from insurers ⁹	761 injured workers	67	107
Tertiary	One medical bill for each injured worker in the secondary sample	Selected from medical bill data collected from insurers and paid from 10/1/2005 through 9/30/2006 for injured workers in the secondary sample	761 medical bills	67	107

Appendix A includes a detailed description of our multi-stage sampling plan.

⁹ For injured workers who met the criterion of having a medical bill paid on their behalf from 1/1/2006 through 6/30/2006, we requested that insurers provide medical bill data for all bills they paid for the injured workers from 10/1/2005 through 9/30/2006. We used this 12-month period because we wanted a reasonably long period over which to conduct the processing review to identify potential duplicate billed services and to examine the overall pattern of services in relation to the one sample bill for the medical review.

Medical Review Modifications

The second modification to the core methodology we made was due to the fact that we could not obtain medical records directly from providers because the State of California does not have such authority. Instead, we requested that insurers provide any supporting medical documentation they received from the provider for the services on the sample bill. We were limited in the potential error issues we could identify because of our inability to obtain complete medical records for our sample bills. While we could use the documentation we received from insurers to determine whether the services billed and paid were consistent with medical and utilization guidelines, without the medical record from the provider, we could not verify that the services billed and paid were actually rendered.

Processing Review Modifications

Another modification we made was to conduct a separate electronic processing review which we refer to as an “electronic processing review only” on the 12 months of medical bill data collected from insurers for the sample injured workers. However, we also used the results from this electronic processing review for the processing review portion of the detailed review we conducted for the tertiary sample bill for each injured worker.

The electronic processing review by itself is not a component of the core payment accuracy measurement methodology developed by Professor Sparrow. However, since we had to collect a large amount of medical bill data because of the multi-stage sampling process requirements, we recognized that a processing review of this large longitudinal dataset could provide valuable information to augment the findings from the three review activities that form the core of the study methodology. For the electronic processing review only, the unit of analysis was a bill line item. We analyzed the bill line items and determined the amount that should have been paid for each. We compared the amount that should have been paid with the amount reported as paid by the insurers and determined whether differences between the two amounts should be considered processing errors. Table 2.3 summarizes the sample for the electronic processing review only.

Table 2.3: Sample for Electronic Processing Review Only

Sampling Criterion	Data Source	Sample Size
Injured workers in primary sample for whom insurers paid medical bills from 1/1/2006 through 6/30/2006	Secondary sample of medical bill data collected from insurers and paid from 10/1/2005 through 9/30/2006	9,614 bills with 38,487 bill lines

The final modification we made was in the processing review. We did not count as errors certain differences between the amounts that should have been paid and the amounts reported as paid by the insurer. This modification was because of the many payers in the California

workers' compensation system. When there is one payer processing medical bills, we would expect the payer to consistently apply its fee schedule and interpret its policies. Under this circumstance, we could reasonably conclude that differences in the amount indicated as appropriate and the amount actually paid represent payment errors. However, the California workers' compensation system has hundreds of different payers, many of which have a variety of negotiated network arrangements whereby they pay providers rates that differ from the workers' compensation fee schedule. Thus, when the amounts reported as paid differed from the amounts indicated as appropriate, and the only explanation for how the appropriate amounts were determined was that the services were billed at or priced according to the applicable fee schedule amount, it was difficult to distinguish whether the differences were due to information that was not available to us for our study or were due to errors. Because of this, we did not count such payment differences as errors. We believe this provides a more informative view of the level of processing errors in the system for public policy decision making, in that it focuses on medical provider billing practices, rather than negotiated network-payment arrangements between providers and insurers.

Methodology for This Study of California Workers' Compensation Payment Accuracy

This payment accuracy study for workers' compensation in California included two components. One component is what we refer to as the detailed review component and this component involved reviewing bills for services provided on one date of service.¹⁰ The other component is the electronic processing review only which involved reviewing line items on bills paid during a 12-month period of time.

Each of these review components is described in more detail in the following sections.

Detailed Review Component

The detailed review component of this study included reviewing the services on one bill for each sampled injured worker claim. This component included the following three activities:

1. **Medical review** of the paid medical bill and supporting documentation to test whether the services on the sample bill were consistent with medical and utilization review criteria.
2. **Survey of the injured worker** associated with the sample medical bill to verify that he/she received the medical services billed and paid.
3. **Processing review** of the sample medical bill to test whether the amount paid was correct.

These activities are described in more detail below.

¹⁰ The one exception to this was for inpatient hospital bills, the review of which was of the entire hospital stay.

We identified the type of provider on the sample bills based on the three categories for which the Workers' Compensation Insurance Rating Board (WCIRB) of California collects and reports workers' compensation medical benefit payments information: physicians and other practitioners; hospitals; and pharmacies. There are two additional categories for which WCIRB collects and reports medical benefit payments: medical-legal evaluations and other.¹¹ The medical bill data we gathered from insurers for our sample included medical-legal evaluations; however, we did not have a reliable method for separately identifying them. Thus, payments for medical-legal evaluations are included in the physician and other practitioner and hospital provider categories.

Medical Review

We requested that insurers provide any supporting medical documentation they obtained from the providers for the services on the 761 tertiary sample bills, and we received medical documentation for 447 of them. Registered nurses (RNs) with experience in workers' compensation utilization review and case management conducted reviews of this documentation to verify that the services on the sample bill were consistent with the following medical and utilization review criteria:

- The injured worker's injury and diagnosis or symptoms.
- American College of Occupational and Environmental Medicine (ACOEM) or other medical practice guidelines.
- All other medical services paid on behalf of the injured worker during the study period (this review is known as a contextual review).

In instances where the RNs questioned whether the services on the sample bill met these medical and utilization review criteria, our physician reviewer, who is board certified in occupational and environmental medicine, conducted a review of the case and made the final determination of whether the services met the medical and utilization criteria. Through that process, he determined that for 79 of the sample bills, the information in the documentation provided was insufficient to determine whether the services met medical and utilization criteria without reviewing the entire injured workers' medical history. Thus, we excluded these 79 sample bills from our analysis of payment errors due to medical reviews, leaving a total of 368 sample bills with medical documentation and medical review results. In addition, to maximize the sample size without biasing the sample results, we also included five sample bills that had survey errors but for which we did not receive medical documentation. This was based on the assumption that the lack of medical documentation for these bills with survey errors was

¹¹ "Other" includes medical cost containment programs and capitated medical payments. These types of payments are not included in the medical bill data we gathered from insurers.

indicative of medical review errors as well. Therefore, we used a total of 373 sample bills for the medical review error analysis.

Survey of Injured Workers

We mailed surveys to 761 injured worker claimants. The injured workers had three options for completing the survey: in writing and returning it by mail; on a website; or over the telephone, either by calling a toll-free number or answering follow-up telephone calls we made to them. Through these three survey methods, 215 sample injured workers completed the surveys for a response rate of 28 percent for the 761 sample.

Processing Review

For the third activity of the detailed review component, the processing review, we determined the amount that should have been paid for each sample bill. We compared this amount with the amount reported as paid by the insurers and determined whether differences between the two amounts should be considered processing errors. Because some of the medical bill data we received were missing information (for example, procedure codes that describe the services) necessary to conduct a processing review, only 295 of the 373 sample bills from the medical review activity also had useable processing review results.

Combining All Three Reviews

We included sample bills for which we had results from the medical review and survey activities to determine the errors for the detailed review component. These were the majority of the sample bills. If a sample bill had a medical review or survey error, the payment error was the entire amount paid for the bill, so it was not necessary to have the results of the processing review for these bills.¹² We also included sample bills that did not have medical review or survey errors and for which we also had results for the processing review. Sample bills for 97 of the 761 sample injured workers fell into the groups described above. Thus, the services on 97 sample bills formed our sample size for the analysis of the results of the three review activities of the detailed review component.

Electronic Processing Review Only Component

Although insurers provided medical bill data for 761 injured workers, a large amount of the data was missing information necessary to conduct the electronic processing review, for example, procedure codes that describe the services on the bill. As a result, data for only 637 of workers were usable for the electronic processing review component. The medical bill data used for the processing review include services paid during the period from October 1, 2005, through September 30, 2006. We analyzed 38,487 bill line items and determined the appropriate

¹² The one exception to this was one bill with a medical review error for only a portion of the services on the bill; however, we also had processing review results for this bill and there was no processing error.

amount that should have been paid for each. We compared the appropriate amount with the amount reported as paid by the insurers and determined whether differences between the two amounts should be considered processing errors.

We determined the number of processing errors and calculated their net dollar value by subtracting the underpayment errors from the overpayment errors and expressed the net value paid in error as a percentage of the total amount paid for all the bills in the sample.

Chapter 3 presents our findings from the detailed review and the electronic processing review only components. Before presenting our findings, in the next section, we discuss the challenges associated with this study.

Challenges in Conducting the Study

We encountered many practical challenges in conducting this study, the largest of which was due to the lack of a centralized database of workers' compensation-related medical bill data and the data collection that this necessitated. These challenges included:

- We received great cooperation from most insurance carriers, self-insured employers and third-party administrators. The data collection was challenging for many of them because the study covered a period of time for which they were not required to retain and report medical bill data. The data collection process extended much longer than we had anticipated, because in many cases, insurers had to gather the portions of the data we needed for the study from different entities, such as bill review and utilization review companies.
- The assumption we made in designing our sampling plan to produce a target sample size of 1,000 injured workers, – that 19 percent of the injured workers in our primary sample would have paid medical bills during the first six months of 2006 – proved generally valid for the 174 insurers that participated in the study.¹³ However, the sample size decreased considerably from our target size for several reasons, including:
 - We learned that nine insurance carriers with claims in our primary sample were no longer operational, and four other insurer carriers never responded to our letter requesting their participation (we could not make contact with them by telephone).
 - We were not able to contact self-insured employers who represented 141 workers' compensation claims in our primary sample. This was because the Department of Industrial Relations, Self-Insured Workers' Compensation Plans (the State office that has jurisdiction over the self-insurance plans) did

¹³ See Appendix A for details.

not have contact information for them. It should be noted that the original list of sample claims with no contact information for the self-insured employer was considerably larger, but we reduced it by coordinating with the third-party administrators listed in WCIS data to obtain the necessary contact information.

- Some self-insured employers that responded that they had paid medical bills during the first six months of 2006 for some of their claims in our primary sample ultimately failed to provide the medical bill data for the claims.
 - Some self-insured employers and insurance carriers provided their medical bill data very late in the data collection phase and in unusable formats.
 - Some of the medical bill data we received in usable format were missing data elements required to conduct the processing review.
- Some of the dates of services were further in the past than we expected, which presented challenges for the survey of injured workers. The time gap may explain why the addresses and/or telephone numbers we obtained from WCIS were outdated for 392 of the 761 injured workers we attempted to survey. If these 392 are excluded from the survey sample denominator, the survey response rate is 58 percent versus the overall response rate of 28 percent for all 761 sample injured workers.
 - The provider name in the medical bill data we received and used for the injured worker survey may have been different than the provider who rendered the service. Although we requested the name of the rendering provider, in some cases, it appeared that the information we received was the name of a corporation or entity that did the billing for the rendering provider. In such cases, it is understandable that the injured worker would not have recognized the provider's name. Therefore, we did not count as survey errors instances in which the injured worker denied receiving the services on the sample bill or ever receiving services from the sample bill provider, and the provider's name appeared to be a billing entity.

CHAPTER 3: STUDY FINDINGS

This chapter presents the results of the various reviews we conducted and our estimates of the value of the potential payment errors in entire California workers' compensation system. At the conclusion of this chapter, we discuss how the results from this study compare with those from other similar studies.

Detailed Review Component Results

As discussed in Chapter 2, our sampling strategy led to the selection of one sample bill for each of 761 injured workers. To reiterate, the detailed review component included the following three review activities:

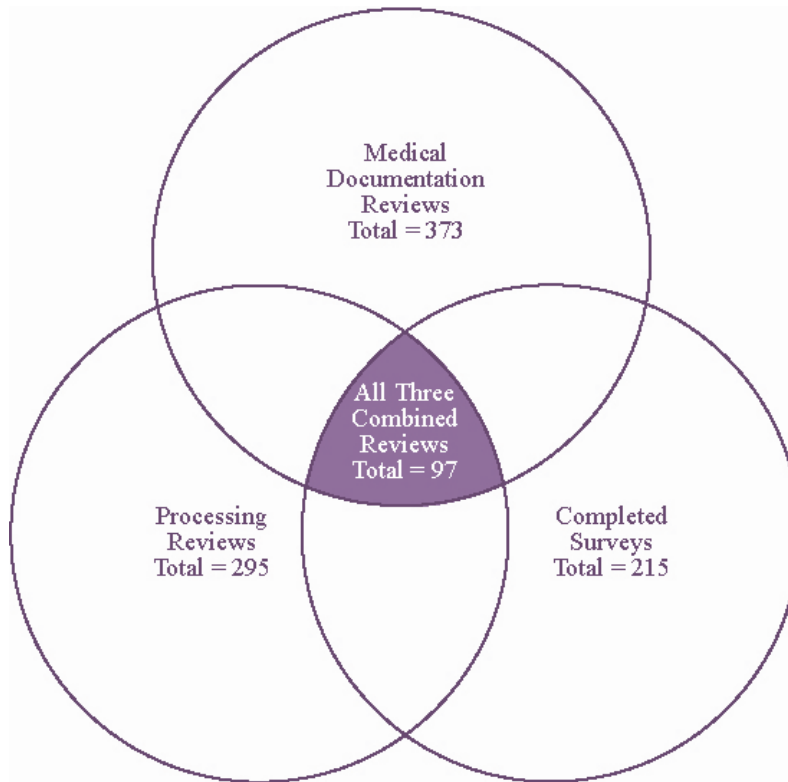
1. **Medical review** of the paid medical bill and supporting documentation to test whether the services on the sample bill were consistent with medical and utilization review criteria.
2. **Survey of the injured worker** associated with the sample medical bill to verify that he/she received the medical services that were billed and paid.
3. **Processing review** of the sample medical bill to test whether the amount paid was correct.

In an ideal situation, we would have been able to conduct all three reviews on all of the bills in our sample. However, due to the many reasons discussed in Chapter 2, this was not possible. As a result of these limitations, we were able to conduct the number of reviews, of each type, as shown in Table 3.1. Figure 3.1 is an illustration of the relationship between these sample subsets.

Table 3.1: Injured Workers Included in Each Detailed Review Activity

Review Activity	Information	Number of Injured Worker Sample Bills
Medical review	Medical documentation reviews	373
Survey of injured workers	Completed surveys	215
Processing review	Processing reviews of bills	295
All three combined reviews	Medical documentation reviews, completed surveys and processing reviews of Bills	97

Figure 3.1: Relationship between Sample Subsets



The 97 sample bills included in the three combined reviews are a subset of the bills used in each of the individual review activities. We tested for a potential bias in the review results due to the small size of this subset, and we discuss this later in this section.

Table 3.2 shows the distribution by year of injury for the injured workers whose information is included in the each of the individual reviews and the three combined reviews. The distribution by year of injury is fairly comparable for each review activity and for all three combined reviews.

Table 3.2: Injured Workers Included in Detailed Review by Year of Injury

Year of Injury	Medical Review		Survey of Injured Workers		Processing Review		All Three Combined Reviews	
	Number	Portion of Total	Number	Portion of Total	Number	Portion of Total ¹⁴	Number	Portion of Total ¹⁵
2001	18	5%	12	6%	17	6%	4	4%
2002	25	7%	17	8%	23	8%	10	10%
2003	32	9%	30	14%	29	10%	12	12%
2004	46	12%	32	15%	38	13%	16	16%
2005	146	39%	74	34%	112	38%	35	36%
2006	106	28%	50	23%	76	26%	20	21%
Total	373	100%	215	100%	295	100%	97	100%

The 97 sample bills in the three combined review activities are from 34 insurers (22 insurance carriers and 12 self-insured employers) for 92 medical providers.

Definition of an Error

We determined an error in payment occurred if:

- The services on the sample bill were not verified by the medical review and the survey of the injured worker. We calculated the dollar value of these payment errors as the entire amount of the bill paid by the insurer for the sample services date of service. However, in a few cases, our physician reviewer determined that only a portion of the services on the sample bill were medical review errors, so the dollar value of the payment errors was the amount the insurer paid for those services only.
- The services on the sample bills were verified by both the medical review and the injured worker survey, but through the processing review, we determined that the amount that should have been paid was different than the amount the insurer reported paying. We calculated the dollar value of the difference as the value of the payment error.

¹⁴ Does not sum to 100 percent due to rounding.

¹⁵ Does not sum to 100 percent due to rounding.

It is important to note that, in other studies similar to this one, the absence of medical documentation and insufficient medical documentation are considered medical review errors. We did not receive medical documentation for 41 percent of the 761 bills in our tertiary sample. We excluded these sample bills from the error analyses, rather than considering them as medical review errors, because we had no way of determining the reason why we received no documentation – whether the insurer had never requested such documentation from the provider or whether the insurer had received the documentation, but did not retain it or could not find it. In addition, we excluded from the error analyses, 79 sample bills for which the information in the medical documentation was insufficient to enable our physician reviewer to determine whether the services met medical and utilization criteria without reviewing the injured workers’ entire medical history.¹⁶ However, we did count as errors sample bills for which the documentation provided did not substantiate the reason and need for the services paid for by the insurer.

Sample Results for Three Combined Reviews

Table 3.3 presents the combined results of the three review activities.

Table 3.3: Sample Payment Errors for Three Combined Reviews – Total and by Provider Category

Statistic	Total	Physicians and Other Practitioners	Hospitals	Pharmacies
Sample bills reviewed	97	91	5	1
Number of bills with payment errors	34	32	2	-
Percent of bills with payment errors	35.1%	35.2%	40.0%	-
Dollar value of payments in sample	\$20,629	\$12,783	\$7,732	\$114
Dollar value of payment errors	\$4,766	\$4,570	\$196	-
Dollar value of payment errors as a percent of dollar value of payments	23.1% ¹⁷	35.8%	2.5%	-

As Table 3.3 shows, we found that 34 of the 97 sample bills were paid in error and that these errors were all overpayments. The value of these overpayment errors totaled \$4,766 and

¹⁶ As discussed in Chapter 2, for the medical review, we included five sample bills that had survey errors but for which we did not receive medical documentation. This was based on the assumption that the lack of medical documentation for these bills with survey errors was indicative of medical review errors as well.

¹⁷ The total sample error rate is unweighted.

amounted to 23.1 percent of total payments in the sample. The physicians and other practitioners provider category accounts for all but two of the errors.

Reasons for Payment Errors for Three Combined Reviews

Table 3.4 shows the reasons for the payment errors we found. Twenty-four of the payment errors were due to medical review errors, and these errors accounted for 61 percent of the total dollar value of the errors. Most of the medical review errors were due to services that were not medically necessary; this is discussed later in this section. The next most frequent reason for medical review error was services that were not supported by the medical documentation. Six payment errors resulted from the survey of the injured workers; the injured workers denied that they had received the services on the sample bill and denied that they had ever seen the providers who billed and were paid for the sample services. The survey errors accounted for 32 percent of the total dollar value of the errors. The other four payment errors were due to processing review errors such as duplicate billed items and incorrect procedure codes.

Note that “fraud” is not among the reasons for error shown in Table 3.4, but fraud can be within the identified errors. Fraud involves deception, and criminal intent on the part of the perpetrator must be established to determine whether an error is fraud. This study was not designed, and the review protocol is not sufficient, to establish criminal intent. The purpose of studies such as this is to determine which medical bills, after detailed review of the circumstances, should not, in our best judgment, have been paid. Therefore, we do not categorize any of the payment errors as fraudulent, but instead use the objective reasons shown in Table 3.4 for classifying the errors.

Table 3.4: Reasons for Payment Errors for Three Combined Reviews

Reason for Error	Number of Sample Bills with Errors	Dollar Value of Errors
Medical Review Errors		
Service was not medically necessary	15	\$1,689
Service was not supported by the medical documentation	7	\$1,126
Diagnosis was not related to worker's injury	2	\$77
Total Medical Review Errors	24	\$2,892
Total Survey of Injured Workers Errors		
	6	\$1,537
Processing Review Errors		
Diagnosis Related Grouping (DRG) pricing	1	\$131
Duplicate billed items	1	\$105
Incorrect procedure codes	2	\$101
Total Processing Review Errors	4	\$337
Total Errors	34	\$4,766

Analysis of Medical Review Only Sample Results

The requirement for results from all three review activities severely limited the sample size. However, we conducted medical reviews on a considerably larger sample of bills for which we received medical documentation. Since most of the errors in the three combined reviews are medical review errors, we tested whether there might be a bias between the 97 bills included in the three combined reviews and the 373 bills for we had documentation to conduct medical reviews.

We analyzed the payment error rate for the 373 bills for which we conducted medical reviews. Table 3.5 presents the result of this analysis of the medical review only results. The 373 sample bills in the medical review only are from 90 insurers (47 insurance carriers and 43 self-insured employers) for 349 medical providers.

Table 3.5: Payment Errors for Medical Review Only – Total and by Provider Category

Statistic	Total	Physicians and Other Practitioners	Hospitals	Pharmacies
Sample bills reviewed	373	335	31	7
Number of bills with payment errors	79	69	7	3
Percent of bills with payment errors	21.2%	20.6%	22.6%	42.9%
Dollar value of payments in sample	\$77,711	\$59,603	\$17,487	\$621
Dollar value of payment errors	\$17,087	\$15,012	\$1,589	\$486
Dollar value of payment errors as a percent of dollar value of payments	22.0% ¹⁸	25.2%	9.1%	78.3%

In this larger sample, we found a comparably high level of error. Payment errors represented 22.0 percent of the total value of the sample payments for the medical review only, compared with the 23.1 percent payment error for the three combined reviews. We also found that all the payment errors in this larger sample were overpayments. This analysis of the payment errors from the 373 medical reviews indicates that there is no bias between this larger sample and the subset of 97 included in the three combined reviews.

Later in this section, we address another potential bias, that is, response bias between the medical review error rates we found in these two samples that include bills with medical documentation, and the underlying medical review error rate for all the bills in the universe.

Reasons for Payment Errors for Medical Review Only

Table 3.6 shows the reasons for the payment errors we found in the medical review only of 373 sample bills. As with the sample of 97 bills, the two most frequent reasons for errors in this larger sample are services that were not medically necessary and services that were not supported by the medical documentation. Again, “fraud” is not among the reasons for error shown here. Fraud may or may not be associated with these medical review errors. Likewise, errors have many causes, and fraud is only one of them.

¹⁸ The total sample error rate is unweighted.

Table 3.6: Reasons for Payment Errors for Medical Review Only

Reason for Error	Number of Sample Bills with Errors	Dollar Value of Errors
Service was not medically necessary	41	\$6,710
Service was not supported by the medical documentation	20	\$5,181
Medical information did not to justify need for the service	8	\$2,577
No medical documentation received (for sample bills with survey errors)	5	\$1,478
Diagnosis was not related to worker’s injury	3	\$928
Diagnosis was incorrect	2	\$213
Total Errors	79	\$17,087

Discussion of Medical Review Errors

As the reasons for errors information in Tables 3.4 and 3.6 indicate, the most frequent reason for medical review errors is services that were not medically necessary. Most of these errors were because the services were inconsistent with ACOEM guidelines. These errors include:

- Treatments that were continued beyond the time in which they could have value, for example: physical therapy passive treatments without active therapy, continued beyond two weeks following the date of injury for diagnoses of sprains and strains; or chiropractic manipulative treatments continued beyond four weeks for diagnoses of low back pain.
- Radiology testing reports that were not supported by adequate medical information to determine if the testing complied with ACOEM guidelines.
- Diagnoses and treatments that were not related to the accepted injury.

Research studies show that there is limited or no evidence of long-term effectiveness for most passive physical therapy treatments for most soft tissue injury diagnoses. ACOEM guidelines indicate that these passive modalities should be used only for a few days to facilitate exercise/active physical therapy. Exhibit 3.1 summarizes information from the ACOEM

guidelines, 2nd Edition, on physical therapy passive modalities for which there is no clear evidence of long-term effectiveness.¹⁹

In addition, for all disorders covered in Exhibit 3.1, ACOEM guidelines recommend one to two physical therapy visits for education and instruction in a home program and a recheck and refresher.²⁰

¹⁹ There is no research on physical therapy visits, as there is no common definition for a physical therapy visit. Research on effectiveness has been done by modality with a few studies of exercise, also known as active physical therapy.

²⁰ Glass LS, Blais BB, Genovese E, Goertz M, Harris JS, Hoffman H, et al (eds), *Occupational Medicine Practice Guidelines: Evaluation and Management of Common Health Problems and Functional Recovery in Workers, 2nd Edition*, (2004), OEM Health Information Press, Beverly Farms, MA.

Exhibit 3.1: Clear Research Evidence of Long-Term Effectiveness for Physical Therapy Passive Modalities for Soft Tissues Injury Diagnoses per ACOEM Guidelines²¹

Modality	Location of Soft Tissue Injury						
	Neck	Shoulder	Elbow	Hand/Wrist	Low Back	Knee	Ankle/Foot
Heat, cold (<i>can be applied equally effectively at home as in a therapy facility</i>)	None	None	None	No comment by ACOEM	Heat – limited	None	None
Diathermy	None	No comment by ACOEM	None	None	None	None	None
Traction	None	No comment by ACOEM			None	No comment by ACOEM	
Cutaneous laser	None	None	None	None	None	None	None
Ultrasound	None	Moderate quality studies ²²	None	Lower quality studies ²³	None	None	None
TENS, Electrical stimulation	None	None	None	None	None	None	None
Biofeedback	None	None	None	None	None	None	None
Iontophoresis	None	None	None	None	None	None	None
Massage	None	None	None	None	None	None	None
Acupuncture	None	Small studies	Limited evidence	None	None	Possibly for chronic osteoarthritis ²⁴	None
Manipulation	None	Small studies for frozen shoulder ²⁵	None	None	Few weeks only	None	None

²¹ Glass LS, Blais BB, Genovese E, Goertz M, Harris JS, Hoffman H, et al (eds), *Occupational Medicine Practice Guidelines: Evaluation and Management of Common Health Problems and Functional Recovery in Workers, 2nd Edition*,(2004), OEM Health Information Press, Beverly Farms, MA.

²² ACOEM has a complex methodology for evaluating the quality of research studies.

²³ ACOEM has a complex methodology for evaluating the quality of research studies.

²⁴ This disorder is rarely work-related.

²⁵ This disorder is rarely work-related.

Estimation of the Dollar Value for the Universe of Bills

The California WCIRB collects information about workers' compensation benefits payments from insurance carriers. However, there is no similar resource for workers' compensation benefit payments made by self-insured employers. Thus, to approximate the universe of workers' compensation medical payments in California, we adjusted the medical payments reported by WCIRB to include an amount for self-insured employers based on self-insured employers' workers' compensation benefits as a percent of total 2005 benefits in California from National Academy of Social Insurance.²⁶

WCIRB collects and reports medical benefit payments for five categories: physicians and other practitioners; hospitals; pharmacies; medical-legal evaluations; and other.²⁷ Because we had no reliable method to identify all the medical-legal evaluations in the medical bill data we received from insurers and separate them into a medical-legal evaluation category, these services and payments are included in the data for the physicians and other practitioners and hospital samples.²⁸ For purposes of extrapolating the sample error rate estimates to the entire California workers' compensation system, we included the WCIRB-reported payments for medical-legal evaluations, adjusted to account for the self-insured employers' payments, in the physician and other practitioner payments.

Error Rate Calculation for the Universe

To estimate the total payment error in California for workers' compensation medical bills, we calculated weighted averages of the total error rates from the sample error rates for each provider category in Tables 3.3 and 3.5. In Tables 3.7 and 3.8, the total sample error rates are the average of each provider category's sample error rate weighted by the respective category's estimated dollar value in the entire California workers' compensation system. This weighting changes the total sample error rate for the three combined reviews shown in Tables 3.3 from the unweighted 23.1 percent to the weighted 21.9 percent in Table 3.7, and for the medical review only, from the unweighted 22.0 percent in Table 3.5 to the weighted 27.4 percent in Table 3.8.

²⁶ National Academy of Social Insurance, "Workers' Compensation: Benefits, Coverage and Costs, 2005," (August 2007). Available online: http://www.nasi.org/usr_doc/NASI_Workers_Comp_2005_Full_Report.pdf.

²⁷ Other includes medical cost containment programs and capitated medical payments. These types of payments are not included in the medical bill data we gathered from insurers.

²⁸ Medical-legal evaluations generally are not subject to utilization review, so their inclusion in our sample had the effect of lowering the medical review sample error rate.

Table 3.7: Sample Errors for Three Combined Reviews – Total Weighted by Provider Category Universe

Provider Category	Percent of Sample Dollars Paid in Error	Estimated Annual Value of Medical Payments in the CA Workers' Compensation System ²⁹ (in millions)
Physicians and other practitioners	35.8%	\$2,520
Hospital	2.5%	\$1,201
Pharmacy	. ³⁰	\$540
Total	21.9%	\$4,261

Table 3.8: Sample Errors for Medical Review Only – Total Weighted by Provider Category Universe

Provider Category	Percent of Sample Dollars Paid in Error	Estimated Annual Value of Medical Payments in the CA Workers' Compensation System ³¹ (in millions)
Physicians and other practitioners	25.2%	\$2,520
Hospital	9.1%	\$1,201
Pharmacy	78.3%	\$540
Total	27.4%	\$4,261

We then applied the sample error rates by provider category and for the total universe to the adjusted WCIRB estimates of total annual payments in the California workers' compensation system. We present the results of these extrapolations in the next section.

²⁹ Per WCIRB, California Medical Losses Paid by Payee in CY 2005 and CY 2006 adjusted to include estimated medical losses paid by self-insured employers. We calculated a weighted average of the calendar year 2005 and 2006 payments to determine a 12-month amount that is reflective of the period of time covered by the study, October 1, 2005, through September 30, 2006.

³⁰ There was no payment error for the one pharmacy bill in the sample for the three combined reviews.

³¹ Per WCIRB, California Medical Losses Paid by Payee in CY 2005 and CY 2006 adjusted to include estimated medical losses paid by self-insured employers. We calculated a weighted average of the calendar year 2005 and 2006 payments to determine a 12-month amount that is reflective of the period of time covered by the study, October 1, 2005, through September 30, 2006.

Extrapolation of Sample Results to Entire California Workers' Compensation System

Tables 3.9 and 3.10 present the results of the extrapolations for the two analyses we conducted.

Table 3.9: Extrapolation of Sample Errors for Three Combined Reviews to Estimate Value of Payment Error in California Workers' Compensation System

Provider Category	Percent of Sample Dollars Paid in Error	Estimated Annual Value of Medical Payments in the CA Workers' Compensation System ³² (in millions)	Projected Value of Error in the CA Workers' Compensation System (in millions)	95 Percent Confidence Interval for Projected Value of Payment Error (in millions)
Physicians and other practitioners including medical-legal evaluations	35.8%	\$2,520	\$902	\$464 – \$1,341
Hospital	2.5%	\$1,201	NA ³³	NA
Pharmacy	-	\$540	-	-
Total	21.9% ³⁴	\$4,261	\$933	\$494 – \$1,372

³² Per WCIRB, California Medical Losses Paid by Payee in CY 2005 and CY 2006 adjusted to include estimated medical losses paid by self-insured employers. We calculated a weighted average of the calendar year 2005 and 2006 payments to determine a 12-month amount that is reflective of the period of time covered by the study, October 1, 2005, through September 30, 2006.

³³ NA indicates that the value was not computed because it is not informative due to the small sample size for the hospital provider category.

³⁴ The total sample error rate is the average of each provider category's sample error rate weighted by the respective category's estimated dollar value in the entire California workers' compensation system.

Table 3.10: Extrapolation of Sample Error Rates for Medical Review Only to Estimate Value of Payment Error in California Workers' Compensation System

Provider Category	Percent of Sample Dollars Paid in Error	Estimated Annual Value of Medical Payments in the CA Workers' Compensation System ³⁵ (in millions)	Projected Value of Error in the CA Workers' Compensation System (in millions)	95 Percent Confidence Interval for Projected Value of Payment Error (in millions)
Physicians and other practitioners including medical-legal evaluations	25.2%	\$2,520	\$635	\$414 – \$857
Hospital	9.1%	\$1,201	NA ³⁶	NA
Pharmacy	78.3%	\$540	NA	NA
Total	27.4%³⁷	\$4,261	\$1,168	\$822 – \$1,513

Potential Response Bias between Error Rates in the Samples and Underlying Error Rate in the Universe

We acknowledge that the small number of bills for which we received medical documentation, and on which our error results are based, raise questions about potential response bias in the results. We did not receive medical documentation for 41 percent of the 761 injured workers in the tertiary sample, so we were unable to conduct medical reviews for them. It is conceivable, but unlikely, that bills for which we did not obtain documentation were more error-free than the underlying error rate in the universe. The reverse is more likely – that is, that the error rate for the sample bills for which we did not receive medical documentation is higher than the underlying error rate in the universe. This is because we believe that medical providers, who knowingly submit bills for services that were not medically necessary or were not rendered, are the providers least likely to offer supporting medical documentation. Therefore, we think any response bias likely has the effect of understating rather than overstating the underlying error rate in the universe.

³⁵ Per WCIRB, California Medical Losses Paid by Payee in CY 2005 and CY 2006 adjusted to include estimated medical losses paid by self-insured employers. We calculated a weighted average of the calendar year 2005 and 2006 payments to determine a 12-month amount that is reflective of the period of time covered by the study, October 1, 2005, through September 30, 2006.

³⁶ NA indicates that the value was not computed because it is not informative due to the small sample sizes for the hospital and pharmacy provider categories.

³⁷ The total sample error rate is the average of each provider category's sample error rate weighted by the respective category's estimated dollar value in the entire California workers' compensation system.

Summary of Results of Extrapolation

In summary, as Table 3.9 and Table 3.10 show, we found the following sample payment-error rates:

- 21.9 percent of the sample dollars were paid in error for the three combined reviews.
- 27.4 percent of the sample dollars were paid in error for the medical review only.

Based on these sample results, we estimate that total potential payment errors in the entire California workers' compensation system range:

- From \$494 million to \$1,372 million for the three combined reviews.
- From \$822 million to \$1,513 million for the medical review only.

It is important to note a caveat regarding the considerably higher estimate of total potential payment error for the medical review only than for the three combined reviews. The explanation for this result is that we found no error in the one pharmacy bill in the three combined reviews sample, but we found three errors in the seven pharmacy sample bills in the medical review only sample. The dollar value of the errors for these pharmacy bills is very high, and this contributes to the estimate of total potential error in the entire California workers' compensation system.

Because this small sample of pharmacy bill errors has a large influence on the total results for the medical review only sample, it is useful to focus on the results for the physicians and other practitioners provider category. This provider category comprises most of the total sample for both the three combined reviews and the medical review only; 91, or 94 percent, of the 97 total sample bills for the three combined reviews; and 335, or 90 percent, of the 373 total sample bills for the medical review only. The extrapolated results for the physicians and other practitioners category are independent of the extrapolated total and provide important information about this provider category that comprises the majority of the total in our sample and in the universe. We found that:

- 35.8 percent of the sample dollars for physicians and other practitioners were paid in error for the three combined reviews.
- 25.2 percent of the sample dollars for physicians and other practitioners were paid in error for the medical review only.

Based on these sample results, we estimate that potential payment errors for physicians and other practitioners in the entire California workers' compensation system range:

- From \$464 million to \$1,341 million for the three combined reviews.

- From \$414 million to \$857 million for the medical review only.

The next section presents the results of the electronic processing review only followed by a discussion of how the overall study results compare with results from other similar studies.

Electronic Processing Review Only Results

The electronic processing review only included 38,487 lines of medical bill data for 637 sample injured workers for services paid during the period October 1, 2005, through September 30, 2006. The dates of service on the medical bill data range from May 2001 through September 2006. The old dates of service are surprising, and the lag between the service and payment dates could be due to a variety of issues, including delays in billing by the provider, delays in payment by the insurer and disputes between the insurer and the provider.

Table 3.11 shows, by the year of injury, the number of injured workers whose bills are included in the electronic processing review.

Table 3.11: Injured Workers Included in Electronic Processing Review Only – Total and by Year of Injury

Year of Injury	Number	Portion of Total
2001	47	7%
2002	44	7%
2003	92	14%
2004	93	15%
2005	214	34%
2006	147	23%
Total	637	100%

For the electronic processing review only, we analyzed the bill data and determined the amount that should have been paid for each line item on the bills. We compared the amount that should have been paid with the amount reported as paid by the insurers and determined whether differences between the two amounts should be considered processing errors. We did not count as errors payment differences where the reason indicated for the differences was that services were billed at or priced according to the applicable fee schedule amount. Table 3.12 shows the results for the electronic processing review only.

Table 3.12: Payment Errors for Electronic Processing Review Only – Total and by Provider Category

Statistic	Number or Dollar Amount			
	Total	Physicians and Other Practitioners	Hospitals	Pharmacies
Sample bills reviewed	9,614	8,743	458	413
Sample bill lines reviewed	38,487	35,569	2,116	802
Number of bill lines with overpayment errors	2,079	1,979	55	45
Percent of bill lines with overpayment errors	5.4%	5.6%	2.3%	5.6%
Number of bill lines with underpayment errors	1,371	1,336	35	-
Percent of bill lines with underpayment errors	3.6%	3.8%	1.7%	-
Total number bill line with payment errors	3,450	3,315	90	45
Percent of bill lines with payment errors	9.0%	9.3%	4.3%	5.6%
Dollar value of payments in sample	\$2,736,586	\$2,036,379	\$644,326	\$55,881
Dollar value of overpayment errors	\$173,801	\$137,363	\$31,703	\$4,735
Dollar value of underpayment errors	\$51,993	\$20,182	\$31,811	-
Net dollar value of payment errors	\$121,808	\$117,181	-\$108	\$4,735
Net dollar value of payment errors as a percent of total payments in sample	4.5% ³⁸	5.8%	-.02%	8.5%

As shown in Table 3.12, we completed processing reviews for 38,487 lines on 9,614 medical bills for which insurers paid approximately \$2.74 million. We found that 2,079 of the bill lines had overpayment errors, i.e., the amount the insurer reported paying was greater than the amount that should have been paid, and these overpayment errors total \$173,801. We found 1,371 bill lines with underpayment errors, and these underpayment errors totaled \$51,993. The net value of the payment error was an overpayment of \$121,808 which represented 4.5 percent of the \$2.74 million total sample payments.

³⁸ The total sample error rate is unweighted.

Reasons for Payment Errors for Electronic Processing Review Only

Table 3.13 shows the value of net payment errors by type of processing error. As noted previously, we did not count as errors payment differences where the reason indicated for the differences was that services were billed at or priced according to the applicable fee schedule amount. We believe this provides a more informative view of the level of processing errors in the system for public policy decision making in that it focuses on medical provider billing practices rather than insurer technical processing factors.

Again, note that fraud is not among the reasons for errors shown in Table 3.13. However, as discussed in the detailed review component results section, fraud can be within the identified errors shown in Table 3.13. Electronic processing payment errors that point to potential fraud are: incorrect or invalid procedure codes and modifiers; non-reimbursable services; unbundled services – that is, services that are billed individually but that are included in a bundled or global service fee; and duplicate billed items.

The overpayments due to physical therapy and chiropractic services that exceeded the 24 per injury limit are based on a strict application of this limit to the number of these visits on bills in our study time period. The insurer may have received documentation from the provider that substantiated the need for the additional physical therapy services, but we are unable to determine this based on the medical bill data we received from the insurers. However, as discussed in the detailed review component results section, from our medical reviews, we found many errors that were due to physical therapy passive treatments and chiropractic services that were not consistent with ACOEM guidelines.

Table 3.13: Reasons for Payment Errors for Electronic Processing Review Only

Reason for Error	Net Dollar Value of Payment Errors
Incorrect or invalid procedure codes and modifiers	\$68,233
Non-reimbursable services	\$14,533
Unbundled services	\$13,821
Physical therapy and chiropractic services that exceed visit limitations	\$13,661
Duplicate billed items	\$12,588
Multiple procedure pricing	\$3,489
Services that exceed per day or other time limits	\$2,274
Other	-\$6,791
Total net dollar value of payment errors	\$121,808

Error Rate Calculation for Electronic Processing Review Only

Table 3.14 shows the percent of the sample dollars paid in error for the electronic processing review. The total sample error rate shown in Tables 3.14 is the average of each provider category's sample error rate weighted by the respective category's estimated dollar value in the entire California workers' compensation system.

Table 3.14: Sample Errors for Electronic Processing Review Only – Total Weighted by Provider Category Universe

Provider Category	Percent of Sample Dollars Paid in Error	Estimated Annual Value of Medical Payments in the CA Workers' Compensation System ³⁹ (in millions)
Physicians and other practitioners	5.8%	\$2,520
Hospital	-.02%	\$1,201
Pharmacy	8.5%	\$540
Total	4.5%	\$4,261

Extrapolation of Sample Results to Entire California Workers' Compensation System

To estimate the total payment error in California for workers' compensation medical bills for the electronic processing review only, we applied the sample error rate estimates from Table 3.14 to total annual payments in the California workers' compensation system. Table 3.15 presents the results of this extrapolation. We estimate that potential payment errors due to processing errors in the entire California workers' compensation system range from \$122 million to \$261 million. As expected, the value of payment errors for the electronic processing review only was lower than the results from the detailed reviews which include the medical reviews where most of the payment errors were found.

³⁹ Per WCIRB, California Medical Losses Paid by Payee in CY 2005 and CY 2006 adjusted to include estimated medical losses paid by self-insured employers. We calculated a weighted average of the calendar year 2005 and 2006 payments to determine a 12-month amount that is reflective of the period of time covered by the study, October 1, 2005, through September 30, 2006.

Table 3.15: Extrapolation of Electronic Processing Review Only Sample Error Rates to Estimate Value of Error in California Workers' Compensation System

Provider Category	Percent of Sample Dollars Paid in Error	Estimated Annual Value of Medical Payments in the CA Workers' Compensation System ⁴⁰ (in millions)	Projected Value of Error in the CA Workers' Compensation System (in millions)	95 Percent Confidence Interval for Projected Value of Payment Error (in millions)
Physicians, other practitioners, including medical-legal evaluations	5.8%	\$2,520	\$146	\$123 – \$169
Hospital	-.02%	\$1,201	\$0	-\$64 – \$63
Pharmacy	8.5%	\$540	\$46	\$28 – \$64
Total	4.5%⁴¹	\$4,261	\$192	\$122 – \$261

Comparison of Error Rate Results with Results from Other Studies

The error rates from this study are higher than those found in other studies. There are a few possible explanations for this:

- The California workers' compensation system may be especially error-prone.
- Workers' compensation programs may be more error-prone than the health insurance programs whose payment errors have been measured in similar studies.
- This study used a more rigorous review protocol than other similar studies.

The only other payment accuracy studies of workers' compensation programs that we know of are those conducted for many years by the Texas Comptroller of Public Accounts for workers' compensation for Texas state employees. The results from the most recent two studies were published in 2003 and 2005. The overpayment error rate was 19.9 percent in the 2003 study and

⁴⁰ Per WCIRB, California Medical Losses Paid by Payee in CY 2005 and CY 2006 adjusted to include estimated medical losses paid by self-insured employers. We calculated a weighted average of the calendar year 2005 and 2006 payments to determine a 12-month amount that is reflective of the period of time covered by the study, October 1, 2005, through September 30, 2006.

⁴¹ The total sample error rate is the average of each provider category's sample error rate weighted by the respective category's estimated dollar value in the entire California workers' compensation system.

13.7 percent in the 2005 study. The Texas Comptroller's office attributed the decrease in the error rate results between the 2003 and 2005 studies to cost containment efforts by the State office that administers the state employees' workers' compensation program and to reimbursement changes that were implemented as a result of the 2003 study.⁴²

This study's error rate of 21.9 percent for the three combined reviews is not significantly higher than the results from the 2003 Texas workers compensation study. In addition, the reasons for the overpayment errors found in the Texas study of workers' compensation are consistent with the results from this study – services that were not medically necessary were frequently the reason for payment error in both the Texas study and in this study. Almost half of the workers' compensation overpayments were due to services that exceeded the Texas Workers' Compensation Commission's (TWCC) spine treatment guidelines or the medical fee guidelines. Similarly, the payment accuracy study that Texas conducted in 2001 found that 66 percent of the workers' compensation medical review errors were due to services that exceeded TWCC medical and chiropractic treatment guidelines.⁴³

An important distinction between the Texas workers' compensation study and this study is that, in Texas, the study was of one payer's – the State's – workers' compensation program, while this study includes many different workers' compensation payers. We would generally expect that studies of programs with one payer would find lower payment error rates than studies like this one that involve many payers.

The results of the Texas study are mixed regarding whether workers' compensation programs may be more error-prone than other health care insurance programs. The Texas Comptroller's office also studied the payment accuracy of the State's Medicaid fee-for-service program using the same methodology as used for the state employees' workers' compensation program. The overpayment error rate in the 2003 study was lower for the Medicaid program, 13.5 percent, than the 19.9 percent error rate found for the state employees' workers' compensation program. However, in the 2005 study, the Medicaid program's overpayment error rate was the same, 13.7 percent, as found for the state employees' workers' compensation program.

The review protocol used in the Texas payment accuracy studies of the state employees' workers' compensation and Medicaid programs included the three review activities we used in this study – medical documentation review, survey of injured workers/recipients and processing review. Thus, the Texas studies provide more valid benchmarks for the results of this study than other studies that do not include all three review activities.

The payment accuracy measurement studies conducted by CMS do not include the survey activity and this may explain the lower payment error rates found in the CMS-sponsored payment accuracy studies. The purpose of the survey activity is to isolate fraud; payment

⁴² Office of the Texas Comptroller, Texas Health Care Claims Study, Executive Summary, March 2005. Available online: <http://www.window.state.tx.us/specialrpt/hcc2005/execsum.htm>.

⁴³ Office of the Texas Comptroller, Texas Health Care Claims Study, Executive Summary, March 2003. Available online: <http://www.window.state.tx.us/specialrpt/hcc2003/section3/1overview.html>.

errors found in this study through the survey of injured workers accounted for 32 percent of the total value of errors for the three combined review sample.

In 2005, 26 states participated in the CMS-sponsored payment error rate measurement pilot project for their Medicaid fee-for-service programs. The payment error rates for the 26 states ranged from .14 percent to 28.4 percent, and the median error rate was approximately 7 percent. It is difficult to compare these error results with the results of our study because the CMS pilot project included an eligibility review activity – to determine whether the sample Medicaid recipients met the income or other requirements for Medicaid benefits – that is not relevant for workers’ compensation.⁴⁴

However, the CMS-sponsored medical payment accuracy studies for Medicaid fee-for-service programs provide some useful benchmarks for this study in terms of the reasons for payment errors. In the 2005 pilot project, medical review errors accounted for 76 percent and processing errors accounted for 7 percent of the net dollar value of the 26 states’ combined payment errors.^{45,46}

This study’s findings on the reasons for payment errors are also consistent with the Medi-Cal Payment Error Study that the State of California Health and Human Services Agency conducted in 2006. Although the Medi-Cal study found a much lower overall error rate – 7.3 percent for a payment error value of \$1.2 billion – than this study’s findings, the Medi-Cal study also found that medical review errors were the most significant factor contributing to the overall dollar error. Lack of provider documentation was the most frequent reason for medical review error, which accounted for 45 percent of the sample dollars paid in error and the second most frequent reason was services that were not medically necessary, which accounted for 41 percent of the sample payment errors.⁴⁷

Conclusion

This study is the first effort to measure payment accuracy for workers’ compensation in California. It provides the baseline for additional studies in subsequent years and serves as the starting point for implementing anti-fraud program improvements, monitoring their effectiveness and success, and tracking workers’ compensation medical bill payment trends.

⁴⁴ We did not conduct an eligibility review as part of this study, because it is not relevant for workers’ compensation medical benefits since eligibility for workers’ compensation is based on a work-related injury claim.

⁴⁵ The net dollar value of processing errors due to pricing errors are excluded from these comparison of error rate results for the Medicaid studies’ to make them comparable to the modification we made in this study for the electronic processing review.

⁴⁶ Centers for Medicare and Medicaid Services, “Payment Error Rate Measurement Pilot Project Final Report, Medicaid and State Children’s Health Insurance Program,” (June 15, 2006). Available online: <http://www.cms.hhs.gov/PERM/Downloads/PermPilotFinalReport.pdf>.

⁴⁷ State of California, Health and Human Services Agency, Department of Healthcare Services, “Medi-Cal Payment Error Study,” (2006). Available online: http://www.dhcs.ca.gov/formsandpubs/publications/Documents/ANI_MPES_2006_Report.pdf.

Although there is a wide confidence interval in our sample error rate findings, they provide a valid estimation of the level of payment errors in the entire California workers' compensation system.

CHAPTER 4: OTHER STATES' EFFORTS TO COMBAT MEDICAL FRAUD IN WORKERS' COMPENSATION

As a part of this medical payment accuracy study, we reviewed other states' efforts in combating workers' compensation fraud, with a focus on medical provider fraud to identify practices that California might consider adopting. We reviewed practices in several large states with private insurance carrier-based workers' compensation systems like California's and some states with monopolistic systems⁴⁸ where the state acts as the insurer for all workers' compensation, and tried to obtain estimates of the resources states devote specifically to combating medical provider fraud.

In addition, based on our finding that some states and insurers are using automated fraud-identification systems to detect and combat medical provider fraud and abuse in workers' compensation and other health insurance programs, we conducted high-level research on these systems.

Findings

We found that most states' efforts to combat workers' compensation fraud are similar to California's in that they mainly focus on claimant, insurer and employer fraud, rather than medical fraud. However, some states we researched employ practices that are specifically aimed at combating medical fraud, and these are practices that California should consider adding to its efforts to combat workers' compensation medical fraud:

- Data mining a centralized database of medical bills.
- Provider registration.
- Explanation of Benefits (EOB) notices.

Each of these practices is discussed below.

⁴⁸ Monopolistic systems are those where a single state agency is responsible for processing all workers' compensation bills. According to the Insurance Information Institute, Ohio, North Dakota and Washington are the only states with a monopolistic workers' compensation system. Although in Wyoming a state fund is the only workers' compensation insurer, such coverage is compulsory only for employers with operations that are deemed hazardous; Wyoming employers with non-hazardous operations may insure with the state fund or opt to go without coverage. (<http://www.iii.org/media/hottopics/insurance/workerscomp>). This is in contrast to carrier-based systems, in which businesses purchase workers' compensation coverage from insurance companies that compete against each other in an open market. Some states with carrier-based systems, including California, also have a state fund that competes in the open market with private workers' compensation insurers.

Data Mining

The practice we identified that we believe holds the most promise for California is data mining – that is, the process of sorting through data to identify patterns and establish relationships – of a centralized database of workers’ compensation-related medical bills. Although we identified 11 states that maintain such databases, we found that only a few use these databases as tools in anti-fraud activities. Specifically, Ohio and Washington, both of which have monopolistic structures for workers’ compensation, are proactively using their databases as tools in specialized programs designed to combat medical provider fraud and abuse. Data mining enables these states to use their databases of workers’ compensation claims and paid medical bills to identify potentially fraudulent patterns and trends on a systemwide basis.

Ohio and Washington do data mining on a post-payment basis. Other states that maintain similar centralized databases could also do such data mining to identify aberrant patterns across their entire system. The California Department of Industrial Relations’ WCIS recently began developing a centralized database of workers’ compensation-related medical bills, and this database represents an important resource for California’s efforts in combating medical fraud.

Later in this chapter, we discuss in greater detail Ohio’s and Washington’s use of data mining. In the last section of this chapter, we examine how automated fraud-identification systems can assist states in data mining to identify fraudulent claims or bills. In addition, we provide an overview of many vendors’ automated fraud-identification systems.

Provider Registration

Currently, California does not require medical providers who provide services to injured workers to be registered as workers’ compensation providers with the State. However, some other states do have this requirement. While the requirement is most common in monopolistic states (such as Washington and Ohio), New York, which is a carrier-based system, also requires that providers register with the State. In New York, physicians and other individual practitioners must be registered with the State Workers’ Compensation Board to be able to provide workers’ compensation-related medical services. For carrier-based states like New York, the central registration of workers’ compensation providers provides a way to track and monitor providers across the entire workers’ compensation program, and if necessary, provide a mechanism for suspending or excluding them based on abusive or fraudulent activities.

EOB Notices

EOB notices is another tool that some other states' workers' compensation programs use as part of their fraud detection and prevention efforts. EOB notices are common throughout the health care insurance industry and are typically sent by an insurance company to a patient to show the services and amounts billed by a provider and the amount that the insurer will cover. EOB notices have not been widely used in workers' compensation because injured workers are not responsible for paying any portion of their workers' compensation-related medical care, unlike in other kinds of health insurance.

However, Ohio, for example, sends EOB notices to workers' compensation claimants, and New York requires worker's compensation carriers to provide EOB notices. These states use EOB notices as a mechanism for claimants to help identify fraudulent provider activities, i.e., a claimant may receive an EOB for a service he or she did not receive and report it to the State. However, Ohio and New York could not provide estimates of the cost effectiveness of EOB notices, and we were unable to identify any cost-benefit analyses of EOB notices in the general health care insurance industry through our literature search.

Currently, California does not require insurance carriers to provide EOB notices to workers' compensation claimants, although some carriers do. Some parties in California are promoting the adoption of such a requirement.

In the next section, we describe how the states we reviewed organize their workers' compensation fraud efforts.

How States Organize Anti-Fraud Efforts

As a part of their anti-fraud programs, states identify a central division to coordinate fraud prevention and prosecuting activities. States usually place these divisions within the office of the state's Attorney General, given its prosecution authority, or with the Insurance Commissioner or Department of Insurance, given its insurance control authority.⁴⁹ In most states, the Attorney General and the Insurance Commissioner collaborate on fraud investigations and prosecutions.

The extent and intensity of states' anti-fraud programs that focus on medical provider fraud vary significantly. Monopolistic system states that maintain medical bills databases are more likely to fund specialized workers' compensation medical provider anti-fraud units or activities.⁵⁰ States with carrier-based workers' compensation systems tend to base their anti-

⁴⁹ Texas Research and Oversight Council on Workers' Compensation, "Fraud Detection and Prevention in Texas Workers' Compensation System." (August 2001). Available online: <http://www.tdi.state.tx.us/reports/wcreg/fraud2001.html>.

⁵⁰ In a monopolistic system, the state is the only entity from which employers can purchase workers' compensation insurance.

fraud programs on reporting mechanisms by insurers and injured workers. In these states, there are not usually separate areas dedicated to different types of workers' compensation fraud. Given these differences among state programs, it is difficult to identify and compare states' operational costs and savings associated with medical provider anti-fraud activities.

California's workers' compensation system is by far the largest in the nation. In researching other states' anti-fraud practices, we concentrated on the next three most populous states, Texas, New York and Florida, all of which have carrier-based workers' compensation systems similar to California's. We also focused on Ohio and Washington, two states with monopolistic systems that are doing data mining. Table 4.1 provides information on the size of each of these states' workers' compensation systems in relation to California's.

Table 4.1: 2005 Workers' Compensation Statistics for States Reviewed

State	Population ⁵¹	Covered Workers ⁵²	Covered Wages (in millions) ⁵³	Workers' Compensation Benefits ⁵⁴ (in thousands)	Medical Benefits (in thousands) ⁵⁵	Percent Medical Benefits
California	35,990,312	14,992,000	\$689,220	\$10,938,475	\$5,102,013	46.6%
Texas ⁵⁶	22,843,999	7,193,000	\$284,550	\$1,554,796	\$965,280	62.1%
New York	19,262,545	8,220,000	\$426,395	\$2,895,331	\$1,004,575	34.7%
Florida	17,736,027	7,309,000	\$266,392	\$2,899,301	\$1,805,804	62.3%
Ohio	11,459,776	5,232,000	\$193,622	\$2,447,038	\$1,144,090	46.8%
Washington	6,270,838	2,697,000	\$108,677	\$1,864,015	\$662,936	35.6%

Texas, New York and Florida require insurers to submit workers' compensation-related medical bill data to the State. In these three states, the workers' compensation anti-fraud departments use the medical data to analyze and investigate provider fraud, but they do not delegate this task to a specific medical fraud unit or department.

⁵¹ U.S. Census Bureau, "2005 U.S. Population Estimates." Available online: http://factfinder.census.gov/servlet/GCTTable?_bm=y&-geo_id=01000US&-_box_head_nbr=GCT-T1-R&-ds_name=PEP_2007_EST&-lang=en&-format=US-9S&-sse=on.

⁵² National Academy for Social Insurance, "Workers Compensation: Benefits, Coverage and Costs, 2005," (August 2007). Available online: http://www.nasi.org/usr_doc/NASI_Workers_Comp_2005_Full_Report.pdf.

⁵³ National Academy for Social Insurance, "Workers Compensation: Benefits, Coverage and Costs 2005," (August 2007). Available online: http://www.nasi.org/usr_doc/NASI_Workers_Comp_2005_Full_Report.pdf.

⁵⁴ Benefits are payments in the calendar year to injured workers and to providers of their medical care.

⁵⁵ National Academy for Social Insurance, "Workers Compensation: Benefits, Coverage and Costs, 2005," (August 2007). Available online: http://www.nasi.org/usr_doc/NASI_Workers_Comp_2005_Full_Report.pdf.

⁵⁶ Texas is the only U.S. state where workers' compensation coverage is not mandatory.

The Texas Department of Insurance Fraud Unit has a team of four investigators responsible for analyzing allegations of all types of insurance fraud, including workers' compensation fraud. The unit's investigations are based on reports of suspected fraud submitted by insurers. Staff from the Texas Department of Insurance Fraud Unit could not estimate the portion of the unit's budget that is associated with workers' compensation-related medical provider fraud. The Texas State Office of Risk Management investigates fraud related to workers' compensation claims for state employees. The Office employs two staff members who investigate claims and allegations for all types of fraud. For provider fraud cases, the Office's investigators coordinate and provide assistance to investigators from the Texas Department of Insurance Fraud Unit.

In New York, the Office of the Workers' Compensation Board Fraud Inspector General (OFIG) is responsible for the anti-fraud program in the worker's compensation system. OFIG has 27 staff consisting of the Inspector General, Deputy Inspector General, three Assistant Inspectors Generals and one Assistant Inspector General Audit, as well as investigators, senior investigators, forensic accountants and support staff. The OFIG has an Audit Unit that uses forensic auditors to analyze complex employer premium and provider billing fraud schemes. OFIG uses data mining programs and fraud complaints to initiate investigations. Similar to the Texas Department of Insurance Fraud Unit, the roles for investigators are not defined based on the type of fraud investigated; because of this, OFIG cannot estimate costs for initiatives related to provider fraud. The OFIG also relies on the private carriers to undertake fraud and prevention investigations. New York requires insurers that write more than 3,000 policies per year to develop an anti-fraud plan. In addition, carriers must perform a certain number of anti-fraud investigations per 1,000 policies.

The structure of the Florida Division of Insurance Fraud, Bureau of Workers' Compensation is similar to those in Texas and New York.

In Ohio, where the State acts as the insurer for all workers' compensation, the Ohio Bureau of Workers' Compensation, Special Investigation Department coordinates fraud prevention and prosecution activities and has a well defined medical care provider section. The Ohio Bureau of Workers' Compensation, Medical Provider Fraud Unit has 27 staff members, four of whom are dedicated exclusively to data mining using the database of workers' compensation-related medical bills that the Department maintains. The data mining team in the Medical Provider Fraud Unit uses an IBM proprietary software package to develop data queries and reports on a post-payment basis. This prevents the analysis from interfering with the processing of medical provider bills that a third-party administrator handles for the State. The data mining team prepares queries and reports on a routine basis; for example, weekly reports to identify providers with large volumes of bills and bill line items and line items with paid amounts greater than \$5,000; and monthly reports of numbers of injured workers receiving prescription medications to identify potential drug trafficking. In addition, the data mining team conducts queries to address specific topics such as trends in Evaluation and Management procedure codes to identify potential upcoding in physician office visits.

Washington, another state with a monopolistic workers' compensation system, also has a well defined Medical Provider Audit program within the Department of Labor and Industry. In 2007, the Department of Labor and Industry contracted with a vendor, ViPS, to conduct a one-year test of its Sentinel software, to demonstrate its efficacy in identifying provider fraud and abuse in the Washington's workers' compensation system. The value of the contract for the one-year test is \$140,000. The Department expects the test to be completed by June 30, 2008. In the next section, we provide an overview of the ViPS software and many other vendors' systems along with estimates of implementation costs.

Washington's Medical Provider Audit Unit refers possible fraud cases for investigation to the Fraud Prevention and Compliance Program in the Provider Fraud and Abuse Unit. The Provider Fraud and Abuse Unit's mission is to ensure quality services to injured workers and stop improper payments to providers. The unit employs 17 full-time equivalent staff members to monitor and review the quality of care provided by health care professionals and vocational counselors and their billing practices. In 2007, the Medical Provider Fraud and Abuse Unit identified more than \$2.9 million in improper billings, penalties and cost avoidances.

Data Mining and Automated Fraud Identification Tools for Combating Provider Fraud

As noted previously, data mining is a practice that we believe holds much promise for California's effort to combat medical provider fraud and abuse. We conducted a review of automated tools and supporting services that are commercially available for fraud detection and prevention. The primary techniques for the review consisted of a comprehensive literature review and interviews with vendor sales representatives. We had limited access to input from existing users or independent reviewers, as few vendors and customers are willing to provide specific information regarding the efficiency of their tools. The literature review focused primarily on vendor marketing materials but also included independent sources discussing the analytical techniques involved. The objective of the literature review was to gain an understanding of common techniques and the basic capabilities of the available solutions. To estimate the investment needed to implement these automated solutions and the expected return from this investment, we interviewed vendors by phone and email, and we report on those who did respond. The interviews were based on a questionnaire focusing on a number of critical concerns:

- Expertise required to configure and use the solution.
- Configuration and service options and their associated pricing.
- Current users, especially in health care claims fraud detection.
- Return on investment based on historical metrics of current users.
- Features that distinguish one solution from another.

We provide the following overview as a starting point for the State of California to consider in conducting more detailed research on the feasibility of using fraud identification systems in combating medical provider fraud and abuse in workers' compensation. The list of vendors we have identified is not comprehensive.

Background on Data Mining and Analytics

Data mining is the process of sorting through data to identify patterns and establish relationships. Data mining with fraud identification analytical software has evolved to become a sophisticated tool to assist insurers in detecting and preventing claims fraud and abuse.

There are two primary analytical approaches used for fraud detection and prevention – identity resolution and predictive analytics:

- **Identity resolution** – A data mining function that identifies and compiles all records for a particular individual, organization, or other entity and determines the relationships among individuals and organizations. Records are recognized as belonging to a single entity, even if they have different spelling, addresses, or other identifying information. Once records have been aggregated by individual or organization, additional rules or analyses are applied to determine whether that entity might be involved in fraudulent activity.
- **Predictive analytics** – The branch of data mining focused on the prediction of future probabilities and trends. The central element of predictive analytics is the predictor, a variable that can be measured for an individual or other entity to predict future behavior. Multiple predictors are combined into a predictive model, which, when subjected to analysis, can be used to forecast future probabilities with an acceptable level of reliability. In predictive modeling, data are collected, a statistical model is formulated, predictions are made and the model is validated (or revised) as additional data become available. Predictive analytics are applied to many research areas, including meteorology, security, genetics, economics and marketing.⁵⁷

Identity resolution and predictive analytics allow the user to review claims and medical bills to determine the likelihood that the claim or bill is fraudulent. In addition, all analytical solutions have some sort of rules engine in which the customer defines business rules that describe constraints, thresholds or other characteristics of the data that should prompt further review of a claim.

Automated fraud detection solutions are applied either pre-payment or post-payment. When applied pre-payment, potentially fraudulent claims are subject to further investigation before payment is issued. This avoids the cost of having to recover fraudulent payments after they

⁵⁷ Whatis.com, "Definitions – Predictive Analytics." Available online:
http://searchcrm.techtarget.com/sDefinition/0,,sid11_gci1070868,00.html.

have already been made. Post-payment analysis looks at claims that have already been processed or paid. Potentially fraudulent claims are investigated and if found to be fraudulent, efforts are taken to recover the amount that was fraudulently paid. Post-payment analysis may also be used to improve the process or business rules to assist in pre-payment analysis.

States have multiple choices in purchasing automated fraud detection solutions. Some vendors simply provide off-the-shelf software with initial consulting to familiarize the user with how to configure and effectively use the software to identify potentially fraudulent claims. Others collect data from the customer and run them through the automated algorithms as a service to the customers. These vendors may also perform investigation and recovery services for fraudulent claims. The third option combines elements of both off-the-shelf software with ongoing services to provide updated fraud models and consulting services.

Pricing varies considerably for the different solutions. Some vendors have a fixed software price based on the number of servers or users. Others vary the price by the number of claims. One vendor we researched established the price as a percentage of the amount recovered. Consulting services for implementation or ongoing support are either priced separately or included in the overall software price.

Return on investment is difficult to determine for nearly all the solutions we reviewed. None of the vendors provided specific information indicating the rate of return when applying their solutions. Also, few customers are willing to release metrics on fraudulent activity. At best, vendors have collected anecdotal comments about improvements in efficiency or the total amounts that a customer has recovered over a certain period of time. No comparisons are available for before and after the organization started using automated solutions. Return on investment is well understood for only one vendor due to its pricing model being based on a percentage of recovered costs.

Solutions Overview

We obtained information about many commercially available products offering automated solutions to address fraud and abuse in health care or workers' compensation claims. The description of each product and associated price information are based exclusively on information reported by the vendor's marketing materials and sales agents. Navigant Consulting does not endorse any of these vendors or products; our goal is to provide an overview of different anti-fraud automated solutions currently on the market that could potentially be applied in a workers' compensation environment.

The products presented in this section combine a variety of analytical capabilities, such as data mining, rules engines, identity resolution and predictive analytics and modeling. Clients can choose software to implement directly in its off-the-shelf format or that can be customized to accommodate specific business needs or patterns. Most of these vendors designed their products to be easily integrated with data formats compliant with open database connectivity standards that are common to most modern database systems. As discussed earlier, vendors'

pricing methodologies differ considerably and, therefore, it is difficult to compare costs across products.

Exhibit 4.1 lists the analytical capabilities, configuration requirements, costs and distinguishing characteristics of many automated fraud-identification products. Appendix B provides a more detailed summary of these products' architecture, installation and configuration requirements, pricing and users.

Exhibit 4.1: Artificial Intelligence-Based Fraud-Identification Products

Product Name	Analytical Capability	Configuration	One-Time Cost	Annual Cost	Consulting Services	Distinguishing Characteristics
EDIWatch SPOT, Intelligent Investigator, Trail Tracker, PrePayment Manager	<ul style="list-style-type: none"> • Predictive analytics • Rules engine 	<ul style="list-style-type: none"> • Modified off-the-shelf • Open database connectivity • Shared rules database 	Not applicable	\$500,000	Includes: <ul style="list-style-type: none"> • Setup • Updates to rules, databases, software • Support 	<ul style="list-style-type: none"> • Desktop tool for investigators • Investigative intelligence
Fair Isaac VeriComp	<ul style="list-style-type: none"> • Predictive analytics • Rules engine 	<ul style="list-style-type: none"> • Modified off-the-shelf • Open database connectivity 	\$200,000	\$25 per lost time claim	Includes: Setup	<ul style="list-style-type: none"> • Designed for workers' compensation • Based on proven algorithms used in credit card fraud • Continuous scoring
IBM FAMS	<ul style="list-style-type: none"> • Identify resolution • Predictive analytics • Rules engine 	<ul style="list-style-type: none"> • Modified off-the-shelf • Open database connectivity • Data warehouse 	>\$500,000	20% of original cost	Setup -- \$200,000	<ul style="list-style-type: none"> • Widely used • Combines patented identity resolution algorithms with predictive analytics
Infoglide IRE	<ul style="list-style-type: none"> • Identity resolution • Rules engine 	<ul style="list-style-type: none"> • Off-the-shelf • Open database connectivity 	\$250,000 \$50,000 per data set	Not applicable	Setup – \$65,000 Support – \$90,000 annual	<ul style="list-style-type: none"> • Sophisticated search technology tied to business rules

Exhibit 4.1: Artificial Intelligence-Based Fraud-Identification Products

Product Name	Analytical Capability	Configuration	One-Time Cost	Annual Cost	Consulting Services	Distinguishing Characteristics
SAS	<ul style="list-style-type: none"> • Predictive analytics • Data mining 	<ul style="list-style-type: none"> • Modified off-the-shelf • Open database connectivity • Data warehouse 	\$200,000 prototype >\$500,000 full	Not applicable	Includes: Setup	<ul style="list-style-type: none"> • Data adaptability • Data warehouse • Existing SAS infrastructure at DTS
SPSS Clementine	<ul style="list-style-type: none"> • Predictive analytics • Data mining and visualization 	<ul style="list-style-type: none"> • Off-the-shelf • Open database connectivity 	\$94,000 (two users)	\$12,000	Setup -- \$15,000	<ul style="list-style-type: none"> • Low initial cost • Long history of statistical analysis
TC³	<ul style="list-style-type: none"> • Predictive analytics • Rules engine 	<ul style="list-style-type: none"> • Software as a service 	Not applicable	20-35% of recovered costs	Includes: Full Service	<ul style="list-style-type: none"> • Full service model • 4-step process • Fee model based on recovered costs
ViPS STARS & STARSentinel	<ul style="list-style-type: none"> • Rules engine 	<ul style="list-style-type: none"> • Off-the-shelf • Modular • Open database connectivity • Data warehouse – STARS 	\$230,000 (three modules)	\$35,000 (connect fee – optional)	Includes: Setup	<ul style="list-style-type: none"> • Widely used in health care

Summary

While the majority of states recognize medical provider fraud as a factor that accounts for the increase in workers' compensation medical benefit costs, it appears that only a handful have specialized anti-fraud programs that focus on medical providers. In states with carrier-based systems, the insurance companies have the main responsibility in detecting and combating fraud. However, states with monopolistic systems that have centralized workers' compensations medical bills databases have developed specialized medical provider fraud-investigation programs.

These monopolistic-system states center their anti-fraud initiatives on mining their medical bill databases. California could undertake data mining to leverage the newly developed WCIS database of medical bills to identify fraud and abuse in the workers' compensation system. There is a range of relevant analytic and pattern-recognition techniques, including the use of advanced techniques such as artificial intelligence, for California to consider.

Other approaches that might strengthen the California Department of Insurance fraud and abuse detection and prevention activities include requiring insurers to provide EOB notices to injured workers and requiring medical providers to register with the State. EOB notices might help the Department of Insurance to identify fraudulent provider activities and provider registration might establish a mechanism for suspending or excluding providers who engage in suspected fraudulent or abusive activities.

CHAPTER 5: RECOMMENDATIONS

Payment errors have many causes; sometime the errors are “honest” errors and sometimes the errors are fraud. Fraud involves deception, and determining and proving fraud require establishing criminal intent, which is beyond the scope of this study. Nonetheless, fraud can be within the errors we identified in this study.

The recommendations we offer below include ways to address a variety of causes of payment errors that we identified in this study, as well as ways to more directly identify potential fraud. We recommend that the State of California:

- Increase education efforts for providers, insurers and other relevant parties about appropriate courses of care per ACOEM guidelines for the most frequent types of injuries.

Our findings suggest that, despite various reforms implemented by the State in 2004 that address utilization of medical services, it appears that many services provided to injured workers are not appropriate for their diagnoses or are not medically necessary. While some of the over-utilization may be willful on the part of providers, some of it may also be due to unfamiliarity with ACOEM guidelines and other evidence-based standards of care. Education efforts are needed to address the latter for providers, qualified medical evaluators (QMEs), agreed medical evaluators (AMEs), insurance adjusters and nurses and physicians performing utilization review and others.

- Data mine the new medical bill database in WCIS to identify aberrant patterns and trends in workers’ compensation medical billing fraud on a systemwide basis and focus investigative efforts. Data mining should include a range of relevant analytic and pattern-recognition techniques, including advanced techniques such as artificial intelligence.

As discussed in Chapter 4, we believe that the medical bill database in WCIS represents an important resource for the Department of Insurance’s workers’ compensation anti-fraud effort. Mining the WCIS database would provide a wider perspective on fraud than can be obtained by any single insurance carrier or self-insured employer.

Another valuable anti-fraud use of the WCIS medical bill database is to combine it with Medi-Cal data for data mining purposes. This would allow the State to identify trends in medical bill fraud on a multi-program basis, which will provide a more complete view of providers’ billing patterns than can be gained by analyzing data from each program in isolation.

- Consider expanding statutory authority for access by the Department of Insurance to injured workers' medical records.

As we discussed in Chapters 2 and 3, the medical review component of this study was limited because we could not obtain medical records directly from providers. Authority to access medical records would facilitate fraud investigations, as well as make subsequent payment accuracy measurement studies more rigorous.

- Develop a medical benefits administration best practices checklist for employers to use in evaluating their workers' compensation insurers' or third-party administrators' efforts in ensuring medical payment accuracy and preventing and detecting fraud.

Employers bear the cost of payment errors, fraud and abuse in workers' compensation medical benefits. Including them in information and education efforts would add yet another layer of vigilance in the anti-fraud effort.

- Consider requiring insurers to send EOB notices to injured workers. Providing information to injured workers about the services billed and paid on their behalf is a way to enlist their active participation in medical services anti-fraud efforts.
- Consider requiring providers to register with the State of California to be eligible to participate in worker's compensation.

As discussed in Chapter 4, New York, which has a workers' compensation system structure similar to California's, requires providers to be registered with the State to participate in workers' compensation. To be effective, such a registration program would require California to develop rules for participation like those used by the Medicare and Medicaid programs and private health insurance programs that would include adherence to utilization guidelines, billing standards, etc. Requirements for mandatory training and periodic audits of providers' practices would make a registration program even more effective. Such a registration program would provide insurers with more legal protection to exclude providers who do not adhere to participation rules.

Next Steps

To build upon this study and evaluate the feasibility of implementing the above recommendations, we offer the following next steps:

- Begin analyzing the medical bill data in WCIS.

There are many kinds of routine and special analyses that can and should be done using the WCIS database. For example, as we note in Chapter 4, Ohio's data mining team prepares weekly reports to identify providers with large volumes of bills and bill line items, line items with paid amounts greater than \$5,000, and monthly reports of numbers of injured workers receiving prescription medications to identify potential drug trafficking. Staff of the WCIS Research Unit estimates that, as of April 2008, the database includes approximately 26 million lines of detailed medical bill data for approximately 50 percent of the workers' compensation claims reported in calendar year 2007.⁵⁸ It is important that analysts begin to conduct basic kinds of analyses to gain a thorough understanding of the WCIS medical bill data and how the data can be used in fraud detection efforts. After the WCIS database grows to include a couple of years of complete historical data, the Department of Insurance should explore using advanced analytic and pattern-recognition techniques, including artificial intelligence, to analyze the data.

- Conduct a pilot study of the use of EOB notices for workers' compensation.

The effectiveness of a pilot study could be assessed by measuring the number of reports to a special fraud hotline of questionable services provided to injured workers who receive EOB notices versus injured workers who do not receive EOB notices, and through a survey of injured workers who receive EOB notices versus a control group to determine if the participant group's recall of services is better than that of the control group.

- Conduct a follow-up payment accuracy study in a few years using the WCIS medical bill database to determine if implementation of any of the recommendations above or other changes has had an effect on payment accuracy levels.

The WCIS medical database will make the process of conducting a follow-up study much easier and quicker than this study for several reasons. First, the medical bill data collection we did for this study will not be necessary. Second, the sample of medical bills will be able to be drawn directly from the database, thus enabling the use of a larger sample size than this study achieved. Finally, the data will be more standardized because they must pass rigorous edits in WCIS.

In addition, if our recommendation regarding access to medical records is implemented, the medical review component of a follow-up study will be more rigorous.

⁵⁸ Information provided by David Henderson of the WCIS Research Unit.

APPENDIX A: SAMPLING PLAN

Data Sources and Sampling Methodology

Payment accuracy studies we have conducted in the past, as well as others with which we are familiar, start with a universe of paid medical bills for a given study time period and select from it a random sample of medical bills to study. Since at the start of the study, no California department or agency had a centralized resource that represented the universe of workers' compensation-related paid medical bills, we employed a multistage sampling methodology that involved selecting primary and secondary samples before we selected the tertiary sample of medical bills to study.⁵⁹

For the first stage of the multistage sampling methodology, we started with the Department of Industrial Relations' Workers' Compensation Information System (WCIS) to select our primary random sample of injured worker cases. Since the focus of the study was payment for medical services, we were only interested in injured worker cases in WCIS that had associated medical services paid during a defined time period. However, there was no information in WCIS that indicated when payments for medical bills were made for the injured workers. Therefore, since our goal was to arrive at a sample of 1,000 injured worker cases that met the criterion of having a medical bill paid during a defined time period, we needed to select more than 1,000 injured worker cases from WCIS. We selected a primary sample of 5,150 injured worker cases. The amount was determined based on analysis by California Workers' Compensation Institute (CWCI) of Industry Claims Information System (ICIS) data as described later. Then we requested that insurers and self-insured employers indicate which cases met the criterion of having medical bills paid during the defined time period and provide electronic medical bill data for the injured worker cases that met the criterion.

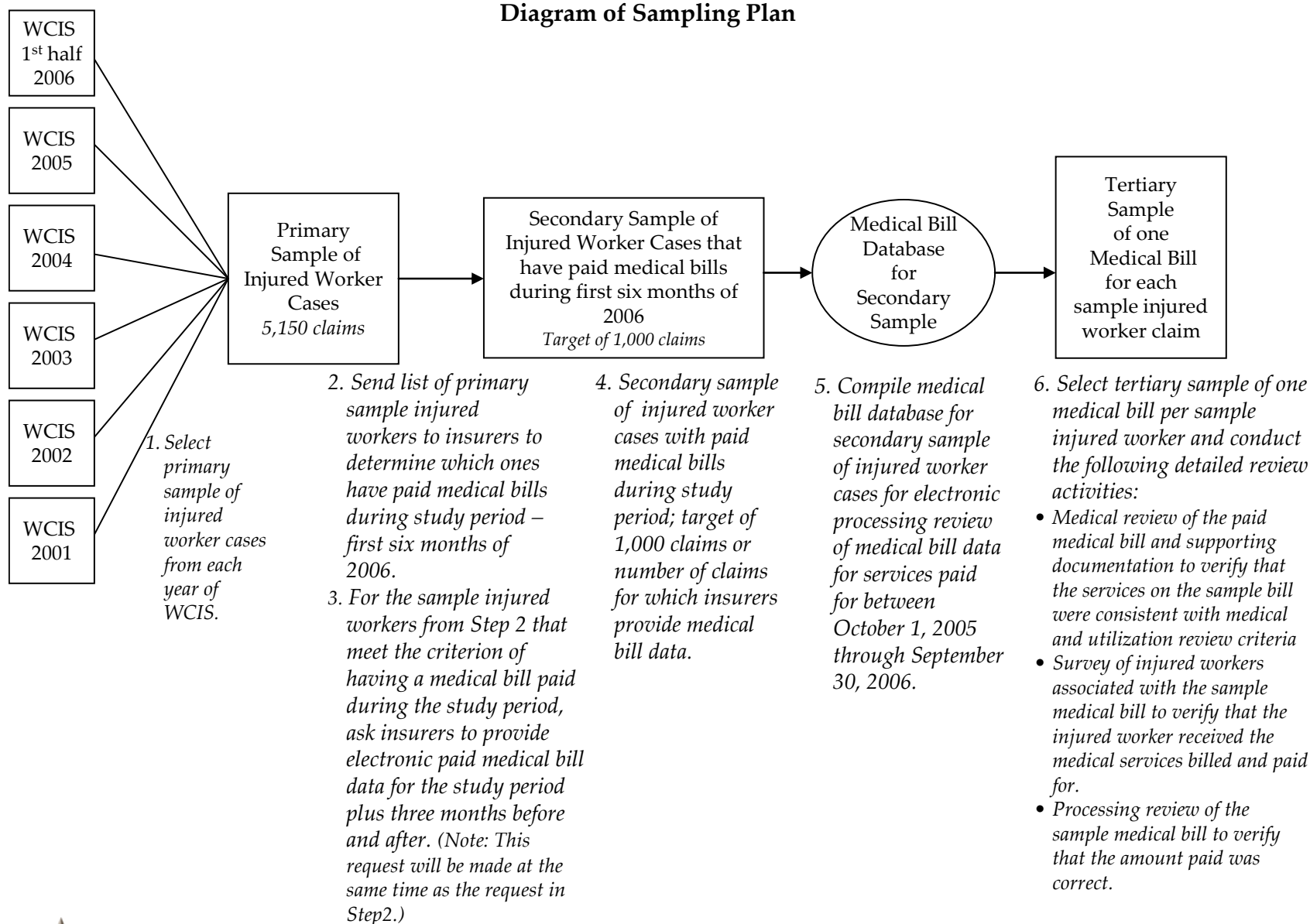
We compiled a database of medical bills paid during the study period for our secondary sample of injured workers using the medical bills data provided by the insurers, self-administered employers and third-party administrators. We used this database for the processing review component of the study.

For the detailed review component of the study, we randomly selected a tertiary sample of one medical bill for each sample injured worker from the database of medical bills paid during the study period for our secondary sample of injured worker cases. Our sampling unit was one medical bill for each sample injured worker that was submitted by a particular provider on a particular date.

On the following page is a diagram of the sampling methodology.

⁵⁹ Claims administrators that handle 150 or more total claims per year are required to submit medical bill payment records to WCIS for each bill with a date of service on or after September 22, 2006.

Diagram of Sampling Plan



Study Time Period

We wanted to select a sample of injured workers who met the criterion of having a medical bill paid on their behalf during the first six months of 2006. There were two reasons for selecting this study period. First, we wanted a recent time period for which it was likely that insurers would have the medical bill data needed for the study in an electronic format. WCIS began requiring insurers to submit electronic medical bill data in September 2006 and had been planning to implement this requirement for some time. Thus, we expected that insurers would have been aware of this medical bill submission requirement well in advance of the September 2006 implementation date and would have been working to prepare their data to be compatible with WCIS requirements. Second, we wanted to have a relatively recent time period for the injured worker survey component of the study because it depended on injured workers' recall of services.

The criterion for inclusion of an injured worker in the sample was payment of a medical bill during the first six months of 2006. Injured workers who met this criterion were included in the sample, and then we collected medical bill data for all services paid on their behalf during the 12-month period of October 1, 2005, through September 30, 2006. We used this database to select our tertiary sample of one bill per injured worker and conducted our review activities on this database.

Analysis to Determine the Size of Sample to Select for Each Year of Injury

To capture paid medical bills from various stages following the initial reporting of a worker's injury, we selected the primary sample based from WCIS based on dates of injury for several years. Our goal was to arrive at a sample of 1,000 injured worker cases whose associated medical services bills paid during the first half of calendar year 2006 were representative of all medical bills paid for workers' compensation-related injuries during the same time period. We wanted to achieve this goal of arriving at a representative sample size of 1,000, while minimizing the number of injured worker cases from each year of WCIS for which we would request information from insurers.

We needed to select a different number of injured worker cases for each year of injury from WCIS for two reasons. First, each year of injury in WCIS represents a different percentage of injured worker cases among the population of all injured worker cases with medical bills paid during the six-month time period January 1, 2006, through June 30, 2006. Second, each year of injury in WCIS has a different percentage of total injured worker cases that continue to have paid medical bills in subsequent years. An early year of injury in WCIS was expected to represent a small percentage of cases with paid medical bills during the period January 1, 2006, through June 30, 2006, and an early year of injury in WCIS was expected to have a small percentage of its cases that have bills in the same six-month time period. To arrive at the number of cases for each year of injury for which we would request information from insurers, we first calculated the percentage of cases from each year of injury in WCIS that had medical

bills paid in the population during the period January 1, 2006, through June 30, 2006. We then estimated the percentage of cases to be selected from WCIS for each year of injury to yield the same percentage distribution of injured worker cases by year in the sample as was in the population for the six-month study period. We expected that the use of these two percentages would result in a larger number of cases being selected from the earlier year of injury in WCIS than from more recent years of injury.

The California Workers' Compensation Institute (CWCI) collects medical bill data from its members and maintains the data in its Industry Claims Information System (ICIS). We recognized that the information in CWCI's ICIS was only a subset of all medical bills paid for workers' compensation-related injuries, but believed that it would provide a useful representation of the total. In addition, ICIS was the only resource for such information. Thus, we sought the assistance of CWCI and asked their analysts to determine the following using CWCI's ICIS data:

1. For all medical bills paid during the period January 1, 2006, through June 30, 2006, determine percentage distribution by year of first report of injury. In other words, what percentage of medical bills paid in the first half of 2006 were for first reports of injury that were filed in 2001, in 2002, in 2003, in 2004, in 2005 and in the first half of 2006.
2. For all first reports of injury filed in each year 2001 – 2005 and in the first half of 2006, determine the percentage that had medical bills paid during January 1, 2006, through June 30, 2006.

We used the result of the CWCI's analysis to determine the size of the primary sample to achieve our target secondary sample size of 1,000 injured workers and the number to sample by year of injury. The exhibit on the following page shows these calculations.

Calculation of Primary Sample Size under Various Confidence Levels of Resulting in Secondary Sample Size of 1,000

Year	Share ¹ A	Target Secondary	Yield ² C	Size ³ At 50 percent Confidence	Size ³ At 95 percent Confidence	Size ³ At 99 percent Confidence
		Sample Size B = A * 1,000		Level D = B/C	Level	Level
2001	5.7%	57	6.9%	830	1,020	1,120
2002	8.3%	83	9.9%	840	1,000	1,070
2003	11.7%	117	15.2%	770	890	940
2004	15.1%	151	19.3%	790	890	930
2005	32.9%	329	48.8%	680	720	740
Jan.-June 2006	26.2%	262	80.1%	330	350	350
Total	99.9%	1,000		4,240	4,870	5,150

¹ Per CWCI analysis; distribution, by year of first report of injury, of all medical bills paid during the first half of 2006.

² Per CWCI analysis; the portion of first reports of injury with medical bill payments during the first half of 2006.

³ Rounded up to the nearest 10.

APPENDIX B: AUTOMATED FRAUD DETECTION SOLUTIONS OVERVIEW

EDIWatch –Multiple Softwares: SPOT, Intelligent Investigator, Trail Tracker, PrePayment Manager

EDIWatch fraud detection solution is comprised of three steps: flagging questionable claim lines; profiling flagged and non-flagged claims (establishing a pattern); and automated analyses. These three steps are performed automatically and instantly within the system. The system then applies an additional set of rules that emulates how an effective investigator would proceed. This is the added intelligence that moves the investigator from discovery mode (trying to find a lead) to investigation mode (actually working on a lead). The EDIWatch solution provides a desktop tool for investigators so that they can understand what is driving the identification of a claim for fraud without requiring a detailed understanding of the underlying analytics and statistics.

EDIWatch sells its products as a comprehensive solution in which the fraud detection applications are combined with consulting services to support customers over a period of time. Pricing for services is negotiated with each customer based on the customer's unique circumstances. Typical costs for a large government agency would be approximately \$1.5 million over three years for system installation and configuration, training, updates to applications, databases, and rules, and ongoing technical support.

Fair Isaac – VeriComp Fraud Manager

VeriComp Fraud Manager is a decision support tool for workers' compensation claims adjusters. Fair Isaac has experience in fraud detection and prevention, particularly in the financial world. Its neural network technology is efficiently used for credit card fraud detection. In information technology, a neural network is a system of programs and data structures that approximates the operation of the human brain. A neural network usually involves a large number of processors operating in parallel, each with its own small sphere of knowledge and access to data in its local memory.

The software relies on advanced predictive analytics, including neural networks, to analyze complex, nonlinear relationships across many claim characteristics to recognize abnormal patterns that may indicate fraudulent activity. VeriComp scores claims to enable adjusters to work more efficiently by showing them which claims require their attention most urgently and why. VeriComp applies these same analytical technologies to fraud detection and investigation for workers' compensation claims. Unlike many solutions, VeriComp provides continuous scoring of a claim to detect fraud that occurs over a period of time.

Pricing for the VeriComp Claimant system for workers' compensation claim fraud detection and action includes a one-time setup fee, typically \$200,000, plus ongoing charges of \$25 per lost time claim (a fraction of all claims). Fair Isaac has flexible pricing options for large volumes of claims.

VeriComp has been used by a variety of government agencies to monitor and reduce workers' compensation fraud. The Workers' Compensation Fund of Utah has incorporated VeriComp into its claims investigation process. The Washington Department of Labor and Industries used VeriComp before recently switching to ViPS STARSentinel. In addition, VeriComp has also been used by the Wyoming Workers' Safety and Compensation Division.

IBM: Fraud and Abuse Management System

IBM's solution for threat and fraud intelligence combines identity and relationship resolution with predictive modeling to provide a comprehensive approach for detecting and investigating fraud. The combination of identify and relationship resolution and predictive modeling enhances IBM system's ability to identify fraud. IBM also has patented identity resolution technologies that are unique to its systems and are certified by the Department of Homeland Security. Accurate identification of patients, providers and other entities by consolidating variations on how the entity is represented in the data allows for comprehensive analysis of all activities in which an entity is involved.

IBM's threat and fraud intelligence software solutions are priced based on the number of records in the underlying data that are expected to be processed over a ten-year period. Annual software maintenance (to obtain patches and upgrades) is 20 percent of the initial cost. Consulting services are priced separately and are in addition to the software products. Prices for the software range from \$300,000 – \$400,000 for 20 million records to as high as \$5 million. Consulting services for initial configuration are estimated at \$100,000 – \$300,000.

IBM's Fraud and Abuse Management System is used in the industry, in both commercial and government organizations. Aetna uses IBM's Threat and Fraud Intelligence solutions to identify physicians who are filing suspicious health care claims, identifying more than \$20 million in potential recoveries. New York State applied IBM solutions to detect suspicious income tax refund requests, leading to the denial of more than \$80 million in wrongful requests that would have otherwise been paid. Literature reviews identified additional organizations as users of IBM's fraud and abuse solutions: Trustmark Sentinel Group; Humana; New York Medicaid; and Empire Blue Cross/Blue Shield.

Infoglide Software Corporation, Identity Resolution Engine (IRE)

Infoglide IRE provides a search capability that correlates claims entities and identifies all activity and information for a particular individual or organization. This search capability handles data with different structure and naming standards, incomplete or inaccurate data and data that have been intentionally altered to disguise identification. Although effective at correlating identity information, IRE has somewhat limited capability for using this information to detect and prevent fraudulent claims. All such detection is dependent on analysts independently determining fraud patterns and creating rules that will categorize claims based

on these rules. The tool provides no automated assistance or predictive analytics for identifying patterns of fraud.

Pricing for IRE is based on the number of data sets to which it is connected. The base configuration supports two data sets (e.g., current claims data, claims history, a watch list, etc). The typical pricing for implementing Infoglide IRE is \$605,000. According to Infoglide, IRE has been widely applied in homeland security to identify terrorism and security risks and in the retail industry to detect fraudulent merchandise returns. Organizations using IRE technology for insurance claims fraud investigations include the Maryland Automobile Insurance Fund (MAIF) and the Iowa Insurance Fraud Bureau (IIFB).

SAS Fraud Detection and Prevention for Health Insurance

SAS draws on advanced predictive modeling techniques built on a foundation of data warehousing and data mining technology that enables predictive, accurate claims decisions before those claims are paid. The system's biggest strength is its ability to ingest data from a large variety of legacy systems and databases. This is valuable for integrating an organization's data into a comprehensive data warehouse. After this is accomplished, SAS analytical tools can be applied to detect fraudulent activity across the entire enterprise. SAS implementation requires significant effort to install and customize the applications for a particular customer; however, California's Department of Technology Services already has SAS solutions installed in its data center.

SAS was reluctant to provide pricing information but estimates that a proof-of-concept solution for worker's compensation claims fraud detection could be implemented for approximately \$200,000. A full implementation is likely to be more than \$500,000.

SAS has an ongoing relationship with California's Department of Technology Services Data Center. Their EnterpriseMiner data mining tool has been proposed as part of a number of solutions for the California Employment Development Department for Unemployment Insurance and Disability Insurance fraud and abuse detection.

Organizations that apply SAS data mining solutions include:

- The Illinois Department of Health
- Highmark
- U.S. Office of Personnel Management, Federal Employees Health Benefits Program
- Health Care Service Corporation
- HBF Group – a large health insurance provider in Australia

SPSS Clementine

Clementine is a data mining system that provides a variety of statistical and predictive analytical techniques for monitoring claims data to recognize potential fraud. By applying neural network pattern-matching techniques, Clementine can recognize unusual claims activity based on known and unknown patterns of fraud.

Clementine is designed to be incrementally adopted and easily learned and is supported by an experienced SPSS consulting staff to make it easy for an organization to introduce data mining into their claims management process.

For single-user licenses, Clementine is priced per user. For server-based licenses, Clementine is priced per processor (or core). Initial implementation consulting is delivered under a fixed price. Pricing for an initial setup of Clementine is estimated at \$133,000.

For fraud detection in health care claims, Clementine has also been applied by a number of commercial and government organizations. Among these are an unspecified major U.S. health care provider and the Nassau County New York office responsible for Medicaid administration.

TC3 – Fraud and Abuse Prevention Suite

TC3 provides a comprehensive service for discovering, preventing and investigating fraudulent insurance claims. Instead of a software product, TC3 offers a suite of fraud and abuse prevention services in which TC3 processes claims data through its proprietary applications, reports back to the client on potentially fraudulent claims, and investigates those claims if requested by the client. Its service model minimizes the impact on client organizations while allowing them to leverage data from multiple companies in determining fraudulent patterns and detection rules. The TC3 comprehensive suite of applications includes both rules-based models based on TC3 expertise and proprietary databases and predictive analytical models based on historical data from multiple insurance providers.

Costs for TC3's services are based on the value of fraudulent activity that is recovered (or prevented through prepayment analysis). Rates vary between 20 and 35 percent of the recovered costs depending on the amount of risk and amount of the process taken on by TC3. TC3's fee model based on recovered costs is unique in the industry and minimizes risk to customers.

Most of TC3's clients are commercial insurance and third-party claims organizations. Many mid-size companies use these services, but also a few larger companies. A few specific companies include U.S. Health and Life, NGS American, and Scan Health Plan.

ViPS STARSentinel and STARS

STARSentinel and STARS solutions are widely used in the health care industry for claims fraud detection. STARSentinel applies rule-based analysis to draw an investigator's attention to claims that differ dramatically from past history. Rules are based on previous analyses that define certain criteria, such as number of claims, size of claims, type of claims or other variables that indicate whether a claim should be flagged for further investigation as possible fraud. STARSentinel is designed to be used with existing organizational databases conforming to common industry standards. STARS combines a data warehousing environment with powerful data analysis and reporting tools to assist in detecting, investigating and pursuing fraud.

ViPS has a number of different modules that are combined to provide a comprehensive fraud detection solution. Pricing is based on the number of claimants and the modules that are implemented. Based on 920,000 claimants with 20 medical claims per claimant per year, ViPS estimates the annual pricing at \$230,000. The Washington Department of Labor and Industry purchased ViPS STARSentinel to detect provider fraud and abuse within the workers' compensation system.

ChoicePoint-FraudFocus⁶⁰

FraudFocus is a predictive modeling-based claims fraud product that relies on advanced statistical analysis of claims data to develop algorithms that can accurately identify claims likely to be fraudulent. FraudFocus also uses text mining functionality to sift through claim diary entries and log notes for fraudulent patterns, allowing predictive models to leverage information that is typically difficult to use in automated systems. FraudFocus continuously reviews claims, beginning at first notice of loss and thereafter whenever a claim is updated, throughout the entire life of the claim.

Different insurance agencies such as Liberty Mutual Agency Market and Erie Insurance are among FraudFocus users.

⁶⁰ Exhibit 2 does not include the ChoicePoint FraudFocus product, as we did not have information regarding its configuration requirements or implementation cost.