White Paper on Data Quality

The Workers Compensation Insurance Organizations (WCIO) is pleased to present this White Paper on Data Quality. It presents a discussion of data quality standards applicable to actuarial and data management disciplines in companies, third party administrators, consultants, and any other entity actively involved in the management of data, in particular workers compensation data. It expands on the data quality issues faced by these disciplines and elaborates on various data quality tools and practices used in preparing analyses and work products.

This paper is the result of work by a joint team of insurance professionals, who are active within the WCIO, the Casualty Actuarial Society, and/or the Insurance Data Management Association. The primary members of the team were:

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Data Quality White Paper

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WORKERS COMPENSATION INSURANCE ORGANIZATIONS (WCIO) DATA QUALITY WHITE PAPER

Purpose

This paper is intended to identify challenges and opportunities that present themselves with respect to maintaining and improving the quality of workers compensation data. It will explain the value and nature of workers compensation data commonly collected and used by WCIO members. (Workers compensation data is also collected and used for various purposes by entities other than WCIO members, particularly state accident boards and commissions. This paper will not address those other entities and purposes.)

The paper is organized into the following sections:

Section 1—Background and Introduction
Section 2—Key Features of the Workers Compensation Line
Section 3—Kinds of Data Most Commonly Captured and Maintained
Section 4—The State of Data Quality in Workers Compensation
Section 5—Recommended Steps for Maintaining and Improving Data Quality

Section 1

Background

The WCIO is a voluntary association of statutorily authorized or licensed rating, advisory, or data service organizations that collect workers compensation insurance information in one or more states. The WCIO provides a forum for the exchange of information about workers compensation insurance.

WCIO members, insurers, regulators, employers, public policy makers, governmental entities and other interested parties continuously use a variety of data pertaining to workers compensation insurance. The ways in which this data is applied include:

- Monitoring and benchmarking existing benefit systems and the competitive marketplaces that provide financial support for them,
- Improving the overall performance of the workers compensation system,
- Establishing and maintaining rating values and rules, and
- Evaluating implications of possible system changes.

Introduction

“Data quality” as used in this paper refers to the extent to which data accurately portrays risk and loss characteristics, historical experience, and/or business events. The better the quality of data becomes, the more accurate, complete, and informative the impressions and perspectives taken from that data will be. Clearly, data quality addresses questions of accuracy, completeness, and consistency. In addition, since historical data is used to estimate or forecast future results, timeliness of the availability of data is a critical quality component.

Data quality is a fundamental determinant of the success of the many pricing, administrative, and/or regulatory initiatives and programs. Industry data can best serve as a basis for intelligent and meaningful benchmarks if that data is of high quality.

Data represents a key corporate asset for insurers, and as such, the quality of data is of primary importance. Quality data pertaining to a company's experience enhances the reliability of indications derived from reviews of that history. Details and/or partitions of experience, either consistent with industry norms or exceeding those standards, can increase the flexibility and confidence with which programs can be established, modified, maintained, and eliminated as circumstances warrant. In simple terms, the answer to the question "how important is data quality?" can be answered with the question "how important is success to the insurance enterprise?"

Section 2

Key Features of the Workers Compensation Line

Workers compensation is a compulsory line of insurance—that is, workers compensation benefits must be provided as a matter of state law to most workers. This produces an extensive and complex environment to be accounted for in designing and collecting workers compensation data. Tens of millions of employees are eligible for benefits countrywide. Millions of employers are required to provide those benefits either by purchasing commercial insurance or via self-insurance. Thousands of brokers and agents market and service workers compensation coverage. Hundreds of insurers compete to acquire and retain policyholders. Fifty-two separate jurisdictions (including federal) impose separate and specific systems of benefit provisions, coverage and pricing options. They operate autonomous regulatory agencies overseeing the delivery of insurance and benefits for and by the interested parties.

Workers compensation provides distinct advantages to both employers and employees in comparison to an alternative tort-based system of remedy for work-related injuries and illnesses. Employers are protected from unpredictable liability suits requiring extensive defense costs and potentially imposing large judgments or settlements in some adverse cases, by virtue of the exclusive remedy provision of most workers compensation laws. Employees receive statutory benefits replacing portions of lost wages and covering all necessary medical treatment and supplies to treat their work injuries or illnesses on a no-fault basis

Pricing systems can be complex and detailed, often involving the application of mandatory and/or elective programs in combination. In general, operation of these pricing systems will include the following component parts:

- **Benchmark Rating Values Established by Licensed Rating Organizations in Each State**

  Using collective experience data for a given state, either alone or in concert with broader regional or national indications, rating organizations prepare and file various rating values that serve as benchmarks or beginnings for the workers compensation pricing system. These benchmarks will include overall changes in rate or loss cost level, and schedules of rates and/or loss costs by classification for a defined plan combining different types of businesses with similar hazards, operational features and/or loss experience into common groups for pricing purposes.

- **Competitive Carrier Pricing Parameters and Programs**

  While a few states still impose various forms of administered pricing, in most jurisdictions carriers retain substantial flexibility in establishing independent competitive pricing structures. Common variables applied to this purpose include:

  - establishment of expense provisions (in states where rating organizations publish loss costs excluding recognition of some or all expense components),
  - application of percentage or other deviations from some or all rating organization loss costs or rates,
  - promulgation of independent loss costs or rates for some or all classifications, and
  - modification of premium charges based on risk characteristics of individual employers or groups of employers.

  One of the requirements of an effective system of data reporting and collection is to properly and adequately account for these market variations in order to accurately report pricing while also supporting statistical needs underlying the ongoing maintenance of appropriate benchmark rating values premised on uniform market-wide indications, assumptions and/or statutory mandates.

- **Classification Plans**

  Most jurisdictions recognize a uniform system of classification of workers compensation that is developed and administered by a licensed rating organization subject to approval by appropriate governmental authorities, usually each state's Insurance Department. In some states, carriers can refine the uniform classification system in various ways, such as developing subclassification partitions of selected uniform classifications that insurers feel are more responsive to competitive interests. However, when carriers report exposure and loss data by classification to the rating organization, subclassification codes must be reported pursuant to the rules of the jurisdiction's Statistical Plan. Where variations in classification procedure exist, challenges arise for data reporting and collection in order to properly account for exposures and losses consistent with various potential applications of the experience data in question.

- **Mandatory Individual Risk Rating Plans**

  Workers compensation insurance uses one of the most robust, detailed, and formal experience rating processes of any line of insurance. Generally, there are minimum size requirements applicable to the qualification for experience rating, and once those requirements are met, application of experience rating is usually mandatory. In some jurisdictions, many risks too small to receive experience rating adjustments are subject to mandatory "merit rating" plans. Generally, merit rating plans are simpler and less responsive to prior experience than experience rating, but still offer some economic incentives for employers to maintain safe work environments. While the parameters and formulas used for experience rating and merit rating vary in specific states, all such plans depend upon a timely supply of experience data for each policy.

- **Elective Individual Risk Rating Programs**

  Employers and insurers may agree to apply a variety of specialized and focused rating programs such as:

- Premium Adjustment Programs (reflecting wage differences between insured risks, often restricted to construction classifications)
- Safety Credit Programs (often requiring certification on a risk by risk basis by some independent private or governmental authority)
- Schedule Rating Plans (allowing underwriting and marketing flexibility to modify otherwise prevailing rating values to specific risks)
- Deductible Coverage Provisions (available options for small or large programs, allowing employers to carry retentions from as low as $250 to as high as $100,000 or more per claim or occurrence)
- Retrospective Rating Plans (allowing for upward and downward adjustments of premium charges based on an employer's actual losses incurred against the policy)

Each separate risk rating procedure or program invokes a set of specific data requirements for successful implementation, application, and monitoring of market activity. Collectively the variety of available elective programs, in combination with the many standard pricing parameters applicable to this line of insurance, precipitates the potential for confusion and errors in the calculation of risk premiums and/or the attribution of components of such premium to various specific programs. Many jurisdictions publish premium algorithms in attempts to clarify their pricing systems, but the diversity of pricing templates that can be encountered raises special concerns about data quality for workers compensation.

Section 3

Kinds of Data Most Commonly Captured and Maintained

There are three primary kinds of statistical data pertinent to workers compensation business. They are policy information, unit statistical report information, and financial data calls. Each of these forms of data is discussed further below.

- **Policy Information**

  When an employer purchases workers compensation insurance coverage, the underwriting carrier issues a policy to the employer. Portions of the language of these policies are uniform across most states. They establish the nature of coverage being provided and rights and obligations of the parties to the contract. An information page identifies the employer and provides detail underlying the estimated premium for the policy. Various endorsements may be attached to the policy informing the employer about certain policy conditions and/or special terms applicable to the policy.

  Data gleaned from the information page and accompanying endorsements is provided to the licensed rating organization serving the state(s) to which the policy is applicable. Some policy information is submitted via the printing of paper copies of the pertinent policy documents. For electronic policy reporting there are standards and procedures under which the requisite information can be exchanged between insurers and rating organizations. The use of such electronic reporting has become the predominant method of data reporting.

Policy information serves three primary purposes:

1. This information is a critical resource for the monitoring and enforcement of coverage requirements imposed on employers by various states' workers compensation laws. In this regard, rating organizations commonly expend substantial effort in providing this information to the appropriate regulatory authorities and in ascertaining the status of employers whose policies have lapsed or been cancelled without renewal or replacement respectively.

2. The second potential application of policy information is the ongoing analysis and monitoring of market performance such as carrier market shares and the use and effect of various pricing programs and initiatives. Although limited in the sense that premium data is subject to revision on audit and may change significantly in some cases, and recognizing that no loss information is known at the time of policy issuance, policy information still provides the best available early view of trends and changes in the marketplace.

3. Finally, policy information serves as notification to rating organizations to expect further data reporting transactions as the policies that have been issued mature. Those subsequent data reporting transactions emerge after policy expiration, and are used to collect final exposure (payroll) and premium information, as well as loss data pertaining to claims incurred during each policy term. Having policy reports in hand, rating organizations can anticipate the timing of future data streams and are able to communicate reporting requirements to the carriers subject to compliance with them.

The ready availability of a prescribed standard for reporting and processing policy information is a key strength of the current data reporting and collection systems for workers compensation insurance. This standard (WCPOLS) is applicable across states, allowing regional and national carriers to configure their data systems consistently and uniformly with confidence that they will be able to comply with all applicable requirements. A second strength of the current systems is the high and increasing level of utilization of electronic reporting for policy information. Given the volume and detail of information involved, submitting electronic reports reduces processing time and costs dramatically for both reporting and receiving entities.

A prevailing problem with the reporting and collection of workers compensation policy information is a tendency toward redundancy on the part of many data sources. This tendency manifests itself in several ways. It is not uncommon for rating organizations to receive policy information that:

- Pertains to a jurisdiction other than the rating organization receiving the data
- Is an electronic replica of information previously received electronically
- Is a hard copy replica of policy information previously received electronically
- Is a hard copy replica of policy information previously received as hard copy
- Comes in hard copy from a carrier approved for electronic reporting

When the above circumstances are presented, the adverse impact on rating organizations is particularly acute.

- **Unit Statistical Report (USR) Information**

  This is the most comprehensive, detailed and broadly referenced of the three kinds of workers compensation data. Compared to policy information, USR data:

  - Provides audited (rather than estimated) exposures and final (rather than projected) applications of pricing programs.
  - Includes a wealth of loss information that cannot be captured at the time of policy issuance (at the individual claim level of detail for at least modest- to large-sized claims).
  - Follows the underwriting results for each policy over an extended period of development (generally five to ten years) as claims continue to be administered and paid, issues arise and proceed through resolution and carrier perspectives for future costs are reflected in case reserves reported for open cases.

  Each jurisdiction provides detailed information about required data, reporting procedures and coding structures applicable to unit statistical reports in formal “Statistical Plans” published for reference by data sources, regulators and other interested parties. Included in such Statistical Plans is a specified date, usually 18 months after the inception of a policy, as of which available loss information pertaining to the experience of each policy is established or “valued”. Soon after this valuation date, normally 20 months after the inception of a policy, a unit statistical report is due to be filed with the state’s rating organization. The format and content of these reports is broadly specified in the WCIO Data Specifications Manual, with individual state requirements arising as selected subsets of the specified data fields that are required to be reported and possible state-specific coding values for selected data elements.

  If subsequent changes occur in previously reported claim data, and/or if any claim(s) remain open as of a given valuation date, subsequent unit statistical reports are required at annual intervals after the submission of the initial report until all claims have been and remain closed or the full spectrum of required valuations has been submitted. If errors are found or certain changes in status such as subrogation recoveries or determinations of non-compensability occur, correction reports are required to revise previously submitted data.

  As was discussed above with regard to policy information, there are standards and procedures under which the requisite information can be exchanged electronically between insurers and rating organizations. The use of such electronic reporting is, and has for some time been, the predominant method of data reporting. Electronic reporting is somewhat more universally applied to unit statistical data than is the case for policy information, although some unit statistical data (and particularly correction reports necessitated by errors detected in previous submissions) does continue to be reported and collected via the printing and processing of paper copies.

  Unit statistical report data serves a number of significant functions within the workers compensation system. Included among these are the following:

  1. Benchmark rating values for individual classifications are promulgated using actuarial analyses of comparative experience data gleaned from unit statistical reports. The values are typically either manual rates reflecting provisions for all applicable benefit costs and insurer expenses, or loss costs limited to benefit costs and perhaps some limited and specified components of carrier expenses.

2. Some risk-specific pricing parameters such as experience modifications and merit rating adjustments are premised upon historical unit statistical reports on file for each employer.
3. Premium adjustments pertinent to selected policy provisions such as deductible coverage and retrospectively rated policies are commonly driven by unit statistical reports or counterparts thereof issued between the standard valuation dates.
4. Pricing factors such as excess loss factors, state and hazard group relativities, and tables of insurance charges and savings attributable to various retrospective rating plans are derived from periodic analyses of experience data submitted as unit statistical reports.
5. Evaluation of the fiscal impact of enacted or proposed legislative or regulatory changes.

As was seen above with regard to policy information, the ready availability of a prescribed standard for reporting and processing USR information is also a key strength of the current data reporting and collection systems for workers compensation insurance. This standard (WCSTAT) is applicable across states, allowing regional and national carriers to configure their data systems consistently and uniformly with confidence that they will be able to comply with all applicable requirements. A second strength of the current systems is the high level of utilization of electronic reporting for USR information. Given the volume and detail of information involved, submitting electronic reports reduces processing time and costs dramatically for both reporting and receiving entities.

Problems encountered with the reporting and collection of workers compensation USR data fall into the following functional categories:

1. **Discontinuation of Reporting:** When a carrier becomes insolvent or even financially impaired, submission of unit statistical reports may become a casualty of reduced staffing and limitations (both economic and regulatory) on resources. Unlike policy issuance, where viable carriers can absorb an insolvent company's prior book of business, and continue the business processes including data reporting in the failed company's absence, the continuing obligation for submission of extended unit statistical reports remains with the failed company. These circumstances defy effective and constructive resolution, and the market is frequently left to operate as best it can without the information intended to be available for employers previously insured by an insolvent carrier.

2. **Late Reporting:** From time to time even viable companies will encounter disruptions in their abilities to maintain current processing of unit statistical reports. The problems involved may include failures in existing information systems, unforeseen delays or problems in migrating to new internal systems, integration issues attendant with carrier mergers or acquisitions, staffing turnover, or unreliable communications with third party administrators engaged to manage claims and/or audits. Depending upon the volumes of business affected and the duration of the delays encountered, these problems have varying levels of impact on employer and/or system pricing efficiencies.

3. **Incorrect Report Submissions:** Despite increasing collaborative efforts between data sources and data collection organizations to pre-screen data submissions for essential quality standards, some submissions are received that are patently and inherently incorrect. For example, invalid classification codes may be included on a report, or class codes that cannot be used in combination under prevailing rules may be included on the same report. Published rating values may not be adhered to for specific reports or key information needed to identify a submission may be omitted. These conditions trigger edit criticisms from data collection organizations and necessitate correction reports from data sources. At a minimum this process imposes delays into the delicate timing sequences in place to support experience rating and related risk-specific pricing programs. Often corrections are submitted in hard copy due to real or perceived systems limitations, adding to the time required to process and accept the corrected reports.

4. **Questionable Report Submissions without Timely Responses to Edit Queries:** Some report data cannot be definitively dismissed as being wrong, but raises serious questions that should be addressed before the data is included in ongoing calculations and analysis. Unit statistical reports having large volumes of exposures and no reported claims are suspect in such regard, as are unusual shifts from year to year in the amounts and/or distributions of exposures, claims or losses between risk classifications. Such issues can be and in many instances are resolved relatively quickly by an exchange of questions and responses between data collection organizations and data sources. However, if and when questions presented about previously submitted data go unanswered or elicit partial or contradictory explanations, the ability of the data collection organization to accept the suspect data is compromised and delays or ultimately failures may result.

One consideration that arises with respect to some instances of the above described data reporting problems is the involvement of separate entities such as Third Party Administrators (TPAs) handling claims or Managing General Agents (MGAs) servicing insured accounts or books of business. While often intended to provide special expertise and attention to various aspects of an insured's workers' compensation exposures, the presence of these additional interests in the data reporting and collection processes can give rise to problems impacting data quality. Such problems may include communications delays, data inconsistencies, systems incompatibility, and differing priorities assigned to matters pertaining to the reporting of data.

- **Financial Aggregate Calls**

  In most jurisdictions, insurers are required to submit periodic summaries of premiums, losses, and/or expenses associated with their workers compensation business. With some limited and focused exceptions involving individual claim detail for specific claims, financial aggregate calls generally do not include classification detail or individual claim information. Exposure data is also not available for financial aggregate calls.

  The principal strengths of financial aggregate calls are that the information reported can be more current than that flowing through the unit statistical reporting process and the data can, at least for some portions of the data, often be reconciled against other reports such as companies' Annual Statements.

In some states certain financial calls may be submitted as frequently as quarterly. In the vast majority of states the predominant cycle for submission of financial aggregate calls is annually with valuation dates on December 31. Financial data is commonly tabulated and reported in portions of these financial calls for the most recent twenty policy years separately, with changes on even older policy years aggregated into an “all prior” category.

Financial aggregate data is primarily used as the basis for deriving indications for overall changes needed in such pricing parameters as loss costs and/or rates. By using financial data, the separation between historical data and the prospective period to which proposed rating values will apply is reduced, and the volume of available experience data is maximized.

Unlike the universal formats and standards that apply for policy information and unit statistical reports, financial aggregate data tends to include numerous differences both subtle and profound in the required reports from jurisdiction to jurisdiction. While reporting applications allowing electronic completion and submission of financial data reports are becoming the norm rather than the exception, these applications may be distinctly different from state to state or between designated groups of states, requiring data sources to navigate and apply a variety of tools to the enterprise of reporting financial data. Another issue impacting these reports is the concentration of effort and deadlines around the annual cycle of calendar year-end reports required by virtually every state and coinciding with Annual Report processes and other year-end reporting and planning efforts.

Insolvent carriers routinely discontinue submission of financial data early on after they are taken under supervision by regulatory authorities. In addition to those circumstances, the most prevalent issues pertaining to the submission of financial data are failures for some data sources from time to time in providing timely and/or acceptable responses to edit criticisms triggered by their submissions. While these failures involve limited numbers of carriers, they can involve meaningful volumes of data if and when market concentration coincides with carriers having difficulties satisfying data collection organizations’ interests with respect to failed data edits.

- **Other Workers Compensation Data Reports**

  While the above categories account for a majority of workers compensation data exchanged between carriers and data collection organizations, they do not exhaust the platforms via which workers compensation data is reported. From time to time special calls may be issued in attempts to obtain information specific to a newly identified need. Academic and research-oriented organizations arrange substantive and often proprietary reporting mechanisms suited to their intended purposes. As previously noted, state accident boards and authorities charged with enforcement of coverage requirements under state law are often active in regard to data collection for workers’ compensation. While documenting these efforts and integrating them into the context of data collection organizations’ tools is beyond the scope of this paper, they should be recognized as additional resources with important applications and implications in their own rights.

Section 4

The State of Data Quality in Workers Compensation

Workers compensation data is collected in a variety of forms, and applies to a broad spectrum of state-specific benefit and pricing systems. The volume of information involved is very large, and potential interpretations and uses of this data may become complicated. Many data sources and data collection organizations must interface effectively and efficiently in order for the data intended to be captured to be timely, complete, and accurate.

In fact, the vast majority of workers compensation data is submitted in a timely fashion and is assimilated into the subsequent analytical, regulatory, and competitive enterprises without incident. Various data quality control measures that contribute to the completeness and accuracy of workers compensation data are in place. Finally, processes are available to test field content, relationships between fields and distribution of values within reported data in support of valid coding and accurate data.

Where this general efficiency is not achieved, instances of compliance failure most often involve rather straightforward violations of timing requirements or inability to supply relatively basic data in a complete and correct fashion. When data reporting problems arise, they are generally corrected, although the time required for such resolution varies substantially. Occasionally the time exceeds parameters necessary to support the intended flow of information. Some specific problems can disrupt the reporting and capture of significant volumes of data depending on the market share of the data source(s) affected and the timing of the issues that arise.

Considerable attention has been, and will continue to be, given to the exceptions and omissions arising in the realm of data reporting for workers compensation. This focus is engendered in substantial part by a broad array of internal initiatives adopted and applied by the workers compensation industry to its own members to sustain the quality of information available to data collection organizations, regulators, market participants and public policy decision-makers. Notable external reviews have contributed to the visibility and recognition of these issues and the programs supported by the data in question.

The ultimate successes of workers compensation insurance markets in serving their various participants rest in no small part upon the ability of the industry to provide high quality data to interested parties, and to support the veracity of that data with meaningful and effective control processes and systems.

Section 5

Recommended Steps for Maintaining and Improving Data Quality

A host of particular considerations will be met in designing and operating data systems for workers compensation for any specific jurisdiction, data source, or data collection organization. Formulation of specific strategies and/or remedies for avoiding and correcting deficiencies in those processes requires the detailed insights only available to the participants directly affected by each circumstance. However, a basis for successfully minimizing errors or omissions and efficiently responding to those conditions may be established through adherence to the following benchmarks:

- Data reporting requirements and specifications should follow commonly used insurer business definitions and processes whenever possible.

  The efficiency of data reporting and the quality of information thus provided are both advanced by virtue of having tools adapted to the purpose of data reporting that are consistent and compatible with the resources that data sources already use and maintain for independent and competitive business reasons. Although some necessary data elements may not have direct counterparts in the realm of common business usage, deference and consideration should be given to those existing reference points in defining requirements and designing reporting processes.

- Knowledge of a carrier's business is critical to data reporting considerations.

  The necessity and value of clear cognizance of data requirements permeates underwriting, claims, accounting, actuarial, and information systems disciplines. Good data is born of grassroots understanding of what has taken place in specific transactions.

- Understanding the applicable requirements for timing, formatting, and coding of data is a fundamental requisite for success.

  Core information about the workers compensation business gleaned from carrier and insured records must be correctly and completely translated into the vernacular of prevailing data reporting systems and processes. While presenting challenges of detail and interpretation, the standards that apply to data reporting are also the means by which data about different entities, taken from different sources and arising from different time periods, is made consistent and comparable. It then becomes a tool for credible and meaningful decision-making by combining small component parts into a large, in fact hopefully universal whole.

- Effective and efficient communication is the linchpin of successful reporting and collection of workers compensation data.

  "Communication" includes the publication and assimilation of data reporting rules and processes, mutual and advance notification between data sources and data collection organizations about requirements and expectations, and prompt interactions upon the event of missing, incorrect, or uncertain data. Maintaining identifications of responsible parties in the participating entities is a critical subset of the processes involved in an effective and productive communication process.

- Data reporting and collection must be given a prominent priority in the participating organizations.

The challenges of having timely, complete, and accurate information about the matrix of workers compensation systems across the country cannot be overcome casually or as a by-product of other business endeavors. Data must be viewed as a critical corporate asset, managed and preserved accordingly, and owned by parties possessed of sufficient authority and responsibility to accomplish the steps involved in successful data reporting. Toward this purpose, the multitude of business purposes that can and should be materially advanced with the benefit of clean, timely, and complete data must be recognized as a means of justifying the undeniable costs of grooming and maintaining that resource.