Big Data in Workers’ Compensation

How Good Is Your Data?

Big Data isn’t always accurate data!

Big Data and Analytics is here...now!

- The amount of available data can be so overwhelming that, according to Marsh’s 2019 Excellence in Risk Management survey, only 39% of companies reported using data for strategic planning.
- “The best predictor of the future is the past!”
- Not understanding your own data and what historically has driven your costs creates gaps that prohibit you from creating benchmarks, not only against industry standards, but against yourself.

What do you want to know from your data? Without clear answers to this question, data is just data.
Big Data, Artificial Intelligence and Predictive Analytics are slowly becoming more mainstream in Workers' Compensation. Let's face it, Big Data is here to stay.

- Can your data help reduce friction/frequency in Utilization Review?
- Can it improve access to Medical care?
- Can your data help identify and manage appropriate treatment plans?
- Can your data identify the best provider specialty to treat the injury?
- Can your data help identify return to work opportunities?
- Can data identify Top performing physicians and Groups
- Can data Identify Fraud Waste and Abuse patterns
- Can your data help better communicate with all stakeholders in the claim?

When used strategically, Data and Analytics can help by:

- Help set and manage reserves
- Predict claim costs using specific factors
- Pre approve appropriate treatment plans
- Provide specialty selections
- Identify high risk claims and early intervention opportunities
- Flag warnings as claim develops
- Impact of comorbid conditions
- Limit/modify provider directories to only those that have higher outcomes
- Identify Fraud Waste and Abuse trends
- Use new medical records to identify psycho social factors
- Future medical calculations
- Identify claim factors to consider for underwriters and Loss Control

2018 Critical issues in Workers' Compensation **

- Change success metrics from volume discounts to value
- Patient-centric metrics that identify improvements in function, productivity and reduced total cost of risk
- Leverage existing tools and available data applicable to measure provider performance and outcomes
- Leverage data and advanced technology solutions to predict and proactively manage claim factors, including comorbidities.
- Consider diverse tools to improve stakeholder communication
- Utilize technology to support provider access and speed to care
- Integrate mental health programs into medical management programs

**2018 Work Comp benchmark Study**
2017 use of Big Data and Analytics in Workers’ Compensation

- 39% of industry measures medical outcomes/performance
- 37% of those surveyed have/will implement patient advocacy into claim models, i.e. text messaging, mobile apps, telehealth, and reducing frictional delays, KPIs on claims, delivery and wellness

According to the new England journal of medicine, patients receive the correct diagnosis and care only 55% of the time. Valid provider performance measures have the potential to greatly improve the quality of care and outcomes across the industry.

**2018 Work Comp Benchmark Study**

Putting Your Data To Work

**Approach**
- Key stakeholder engagement
- Define expectation and build around that
- Outcome benchmarks

**Measure**
- Provider considerations
- Process gaps
- Claims elements

**Partner**
- Provider communications
- Employer and patient engagement
- Claim team awareness

Using Data As a Guide

To navigate against the background of both where we are and what lies ahead, we can begin to use data to compare performance between providers. Data can:

- Highlight problem areas in clinical performance
- Inform or drive quality improvement activities
- Identify issues for further research (i.e. trends)
Begin your Big Data analysis with Goals in Mind

Define quantitative and qualitative outcomes that you want to meet. Start with the ultimate goals and desired outcomes, then, identify the data and activities that drive that desired outcome to ensure proper qualitative and quantitative balance.

What data elements are necessary to identify and track priorities?

Are there internal and external factors that influence those priorities... if so, know them early!

Methodology Matters

It all starts with how you collect data and structure your processes.

- When assessing outcomes, factors must be:
  - Objective
  - Quantifiable
  - Reproducible
- Consider limiting your models to closed claims only
- Outcomes by definition can only be fully seen on claims that have run their course
- Data integrity matters
- Get granular
- Identify and remove outliers

It Sounds Easy, But Beware The Pitfalls...

The way in which data is collected and interpreted may have significant implications. Key areas of focus are:

- Measurement Properties
- Controlling for Case Mix and Other Factors
- Coping with Chance Variability
- Data Quality
The impact of Co-morbidities

- Based on Harbor research analyzing more than 7,000 WC claim, injury dates between Jan. 1, 2011 and Dec. 31, 2013.
- Seven comorbidities observed: obesity, diabetes, hypertension, addiction, mental health, tobacco use and multiple comorbidities.
- Claims associated with comorbid conditions experienced:
  - Longer claims duration
  - Higher medical costs
  - More temporary disability (TD) days
  - Increased litigation rates
  - Increased surgery rates
  - Except tobacco use – did not have a significant impact on outcomes compared to control group.

Measurement Properties

Validity & Reliability

Some of the sources we might rely on may lack important clinical details needed for a true quality assessment:

- Who?
  - Lack of structure and consistency around NPI numbers can make mapping identities incredibly challenging
- Why?
  - Manually entered data can lead to variations in absence of crucial elements such as changes to, or accuracy of injury 10 codes
- What?
  - Variations in reporting practices over time may hinder clarity around care plans, results, and critical details

Measurement Properties

Conflicting Findings

Combining diverse data elements into a single analytical approach can lead to inaccurate correlation to the outcomes observed:

- Correlation
  - Quantifies the degree to which two variables are related
- Regression
  - Used to examine the relationship between one dependent variable (TD) and one independent variable (any patient characteristic, such as severity)
Controlling for Case Mix

Performance comparisons between healthcare providers need to take into account whether the measures being compared derive from similar patient groups.

- Clinical Characteristics
- Patient Characteristics (i.e., presence of co-morbidities)
- Weighting variables
- Adjusting for controllable vs. uncontrollable variables

Data Quality

Garbage In = Garbage Out

- Some data collection may be manual – i.e., an adjuster entry of claims information into a claims system
- Disassociation of the system(s) as a source and the understanding of the intended use for analytics can lead to a bad set of data elements
- Collection over time can also mean variation in sources
  - New claims systems
  - Multiple claims systems
  - New biller/review partners
  - Revised data reporting requirements

Evolution of use for Big Data with Analytics

- "What Happened" - Descriptive: rear view look at reporting
- "What Will Happen" - Predictive: understanding most likely future scenario and impact
- "What Should we do about it" - Prescriptive: collaboration to achieve consistently best outcomes by advanced analytics
- "How to Optimize" - Cognitive: highly automated optimization of solutions with machine learning
Before you decide how or where I should use this technology, you need to ask, "How's my data?" You need the insight necessary to take a deep dive into your data (for those of us who don't think to ensure you are prepared to ask the right questions to know not only where to look, but what to look for in your big data).

What does your data look like?

- **Core Building Blocks to Success**
  - **Master Data Management strategy and applications**: Most of them fail (85%). Prepare proper business case, have clearly defined goals and safeguard your resources and program from internal and external competing priorities.
  - **Data governance**: A collection of processes, roles, policies, standards, and metrics that ensure an effective and efficient use of commonly understood data and information.
  - **External support**: is readily available and will accelerate the success of your data and analytics program.

Ask yourself - How much time do you spend managing, cleaning and or labelling your data?
Does the last slide scare you?

Don't fear, you're not alone!

There are many external resources readily available that can help you manage and accelerate the success of your data and analytics program,

...once you know what you want!

Big Data sources may include:

- Medical bill data
- Pharmacy data
- Utilization review data
- Nurse case management data
- Underwriting data (carrier, excess, etc.)
- Document images
- Internal data and metadata
- Enterprise integration and operation
- Risk management
- Data governance
Do you want information from your claims data?

If you plan to use your Claims data, a few examples that need a clear definition:

- Claim type: Open/closed or Ind/MO?
- Claim Totals: Paid/Outstanding/Total?
- Break out total/medical/indemnity/expense?
- Juris indicator based on?
- Does claim data have CORRECT PTP?
- TTD days?
- CORRECT ICD-10?
- Injury type/injury code?

Above are just a few examples you need to pay attention to.

If you plan to use your Bill Review data, a few examples that need a clear definition:

- Where/who enters provider information?
- What is the difference between rendering, service, paid and group provider info?
- Is the rendering provider (individual/physician) associated to group? If so where, claim system of MB or in MBR system?
- Does service code mean just CPT or HCPCS?
- Does service code mean just CPT or HCPCS?
- Surgery codes? EMR? ROIC?
- Juris indicator based on?
- How many ICD's are enough?
- Billed, reductions, allowed, paid…which one do you want? Reason codes?
- What's an NPI? What's a taxonomy? What's a license number? Where do they come from? Can you trust them?

PPO Information

Are you using more than one PPO source that include same providers?

- Are you matching bills to providers?
- Are you matching UR decisions to providers?
- Are you pulling provider information from claim system?
- Are you using PBM data that includes provider RX history?
- Are you using NCM notes and data that includes providers?
- Are you scraping data from images and matching to providers?

You see the issue? You might need to master provider data.
Evolution of Data and Analytics

- Digital Transformation: "The novel use of digital technology to solve traditional problems. True digital solutions contain the essence of innovation; they are not just enhancements to traditional methods. In a narrower sense, 'digital transformation' may refer to the concept of going paperless or reaching a 'digital business maturity.'"

- Disruption: "In business theory, a disruptive innovation is an innovation that creates a new market and value network and eventually disrupts an existing market and value network, displacing established market-leading firms, products, and services."

- Transformation: "Business transformation is the process of fundamentally changing the systems, processes, people and technology across a whole business or business unit, to achieve measurable improvements in efficiency, effectiveness and stakeholder satisfaction."

** ref- Michael Gabriel Fortium Partners

What's next?
Can we use data to

- Automate claims creation
- Automate claims handling
- Improve use data to automate intake?
- Improve claims creation and passing of data between departments and software?
- Automated claims routing based on distinct claim factors?
- Improve claims handling and outcome improvement monitoring?
- Improve customer service?
- Use data to make AOE/COE decisions, set reserves, etc?
- Improve regulatory compliance?

So How Do We Get there?

Begin with what you know... Use routine data that is readily available for the purpose of assessing quality

- Data, in most cases, is readily available in your internal systems
- We sit on a rich source of information representing large volumes of patient history over many years
- This data is already being collected for other purposes and the cost of collection should be relatively low
- This retrospective view of closed claims can be used to assess future trends and quality indicators
Conclusion

- Not all data is clean data
- There are different methodologies and approaches to your data strategy - but your approach must be a well educated one
- Better data and analytics will improve outcomes for all constituents
  - The injured worker
  - The employer
  - The payor
- It's not just about the data. It's not just about analyzing data. It's about improving quality of care to the injured worker, improving claims management and claims outcomes.

What do you want to get out of your Big Data?