2018 Pennsylvania Workers’ Compensation Conference

**Analytics:** Injury Prevention & Safety

Moderator: Bernadette Heckman – Heckman Group

Speakers:  Jim Harris – Genex Services
            Kevin O’Sadnick – Safety National
            Peter Phelan – PA Department of Labor & Industry
Analytics – Using Technology & Tools to Prevent Injuries

Jim Harris
Vice President, Analytics & Reporting
Genex

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What is Analytics and Why Should You Care?

› Big Data is everywhere, and if you are not using it for your benefit, you are falling behind

› “From the dawn of civilization until 2003, humankind generated five exabytes of data. Now we produce five exabytes every two days… and the pace is accelerating.” - Eric Schmidt, Executive Chairman, Google

› Having data without an action plan doesn’t accomplish anything

› How you harness this data and develop actionable business decisions is what will set you apart in your industry
How Analytics Should Work

By taking advantage of all of the data available to you, you should be able to provide meaningful results to your company and identify actionable enhancement opportunities to your programs.
The Four Types of Analytics

- **Predictive**
  - What will happen?

- **Prescriptive**
  - How can we make it happen?

- **Descriptive**
  - What happened?

- **Diagnostic**
  - Why did it happen?
Descriptive Tools

- Loss Reports
- Monthly/Quarterly Vendor Reports
- Ad-Hoc Reporting Tools
- Annual Stewardships
  - Multi-year Trending
- Interactive Dashboards

Descriptive
What happened?

Diagnostic
Why did it happen?
Meaningful Company-Focused Outcomes

- Simple widget counting is no longer enough
- Results must be **valuable** and **actionable**
- Poor results = opportunity for improvement; don’t be afraid of them
- Analytics should be used for both your internal and external customers

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### % of Total Recommended Payments by Utilization Category

<table>
<thead>
<tr>
<th>Utilization Category</th>
<th>FY 15/16</th>
<th>FY 16/17</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td>21.6%</td>
<td>22.2%</td>
<td></td>
</tr>
<tr>
<td>Physical Medicine</td>
<td>14.9%</td>
<td>18.5%</td>
<td>20.8%</td>
</tr>
<tr>
<td>Facility</td>
<td>13.4%</td>
<td>14.9%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Evaluation</td>
<td>13.8%</td>
<td>14.9%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>9.8%</td>
<td>9.7%</td>
<td>11.6%</td>
</tr>
</tbody>
</table>
4. Data Visualization

- A picture is worth a thousand words
- Use visual tools to make the results digestible
- Tools should be *easy* and *interactive*, with drill-down features
- Visualize trending and outliers to stimulate decisions and action
Example of Medical Spend Dashboard
Predictive & Prescriptive Analytics

- This is the future of analytics using Machine Learning and Artificial Intelligence
- Predictive analytics is the practice of extracting information and learning from it to recognize trends and predict future outcomes
- Big data is the fuel and predictive analytics is the engine to identify patterns and benefit from that knowledge
Examples of Using Data to Prevent/Reduce Injuries
Case Study #1 – Using Data and Case Management

- Using trending information, a large hospital system noticed a dramatic rise in the frequency and severity of shoulder injuries.
- Data pinpointed specific locations with a significant increase in shoulder surgeries.
- Targeted training & post-surgery pamphlet for employee education were developed.
- Increased case management on all shoulder injuries.
Case Study #1 – Using Data and Case Management

What were the Results?

› Frequency of shoulder injuries decreased by **14%**

› More significantly, the average cost of shoulder injuries fell by **-46%**
Case Study #2 – Using Data & Ergonomics

- A tile company in New Jersey had identified high frequency of shoulder & back injuries from their data.
- The company hired an ergonomist to conduct an assessment and develop an ergonomic strategy.
- The assessment identified that employees were repeatedly lifting 90lb boxes of tile from pallets at 5” from ground to tables at 30” above ground.
- Recommendations to place pallets on lifts eliminated all bending & lifting below waste height.
- Injuries and costs fell.
Make Your Data Work for You

› Develop meaningful reports to access your data
› Watch your trends – use your reports
› Take advantage of advanced analytic tools
› Work with your Brokers & Vendor partners
› Most Importantly ... Create an Action Plan
Questions?

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2018 PA Workers’ Compensation Conference

**Analytics:** Loss Runs & Areas of Focus

Kevin O’Sadnick, CSP – Safety National Risk Control Manager
• **Loss Runs**

  • List of claims/losses that have occurred within a specified time span.
  
  • Loss run information tends to vary depending on the provider.
  
  • Nearly all loss runs include the same “standard” information.
  
  • Supplemental information can vary drastically.
  
  • Loss run customization is normally available to some extent.
• Most Common Data Fields

• Policy Year
• Date of Loss
• Cause/Description of loss
• Loss Location
• Loss Value
• Claim Status
• Accident State/Location
### XYZ Company

#### Line of Coverage(s)

Report sorting (summary, detailed, etc.)

### Date

<table>
<thead>
<tr>
<th>Date of Loss</th>
<th>Policy Year</th>
<th>Claimant Name</th>
<th>Claim Number</th>
<th>Division/Location</th>
<th>Cause of Injury</th>
<th>State</th>
<th>Status</th>
<th>Med/Indem</th>
<th>Total Paid</th>
<th>Total Outstanding</th>
<th>Total Incurred</th>
</tr>
</thead>
</table>
• Supplemental Data Fields
  • Accident Description
  • Occupation/Job Position
  • Medical Cost
  • Indemnity Cost
  • Lag Time
  • Shift
  • Tenure
Crucial Focal Points

• **Cause of Loss**
  - Slips, Trips, & Falls
  - Struck by
  - Motor Vehicle Accident
  - Cut
  - Strains/Sprains
  - Occupational Disease

• **Frequency of Loss Cause**
  - How often a cause of loss shows up in loss runs

• **Severity of Loss Cause**
  - Dollar value of loss
Sorting and Analyzing
Crucial Focal Points

• Description of Loss
  • Gives insight to loss situation

• Claim Status
  • Open or closed

• Loss Location
  • Which company location
• Getting the Most out of Loss Runs

• Quality of reported of loss information will determines capabilities of loss analysis.
• Have knowledge of any coding used by TPA/Carrier
• Work towards a standardized loss report.
• Become familiar with customization available.
• Quarterly or monthly loss reviews.
• “Frequency often breeds severity...”
Success Story

The problem:
- Alliance of Schools for Cooperative Insurance Programs (ASCIP) has 46 members that participate in their WC Program.
- They noticed that approximately 22% of WC claims from lifting injuries.
- Also noticed that 31% of claim costs resulted from lifting injuries.
- More specifically, they determined that a large percentage of the claim costs were from the maintenance and custodial staff lifting trash cans.

The solution:
- ASCIP identified a product known as the Ergonomic, Assist, Garbage, Lift and Empty (E.A.G.L.E Lift).
- E.A.G.L.E Lift is an assisted lifting device that removes the need for lifting while emptying garbage cans into dumpsters.
Questions?

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Statistician Supervisor
PA Department of Labor & Industry
Center for Workforce Information & Analysis
CMU – CAPSTONE Project

• A Predictive Analytics Project
• Carnegie Mellon University students
• Master’s degree candidates
• Ongoing project – new group of students each semester
Data sets

• Workers’ Comp data

• Employment data

• Training data

• SOII data
Data sets – Workers’ Comp data

- Workers’ Comp data
  - Name
  - Date of Injury
  - Industry (NAICS code)
  - Nature and cause
  - Age
  - Gender
  - Occupation – if available
Data sets – Employment data

• Quarterly Census of Employment & Wages (QCEW)
  • From the Unemployment Comp. system
  • Covers about 97% of employers in PA
  • Provided employment only (not wages)
  • Employment by NAICS and county
Data sets – Training data

• PA Bureau of Workers’ Comp training sessions
  • number of attendees online or on-site
  • by training topic
Data sets – SOII data

• Survey of Occupational Injuries & Illnesses (SOII)
  • survey of 6,000 business locations in PA
  • published annually on the BLS website
  • follows OSHA record keeping guidelines
  • provides detailed injury statistics
• Help identify employers who are outliers
• Identify industry trends
• Identify geographical trends
• Results of the project will help BWC target future training sessions
Overview
- In 1915, the Department of Labor & Industry, Workers' Compensation was established to reduce injuries and provide lost wages and medical benefits to PA employees who become ill and injured through the course of their employment.
- This project will provide an in-depth analysis of actual workplace injury and illness across high-risk industries in Pennsylvania, develop a predictive model for the Commonwealth and non-commonwealth, and provide public policy recommendations to lower the workplace injury rate in Pennsylvania.

Methodology
- Data fields are narrowed down by their usefulness and in-matched values were converted to be consistent for both Commonwealth and non-commonwealth data.
- Injury rate is calculated yearly by aggregating monthly data by the following formula:
  \[
  \text{Injury Rate} = \frac{\text{Total Number of Injuries}}{\text{Total Number of Employees}}
  \]
- Injuries were ranked by their contribution to the overall injury rate. The top 5 industries with the highest injury rates were selected for further analysis.

Summary
- The majority of injuries across the top 5 industries were sprains, strains, and contusions.

Top 5 Commonwealth Industry & County
- Residential, Institutional, and Developmental Disability Facilities
- Police Protection Facilities
- Nursing Care Facilities
- Highways, Streets, and Bridge Construction
- Psychiatric & Substance Abuse

Top 5 Non-Commonwealth Industry & County
- Fire Protection
- Home Centers
- Police Protection Facilities
- Other Poultry Production
- Animal (except Poultry) Slaughtering
• This slide reserved for the students’ final project.
• I will include a slide or two of their dashboard here.
• Final deliverable will include a database which can be accessed via a Tableau interface
• These predictions will enable PA Training for Health and Safety (PATHS) staff proactively target training for high risk industries, employers, or employees.
Questions?

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