



Data Analytics – You Can Do It!

Todd Christenson

Data Analytics – You Can Do It!

Today's Agenda

- Why and What to Measure
- Understanding your Data
- Data Visualization
- The Good, the Bad, and the Ugly
- Excel Features Demonstration



Why and What to Measure

So why bother measuring????? 

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Why and What to Measure

“What gets measured
gets done”

W. Edwards Deming



True, if what we measure is
correlated to the desired
outcomes and is actionable .

“What gets measured
gets improved”

Peter Drucker



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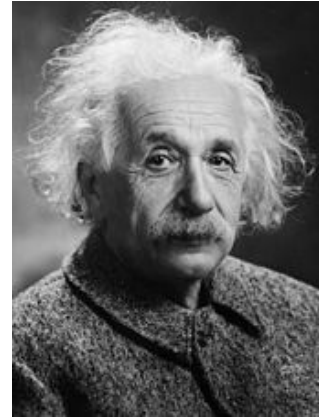
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Why and What to Measure

“Everything that can be counted does not necessarily count; everything that counts cannot necessarily be counted.”

Albert Einstein



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Why and What to Measure

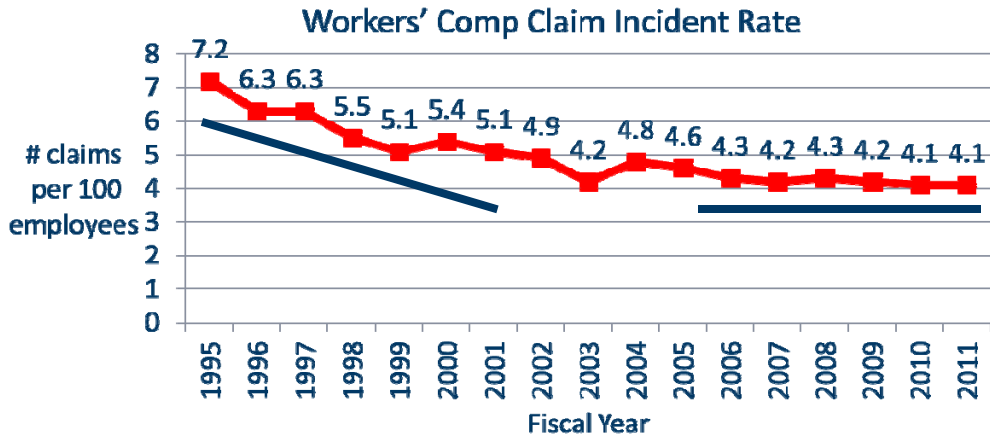
Create dissatisfaction in status quo,
without dissatisfaction there will be little motivation to change!

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Why and What to Measure



Why and What to Measure

“Leading” versus “Lagging” indicators

Lagging indicators are typically “output” oriented, easy to measure but hard to improve or influence

Leading indicators are typically input oriented, hard to measure and easy to influence.

| Agency | MnSAFE - Safety Accountability From Everyone Workers' Compensation Claim Incident Rate Reduction Goals Cabinet Agencies | | | | | | | | Fiscal Year 2018 Results 3rd Quarter (Jan-March) | | | |
|--|---|--------------------|----------------------|----------------------|----------------------|----------------------|------------|-------------------|---|--------------------|--------------------|--|
| | Base Incident Rate | Base Severity Rate | FY2018 Incident Rate | FY2018 Severity Rate | FY2017 Incident Rate | FY2017 Severity Rate | QTR Claims | QTR Severity Rate | FYTD Claims | FYTD Incident Rate | FYTD Severity Rate | |
| Overall MnSAFE Incident Rate Goal | | | | | | | | | | | | |
| | 5.13 | 2.44 | 4.78 | 2.28 | 4.78 | 2.28 | 4.78 | 2.28 | 4.78 | 2.28 | 4.78 | |
| Administration | 5.21 | 2.47 | 4.91 | 2.31 | 4.91 | 2.31 | 4.91 | 2.31 | 4.91 | 2.31 | 4.91 | |
| Business | 4.43 | 2.09 | 4.02 | 1.92 | 4.02 | 1.92 | 4.02 | 1.92 | 4.02 | 1.92 | 4.02 | |
| Community & Economic Inequality & Services | 6.58 | 3.76 | 6.29 | 3.58 | 6.29 | 3.58 | 6.29 | 3.58 | 6.29 | 3.58 | 6.29 | |
| Construction | 5.29 | 2.43 | 5.02 | 2.33 | 5.02 | 2.33 | 5.02 | 2.33 | 5.02 | 2.33 | 5.02 | |
| Education | 4.91 | 2.51 | 4.64 | 2.24 | 4.64 | 2.24 | 4.64 | 2.24 | 4.64 | 2.24 | 4.64 | |
| Health | 5.17 | 2.57 | 4.90 | 2.27 | 4.90 | 2.27 | 4.90 | 2.27 | 4.90 | 2.27 | 4.90 | |
| Human Resources | 5.03 | 2.45 | 4.76 | 2.25 | 4.76 | 2.25 | 4.76 | 2.25 | 4.76 | 2.25 | 4.76 | |
| Information Management & Budget | 4.98 | 2.38 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | |
| Insurance | 5.34 | 2.57 | 5.07 | 2.27 | 5.07 | 2.27 | 5.07 | 2.27 | 5.07 | 2.27 | 5.07 | |
| Legal Services | 4.98 | 2.38 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | |
| Public Safety | 4.98 | 2.38 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | |
| Rural Range Resources | 5.01 | 2.40 | 4.74 | 2.20 | 4.74 | 2.20 | 4.74 | 2.20 | 4.74 | 2.20 | 4.74 | |
| State & Federal | 5.36 | 2.52 | 5.09 | 2.22 | 5.09 | 2.22 | 5.09 | 2.22 | 5.09 | 2.22 | 5.09 | |
| Talent Management | 4.98 | 2.38 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | |
| Technology Services | 4.98 | 2.38 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | |
| Workforce Development & Budget | 4.98 | 2.38 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | |
| Workforce | 4.98 | 2.38 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | 2.18 | 4.71 | |

Claims by open date, not closed and based on March 31, 2018.
Severity rate is per \$100 of benefits payment.
Based on a number of claims per \$100 of wages.
Incidents and severity rate are open claims by the reporting date.

Understanding your Data

Know thy data!

Data types

- Static – not changing
- Dynamic – can change over time

What influences your data

- Reliability - single vs multiple sources subject to interpretation
- Standardized – means the same for all

Quantity

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Understanding your Data

Know thy data!

Existing data sources

- Injury/incident data
 - Severity, return to work, investigations, corrective actions
- Planned activities
 - Training, audits, inspections, etc
- Perception survey
- Work Comp annual report
- Bureau of Labor Statistics

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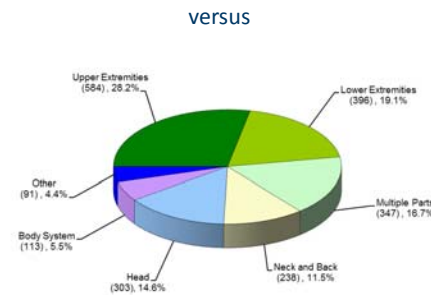
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Data Visualization

Main goal of data visualization is to communicate information clearly and effectively through graphical means

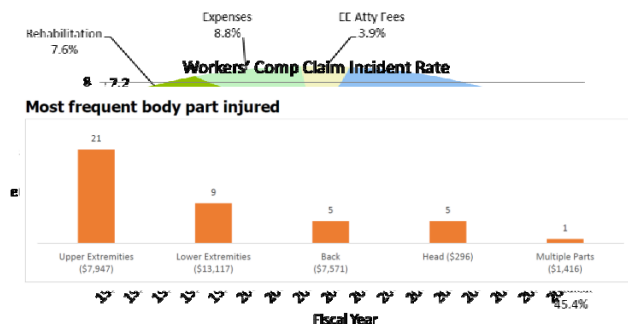
| Body Part | FY2016 |
|-------------------|--------|
| Upper Extremities | 584 |
| Lower Extremities | 396 |
| Multiple Parts | 347 |
| Neck and Back | 238 |
| Head | 303 |
| Body System | 113 |
| Other | 91 |



Data Visualization

Basic

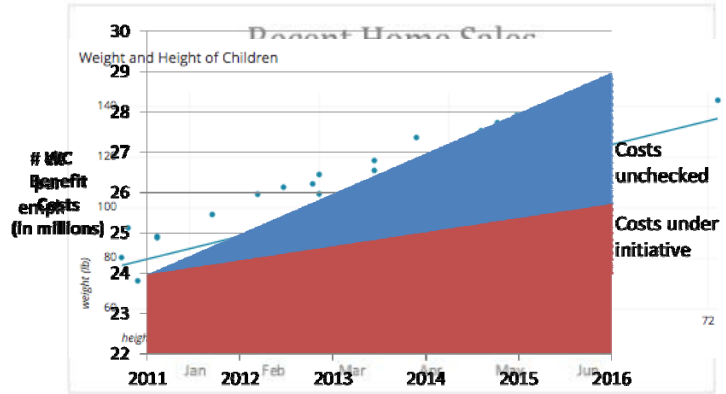
- Bar or Pareto
 - Bars proportionate in length or height to counts
- Pie
 - Divided into slices to illustrate numerical proportion.
 - No more than 6 categories
- Line graph
 - Trend in data over intervals of time



Data Visualization

More advance

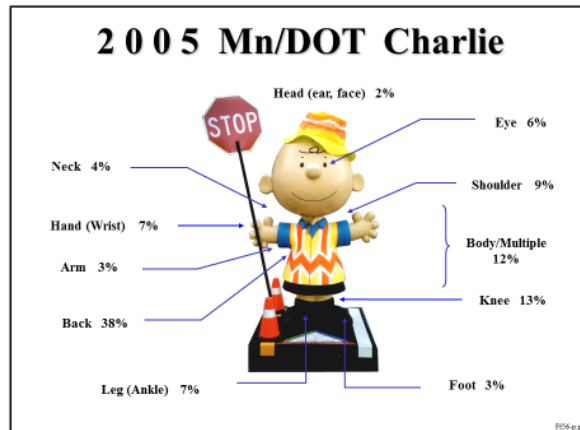
- Trendlines
- Multiple elements and axis
- Area chart
- Scatter plot



Data Visualization

Even more advance!

- Incorporating graphics - true data visualization



The Good, the Bad, and the Ugly

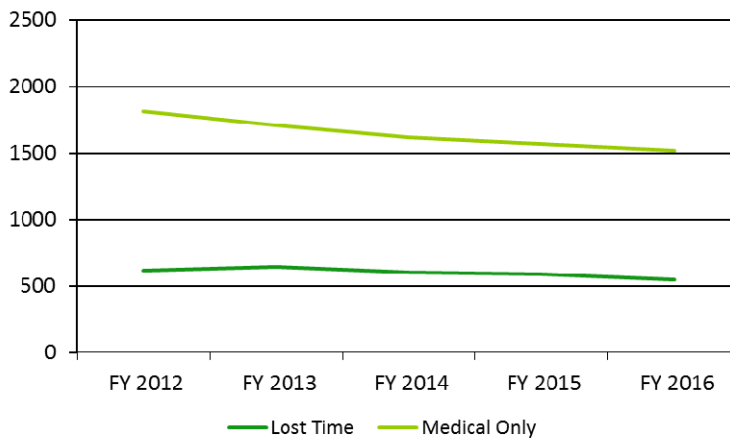


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The Good, the Bad, and the Ugly



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The Good, the Bad, and the Ugly

| Year of Closure | | Return to Work: Same Employer (%) | Return to Work: Different Employer (%) | Not Employed (%) | Total (%) |
|-------------------|------------------|-----------------------------------|--|------------------|-----------|
| 2010 | All MN Employers | 39.0 | 16.7 | 44.2 | 100 |
| | State Agencies | 62.1 | 10.3 | 28.6 | 100 |
| 2011 | All MN Employers | 41.3 | 17.6 | 41.1 | 100 |
| | State Agencies | 65.2 | 14.5 | 20.3 | 100 |
| 2012 | All MN Employers | 40.3 | 17.9 | 42.1 | 100 |
| | State Agencies | 66.0 | 12.0 | 21.8 | 100 |
| 2013 | All MN Employers | 41.0 | 18.0 | 41.0 | 100 |
| | State Agencies | 51.2 | 12.4 | 36.9 | 100 |
| 2014 | All MN Employers | 43.2 | 18.7 | 40.1 | 100 |
| | State Agencies | 66.4 | 8.4 | 25.2 | 100 |
| 2015 | All MN Employers | 42.2 | 17.5 | 40.4 | 100 |
| | State Agencies | 58.7 | 11.1 | 30.2 | 100 |
| 2016 | All MN Employers | 42.3 | 16.7 | 41.1 | 100 |
| | State Agencies | 62.9 | 14.9 | 22.1 | 100 |
| Average 2010-2016 | All MN Employers | 41.3 | 17.3 | 41.4 | 100 |
| | State Agencies | 60.0 | 11.9 | 28.0 | 100 |

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Excel Features Demonstration

Excel features

- Table features - Sort and filter
- Functions
- Pivot table - Arrange and summarize complex data
- Charts
- Trend lines and projections

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More information

- Internet search engines such as Google
- YouTube
- Co-workers who excel at Excel (sorry, couldn't resist)
- Safety and Loss Control

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Thank you!

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