

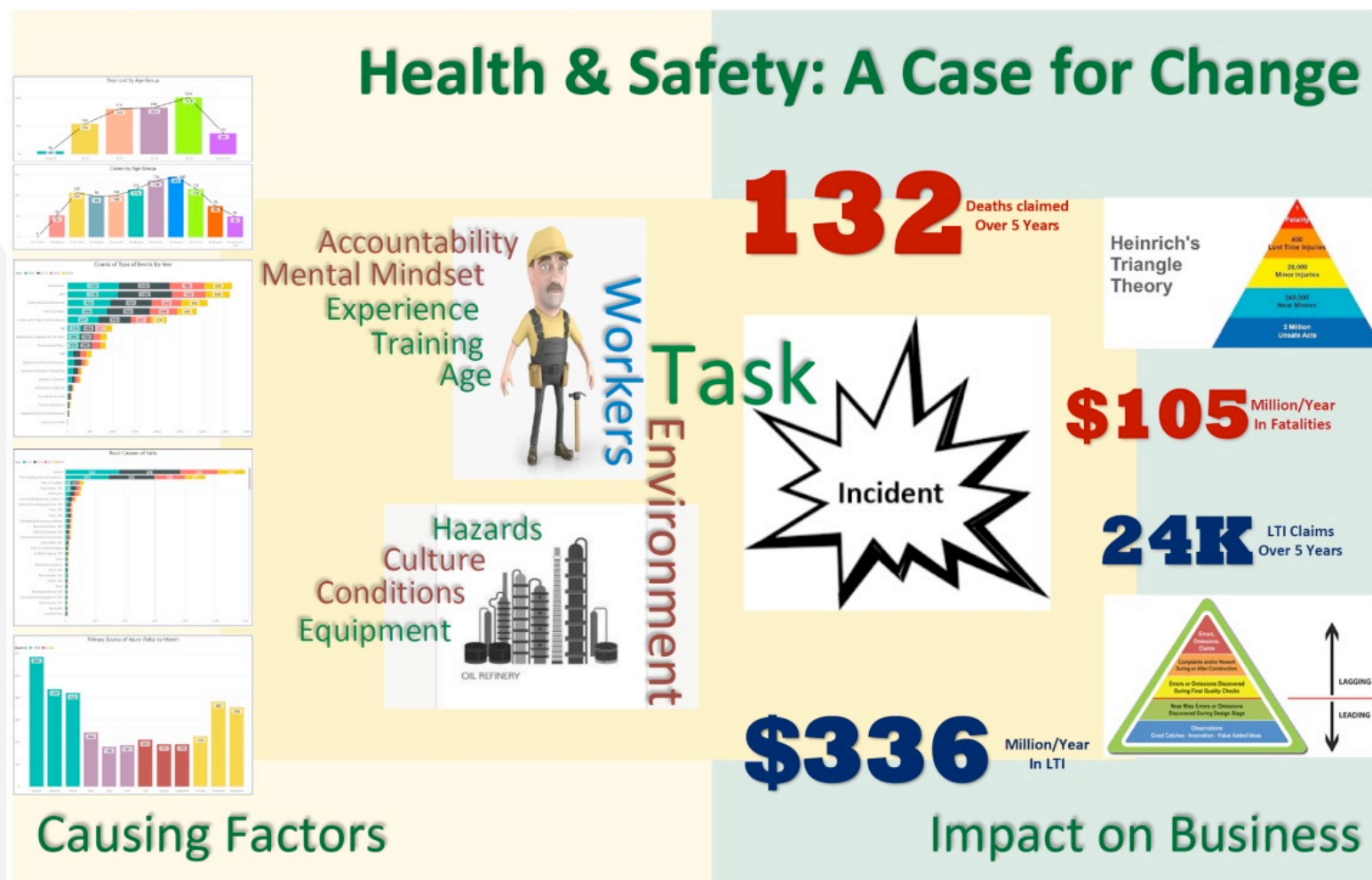
# Health & Safety Data Driven Insights

The Product:  
“A Case for Change”

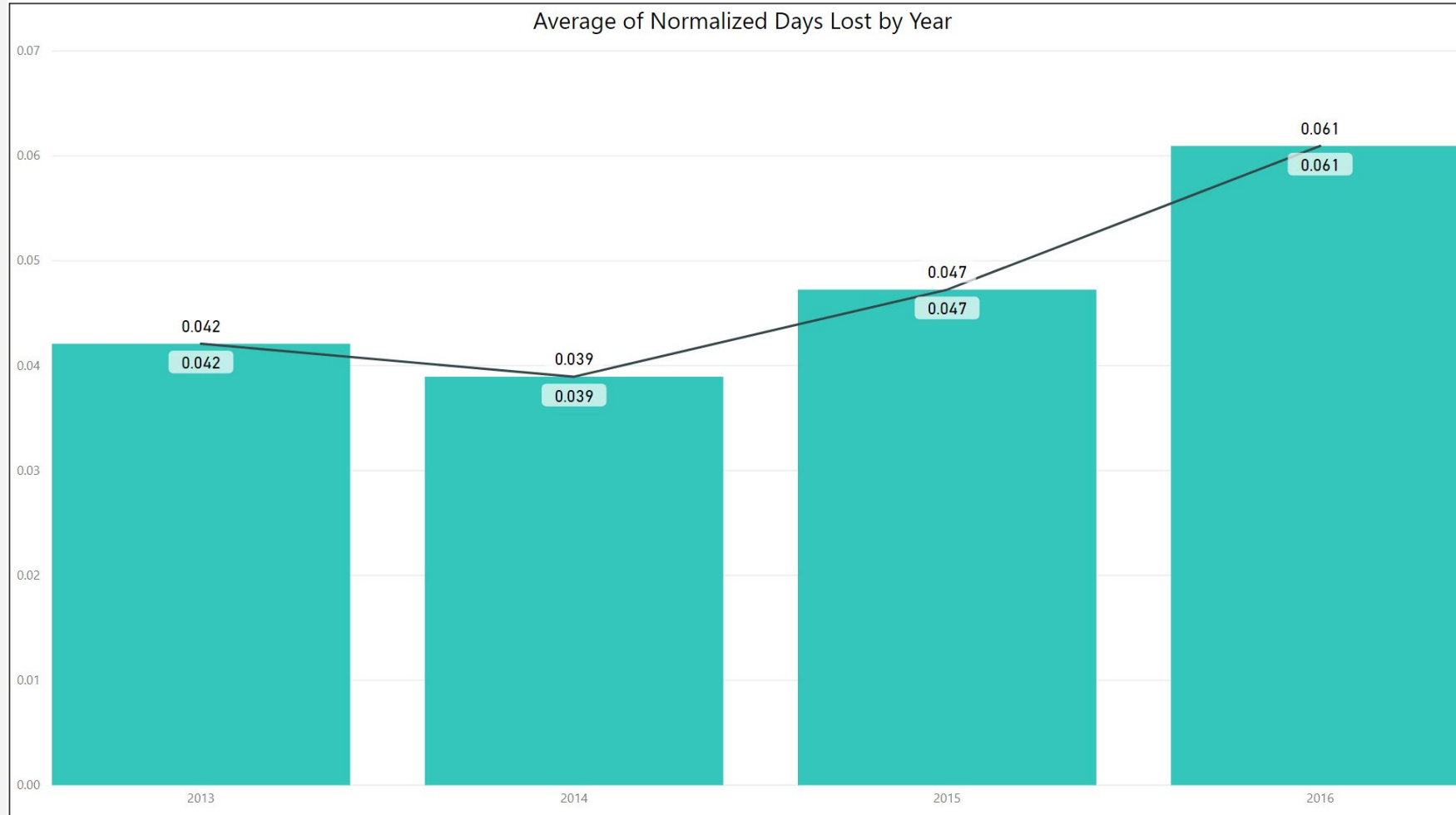
# We are in the SWAMP!



# This is the SWAMP!



## How have we been trending (normalized to staff reductions )





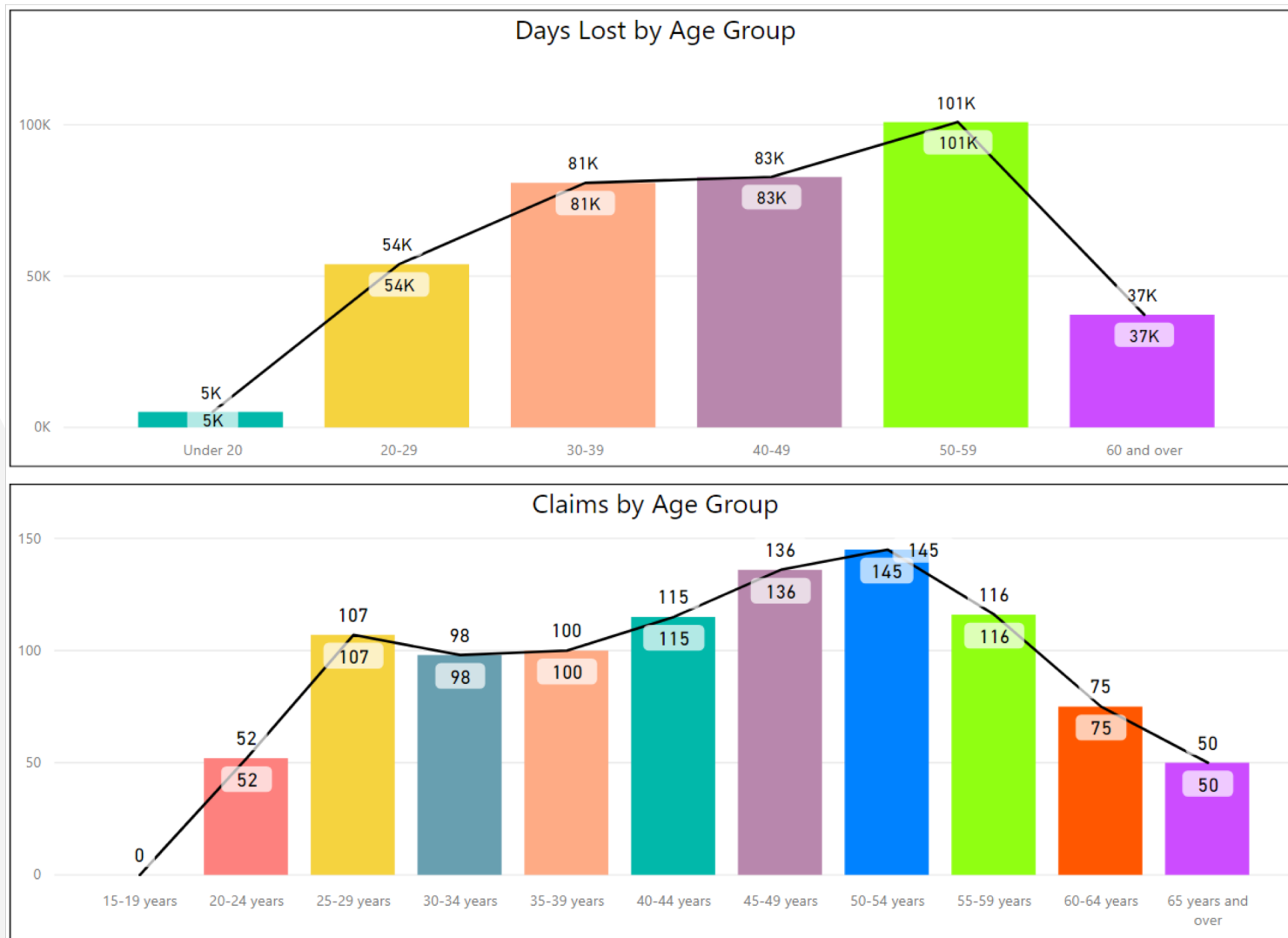
# CAUTION – Icebergs ahead (What we are not seeing?)



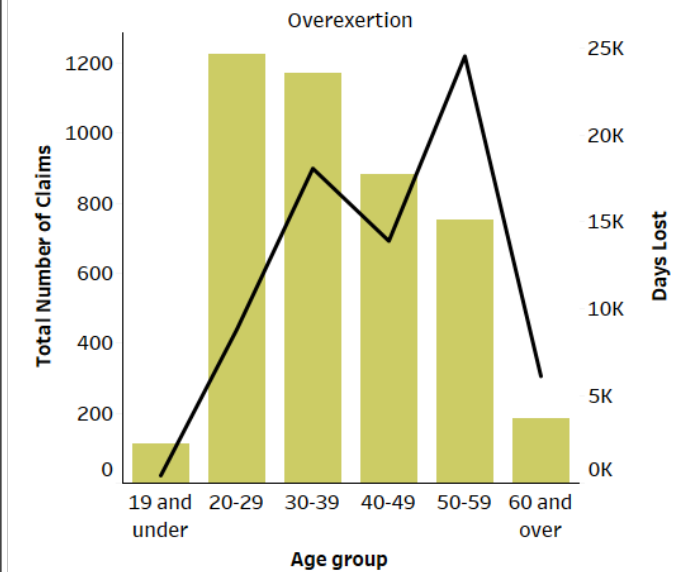
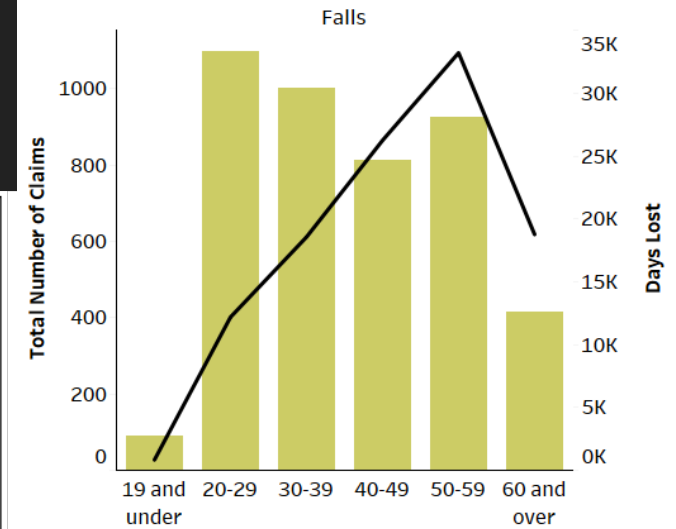
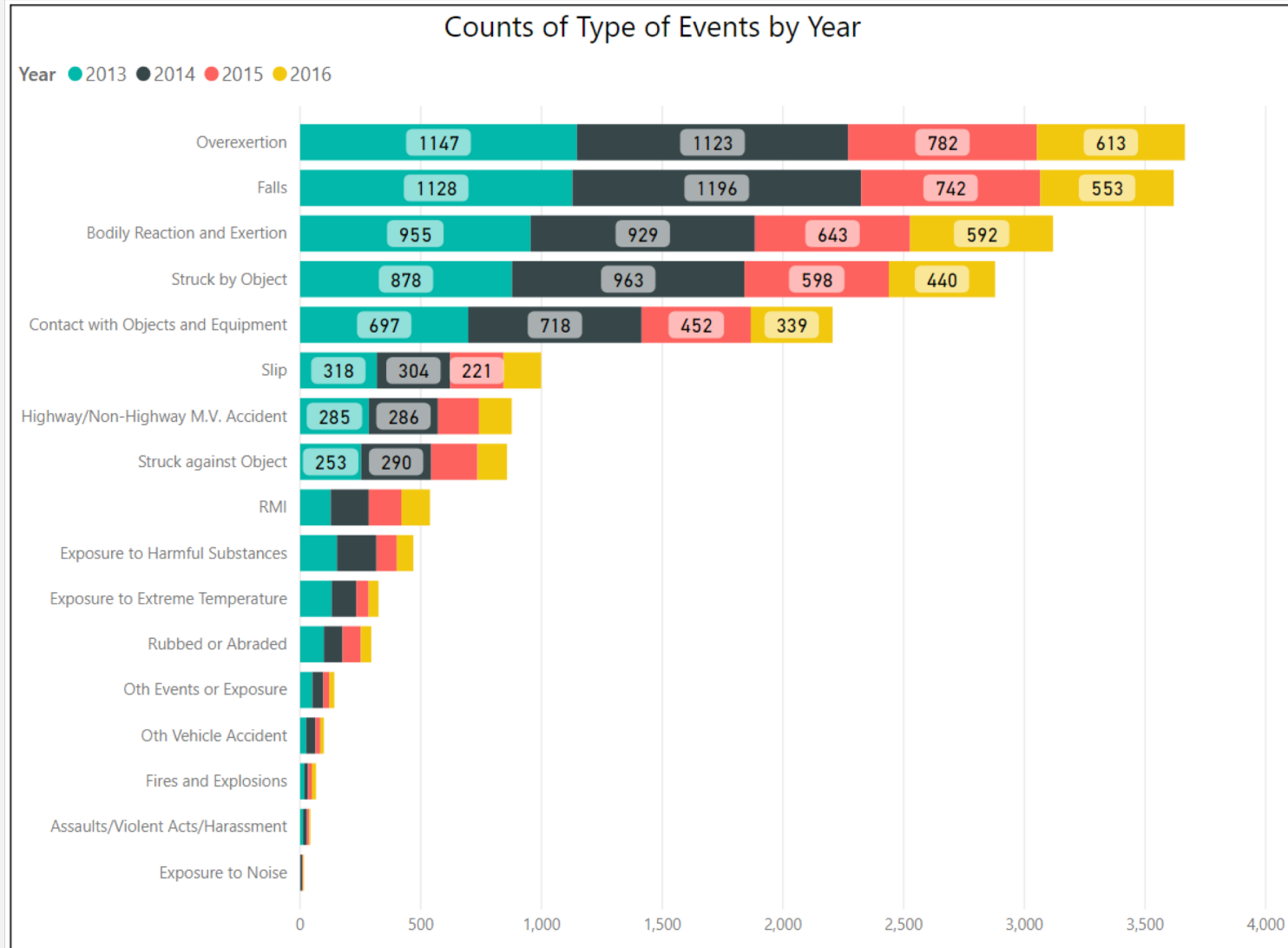
## Heinrich's Triangle Theory



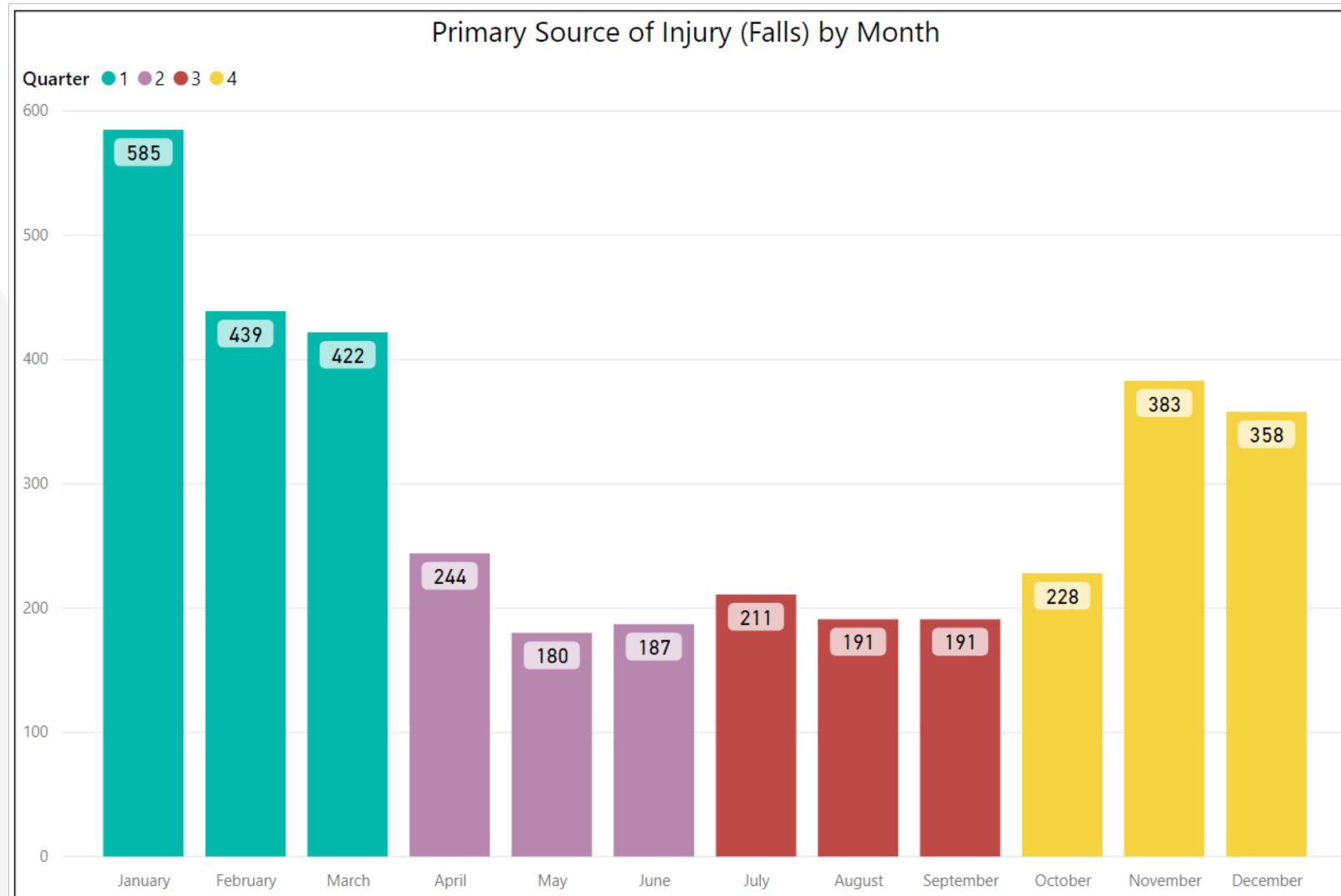
# Is age a factor?



# What are the most frequent events?

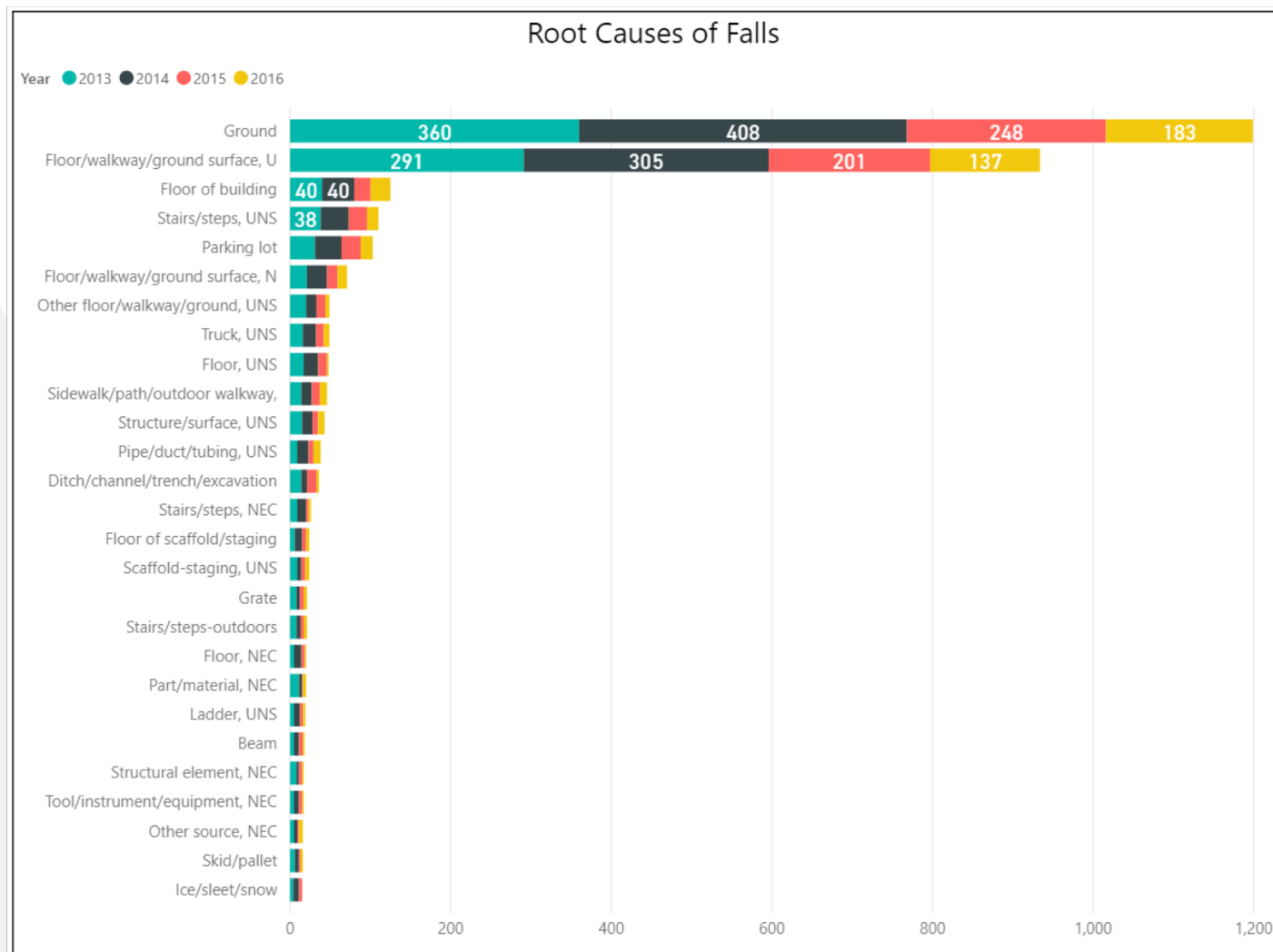


# Is time of year a factor?



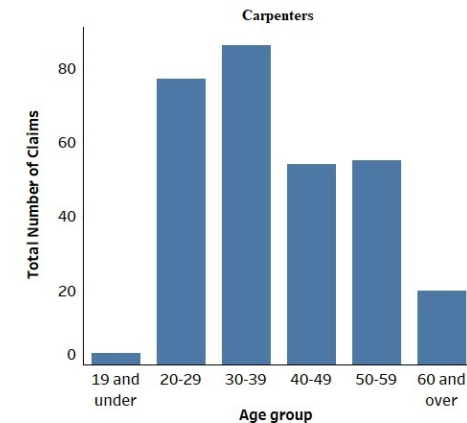
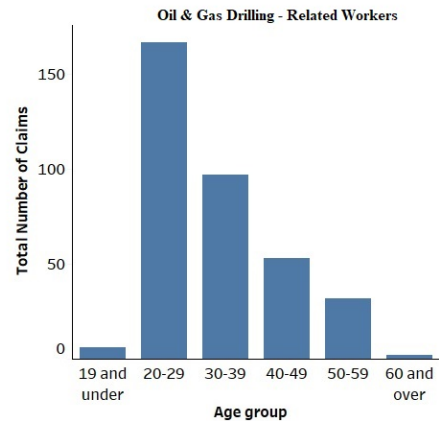
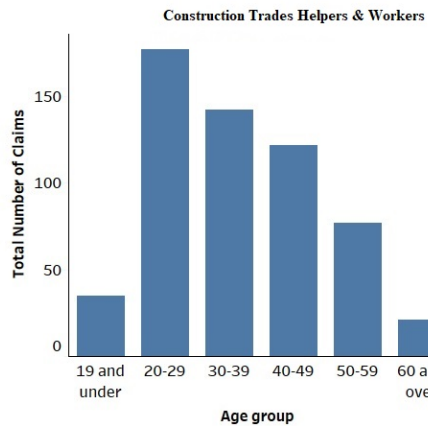
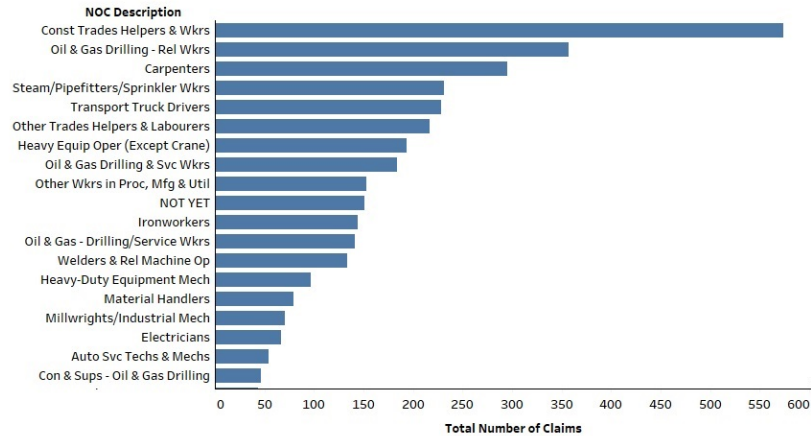


# Drilling Deeper - What is the root cause?



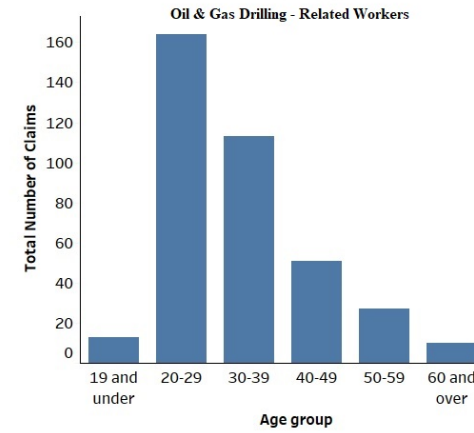
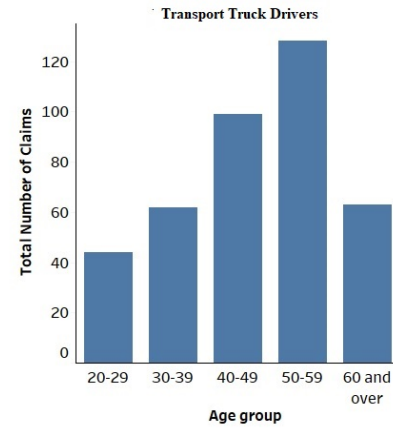
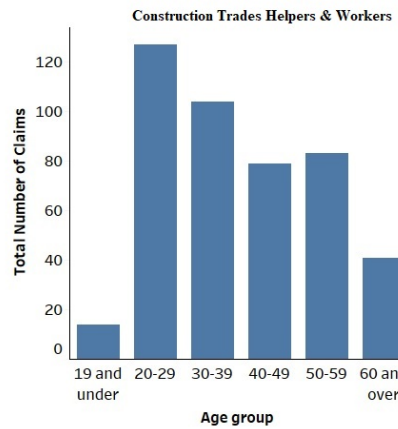
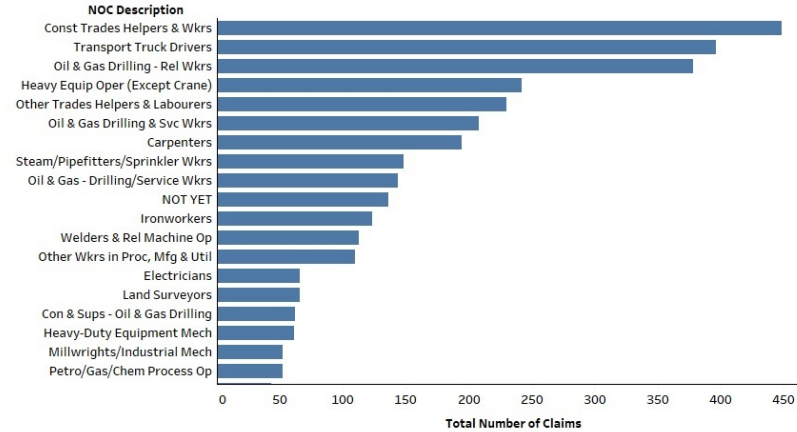
# Drilling Deeper – Occupational Class - Overexertion

Overexertion



# Drilling Deeper – Occupational Class - Falls

Falls



## What is the impact of this?

### Heinrich's Triangle Theory



\$105MM / year in fatalities

\$336MM / year in LTI

132 fatalities and 24K LTI claims over 5 years

# Metadata Analysis

## Environment

- Project/Work Environment
- Man hours
- Total number of people on site
- Location of the site
- Production schedule (length, ahead/behind schedule)
- Site Supervisor

Where

- Location
- Well/Rig/Mile Post Marker
- Occurred on Completion
- Unique Well Identifier
- Weather

Inspection (Date, type of inspection, user)

- LDAR
- SPCC
- Service provider [assessment](#)
- Title V
- Service provider spot check

Observation data on inspections

- Type of observation (safety, equipment)
- Category or subcategory (personal protection)

## Incident Details - including near misses

Incident/injury information

- Injury/illness
- Body part
- Mechanism of injury
- Reporting category (OSHA recordable, First Aid, etc.)
- Lost time
- Cause
- Incident opened/closed
- Return to work
- Days away
- Reported By
- Date Reported
- Responsible for Investigation
- Was PPE Worn?
- PPE Worn
- Describe PPE worn
- Alcohol Test Performed?
- Date of Alcohol Test
- Drug Test Performed?
- Date of Drug Test

Detail

- Task or Activity at Time of Incident
- Physical or Immediate Causes of Incident
- Immediate Action Taken
- Object/Substance That Directly Injured or Made Incident Possible

Incident Type

- Injury
- Near Miss
- Occupational Illness
- Environmental Release/Spill
- Fire/Explosion
- Motor Vehicle
- Property Damage
- Equipment Failure
- Security
- Regulatory Citation
- Wildlife
- Public Complaint

When

- Incident Date
- Time of Occurrence

## Worker

- Age/ date of birth
- Education
- Gender
- Overall experience
- Specific project experience
- Hire date
- Craft (e.g., pipefitter)
- Employee ID
- Years in Present Job
- Total Years Experience
- Contact Information

Job Details

- Activity
- Task
- Hours per shift
- Job Title

Date Shift Begins

## Incident Outcomes

First Aid

- Medical Treatment
- First Aid Responder
- Description of Treatment Provided
- Name of Physician or Health Care Professional
- Healthcare Facility Name & Address
- Restricted Work
- Estimated Restricted Days
- Describe Restriction
- First Restricted Day
- Date Returned
- # Restricted Days
- Restricted Work Add Another
- Lost Work
- Estimated Lost Days
- First Lost Day
- Date Returned
- # Lost Days
- Lost Work Add Another
- Fatality
- Fatality Date

Injury/Illness Type

- Body Part
- Side of body
- Accident Type
- Accident Agent
- Height of fall
- Body Part
- Illness Type
- Illness/Exposure Cause
- Injury Severity
- Severity / Risk (all incident type)
  - Severity Level
  - Impact
  - Probability
  - Risk Level
  - High Potential

Was a Tap Root Investigation Performed?

- Root Causes/Contributing Factors
- Cost Type
  - Amount
  - Currency
  - Description
  - Cost Add another
- Responsible For Investigation Review
- Responsible For Closure
- Corrective Action
  - Action Title
  - Description
  - Person Responsible
  - Person Delegated
  - Due Date



## Metadata Analysis

(Of the metadata we analyzed – that was provided)

- ▶ Most of the data is being captured
- ▶ couple data point to optimize reporting:
  - ▶ Worksite and Org. cultural aspects
  - ▶ Worker mindset (distracted?)
- ▶ Not Integrated!
- ▶ Not designed with intention!  
(prescriptive reporting and rarely further)

## What have we found

- ▶ Incidents are treated at a worker level
- ▶ Corrective Action is treated at a “generic” group level
- ▶ We need to personalize safety and change the mindset towards data culture

# Draining the swamp



## One suggestion - Product Recommendation

- ▶ Personalized H&S Alerts
  - ▶ Based on Work Activity / Task
    - ▶ Equipment, Complexity, Risk
  - ▶ Based on Environment
    - ▶ Culture, Hazards, Conditions
  - ▶ Based on Worker
    - ▶ Demographics, Training, Mindset

## How do we achieve this?

- ▶ Additional Data  
(because more granular = higher accuracy)
- ▶ Data Sharing throughout industry  
(because more data = higher accuracy)
- ▶ Standardization (units, ontology, definition)
- ▶ Capture root cause by incident - monitor  
Feedback Loop of consumption for the  
corrective action



## Limitations of this approach



## SAFETY IS NOT A COMPETITIVE ADVANTAGE

We cannot compromise on health and safety!

Yet we are in an industry that demands efficiency and cost reduction driven by better data insights.

We can do both!



# The Journey

## Who are these SWAMP BUSTERS?

- ▶ Business SME's –  
Lewinda and Jamie
- ▶ The number crunchers – Jin and Farhad
- ▶ The organizers –  
Darrell and Gab



# The Journey

- ▶ Organization and Preparation
- ▶ Introductions + Method (CRISP-DM)
- ▶ Business Model
- ▶ More SME Engagement + Refinement
- ▶ The hard work
  - ▶ Set and refine the objectives
  - ▶ Understand the data
  - ▶ Review the results
- ▶ Prepare the results