



United States Department of Agriculture

Human Performance & Innovation and Organizational Learning (HP&IOL)  
Research, Development, and Applications (RD&As)

# Forest Service Fire Meta- Review

Data Analysis

October 2017



Forest Service  
Rocky Mountain Research Station



# Forest Service Fire Meta-Review

## WHY?

- Twisp River Fire Fatalities and Entrapments *Safety Action Plan* recommendation.
- Potential to improve decision-making.
- The Forest Service strives to be a learning organization.





# Forest Service Fire Meta-Review

## WHO?

- HP&IOL initiated meta-review, in consult with Safety Working Core Group.
- HP&IOL is coordinating with numerous entities, including:
  - Wildland Fire Lessons Learned Center
  - Office of Safety and Occupational Health
  - US Chemical Safety & Hazard Investigation Board



# Forest Service Fire Meta-Review

## WHAT?

- Ten years of Wildland Fire Lessons Learned Center entries (2007 – 2016).
  - Forest Service (FS) operational control
  - FS personnel or resources under partner operational control
- Includes wildfires, prescribed fires, physical training, and project work.

406 total entries - including no-consequence events and informational pieces.

**341 events encompassing 310 injuries and 48 fatalities.**





# Forest Service Fire Meta-Review

## DATA CAVEATS

- Forest Service personnel directly involved in the event or a fire under FS operational control.
- All events pulled directly from learning products listed on the Wildland Fire Lessons Learned Database.
- Only fatalities and entrapments must be reported; all others are voluntarily reported with leadership discretion.





# Forest Service Fire Meta-Review

## METHODOLOGY: CATEGORIZATION

- Name
- Event Date
- Activity Underway
- Accident Type
- Number of Fatalities
- Number of Injuries



# Forest Service Fire Meta-Review

## Activity Under Way

- Aviation Operation
- Driving (truck, engine, crew carrier, etc.)
- Heavy Equipment Operations (dozer, feller-buncher, etc.)
- Other Chainsaw
- Other Fire Operations
- Physical Training
- Prescribed Fire
- Tree Falling
- Vehicle Operations (dozer transport, UTV/ATV, water tender, etc.)
- Work Capacity Test

## Mechanism/Accident Type

- Acute Medical (heart attack, rhabdomyolysis, etc.)
- Aviation Incident
- Burn Injury
- Entrapment
- Escaped Prescribed Fire
- Heat-related Illness
- Hit By (tree, rock, water drop, etc.)
- Motor Vehicle Accident
- Nature Exposure (bee, lightning, etc.)
- Near Miss
- Other
- Slip, Trip, Fall
- Unknown





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# Forest Service Fire Meta-Review

## INITIAL DATA RESULTS

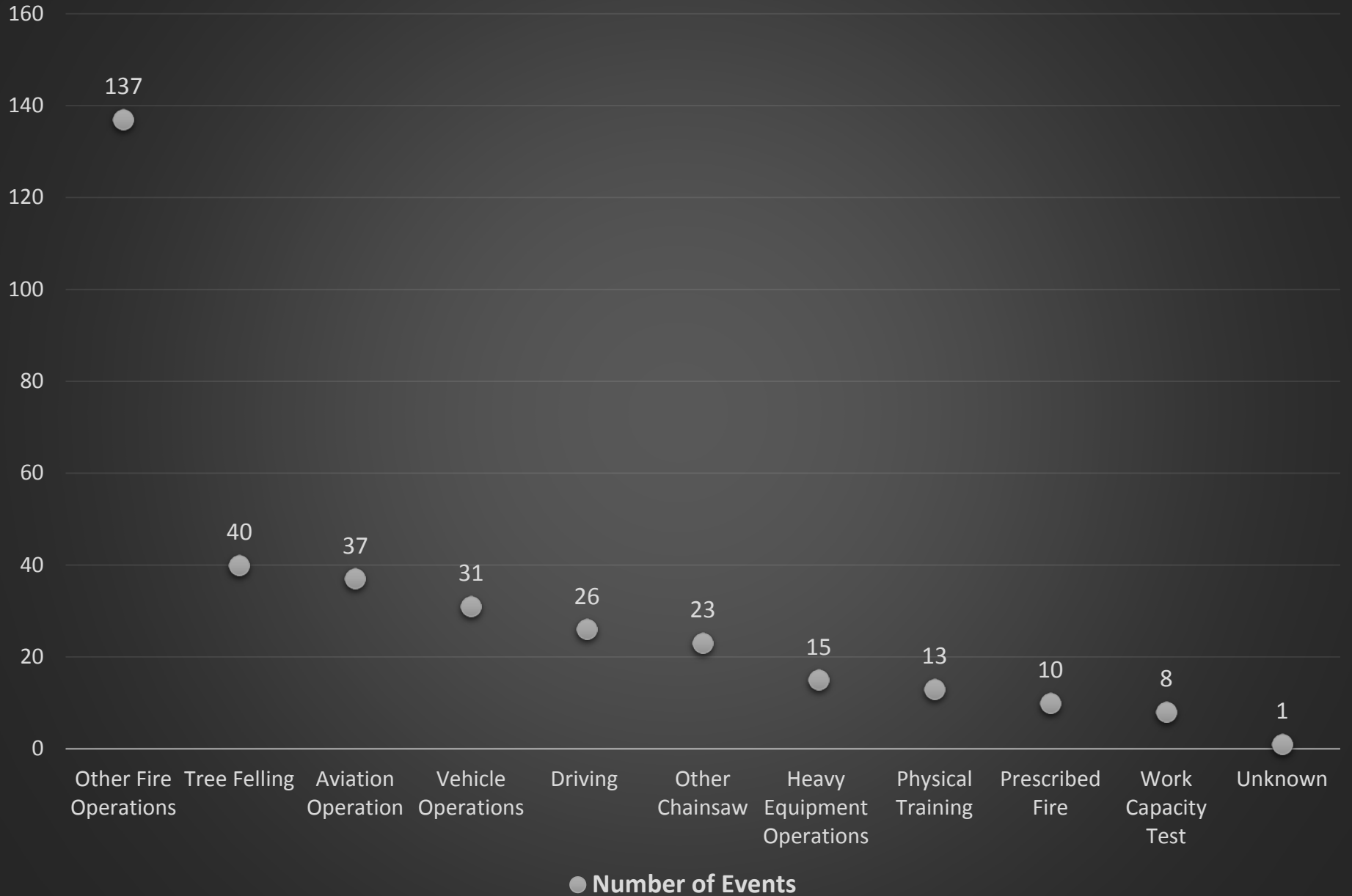
- Overall Numbers
- Top five by Activity Under Way
- Top five by Mechanism/Accident Type



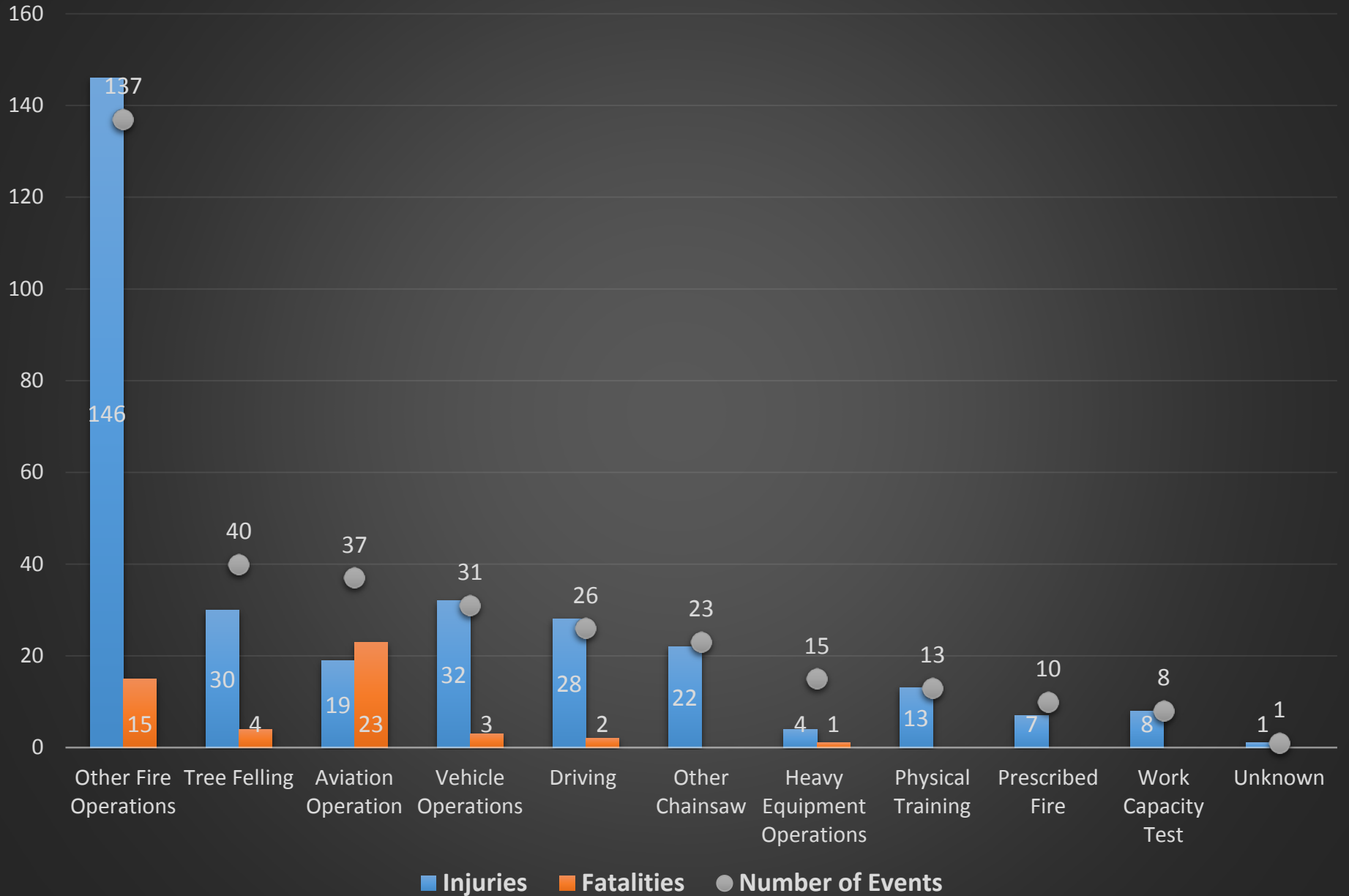
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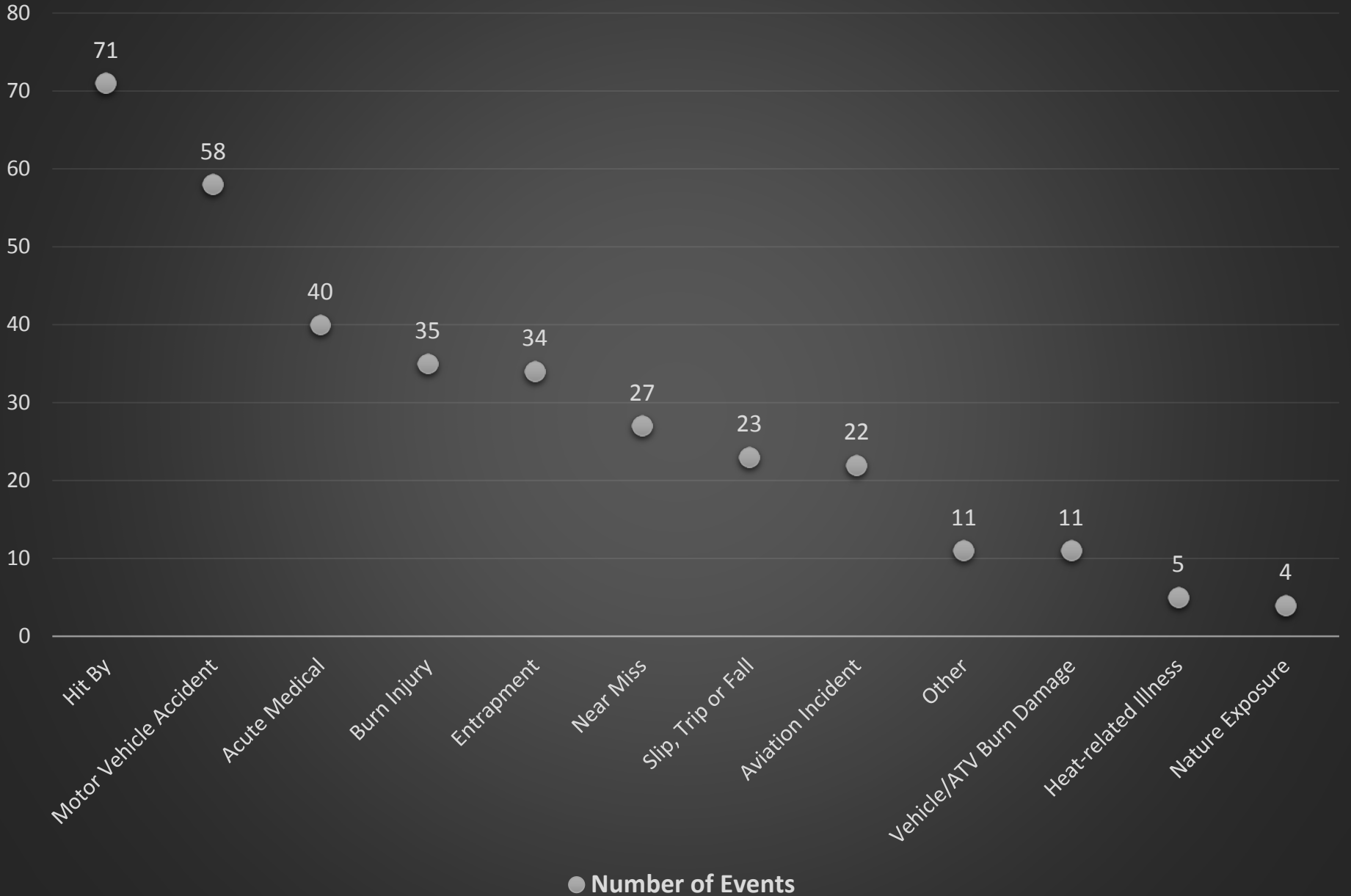
# Event Summary by Activity



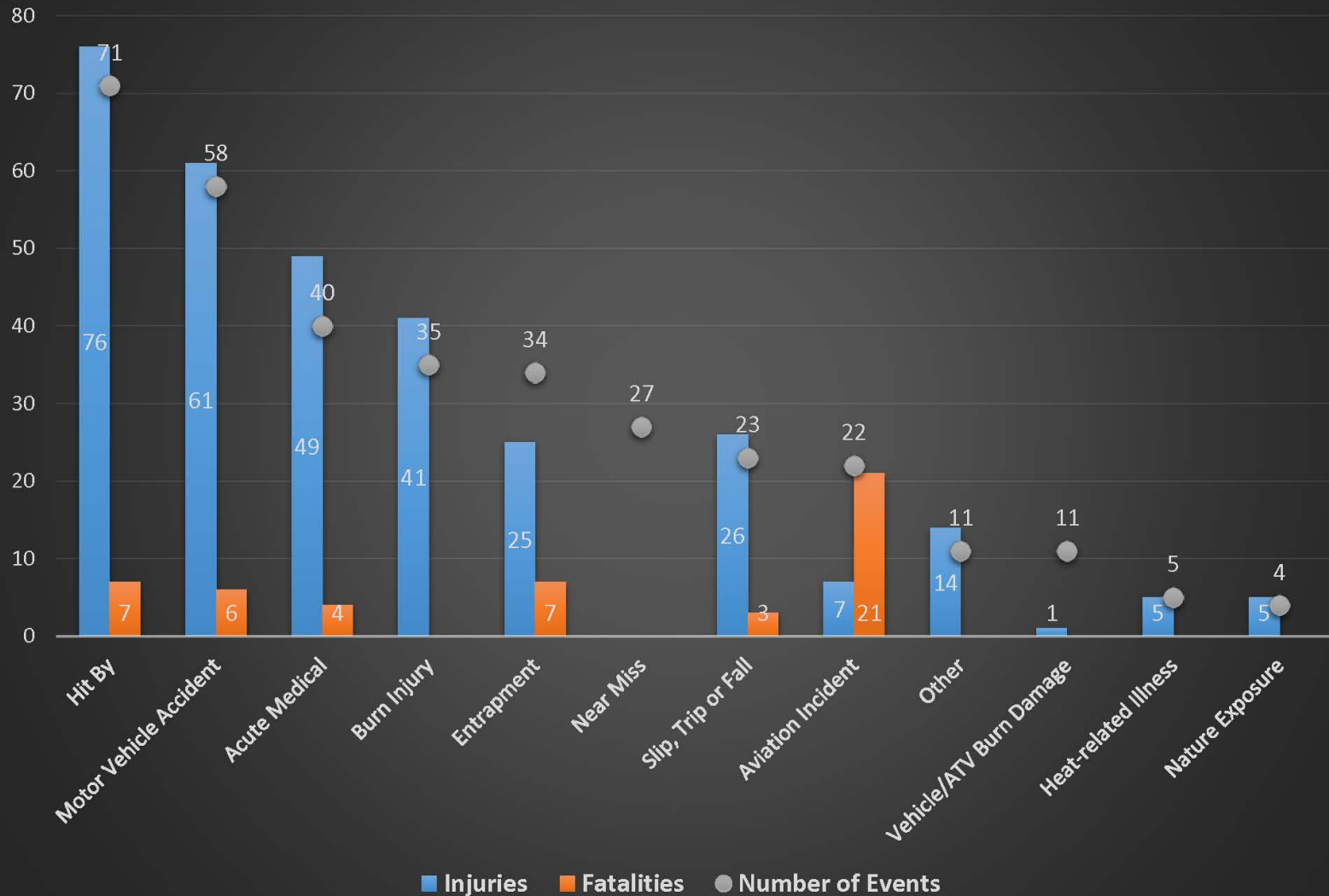
# Event Summary by Activity



# Event Summary by Accident Type



# Event Summary by Accident Type





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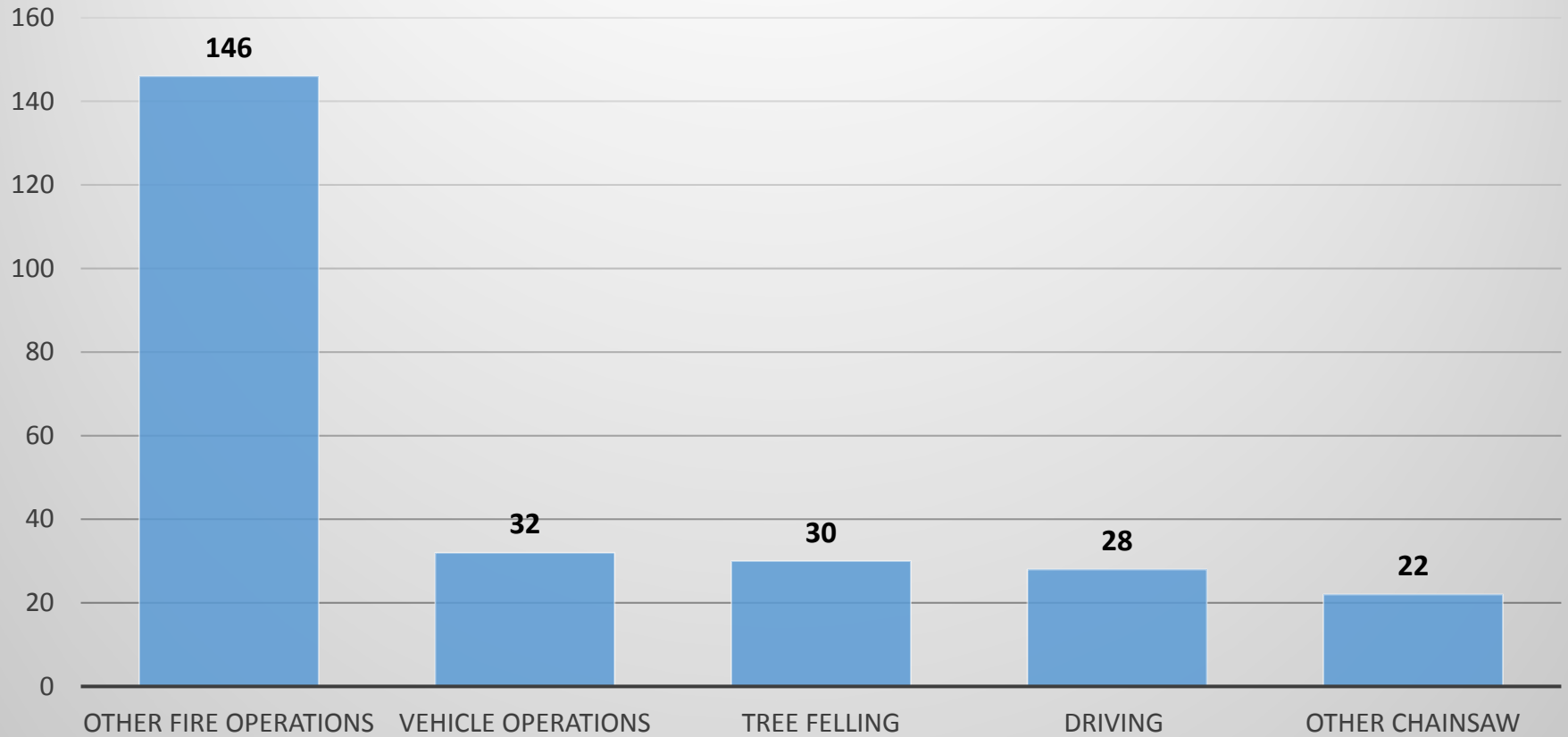
## INITIAL DATA RESULTS

### Top Five by Activity Under Way



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# Top 5 by Activity Under Way

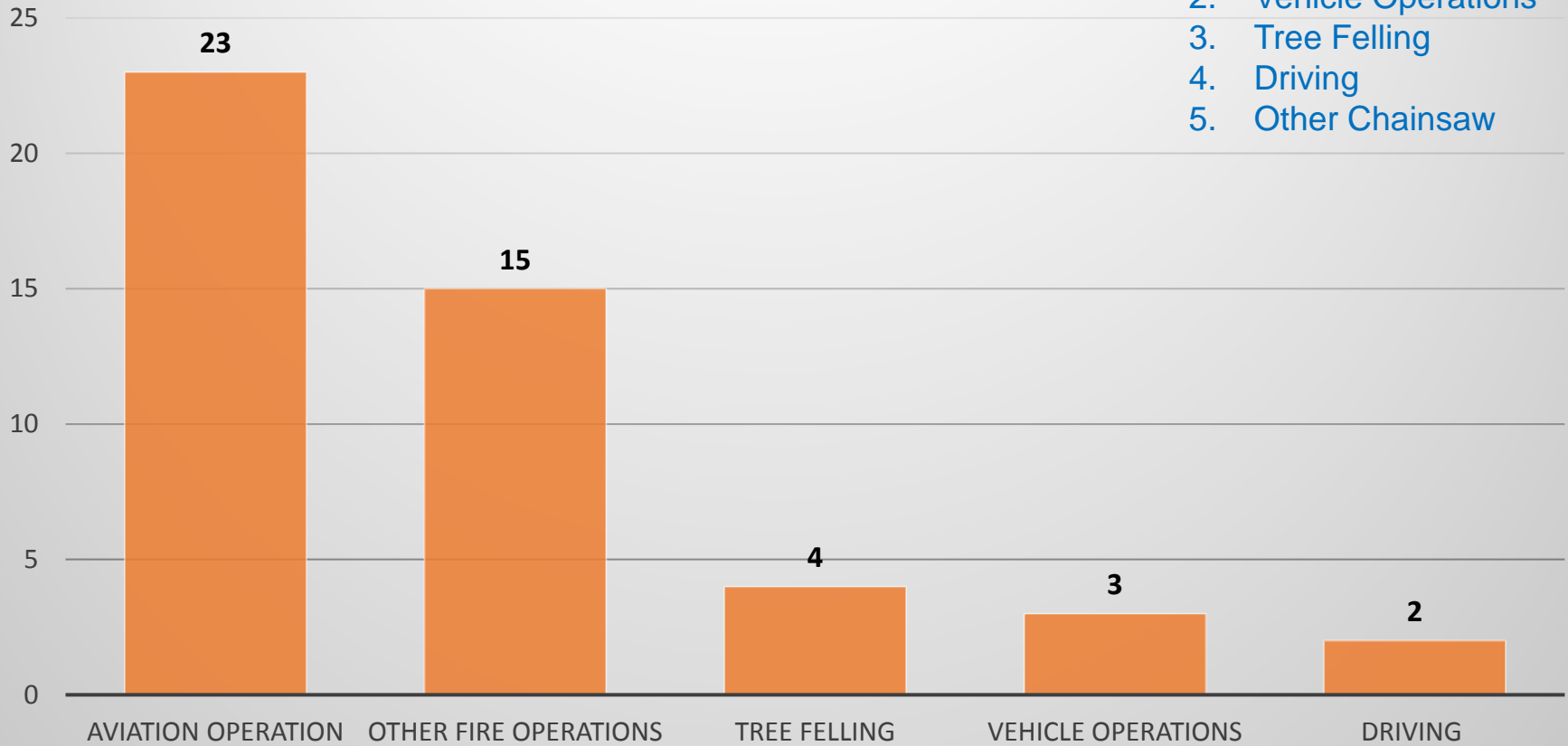


■ Injuries

# Top 5 by Activity Under Way

## Injury Top 5

1. Other Fire Operations
2. Vehicle Operations
3. Tree Felling
4. Driving
5. Other Chainsaw



■ Fatalities



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## INITIAL DATA RESULTS

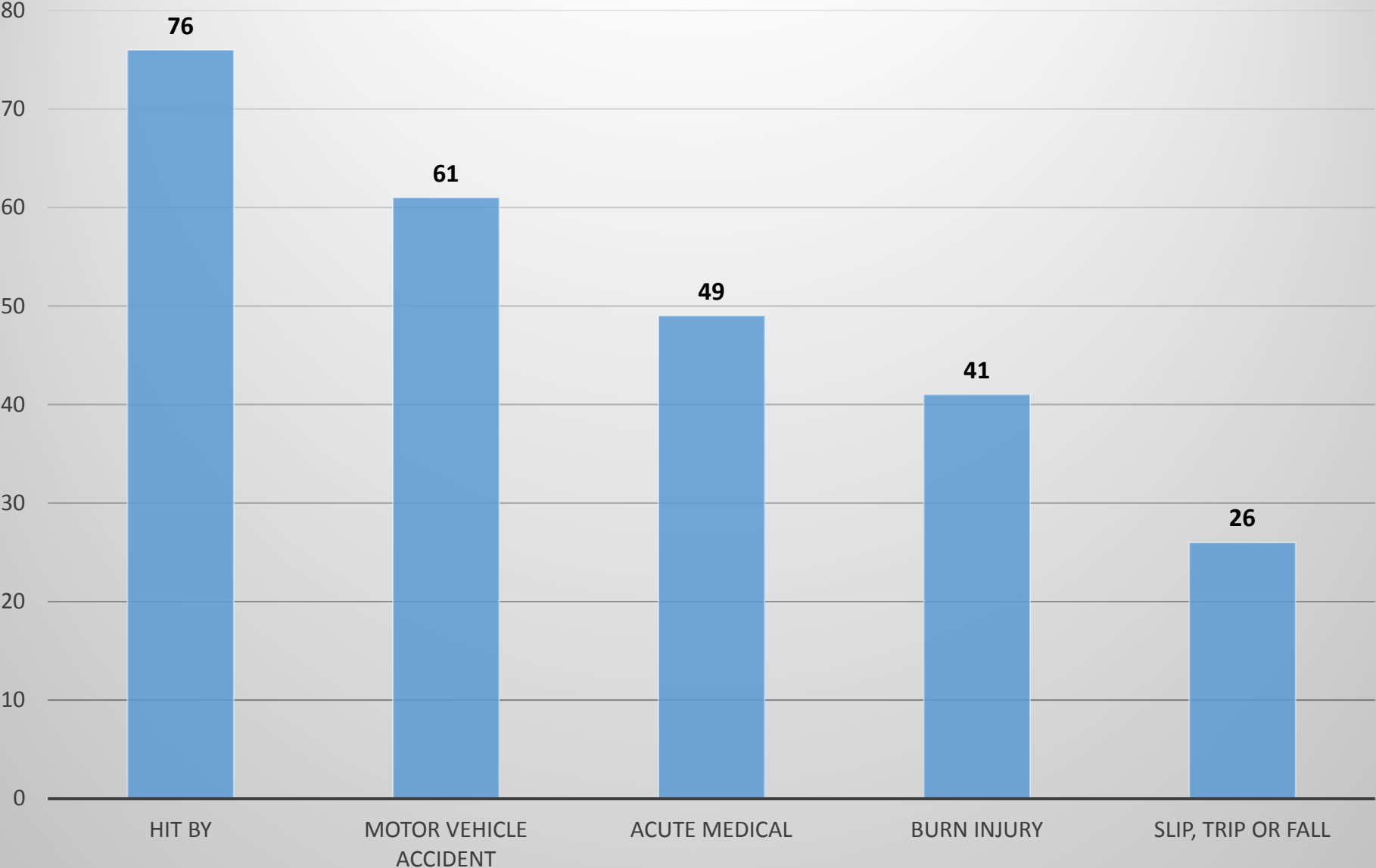
### Top Five by Accident Type



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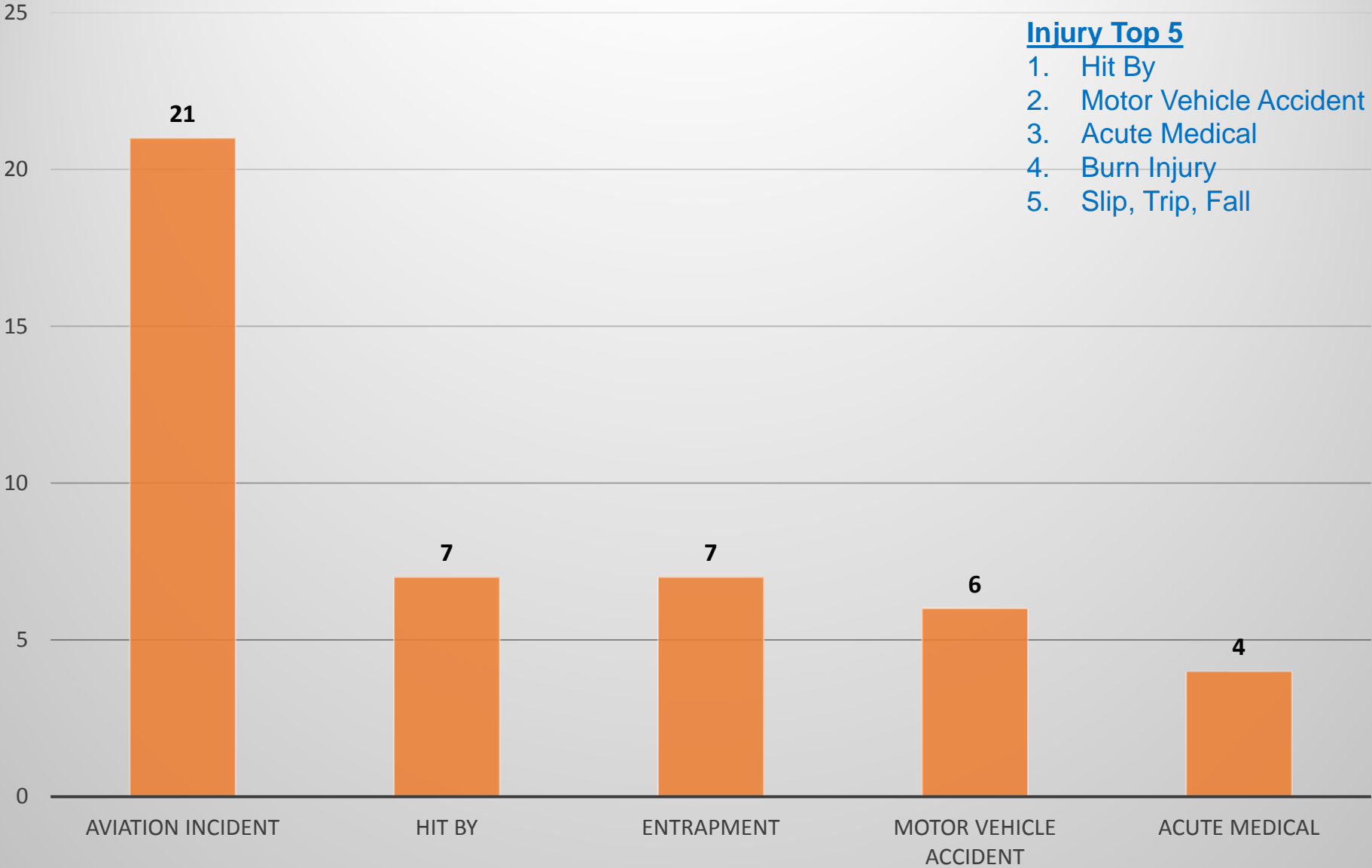


# Top 5 by Accident Type



■ Injuries

# Top 5 by Accident Type



## Injury Top 5

1. Hit By
2. Motor Vehicle Accident
3. Acute Medical
4. Burn Injury
5. Slip, Trip, Fall

■ Fatalities

# Forest Service Fire Meta-Review

## DISCUSSION

- Current Forest Service recording – the ability of our system to collect data.
  - SHIPS (2007-2014)/eSafety (2015-present) data is mandatory reporting but does not always show actions taken or learning that occurred.
  - Wildland Fire Lessons Learned Center translates to greater awareness, but how does that translate to learning?
  - We do not have a way to track exposure rates.
- Absence of an inter-agency database.





# Forest Service Fire Meta-Review

## DISCUSSION

- What jumps out at you?
- What do you want to know more about?
- How should we learn from this?
- What do we need to do to prevent duplicating 48 fatalities in the coming decade?





# Forest Service Fire Meta-Review

## NEXT STEPS

- Examine different approaches the Wildland Fire Lessons Learned Center is working on to share lessons through dialogue.
- Qualitative analysis – beginning a deeper dive.
- Other next steps?

