



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



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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.



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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



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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.





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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.





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METHODOLOGY: CATEGORIZATION

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



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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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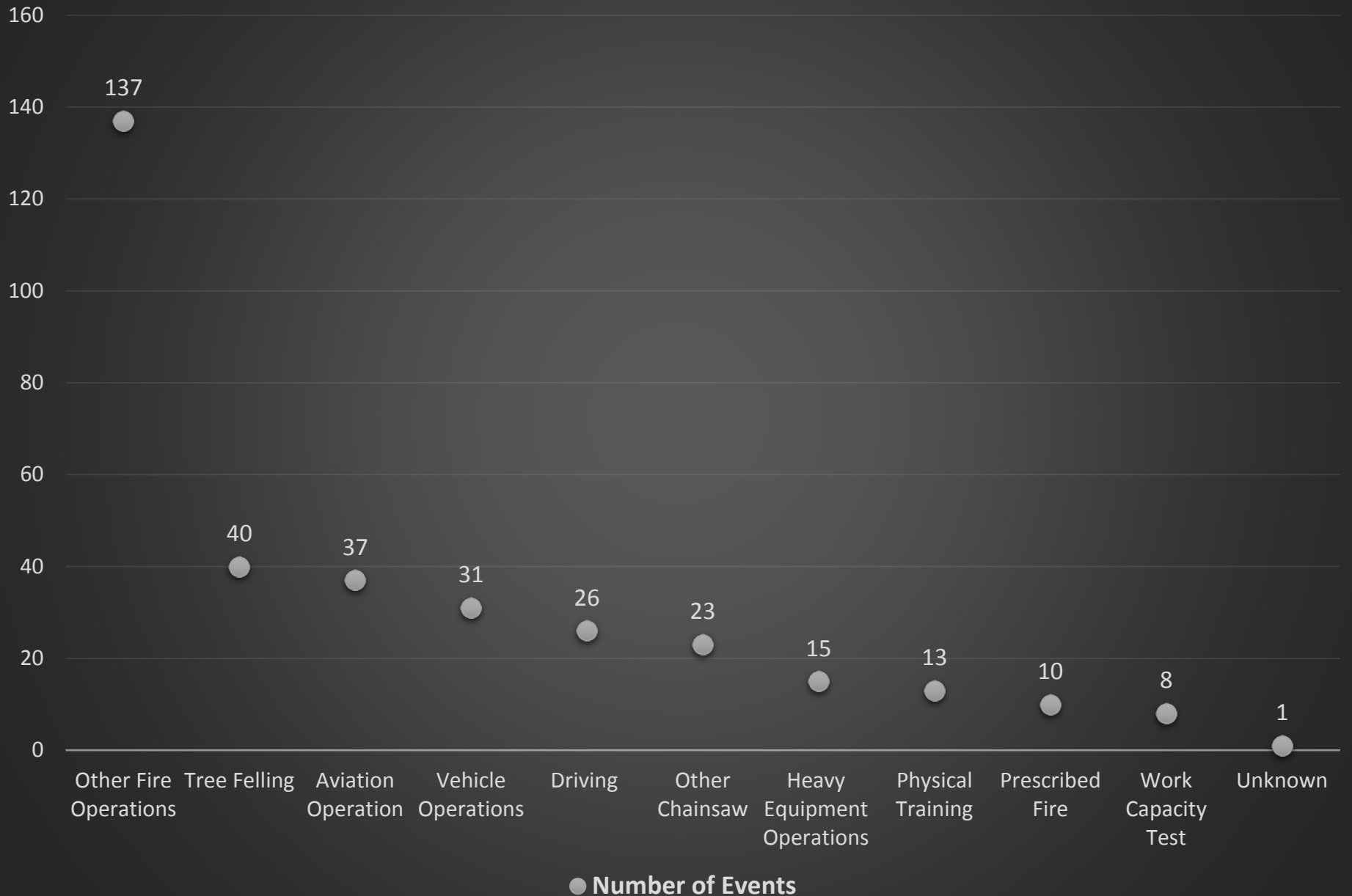
INITIAL DATA RESULTS

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

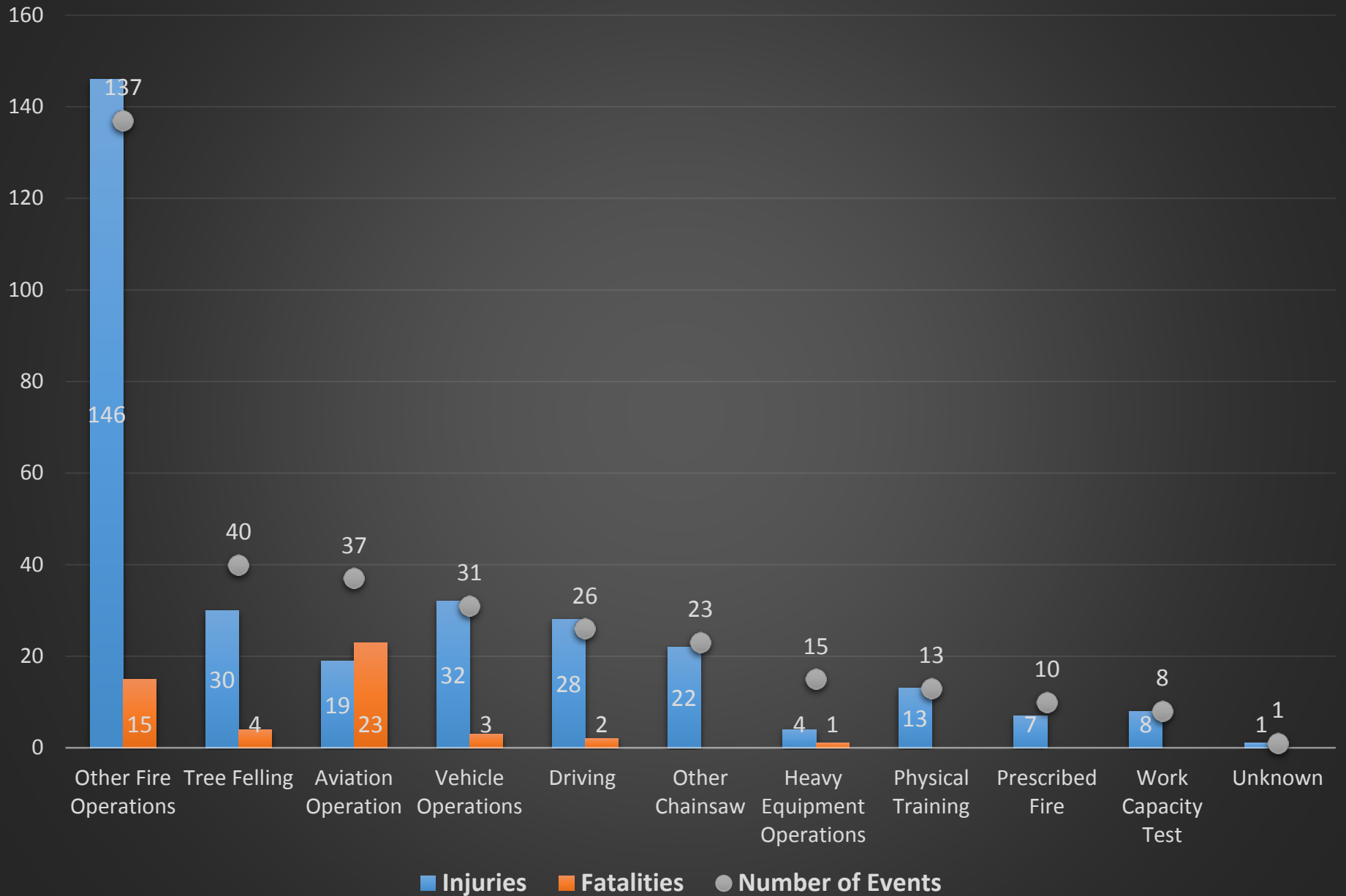


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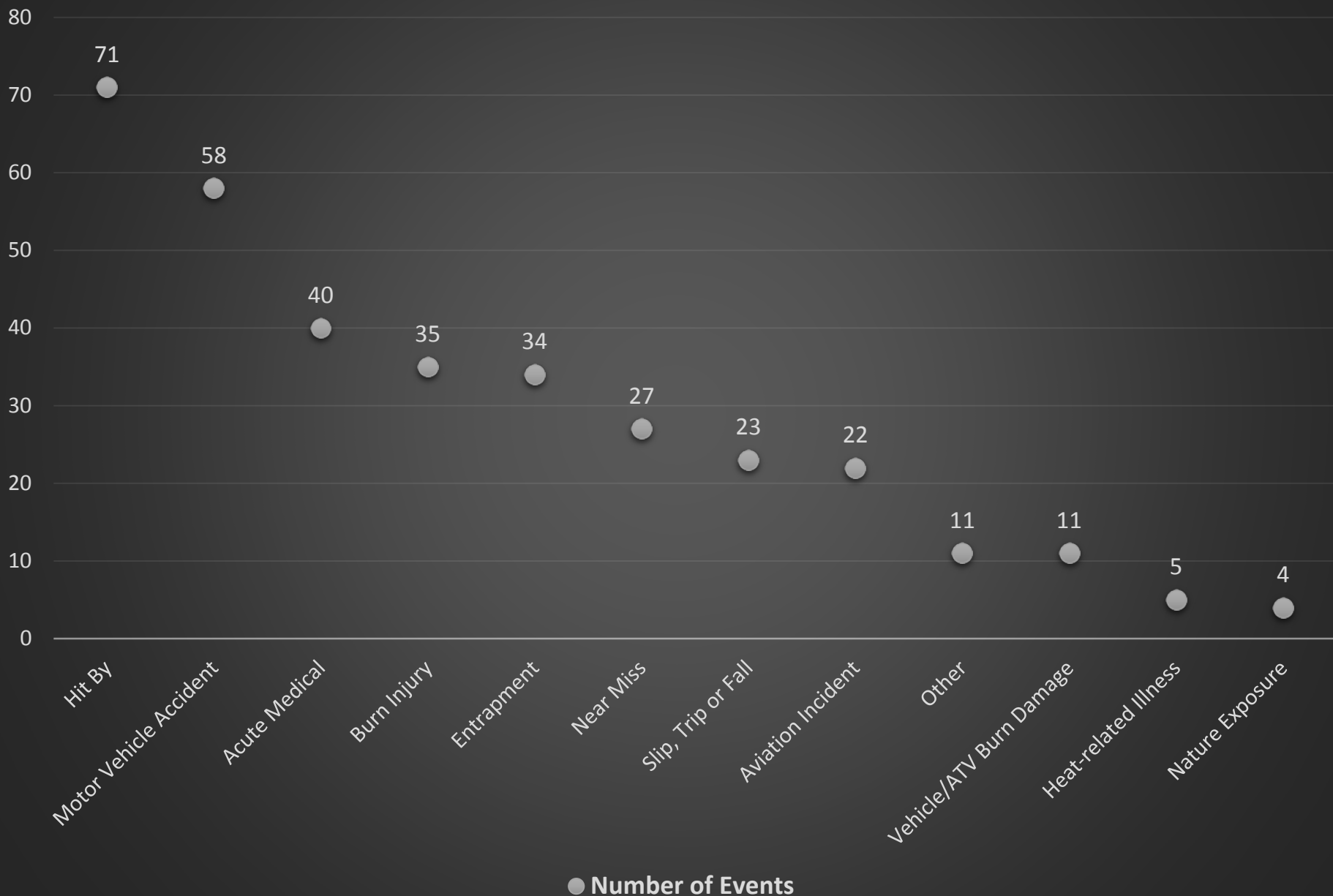
Event Summary by Activity



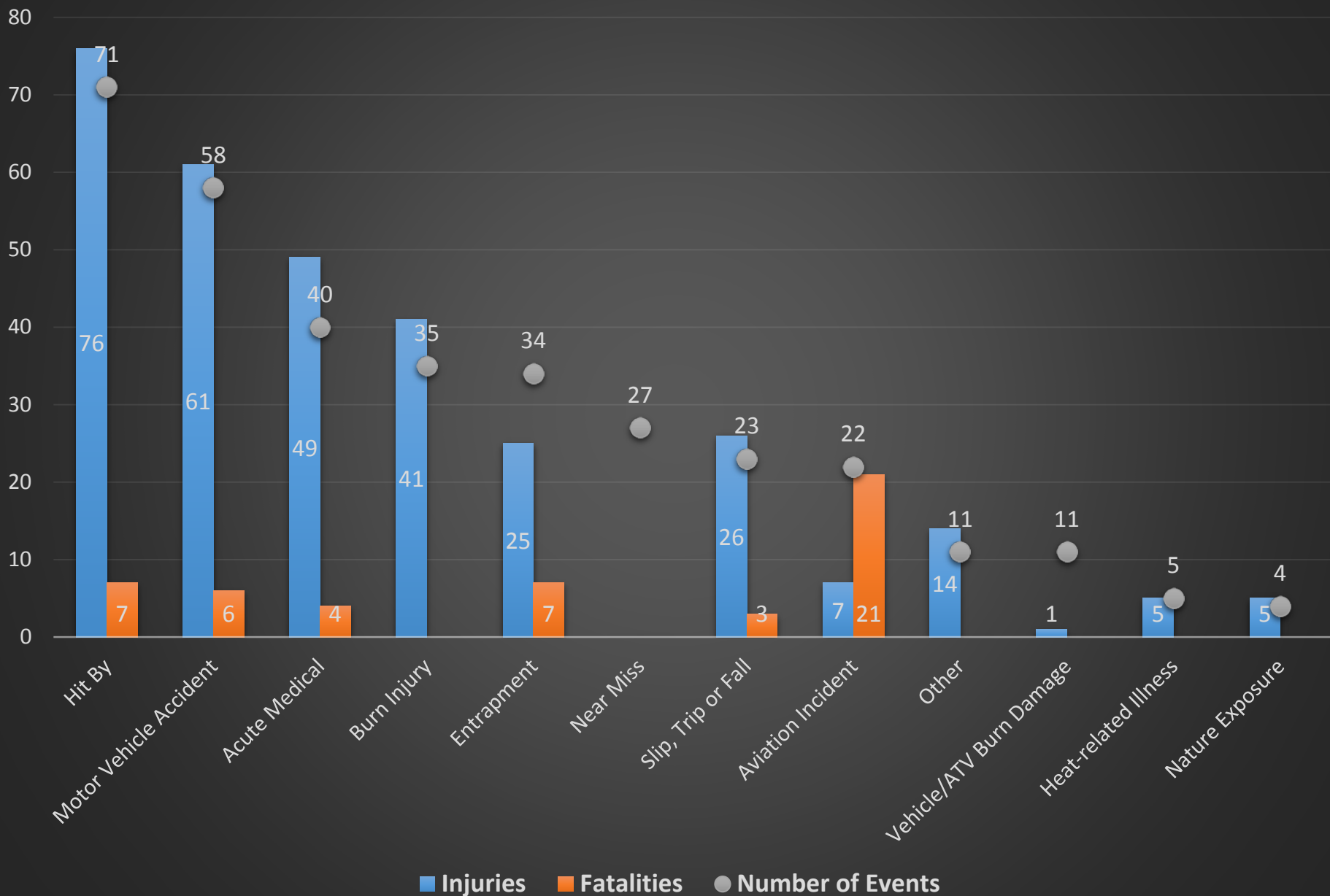
Event Summary by Activity



Event Summary by Accident Type



Event Summary by Accident Type





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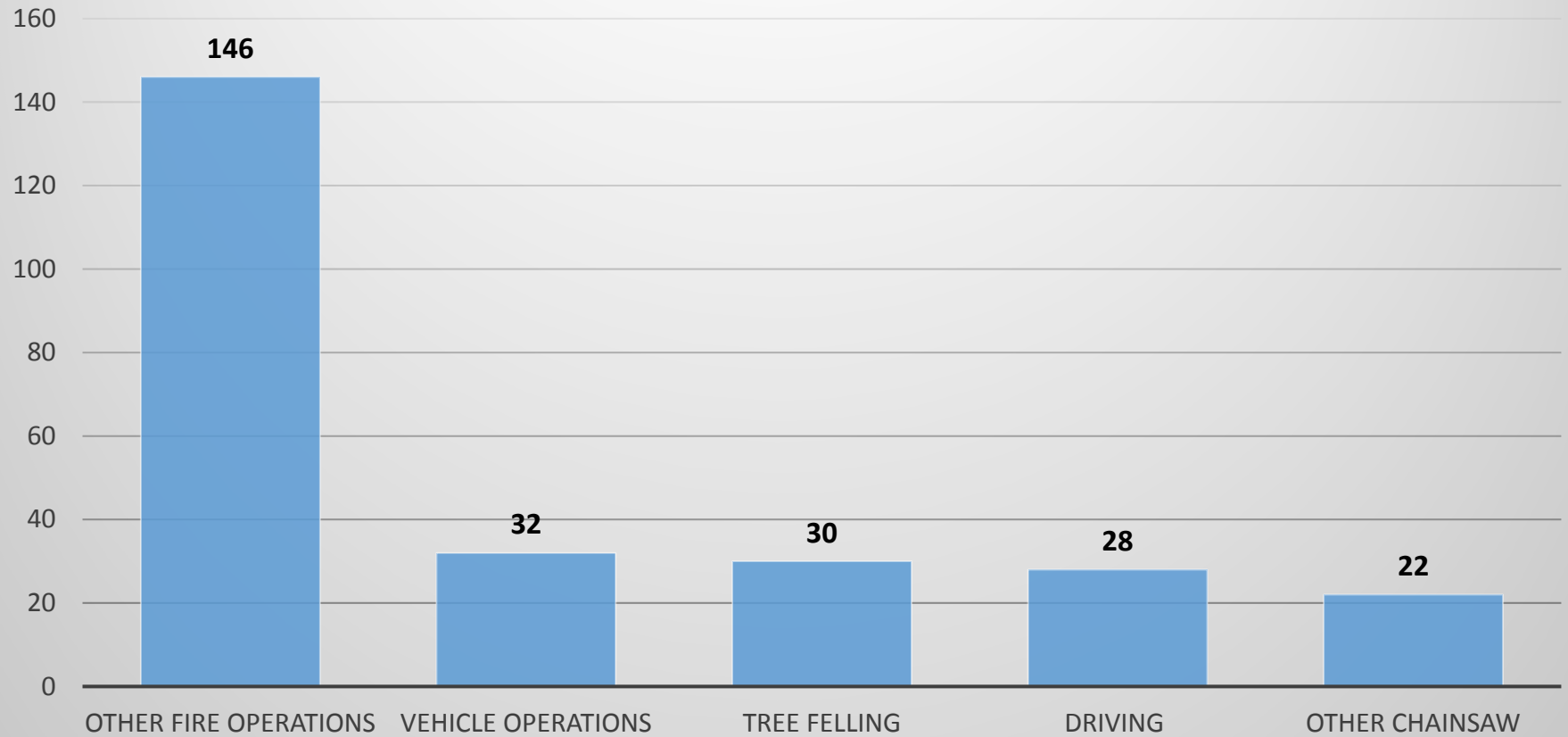
INITIAL DATA RESULTS

Top Five by Activity Under Way



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Top 5 by Activity Under Way

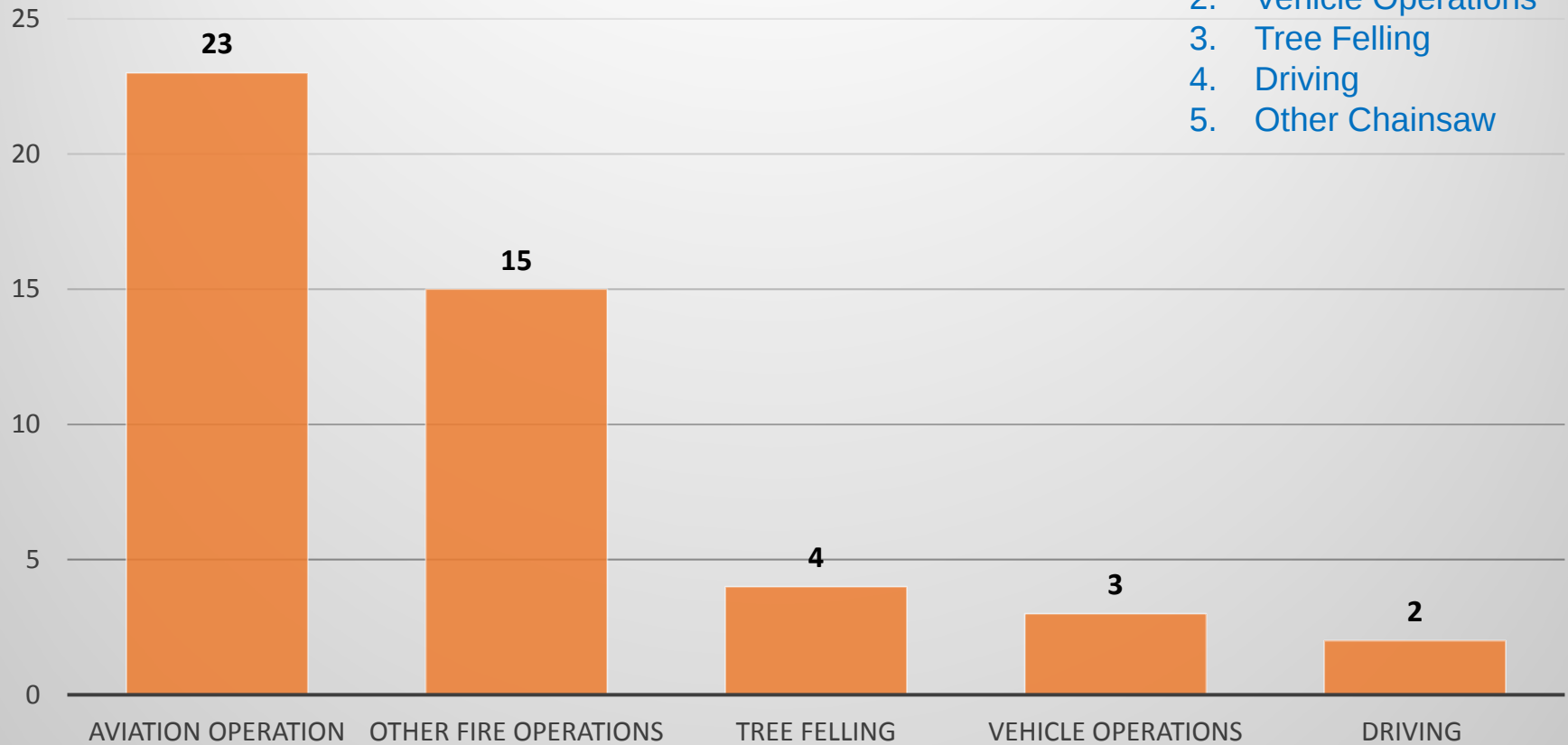


■ Injuries

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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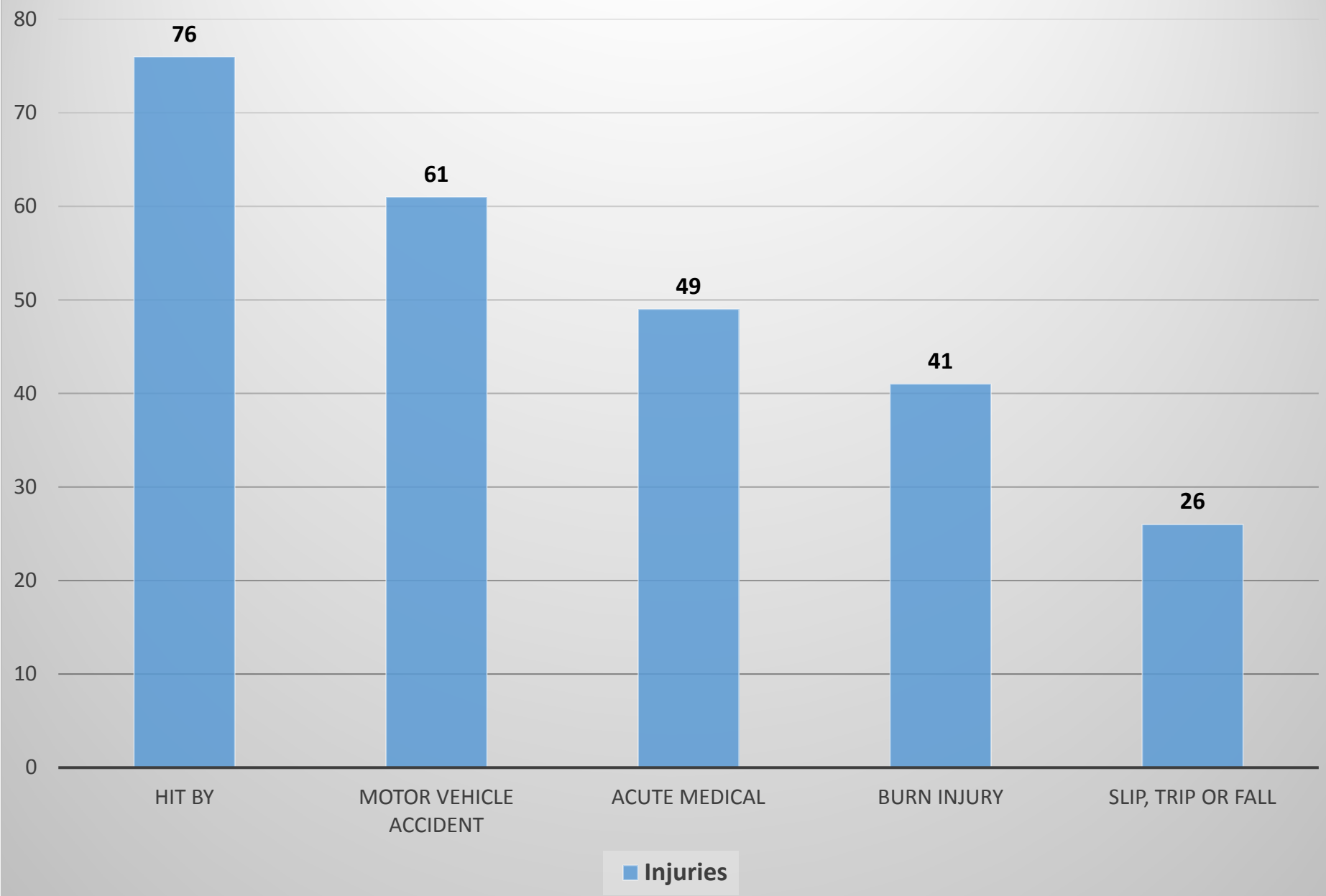
INITIAL DATA RESULTS

Top Five by Accident Type



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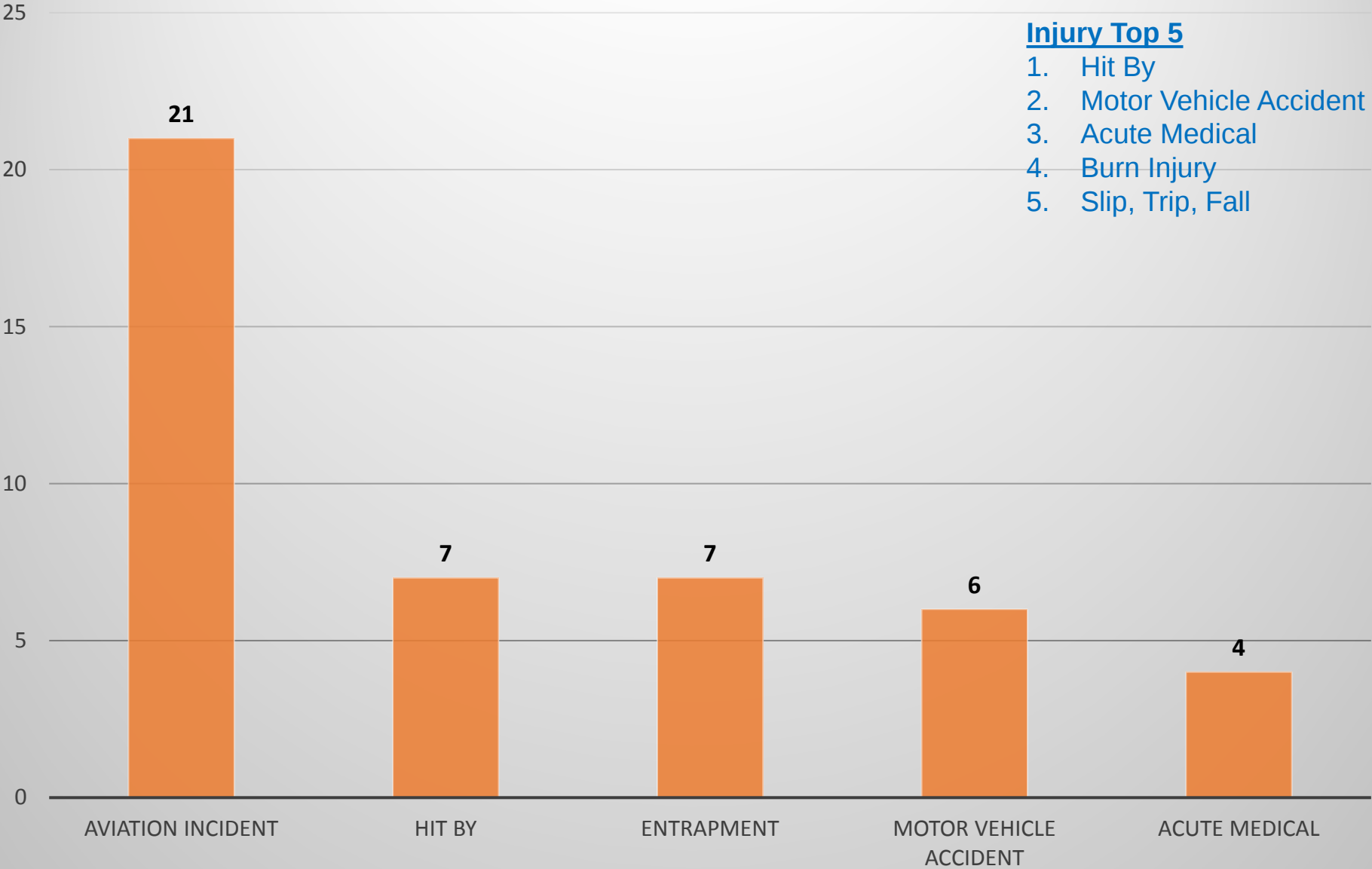
Top 5 by Accident Type



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

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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.





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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?



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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?



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