



# Large fire management: Coping with jurisdictional complexity

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CALIFORNIA 2019 INTERAGENCY IMT WORKSHOP:  
MCCLELLAN PARK, CALIFORNIA

ANNE-LISE VELEZ, VIRGINIA TECH

# Meet the Firechasers

[www.firechasers.ncsu.edu](http://www.firechasers.ncsu.edu)



## Principal Investigator:

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## Co-PIs

- ❖ Anne-Lise Velez, Virginia Tech
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## Current Graduate Students

- ❖ Kate Albrecht
- ❖ Shannon McGovern
- ❖ Honey Minkowitz
- ❖ Elliot Nauert



# What have we been up to?

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## Phase 1: case studies of the 10 most jurisdictionally complex fires of 2017

- Federal, state, local and private interests
- Type 1 project fires
- Federal led fires, state led fires
- 6 states– 6 GACCs
- Surveys and interviews with 88 AAs, ARs, private reps, and ICs

## Phase 2: Field observations on three jurisdictionally complex fires in 2018

- 2 in OR; 1 in CA
- Interviews on 5 fires [on-going]

## Phase 3: Field observations on two jurisdictionally complex fires in 2019

- [coming to a fire near you!]

# Today: Guiding Questions

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- ❑ What does the “new normal” of jurisdictional complexity look like nationally on Type 1 and Type 2 incidents?
- ❑ How effective are we at managing multi-jurisdictional wildfire events?
- ❑ What is the role of risk perception in the co-management of multi-jurisdictional events?
- ❑ What factors promote more effective co-management?

# What does the new normal of jurisdictional complexity look like?

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# What do we mean by jurisdictionally complex fires?:

## # of Type 1 & Type 2 Fires

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# What do we mean by jurisdictionally complex fires?: Fire Organizations

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What does the new normal of jurisdictional complexity look like?:  
# of total jurisdictions impacted

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CITY OF  
**VENTURA**

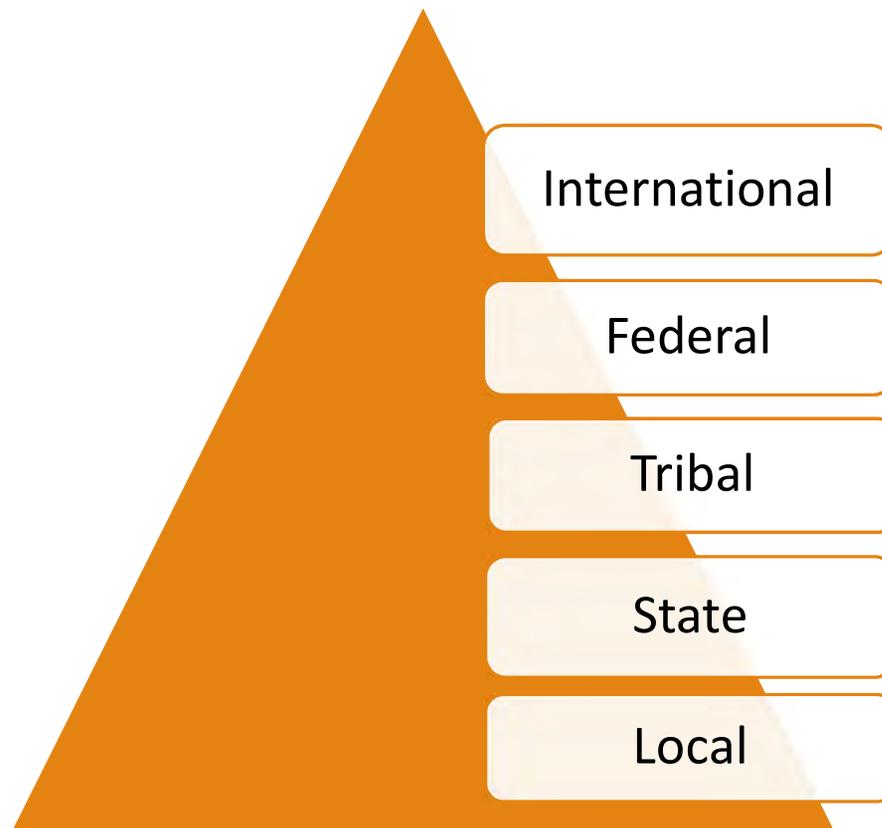


*City of*  
**SANTA BARBARA**



What does the new normal of jurisdictional complexity look like?:  
# of jurisdictional levels

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# The challenge...

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There are no easy data sources to give us a picture of what jurisdictional complexity on large fires looks like nationally

- ❖ Its hard to prepare for something we don't fully understand
- ❖ Need to understand how changes in wildfire are leading to changes in wildfire management
- ❖ **Firewatch protocol** – developed in 2017; refined in 2018



Photo credit: AL KNAUBER  
al.knauber@helenair.com

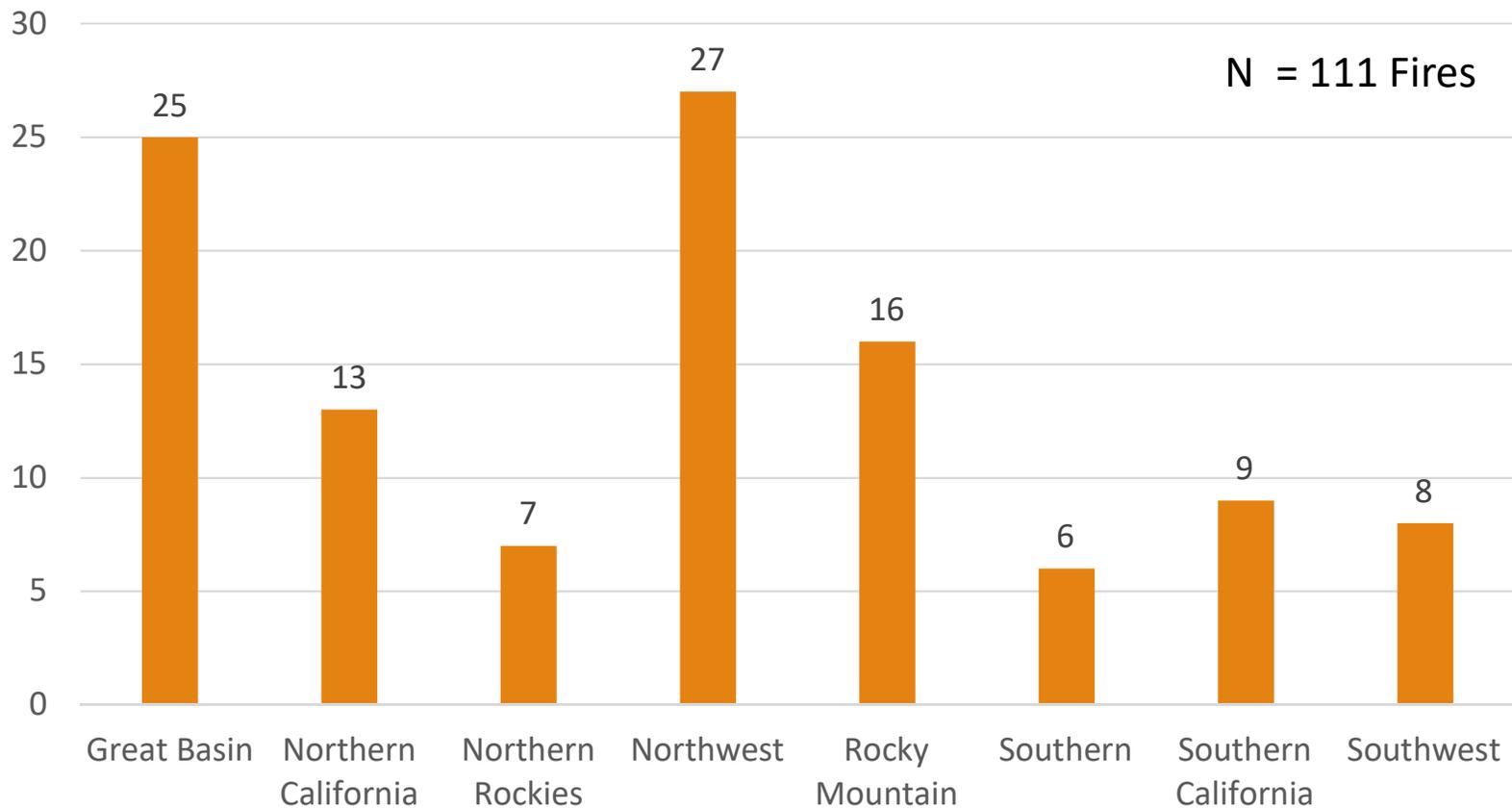
# What do we mean by jurisdictionally complex fires?:

## # of Type 1 & Type 2 Incidents

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# # of Type 1 and Type 2 Incidents by GACC in 2018



What does the new normal of jurisdictional complexity look like?  
Use of unified command

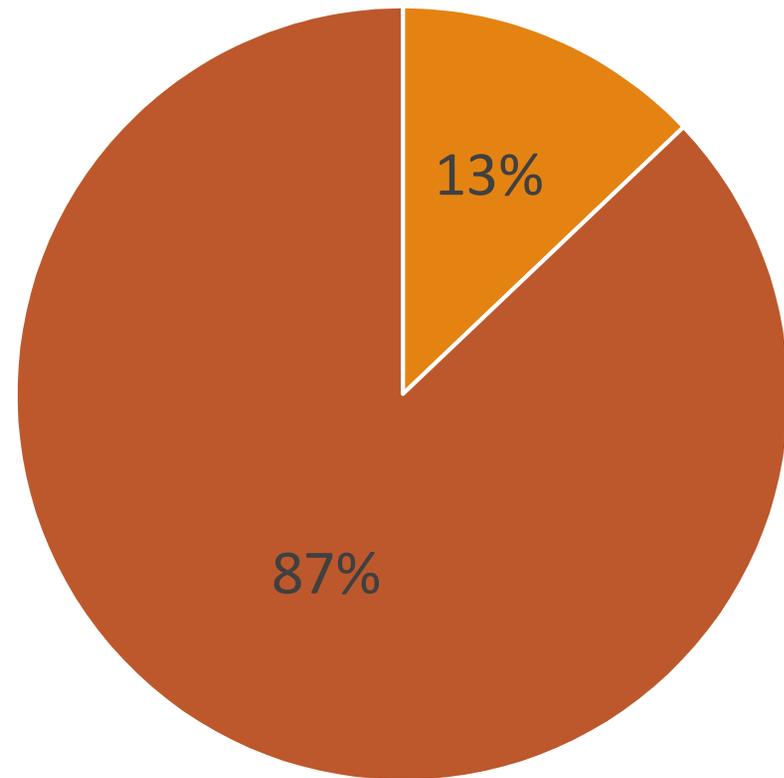
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# What does the new normal of jurisdictional complexity look like?: Use of unified command

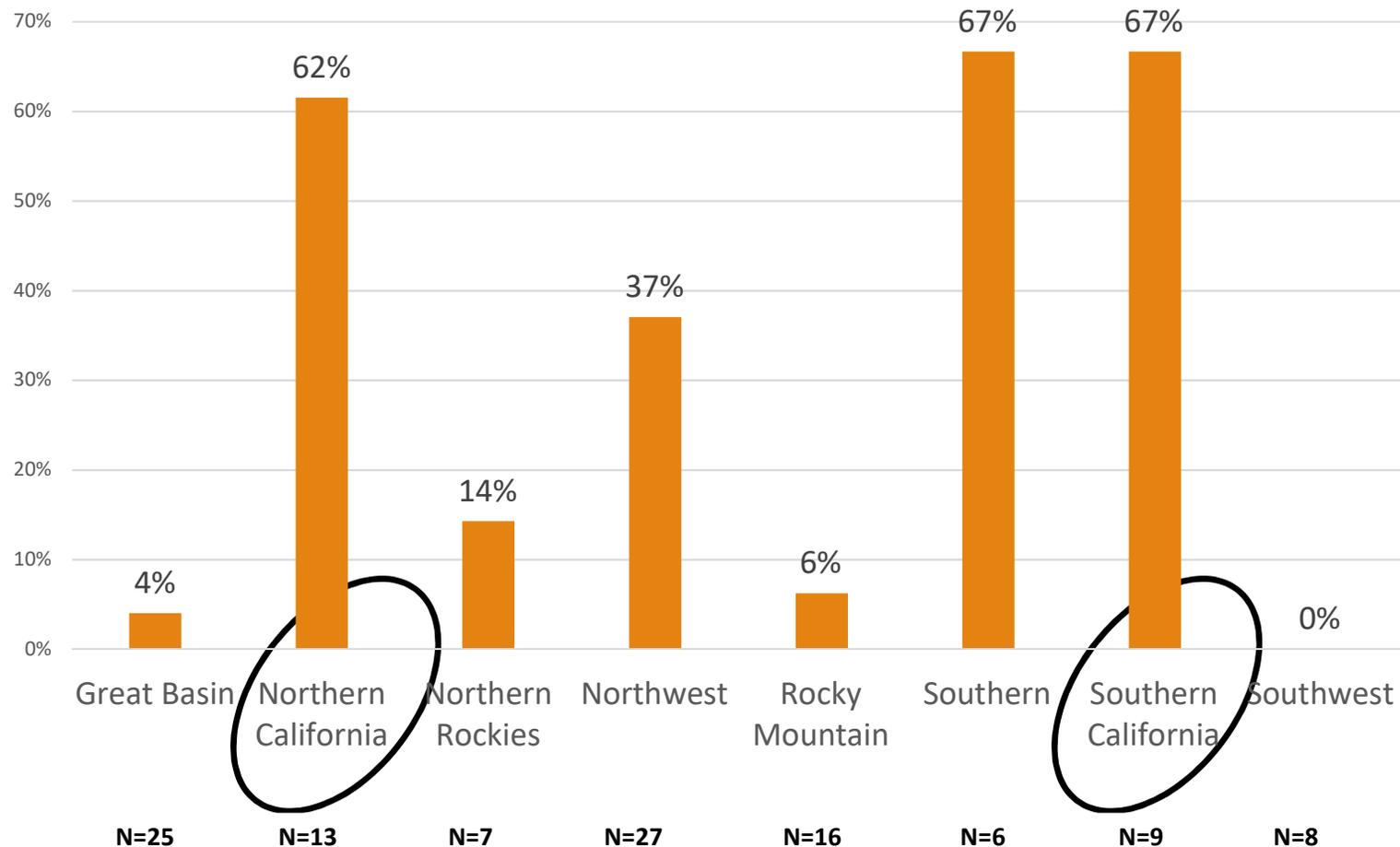
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87% of unified  
command  
organizations  
involved state actors



■ No ■ Yes

# How did regions differ in use of unified command?



What does the new normal of jurisdictional complexity look like?:  
# of total jurisdictions impacted



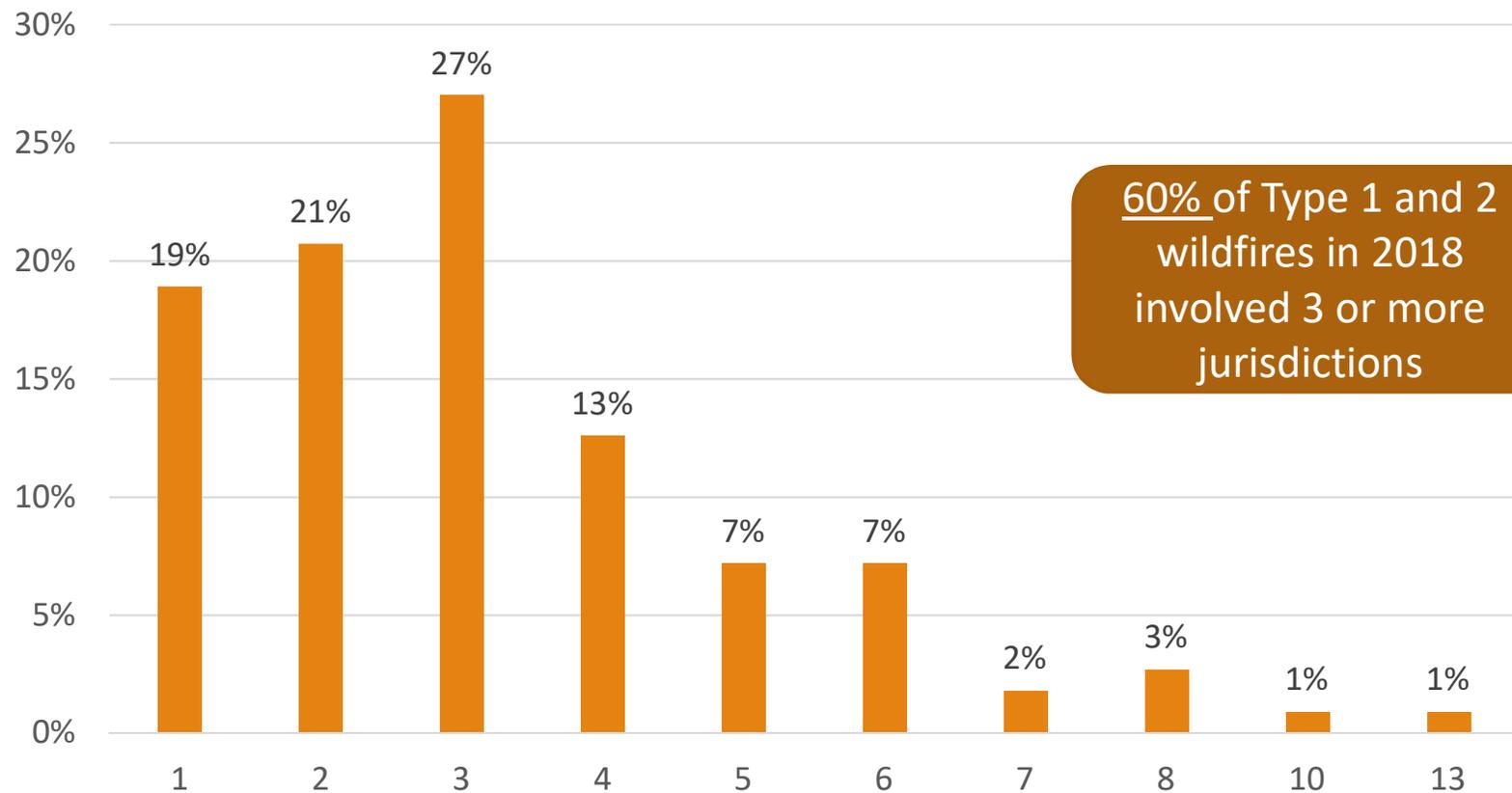
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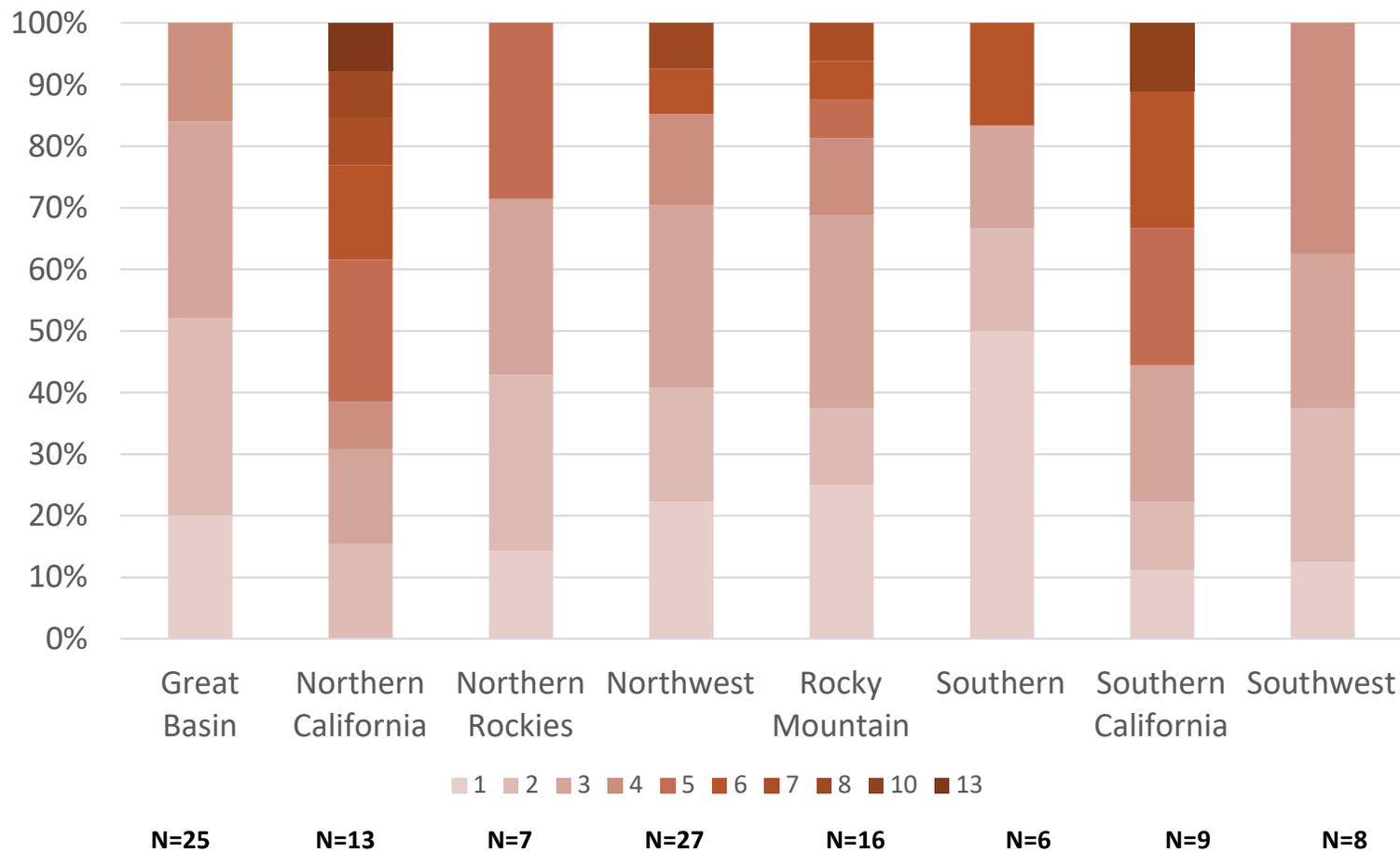


# What does the new normal of jurisdictional complexity look like?

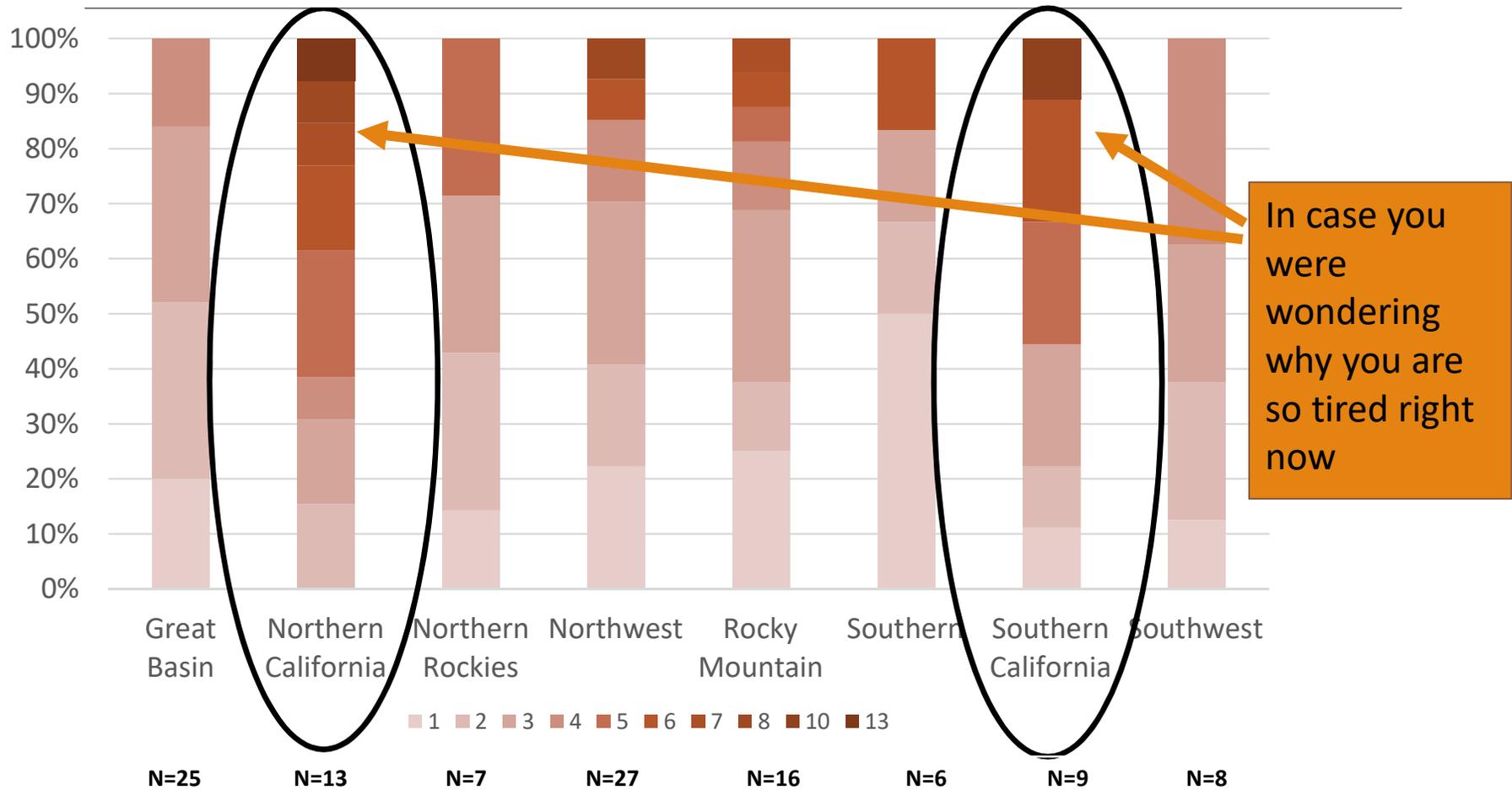


*Includes only public jurisdictions (international, federal, tribal, state, local) /excludes private*

# What did jurisdictional complexity look like by GACC in 2018?

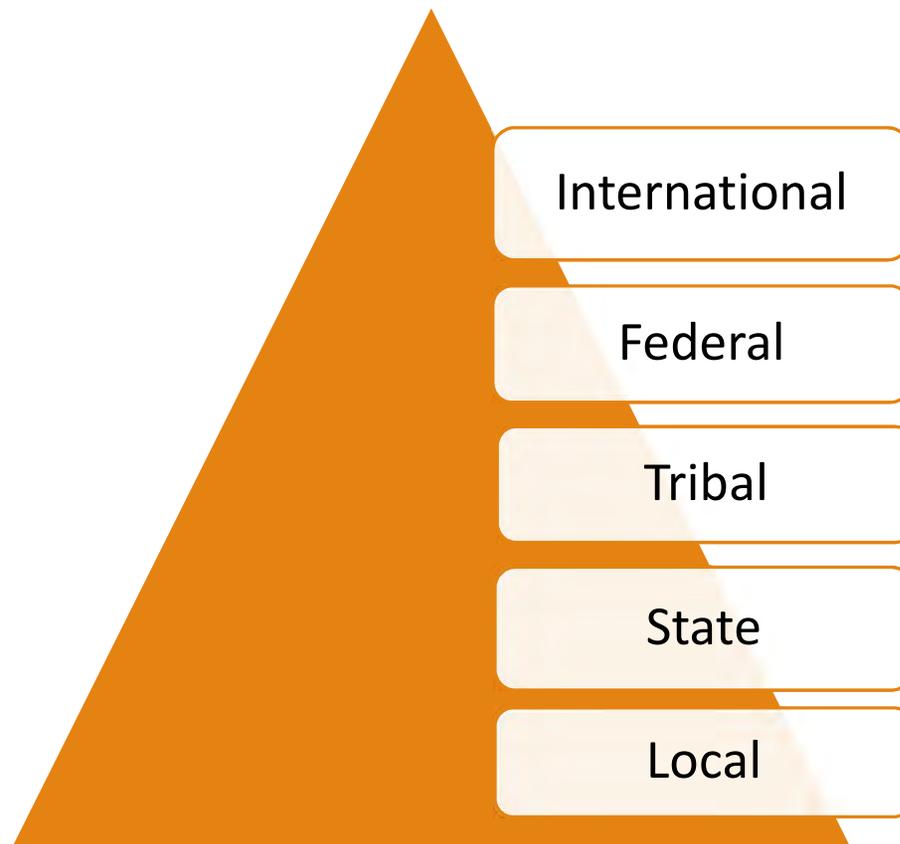


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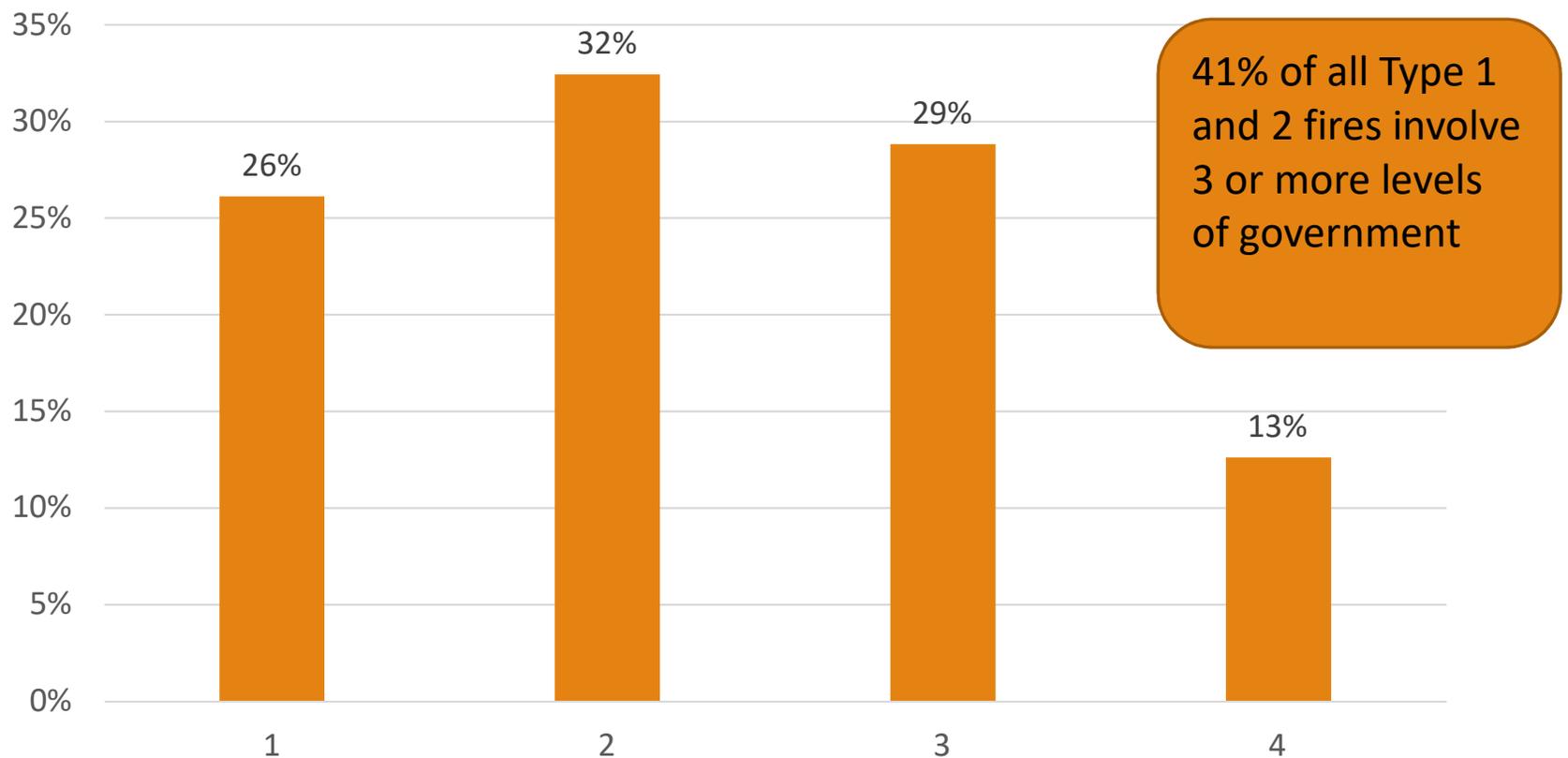


# What does the new normal of jurisdictional complexity look like?: # of jurisdictional levels

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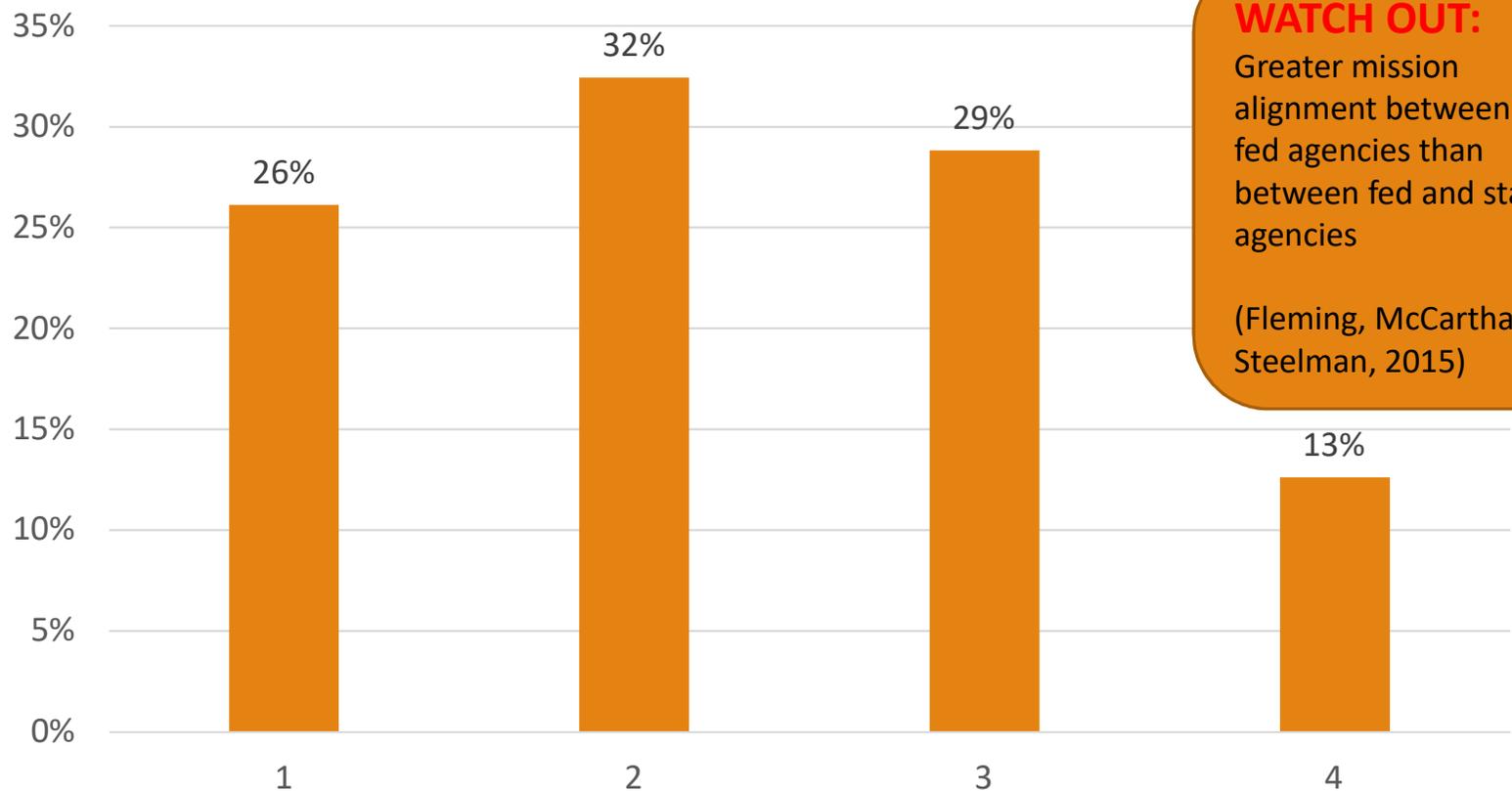


# What does the new normal of jurisdictional complexity look like?



Based on a possible range 1-5: local, state, tribal, federal, and international

# What does the new normal of jurisdictional complexity look like?



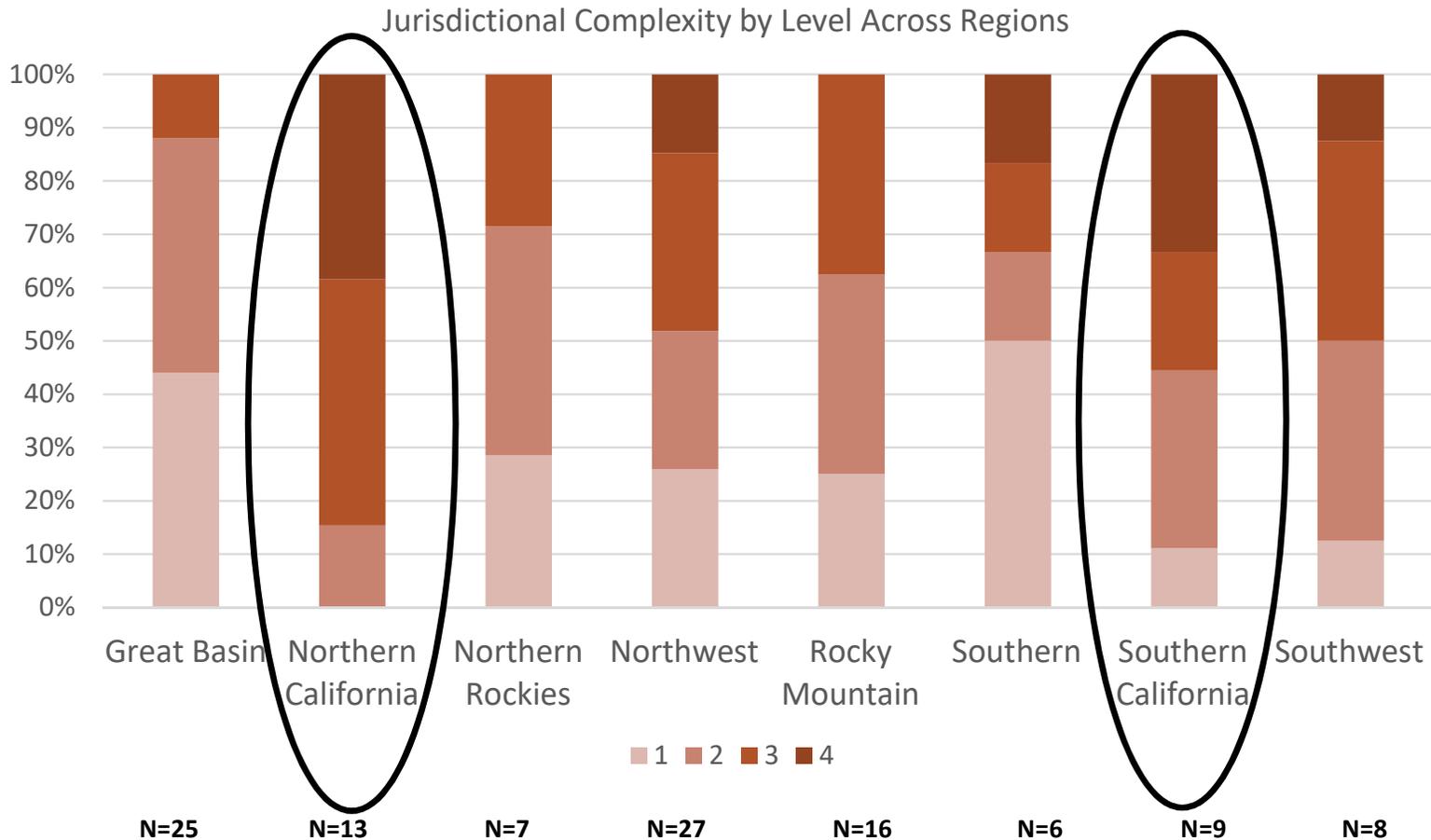
## **WATCH OUT:**

Greater mission alignment between fed agencies than between fed and state agencies

(Fleming, McCarthy, and Steelman, 2015)

Based on a possible range 1-5: local, state, tribal, federal, and international

# What did jurisdictional complexity look like by GACC in 2018?



*Includes only public jurisdictions (international, federal, tribal, state, local) - excludes private*

# Big Take Aways

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- ❖ Type 1 and 2 fires routinely have 3 to 4 jurisdictions impacted, representing 3 levels of government or more– this is the new normal
- ❖ Northern and Southern CA use Unified Command a lot
  - ❖ When using UC, 87% of the time state actors are involved
- ❖ **Watch out:** Greater mission alignment Fed → Fed than Fed → State

Improving fire management will require improving our ability to govern large multi-jurisdictional fire organizations... but what does that mean?

How are we doing  
managing multi-  
jurisdictional fires?

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# Short answer:

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IT DEPENDS ON WHO YOU ASK....



# Methods: 10 item survey– Network performance at co- management

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- |   |
|---|
| 1. A coordinated set of fire management objectives were agreed upon among all affected jurisdictions        |
| 2. All concerned jurisdictions prioritized maintaining good communication among jurisdictions               |
| 3. Credit for success and effort was shared among jurisdictions during public meetings and media events     |
| 4. There was a general willingness across affected jurisdictions to offer assistance to other jurisdictions |
| 5. “Borrowed resources” were released in a timely fashion to minimize burden on the lending agency          |
| 6. Critical values at risk were broadly understood by all major stakeholders                                |
| 7. Efforts to protect identified values were appropriate given available resources                          |
| 8. The overall strategy taken in managing this fire was appropriate   |
| 9. Local resources were incorporated into the incident management operations                                |
| 10. Public information was coordinated among cooperating jurisdictions to ensure continuity of the message  |

N =

Nowell & Steelman, 2013; [www.firechasers.ncsu.edu](http://www.firechasers.ncsu.edu)



# How are we doing co-managing wildfire?

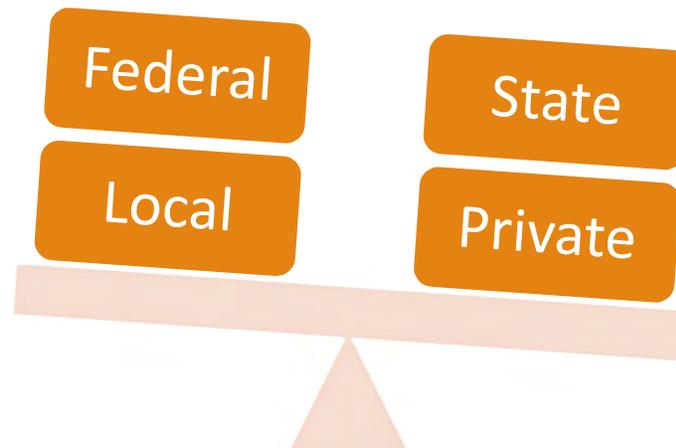
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Everything depends on:

- What jurisdiction you represent  
[F (4,84)=10.22\*\*\*]
- Which incident being referenced  
[F (9, 80) = 4.78\*\*\*]

General patterns:

- State and private were least satisfied

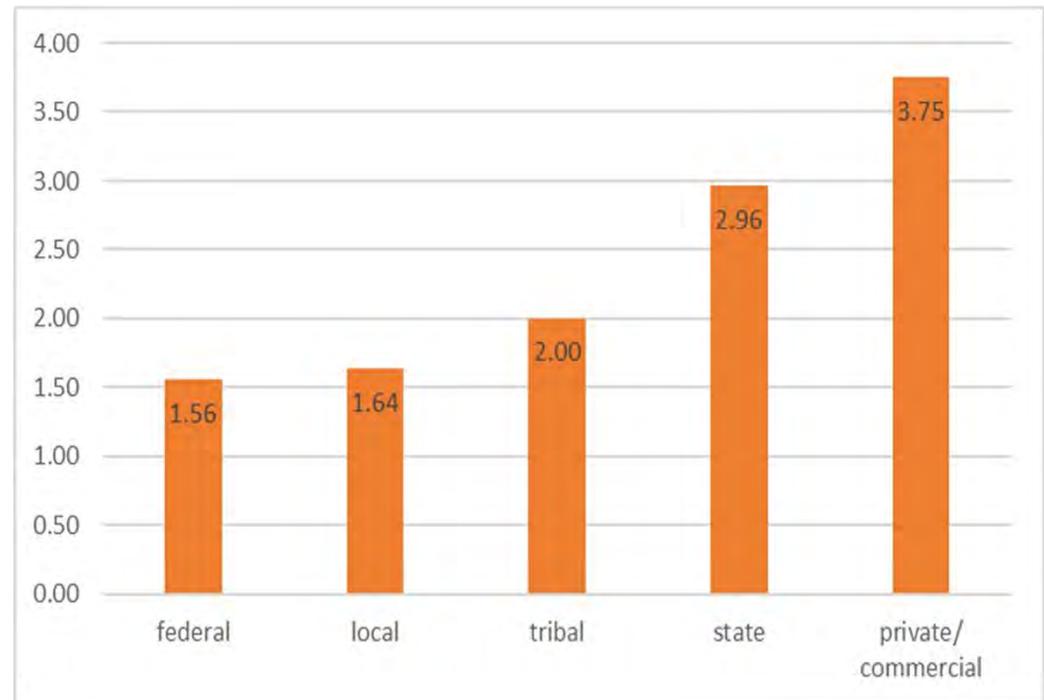


# Biggest Point of Divergence

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The overall strategy taken in managing this fire was appropriate

[F(4,84)=12.03\*\*\*]



**1 = most agree, 5 = most disagree**

# Take home points....

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- ❑ How well a large, complex wildfire is managed depends on who you ask
- ❑ States and private interests are less satisfied than federal and local interests
- ❑ Out of the many dimensions we asked about, there was the greatest amount of disagreement on “appropriateness of strategy taken”



Photo Credit:  
Craig Pedro

But wait...Both the challenges and the solutions were markedly similar regardless of jurisdiction.

# The Conflict Cocktail: Jurisdictional Interdependency Meets Jurisdictional Autonomy

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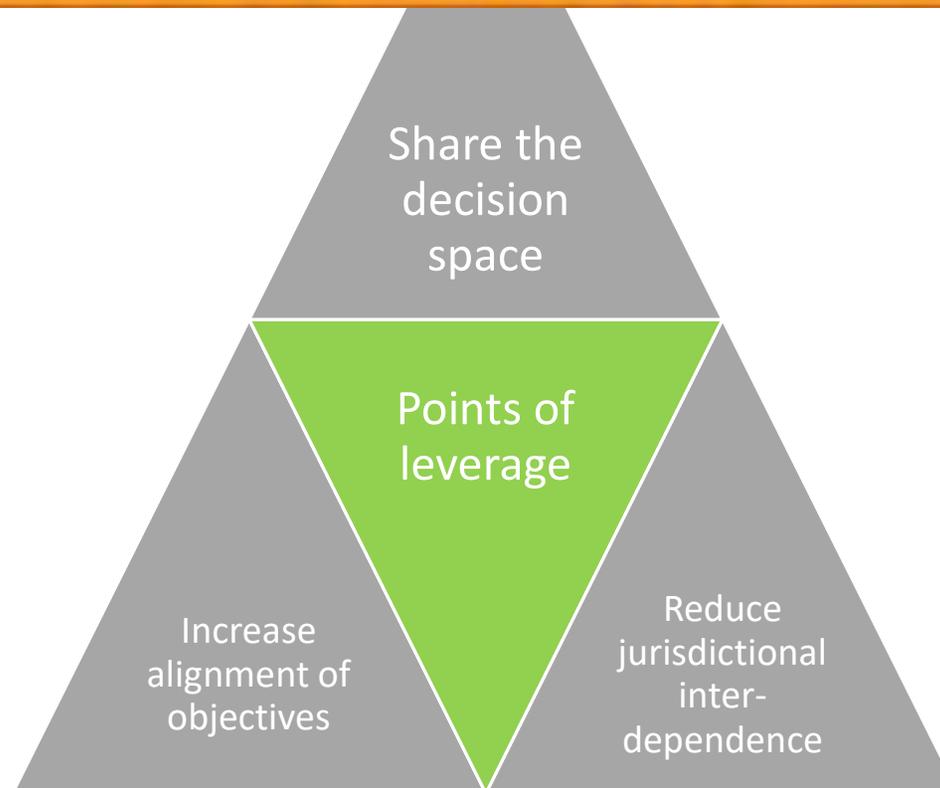
Interdependence \* Competing Objectives \* Unilateral Decision-Making = Conflict



# Points of Leverage to Resolve Tensions in Multijurisdictional Settings

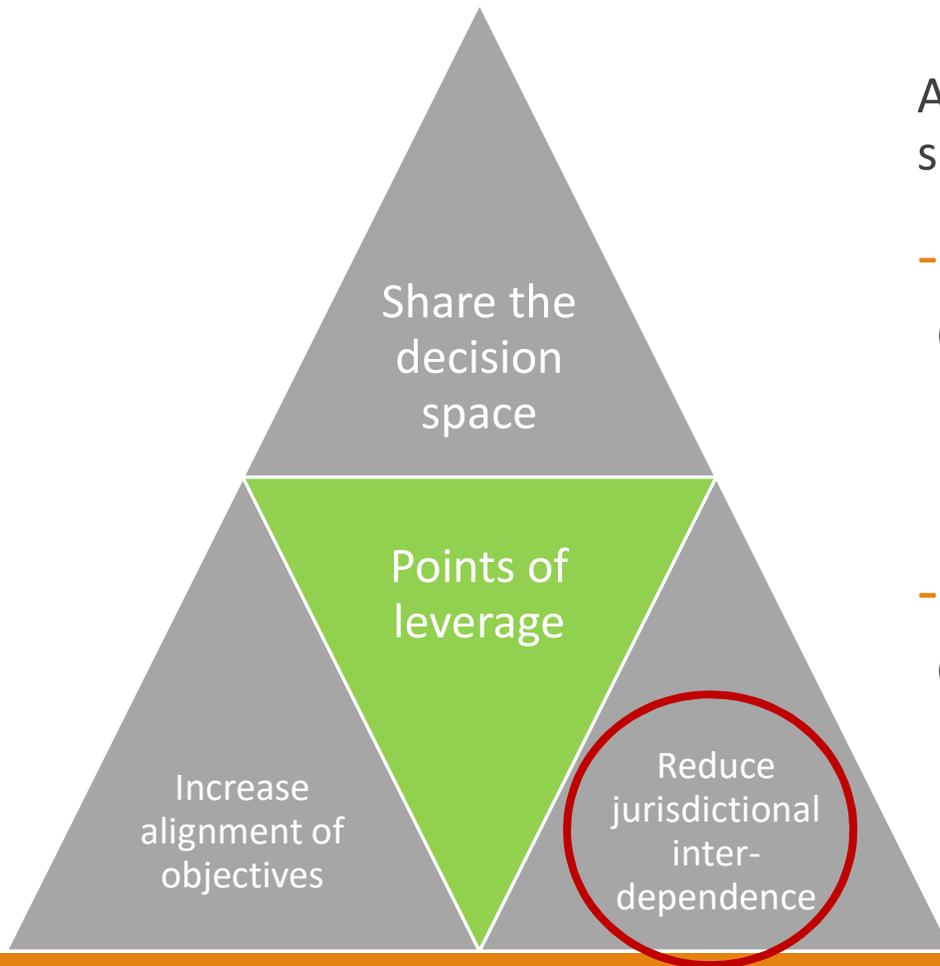
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Interdependence \* Competing Objectives \* Unilateral Decision-Making = Conflict



# Reduce Jurisdictional Interdependence

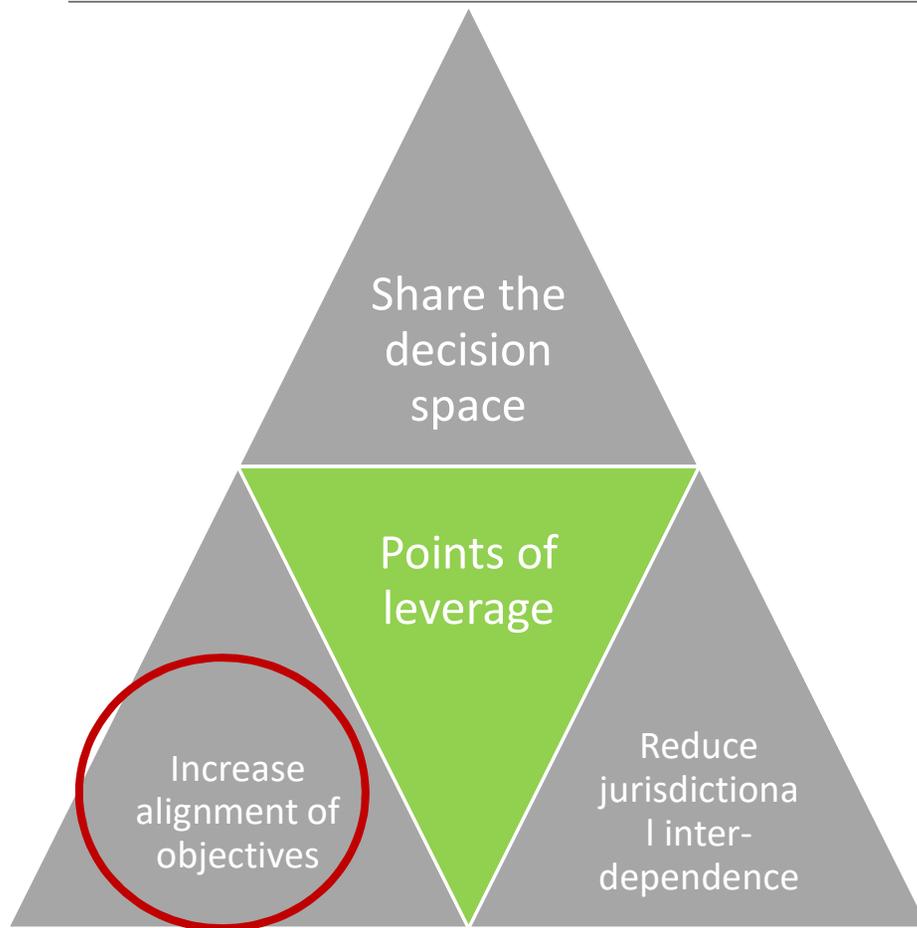
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Are there opportunities to mitigate fire spread between two jurisdictions?

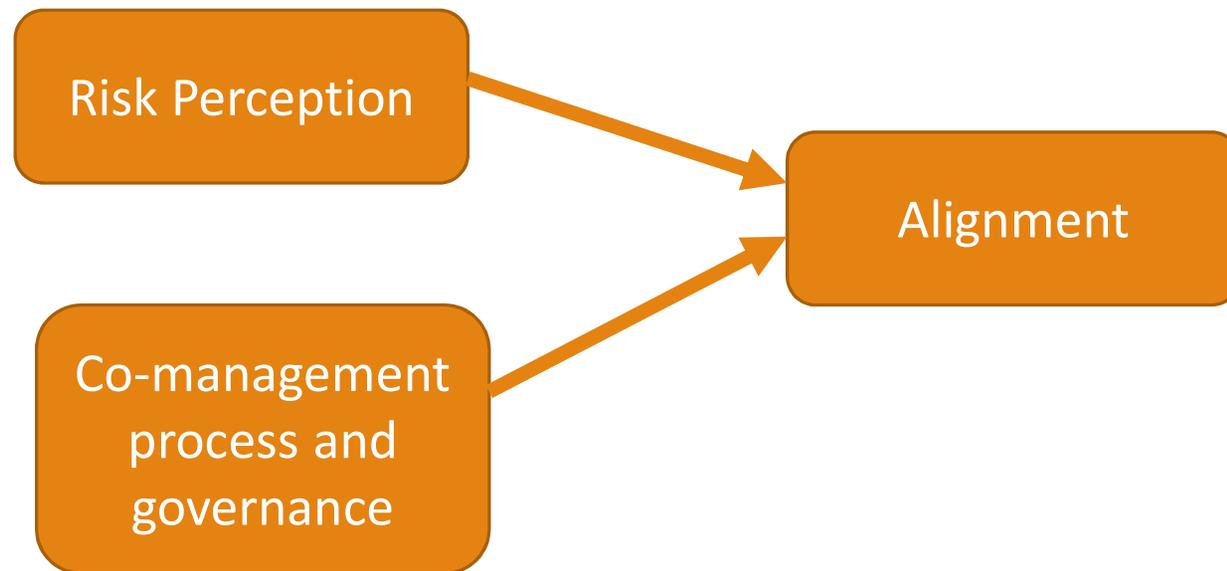
- Pre-season efforts to establish or strengthen buffer zones or containment lines
- RMRS work on potential operational delineations [PODS]

# Increase Alignment of Objectives



# General Proposition

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How does risk  
perception differ?

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# Short answer:

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RISK PERCEPTIONS APPEARS TO DIFFER MORE  
IN TEMPORAL SCALE THAN SUBSTANCE....



# Risk Perception

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## TEMPORAL SCALE OF RISK



## SUBSTANTIVE CATEGORIES OF RISK

Human safety

Homes, infrastructure & communities

Ecosystems/environment

Social, political, & economic

# Immediate & Tactical Risk—

current operational period

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## **Human safety**

Risks to fire fighter safety  
Public safety

## **Homes, infrastructure & communities**

Immediately threatened values

## **Ecosystem/environmental**

Fire suppression impacts on natural resource values

## **Social/political/economic**

Inter-agency coordination

# Incident Level Risk—

spatial and temporal scope for entire incident

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## **Human Safety**

Firefighter risk exposure hours on long duration incident  
Community health risk from prolonged smoke exposure

## **Homes, infrastructure & communities**

Fire potential to impact public infrastructure and communities

## **Ecosystem/environment**

Threats to endangered species & habitat  
Destruction of agricultural resources (timber, grazing lands)

## **Social/political/economic**

Political risk and negative public perceptions  
Risks to cultural sites  
Cost  
Disruption of local economies

# Long Term Risk—

extending beyond the incident into the days and years after the event

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## **Human safety**

Post-fire risks, mudslides, flooding, recovery

## **Ecosystem/environmental**

Ecological health of the wildland and associated risk exposure for more intense future wildfires

Aesthetic and recreational value of the land

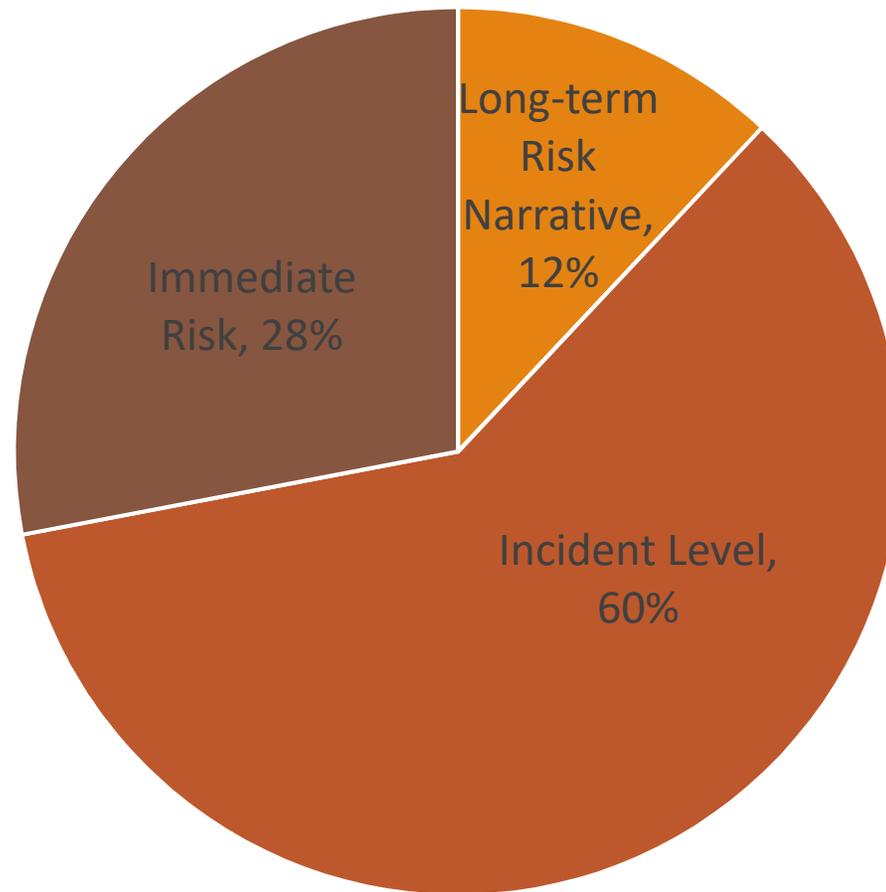
## **Social/political/economic**

Long term impacts to local economies

Public and political support of public lands

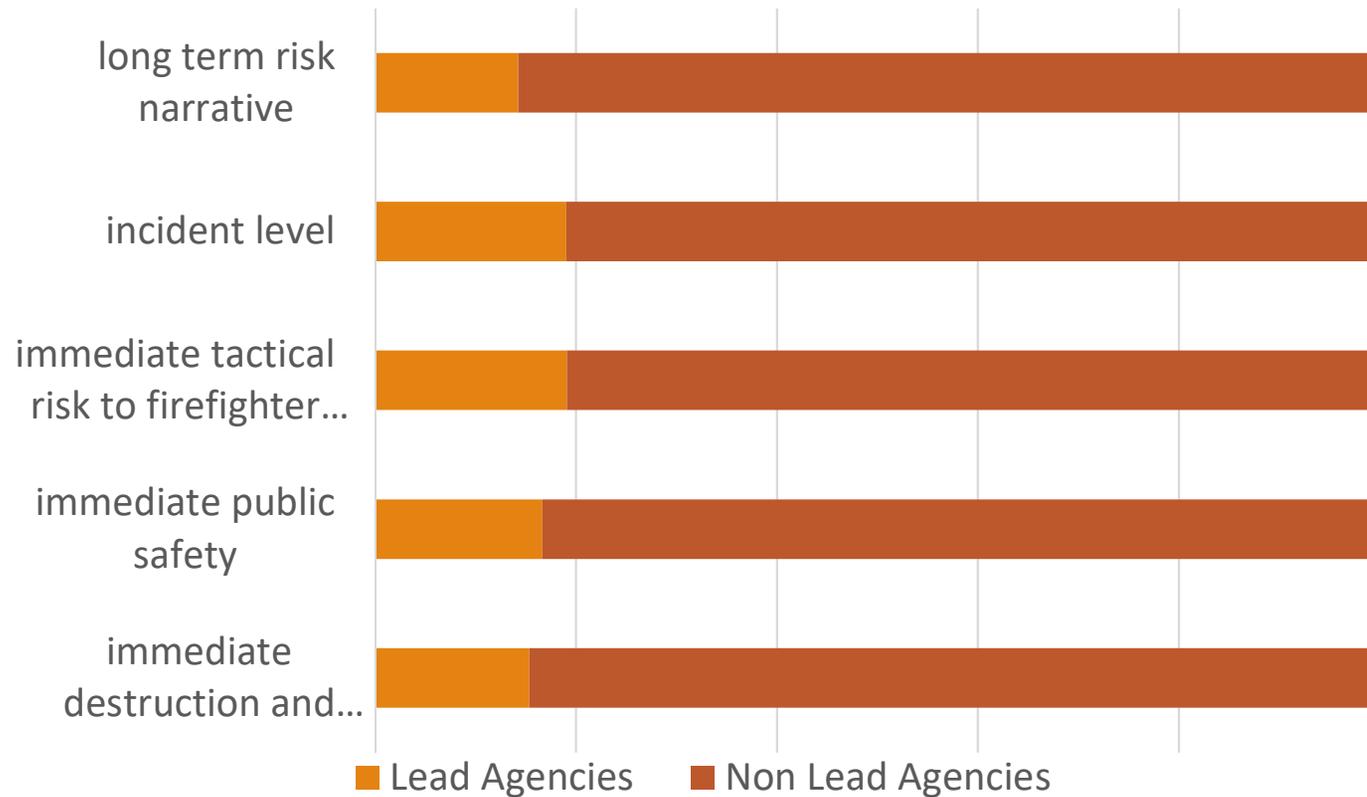
# Prevalence of Different Risk Narratives

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# Differences in Risk Perception

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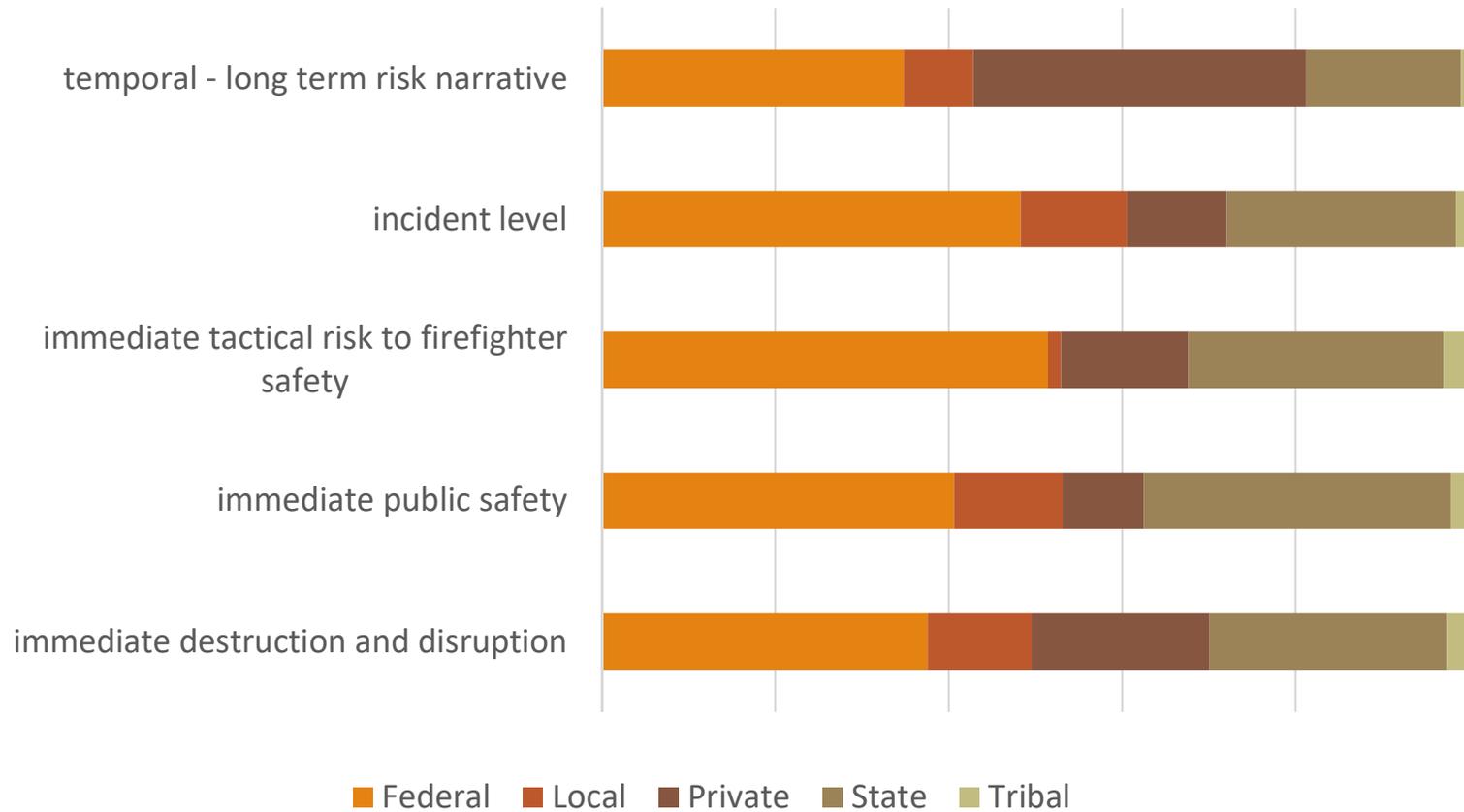


Risk perceptions of lead agencies were not systematically different from their non-lead counterparts



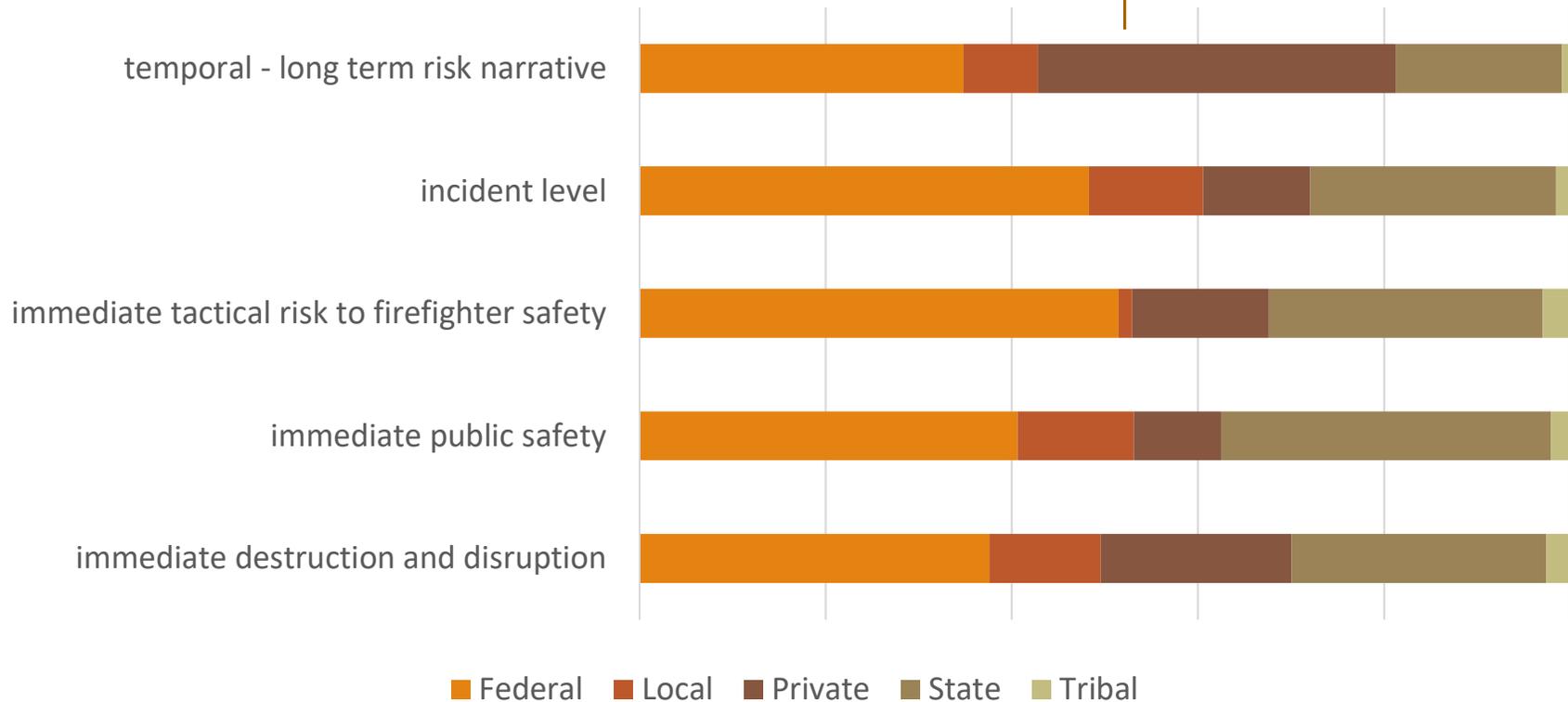
# Differences in Risk Perception

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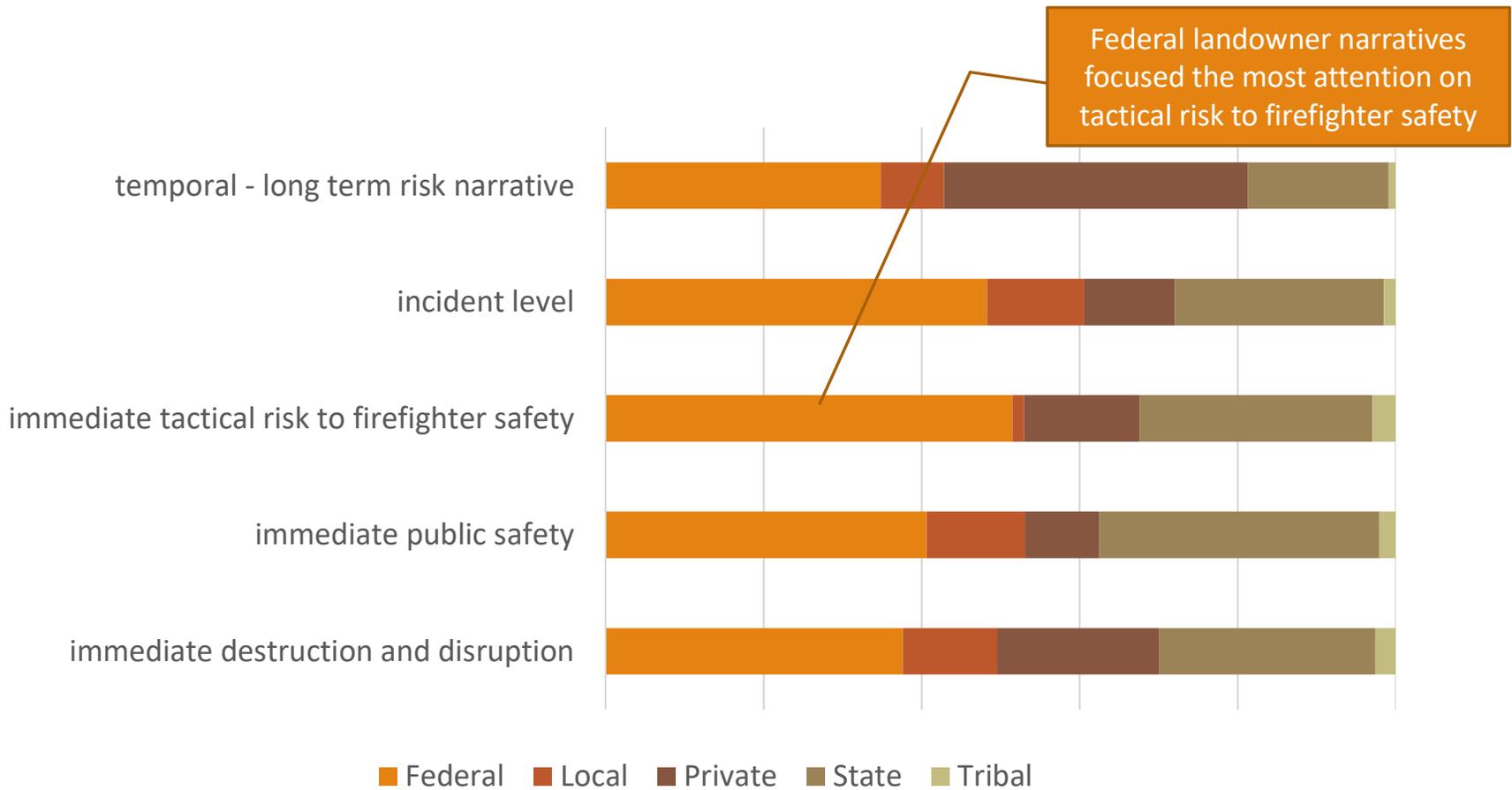


# Differences in Risk Perception

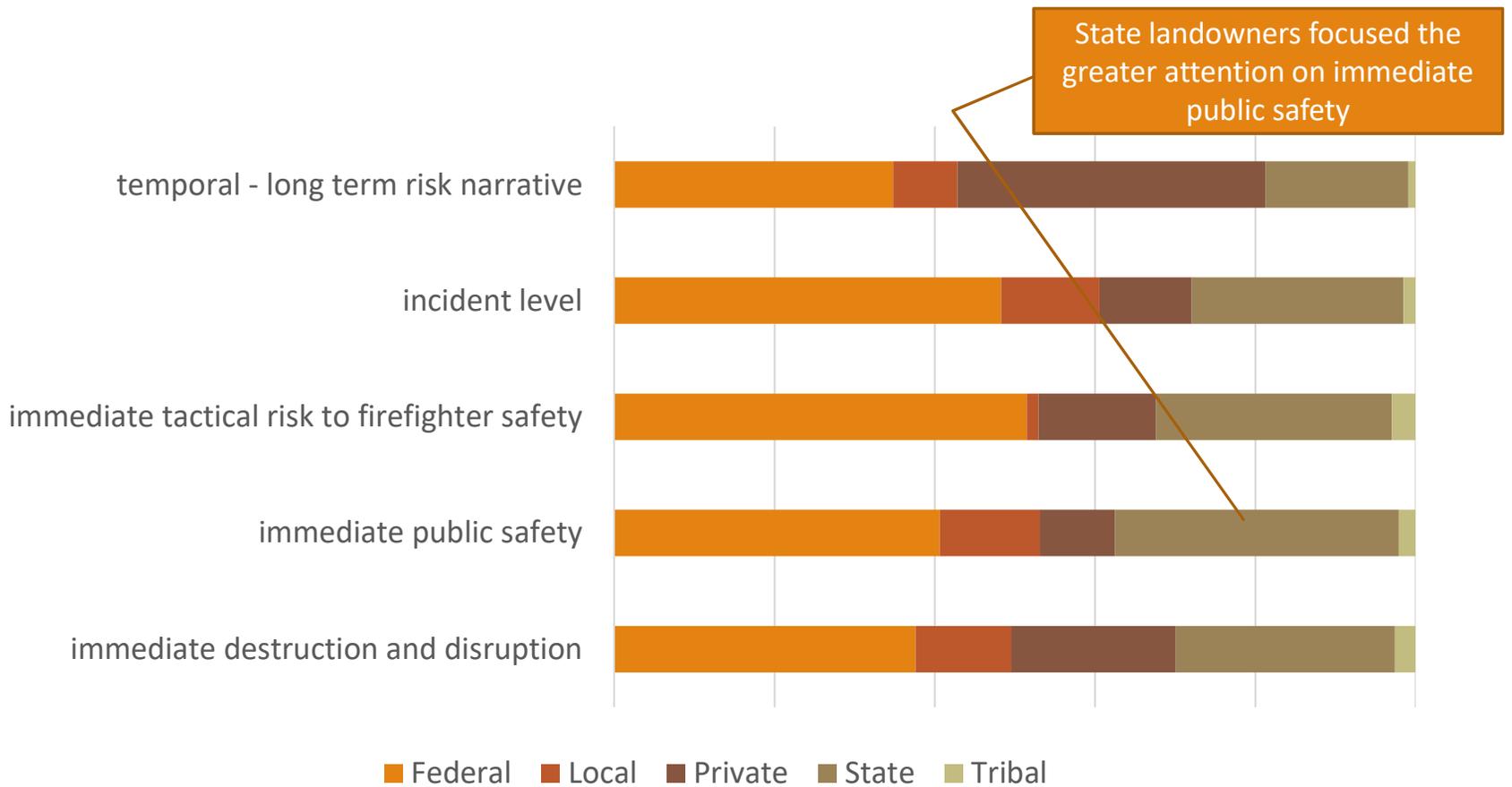
Private landowners expressed the greatest concern about long term impacts – particularly economic



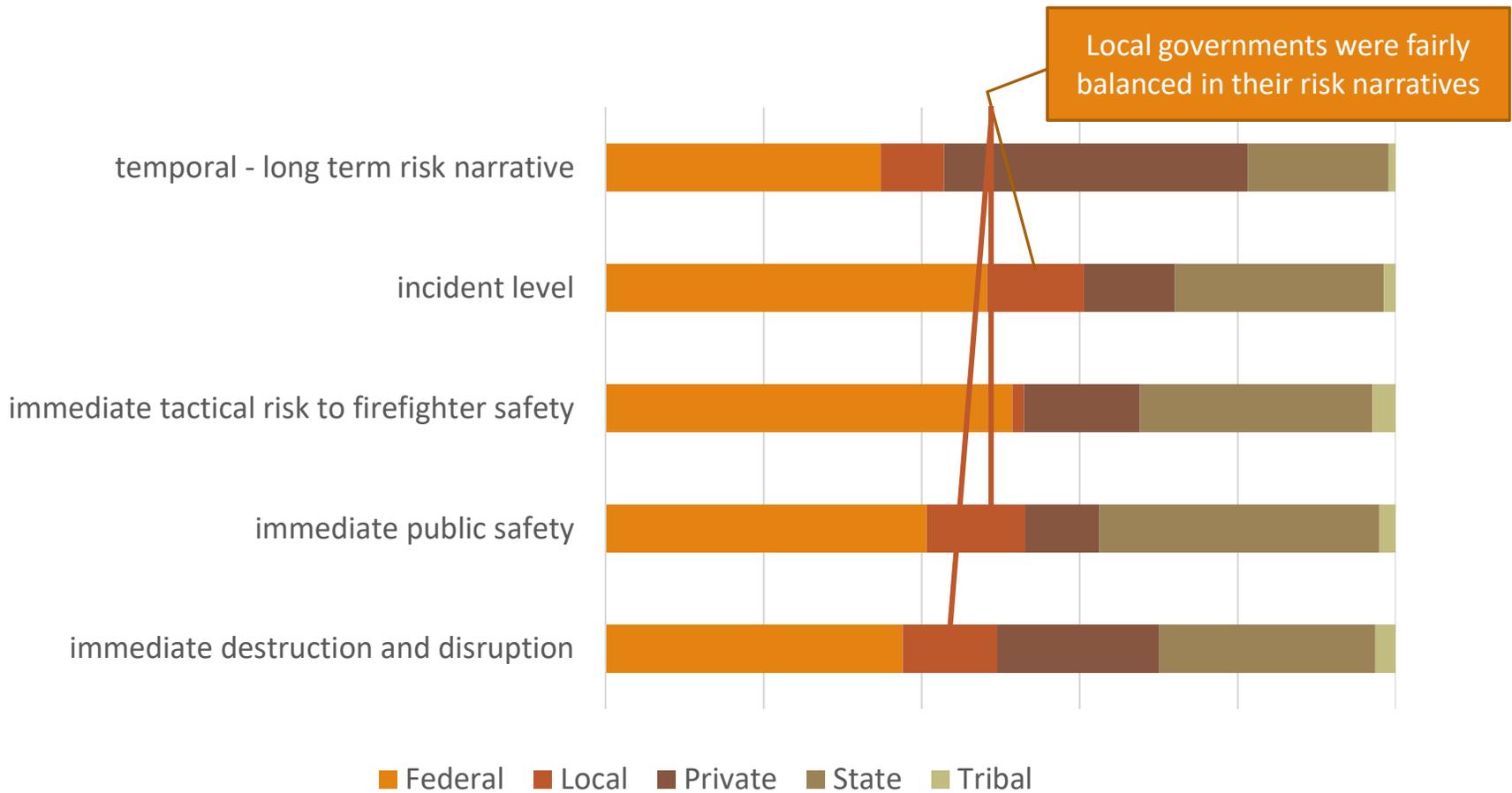
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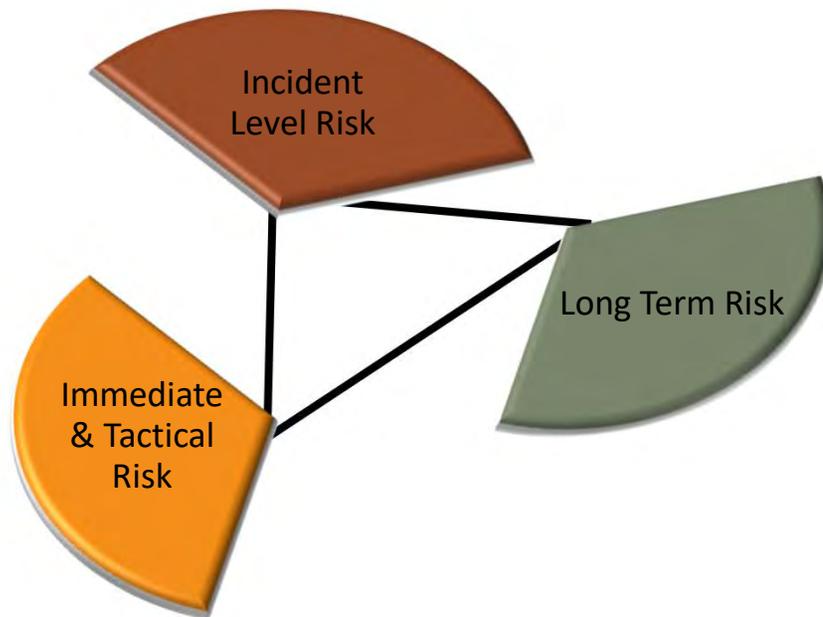


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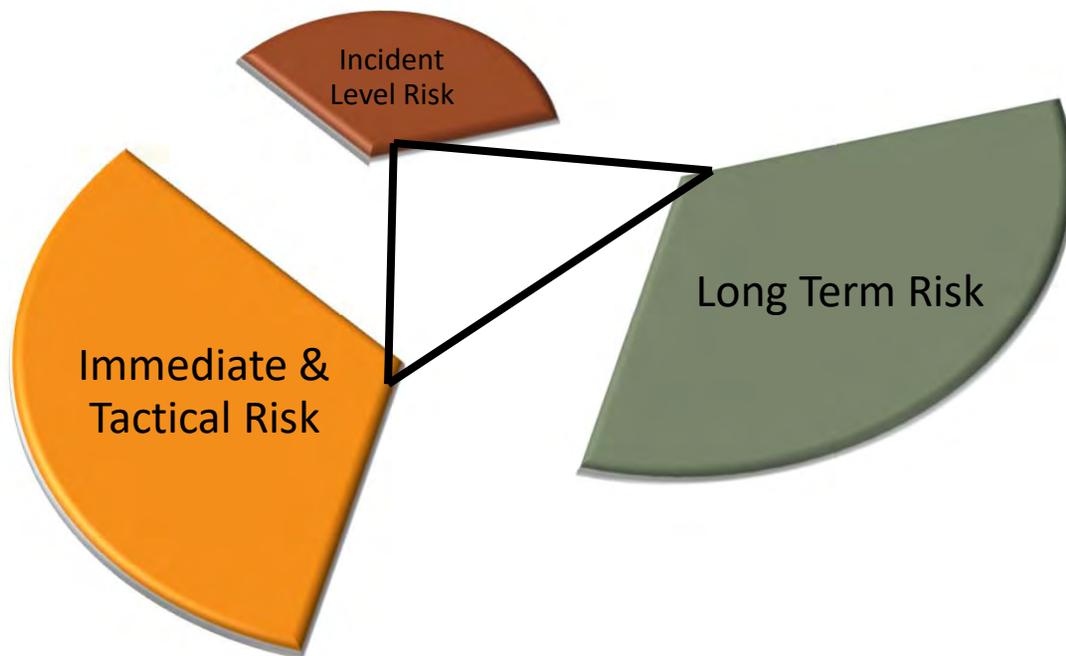
# Balancing tensions and tradeoffs

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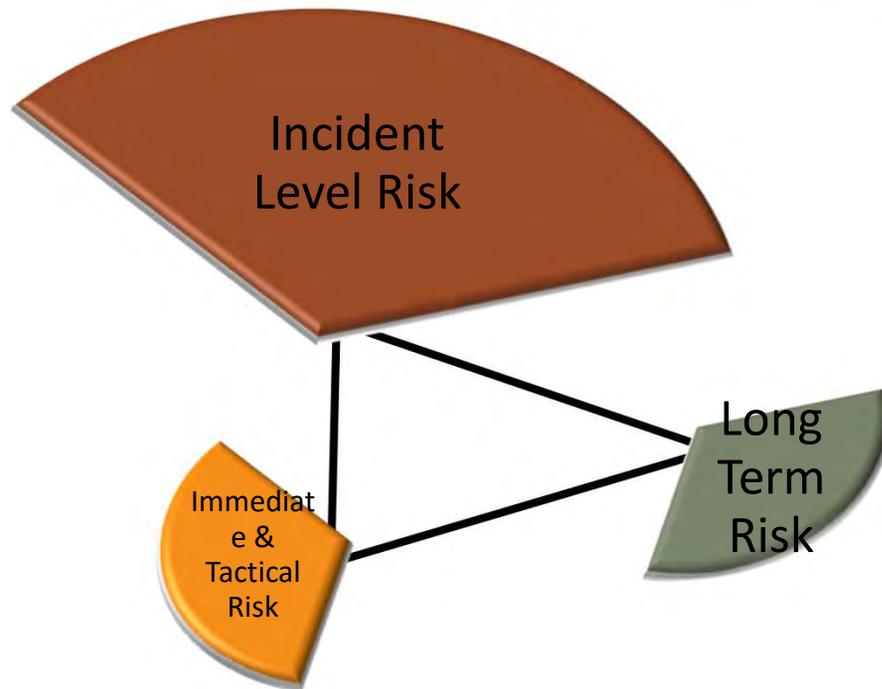
# Historical Tradeoffs: 10am Fire Policy

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# Historical Tradeoffs

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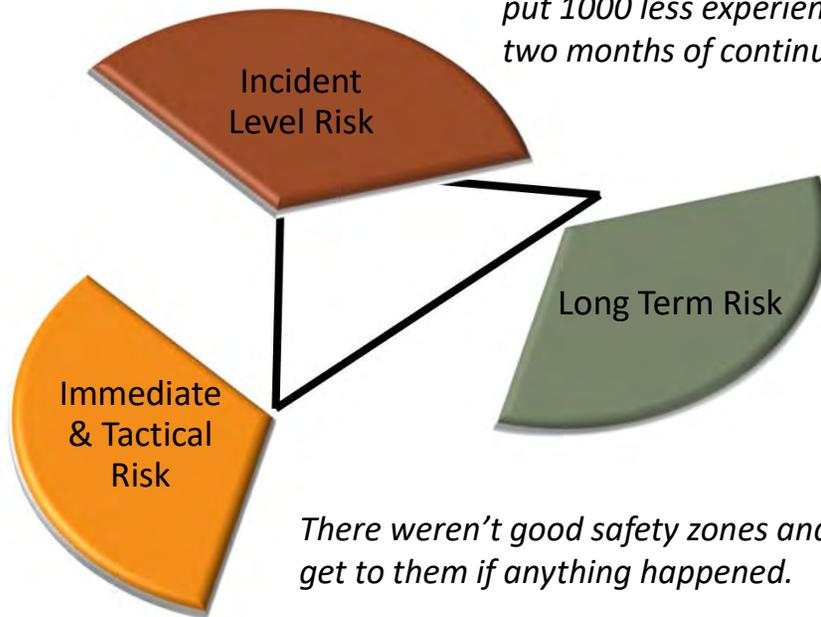


# Balancing tensions and tradeoffs

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*Instead of putting one experienced hot shot crew at moderate risk for 2 days, we put 1000 less experienced firefighters in tactically less risky situations but over two months of continuous risk exposure.*



*You know, there's 4,000 acres out there [of snags]..., that is going to be tough to fight fire in some of those tight patches moving forward.*

*I remember...we ended up fighting fire in the same area three years in a row, and each year we suppressed it, the next year was worse and more dangerous.*

*There weren't good safety zones and there are no roads back there. We couldn't get to them if anything happened.*

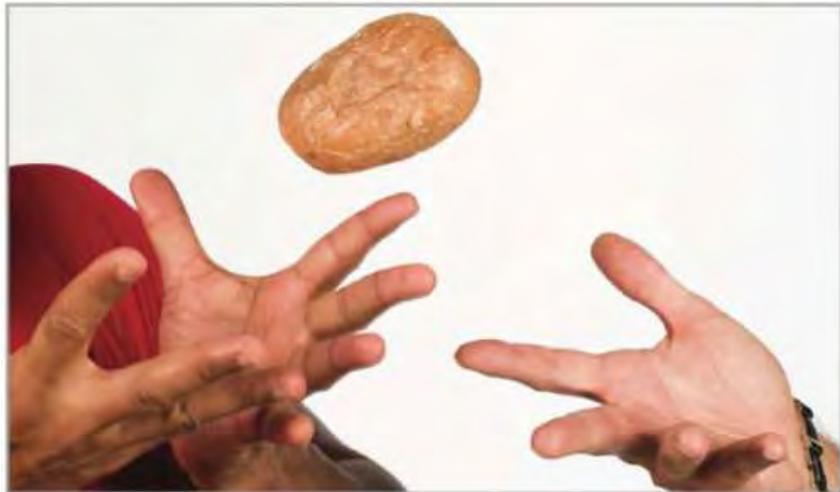
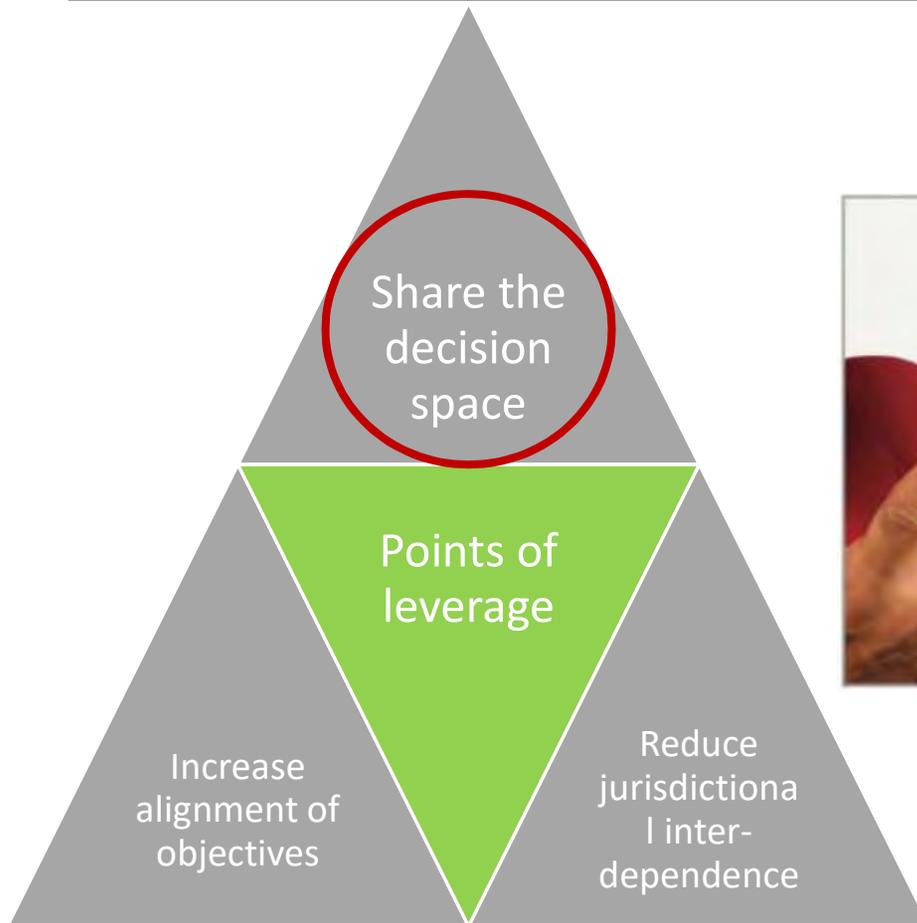


# Take home points...

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- Agreement on substantive risk
- Divergence around temporal risk
  - Local fire service have a more balanced view
  - Private landowners more focused on long term impacts
  - Feds more focused on short term tactical risk to FF safety
  - States more focuses on short term risk to public safety
- Need to balance among the short, medium and long term creates tensions given the necessary tradeoffs

# Co-Management vs. Jurisdictional Hot Potato



BEST  
PRACTICES?:  
Factors to  
support more  
effective co-  
management

- Early notification of adjacent jurisdictions
- Transparent risk management decision process
  - Statements like “*highest probability of success with lowest risk to firefighter safety*” work best with shared understanding of:
    - a) objectives and priorities
    - b) temporal and substantive nature of risk
    - c) probabilities for success – need to continually build common situational awareness
- Opportunities for threatened jurisdictions to express concerns and participate in strategy – AA meetings

# Conversations to have right now..

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**“Hi, my name is...”**

**“How and when are we going to communicate with each other about potential threats?”**

- Be specific about expectations
- Daily, twice daily, every few days
- Potential AA meeting, Texts, Phone calls, In person meetings

**“What are your biggest concerns now and into the future?”**

- Recognize these risk narratives will differ among the various interests

**“How do we communicate concerns and offer assistance when we perceive a significant threat from a fire that is on your jurisdiction?”**

- Pro-actively solicit input, don't wait for others to offer it
  - Verbally confirm that everyone is on the same page, don't assume you are
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# How would we know if we are doing a good job?

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[www.firechasers.ncsu.edu](http://www.firechasers.ncsu.edu)



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