

Risk Co-Management on Interjurisdictional Lands: Insights into 2017 wildfires

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 **FIRE CHASERS PROJECT**
Advancing the science of adaptive capacity toward more disaster resilient communities

<http://www.firechasers.ncsu.edu/>

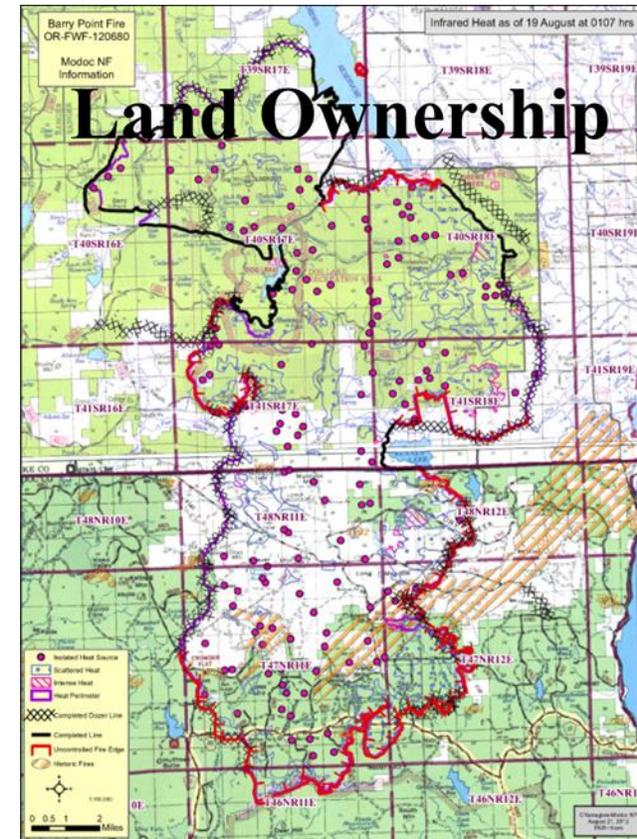
Why is this interesting?

Governance drives management

Incident Command Systems = top down, hierarchical organizational command structure

Co-management = multiple jurisdictions working together (?)

Is risk co-management among multiple jurisdictions possible within this governance structure?



http://www.nwmapsco.com/ZybachB/Presentations/2010-2015/20140827_CTV/Wildfires_20140827-29-10.jpg

Focal Questions

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?

10 most complex wildfires in US 2017

Most complex = multi-jurisdictional

- Federal, state, local and private interests
- Type 1 project fires

Federal led fires, state led fires

6 states— 6 GACCs

Preliminary evidence



Taken Sept. 5, 2011 in Bastrop, TX of the Bastrop Complex Fire. Credit: Michael Rose via Flickr.

Sampling

Sampling: 79 phone interviews to date with agency administrators; agency administrator representatives, incident commanders, private industry liaisons

- Federal: 34%
- State: 28%
- Private: 19%
- Local Gov: 16%
- Tribal: 3%



<https://action.com/wp-content/uploads/2010/02/boss.jpg>

Methods

Mixed methods study

- Quantitative Survey
- Grounded Theory
- Qualitative Comparative Analysis



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How are we doing
managing multi-
jurisdictional fires?

Short answer:

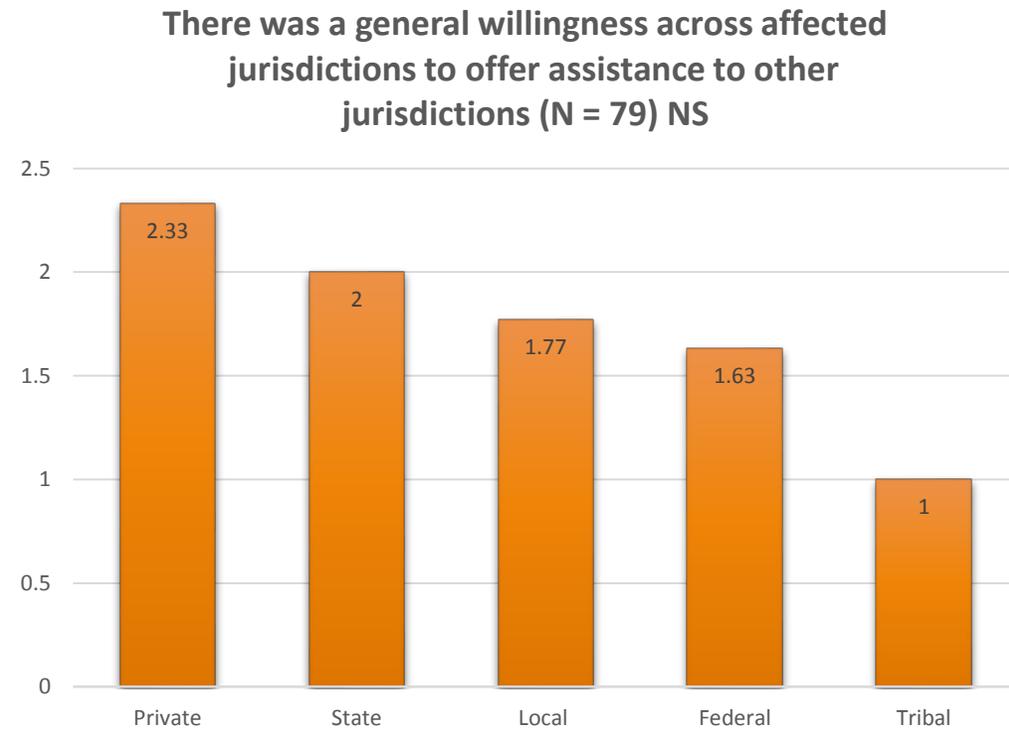
IT DEPENDS ON WHO YOU ASK....

Methods: 10 item survey– characteristics of wildfire co-management

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

The good news...

- Agreement as indicator of co-management effectiveness
- Widespread endorsement that jurisdictions were willing to offer assistance to one another
 - No significant differences between jurisdictions or between lead versus non-lead entities



1 = most agree, 5 = most disagree
NS = no significant difference among jurisdictions

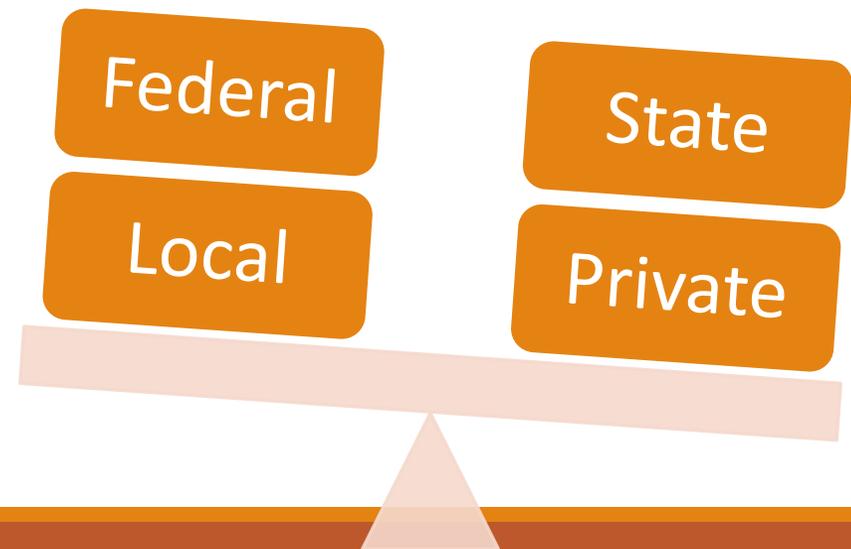
The less good news...

Everything else depending on:

- Whether you were the lead agency or not [F (1,76)=10.33**]
- What jurisdiction you represent [F (4,73)=7.9***]
- Which incident being referenced [F (9, 68) = 3.38**]

General patterns:

- State and private were least satisfied
- Lead agencies were most satisfied

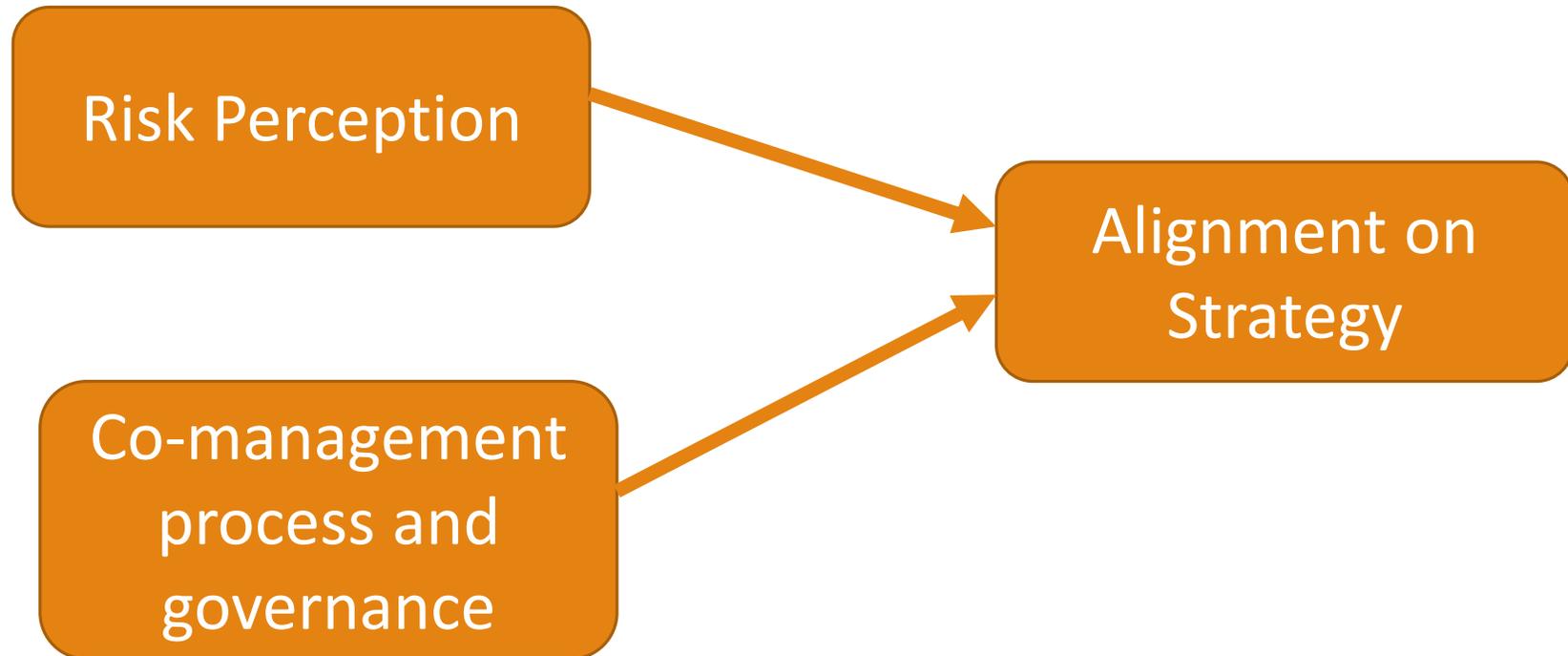


Biggest Point of Divergence

The overall strategy taken in managing this fire was appropriate
[F(4,73)=11.1***]



General Proposition



How does risk
perception differ?

Short answer:

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

Risk Perception

TEMPORAL SCALE OF RISK



SUBSTANTIVE CATEGORIES OF RISK

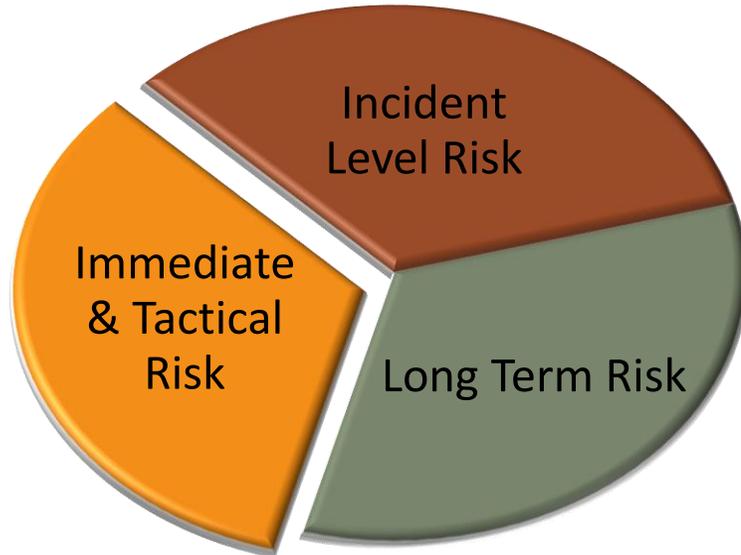
Human safety

Homes, infrastructure & communities

Ecosystems/environment

Social, political, & economic

Immediate & Tactical Risk



Human safety

Risks to fire fighter safety

Public safety

Homes, infrastructure & communities

Immediately threatened values

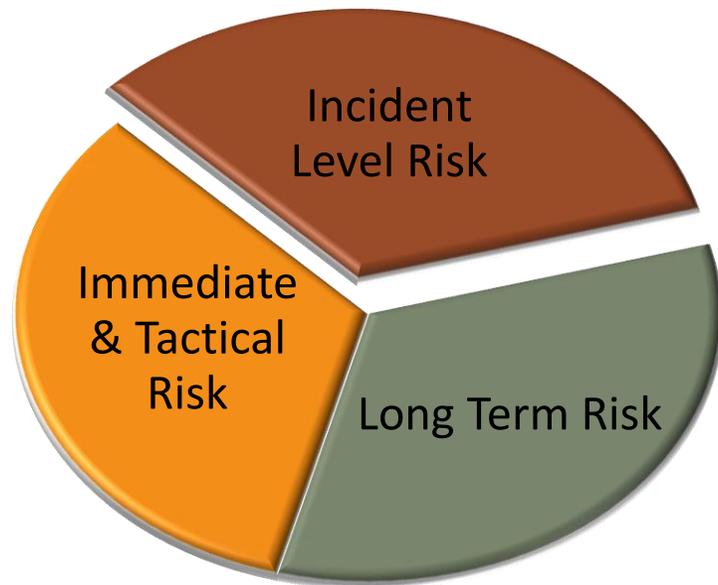
Ecosystem/environmental

Fire suppression impacts on natural resource values

Social/political/economic

Inter-agency coordination

Fire Potential: Incident Level Risk



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

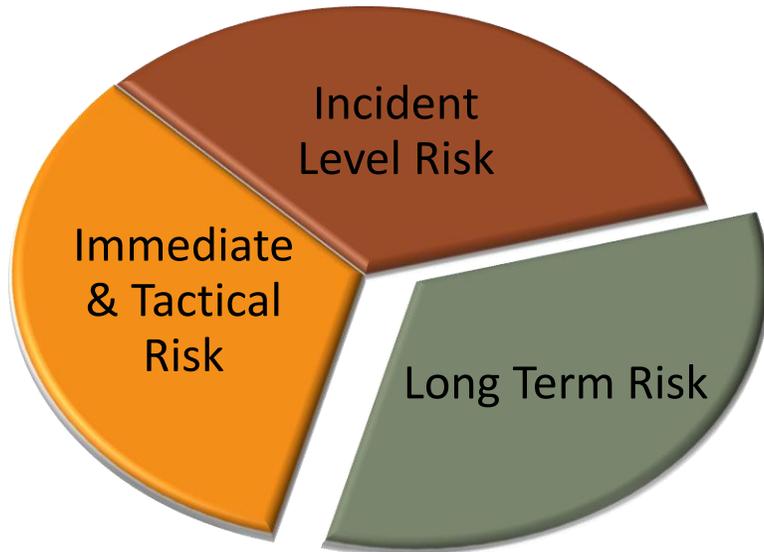
Ecosystem/environment

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



Human safety

Post-fire risks, mudslides, flooding, recovery

Ecosystem/environmental

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

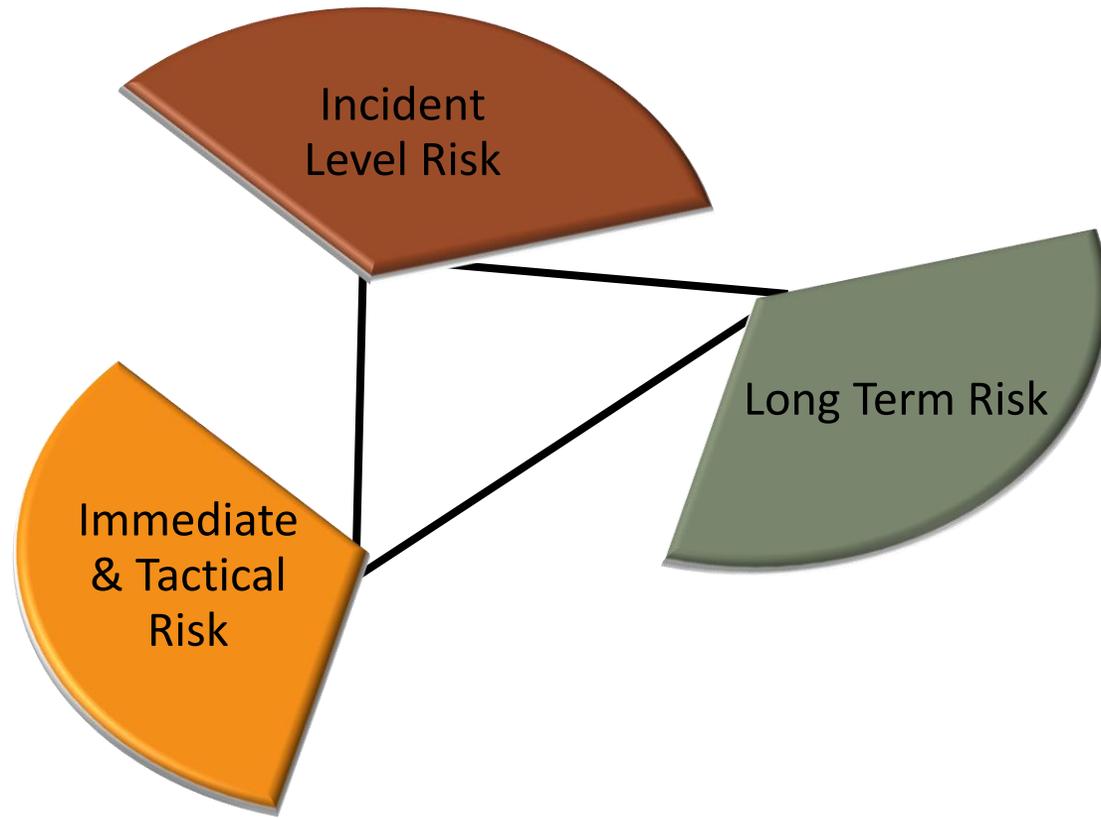
Aesthetic and recreational value of the land

Social/political/economic

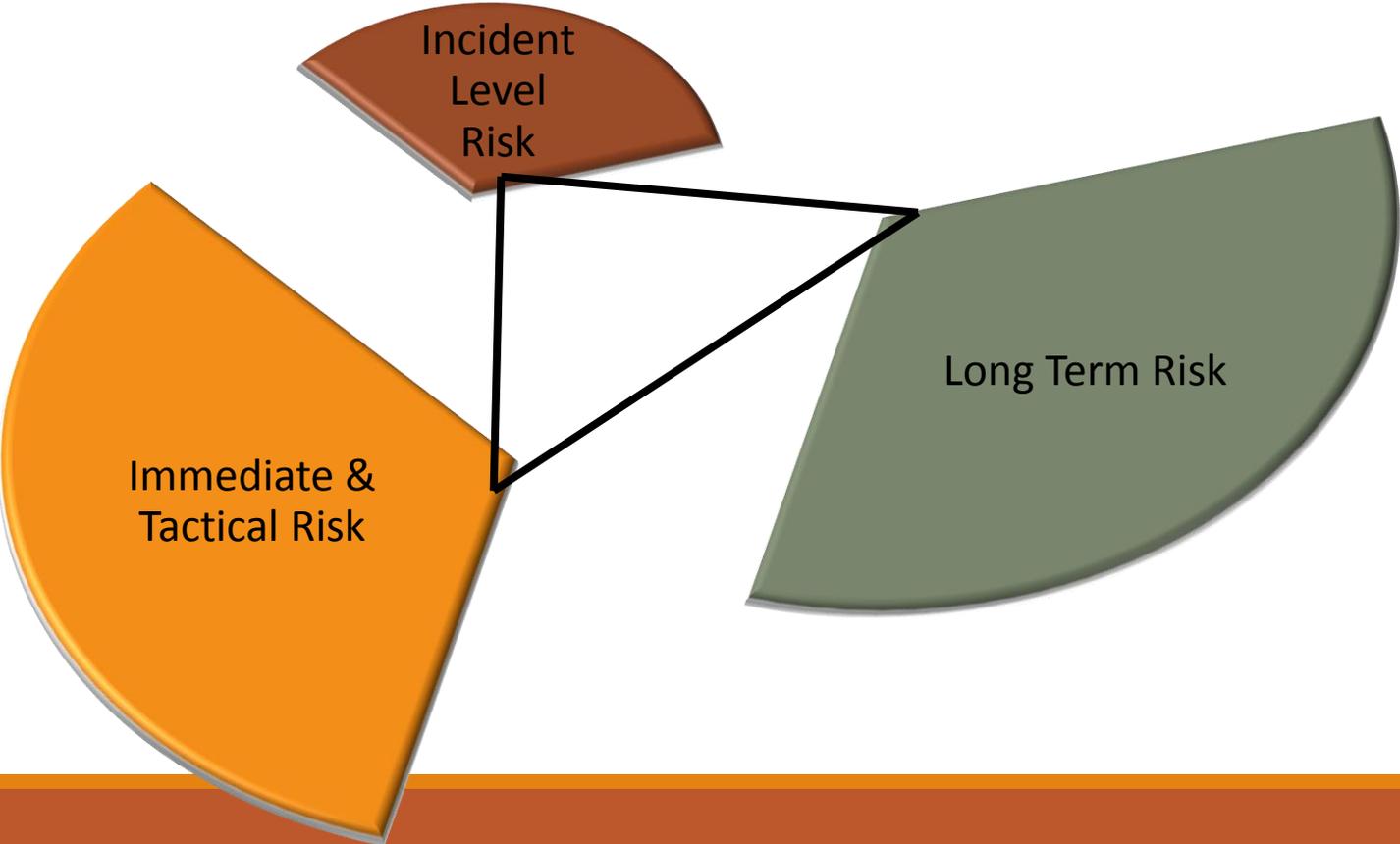
Long term impacts to local economies

Public and political support of public lands

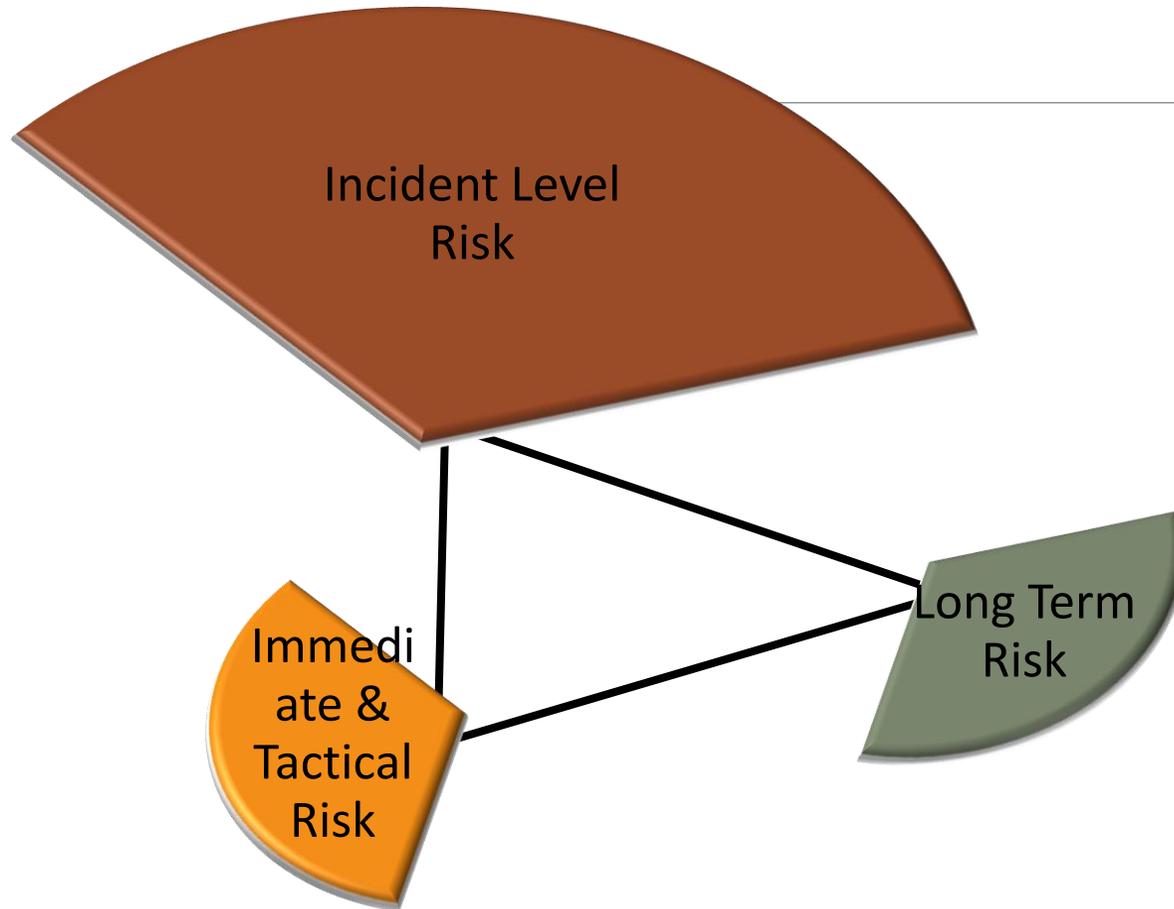
Balancing tensions and tradeoffs



Historical Tradeoffs: 10am Fire Policy



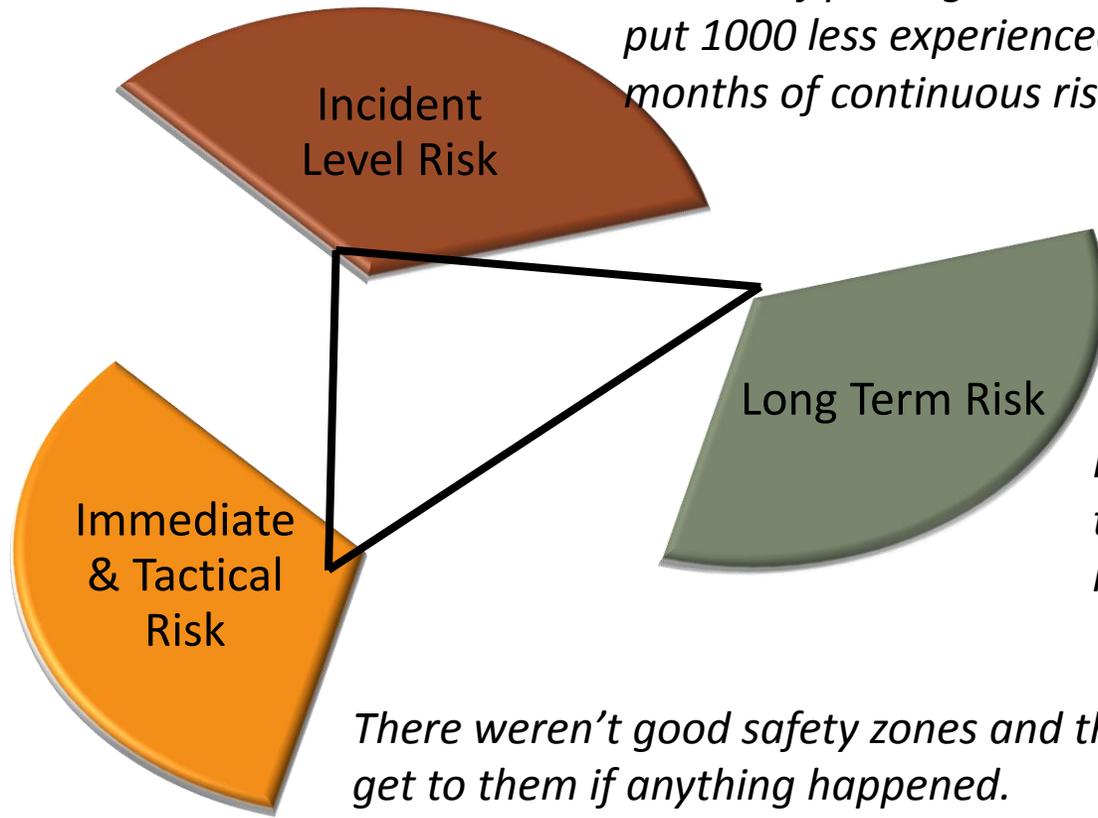
Historical Tradeoffs



Balancing tensions and tradeoffs



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.

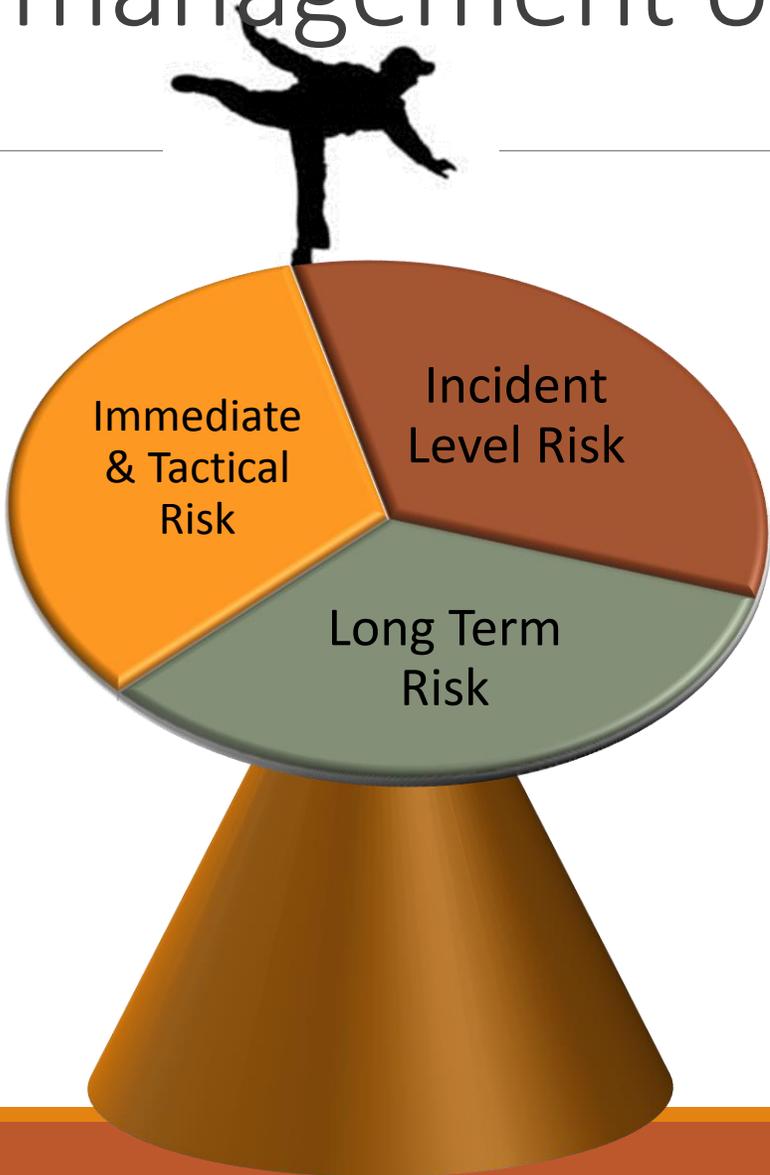
I remember...we ended up fighting fire in the same area three years in a row, and each year we suppressed it, the next year was worse and more dangerous.

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

If this is an incident...



This is risk management on an incident...



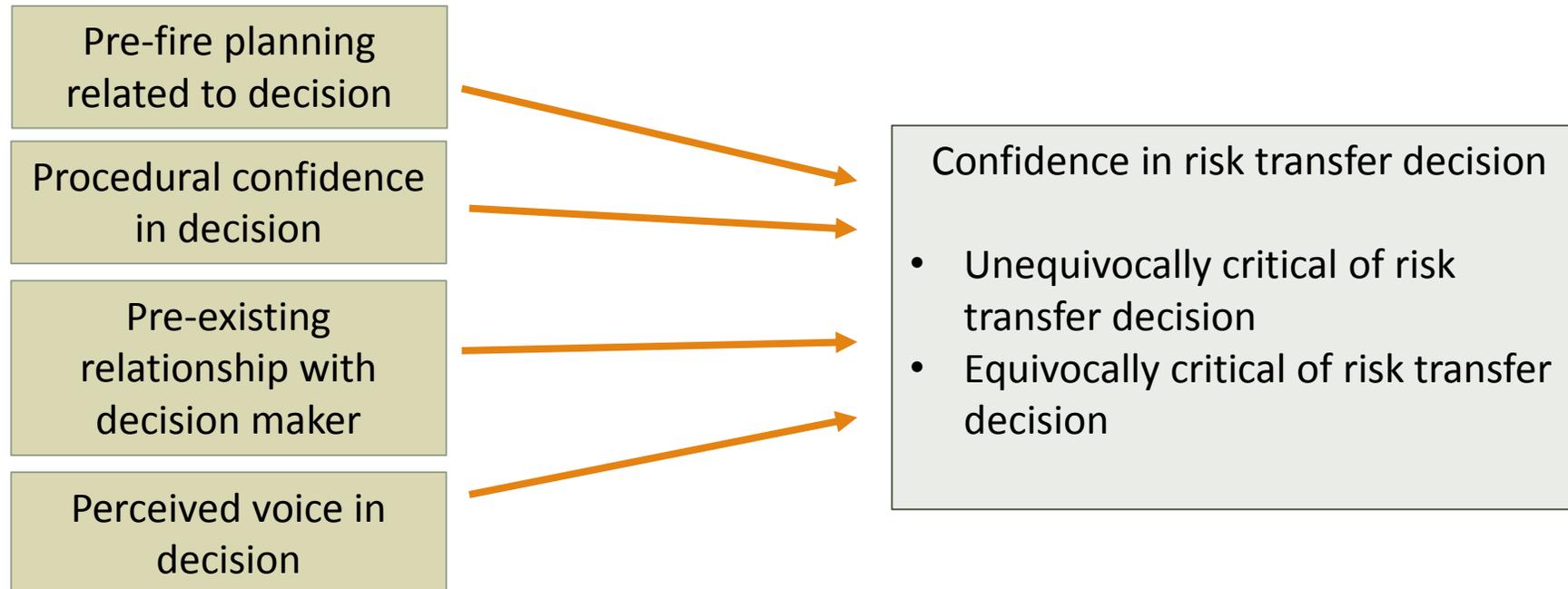
How do we better manage
multi-jurisdictional fires?

Short answer:

URR.....THERE'S NOT REALLY A SHORT ANSWER TO THIS QUESTION BUT HERE ARE SOME COOL DATA!

Unit of analysis: Risk transfer decision

MODEL



QCA Preliminary Findings on Risk Transfer Decisions:

Necessary Conditions and Pathways for Private Sector

Necessary Conditions

Factors

Outcome

I think they use that excuse as "Oh, we can't safely, you know, do anything." And, and that's not true. Safety is a core value. We are as safe at forest fire fighting as there is...But you don't use that as a crutch. I think they just use that as an excuse not to do certain things.

Unequivocally critical of risk transfer decision

There were some things done that I don't think were necessary but again, you know, I'm looking at it through just my set of eyes, so. ..You have several experienced people looking at it from different angles

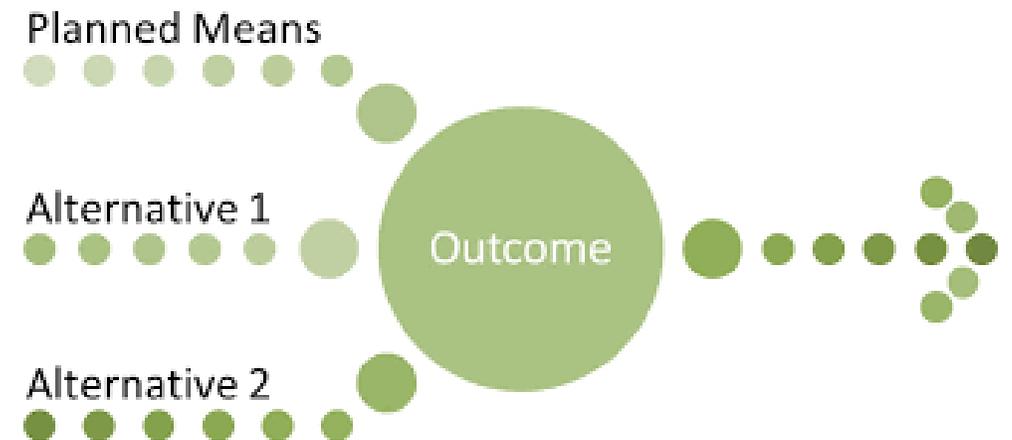
Equivocal support of risk transfer decision

Qualitative Comparative Analysis (QCA): Understanding Causal Pathways Associated with a Given Outcome

Inductive analytic procedure based in Boolean algebra

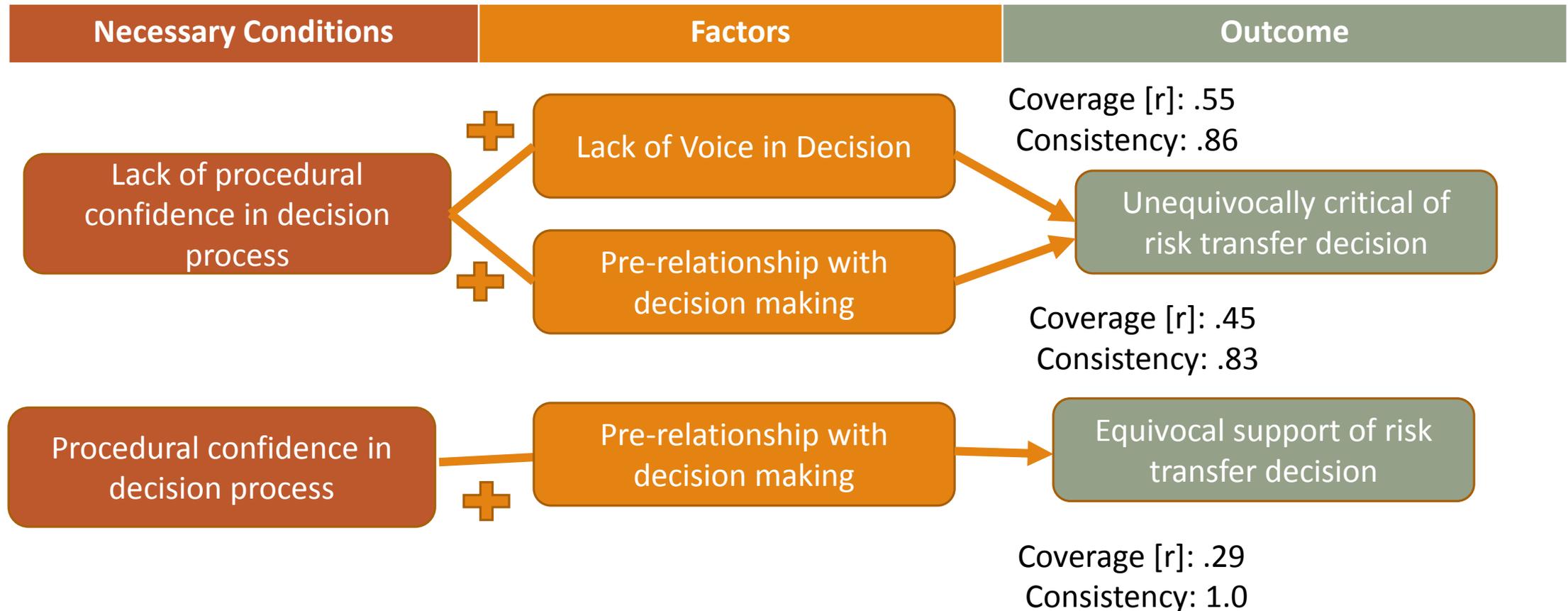
Allows for the examination of equifinality and multiple causal pathways to the same outcome

Useful in understanding complex problem domains



QCA Preliminary Findings on Risk Transfer Decisions:

Necessary Conditions and Pathways for Private Sector



Concluding insights for 2018 fire season

- ✓ Strategy is a highly polarizing issue among jurisdictions
 - ✓ Wedge issue for Federal vs. state, private entities, acknowledge it!
- ✓ General agreement on substantive risk priorities, but not on short, medium and longer temporal tradeoffs
 - ✓ Need more explicit discussions about these tradeoffs before fire season and when they are being made during fire season
- ✓ The best you can hope for is equivocal acceptance of a risk transfer decision
- ✓ Pre- fire planning among potentially threatened jurisdictions – figure out your fire organization before you need it!
- ✓ Think of every fire that escapes initial attack as a potential multi-jurisdictional fire, especially when resources are stretched at PL 4 & 5
 - ✓ Who would need to be involved if it moved into other jurisdictions
 - ✓ Get them involved now if you can
- ✓ Participation and procedural confidence are critical
 - ✓ Agency Administrator meetings should occur early and often!
 - ✓ Create opportunities for genuine involvement in incident planning decisions
 - ✓ Genuine participation in planning decisions is not the same thing as asking someone to simply approve the plan
- ✓ Negotiating tactics on the fire line with division supervisors is a WATCHOUT

Concluding insights for 2018

Traditional ICS governance encourages jurisdictional hot potato

We are seeing workarounds and lots of innovation to compensate for the inflexibility of ICS– more to come on this!

