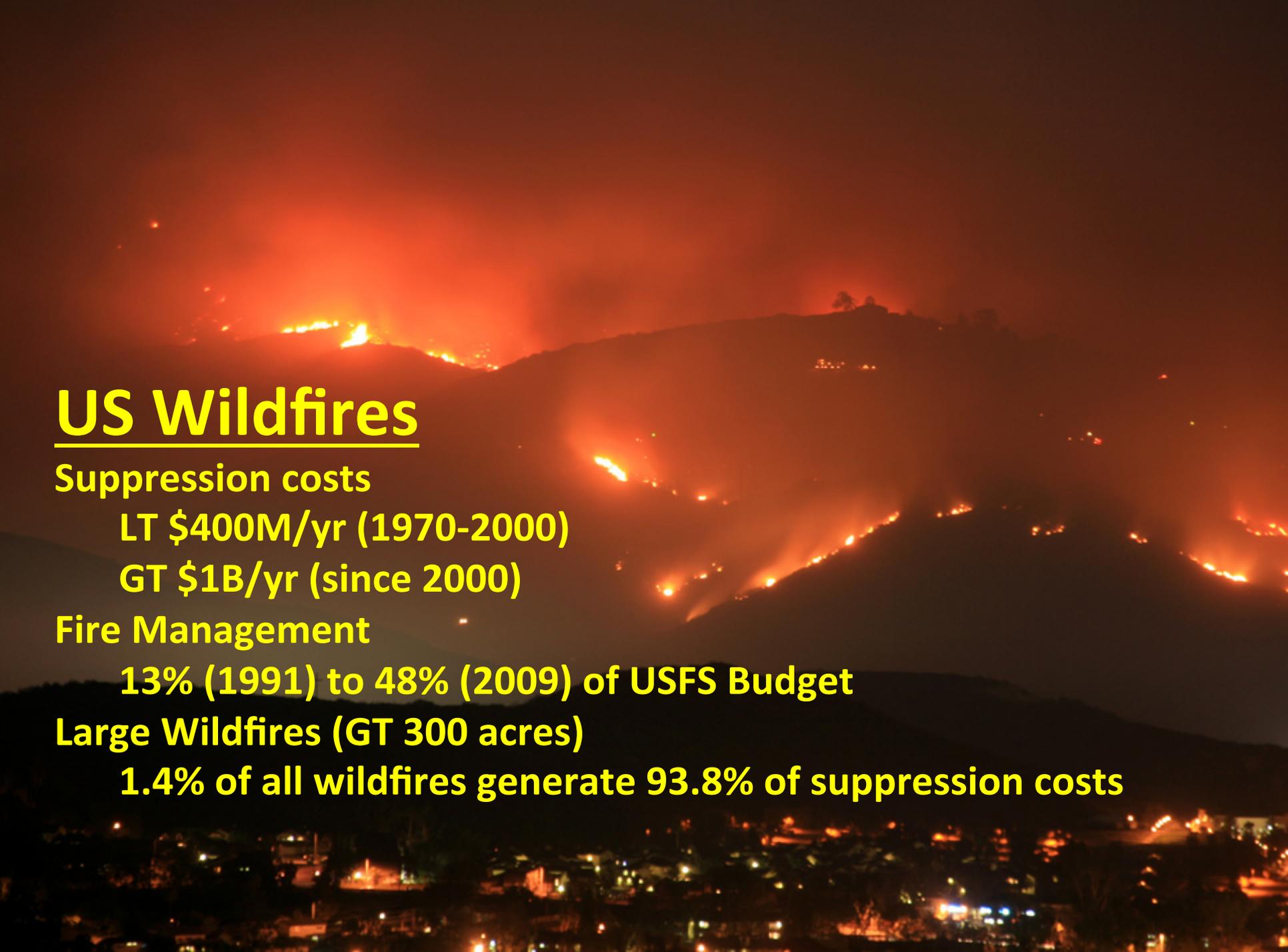


THE EFFECTS OF LARGE WILDFIRES ON LOCAL LABOR MARKETS

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Weaverville, CA June 25, 2008 www.trinitycam.com



US Wildfires

Suppression costs

LT \$400M/yr (1970-2000)

GT \$1B/yr (since 2000)

Fire Management

13% (1991) to 48% (2009) of USFS Budget

Large Wildfires (GT 300 acres)

1.4% of all wildfires generate 93.8% of suppression costs

Impacts of Wildfires to Communities

- **Community, individual, property, natural resources**
- **Labor market shocks**
 - People leave and visitors avoid visiting
 - Work stoppages and slowdowns
 - Natural resource sectors
 - Recreation and tourism
 - Service sectors
 - Fire suppression contracting & procurement
- **Suppression spending decisions matter!**



Questions and Methods

Research Questions

- What are the effects of large wildfires on local labor markets?
- Do fire suppression expenses mediate the effect of large wildfires on local economies and labor markets?



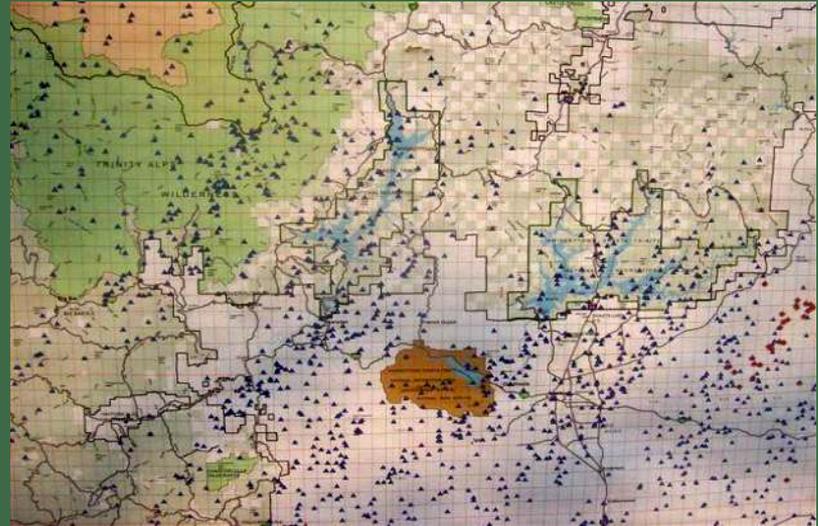
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Methods

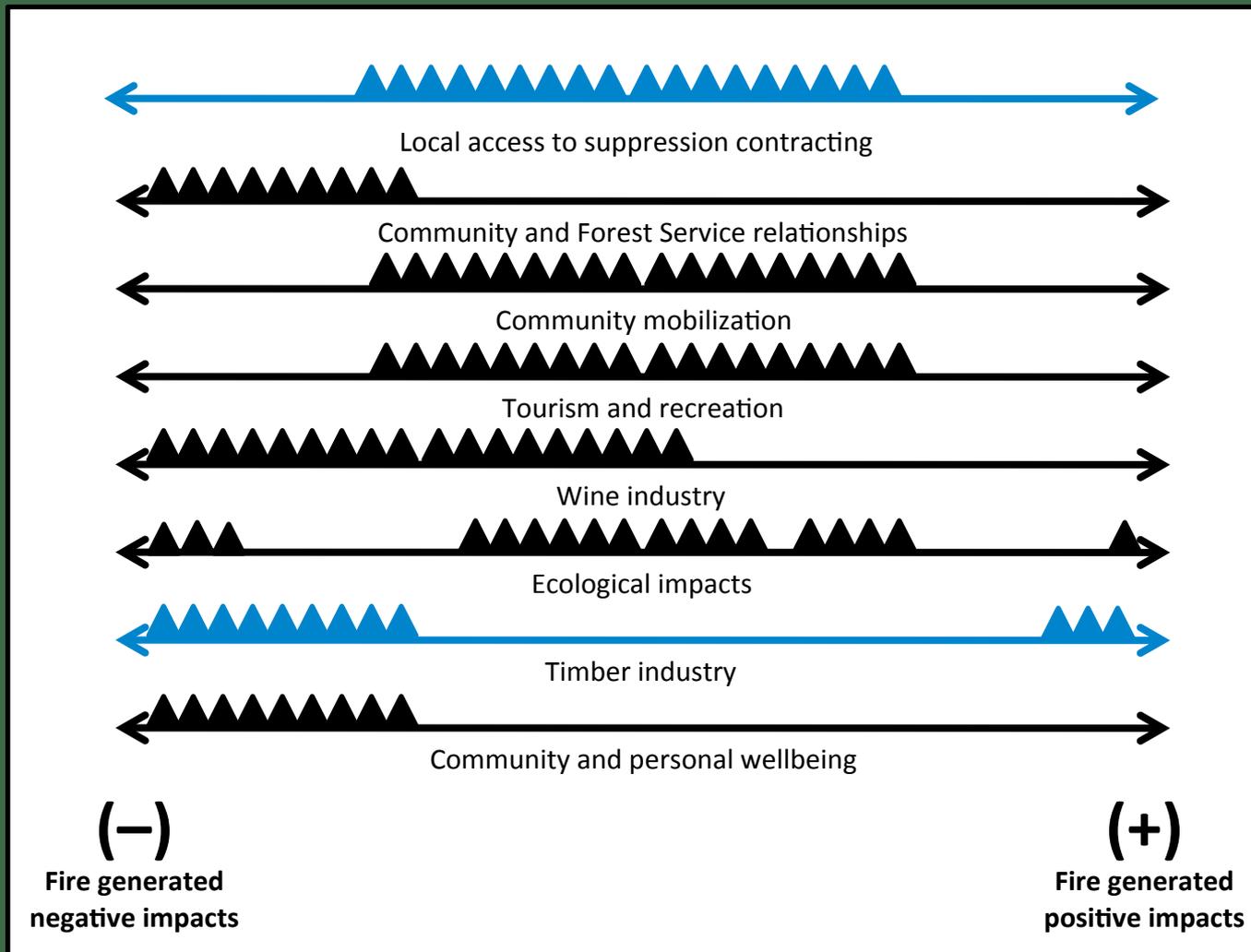
- Qualitative case study of Trinity County, CA
- Generalized model (GDD) of wildfire impacts on labor markets in western US

I. Trinity County, CA – Pilot Case Study

- Population: 13,000
- USFS and BLM: 89%
- June 20th 2008:
 - 3000 lightning strikes
- Fire Duration:
 - June to October
- Fire Extent:
 - 250,000 acres
- USFS Suppression Costs:
 - \$155,000,000



Community experience – Impacts to socioeconomic sectors



Examples...



During the fires

"It shut down projects. We had [fuels projects] that were downriver, that we couldn't get to 'cause of the fire."

Post-fire Recovery and Restoration

"Many displaced loggers were on the verge of losing everything they had, had their houses mortgaged up to the hilt, and it pulled 'em out. It was actually a saving grace for those small businesses. Some of my friends who I know, it got 'em out of debt for about a year or so"



Suppression Contracting Policy

So historically, what would happen is the locals would make all the sandwiches and stuff like that... [in 2008] there was a state-wide list ... and there wasn't any preference give to locals... the Forest Service management were new, and ... didn't have any feeling for who wasn't local."



II. Generalized Economic Model of Wildfire Effects on Labor Market

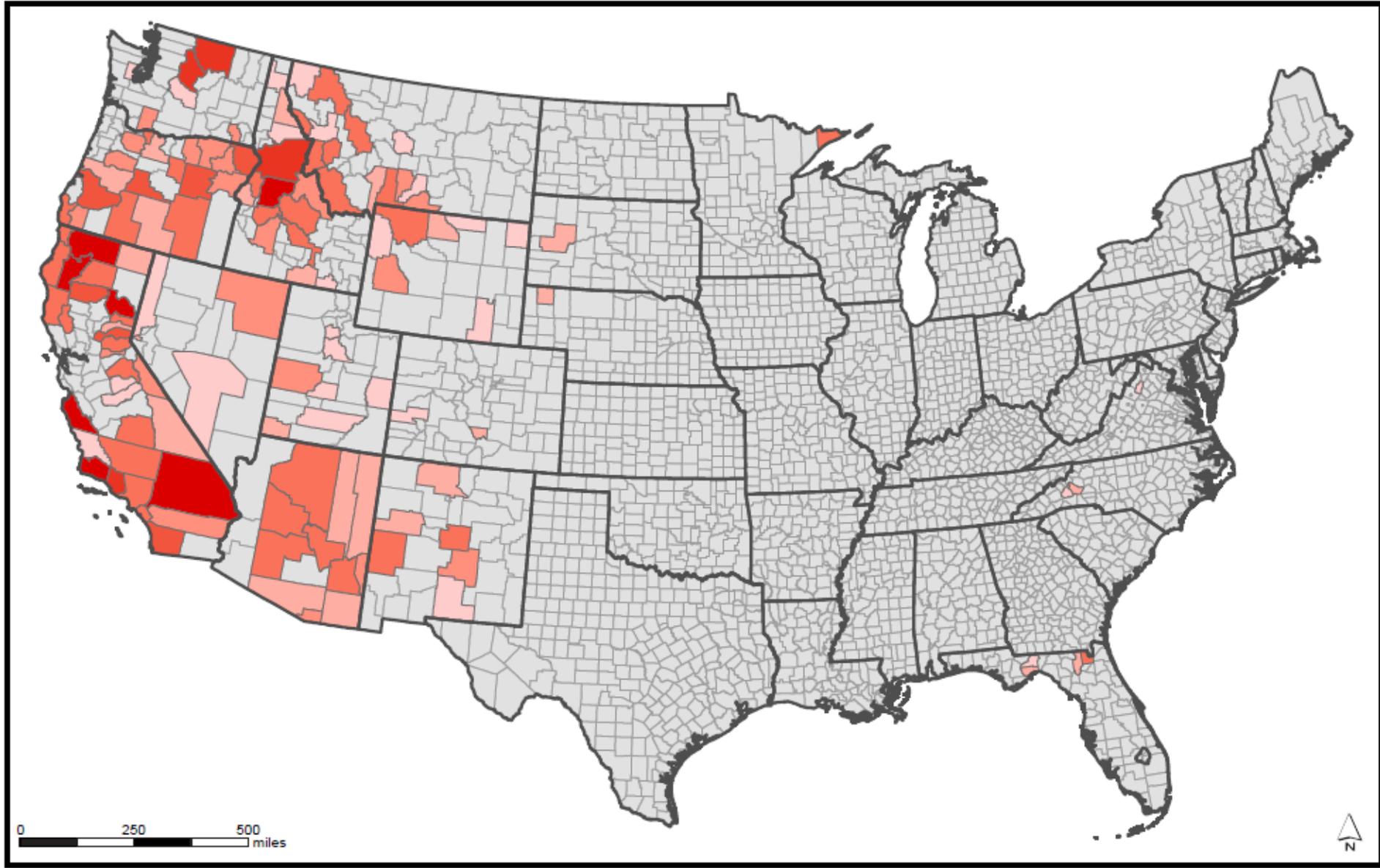
- Labor supply likely to shrink
 - People displaced
- Labor demand likely to grow
 - Some business slows or ceases
 - Some work is displaced
 - Some firms grow to support the suppression effort
 - Some firms grow to support post fire recovery



H_1 : Earnings increase during wildfire due labor constraint

H_2 : Employment depends on whether more local people lose work than gain work

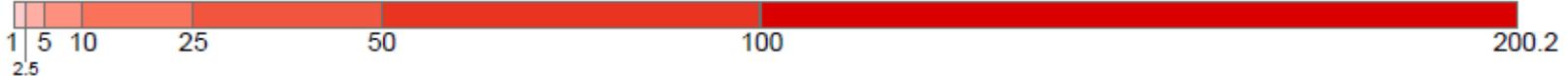
Total Forest Service suppression costs for large fires* in US counties between 2003 and 2008



*Large fires are defined as Forest Service suppression costs greater than \$1 million dollars

Data Source: NIFMID

Total spent (in millions of dollars)



A Road Map to Labor Market Impacts

Bureau of Labor Statistics

– Quarterly Census of Employment and Wages

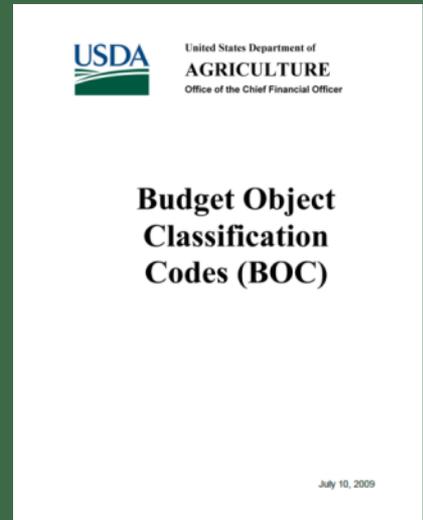
Western US Large Wildfire Panel

2004 – 2008

234 large fire quarters in 150 counties

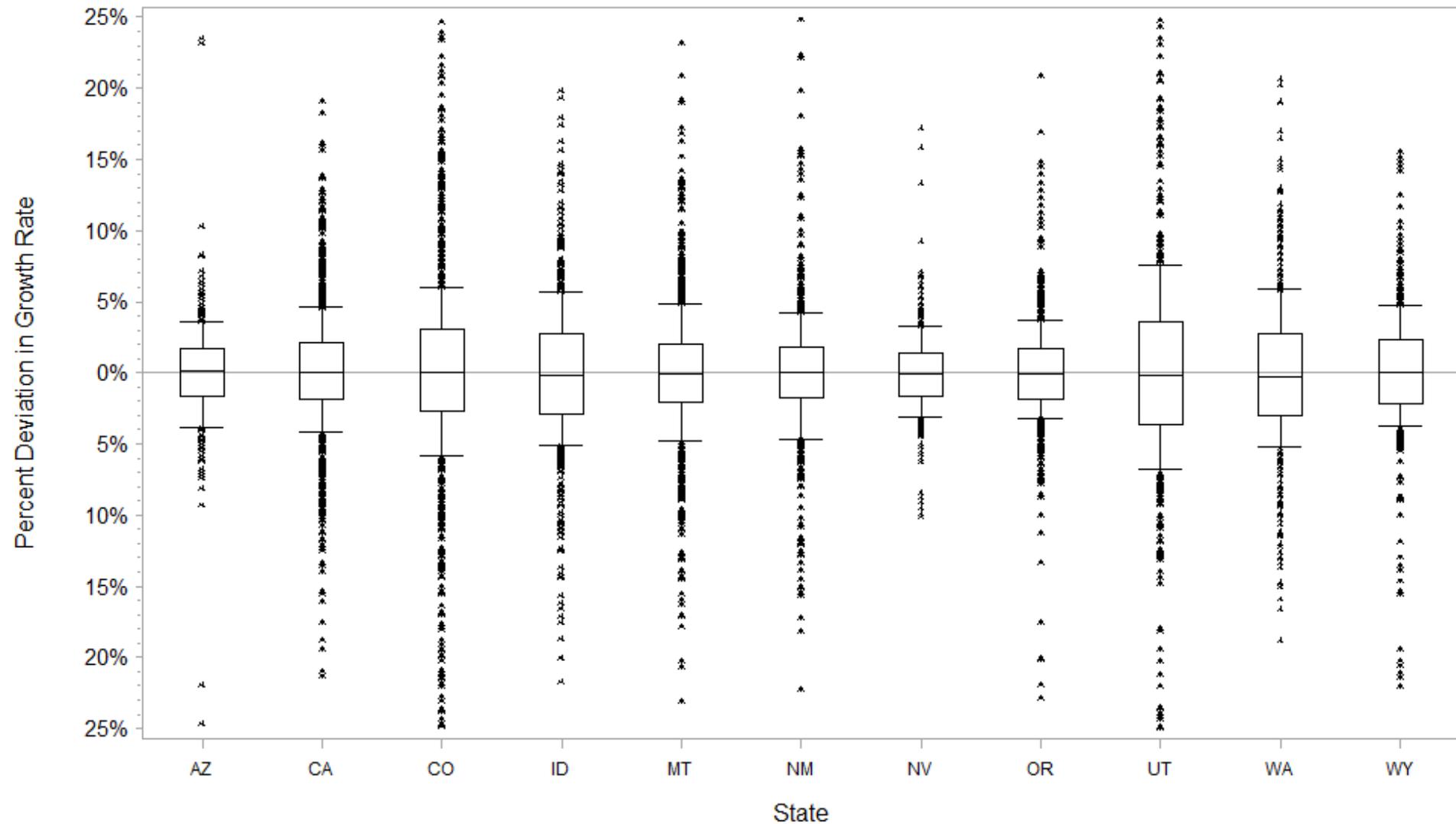
\$2.4 Billion in suppression costs

155 fires sampled for transaction data*

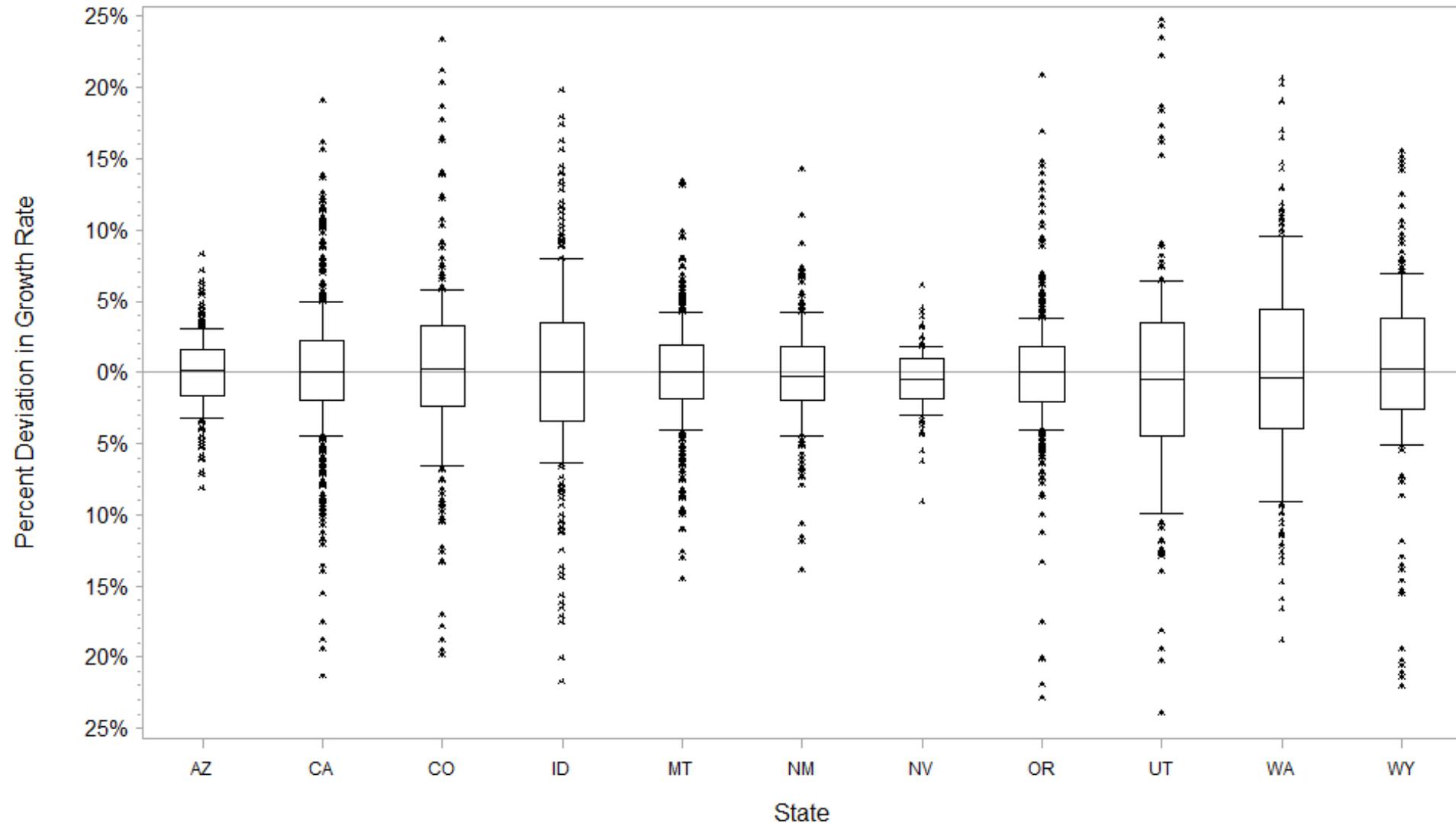


Category	% Total	% Local
Contracted Suppression Services	47	7
Federal Personnel and Cooperative Agreements	37	5
Flying Contracts	9	0
Other	7	<1

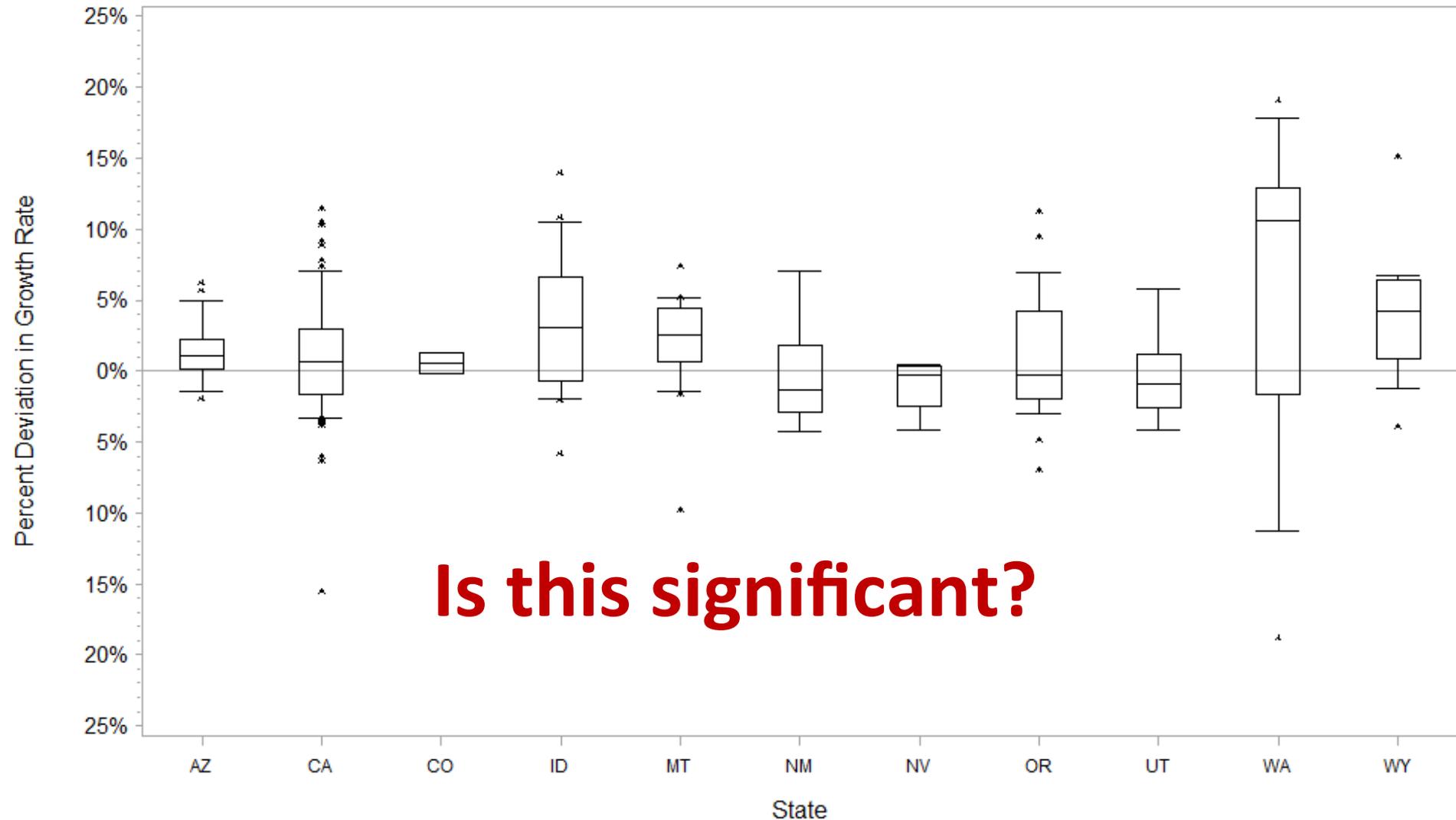
Employment change in 11 western states (n=413 counties over 20 quarters)



Employment change in wildfire counties (n=150 over 20 quarters)



Employment change during wildfires (n=234)



Wildfire effects on wages and earnings

- H_1 : Increased Wages
 - Large wildfires increase wages by about 0.7%
 - Being near a wildfire increases wages by 0.5%
- H_2 : Employment change
 - Large wildfires increase employment by 1.8%
 - Minor effect (0.3%) of wildfire in neighboring county

Effects persist for up to 5 quarters following a wildfire



Do more expensive wildfires have bigger effects?

- **Minor effect from total suppression expenditures**
- **Effect from wildfire suppression expenditures**
 - **Employment:** ~4% per \$50M
- **Neighbor effect from wildfire suppression expenditures**
 - **Wages:** ~2.2% per \$100M



Does local suppression spending have an effect on wages and employment?

Transaction Data – 155 large fires

- 8% of suppression expenses were spent locally
- Local suppression expenditures
 - 1% increase in employment per \$1M local capture
 - No effect on wages...



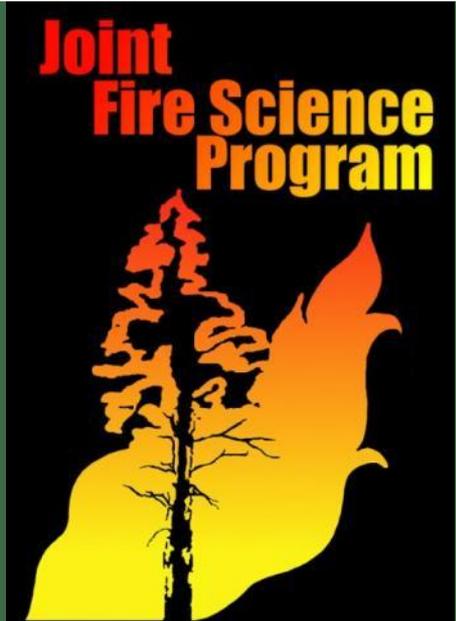
Implications

- 1% change is about ~100 jobs and \$7000 in extra wages per job
- Wildfires appear to cause labor demand greater than any displacements created by the suppression effort.
- Challenges of utilizing local capacity.
- What is the role for local communities in wildfire response?

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