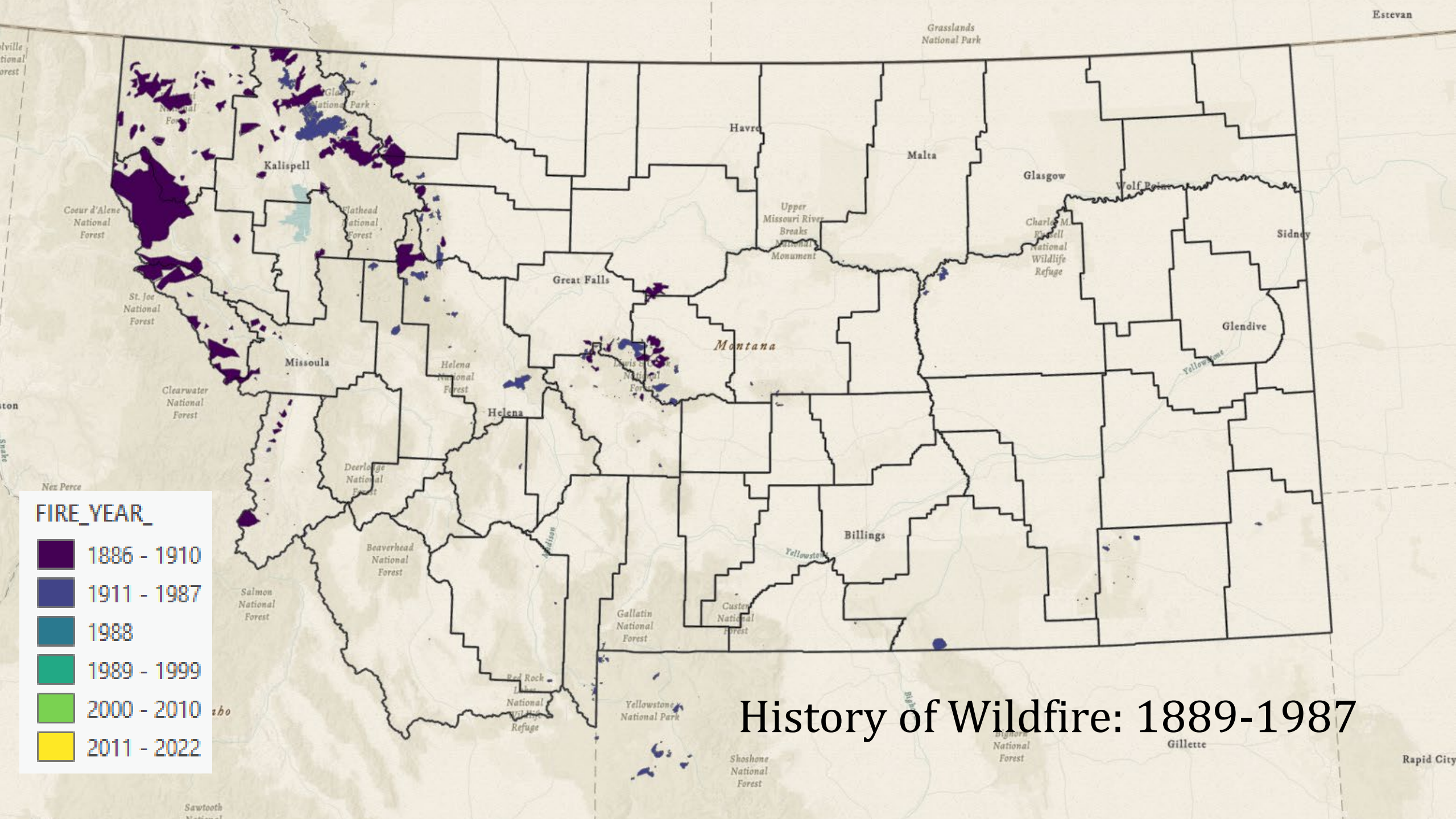
Wildfire Suppression and Mitigation

Assessing and Planning for Costs to the State of Montana

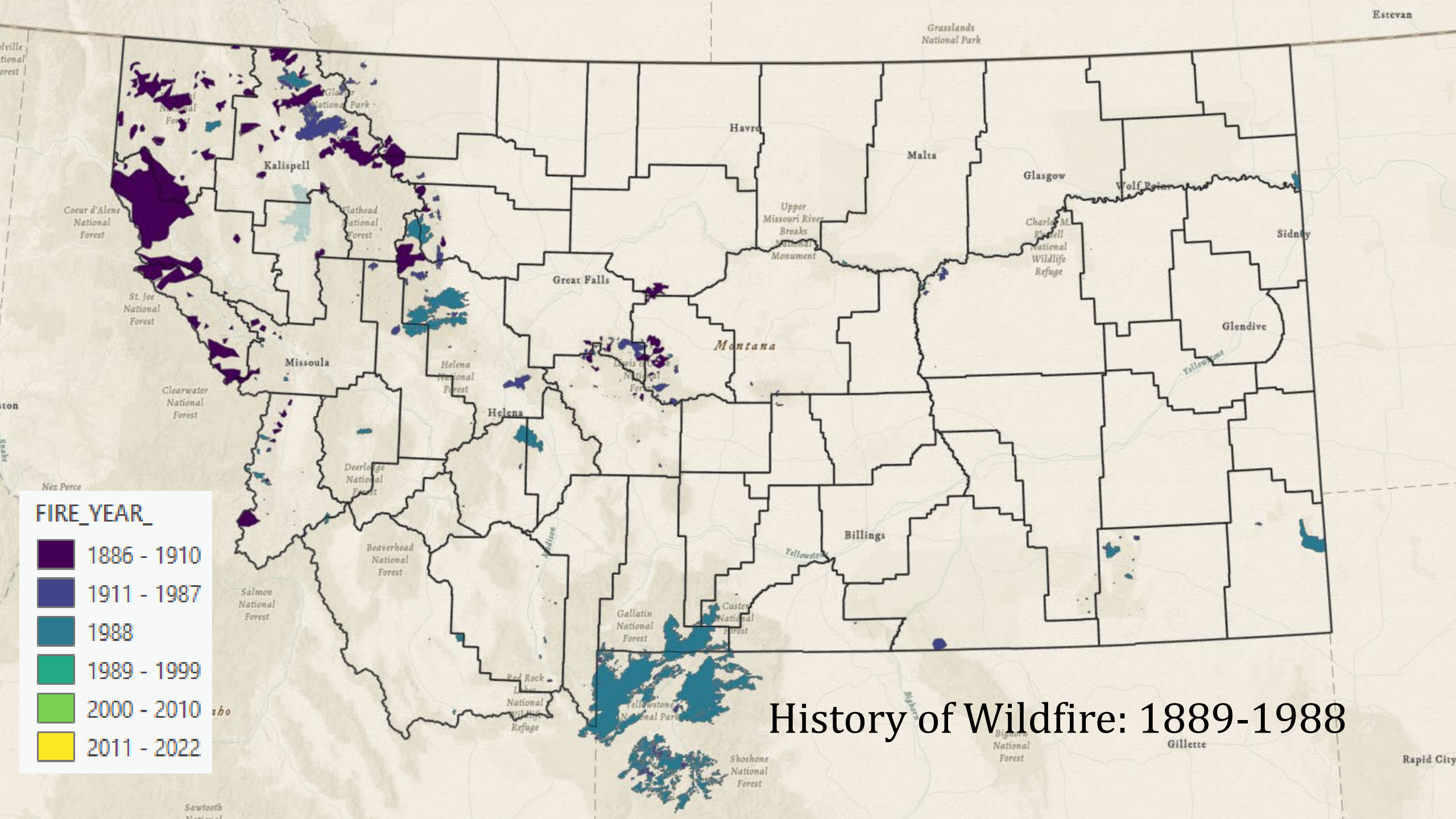
Key Points

1. Wildfires are a significant, variable, and hard-to-predict cost to the state and its partners
2. Regardless of policy or funding changes, wildfires will continue to impose risk on the state and its residents, and that risk may be increasing over time
3. Much of the state's newly taxable value is in areas that have high wildfire risk

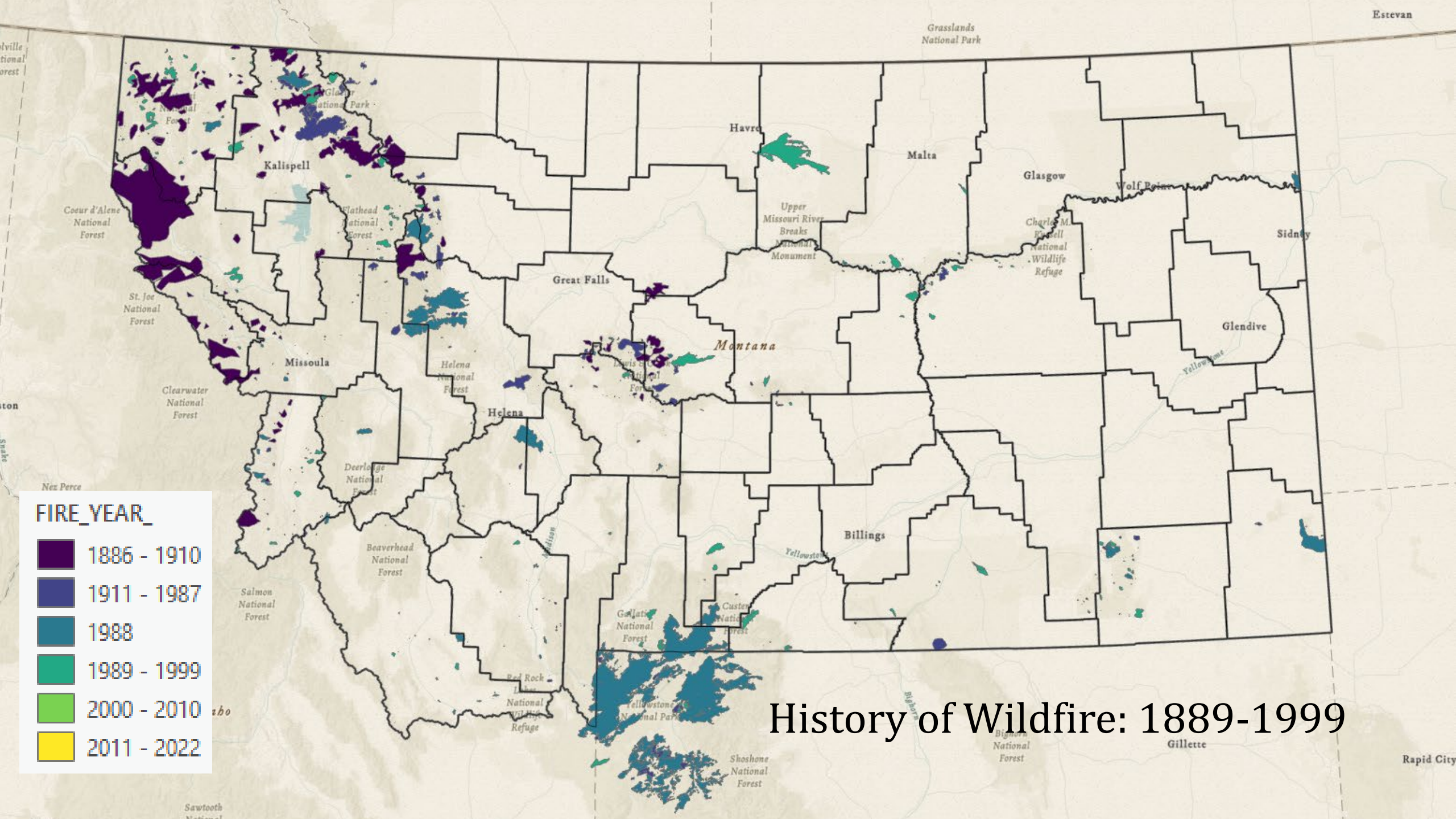
History of Wildfire: 1889-1910



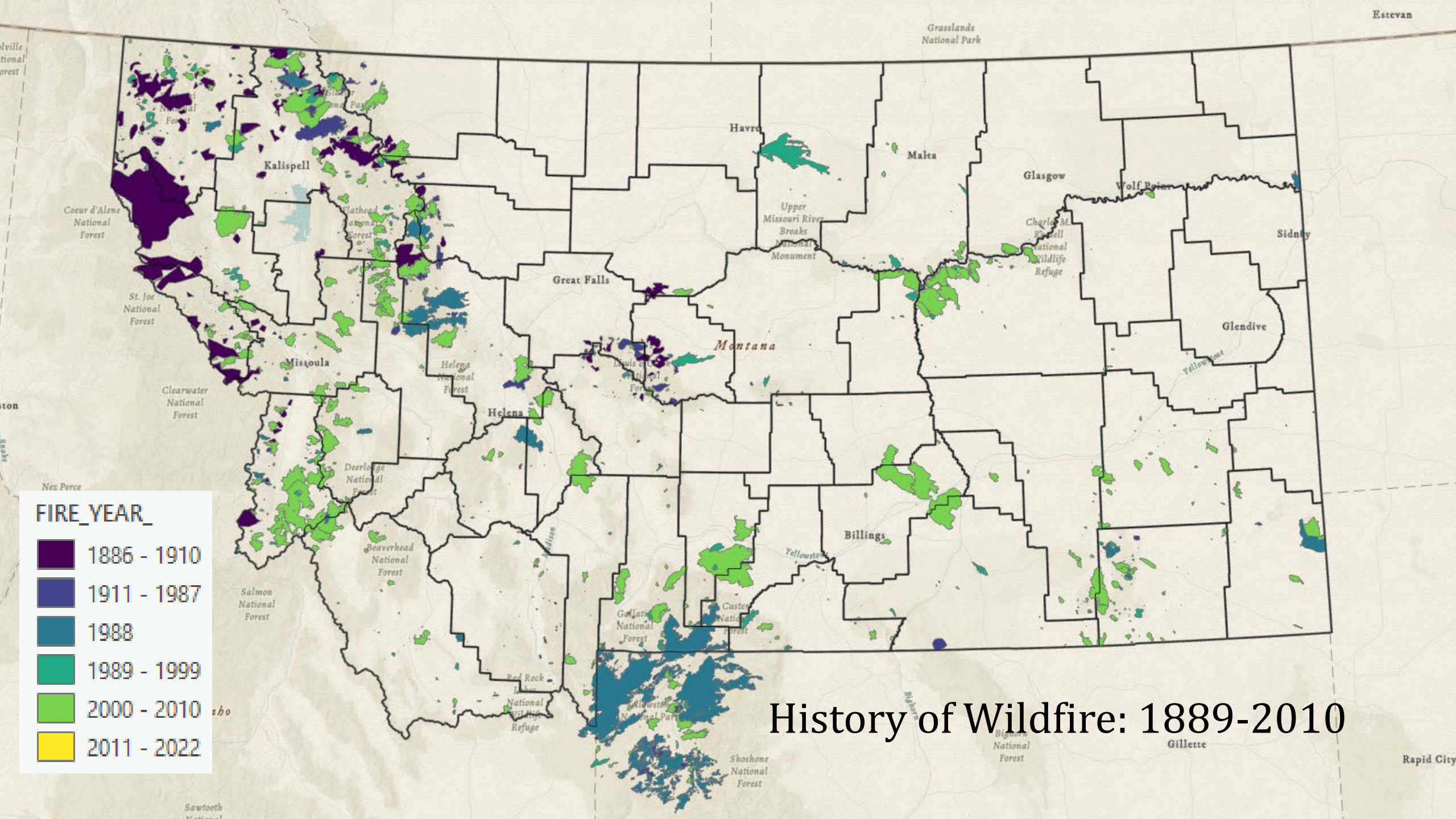
History of Wildfire: 1889-1987



History of Wildfire: 1889-1988

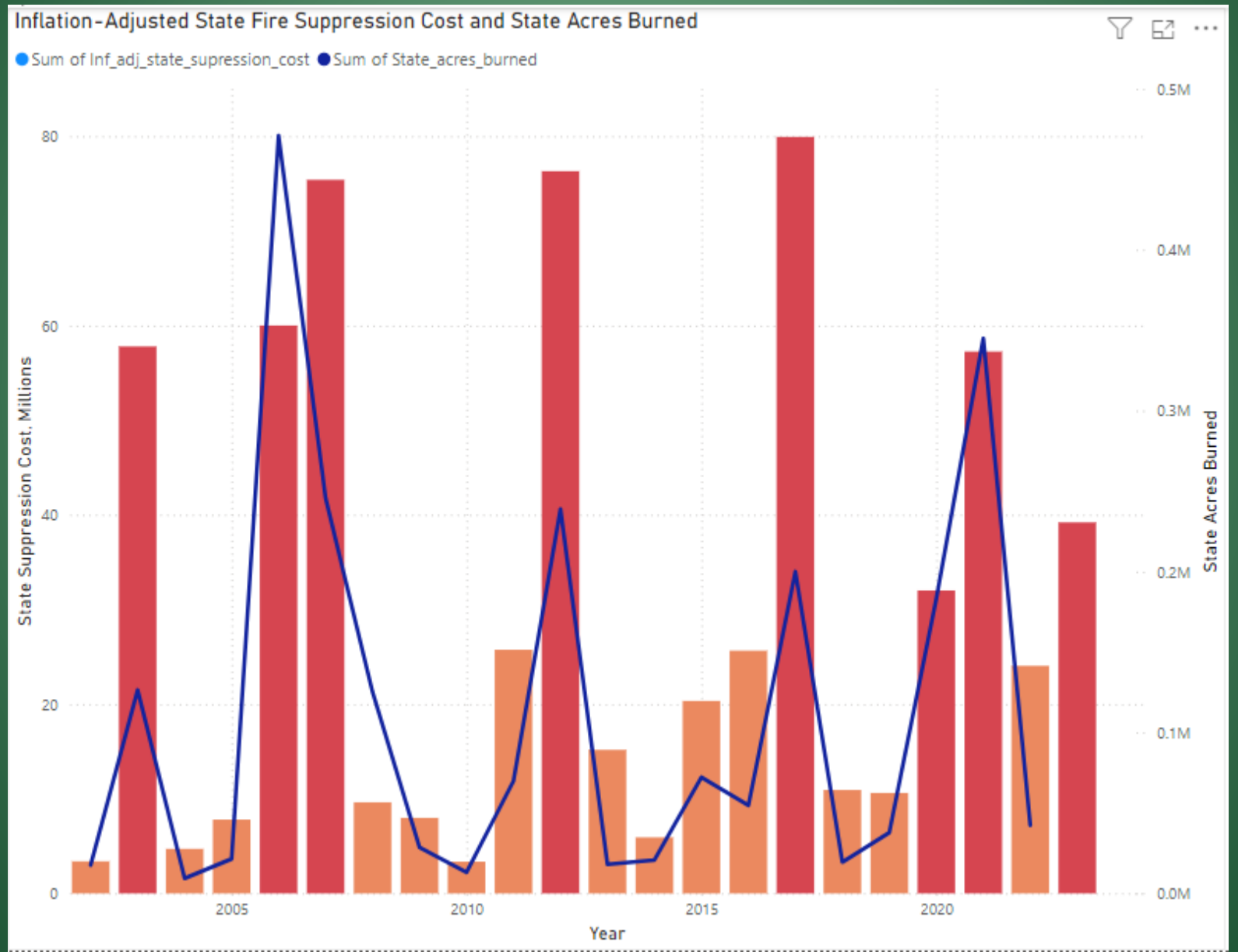


History of Wildfire: 1889-1999



History of Wildfire: 1889-2010

Wildfire Suppression Cost and State Acres Burned



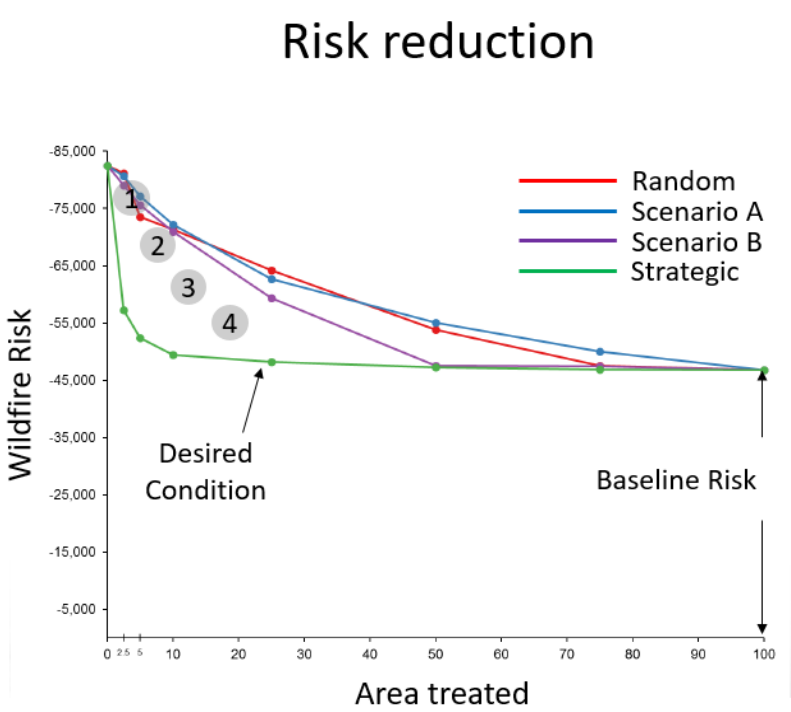
Suppression vs. Mitigation

- **Suppression**: Putting out the wildfires
- **Mitigation**: Practices that reduce the severity/frequency of wildfires

- Mitigation is cheaper than suppression but impossible to quantify savings from fires that were prevented
- Reduce burnable fuels with more planned burns off-season and letting wildfires burn if not a risk to structures
- Changes to zoning and building codes seems to be a promising mitigation strategy

Measuring Risk Reduction and Desired Condition

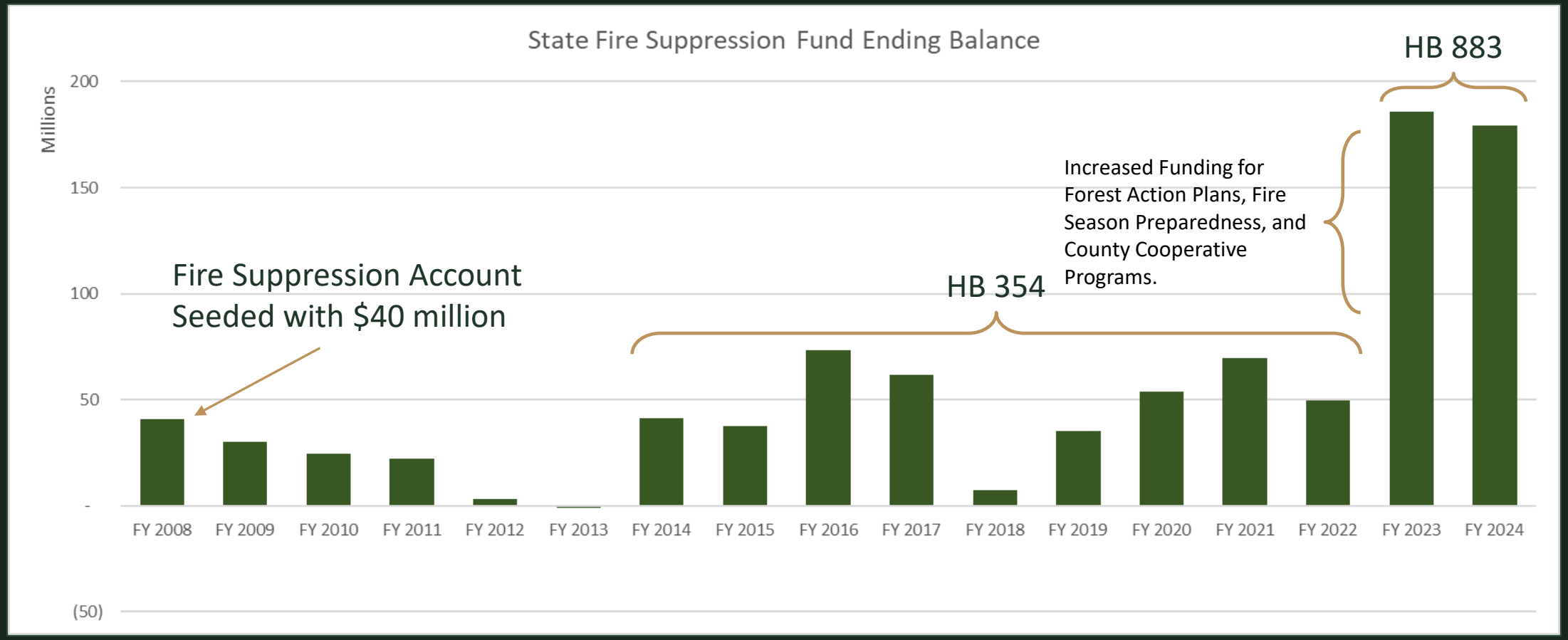
- **Measure** effectiveness of treatment program (reduced risk, improved condition)
- **Track** accomplishments over time and amount of treatment
- **Compare** different spatial treatment scenarios
- **Identify** baseline risk



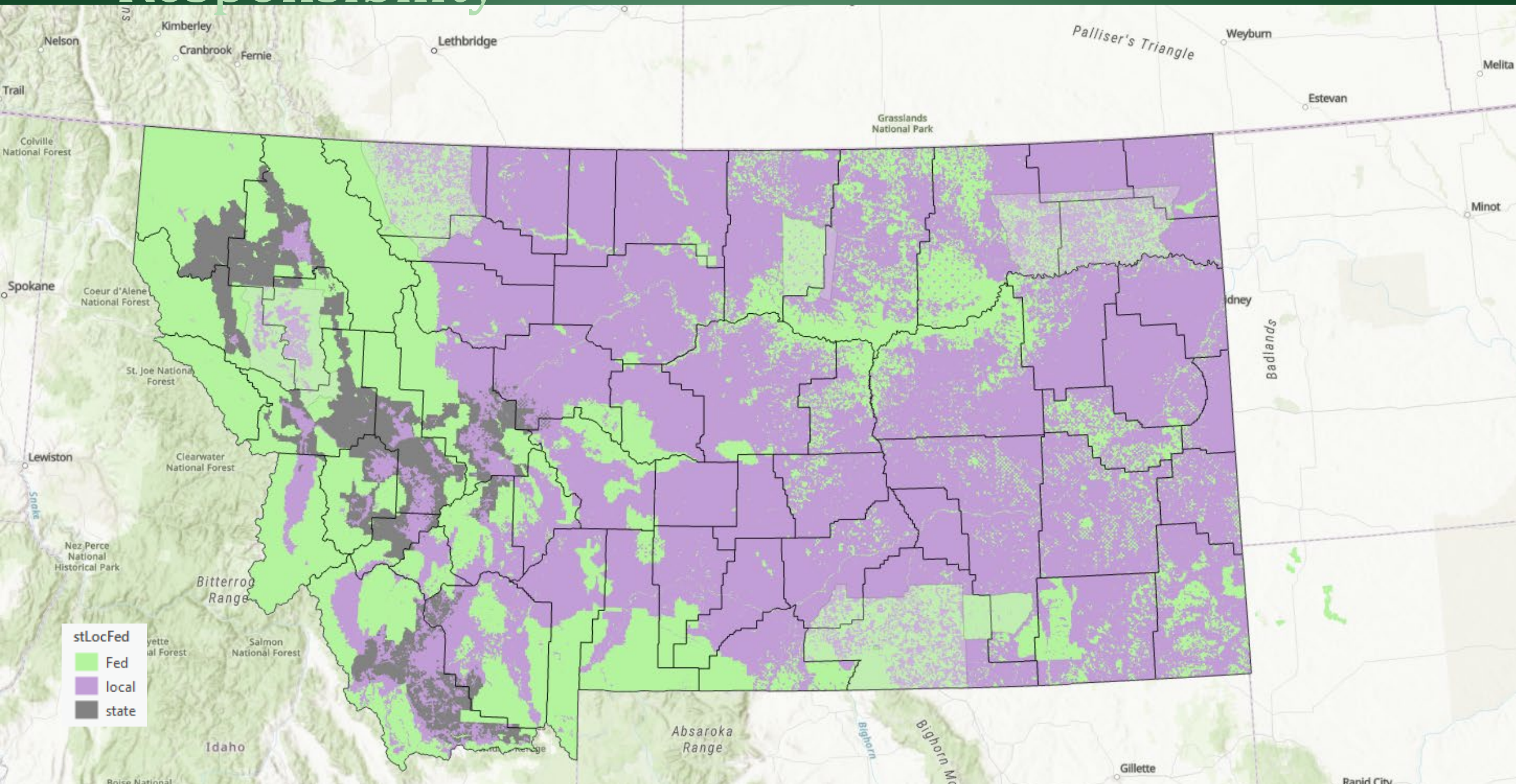
Scott et al. 2019

Image courtesy of USDA FireLab, Missoula

Montana Wildfire State Special Revenue Fire Suppression Account

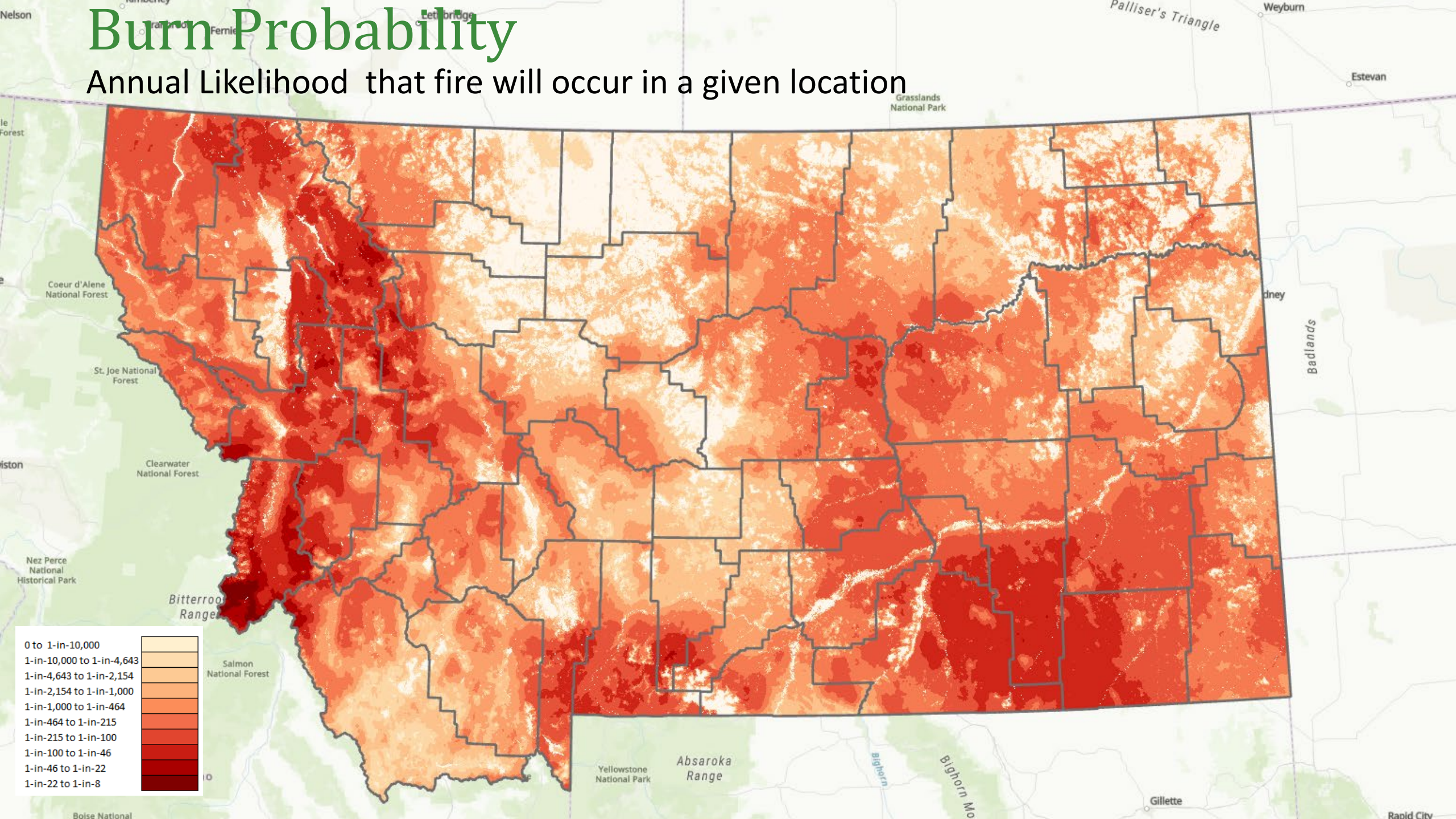


Responsibility



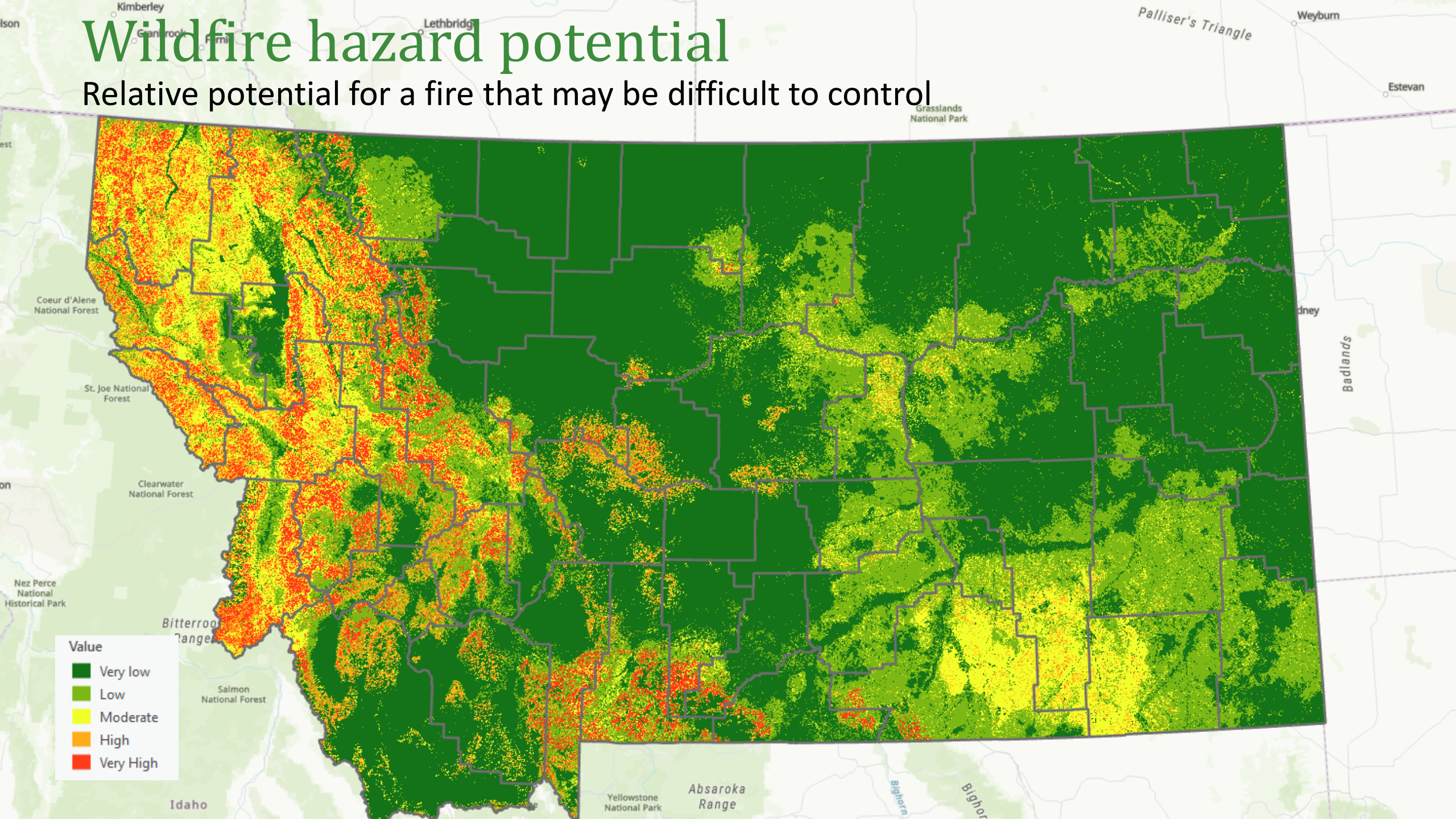
Burn Probability

Annual Likelihood that fire will occur in a given location

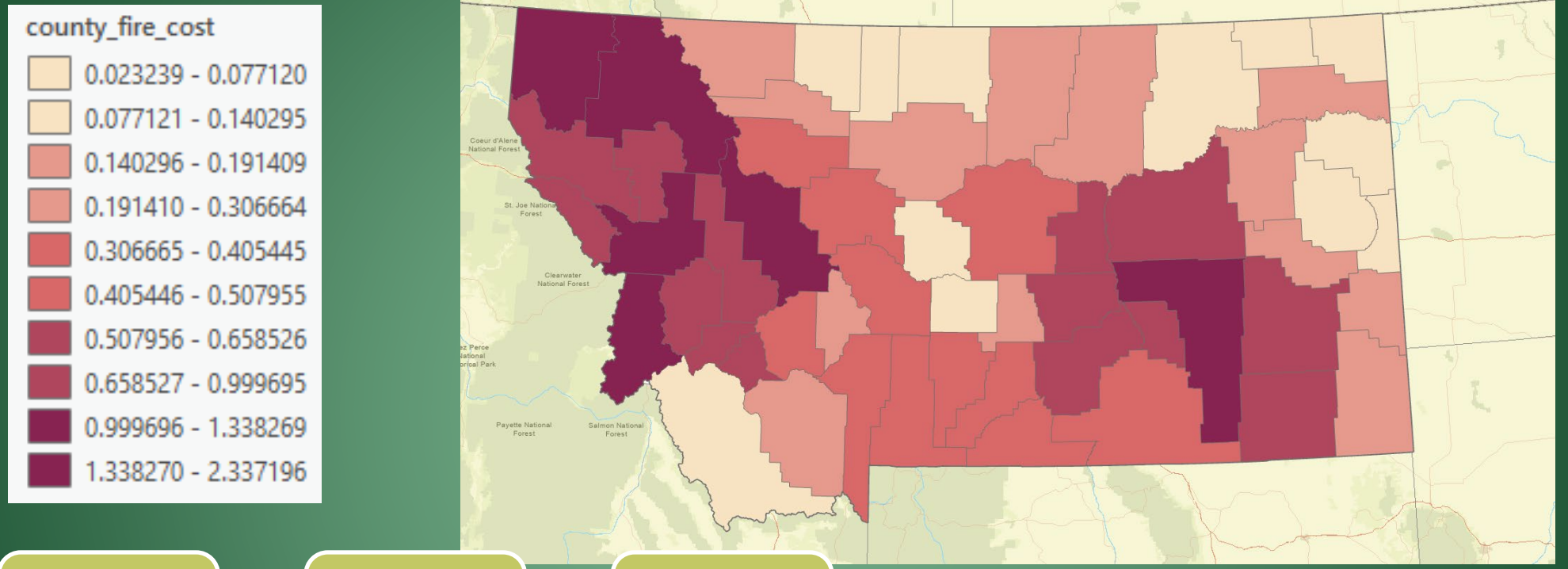


Wildfire hazard potential

Relative potential for a fire that may be difficult to control



State Fire Cost by County from MARA Model, in Millions of Dollars (Projected Annual Average, risk-weighted)



Wildfire Hazard Potential and Wildfire Risk for each county

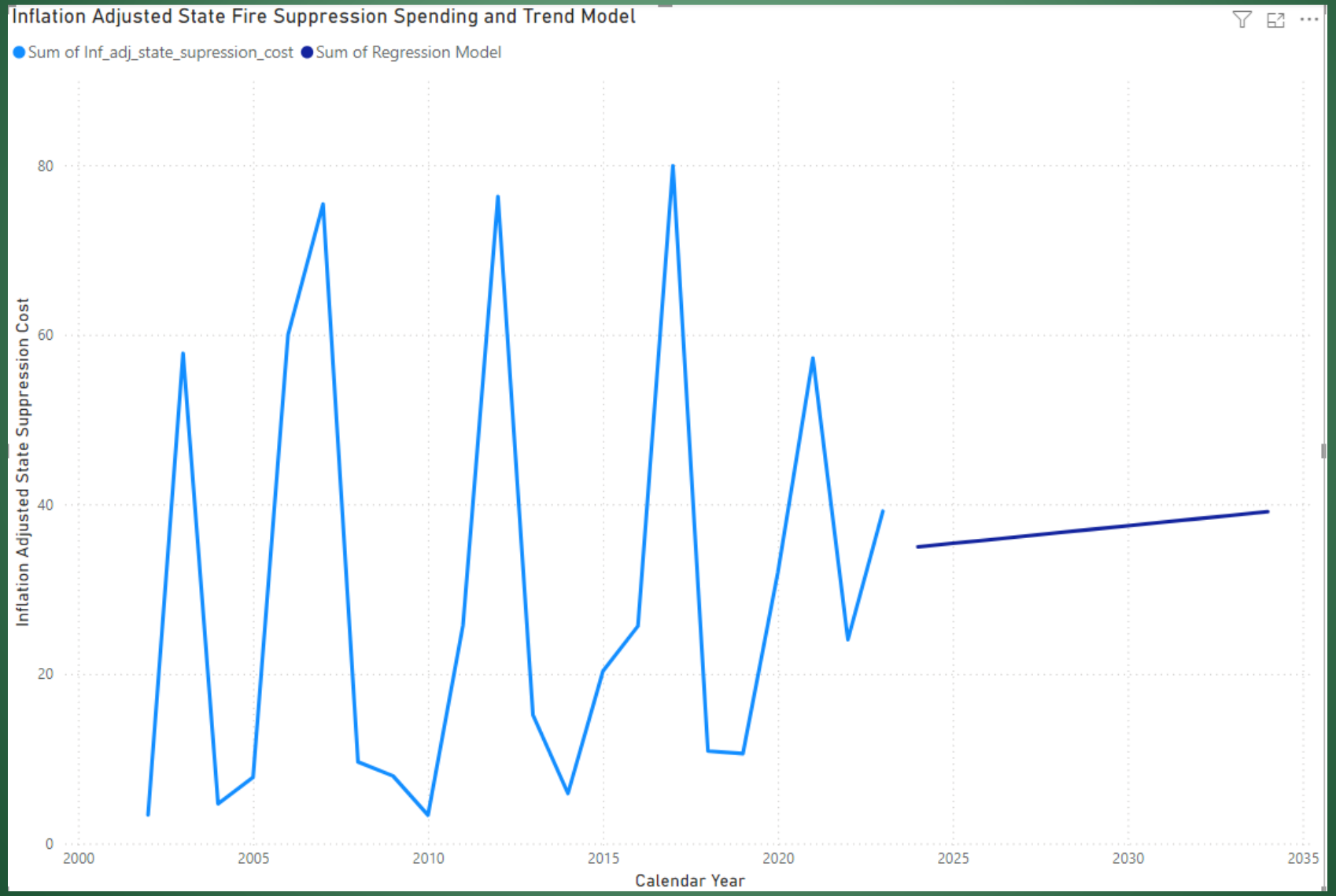
Sum those risk numbers for all counties TOTAL RISK UNITS

Divide the state average cost of firefighting ($28.5mil) by sum of risk COST PER RISK UNIT

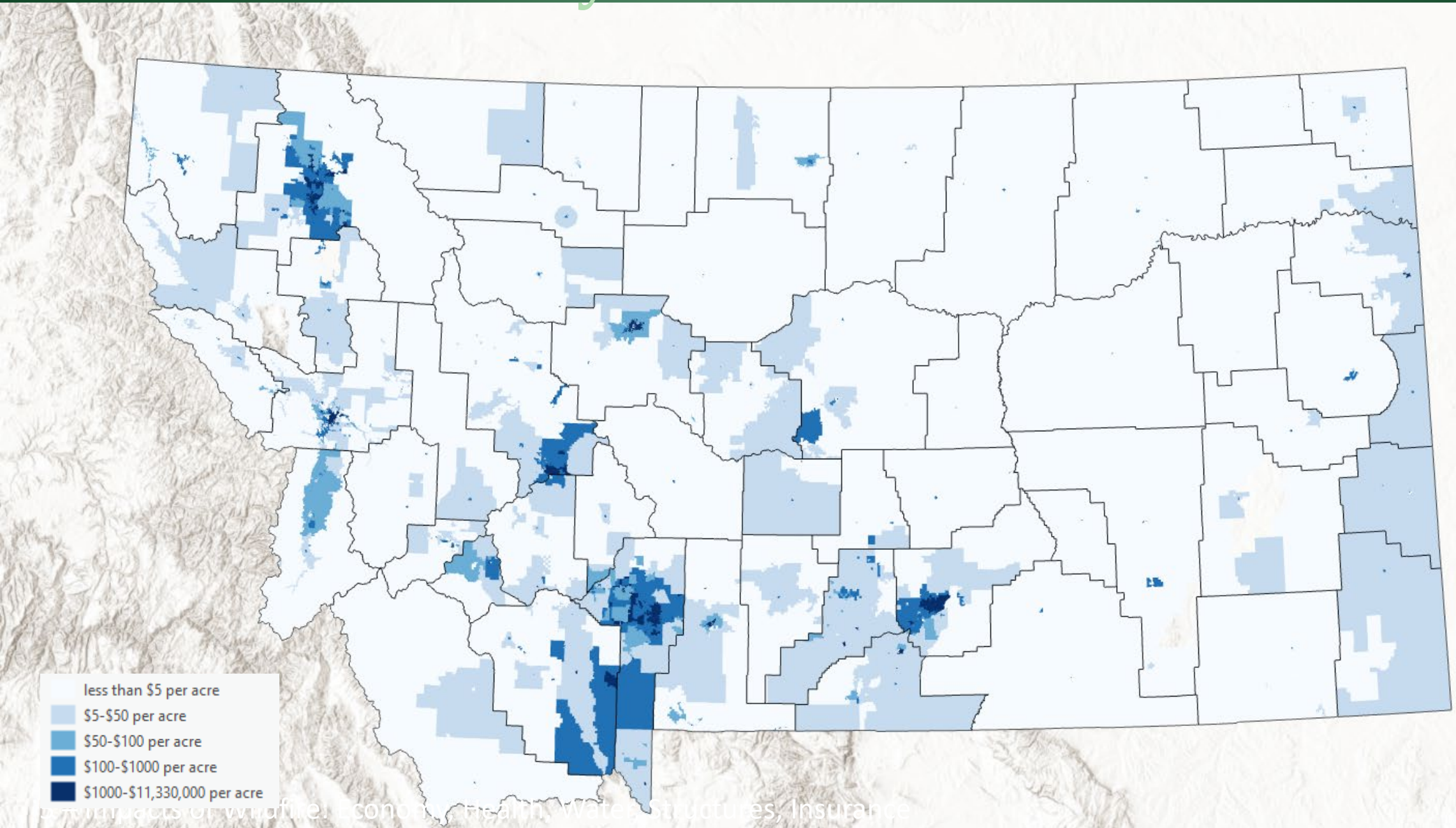
Multiply cost of firefighting per risk unit by the risk for each county COUNTY COST

Result: the risk and difficulty-weighted expected cost of wildfire fighting in each county

Mara Model Trendline

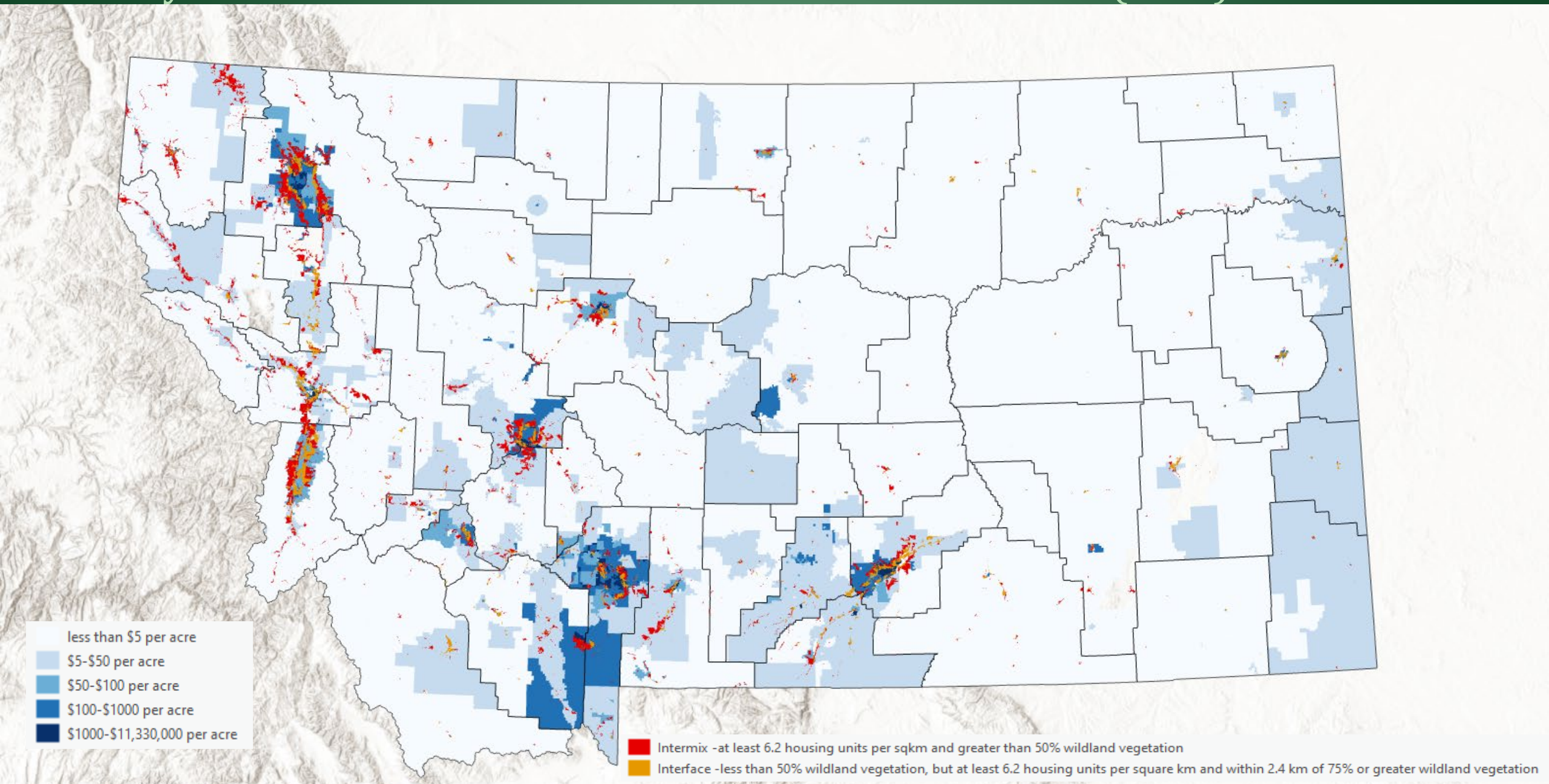


Residential Newly Taxable Value 2014-2023



Property taxes on wildfire, economy, health, water, utilities, insurance

Newly taxable value and the Wildland Urban Interface (WUI) 2014-2023



References:

Scott, Joe H.; Dillon, Gregory K.; Jaffe, Melissa R.; Vogler, Kevin C.; Olszewski, Julia H.; Callahan, Michael N.; Karau, Eva C.; Lazarz, Mitchell T.; Short, Karen C.; Riley, Karin L.; Finney, Mark A.; Grenfell, Isaac C. 2024. Wildfire Risk to Communities: Spatial datasets of landscape-wide wildfire risk components for the United States. 2nd Edition. Fort Collins, CO: Forest Service Research Data Archive. https://doi.org/10.2737/RDS-2020-0016-2