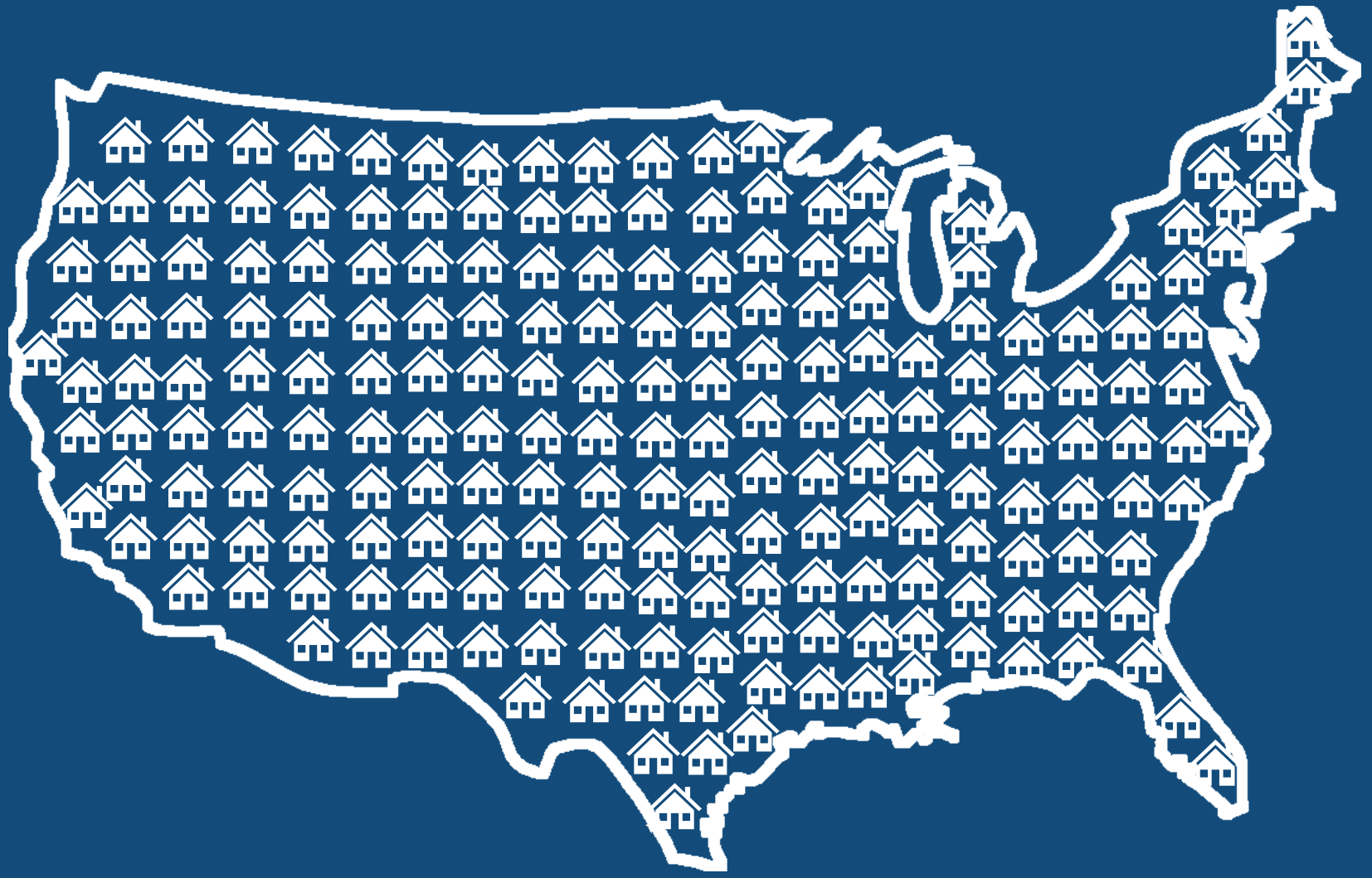
# Socioeconomic Tools for Wildfire Resilience in Austin

HEADWATERS ECONOMICS

Kelly Pohl
Austin Wildfire Symposium
May 3, 2019

# What % of U.S. homes are located in the wildland-urban interface?



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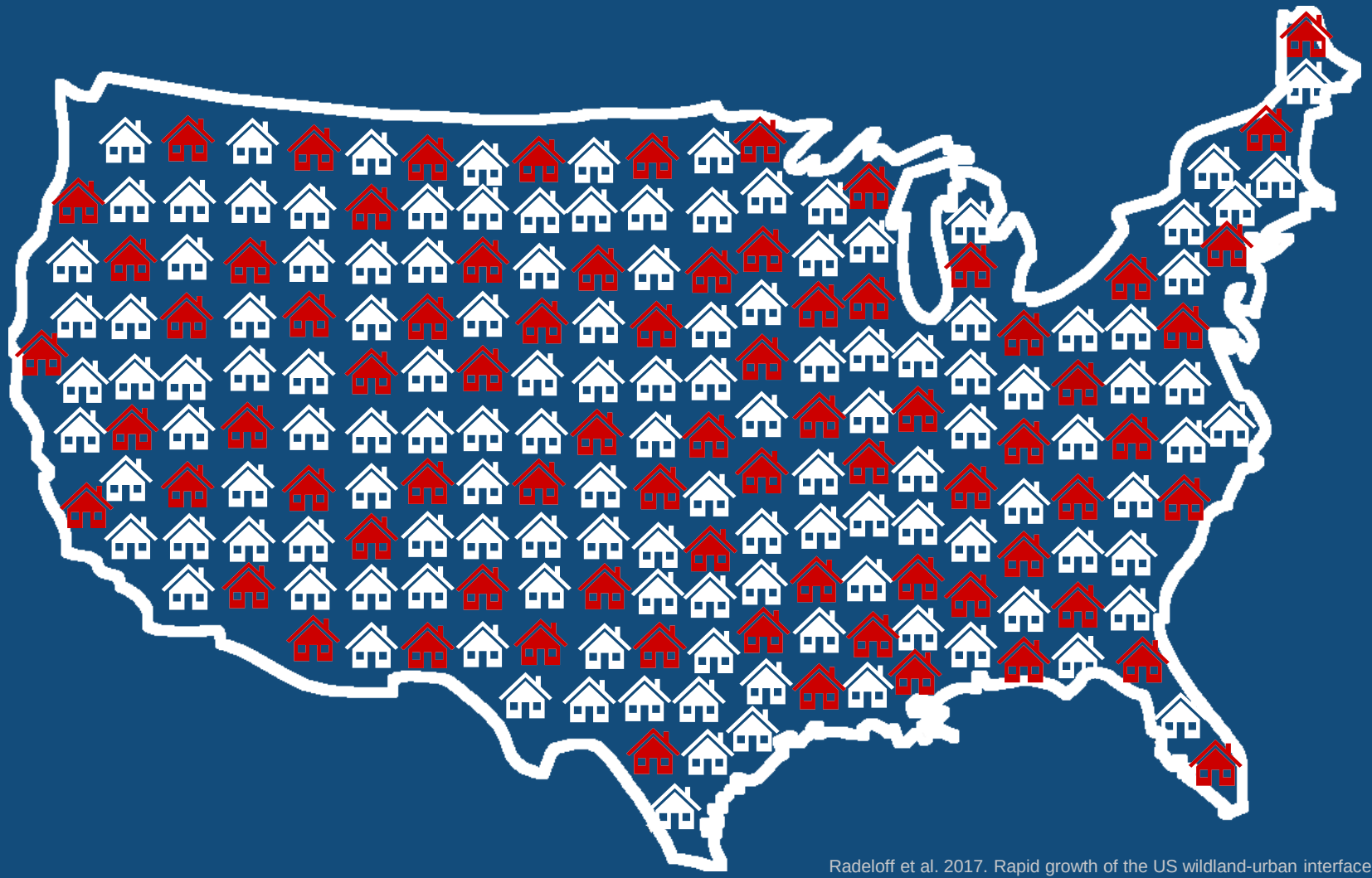

One in three.

Radeloff et al. 2017. Rapid growth of the US wildland-urban interface raises wildfire risk. PNAS. https://www.pnas.org/content/115/13/3314.short

Marnuzzi, S., et al, 2015, “The 2010 Wildland Urban Interface of the Conterminous United States,” USDA Forest Service, June 2015. https://www.fs.fed.us/nrs/pubs/rmap/rmap_nrs8.pdf

# 60%

## of Austin’s structures are in the WUI

Photo: Createve Commons Tendinci

Austin Fire Department Wildfire Division. Update on Council Resolution Presented to Public Safety Commission, April 1, 2019.

# The WUI is the fastest growing land use type in the country.

https://headwaterseconomics.org

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Photo: FEMA- Andrea Booher

# The problem is likely to get worse in the future.

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Photo: FEMA- Andrea Booher

DOOM
GLOOM

DOOM
GLOOM

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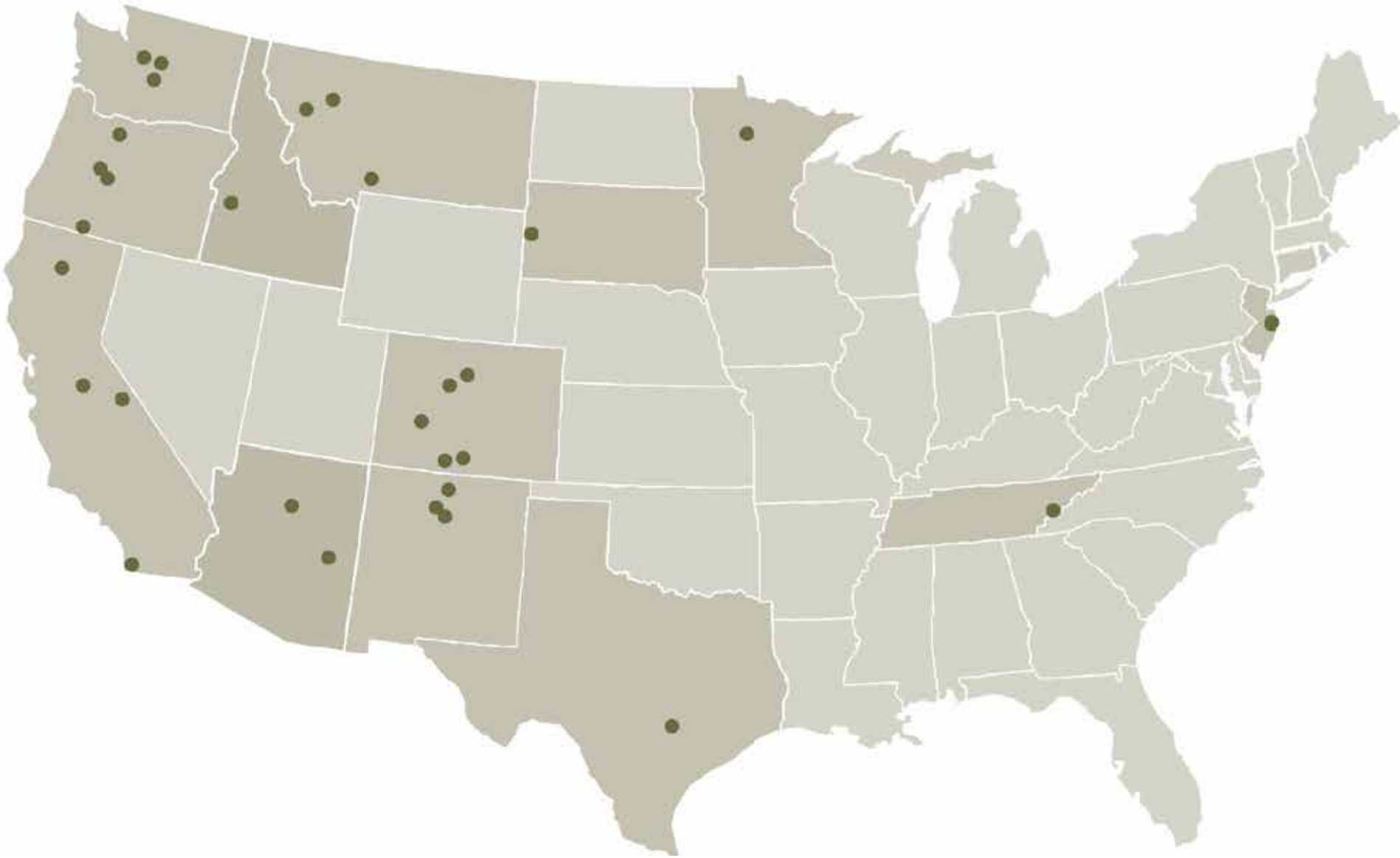
# Independent Nonpartisan Research



COMMUNITY PLANNING ASSISTANCE FOR WILDFIRE

*Helping communities better plan the wildland-urban interface.*

planningforwildfire.org

# Austin & Community Planning Assistance for Wildfire

- Featured case study (2015)
- Land Use Planning recommendations (2016)
- Vulnerable Populations Tool (2018)

# Three Strategies:

1. Understand the true costs
2. Identify vulnerable neighborhoods
3. Prioritize actions that work

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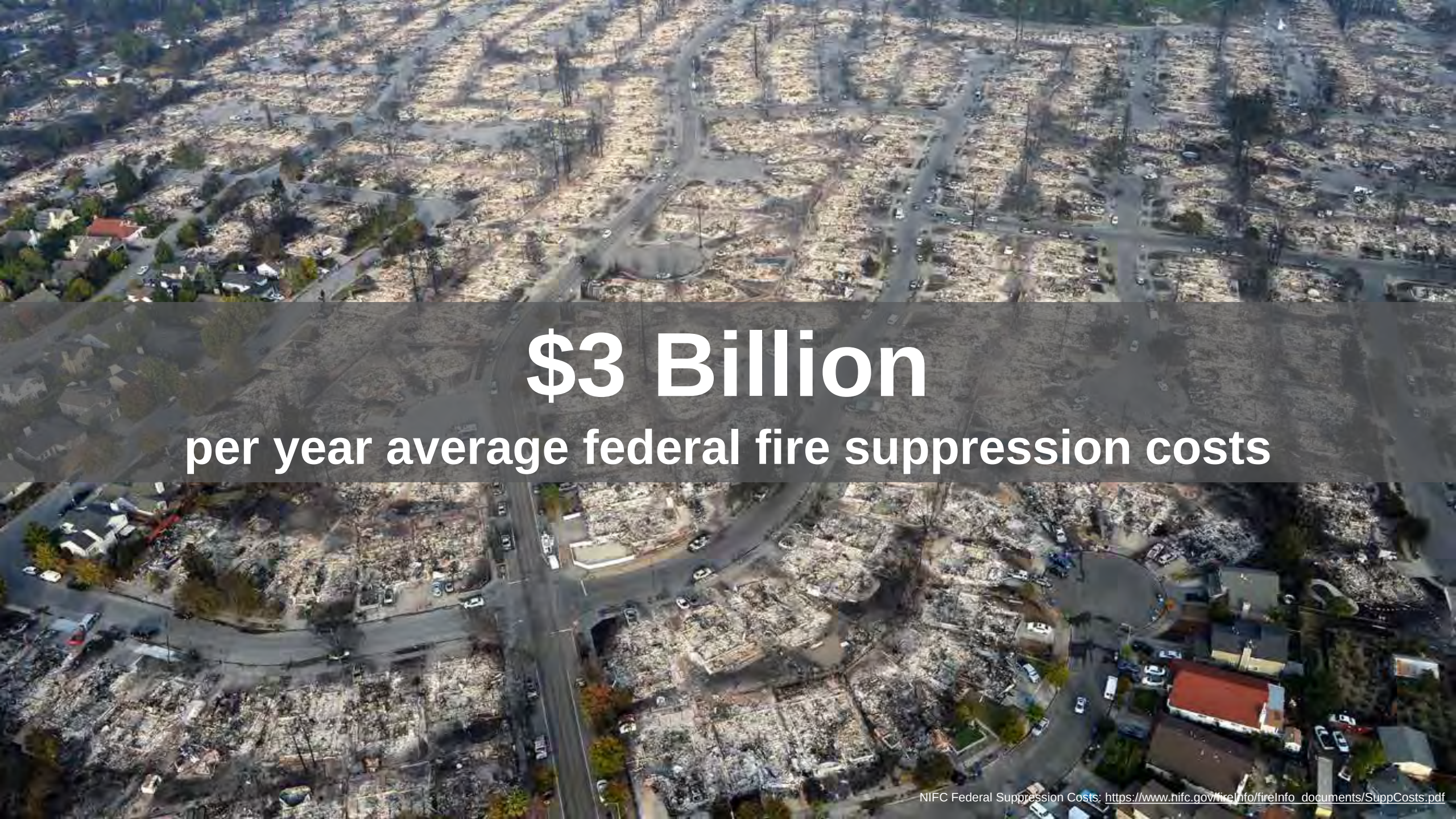
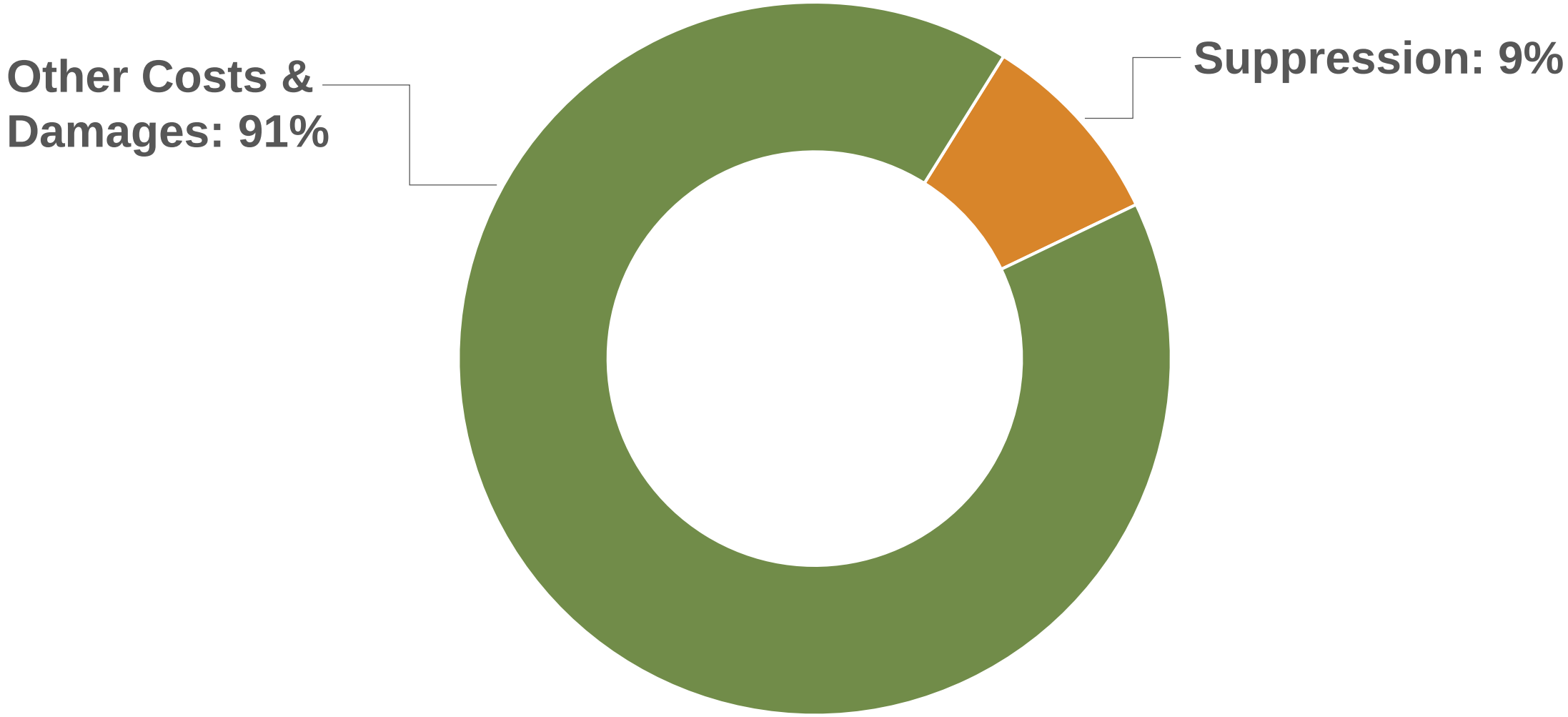


# $3 Billion

## per year average federal fire suppression costs

NIFC Federal Suppression Costs: https://www.nifc.gov/fireInfo/fireInfo_documents/SuppCosts.pdf

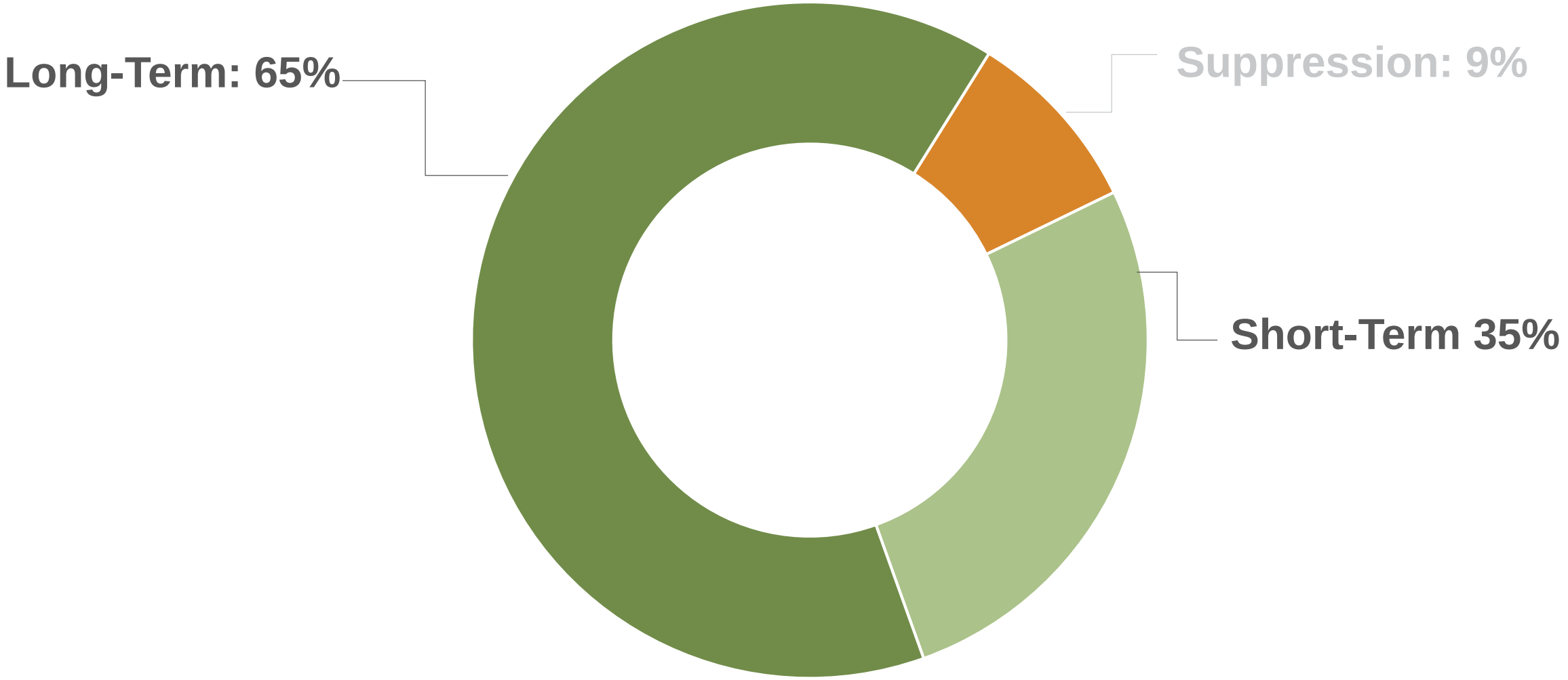
# Suppression is only 9% of total fire costs




https://headwaterseconomics.org

Headwaters Economics. 2018. Full Community Costs of Wildfire. https://headwaterseconomics.org/wildfire/homes-risk/full-community-costs-of-wildfire/

# Most costs are long-term

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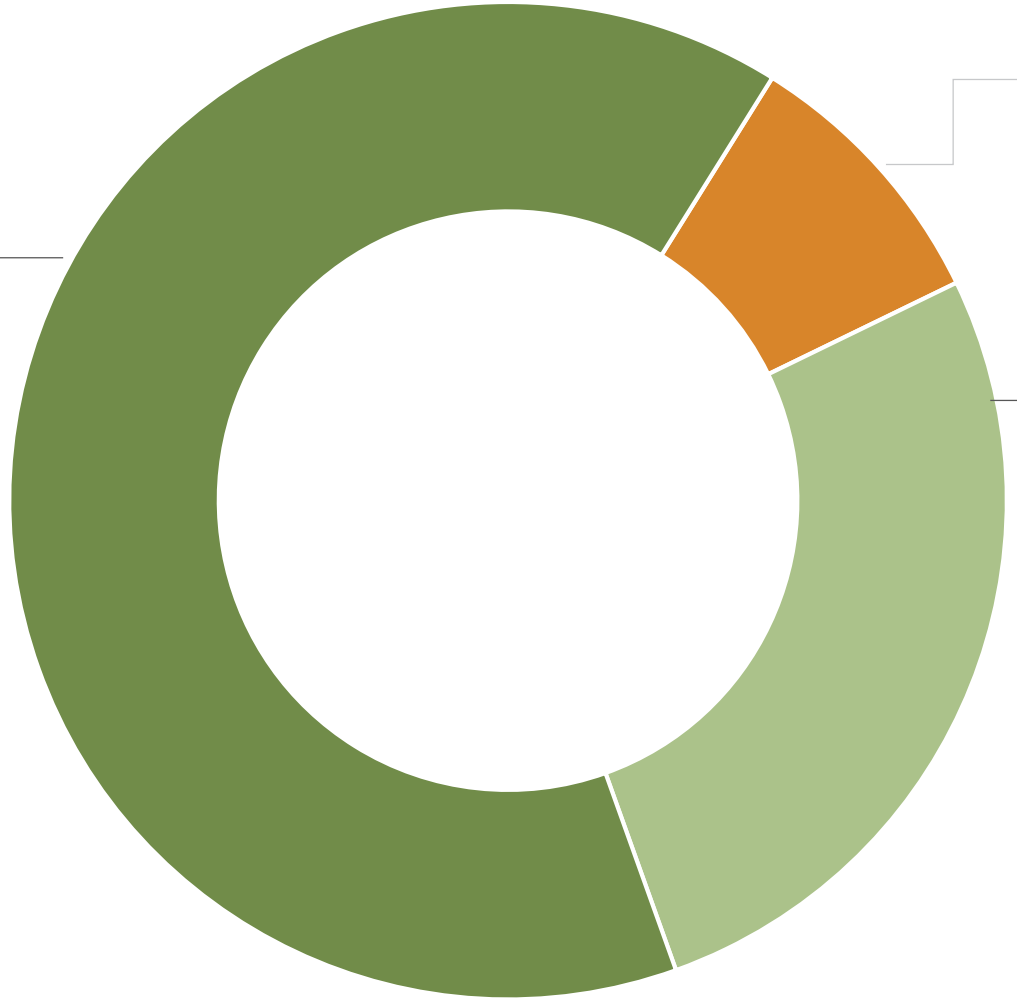


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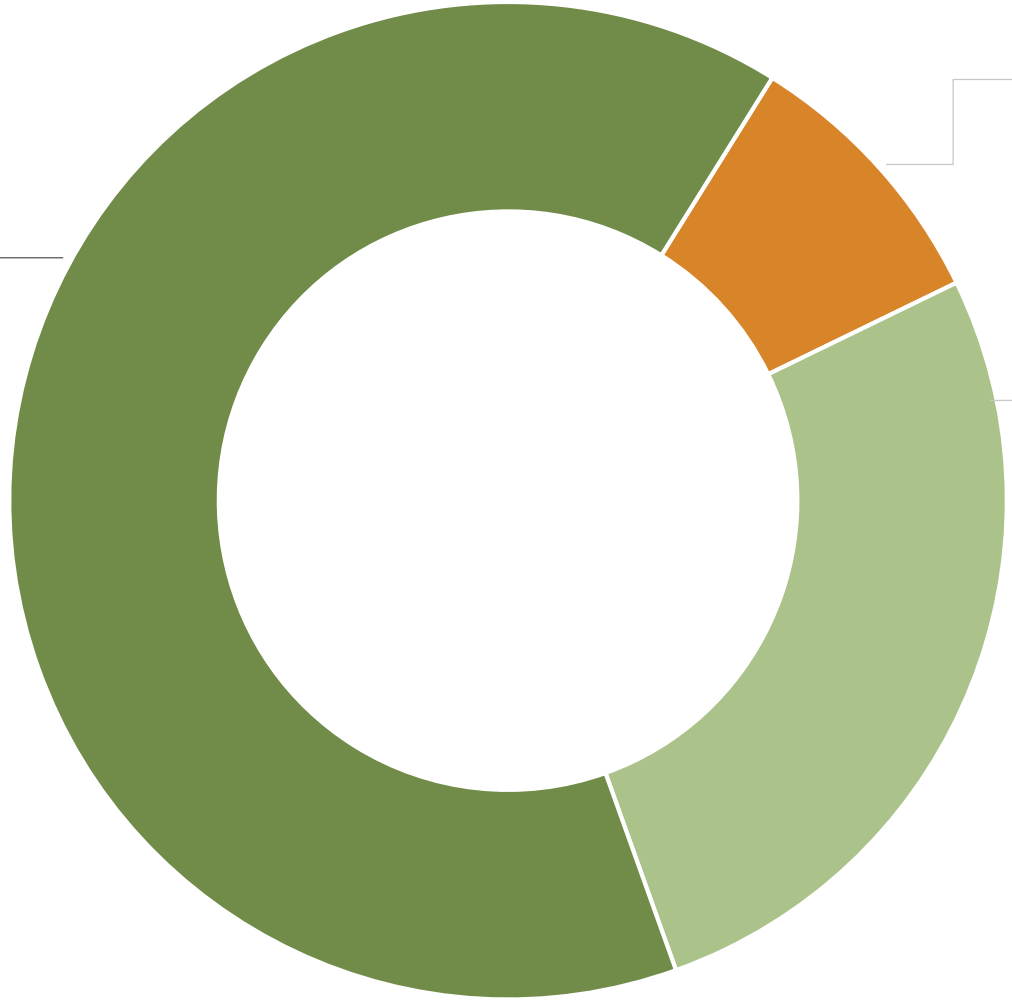
# Most costs are long-term

**Long-Term: 65%**

- Loss of property value, tax, business revenue
- Rehabilitation
- Infrastructure
- Loss of ecosystem services
- Human casualties



**Suppression: 9%**

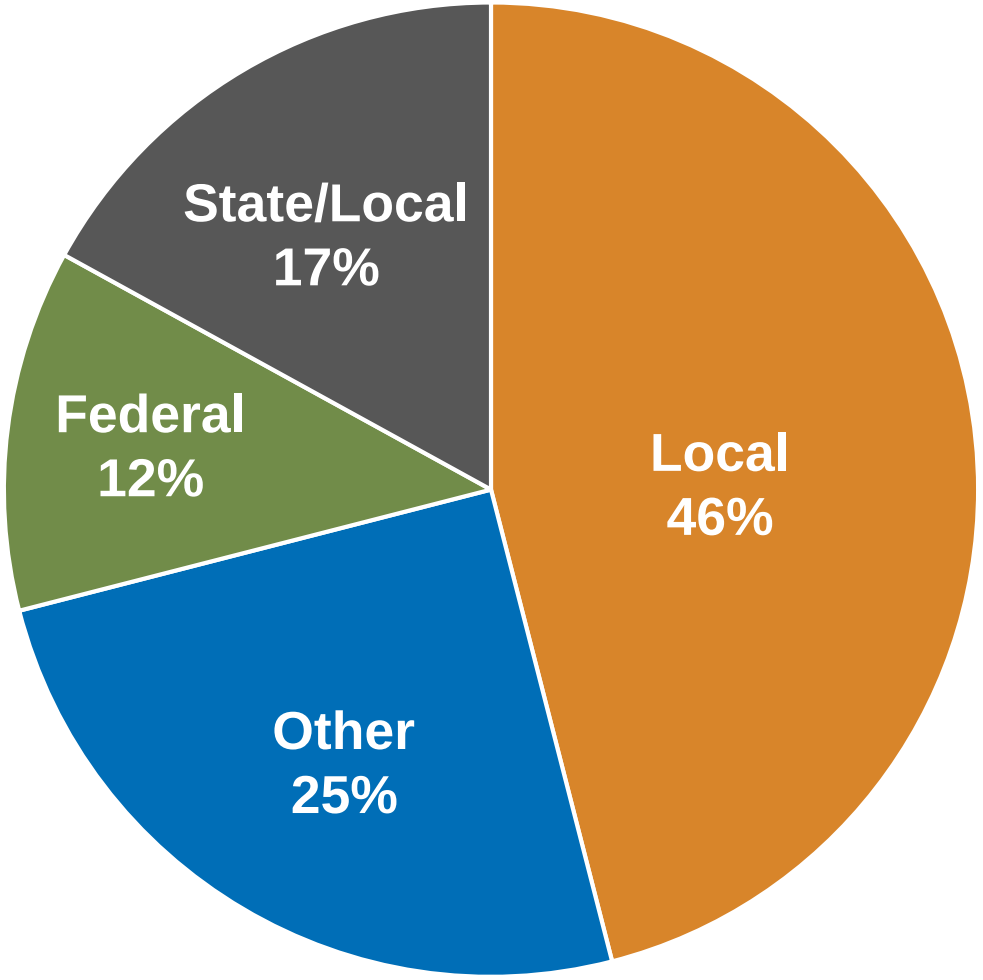
**Short-Term 35%**

- Evacuation and aid relief
- Road stabilization
- Home and property loss

https://headwaterseconomics.org

Headwaters Economics. 2018. Full Community Costs of Wildfire. https://headwaterseconomics.org/wildfire/homes-risk/full-community-costs-of-wildfire/

# Nearly Half of All Wildfire Costs are Local

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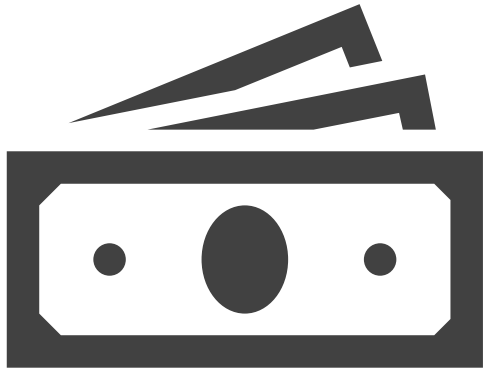

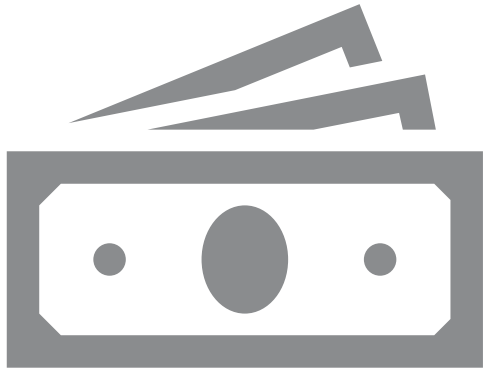

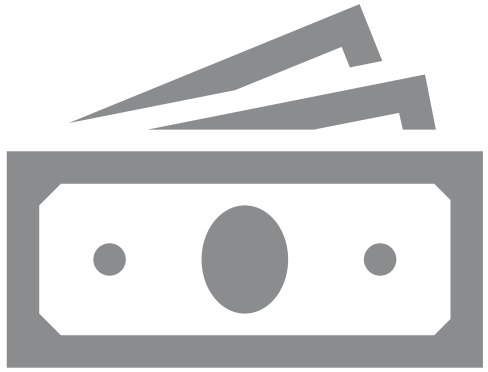

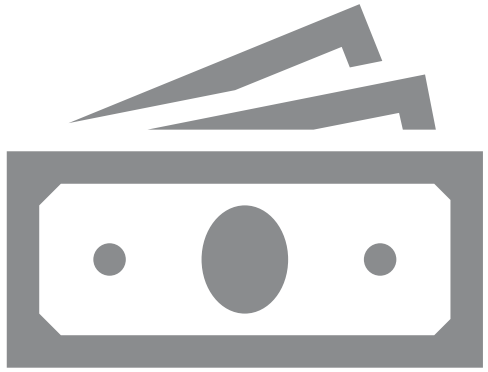

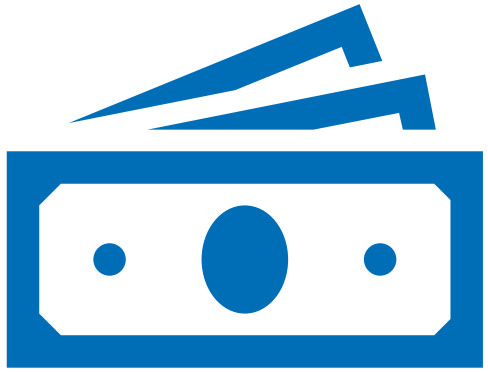

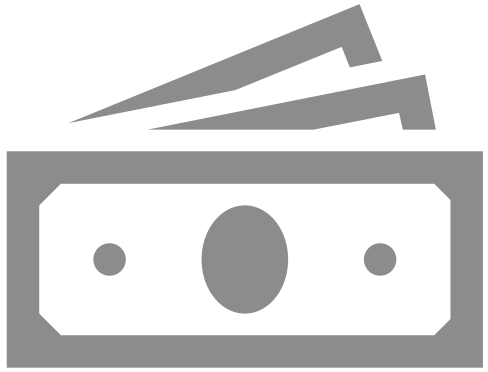

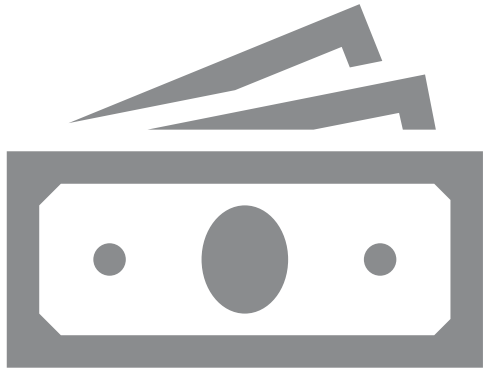

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# What neighborhoods are disproportionately at risk?

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## Wildfire Hazard

- Wildfire Potential
- Flame Length
- Rate of Spread

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+

## Socioeconomic Variables

- Families in poverty
- People with disability
- People with difficulty speaking English
- People over 65
- People under 5
- Households without a car
- Nonwhite population
- Population and rate of change
- Housing units
- Adults with COPD
- Adults with asthma

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Austin Wildfire and Vulnerable P

https://headwaterseconomics.org/wildfire/homes-risk/austin-wildfire-population-risk/

**Set criteria:**

## WILDFIRE POTENTIAL

Wildfire Potential

>= Normal

## AT-RISK POPULATIONS

Accuracy Choice

RESTRICTIVE: Areas definitely meeting criteria

Families in Poverty

>= 0%

Median = 6.9%

People with a Disability

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People with Difficulty Speaking English

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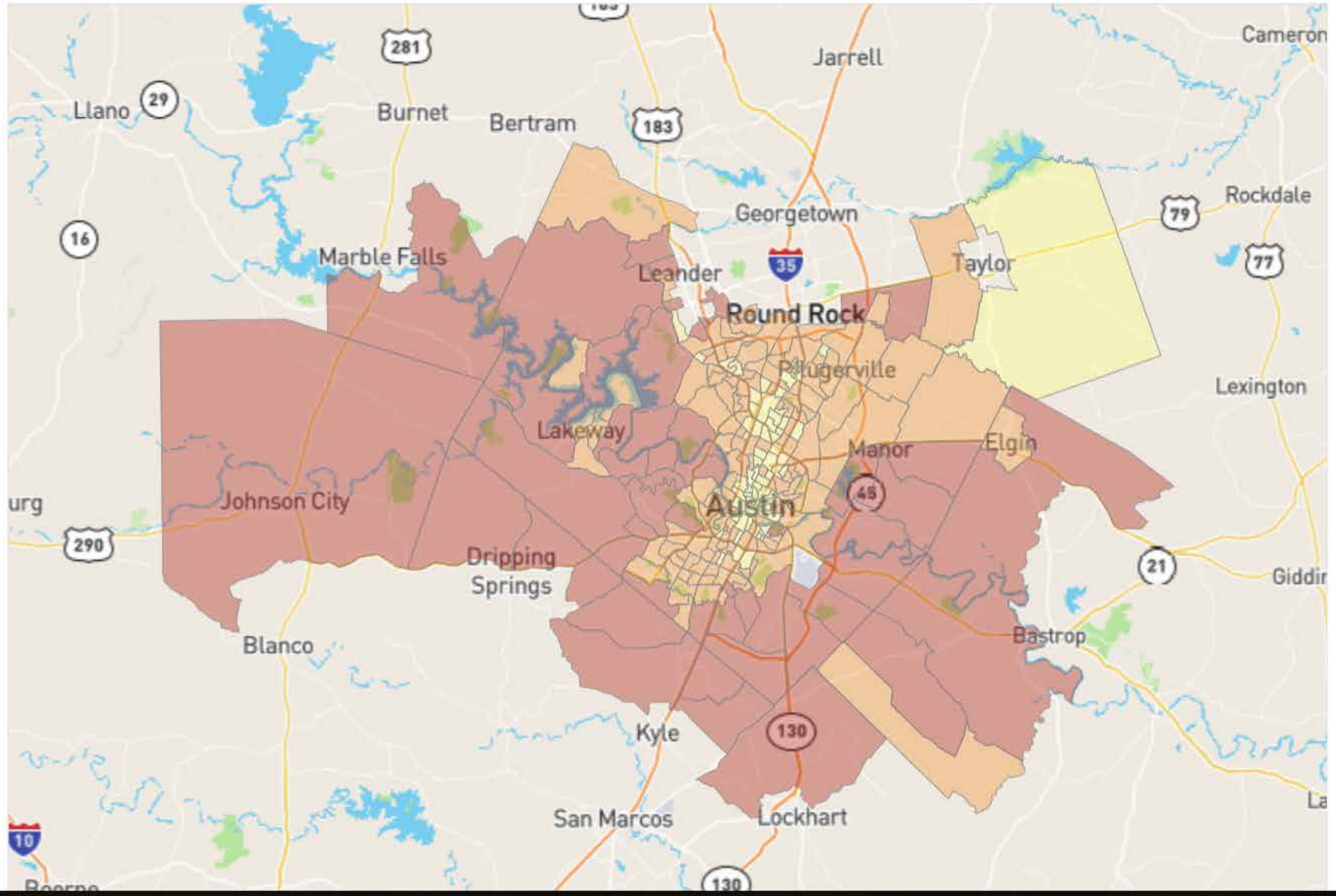
Nonwhite Population

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Nonwhite Population

>= 0%

Median = 18.6%

Population Change, Last Five Years

>= -100 %

Median = 12.0%

**East of the airport**
(Tract 24.33, Travis, TX) **- Zoned for mobile homes.**

**WILDFIRE**

Wildfire potential: **Highest - Surface and crown fire potential**
Avg. flame length: 8.27 ft
Avg. rate of spread: 1.085 mph

**AT-RISK POPULATIONS**

| | |
|---|---|
| Families in Poverty: | 12 - 30% |
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| Households with no car: | 1 - 3% |
| Nonwhite population: | 29 - 53% |

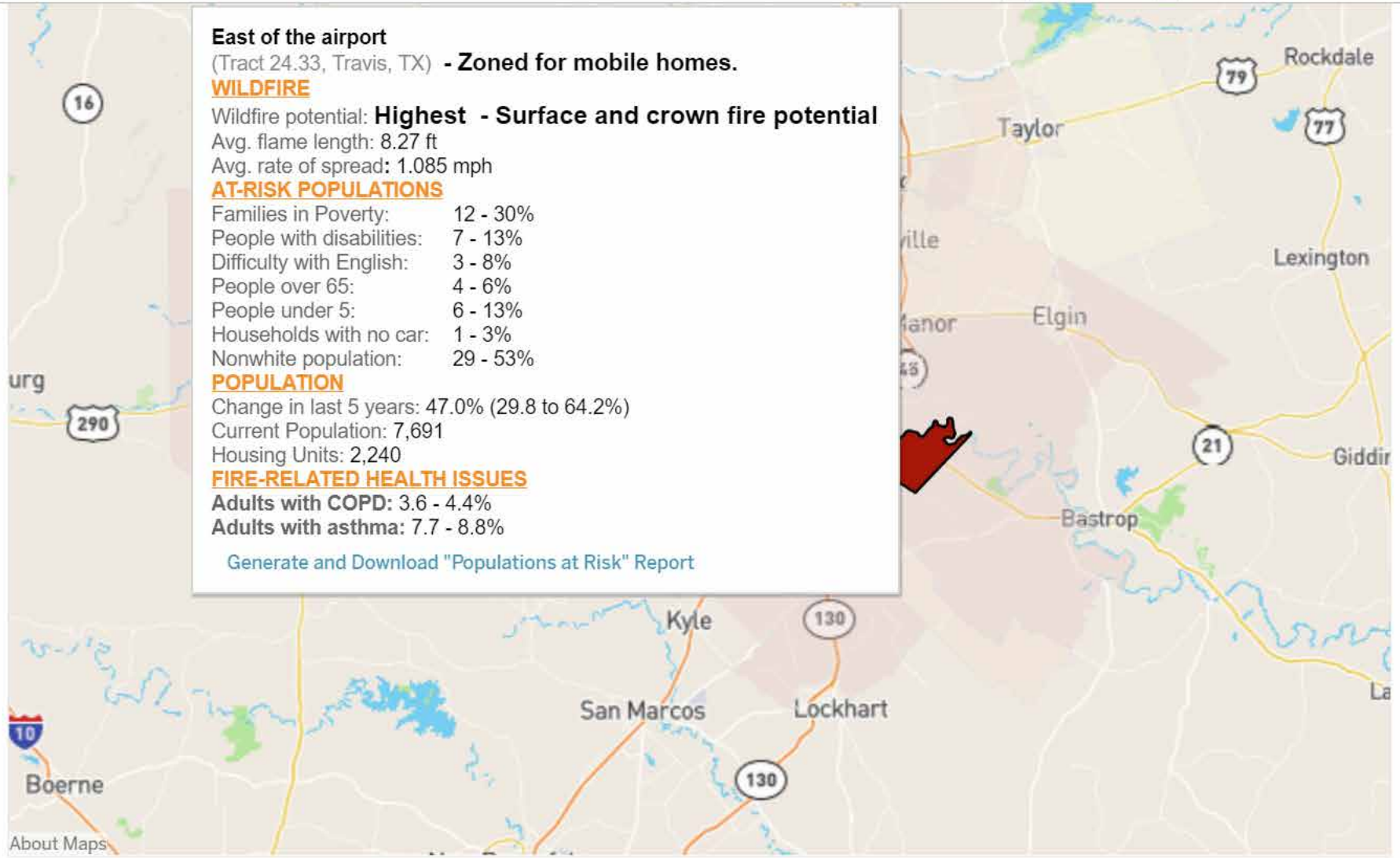
**POPULATION**

Change in last 5 years: 47.0% (29.8 to 64.2%)
Current Population: 7,691
Housing Units: 2,240

**FIRE-RELATED HEALTH ISSUES**

**Adults with COPD:** 3.6 - 4.4%
**Adults with asthma:** 7.7 - 8.8%

Generate and Download "Populations at Risk" Report




Wildfire Potential

Highest Elevated Normal

Number of tracts: 259

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4/28/2019

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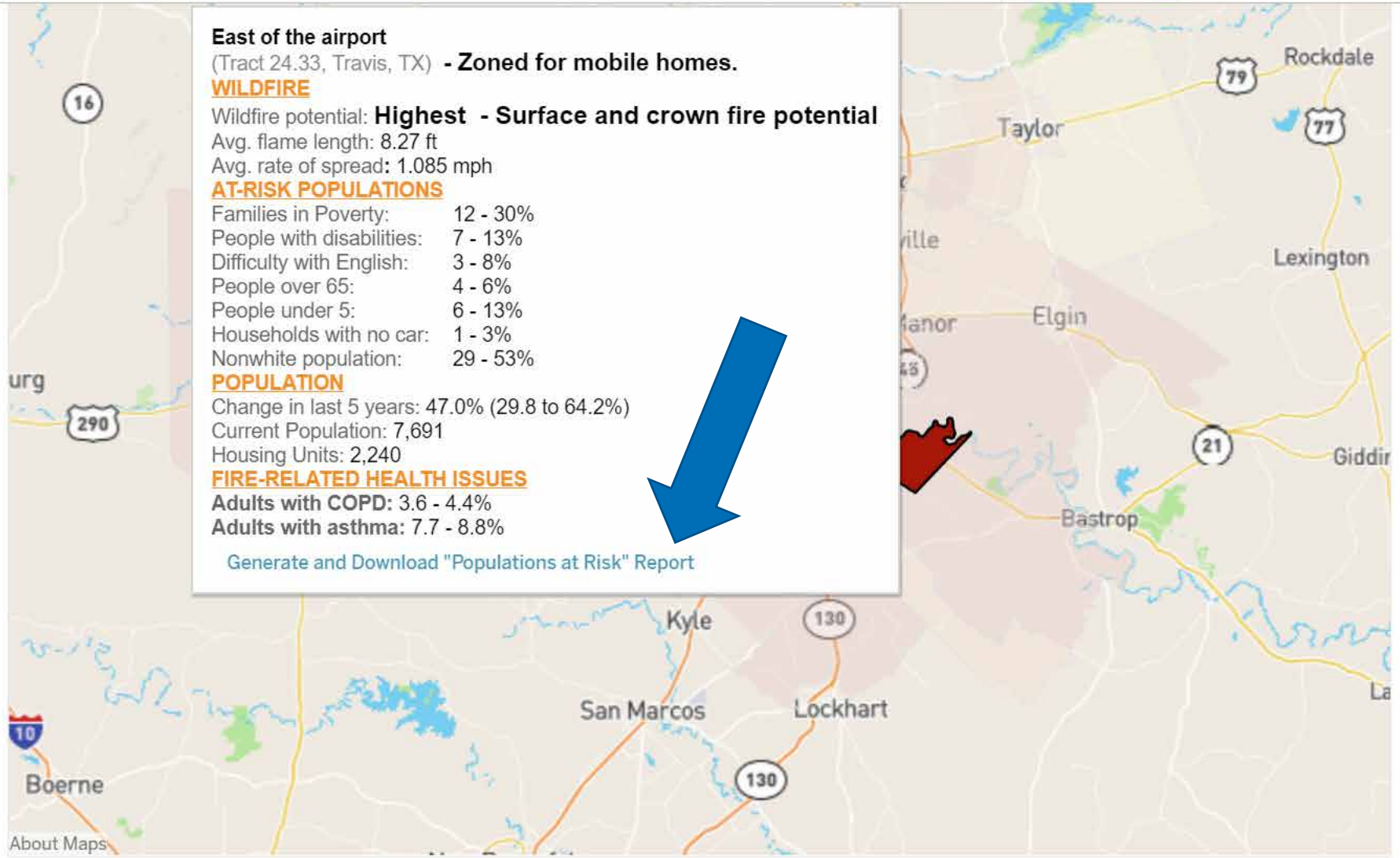


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# Populations at Risk Report

https://headwaterseconomics.org

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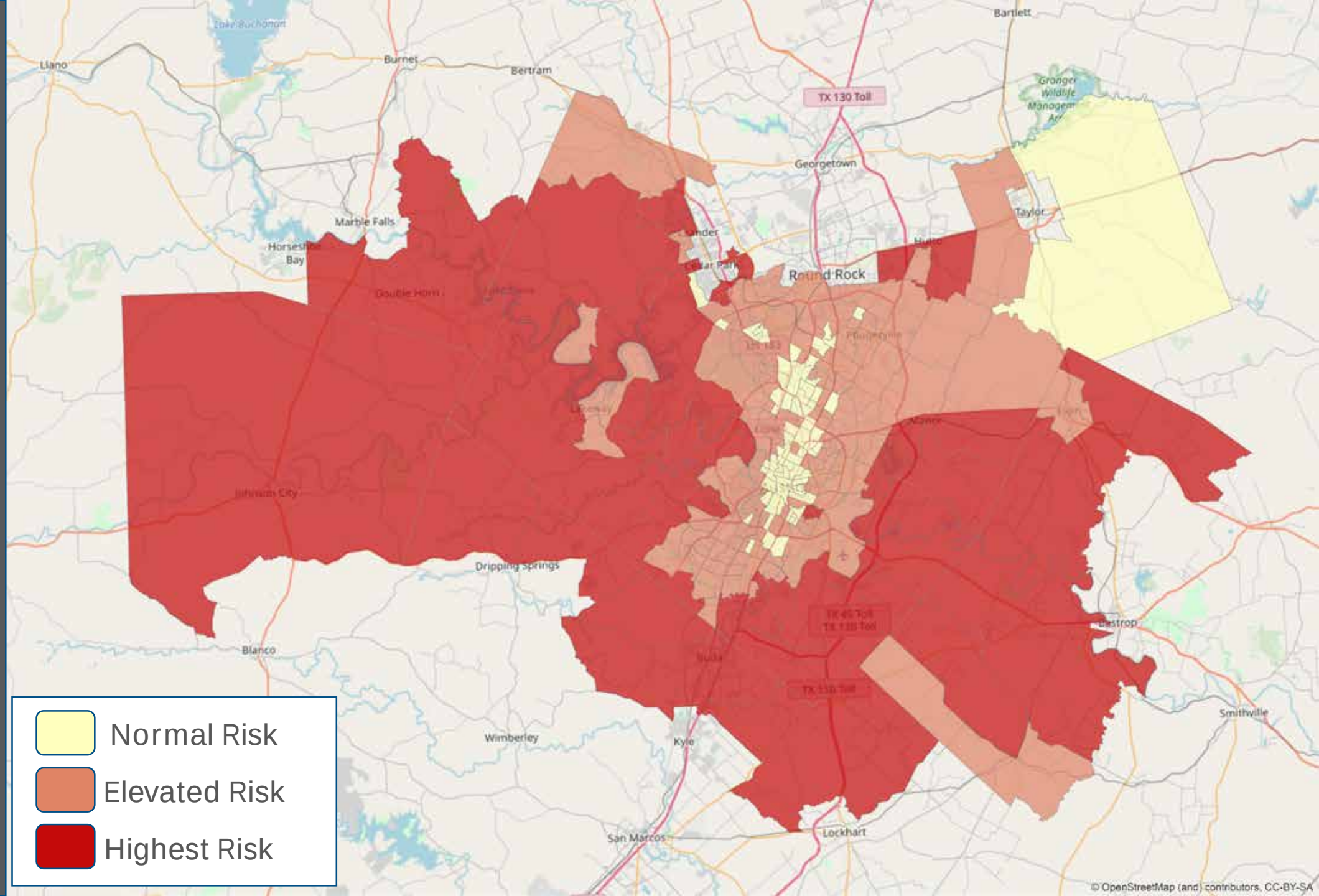


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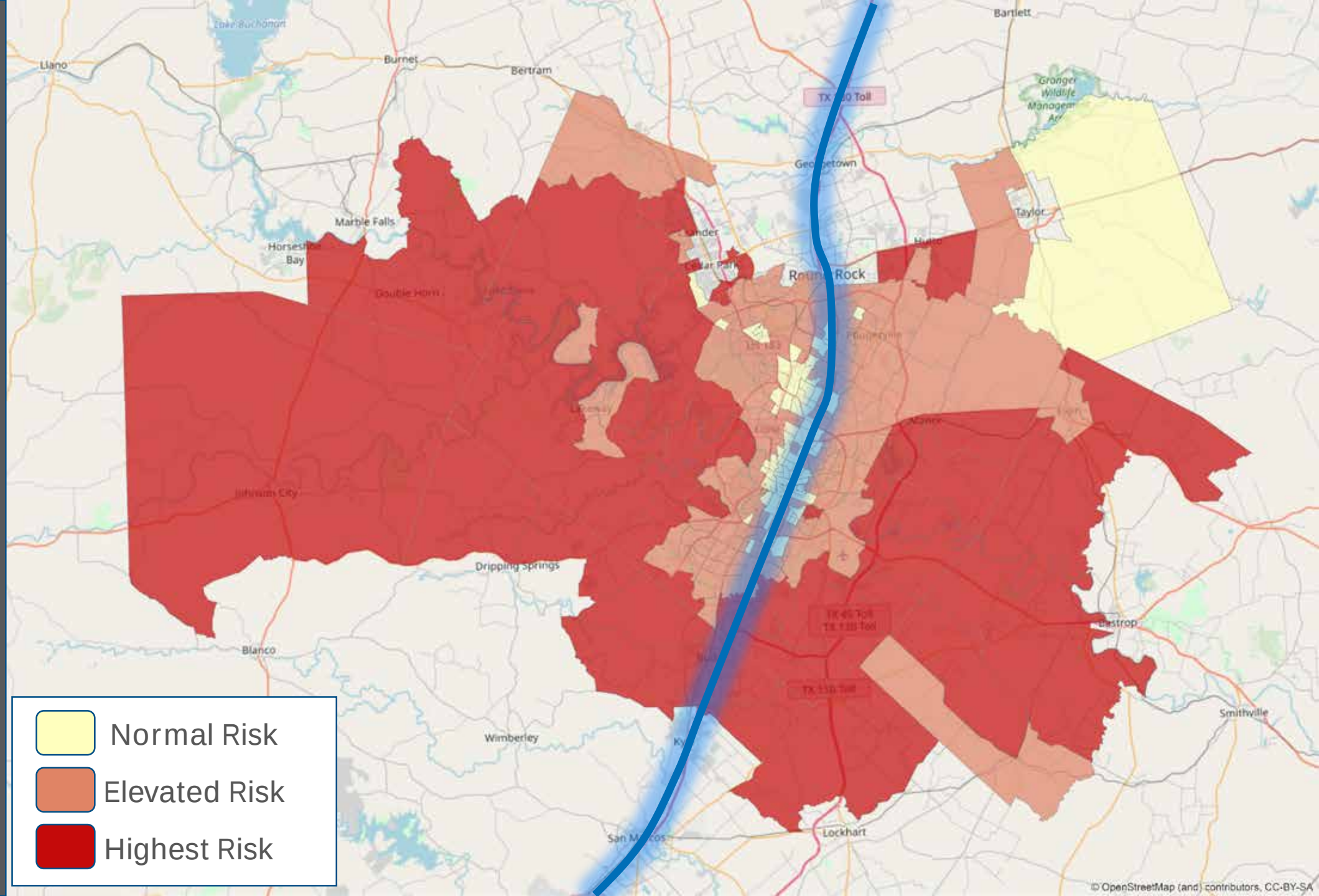


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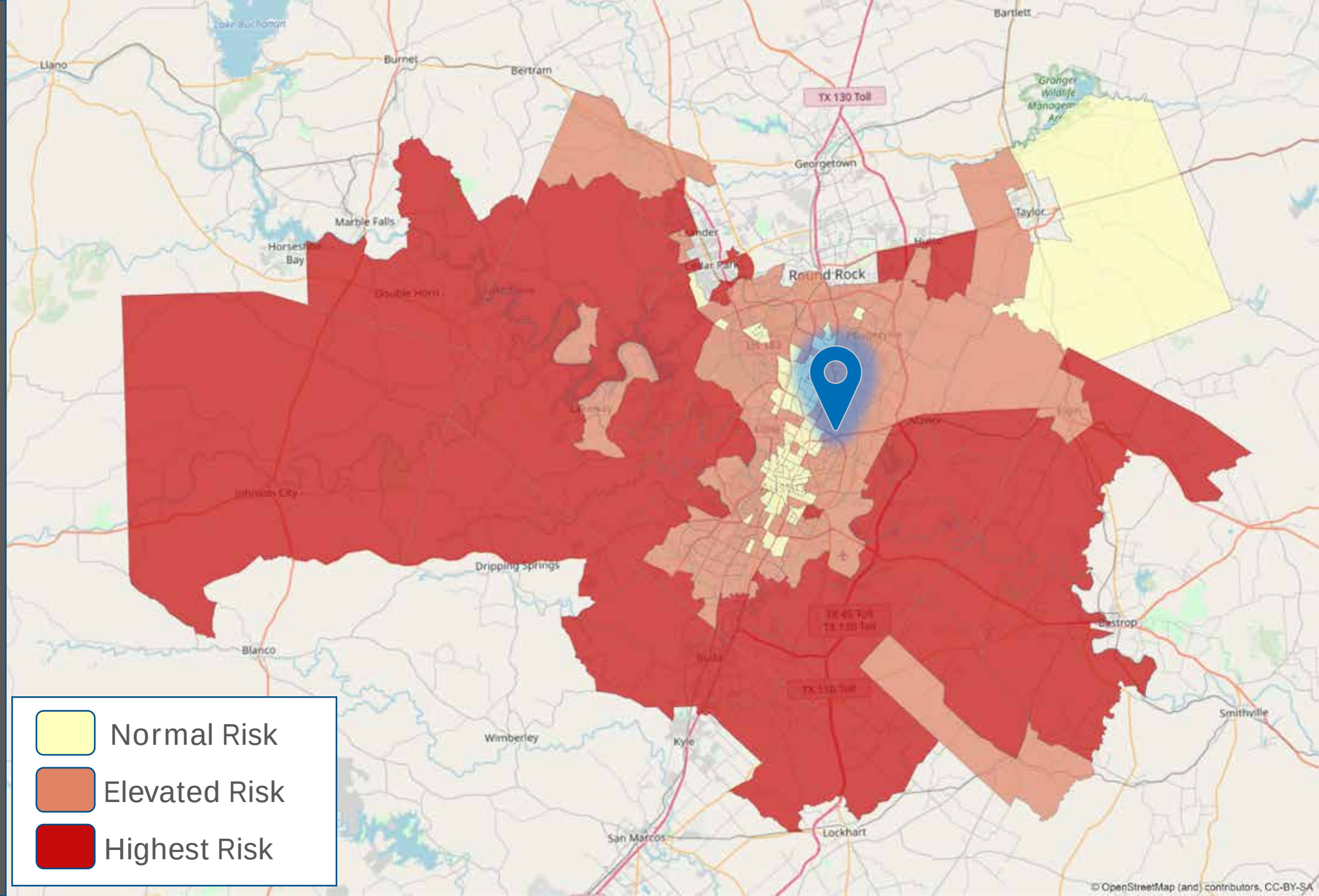


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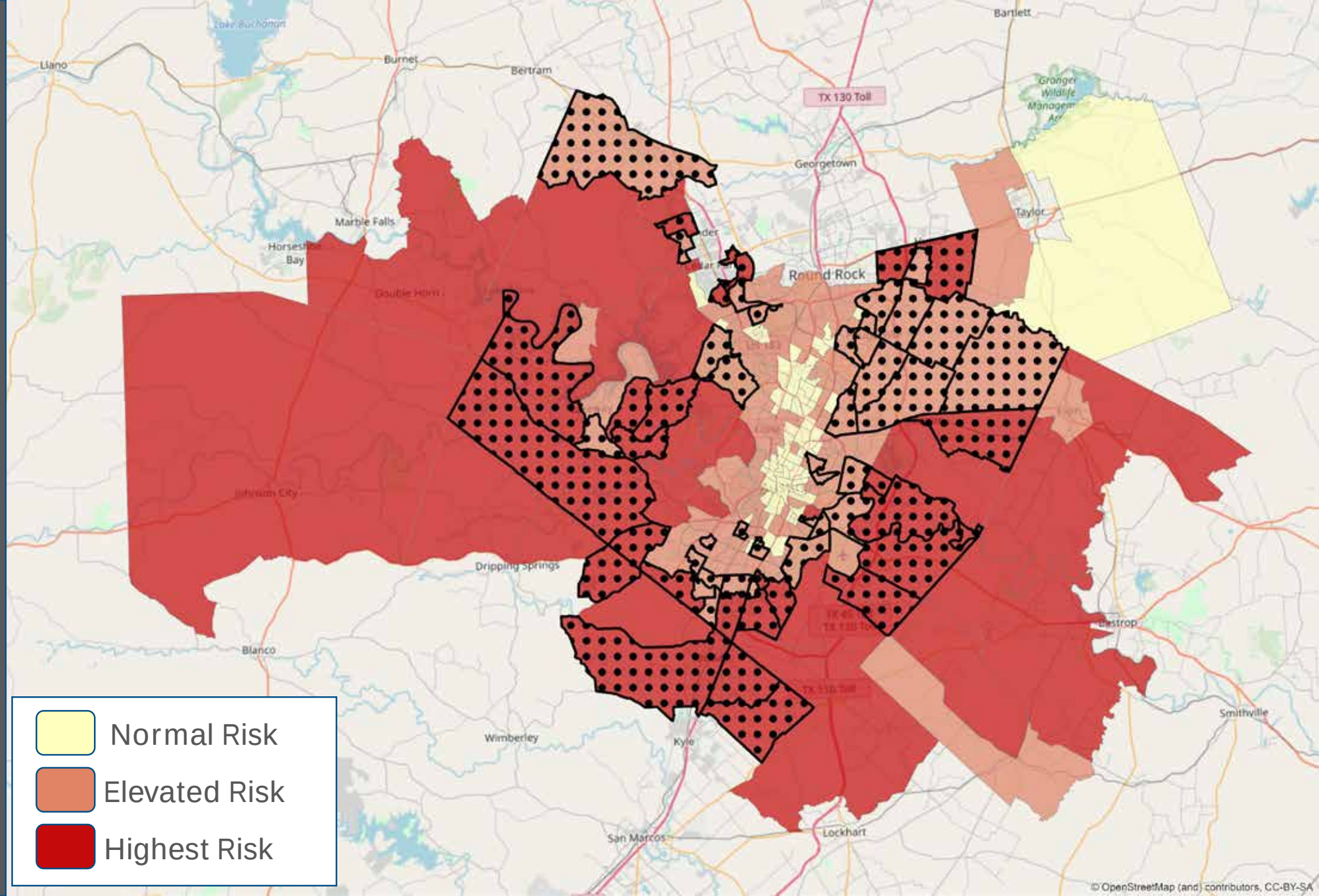
Above Median

# Population Growth

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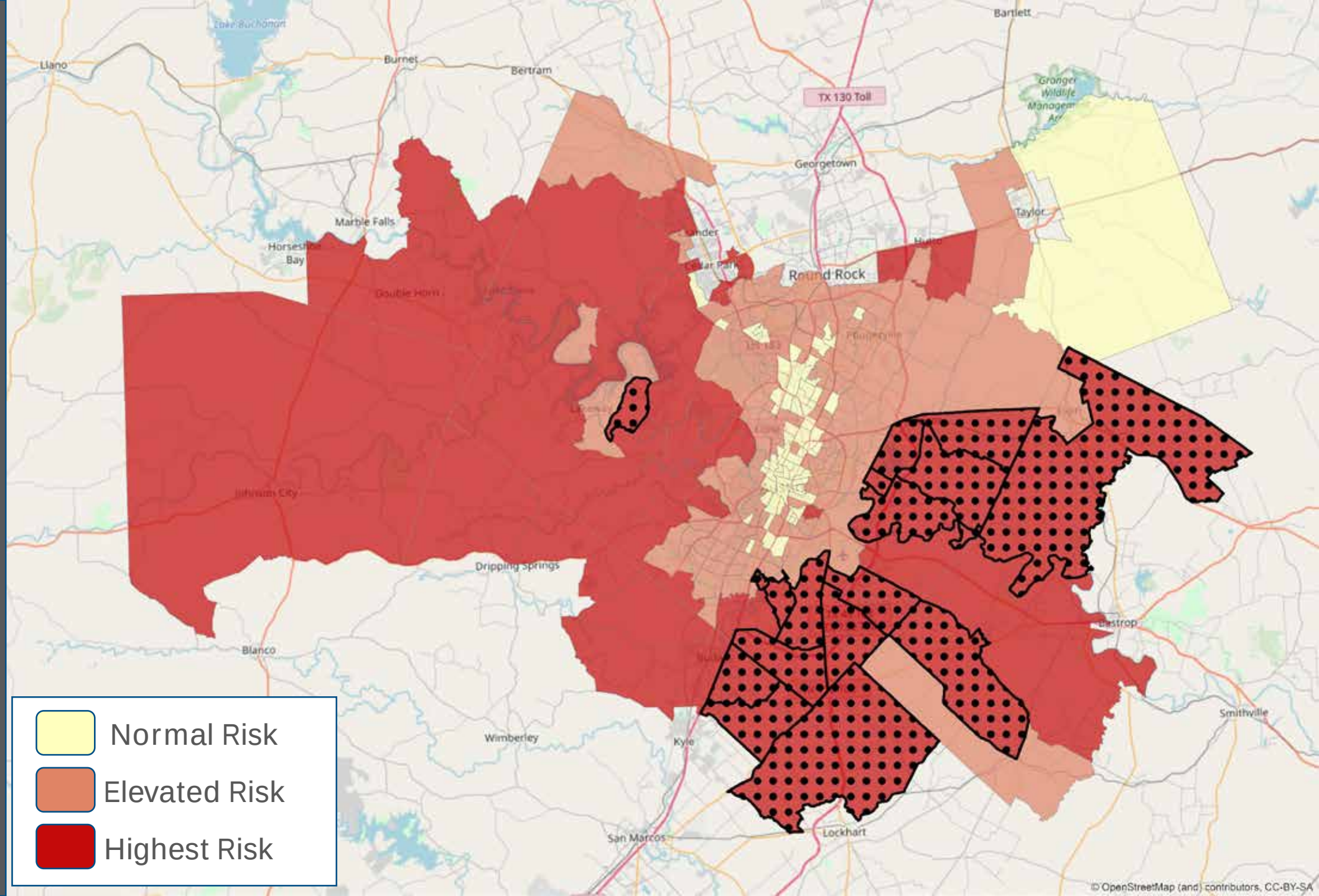
Above Median

# Difficulty Speaking English

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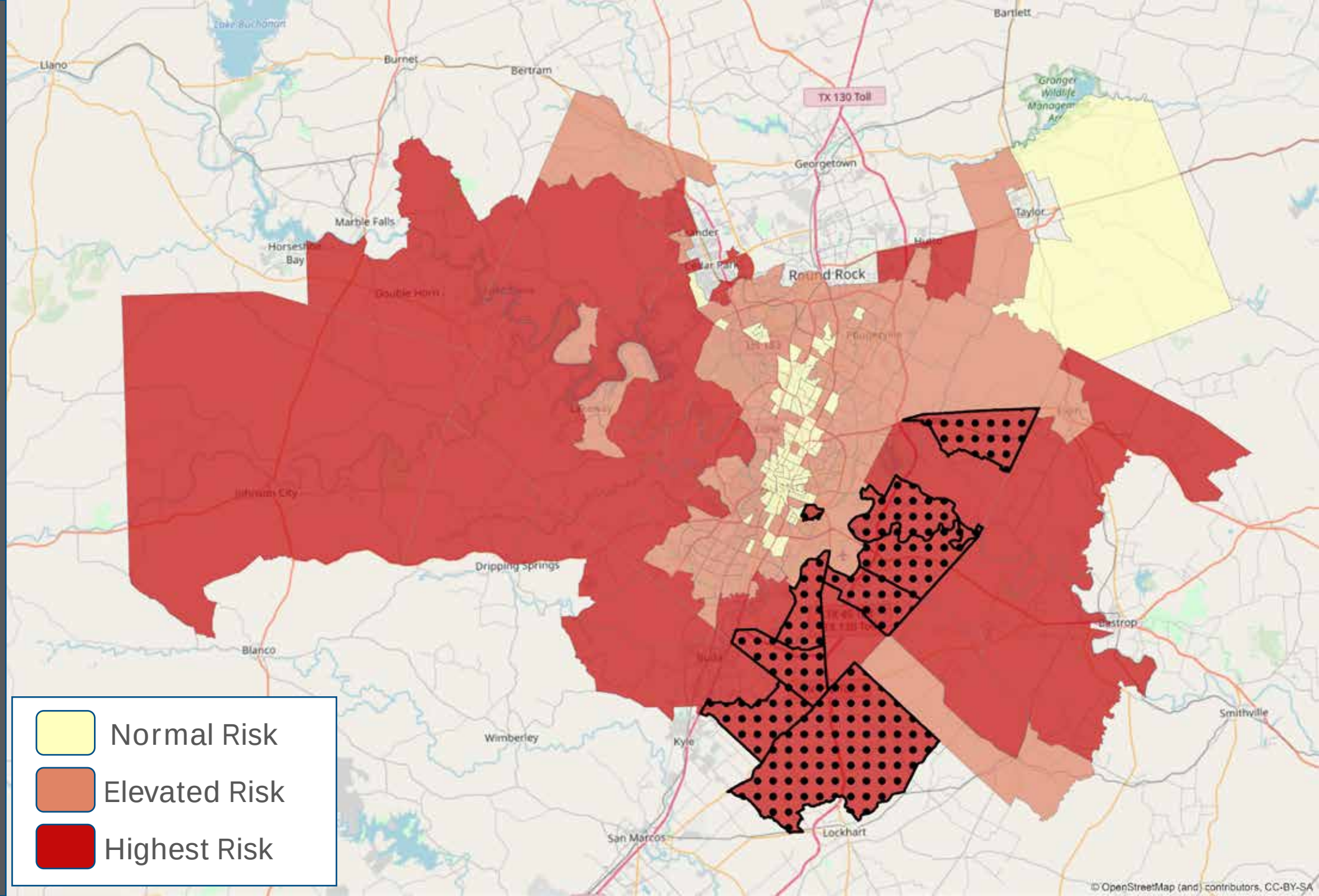
Above Median

# Families in Poverty

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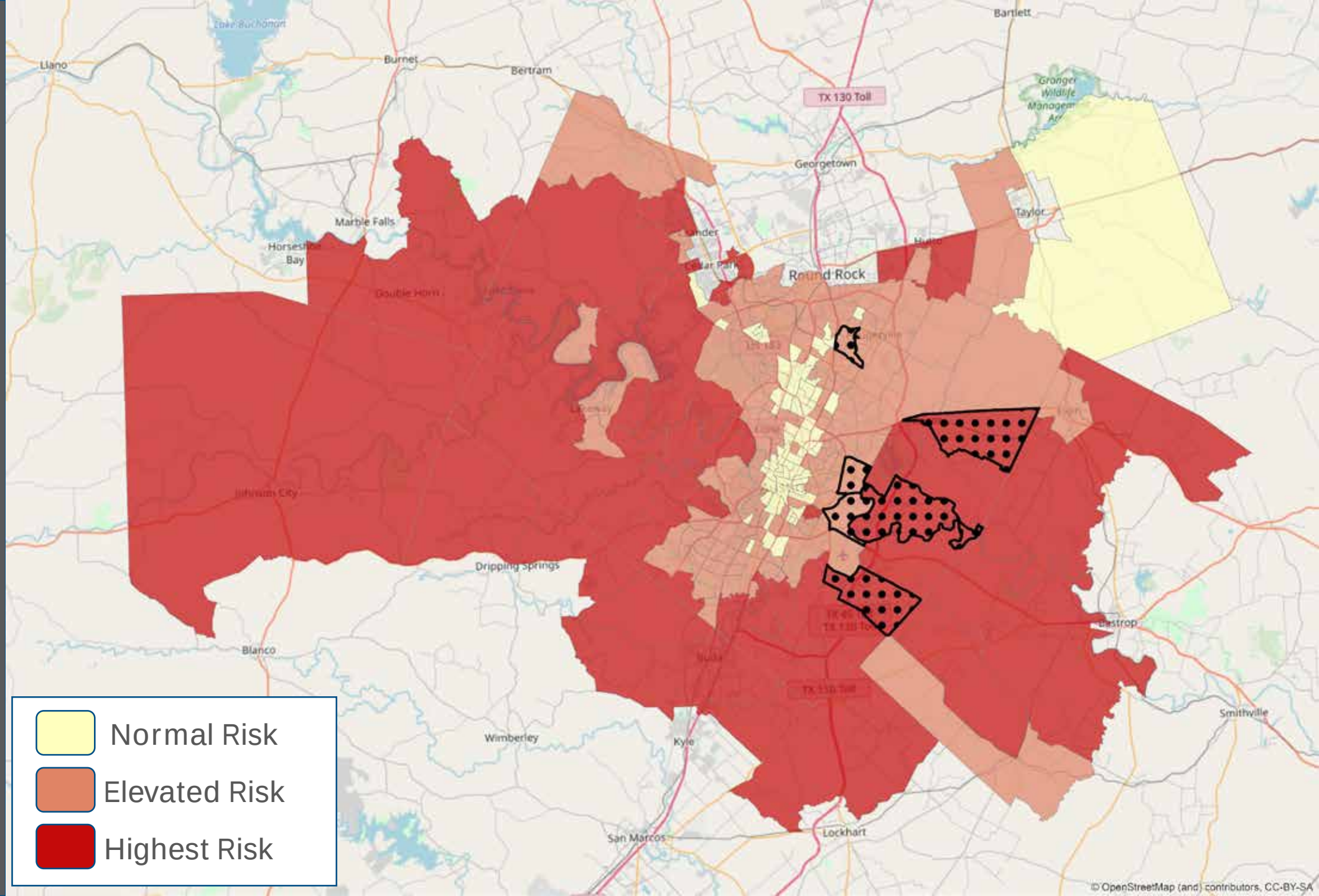
Above Median

# Population Growth

# + Poverty

# + Difficulty English

# +Nonwhite

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## Austin Wildfire and Vulnerable Populations Tool

Set criteria:

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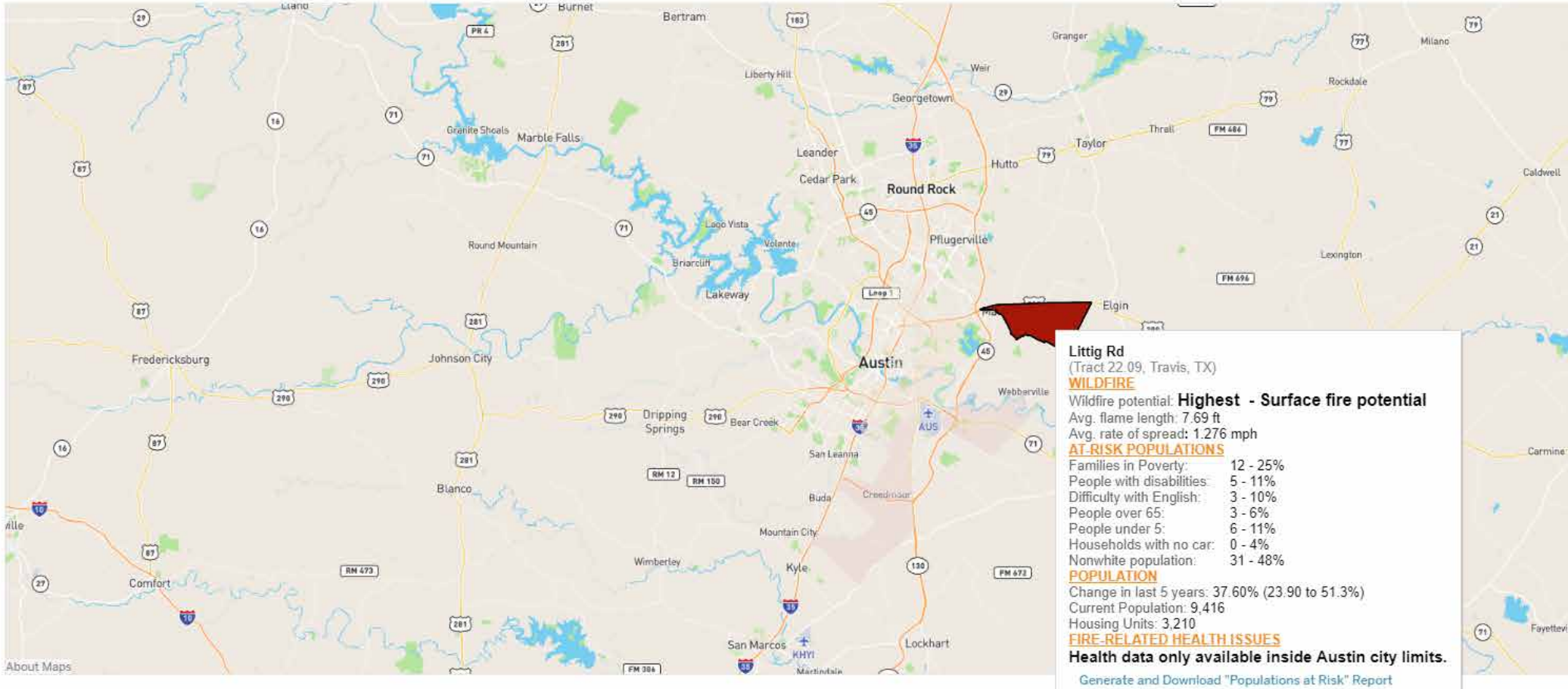


**Littig Rd**
(Tract 22.09, Travis, TX)
WILDFIRE
Wildfire potential: **Highest - Surface fire potential**
Avg. flame length: 7.69 ft
Avg. rate of spread: 1.276 mph
AT-RISK POPULATIONS

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|---|---|
| Families in Poverty: | 12 - 25% |
| People with disabilities: | 5 - 11% |
| Difficulty with English: | 3 - 10% |
| People over 65: | 3 - 6% |
| People under 5: | 6 - 11% |
| Households with no car: | 0 - 4% |
| Nonwhite population: | 31 - 48% |

POPULATION
Change in last 5 years: 37.60% (23.90 to 51.3%)
Current Population: 9,416
Housing Units: 3,210
FIRE-RELATED HEALTH ISSUES
**Health data only available inside Austin city limits.**
Generate and Download "Populations at Risk" Report

Wildfire Potential
Highest  Elevated  Normal

Number of tra

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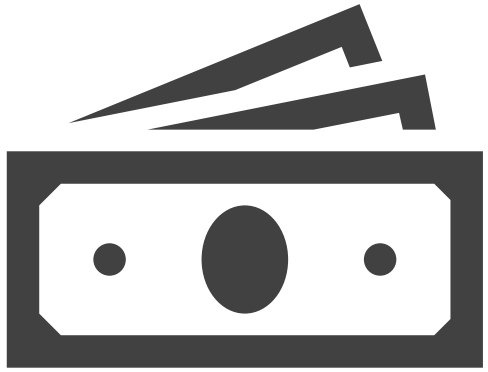
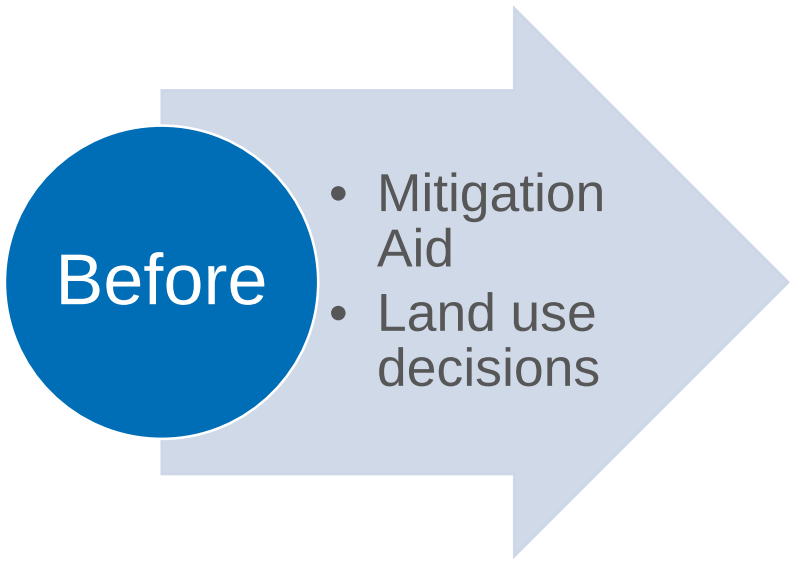


# Equity & Resilience



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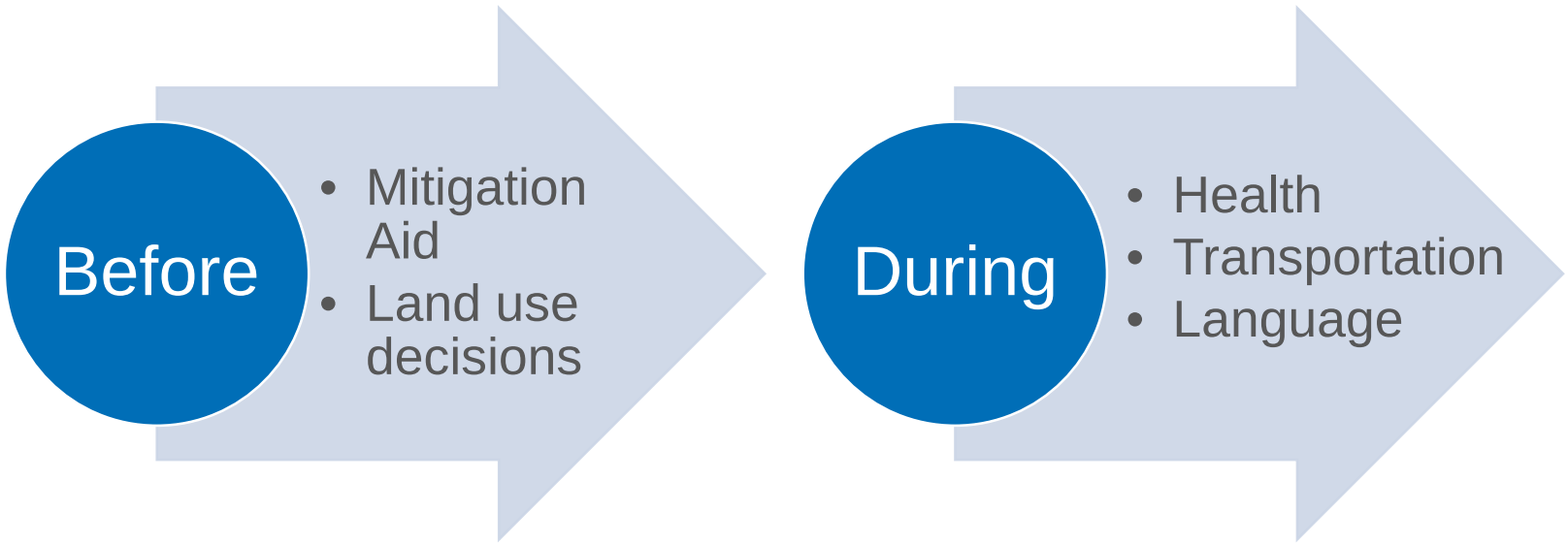

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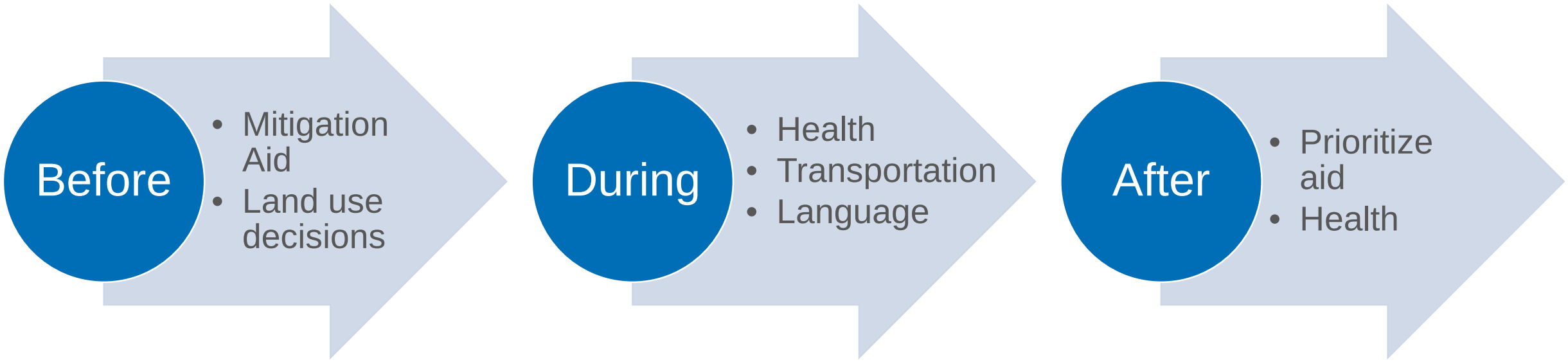

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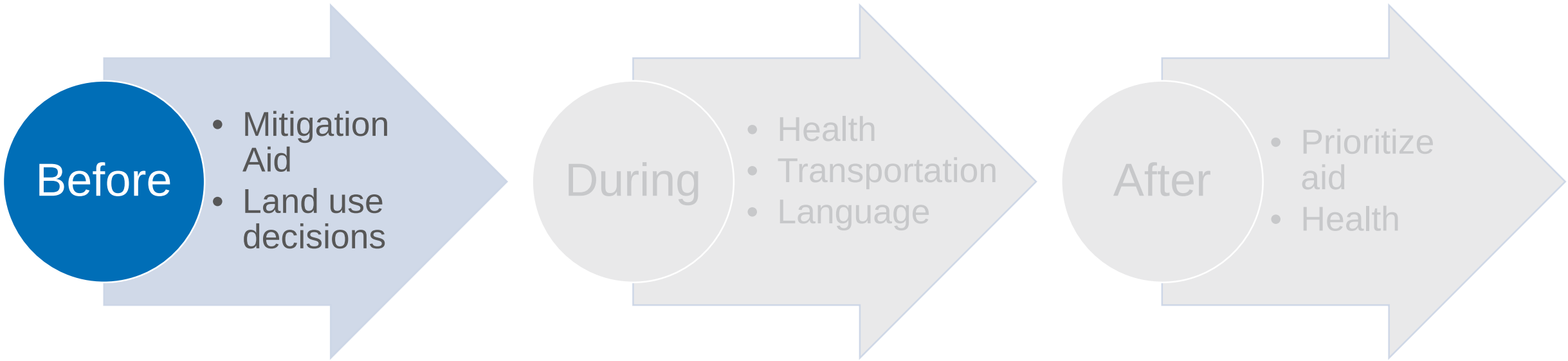


# The Home Ignition Zone

https://headwaterseconomics.org

Cohen, J. The Wildland-Urban Interface Fire Problem: A Consequence of the Fire Exclusion Paradigm. Fall 2008. *Forest History Today*. https://www.fs.fed.us/rm/pubs_other/rmrs_2008_cohen_j002.pdf

# The Home Ignition Zone

https://headwaterseconomics.org

Cohen, J. The Wildland-Urban Interface Fire Problem: A Consequence of the Fire Exclusion Paradigm. Fall 2008. *Forest History Today*. https://www.fs.fed.us/rm/pubs_other/rmrs_2008_cohen_j002.pdf

# Most WUI Disasters Happen Because of Embers

Photo: Wenatchee Valley Firefighters– Sleepy Hollow Fire 2015

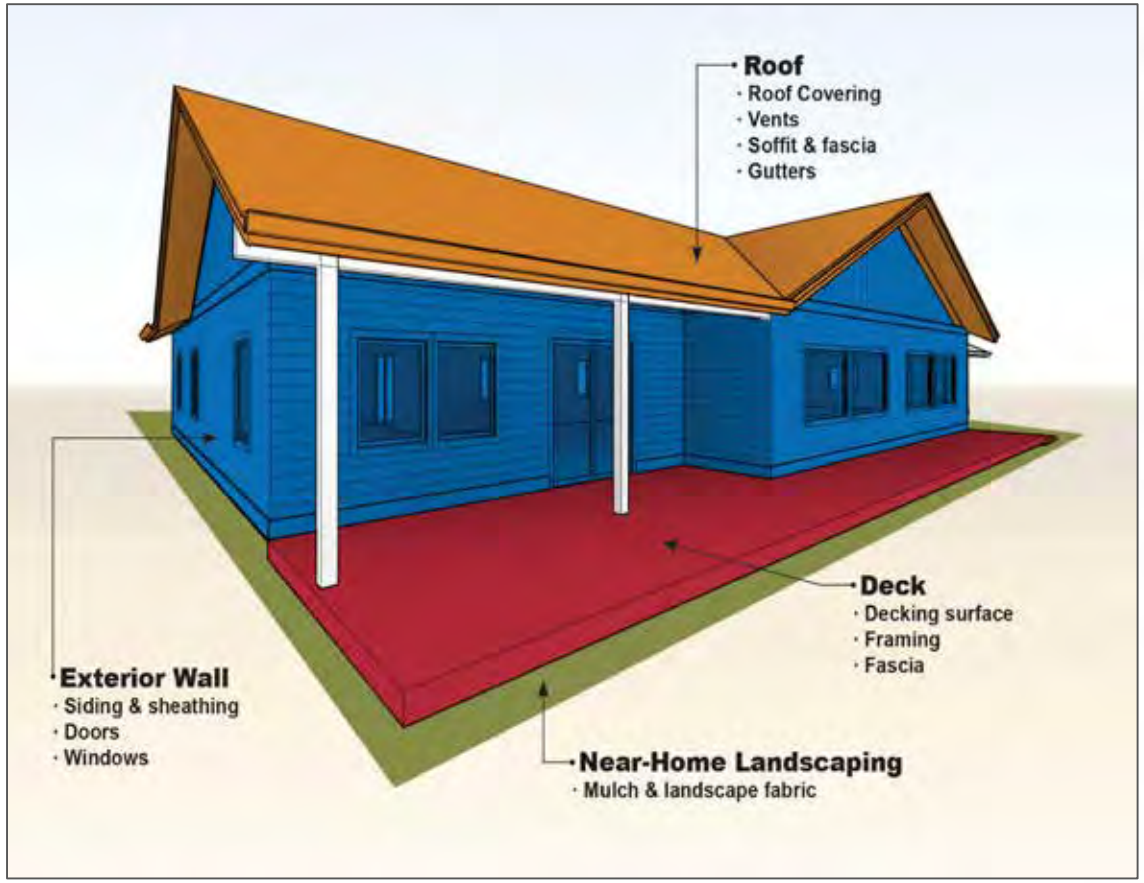
https://headwaterseconomics.org

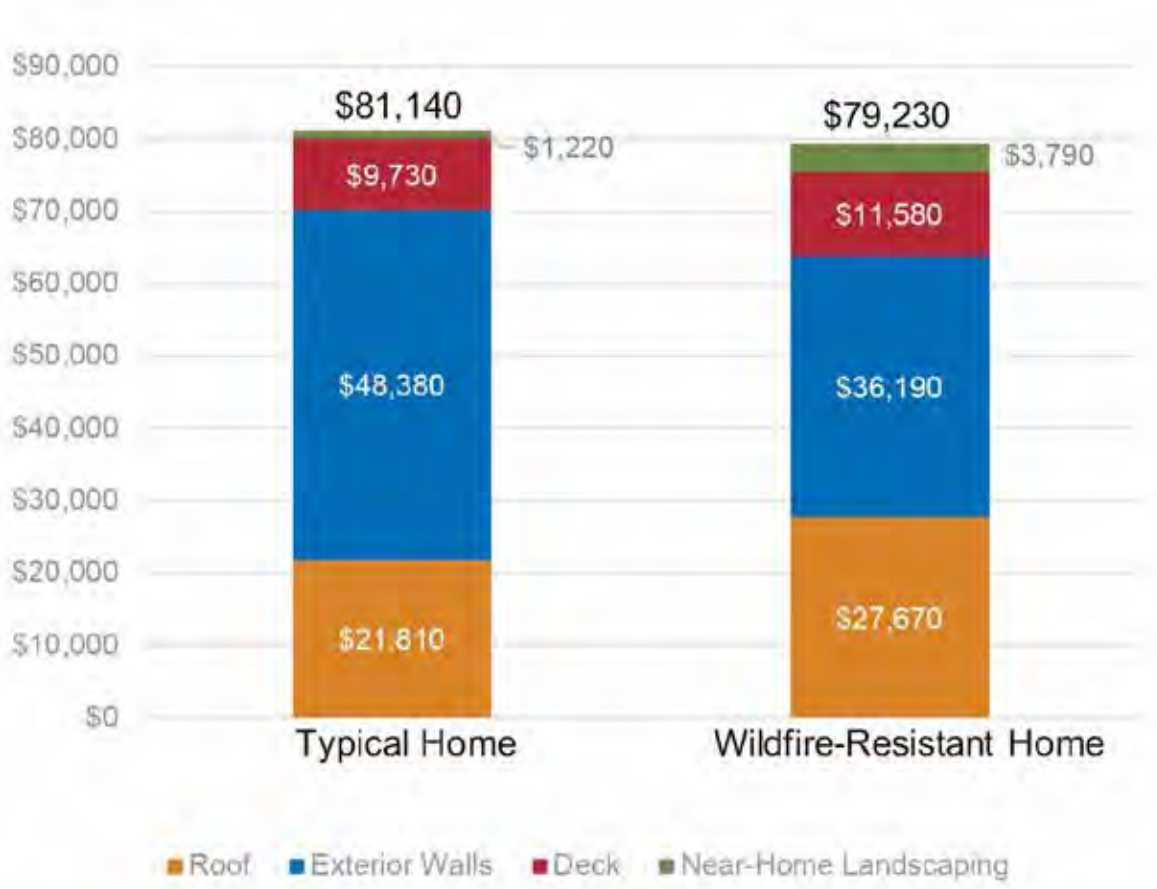
Finney, M.A., and J. D. Cohen. 2003. Expectation and Evaluation of Fuel Management Objectives. USDA Forest Service Proceedings RMRS-P-29.

# Insurance Institute for Business & Home Safety: Wildfire Demo

Insurance Institute for Business & Home Safety
https://ibhs.org/wildfire/wildfire-demo-2019/

# A wildfire-resistant home is comparable in cost

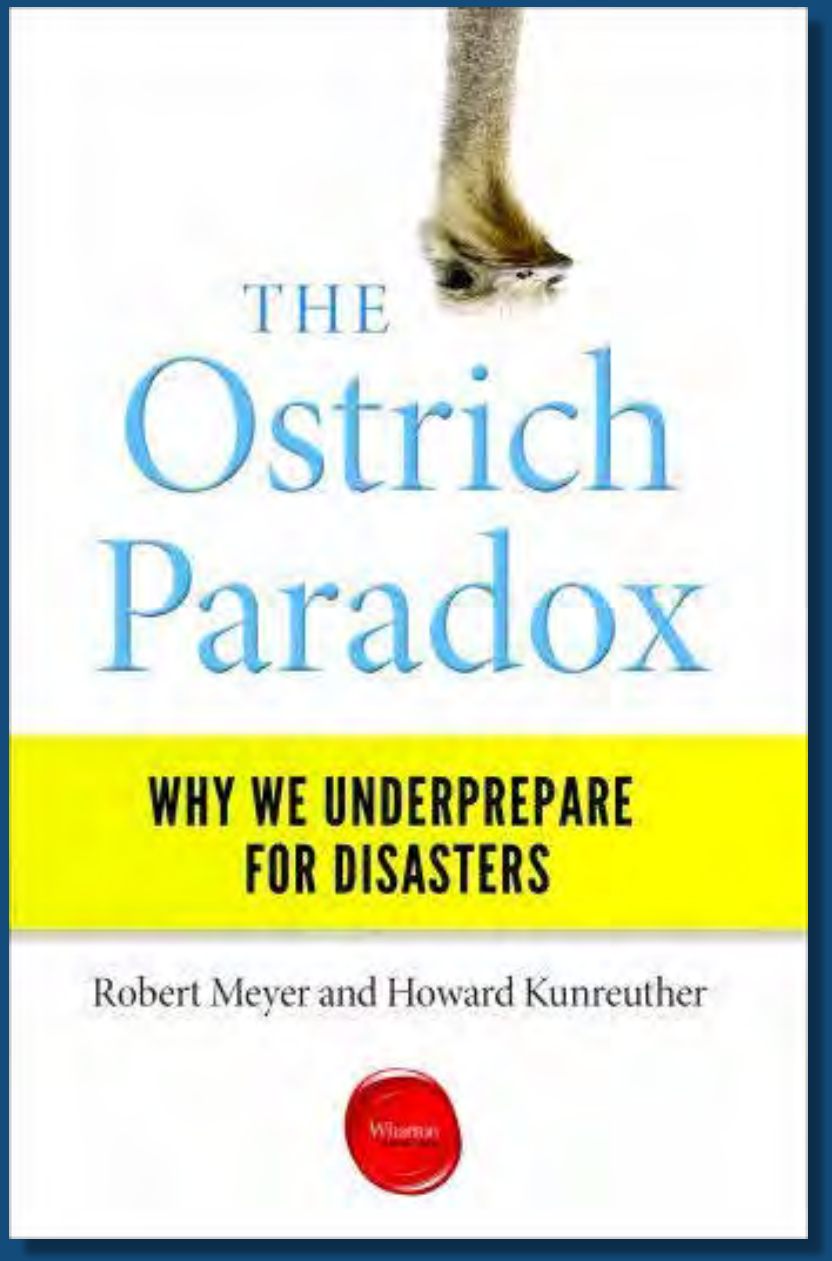



https://headwaterseconomics.org

Headwaters Economics. 2018. Building a Wildfire-Resistant Home: Codes and Costs. https://headwaterseconomics.org/wildfire/homes-risk/building-costs-codes/

# Why aren’t we building safer communities?




**“People are naturally prone to a range of biases that inhibit long-term thinking.”**

Amnesia

Amnesia
Optimism

Amnesia
Optimism
Herding

ü Implement land use planning tools

- Implement land use planning tools
- Create a culture of safety

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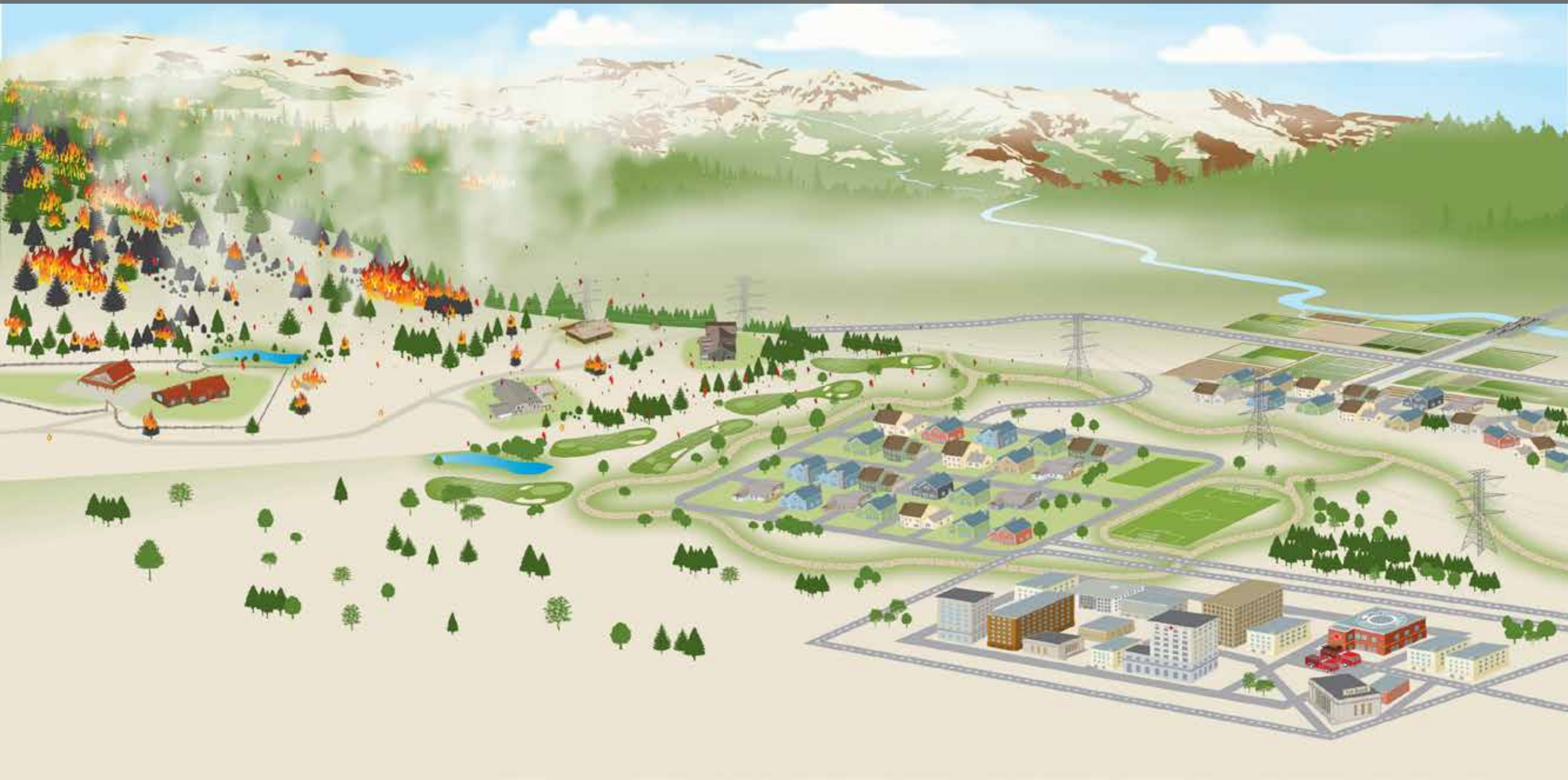
- Create a culture of safety
- Prioritize resources to the people who need it most

# Example Land Use Planning Tools



# WUI Code

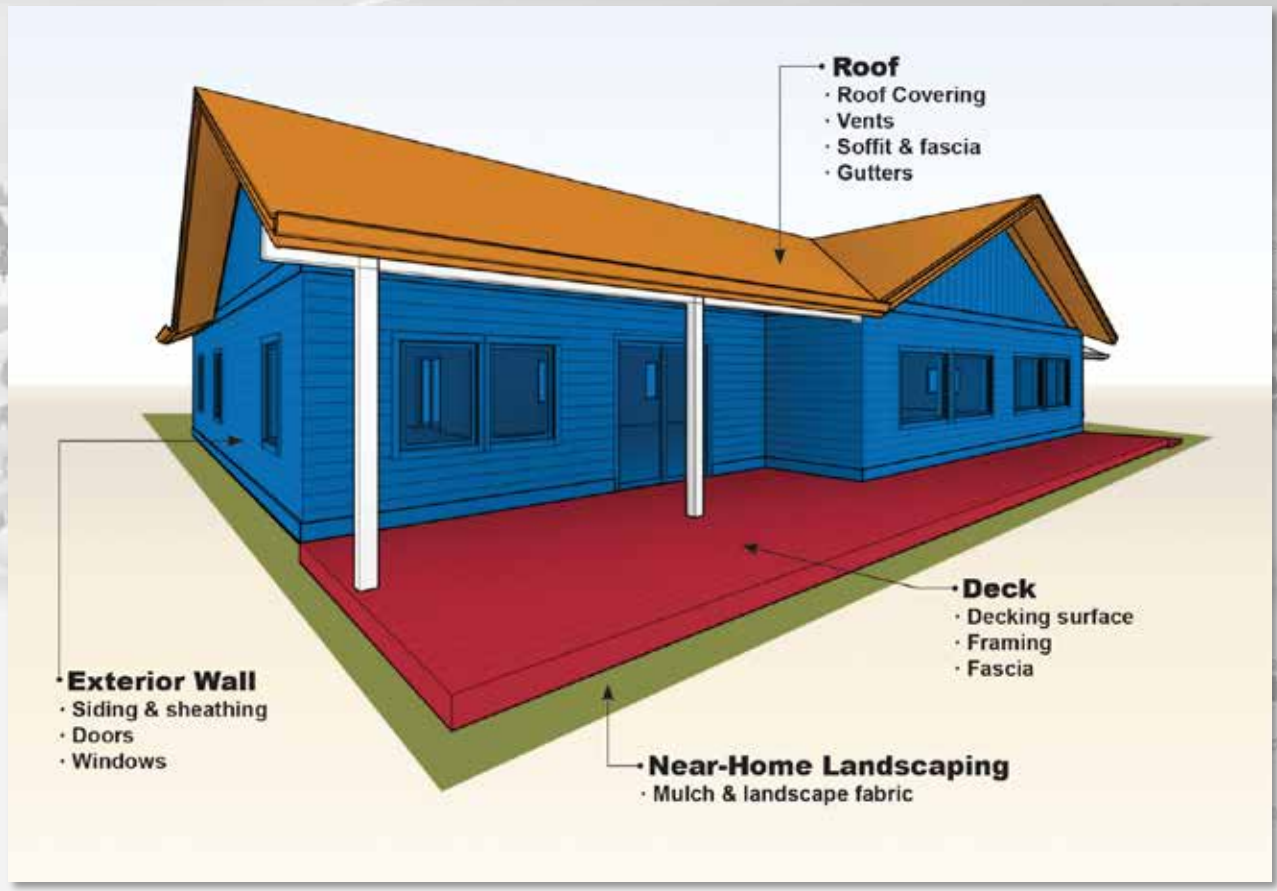
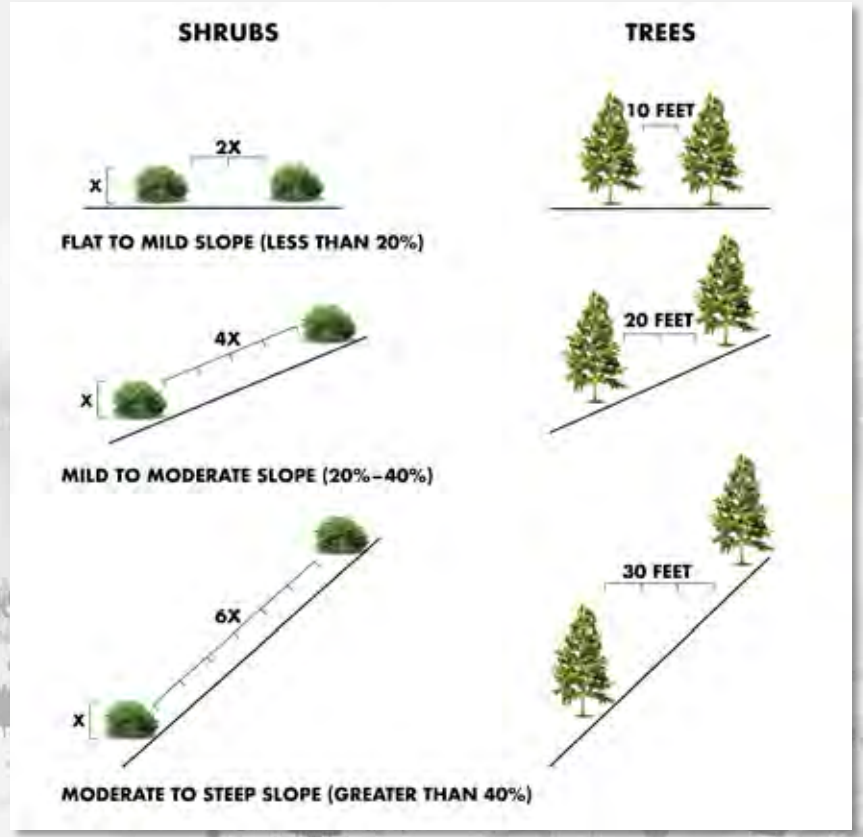

Roof
· Roof Covering
· Vents
· Soffit & fascia
· Gutters
Deck
· Decking surface
· Framing
· Fascia
Exterior Wall
· Siding & sheathing
· Doors
· Windows
Near-Home Landscaping
· Mulch & landscape fabric

Photo: La Citta Vita Flikr

# Density Bonus



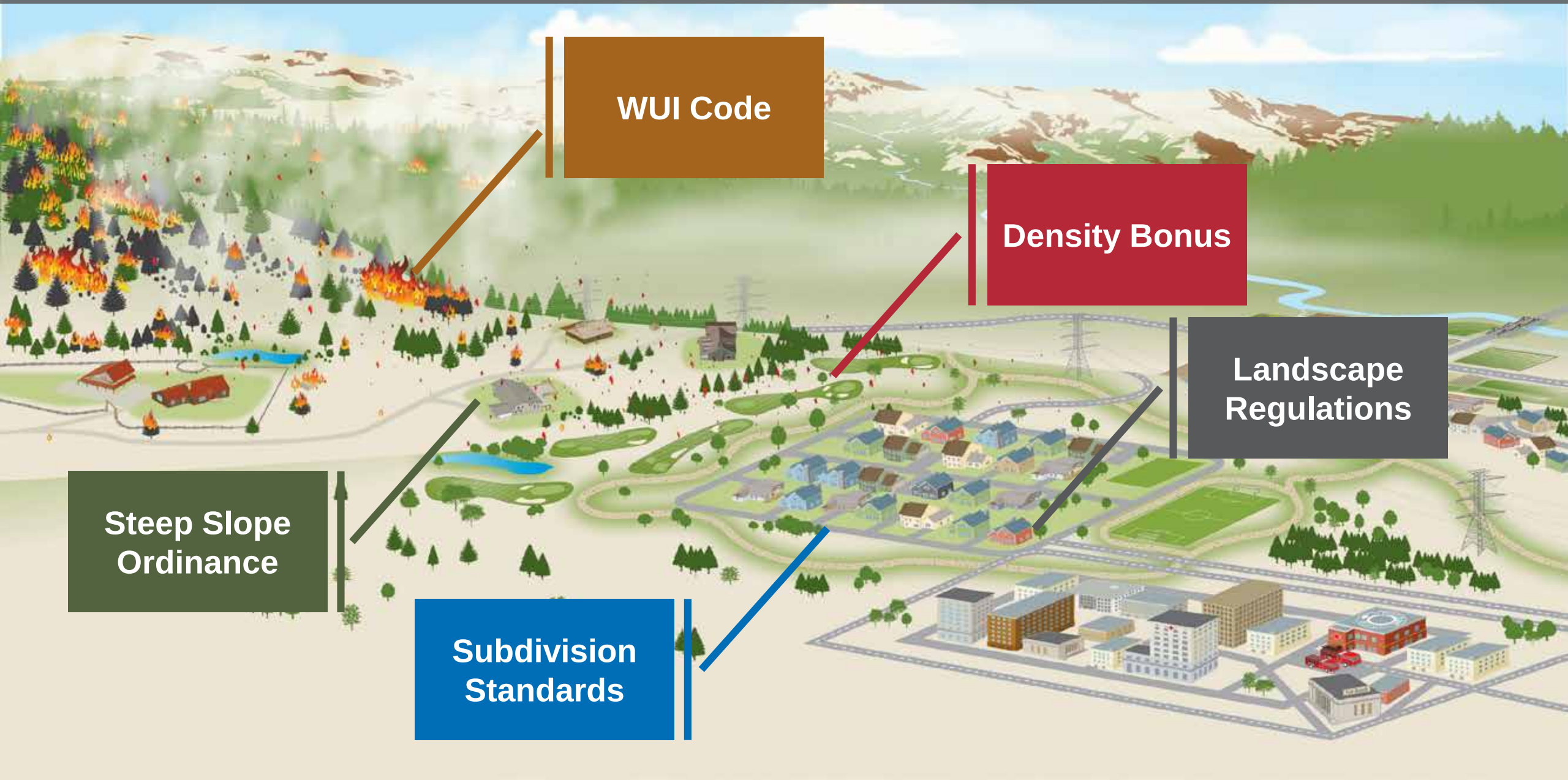
# Landscape Regulations

# Subdivision Standards

# Steep Slope Ordinance

Photo: Wenatchee World

# Powerful Tools for Resilience



Risk is not evenly distributed.

Risk is not evenly distributed.
We know how to build safer communities.

Risk is not evenly distributed.
We know how to build safer communities.
We can’t afford not to.

SURGEON GENERAL'S WARNING:
Smoking Causes Lung Cancer,
Heart Disease, Emphysema, And
May Complicate Pregnancy.

# Thank you!

HEADWATERS ECONOMICS

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