

# Nearmap

How climate stress  
is quietly reshaping  
America's roofs



## EXECUTIVE SUMMARY

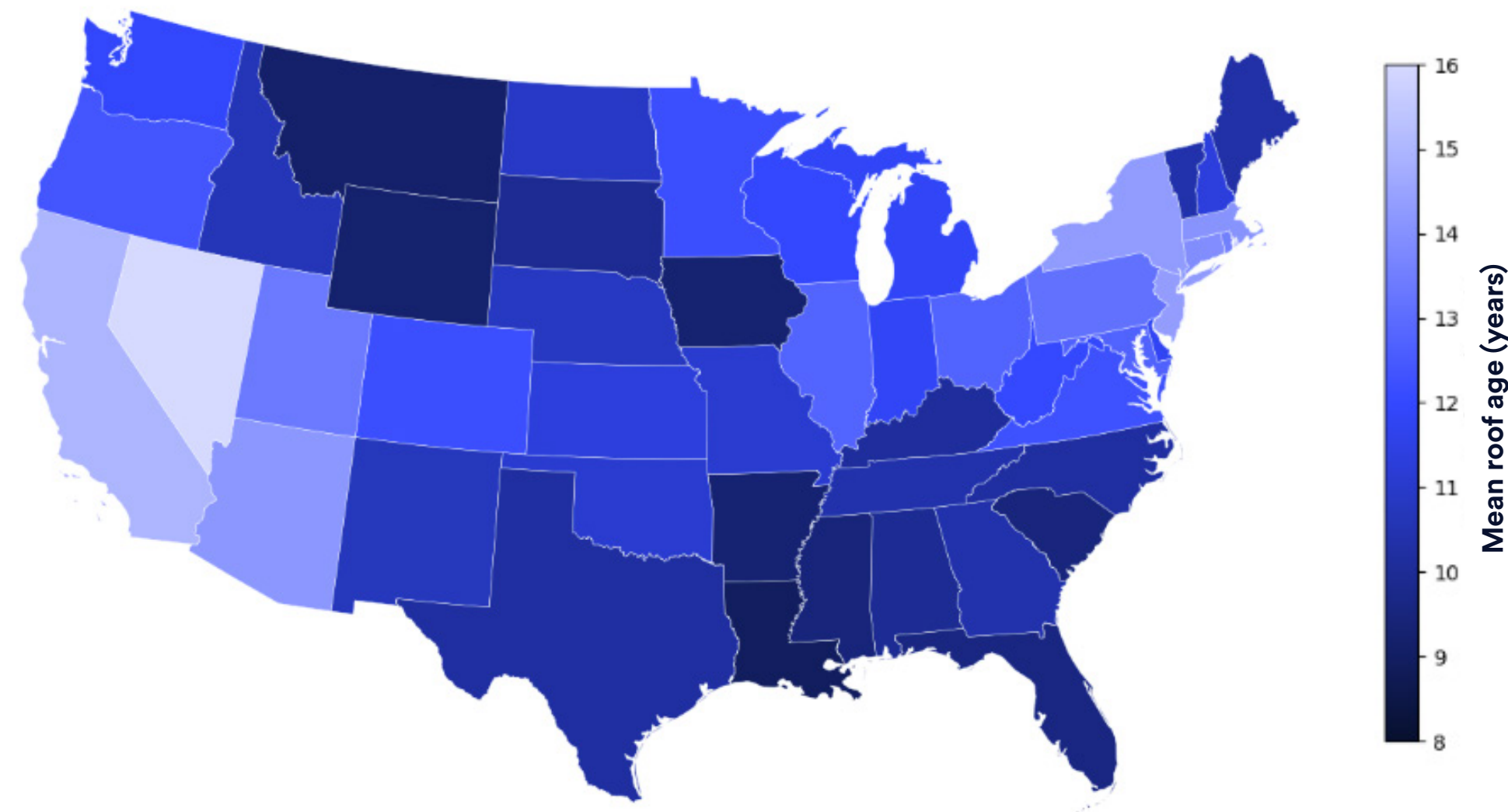
# Climate risk isn't just about catastrophic events anymore

The insurance industry has long used catastrophic weather as the primary driver for understanding climate risk. While catastrophes offer a good understanding, they don't tell the full story.

What about the events that occur between major weather events? Daily heat cycles, persistent humidity, and increasingly intense rainfall are quietly reducing roof lifespans across the U.S. These effects influence replacement frequency, claim patterns, and the slow erosion of roofing stock in regions that may not carry traditional high-risk designations.



Mean roof age by state



# 82%

States with the youngest average roof ages see replacements 82% more frequently than those with the oldest average age.

# 2.8B

Roof images analyzed to generate this dataset.

# ~2,100

U.S. counties covered, enabling county-level climate and risk comparisons.

## The solution

Roofs are the primary interface between a property and the elements, and one of the most reliable indicators of where climate stress is accumulating. Nearmap captures high-resolution aerial data across the U.S. at a scale and frequency that makes portfolio-wide analysis possible. With 12+ years of historical imagery and Nearmap AI running across every new capture, we can see what's happening to roofing stock, not one property at a time, but across entire regions, over time.

To understand how climate conditions translate into roof longevity, Nearmap analyzed over 2.8 billion roof images from that archive, covering nearly 2,100 U.S. counties and enabling direct comparisons between climate conditions and average roof age at the county level. The findings give underwriters, actuaries, and risk teams a more complete picture of where climate-driven property risk is concentrating, and how that picture is changing over time.

**Nearmap**

## NATIONAL SNAPSHOT

# Roof age varies by nearly a decade across the U.S.

Average roof age across the contiguous U.S. ranges from 16.2 years in Nevada to 8.9 years in Louisiana. That difference is likely driven by climate conditions, construction standards, and material choices. But the climate signal is hard to ignore.

For individual properties, a newer roof is generally lower risk for an insurer. At a regional level, a low average roof age signals that, overall, roofs are being replaced more frequently. A five-year-old roof in Louisiana is not equivalent to one in Nevada. The Louisiana roof is already further through its expected lifespan. Regional patterns add important context, helping insurers distinguish between a roof that's young because it's well-maintained and one that's young because it had to be replaced.

Drier western states show significantly older average roof ages. But even those baselines are not fixed. As climate profiles shift across the country, the geography of risk is shifting with them.

## Roof age varies by up to 7 years across the U.S

A seven-year gap in average roof age between the highest and lowest ranked states, driven by the climate conditions each region imposes on its roofing stock.

Highest average roof age

# 16.2 yrs

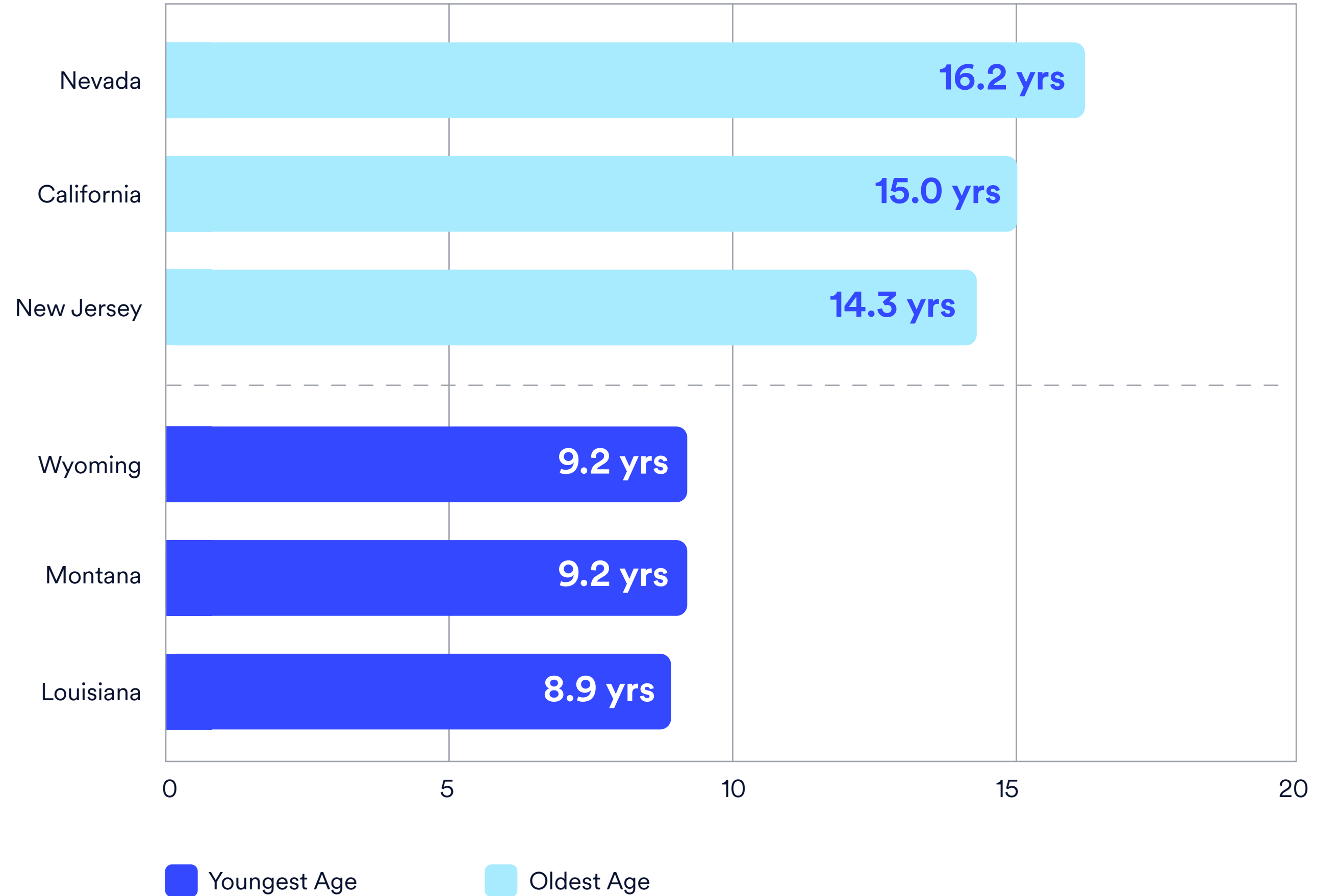
Nevada

Lowest average roof age

# 8.9 yrs

Louisiana

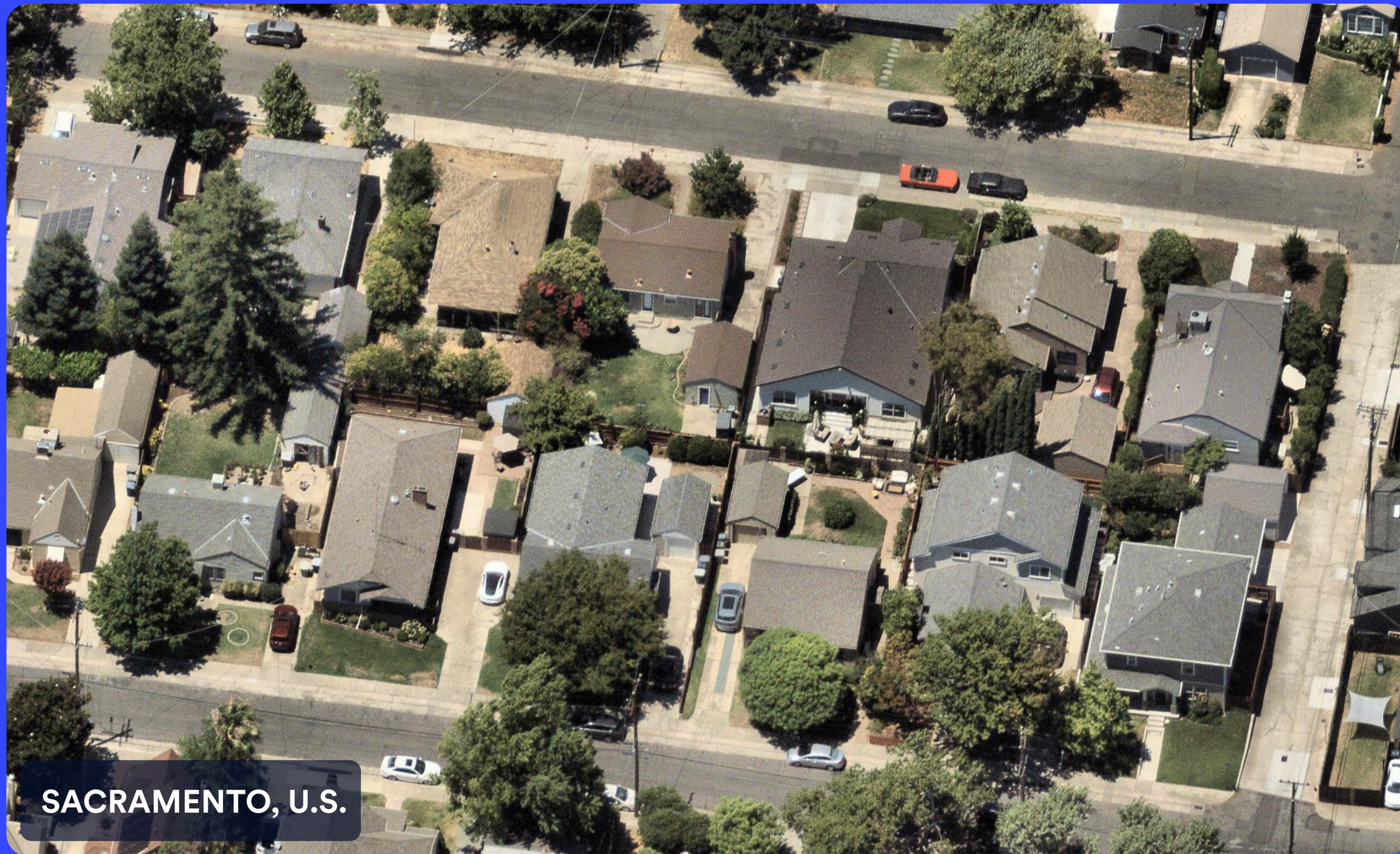
## Oldest vs. youngest average roof age across U.S. states



## CLIMATE DRIVERS

# Three factors have the clearest relationship with roof age

Nearmap paired county-level roof age data with five-year average climate conditions from the gridMET climate dataset across nearly 2,100 U.S. counties. Three variables stand out for the strength of their correlation with reduced roof longevity.



### DRIVER 1

## Thermal stress

Daily temperature swings accelerate material aging.

When temperatures rise significantly during the day and cool sharply at night, roofing materials expand and contract in a repeated cycle. Over years, that stress weakens shingles, loosens fasteners, and cracks the sealants around vents and flashing, causing roofs to age ahead of their expected lifespan.

The data makes this visible at scale. Counties where mean daily temperature fluctuations exceed 23°F have an average roof age of 9.0 years. Counties where fluctuations stay below 20°F average 11.1 years, a 23% difference driven by this single climate variable.

## 23% longer

Average roof lifespan in high thermal stress counties, a difference of 2.1 years attributable to this factor alone



**DRIVER 2**

**Heat and humidity**

The combination is more damaging than either condition alone.

Temperature and humidity each independently reduce roof longevity. But counties where both are elevated show the most severe effect in the entire dataset: an average roof age of just 8.5 years.

That compares to 11.0 years in cool, low-humidity counties. The gap reflects how heat and moisture together accelerate biological growth on shingles, promote water intrusion, and drive material breakdown beyond what either condition produces on its own.

For insurers, the Gulf Coast and Florida are the clearest examples. Both fall predominantly into the hot, high-humidity climate category. At the county level, the data is specific:

- Taylor County, FL — 5.0 years
- Walthall County, MS — 5.2 years
- Madison County, FL — 5.6 years

Roofs in these counties are being replaced roughly twice as often as those in cooler, drier regions of the country.



**DRIVER 3**

**Extreme rainfall**

Where rainfall intensity is highest, roofs are youngest. In other words, roofs are replaced more frequently.

Severe rainfall events stress drainage systems, exploit weaknesses in flashing and seals, and drive water intrusion that damages structure and insulation over time. The data shows a consistent pattern: counties experiencing the highest rainfall intensity have the youngest average roof ages, indicating more frequent replacements.

The trajectory of this trend is what makes it most significant. The land area of the U.S. falling into the highest precipitation band grew from approximately 35,000 square miles in 1980–1984 to just over 300,000 square miles in 2020–2024, a 750% increase over four decades.

Properties that were once in moderate-risk zones are now regularly exposed to the conditions that drive accelerated roof wear. That geographic expansion has direct implications for portfolio concentration, pricing, and where claims pressure will build.

**750%**  
 Increase in U.S. land area in the highest rainfall intensity band, from ~35,000 sq miles (1980–84) to ~300,000 sq miles (2020–24)

**8.5 years**  
 Average roof age in hot, high-humidity counties, the shortest lifespan of any climate combination in the dataset, compared to 11.0 years in cool, low-humidity regions

## CLIMATE TRENDS

# The geographic footprint of extreme rainfall risk has expanded significantly

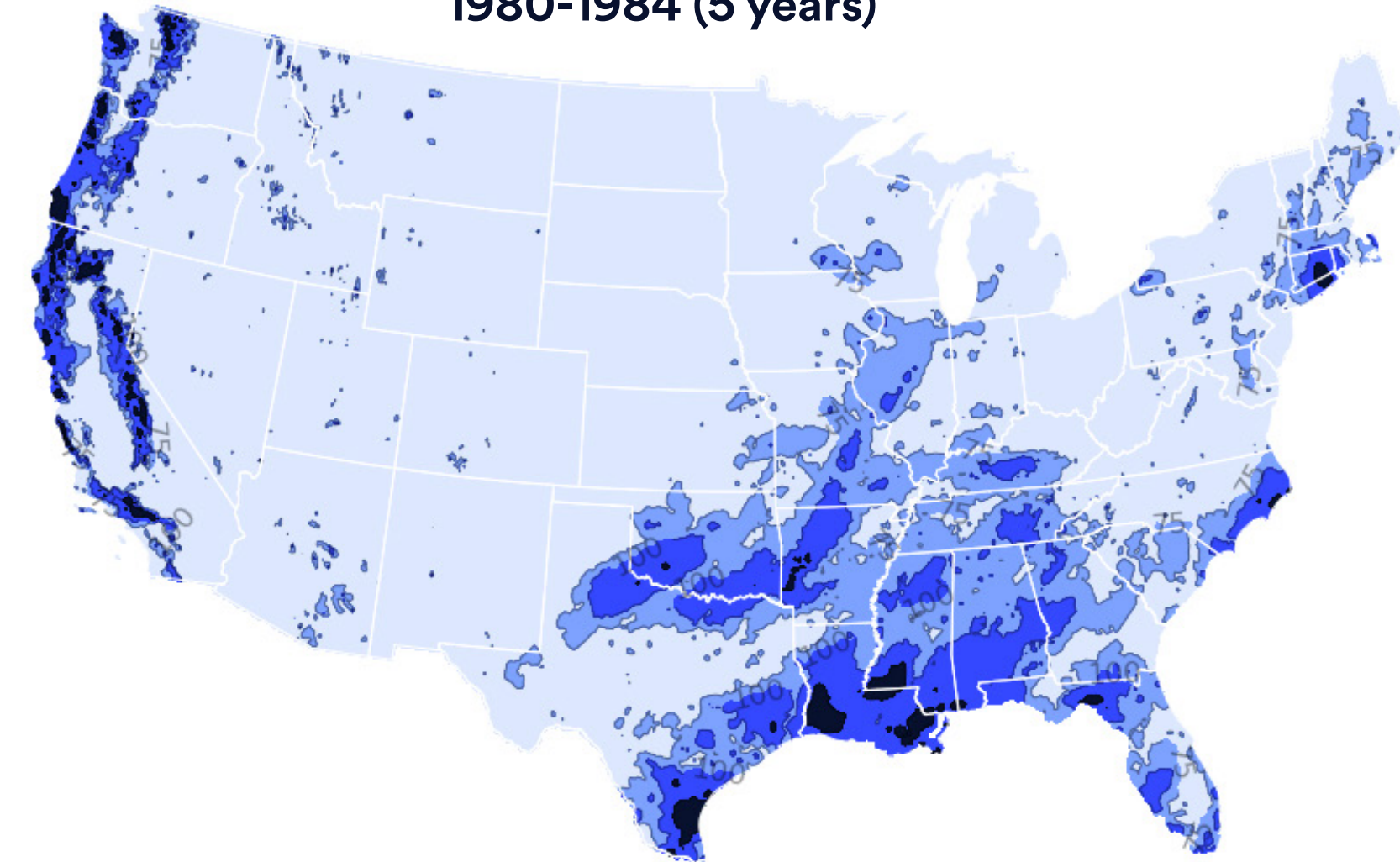
Of the three climate factors in this analysis, extreme rainfall provides one of the clearest pictures of how risk geography is changing. The 750% expansion in land area exposed to the highest precipitation band, from approximately 35,000 square miles in 1980–1984 to just over 300,000 square miles in 2020–2024, is not a marginal shift. It represents a fundamental change in where intense rainfall occurs and which properties are now exposed to the conditions that drive accelerated roof wear.

Properties in areas once characterized by moderate precipitation are now regularly experiencing events intense enough to stress drainage systems, exploit vulnerabilities in seals and flashing, and shorten roof lifespans. These are not properties that typically appear on traditional risk radar.

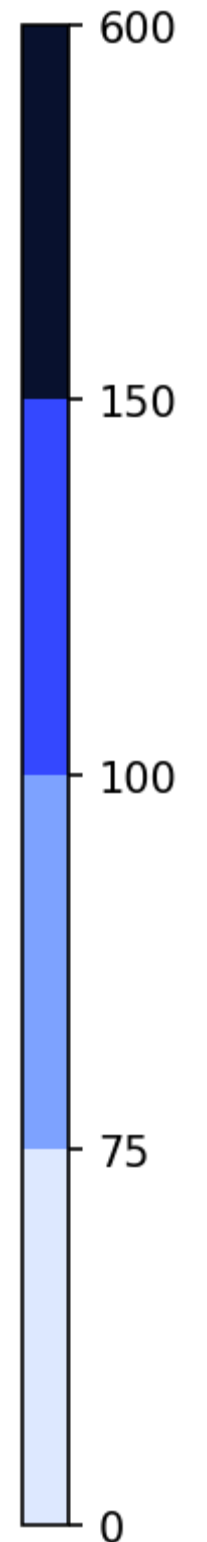
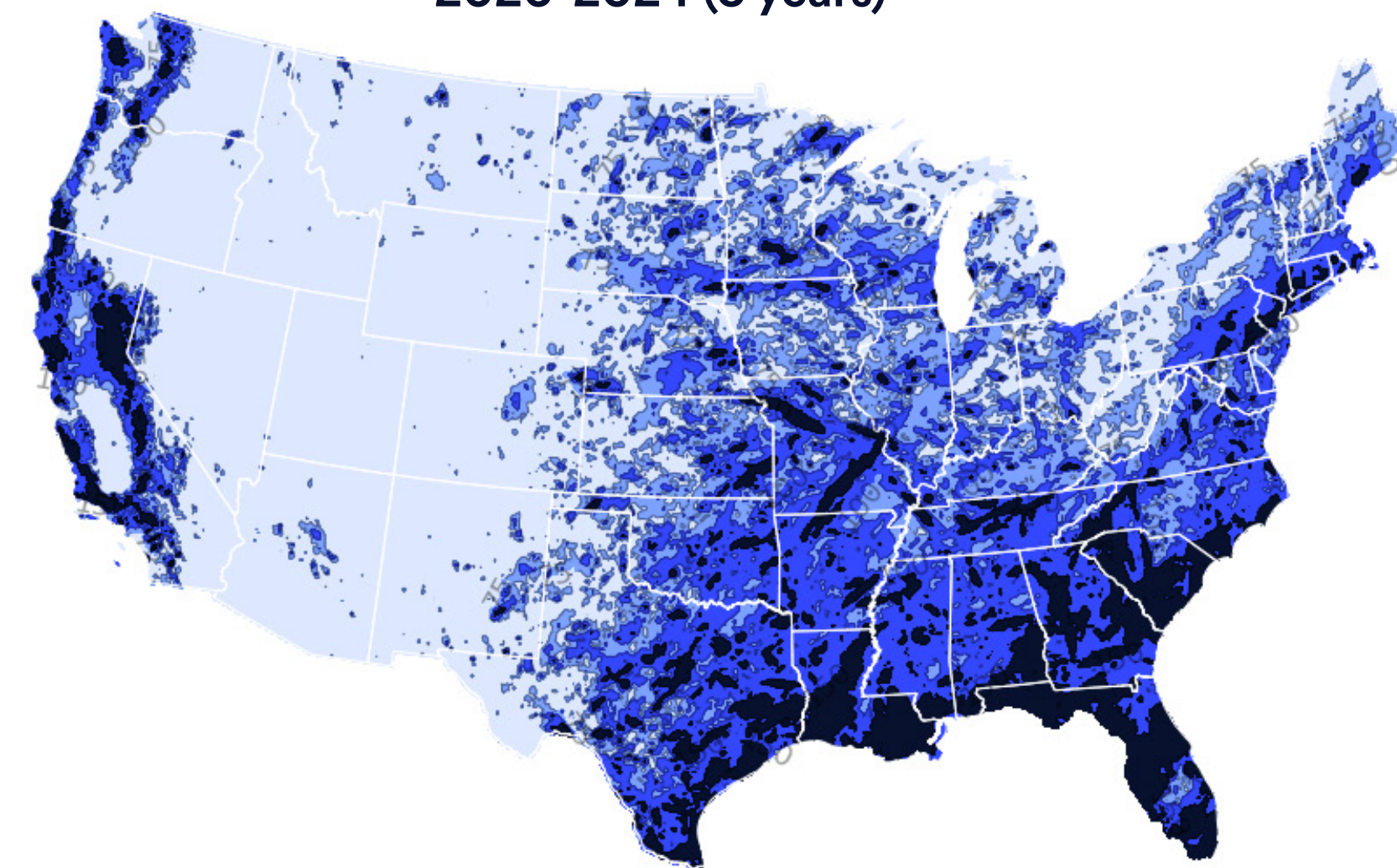
That gap between the exposure they now carry and the assumptions built into their pricing is where loss accumulates quietly.

“Climate shifts don’t announce themselves with a single event. They accumulate, county by county, year by year.”

Max daily precipitation  
1980-1984 (5 years)



Max daily precipitation  
2020-2024 (5 years)



Max daily precipitation (mm)



2023



2024



2024



2025

## FOR INSURERS

# Chronic degradation is reshaping the underwriting conversation

CAT models remain essential. But this analysis points to a dimension of risk that sits alongside them: the ambient climate conditions that quietly erode roof lifespans between events, and amplify exposure when a CAT event does arrive. An aged, climate-stressed roof absorbs the same storm differently than a newer one. The conditions that accumulated in the years before the event shape the claim that follows. Most carriers recalculate regional hazard exposure regularly. What is harder to keep current is property-level condition data. That is, the actual state of the roofing stock those models are pricing against. Both are needed to give a complete picture.

At an average replacement cost of \$9,500–\$11,000 per roof\*, compressed lifespans translate directly into more frequent claims. For portfolios concentrated in high-replacement-frequency regions, that frequency is a line item.

A roof in a hot, humid county may reach the end of its useful life years before a homeowner or insurer expects. That compressed lifespan affects claim probability, claim severity, and for portfolios concentrated in those regions, aggregate loss expectations. Pricing that models regional hazard exposure without current property-level condition data may not capture the full picture at renewal.

Roof Age results cover properties across 91% of the U.S. population, removing the need for costly manual inspections or reliance on homeowner-reported information and permits alone. Insurers can assess the condition of their entire book before a storm, before a renewal, and before a pricing decision. They use data derived from the actual state of the housing stock rather than modeled assumptions.

The result is underwriting that accounts for both acute event risk and the chronic, climate-driven degradation that is reshaping risk across millions of properties that have never filed a CAT claim.

\*<https://exterioralliance.com/roofing/roof-replacement-cost-2025>

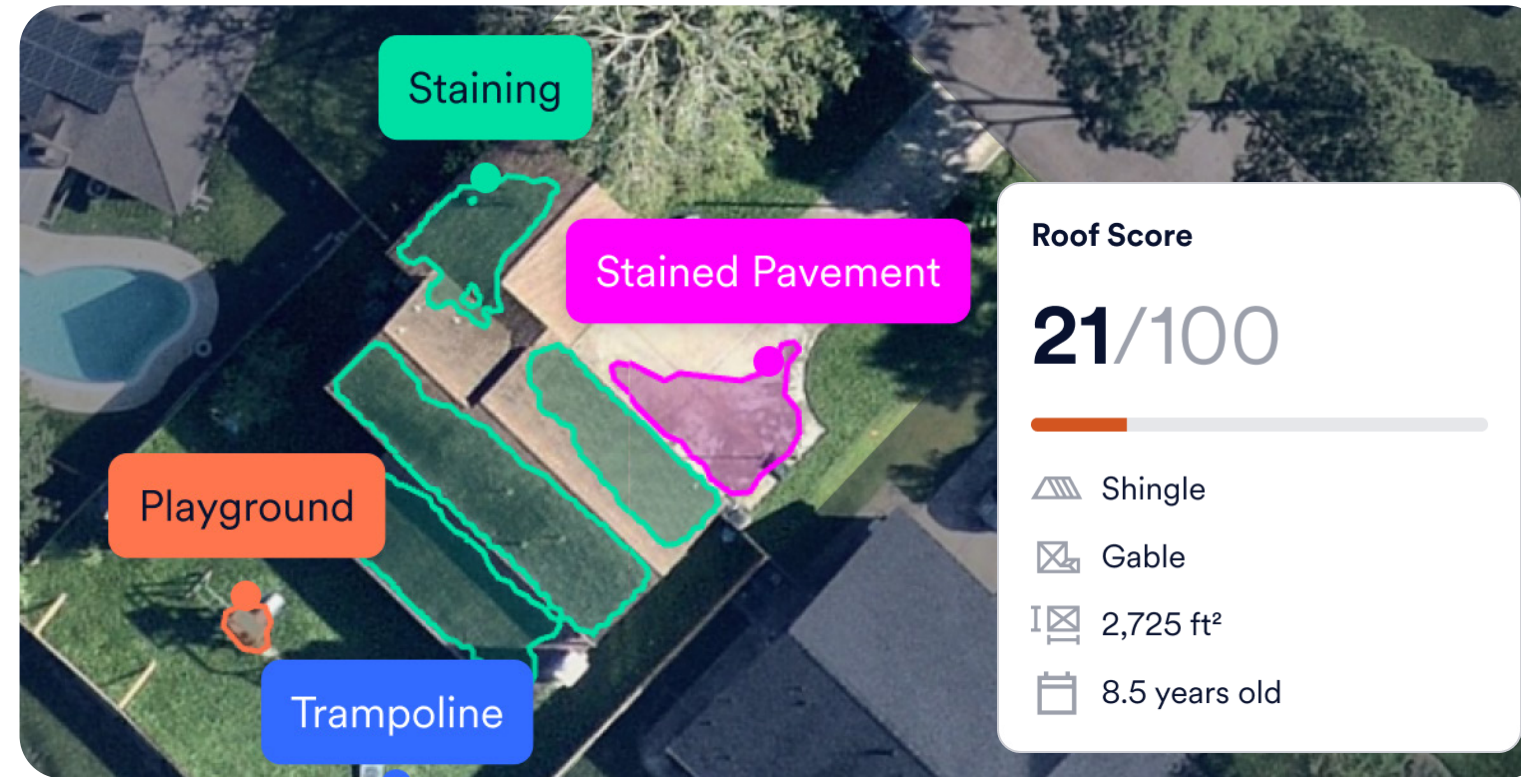
## PROPERTY INTELLIGENCE

# AI-powered roof age data, nationwide and at scale

The analysis in this guide is drawn from Nearmap roof age, an AI-derived dataset generated from 2.8 billion roof images across the Nearmap historical imagery archive. Age predictions are generated for every roof captured, with county-level averages calculated across nearly 2,100 U.S. counties.

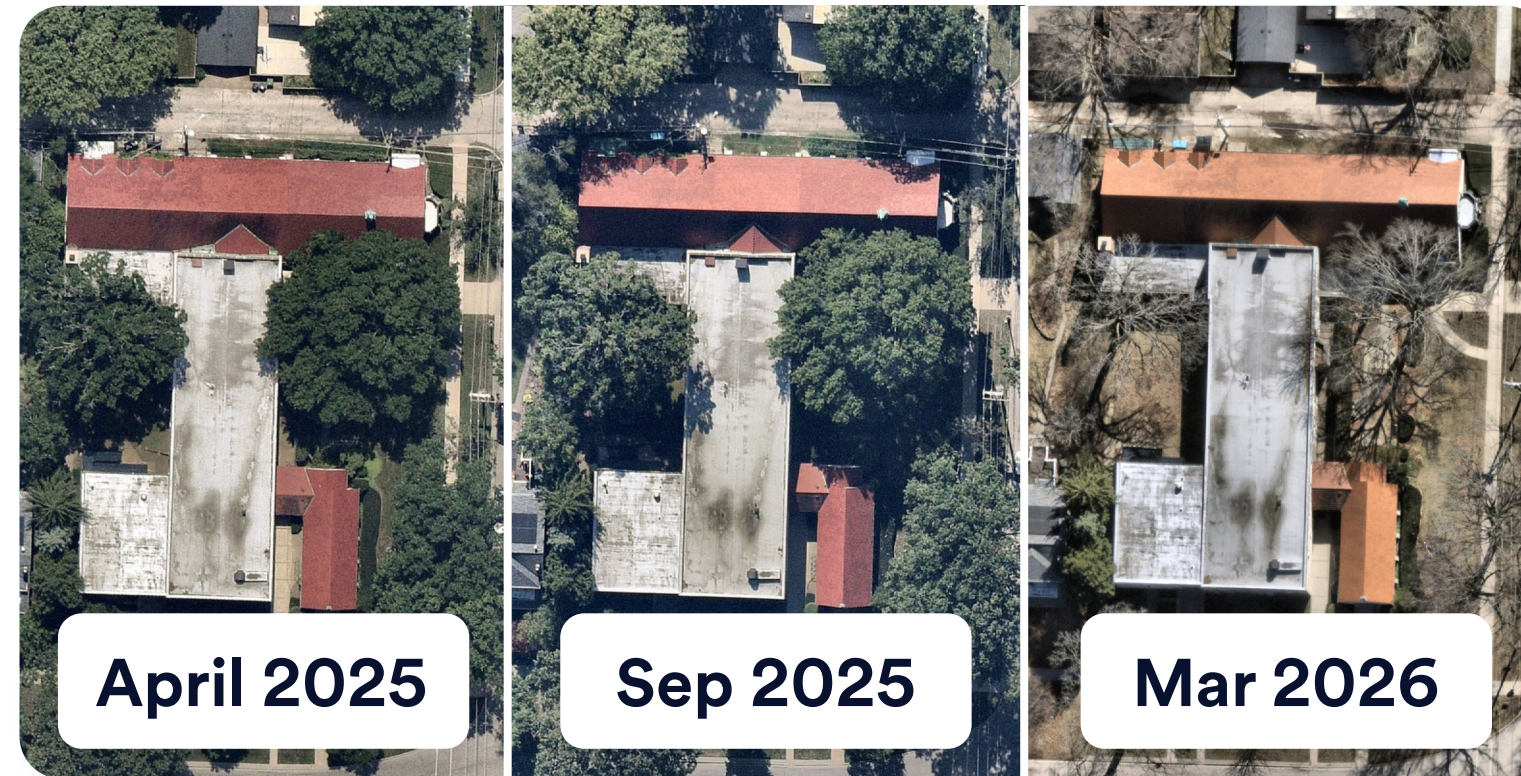
This dataset is not built on modeled assumptions or homeowner-reported data. Roof age is derived directly from Nearmap fully-owned high-resolution aerial imagery, applied across the U.S. housing stock.

Property intelligence that reflects real-world climate conditions, not just unverified data or post-claim damage, gives underwriting, actuarial, and risk teams a more certain picture of where exposure is building.



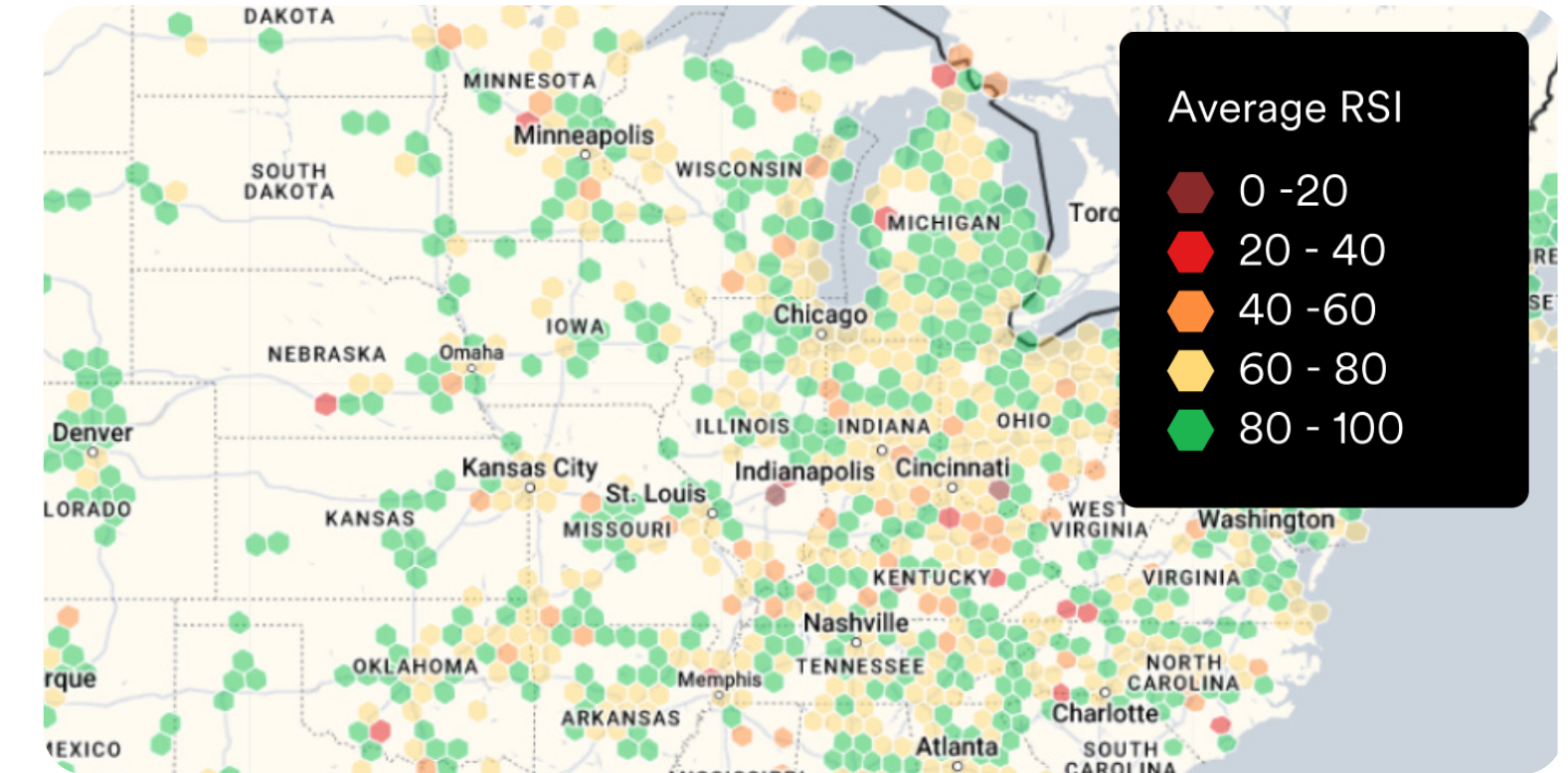
## Roof condition and age data

Available pre-inspection, across the entire U.S.



## Flagging & Continuous Monitoring

Flag and track climate-driven exposure changes over time - Not just after claims.



## Portfolio Intelligence

Assess risk at portfolio scale, not property by property.



## Partner Connect

Combine roof condition, age, and characteristics with third-party regional hazard data like HazardHub, Canopy Weather, and RedZone within Betterview, giving underwriting and risk teams a complete property risk picture in one place.

# See what property intelligence data reveals about your portfolio

Speak with Nearmap about using AI-powered roof age and property intelligence data across underwriting and risk workflows. Tell us your biggest problem, and we'll show you how to address it.



Scan the QR code to access your free roof age assessment or

[Visit The Link](#)



# Nearmap

Nearmap is a global property intelligence company delivering a complete, current view of the built environment. By owning the entire intelligence value chain—combining frequently refreshed aerial imagery capture, AI-derived analytics, and guaranteed building materials data—Nearmap provides a single source of truth for property decisions. Insurers, governments, and AECO organizations rely on Nearmap to replace uncertainty with evidence so they can act with speed and confidence as they shape the livable world.

For more information, visit [nearmap.com](https://nearmap.com)