



Affordability is more than a mortgage

The cost of homeowners' basic needs in a changing climate

Andy Walden
Phoebe Devries
Lauren Patterson

June 6, 2024

A Unique Value Proposition



Fixed Income

Our core focus is on fixed income, including U.S. municipal bonds and mortgage-backed securities



Security Linkage

Security linkage and entity mapping service to help clients with total portfolio coverage of climate transition and ESG data



Geospatial Intelligence Platform

Dynamic spatial intelligence platform links climate and impact data layers to a broad range of financial assets



Real Estate & Mortgage

Building on ICE's recent acquisition of Black Knight to advance data solutions in U.S. real estate and mortgage

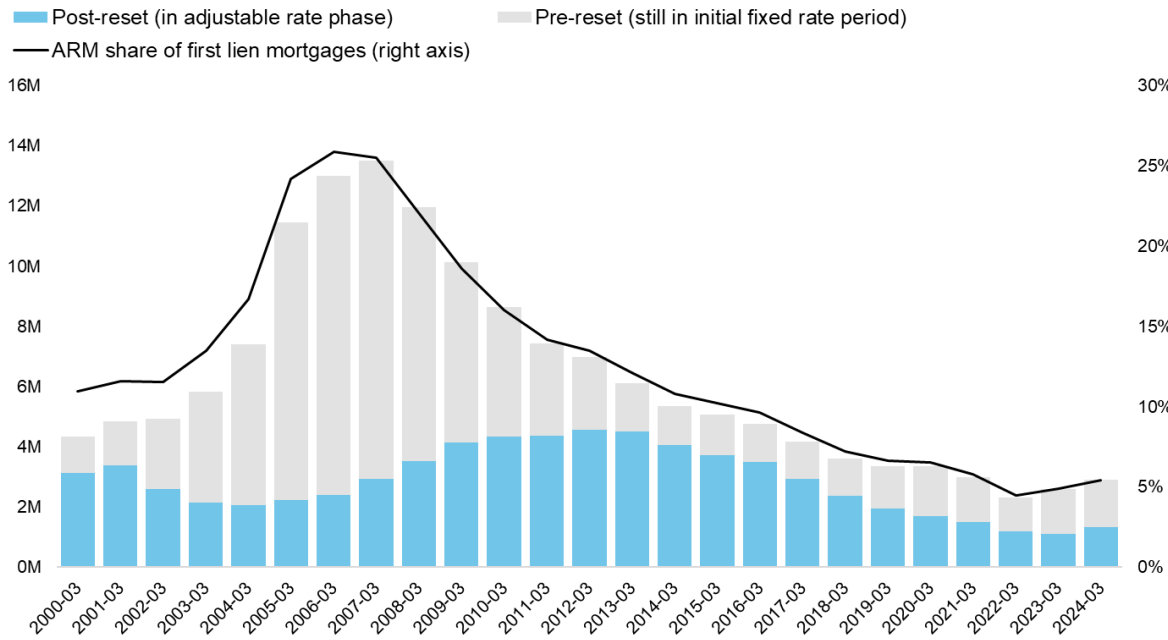




Four myths around homes, loans, and affordability

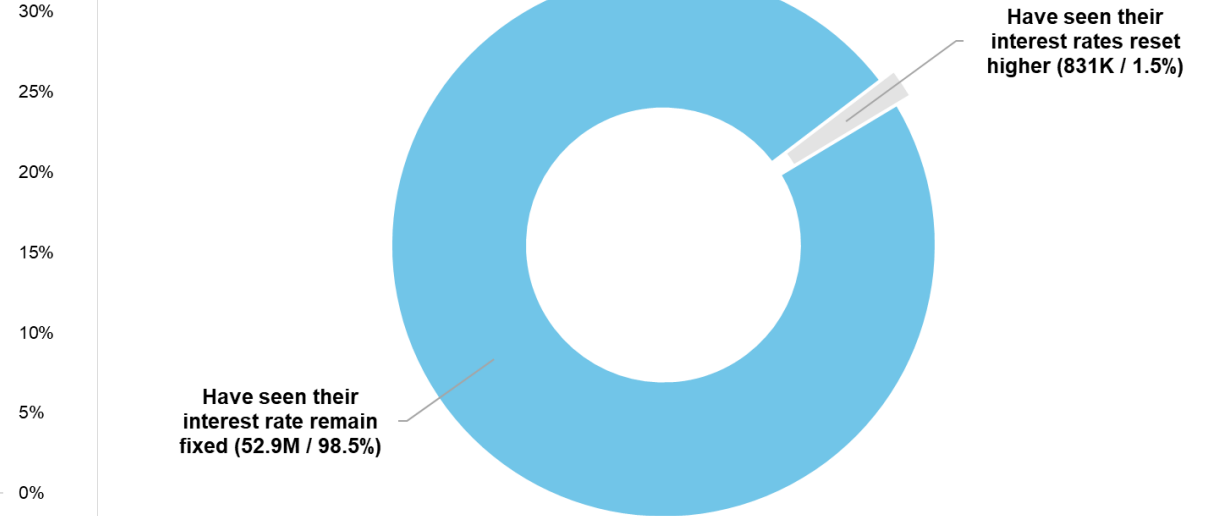
Myth #1: Monthly housing costs are locked in for 30 years for fixed rate loans

Adjustable-rate mortgages (counts and market share)



Source: ICE, McDash

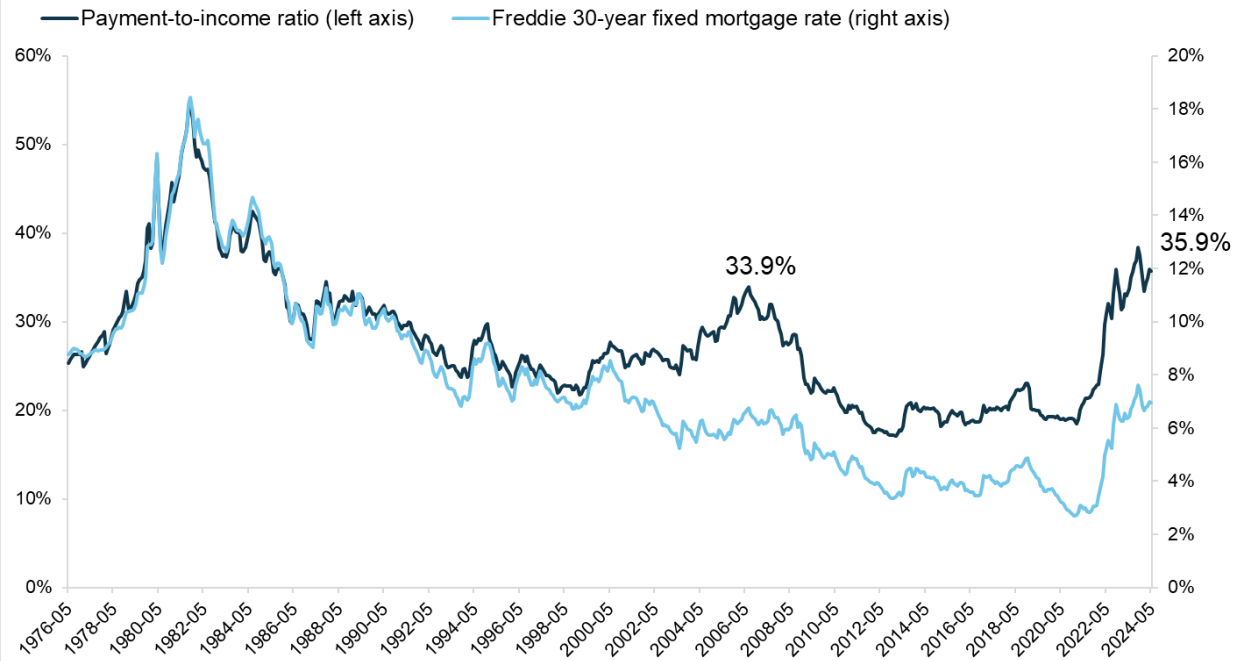
12-month lookback on interest rates of active mortgages



Source: ICE, McDash

Myth #2: The only factors that impact home affordability are home prices, incomes, and interest rates

National payment to income ratio*



Source: ICE Home Price Index, FHLMC PMMS, Census Bureau
 May 2024 reading is based on May 23 FHLMC PMMS of 6.94%

*The national payment-to-income ratio is the share of median income needed to make the monthly principal and interest payment on the purchase of the average-priced home using a 20% down 30-year fixed rate mortgage at the prevailing interest rate

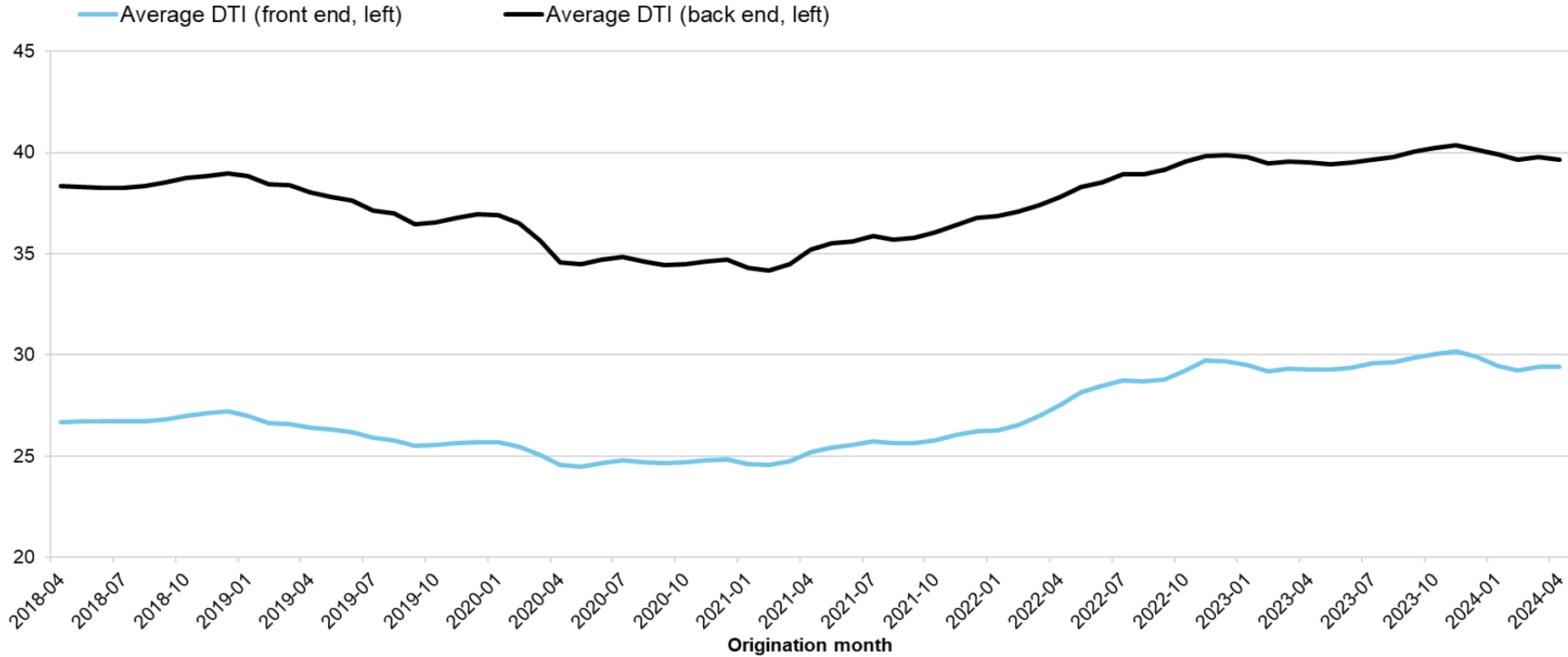
Most affordable markets				
Rank	Geography (CBSA)	Payment-to-Income Ratio	Payment-to-Income 1995-2003 Avg	Difference
1	Cleveland, OH	22.8%	21.6%	+1.2%
2	St. Louis, MO	24.1%	19.5%	+4.6%
3	Detroit, MI	24.4%	21.8%	+2.5%
4	Indianapolis, IN	24.4%	19.1%	+5.3%
5	Pittsburgh, PA	24.9%	21.7%	+3.2%
6	Oklahoma City, OK	25.0%	21.4%	+3.6%
7	Cincinnati, OH	25.5%	21.3%	+4.1%
8	Minneapolis, MN	26.0%	20.4%	+5.7%
9	Birmingham, AL	26.1%	25.0%	+1.1%
10	Chicago, IL	26.5%	23.7%	+2.7%

Least affordable markets				
Rank	Geography (CBSA)	Payment-to-Income Ratio	Payment-to-Income 1995-2003 Avg	Difference
41	Sacramento, CA	40.5%	27.3%	+13.2%
42	Boston, MA	41.2%	27.2%	+14.1%
43	Riverside, CA	42.8%	25.9%	+16.9%
44	Seattle, WA	44.5%	27.3%	+17.2%
45	Miami, FL	45.5%	24.4%	+21.1%
46	New York-Newark, NY-NJ	47.2%	28.2%	+19.0%
47	San Francisco, CA	52.3%	35.1%	+17.2%
48	San Jose, CA	60.9%	34.4%	+26.5%
49	San Diego, CA	61.0%	34.2%	+26.8%
50	Los Angeles, CA	69.4%	35.6%	+33.8%

Myth #3: Debt-to-income ratios (DTIs) are locked in at the time of origination and remain consistent over the life of a loan

Debt-to-income ratios by loan origination month

First lien originations

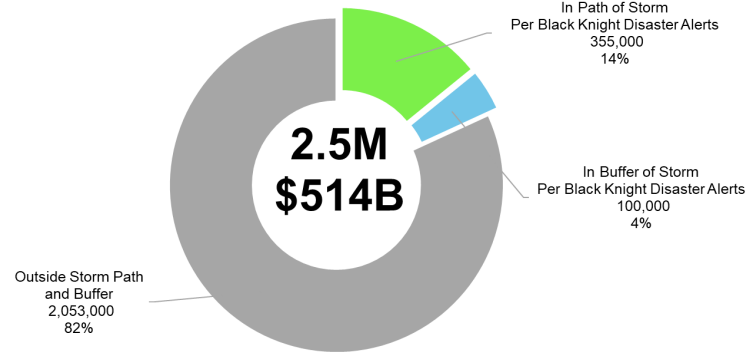


Source: ICE Market Trends

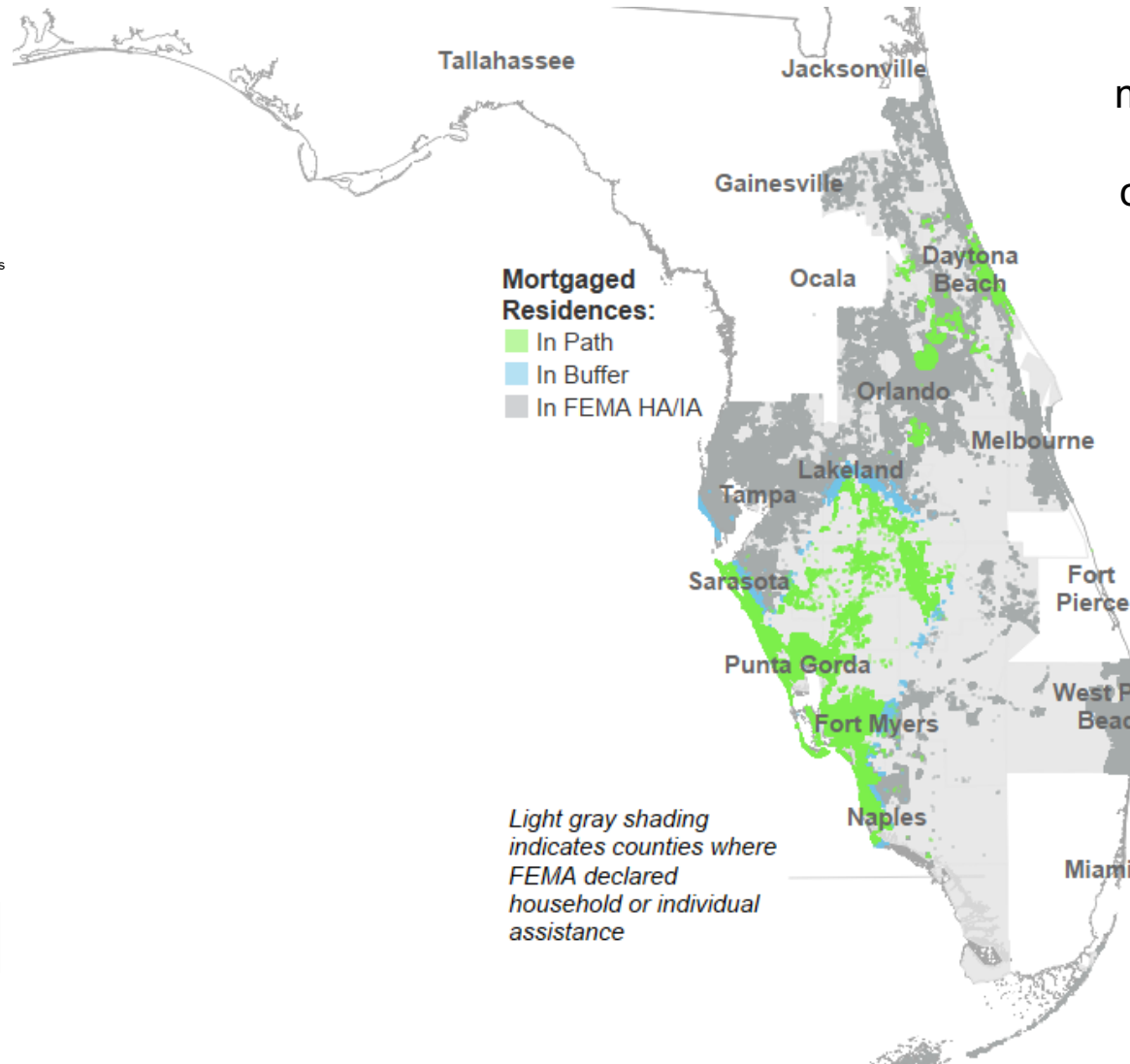
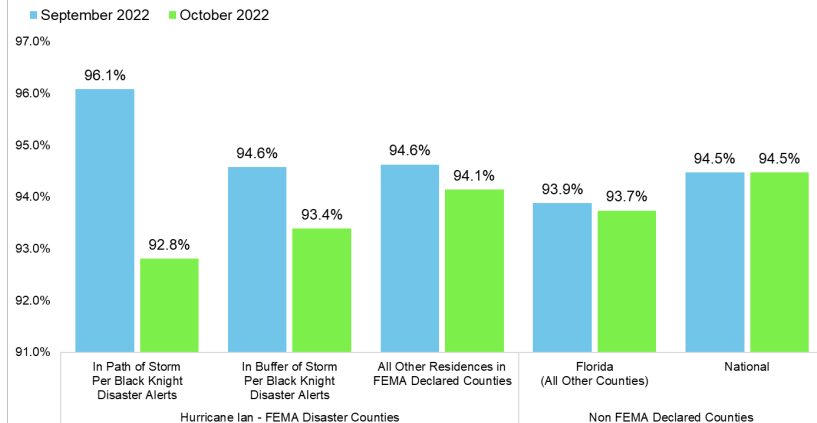


Myth #4: Climate change and natural disasters only impact borrowers directly affected by specific events

Make-up of mortgaged homes in hurricane Ian FEMA declared disaster counties



Early impact of hurricane Ian on mortgage payments (share of payments received by 19th day of the month)



355K of the 2.5M mortgaged homes in FEMA declared counties were in the direct path of hurricane Ian

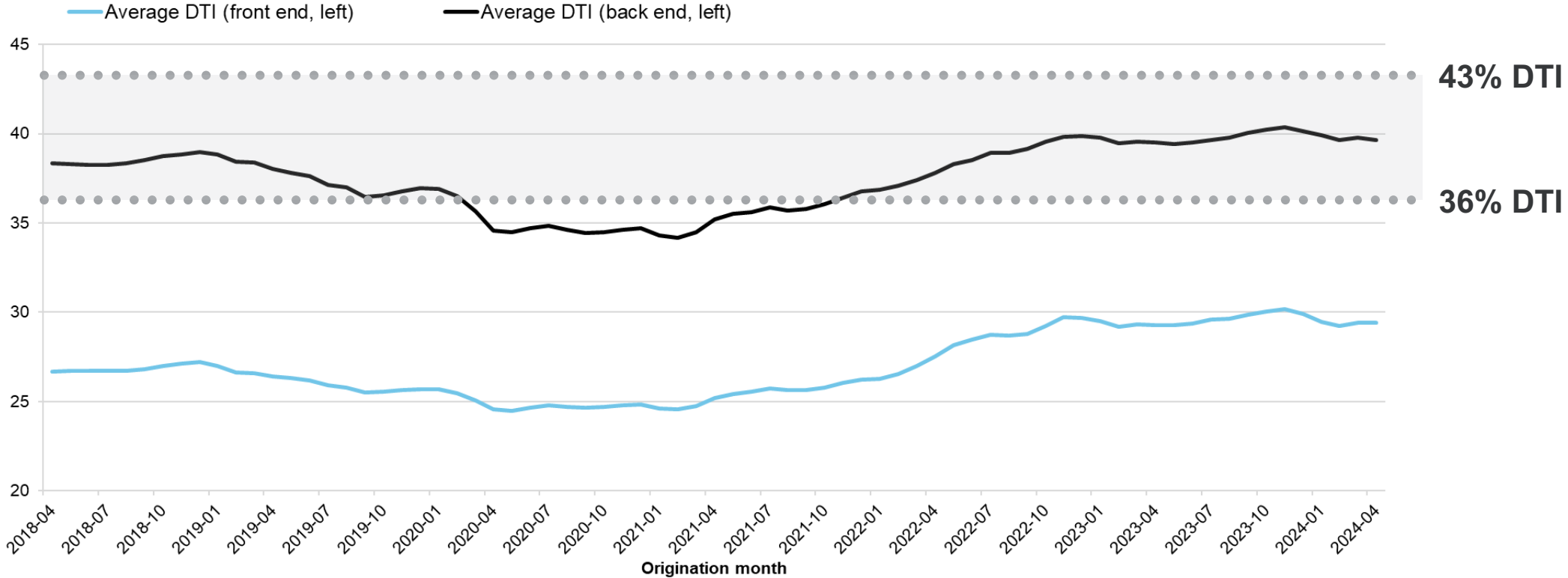
What is household affordability?

Traditional Understanding of Affordable Mortgages: DTI

❑ Lenders usually require a Debt-to-Income (DTI) ratio less than or equal to 36-43%

Debt-to-income ratios by loan origination month

First lien originations

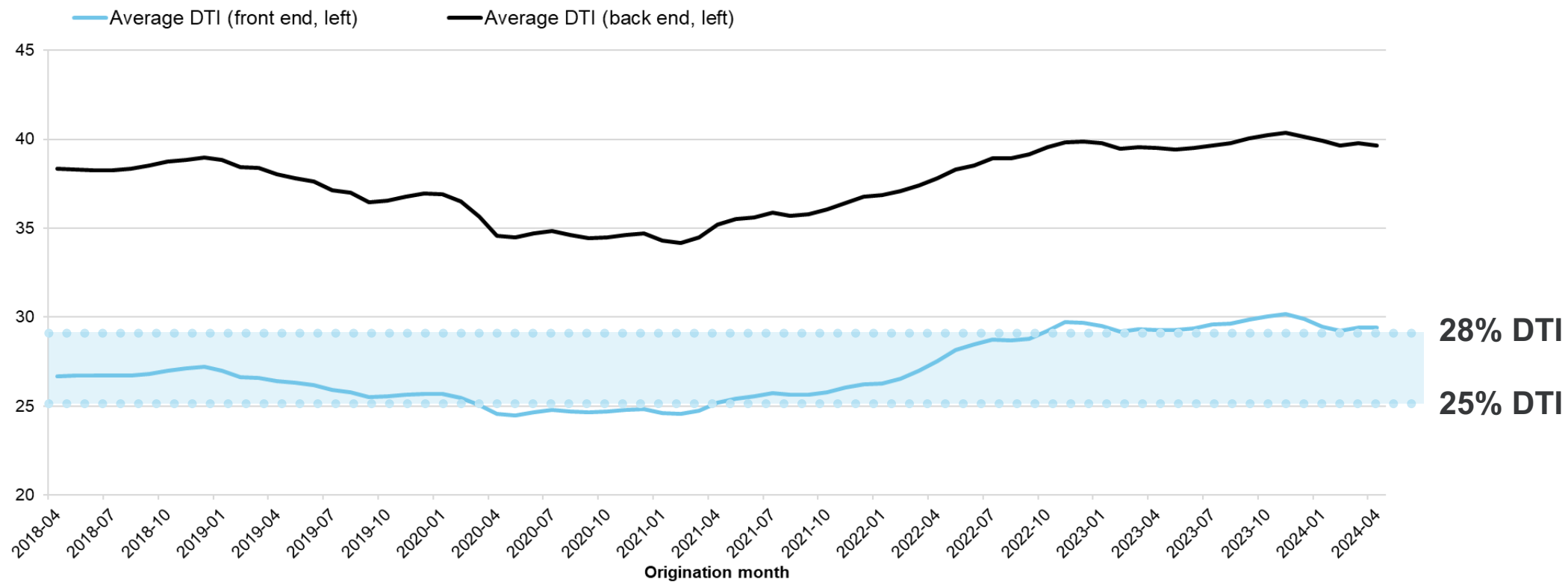


Traditional Understanding of Affordable Mortgages: DTI

- Principal, interest, property taxes, and insurance **less than or equal to 25-28% of gross income** (Lenders' usual requirements, FDIC)

Debt-to-income ratios by loan origination month

First lien originations



How else is housing affordability defined?

- **Components**

- Principal, interest, property taxes, and insurance **less than or equal to 25-28% of gross income** (Lenders' usual requirements, FDIC)
- 'Energy-burdened' if **energy costs are greater than 6% of gross income** (Department of Energy)
- Water services are considered unaffordable if costs are **more than 4.5% of income** (EPA)

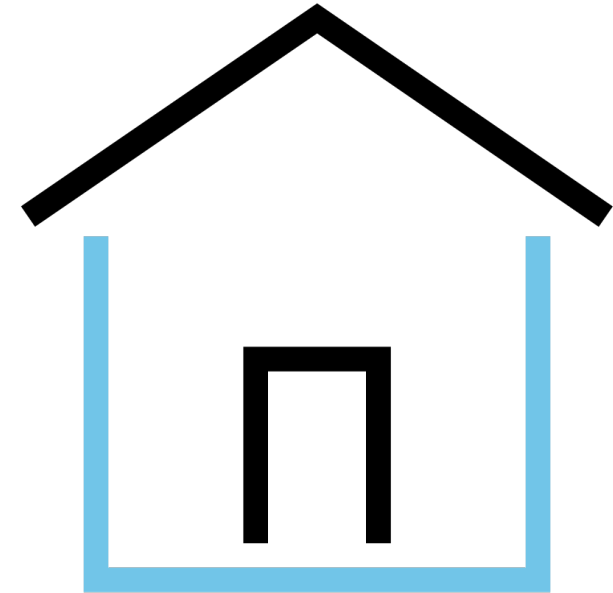
- **Combined**

- **No more than 30% of gross income** spent on housing costs, including utilities (Department of Housing and Urban Development)

Affordability thresholds are generally based on annual costs

Homeowners have location-specific costs

- Local Property Taxes
- Insurance Premiums
- Utility Bills



These costs can change **geographically, year-by-year, and month-by-month** – depending on local municipalities, utility service areas, local weather patterns, and climate risk.

For individual households, these costs can be significant

House A
Detroit, Michigan



Mortgage Payments: **\$9,800**
Insurance Premiums: **\$2,500**
Property Taxes: **\$700**
Energy & Water Costs: **\$3,800**
Total Cost: \$16,800

House B
Miami-Dade, Florida



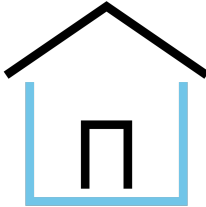
Mortgage Payments: **\$9,300**
Insurance Premiums: **\$6,700**
Property Taxes: **\$5,200**
Energy & Water Costs: **\$3,100**
Total Cost: \$24,300

The affordability of those costs depends on household income

House A
Detroit, Michigan

\$75k

House B
Miami-Dade, Florida



Mortgage Payments: **\$9,800**
Insurance Premiums: **\$2,500**
Property Taxes: **\$700**
Energy & Water Costs: **\$3,800**
Total Cost: \$16,800

Percent of Income: **22%**

Mortgage Payments: **\$9,300**
Insurance Premiums: **\$6,700**
Property Taxes: **\$5,200**
Energy & Water Costs: **\$3,100**
Total Cost: \$24,300

Percent of Income: **32%**

A large percentage of these costs change over time

House A
Detroit, Michigan



Mortgage Payments: **\$9,800**
Insurance Premiums: **\$2,500**
Property Taxes: **\$700**
Energy & Water Costs: **\$3,800**
Total Cost: \$16,800

Percent Variable Cost: 42%

House B
Miami-Dade, Florida



Mortgage Payments: **\$9,300**
Insurance Premiums: **\$6,700**
Property Taxes: **\$5,200**
Energy & Water Costs: **\$3,100**
Total Cost: \$24,300

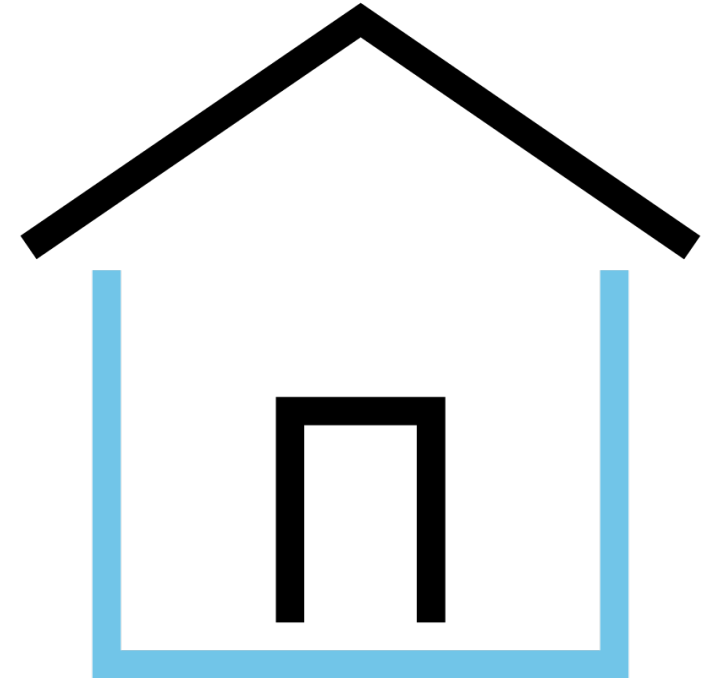
Percent Variable Cost: 62%



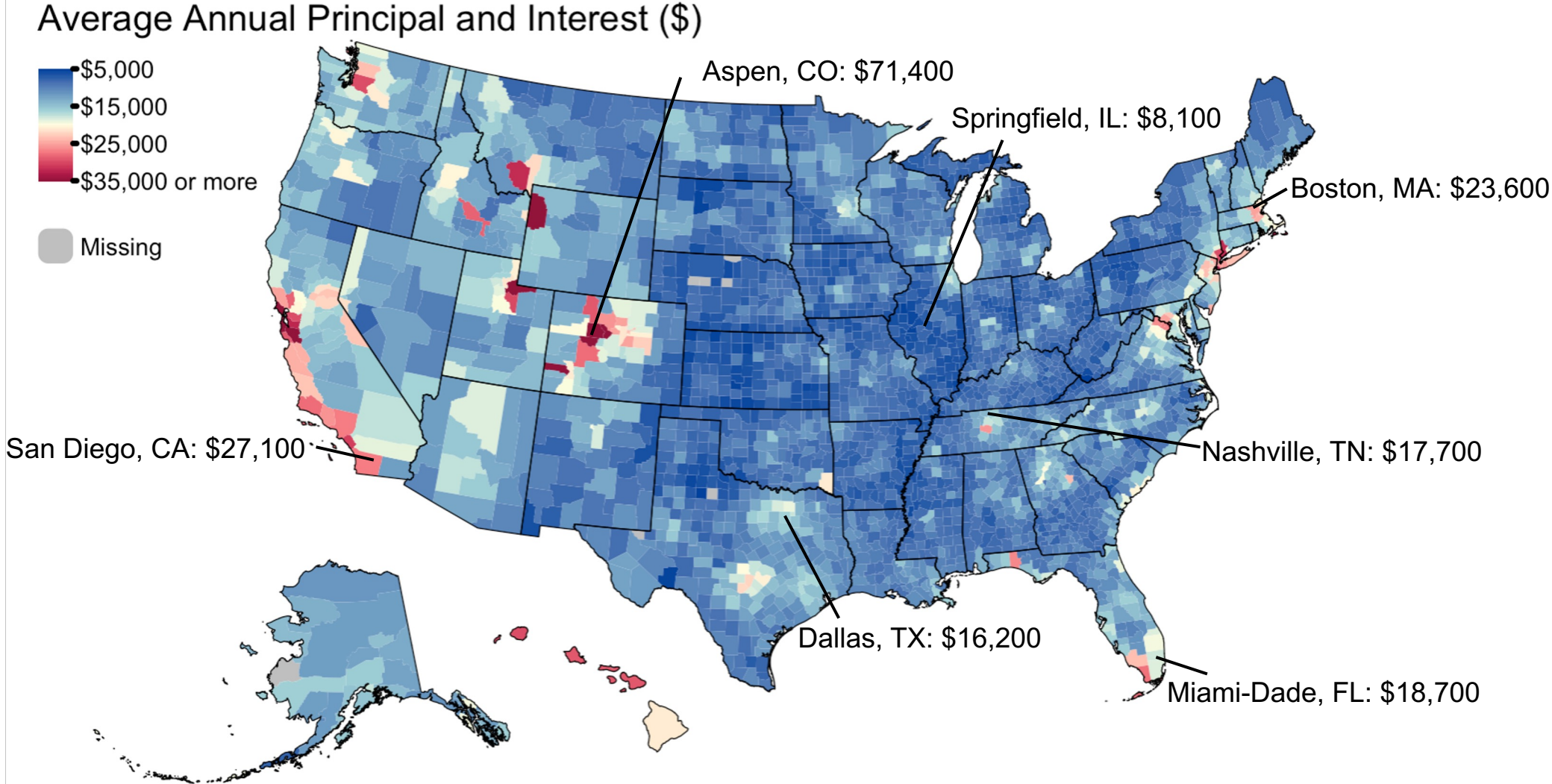
How do these costs vary across the country?

Fixed Cost: Principal and Interest

- 95% of U.S. homeowners currently have fixed rate mortgages
- For these homeowners, monthly costs for shelter are predictable
- Data on Property Level Principal and Interest Payments come from ICE's McDash Loan Catalogue

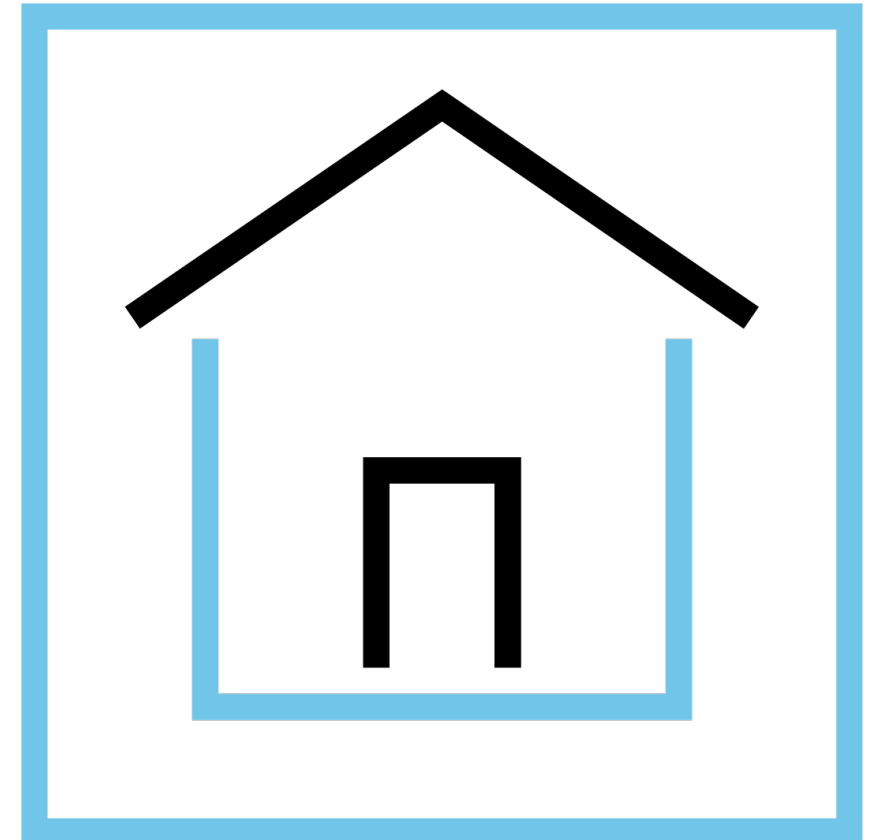


Fixed Cost: Principal and Interest



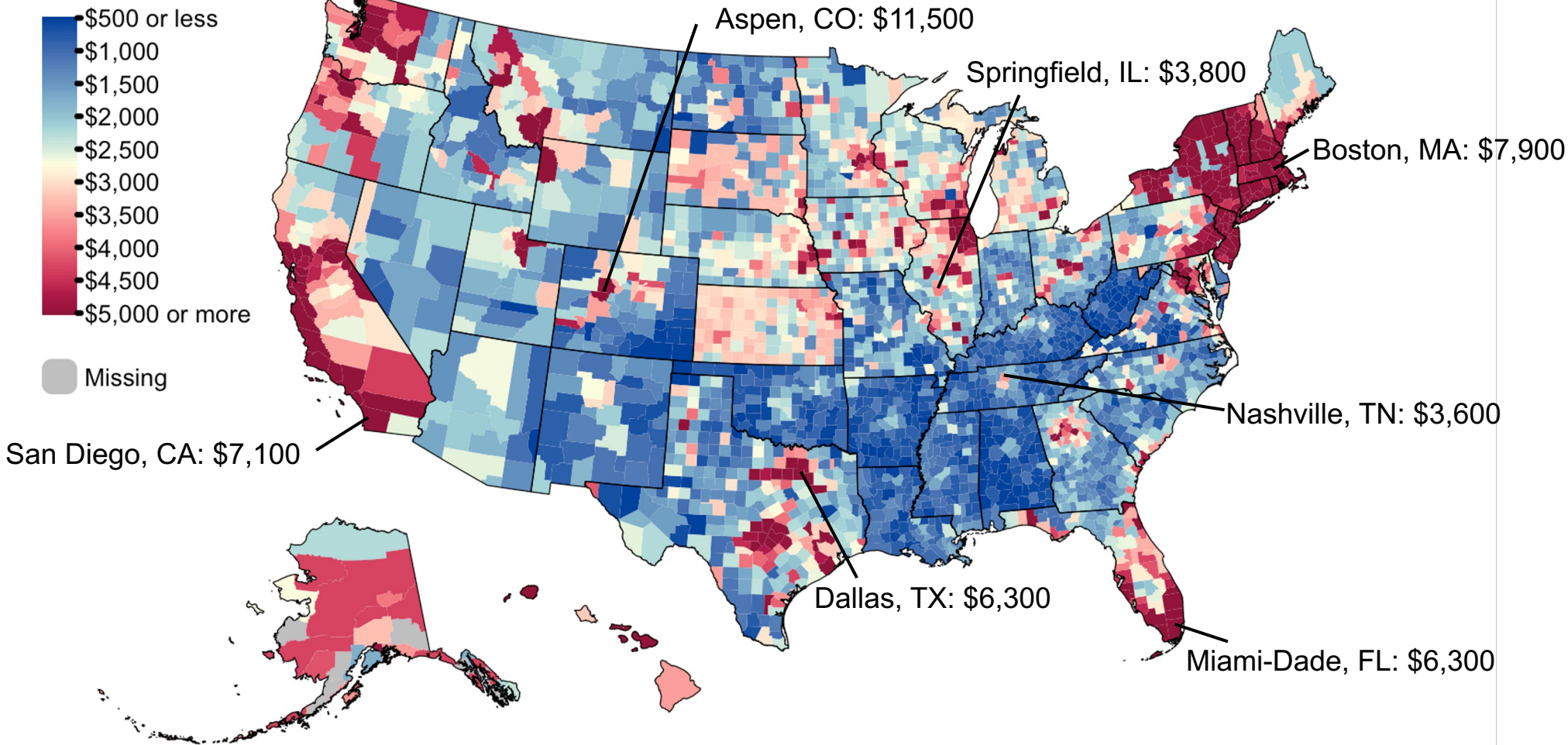
Variable Cost: Property Taxes

- Real estate taxes on single family homes **increased 24%** between 2019 and 2023
- In parts of the county, property tax increases have created an **affordability crisis** for some homeowners
- Data are from **ICE Property Assessment Tables**



Variable Cost: Property Taxes

Average Annual Property Tax (\$)



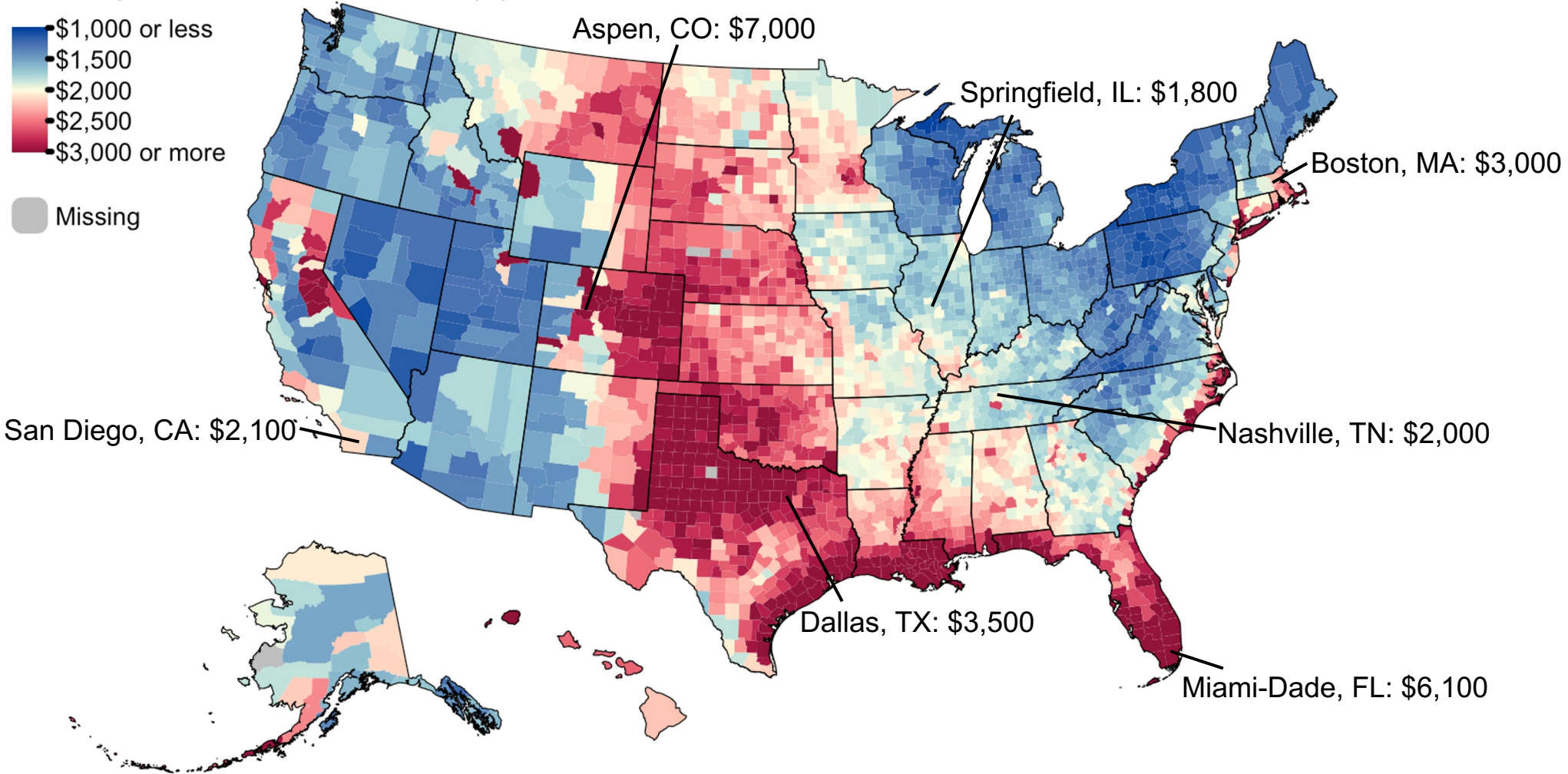
Variable Cost: Home Insurance

- According to a recent New York Times investigation, homeowners' insurance was **unprofitable in 18 states last year**
- Allstate and State Farm left California last summer; Farmers followed in Florida
- Data on Property Level Insurance Costs come from ICE's McDash Loan Catalogue



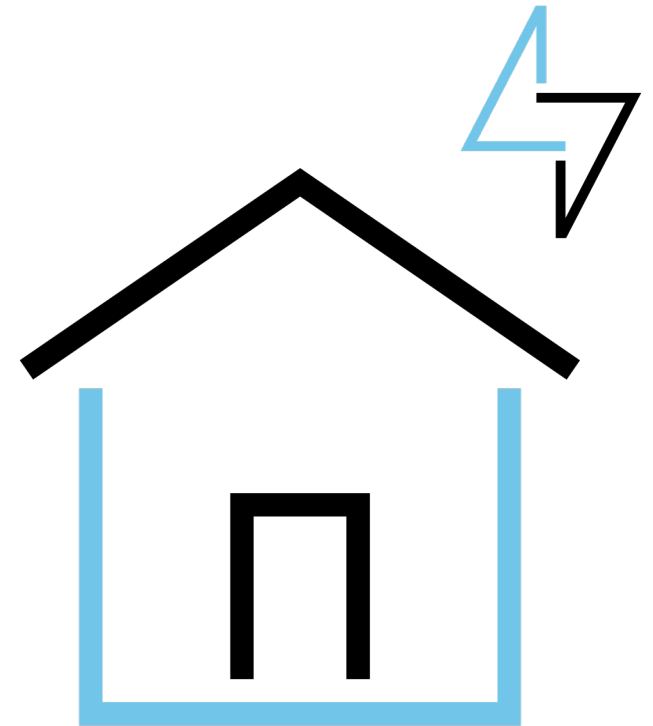
Variable Cost: Home Insurance

Average Annual Insurance (\$)

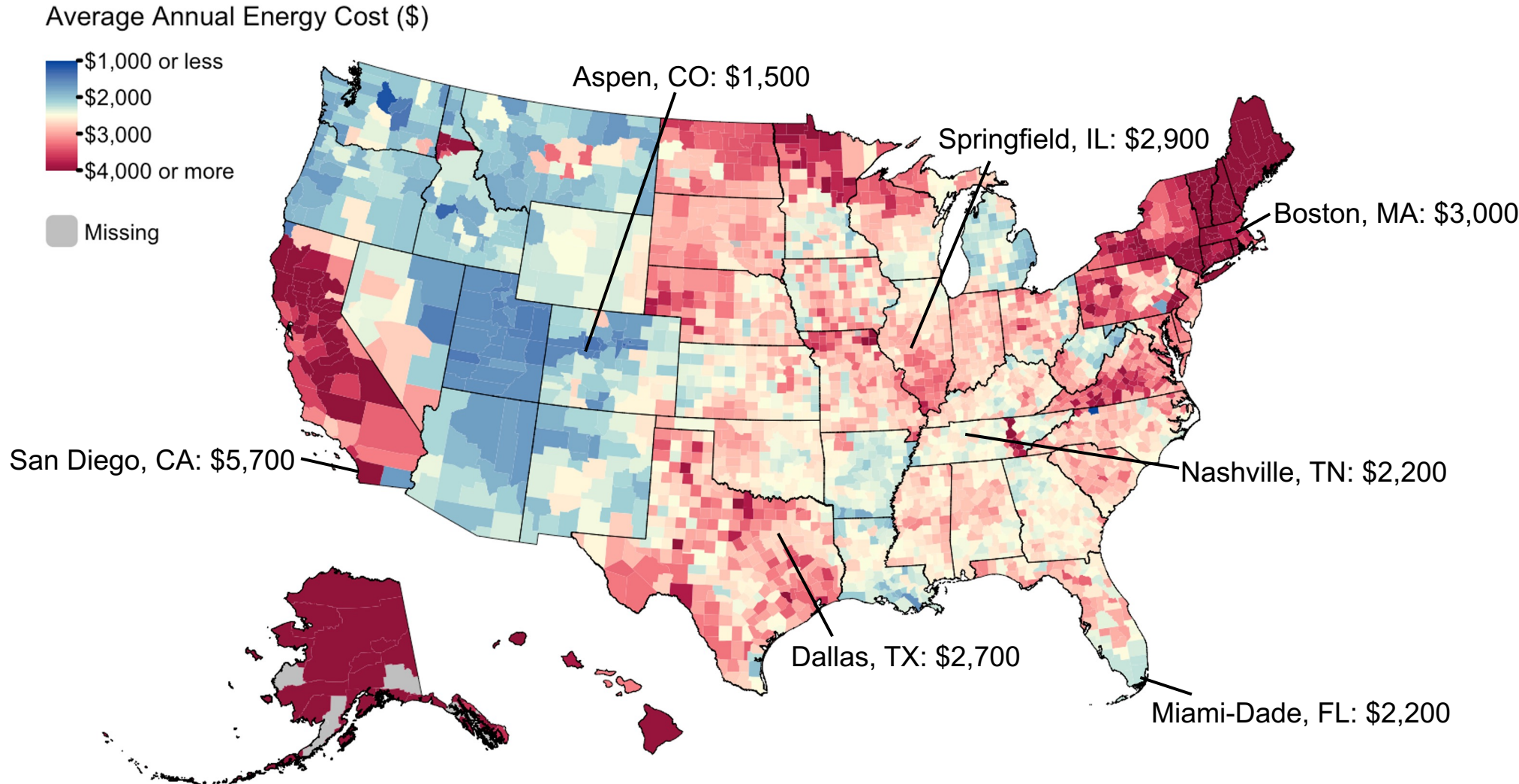


Variable Cost: Energy

- About **25% of U.S. households** spend more than 6% of income on energy costs
- ICE Sustainable Finance estimates **monthly energy bills** for over 100 million American households
- Household energy usage estimates are based on combining **hundreds of thousands of Building Energy Models** with **ICE Property Assessment Tables**
- Utility rate data from over 1,000 utilities nationwide was collected and combined with pricing information from the U.S. Energy Information Administration

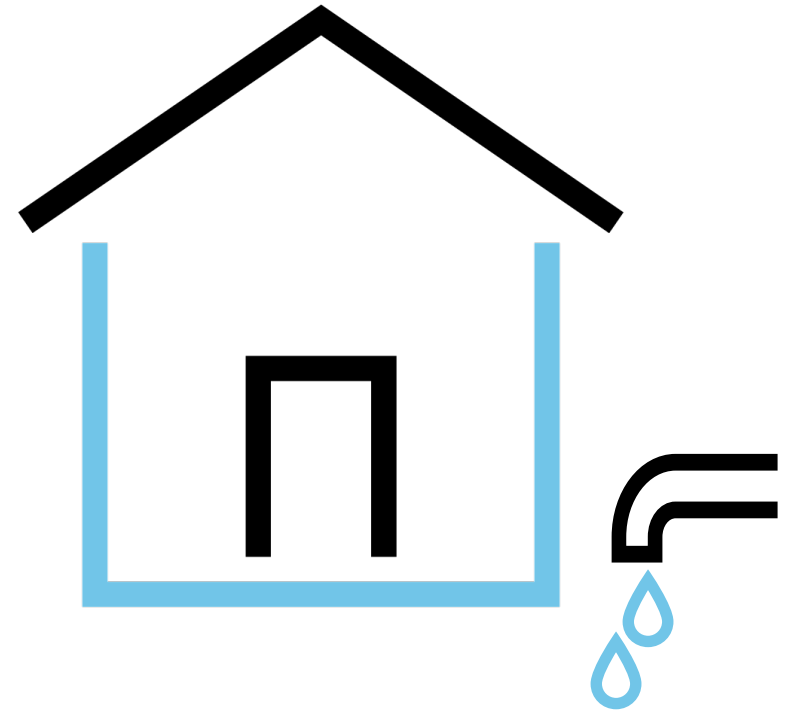


Variable Cost: Energy

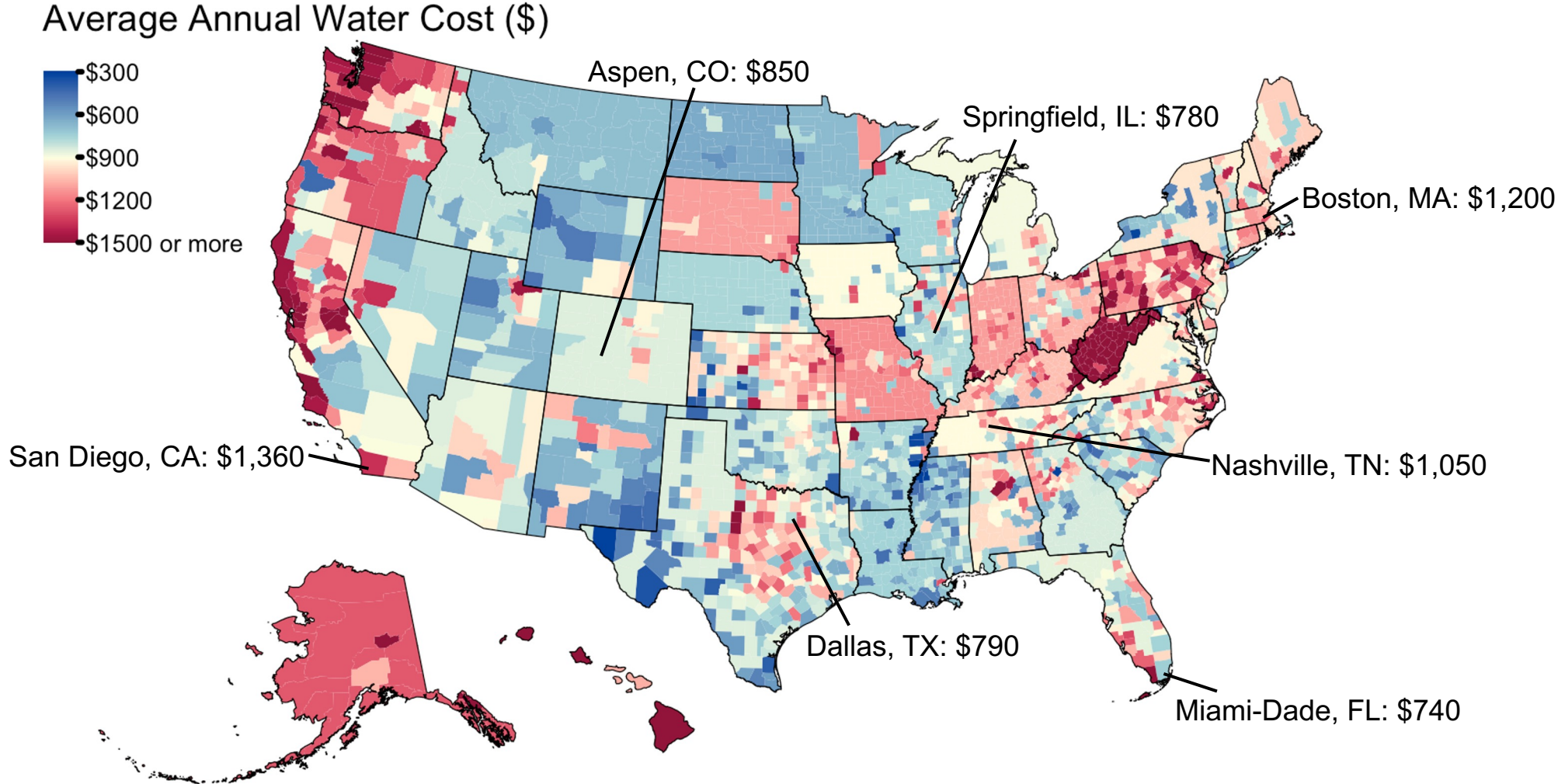


Variable Cost: Water Services

- ICE Sustainable Finance estimates **water service costs** across the country based on utility rates for over 4,000 water service providers.*
- Annual costs are estimated assuming 5,000 gallons per month.
- Water service costs are rising to recover the full cost of service, replace aging infrastructure, and comply with new regulations to replace lead lines and treat PFAS.

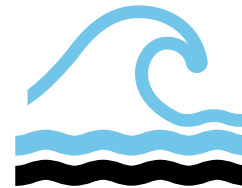


Variable Cost: Water Services



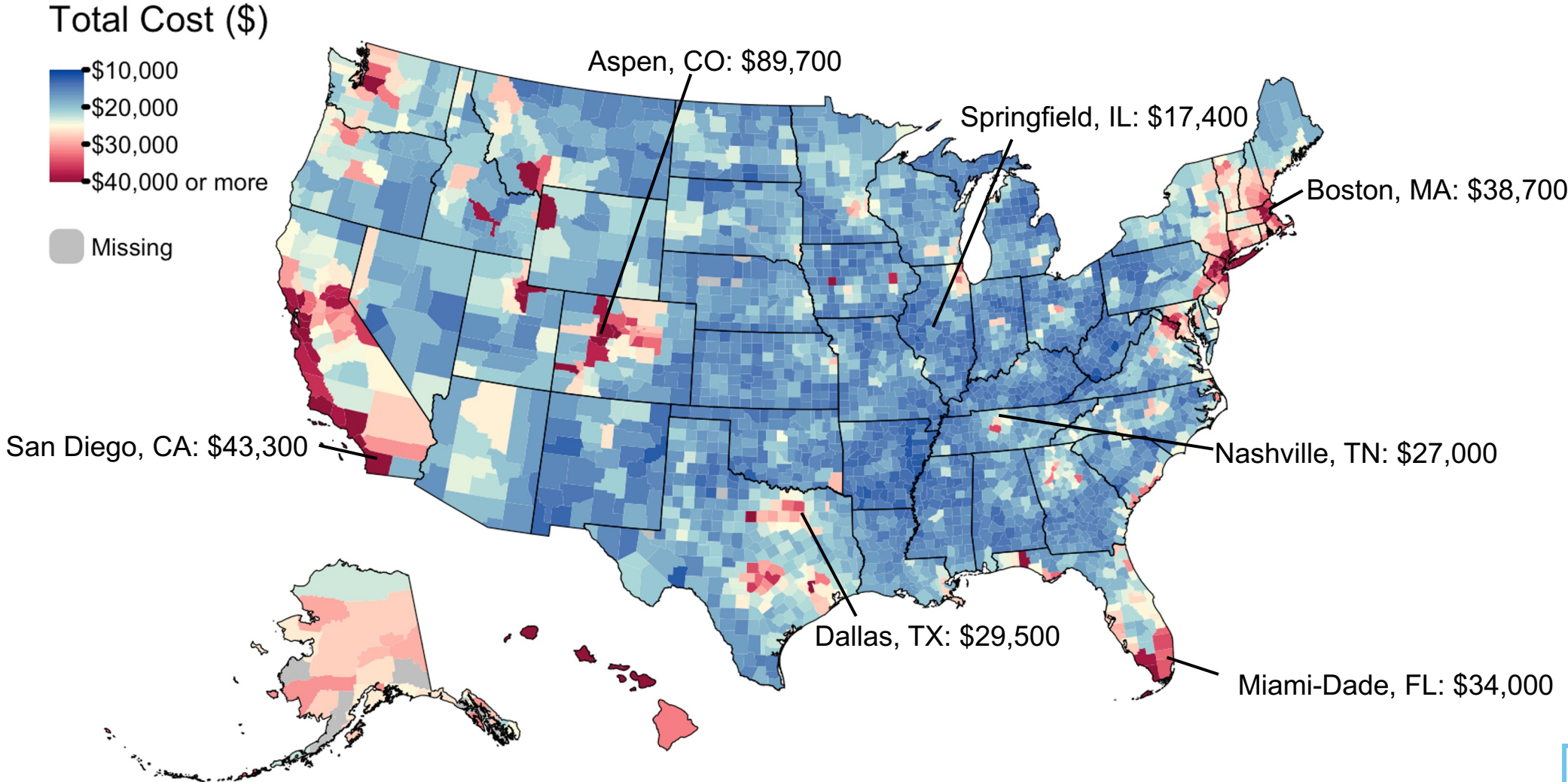
Total Housing Costs

- Principal and Interest Payments (**Fixed**)
- Property Taxes (**Variable**)
- Insurance Premiums (**Variable**)
- Energy Costs (**Variable**)
- Water Costs (**Variable**)



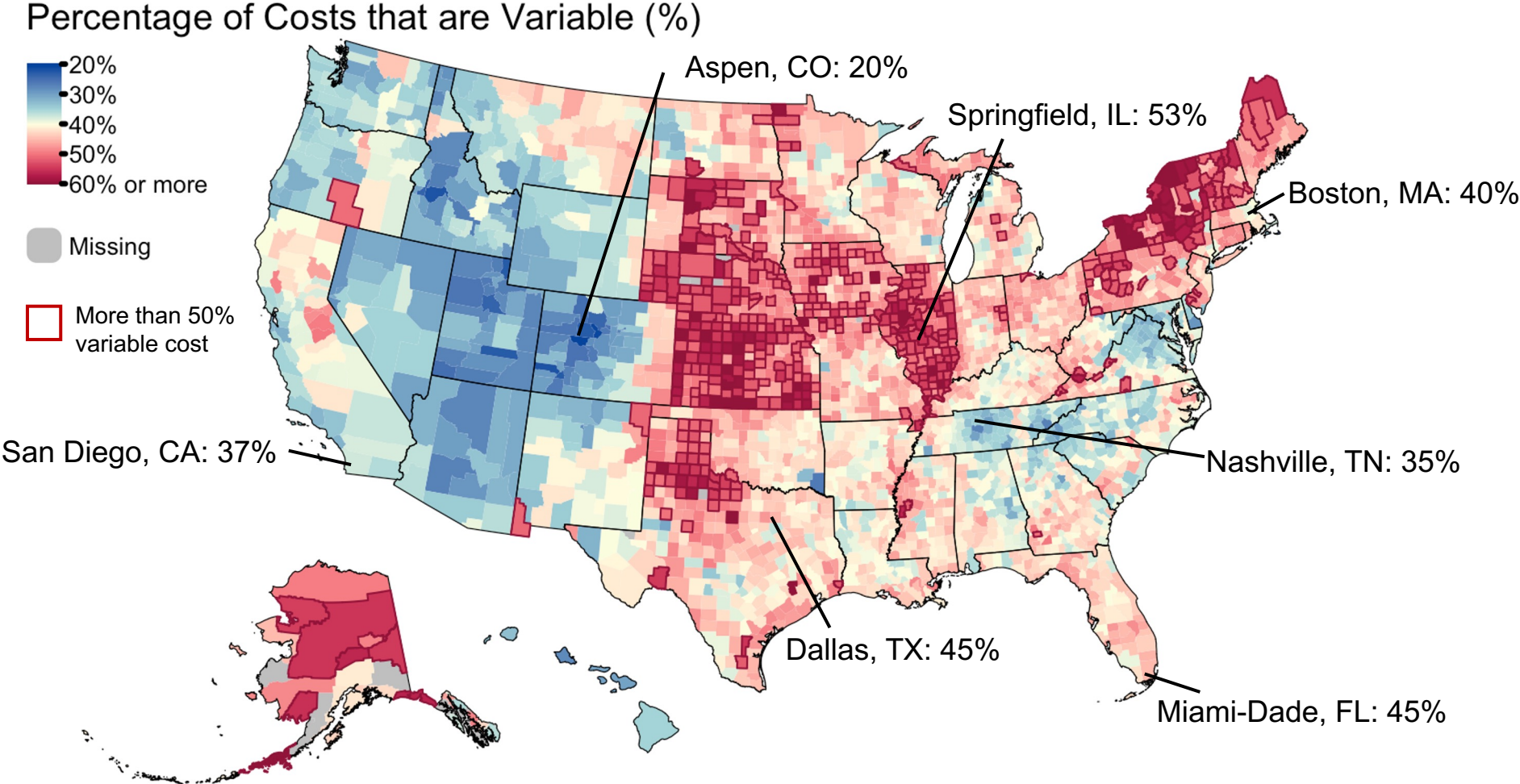
Total Housing Costs

Principal and Insurance, Property Taxes, Insurance, and Energy and Water



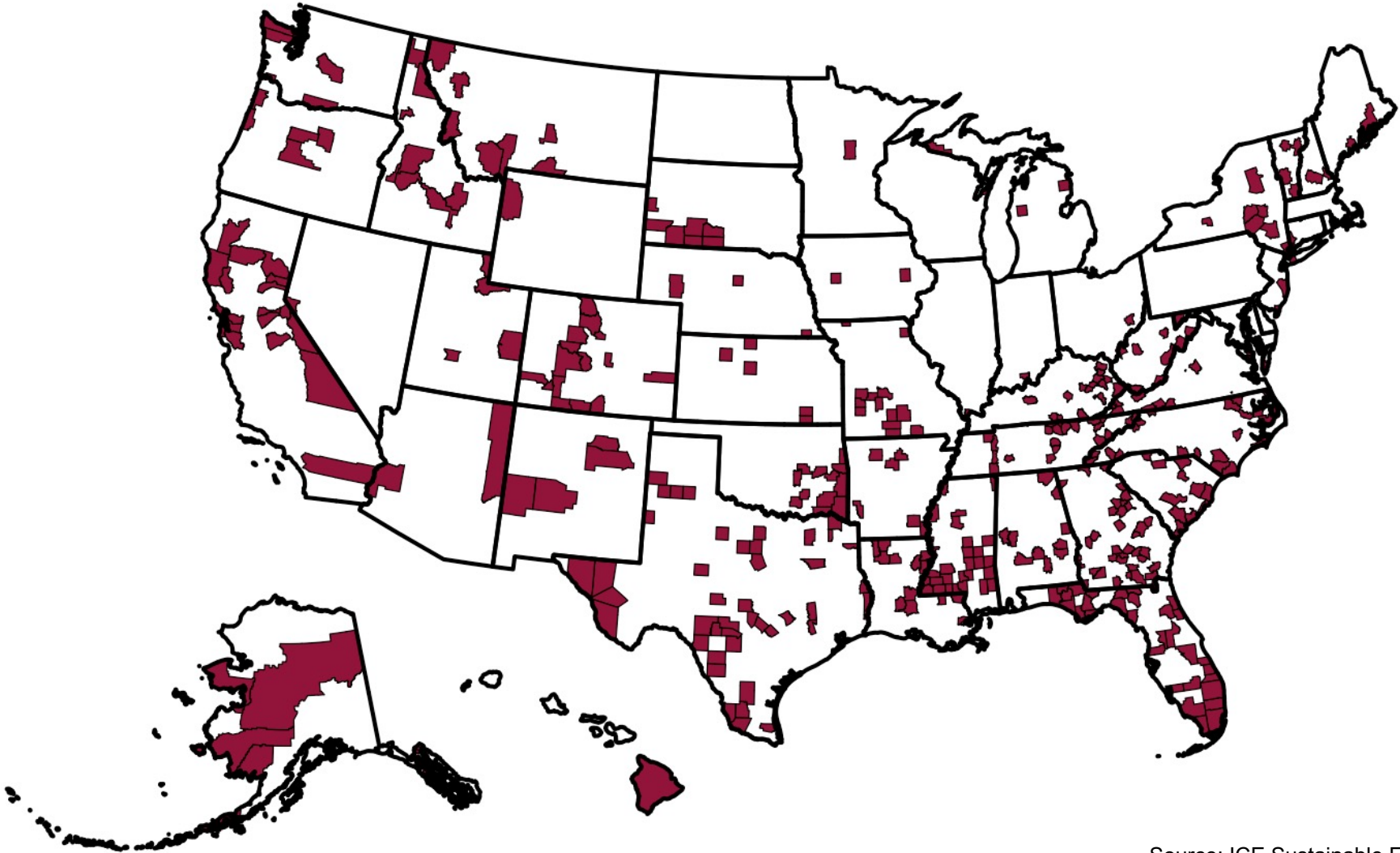
What percent of total cost could vary year-to-year?

Percent of total housing cost going towards property taxes, insurance, energy, and water



Where are home affordability challenges most prevalent?

There are **414 counties** in which more than half of households with mortgages would spend more than 30% of gross income on the average costs of a mortgage (principal and interest), insurance, property taxes, energy, and water services



Source: ICE Sustainable Finance, U.S. Census



The interplay between home costs and climate change

Costs in a warming climate

Prolonged cold snaps and heat waves may create affordability shocks

Some Iowa natural gas customers' bills still impacted by 2021 polar vortex

BY KAYLI REESE kayli.reese@thmedia.com Feb 22, 2022

← INSIGHTS / ENERGY

ARTICLE

Polar vortex sends Texas natural gas markets spinning



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Associated
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Millions struggle to pay AC bills amid increasing heat waves. Federal aid reaches only a fraction

Nation Aug 9, 2023 2:47 PM EDT

Southerners slammed by rising temperatures, energy bills

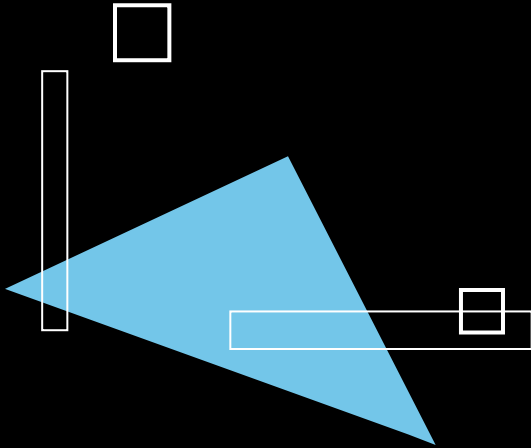
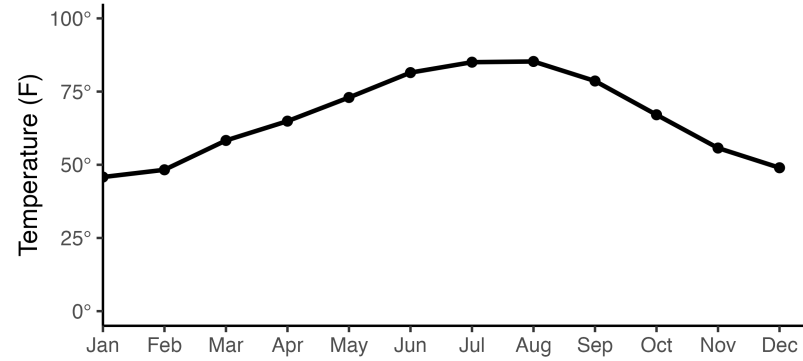
Extreme heat, exacerbated by climate change, is raising the energy bills for U.S. residents already experiencing high energy burdens, especially in the South.

Costs in a warming climate

Heating fuels affect costs too

Dallas County, Texas

Comfortable average temperatures in spring and fall



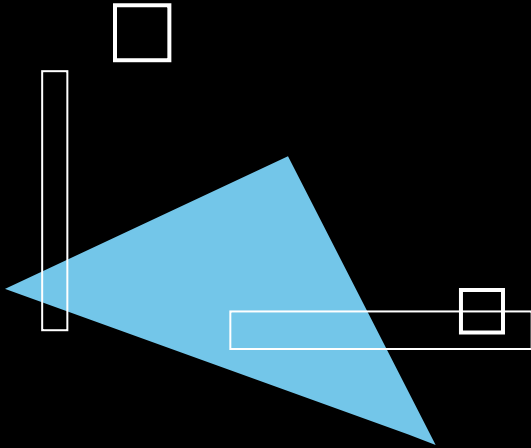
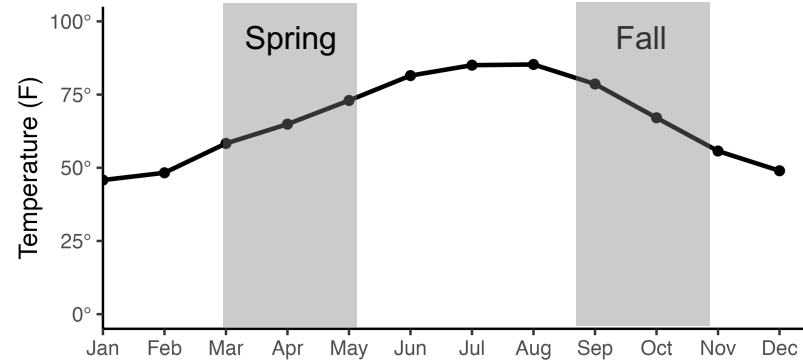
Source: ICE Sustainable Finance and National Oceanic and Atmospheric Administration

Costs in a warming climate

Heating fuels affect costs too

Dallas County, Texas

Comfortable average temperatures in spring and fall



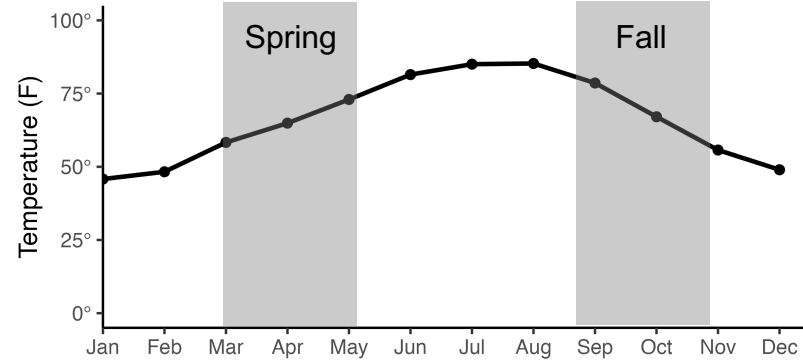
Source: ICE Sustainable Finance and National Oceanic and Atmospheric Administration

Costs in a warming climate

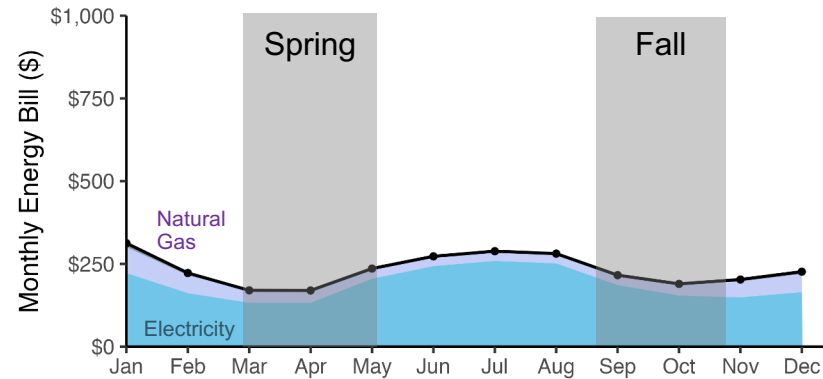
Heating fuels affect costs too

Dallas County, Texas

Comfortable average temperatures in spring and fall



Lowest energy bills in spring and fall



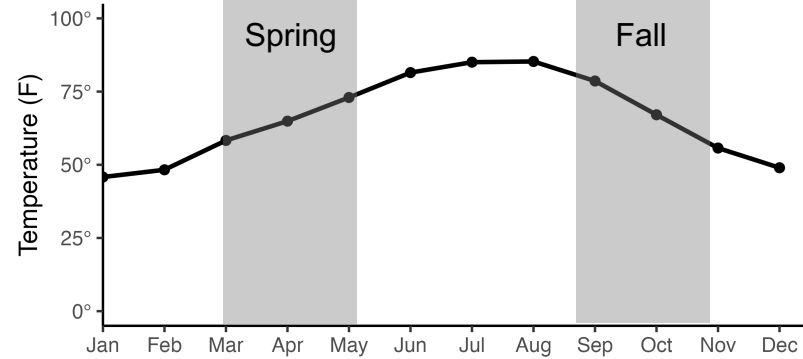
Source: ICE Sustainable Finance and National Oceanic and Atmospheric Administration

Costs in a warming climate

Heating fuels affect costs too

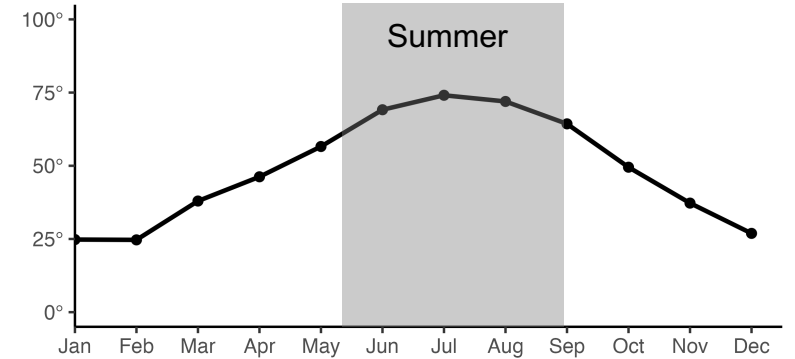
Dallas County, Texas

Comfortable average temperatures in spring and fall

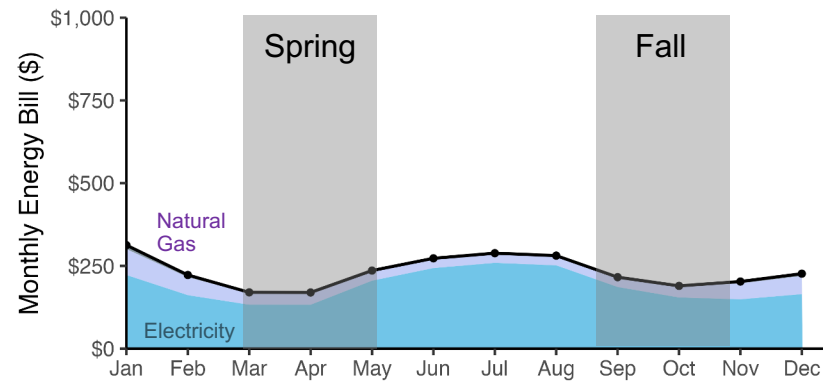


Suffolk County, Massachusetts

Comfortable average temperatures in summer



Lowest energy bills in spring and fall



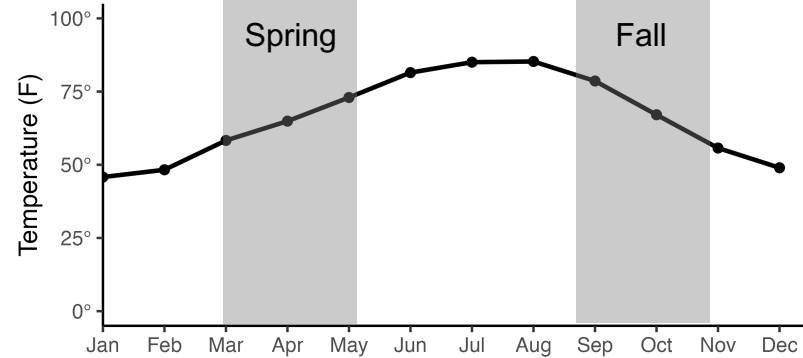
Source: ICE Sustainable Finance and National Oceanic and Atmospheric Administration

Costs in a warming climate

Heating fuels affect costs too

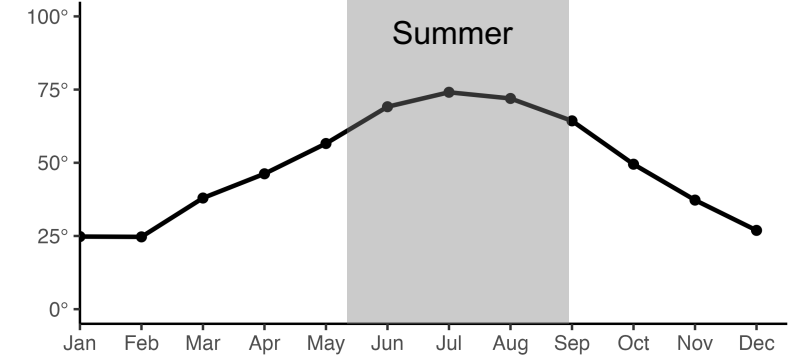
Dallas County, Texas

Comfortable average temperatures in spring and fall

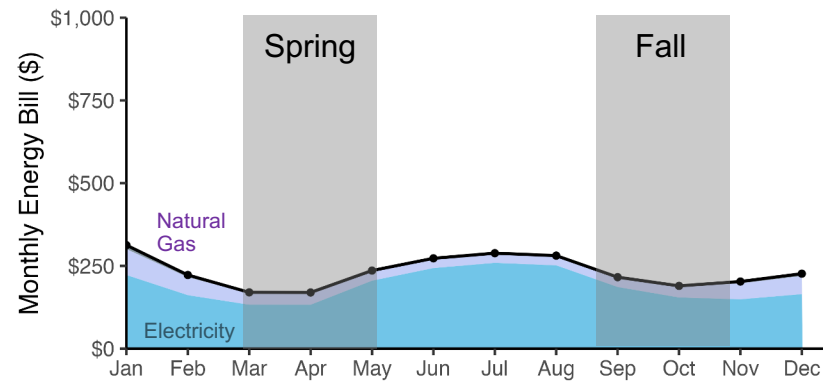


Suffolk County, Massachusetts

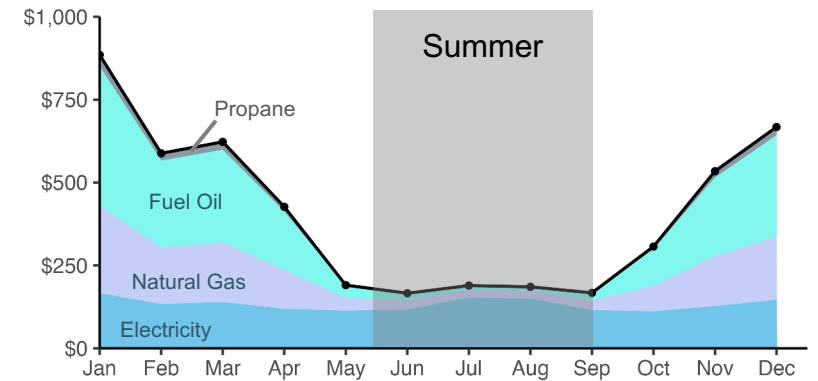
Comfortable average temperatures in summer



Lowest energy bills in spring and fall



Lowest energy bills during the summer

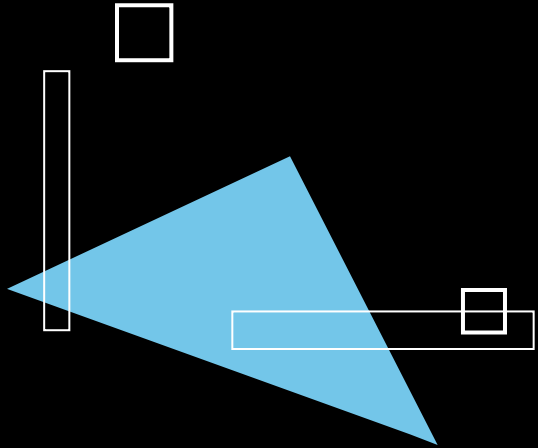
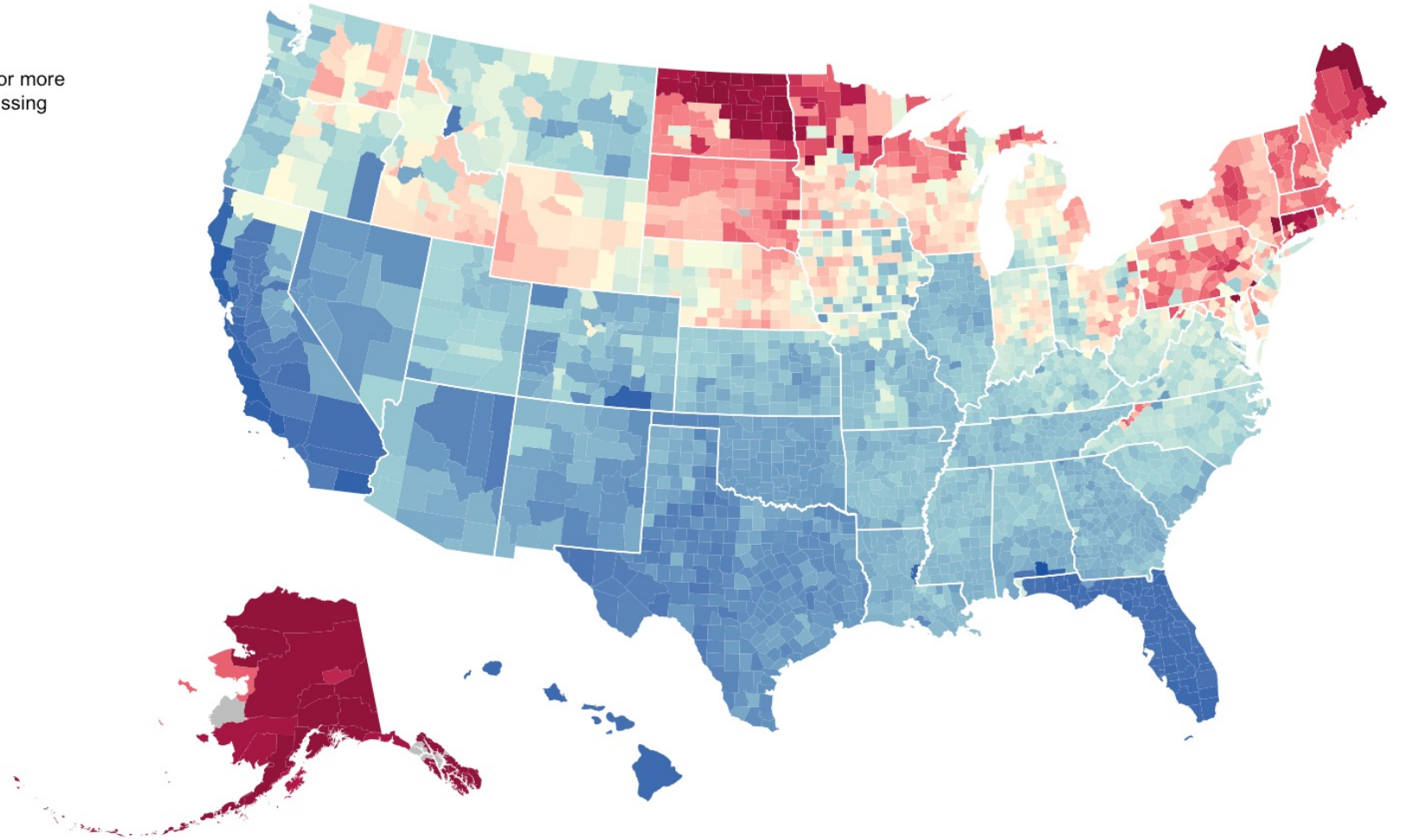


Source: ICE Sustainable Finance and National Oceanic and Atmospheric Administration

Costs in a warming climate

Monthly bills can vary by a factor of 5

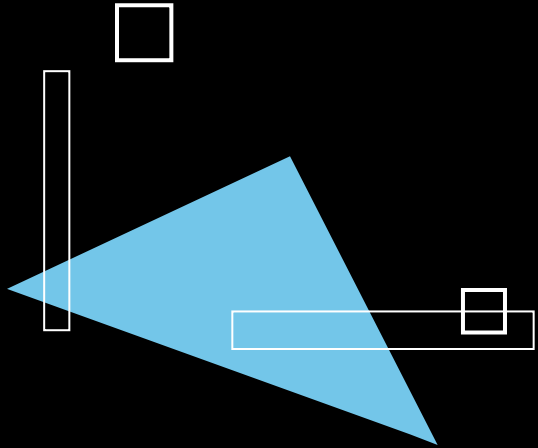
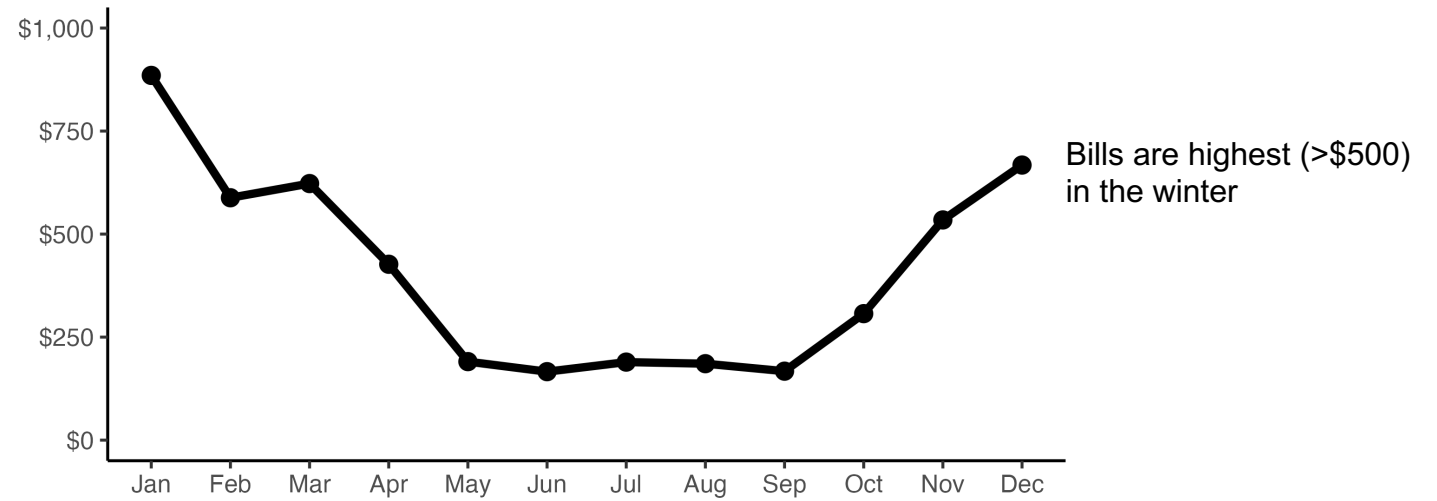
Ratio of Maximum/Minimum Monthly Bill



Even six-figure households may be energy burdened

Costs in a warming climate

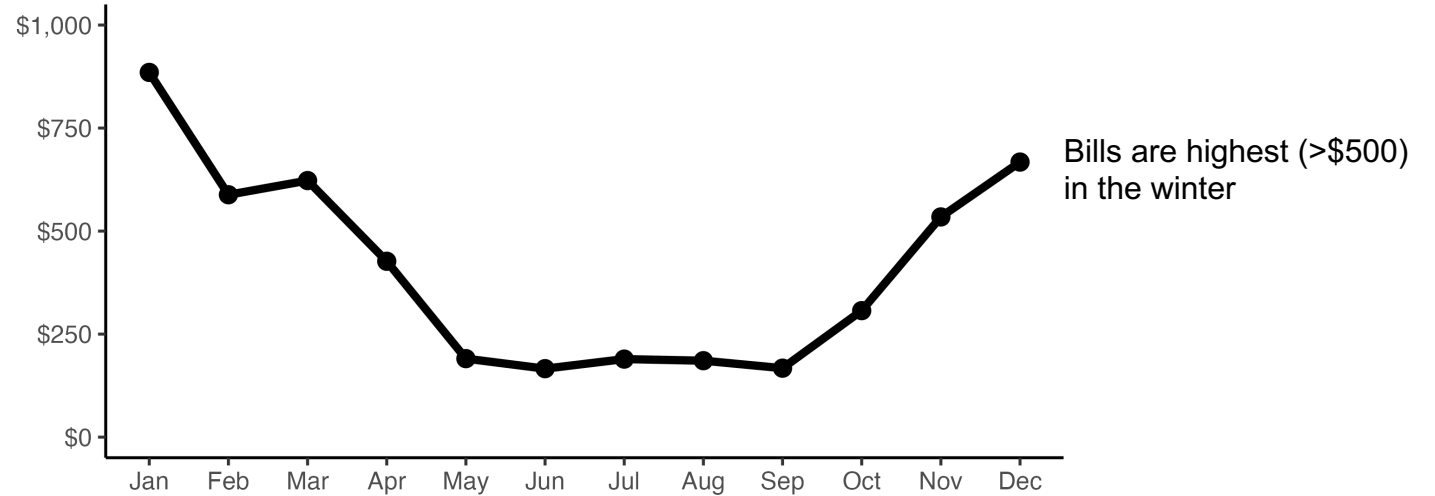
Monthly Energy Bills in Suffolk County (Boston)



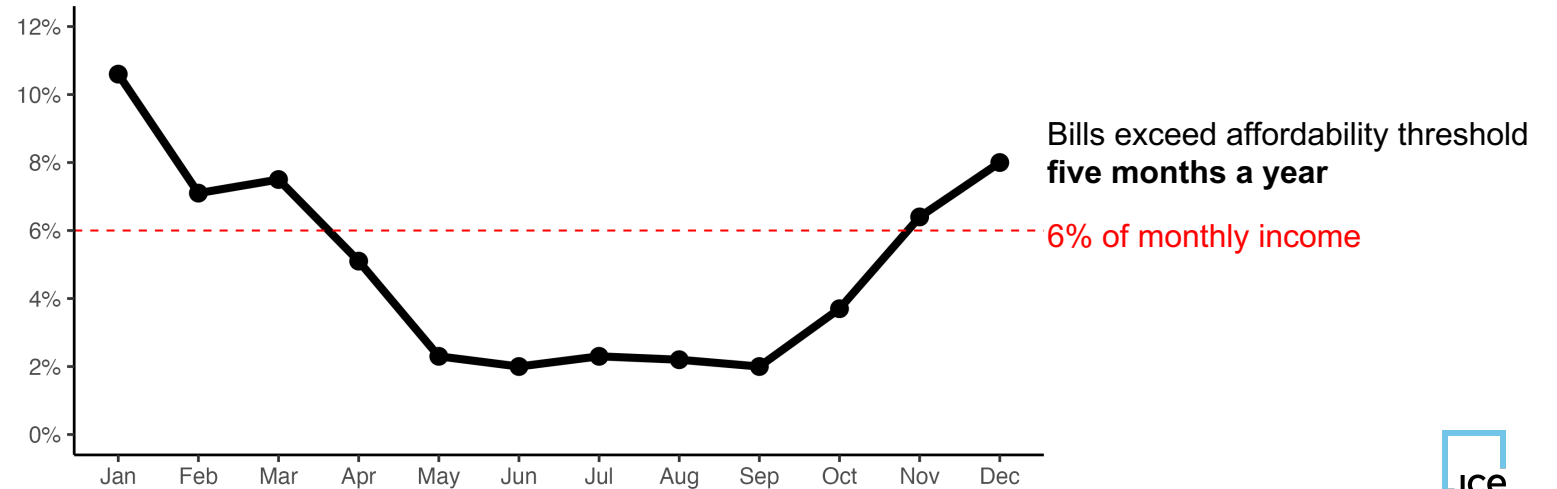
Costs in a warming climate

Even six-figure households may be energy burdened

Monthly Energy Bills in Suffolk County (Boston)



Bills as a percentage of \$100,000 household income



Source: ICE Sustainable Finance

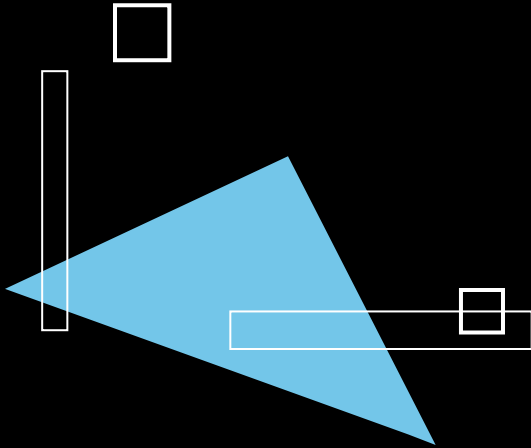
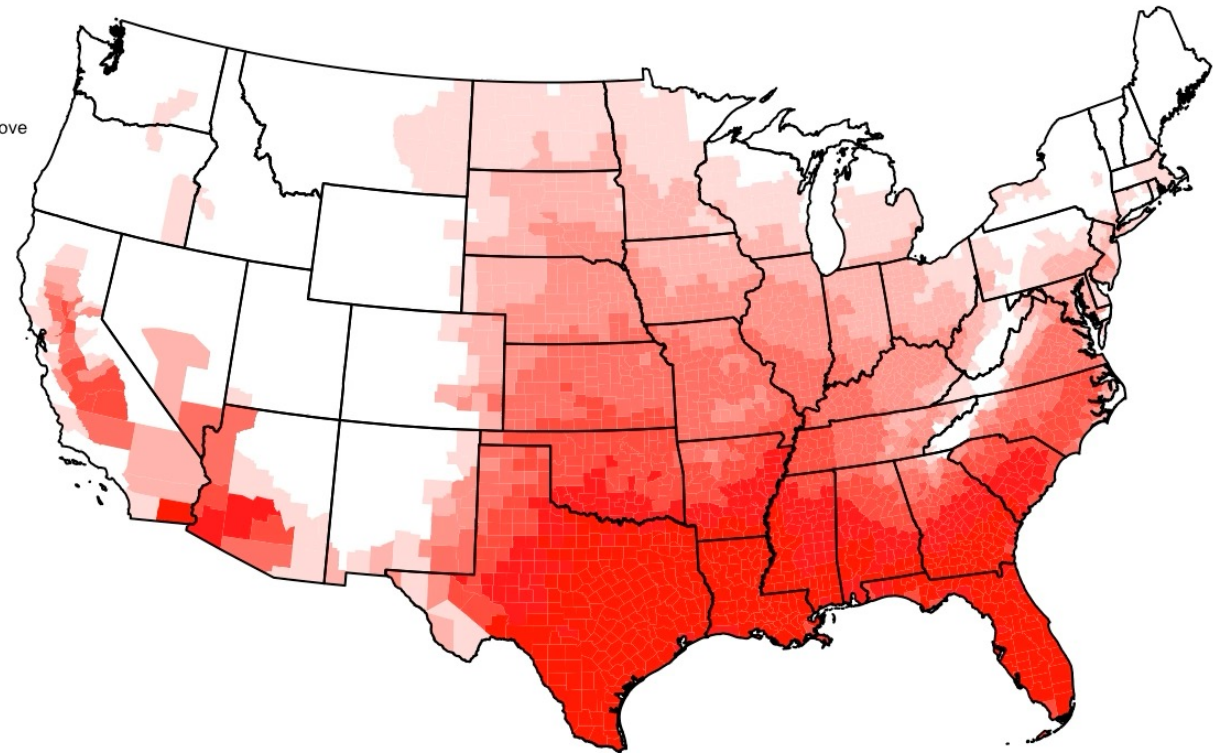


Costs in a warming climate

Higher energy needs for cooling

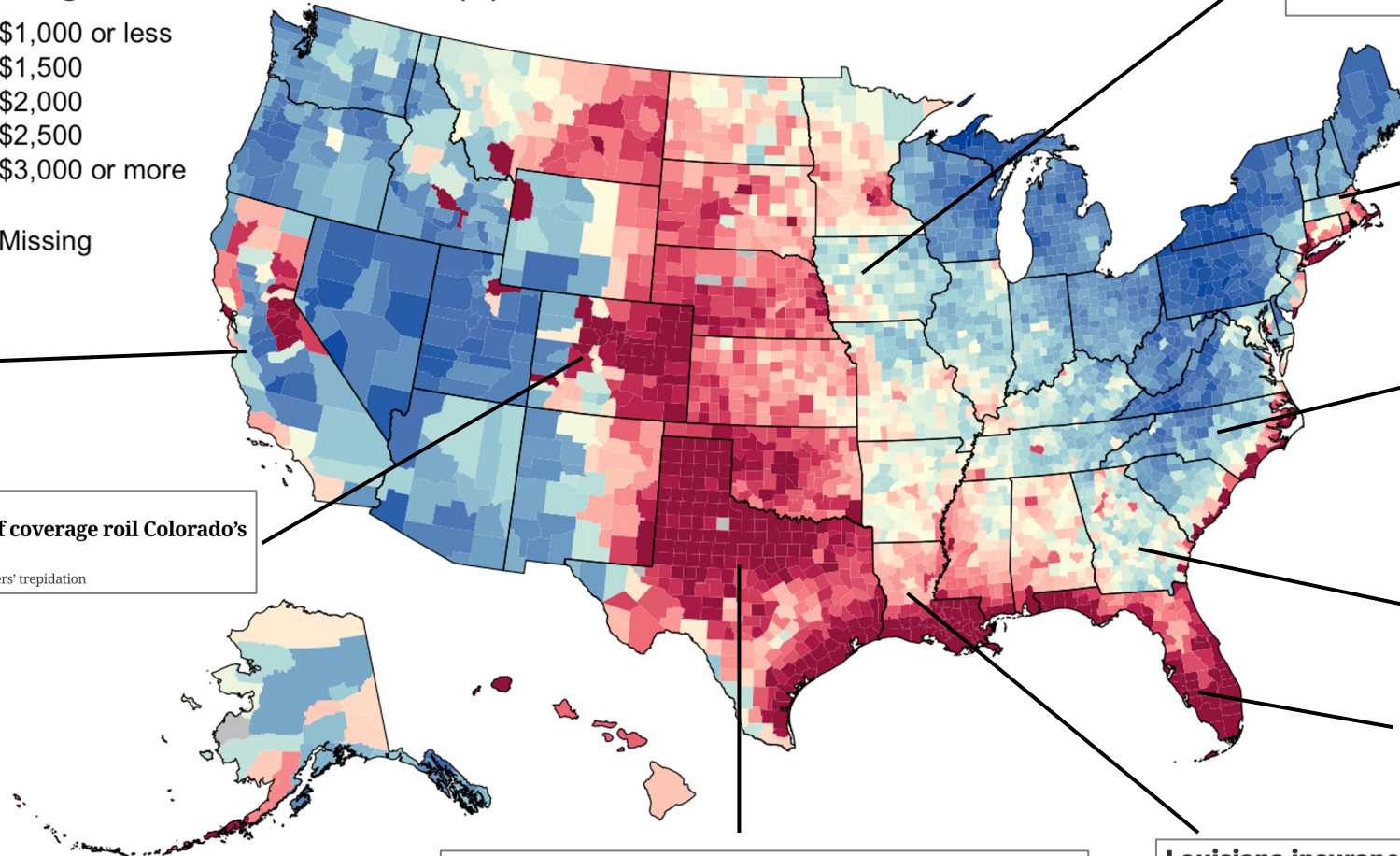
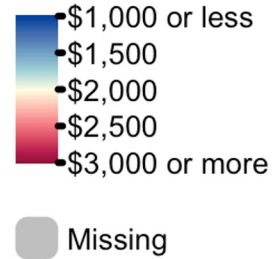
2020

Average Number of Days with Heat Index > 95



Home Insurance Premiums Increasing

Average Annual Insurance (\$)



FINANCE - INSURANCE

4 more insurers are leaving California after Allstate and State Farm cut back due to wildfire risk

BY CHRIS MORRIS AND ALENA ROTROS
October 31, 2023 at 12:19 PM EDT

BUSINESS > REAL ESTATE

Skyrocketing home insurance rates, loss of coverage roil Colorado's strained housing market

Wildfires, natural disasters among factors driving up costs and insurers' trepidation

CLIMATE CHANGE IN TEXAS

Climate change, costly disasters sent Texas homeowner insurance rates skyrocketing this year

'Hardest market I've ever seen': Eastern Iowa counties face steep insurance increases

BY BENJAMIN FISHER benjamin.fisher@thmedia.com Dec 22, 2023 Updated Dec 23, 2023

LOCAL NEWS

Boston area could face more expensive home insurance costs in coming years

By Ben Tracy
September 20, 2023 / 7:09 AM EDT / CBS Boston

NEWS

99% home insurance hike sought by firms at NC beach areas; inland eastern NC areas increase at 57%, officials say

By Robbery Overton
Posted: Jan 5, 2024 / 10:16 PM EST
Updated: Jan 6, 2024 / 04:22 PM EST

Homeowners insurance is rising across Georgia and South Carolina. Here's why, and what you can do

An increasing number of homeowners in both Georgia and South Carolina are dealing with a rise in insurance rates.

US NEWS

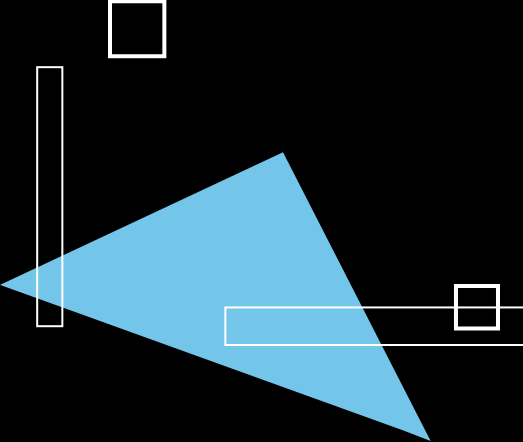
Farmers pulls out of Florida property insurance despite efforts to stabilize the market

Louisiana insurance crisis could crush home ownership dreams in coastal regions

Greg Hilburn
The Courier
Published 11:49 a.m. CT Sept. 22, 2022



Costs in a warming climate



Leaflet | © Mapbox © OpenStreetMap Improve this map

Source: ICE Sustainable Finance

Home Sustainability Report

House A
Detroit, Michigan



Total Annual Costs: **\$16,800**
Percent Variable Cost: **42%**
Median Household Income: **\$37,700**
Cost as Percentage of Median Income: **44%**

House B
Miami-Dade, Florida



Total Annual Costs: **\$24,300**
Percent Variable Cost: **62%**
Median Household Income: **\$61,000**
Cost as Percentage of Median Income : **40%**

Home Sustainability Report

House A
Detroit, Michigan



Total Annual Costs: **\$16,800**
Percent Variable Cost: **42%**
Median Household Income: **\$37,700**
Cost as Percentage of Median Income: **44%**

Wildfire Risk: **Negligible** (Same in 30 years)
Hurricane Risk: **Negligible** (Same in 30 years)
Flood Risk: **Low** (Same in 30 years)

House B
Miami-Dade, Florida



Total Annual Costs: **\$24,300**
Percent Variable Cost: **62%**
Median Household Income: **\$61,000**
Cost as Percentage of Median Income : **40%**

Wildfire Risk: **Low** (Same in 30 years)
Hurricane Risk: **Very High** (Extreme in 30 years)
Flood Risk: **Low** (Same in 30 years)





Questions

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