Portfolio Section: Residential Energy Use by Region & Housing Type

Title: Climate-Driven Energy Patterns in U.S. Homes

Analyst: [Your Name]

Focus Areas: Regional Climate | Housing Type | Heating & Cooling Energy Use

Overview

This analysis explores how U.S. residential energy consumption is influenced by climate and housing type. Using 2009 RECS survey data, we visualize energy use patterns across regions and building types, with a special focus on heating and cooling.

Regional Summary

- Northeast & Midwest: High energy use for space heating, driven by colder winters.
- South: Dominated by cooling demand, particularly in mobile and detached homes.
- West: Balanced usage due to milder, drier climate zones.

Housing Type Insights

- Single-Family Detached Homes: Highest energy usage for both heating and cooling.
- Apartments (5+ Units): Lowest energy use, benefiting from shared walls and smaller unit sizes.
- Mobile Homes: Show inefficient energy use, especially in Southern and Midwestern states.

Space Heating Share of Energy Use

Key Insight: In the Northeast and Midwest, heating makes up 40-60% of total household energy use.

Cooling Share of Energy Use

Key Insight: In the South, cooling accounts for 10-20%, especially high in mobile homes.

Conclusion

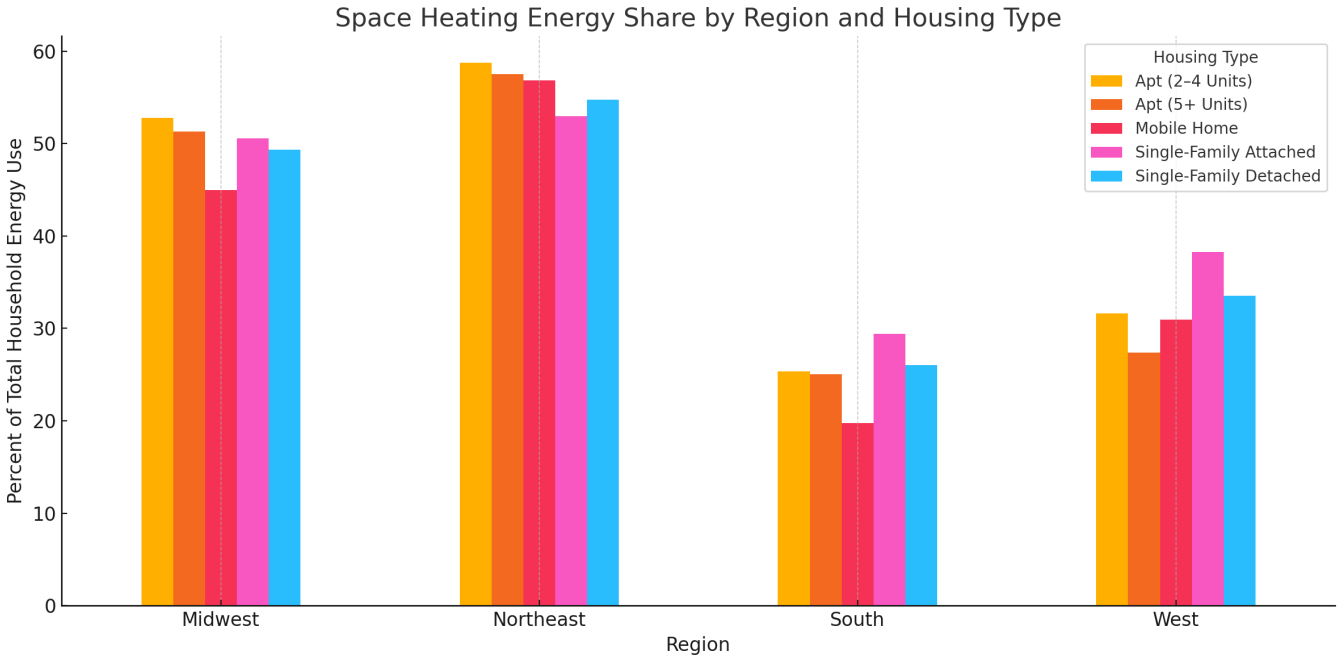
Housing type and climate jointly determine household energy burden. These insights help inform:

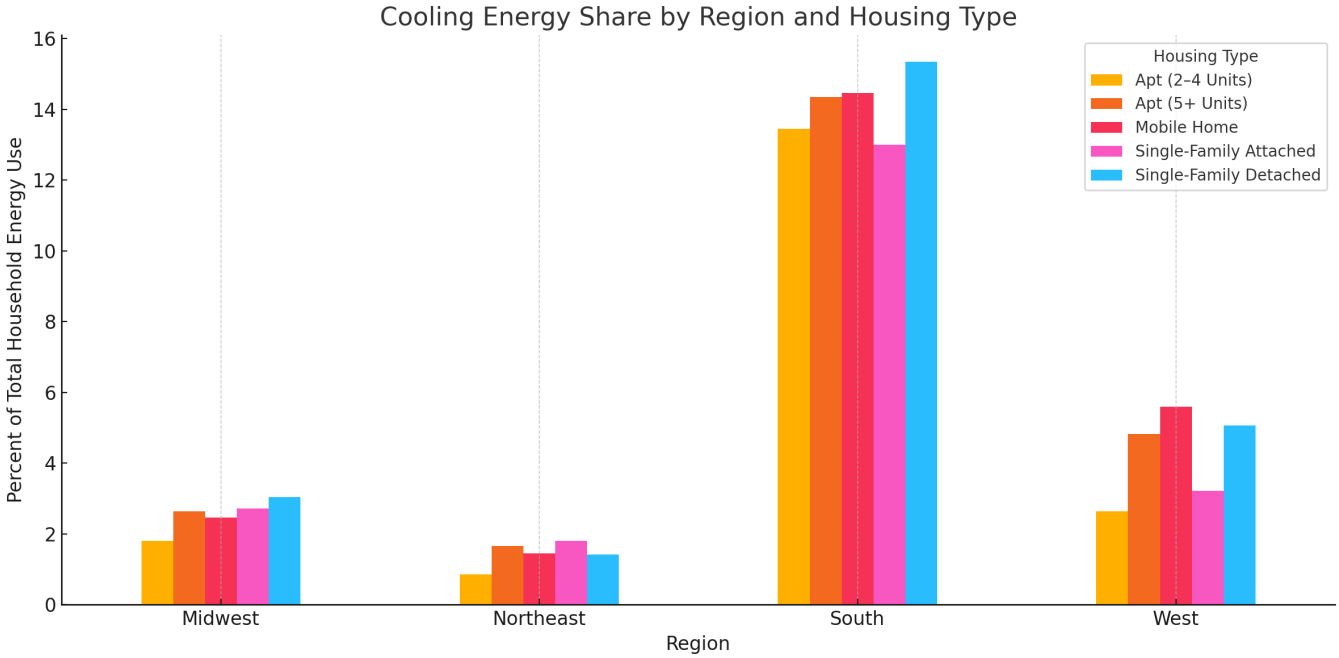
- Regional building code development
- Retrofit and insulation programs
- Targeted energy efficiency incentives

Tools Used

- Python (Pandas, Matplotlib)
- U.S. Energy Information Administration (RECS 2009 dataset)

Next Steps: Extend this analysis with income and occupancy factors, or simulate future climate impacts on energy demand.


Space Heating Energy Share by Region and Housing Type
Housing Type
Apt (2–4 Units)
Apt (5+ Units)
Mobile Home
Single-Family Attached
Single-Family Detached
Percent of Total Household Energy Use
0
10
20
30
40
50
60
Midwest
Northeast
South
West
Region


Cooling Energy Share by Region and Housing Type
Housing Type
Apt (2–4 Units)
Apt (5+ Units)
Mobile Home
Single-Family Attached
Single-Family Detached
Percent of Total Household Energy Use
0
2
4
6
8
10
12
14
16
Midwest
Northeast
South
West
Region