

# FY20 energy burden estimates for the WAP-eligible population using available RECS and EIA data sets

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Methodology adapted from Eisenberg 2014

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# Prior Reports on Energy Projections, Use and Burden

-by Joel Eisenberg

Joel's reports can be found at:

<https://weatherization.ornl.gov/reports/>

- 2014 – Technical Memorandum Background Data and Statistics On Low-Income Energy Use and Burdens
- 2014 – Impacts of colder than usual 2013-14 winter
- 2010 – Energy and cost savings and program benefit-to-cost ratios (before national evaluation performed)
- 2007 – 2008 forecasted energy price increases and cap-and-trade carbon policy
- 2005 – Impact of projected fuel prices

- Update projected **energy characteristics** (energy consumption + expenditures) and **energy burden** of WAP eligible households in FY 2020
- By proxy, reflect energy burden of clients served by WAP
- Assist with measuring the need for WAP and the program's effectiveness in meeting its statutory mandate to:

*“reduce [...] total residential energy expenditures” while prioritizing assistance to targeted households including “high-residential energy users” and “households with high energy burden”*

- These estimates provide insight into the potential for reductions in energy burden through energy savings as a result of WAP.

## Purpose

# Calculating Energy Burden

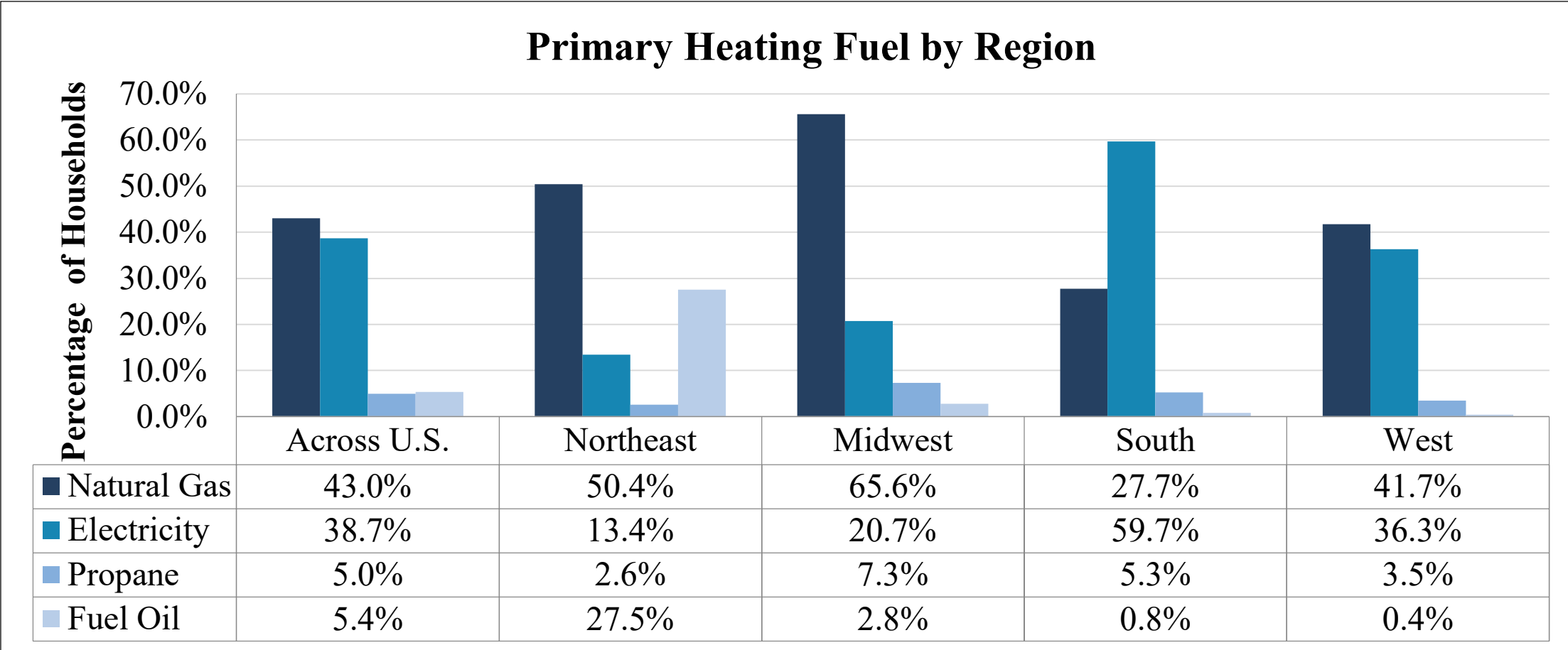
- (Home) energy burden = the percent of a household's income spent on energy expenditures
- For this analysis, energy expenditures drawn from RECS 2009 included:
  - Space heating
  - Space cooling
  - Water heating
  - Lighting
  - Refrigerator and 'Other' appliances
- The average income of the WAP eligible population for FY 2020 (using an income adjusted RECS 2009 dataset) is estimated to be about **\$22,243**

# Methodology

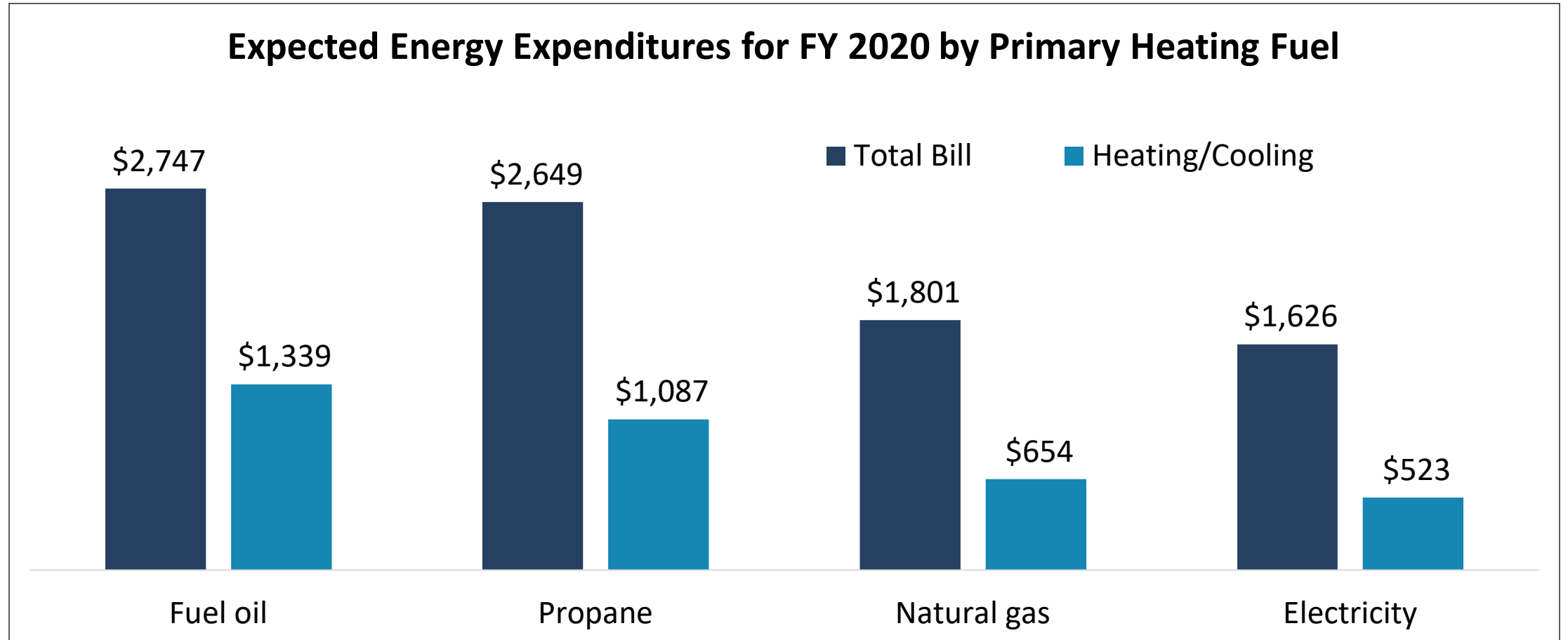
- 2009 RECS data continues to be used as the basis for energy consumption data and other house/occupant information
  - 2015 RECS not used; income bands too wide to determine poverty thresholds
  - 2020 RECS; in process
- Energy consumptions (based on actual utility bills in RECS 2009) normalized to standard/typical weather conditions
- Energy costs adjusted to account for changing fuel prices from 2009 to present (since actual bills reflect 2009 weather)
- Household income adjusted for inflation
- Energy burden calculated at the household level

# Analysis Using 2009 RECS (adjusted for 2020)

# Primary Heating Fuel by Region for WAP Eligible Households

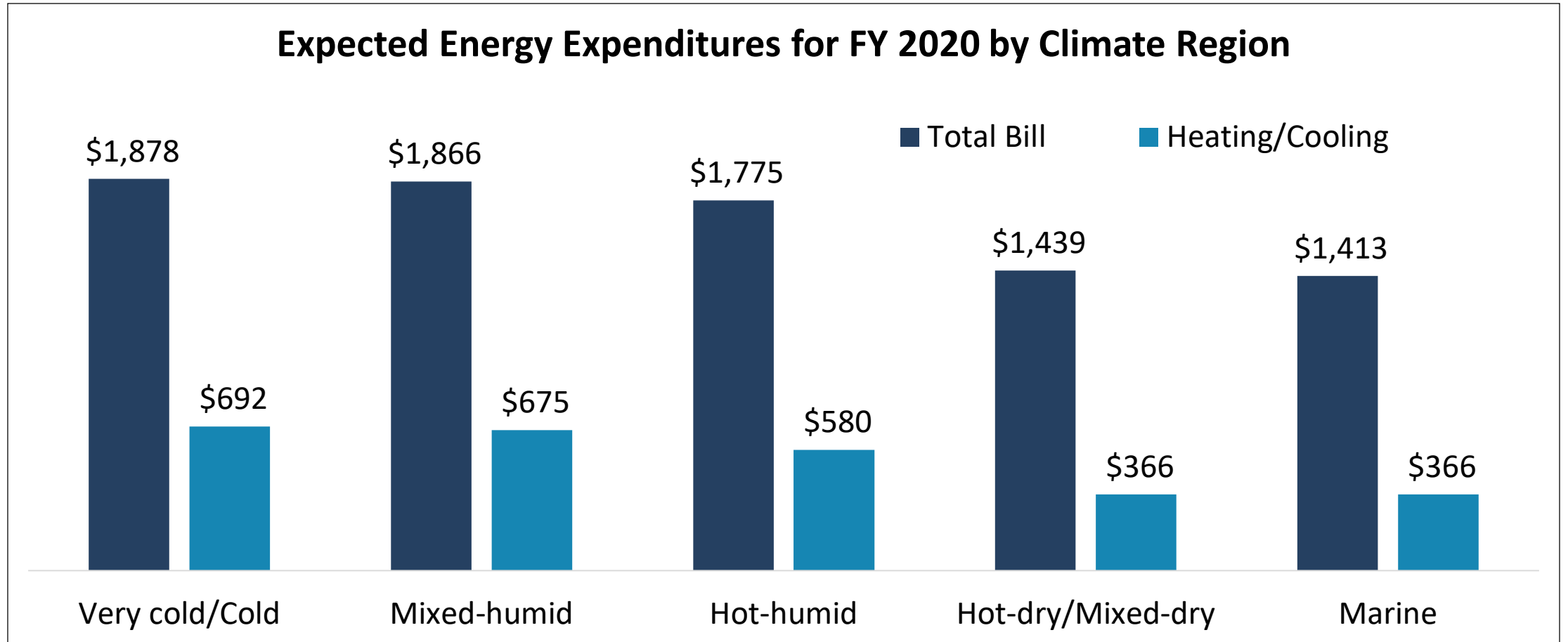


# Energy Expenditures by Primary Heating Fuel

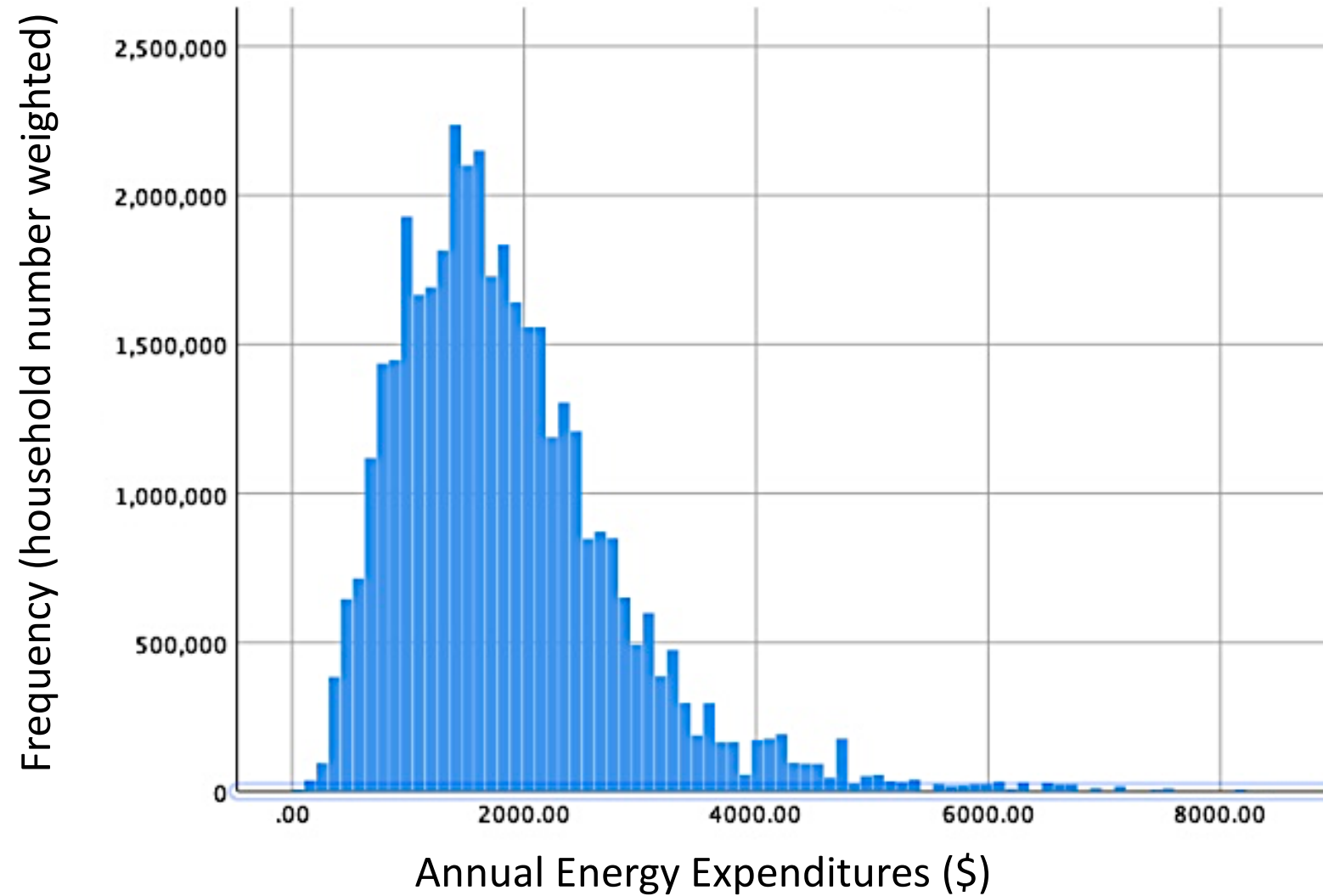




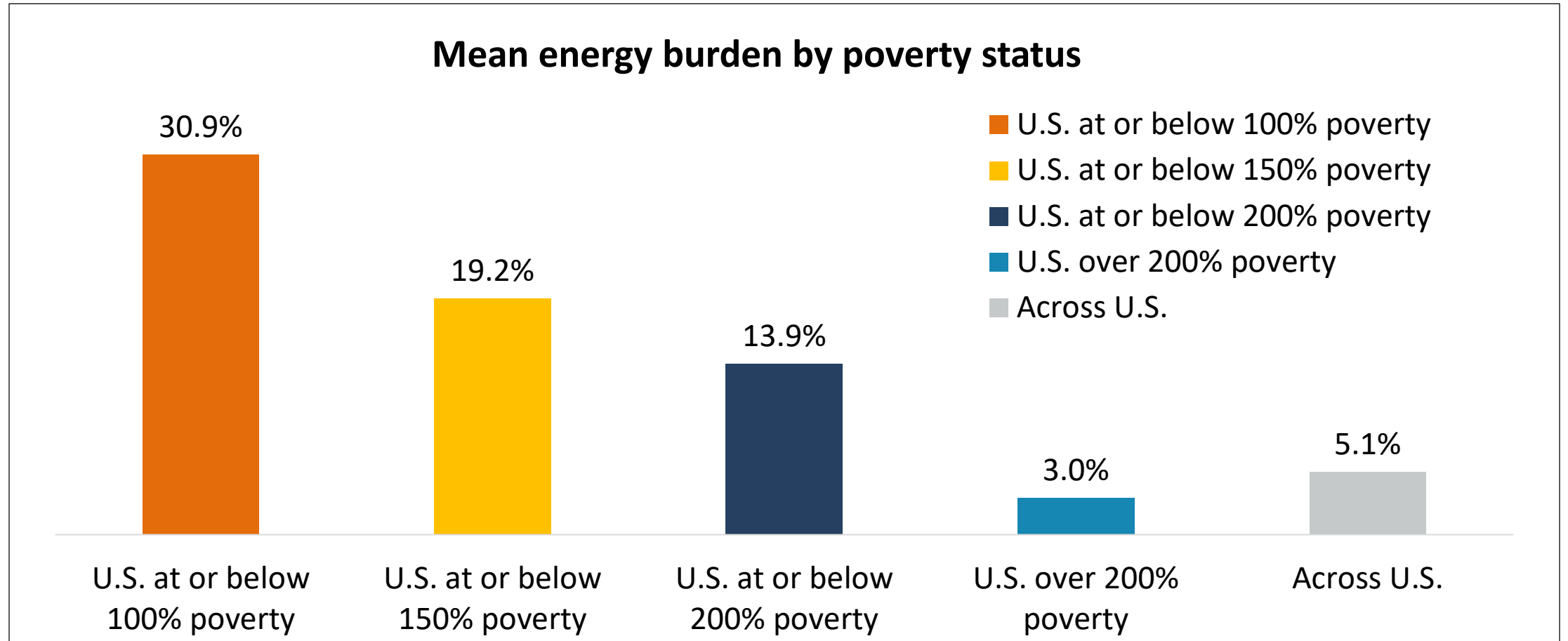
# Energy Expenditures by Climate Region



# Distribution of Energy Bills Estimated for FY20 for the WAP Eligible Population

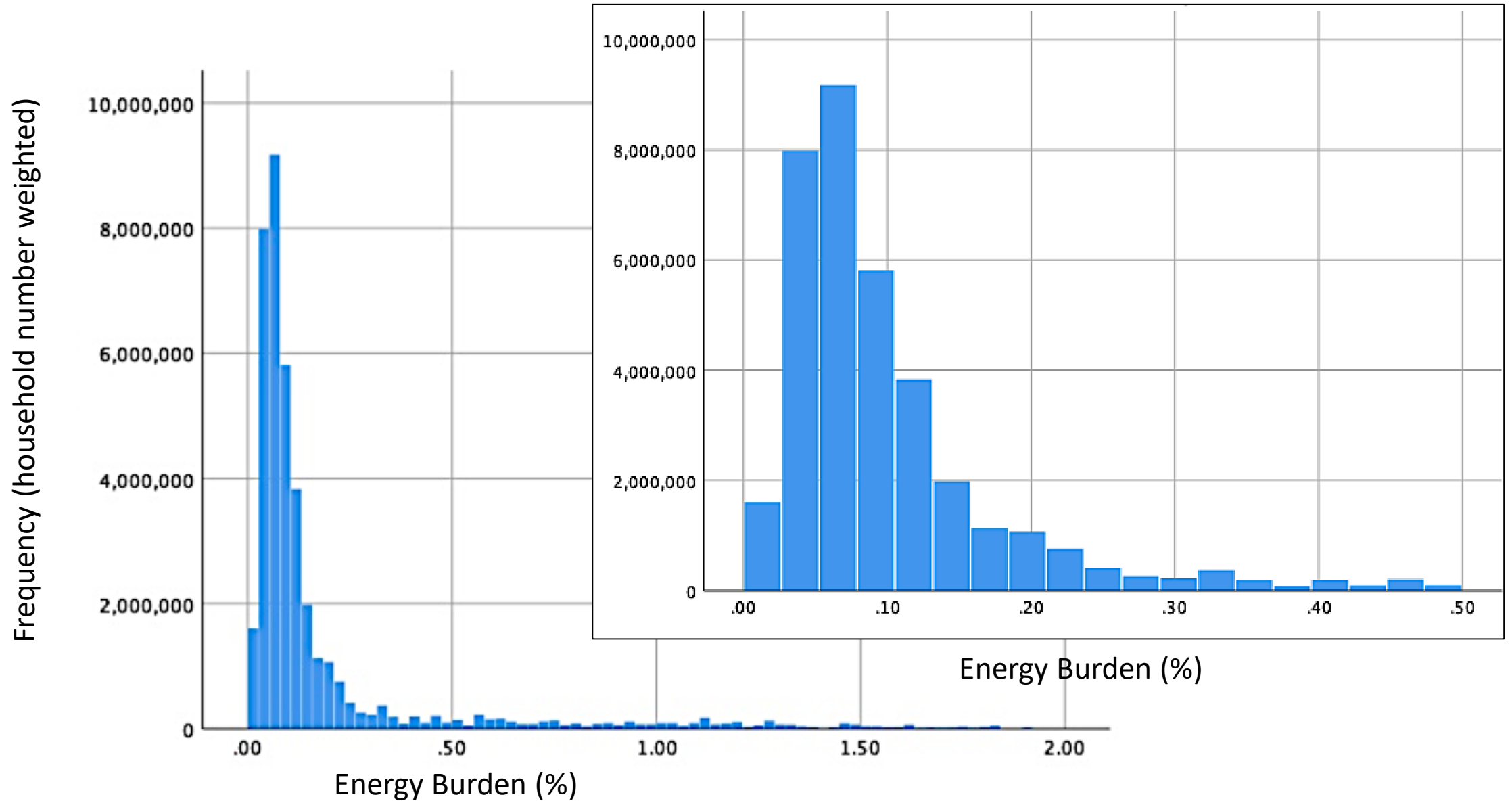


# Energy burden in the U.S. by poverty status (RECS)

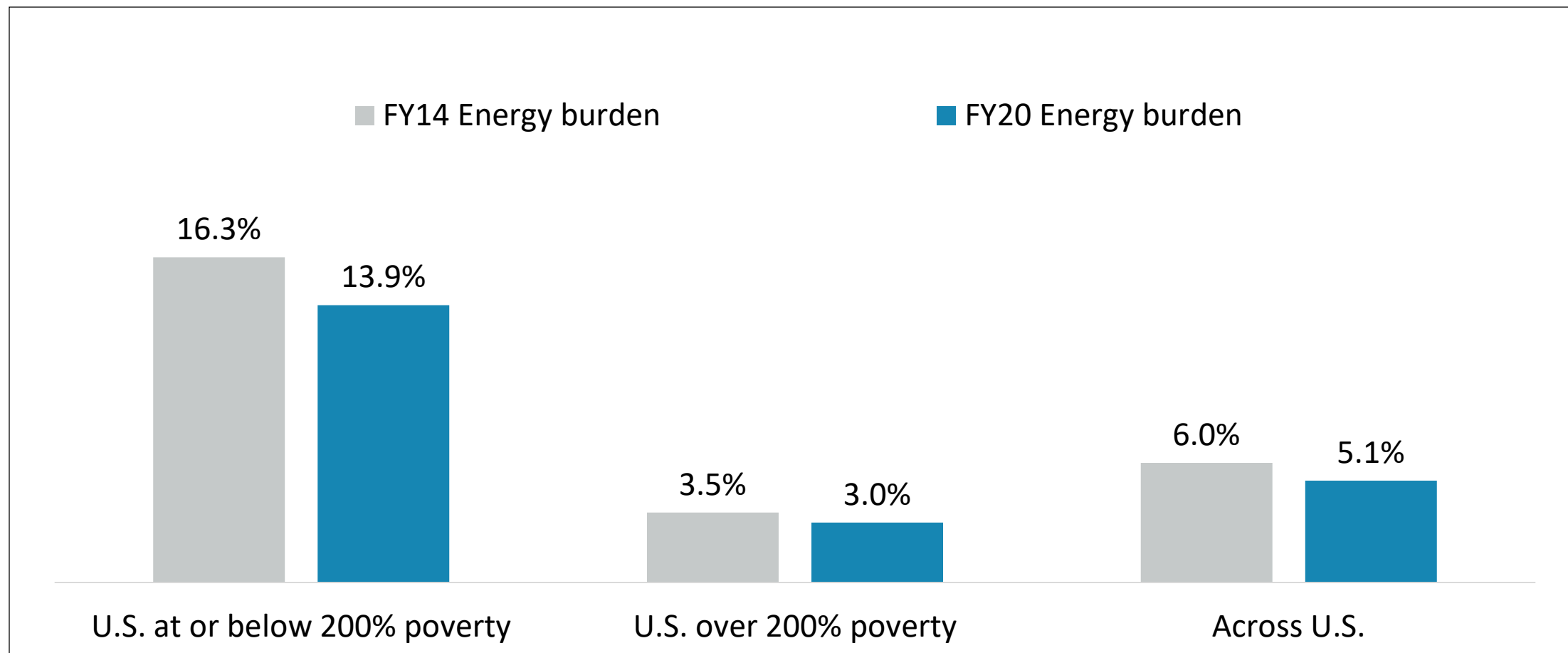


\*5% trimmed mean

# Distribution of Energy Burden for FY20 (WAP Eligible)

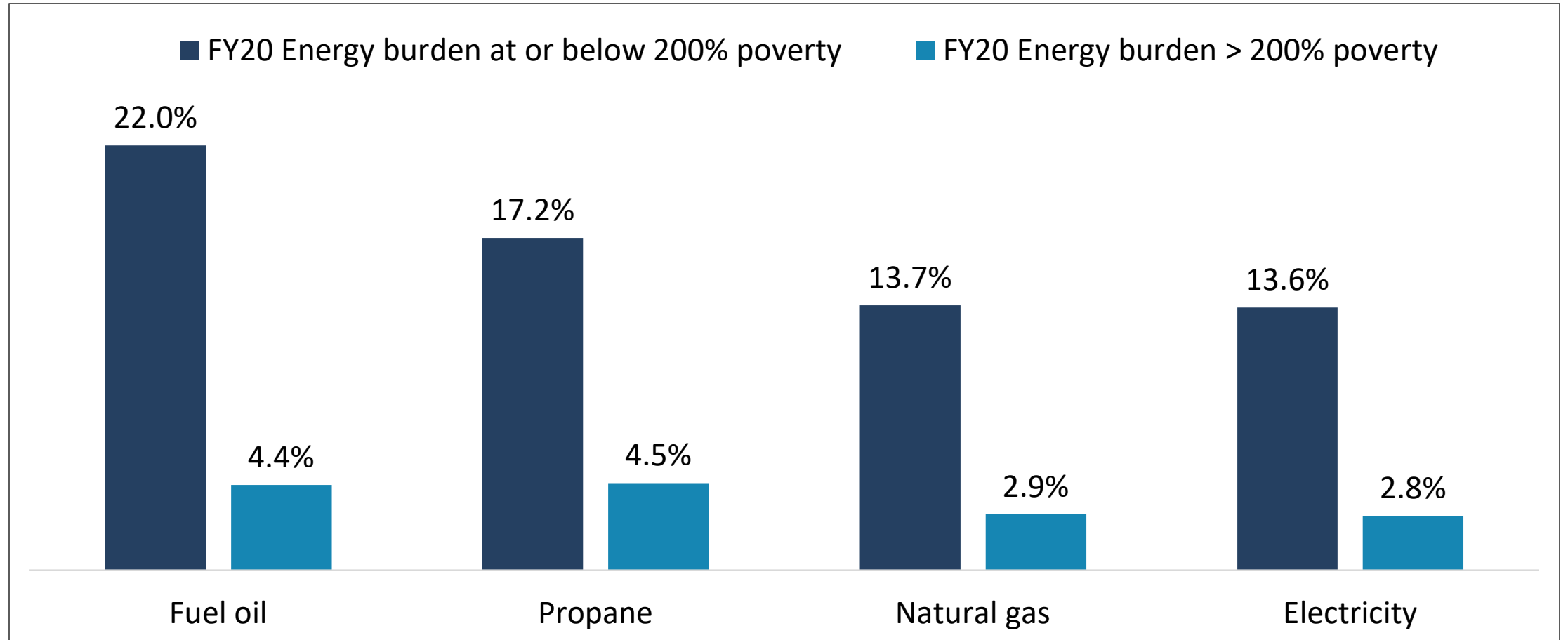


# Mean Energy Burden for FY14 and FY20 by Poverty Status

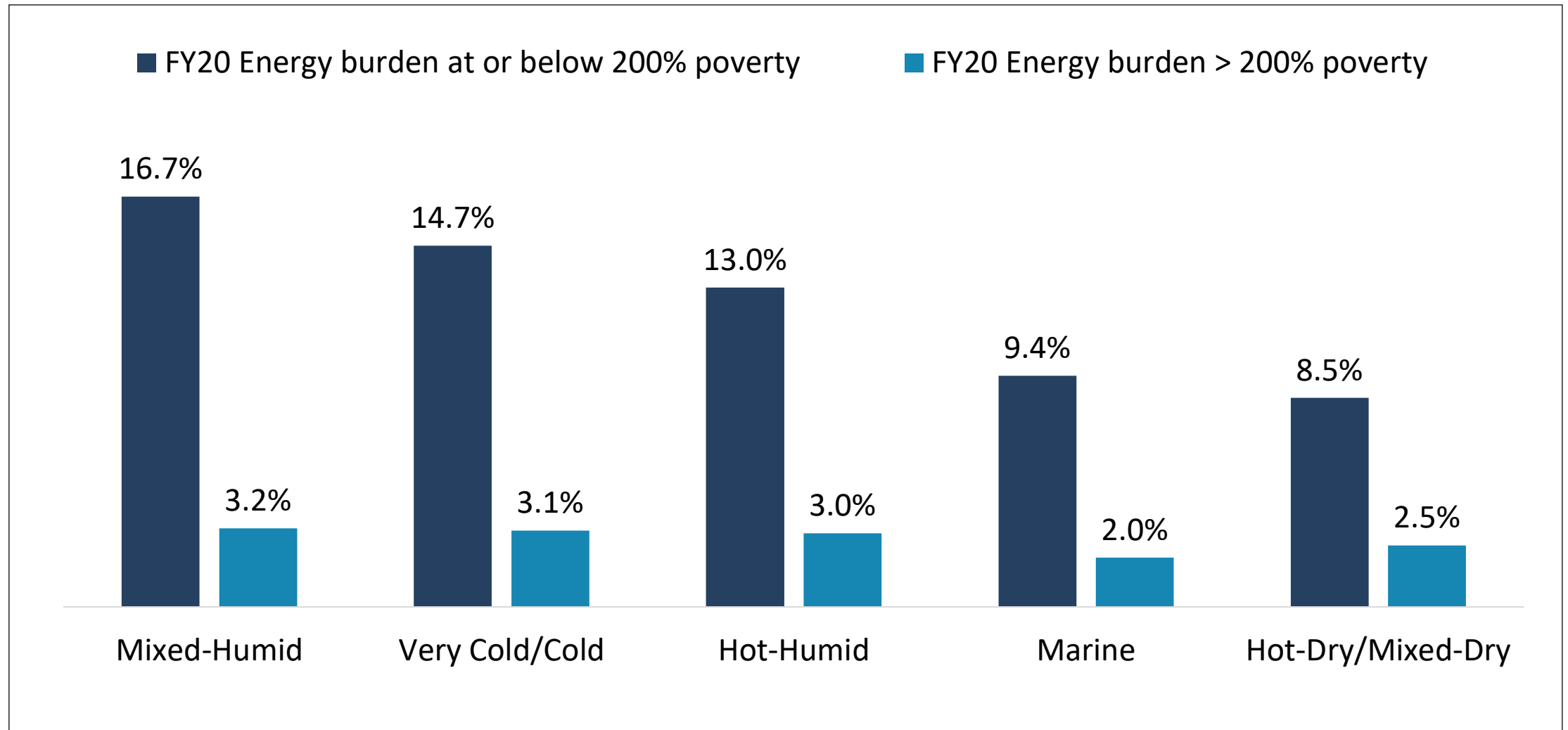


\*5% trimmed mean

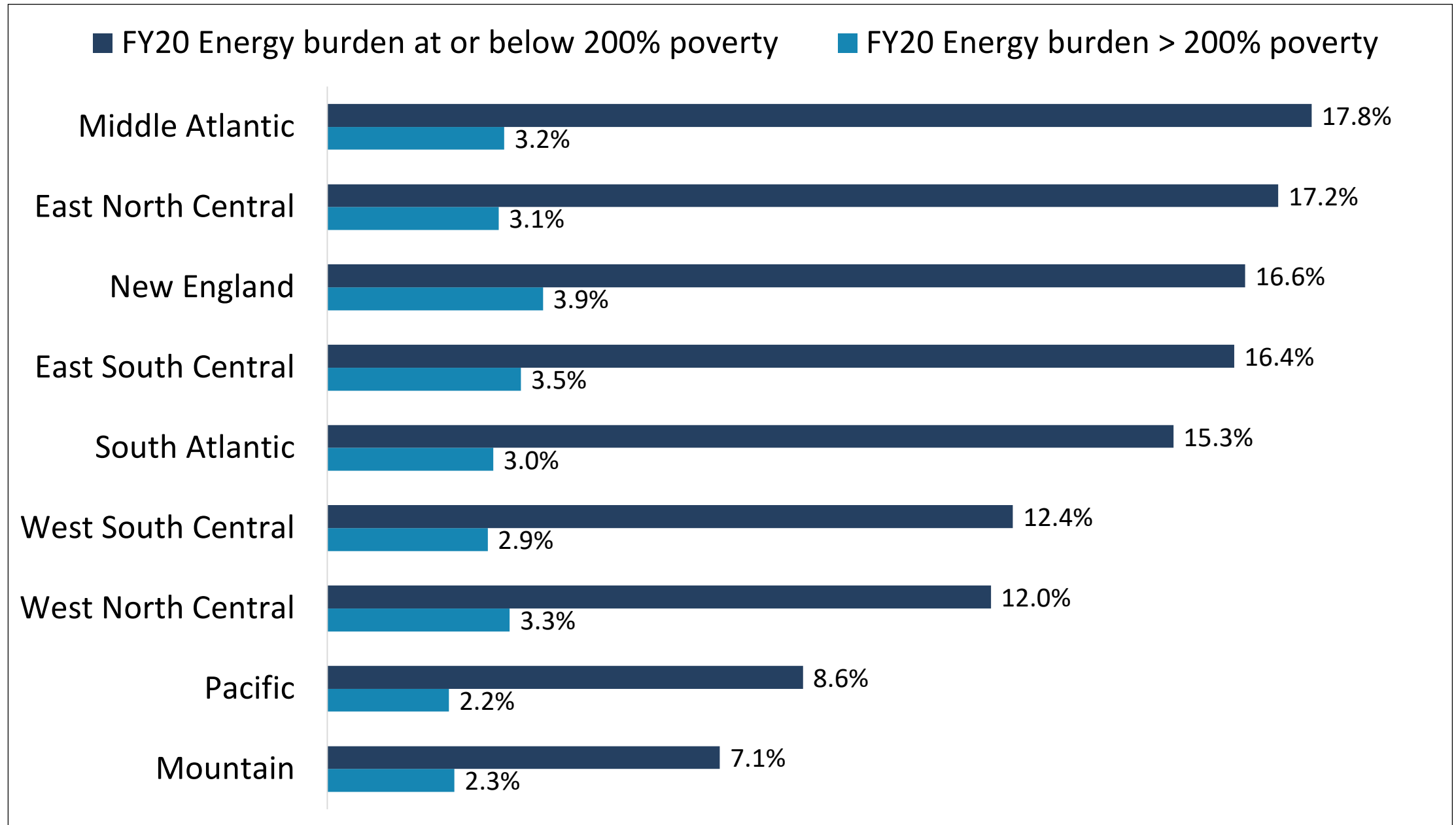
# Energy Burden by Fuel Type by Poverty Status



# Energy Burden by Climate Region by Poverty Status

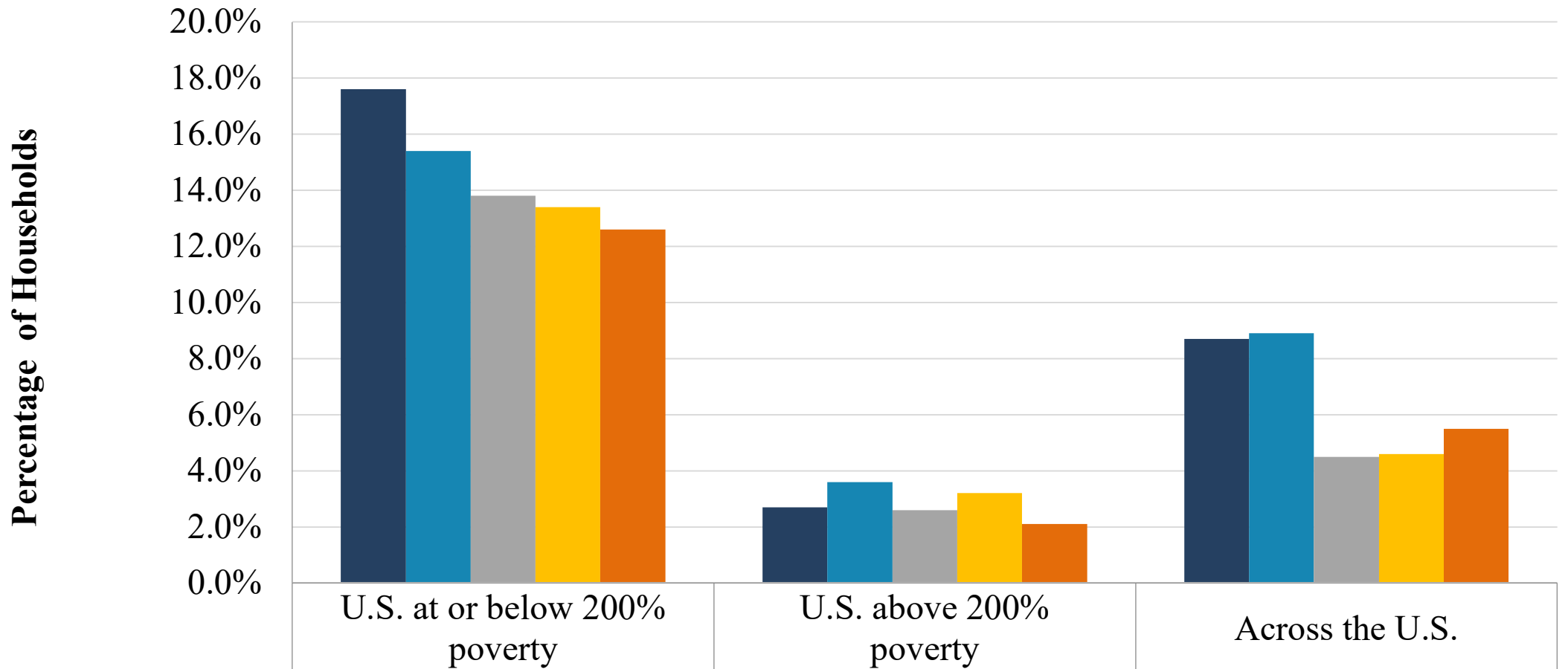


# Energy Burden by Division and Poverty Status





# Energy Burden in the U.S. by Housing Type

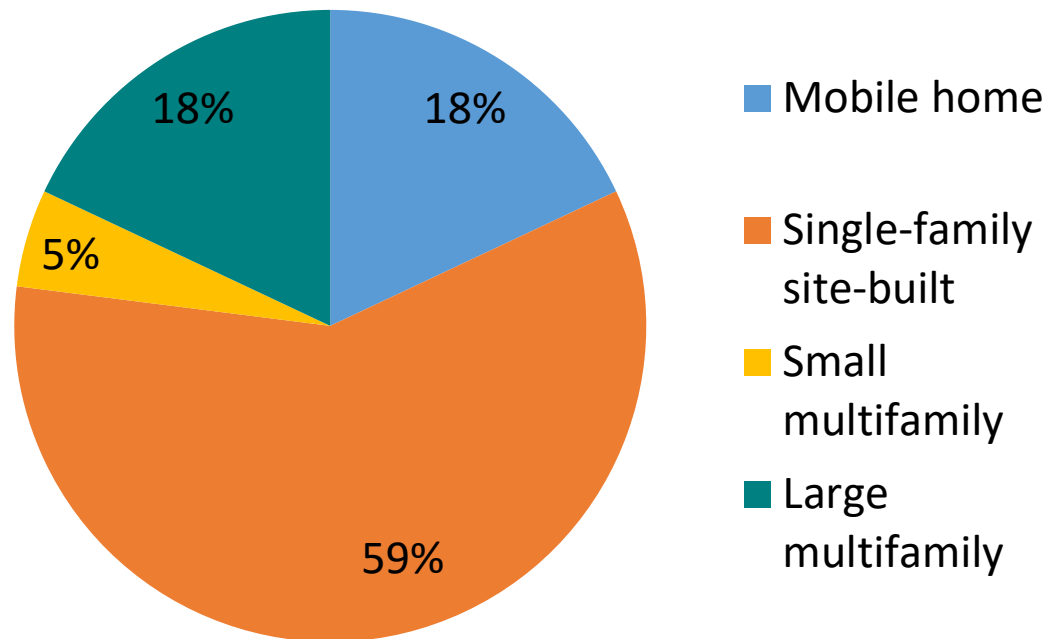


■ Small multifamily (2-4 units)	17.6%	2.7%	8.7%
■ Mobile homes	15.4%	3.6%	8.9%
■ Single family attached	13.8%	2.6%	4.5%
■ Single family detached	13.4%	3.2%	4.6%
■ Large multifamily (5+ units)	12.6%	2.1%	5.5%

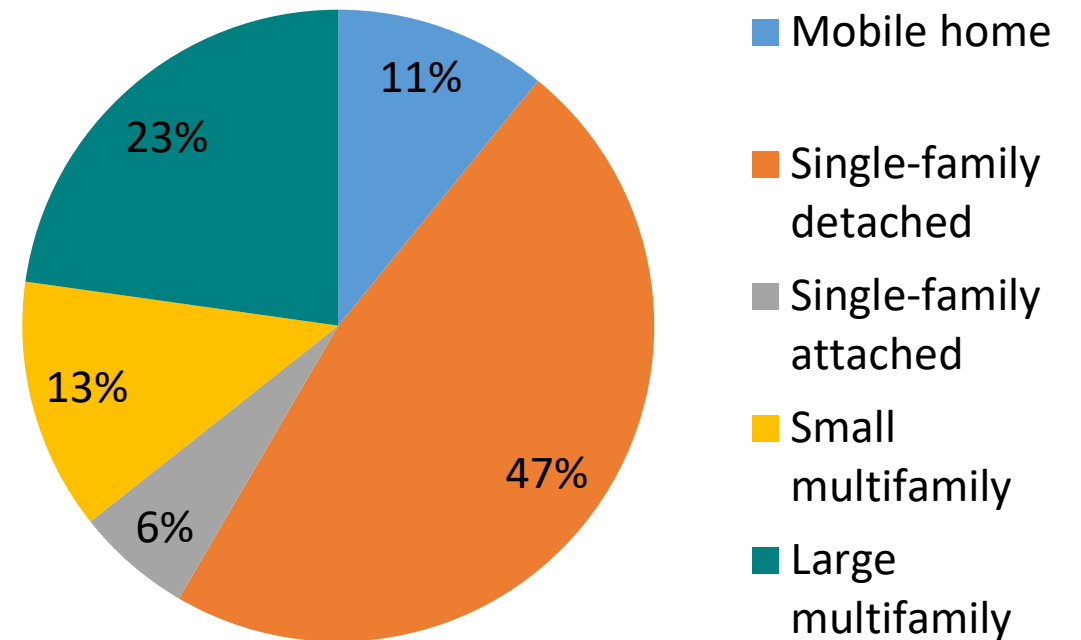
# Comparison of: RECS and National WAP Evaluation Findings

# WAP population housing characteristics using RECS and ORNL National WAP Evaluation data

**WAP units weatherized (ORNL evaluation PY08)**



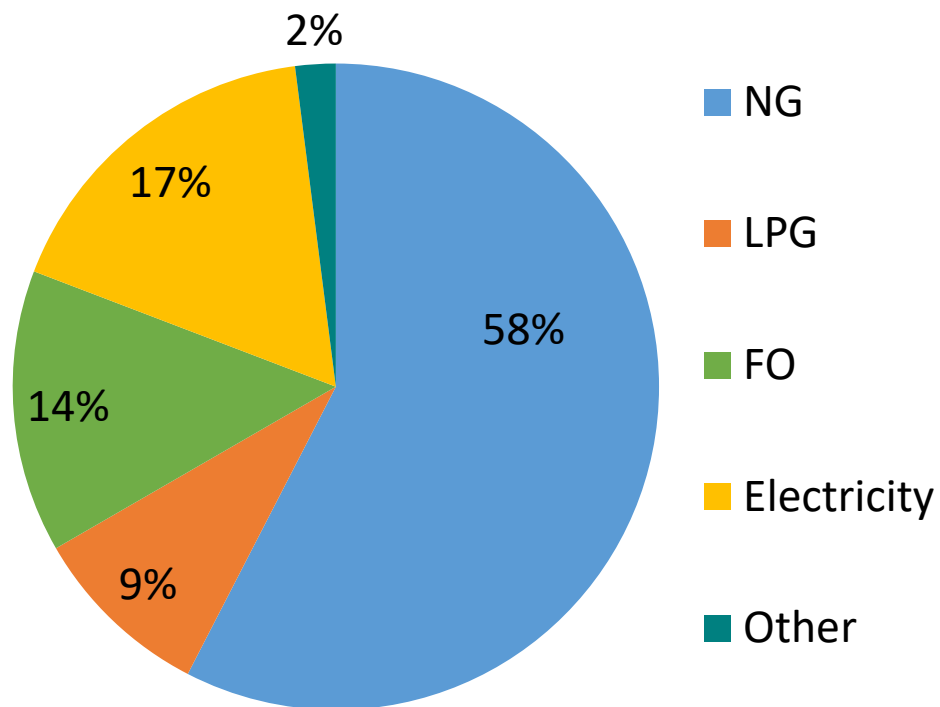
**WAP eligible population RECS data**



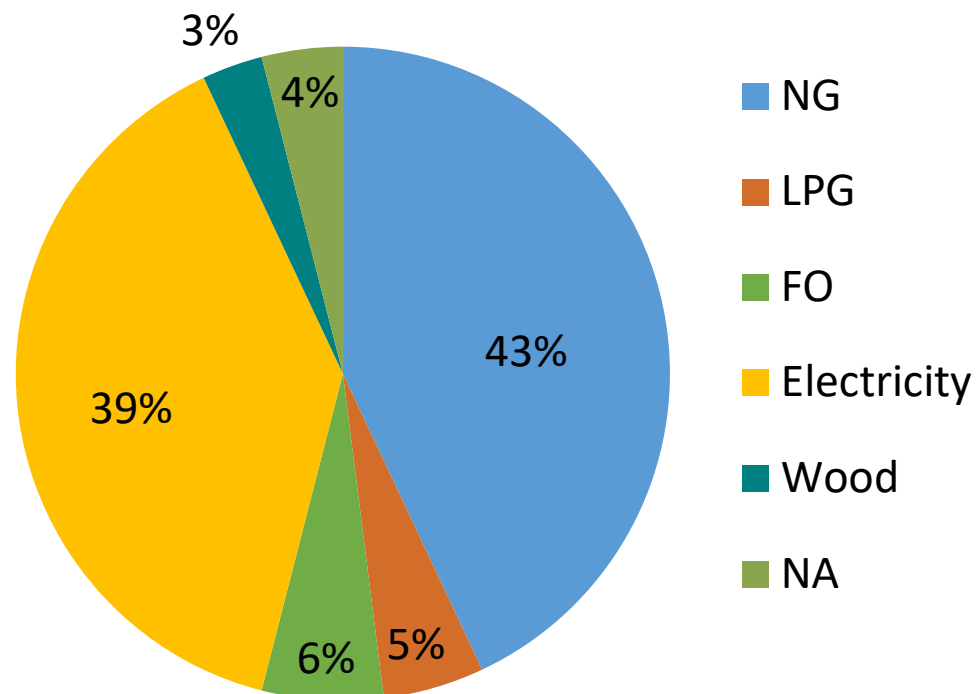
\*Single-family site built is a combination of detached and attached housing

# WAP population fuel characteristics using RECS and ORNL National WAP Evaluation data

**WAP units weatherized  
(PY08)**

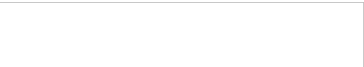


**WAP eligible population  
RECS data**



# ORNL WAP evaluation occupant survey findings: From pre- to post-weatherization (single-family)

Survey Item	Pre-weatherization incidence	Post- weatherization incidence	Difference
Trade Offs			
It is hard or very hard to pay energy bills	74.6%	58.5%	-16.1%
Did not buy food to pay energy bills	33.2%	23.1%	-10.1%
Did not fill prescriptions to pay energy bills	27.5%	18.5%	-9.0%



# Thank you!

## Questions?

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