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RURAL RESEARCH SYMPOSIUM

Collaboration Through
Insights-Driven Solutions

Intersecting Costs: Balancing Housing and Transportation Expenses

Sierra Latham

A high-angle, top-down photograph of a person with long dark hair sitting at a dark wooden desk. The person is wearing a light-colored long-sleeved shirt and is looking at a laptop. On the desk, there is a silver calculator on a blue clipboard, a white laptop with a blue pen resting on it, and a white coffee cup on a saucer. A green rectangular box highlights the laptop and the person's hands. The background shows a tiled floor and a window with a grid pattern.

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Housing Affordability: Rural Rental Markets

A high-angle, top-down photograph of a person with long dark hair sitting at a dark wooden desk. The person is wearing a light-colored long-sleeved shirt and is looking at a laptop. On the desk, there is a silver laptop, a calculator on a clipboard, a blue pen, a white coffee cup on a saucer, and a glass of water. A green rectangular box highlights the laptop and the person's hands. The background shows a tiled floor and a chair.

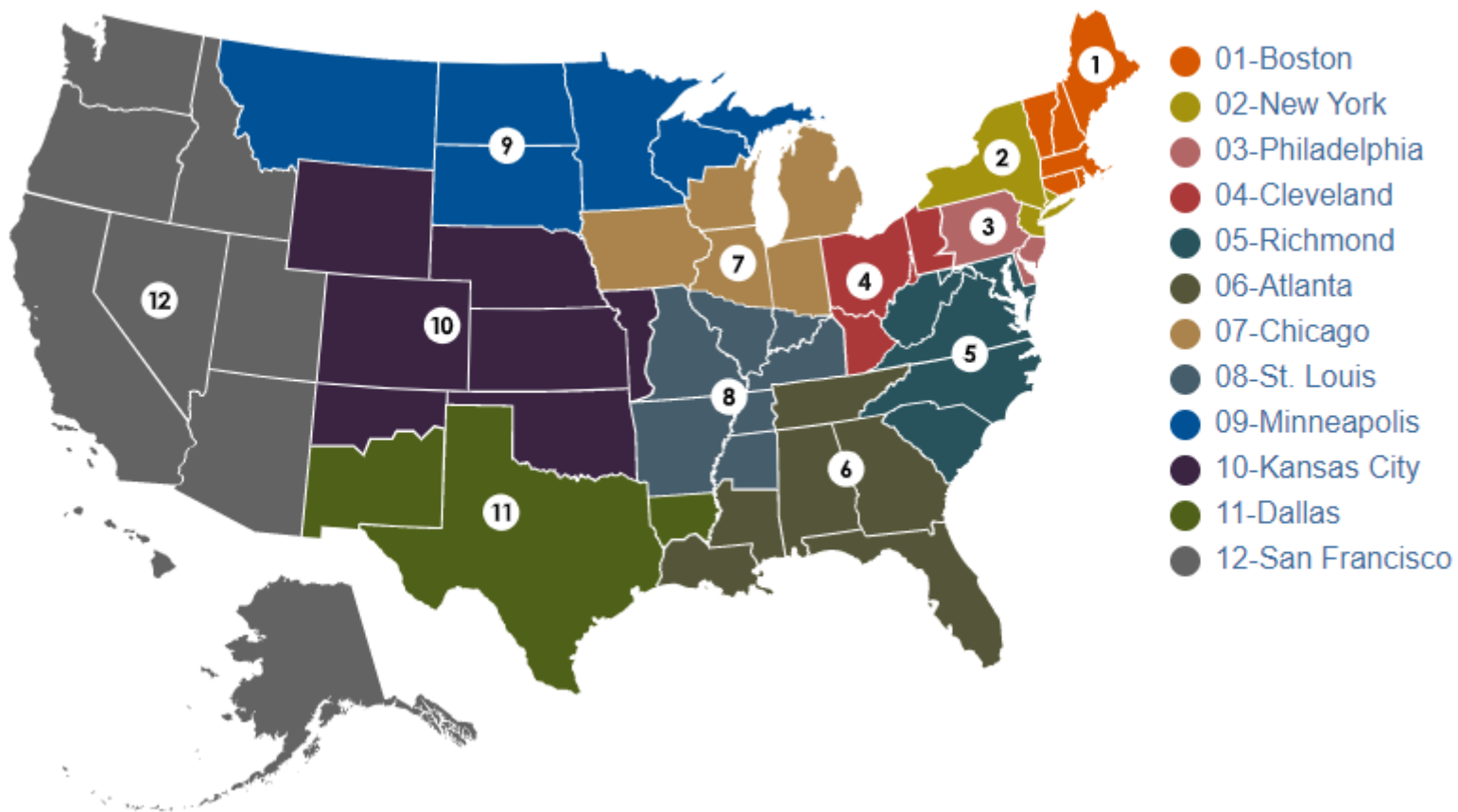
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The Federal Reserve System

Federal Reserve Banks



For this presentation,
**USDA 2013 Rural-
Urban Continuum
Codes (RUCC) 3 – 9**
are considered rural.



Housing and Transportation

- Housing choice factors in location
- Housing and transportation tend to be the two largest recurring household expenditures
- Rural households tend to spend more on transportation than on housing



Housing and Transportation

What is considered affordable?

- To be considered affordable, housing and transportation expenses should account for **no more than 45 percent** of a household's gross income, according to the Center for Neighborhood Technology.

What is meant by “typical household”?

- A household earning the regional area median income.

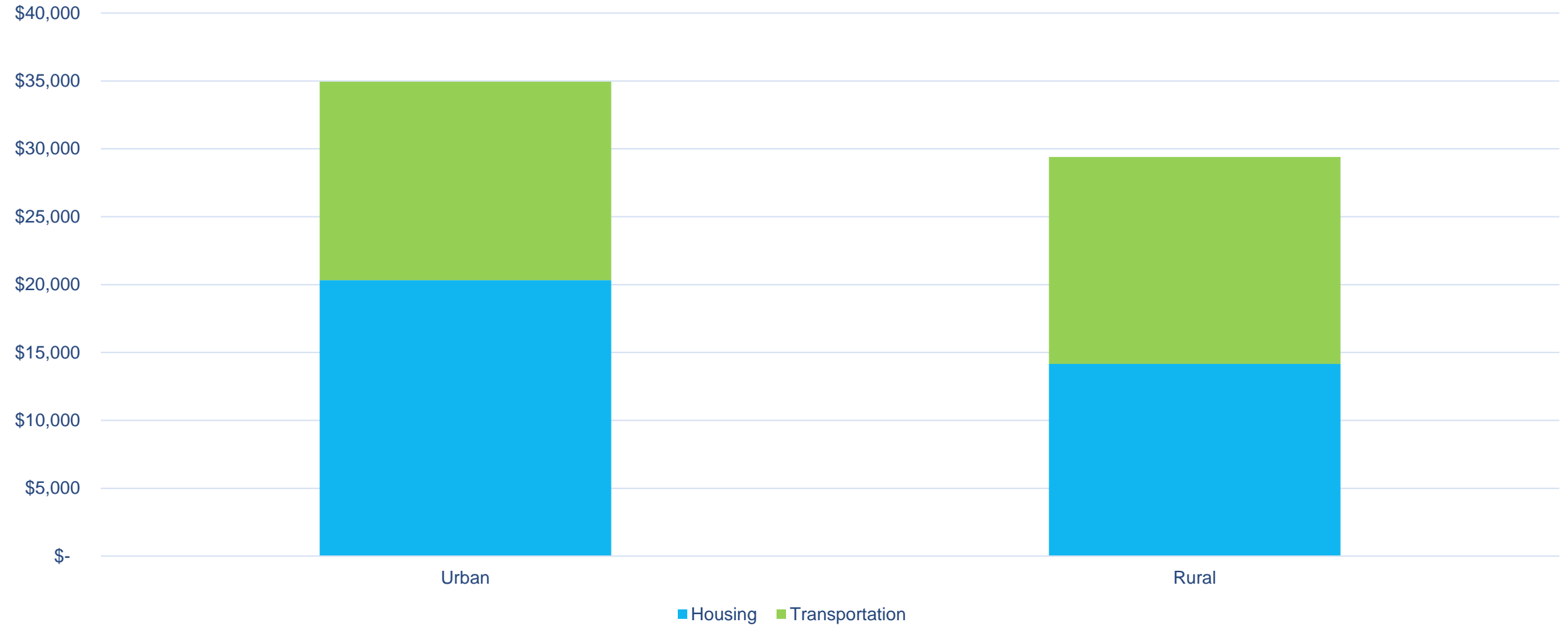


A National Look at Housing and Transportation



Annual H+T Cost for a Typical Household

Annual H+T Cost for a Typical Household (\$2021)

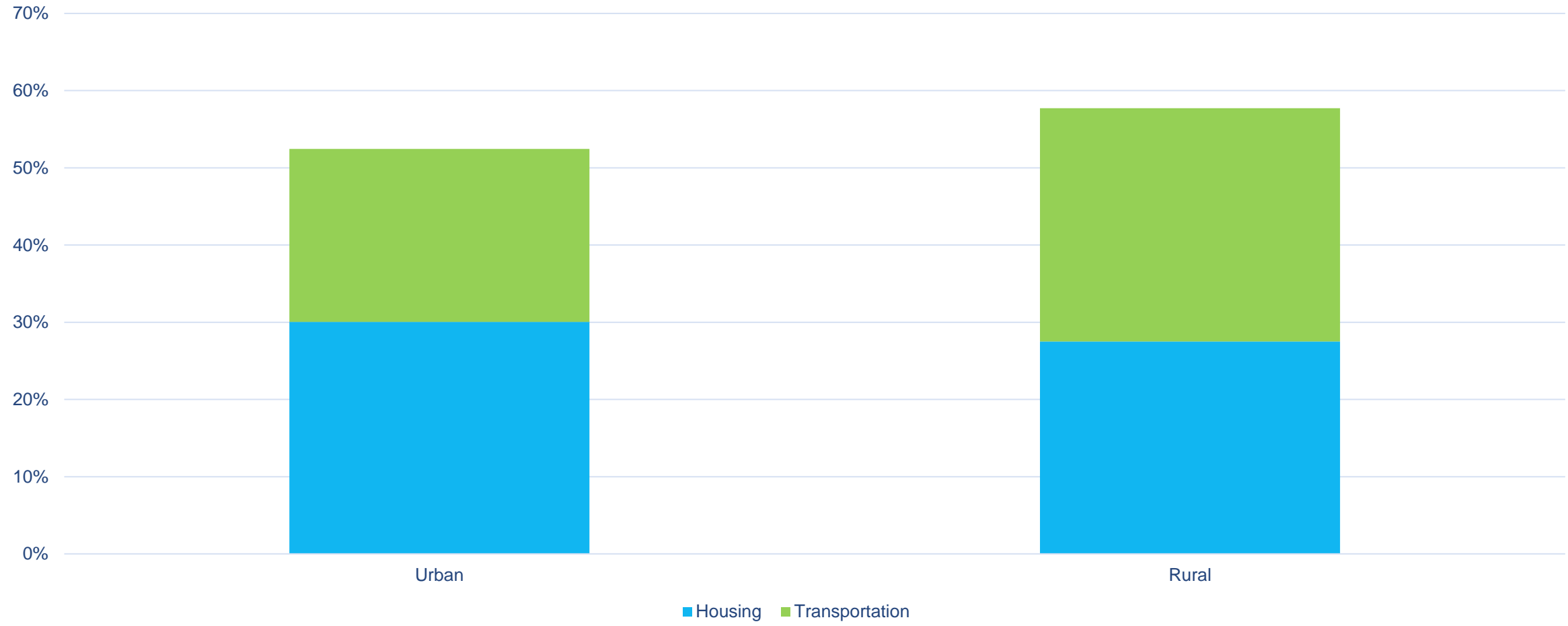


Source: Center for Neighborhood Technology (CNT) Housing + Transportation (H+T) Index Data and author's calculations.



Annual H+T Cost for a Typical Household

H+T Cost as a Share of Income for a Typical Household



Source: CNT H+T Index Data and author's calculations.



Annual H+T Cost for a Typical Household

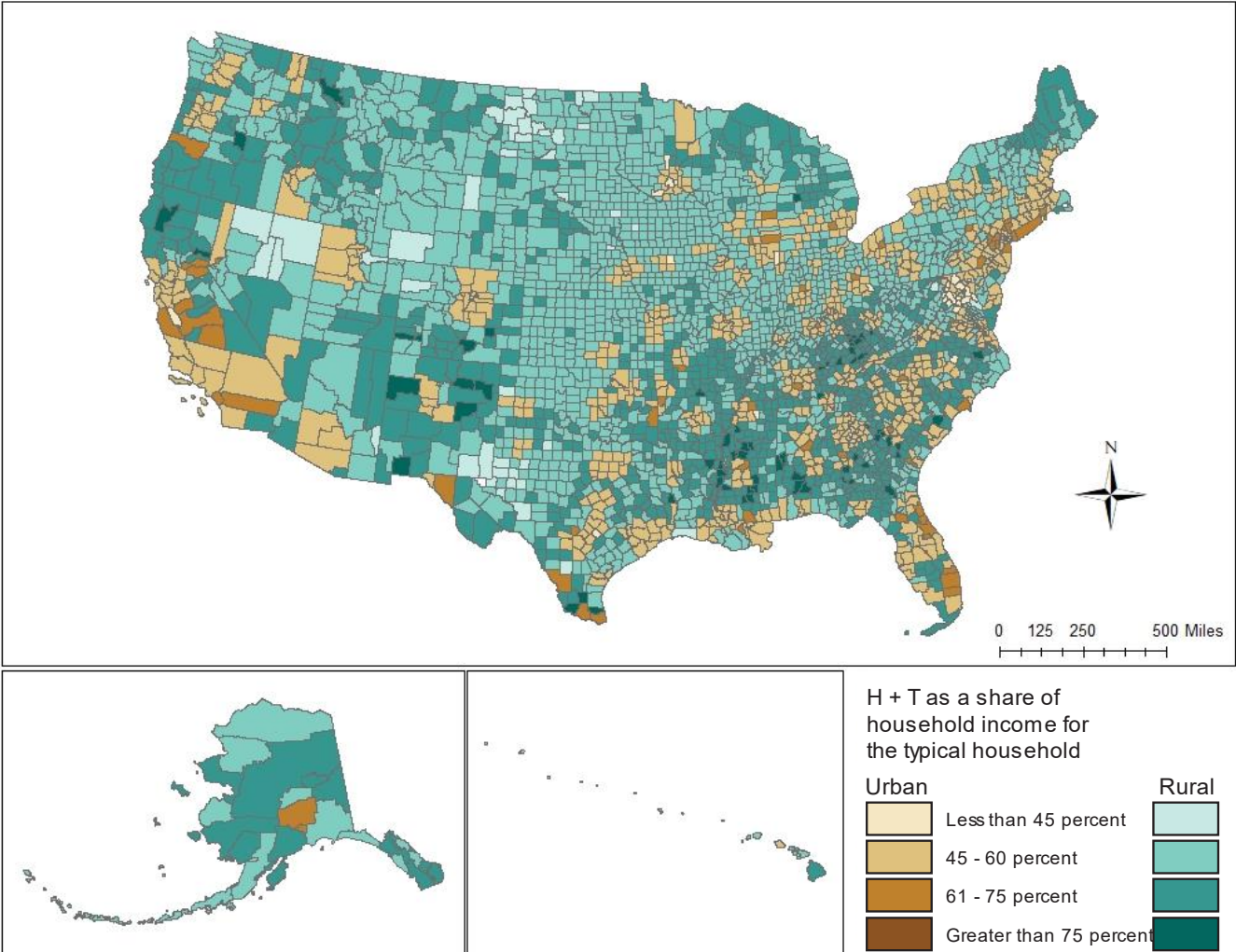
H+T Cost as a Share of Income for a Typical Household, by Census Region



Source: CNT H+T Index Data and author's calculations.



Annual H+T Cost for a Typical Household



Source: CNT H+T Index Data and author's calculations.

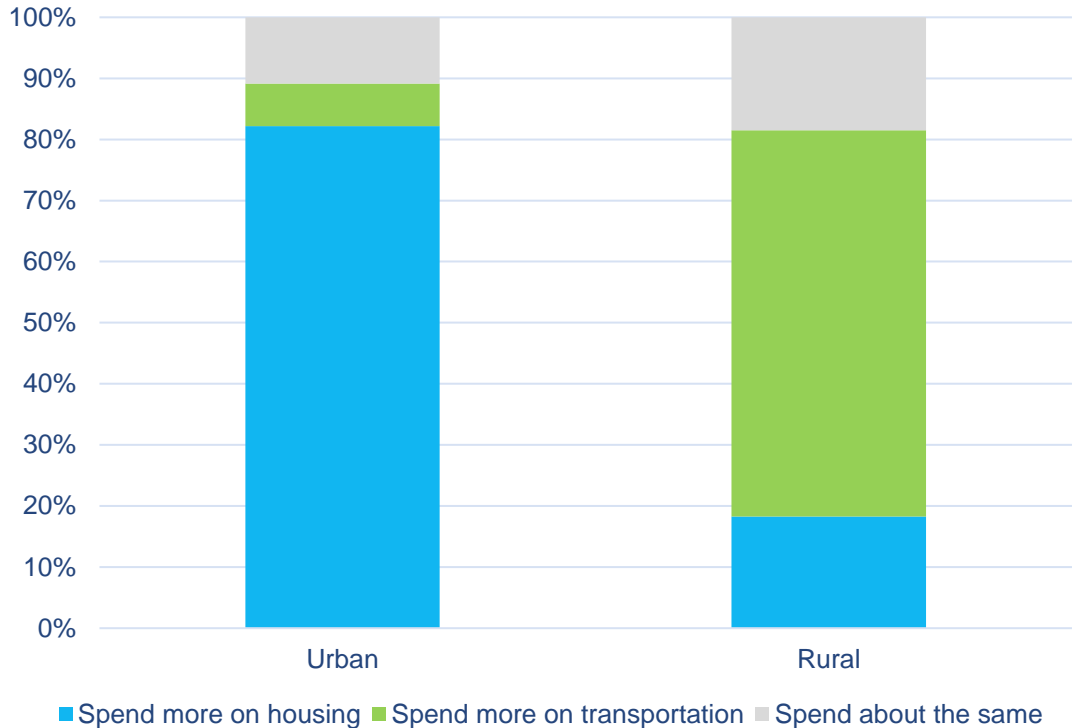


Rural Households Spend More on Transportation than on Housing



Rural Households Spend More on Transportation than on Housing

Share of Households, Nationwide

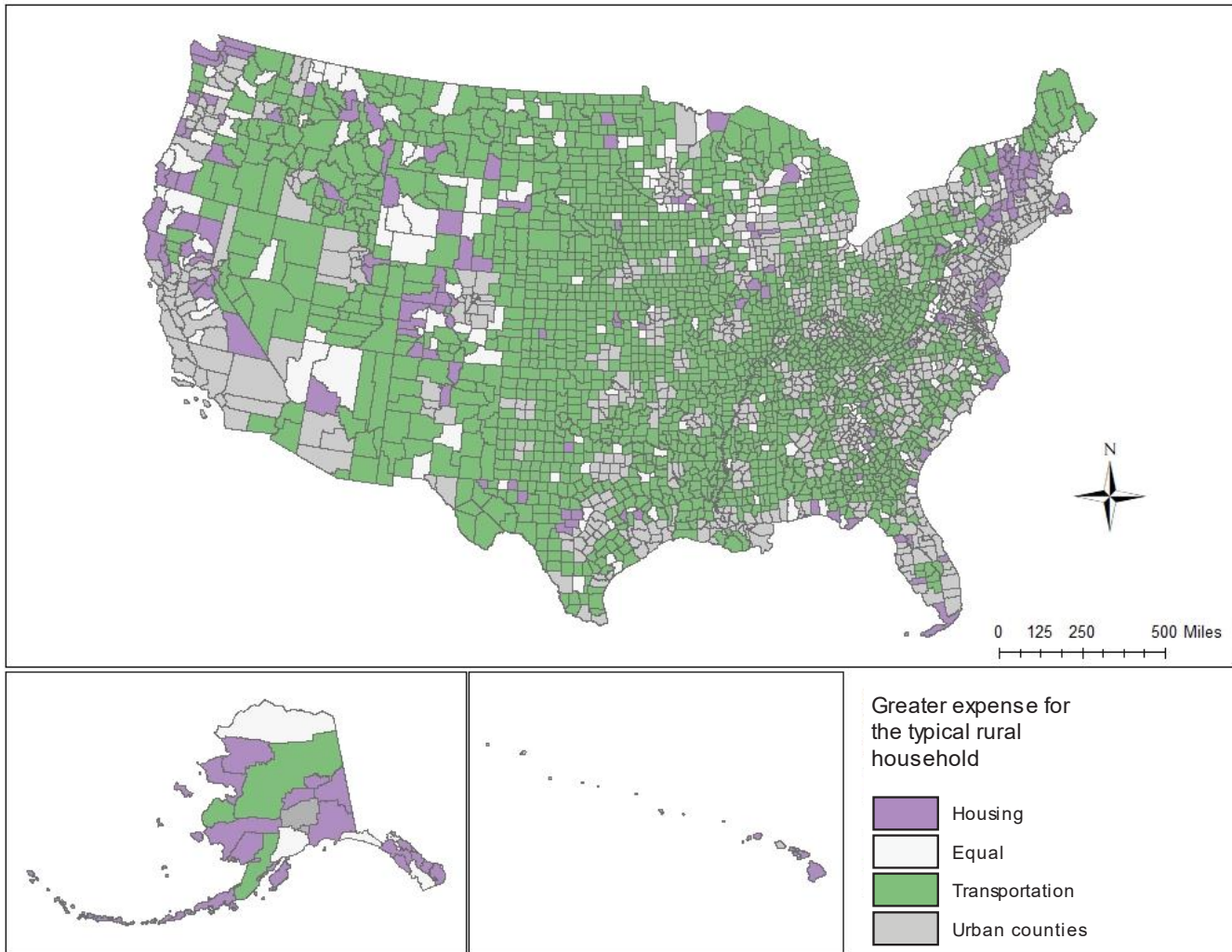


63 percent of rural households spend more on transportation than on housing, versus only 7 percent of urban households

Source: CNT H+T Index Data and author's calculations.



Annual H+T Cost for a Typical Household



Source: CNT H+T Index Data and author's calculations.

What's Happening when Transportation Costs more than Housing in Rural Counties?

Metric	Rural Counties where Housing > Transportation	Rural Counties where Transportation > Housing
Metro or metro-adjacent	71 percent	56 percent
Residential density	0.96 housing units per acre	0.04 housing units per acre
Employment density	0.52 jobs per acre	0.03 jobs per acre
Road network density	2.54 miles of road per acre	2.07 miles of road per acre

Source: U.S. EPA Smart Locations Database, USDA 2013 RUCC, and author's calculations.

Why Does it Matter?

Metric	Rural Counties where Housing > Transportation	Rural Counties where Transportation > Housing	Urban counties
Labor force participation rate (age 25-64)	77 percent	72 percent	77 percent
Employment-to-population ratio (age 25-64)	74 percent	69 percent	74 percent
Unemployment rate (age 25-64)	4.3 percent	4.3 percent	4.1 percent
Median household income	\$65,042	\$48,760	\$66,860

Relationship between H + T and economic outcomes is likely due to endogenous factors

Source: U.S. Census Bureau 2016-2020 American Community Survey (ACS) 5-year estimates and author's calculations.

Housing and Transportation Initiatives in the Fifth District



Investing in Public Transportation

Country Roads Transit (Randolph and Upshur Counties, West Virginia)

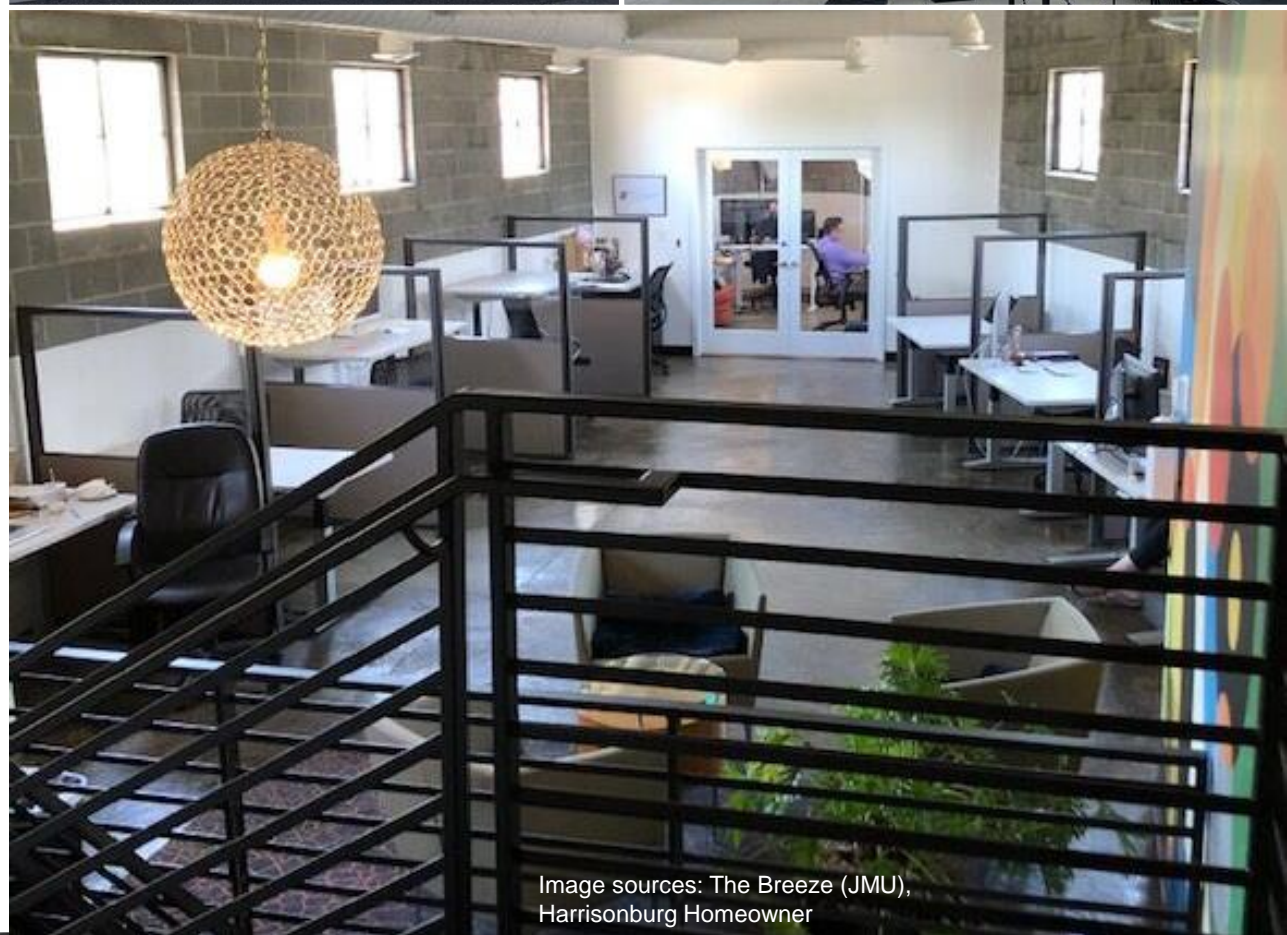
- Hybrid fixed-route and on-demand
- Grant funded, along with private and non profit contributions



Investing in Placemaking

Big L Tire Pros Adaptive Reuse (Harrisonburg, Virginia)

- Revitalized a commercial corridor
- Used federal and state historic tax credits



Investing in Placemaking

Route 9 Streetscape Improvements (Hillsboro, Virginia)

- Pedestrian-oriented design
- Simultaneously upgraded utility lines

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Image source: Michael S. Williamson/ The Washington Post

Expanding Broadband Infrastructure

Dominion Energy Rural Broadband Program

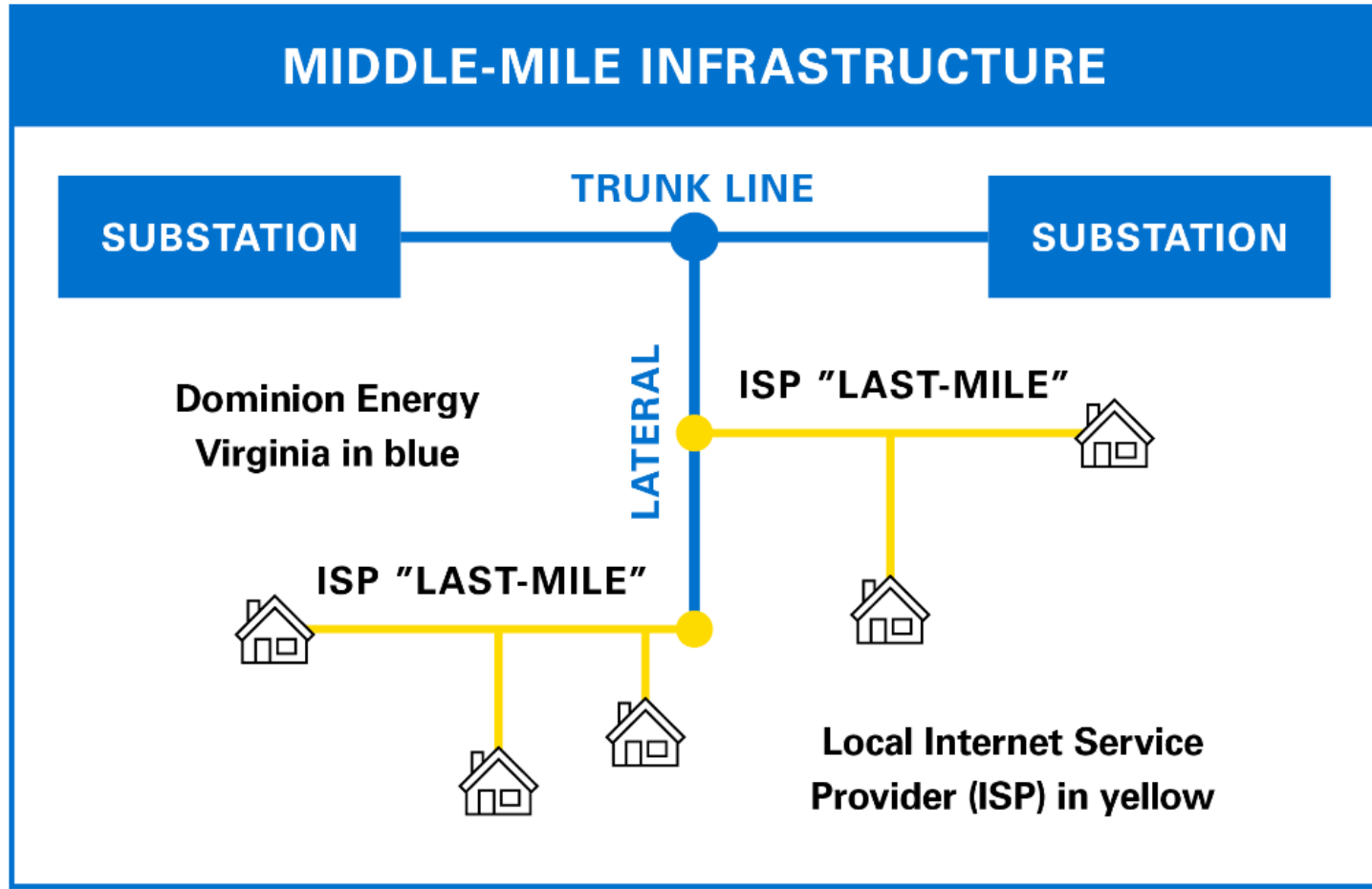


Image source: Dominion Energy



Thank you

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Preserving Rural Affordable Rentals: The Role of Ownership and Management

Brian An, Georgia Tech
Anthony Orlando, Cal Poly Pomona
Andrew Jakabovics, Enterprise Community Partners
Seva Rodnyansky, Occidental College

A high-angle photograph of a person with long dark hair, seen from behind, sitting at a wooden desk. They are wearing a light-colored long-sleeved shirt and blue pants. On the desk, there is a silver laptop, a calculator on a clipboard, a blue pen, and a white coffee cup on a saucer. A green rectangular box highlights the person's hands and the desk area. The background shows a tiled floor and a window with a grid pattern.

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Rural Subsidized Rental Housing



The Premise for Studying the Role of Owners and Managers

- Serve a real need
 - 40% of the 5 million rural renters are low income
- Are a scarce resource
 - 6.5% of rural rental units
- A sparse resource & spread out over the whole country
- Fits into broader policy and program discussions around preservation, given Section 515 mortgage payoffs and prepayments
- Data exists
- Understudied

Sources: Pendall et al. (2016), Tom & Kaney (2014), Author calculations on NHPD & ACS data

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USDA Section 515 is the Largest Rural Subsidized Rental Program

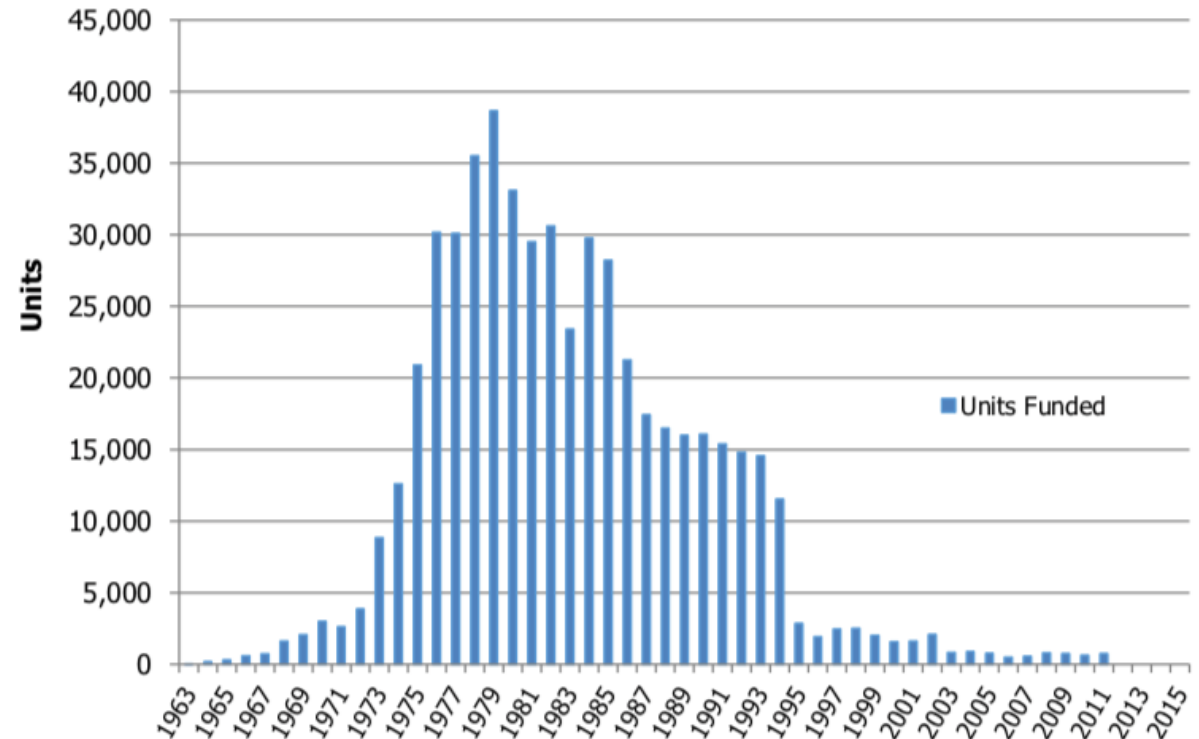
USDA Section 515:

- ~15,000 properties
- ~450,000 units
- Average tenant income is \$13,600
- 80% of tenants are on rental assistance too (such as USDA Section 521 or HCV)

Low-Income Housing Tax Credit in rural areas:

- 2nd largest program
- 272,000 units
- Some overlap with Section 515
- Some state QAPs have rural set-asides

USDA Section 515 Rural Rental Housing Loans, FY 1963 – FY 2016



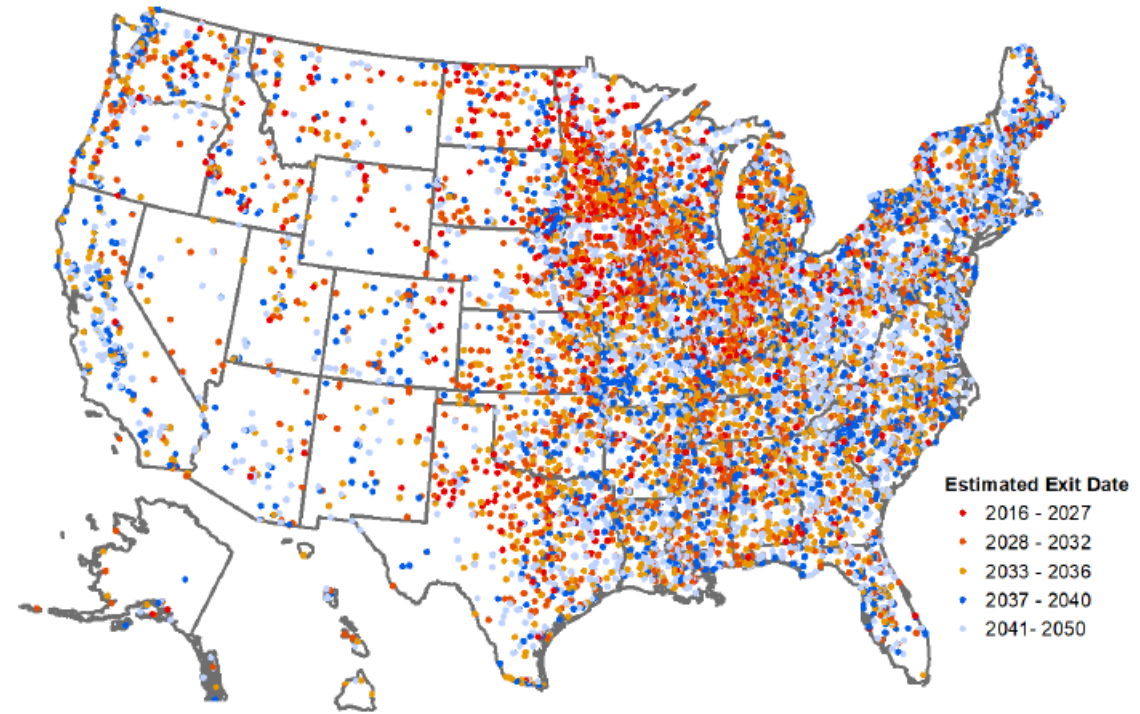
Source: HAC Tabulations of RD Data

Sources: Scally et al. (2018), Dumont (2018), HAC (2018), Author calculations on NHPD data

Estimates suggest from 2028-2045, ~90% of units will reach loan maturity (HAC 2018)

Section 515 Properties by Estimated Loan Maturity Date

Section 515 Properties by Estimated Loan Maturity Date



Source: Housing Assistance Council (HAC) Tabulations of USDA Data

Program Exit and Expiring Subsidies

Program exit does not always mean lost affordability...but it depends on many factors

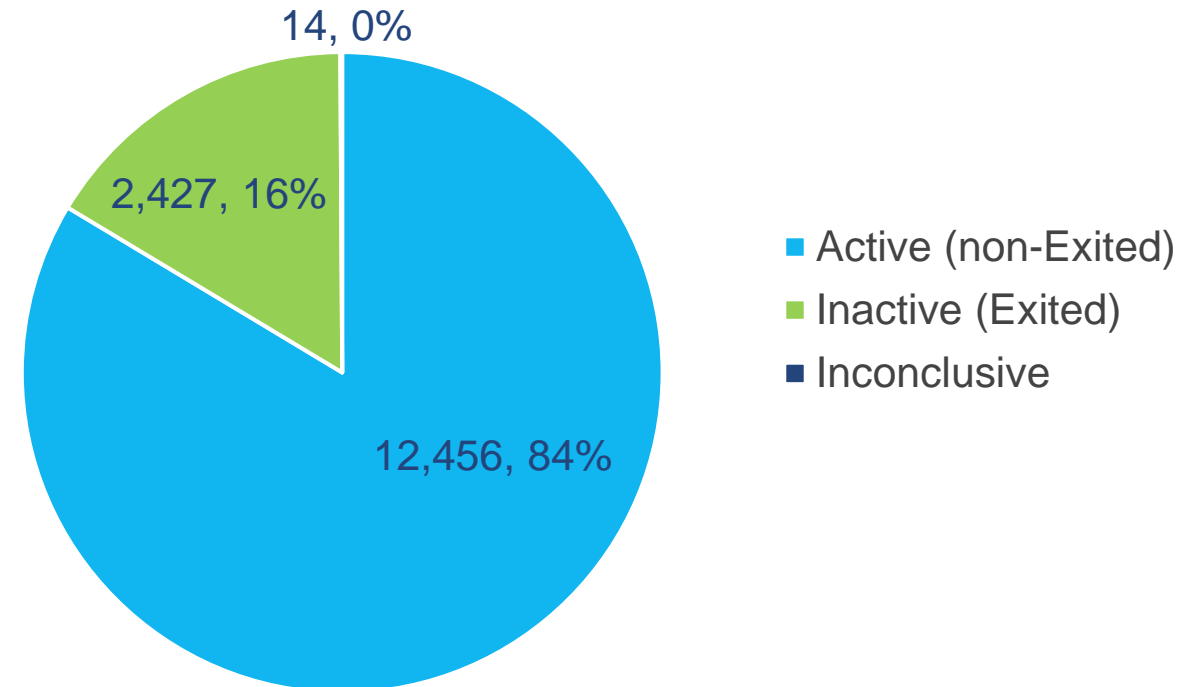
- Weak markets vs. strong markets
 - Foreclosure risk
 - Access to transit
 - A range of post-subsidy affordability levels
- Non-profit owners vs. for-profit owners
- Availability of additional public resources for recapitalization

Current Status of Section 515 Properties

Data sources in our research:

- National Housing Preservation Database (NHPD) (2022)
- USDA (2016-2021)
- ACS (2015-2019 and older)
- Census

Section 515 Status (NHPD)



What Predicts Section 515 Program Exit?

Identifying characteristics that have
strongest correlations with exit



Characteristics Analyzed

1. Property characteristics	# of units, age, presence of other subsidies, rural vs. urban
2. Owner & property manager characteristics	manager type, owner type, owner is manager, # of properties managed, # of properties owned, 515s as a share of county rentals, owner corporate structure, manager corporate structure
3. Local market characteristics (county)	pop density, income, HUD FMR, renter burden, severe renter burden, poverty, public assistance, renter share, vacancy rate, labor force participation, unemployment, military, college rate, race/ethnicity shares

The Role of Management Companies

HHI by Management Company Name



Owner HHI is much lower → i.e., less concentrated



Different Owner Types Lead to Different Outcomes

Owner Type	Total Properties	% of Active Properties	Share of Exits: Properties	Total Units	% of Active Units	Share of Exits: Units
For Profit + Profit Motivated	2,622	10%	57%	68,987	9%	55%
Limited profit	5,984	46%	11%	179,877	44%	10%
Non-Profit	2,724	17%	23%	68,550	15%	18%
Other (Multiple, Limited Dividend, Public Entity)	3,486	27%	7%	131,041	32%	9%
Unknown	67	0%	0%	4,958	0%	0%
Total # of Properties	14,883	12,456	2,427	453,413	395,765	57,648

Setting Up the Statistical Model

- Dependent variable: 515 program exit (1 if exit, 0 if stay)
- Explanatory variables: property characteristics (P_i), owner and manager characteristics (O_i), and local market characteristics (M_i)
- Probit model: $P(\text{exit} = 1 \mid P_i, O_i, M_i) = \Phi(\beta_0 + \beta_i P_i + \beta_j O_i + \beta_k M_i)$, where $\Phi()$ is the cumulative standard normal distribution function, and standard errors are clustered at the state level
- Calculate marginal effects using partial derivatives for easier interpretation and to get a sense of magnitude:
 - What is the impact of a small change in the explanatory variable on the probability of 515 exit?

Probit Model Results: Property Characteristics

Variable Name	Marginal Change from Baseline
# of Units	-0.1% ***
Property Age (years)	0.4% ***
Presence of Other Subsidies (yes / no)	-5.7% ***
In a <u>Micro</u> politan Statistical Area (vs. non-MSA)	0.9%
In a <u>Metropo</u> litan Statistical Area (vs. non-MSA)	0.7%

Property characteristics have slight, but low magnitude impacts

- 10-unit change ↓ exit probability by 1% (0.1 * 10)
- 10 years older ↑ exit probability by 4% (0.4 * 10)
- An extra subsidy cuts exit probability by 6%
- Rural vs urban doesn't matter

Dependent Variable: 1 if exit, 0 if active
N = 14,782 Pseudo-R2 = 0.3313

Probit Model Results: Owner Characteristics

Variable Name	Marginal Change from Baseline
Non-profit <u>manager</u> (vs. for profit)	-4.3% ***
Unknown <u>manager</u> (vs. for profit)	-4.3% ***
Limited-profit <u>owner</u> (vs. for profit)	-41.6% ***
Non-profit <u>owner</u> (vs. for profit)	-32.3% ***
Multiple <u>owner</u> types (vs. for profit)	-36.3% ***
Owner is Manager	3.5% ***
# of Properties Managed	-0.1% ***
# of Properties Owned	0.1% ***
State 515 <u>Management</u> Concentration	0%
State 515 <u>Management</u> Concentration	0%
515 share of all county rental units	17.8% **

Owner / manager characteristics very impactful

- In particular, any kind of non-for-profit owner reduces exit probability by 30–40%
- Manager type is less impactful
- Owner is manager slightly increases exit probability
- When 515s make up a larger share of all rental units, exit probabilities rise

Dependent Variable: 1 if exit, 0 if active
N = 14,782 Pseudo-R2 = 0.3313

Probit Model Results: Owner Characteristics

Variable Name	Marginal Change from Baseline
LLC <u>manager</u> (vs. for All Other)	-0.5%
LP <u>manager</u> (vs. for profit)	-1%
CORP <u>manager</u> (vs. for All Other)	-0.7%
Housing Authority <u>manager</u> (vs. for profit)	-0.3%
LLC <u>owner</u> (vs. for All Other)	-3.7% **
LP <u>owner</u> (vs. for profit)	-5.5% ***
CORP <u>owner</u> (vs. for All Other)	-3.0% ***
Housing Authority <u>owner</u> (vs. for profit)	-1.7%

Owner corporate structure has some impacts on exit probability, but much lower than owner type (profit vs not), except for housing authority owners which have no impact

- Manager corporate structure does not make an impact

Dependent Variable: 1 if exit, 0 if active
N = 14,782 Pseudo-R2 = 0.3313

Probit Model Results: Local Market Characteristics

Variable Name	Marginal Change	Using Pre-Period Census Data
Population density	0.0% **	0.0% ***
Median household income	0.0%	0.0% ***
HUD FMR 2-bedroom rent	0.0%	0.0% ***
Share rent burdened	-2.7%	0.6%
Share in poverty	-30.5% **	-68% ***
Share receiving public assistance	-2.5%	-12.5%
Share renters	5.7%	-37.4% ***
Vacancy rate	1.8%	-8.2%
Labor force participation rate	-6.5%	54.7% ***
Unemployment rate	12.5%	130.9% ***

Variable Name	Marginal Change	Using Pre-Period Census Data
Military share	5.7%	25.3% ^
College attainment share	8.7%	28% ***
Black share	-2.6%	-2.5%
Hispanic share	4.2%	2.1%
Asian share	11.6%	83.1% ***
Native American share	15.5% **	8.4%
Northeast region (vs. Southeast)	-2.4%	-0.2%
Great Lakes region (vs. Southeast)	5% ^	3.7%
Plains region (vs. Southeast)	7.5% ***	5.7% ***
Southwest region (vs. Southeast)	1%	3.6%
West region (vs. Southeast)	-1.7%	2.4%

Market characteristic impacts depend on timing of data; data from Census prior to exit shows greater impact of local conditions on exit propensity

Questions?



Thank you





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Identifying High Opportunity Areas – An Alternative Approach

Sara Hoffmann, Multifamily Research Director,
Freddie Mac



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Alternative Approach to Defining High Opportunity Areas

Building from the foundation of FHFA defined high opportunity areas, we consider an alternative measurements that builds towards a spectrum approach of identifying opportunity, specifically to renters

Using two methods for measuring opportunity, every census tract is scored based on:

- Opportunity Atlas which scores intergenerational opportunity
- Location Score which scores areas based on factors that correlate with rental market performance

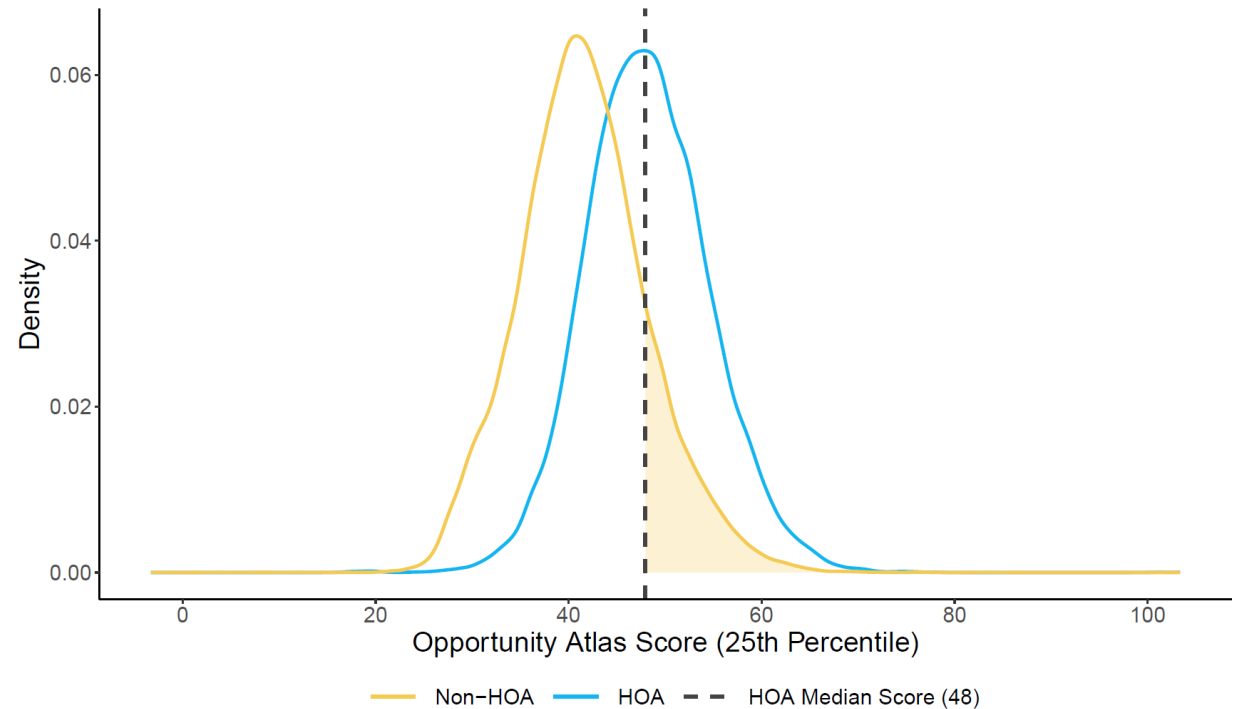
Using the population of existing high opportunity areas, we set the initial threshold as the median scores. We believe areas not designated as high opportunity but have scores equal to or greater than the median scores exhibit similar access to opportunity as high opportunity areas

Opportunity Atlas Across All Census Tracts

High Opportunity Areas (HOAs) have on average a higher Opportunity Atlas Score (OAS)

- The median Opportunity Atlas Score of High Opportunity Areas is 48 compared to 41 for non-High Opportunity Areas (Non-HOAs)

The yellow shaded region are areas not designated as high opportunity but have an Opportunity Atlas Score equal to or greater than the median of HOAs



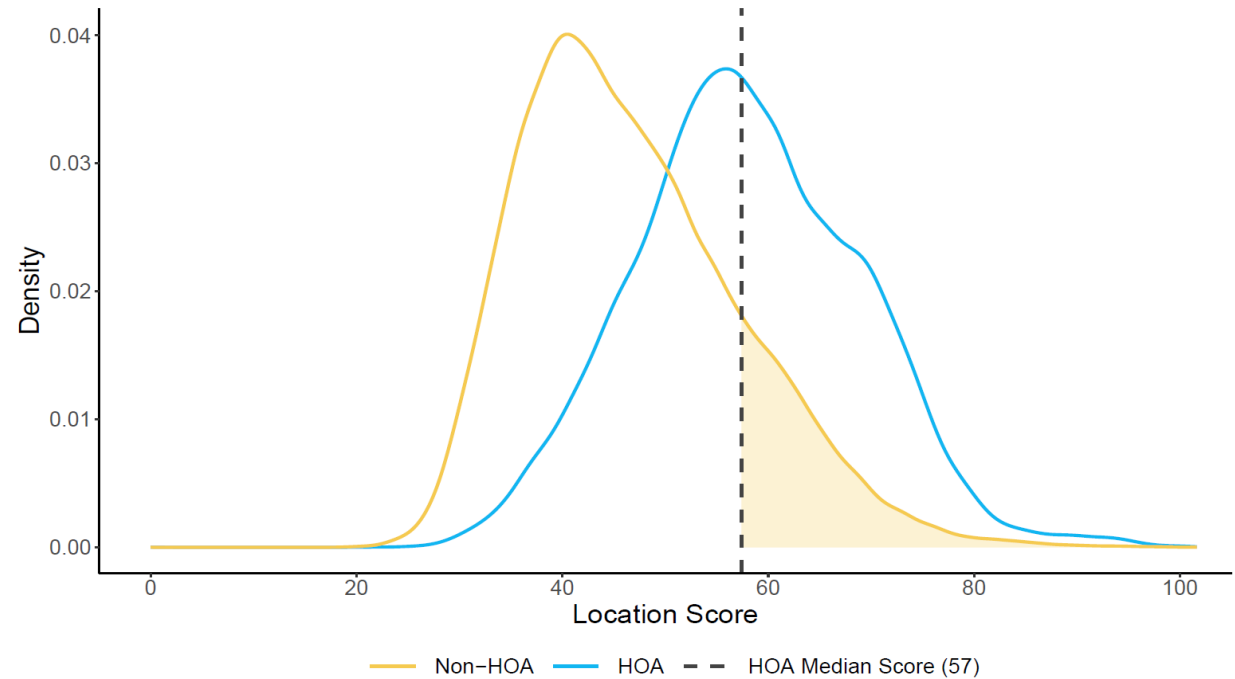
Source: Opportunity Atlas, FHFA Defined High Opportunity Areas, and Freddie Mac

Location Score Across All Census Tracts

High Opportunity Areas (HOA) have on average a higher Location Score (LS)

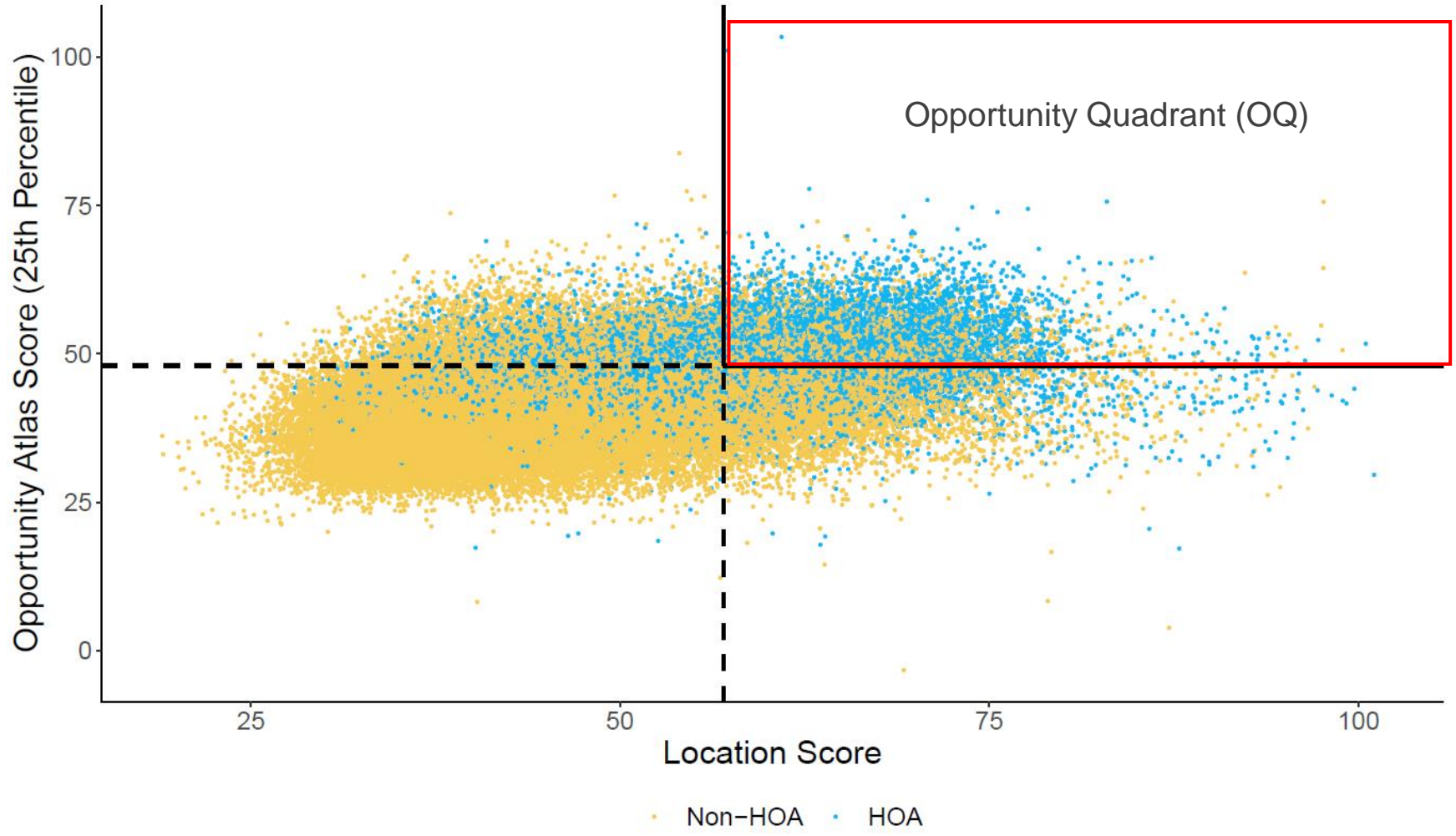
- The median Location Score of High Opportunity Areas is 57 compared to 45 for non-High Opportunity Areas (Non-HOAs)

The yellow shaded region are areas not designated as high opportunity but have a Location Score equal to or greater than the median of HOAs



Source: FHFA Defined High Opportunity Areas, and Freddie Mac

Combining into the Opportunity Quadrant



Rural vs Urban Concentration

This method finds 3,148 census tracts that are not currently defined as High Opportunity Areas but have Opportunity Atlas Scores and Location Scores equal to or above the median scores of High Opportunity areas

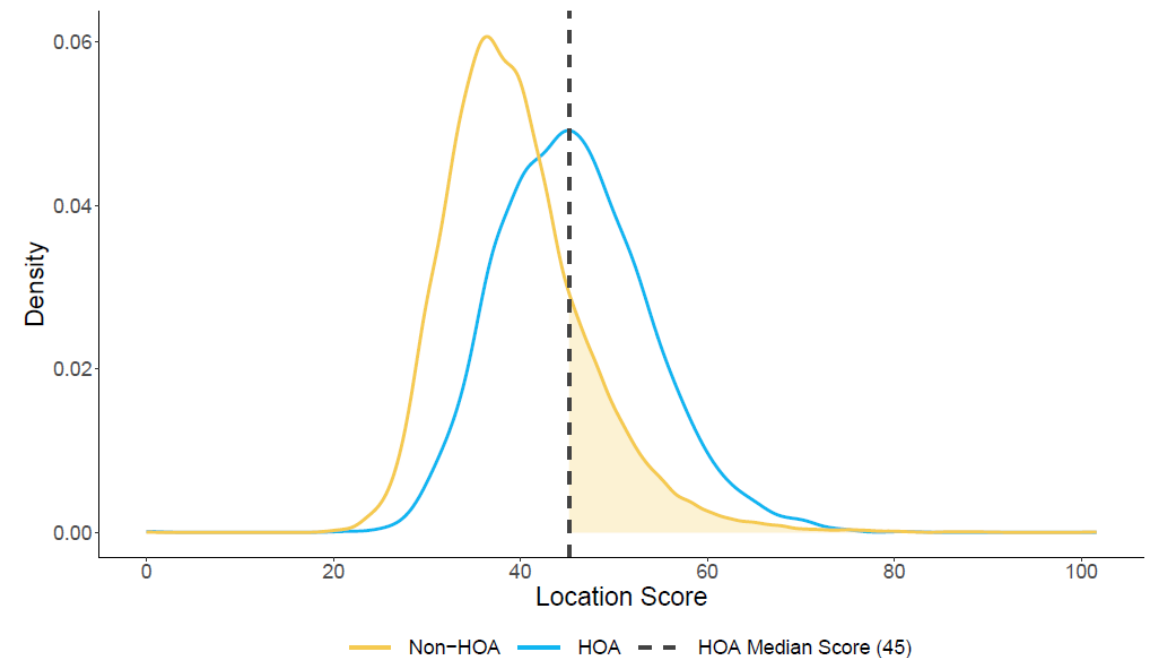
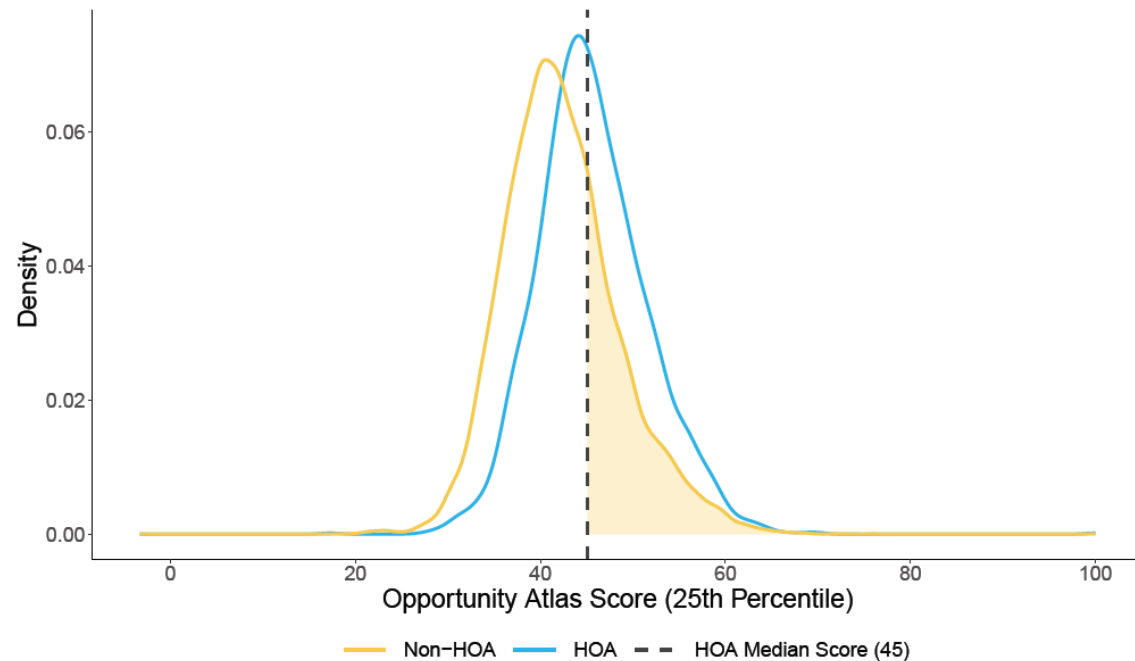
- This method finds census tracts that have similar qualities that score them similar to currently defined high opportunity areas
 - These areas embody characteristics similar to currently defined HOAs
- The majority of the Non-HOAs in the Opportunity Quadrant areas are in urban areas; 97.9% - similar to the HOAs in the Opportunity Quadrant at 98.4%
 - Comparatively, among all HOAs, 16.3% are in rural areas

		HOA		Non-HOA		All Tracts	
	Tract Type	Tracts	%	Tracts	%	Tracts	%
OQ	Rural	72	1.6%	66	2.1%	138	1.8%
	Urban	4,490	98.4%	3,082	97.9%	7,572	98.2%
	Total	4,562	100%	3,148	100%	7,710	100%
National	Rural	2,317	16.3%	16,553	28.3%	18,870	26.0%
	Urban	11,859	83.7%	41,898	71.7%	53,757	74.0%
	Total	14,176	100%	58,451	100%	72,627	100%

High Opportunity Spectrum

This alternative approach allows for analysis of opportunity among different cut off points

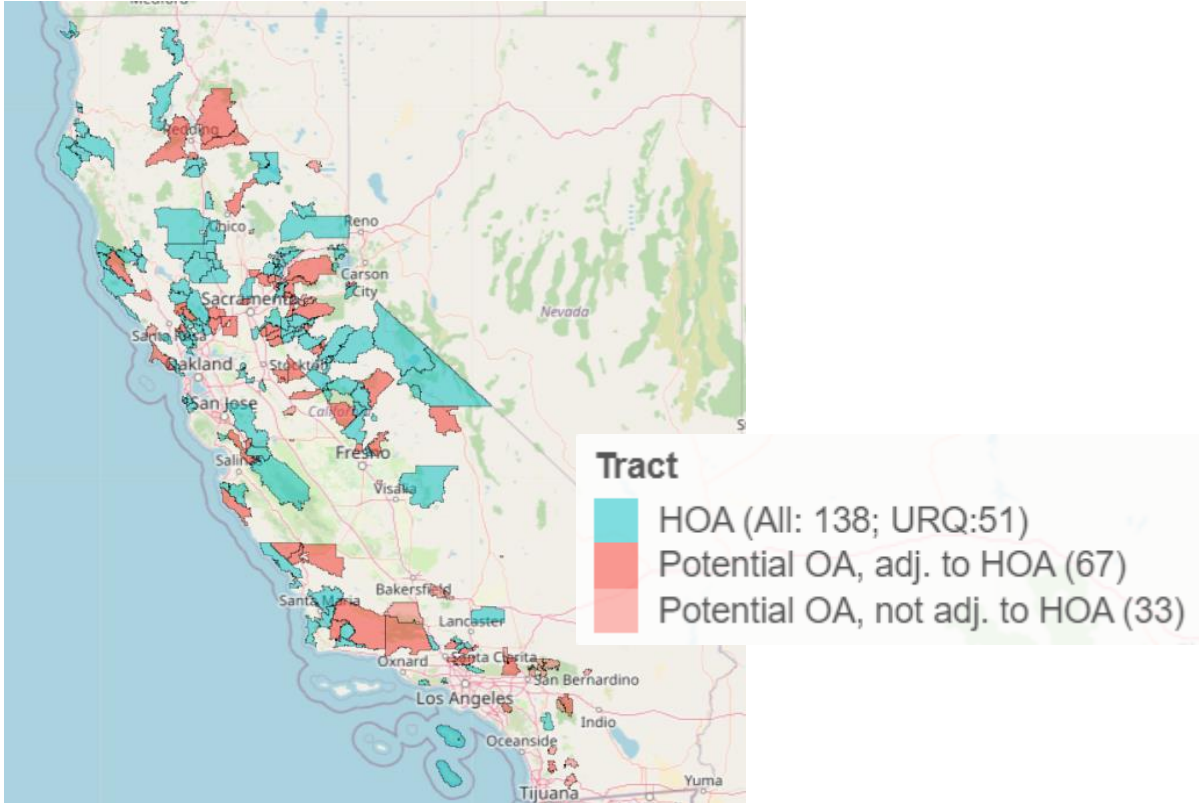
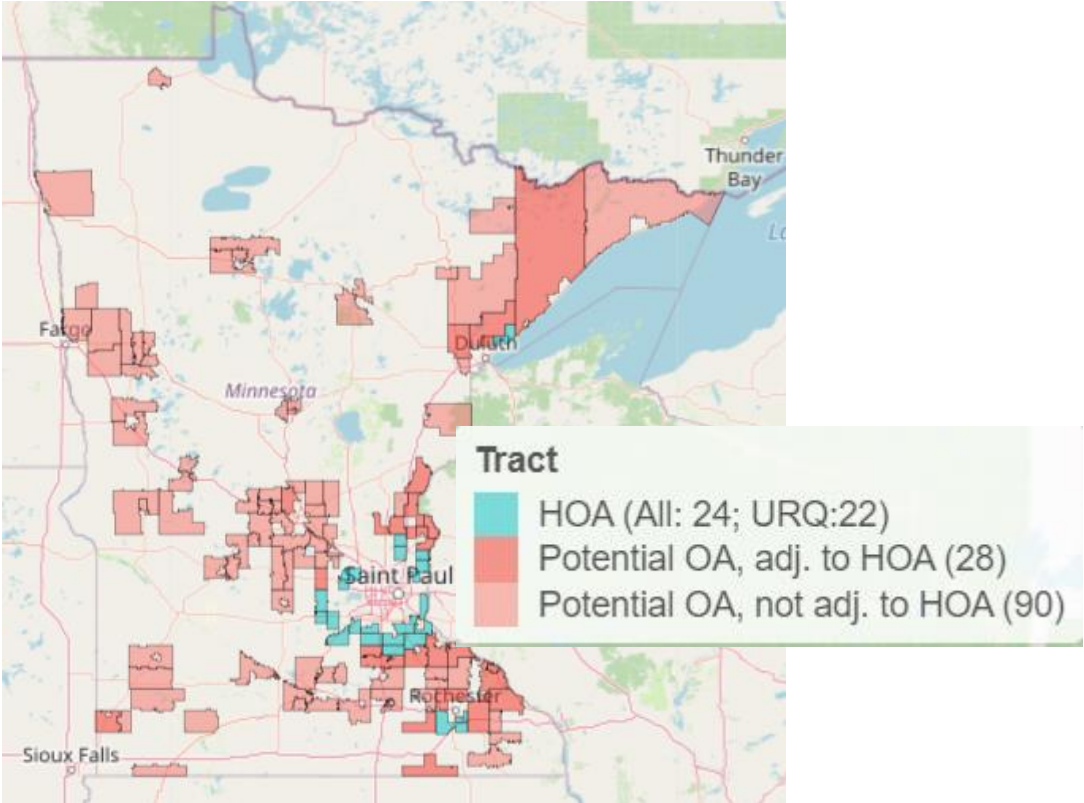
- Reset the medians based on the population of rural census tracts
 - There is more overlap in the OAS curve among HOA and Non-HOAs
 - This identifies 1,390 Non-HOA rural census tracts with OAS and LS above the median HOA score among rural areas



State Case Studies

Minnesota and California

Top five states with the most census tracts that get picked up in this analysis are Minnesota (118), California (100), Texas (89), Pennsylvania (88), and Iowa (78)



Thank you

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