Leveraging Data for the Strategic Preservation of Affordable Housing

December 2024

Enterprise

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About This Brief

This brief highlights the crucial role of currently unsubsidized small to medium multifamily (SMMF) properties in Colorado's affordable housing ecosystem, and stresses the importance of strategic, data-driven approaches in safeguarding these assets. By leveraging insights from a new dataset, this document illustrates how comprehensive data, and its focused application, can enable mission-driven organizations to proactively identify, evaluate, and acquire SMMF properties for preservation — thereby increasing the supply of affordable homes across Colorado for low- and moderate-income households.

Acknowledgments

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Enterprise Community Partners (Enterprise), Colorado Housing and Finance Authority (CHFA), and Community Insights LLC developed the Colorado SMMF Dataset and this accompanying brief. Technical research and data support were conducted by Jennifer Newcomer of Community Insights LLC, a firm committed to empowering community development through data-driven insights that aim to ensure resources and policies are implemented equitably and effectively.

This research was made possible through the generous support of JPMorganChase and Kaiser Permanente. Unless otherwise specifically stated, the views and opinions expressed in the report are solely those of the report's authors and do not necessarily reflect the views and opinions of JPMorganChase, Kaiser Permanente, or their affiliates.

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Introduction

Colorado's housing landscape is facing a deepening affordability crisis that threatens stability for low-income residents in communities across the state. Over the past decade, the erosion of affordable housing has accelerated. Escalating living costs combined with the rapid loss of affordable housing inventory are significantly increasing the risk of displacement, destabilizing communities, and perpetuating economic hardship. According to the Colorado Coalition for the Homeless, this trend is expected to worsen and continue impacting thousands of very low- to low-income households in the years to come. With the construction of new homes lagging and the looming expiration of rent restrictions on subsidized homes, our focus must turn to immediate, targeted intervention to preserve our currently affordable, unrestricted housing stock.

A Strategic Focus on SMMF Preservation

To tackle the housing affordability crisis, we need to channel increased and more supportive resources into preservation. Colorado can't build our way out of the current affordable housing gap, preserving both subsidized and unsubsidized homes is one of our strongest approaches to increase access to affordability for residents statewide.

Small to Medium Multifamily (SMMF) buildings — ranging from duplexes to 49-unit buildings — are a key segment of the housing market to consider for affordability preservation. These properties tend to naturally lend themselves to affordability due to their size, age, limited amenities, and owner-operated nature. They are also predominantly rental units, which aligns with the housing needs of many lower-income households.

In Colorado, SMMF buildings alone account for 46% of the entire rental housing stock. Two-thirds of these homes are occupied by households earning less than $75,000 per year.[1]

Understanding the key role that SMMF buildings play in the housing ecosystem, it is imperative that we focus on incorporating more of these assets into the restricted affordable housing stock in addition to safeguarding those that already serve lower-income households from market-driven affordability pressures.

This brief elevates the importance of SMMF properties in our affordable housing inventory and offers tactics for housing providers on how data can be used to inform acquisition strategies in communities they serve.

1. 2023 American Community Survey 5-year Estimates (U.S. Census)

Harnessing Data for Successful Preservation

To successfully preserve and expand our affordable stock, harnessing detailed, comprehensive data about the housing landscape is essential. Data-driven insights can enable policymakers and advocates to accurately assess the scope of housing affordability issues and proactively respond to existing and emerging needs. This approach not only addresses current challenges but also anticipates and mitigates potential future crises, focusing on preventing the displacement of vulnerable residents.

Data can also strengthen advocacy efforts to mobilize the necessary resources. For example, data can guide decisions on pushing back on policy changes that may lead to further cost increases and displacement. It can also drive robust analyses to support efforts to secure funding and craft compelling, evidence-based cases for investment.

For organizations committed to affordable housing, data is crucial to developing and implementing effective preservation strategies.

A detailed understanding of both property-specific factors and the broader social, economic, and regulatory context can help pinpoint where vulnerability intersects with opportunity, enabling them to allocate resources effectively and prioritize interventions. This begins with a thorough evaluation of property conditions—data on the age, size, and condition to determine the scope of needed rehabilitation is of the highest priority. Data about age, size, and condition of buildings are a first step to inform where resources might need to be directed, including capital improvements like structural repairs and energy efficiency upgrades, or operational enhancements like increased maintenance and supportive services. Planning for these expenses ensures long-term sustainability of the building, essential for resident safety, comfort, and livability.

- Data on real estate trends — fluctuations in property values or rents and regulatory trends such as zoning laws, building codes, and land-use standards — can help anticipate market pressures and navigate existing constraints so acquisitions are feasible and properties remain compliant.
- Neighborhood-level demographic data like household income levels, racial makeup, common occupations, or educational attainment helps identify opportunities that maximize housing stability for communities, especially those at-risk of displacement due to market pressures and significant public investment.
- Understanding tenant demographics such as household sizes and income levels is necessary for tailoring interventions that support resident well-being and align with affordability needs.

Strategic Use of Data

Consider the following scenarios:

- Data on declining property values and increased vacancy rates in a downtown area may guide a developer to focus on revitalizing a block of SMMF buildings. By aligning with the local government's economic development goals, the developer can leverage public and private funding for a mixed-use development that maintains affordable homes while boosting local commerce.
- In response to new building codes, an organization uses property data to identify older buildings that will need updates. They prioritize properties where upgrades can be paired with affordability covenants, ensuring long-term compliance and preservation of affordable units.
- In a gentrifying neighborhood, an organization uses demographic data to identify the most at-risk populations for displacement. They prioritize properties where renovation can maintain affordability, securing resources to subsidize rents and partnering with local services to enhance tenant stability.
- Data revealing a high percentage of substandard housing in a rural area makes the case for a targeted approach for small (individual home) and/or large scale (portfolio) impact. This approach could include utilizing more significant state or federal resources, including USDA rural development funds, to improve housing quality and efficiency, directly impacting the health and economic well-being of the community.
- Collaborating with veterans' affairs, a housing organization can use data to locate SMMF properties near key services for veterans and create opportunities for stable, affordable housing tailored to veterans' most identified needs.

Navigating the Fragmented Landscape of Housing Market Data

While a wealth of information can be found in open sources like the U.S. Census demographic surveys, Colorado Housing and Finance Authority (CHFA), Colorado Department of Local Affairs (DOLA), County Assessor's Offices, local government and planning department records, nonprofit organizations and research institutions, **no single source will encompass all the information necessary for effective decision-making.**

This is particularly true when it comes to unsubsidized properties. Unlike subsidized properties and units, which benefit from close oversight and are systematically tracked in public databases like the National Housing Preservation Database or CHFA's Affordable Housing Preservation Database, unsubsidized properties exist in a largely privately-owned and unregulated environment with few systems focused on supporting or tracking them.

The scattered ownership of SMMF properties further complicates data quality and availability. Large multifamily complexes or portfolios under single-entity ownership typically maintain thorough and consistent records, but the majority of Colorado's SMMF buildings are owned by a single-property owner and therefore the data associated with many of these buildings is inconsistent. This means nonprofit and smaller owners/investors must conduct extensive research and outreach, which can be prohibitive for many.

Detailed, resource-rich real estate data platforms like CoStar exist, but they're frequently out of reach for many nonprofits or smaller businesses due to their high subscription costs and complex data structures. Additionally, these records don't capture the full extent of the housing inventory. This means properties that could be suitable for preservation often remain under the radar.

These data gaps have been a source of challenges and roadblocks for mission-driven organizations to effectively identify and capitalize on acquisition or investment opportunities.

First Steps Toward Clarity

The Colorado Preservation Network — a collaboration led by Colorado Housing and Finance Authority (CHFA) and Enterprise — has been instrumental in creating supportive measures to preserve restricted and unsubsidized affordable rental housing statewide. Through the creation of the Colorado Affordable Housing Preservation Database, the Network has already cataloged all price-restricted rental units, devising strategies to re-capitalize and maintain affordability as restrictions expire. So far, this effort has successfully supported the preservation of over 9,000 units facing expiring restrictions.

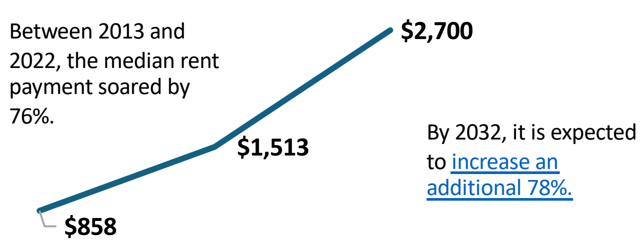
Recognizing the particular challenges in preserving unsubsidized affordable housing, the Network recently supported the creation of a proprietary dataset of smaller, unsubsidized properties. By aggregating data from local governments and county assessors across 17 of the most populous counties in Colorado, we see the opportunity for the field to use data in a more intentional way as preservation is considered as a strategy to increase the supply of affordable housing through preservation.

The insights taken from this dataset are shared throughout this brief to illustrate how mission-driven housing organizations can leverage data to proactively identify, evaluate, and pursue SMMF properties for preservation.

This brief emphasizes how this level of detail can shape investment decisions and strategic interventions in affordable housing.

The Erosion of Colorado's Housing Landscape

Colorado's housing landscape is marked by a deepening lack of affordable inventory, threatening housing stability for many Coloradans. While lower-cost rentals have decreased in every state, and the national supply falling by 3.9 million units over the last decade, Colorado has had a historically low supply of low-cost rentals when compared to national averages. Since 2011, the state has lost more than 250,000 rentals that cost $1,000 or less a month, and for very low-income households, housing with rents below $600 a month has fallen by 40%. Only Arizona, Nevada, and Texas lost more units with similar rental rates than Colorado over the same time period. These statistics include apartments, townhomes, condos, and single-family rentals — a large part of the state's aging, unrestricted housing stock vulnerable to rising rents and redevelopment.

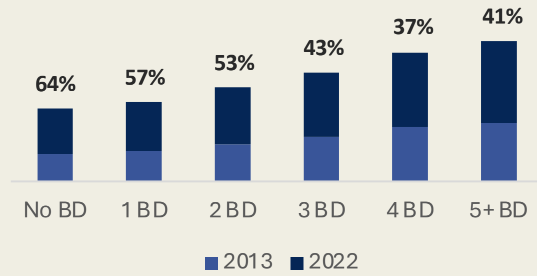


The rapid fallout of the unsubsidized housing supply is exacerbated by the continued expiration of rent restrictions on subsidized units. Since 2011, 5,793 of units receiving public subsidies have lost their affordability restrictions. Over the next 10 years, an additional 15,000 units, including 1,764 accessible to extremely low-income and 5,712 to low-income households, are expected to exit the affordable housing inventory if not preserved.

American Community Survey, 1-Year Estimates (U.S. Census)

Median Rent

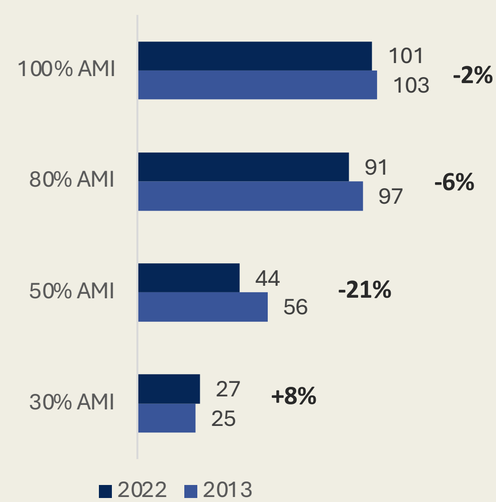
Change in median gross rent by number of bedrooms (2013 – 2022)



The Gap: A Shortage of Affordable Homes (NLIHC)

Affordable and Available Rental Homes

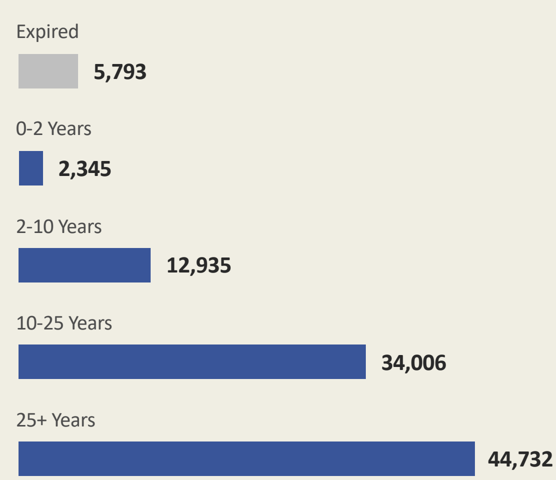
Change in affordable rental units per 100 households at or below income thresholds (2013 – 2022)



Colorado Affordable Housing Preservation Database (CHFA)

Expiring Subsidized Rental Units

Expiration of Colorado subsidized rental units by expiration timeframe (2024)



Additionally, new construction has been outpaced by the state's rapidly growing population. Between 2012 and 2022, the state's population grew by 12.6%. In 2022, the Colorado Affordable Housing Transformational Task Force estimated a need for 325,000 new homes "in the next couple of years" to rebalance the market. To put that figure in perspective, Colorado built about 388,750 units between 2010 and 2022.

Coloradoans are increasingly struggling to identify housing options within their financial reach. The National Low Income Housing Coalition (NLIHC) reports that, for every 100 households with extremely low incomes in Colorado, only about 27 have access to affordable rental homes that are either vacant or not occupied by other — often higher-income — residents. This is well below the national average of 32%.

The loss of these affordable homes presents significant risks of displacement for thousands of individuals and families, destabilizing our communities and perpetuating the cycle of economic hardship through escalating housing costs. With the construction of new homes lagging far behind the loss of affordable ones and the impending expiration of rent restrictions on subsidized units, we continue to stress the importance of preserving the affordability of unrestricted homes for the stability of Coloradoans across the state.

Colorado Futures Center

Foregone Spending

In 2022, Colorado's households earning less than $75,000 annually spent an excess of $6.23 billion on housing costs. This burden constrains people's ability to spend on essentials like food, childcare, transportation, and healthcare — impacting both their quality of life and the broader economy.

54%
Renters alone account for $3.34 billion

National Low Income Housing Coalition, 2022

Cost Burden

Over half of the state's households are now housing cost-burdened, spending at least 30% of their income on housing, with an additional 25% severely burdened, spending over 50%.

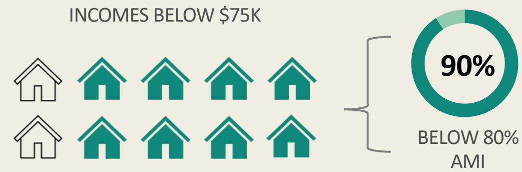
OF VERY LOW-INCOME HOUSEHOLDS ARE COST BURDENED

OF EXTREMELY LOW-INCOME HOUSEHOLDS ARE COST BURDENED

Extremely low-income renters in Colorado are far more likely than others to experience housing cost burdens.

8 in 10

COST-BURDENED HOUSEHOLDS HAVE INCOMES BELOW $75K

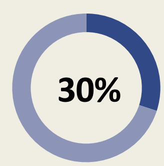


BELOW 80% AMI

Colorado Futures Center

Doubling Up

These rising costs have forced more households to double up. In 2022, about 270,000 renters were sharing homes — a significant increase from 1 in 5 in 2006.



OF COLORADO RENTERS WERE DOUBLING UP IN 2022

Household Pulse Survey, 2024 (U.S. Census)

Risk of Displacement

By February 2024, nearly 70,000 households were behind on rent or mortgage and on the brink of eviction or foreclosure.

70,000

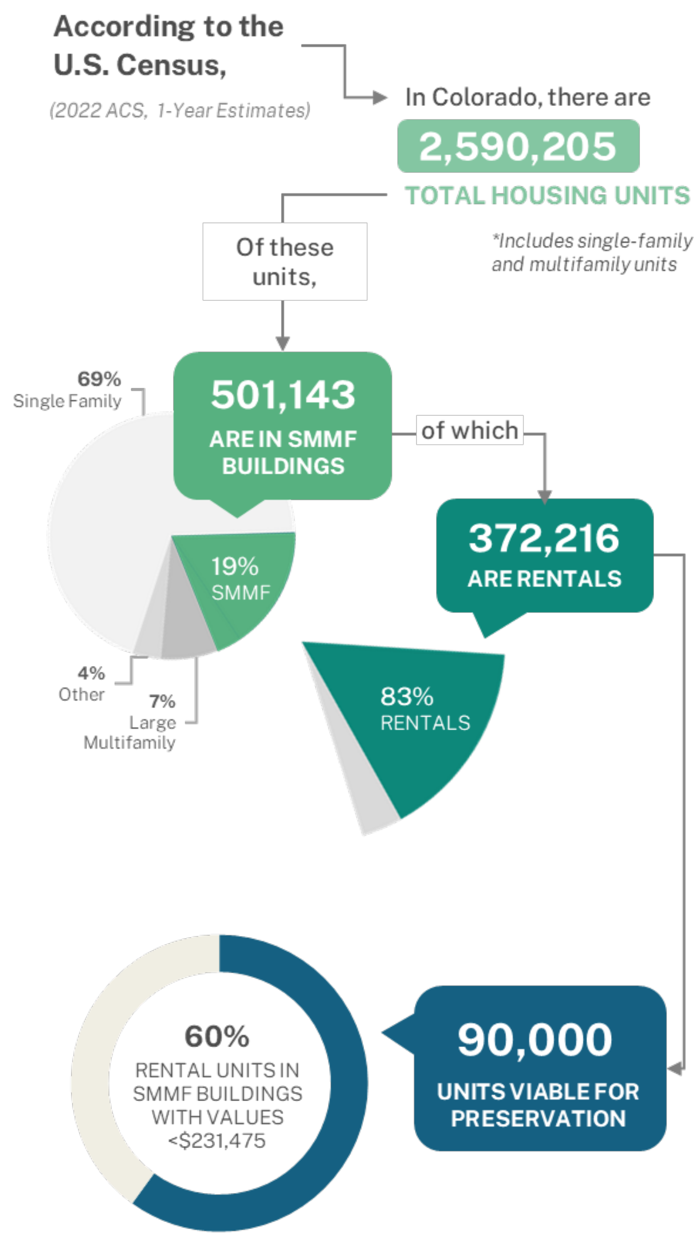
HOUSEHOLDS AT RISK OF EVICTION OR FORECLOSURE

A Strategic Focus on the Preservation of SMMF Buildings

Achieving housing affordability requires a wide range of tools, including a mix of loan products, philanthropic resources, policy interventions, and cooperative strategies. Affordable housing developers rely on tax credit allocations, which are oversubscribed and extremely competitive, to construct new affordable rental units. Unfortunately, dedicated resources for preservation are insufficient despite the state's growing housing affordability crisis.

Amidst a wide range of publicly-supported affordable housing development solutions, SMMF properties stand out as a key opportunity to preserve the affordability of rental homes. According to the U.S. Census, SMMF housing stock represents approximately 501,143 homes across Colorado, and 372,216, or 83% of these units are rented. In fact, SMMF buildings account for 46% of the state's total rental housing stock.

However, not all of these units are suited for households with lower incomes due to their higher value. The Colorado SMMF dataset reveals that of the 501,143 SMMF units statewide, 143,638 units across 29,008 properties are viable for affordable housing.[2] Two-thirds of these homes are occupied by households earning less than $75,000 per year, proving their significance in meeting the needs of lower-income residents.



2. *The Colorado SMMF dataset specifically considers units valued at or below the overall median valuation per unit, which is $231,475. This approach ensures the database features the most viable options, accounting for over 60% of the total units, that have the potential to support affordability initiatives*

The majority of homes in Colorado's SMMF buildings do not receive any type of subsidy, making them suitable for providing ongoing, or permanently affordable housing options that do not rely on public funding. This strategy is a real solution when considering the significant gap between the demand for affordable housing and the availability of homes through publicly-funded programs.

However, the very characteristics that make SMMF properties affordable can also present challenges:

- Because a large portion of the affordable SMMF inventory is unsubsidized, they tend to be attractive targets for investors seeking properties with potential for high returns, which typically leads to increased rents and displacement of existing tenants.
- The smaller scale of these properties can also complicate efforts to secure traditional sources of financing for necessary maintenance and improvements.

About 52% of all homes in Colorado's SMMF buildings do not receive any type of subsidy.

larger developments for funding eligibility and other kinds of support, which can place a disproportionate burden on SMMF property owners.

Access to an affordable rental rate is becoming more challenging as currently affordable SMMF properties are lost to market forces – with most tenants being displaced when building ownership changes.

Constructing new affordable homes should continue to be an area of focus; however, the availability and oftentimes lower cost of existing unsubsidized SMMF properties offer a uniquely practical and swift solution to our affordable housing crisis. With thousands of SMMF properties in the market, if our focus shifted to securing these assets before they transition to market-rate housing, we ensure they remain accessible to those most in need.

What We Know About Colorado's Affordable SMMF Inventory

Trends from the Colorado SMMF Dataset

29,008
SMMF PROPERTIES

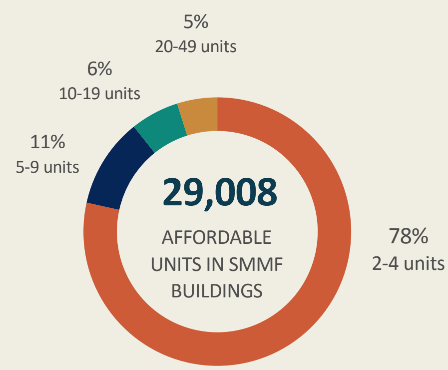
143,638
TOTAL SMMF UNITS

$231,475
MEDIAN UNIT VALUATION

60% of all units are valued at or below the median for the 17 counties captured in the Database.

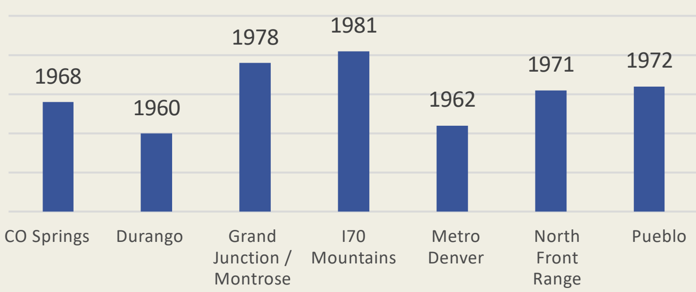
SMMF Building Size

The Colorado SMMF landscape is significantly skewed toward smaller properties, which offers a unique opportunity to tailor property management and maintenance approaches. These smaller buildings often require less capital for upgrades and can be more quickly adapted to meet market demands or regulatory changes, making them ideal for targeted investment to boost both their appeal and livability.



Median Year Built by Submarket

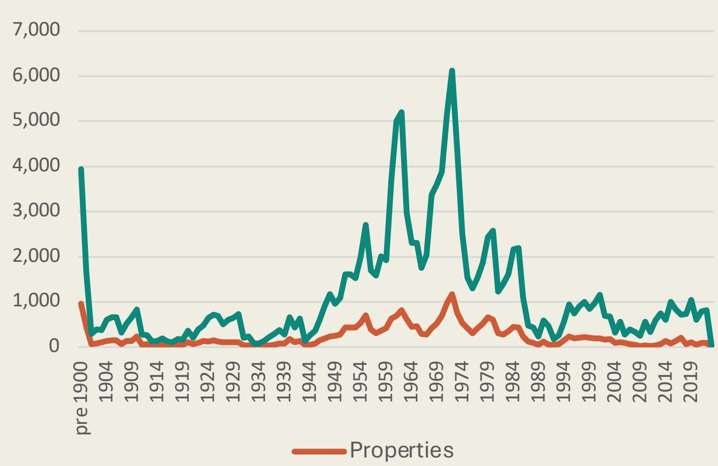
The SMMF inventory is older with 2 in 3 of the units built from 1945 – 1985, which presents a valuable opportunity for affordable housing preservation. These older properties tend to be more affordable because of their age, making them ideal candidates for investment and increased efficiency.



Over half of homes in SMMF buildings have a cost of replacement ratio (CRR) below .75, meaning that they have depreciated and may need rehabilitation. These updates not only reduce operating costs but also enhance living conditions, aligning with residents' needs while maintaining affordability.

SMMF Building Construction

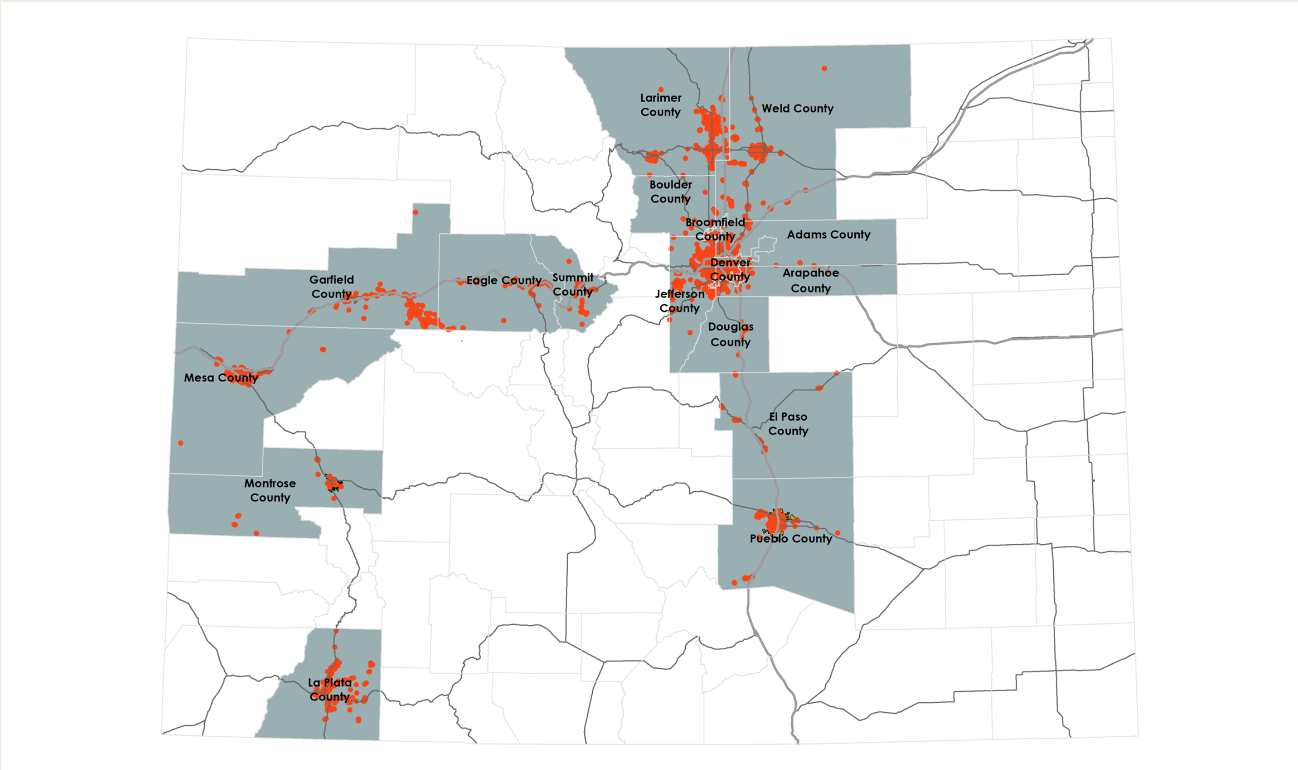
SMMF buildings and units built per year across the 17 counties covered in the dataset.



To view this data for your specific region, please see our Submarket Profiles (Appendix B)

Geographic Distribution of SMMF Properties & Units

The selected 17 counties encompass 90% of the state's population



	PROPERTIES	UNITS
Adams	1,819	9,738
Arapahoe	1,703	10,757
Boulder	2,649	12,348
Broomfield	79	745
Denver	5,528	35,204
Douglas	59	558
Jefferson	3,909	18,283
Larimer	3,238	12,240
Weld	1,758	7,909
El Paso	3,632	17,464
Mesa	1,310	6,237
Montrose	110	619
Pueblo	1,836	5,887
Eagle	114	682
Garfield	682	2,705
Summit	61	426
La Plata	521	1,836

Data Note

The dataset captures SMMF properties in 17 counties across the state, including: Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Eagle, El Paso, Garfield, Jefferson, La Plata, Larimer, Mesa, Montrose, Pueblo, Summit, and Weld. In total, these 17 counties represent approximately 90% of the state's population encompassing the front range, west I-70 corridor, and portions of the western slope.

For detailed information about geographic coverage, please see Appendix A. Technical Documentation.

Who Owns SMMF Housing in Colorado?

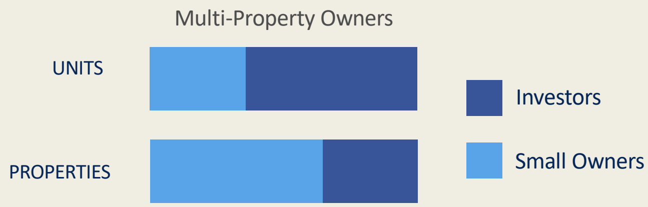
Trends from the Colorado SMMF Dataset

19,586
UNIQUE SMMF PROPERTY OWNERS

There are 19,586 unique holding entities captured in the database, including all entity types

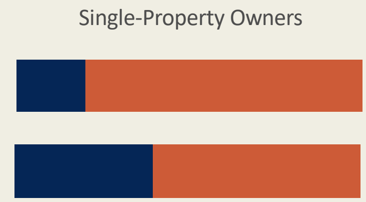
Owner Types

Investor type owners — any person or other entity (such as a firm or mutual fund) who commits capital with the expectation of receiving financial returns — hold 40% of the properties, but 60% of the units, indicating that their properties tend to be larger than those owned by mom-and-pop type owners.



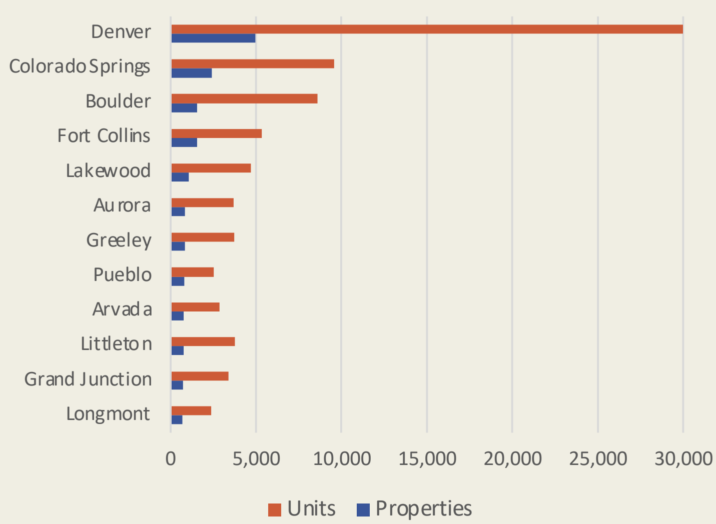
Portfolio Size

80% of all owners own just one property, collectively accounting for 40% of all units. In contrast, 20% of all owners own multiple properties and 60% of all units.



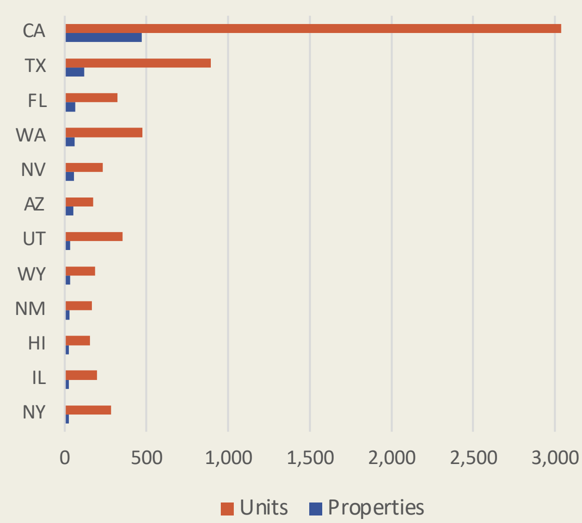
Local Owners

95% of all SMMF properties are owned by a Colorado-based investor. All local owners are concentrated in 25 cities in the state, representing almost three in four properties and over seven in 10 units.



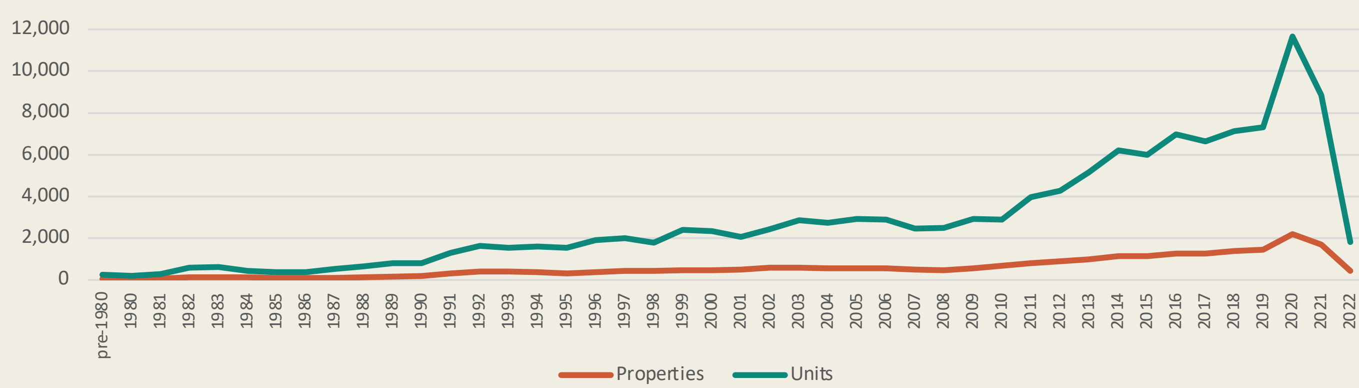
Out-of-State Owners

There are ~840 out-of-state entities owning at least one SMMF property in Colorado. Over half of these units are held by entities in California, Texas and Washington.



Long-Term Owners

Three in 10 properties and units were purchased prior to the Great Recession, accounting for over 9,000 properties and over 42,000 units that are held by long-term owners (10+ years).



Affordable SMMF Housing Preservation Tactics

Proactive measures to safeguard affordable SMMF properties include both immediate actions to counter market pressures — such as rent hikes or redevelopment — and long-term strategies to enhance their livability and financial viability as affordable housing. In the short-term, key measures include the acquisition by mission aligned entities and capital investment to rehabilitate and improve living conditions. Over the long term, the focus shifts to the continued stewardship of properties as a permanent resource for affordability, including financial strategies aimed at preserving or expanding current affordability levels for both existing and future residents, and the stabilization of existing owners so they can continue to provide affordable rents.

1. ACQUISITION BY MISSION-ALIGNED ENTITY
2. STABILIZATION OF EXISTING OWNER
3. CAPITAL INVESTMENT FOR REHABILITATION
4. FINANCING STRATEGIES
5. LONG-TERM STEWARDSHIP

Local market dynamics can significantly influence preservation efforts — especially for smaller, unsubsidized properties — including feasibility and timing, their impact on affordability and risk of resident displacement, and even the perceived investment risk by capital providers.

In stable markets with less fierce competition, maintaining and improving property conditions, often threatened by aging and deterioration, becomes the priority. In these markets, challenges typically involve serious rehabilitation needs which contrast with lower property values and potential financial returns, making financing more complex.

In competitive markets where affordability pressures are intense, the focus shifts to safeguarding existing affordable units. Those operating in Colorado's high-competition markets must be able to respond nimbly to opportunities, such as having the ability to quickly and accurately determine the feasibility and risks of preserving a property and understand key regulatory constraints when the opportunity arises.

Enterprise

Trends in Affordable SMMF Housing Preservation

Enterprise's PreservationNEXT program is dedicated to preserving unsubsidized affordable homes within small to medium multifamily (SMMF) properties. It provides training and tools, catalytic grants, and capital resources essential for affordable SMMF housing preservation. The program includes a publicly available Preservation Toolkit for SMMF Properties, featuring several training modules, market reports, issue briefs, case studies, and other tools designed to equip affordable housing developers, practitioners, and advocates to acquire, rehabilitate and preserve unsubsidized SMMF properties, prevent displacement of residents at risk of eviction, and advocate for preservation-minded policies, programs, and resources.

In 2023, Enterprise hosted the Colorado Preservation Next Academy in Colorado. The Academy brought together nonprofit housing organizations from Colorado for a series of virtual training sessions designed to address our state's affordability crisis directly. Eleven cohort members received a range of support to help advance their preservation pipeline, including deep-dive workshops to help navigate the development process, catalytic grants to activate their preservation pipeline and build capacity to continue the work, and technical assistance to meet their priority needs.

Drawing on insights from our Colorado Preservation Academy cohort and additional partner feedback, we've pinpointed some of the most common challenges that nonprofit housing organizations encounter in affordable housing preservation, and some of the most effective steps they've taken to overcome these challenges and advance their preservation objectives.

CHALLENGE #1

Identifying properties viable for acquisition and investment

Partners often face difficulties in identifying viable properties for preservation due to the lack of comprehensive, accessible information, particularly for unsubsidized units. This shortage of information not only hampers the ability to locate properties but also complicates the assessment of property conditions and investment feasibility.

SOLUTIONS:

- **Develop a strategy to proactively identify properties at risk of losing affordability** and act before they hit the market, getting ahead of potential profit-driven investors. Regularly monitoring local real estate trends — including rent fluctuations, occupancy rates, and the pace of development — and leveraging predictive analytics can help anticipate market pressures that could affect affordability, and pinpoint opportunities where intervention could prevent displacement.
- **Build strategic alliances with other stakeholders**, including local governments, housing organizations, neighborhood organizations, realtors, and housing authorities. This can help uncover off-market deals, providing local intelligence and community support for early engagement with property owners. These partnerships can also enhance resource pooling and align efforts across different sectors to support preservation goals more effectively.

CHALLENGE #2

Aligning preservation financing

Not surprisingly, preservation financing remains a major hurdle with available resources in Colorado, with new housing development oftentimes prioritized over preservation. Smaller projects, particularly in rural areas, often fall outside the eligibility criteria for tax credits and other financial tools.

On the other hand, the discontinuation or unavailability of critical local and state funding sources has severely restricted the ability to close financial gaps, causing delays and the abandonment of preservation pursuits.

SOLUTIONS:

- **Tap into innovative, non-traditional funding partners** like social impact investors, and securing flexible financing options like bridge loans. Collaborating with financial institutions committed to affordable housing preservation can enable more swift action on acquisition opportunities.
- **Enhance resource pooling through productive collaborations.** Combine financial, technical, and operational resources from various partners or stakeholders to increase the scale and effectiveness of preservation projects. This could include pooling capital, sharing data and analytics capabilities, or partnership in ownership structures of housing communities.

CHALLENGE #3

Market competition and funding timelines

The competitive nature of unsubsidized property acquisitions and the lengthy timelines for securing funding complicate negotiations with traditional market sellers, who are often unwilling to adjust prices or wait for extended transaction periods/closures. The lack of funding resources and prolonged timelines to secure funding, sometimes exceeding a year, can discourage traditional sellers from collaborating with nonprofit or under-resourced organizations—including resistance to negotiating the price to help make ends meet.

Most of the available inventory is owned by traditional sellers, and those are the homes at risk of losing affordability.

SOLUTIONS:

- **Enhance financial readiness by assembling a diverse capital stack,** including tapping into innovative, non-traditional sources like social impact investors, and securing flexible financing options like bridge loans. Establishing partnerships with financial institutions committed to affordable housing preservation can expedite or enable more swift action on acquisition opportunities.
- **Engage early with property owners.** Proactively initiating contact and building relationships with property owners before they are listed or considered for sale provides an opportunity for mission-driven organizations to gain insights into the property's affordability potential and the owner's intentions, negotiate terms discreetly, and develop more strategic investment or acquisition plans.

CHALLENGE #4

Regulatory curveballs and roadblocks

Unforeseen regulatory requirements or delays in obtaining necessary permits has significantly stalled projects, impacting timelines and financial planning. Specifically, the financial burden of due diligence can be prohibitive. Significant upfront costs without guarantees of a project moving forward strain organizational budgets. Sometimes even available gap subsidies are insufficient to cover all necessary expenses of due diligence required by lending institutions to be eligible for loan products and other resources.

SOLUTIONS:

- **Invest in comprehensive strategic and financial planning/modeling** to fully grasp the regulatory environment and assess the economic viability of each project within that context—including acquisition, rehabilitation, and ongoing operational costs. Scenario planning prepares organizations for changes in the market and regulatory conditions.
- **Whenever possible and appropriate, engage specialists with regulatory expertise** to streamline compliance navigation—zoning laws, land-use regulations, and compliance requirements. This approach not only ensures efficiency but also minimizes delays and enhances acquisition and operational feasibility.

Enterprise

Applying the Data

The challenges and tactics discussed highlight the need for comprehensive data to navigate affordable housing preservation. Affordable housing providers require clear, reliable information to identify, evaluate, and pursue SMMF properties effectively. While no single data source provides all necessary insights—especially complex details like property ownership—leveraging multiple sources can offer a clearer picture. The combination of these data-driven insights enable organizations to identify opportunities, assess risks, and mobilize resources efficiently, ensuring strategic and sustainable preservation efforts.

However, the application of this data is not one-size-fits-all. As we know well, different communities face distinct challenges and opportunities that call for tailored approaches to preservation. For example, a community experiencing rapid gentrification may require strategies that focus on protecting long-term residents from displacement, while another with a shrinking population might prioritize rehabilitating and repurposing existing housing stock to attract new residents or meet changing needs.

Understanding local dynamics through good data makes it possible for people to advocate for what is important to them, co-develop solutions, and hold others accountable for promised changes.[3]

Considering the extent of the SMMF inventory, it is necessary to identify both place- and property-based characteristics that point to preservation opportunities. Place-based indicators can highlight areas of housing instability, while property-specific factors enable the creation of strategies for engaging property owners who might be open to selling or partnering to ensure long-term affordability. Consistent with the hallmark of real estate investing, location is foundational to securing affordable housing for the most vulnerable residents. Identifying preservation prospects should be done in the context of local conditions, particularly for the socio-economic circumstances of residents as well as access to opportunities like jobs, transportation, healthcare, education, food, and other community amenities that directly influence residents' health, security, and economic success.

3. Visit www.neighborhoodindicators.org to learn more about how the National Neighborhood Indicators Partnership (NNIP) helps communities use data to shape strategies and investments to help neighbors of all backgrounds thrive.

Enterprise

Case Studies

The following two case studies illustrate how the Northeast Lakewood and Grand Junction communities have leveraged detailed, context-specific data to develop and refine their housing preservation strategies. Each demonstrates how data-driven insights can enable these communities to not only understand their unique housing landscapes but also to implement effective preservation tactics that align with their specific circumstances.

While not exhaustive, these case studies offer a starting point for narrowing down the inventory and identifying potential off-market opportunities. These two examples highlight the indispensable role of comprehensive, localized data in crafting successful affordable housing interventions and advocate for its broader adoption to enhance community-specific preservation efforts across different regions.

Framework

In Colorado, SMMF properties are spread across multiple owners with a diverse range of profiles, from individual local landlords to small investment groups to corporations, as opposed to the unified ownership typically seen in larger multifamily complexes. Each property may have different management practices, financial health, and willingness to engage in preservation efforts.

The following scenarios illustrate potential motivations for property owners to sell or collaborate with affordable housing organizations to ensure properties maintain affordability levels:

Low-Basis Owner

Current owner purchased property at a price per unit consistent with affordable purchase at 50% AMI. Intersect this inventory with the 'CRR' and cost-to-value spread.[4]

Out-of-State Small Owner

Property is a "one off" (with respect to the metro Denver region) for the out-of-state owner.

Geographic Outlier

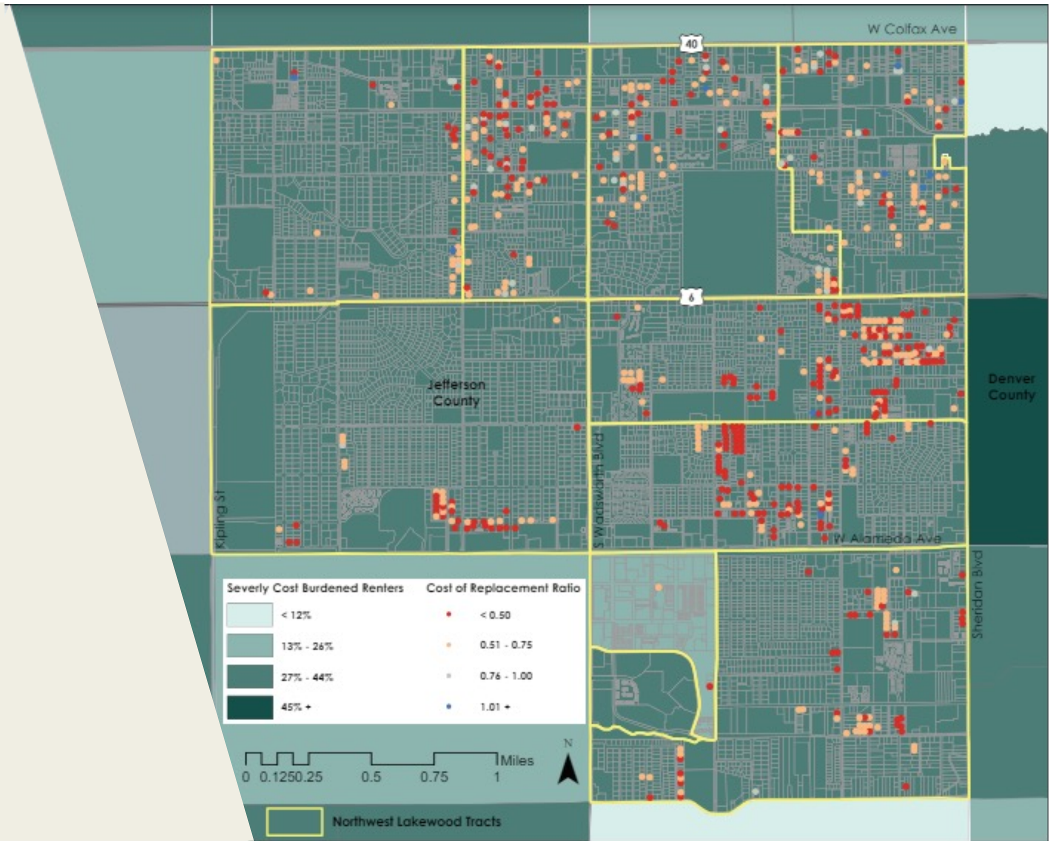
Owner's portfolio is largely concentrated outside of the corridor. Split across multifamily and single-family properties.

4. All of this inventory have CRR values <0.5.

Enterprise

Northeast Lakewood

As an inner-ring suburb of Denver with transit links and access to major employment hubs, Northeast Lakewood is well positioned for the preservation of affordable SMMF homes.



Community Profile

~16,300

TOTAL HOUSEHOLDS

~2,700

SEVERELY COST-BURDENED RENTER HHS

43%

BIPOC RESIDENTS

The majority of households in Northeast Lakewood earns below $75,000 annually, just above the 60% area median income (AMI) limit of $70,320 for a family of four. Many of the area's residents would qualify for housing assistance, which is much needed given that economic challenges are prevalent: about 2,700 households, representing 16% of the total, are severely cost-burdened, spending over half of their income on housing. This severe cost burden limits their ability to afford other necessities such as food, childcare, transportation, and healthcare, thereby affecting their overall quality of life and contributing to economic insecurity.

Over 4 in 10 residents in the study area are persons of color. The area has increased in the share of BIPOC residents over time. The rising demographic diversity, with 4 in 10 residents being people of color and increasing over time, further highlights the importance of inclusive housing strategies to support the community's evolving needs.

OVERVIEW

SMMF Inventory

681

PROPERTIES

3,766

UNITS

In Northeast Lakewood, the SMMF housing stock predominantly dates back to the 1960s and 1970s—a boom period for the city's development—with the median year of construction at 1962. Remarkably, fewer than 8% of these units were built post-1980, highlighting the aging nature of this inventory.

51%

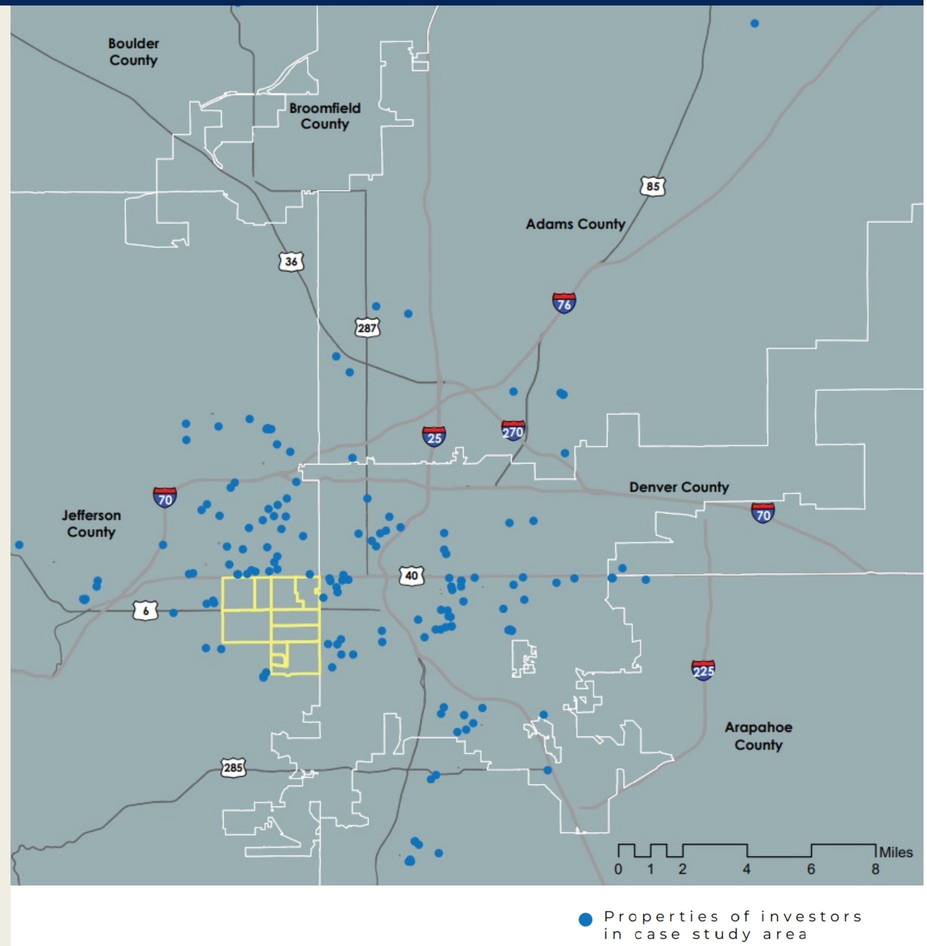
UNITS WITH CCR VALUE BELOW 0.5

Over half of these units display cost-of-replacement (CRR) values below 0.5, suggesting that many of the properties are in need of repairs.[5]

$205,000

MEDIAN AVERAGE VALUE PER UNIT

The median unit value stands at $205,000. This value aligns with the affordability threshold for households earning 100% of the AMI,[6] making these units accessible to essential workers like teachers, nurses, mechanics, and chefs.[7]This affordability factor positions Northeast Lakewood as a critical area for targeted preservation strategies to support community stability and ensure adequate affordability for essential service providers.



OVERVIEW

Ownership Profile

In Northeast Lakewood, over 60% of homes (units) in SMMF buildings are owned by investor entities, highlighting a significant presence of investment-driven ownership in the area. Notably, nearly one-quarter of these investors hold just one property (the one located within the study area itself). The map above depicts where the other properties held by investors are located within the Northeast Lakewood area, as well as other properties across El Paso, Larimer, Mesa, Pueblo, and Weld counties also owned by investors.

5. The map on the previous page (p. 21) shows the distribution of these CRR values across the neighborhood.

6. Sources: analysis using CHFA mortgage calculator; assumptions: income $78,240, monthly debt $1,000, $20,000 down payment, 7.25% interest rate at 30 years

7. BLS OES 2023

PRESERVATION OPPORTUNITIES

Seller Motivation Scenarios

Low-Basis Owner

84 SMMF properties encompassing 1,040 units were purchased at prices aligning with affordability at 60% AMI and a high value to investment ratio. These low-basis owners, having purchased properties at costs that align with affordability thresholds, may be more amenable to selling to mission-driven organizations dedicated to maintaining or increasing affordability. This approach capitalizes on the high value-to-investment ratio to ensure these properties continue serving the community without transitioning to market rates.

Out-of-State Small Owner

For 19 out-of-state owners, the property they own in Northeast Lakewood is a 'one-off' in Colorado. These owners may view local properties as less valuable, especially if these constitute a minor part of their holdings, potentially opening opportunities for local affordable housing organizations to acquire.

Geographic Outlier

For 50 SMMF property owners, their portfolio is largely concentrated outside of the Northeast Lakewood area. The scattered geographic distribution of their portfolio potentially makes these local properties less integral to their overall portfolio. It may also be more difficult and less efficient to manage a single property which could be a motivator.

Low-Basis Owner	Out-of-State Small Owner	Geographic Outlier
1,040 UNITS	**537** UNITS	**303** UNITS
84 PROPERTIES	**55** PROPERTIES	**21** PROPERTIES
72 OWNERS	**55** OWNERS	**19** OWNERS (9 sole property owners)

PRESERVATION OPPORTUNITIES

Property Spotlight

A 32-unit residential building in Northeast Lakewood represents a good example of how geographic and strategic factors converge to enhance the value of preservation efforts. Owned by an out-of-state LLC, it stands as the only property the LLC manages in Colorado, marking it as a geographic outlier within their broader real estate portfolio.

Located near bus and rail lines, the property is accessible to essential services including education, health care, employment centers and parks and outdoor spaces. Preserving affordability in areas with better access to these types of amenities can promote economic mobility and addresses long-standing racial and economic disparities in a community.

Property Stats

32 UNITS	**1962** YEAR BUILT
0.44 CRR	**19** DU/AC

The owner purchased this SMMF property in Northeast Lakewood for $2.3 million in 2012. As of 2023, the property's average per-unit value has risen to $171,600, reflecting a value-to-investment ratio of 2.4 by 2023. This appreciation over a decade shows that the property has done well in the market and could be a reliable investment for affordable housing.

Affordability Inquiry

The community surrounding this property has experienced rapid development and gentrification, impacting property values and rent levels. The property's worth has more than doubled since the LLC acquired it in 2012.

Due to the increase in the property's value, the rent prices have also increased. Currently, the rent for a two-bedroom, two-bathroom unit ranges from $1,567 to $2,029 per month depending on the lease term. A two-person household earning 30% of the area median income (AMI) would only be able to afford $940 per month in rent. Since rents are much higher than what would be affordable at 30% AMI, it's challenging to keep these apartments affordable for lower-income households without some form of subsidy.

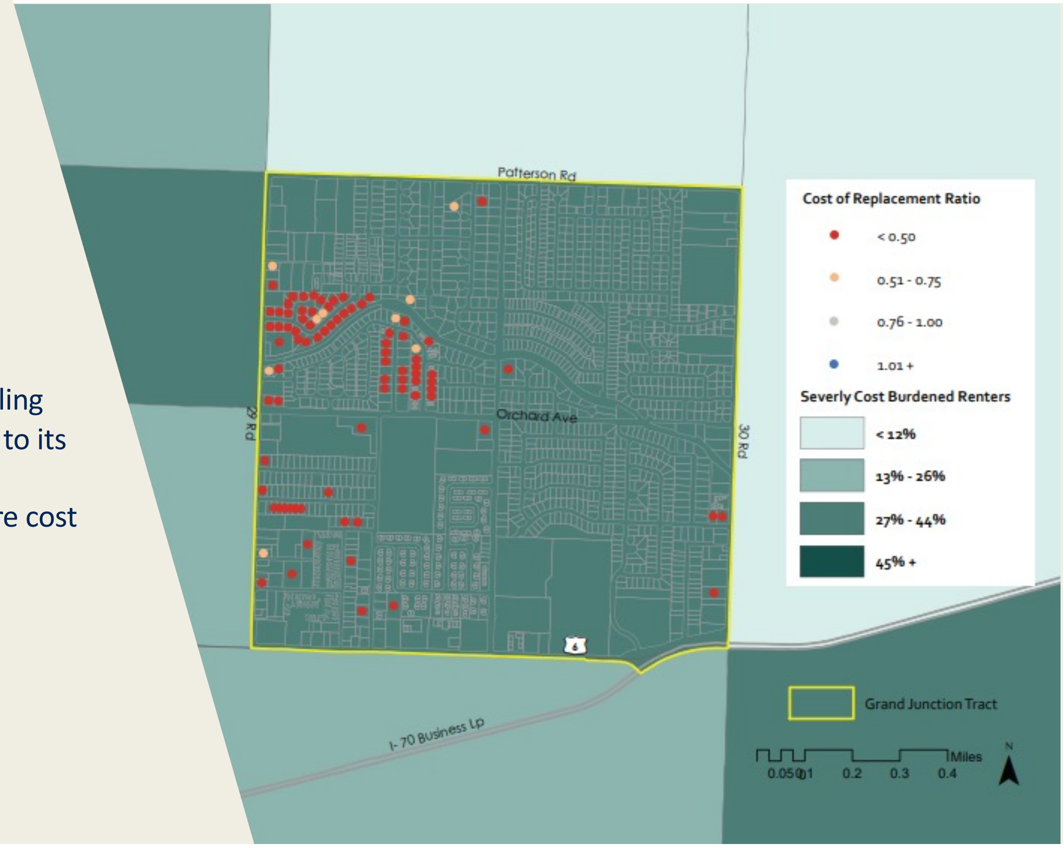
Applying Data in Due Diligence

In addition to researching property information from assessor offices, other relevant data to support due diligence for potential acquisition include recent permit activity and deed of trusts. Recorded permits from the local building department will help determine whether additional significant property investments were made. Paired with recorded debt service instruments, this property information provides refined insight on the extent and type of investments the owner has made.

Enterprise

Grand Junction

Grand Junction presents a compelling case for housing preservation due to its considerable number of SMMF properties and a high rate of severe cost burden among households.



Community Profile

~2,250

TOTAL HOUSEHOLDS

~410

SEVERELY COST-BURDENED RENTER HHS

26%

BIPOC RESIDENTS

The city's median household income stands at approximately $47,575, which is below 60% of the AMI for a family of four. Nearly 20% of households in Grand Junction are severely cost-burdened, spending more than half their income on housing, which places them at risk of financial instability and potential displacement.

Given the presence of essential services and amenities like grocery stores, elementary and middle schools, a workforce center, and a nonprofit medical center, the Grand Junction area rises as a prime target for preservation interventions, ensuring this residents maintain access to the people and places that they call home.

OVERVIEW

SMMF Inventory

88

PROPERTIES

452

UNITS

In Grand Junction, SMMF housing landscape features 88 properties encompassing 452 units. The city's inventory is slightly newer with a median construction year of 1981 compared to the county's 1978. Less than 5% of these properties were built before 1975, indicating a relatively modern stock compared to similar inventories.

95%

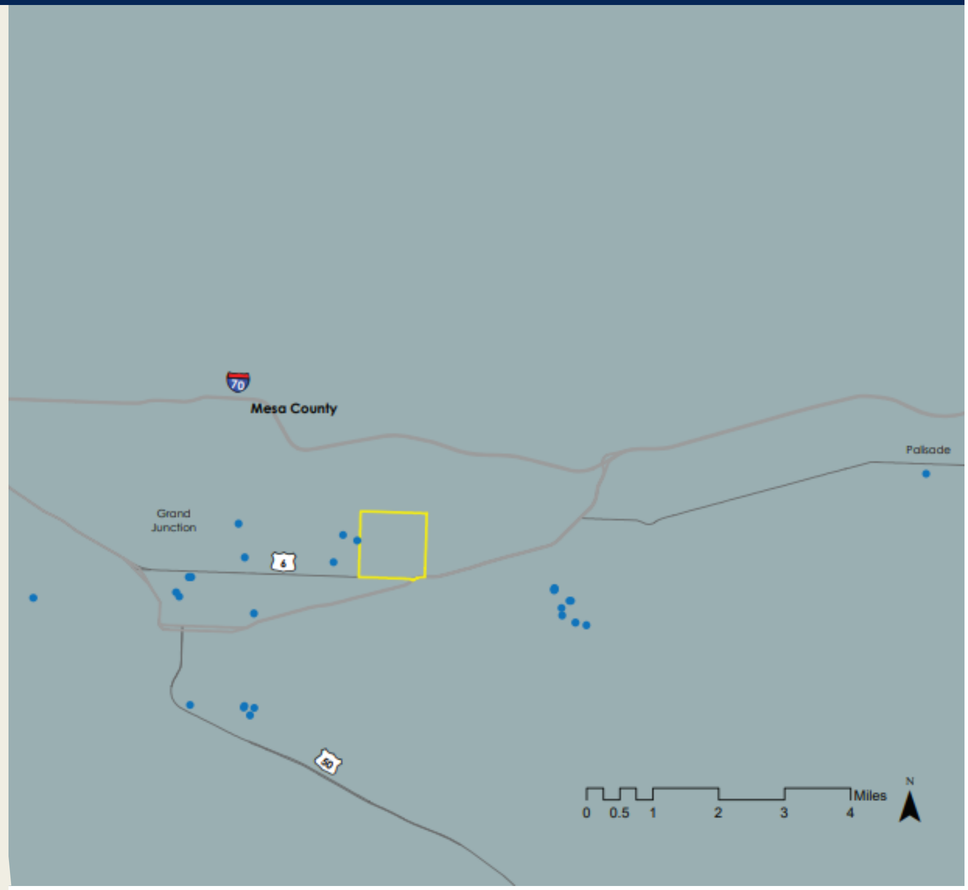
UNITS WITH CCR VALUE BELOW O.5

The overwhelming majority of these units have CRR values below 0.5, suggesting a significant need for updates and repairs.

$103,675

MEDIAN AVERAGE VALUE PER UNIT

These units have a median value of $103,675, placing them within the affordable range for local median earners such as teachers, nurses, and other essential workers.



Properties of investors in case study area

OVERVIEW

Ownership Profile

The ownership of SMMF properties in Grand Junction is predominantly concentrated among investor entities, with more than half of the units owned by this entity type. About 10% of these investors own just a single property within Grand Junction, indicating a diverse range of investment strategies.

The map above depicts where the other properties held by investors are located within the Grand Junction area, as well as other properties across Arapahoe, El Paso, Jefferson, Larimer, Pueblo, and Weld counties.

PRESERVATION OPPORTUNITIES

Seller Motivation Scenarios

Low-Basis Owner

In Grand Junction, 14 properties comprising 144 units are held by investors who purchased them at rates that meet the affordability at 60% AMI. These owners' acquisition costs and favorable value-to-investment ratios position them as potential partners in affordable housing initiatives. These low-basis owners, having purchased properties at costs that align with affordability thresholds, may be more amenable to selling to mission-driven organizations dedicated to maintaining or increasing affordability. This approach capitalizes on the high value-to-investment ratio to ensure these properties continue serving the community without escalating to market rental rates.

Out-of-State Small Owner

Six owners based outside Colorado have their sole state property in Grand Junction. This unique ownership dynamic might prompt these small-scale investors to divest from these outlier properties, presenting opportunities for local organizations to step in and preserve these units long-term. Generally, local, part-time property managers or small-scale owners are more likely to prioritize community and mission over profitability, especially if not tied to the broader financial goals of a larger organization.

Geographic Outlier

For six SMMF property owners, their portfolio is largely concentrated outside Grand Junction, with a single asset in the area. This sparse local presence could make these properties non-essential to their broader investment strategies, potentially easing negotiations for local preservation-focused entities. The logistical challenges of managing these isolated units might further motivate owners to sell to local stakeholders dedicated to affordable housing.

Low-Basis Owner	Out-of-State Small Owner	Geographic Outlier
144 UNITS	66 UNITS	58 UNITS
14 PROPERTIES	6 PROPERTIES	7 PROPERTIES
10 OWNERS	6 OWNERS	6 OWNERS (no sole property owners)

PRESERVATION OPPORTUNITIES

Property Spotlight

A 48-unit residential building in northeast Grand Junction represents a good example of a strategic investment with significant appreciation potential that also maximizes tenant access to community resources. Owned by a Denver-based LLC, this is one of three SMMF holdings out of a total of five properties in their portfolio.

The property benefits from its proximity to essential services and public transportation, which boosts its attractiveness to both potential investors and tenants—especially those that rely on public transportation. Being less than 3 miles from Colorado Mesa University might also attract a consistent rental demand from students or staff, positioning it as a stable rental income source.

Given the small scale of the owner's portfolio, which includes only two other SMMF properties, and the logistical complexities of remote property management, partnering with a mission-driven affordable housing organization could offer a mutually beneficial solution, collaborating with a mission-driven affordable housing organization could provide a win-win situation, ensuring long-term affordability while ensuring a continued return on investment through stable, community-focused developments.

Property Stats

48 UNITS	**1979** YEAR BUILT
0.22 CRR	**24** DU/AC

Acquired for $1.2 million in 2018, its current average value per unit stands at $73,702, showing rapid appreciation with a value-to-investment ratio of 2.95. This property not only offers competitive returns on investment but also aligns well with the needs of community due to its favorable location and access to essential community amenities.

Affordability Inquiry

A 2-bedroom, 1-bath unit in the building is currently listed at $1,000 per month, which includes access to an onsite pool. Factoring in an estimated monthly electric cost of $78, a household would need an annual income of $43,120 to afford rent based on the 30% income threshold for affordability. For a two-person household, this rent is just below 60% AMI, while for three persons, it meets the 50% AMI threshold. ** Income qualifications were not specified on Apartmentguide.com*.

Applying Data in Due Diligence

In addition to researching property information from assessor offices, other relevant data to support due diligence for potential acquisition include recent permit activity and deed of trusts. Recorded permits from the local building department will help determine whether additional significant property investments were made. Paired with recorded debt service instruments, this property information provides refined insight on the extent and type of investments the owner has made.

CASE STUDIES

Subsequent Analysis Suggestions

With a list of prospective properties assembled, additional insight will be necessary for due diligence. In addition to looking up the properties for their current information from assessor offices, other relevant data are accessible through local government offices. Debt service instruments, planning applications, recent permit activity and public health violations are all relevant points of information to secure for properties of interest for preservation.

Debt Service

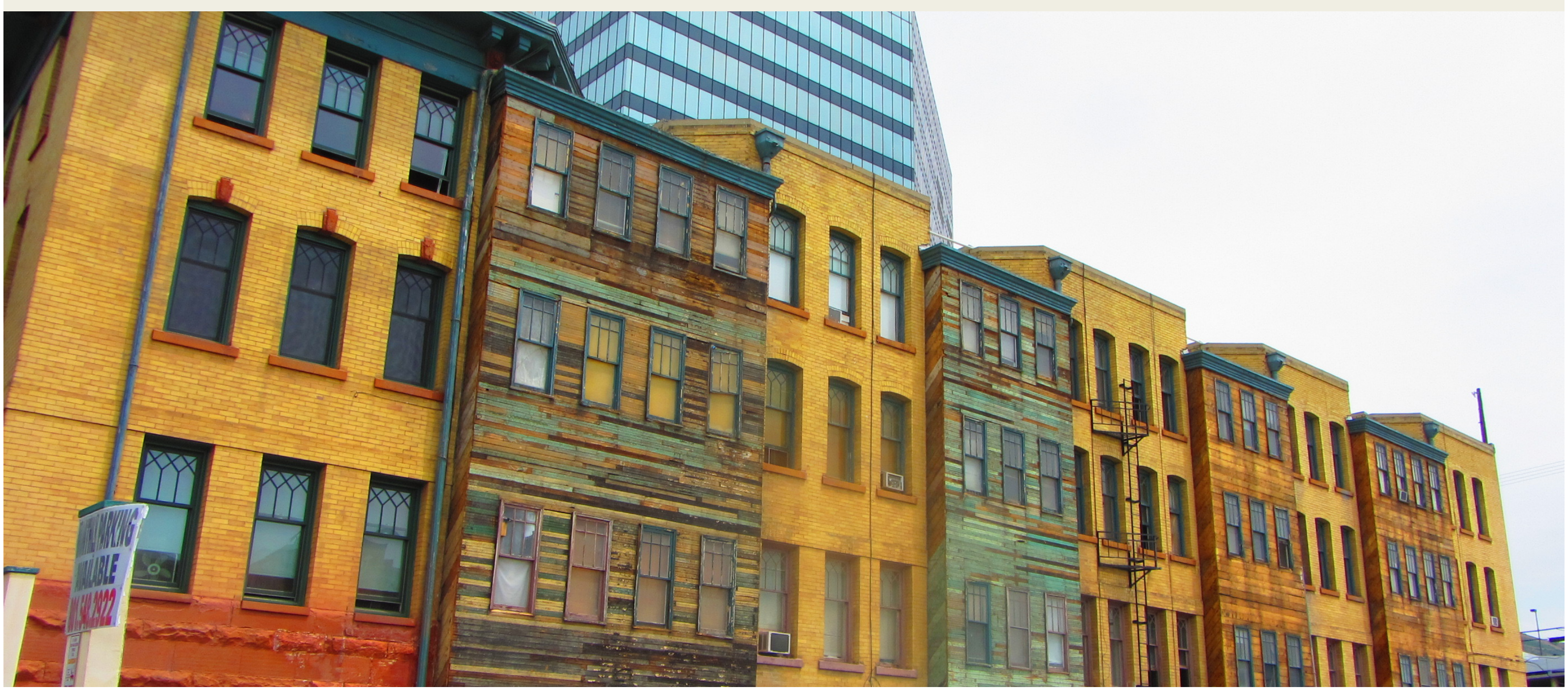
All properties that have debt must record the deed of trust. Researching the property with the county clerk and recorder will provide refined insight on the extent and type of investment the owner has in the property.

Building Upgrades

Determining if the current owner has recently or is planning on renovations to the property will provide a fuller investment basis picture and could signal if the property is a risk of becoming less affordable.

Regulatory Infractions

Determining whether the property has had a history of public health complaints filed against it can aid in understanding more about property conditions.



CONCLUSION

Creating a Sustainable Future for Affordable Homes

When building affordable housing, developers must consider the infrastructure needed to accommodate the community's current and future needs. Building a strategy to tackle the shortage of Colorado affordable homes must also begin with a solid foundation, and in this case, it is resources, research, and policy.

State and local municipalities can help lead preservation efforts by creating an infrastructure of data that guides and supports the housing providers in reaching Colorado's affordability goals.

Quite simply, reliable community-level information helps providers understand where the opportunities are and evaluate the viability and sustainability of acquiring and rehabbing unsubsidized, affordable housing. Whether new construction of housing credit supported housing or preservation of existing affordable homes, it is a very complex process from opportunity to opening, and detailed information is essential every step of the way.

The information that many platforms report is not typically conducive to quick analysis to find and address these opportunities, with most of the property-level information collected primarily for tax assessment purposes. These yawning data gaps have been a huge source of challenges and roadblocks in mission-driven efforts to effectively identify and capitalize on acquisition an investment opportunities.

While resources are available today, there aren't nearly enough to meet the need. Most notably, there is not capital that's specifically directed to preservation activities, including investments directed to better data collection, reporting, and accessibility.

Appendix A.

About the Colorado SMMF Dataset

Appendix A.

About the Colorado SMMF Preservation Dataset

The Colorado Preservation Network – a collaboration by Colorado Housing and Finance Authority (CHFA), Enterprise, and City of Denver – has been instrumental in the preservation of both price-restricted and unsubsidized affordable rental units statewide. Through the creation of the Colorado Affordable Housing Preservation Database, the Network has already cataloged all price-restricted rental units, devising strategies to re-capitalize and maintain affordability as pricing restrictions expire. So far, this effort has successfully supported the preservation of over 9,000 units facing expiring restrictions. Recognizing the particular challenges in preserving unsubsidized affordable housing, the Network has more recently sought to expand the scope its toolkit to include a comprehensive dataset of smaller, unsubsidized affordable housing units. By aggregating data from various local governments and county assessors, we now have a clearer view of the SMMF housing landscape across the state—including the precise location of properties enriched with key details about their physical, ownership, and financial characteristics.

About the Dataset

The Colorado SMMF dataset is a comprehensive inventory of SMMF properties across 17 Colorado counties. It captures key details about the location, physical, ownership, and financial characteristics of ~29,000+ SMMF properties encompassing ~144,000 units. When combined, these data points can turn into insights that enable the identification of preservation opportunities and the assessment of their potential impact. This resource is instrumental in pinpointing properties at risk of becoming unaffordable or uninhabitable and in evaluating how the existing SMMF stock aligns with community needs.

Geographic Coverage

The Database captures SMMF properties in 17 counties across the state, including: Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Eagle, El Paso, Garfield, Jefferson, La Plata, Larimer, Mesa, Montrose, Pueblo, Summit, and Weld. In total, these 17 counties represent approximately 90% of the state's population encompassing the front range, west I-70 corridor, and portions of the western slope.

Focus on Viable Preservation Opportunities

While SMMF housing represents the most substantial share of affordable units, not all SMMF units are inherently suitable for lower-income households, often due to higher property values and financial burdens related to capital and operational expenses. To strategically target efforts where they can be most effective, the database narrows down the inventory to SMMF properties with rental units valued at or below $231,475 — the median across the 17 counties represented in the database — capturing over 60% of the total SMMF rental inventory. This threshold ensures that the database prioritizes properties that are most feasible for preservation — considering the economic and operational factors critical for supporting affordability for low-income households.

These insights are meant to equip mission-driven organizations to effectively identify, assess, and pursue preservation opportunities, whether through acquisition, capital investment, or efforts to stabilize current owners to maintain affordability.

According to the U.S. Census,

(2022 ACS, 1-Year Estimates)

In Colorado, there are

2,590,205

TOTAL HOUSING UNITS

**Includes single-family and multifamily units*

Of these units,

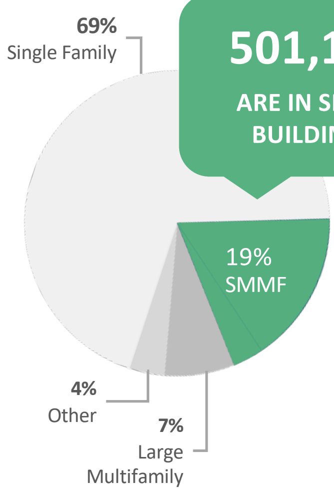
501,143

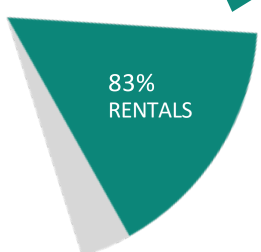
ARE IN SMMF BUILDINGS

of which

372,216

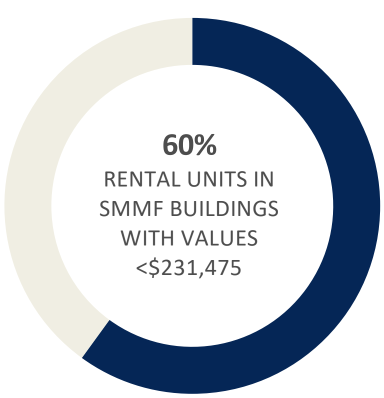
ARE RENTALS





The Colorado SMMF Preservation Database

narrows down the SMMF rental inventory to properties with units valued at or below $231,475 — the median across the 17 counties represented in the database — capturing over 60% of the total SMMF rental inventory. This threshold ensures that the database prioritizes properties that are most feasible for preservation — considering the economic and operational factors critical for supporting affordability for low-income households.



90,000

UNITS VIABLE FOR PRESERVATION

Notes on Data

- The Colorado SMMF Database was designed to facilitate the preservation of affordability within SMMF *rental* properties, which represent the most substantial portion of unsubsidized housing.

- While the Database primarily focuses on the SMMF rental inventory, it also includes certain owner-occupied properties like duplexes or townhomes, which, depending on assessor coding, may be individually owned or collectively managed as part of a rental portfolio.

- The U.S. Census reports the size of housing structures based on the number of units per *building or structure.* In contrast, the Colorado SMMF Database aggregates the total number of units per *property or parcel*, which may include multiple buildings. This can lead to discrepancies where individual Census-reported structures meet the criteria for SMMF but are part of a larger property with multiple buildings that do not qualify under the Colorado SMMF Database criteria.

- In Colorado, residential structures like duplexes or townhomes, where units extend horizontally and are separated by vertical party walls, receive individual parcelization for each unit. That means that each unit within these structures is assigned a unique parcel ID. This can lead to under- or misrepresentation in the Database, as it accounts for SMMF properties as parcels that collectively house 2-49 units.

Appendix B.
Technical Documentation

Enterprise

Appendix C.

Technical Overview of Data Processing and Structure

This technical document outlines each information source and the process through which the data were developed into the final schema that are made available in the application housed at the Colorado Housing and Finance Authority (CHFA) website. It also includes the general description of each variable, including the contributing and original sources, and related metadata. For questions not answered through this document or others pertaining to these data or their inference structure, please contact: jennifer@communityinsights.us. Questions regarding access to these data should be directed to Martina Guglielmone at mguglielmone@enterprisecommunity.org.

Background

The Colorado Preservation Roundtable is a seven-year collaborative effort to preserve price-restricted and naturally occurring affordable rental units throughout Colorado. Formed by Colorado Housing and Finance Authority (CHFA), Enterprise Community Partners and City of Denver, the effort is staffed through CHFA. The network successfully created a database of all price-restricted rental units throughout the state and strategies to re-capitalize and restrict these properties as pricing restrictions expire. To date, over 9,000 price-restricted units with expiring restrictions have been preserved. Recently, the network identified the need to explore other tools — both financial and educational — to advance the work and expand the types of properties to preserve, including small, restricted properties and naturally occurring affordable housing (NOAH) properties. Enterprise is working across the country in various markets to create strategies and financing tools to preserve these NOAH properties, which make up the largest inventory of affordable rental units nationwide. Developing a complementary database of small to medium sized multifamily (SMMF) NOAH properties will aid in understanding where properties are located, who owns them, their conditions, and to prioritize properties for acquisition and rehabilitation that are in danger of being sold and are in areas of change or opportunity.

About the Data

Raw data feeding the SMMF NOAH property database were collected from public sources for 17 counties across the state including: Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Eagle, El Paso, Garfield, Jefferson, La Plata, Larimer, Mesa, Montrose, Pueblo, Summit, and Weld. In total, these 17 counties represent approximately 90% of the state's population encompassing the front range, west I70 corridor and portions of the western slope.

The foundation of the relational database development is parcel-level data from each of the county assessor departments. As outlined in this document below, these data were further augmented through text analysis and integration of data from RS Means to develop derivative variables to form the final schema.

Neighborhood related data are from the Census Bureau's American Community Survey 5-year estimates to develop indicators related to characteristics of the places where NOAH properties are located.

All data are attached to a geographic information system (GIS) to spatially display the data in the interactive tool.

The data available in the database are organized in the following spatial structure:

Parcel-level Property Information – geographically referenced information about the ownership, rights, and interests of pieces of land within the geographic coverage area, a.k.a. property characteristics.

Census Tract (neighborhood) Indicators – measurements represented by socioeconomic characteristics providing information about characteristics in a particular area, specifically the including aspects of social, environmental, and economic factors affecting resident's well-being.

Dealing with Disparate Authors of Conceptually Comparable Data

While the practice of property assessment in the state is overseen to be consistent, the way county assessors structure their property files is not. Files come in their own formats and table structures requiring unique assemblage structures to curate the base set of variables. In some counties assessors employ a different class code system for which a cross walk was created to the state classification system for assigning the final property type. Once the base variables are established, they can then be used as inputs for the development of derivative variables. While most assessor departments make all the necessary base variables assessable (typically through open data portals), in some cases requests were made to obtain core variables to complete the base files.

Adding New Counties

In 2023 ten new counties were added to the property database. Like the original seven counties in metro Denver, each new county files were set up to accommodate their unique assemblage structures to curate the base set of variables. These base county models will be leveraged for future database updates.

Updating Existing Counties Process

For the original seven metro Denver counties an update process was employed for the 2023 version. Building off the 2021 vintage file, new property files were obtained from each county assessor and linked back to the original file.

As noted with developing new county files, raw files from existing counties are structured differently and require unique assemblage to curate the base set of variables that are used as inputs for the derivative variables. Parcel IDs are the primary key field used to join both intra and inter-year files. Generally, six change conditions that occur over time with properties at the parcel level are:

1. Physical property remains the same and with the same owner:
    a. Owner occupancy remains the same (owner or renter proxy).
    b. Owner occupancy changes (owner or renter proxy).
2. Physical property remains the same and changes owner:
    a. Owner occupancy remains the same (owner or renter proxy).
    b. Owner occupancy changes (owner or renter proxy).
3. Physical land changes through assemblage:
    a. These parcels can be preserved (spatially and attribution) via the prior period.
4. Physical land changes through subdivision:
    a. These are the net new properties and have new spatial and attribution established to match the file schema.

Developing the Parcel-level Property Characteristics File

As noted above, a core set of variables comes directly from the raw assessor property records. From the core variables, derivative variables are created to establish the full property characteristics file from which the SMMF NOAH Inventory is established.

The following table outlines the base and derivative variables, with base variables not color coded and two-color coded sets of derivative variables based on when they are created prior to or after the text processing phase.

Variable	Data Type	Descriptor Title
county	String	County name
parcelnb	String	Parcel ID
acct_no	String	Account Number
class_cd	String	State Classification Code
class_group	String	Classification Group
class_name	String	Classification Name
situs_address	String	Property Address
situs_city	String	Property City
situs_st	String	Property State
situs_zip	String	Property Zip Code
owner	String	Owner Name
own_address	String	Owner Address
own_city	String	Owner City
own_st	String	Owner State
own_zip	String	Owner Zip
residential	Bool	Is Residential Property
units	Double	Housing Units in Property
bldg_sf	Double	Total Building Square Footage
comm_sf	Double	Commercial Square Footage
yrblt	String	Building Year Built
land_act	Double	Land Appraisal Value*
land_assess	Double	Land Assessed Value*
imp_act	Double	Improvement Appraisal Value*
imp_assess	Double	Improvement Assessed Value*
sale_pr	Double	Last Sales Price
sale_yr	String	Last Sales Year
crr	Double	Cost-of-Replacement Ratio
prop_ct	int64	Property Count - Based on Owner Address
inv	String	Investor Owner
local_own	Bool	Local Owner (Colorado)
long_own	Bool	Long-Term Owner (10+ yrs)
own_occ	Bool	Owner Occupancy (tenure)
du_ac	Double	Dwelling Units per Acre (density)
zoning	String	Local Zoning Code
sf	Bool	Single Family Residential
smmf	Bool	Small to Medium-Sized Multifamily (2-49 units)
mf	Bool	Multifamily Residential (50+ units)
land_area	Double	Land Area (square feet)
date	Date	Date of raw data pull
Derivative Variable	pre-OR	
Derivative Variable	post-OR	

**Colorado reassesses properties in odd years. Assessment valuations are established from appraisals using market conditions in the prior 18 months from the previous even state fiscal year end. For example, in 2023 the values are based on market conditions from Jan 1, 2021 through Jun 30, 2022. For more information on Colorado's assessment procedures please visit: https://arl.colorado.gov/administration-manual*

Cleaning Messy Data

Once a standard set of base variables is established the file is not fully viable to query for the kind of analysis that best informs potential properties for preservation. Even within counties files inherently have spelling typos and inconsistencies in the way information is presented. Many software packages deal with cleaning these messy data issues. A somewhat unique need in this process is establishing which properties could be tied to the same owner or portfolio. This is where the OpenRefine tool comes in.

OpenRefine (OR) Process

OpenRefine (https://openrefine.org/) is "an open-source tool for working with messy data: cleaning it; transforming it from one format to another; and extending it with web services and external data." Many software packages allow for fuzzy matching in datasets but only horizontally, within records. In order for the database to identify common portfolio owners through common addressing the addresses must be exact. This clustering (and merging) must be done vertically, within the address variable. OR allows for the clustering and merging of variable values that otherwise would not be considered the same in a database query. Once the draft files are created from each county assessor, they are appended into one complete file and loaded into OR for cumulative text analysis through clustering and merging, as well as other general data cleaning across multiple text variables. Once the cleaning and merging processes are complete the file is exported and brought back into the ETL model to create the final derivative variables.

Establishing Derivative Variables

After the text analysis process a set of derivative variables was established to support the network partners to quickly filter through the inventory of properties to identify prospective properties for preservation. Key derivative variables developed for the database follow.

- Cost-of-Replacement Ration (crr): While each valuation model appraisers use theoretically accommodates the quality of a property and thus the resulting value used in the basis for property taxation, assessor departments do not consistently provide a measure of quality. To provide as much information up front about the SMMF properties, the cost-of-replacement ration was established to proxy a quantitative measure of quality when considering total costs for preservation.

- Property Count (prop_ct): Key to understanding the nature of the ownership of SMMF properties is seeing past the disparate isolated entities that are formed to hold real estate investments. These common entities are identified through common addressing. Because owner addresses are clean the model can generate property counts as assigned to each entity across each property.

- Investor Owner (inv): Properties can be held in the name of individuals or investment vehicle entities (e.g. LLCs, LLPs, corporation, partnership, etc.). In the raw files this is hard to cull out, so a catalog of entity types was coded to flag the properties held by a likely investor entity. The extensions include:

  'Llc', 'llp', 'orp', 'ent', 'nts', 'L P', ' Lp', 'ion', 'L C', 'Ltd', 'Inc', 'tes', 'ept', 'Dst', 'ngs', 'hip', 'mes'.

- Local Owner (local_own): Investing in real estate based on location can vary depending on the strategies of the investor. Creating a variable that identifies whether the investor is located (owner address) in some proximity to the subject property is useful to understand in terms of the type of approach taken when thinking about preservation. Currently this variable is set to qualify the owner as local if they have a Colorado address, however, this could be adjusted based on other definitions that qualify the owner as "local".

- Long-Term Owner (long_own): Transactions of real estate happens every day, so it's no surprise that most properties have changed hands more recently. In light of the current interest rate environment as well as a lens for long-term investing, it is useful to understand which properties have been held by the same owner for a longer period of time. Creating a variable that identifies long-term owners informs the preservation strategy in terms of initial insight on the original investment basis as well as assumptions regarding any residual debt service.

- Owner Occupancy (own_occ): Determining owner tenure for the properties was based on a (fuzzy) match between the situs address and the owner address. While there are instances where an owner could receive mail at another location than the subject property, it is a reasonable proxy to assess tenure utilization of the property.

- Dwelling Units per Acre (du_ac): Calculating the as-built density of the property was based on diving the number of units by the acreage unit of the parcel. Understanding the as-built density of a property juxtaposed with the zoning is useful for purposes of identifying properties that could be candidates for densification through redevelopment. This would be a preservation-plus strategy that could bring net new affordable units to the market.

- Single Family, Small to Medium-Sized Multifamily and Multifamily Residential (sf, smmf, mf): These variables are flags based on the unit size, which the current NOAH SMMF is a filter from the full extent of records in the assessor files.

Mapping the Properties

In addition, each county maintains parcel-level GIS files. These files are standardized to assemble one shapefile for the 17-county coverage. From this the property characteristics file can join to allow for geographic visualization and analysis with the select tract-level socioeconomic indicators.

Curating the SMMF NOAH Inventory

For purposes of having the broadest picture of all potential SMMF NOAH properties and that all real estate is local, the database includes all properties that qualify as SMMF (i.e. 2-49 unit properties), as well as any vacant parcel that is coded as a qualifying SMMF. From there with the help of the derivative variables local partners can determine the best parameters to isolate potential properties for preservation to investigate further. Certainly, there are properties that have been constructed more recently that are not viable candidates. However, it can be useful to include these properties to better understand where they are being constructed and the submarket conditions. Because SMMF units are not a significant portion of Colorado's housing inventory, and for many years have made up a small fraction of building, paring the database's vacant parcels (in conjunction with allowable zoning) can inform parallel strategies for acquiring land to build a housing type that can play a meaningful role in bringing more affordable housing to the market.

Other factors of note through the curation process:

- To the extent possible, properties that were able to be determined to function as group homes were removed from the inventory even if their state use code generally qualified the property as an SMMF.

- Properties were kept in even if it was just land that was coded as a multi-unit category as a potential development opportunity.

- Pueblo files are extremely incomplete. Imputation was done for the apartment properties based on building size and average units of approximately 1,000 sf per unit.

Neighborhood Indicators

Neighborhood indicators are included to provide the necessary context to support users in identifying the most viable NOAH properties beyond relying only on property characteristics alone.

The following table provides the initial list of indicators supporting the NOAH SMMF database, however, additional researched indicators are envisioned to be added to the database that focus on better proxies for displacement and arrival into neighborhoods.

GIS Layer	Description	Data Source(s)
Parcels	2023 County Assessor property records	Curation and text analysis of county assessor property records downloaded July 2023
Tracts	2020 US "Census tracts - are small, relatively permanent statistical subdivisions of a county or equivalent entity that are updated by local participants prior to each decennial census as part of the Census Bureau's Participant Statistical Areas Program. The primary purpose of census tracts is to provide a stable set of geographic units for the presentation of statistical data. A census tract usually covers a contiguous area; however, the spatial size of census tracts varies widely depending on the density of settlement."	Census 2020 https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_13

Indicator	Indicator Description	Data Source(s)
Total Households	Number of households in the census tract	American Community Survey (ACS) 5 year estimates, 2022
Race/Ethnic Plurality	The percentage of the race or ethnic group that holds the majority of the population in the Census tract.	Analysis of American Community Survey (ACS) 5 year estimates, 2022
Renter Tenure	The share of households that are renter households	American Community Survey (ACS) 5 year estimates, 2022
Median Rent	Median rent of the renters in the census tract, where half of the renter households have rent below, and half have rent above.	American Community Survey (ACS) 5 year estimates, 2022
Median Income	Median household income in the census tract, where half of the households have incomes below and half have incomes above.	American Community Survey (ACS) 5 year estimates, 2022
Households Earning Less Than $75,000	Number of households in census tract earning less than $75,000	American Community Survey (ACS) 5 year estimates, 2022
Share of Cost Burdened Renter Households	The percentage of renter households that are cost burdened. Cost burden is defined as paying more than 30% of gross household income on housing.	American Community Survey (ACS) 5 year estimates, 2022
Change in Cost Burdened Renter Households	Change in the percentage of renter households that are cost burdened. Cost burden is defined as paying more than 30% of gross household income on housing.	American Community Survey (ACS) 5 year estimates, 2017/2022 (forthcoming)