IVORY INNOVATIONS

Catalyzing Innovation for Housing Affordability

5-Year Report

Our mission is simple:
to catalyze innovation in housing affordability.

Ivory Innovations was founded in 2017 and is housed at the David Eccles School of Business at the University of Utah. We are an applied academic institution dedicated to catalyzing high-impact innovations in housing affordability. We seek to promote the most compelling ideas in housing affordability by working across sectors, providing monetary awards for groundbreaking innovations, and leveraging our network and resources. The Ivory Prize for Housing Affordability was established in 2018 as an annual award recognizing ambitious, feasible, and scalable solutions to housing affordability. 2023 marks the fifth year the Ivory Prize has been awarded, and this report highlights what we have learned during this five-year period.

The Prize is designed to award innovators for their efforts and provide material support to advance their projects. The search committee looks for solutions that include and combine elements of finance, policy and regulatory reform, and construction and design. Innovators include small and large-scale companies, nonprofits, or government entities. Anyone may nominate an organization impacting housing affordability, and self-nominations are encouraged.

We identify significant innovation and creativity in the housing sector through the Ivory Prize. Through this process, we have found that not one, but many, solutions are emerging.

Background

Americans currently face the least affordable housing market in history. After the Great Financial Crisis, housing production fell well below growing household demand; and as a result, the nation now experiences major housing shortages coupled with a housing affordability crisis. The COVID-19 pandemic further exacerbated these challenges.

These are complex and longstanding issues, and there are no silver bullet solutions. However, over the last five years, Ivory Innovations and the Ivory Prize for Housing Affordability have shown that there is a great deal of energy and creativity throughout the country to address these challenges. These efforts point to a number of small-scale solutions at the grassroots level that address affordability and increase housing supply through approaches such as new construction and design, financing innovations, and regulatory reform. These innovations point to directions and paths that will help us move towards greater housing affordability.

This report highlights current and future challenges facing our nation's housing market. It also highlights the many entrepreneurs and innovations that are underway to address and solve the obstacles that exist—one step at a time.

These innovations point to directions and paths that will help us move towards greater housing affordability.

Why is Innovation Important?

We have a
housing shortage
between three and five million housing units.

Recognizing that choices made in housing policy can either create increasing opportunity or prosperity or reinforce the cycle of poverty, Ivory Innovations works to disseminate valuable knowledge and solutions.

Growing housing inequality means many minority populations are disproportionately affected by the housing crisis. In addition, redlining, the discriminatory practice of denying loans or other financial services to residents of certain areas (usually based on ethnicity or race), still poses an issue years after it became illegal.

Rapidly rising construction and material costs means innovations in construction and design are increasingly necessary and impactful for affordability and sustainability. Innovators are pioneering new material applications and construction methods that are more efficient, scalable, and, importantly, more sustainable, resulting in greater affordability.

Building operations and the construction industry account for almost 40% of global energy-related carbon emissions.1 To improve environmental sustainability and outcomes, many innovators are working on new ideas, methods, materials, and approaches.

The Ivory Prize seeks and supports organizations working on innovative approaches to housing affordability in the following categories:

Finance

New financial tools are needed as the next generation of homeowners face a unique set of constraints. These constraints range from higher down payments, greater personal/student debt, and a growing number of careers with regular job changes to a longer timeline for family formation and rapid urbanization. The Ivory Prize recognizes that new financial contracts must be negotiated to provide this generation with the same opportunity to build wealth through homeownership.

Construction & Design

Innovative construction and design plays a critical role in bringing down the cost of housing and improving building performance. The Ivory Prize award focuses on approaches for both new construction and rehabilitation. Participants may advocate for new materials or practices that provide improved efficiency in home building or use. Areas of interest include: material production and use sustainability; income-generating opportunities such as power generation or mixed-use spaces; and the potential of emerging smart devices and data.

Policy & Regulatory Reform

From local zoning laws and building codes to federal mandates and appliance standards, the housing space is subject to more regulatory oversight and intervention than any other industry. This places a unique burden on innovators and adds to the cost of housing. The Ivory Prize recognizes teams that demonstrate competency in using policy to their advantage, with a particular focus on supporting new, scalable approaches to improving housing affordability.

Assessing America's Housing Shortage and Affordability Crisis

Population growth is expected to grow at a slower rate, as will the demand for housing. While the housing shortage will likely begin to dissipate in the 2030's, the need for innovative housing that is affordable will continue.

Millions of Americans are experiencing the crippling effects of the housing crisis. Over the last decade, housing affordability in the United States diminished as housing production could not keep up with demand after the Great Financial Crisis (GFC)

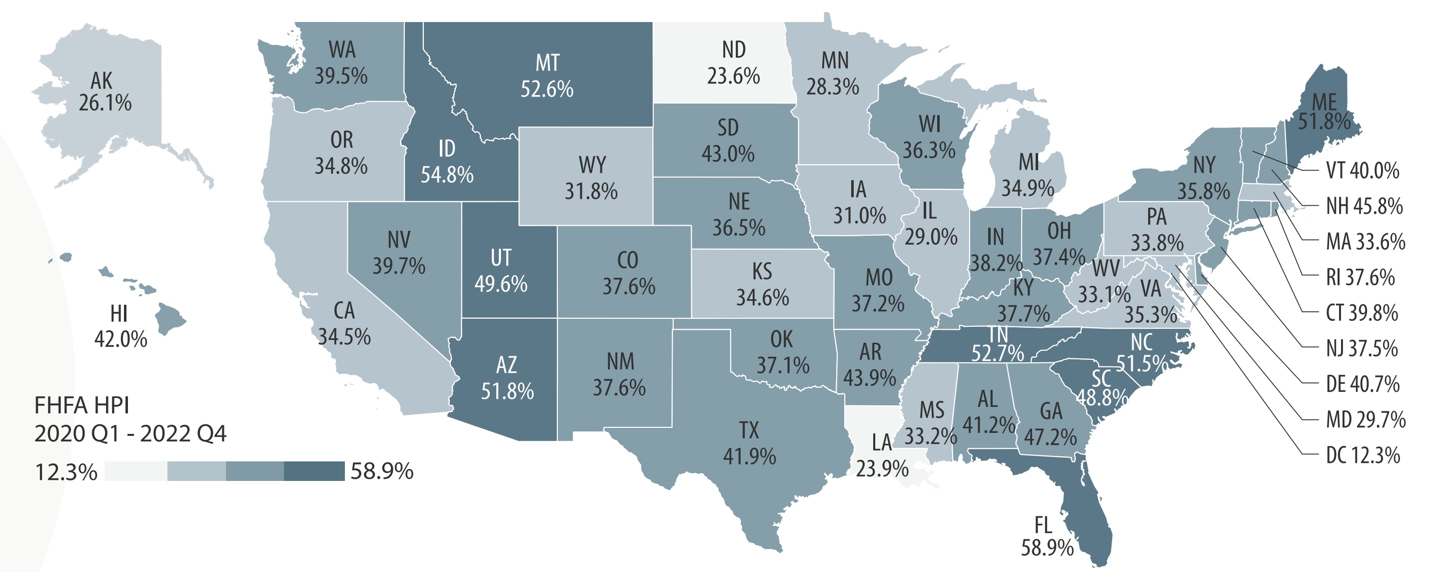
While the numbers vary by source, experts agree, we have a housing shortage between 3–5 million housing units.

Housing supply continues to be inundated by a myriad of challenges, such as rising material costs, construction labor shortages, local, state and federal regulations, and financial challenges for affordable housing.2 While serious housing shortages are expected to persist through the end of the 2020s, projections from the Urban Institute show household growth slowing in the beginning of the 2030s. Population growth is expected to grow at a slower rate, as will the demand for housing. While the housing shortage will likely begin to dissipate in the 2030' s, the need for innovative housing that is affordable will continue.

Home prices reached all-time highs in many regions of the country during the previous decade. Federal Housing Finance Agency (FHFA) shows home prices increased by an average of 5.0% annually between 2013 and 2020. This increase was not uniform across all regions of the country, with some areas experiencing more significant price growth than others.

Price accelerations between 2020 and 2022, however, made the path to homeownership even more difficult. Every state in the United States experienced double-digit growth rates during the COVID-19 pandemic. Prices in Intermountain West and Southeastern states grew by around 50% since the start of the pandemic (Figure 1).

Figure 1: Percent Change in the FHFA Housing Price Index, 2020 Q1–2022 Q4



Source: Federal Housing Finance Agency, Quarterly Purchase-Only Index, Seasonally Adjusted

Figure 2: Quarterly Median Sales Price of Existing Homes, Asking Rents, and Mortgage Payment, 2000-2022, U.S.

Note: Mortgage Payment is calculated using FreddieMac Primary Mortgage Market Survey and assumes a 10% down payment.
Source: Existing Home Sales National Association of Realtors, Asking Rents U.S. Census Housing Vacancy Survey.

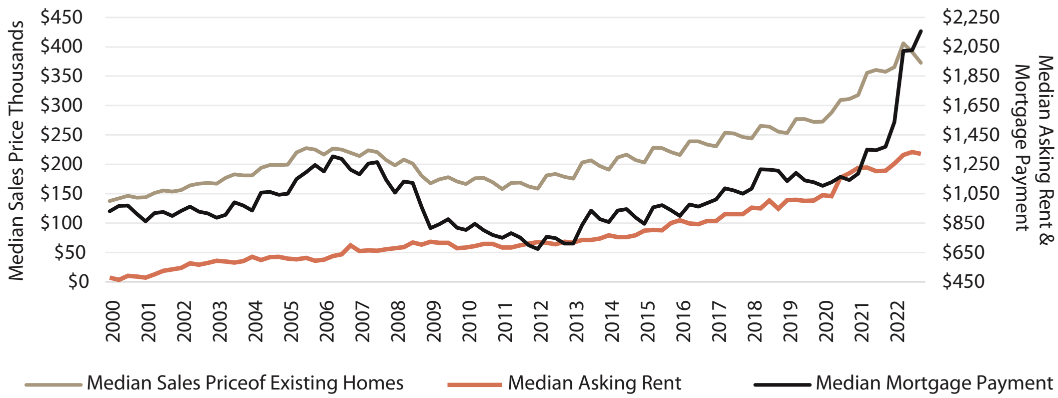
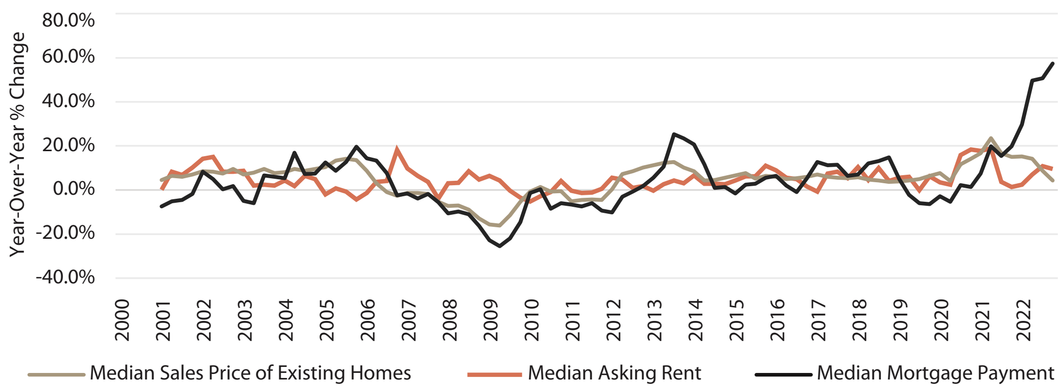


Figure 3: Quarterly Year-over-Year Percent Change in Median Sales Price of Existing Homes, Asking Rents, and Mortgage Payment, 2000-2022, U.S.

Note: Mortgage Payment is calculated using FreddieMac Primary Mortgage Market Survey and assumes a 10% down payment.
Source: Existing Home Sales National Association of Realtors, Asking Rents U.S. Census Housing Vacancy Survey.



The median monthly mortgage payment at the end of 2022 was approximately $2,150, an increase of over 57% from the previous year.

According to data from the National Association of Realtors, the median sales price for an existing home peaked in the second quarter of 2022 at $405,000 (Figure 2). By the end of the year, prices declined to $373,000 due to rapidly rising interest rates. While sales prices are cooling, the median monthly mortgage payment continues to rise. Assuming a 10% down payment, the median monthly mortgage payment at the end of 2022 was approximately $2,150, an increase of over 57% from the previous year (Figure 3). While interest rate volatility continues to cool housing prices, median mortgage payments have risen faster than any other time in recent history, putting homeownership out of reach for many.

Rents across the country have also steadily grown over the last decade. Between 2010 and 2020, the median asking rent increased at an average annual rate of 4.7%.

During the COVID-19 pandemic, rental prices experienced near historical annual growth rates. Overall, monthly asking rents surpassed $1,300 in 2022. While there was a slight softening in asking rents in late-2021/early-2022, the median asking rent increased 9.5% by the end of Q4 of 2022 from 2021.

Challenges from COVID-19 and Inflation

by the end of 2022, nearly 62% of current residential mortgages had an interest rate of 4% or lower.

Rapidly declining mortgage rates in the early stages of the COVID-19 pandemic resulted in lower monthly mortgage payments despite accelerating prices.

By the end of 2020, the mortgage payment to asking rent ratio was almost one, meaning mortgage payments and asking rent were about equivalent.

As prices continued to accelerate into 2021 and 2022, the growth rate in mortgage payments outpaced the growth in asking rents. As a response to inflation, the increase of the Federal Funds rates put pressure on the financial markets, accelerating the rise of mortgage rates and, thus, monthly mortgage payments for new buyers. **By the end of 2022, the monthly mortgage payment was 1.6 times greater than the asking rent due** to the double impact of rising prices in 2021-2022 coupled with rising mortgage rates in 2022-2023 (Figure 4).

These impacts from inflation discouraged many existing homeowners from selling and moving, which contributed to the low inventory of homes for sale. According to the Federal Housing Finance Agency, by the end of 2022, nearly 62% of current residential mortgages had an interest rate of 4% or lower.

Rising interest rates and elevated housing prices means most Americans are priced out of the market. Between October and December 2022, only 38.1% of new and pre-owned homes sold were affordable to households with a median income of $90,000 in the U.S. (Figure 5). This marks the third consecutive quarter of record low housing affordability since the GFC.

Figure 4: Ratio of Mortgage Payment to Asking Rent, 2010-2022, U.S.

Source: Note: Mortgage Payment is calculated using FreddieMac Primary Mortgage Market Survey and assumes a 10% down payment. Source: Existing Home Sales National Association of Realtors, Asking Rents U.S. Census.

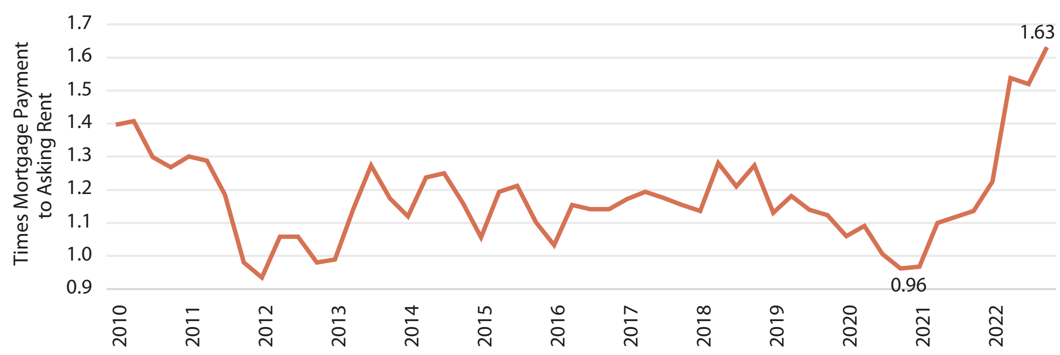


Figure 5: NAHB/ Wells Fargo Housing Opportunity Index, 2000-2022, U.S.

Source: Core Logic all transactions, Census Bureau, HUD, Freddie Mac, & MBA. Analyzed by NAHB Economics & Housing Policy Group.

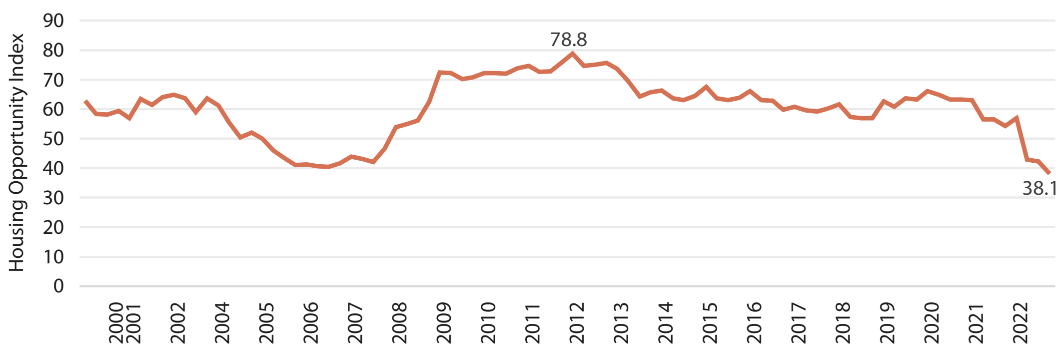
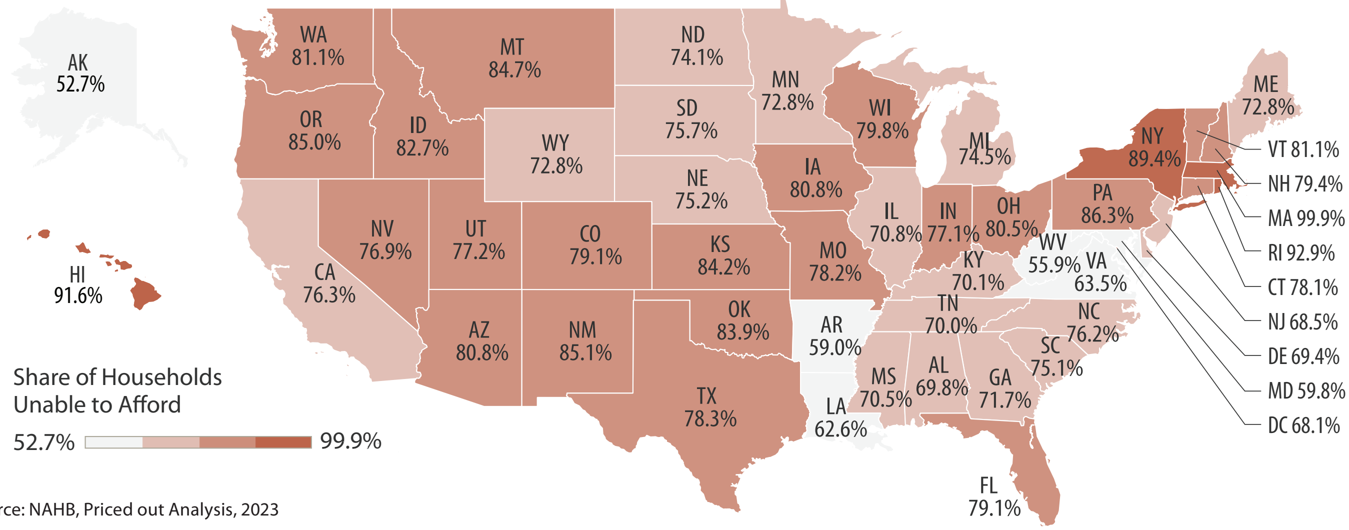


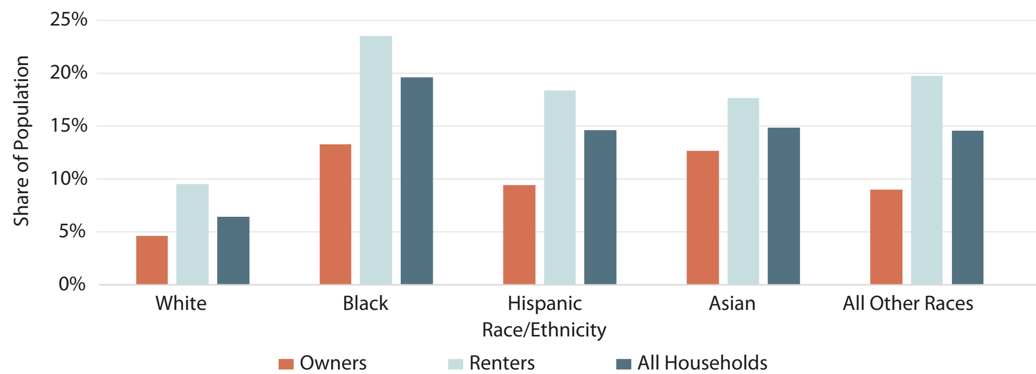
Figure 6: Share of Households Priced out of a New Median-Priced, 2023



Source: NAHB, Priced out Analysis, 2023

Figure 7: Share of Households Behind on Rent/Mortgage Payments by Race/Ethnicity, December 2021–April 2022, U.S.

Source: JCHS tabulations of U.S. Census Bureau, Household Pulse Surveys, December 2021–April 2022.



Out of the 132.5 million households in the U.S., 96.5 million are not able to afford a median-priced home of $425,000.

The National Association of Home Builders (NAHB)-Wells Fargo Housing Opportunity Index (HOI) calculates the share of homes sold that are affordable to a family earning the median income based on standard mortgage underwriting criteria. In 2012, 78.8% of new and existing homes sold were affordable to households earning the median income that year.

Another similar analysis performed by the NAHB estimates that at the beginning of 2023, out of the 132.5 million households in the U.S., 96.5 million are not able to afford a median-priced home of $425,000.[3] The share of households priced out of homes varies by state (Figure 6). For example, nearly all households are priced out of a home in Massachusetts as the price exceeds just over $1.01 million. In states like Alaska and West Virginia, where median housing prices are below $250,000, about half of the state's households cannot afford a median priced home.

The COVID-19/inflation crisis created unique challenges and dynamics in the housing sector. Despite turmoil across many sectors of the economy, the housing market remained relatively strong, and home prices did not drop as they did during the last recession. Instead, COVID-19 depressed incomes and left many without the ability to make rent. The pandemic, followed by inflation, exacerbated already-existing inequities and created additional challenges related to evictions and homelessness.

Minority households who rent were disproportionately impacted by the financial consequences of COVID-19 (Figure 7). Black and Hispanic renter households were twice as likely to fall behind on their housing payments and were at double the risk of eviction compared to White renter households.

Housing Shortage and Changing Demographics

As the housing market began to recover, the 2010s experienced the weakest housing production of any decade since 1960.

According to an analysis by Freddie Mac, the U.S. had a housing supply deficit of 3.8 million units in 2020.[4]

The National Association of Realtors estimates that the U.S. has 5.5 million fewer units than it needs to meet demand due to the slower annual pace of construction from 2001 to 2020.[5] In its 2022 report, Up For Growth estimates the U.S. was underbuilding homes by 1.7 million in 2012; and that deficit increased to 3.8 million homes in 2019.[6]

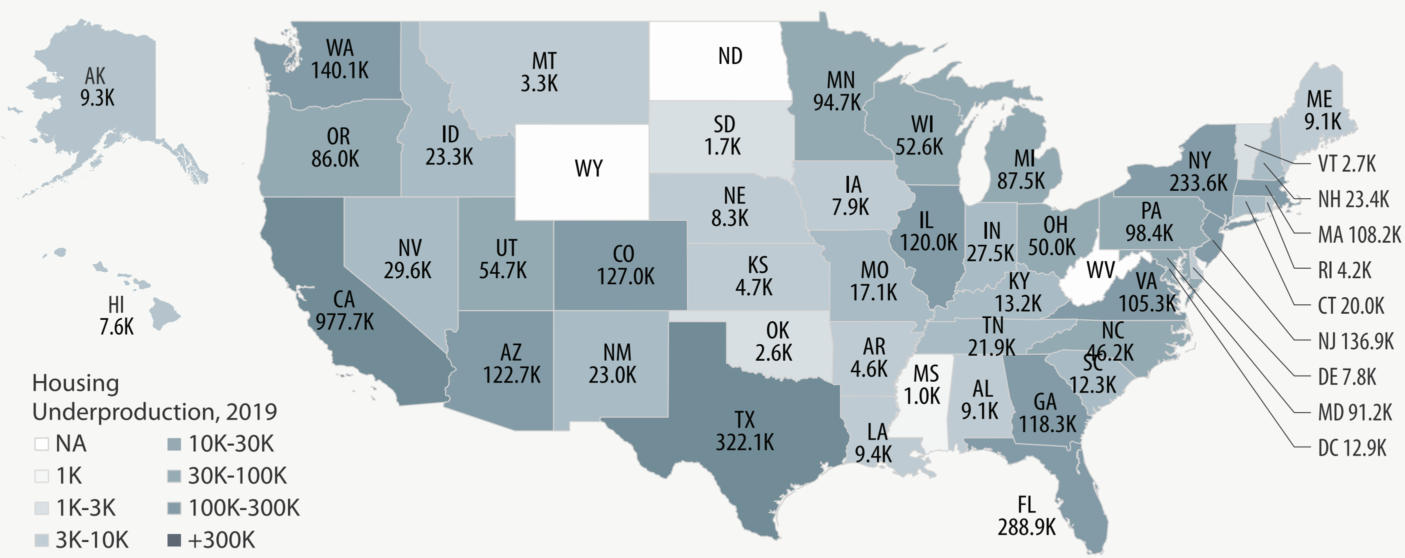
Housing underproduction exists in almost every state and Washington DC. California leads the nation with its deficit in production, followed by Texas. Other Southeast and Intermountain West markets also experienced a substantial increase in underproduction over the past decade.

Growth in new households is the primary driver of housing demand. At the end of 2022, the U.S. Census Bureau estimated that there are 129.6 million households in the U.S., an increase of 22.9 million since 2000 (Figure 9).

Between 1960 and 1999, housing starts averaged 1.5 million annually, outpacing new household growth. In the 1960s, for every new household formed, 1.5 new housing units were started (Figure 10). As the oversupply of the housing bubble accelerated construction in the 2000s, housing starts outpaced new households by a factor of 3.1.

This oversupply of housing, along with credit concerns and subprime mortgages, led to the GFC, which, in turn, caused housing production to fall. As the housing market began to recover in 2010, the following decade marked the weakest housing production since 1960, with housing starts averaging below one million annually.

Figure 8: Housing Underproduction by State, 2019



Source: Up For Growth, Housing Underproduction in the U.S., 2019

Figure 9: Annual Total Households and New Privately Owned Housing Unit Starts, 1960–2022, U.S.

Source: U.S. Census Bureau, New Privately Owned Housing Units Started, Annual Household Estimates.

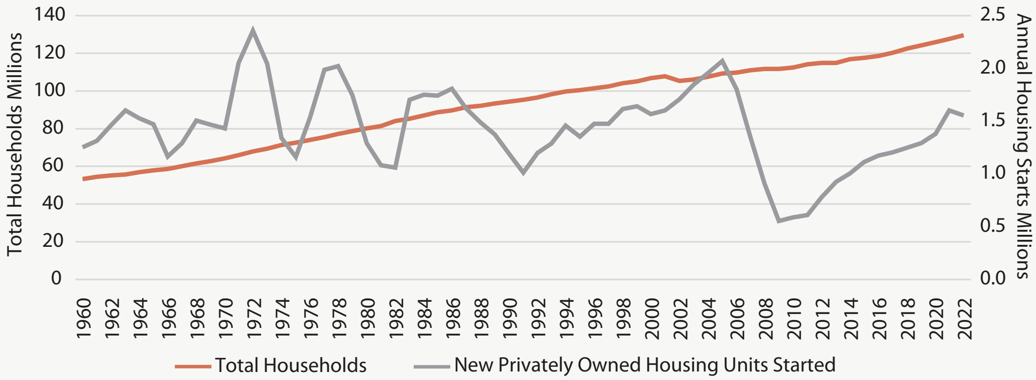
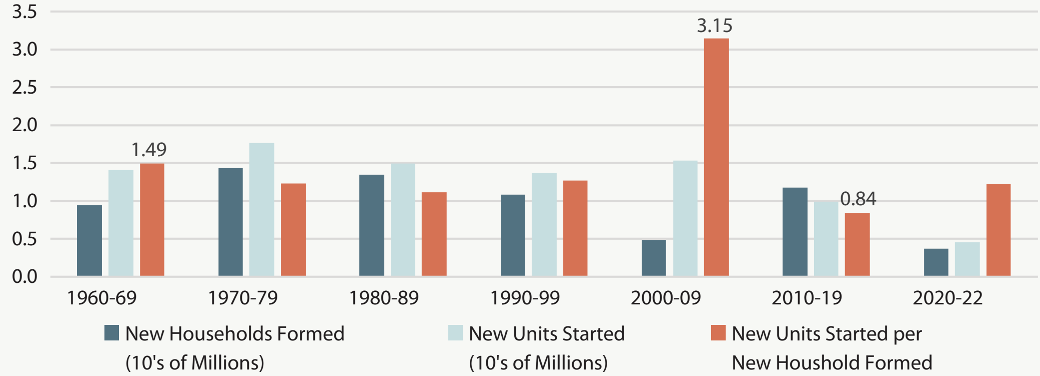


Figure 10: By Decade, New Households Formed, New Housing Starts, and New Housing Starts Per New Households Formed, U.S.,

Source: Ivory Innovations analysis of U.S. Census Bureau, New Privately Owned Housing Units Started, Annual Household Estimates.



The lack of opportunity for younger generations to achieve home ownership **limits their future** wealth creation.

Between 2010 and 2019, only 0.8 new units started for every new household, negatively impacting homeownership and access.

While there are many outcomes from the GFC, one of the greatest impacts was to homeownership and access to it. While homeownership rates have improved over the last five years, they remain below mid-2000s levels. Long-running production challenges continue to impact most people's ability to purchase housing, especially millennials. As of 2022, 39% of households under age 35 are homeowners. However, the trajectory of wealth for millennials lags behind previous generations. Data from the Board of Governors of the Federal Reserve System show that, in 2022, those with a median age of 34 owned 12% of the real estate value in the country (Figure 11). Previous generations had much higher shares. GenXers owned 19% when they were 34, while Baby Boomers held 32% of the real estate value at the same age (2.7 times more)

Housing demand through the past few years was primarily driven by millennials entering their 30s and baby boomers aging. The population growth experienced between 2010 and 2020 was led by the young and the old. The population increased by 16.7% for people aged between 30 and 34, and those over 65 increased by 40.6% from the previous decade. This older population accounted for 55.4% of the 22.7 million people added between 2010 and 2020, while those between 30 and 35 years of age accounted for 11.5% of the growth.

The rapid expansion of these two age groups increased the demand for affordable housing just as younger households are trying to enter the housing market, while those that are retiring and typically limited to a fixed income, are likely seeking to downsize.

The lack of opportunity for younger generations to achieve home ownership limits their future wealth creation. Young people are also eager to be homeowners.

Figure 11: Share of Real Estate Owned by Generation and Median Age

Source: Board of Governors of the Federal Reserve System, 2023

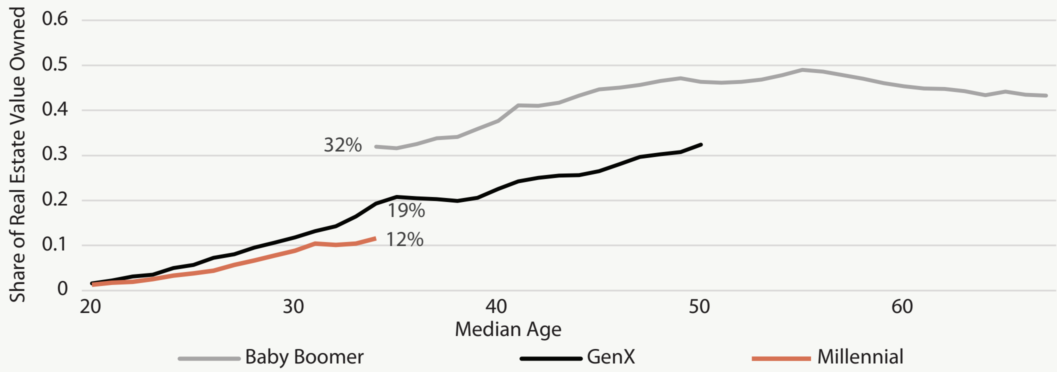
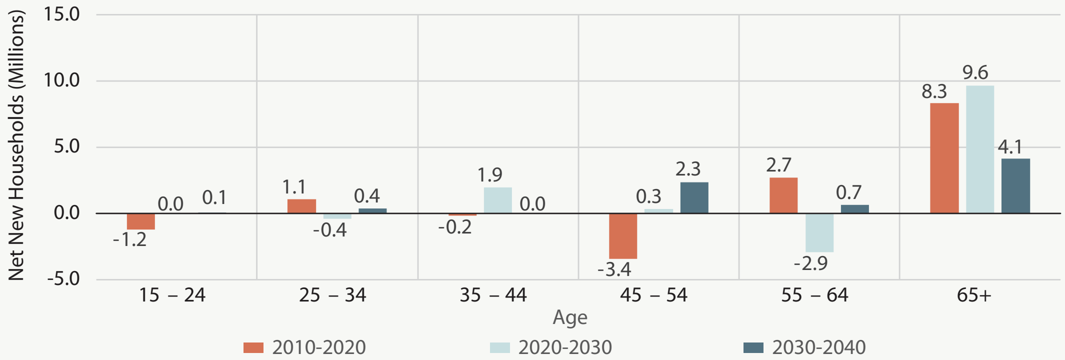


Figure 12: Percentage of Total Population Change by Decade and Age Cohort, U.S.

Source: Sources: Decennial censuses and Urban Institute projections.



About 16.1 million net new households will form between 2020 and 2040, with 13.8 million headed by someone 65 or older.

According to a Zonda's Millennial Survey of 1,000 young people, 98% of millennials want to become a homeowner at some point if they aren't already.[7]

Strong demand for housing is expected to continue for the rest of the decade, but it is expected to weaken starting in the 2030s. lower adult population growth overall is likely. However, certain age categories within the adult population are expected to experience accelerated growth. This is expected to cause a slight decline in the headship rate.

According to 2021 household projections by the Urban Institute, household growth averaged 12.4 million per decade from 1990-2010, and 7.3 million from 2010-2020. It is projected to rise to 8.5 million from 2020-2030, and 7.6 million from 2030-2040. The decline from 2030-2040 results from slowing U.S. population growth and lower headship rates for most age groups. About 16.1 million net new households will form between 2020 and 2040, with 13.8 million headed by someone 65 or older (Figure 12).

The same study also projects that a rise in household size will occur due to the increase of young adults living with their parents and more single adults living with roommates or relatives. These factors, along with the slow pace of population growth and a decrease in immigration, will contribute to a lower rate of household formation for the next twenty years.

The aging population presents a unique challenge for the housing market. Slowing household formation could ease, or even erase the housing shortage by the mid-2030s. Older homeowners, who've accumulated significant equity over their tenure, are expected to sell their existing homes. However, the challenge of transferring the homes to younger generations is critical to having a functional housing market for new buyers and providing the means for a fruitful retirement for the older generation. Innovations are needed for all to unlock the current stalemate in the housing market.

The Importance of Innovation

There is no silver bullet to building more housing.

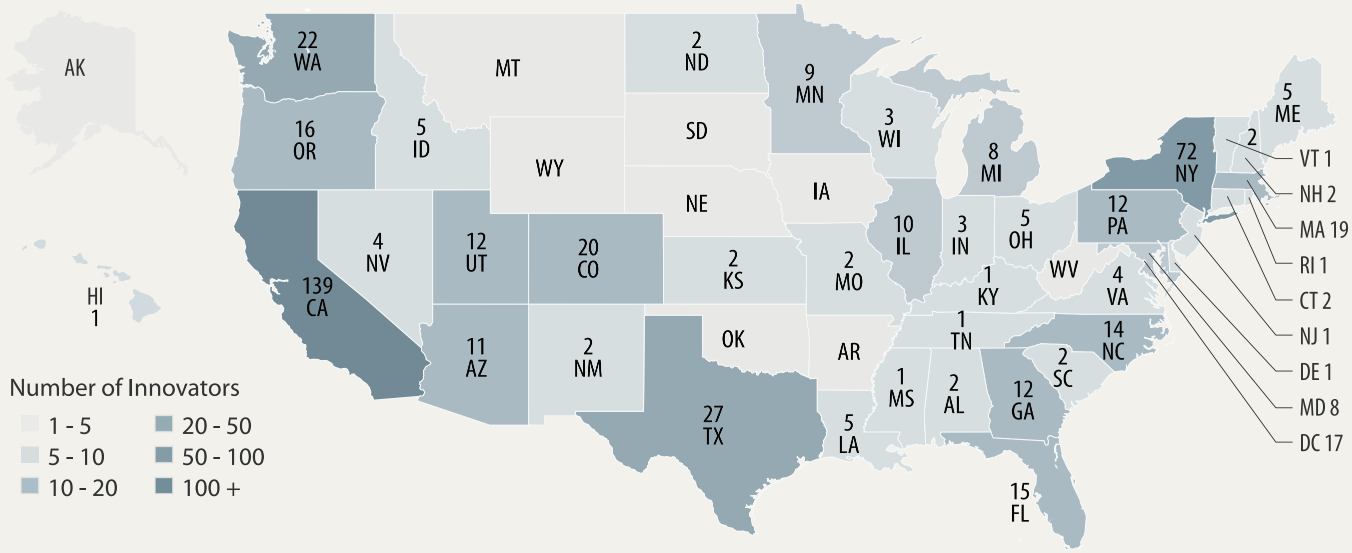
Innovation—seeking new and novel approaches to the country's housing challenges we face is a critical aspect of addressing these challenges. The country's housing challenges are complex, and longstanding issues that demand new and innovative solutions.

There are no silver bullets to building more housing, addressing significant and longstanding racial wealth gaps in housing outcomes, or enabling increased financial access for millions of renters, homebuyers, and homeowners. Dozens, if not hundreds, of new ideas need to work in tandem to effect meaningful change.

Over the past five years, through the Ivory Prize, Ivory Innovations has identified over 500 organizations in 42 states that have created innovative solutions in finance, construction and design, and public policy and regulatory reform through the Ivory Prize. These innovators come from the nonprofit, for-profit, and public sectors and provide high-impact solutions to the country's housing crisis.

The hundreds of solutions identified below illustrate the vibrancy of innovation in this sector and the potential for these ideas to help find new ways to address a crisis that is decades in the making.

Figure 13: Innovators by State, 2019-2023



Source: Ivory Innovations.

A Path Forward – What Innovations Show Us

The Ivory Prize for Housing Affordability focuses on solutions from three categories: finance, construction and design, and public policy and regulatory reform.

Not one solution, but a number of solutions have emerged in the battle of addressing America's affordable housing crisis.

The Ivory Prize for Housing Affordability focuses on solutions from three categories: (1) finance, (2) construction and design, and (3) public policy and regulatory reform.

The solutions in these categories work in tandem to support industry progress. Innovations in finance seek to support increased stability and access for renters, would-be homebuyers, and existing homeowners. This is especially important for populations who have been historically marginalized or targets of predatory financing. Innovations in construction and design seek to address building methods, labor issues, building methods, and environmental challenges. Innovators seek ways to build homes more quickly, more affordably, and more sustainably. And without innovations in public policy and regulatory reform, the roadblocks facing housing construction and innovations will persist. That said, policy alone does not generate outcomes; private sector organizations are equally important as they act on public sector innovations and facilitate progress after regulatory change.

The following sections focus on three important questions highlighting the importance of innovation and the challenges and possible solutions that have been identified through the Ivory Prize process.

1. How can we improve the Path for Rental Housing and Homeownership for those who have been left behind?
2. How can we Build Homes to improve Affordability, and How do we Responsibly Accommodate the next generation of growth?
3. How can we Act Now before it is too late to Achieve Meaningful Regulatory Reform to improve Housing Affordability?

Homeownership disparities exist among different racial and ethnic groups.

Q1: How can we improve the Path for Rental Housing and Homeownership for those who have been left behind?

THE CHALLENGE:

The United States is a country of homeownership. As of 2022, more Americans own homes than rent (66%). Over the past 60 years, the country's homeownership rate has stayed above 60%, peaking just under 70% in 2005 before the GFC.

Homeownership disparities exist among different racial and ethnic groups. In 2022, White Americans had the highest ownership rate with 75%, while only 45% of Black Americans were homeowners. Asian Americans have seen the most significant increase in homeownership rates in the last half of the decade (Figure 14).

Household wealth depends on homeownership access. Historical data from the Survey of Consumer Finances, compiled by the Federal Reserve Board, shows significant differences in

Figure 14: Quarterly Homeownership Rate by Racial and Ethnic Groups in the, 2000-2022, U.S.

Source: U.S. Census Bureau

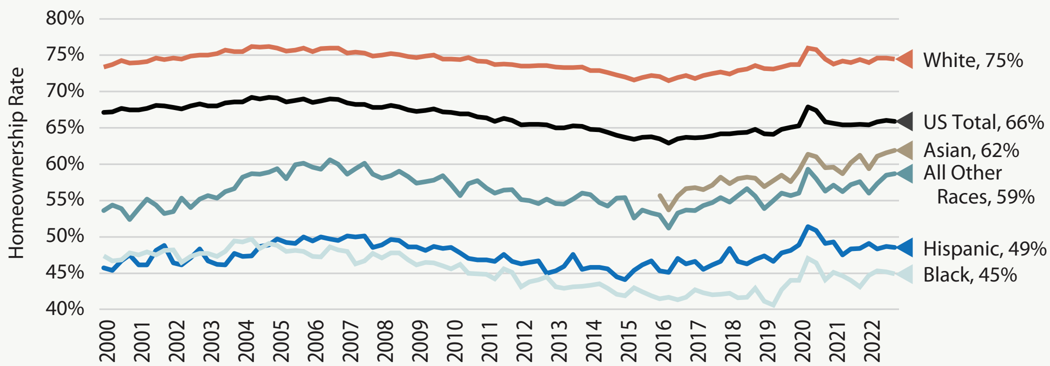


Figure 15: Median Net Wealth by Tenure, 1999 –2019, U.S.

Note: Data is inflation-adjusted to 2019 dollars.
Source: JCHS tabulations of the Federal Reserve Board, Surveys of Consumer Finances.

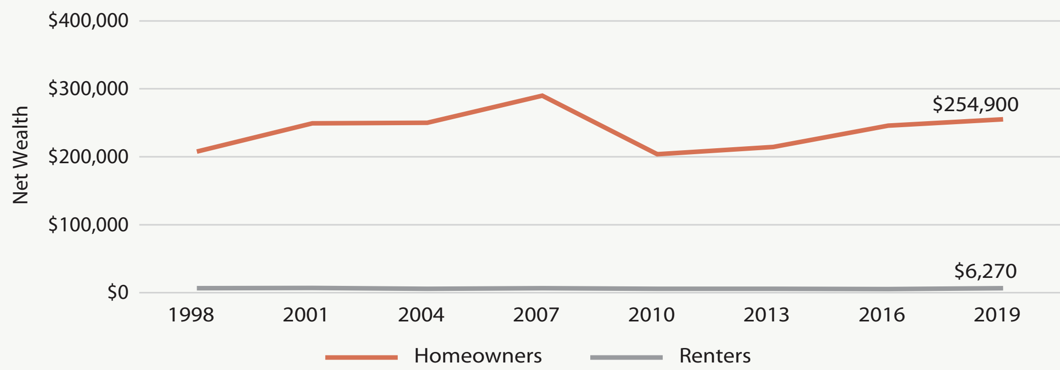
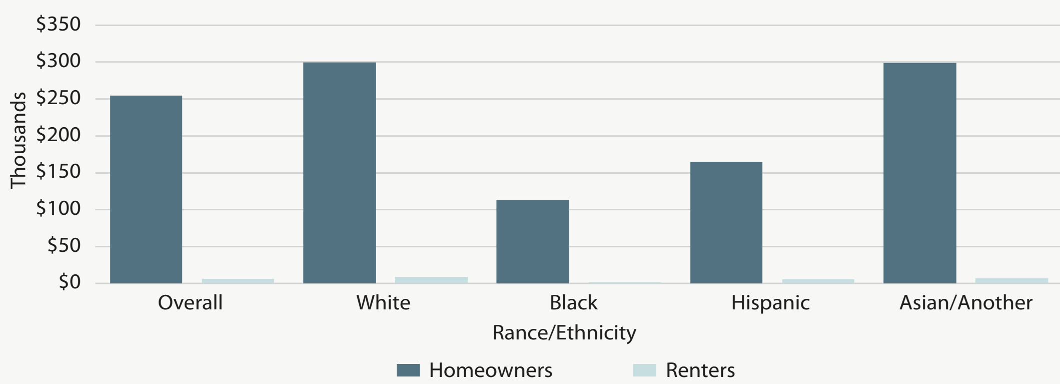


Figure 16: Median Net Wealth by Race/ Ethnicity and Tenure, U.S., 2019

Note: Data is inflation-adjusted to 2019 dollars.
Source: JCHS tabulations of the Federal Reserve Board, Surveys of Consumer Finances.



The contrast in wealth accumulation is further exacerbated when breaking out the data by race and ethnicity.

new wealth generation between renters and homeowners. In 1998, homeowner wealth was 31 times larger than renters (Figure 15). By 2019 it was 41 times larger. Homeowners' median wealth was approximately $255,000, and $6,300 for renters.

The contrast in wealth accumulation is further exacerbated when breaking out the data by race and ethnicity. In 2019, the median net worth of White homeowners was $300,000 (Figure 16), which was 2.7 times greater than the net worth of Black homeowners ($115,000) and 1.8 times greater than the wealth of Hispanic homeowners ($165,000). Similar racial and ethnic disparities exist for renters. The net worth of a White renter ($9,000) is approximately 4.9 times greater than Black renter ($1,800) and 1.5 times greater than a Hispanic renter ($ 5,800)

Housing demand is changing as racial and ethnic diversity becomes more prominent. Between 2010 and 2020, minority populations were a key driver of the country's population growth of nearly 23 million

Homeowners' median wealth was approximately $255,000, and $6,300 for renters.

Homeownership growth from 2020 to 2040 will primarily occur among people of color. Hispanic homeowners will experience the most growth with

4.8 million

new households.

people. The Hispanic population grew by almost 23%, the Asian population by 36%, and the Black population by 6%.

According to the 2021 Urban Institute report, 16.1 new households are expected between 2020 and 2040. Hispanic households are expected to increase by 8.6 million new households over the next two decades, followed by other races (mainly Asian) with 4.8 million new households, and Black households with 3.4 million new households. White households will decrease by 0.6 million over this period.

Additionally, the study also highlights that homeownership growth from 2020 to 2040 will primarily occur among people of color, particularly Hispanic homeowners. Overall, the study estimates that there will be 6.9 million new homeowner households during this period, a 9% increase. Hispanic homeowners will experience the most growth with 4.8 million new households, followed by other races (primarily Asian homeowners) with 2.7 million new households and Black homeowners with 1.2 million new households. However, the total number of White homeowners will decrease by 1.8 million. Innovation and change are not just important, but necessary, as the projected growth in households is headed by groups facing the greatest barriers to homeownership

People of color in the United States have historically faced significant disparities and barriers to achieving homeownership. In the early to mid-20th century, many lenders and real estate professionals engaged in a practice known as redlining, which involved systematically denying mortgage loans and other financial services to residents of certain neighborhoods based on their racial or ethnic makeup. This made it difficult for many people of color to access affordable housing and build intergenerational wealth through home ownership.

Even after outlawing the practice of redlining, many lenders continued to engage in discriminatory lending practices that made it harder for people of color to obtain mortgage loans. For example, some lenders charged higher interest rates or required larger down payments for borrowers of color, even when they had similar credit scores and financial profiles as White borrowers.

There is also evidence that people of color face appraisal bias, which can impact the value of their homes and their ability to access financing. Studies show that homes in predominantly White neighborhoods are often appraised at higher values than homes in predominantly non-white neighborhoods with similar features, even when considering other factors.[8]

Finally, people of color may face barriers to accessing information and resources that can help them navigate the home-buying process. This can include a lack of knowledge about available financing options or programs, limited access to real estate agents or other professionals who can help them find suitable homes, and a lack of trust in the financial and real estate industries due to historical and ongoing discrimination.

New tools are needed for the **next generation** of renters, homebuyers, and homeowners.

THE SOLUTIONS:

New tools are needed as the next generation of renters, homebuyers, and homeowners face current and future challenges related to the nation's housing market. Over the last five years the Ivory Prize for Housing Affordability has identified significant innovation and creativity to address these challenges. Table 1 lists some of the solutions related to improving rental housing and the path to homeownership for those that are "left behind". The table includes several of the Ivory Prize winners and Top 10 and Top 25 finalists from 2019–2023, showcasing the many innovative paths to addressing the challenges of housing affordability.

Table 1: Innovators in Finance

Renter Support and Rewards	Homeowner Education	Home as an Asset
• Bilt Rewards • ESUSU • Rhino • Roots Investment Community • Till	• Acts Housing • Digs • EarnUP	• Blackstar Stability • EasyKnock • Point • RenoFi • True Footage
Access to Homeownership	**Downpayment Assistance**	**New Models of Ownership and Living**
• Acts Housing • Black Homeownership Collaborative • Home Partners of America • HomeFundIt • Rocket Community Fund	• Dearfield Fund for Black Wealth • HomeFundIt • Landed • State of California: Dream for All Program	• Frolic Community • Impact Justice • ROC USA • Silvernest • Trust Neighborhoods

Renter Support and Rewards

Helping renters improve their financial position and credit scores both improves renter wellbeing and can help them achieve homeownership. **Esusu** is a digital platform that helps renters save and build credit. Users report their rent payments, which increases their credit score, and join online communities that help create accountability for saving. **Bilt Rewards** offers a loyalty program for renters to redeem points for perks, including converting points into cash for a down payment. **Roots Investment Community** provides monthly rebates to their renters and enables their participation in a real investment fund so they can grow their wealth through real estate even if they are not yet homeowners.

Access to Homeownership

Other innovators are building solutions that explicitly target paths to homeownership. The **Black Homeownership Collaborative** addresses the barriers that prevent black Americans from achieving homeownership, including discrimination in the housing market, lack of access to affordable financing, and historical patterns of segregation and disinvestment in black communities. **Acts Housing** purchases homes in need of repair or renovation and works with local lenders and investors to purchase these properties at a discount. Once acquired, Acts Housing invests in renovations and upgrades to make them suitable for low-income families at attainable prices. **Home Partners of America** has built an innovative financing and operating platform that has enabled thousands of households who currently are not mortgage-qualified to gain access to high-quality for-sale listed homes in high-quality communities by participating in their Lease-Purchase program.

Housing affordability issues often persist **even after the home purchase process.**

Down Payment Assistance

Downpayment assistance is a capital-intensive, but extremely meaningful, way to provide assistance to low-to-moderate income buyers who may have the income to afford a mortgage but do not have the generational wealth or savings to meet downpayment requirements. Many cities have established homebuyer assistance programs at the city-level. But the **California Dream for All Program** is the first state-wide program funded by public dollars that aims to increase homeownership through a shared appreciation loan fund. This effort may serve as a model to other states or cities considering their own housing needs and programs.

The scalability of down payment assistance and shared appreciation loan programs is aided significantly by private sector organizations that can draw on private capital and work across geographies. The **Dearfield Fund for Black Wealth** is helping philanthropic capital sources create down payment assistance programs that match the unique needs of certain communities, such as supporting more Black homebuyers in the metro Denver area. The model can be translated to any city or state where philanthropists are interested in supporting similar housing outcomes for an underrepresented homebuyer group. **Landed**, a financial technology startup, is equally well positioned to support the expansion of down payment assistance programs through providing schools and hospitals with the infrastructure to launch and manage their own down payment assistance programs to attract and retain staff.

Homeowner Education

Housing affordability issues often persist even after the home purchase process. Many first-time buyers or low-to-moderate income buyers may not have access to financial education resources that can help them maintain their property or more quickly build wealth. Acts Housing provides ongoing support to their homeowners, including access to financial coaching and home maintenance workshops. Both **Digs** and **EarnUp** help homeowners better understand their mortgage payments and enable prepayment on the mortgage principal, which can save thousands of dollars for a homeowner over the lifetime of their mortgage loan.

Home as an Asset

Most homeowners benefit as home values increase. Yet disparities exist across the country in how those values increase, and who enjoys the benefits. **True Footage** is addressing racial disparities in housing appraisal processes through technology and establishing a new community of appraisers to collect cleaner data and deliver a more standardized appraisal product. Improved data and informed appraisers can help to combat historic and systematic biases that hurt minority homeowners when they look to sell their homes. **Blackstar Stability** also helps address systemic issues in value creation by working with residents who have entered predatory loan products and converting those loans into conventional mortgages that enable the full benefits of true homeownership.

Most homeowners benefit as home values increase. Yet **disparities exist across the country** in how those values increase, and who enjoys the benefits.

While these are novel and scalable methods to support those who need financial support to access existing housing units, we must also look at ways to **increase housing supply** itself across the country.

Many homeowners may also consider renovating their home to add additional space, such as building an Accessory Dwelling Unit (ADU), or to accommodate life changes. Yet owners who most need financing for these types of renovations are often unable to access affordable financing options. **RenoFi** is a lending platform that specializes in financing home renovation projects by allowing customers to borrow against the after-renovation value of their home. This allows homeowners access to larger loans, thus enabling the construction of higher cost renovations such as building ADUs.

New Models of Homeownership and Living

Innovators are also focused on new models of ownership and living arrangements. **ROC USA** supports residents in manufactured home communities in forming resident-owned cooperatives (ROCs) to purchase the land underneath their homes from private landlords. By giving residents control over their land, ROC USA helps to ensure that these communities remain affordable and sustainable for years. **Trust Neighborhoods** similarly helps communities that are facing displacement pressures purchase buildings in their neighborhood and establish permanently affordable housing units through a mixed-income trust model. **Frolic Community** takes this one step further by enabling homeowners in communities facing displacement pressure because of upzoning changes to co-develop a single family home into a multi-unit co-operative building. The co-op structure enables homeowners to return to a newly constructed unit on their land while also creating net new units with low down payment amounts for the new co-op residents moving in. New types of living arrangements are also on the rise. **Silvernest** helps older adults find compatible housemates to share their homes in co-living arrangements. The platform aims to address the challenges of aging in place and housing affordability by offering a solution that benefits both homeowners and renters.

The organizations listed above are just a sampling of the many creative solutions that entrepreneurs and innovators are working on to address the financial challenges of housing affordability today. While these are novel and scalable methods to support those who need financial support to access existing housing units, we must also look at ways to increase housing supply itself across the country.

Labor shortages became a **persistent problem** for homebuilders across the nation as the housing market recovered.

Q2: How can we Build Homes to improve Affordability, and How do we Responsibly Accommodate the next generation of growth?

THE CHALLENGE:

While the housing shortage is expected to persist this decade and into the next decade, as population growth slows, the shortage will likely disappear into the late 2030s and into the 2040s. The structural demand of an aging population is also altering the need for different housing types.

Housing underproduction is expected to continue as fallout from the GFC set the construction industry behind. In 2022, total construction employment exceeded 7.6 million jobs from the peak in 2006. However, residential building construction jobs still lag the 2006 peak of 1.0 million by 9.4% (Figure 17).

While the loss of residential construction jobs was not an issue during the GFC's early recovery period, labor shortages became a persistent problem for homebuilders across the nation as the housing market recovered. The number of residential construction jobs per new unit started never recovered to its pre-GFC level (Figure 18). Prior to 2006, there were over two residential construction jobs for every one unit started. Over the last decade, jobs have remained below their GFC ratios.

The shortage of skilled workers makes it challenging to complete projects on time and increases labor costs. Furthermore, current global supply chain disruptions from the COVID-19 pandemic and trade disputes leads

Figure 17: Annual Average for Total and Residential Construction Employment, U.S.

Source: Bureau of Labor Statistics.
*2022 Average January-September.

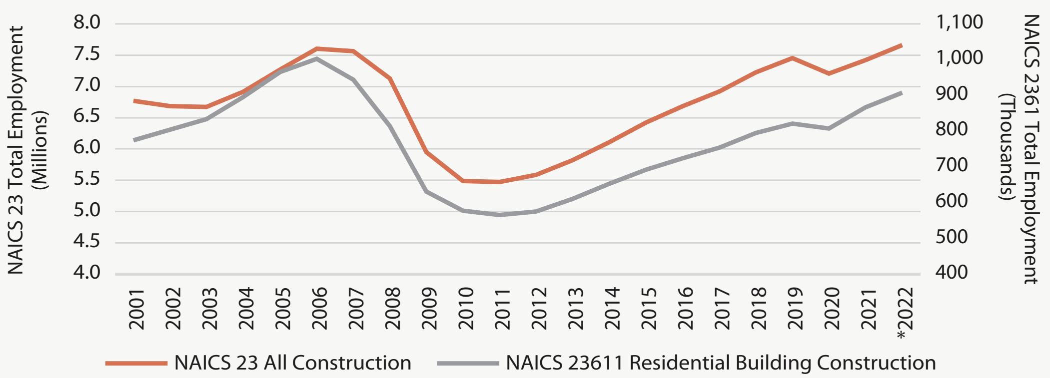


Figure 18: NAICS 23611 Residential Building Construction per New Housing Unit Started, 2001-2022 U.S.

*2022 Average January-September.
Source: Ivory Innovations analysis of Bureau of Labor Statistics Data

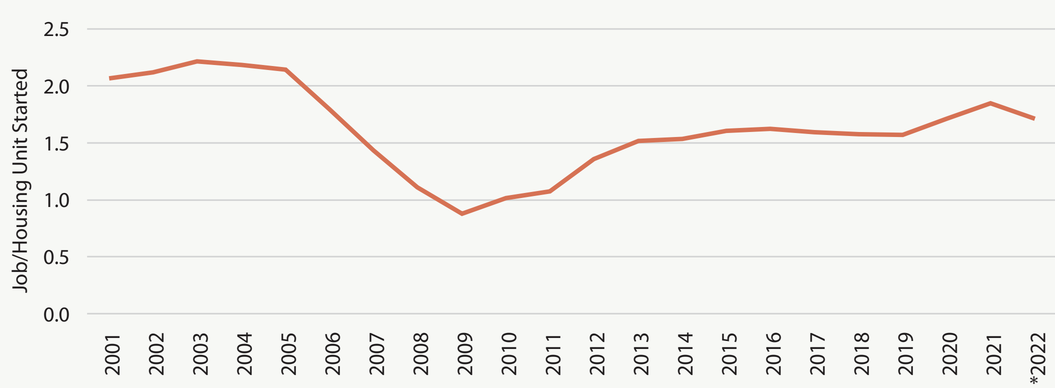


Figure 19: Historic Productivity Index for Residential Construction (1987=100), 1987-2021, U.S.

Source: Bureau of Labor Statistics.

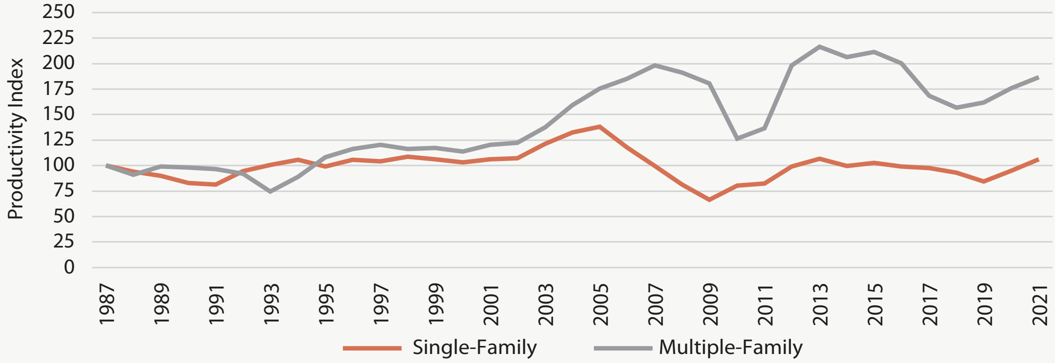
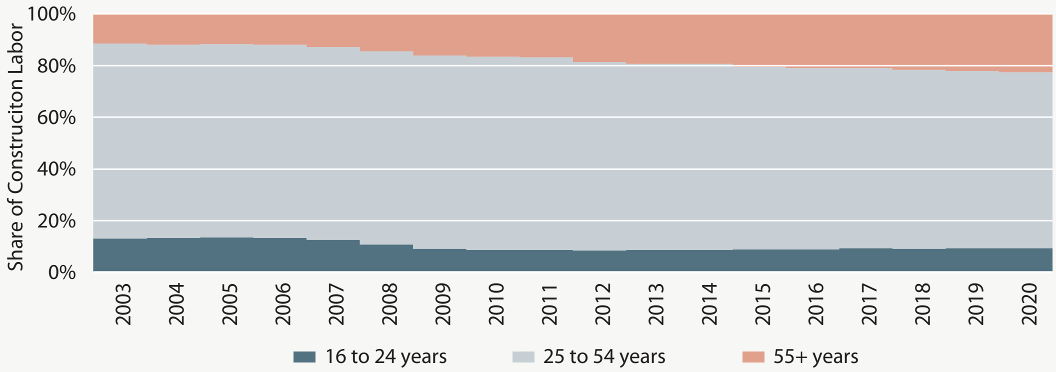


Figure 20: Share of Construction Labor by Age Category, 2003-2020, U.S.

Source: Bureau of Labor Statistics.



Single-family construction's productivity (output per hours worked) remains below GFC levels and just slightly above 1987 levels.

to material shortages and increases the costs of building materials such as lumber and steel, further complicating affordability.

Single-family construction productivity (output per hours worked) remains below GFC levels and just slightly above 1987's levels (Figure 19). Multi-family housing construction productivity, while experiencing some volatility, continues to see improvements overall.

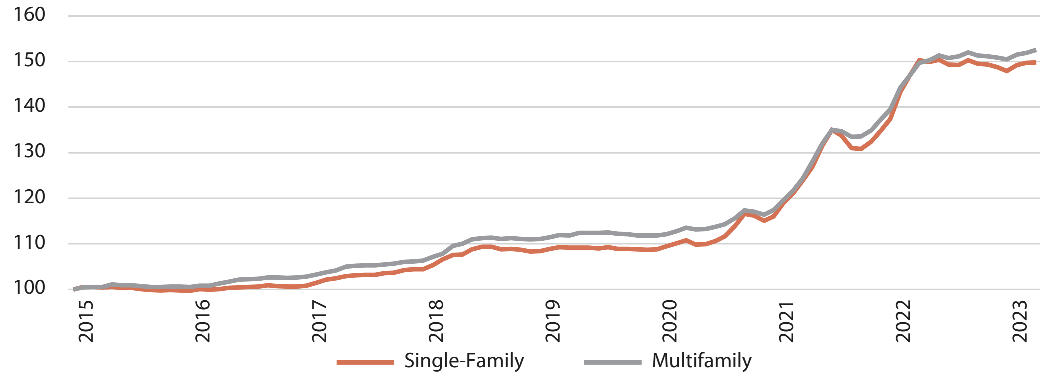
Part of the advantage of increases in multi-family construction productivity is that off-site factory building becomes a standard part of the building process. Despite the affordability advantages of off-site and factory-built construction, local zoning, subdivision ordinances, architectural design standards, and other requirements often limit the number of locations where this type of housing can be placed, especially for detached, single-family units . Cities can also impose additional onsite installation standards and other design requirements, which may not pertain to site-built units and, in some cases, prohibit the use of factory-built housing units altogether.

Additional challenges with labor include an aging workforce. The share of construction workers who are 55 and older nearly doubled from 11.5% in 2003 to 22.7% in 2020 (Figure 20). The lack of young people entering the construction labor force poses many challenges for the future of housing development, the greatest of which is the transfer of skills and training that the aging labor force possesses.

While labor issues continue to add to the challenging building environment, the increase in construction costs have further exacerbated the ability to deliver affordability to the market. The producer price index (PPI) for single-family and multifamily residential construction significantly increased over the last decade (Figure 21). Between 2014 and

Figure 21: Producer Price Index for Single-Family and Multifamily, January 2015- March 2023, U.S.

Note: Producer Price Index by Commodity: Inputs to Industries: Net Inputs to Single-Family and Multifamily Residential Construction, Goods Less Foods and Energy, Index Dec 2014=100, Monthly, Not Seasonally Adjusted. Source: Bureau of Labor Statistics



the increase in construction costs have **further exacerbated** the ability to deliver affordability to the market.

early 2020, the PPI increased 9.5% for single-family and 12.1% for multifamily residential construction. This increase accelerated during the COVID-19 pandemic. Between early 2020 and 2023, the PPI for single-family residential construction increased 37.4% and 36.2% for multifamily residential construction.

Another challenge for the construction industry is environmental and sustainability factors, which add complexity and cost to the building process. According to data from Federal Emergency Management Agency (FEMA), 17.6 million rental units (40% of the occupied rental stock) are located within areas at risk for coastal flooding, drought, earthquakes, and hurricanes.[9] These climate and environmental challenges can make it difficult for the construction industry to build more residential homes, particularly those that are affordable—impacting the stability of the economy and national housing markets.[10] Addressing these challenges will require a concerted effort from innovators, builders, and policymakers to create a more favorable environment for construction.

THE SOLUTIONS:

There are a number of solutions to these challenges already in the market, and many more enter the building cycle each year. These range from new building methods (such as off-site and panelized approaches) to new materials that emphasize sustainability. The organizations listed in Table 2 provide new ways of thinking about meeting the labor challenges in the construction industry, such as bringing new workers into the trades and creating new technologies that help existing builders re-think design, permitting, procurement, and training. The table also highlights development models designed for specific communities that share lessons learned from different areas around the country that are on the vanguard of new housing approaches.

Table 2: Innovators in Construction & Design

Building Methods

- Autovol
- Blokable
- BotBuilt
- Connect Homes
- Diamond Age
- FactoryOS
- ICON
- indieDwell
- Module
- oWow
- Panoramic Interests
- Vantem
- Volumetric Building Companies

Sustainability and Materials

- BamCore
- Baya Build
- Curtis & Ginsberg
- Forterra
- Plantd
- TimberHP
- T-stud

Labor Solutions

- Building Talent Foundation
- Home Builders Institute
- KairosXR
- ToughLeaf

Technology Platforms

- CoFi
- Madelon
- PermitFlow
- ProforMap

Community-Focused Models

- Build UP
- Eightvillage
- Home by Hand
- Inherent L3C
- Rural Studio
- Telluride Foundation
- The Kelsey
- Tiny Home Village Project

The innovations

identified over the last five years focus on innovations that have the potential to achieve lower costs, faster construction times, increases in sustainability, productivity, and improved community outcomes.

Building Methods

Innovative construction and design play a critical role in bringing down the cost of housing and improving building performance. The innovations identified over the last five years focus on innovations that have the potential to achieve lower costs, faster construction times, increases in sustainability, productivity, and improved community outcomes.

Off-site building methods are promising for affordability given reductions in total construction time while maintaining or increasing building performance and jobsite safety. **Volumetric Building Companies**, **FactoryOS**, **indieDwell**, **Autovol**, **Connect Homes**, and **Module** are companies that produce volumetric modular units which can be built to 90%+ completion in a factory, shipped to the jobsite, and installed – in significantly less time than it would take to build the same number of housing units with traditional onsite methods.

Diamond Age uses robotics to create a "factory on-site" and achieves time savings and cost reductions as their robotic arm can perform numerous tasks that would typically require skilled labor and manpower to accomplish.

Sustainability and Materials

Innovators are not only looking at new methods of building but also new types of materials that increase environmental sustainability and energy efficiency. **Plantd** makes durable carbon-negative building materials for homebuilders using fast-growing perennial grass, which fulfills their mission to rapidly remove atmospheric carbon dioxide in the field and lock it away within the structures of new homes. **BamCore** is similarly making new materials mainstream with their focus on panelized wall products built with timber bamboo.

Labor Solutions

Labor issues and the shortage of skilled residential construction workers exacerbated housing affordability issues. Shortages of skilled labor can increase build costs and extend build timelines. One solution is to bring more workers from non-traditional backgrounds into the industry. The **Home Builders Institute** has opened up several academies across the country to provide tuition-free training that take students with little-to-no building experience to tradespeople. The **Building Talent Foundation** similarly provides underrepresented students with resources, education, and mentorship to pursue careers in the industry. This might include scholarships, mentorship opportunities with existing professionals, and internships with architecture, engineering, or construction firms. Another approach to increasing the availability of skilled labor professionals is ensuring that existing, but smaller, firms have equal access to projects. **ToughLeaf's** software platform bridges the gap between quality subcontractors from underrepresented groups and builders or developers seeking to fill a labor shortage or seeking diverse talent to meet procurement requirements.

Labor issues and the shortage of skilled residential construction workers have exacerbated housing affordability issues.

Technology Platforms

Technology platforms can also streamline building processes, whether through more quickly identifying potential build sites or speeding the permitting process required to start construction. **Madelon's** platform can identify urban land parcels that could support new housing development and enables users to design and build that those units using off-site construction methods. **PermitFlow** streamlines the building permit application process for developers once they begin construction through software that automatically populates dozens of forms and streamlines corrections between the dozens of stakeholders who are part of the building process.

Some innovators are going above and beyond to focus on ways that new housing can benefit local communities or people within a given community.

Community Focused Models

Some innovators are beyond building new housing to focus on ways that new housing can benefit local communities or people within a given community. **BuildUP**, a school based project in Birmingham, Alabama, has developed a model that provides hands-on construction experience for its high school students and gives them the opportunity to rehabilitate and help their parents own homes in their own neighborhoods. **Inherent L3C**, in Chicago, is scaling a community-based model that supports workforce development, offsite construction, and homeownership for residents who may not otherwise have had stable employment or the opportunity to own a home. **The Kelsey**, an advocacy and development firm, has published a set of Housing Design Standards for Accessibility and Inclusion which reflect design operations and choices that include development strategies, building features, and operational policies that support accessibility and inclusion.

These innovators illustrate the potential for new solutions to bring thoughtful and much-needed change to how we build, where we build, and whom we build for as we address the housing crisis. To truly address the housing needs of the nation at scale, we turn to policy and regulatory approaches that underpin the fundamentals of unlocking new supply.

Housing challenges **cannot be solved without** regulatory reform.

Q3: How can we Act now before it is too late to Achieve Meaningful Regulatory Reform to Improve Housing Affordability?

THE CHALLENGE:

The housing shortage highlights the importance of regulation and its impacts on housing supply and affordability. From environmentalist, to social justice advocates, to highlighting the discriminatory roots of zoning, the coalition to overcome regulatory obstacles has grown.

It also makes clear that housing challenges cannot be solved without regulatory reform. Political leadership is at the forefront of addressing the issue, whether at the local or state level. Taking action before affordability worsens is vital to getting ahead of the problem. For example, states like California and Oregon legalized denser development in single-family zones. However, will other states with lesser housing cost burdens follow suit?

Many municipalities have also implemented regulations that make it difficult and/or expensive to build housing which is affordable, such as minimum lot size requirements, parking minimums, and lengthy approval processes to issue permits.

Author Jenny Schuetz's book "Fixer-Upper: How to Repair America's Broken Housing System" identifies different regulatory issues contributing to the affordability crisis.[11] Land-use regulations such as zoning, implemented by municipalities, limit the type and intensity of land use and result in fewer housing units. Additionally, federal, state, and local level policies can shape housing patterns and are often prioritized to benefit current homeowners. This can lead to restrictive zoning measures that limit the housing supply.

Many municipalities have also implemented regulations that make it difficult and/or expensive to build housing which is affordable, such as minimum lot size requirements, parking minimums, and lengthy approval processes to issue permits.

The dictation of minimum lot size requirements have a significant impact on affordability. Over the last decade land prices have expanded their share of the total home price increasing from 36% in 2012 to 55% by 2021. Price appreciation for land outpaced the price of a home. According to data from FHFA, analyzed by the American Enterprise Institute, between 2012 and 2021, land prices increased by approximately 196% while home prices appreciated 92% (Figure 22). This further indicates the importance of zoning reform necessary to limit land price impacts on housing.

While zoning is a major driver of regulatory costs, it's not alone. Over the last decade, NAHB has followed the cost of regulation on new single-family construction. In 2021, the cost of regulation accounted for 23.8% of the

Figure 22: Land Prices and Home Price Appreciation Index, US, (2012=100), 2012-2021, U.S.

Source: American Enterprise Institute analysis of FHFA data

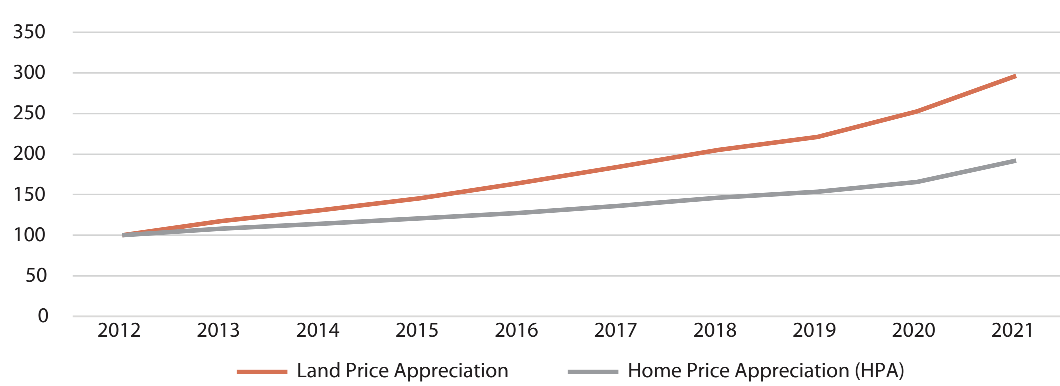
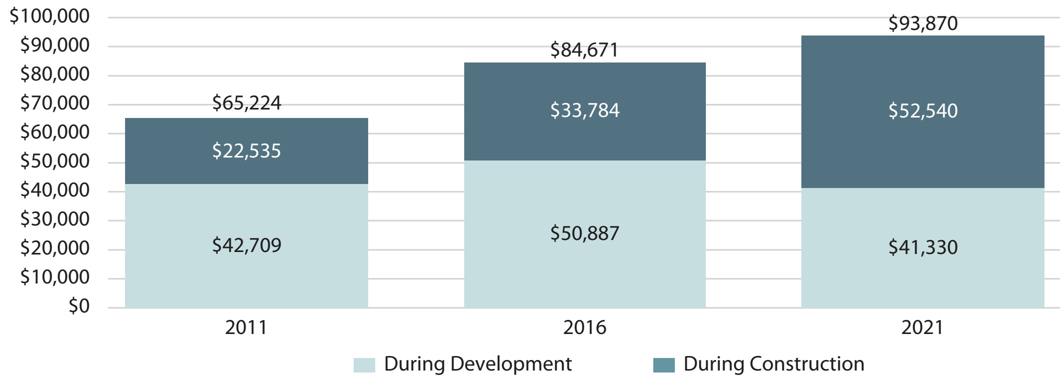


Figure 23: Average Cost of Regulation in a New Single-Family Home and Stage of Development, 2011-2021, U.S.

Source: NAHB



In 2021, the cost of regulation accounted for 23.8% of the price of a new home or $93,870.

price of a new home or $93,870 (Figure 23). This is an increase of 10.9% from 2016 and 43.9% from 2011. The data is further categorized by two phases of the building process. First, regulatory costs are incurred during development of the land, then further costs are added during the construction of the housing unit.

Between 2011 and 2016, development-related regulatory costs increased by 19.1% from $42,709 to $50,887, while construction-related regulatory costs rose by 49.8% from $22,535 to $33,784. The total regulatory cost of permits during this period increased by 29.7% from $65,224 to $84,671. However, between 2016 and 2021, development-related regulatory costs dropped by 18.9% to $41,330, while construction-related costs increased by 55.3% to $52,540. The total regulatory cost of permits increased by 11.1% to $93,870. These changes in regulatory costs have significant implications for builders and developers, highlighting the challenges they face in balancing profitability with regulatory requirement compliance.

The largest contributor to regulatory costs is the changes to building codes over the last decade. These changes account for 25.7% of the $93,870 regulation-associated costs in 2021 (Figure 24). Removing building code enhancements can be viewed as a risk to building safety and resilience. However, it may be worth considering alternative ways to achieve performance goals, such as utilizing lower-cost materials, products, and practices, instead of continuing to add to existing codes. This can also have impacts in reducing architectural requirements that go beyond code, which, in 2021 accounted for $10,794, or, 11.5% of the total regulatory costs.

There are opportunities to revise all aspects of the construction regulatory process to increase the supply of affordable housing.

According to an analysis by the Harvard Joint Center for Housing Studies, the United States lost nearly 3.8 million (28.4%) low-rent housing units between 2011 and 2019. The loss was primarily driven by western states (Figure 25). Texas, in particular, lost 49% of its low-rent stock, which amounted to over 600,000 units, the highest in the nation. Colorado ranked the highest, losing nearly 52% of low-rent housing stock.

Innovative public policy and impactful regulatory reforms are needed to address the full scope of the housing crisis in the United States. Where we build, how we build, and how families afford housing are decisions deeply shaped by political decisions at many different levels of government including local zoning maps, state and local building regulations, and federal and state financing programs and requirements.

the United States lost nearly 3.8 million (28.4%) low-rent housing units between 2011 and 2019.

Figure 24: Components of the Cost of Regulation in the Price of an Average New Home, US, 2021

Source: NAHB

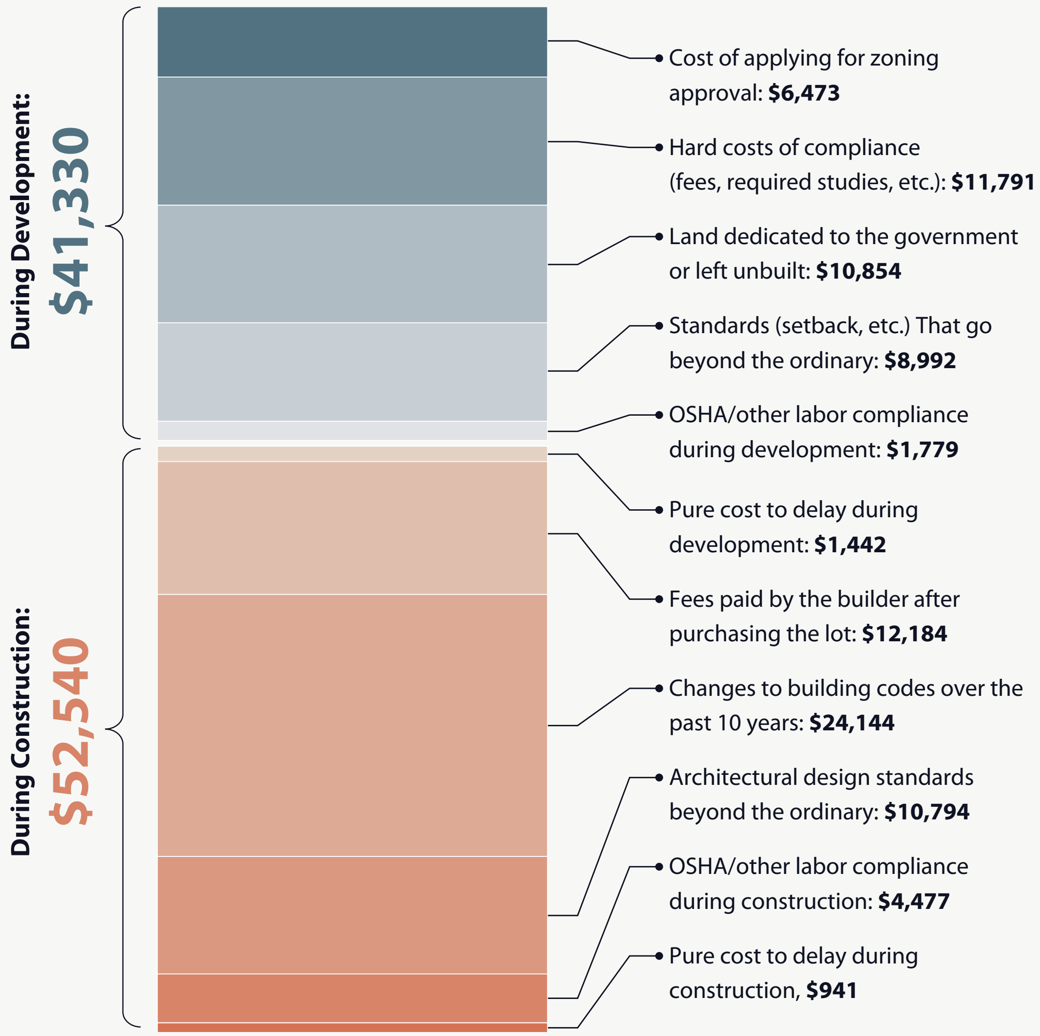
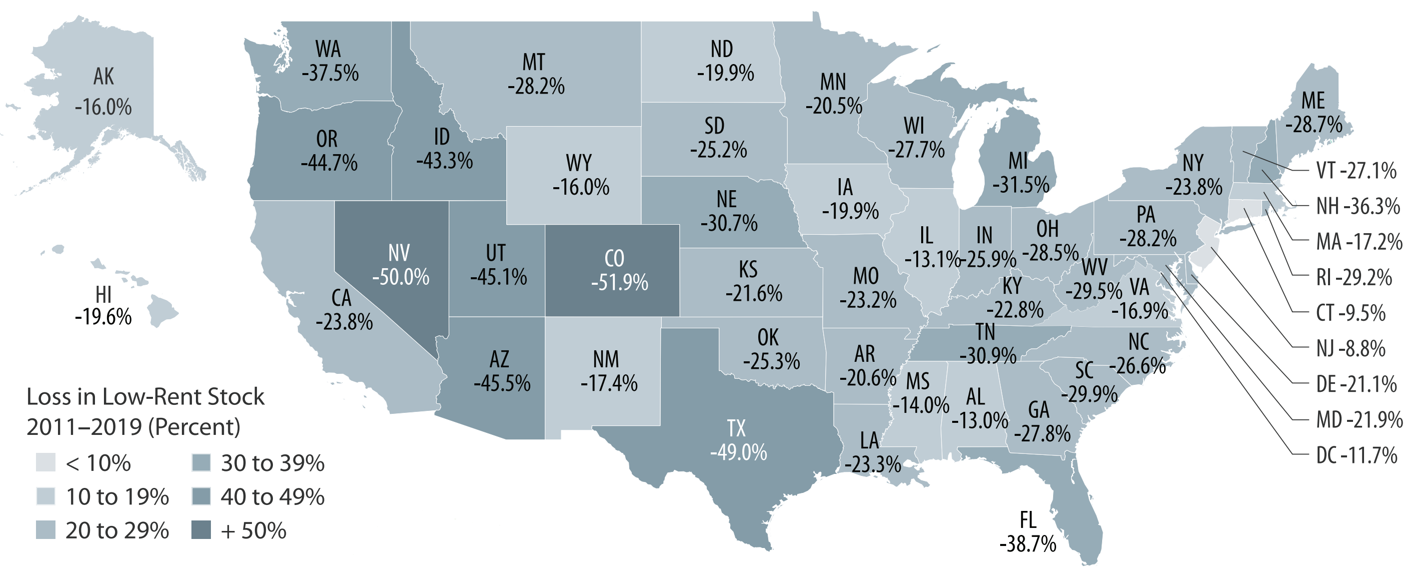


Figure 25: Percent Loss in Low-Rent Stock, 2011–2019, by State



Notes: Low-rent units have contract rents under $600. Rents are inflated to 2019 dollars using the CPI-U Less Shelter. No-cash units are excluded.
Source: Harvard Joint Center for Housing Studies tabulations of U.S. Census Bureau, American Community Survey 1-Year Estimates.

We must acknowledge that **policy change alone** does not implicitly dictate outcomes; simply changing a law does not automatically create more housing units overnight.

THE SOLUTIONS:

Political change is needed at all levels of government to address not only the symptoms, but the causes of the housing shortage and affordability crisis in the United States. But we must acknowledge that policy change alone does not implicitly dictate outcomes; simply changing a law does not automatically create more housing units overnight. Instead, changes in policy and regulation often require action by the private sector to realize outcomes. The solutions listed in Table 3 highlight the importance of entrepreneurs in creating positive housing outcomes following regulatory action.

These private sector approaches include efforts to make zoning changes more accessible to the public, developers, and organizations, building on legislative efforts to increase supply and accelerate timelines. There are also specific efforts across the country to increase political support for ADUs and to bolster support networks and coordination for people experiencing homelessness or those facing evictions.

Together, these solutions from the Ivory Prize winners and finalists offer a set of examples that show how both public and private sector innovation can, in tandem, make a great difference in finding new ways to address the root causes of our housing challenges.

Table 3: Innovators in Policy & Regulatory Reform

Zoning and Land Use

- ARX
- Buncombe County
- City of Minneapolis
- DeepBlocks
- Desegregate CT
- National Zoning Atlas
- State of Oregon
- Symbium
- University of Miami: LAND Platform

Increasing or Improving Affordable Supply

- Acts Housing
- Build UP
- CA YIMBY
- Century Partners
- City of Austin
- CoUrbanize
- DASH Fund
- Hello Housing
- Housing Impact Fund
- Housing Navigator Massachusetts
- Next Step
- Rocket Community Fund: Make It Home Program

Accelerating Permitting and Build Bimelines

- ARX
- Builders Patch
- City of Cambridge
- PermitFlow
- ProforMap

ADUs

- Casita Coalition
- City of Boston
- City of Pasadena
- Community First! Village
- eightvillage
- RenoFi
- Symbium
- The Alley Flat Initiative
- Tiny Home Village Project

Homelessness and Evictions

- Community First! Village
- Community Solutions
- DC Flex
- Hello Landlord
- HomeStart
- Housing Connector
- Impact Justice: The Homecoming Project
- LA Room & Board
- Outreach Grid

Innovators have flocked to create solutions that support the housing increases allowed by these legislative changes.

Zoning and Land Use

Zoning and land use are one of the most discussed types of regulatory reform in housing conversations. Both the **State of Oregon** and the **City of Minneapolis** were lauded for their upzoning policies, passed in 2019, that respectively eliminated single-family zoning and increased density by allowing for the construction of up to three units on any residential lot. These policy changes are necessary and important – and have spurred similar successful policy efforts in other cities and states, such as Seattle, California, and Maine.

Innovators have flocked to create solutions that support the housing increases allowed by these legislative changes. Both **Symbium** and **ARX** illustrate the developable potential of parcels across a city, including whether it's possible to build additional housing units. This type of data availability makes policy changes actionable by translating regulatory changes into useable insights that homeowners, developers, or construction professionals might need. Innovators and groups like the **National Zoning Atlas** are also creating tools that can inform future zoning and land use decision making. In digitizing, demystifying, & democratizing ~30,000 U.S. zoning codes, the National Zoning Atlas is creating a powerful, data-backed advocacy tool that has spurred upzoning efforts in places as diverse as Connecticut and Montana.

Increasing or Improving Affordable Supply

Some policy changes explicitly promote affordable, income-restricted units. The **City of Austin's Affordability Unlocked Development Bonus Program** waives or modifies some development restrictions in exchange for providing low and moderate-income housing. Public efforts like this in many states may be aided by private sector efforts such as advocacy groups like **CA YIMBY** that advocate for increased housing supply or platforms like **CoUrbanize** that help gather public feedback on specific residential developments.

Once new affordable units are built, platforms like Housing Navigator Massachusetts [in bold] can help many key stakeholders -- including governments, social service providers, case managers, and residents themselves -- identify available housing units in a given neighborhood or show the lack of available affordable options in the most sought-after places.

Accelerating Permitting and Build Timelines

The **City of Cambridge's** 100% Affordable Housing Overlay promotes denser affordable housing development by nonprofit developers. The overlay is designed to help affordable housing developers create new, permanently affordable homes more quickly, more cost-effectively, and in areas of the city where there are currently fewer affordable housing opportunities. Cambridge achieves this goal by streamlining the approval and permitting process for housing that is designated as 100% affordable, providing a clear incentive to market and nonprofit developers who are looking to avoid lengthy permitting delays.

Governments are not only focused on changing regulations to allow new types of housing to be built, but also **creating financing programs** that incentivize homeowners to build them.

This type of policy innovation can be bolstered by technology solutions, such as those from PermitFlow and BuildersPatch, which help to accelerate the permitting and financing processes for builders. **PermitFlow's** "TurboTax" approach to permitting makes it simple for developers to submit and adjust permit applications based on Building Department feedback, while **BuildersPatch** software helps developers line up financing for complex capital stacks, such as those often found in financing income-restricted affordable housing projects.

■ *ADU's*

Another area of policy reform has focused on legalizing and enabling the construction of Accessory Dwelling Units (or ADUs) by existing homeowners. Governments are not only focused on changing regulations to allow new types of housing to be built, but also creating financing programs that incentivize homeowners to build them. Both the **City of Boston** and the **City of Pasadena** created such financing programs to provide extremely low interest loans (0-1% interest rates) to incentivize the construction of new ADUs that, in Pasadena, could counted on as new rental housing for housing voucher recipients.

Yet such public efforts are necessarily limited in scope by city finances – no city has unlimited funds, and those funds are only available to residents living within the bounds of a given city. Private sector actors are unencumbered by such boundaries. **RenoFi** underwrites after-renovation home values and allows borrowers to borrow against that value, rather than borrowing only against the value of an existing owner's equity. This approach has allowed RenoFi to become the biggest financier of ADUs in the country.

■ *Homelessness and Evictions*

One of the most visible reflections of the housing crisis in the United States is in the growing population of people experiencing homelessness or facing housing instability due to eviction. **DC Flex**, a pilot program launched by the Department of Housing Services in Washington DC, provided a rent subsidy program which gave low-income, working families $7,200 to spend per year on rent for four years. While innovative approaches like this exist in the public sector to tackle the pressing issue of homelessness and housing instability, most of the innovations we have seen are private sector organizations supporting public sector goals.

Both **Outreach Grid** and the **Community Solutions: Built for Zero Program** help support increased and effective coordination between public agencies, nonprofits, and organizations that work with individuals experiencing homelessness. Although coordination issues may seem simple to fix, the success of both organizations' work with dozens of cities across the country suggests that these issues are not easy for public entities to fix themselves. Rather, private sector solutions fill a gap that the public sector has been unable to solve on its own.

For many parts of the housing ecosystem, regulatory and public policy change is the start of a process to build, create, or enable access to more housing that is affordable – but it does not guarantee those outcomes. Just as policy change is essential, so are the private sector organizations which help realize that change over time.

A Call to Action

There is
incredible potential
for bold, innovative ideas and entrepreneurs to make an impact in this industry and for the country.

The solutions highlighted in this report illustrate the breadth and depth of opportunity for new ideas and bold entrepreneurs to address the housing crisis. The housing shortage will persist for the remainder of the decade and beyond, and new approaches are an essential part of addressing that challenge.

Affordability will remain a challenge even as an aging population will slow growth, and household formations into the 2030s and 2040s are expected to weaken. Most future housing demand will be from minorities and seniors seeking to modify their housing situation. These are two populations that face significant housing difficulties in today's market. As housing needs for these groups grow and evolve, we need fresh new approaches that improve housing outcomes. While we have identified some wonderful solutions, more are needed to address the full scale and scope of this growing challenge.

Housing affordability, accessibility, and attainability are critical to our nation's future. There is incredible potential for bold, innovative ideas and entrepreneurs to make an impact in this industry and for the country. Whether in construction and design, finance, or policy and regulatory reform, there are innovators striving to make change in every part of the housing market. Yet the scale of the issues we face means existing solutions are only the tip of the iceberg. There is so much untapped opportunity to make a difference in this space.

Our mission at Ivory Innovations and with the Ivory Prize for Housing Affordability is to catalyze innovation in housing affordability.

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We hope you will join us on this journey.

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Endnotes

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