

Methodologies, Data Sources, and Case Studies

HR&A Advisors Methodology and Data Sources

Estimating Future Housing Demand

Growth Projections and Housing Production Targets

HR&A used a jobs-based population projection to estimate the projected population in 2034. Using the jobs-based projections provides a more aggressive population forecast. HR&A calculated the number of non-workers for each sex and age bucket using LFPR. The income distributions of workers come from projections of Bureau of Labor Statistics (BLS) Quarterly Census Employment & Wages (QCEW) county employment data, explained in detail below.

Industry Projections

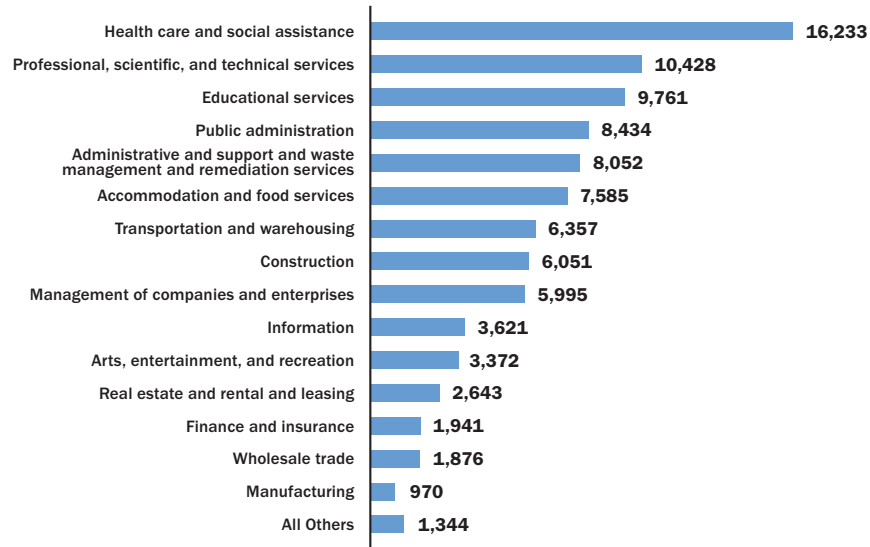
The QCEW provides annual county employment data at the 2-6 digit NAICS (North American Industry Classification System) industry level. HR&A forecasts the annual employment for each NAICS industry sector using an exponential smoothing model. To capture both long-term and short-term trends in employment, we perform the forecasts using 5, 10, and 15 years of historical data before taking the average of the three forecasts to create a single forecast. Additionally, both BLS and states provide 10-year industry projections at the national and state level respectively. To account for both national and state trends in long-term industry employment, we adjust our industry forecast using the annualized long-term changes in industry employment from BLS and the state.³

To translate industry employment projections to demographic (sex, age, income) distributions, we first convert industry jobs to occupations using another BLS dataset. The BLS Employment Projections (EP) program⁴ provides the national employment matrix (EP matrix), which contains the long-term Standard Occupational Classification (SOC) occupation distributions of each industry nationally. The EP matrix is a 10-year projection and EP updates this matrix annually (i.e. the 2023 version of the matrix has data for 2023 and 2033). Merging the EP matrix and industry job projections produces job projections at the industry and occupation level. BLS publishes occupation wages at the metropolitan and nonmetropolitan area level, which we use as a measure of personal income. Finally, we distribute the occupation projections into sex and age groups using occupational demographic distributions from Lightcast.

The next stage of the process is to distribute the workers and non-workers into demographic cohorts defined by sex, age, personal income (wages), household income, household size and tenure (owner or renter). The distributions of the cohorts come from historic Census microdata (IPUMS).

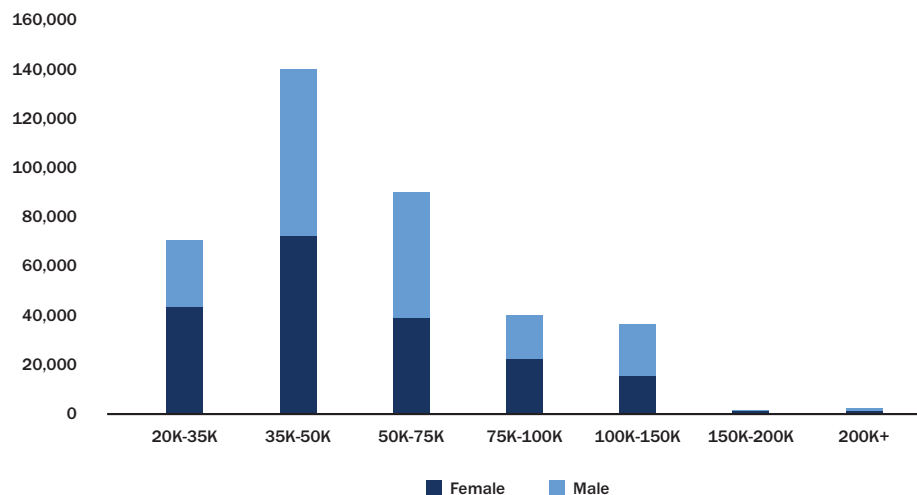
Taking the IPUMS data as is constitutes the *All Households* scenario, which focuses on the historic demand of tenure and household size. This demographic profile of this scenario more closely resembles households forming from a natural increase (net births) in the population. HR&A also runs another scenario, *Recent Movers*, that limits IPUMS to just individuals who moved to the geography within the last 24 months. Compared to All Households, this scenario focuses on households forming through net migration. This scenario tends to skew towards smaller households at lower incomes. The final household demand prediction is a blend of these two scenarios. HR&A applied an average household size of 2.3 to estimate to households from population projects.

Figure 30: Projected Job Growth by Industry, 2024-2034



Source: Bureau of Labor Statistics (BLS) Quarterly Census Employment & Wages (QCEW) County Employment Data

Figure 31: Projected Distribution of Workers by Gender and Wages, 2034



Source: Bureau of Labor Statistics (BLS) Quarterly Census Employment & Wages (QCEW) County Employment Data, LFPR

Davidson County is estimated to have a total population of about 892,000 people by 2034, an addition of about 175,000 people. Using an average household size of 2.3 people per household, **Davidson County is projected to have about 388,000 total households in 2034, an increase of about 85,300 households.**

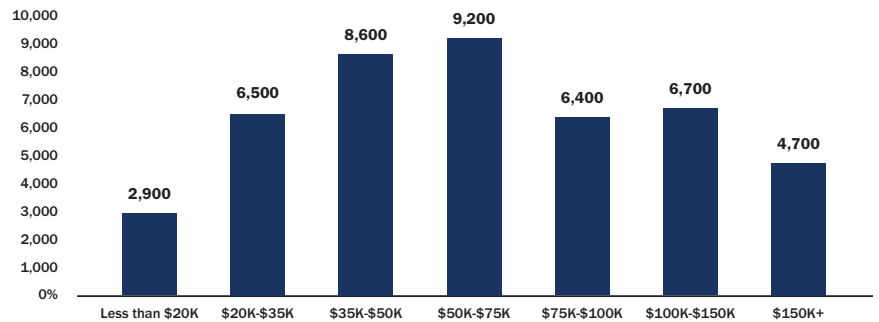
Overall Housing Projections

HR&A applied a 7% vacancy target to household projections to arrive at a total production target of 91,288 total net new homes by 2034. This determined HR&A's production target of about 9,000 homes annually (rounded), or 45,000 homes by 2030. The tenure, household size, household income and corresponding affordability is based on the IPUMS distribution described above.

Affordable Housing Projections

The affordable housing demand is based on an analysis of the demand for affordable rental housing compared to the existing inventory and recent deliveries of rental housing by AMI level. The existing inventory accounts for both restricted and unrestricted rental units. The cumulative rental housing gap compares the inventory of rental homes by rent to the number of renter households that can afford this rent based on their total household income.

Figure 32: Total Homes Demanded by Income (2030)

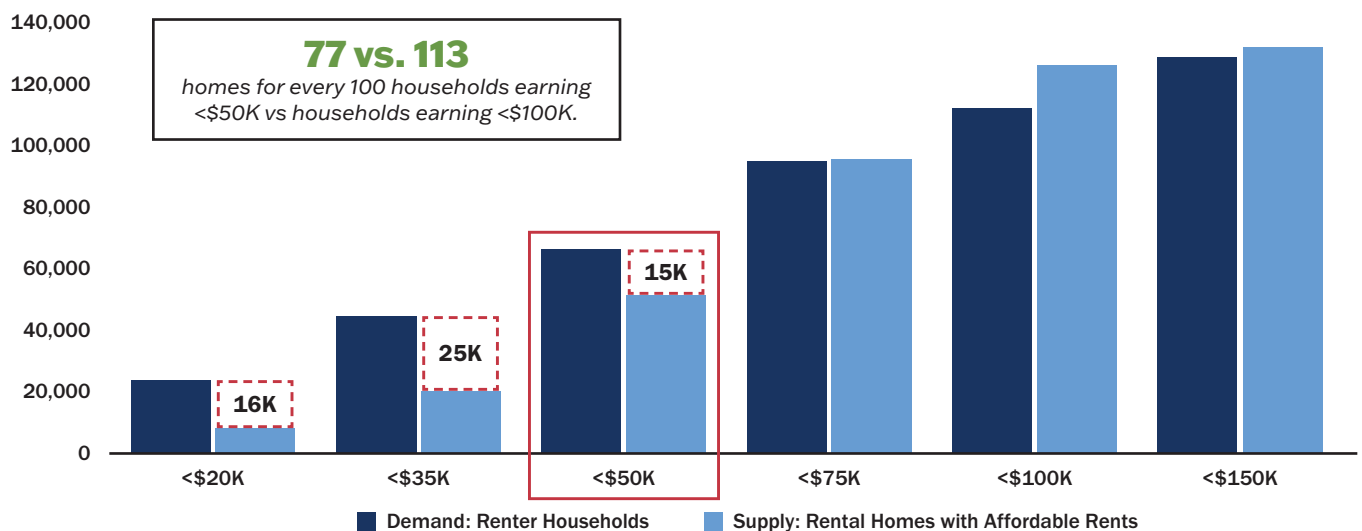


Source: HR&A Analysis

There are 15,300 more households earning \$50,000 or less a year (50% AMI) than there are homes affordable to them. Higher income households rent homes that would otherwise be available and affordable to lower income households. As a result, when looked at cumulatively, the rental housing supply gap reaches households making up to \$50k. There are about 77 homes for every 100 households earning less than \$50k in Davidson County, as opposed to 113 homes for every 100 households earning less than \$100k. This informed the target goal of 50% AMI.

HR&A also considered disparate impacts for different renter cohorts. Family renter households making less

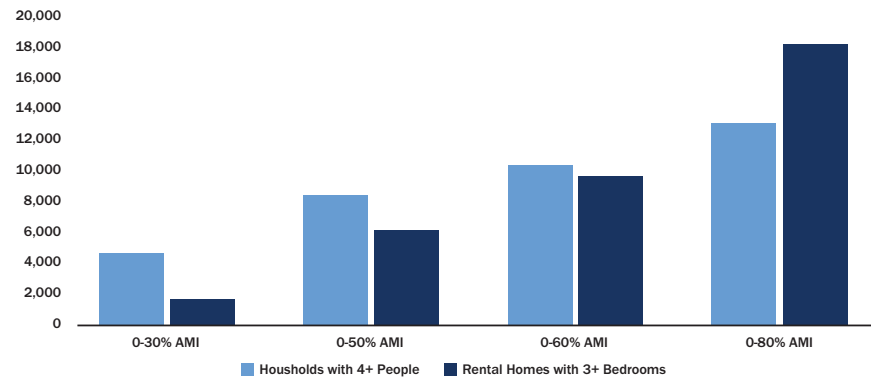
Figure 33: Davidson County Cumulative Rental Housing Gap (2022)



Source: ACS 5-Year Estimates (2022); PUMS (2022)

than 60% AMI, and particularly renter households with 4 or more people making less than 50% AMI, face a shortage in adequately sized affordable rental units (rental homes with 3 or more bedrooms). The demand for 3-bedroom rental units especially is squeezed when taking into account the number of smaller renter households – 2 and 3 people – that are currently “over-housed” and renting larger units because they can afford to. This increases the competition for larger renter households making less than 50% AMI.

Figure 34: Supply and Demand for Rental Homes with 3+ Bedrooms by AMI Level (2022)



Source: PUMS (2022)

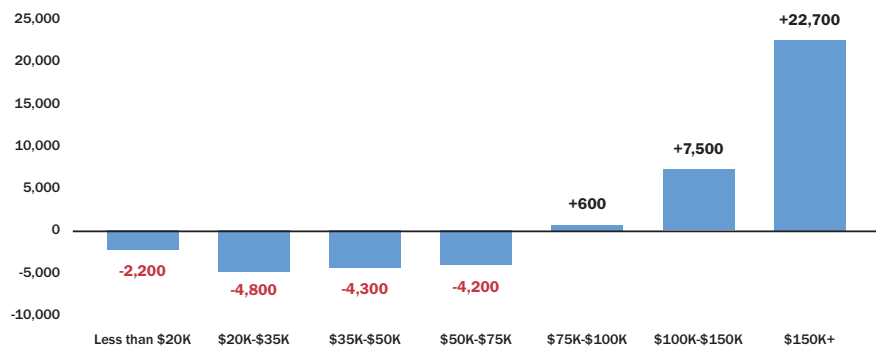
Currently, Nashville has approximately 20,000 deed-restricted affordable homes.¹ Creating 10,000 new deed-restricted homes by 2030, and another 10,000 by the end of 2035, will double that supply, meet the existing deficit of deed-restricted affordable homes and add additional homes to account for growing need.

Homeownership Projections

HR&A analyzed changes in affordability for homeowners across the income spectrum by considering both changes in cost burden and changes in the distribution of home sales. Both of these analyses indicate that homeownership is increasingly out of reach.

Homeownership in Davidson County is **increasingly inaccessible to households making less than \$100k annually**. The net decline in households below this income level can be explained both by homeowners leaving the county and a rise in incomes for some.

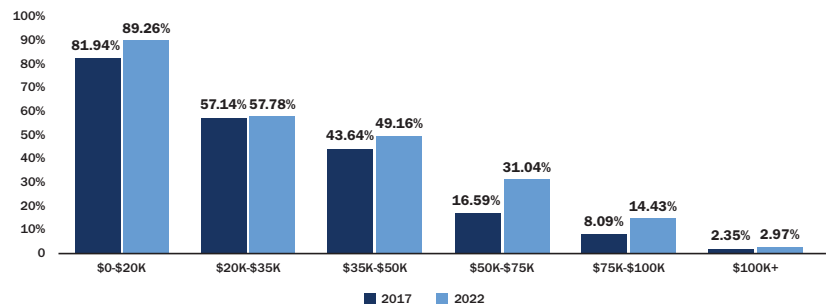
Figure 35: Change in owner Occupied Households (2017-2022)



Source: ACS 5-year estimates (2017, 2022)

Cost burden rates for homeowners in Davidson County are increasing across all income levels. Owner households earning between \$50k and \$100k are experiencing the greatest increases.

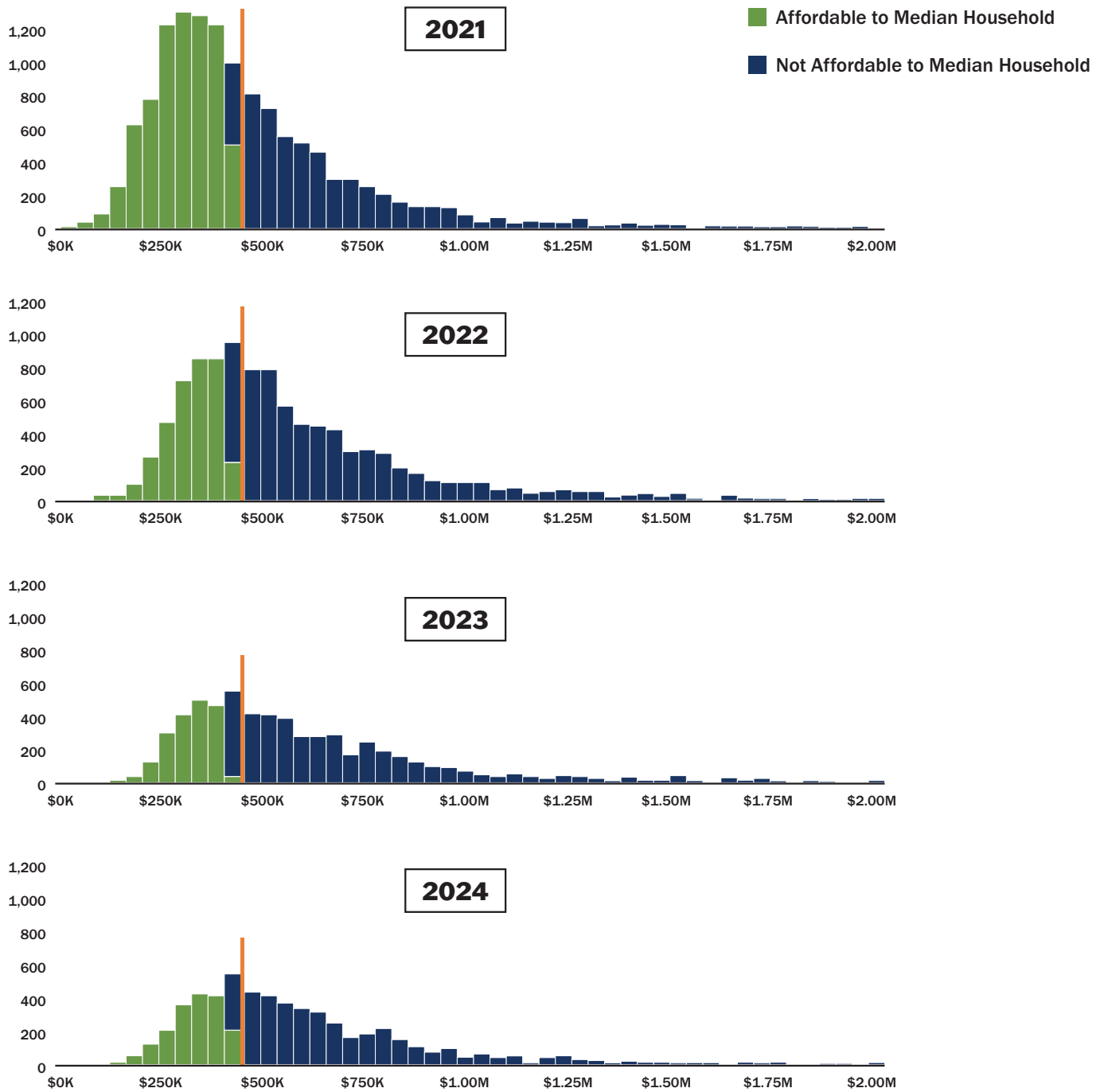
Figure 36: Davidson County Homeowner Cost Burden Rate (2017-2022)



Source: ACS 5-year estimates (2017, 2022)

¹ Source: National Housing Preservation Database

Figure 37: Distribution of Home Sales (2021-2024)



Source: Metropolitan Nashville and Davidson County Sales Records, ACS 1-year estimates, and Freddie Mac's Primary Mortgage Market Survey via FRED, the Federal Reserve Bank of St. Louis

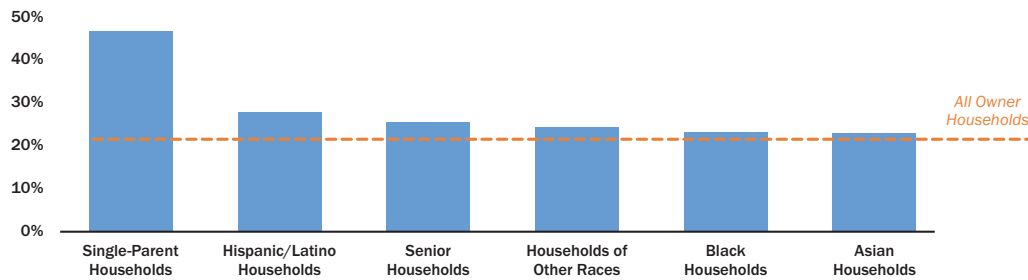
Note: HR&A calculates the home sale price that is affordable to the median household in Davidson County in each year using income data from the ACS and accounting for a maximum of 30% of income toward mortgage payments (principal and interest) and property tax payments. The calculation assumes a 20% down payment, a 30-year fixed-rate mortgage, the national annual average 30-year fixed interest rate from Freddie Mac via the Federal Reserve Bank of St. Louis, and Davidson County's average effective property tax rate based on ACS data.

In 2021, with a household income of \$65,000 and low interest rates, the median household in Nashville could theoretically afford to buy more than 55% of homes that were sold in that year; the green portion of the distribution covers most of the market's peak around the \$250,000-\$400,000 range.

In subsequent years, homeownership affordability has deteriorated rapidly, driven by rising interest rates, increased home prices, and a lower overall supply of existing and new units available for sale. Despite considerable gains in median income (estimated to reach \$82,000 by 2024), only one in three homes is affordable to the median household (1,862 homes).

Another way to identify the disparate impacts of decreasing homeownership affordability in Nashville is to look at rates of cost burdened for owner households across different cohorts. **Single-parent owner households** are most likely to be burdened by housing costs, but households of color, especially **Hispanic/Latino households, and elderly homeowners** are also disproportionately burdened.

Figure 38: Owner Household Cost Burdened by Cohort (2022)



Source: ACS 5-Year Estimates (2022)

Case Studies: Governance

Figure 39: Governance Case Studies

Place	Jurisdiction	Population	Housing Lead	PHA Structure*	CoC Structure
Nashville, TN	Consolidated Metro	708,144	Metro-MDHA	Not MTW; Mayor appoints board	Metro commission
Austin, TX	City	974,447	City-HACA	Not MTW; Mayor appoints board	External nonprofit
Atlanta, GA	City	499,127	Mayor	MTW; Mayor appoints board	External nonprofit
Charlotte, NC	City	897,720	City Manager/ Mayor	MTW; Mayor and council appoint board	Joint city-county
Washington, DC	District with city, county, and state functions	671,803	Mayor	MTW; Mayor and Council appoint board	External nonprofit
Denver, CO	Consolidated Metro	713,252	Mayor	Not MTW; Mayor appoints board	External nonprofit

Austin, Texas	
Leadership and Vision	The Housing Department is responsible for drafting the city’s housing priorities (with final approval from Council), most recently through the Strategic Housing Blueprint which identifies housing goals as well as systems for tracking and reporting. This creates a mechanism for public accountability.
Agency Coordination	Using the priorities in the Housing Blueprint, the city manager through the Housing Department is primarily responsible for coordinating actors in the ecosystem. However, without strong internal mechanisms for accountability, external advocates such as HousingWorks Austin play a critical role in making sure actors are all playing their part to achieve the Blueprint goals.
Resource Management	The City controls the Housing Trust fund and other key housing finance functions through the Housing Finance Corporation. Although the housing authority holds many of the functions in the ecosystem, control of key financing sources means a seat at the table for the City, both for individual projects and for larger strategic priority setting.
Atlanta, Georgia	
Leadership and Vision	The Mayor’s Office – and often the mayor himself – provide clear strategic direction in Atlanta. City agencies, the housing authority, and the housing finance agency are all aligned around Mayor Dickens’ goal of 20,000 affordable homes by 2030.
Agency Coordination	Housing activities are led by the Mayor’s Office, largely under the Affordable Housing Strike Force, a group of senior staff who coordinate quarterly leadership meetings and convene key landholding agencies (e.g. Atlanta Public Schools) to activate public land for affordable development.
Resource Management	The city, the housing authority, Invest Atlanta, and key private funders created a ‘common intake form’ for developers seeking funds. Staff from each entity meet monthly to review the pipeline, coordinate allocations, and align on key priorities and underwriting criteria.

Charlotte, North Carolina	
Leadership and Vision	Although Charlotte has a weak mayor structure, the mayor has strong relationships with key spheres of influence including banks, philanthropy, and the large health systems, and as a result, plays a significant role in setting policy priorities.
Agency Coordination	Homelessness work in Charlotte is coordinated between the city and the county, with county staff primarily responsible for administration. Clear delegation of roles is important for this structure. The city's role is primarily bringing resources to the table for PSH or shelter construction while the county is largely responsible for social services.
Resource Management	The Department of Housing and Neighborhood Services administers the city's Housing Trust Fund which includes philanthropic dollars as well as public resources. Strong technical capacity, especially underwriting and regulatory expertise, is critical to deploy these funds effectively.
Denver, Colorado	
Leadership and Vision	Like Atlanta, housing is a key component of the current mayor's platform. This is visible in the Comprehensive Plan as well as in the annual budget, and it is clear from funding allocations that these priorities are reflected in key agencies.
Agency Coordination	Although Denver has a strong mayor system, previous mayors did not take advantage of their executive authority to the extent of the current mayor, according to stakeholder input. To achieve key housing goals, the current mayor created several senior advisor positions within his cabinet to coordinate activities.
Resource Management	Denver has a special revenue fund controlled by the mayor that is designated for housing projects. Control over project funding allows the mayor to communicate his priorities. However, other resources are less centralized. Homeless services and prevention organizations outside city government do much of the work to streamline and coordinate resources by responding to RFPs from DSS and from Housing Stability.
Washington, DC	
Leadership and Vision	The vertically integrated governance in DC, in which all key housing agencies, including independents, are organized within the DMPED structure, supports effective coordination and communication around the Mayor's housing priorities.
Agency Coordination	DMPED regularly convenes executive leadership of key housing agencies. Because this coordinating responsibility is clearly assigned to DMPED via the mayor's authority, even quasi-independent agencies and independent entities such as DCHFA and DCHA can be brought to the table.
Resource Management	All housing agencies submit budget requests to the Mayor's budget director, and agencies under the executive review, approve and/or advise requests from the independents. To deploy resources, DHCD runs a consolidated RFP for all resources and coordinated underwriting of awards with other investors (DCHFA and DCHA) where relevant. Processes governing deployment of resources involving multiple agencies (e.g. bond cap, local voucher) are often formalized through written agreements with established performance benchmarks.

Case Studies: Public Housing Authorities

Figure 40: Public Housing Authorities Comparison

Location	Public Housing Authority (PHA)	Moving to Work Agency	Traditional Redevelopment Authority	Housing and Community Development (HCD)	Voucher Only PHA	Voucher Administration	RAD
Nashville, TN	Metropolitan Development & Housing Agency (MDHA)	No	Yes	Yes	No	Yes	Fully Converted to RAD
Austin, TX	Housing Authority of the City of Austin (HACA)	No	No	No	No	Yes	Appears to have converted nearly all approx. 1,900 units to RAD
Atlanta, GA	Atlanta Housing	Yes	No	No	No*	Yes	Converted to vouchers long before RAD program rollout
Charlotte, NC	InLivian	Yes	No	No	No	Yes	Approx. 3,197 out of 3,500
Denver, CO	Denver Housing Authority	No	No	No	No	Yes	Approx. 1,400 out of 3,900
Washington, DC	District of Columbia Housing Authority (DCHA)	Yes	No	No	No	DCHA administers both Federal and LRSP vouchers*	2 properties complete (out of 44). Authority for 5 more properties (5+ years ago) that remain not converted.

- Robust, clear and transparent procurement process for all housing activities and funding opportunities including voucher administration.
- Accountable governance: multiple appointing parties, staggered and expiring terms, etc. Appointees should provide enhance the capacity of a PHAs via thoughtful, non-biased approach to governance.
- Collaborative relationships with other agencies in the housing ecosystem.
- Leverage other federal and state program funding: internet and digital devices or environmental, which improves their products, while they gain access to additional administrative/operating funds.
- Build human and financial capacity: leverage subsidiaries that deepen expertise, improve product(s) and create additional revenue streams.
- Actively participant in development: build internal capacity by seeking technical assistance when necessary but not outsourcing development tasks.
- Resident focused operations: while real estate development activities are necessary, existing housing units should be maintained to the highest possible standards and resident services should be consistent/continuous regardless of ancillary activities