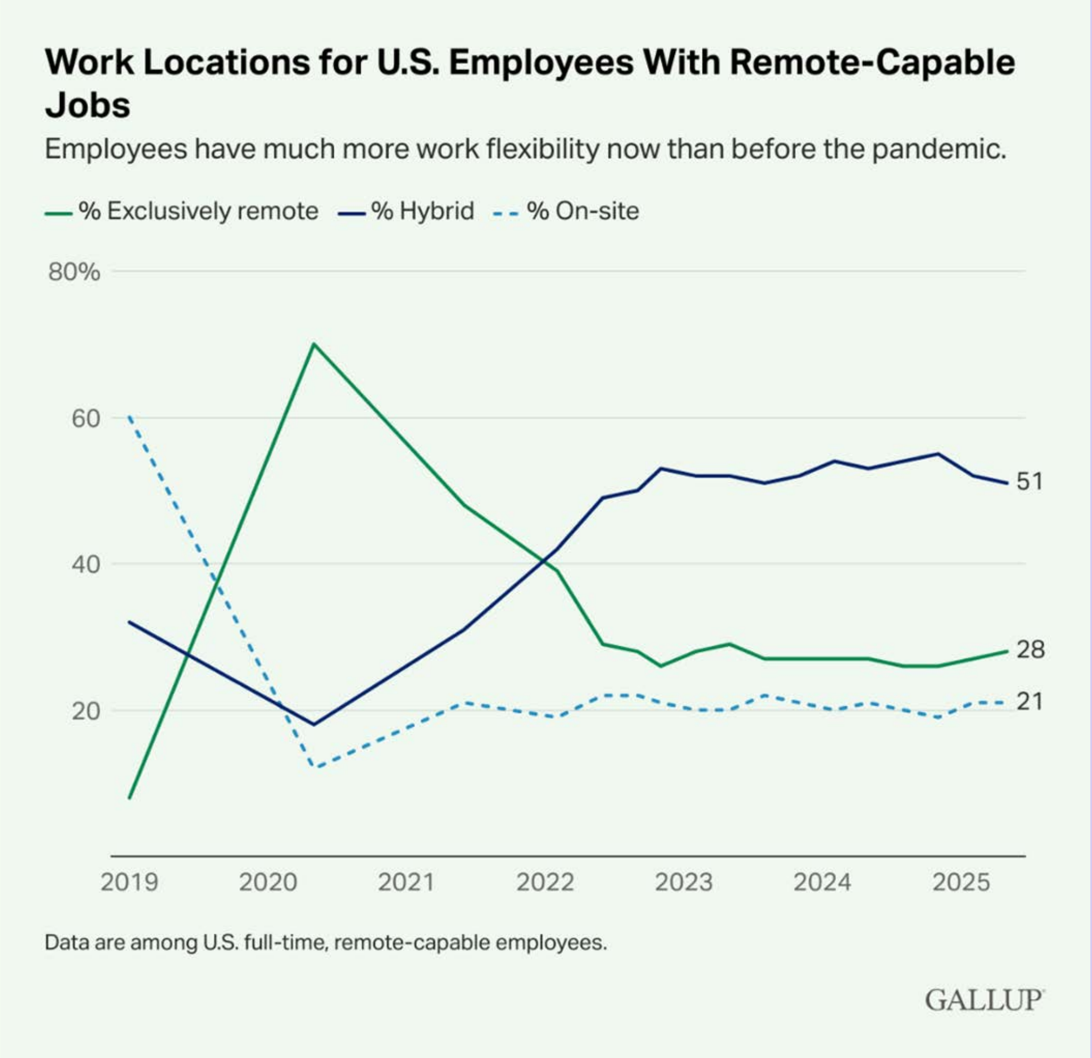
The Rise of Remote Work

Anca Traian, Ph.D. • Associate Professor of Finance

Remote work (also known as work from home or telework, as defined by the Bureau of Labor Statistics) is not a new concept. It became feasible through advances in communication and information technology. However, it gained widespread popularity and attention during the COVID-19 pandemic. According to the American Community Survey, before the pandemic, about 5.7% of Americans (roughly 9 million people) worked from home. This number surged during the pandemic as employers closed physical offices, and many employees experienced remote work for the first time. Even after the economy reopened and businesses resumed normal operations, remote work did not return to its pre-pandemic levels. In other words, remote work is here to stay.



For employees, remote work opportunities offer new benefits such as increased flexibility, reduced commute time that translates into more free time, and even the ability to choose where to live. A fully remote work environment has given employees the freedom to live farther from their employers, in neighborhoods of their choice. Figure 1 illustrates the benefits remote workers report experiencing when working from home.

For employers, the situation is more complex. For instance, savings on office space may be offset by higher training costs. Many employers acknowledge that remote work makes recruiting easier by expanding the labor market pool; however, they are concerned that it also makes it more challenging to build workplace culture, foster collaboration and idea generation, and effectively track employees' hours and performance.

Remote work brought to light the possibility of working from different locations. Many employees have relocated to smaller towns and rural areas, as these communities offer a better quality of life for them and their families. This trend provides an opportunity for smaller cities and rural areas to attract new residents. Offering a fast and reliable broadband infrastructure, encouraging adequate housing development and networking spaces, developing a robust mix of local amenities to make communities attractive, and offering training opportunities have been some of the suggestions. Some studies have also proposed tax incentives to support these efforts.

Academic research examines the effects of remote work on firm performance and finds that, while it enhances job satisfaction and employee retention, it also leads to higher coordination and communication costs, as well as fewer opportunities for informal interactions, idea generation, and mentoring. When it comes to productivity, academic research does not offer a clear answer. Two major challenges complicate the analysis and blur the results. First, conducting a randomized control trial is difficult. For example, workers with different abilities may self-select into their preferred work arrangements, creating selection bias. Second, measuring productivity depends heavily on how it is defined and what inputs are used. Another factor also plays a role: the distinction between hybrid and fully remote work. Nicholas Bloom, a Stanford economist who studies remote work policies, finds that employees who work remotely part of the time (2 days) are just as productive as those who work entirely in the office.

On a lighter note, according to a paper published in the *Journal of Economic Perspectives* by Barrero et al., when productivity is measured as output per paid hour, employers and employees define "time input" differently, employees include commuting time, while employers do not, resulting in different conclusions.

Starting in 2024, a new topic has inundated the media: return-to-office (RTO) policies. More and more companies, including big names like JPMorgan, Dell, Amazon, and The New York Times, are requiring employees to return to the office more days per week, citing improved collaboration and a stronger work culture. The truth may lie somewhere in the middle, as some companies are also leveraging RTO policies as a way to reduce headcount. The RTO requirements have been met with strong pushback from employees, with some seeking other opportunities or simply ignoring the mandates, sometimes with the support of their managers, who are also not excited about these policies.

It is interesting to note that growing evidence shows employees are willing to accept lower pay for fully remote or hybrid positions. Research has repeatedly found that many are willing to take a pay cut of between 5% and 10%. A recent study published by the American Economic Association reported a figure as high as 25%, though it's important to note that the sample consisted only of tech workers.

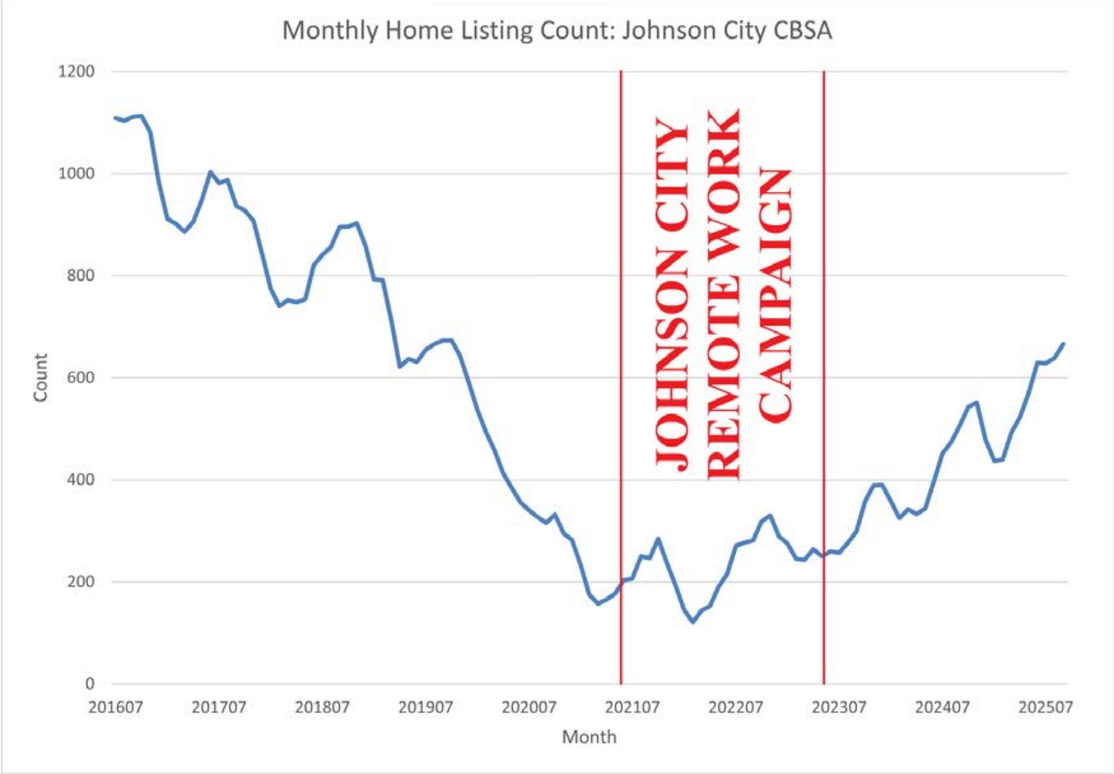
Given the evidence that remote work can reduce costs through lower salaries and reduced office expenses and the mounting dissatisfaction among employees, the question that comes to mind is: why the mandates? A study of Russell 3000 companies found that firm size and CEO characteristics influence RTO policies, suggesting that the decision is driven more by managerial style than by productivity concerns. As previously mentioned, RTO requirements can also disguise management's intent to reduce the workforce. According to The Wall Street Journal, many policy changes are either followed or preceded by layoff announcement (see Amazon, Dell and AT&T).

Even though the exact future of hybrid and fully remote work remains uncertain, one thing is clear: they will continue to exist in one form or another and impact everyone from individual employees to companies to entire communities.

The Johnson City Remote Work Campaign

Joseph Newhard, Ph.D. • Associate Professor of Economics

The housing supply was declining in our region even before Covid. For the combined metro areas of Johnson City and Kingsport-Bristol, the listing count fell from 3,057 in July 2016 to 993 in July 2020. The count further collapsed in subsequent months and bottomed out at 342 the following February. Consequently, the median listing price for homes in the Johnson City CBSA exploded from $190,450 in summer 2016 to $324,950 by spring 2021. This constituted a 71% increase in prices and an 89% decrease in supply in just five years. It was in this environment that the Johnson City Commission voted unanimously to fund the Remote Work Campaign which launched in June 2021.



As a partnership between the Johnson City Convention & Visitor Bureau, the Northeast Tennessee Tourism Association, and the Northeast Tennessee Regional Economic Partnership, the Remote Work Campaign was a $300,000 program that ran through May 2023. It offered remote workers up to $5,000 plus other incentives to relocate to Johnson City. The program was advertised through Facebook, Instagram, LinkedIn, and CTV and targeted workers in cities like Atlanta, Chicago, Dallas, New York, and San Francisco. The program also hosted receptions and meetups. Out of 400 applicants, 44 households were accepted from 29 states with the city claiming an economic impact of $800,000. What follows is my economic analysis of the program.

The regional sorting mechanism for labor is real wages. Workers move away from states where prices are high relative to wages and move to states with better purchasing power. Remote workers are particularly well-positioned to move to where the cost of living is low while maintaining their high salaries in order to outbid local families for homes. Worker migration raises real wages in the states they depart and lowers them in their new states, eventually equalizing real wages across all states in the long-run labor market equilibrium. No government subsidies are required, and subsidies could only distort the equilibrium. To the extent that subsidies increase the workforce beyond what would have occurred in a free market, real wages can fall further.

The campaign wasn't attempting to provide workers for unfilled job openings or counter economic decline: it was implemented during a period of unprecedented population growth. In April 2021, Johnson City was ranked #2 on the PODS list of most moved-to cities. Some applicants to the program lived in cities outside of the advertising campaign, suggesting that they were already planning to move here when they discovered the subsidy. The timing of the campaign reveals a bureaucratic logic which dictates that government must intervene in the private sector to further stimulate a market that is already red hot and pricing out one's constituents.

Population growth increases congestion and can forever alter a rural setting, but this program likely did not grow our households by the number of successful applicants. With an inelastic housing supply that severely lags new residential construction statewide coupled with the surrender of hundreds of existing homes to the unregulated short term rental market, there was likely some displacement of local working-class households by remote work households. Organizers favored households earning above-average incomes which could further increase home prices and apartment rents beyond what the median local family could afford. This forces some working families to abandon Johnson City in favor of cities where housing prices are more in line with wages. Displaced families moving to nearby communities would reduce home inventories and increase home prices in those locations too.

If the intention was to grow the local economy, the program targeted the wrong types of workers. The economy is measured by the production of goods and services. The supply of goods available for local consumption increases with the arrival of workers who produce them. The economic impact of remote workers is comparable to that of retirees who increase local demand for goods but not local supply. This contributes to higher prices for food and housing as well as shortages of dentists and doctors, for instance. By replacing local workers with remote workers, production of consumption goods is lower than it would have been. The upside is that unlike the in-migration of local workers, this program would not depress local nominal wages although purchasing power can still fall. Sales and property tax revenue generated by new households is also cancelled out by the households that are lost.

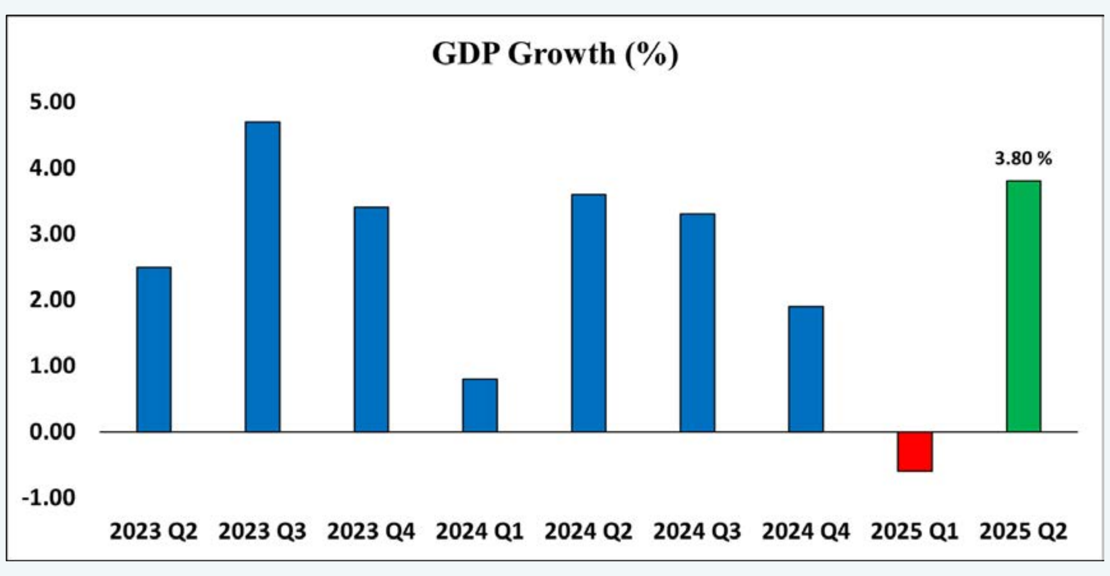
Being neutral at best in workforce, economic output, and tax revenue, this program is a success only if it was intended to grow home equity at the expense of young working-class families in the region. The Remote Work Campaign allocated tax dollars either to households that would have moved here anyway, as thousands of others have done on their own initiative, or to households who would not have moved here but were persuaded to do so by the city in the midst of a workforce housing supply crunch that continues to this day. Although only 44 households relocated, when supply and demand are inelastic, small changes in quantities can have outsized effects on prices.

Home prices have increased nationwide, but the combination of population growth and constrained new residential construction produced a 64% rise in prices here since 2020 versus 42% for the United States. By increasing home prices and rents, the program constitutes a tacit subsidy for local landowners, homeowners, landlords, investors, and flippers paid for by the taxpayers at large. It is also a tax on the young workers who aspired to own a home someday who must now accept renting long term as a cost of living and working in Johnson City.

Appalachian Highlands Economic Update

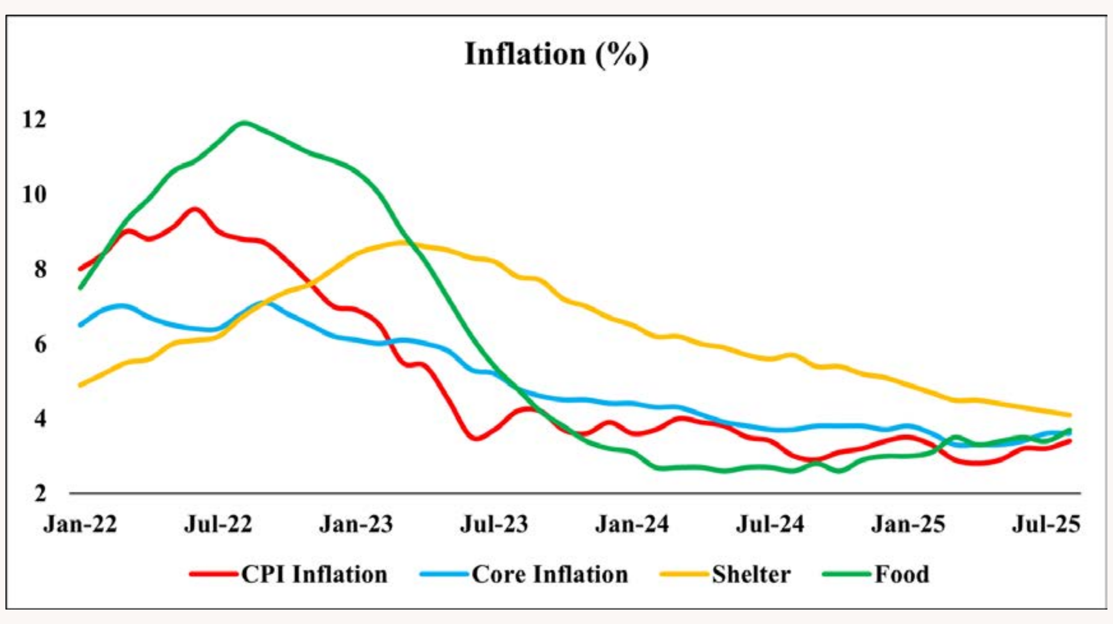
Macroeconomic Overview

Dr. Aryaman Bhatnagar, Ph.D. Assistant Professor of Economics



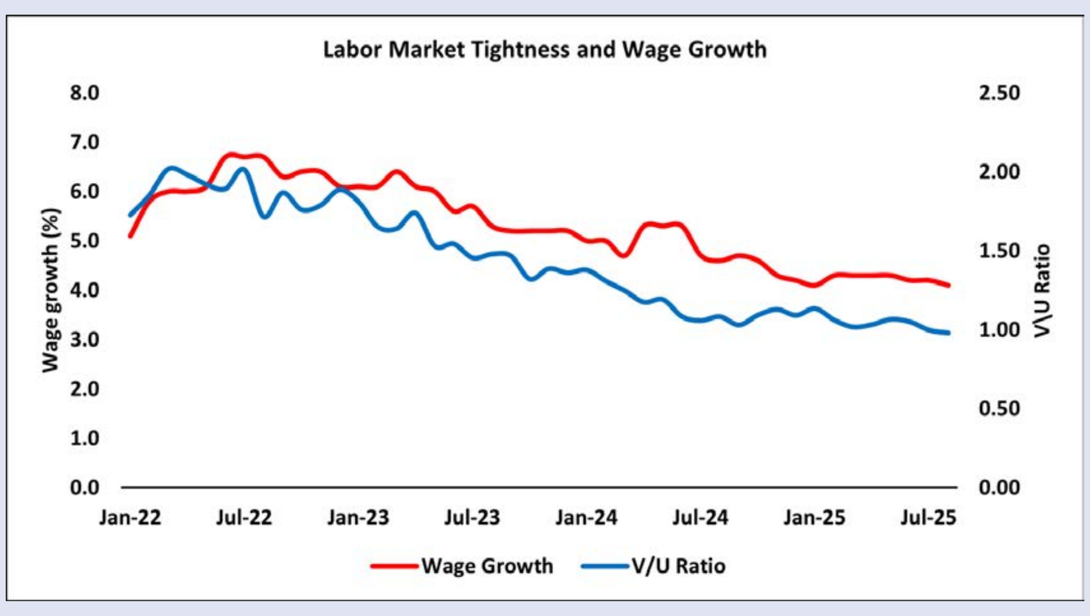
Growth Rebounds

The U.S. economy posted a solid rebound in mid-2025, signaling continued resilience despite policy uncertainty and soft global demand. Real GDP grew at an annualized rate of 3.8 percent in Q2, according to the Bureau of Economic Analysis, following a 0.6 percent contraction in Q1. The rebound was driven primarily by household consumption (especially in services) alongside a smaller drag from inventories and net exports. Business investment remained mixed, with strength in technology and energy infrastructure offset by weakness in commercial construction and equipment spending. Early indicators from the Atlanta Fed's GDPNow model suggest that Q3 growth is also tracking near 3.8 percent, reflecting ongoing consumer spending momentum and moderate fiscal support. However, leading indicators such as new orders, housing starts, and small-business sentiment point to a gradual cooling ahead. Manufacturing output and freight activity have plateaued, while regional surveys show signs of declining optimism among producers. Overall, the data portray a U.S. economy still expanding but increasingly uneven, supported by strong households and AI-driven investment, yet constrained by high borrowing costs and waning global tailwinds.



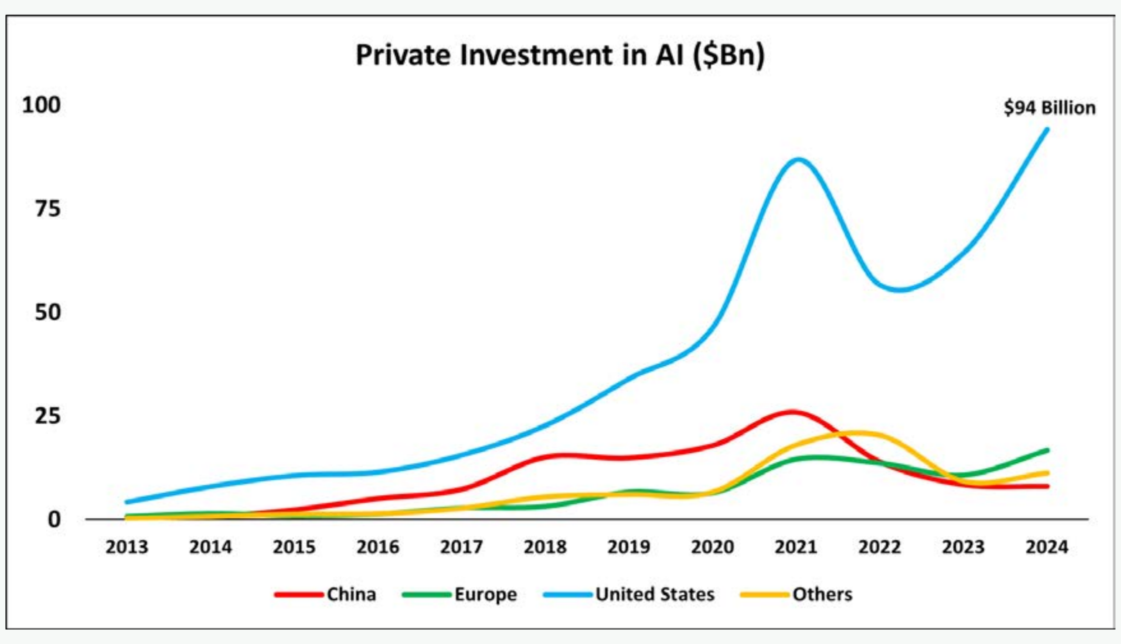
Inflation Ticks Up

Inflation has edged higher in recent months, keeping price stability at the center of policy debates. The Consumer Price Index (CPI) rose 0.4 percent in August, placing year-over-year inflation at 2.9 percent, while core CPI (excluding food and energy) held near 3.1 percent. Tariff-related cost pressures, persistent shelter inflation, and firm service prices are offsetting disinflation in goods categories. In its September statement, the Federal Reserve acknowledged that inflation "remains somewhat elevated" and reiterated its data-dependent stance. Energy and food prices, though volatile, have become less of a driver of overall inflation compared to 2022–2023, but service inflation continues to challenge policymakers. Longer-term inflation expectations remain well anchored, yet the recent uptick in near-term readings has rekindled debate over whether monetary policy is restrictive enough to firmly return inflation to target.



Labor Market Cools Down

The U.S. labor market remains solid but is clearly cooling from its earlier highs. Nonfarm payrolls rose modestly in August, bringing total employment to about 159.5 million workers. The unemployment rate ticked up to 4.2 percent, while average hourly earnings grew 3.7 percent year-over-year, down from over 5 percent a year ago. The average workweek has held steady at 34.2 hours, and labor force participation remains near pre-pandemic levels. Employers are increasingly cautious, favoring attrition over layoffs, while job openings continue to trend downward. The quit rate (a measure of worker confidence) has normalized to pre-2020 levels, indicating less churn and fewer voluntary separations. Meanwhile, sectors such as health care, leisure, and professional services continue to expand, while manufacturing and transportation show mild contraction. Taken together, the data point toward a gradual rebalancing of labor demand and supply, supporting the case for a "soft landing" rather than a sharp rise in unemployment.



The Artificial (Intelligence) Boom?

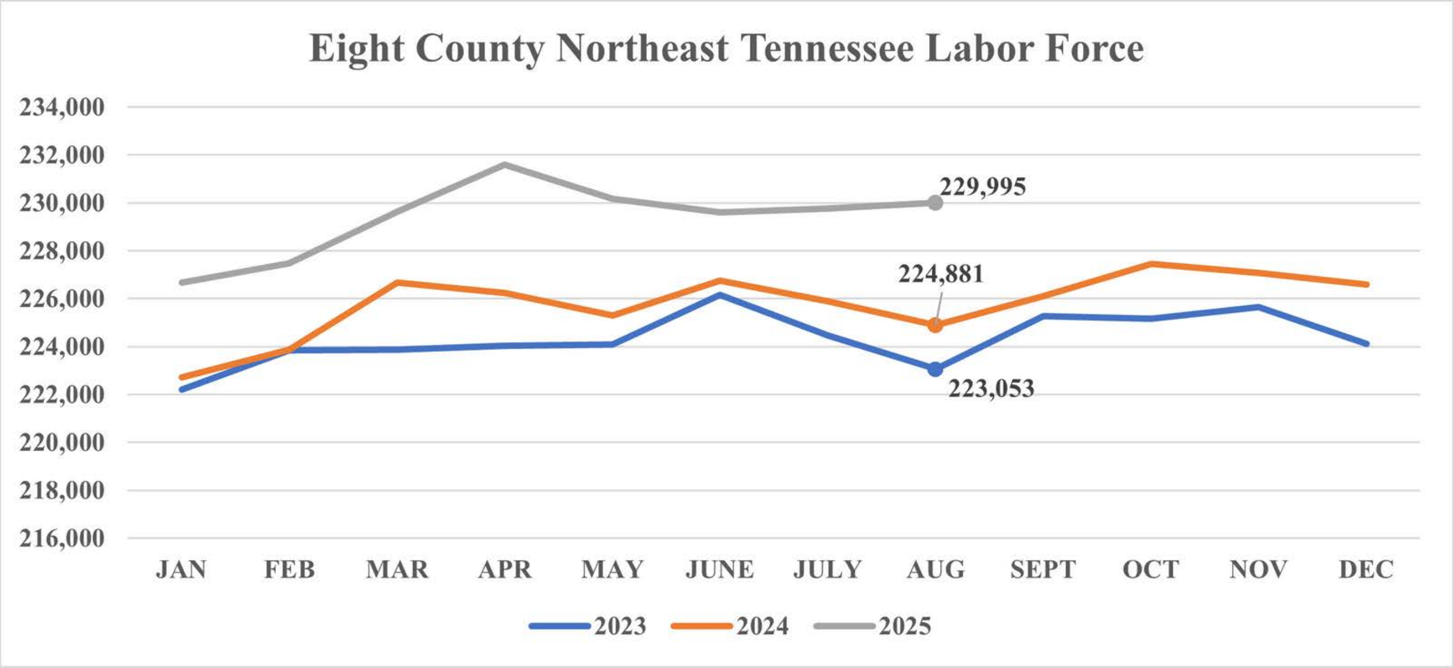
A defining theme recently, and specifically this year, has been the rapid expansion of artificial intelligence (AI) investments. A recent Harvard report suggests that investment in AI related software and information processing equipment accounted for a whopping 92% of US GDP growth in the first half of 2025. In 2024 alone, US private investment in AI amounted to $94 billion, almost three times as much as the rest of the world combined. The IMF and private forecasters credit these outlays with bolstering near-term productivity and GDP growth. However, concerns persist about the "jobless growth" risk, where automation and efficiency gains could suppress hiring in mid-skill occupations. The macroeconomic implications remain complex: AI adoption may ease inflationary pressures through productivity, but it could also disrupt labor dynamics and capital-income distribution. Early evidence suggests firms investing heavily in AI are achieving faster profit growth and labor efficiency, yet disparities across industries remain large. Policymakers and researchers are also assessing how AI-driven productivity might reshape traditional relationships such as the Phillips Curve and the natural rate of unemployment. The coming quarters will reveal whether AI proves to be a broad-based growth engine or a sector-specific phenomenon with uneven effects on workers and wages.

Outlook

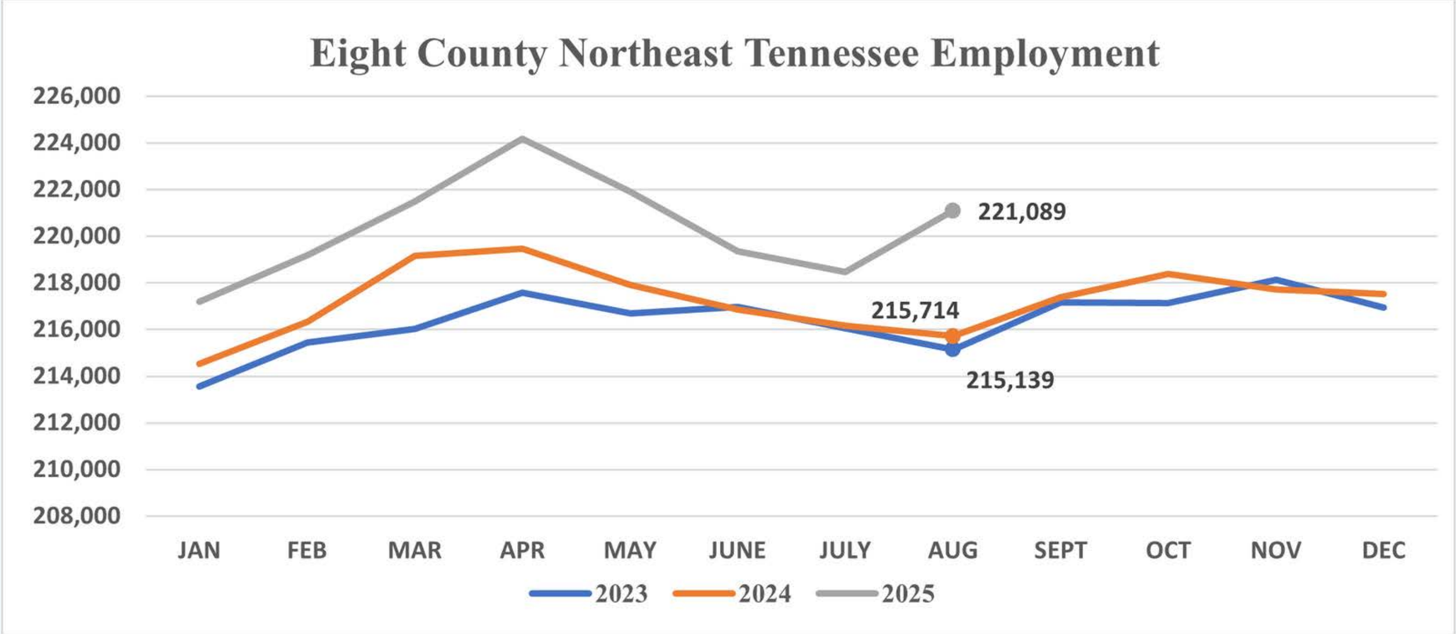
Looking ahead, the U.S. economy appears to be entering a phase of slower yet stable growth. Consensus forecasts anticipate real GDP expanding at roughly 2½ to 3 percent in the second half of 2025, with inflation gradually drifting lower toward the 2½ percent range by mid-2026. The labor market is expected to soften further, adding about 100,000 to 150,000 jobs per month while maintaining fairly low unemployment. The main sources of uncertainty include the timing of the Fed's rate cut, evolving trade tensions, and the trajectory of energy prices. If inflation moderates as expected, policy normalization could begin gradually towards the end of the year. However, global headwinds (from slower growth in Europe and China to geopolitical frictions) could weigh on exports and business sentiment. Domestically, the housing and credit markets remain sensitive to interest rate levels, suggesting limited upside for consumer spending. For now, the baseline scenario points toward a soft landing (moderate growth, easing inflation, and continued resilience) though the balance of risks has shifted toward slower momentum and greater volatility as the expansion matures.

Labor & Unemployment

Dr. Jon L. Smith, Ph.D. • Director, Bureau for Business & Economic Research



Source: U.S. Bureau of Labor Statistics: Local Area Unemployment Statistics Unadjusted Data



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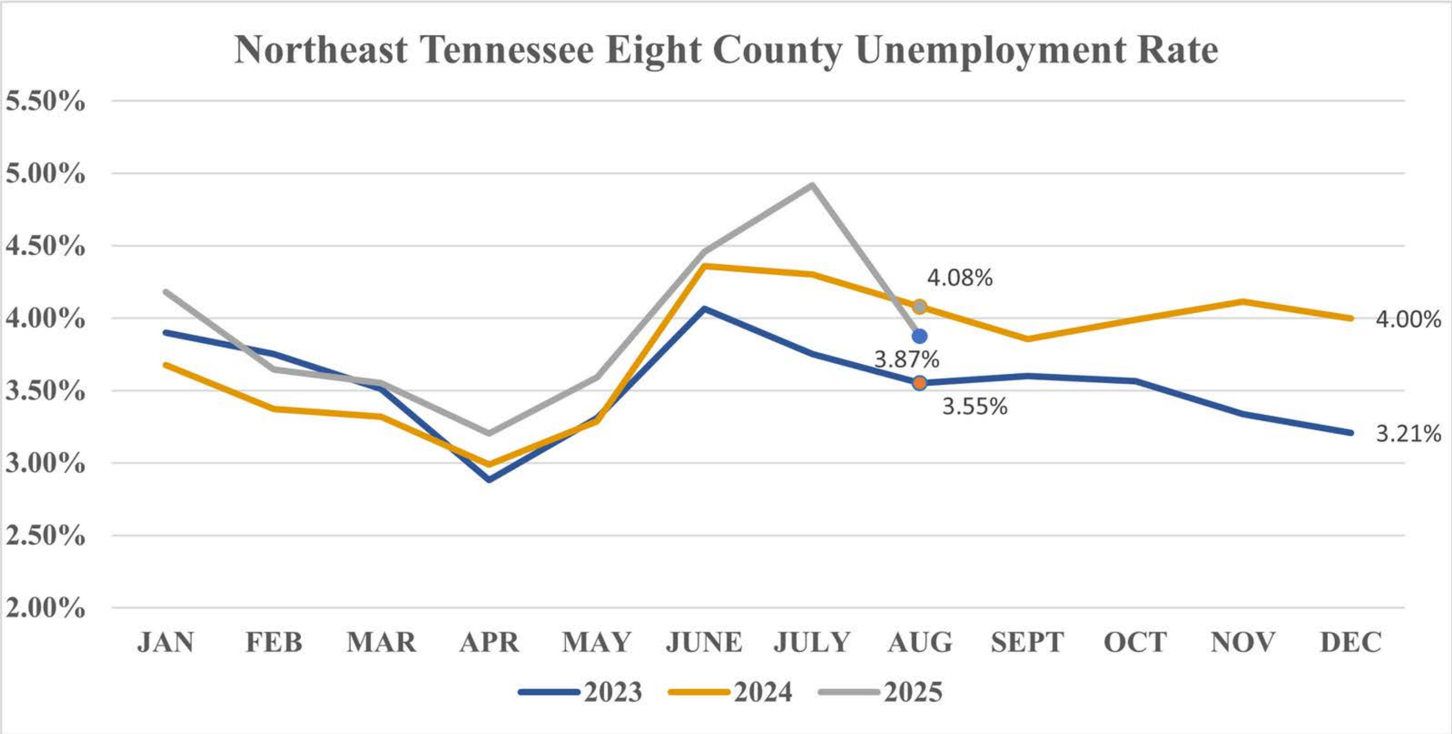
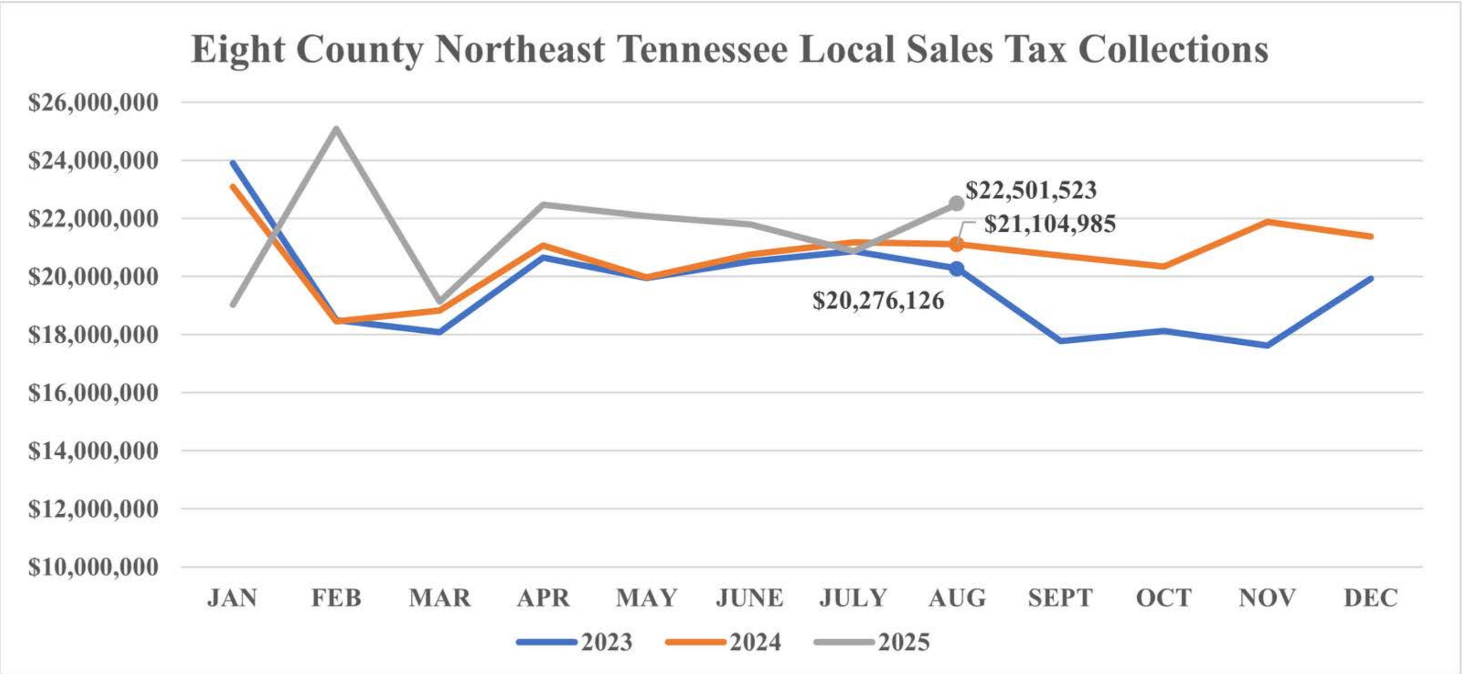


Source: U.S. Bureau of Labor Statistics: Local Area Unemployment Statistics Unadjusted Data

Employment & Labor Force

The combined eight county labor force has seen growth in 2025. The combined labor force in August of 2025 grew by almost 3% over August of 2024. Employment in showed a similar increase, 2.5%. Much of the growth in labor force and employment was centered in the two highest population counties, Sullivan and Washington counties.

The regional unemployment rate edged up in April and then increased over the Summer months before showing a sharp decrease in August. As with the employment and labor force data, Sullivan and Washington counties had lower unemployment rates than the smaller more rural counties.



Source: Source: Tennessee Department of Revenue: Monthly Statistics and Collection Reports

Sales Tax

Eight county local sales tax collections had a sharp spike in February of 2025 before returning to the normal collection pattern albeit at a higher level than 2024. Much of this increase is due to sharply higher prices for local goods and services.

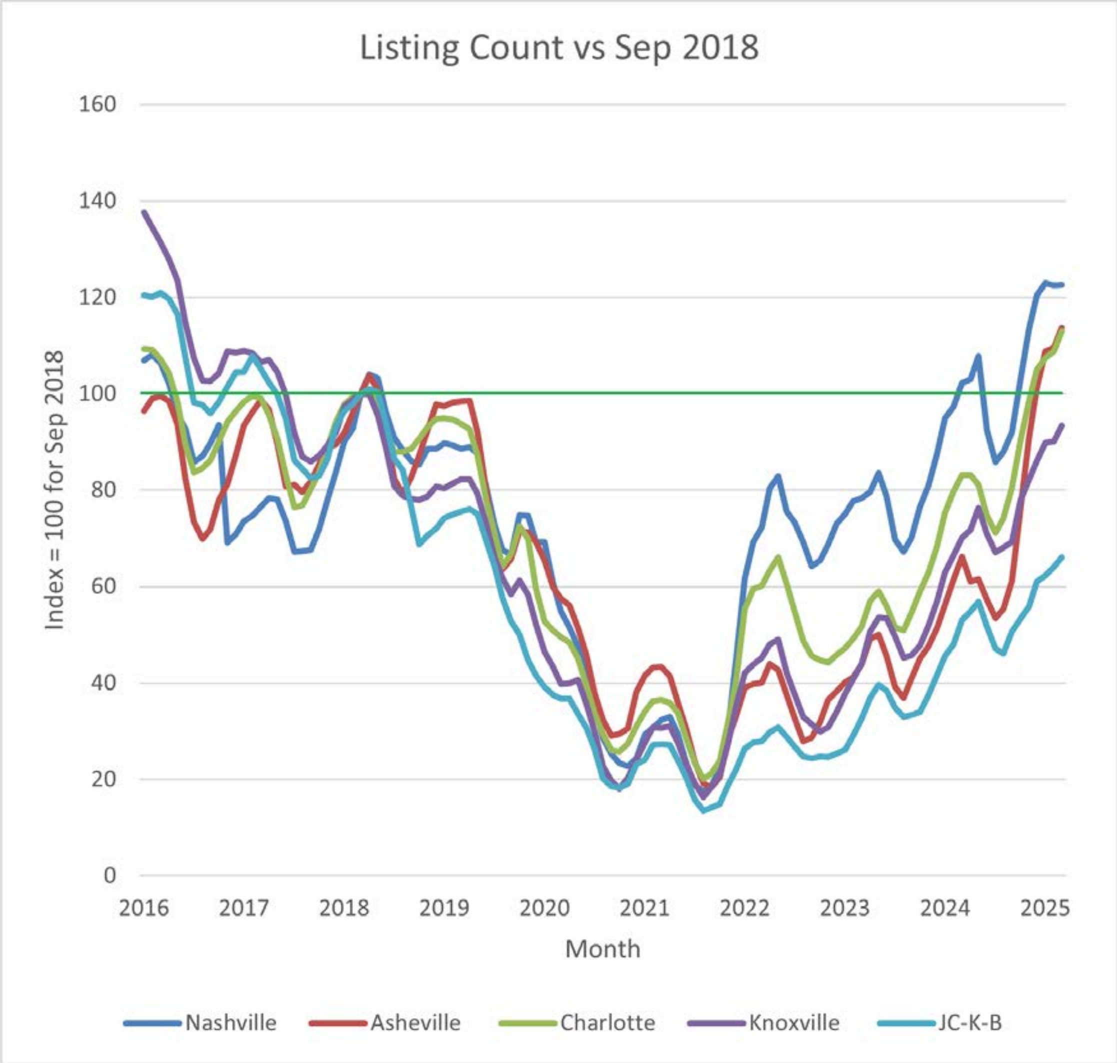
Summary

2025 has brought growth in the labor force and employment. Unemployment levels dropped in August. However most of the positive growth has been in the high population counties. The future is somewhat uncertain as the effect of increased tariffs has yet to manifest itself. Prices will continue to rise and will push basic living expenses to higher levels throughout the year.

Housing Market

Joseph Newhard, Ph.D. • Associate Professor of Economics

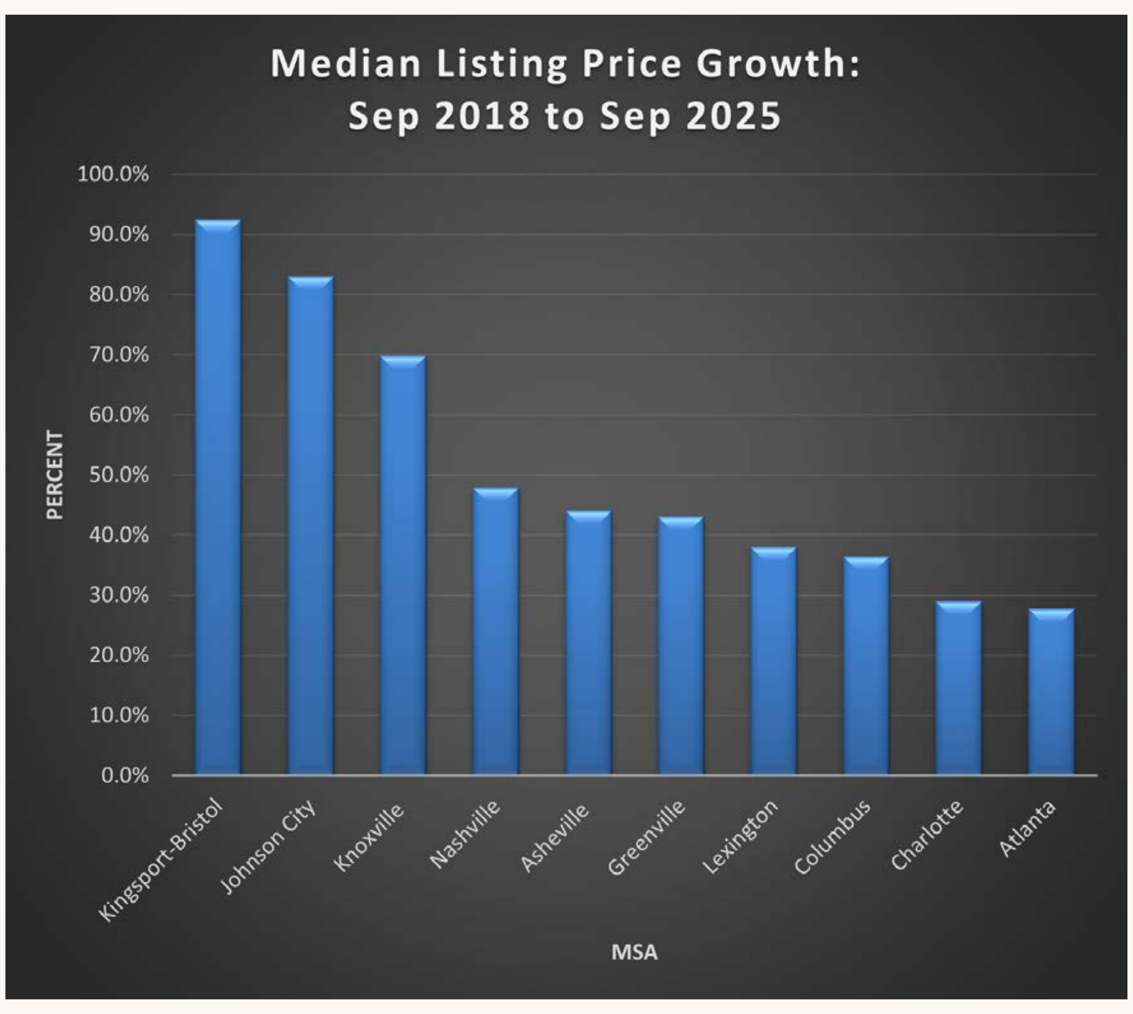
The graph below shows how the time series of housing supply compares to September 2018 (Index = 100), the last year that was considered to be a balanced market. Nashville has 22% more listings in September 2025 than it did in September 2018. Charlotte and Asheville have 13% more listings. Even Knoxville, which saw almost the exact same percentage decline as Johnson City during the pandemic, has recovered quickly and is down by only 6.5%. Yet the combined Johnson City and Kingsport-Bristol area is still down by 34%.



This failure to recover cannot be attributed to a greater degree of population growth here than in other cities. The PODS Moving Trends update for October 2025, which only lists the top 10 cities, still includes Charlotte (6) and Knoxville (10). I also don't believe that short-term rentals are more pervasive here than in Knoxville or Asheville. I don't have hard data, but one possibility is that we have responded to the housing crunch by building relatively more rental units and fewer homes for purchase than other cities.

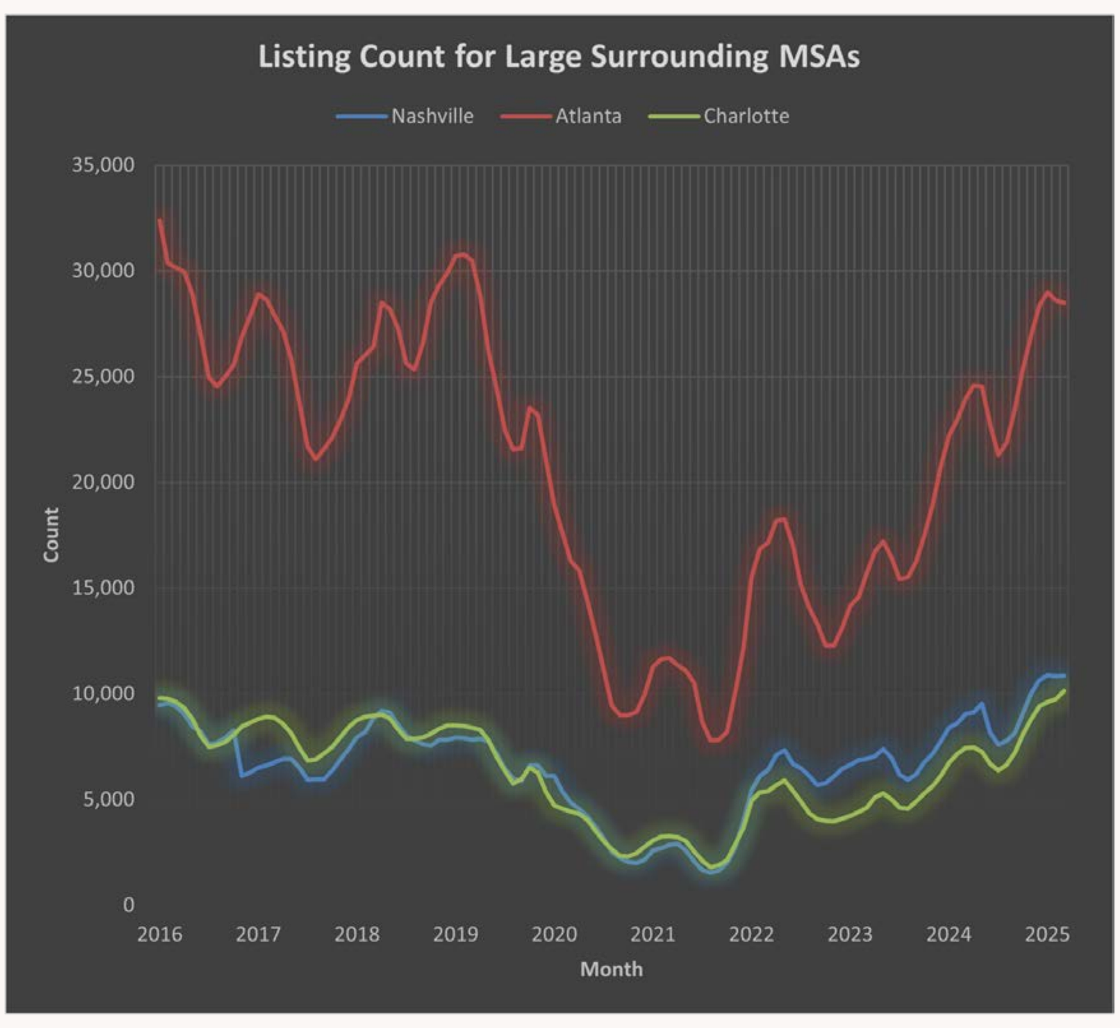
This could be the case if developers determined that lower local incomes and high construction costs make multifamily rental units the more profitable option here. It could also be a consequence of the regulatory process somehow, but city governments around the country tend to prefer single-family homes and discriminate against dense housing. It also makes sense that construction companies would allocate capital to where homes sell for the highest prices which would lead them to build first in cities like Asheville and Nashville.

With our current supply-demand imbalance, the median listing price for the Johnson City MSA is $402,450 in September 2025. This is only a 3% discount versus Atlanta. By comparison, the Census reports a median household income of $56,000 in Johnson City versus $87,000 in Atlanta. Price growth since 2018 has been much higher in Northeast Tennessee than other areas. With 28.2% CPI inflation since September 2018, the real price in September 2025 is down slightly in Atlanta, flat in Charlotte, and up 55% in Johnson City and 64% in Kingsport-Bristol.



This price growth should attract more new home construction to the area assuming that local regulations are not too burdensome relative to other areas. High prices will also deter some in-migration. The large residential development at Keebler Meadows is finally underway in Gray. DR Horton plans to build 350 single-family homes and 120 townhomes over the next few years. New apartments being completed on Mountainview Rd and Oakland Dr will help constrain monthly rents in Johnson City, and as a substitute good, they will also help constrain home prices.

I continue to expect that the complete recovery of housing supply in Nashville, Charlotte, and Atlanta will generate more price cuts in those locations. The greatest source of downside risk in Johnson City remains the fact that its incomes and amenities cannot continue to command current prices if prices are falling in the surrounding major cities. As a result, price cuts will cascade even into areas where new home construction has lagged.



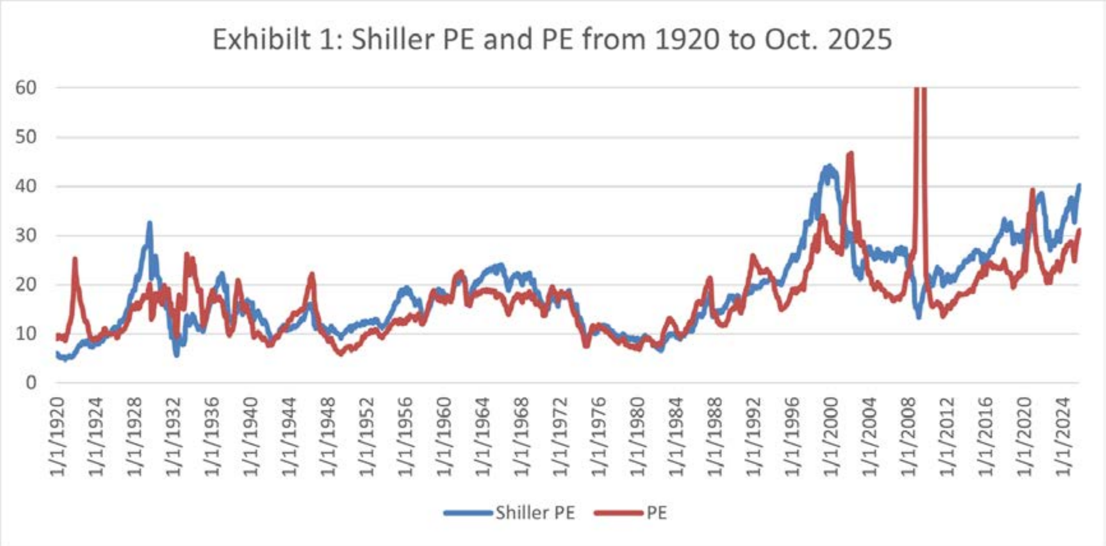
Final Thoughts

I try to avoid using the word "shortage" when writing about housing. Economists define a shortage as a situation in which quantity demanded exceeds quantity supplied. If prices are free to adjust, a shortage is only a temporary phenomenon: prices rise until quantity supplied equals quantity demanded and equilibrium is restored. A persistent shortage requires that the government has imposed a binding price ceiling, such as what Americans experienced when buying gasoline during the oil embargo of the 1970s. Various organizations have attempted to measure a housing shortage in the United States, often arriving at a number greater than 4 million units. There is no shortage of housing as economists define the term, just as there is no "shortage" of gold or Nvidia stock. There is simply a generation of Americans who have been priced out of homeownership due to low supply and who have fallen back on alternative arrangements such as renting or living with parents.

Financial Market Overview: Valuing the S&P 500

William Trainor, Ph.D., CFA • Professor of Finance and
Director of the Center for the Study of Finance

Almost every relative valuation metric shows that the S&P 500 is richly valued, which is a nice way of saying it appears overvalued. Exhibit 1 displays the Shiller and more traditional price earnings ratio for the S&P 500. Almost every popular metric, (price/sales, price/cash flow, price/book value, dividend yield, equity allocation percentage to name a few) is flashing warning signs. The last time the Shiller PE hit 40 was just before the tech crash and the PE is not any more comforting.



However, the drawback of using relative valuation measures is that it only measures what investors are currently paying for some underlying factor. It does not discern why investors are paying a particular amount or what is being assumed about growth, earnings, and discount rates.

A more expansive method is to use fundamental valuation which involves making projections of underlying cash flows and discounting those cash flows back to the present. In this way, the assumptions are clear and a theoretical value is attained. As Benjamin Graham (known as the father of value investing) stated: "In the short run, the market is a voting machine, but in the long run, it is a weighing machine." Earnings matter whether that seems the case or not in the short-term.

Fundamental Value of the S&P 500

I'll gloss over details, but the basic idea is to discount all future cash flows of all the S&P 500 companies from now to infinity back to the present.

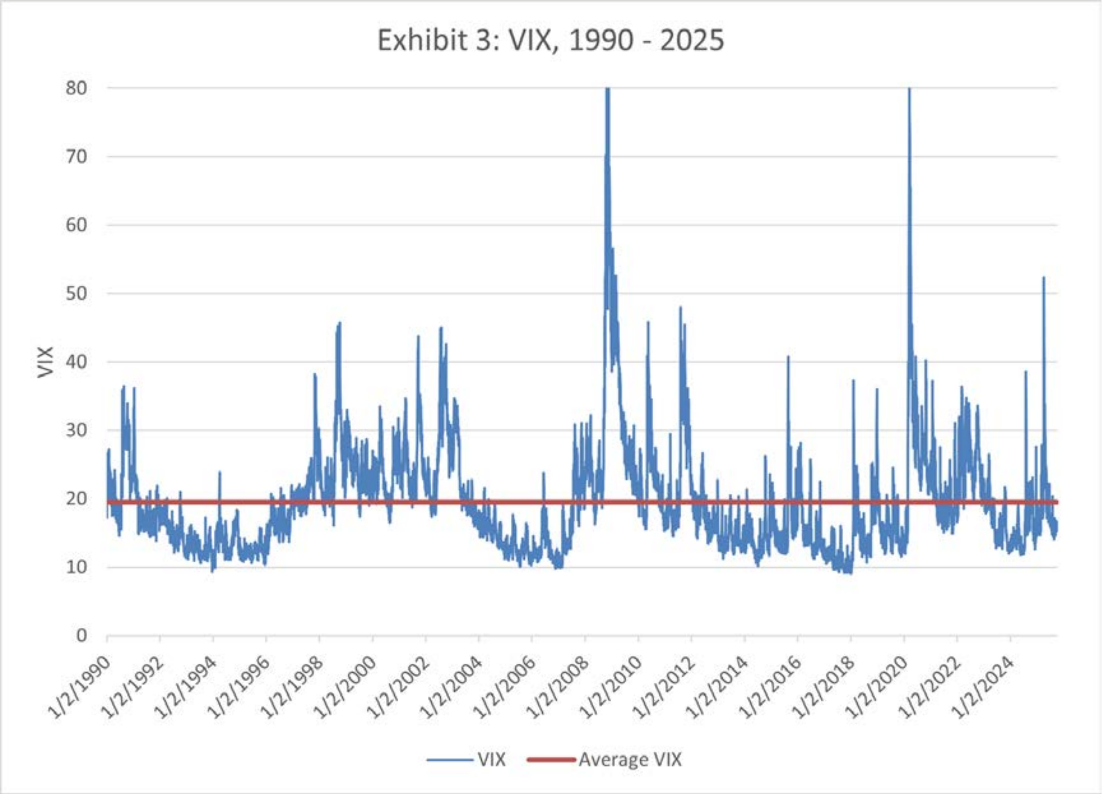
Exhibit 2 below displays my initial assumptions about future earnings and growth rates. 2025 and 2026 earnings are based on analysts' estimates, and I reduce these very optimistic growth rates back to the long-run average of 6.7% by 2030.

Exhibit 2: S&P 500 Earnings Forecast, growth assumptions, with 80% estimated free cash flow to equity payout.

	Earnings Forecast	Growth	Est. FCFE
12/31/2025	$240.05	14.2%	$192.04
12/31/2026	$279.65	16.5%	$223.72
12/31/2027	$313.21	12.0%	$250.57
12/31/2028	$344.53	10.0%	$275.62
12/31/2029	$372.09	8.0%	$297.67
12/31/2030 and on	$397.02	6.7%	$317.62

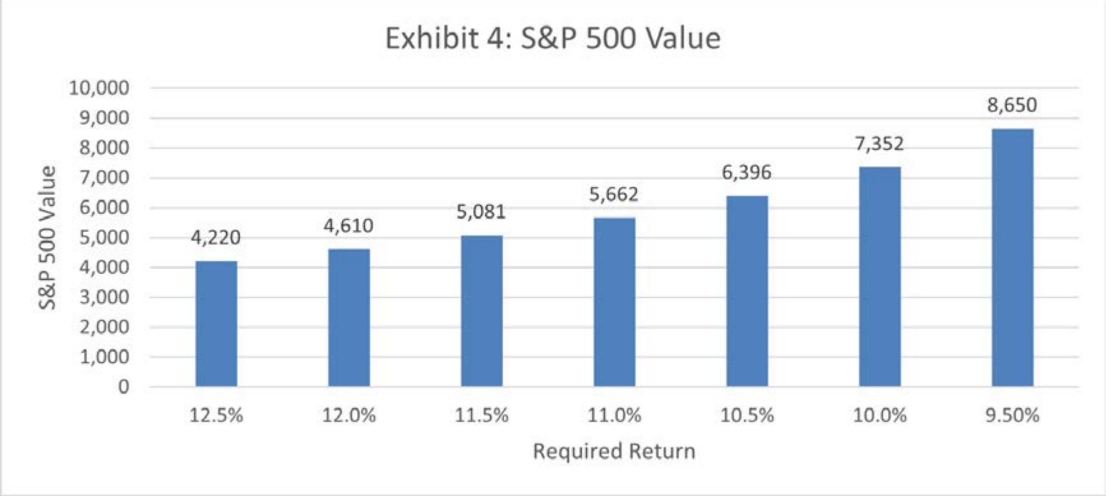
The estimated free cash flow to equity is what a firm could pay out after accounting for capital expenditures to remain a going concern and continue to grow. I assume this value is 80% of earnings which is based on doing thousands of valuations of individual firms. In addition, over the last 10 plus years this number has averaged much higher through dividends and stock buy-backs. In 2024, approximately $1.6 trillion was returned out of $2 trillion in earnings for a payout ratio of 80%.

Perhaps the most critical input is the return investors require for holding stocks. It doesn't take much of a scare to increase this required return and drastically reduce the value of the stock market. A quick way to gauge how the market's required returns change is to monitor the Chicago Board Option Exchanges Volatility Index (VIX), which is often referred to as the Fear Index. For the statistically minded, VIX is the implied volatility from index options. Exhibit 3 shows VIX history from 1990 through Oct. 2025. It is currently back to its average value of 19 (as of Oct. 13, 2025) after jumping from 17 to 22 three days earlier when President Trump announced new 100% tariffs on China. The VIX has reached 80 twice, once during the financial crisis and the second time during the Covid Crash. It is usually more reactionary than predictive.



If the VIX is around its average value and knowing the market averages 10% a year over longer periods of time, a good estimate for investor's required return to hold stocks is 10%. One can also use the equity risk premium method which involves adding 5 to 8% to the 90-day treasury rate. With the 90-day treasury currently yielding 4% and adding a 6% equity premium (5.5%) is the historical average, one also arrives at approximately 10%, at least as of early Oct. 2025.

With all these assumptions, Exhibit 4 shows the value of the S&P 500 for required return estimates ranging from 12.5% to 9.5%. At 10%, the value is 7,352. As of Oct. 3, 2025, the S&P 500 is currently at 6,700. However, increase the required return to just 10.5% and the market is overvalued and only worth 6,396 according to Exhibit 4. It is easy to see why the market is so volatile. Investors becoming more confident or cautious can move the market drastically in either direction. As two examples, we just saw this with the tariff tantrum in April and the Oct. 10, 2025, reaction to President Trumps 100% tariff announcement on China.



Estimating the S&P 500 fundamental value based on what I think is relatively straight forward. The hard part is not what I or you think but trying to figure out what everyone else is thinking.