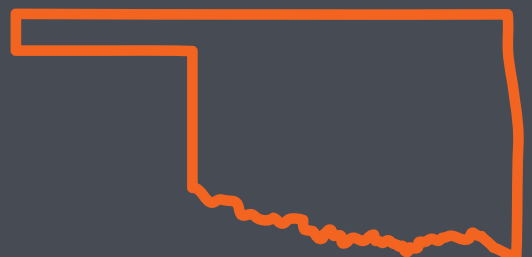


# OKLAHOMA BRAIN DRAIN REVERSAL

## WHAT IS HAPPENING, AND WHAT CAN WE LEARN?



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# TABLE OF CONTENTS

**EXECUTIVE SUMMARY.....1**

**INTRODUCTION.....2**  
Theory.....2  
The Initial Data.....3  
A Comparative Look.....3

**FACTORS OF COMPARISON.....4**  
General Economic Trends.....4  
Industry Portfolio.....5  
State Taxation and Support.....6  
Cost of Living.....7  
Employment.....8  
Transportation Infrastructure.....9

**CONCLUSION.....11**

**REFERENCES .....12**

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# EXECUTIVE SUMMARY

Our team has done it again! We're excited to share with you our latest work that explores a phenomenon colloquially referred to as "Brain Drain Reversal."

For some years, there has been a public narrative pointing to brain drain out of Oklahoma, based on a perception that young, well-educated Oklahomans were moving away from the state in search of better opportunities. We noticed something different in recent data and have sought to uncover what may be behind this potential reversal. We also wanted to look for insights that could show the way to enhanced competitiveness for the state, particularly as it relates to increasing the state's attractiveness as a hub for international trade. This is important because as the US Small Business Administration points out, "small businesses engaged in international trade grow faster, pay higher wages, and have greater economic stability"<sup>1</sup> than their peers who are not engaged internationally.

Seeking a better understanding, we embarked on a comparative analysis with Tennessee, aiming to unearth insights that could grow Oklahoma's attractiveness as a destination for domestic migrants and also enhance Oklahoma's competitiveness, particularly in the context of increasing international trade. One key finding was that Oklahoma may have an opportunity to leverage its geographical advantage and contribute to the evolving Canada-US-Mexico trade corridor, particularly in the context of the recent trend toward nearshoring.



Back row: Jeremy Hicks, John Schoeneman, Andrew Ranson, Mark Walker, and Paulo Freitas  
Front row: Annie Vo, Maria Lopez, Ye Wana Hlaing, Maria Espinosa, and Evelin Mendoza

# INTRODUCTION

For some years, there has been a public narrative pointing to “brain drain” out of Oklahoma. The narrative was based on a perception that young, well-educated Oklahomans were moving away from the state in search of better opportunities. We noticed something different in recent data and have sought to uncover what may be behind this potential “Brain Drain Reversal” as well as any insights that point to enhanced competitiveness for the state, particularly as it relates to increasing international trade. As we considered ways to uncover insight, we thought about what other similar states we might compare to Oklahoma. We believed that Tennessee’s industrial sector focus, and its success over the past few decades as a logistics hub could potentially serve as a benchmark.

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## THEORY

In 1970, Harris and Todaro introduced a model to explain domestic migration from rural to urban areas. Instead of using simple wage gaps to explain urbanization, it introduces the concept of expected income as a motivating factor for domestic migration.<sup>2</sup> Adjusting for cost of living to measure real incomes, the model provides a powerful explanation for why we historically saw high rates of migration to states with already higher population densities. However, as costs have gone up in these areas, cities in less populated states have become more attractive. Also, trends such as remote and hybrid work have changed individual calculations about the optimal place to live and how to receive the highest wages relative to cost of living. Lastly, for developed countries the tradeoff between wages and location is more nuanced as the trade-off between income and other sources of benefits become more complicated (e.g., commute time, resources, politics, etc.). This is because income becomes relatively less important as individuals reach certain thresholds for quality of life that are directly determined by income.

**“Trends such as remote and hybrid work have changed individual calculations about the optimal place to live and how to receive the highest wages relative to cost of living.”**

These drivers of migration have led Oklahoma to find itself part of a transformative demographic shift in the United States, which some see as the ending or reverse of “Brain Drain” in certain states.<sup>3</sup> While new destination states exist in every region, there is a noticeable concentration of increased population in the Southern region, including states like Oklahoma, Georgia, Florida, and Texas, which saw population increases exceeding 1% during this period due to domestic migration. This contrasts sharply with population declines experienced by states like California, New York, Illinois, New Jersey, Massachusetts, and Maryland, that historically have had net inbound migration. In this report we seek to explain why this shift is happening through careful consideration of migration trends, underlying characteristics, and policy differences. (While this report specifically focuses on migration trends, the CITD has produced a longer, more in-depth report on human capital trends in Oklahoma and how it matters for international competitiveness. Scan the QR code on page 14 for access.)



# THE INITIAL DATA

According to a 2023 report on migration statistics<sup>4</sup>, Oklahoma has witnessed its highest gains in net domestic migration since 1999. This trend strengthened throughout 2022, as Oklahoma ranked 11th nationally for interest in moving services in 2022. However, Oklahoma maintained a solid 15th position throughout early 2023.



Oklahoma City metropolitan area

These statistics are reflected in tangible changes, including Oklahoma City's emergence as the 20th-largest city in the nation, boasting a population of 687,725 residents. Notably, the dynamic growth extends beyond the capital, with Tulsa experiencing an influx of 7,000 new residents in 2021, propelling the Tulsa metropolitan area past the one million resident milestone. A projected 6% increase in Tulsa's population, equivalent to 63,000 residents, is anticipated between 2021 and 2027.<sup>5</sup>

Oklahoma's recent population growth follows years of slowing growth that lasted until 2020. This shift, while nascent, is widespread. According to a 2022 report by Shupert and Wilkerson<sup>6</sup>, in the years 2020 and 2021, Oklahoma experienced a population increase as it gained more residents from 33 other states than it lost to them. Notably, during these two pandemic years, there was a significant influx of people from California and Texas into Oklahoma. Oklahoma saw a net gain of 8,500 individuals from California and 7,300 from Texas, and the state gained 1,500 new residents from Colorado and 1,100 from Arizona during the same period, as reported by The Oklahoman in 2023.<sup>7</sup> This positive inflow includes people with some college education, including associate degrees, and diverse professionals between 25-52 years old. This indicates that the state is receiving new workforce participants and intellectual capital<sup>8</sup> in addition to people moving for retirement, health, and family reasons.

**“Oklahoma finds itself part of a transformative demographic shift in the United States – a Brain Drain Reversal.”**

Meanwhile, in another Southern agricultural state, Tennessee, an equally impressive migration story is unfolding. Tennessee witnessed a significant influx of nearly 83,000 residents in from July 2021 to June 2022, marking what is likely the largest yearly in-migration in the state's history. The Tennessee State Data Center's analysis of US Census Bureau data for the year ending June 30, 2022, reveals that a 1.2% population increase, despite a higher number of deaths than births<sup>9</sup>, was driven by a net migration of 90,000 people, including 8,000 from international locations.

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## A COMPARATIVE LOOK

It is interesting to note the similarities in the migration trends between Tennessee and Oklahoma, as both states have experienced an influx of newcomers driven by common factors such as affordability, a strong housing market, and attractive economic opportunities from growing industries. While each state has its unique appeal, there are indeed some shared characteristics that make both Tennessee and Oklahoma attractive destinations for individuals and families seeking a better quality of life and career prospects.

One of the most impressive feats for Tennessee has been its success in establishing Memphis as a major transport hub with firms such as FedEx, Swift Transportation, and J.B. Hunt establishing major operating hubs there. This success is of particular interest for Oklahoma. Given its geographical centrality in the US and the North American continent, Oklahoma may in the future increase its role as a logistics center.



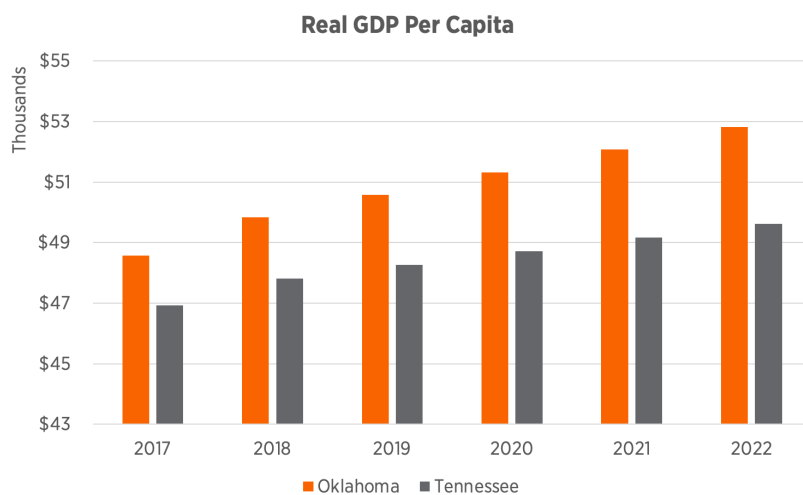
Memphis metropolitan area

Tennessee has a significantly higher population density and nominal GDP per capita than Oklahoma and is further along on the development track, but due to some of the shared characteristics described above, and especially because of its success in the transportation and logistics sector, we have chosen it for a case comparison. Through this comparison, we strive to uncover differences and similarities that can be exploited by Oklahoma policy makers, firms, and residents to position Oklahoma as a destination state and continue to increase its national and international competitiveness. For this comparison, we focus on migration trends, economic variables, industry portfolio, infrastructure, and policy. Before moving into the comparison, we provide a short explanation of the economic theory for domestic migration, and we conclude with a summary of the comparison and a path forward for Oklahoma.

## FACTORS OF COMPARISON

In this section, we compare Oklahoma and Tennessee across a range of dimensions and end each section with an assessment of which state is the “Winner” based on our analysis.

## GENERAL ECONOMIC TRENDS



Source: Open Data Network<sup>11</sup>

Figure 1

In the past five years both Oklahoma and Tennessee have been growing both in overall GDP and GDP per capita. However, the two differ in that Tennessee is much larger in terms of GDP (\$350 billion in 2022, compared to Oklahoma’s \$191 billion), but Oklahoma’s inflation adjusted GDP per capita is higher and growing faster (2.17% compared to Tennessee’s 1.18%, see Figure 1). Both states present a rapid increase compared to their neighbors according to the national GDP growth ranking, being in the 6th and 15th place, respectively.<sup>10</sup>

In recent years, there have been increased flows of domestic migration into both Oklahoma and Tennessee, with individuals arriving to settle, work, or retire. These individuals are contributing to the states' economies through their employment, businesses, consumption, and tax payments. These contribute to a mutually reinforcing increase in each state's attractiveness to migrants.

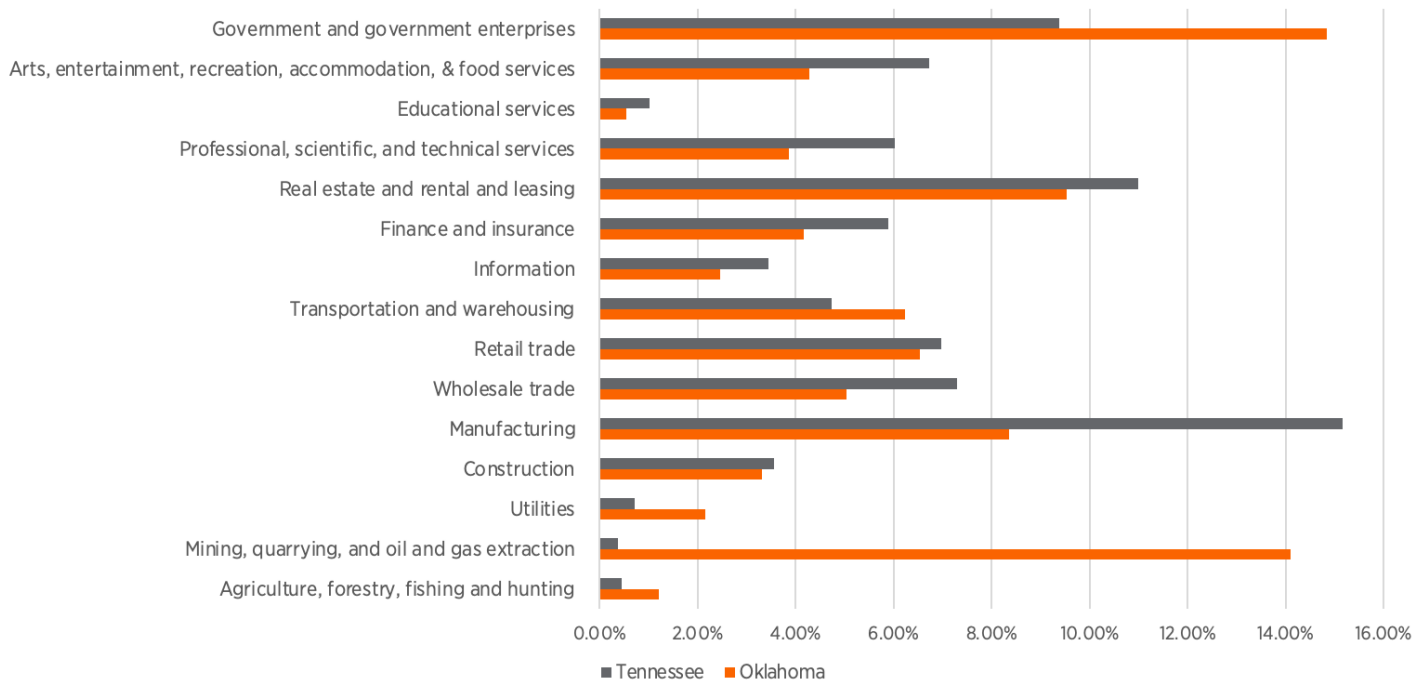
**Winner = Tie: both states have growing, real economies that can accommodate a relatively good quality of life.**

## INDUSTRY PORTFOLIO

When examining the economic portfolios of both Tennessee and Oklahoma, it becomes evident that both states maintain diversified economies encompassing various sectors. Nevertheless, distinct trends and dependencies emerge. Oklahoma's economy exhibits a pronounced reliance on the oil and gas industry and has a prominent aerospace industry centered around Tinker Air Force Base. In contrast, Tennessee's economy is characterized by a more prominent presence in manufacturing (automotive manufacturing in particular) and healthcare. These sectors have become the pillars of each state's economic foundation.

One influential factor contributing to Tennessee's portfolio is its strategic geographic location. Situated near the East Coast, the state is traversed by an automotive corridor stretching from Michigan to Alabama. It also borders states that have growing automotive manufacturing sectors such as Georgia, Alabama, and Mississippi, which are forming new automotive economic clusters.

**Sector Contribution to State GDP in 2022**



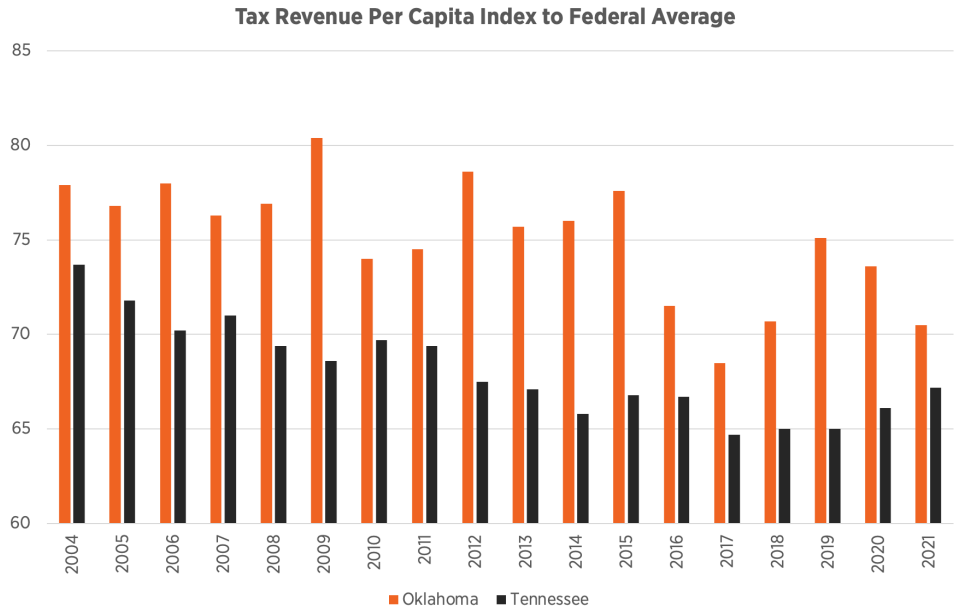
Source: U.S. Bureau of Economics<sup>12</sup>

**Figure 2**

**Winner: Tennessee – Tennessee's manufacturing and service sectors contribute a larger share of its GDP, while Oklahoma is more reliant on natural resources and government enterprises.**

# STATE TAXATION AND SUPPORT

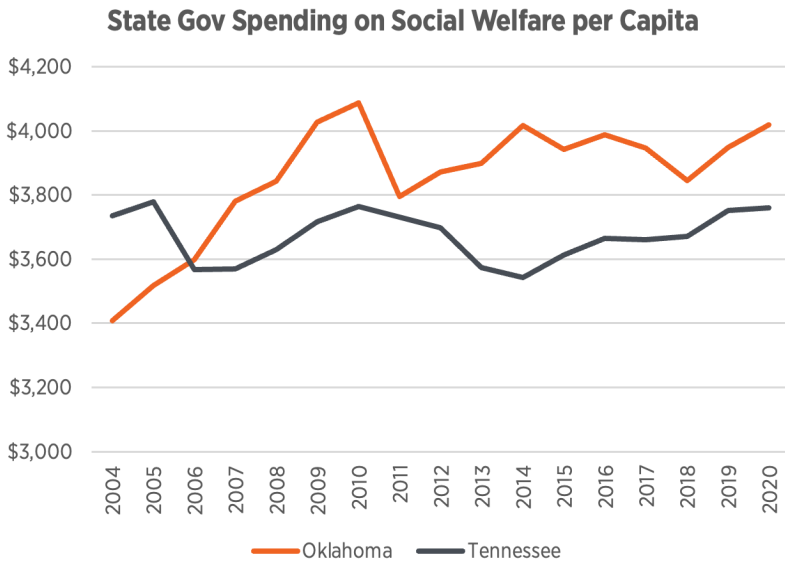
Oklahoma’s tax revenue per capita is notably higher than Tennessee’s, with an approximate margin of 5 to 10 points, but both are well below the federal average (Figure 3a). In 2021, Tennessee recorded a per capita tax revenue of \$7,771, which encompasses intergovernmental funding from the federal government, property taxes, general sales taxes, selective sales taxes, individual income taxes, corporate income taxes, and various other sources.



Source: Tax Policy Center<sup>13</sup>

Figure 3a

Oklahoma’s per capita tax revenue from the same array of categories stood at \$9,117. This disparity suggests that Tennessee may be a more attractive state for businesses or individuals that place a higher value on taxation rate at the margin.



Source: Tax Policy Center<sup>14</sup>

Figure 3b

Turning our attention to how state governments spend their tax revenue, Oklahoma exhibits a slightly higher and growing per capita spending level than Tennessee across various essential services such as public welfare, law enforcement, healthcare, basic education, and higher education (see Figure 3b). Therefore, while Oklahoma taxpayers might pay more in taxes per capita, they also receive more government spending per capita, which can wash out the differences in tax collection per capita.

However, it is important to note that Tennessee boasts a significantly larger population than Oklahoma, with 6.975 million residents compared to Oklahoma’s 3.987 million.<sup>15</sup> A larger population can lower per capita costs of services and derive benefit from economies of scale. However, the difference in real GDP per capita between Tennessee and Oklahoma far outweighs this disparity in their spending patterns.

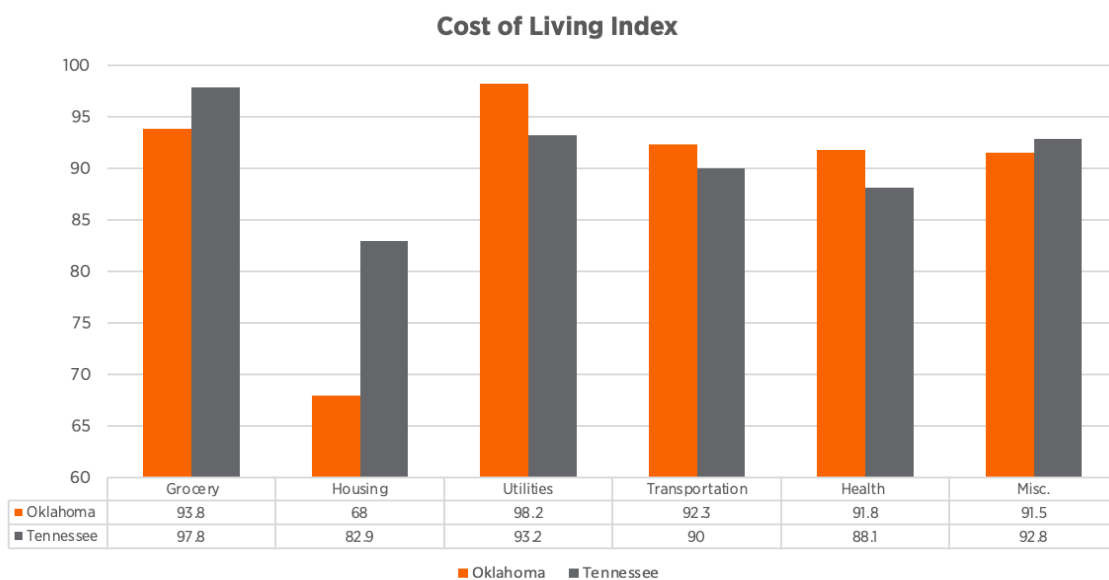


Both states have a variety of programs to support their workforce, and firms, and to promote domestic and international investments. The state of Tennessee is committed to fostering business growth and employment opportunities by offering a range of incentives. These include programs for new small to medium-sized businesses creation, economic development, machinery and industrial grants, and a series of tax credits, aiming to contribute to the overall economic prosperity of the state and nourish its industry.<sup>16</sup> Oklahoma also is focusing on offering a more business-friendly environment and an attractive employment hub and offers an even greater number of programs. Oklahoma’s approach differs in that it has strategically identified and focused its programs on job creation incentives, investment incentives, and workforce tax credits, in addition to other types of benefits focused on the expansion of local businesses, export consulting services for small businesses, tax credits for rural communities, Foreign Trade Zone benefits, and grants for human capital specialization.<sup>17</sup>

**Winner: Oklahoma – while Tennessee has a slightly lower tax index per capita, Oklahoma’s higher real GDP per capita, higher level of government spending per capita, and strategic state support programs give it the edge.**

## COST OF LIVING

While we have already discussed real wages in each state, it is useful to look at a more detailed breakdown for each state’s relative cost of living through the lens of Personal Consumption Expenditures (PCE), also known as consumer spending. PCE differs from Consumer Price Index in that it also includes costs that are paid for by third parties, such as employer provided health insurance. According to the Bureau of Economic Analysis’ 2023 PCE report, Oklahoma has the second-lowest per capita PCE (\$42,046) in the United States, behind only Mississippi. This indicates that Oklahoman households spend a relatively lower amount on goods and services due to the low cost of living. In comparison, California’s per capita PCE is \$60,272, Texas’ is \$49,082, and Tennessee’s is \$46,260.<sup>18</sup> This gap does appear to be growing according to the Bureau of Economic Analysis, with Tennessee being hit harder by inflation.



Source: *World Population Review*<sup>19</sup>

Figure 4

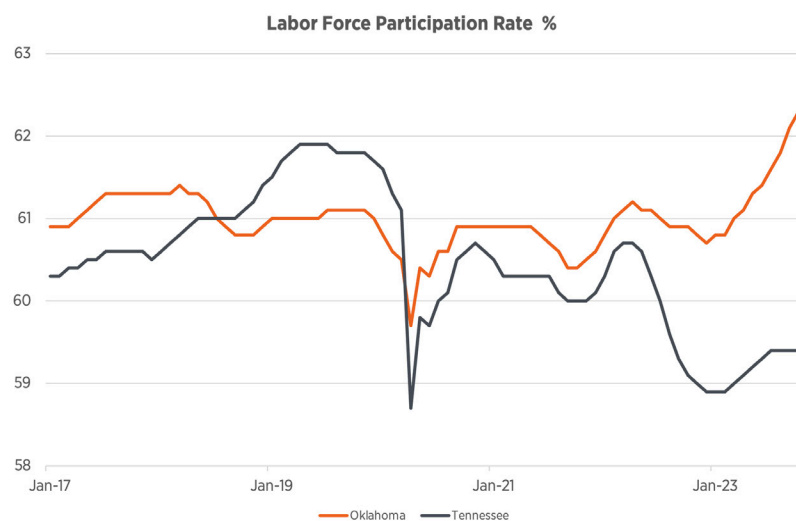
In Figure 4 you can see that in most categories, Tennessee and Oklahoma have similar costs of living; and both are also below the national average. Among these categories, the biggest difference between the states is in housing. Since housing can be a significant share of household spending, with some estimates at 25% or higher for lower income households,<sup>20</sup> affordable housing can be a major contributor to a state's competitiveness in attracting highly needed labor.

One factor of cost-of-living not captured in these categories is that Tennessee does not have a state income tax, which can result in a lower tax burden for individuals residing there. However, this difference shrinks when considering property, sales, and use taxes, which results in Oklahoma having an effective state-local tax rate of 8.98%. In comparison, Tennessee's effective state-local tax rate is 9.55%.<sup>21</sup>

Another key difference is home and auto insurance. Because of its weather, Oklahoma has some of the highest home and auto insurance rates in the country. Oklahoma's home insurance rates are nearly double Tennessee's and auto insurance rates are nearly a third higher.<sup>22, 23</sup>

**Winner: Oklahoma – Cost of living has become one of the most crucial factors that have led domestic migration into Oklahoma, especially after the COVID-19 pandemic. Because of this, Oklahoma and Tennessee have become leaders as destinations for domestic migrants. There are key differences between the two across the cost of living categories but taken together the states are similar, and Oklahoma appears to have a slight edge. Lastly, it is important to note that while state to state comparisons can be useful, individuals looking to move will most likely compare city to city, which can deviate from the state-to-state differences presented here.**

## EMPLOYMENT



Source: US Bureau of Labor Statistics<sup>24</sup>

Figure 5a

Despite Tennessee having a larger population and higher population density than Oklahoma, it is interesting to note that Oklahoma's labor force participation rate currently exceeds that of Tennessee, and it has a slightly lower unemployment rate (see Figure 5a & 5b). This is important because a lower unemployment rate, especially when labor participation is higher, indicates that Oklahoma has more job opportunities for prospective migrants.

Furthermore, this difference is growing with Oklahoma's labor force participation rate exhibiting an upward trend with fewer fluctuations. Tennessee, while still maintaining

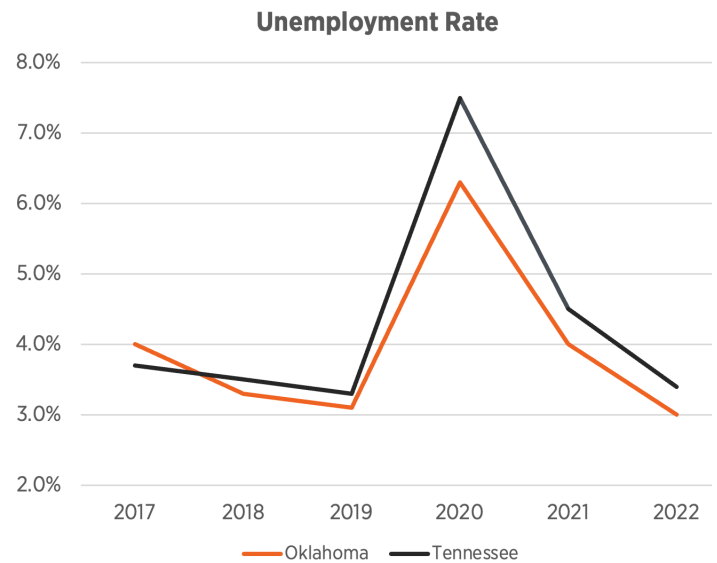
a strong workforce, faces a slightly more challenging labor market environment.

That being said, it is worth acknowledging that making assumptions about the impact of domestic migration on both states' labor force participation rates is a complex endeavor, especially considering the widening gap of labor participation rates between the two states following the pandemic.

Another observation is the contrasting productivity trends of those that are employed in Tennessee and Oklahoma. Although both states follow the minimum wages set by the federal Fair Labor Standard Act (FLSA), currently set at \$7.25 per hour, Tennessee stands out as a state experiencing a positive trajectory in labor productivity, attributed to a surge in output that surpassed the growth in hours worked. In comparison to the previous year, Tennessee achieved a 5.1% increase in productivity in 2022. Conversely, OK is grappling with a decline in productivity, registering an average decrease of 0.8% from 2019 to 2022.<sup>26</sup>

One of the possibilities of lower labor force participation in Tennessee than Oklahoma is that the Tennessee-based Yellow Corp trucking company filed bankruptcy in 2020, causing 33,000 jobs to be lost.<sup>27</sup> With respect to labor productivity, Tennessee's advantage is likely due to the automotive sector which can yield higher productivity by utilizing robotic machines and fewer people.

**Winner: Oklahoma - Employment statistics indicate that finding a job in Oklahoma is currently easier, which is the main contributor to domestic migration.**



Source: Bureau of Labor Statistics<sup>24</sup>

Figure 5b

## TRANSPORTATION INFRASTRUCTURE

In Tennessee, infrastructure has been a key contributor to the state's recent positioning as a logistics and transportation hub. There are 78 public-use airports, of which five provide primary commercial services, and the rest are general aviation airports. Railroads are also important in Tennessee with a system that spans more than 2,000 track miles for Class I rail lines (six lines) and 23 lines of Class III tracks with a total track mileage of 806. Tennessee also has some of the best rated roads in the country and is connected by important interstates such as I-40 and I-75.

Annually \$812 million of goods are shipped to and from Tennessee through its 95,000 miles of highway, these being critical for resident, visitor, and carrier mobility across and beyond the state. Tennessee does appear to be struggling to keep up with needed repairs from the increased usage, as pavement deterioration, congestion, and accidents have increased, causing the pavement Quality Index to drop 0.3 points from 2016 to the end of 2021 (from 4.2 in 3.9 on interstates, and from 3.6 to 3.3 on state surface roads).<sup>28</sup>

Tennessee’s main comparative advantage, however, is its 950 miles of inland waterways that come together at the Cumberland, Mississippi, and Tennessee Rivers which are crucial for commercial and transportation navigation inside this logistics hub. Tennessee’s main strategy for building this logistics center was to attract as many investments and companies as possible to the river proximity, and create a circular ecosystem that links carriers, stakeholders, industry, and a monumental infrastructure. This plan aimed not just to protect the surroundings from flooding (as this area has a history of severe water disasters), but also to embody a futuristic vision of becoming the connection between people, resources, and products. This has resulted in great success for the state but has also brought challenges related to water and habitat protection and sustainability.<sup>29</sup>

**“Tennessee’s main comparative advantage is its 950 miles of inland waterways . . . which are crucial for commercial transportation.”**

Unlike Tennessee, Oklahoma does not have the advantage of the Mississippi River or proximity to large East Coast population centers, but it is strategically positioned at the geographical center of North America, and therefore serves as a pivotal logistical hub for the entire continent that facilitates connectivity for trade and commerce.

A standout feature of the state’s central location is that 101 million people reside within a 500-mile radius, or a single night’s journey by road, primarily along I-35 and I-40, which

intersect in Oklahoma City.<sup>30</sup> Oklahoma’s transportation network includes 135 public-use airports, 3,850 miles of rail track (including 3 Class I rail lines and 18 Class III lines), 12,000 miles of highways and several inland ports, including the Tulsa Port of Catoosa, and Tulsa Port of Inola, and the Muskogee Port. These inland waterways provide access to 20 states and the Gulf of Mexico and serve as crucial gateways for goods and commodities, enhancing the state’s trade capabilities and fostering economic growth.

Access to inland waterways is beneficial, especially for the cost effective, environmentally friendly transport of bulk goods. By upgrading the current inland waterway network and further integrating it with the rail and road transportation modalities, extensive benefits could be realized, and the entire network could become more competitive, and more connected.



With the current trend toward reshoring and nearshoring of US manufacturing, Oklahoma could potentially take advantage of the evolving Canada-US-Mexico trade corridor. Key features of this corridor are I-35 and a recent merger creating a single north-south continental rail network that passes through the eastern part of Oklahoma.<sup>31</sup> A serious evaluation of the cost-benefit of taking actions that could propel the state while the nearshoring trend is still emerging may be in order.

**Opportunity: While Tennessee may win this category today due to its Mississippi river ports and better roads, Oklahoma’s more central location, and its position along the Canada-US-Mexico trade corridor, especially as nearshoring trends evolve, position the state to make meaningful strategic infrastructure moves.**

# CONCLUSION

Our exploration began with a question rooted in the observation of a novel trend in Oklahoma in 2022 when it ranked 11th nationally for net domestic migration. This phenomenon challenged the prevailing narrative of “brain drain” out of the state. Seeking a better understanding, we embarked on a comparative analysis with Tennessee, aiming to unearth insights that could enhance Oklahoma’s competitiveness, particularly with the aim of increasing international trade.

The demographic shift in the United States marked by a brain drain reversal suggests a transformative trend, with Oklahoma as a clear beneficiary. The state’s net migration statistics underscore its newfound appeal. The influx is made up of a diverse range of professional and skilled workers, highlighting the state’s robust industries and attractive career opportunities.

As we delved into the comparative analysis, certain parallels emerged between Oklahoma and Tennessee. Both states have experienced an increase in population due to common factors such as affordability, a robust housing market, and attractive economic opportunities. However, key differences in economic portfolios, taxation, cost of living, and employment dynamics also surfaced. One significant insight was that while Tennessee’s proximity to the Mississippi River and the East Coast population centers is an advantage, further analysis revealed that Oklahoma may benefit from its location in the center of North America which facilitates access to cities not only in the US, but also in Canada and Mexico, which is especially meaningful in the context of the recent trend toward nearshoring. By improving and integrating its network of airports, rail tracks, highways, and inland ports, Oklahoma has an opportunity to leverage its geographical advantage and contribute to the evolving Canada-US-Mexico trade corridor.

Crucially, our comparative analysis indicates that such infrastructure integration and investment could play a vital role in enhancing Oklahoma’s competitiveness. This, coupled with the state’s other strategic advantages, opens avenues for policymakers, businesses, and residents to position Oklahoma as a destination state for businesses to relocate or expand, or for home grown businesses to thrive. This could potentially create hundreds if not thousands of new, well-paying jobs, thus continuing and enhancing the positive momentum of net in-migration which triggered our inquiry. Recent announcements by Canoo,<sup>32</sup> Enel,<sup>33</sup> and others demonstrate that companies are already choosing Oklahoma as the place to grow, and these transportation networks are a factor.

In conclusion, the pathway to continued success for Oklahoma involves strategic investments that capitalize on its unique strengths and contribute to the state’s emergence as a strong global competitor, and a key player in the evolving landscape of domestic migration and international trade.

**“ Our analysis indicates that such infrastructure and investment could play a vital role in enhancing Oklahoma’s competitiveness. ”**



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