



# **Diagnosing Wyoming's Workforce Challenges**

Pathways to Prosperity Project

July 2024

## Executive Summary

**Wyoming is facing two distinct labor market challenges: in the short-term low workforce availability is a constraint while in the long-term job and wage growth have stagnated.**

Currently, Wyoming's labor market is characterized by tightness and employers are struggling to fill positions. However, the current tightness of the labor market is not a phenomenon that is specific to Wyoming but instead is prevalent across the country. What sets Wyoming apart is the lack of growth in employment and wages over the long-term. Understanding these differing dynamics is important because policy responses may attempt to address the short-term issue without considering the underlying structural causes of the long-term dynamics. This will likely be ineffective and not lead to lasting change. For lasting change, the structural issues of the long-term dynamic need to be addressed.

**An often-discussed solution is to increase the supply of training and education – this has merits in its own right but will not solve the long-term labor market challenge facing Wyoming.** Only 38% of all jobs in Wyoming require tertiary education, the second lowest of any US state. Additionally, our analysis shows that the returns to a tertiary degree in Wyoming are significantly below those of its peers. Unsurprisingly, the lack of demand for tertiary-educated workers leads many young Wyomingites with a tertiary degree to leave the state. Overall, however, Wyoming has become an exporter of well-trained young people. Increasing the supply of tertiary education will not address the underlying structural issues facing the labor market.

**A main driver of Wyoming's lagging performance has been the comparatively low labor productivity in the state.** Most of Wyoming's industries have a lower output per worker than the respective national industry and pay lower wages on average. Industries that fall into this category cover 82.8% of all employment in Wyoming. The few industries in which Wyoming is more productive than the rest of the US are mostly related to natural resource extraction. Wage dynamics of occupations in the state exert a similar pattern where STEM-related occupations have not seen much growth, indicating low demand in the state.

**To address the long-term issue Wyoming needs to create the conditions for a more complex economy that can use the potential of its human capital instead of excessively relying on its natural resources.** The challenge is to attract and grow competitive companies in industries with strong demand. A critical factor in doing so is scale. Many more knowledge-intensive industries tend to develop in places that are larger urban agglomerations. Wyoming should focus on the positive forces of agglomeration to develop these industries and make use of the productive potential it has. Creating the conditions for this includes place-based investments and an enabling regulatory framework. In Wyoming, housing regulations have been an important barrier preventing further agglomerations, but efforts are underway to address this barrier.

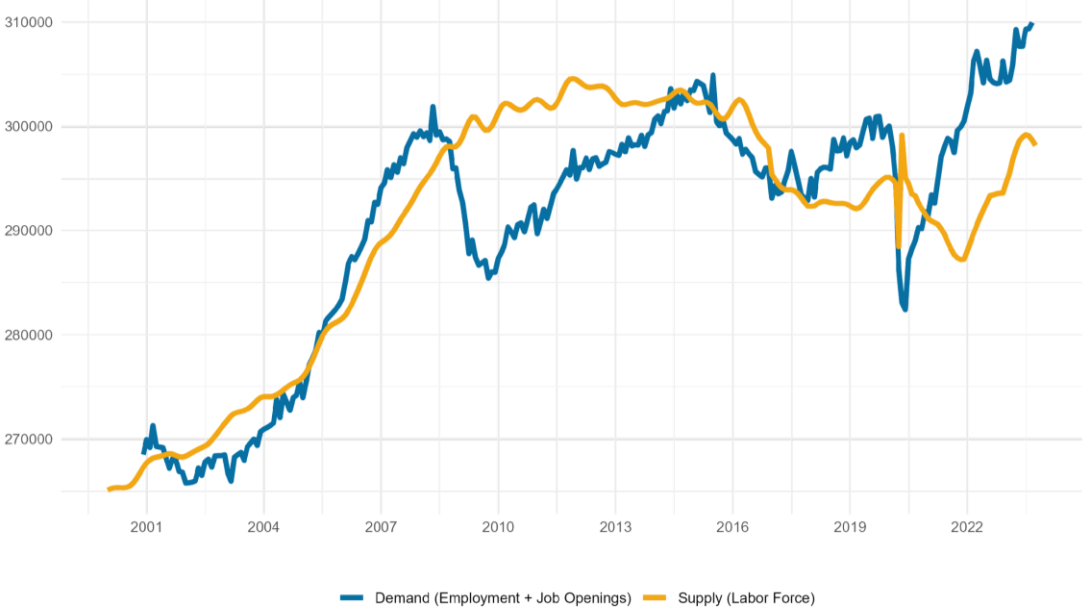
**In the short-term, solutions that are focused on increasing the available labor pool within the state appear most promising in easing the current constraint.** This is especially true when they address structural barriers that could persist after the labor market cools off. Our work documents specific recommendations within the areas of childcare, justice-involved individuals, higher education, and out-of-state workers (Section 3.2) that aim to increase the participation from these labor pools in Wyoming's workforce. These are labor pools that are significant in size and have underutilized potential in terms of labor force participation within the state.

# 1 Describing the workforce challenge

Wyoming is currently experiencing the tightest labor market the state has seen this century. Since February 2021 the demand for labor has significantly outstripped supply. Companies are hiring and posting jobs, but the labor supply is not keeping pace. As Figure 1 shows, the demand for labor is at a record high and significantly exceeds labor supply. This is an abnormal situation compared to the past 25 years. From 2001 to 2009, supply and demand grew in parallel until the financial crisis of 2009 led to a sharp decline in labor demand. Labor demand recovered over time and peaked in 2015. These dynamics are closely related to commodity prices. High demand for Wyoming’s natural resources (coal, oil, and gas) led to high mining employment at the peak of 2008 which created a tight labor market in the state (see Appendix 1).<sup>1</sup> More recently, the impact of the COVID-19 pandemic led to a brief period of excess supply, but since the start of 2021, the state has seen excess demand with labor demand growth outstripping labor supply growth. State-wide the unemployment rate was at 2.8% in February 2024, which is the lowest it has been since May 2008.

This labor market tightness in Wyoming is also visible in the fact that currently there are more than two job openings for every unemployed person in the state<sup>2</sup>. This is the highest that this ratio has been in the state in the last 25 years. But as Figure 2 shows, many other US states also face a tight labor market – this is a national phenomenon that has become acute since 2021. In fact, 24 out of all 50 states reported having more than two job openings per unemployed person in September of 2023 (Figure 3).

Figure 1: Labor Supply and Demand in Wyoming

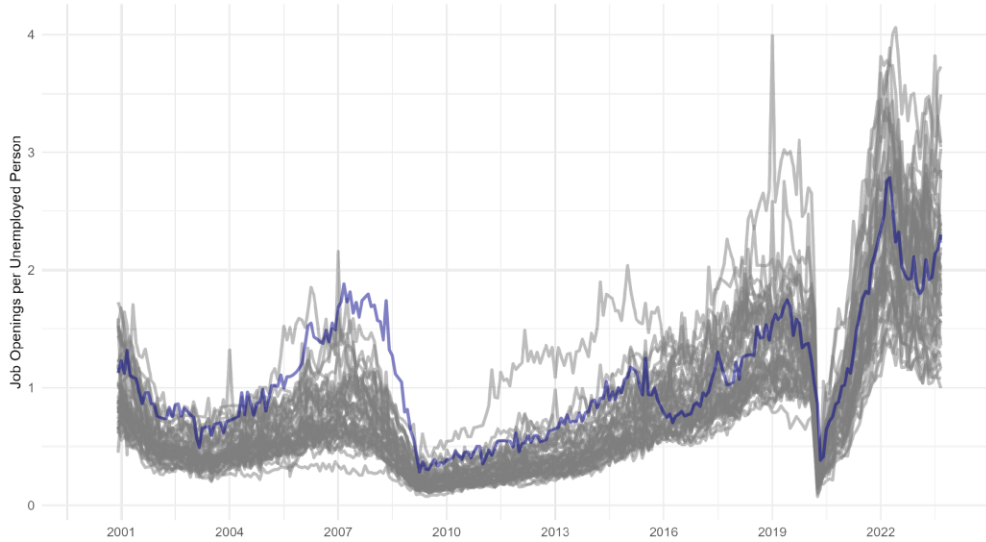


Source: Author’s elaboration based on Bureau of Labor Statistics – Job Opening and Labor Turnover Survey data

<sup>1</sup> Wyoming’s employment in the mining industry (NAICS 21) peaked at 30,372 in Q4 of 2008 and decreased to 17,173 in Q3 of 2023.

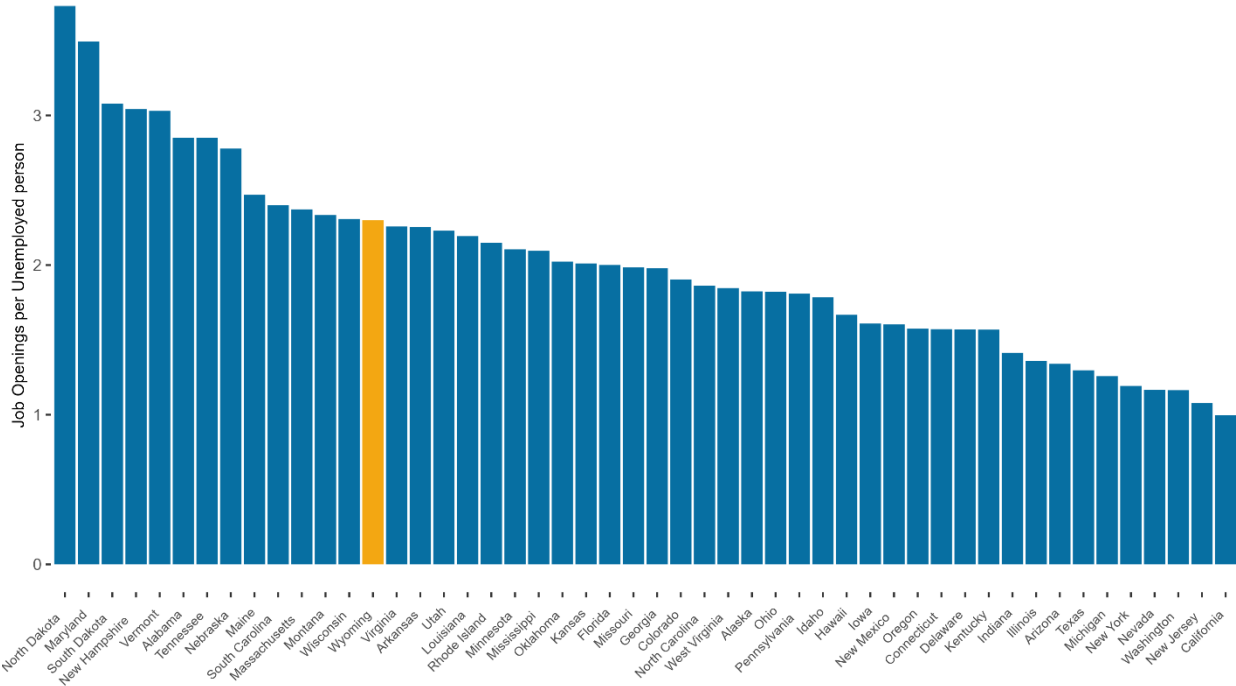
<sup>2</sup> In September 2023 there were 8696 unemployed people in Wyoming and 20,000 job openings.

**Figure 2: Labor Market Tightness across US States (Wyoming in Blue)**



Source: Author's elaboration based on Bureau of Labor Statistics – Job Opening and Labor Turnover Survey data

**Figure 3: Job Openings per Unemployed Person - October 2023**



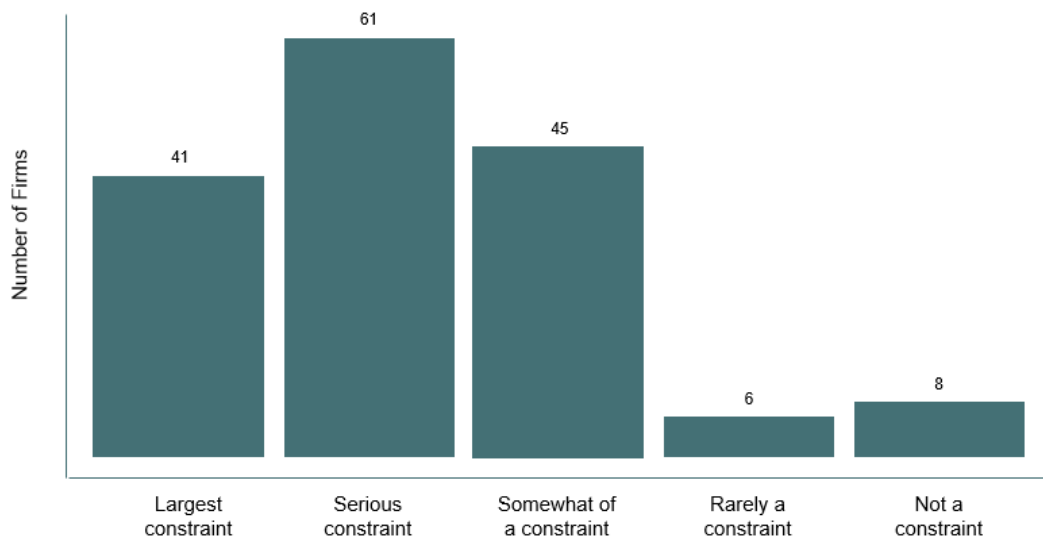
Source: Author's elaboration based on Bureau of Labor Statistics – Job Opening and Labor Turnover Survey data

**While a tight labor market leads to many opportunities for job seekers, its persistence may be concerning if labor availability hinders companies from growing.** This seems to indeed

be the case in Wyoming. In a survey of 161 businesses conducted in July 2023 together with Wyoming’s Department of Workforce Services, the majority of surveyed firms identified workforce availability as a top or serious constraint to their operations (Figure 4). This pattern was consistent across all industries except for mining<sup>3</sup>. The fact that workforce availability is such a constraint is concerning because the growth of existing firms in Wyoming is one avenue to provide better economic opportunities for citizens in the future.

An additional avenue to grow jobs is to attract new firms to the state. Figure 5 shows that Wyoming has successfully attracted small and medium-sized enterprises in recent years, partly due to its favorable tax environment. However, it has struggled to attract larger enterprises even after accounting for its small population size. The combination of a lack of agglomeration and a tight labor market may present a large hurdle for large firms to set up in the state. This is also supported by the experience of the staff from the Wyoming Business Council, who have observed that firms considering moving to Wyoming are most often concerned about the availability of workforce. In the current situation, the lack of available workforce seems to constrain existing companies from growing and large firms from entering the state.

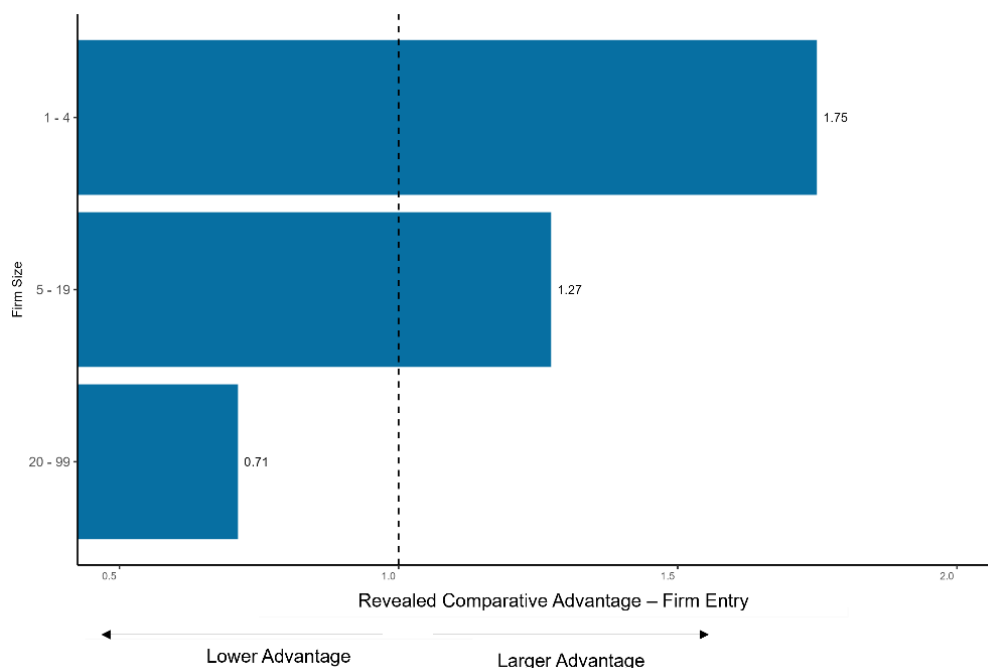
**Figure 4:** Survey of Businesses in Wyoming - Workforce Availability as a Constraint (2023)



Source: Survey of Businesses in Wyoming - jointly conducted with the Department of Workforce Services

<sup>3</sup> The fact that the mining industry is not finding workforce availability to be a challenge may be explained by the fact that it is not growing in employment. At the time of the survey (July 2023) mining employment in Wyoming was still significantly below its pre-pandemic employment levels (17,029 vs 19,845 in February 2020). While there are some

**Figure 5: Entry of New Firms to Wyoming based on Initial Employment (2017 - 2022)**



Note: The revealed comparative advantage is calculated based on the firm entries and also population size. It, therefore, takes into account the smaller population of Wyoming already. Source: Author's elaboration based on US Census – Business Dynamics Survey

**While in the short-term Wyoming faces excess labor demand, the long-term development of the state is characterized by lackluster job growth. Moreover, there is no indication that this tightness is permanent, as previous periods of labor market tightness in Wyoming were linked to high commodity prices and the demand for Wyoming's main natural resource exports is declining.**<sup>4</sup> The trajectory of its regional peers is very different, as most of them significantly grew overall employment from 2012 to 2022. In that period Wyoming performed second worst of all US states with an employment growth rate of 1%, compared to a national rate of 13.8% in this period (Figure 6).<sup>5</sup>

Figure 7 shows a similar dynamic by depicting the job growth of occupations and their starting wage in 2012. The green dots show occupations that grew in terms of employment over this period while the red dots have contracted in employment. Notably, Wyoming has many fewer growing occupations (i.e. green dots) than other states, and even those that grew did not grow substantially.<sup>6</sup> Those occupations which did grow were well-paying, which is a good sign. However, the overall growth performance is still worrisome, especially in comparison to the experience of its Mountain West peers of Utah, Colorado, or Idaho which saw significantly more growth. In the long term, Wyoming's economy has failed to add a significant number of jobs, while

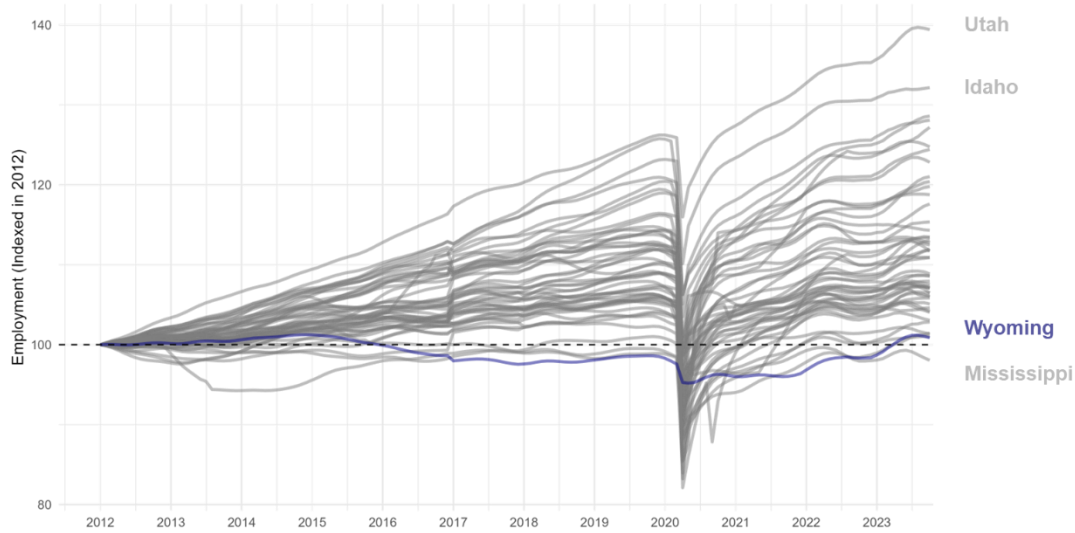
<sup>4</sup> However, the structural issue with an aging population and high outmigration of young people from Wyoming is a factor that could contribute to a slower responsiveness of the supply side.

<sup>5</sup> Robustness analyses using the period 2017 – 2022 instead of 2012 – 2022 yield similar results.

<sup>6</sup> Growing occupations only captured 14% of all employment in Wyoming compared to an average of 34% in its regional peers. The average growth of these occupations in Wyoming was 28% and 40% in the region.

peer states such as Colorado, Utah, Idaho, and Nebraska have seen significant employment growth leading to larger agglomerations.

**Figure 6:** Employment Growth across US states since 2012



Source: Author's elaboration based on Bureau of Labor Statistics –Quarterly Census of Employment and Wages

**Figure 7:** Job Growth by Median Wage 2012-2022



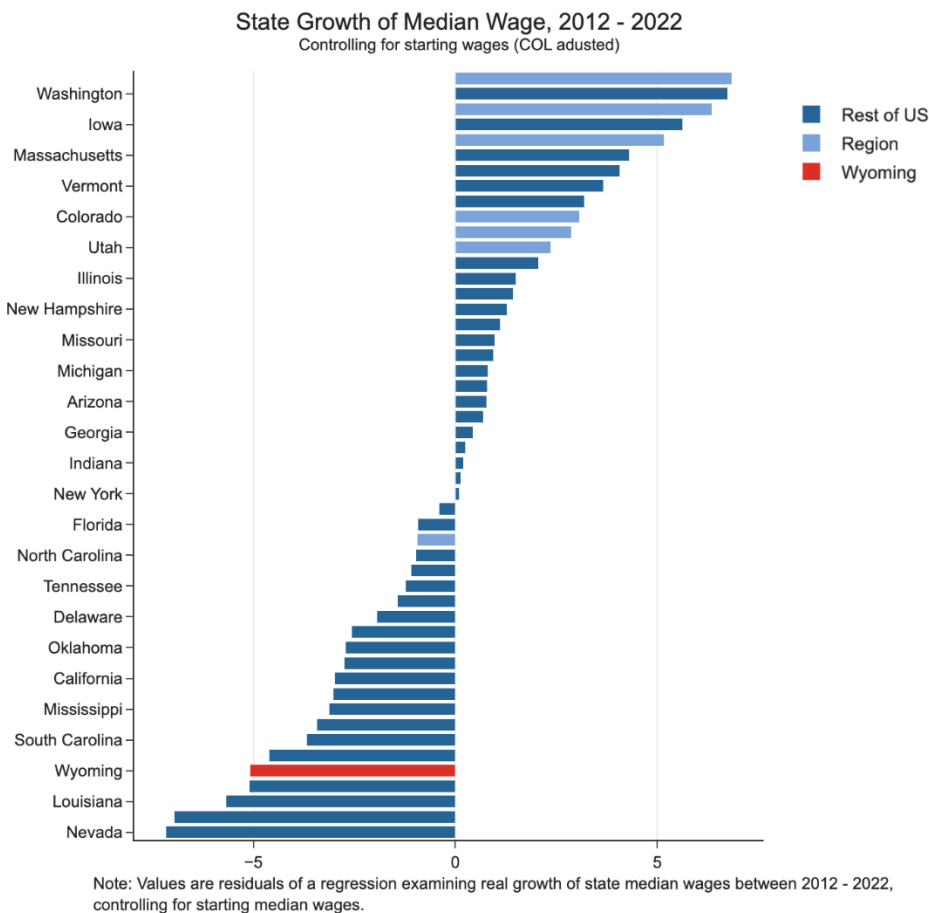
Source: Author's elaboration based on Bureau of Labor Statistics Occupational Employment and Wage Statistics

**In addition to a lack of employment growth, the long-term trajectory of Wyoming also shows low wage growth.** Compared to the national growth of wages over the 2012 to 2022 period, Wyoming has seen the fourth lowest wage growth in this period. Its regional peers have all seen larger wage growth than the national average, except for Utah. A shift-share analysis of

the lack of wage growth in Wyoming reveals that this is largely driven by low wage growth within occupations (which accounts for 60% of the effect) and only to a lesser extent to changes in the occupational structure of the economy (40% of the effect). The slow wage growth in Wyoming may be interpreted as a sign of missing demand and dynamism in the state's economy, as Wyoming has not managed to diversify. Additional explanations may include a lack of productivity gains; the state has not shifted into higher productivity industries, and productivity growth within existing industries has also been low.

Wyoming's regional peers have seen wage growth significantly above the national average after controlling for starting wages, except for Idaho. Increases in employment and real wages indicate significant labor demand in Wyoming's regional peer states. The lackluster performance in both dimensions points towards relatively lower demand for labor in Wyoming over the long term. Wyoming is experiencing a short-term tightness in its labor market within the context of a long-term weakness.

**Figure 8:** Growth of Median Wages at the State Level 2012-2022 - Compared to National Growth



Source: Author's elaboration based on Bureau of Labor Statistics Occupational Employment and Wage Statistics

**In the short-term, the economy and labor market of Wyoming is dominated by tightness, but the long-term trajectory of the state indicates underlying structural issues leading to**



**lackluster growth.** Currently, many firms in Wyoming struggle to fill positions and the lack of availability of labor is constraining the growth and operations of firms across the state. This is, however, an experience shared by employers in many other states across the country, as the US is facing a very tight labor market at the national level. Over the long term, the trajectory of Wyoming's economy has not been dominated by labor tightness but rather by a lack of employment and wage growth. This points to underlying structural issues whose drivers will be analyzed in the following sections.

**The strongly differing patterns over the short- and long-term indicate the existence of two relatively distinct labor market challenges.** In the short-term companies are struggling to find workers as they are trying to grow. However, in the long term, Wyoming's economy has not been able to grow significantly in terms of employment and wages indicating structural issues. The state needs strategies to respond to both challenges. These strategies should not undermine each other but rather be informed by these different dynamics.

## 2 Unpacking potential causes

**The following analysis focuses on distinguishing whether the long-term labor market weakness is driven by insufficient demand for skills or their insufficient supply.** To determine where the main problems lie, we test for specific signals that would indicate an existing problem on either side. We specifically focus on demand and supply of skilled labor, as the provision of skills through tertiary education has been at the center of Wyoming's approach to economic development. While no test will be conclusive by itself, a multitude of signals taken together can indicate what is driving the dynamic. This approach follows the Growth Diagnostics methodology (Hausmann, Klinger, and Wagner 2008). Figure 9 lists the different signals that we would expect to see in the case of either the demand-side or the supply-side being the issue behind the labor market weakness. The following sections will show to what extent we observe these signals in Wyoming.

**Figure 9: Labor Market Diagnostic Signals**

Demand-Side Signals	Supply-Side Signals
<p>⓪ <b>Low Employment Growth:</b> Employers not hiring more indicates low demand</p>	<p>⓪ <b>Low Quantity:</b> Share of tertiary education being low</p>
<p>⓪ <b>Low Wage Growth:</b> Suggests weak demand for labor as higher demand would increase the price for labor which are wages</p>	<p>⓪ <b>High Price:</b> High returns for tertiary degrees would indicate that there is not enough supply to meet the demand</p>
<p>⓪ <b>Low Labor Productivity:</b> Relatively lower output per worker indicates inability to use labor efficiently</p>	<p>⓪ <b>Movement-in-Movement:</b> An increase in tertiary education should have led to growth if insufficient supply had been a binding constraint</p>
	<p>⓪ <b>Skill Mismatch:</b> Higher Demand than there is supply in specific occupations/degree areas</p>

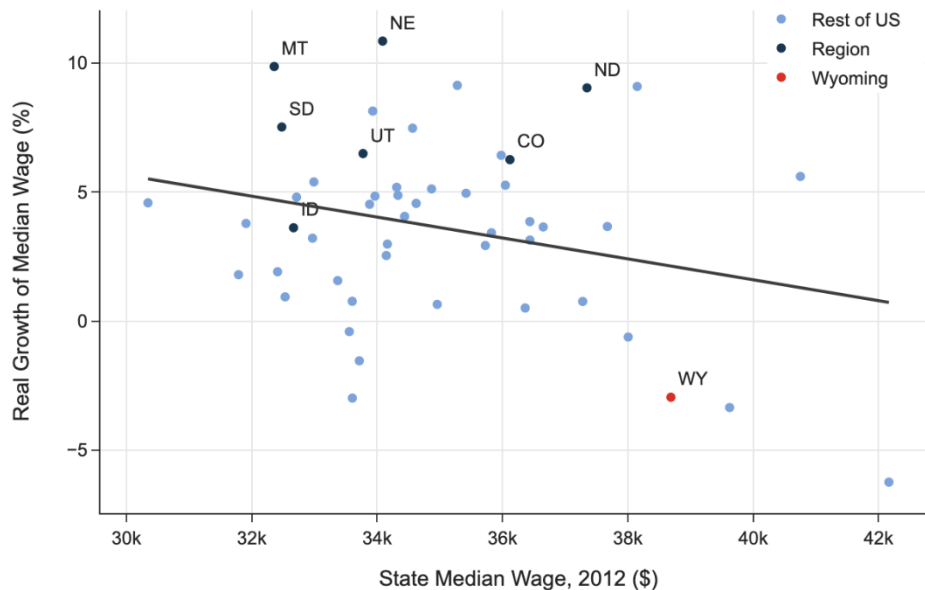
## 2.1 Demand Side Analysis: Labor Productivity and Wage Dynamics

**Wyoming is one of few states that experienced negative wage growth over the period 2012 – 2022 while the national economy grew.** Over the past decade, wage growth in Wyoming stagnated behind other states in the region and the country overall. Wyoming’s median wage was \$38,700 in 2012, among the highest of all US states and \$4,000 above the national median. However, real growth in Wyoming’s median wage was substantially slower in the past decade. The national median wage increased by 4.5% in real terms between 2012 to 2022, while Wyoming’s contracted by 2.9%. Wyoming is one of seven states that saw a contraction in the real median wage during this time, and only Alaska, Connecticut, and Nevada experienced more severe contractions. After controlling for state starting wages in 2012, Wyoming’s growth rate is much lower than expectations, while several neighboring states achieved among the highest growth in median wages of all states. Nebraska, Montana, and North Dakota are among the top five states, all with growth rates exceeding 9% (Figure 10).<sup>7</sup> Two potential factors can drive this divergence in wage growth between Wyoming and other states: (1) a shift in composition to lower-wage occupations as well as those with slower wage growth, and/or (2) lower wage growth of the existing occupations in Wyoming’s economy relative to other states. Using a shift-share analysis, we find that while both factors are at play, approximately 60% of the difference can be attributed to smaller wage growth of occupations relative to other states.<sup>8</sup>

<sup>7</sup> The wage dynamics observed over the last ten years are largely similar to those observed over the last five years: from 2017 – 2022, Wyoming saw a contraction in its real median wage by 2.7%, which is among the lowest growth rates of all US states behind only Alaska and Connecticut. After controlling for state starting wages in 2017, Wyoming’s growth rate is still much lower than expectations, while neighboring states including Utah and Montana achieve among the highest growth rates of all states.

<sup>8</sup> Occupations that are growing slower in Wyoming than they are nationally can be seen in Figure 10.

**Figure 10: State Median Wage in 2012 and Real Wage Growth, 2012 - 2022**



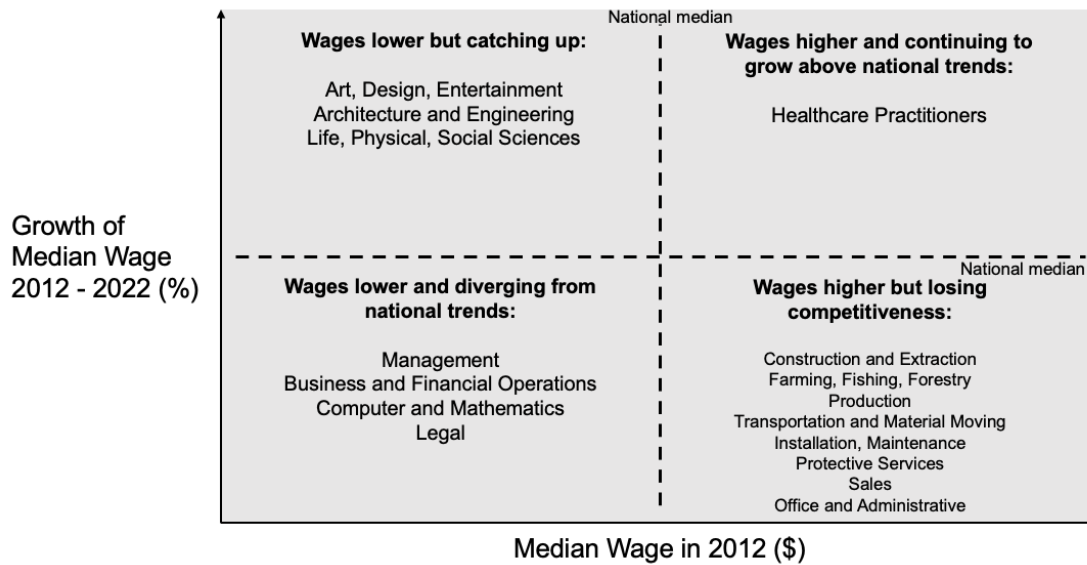
Source: Bureau of Labor Statistics – Occupational Employment and Wage Statistics. Wages adjusted for state cost of living using regional price parities from the Bureau of Economic Analysis.

**The relative wages and recent growth patterns of occupations in Wyoming are strong signals of what labor or workforce is being demanded in Wyoming’s economy.** Over the past decade, Wyoming has seen consistently higher wages (adjusted for cost-of-living) than most states in occupations in construction and extraction, production, transportation and material moving, and healthcare (Figure 11). The bottom right quadrant in Figure 11 lists the occupations in which Wyoming has had higher wages compared to the rest of the US but where wage growth has been lower in Wyoming – indicating a convergence to the national level. There is only one case in which both wages in 2012 as well as subsequent growth have been higher in Wyoming – Healthcare Practitioners (top right quadrant in Figure 11). This points to sustained demand for healthcare occupations in Wyoming, as employers signal a need by raising wages even when they are already higher than in the rest of the country.<sup>9</sup>

**In contrast to healthcare, other occupations show signals of low demand in Wyoming’s economy, particularly in various professional and STEM fields.** Occupations in management, business and financial operations, computer and mathematics, and legal fields had median wages between 8-25% lower than national levels a decade ago, and their wages have continued to diverge from national trends since then (Figure 11 – bottom left quadrant). Growth in both the number of jobs and median wages of many STEM occupations have been slower in Wyoming than in neighboring states and nationally (Figure 12). Low growth in jobs and wages may point towards low demand for these occupations in Wyoming.

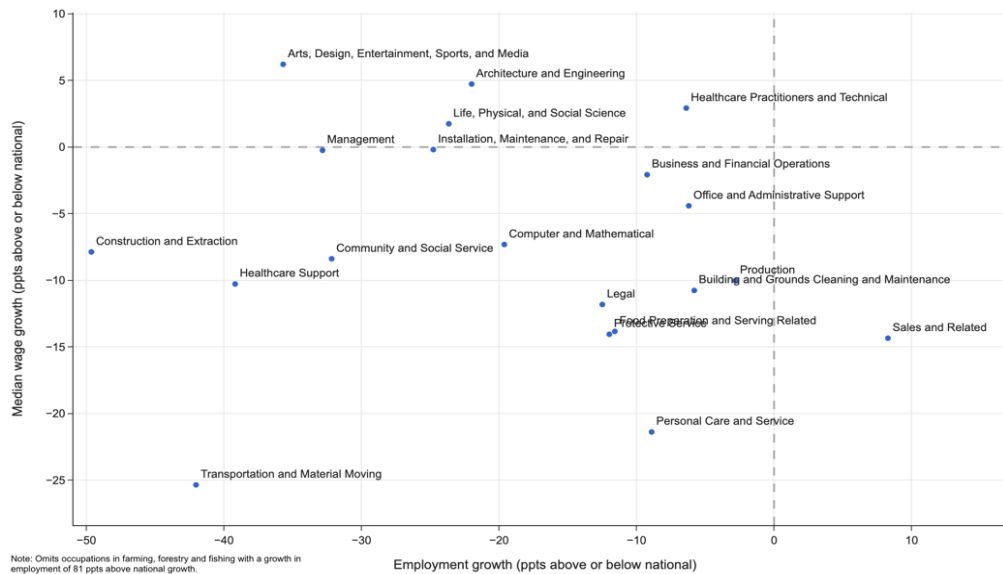
<sup>9</sup> The ability of employers in the healthcare industry to raise wages is somewhat unique compared to other industries that cater to local demand for services. The reason for that is that their revenues are not subject to local purchasing power as the compensation is tied to healthcare insurance.

**Figure 11:** Wyoming's median wage and real wage growth across occupations, 2012 - 2022



Source: Bureau of Labor Statistics – Occupational Employment and Wage Statistics. Wages adjusted for state cost of living using regional price parities from the Bureau of Economic Analysis. Note: This graph indicates in which of the quadrants the different occupational groups fall. The actual data points might differ slightly among groups, the idea is to show the general categories.

**Figure 12:** Wyoming Employment Growth and Median Wage Growth relative to the USA 2012 - 2022

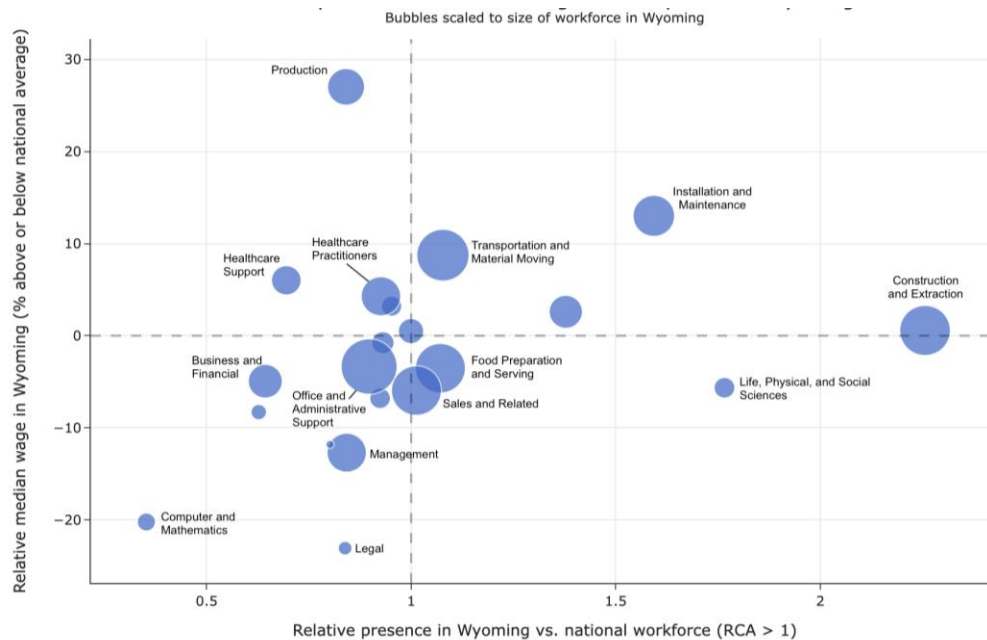


Source: Bureau of Labor Statistics – Occupational Employment and Wage Statistics and Quarterly Census of Employment and Wages. Wages adjusted for state cost of living using regional price parities from the Bureau of Economic Analysis.

**Weak job and wage growth in an occupation may be related to an oversupply of these occupations; however, most occupations that are not growing in Wyoming are already relatively underrepresented in its economy today.** Figure 13 shows the relative presence of occupations in Wyoming in terms of employment (if RCA > 1 Wyoming has more than its fair

share in that occupation)<sup>10</sup> and the extent to which they offer higher wages in Wyoming. The bottom left quadrant shows occupations such as Computer and Mathematics and Business Finance, which are relatively underrepresented in Wyoming and also have lower wages in the state. This Figure also highlights the economic structure of the state, as the occupations with a relatively larger presence are “construction and extraction”, “life, physical and social sciences” (dominated by environmental scientists and conservation technicians in Wyoming) as well as “installation and maintenance”.

**Figure 13:** Relative Presence and Median Wages of Occupations in Wyoming 2022

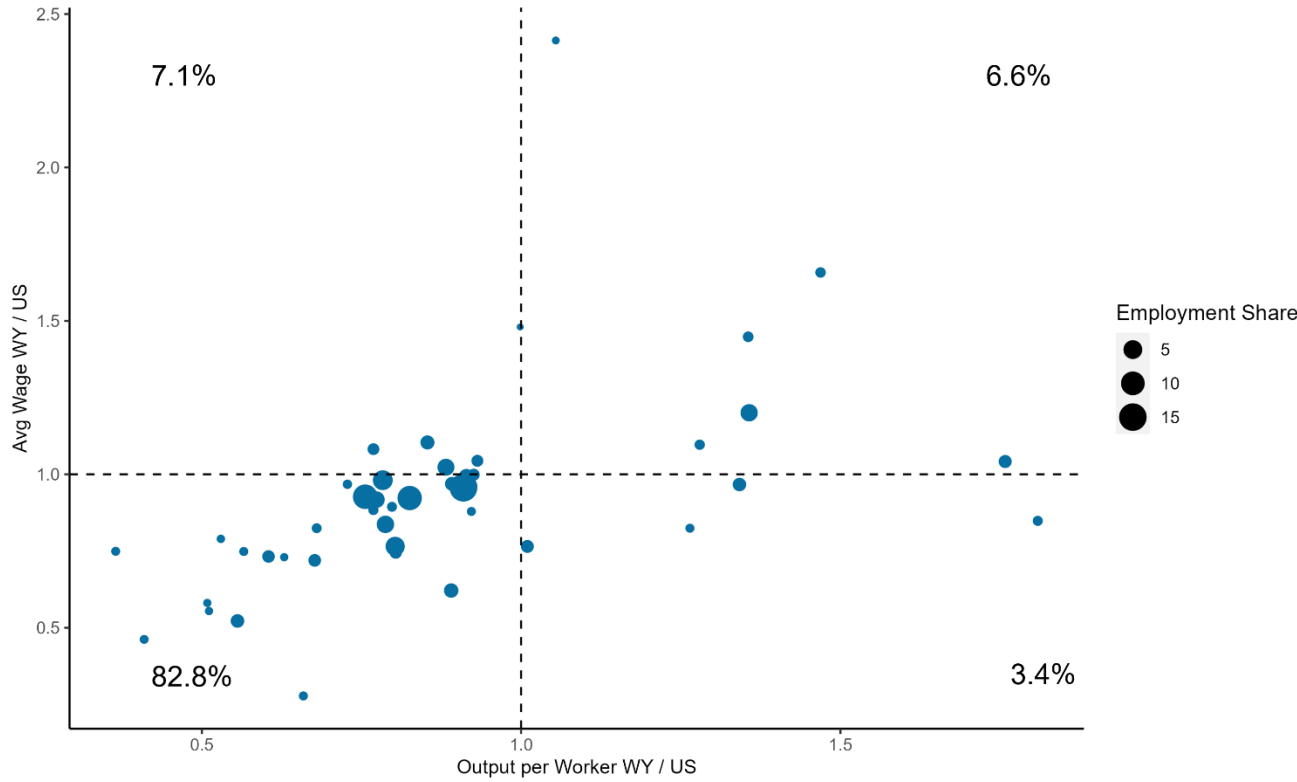


Source: Bureau of Labor Statistics – Occupational Employment and Wage Statistics. Wages adjusted for state cost of living using regional price parities from the Bureau of Economic Analysis.

**The main driver of lower wages in Wyoming - particularly for tradeable industries - is the low labor productivity of industries in the state relative to national levels.** Labor productivity (i.e. output per worker) is positively related to average wages; more productive firms and industries can generally afford to pay their employees more. Wyoming has a lower labor productivity than the national level in most industries, as can be seen in Figure 14. Industries which had a lower labor productivity also had below average wages in Wyoming as shown by the bottom left quadrant in Figure 14. This is concerning, as industries in this quadrant capture 82.8% of all employment in Wyoming. There are only a handful of industries that have a higher output per worker in Wyoming than they do nationally. These are mining, agriculture, manufacturing of primary metals, and plastics products manufacturing, among others. Industries that have a higher output per worker and higher average wage in Wyoming only capture 6.6% of all employment in the state (top right quadrant).

<sup>10</sup> This is determined by the revealed comparative advantage (RCA) which is calculate as follows: (employment share occupation X in WY / employment share of occupation X in US) / (employment WY / employment USA)

**Figure 14:** Relative labor productivity and average wages across industries, 2022



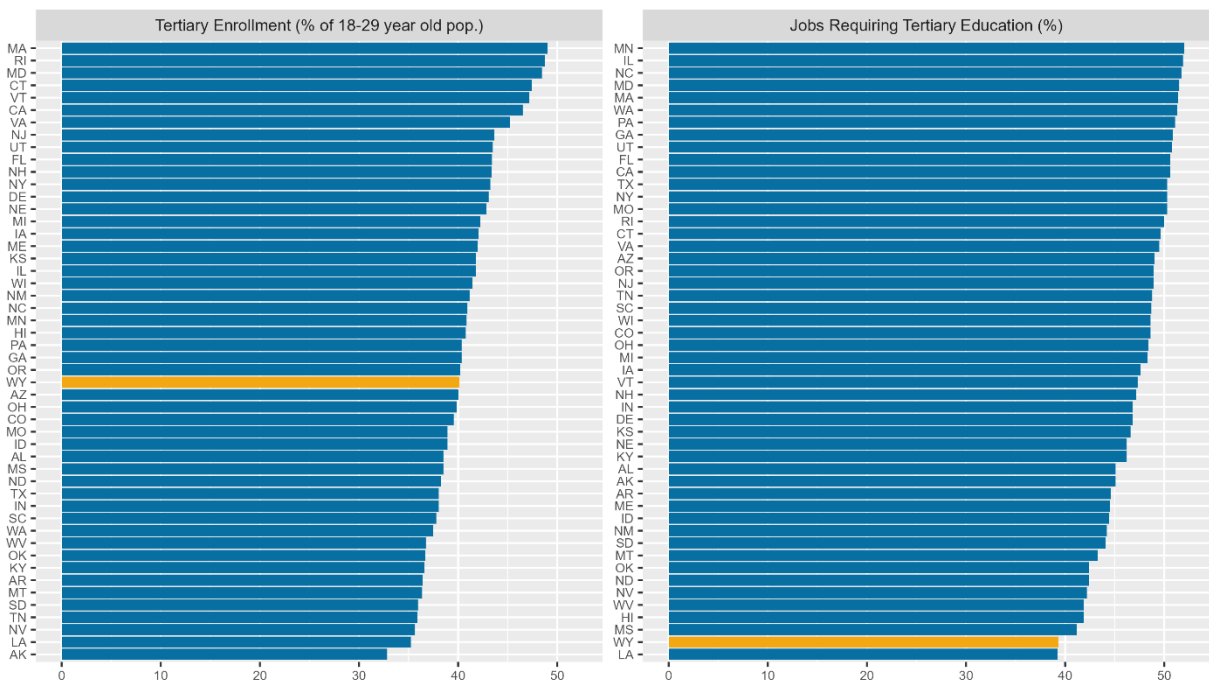
Note: The wages in Wyoming are adjusted for the cost of living. The numbers in each quadrant represent the share of employment from Wyoming that falls within each quadrant.

Source: Author's elaboration based on data from the Bureau of Economic Analysis on Output per Industry and the Quarterly Census of Employment and Wages

## 2.2 Supply Side Analysis: Human Capital and Education

A common contention in Wyoming is that the solution to lagging growth of employment and wages as well as low diversification must be more education – our research suggests that this is not the case. Wyoming has a high-quality tertiary education system and increasing tertiary attainment has been at the center of recent strategic plans and policies (Wyoming’s Educational Attainment Executive Council 2020). Thus far, Wyoming has been middle of the pack in the country in terms of tertiary enrollment rates – 40% of its 18 to 29 year old population is enrolled in a tertiary education program (Figure 14). On the other side, however, Wyoming’s economic structure differs from that of many other US states as most of its jobs do not require tertiary education (Figure 14). With only 38% of all jobs requiring tertiary education Wyoming, is second-lowest after Louisiana. A factor that drives this pattern is that the industries in which Wyoming has a relatively larger presence (i.e. mining, accommodation and food services) often do not require tertiary degrees for their job opportunities. While Wyoming’s supply of tertiary education is similar to that of many other US states, its demand is significantly lower. This indicates that increasing the supply of tertiary-educated people will not address the needs of the labor market in the state. Instead, the focus should be on creating more demand for tertiary education.

**Figure 15:** Tertiary Enrollment and Jobs Requiring Tertiary Education (2019)

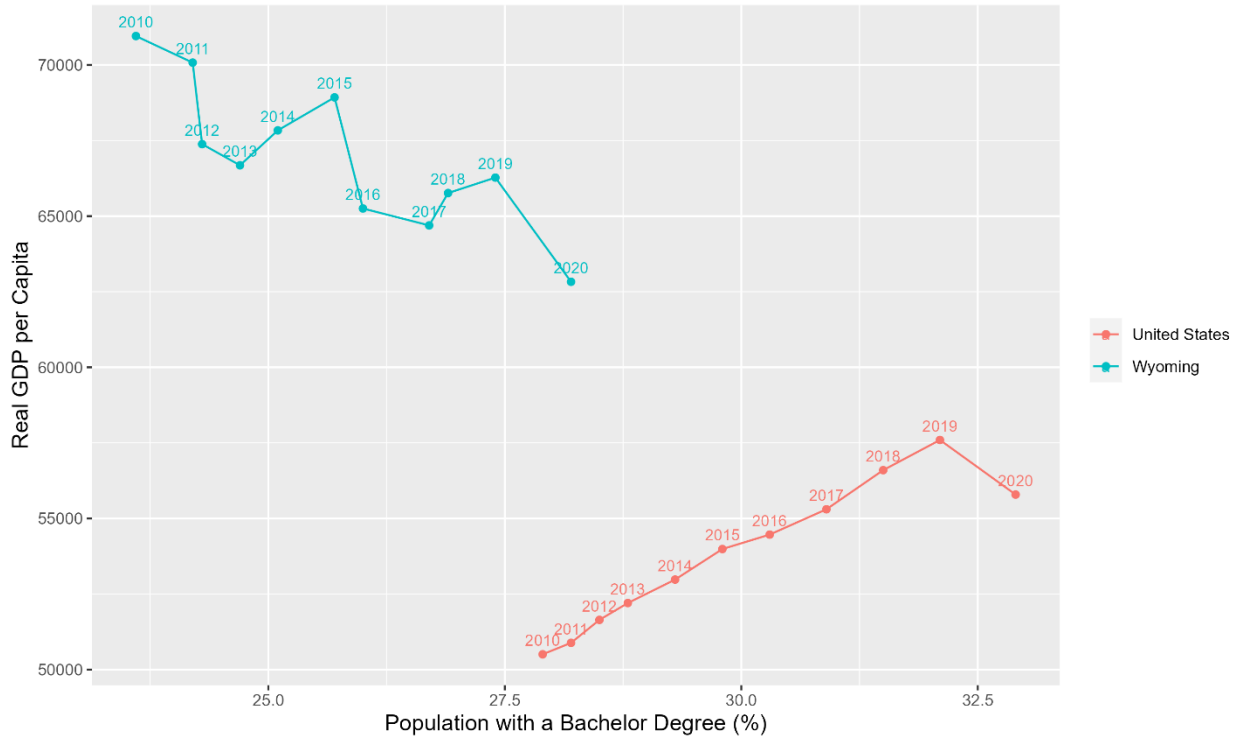


Source: American Community Survey (left), Bureau of Labor Statistics (right)

**While the demand for tertiary education in Wyoming is low, the supply of tertiary educated people has increased without leading to economic growth.** The share of the population that had at least a bachelor's degree increased from 23.6% to 28.2% between 2010 and 2020. The increase in the population with tertiary degrees was not accompanied by economic growth. Instead, the real GDP per capita of Wyoming decreased in this period (Figure 15). If insufficient human capital had been the binding constraint to growth, an increase in tertiary educated people should have led to larger economic growth. While the US overall has seen GDP growth coincide

with a growing tertiary educated population, the opposite is true for Wyoming. This is an indication that an insufficiently trained workforce has not been the constraint in the past and it is unlikely to be the solution to the structural issues of the state's economy.

**Figure 16: Tertiary Degrees and GDP per Capita 2010 - 2020**



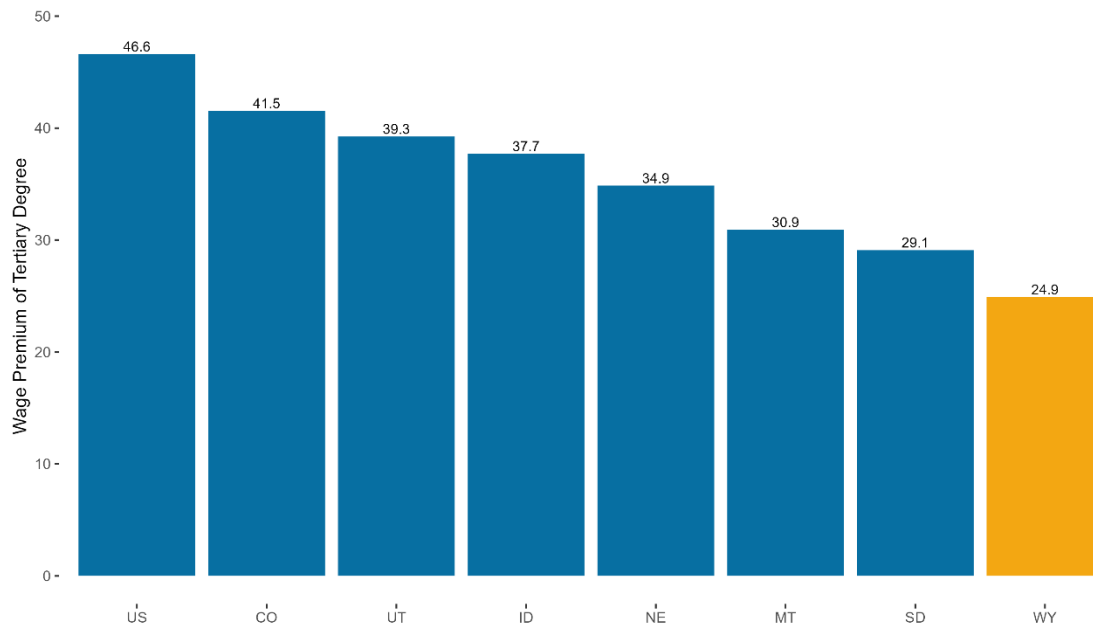
Source: Author's elaboration based on data from the Bureau of Economic Analysis on Regional GDP and the American Community Survey

**Another factor showing the comparatively low demand for tertiary education in Wyoming is a pattern of low returns to tertiary education.** On average, a person with a tertiary degree earns 24.9% more than someone with a high school degree in Wyoming. This is significantly below the returns to tertiary degrees in most of its peer states and far below the national average of 46.6%. Only South Dakota and Montana show comparably low returns, with 29.1% and 30.9% respectively. The highest returns to tertiary education in the peer group can be found in Colorado with 41.5% (Figure 6). A larger return to tertiary education can be interpreted as a signal of high demand for tertiary-educated workers given their supply. If human capital was constraining growth in Wyoming, we would expect to see high returns to tertiary education as employers compete for scarce talent and have productive use for more of it. In additional analyses, we have found these lower returns to be persistent across different geographical areas in Wyoming as well as different programs of studies<sup>11</sup>. This reality of low returns to tertiary education in the job market in Wyoming is consistent with the struggle to retain educated, young people in the state.

<sup>11</sup> The analysis was conducted at the Public Use Micro Area (PUMA) level which is the lowest possible level of aggregation with the American Community Survey data, it includes five different PUMAs in Wyoming. All of these PUMAs showed below average returns to tertiary education. For the programs of study the level of detail of the ACS only allowed for an analysis of returns to STEM and social science degrees. Both of these areas had lower returns than nationally (-20.7% for STEM and -16.6% for social science).



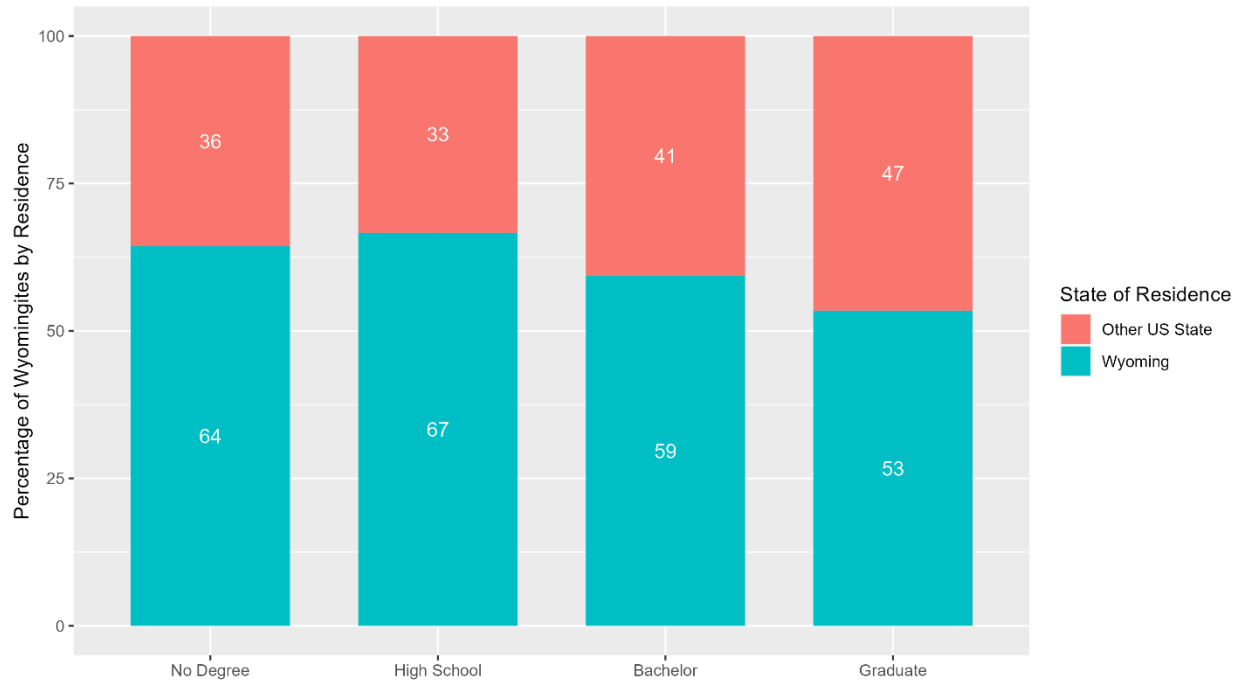
**Figure 17: Return to Tertiary Education in the Mountain West**



Note: These are the returns to a tertiary degree (Associate's – PhD) in comparison to having a high school degree. Someone with a tertiary degree in Wyoming will earn on average 24.9% more than someone with a high school degree.

**The relatively low demand for tertiary education in Wyoming leads many tertiary-educated Wyomingites to leave the state.** As Figure 17 shows, the more educated a Wyomingite becomes the more likely they are to move and work in a different state. It is generally true that people with a higher level of educational attainment are more mobile since they have more employment opportunities. This increased mobility is exacerbated in Wyoming given the low demand for tertiary education in the state and the larger earning potentials that exist elsewhere. It is a well-known and often lamented fact in Wyoming that the state loses a lot of its young population. Creating an environment in which Wyoming can keep more of its young and educated population means growing a more diverse economic structure that has a more productive use for their skills.

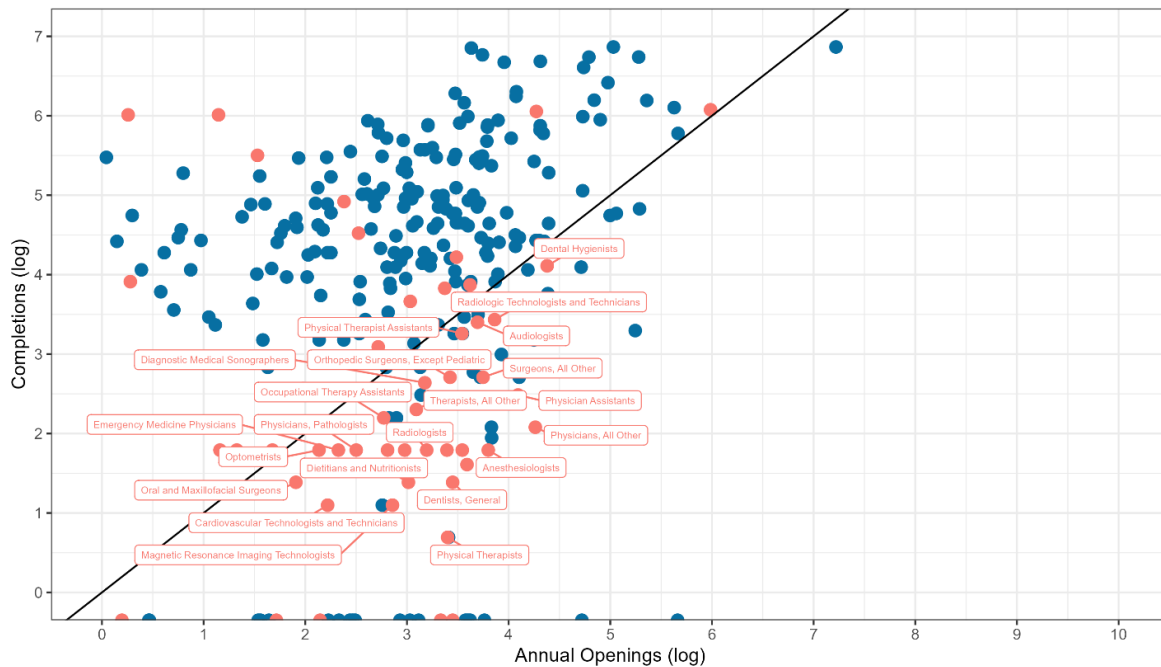
**Figure 18:** Wyomingites by Educational Attainment and their Residence - 2021



Source: Author's elaboration based on American Community Survey data

**For most occupations the supply of graduates exceeds the respective demand, which may lead them to seek opportunities elsewhere.** An analysis of program completions and annual job openings by occupation in Wyoming reveals that in many areas Wyoming produces more graduates per year than there are annual job openings (Figure 18). The exception to this is mostly in healthcare-related occupations, which show more demand than supply (highlighted in Figure 18). This may indicate that expanding the capacity of healthcare-related offerings may be warranted given the demand from the labor market. The signal of demand being larger than supply in healthcare-related occupations is also in line with the observation from Figure 10. The figure shows that healthcare occupations have been one of the few occupational groups which have seen employment and wage growth in Wyoming above the national trend. Overall, the fact that across most occupations supply exceeds demand further indicates that there is a demand instead of a supply issue in Wyoming.

**Figure 19:** Analysis of Openings and Completions by Occupation in Wyoming










Source: Wyoming Business Council calculations based on Lightcast Data

### 2.3 Demand vs. Supply Signals

**The long-term underperformance of Wyoming’s labor market appears to be driven by low demand for skills rather than low supply.** The signals from the analyses shown in the previous two sections indicate that there are significant issues on the demand side in Wyoming. Employment as well as wage growth in Wyoming has significantly lagged that of peers. This has been even more pronounced in knowledge-intensive occupations such as computer and mathematics or legal occupations, showing the lack of demand for these skills. Additionally, the output per worker in most of Wyoming’s industries is below that of the industry at the national level, indicating the lower competitiveness of these industries in Wyoming. The combination of these three signals point towards an existing issue on the demand side (Figure 20).

**A multitude of signals clearly indicate that low supply of skills has not been the issue in Wyoming.** The analysis in section 2.2 showed that the returns to tertiary education in Wyoming are relatively low and many jobs in the state do not require tertiary education. In most occupations Wyoming is training more graduates than it has job openings, except for healthcare-related occupations. Currently, this leads to a situation in which tertiary-educated Wyomingites are compelled to move out of the state since the job opportunities that demand their skills are larger elsewhere (more details on this in section 3). The combination of these signals show that the supply of skills does not seem to have been the issue over the long-term in Wyoming. While expanding tertiary education access has a value in and of itself, it is not the solution to the economic development challenges of the state.

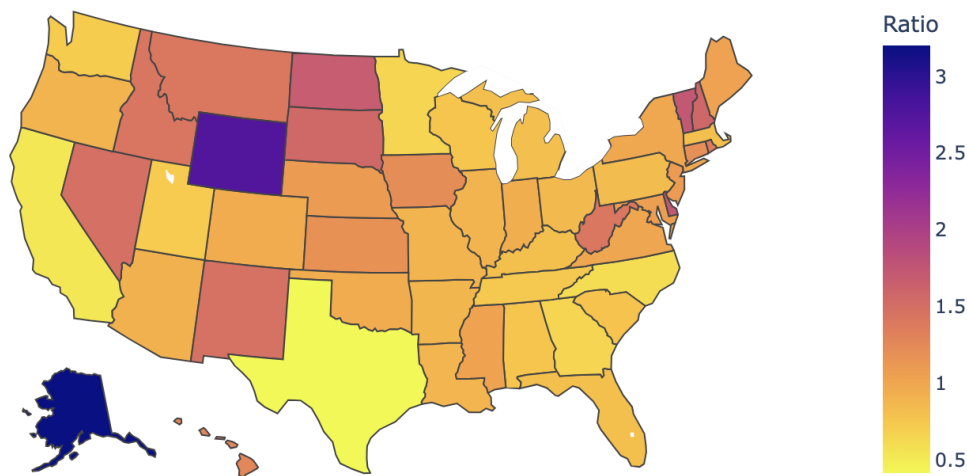
**Figure 20:** Labor Market Diagnostic Signals based on Wyoming's Diagnostic

Demand-Side Signals	Supply-Side Signals
<p> <b>Low Employment Growth:</b> Employers not hiring more indicates low demand</p>	<p> <b>Low Quantity:</b> Share of tertiary education being low</p>
<p> <b>Low Wage Growth:</b> Suggests weak demand for labor as higher demand would increase the price for labor which are wages</p>	<p> <b>High Price:</b> High returns for tertiary degrees would indicate that there is not enough supply to meet the demand</p>
<p> <b>Low Labor Productivity:</b> Relatively lower output per worker indicates inability to use labor efficiently</p>	<p> <b>Movement-in-Movement:</b> An increase in tertiary education should have led to growth if insufficient supply had been a binding constraint</p> <p> <b>Skill Mismatch:</b> Higher Demand than there is supply in specific occupations/degree areas</p>

### 3 Looking Ahead: Migration and Aging Population

The relatively lower returns to tertiary education in Wyoming help to explain another key dynamic in the labor market: the state sees exceptionally high out-migration of its Wyoming-born population and of tertiary-educated individuals in particular. In general, nationwide trends show that people with a tertiary level of education are relatively more mobile: tertiary-educated people are less likely to live in the state in which they were born, compared to people with a high school level of education. In 2019, 71.2% of the US working-age population with only a high school degree lived in the same state in which they were born, compared to 54.6% of the US working-age population with a tertiary degree. In Wyoming, these rates are much smaller, particularly among the tertiary-educated population: in 2019, 44.8% of the Wyoming-born working-age population with only a high school degree resided in Wyoming, compared to 26.7% with a tertiary degree. In turn, this means that 73.3% of the Wyoming-born population with a tertiary degree have left the state. Wyoming exports highly educated people, a fact that receives significant attention in policy discussions across the state. The rate that the tertiary-educated population remains in state is the second lowest rate across all US states, behind only Alaska.

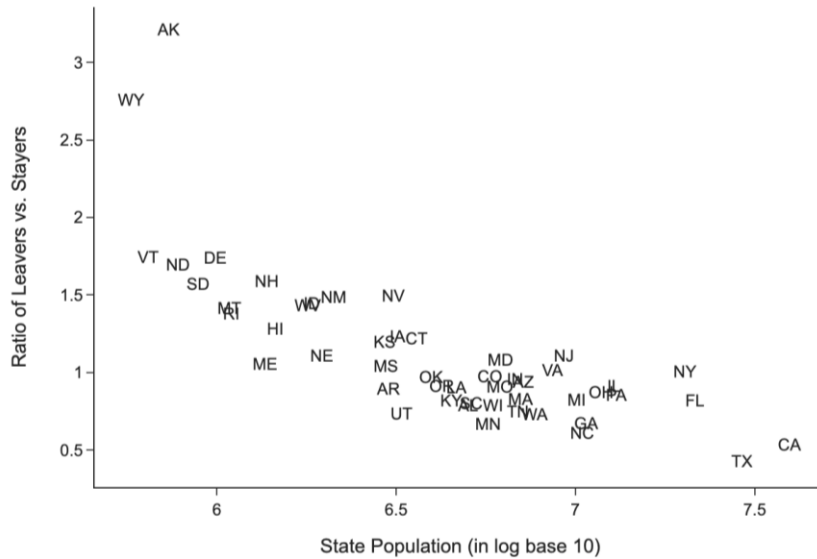
**Figure 21:** Ratio of tertiary-educated population born in each state that has left versus continues to reside in state, 2019



Highly educated persons defined as those with a college level education (4 years of college or more).  
Source: American Community Survey.

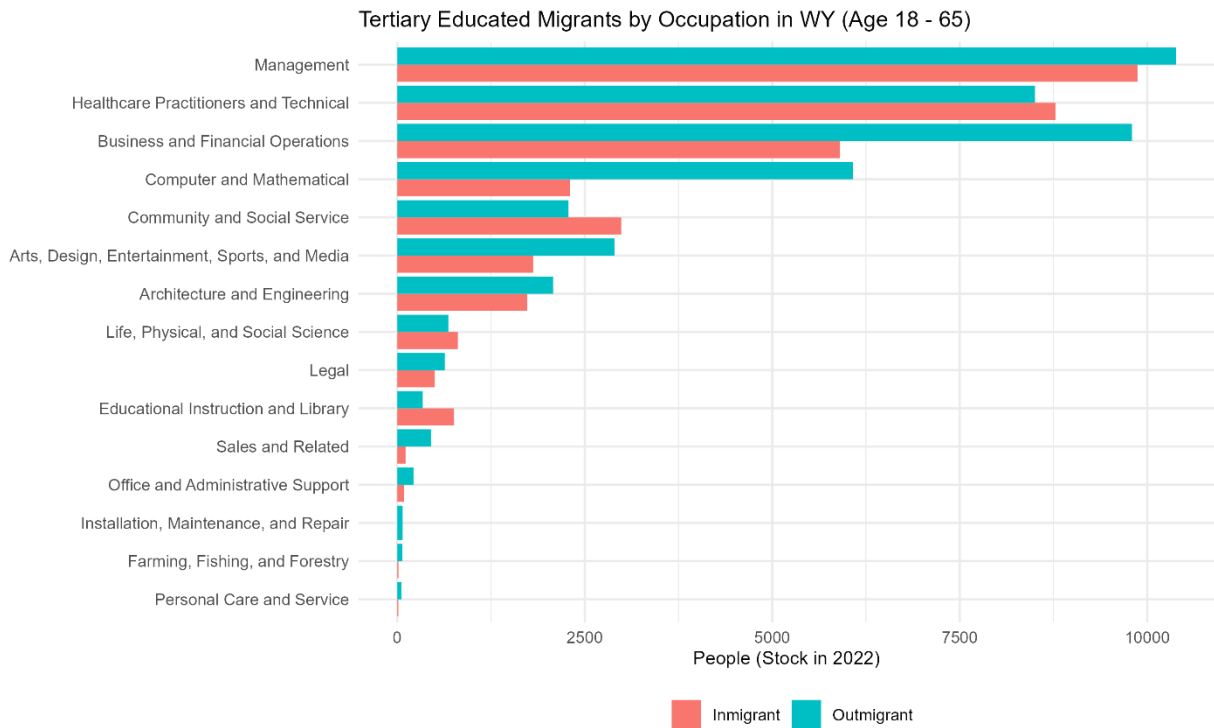
**Smaller states tend to have larger outmigration rates because they are competing with a national labor market that is comparatively much larger; however, this fails to fully explain the situation in Wyoming.** After accounting for Wyoming's small population size, the state continues to be an outlier in its outmigration of highly educated people, higher than all other states except Alaska (see Figure 21). While Wyoming also attracts a sizeable population of tertiary-educated people from out of the state (see Appendix Figure A.2) it is characterized by a net brain drain. This is especially driven by people migrating out of the state in business & financial operations occupations and computer & mathematical occupations, as Figure 22 shows. These occupational groups were characterized by low demand in Wyoming as they had below-average wages as well as below-average wage growth compared to national industry dynamics (see Figure 10).

**Figure 22:** State population vs outmigration rate of the tertiary-educated population, 2019



Source: American Community Survey 2015-2019. Note: Figure plots the ratio of highly educated 18-65 year-olds born in each state that have left versus those that continue to reside in the state in 2019

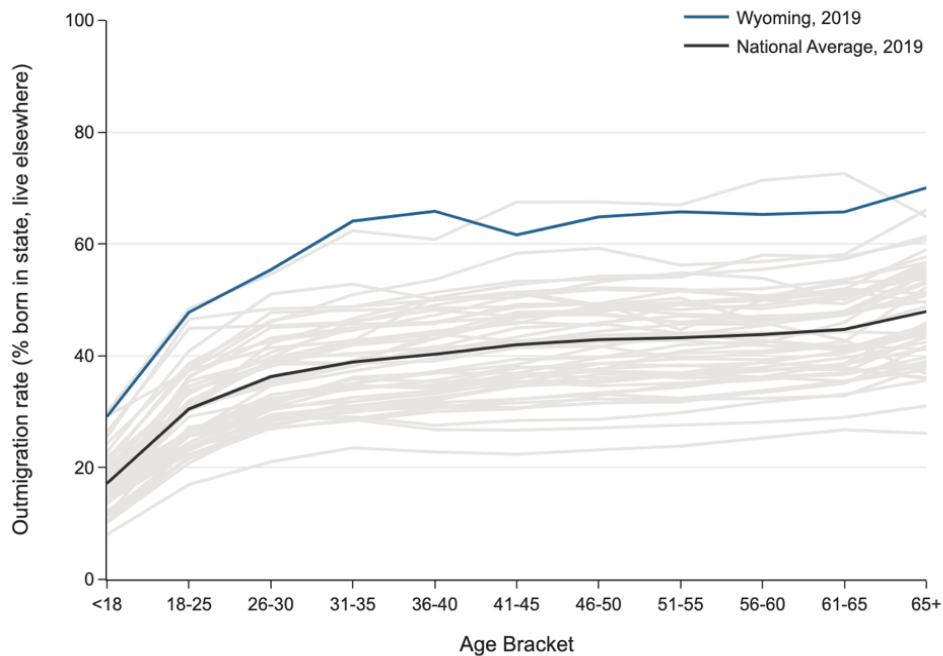
**Figure 23:** Wyoming’s Tertiary Educated “Inmigrants” and “Outmigrants” by Occupation



Source: Author’s elaboration based on American Community Survey 2018-2022.

**Beyond just tertiary-educated individuals, Wyoming has among the highest outmigration rates in the whole country in its overall population (Figure 23).** Young people from Wyoming in general leave at among the highest rates across the US. The share of the Wyoming-born population living out of state increases rapidly at early age brackets. 30% under 18, ~50% in 20s, ~65% in 30s. This share is higher than nearly all states at every age bracket (Figure 23).

**Figure 24:** Wyoming's outmigration by age bracket, 2019



Source: Author's elaboration based on American Community Survey 2015-2019.

**As young Wyomingites leave the state and fertility rates have been declining in Wyoming and the US at large, the population of the state is aging significantly.** Between 2012 and 2022, Wyoming's median age has shifted from 36.9 to 39.1, compared to a shift in the national median age from 37.4 to 39.0.<sup>12</sup> A significant portion of this shift is in the share of the population that has grown out of the working age population, from 12.9% that were 65+ in 2012 to 18.6% that were 65+ in 2022<sup>13</sup>. The aging of the population in Wyoming – at faster rates than the US population – means that Wyoming's labor force is not growing apace with its population. Since 2000, Wyoming's population (16+) has grown by 24.5% while its labor force has grown by 12%, producing a gap of 166,375 people by 2023. This gap has widened over time and has done so faster than the majority of other US states over the last ten years (see Appendix Figure A.3). The aging population of the state of Wyoming presents a challenge for the state as the size of the available labor pool decreases simply due to demographic factors.

<sup>12</sup> American Community Survey (S0101 1-year estimates subject tables on age and sex), 2012 and 2022.

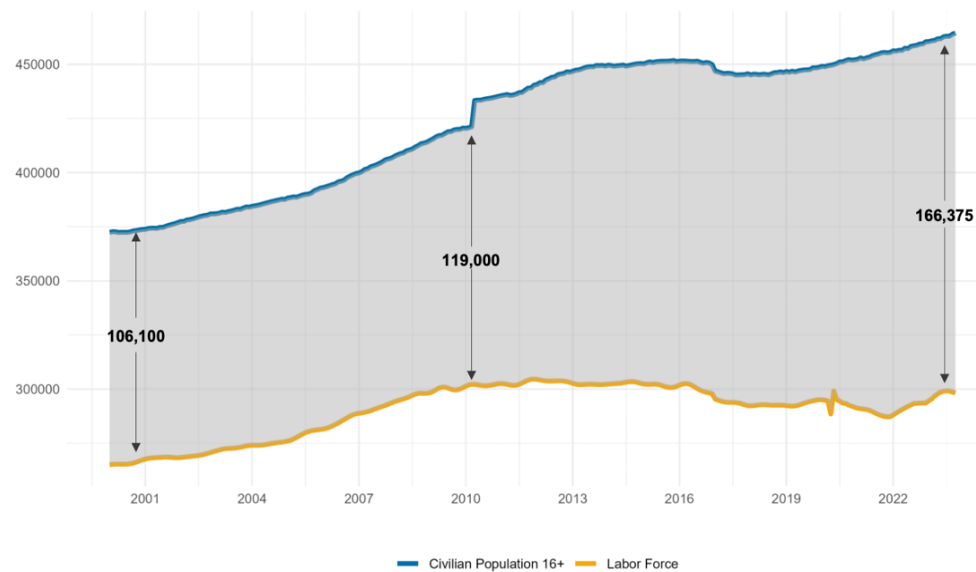
<sup>13</sup> Relative to a shift from 13.7% to 17.4% in the national composition

**Figure 25:** Population by Age Range in Wyoming, 2010 and 2020



Source: Author's elaboration based on Census Bureau Decennial Survey.

**Figure 26:** Wyoming Population and Labor Force Growth, 2000-2023



Source: Author's elaborations based on Bureau of Labor Statistics – Job Openings and Labor Turnover Survey.

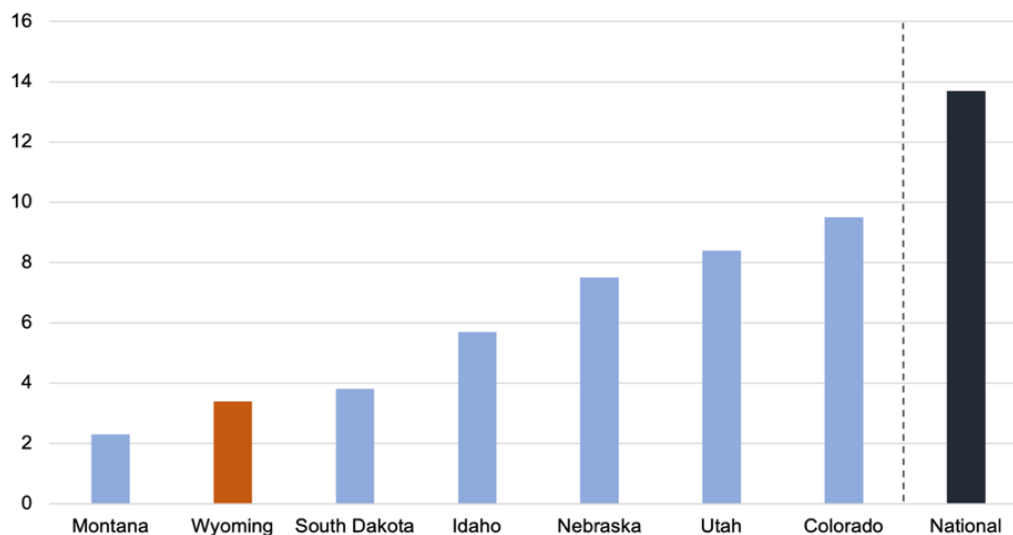
**These demographic patterns put additional pressure on the labor market – pressure that could potentially be addressed by international migration.** International migrants are projected to drive growth in the US working-age population through 2035, with relatively higher



birth rates and population growth compared to the general population.<sup>14</sup> Wyoming has a smaller foreign-born population than nearly all neighboring states, which all have lower international migration compared to the country overall. In 2022, the foreign-born population in the US totaled approximately 45.6 million (13.7%). Only 3.4% of Wyoming’s population is foreign-born by comparison, significantly smaller than neighboring Colorado (9.5%), Utah (8.4%), and Nebraska (7.5%), and larger than only Montana (2.3%) (Figure 26).

**The US foreign-born population has a higher likelihood of being employed in occupations with a stronger relative presence and demand in Wyoming’s economy.** The Department of Workforce Services’ Workforce Annual Report for 2023 projected approximately 75,000 job openings between Q2 2022 and Q2 2024 due to workers exiting the workforce, changing occupations, and the creation of new positions.<sup>15</sup> The majority of these openings (72.4%) were anticipated for jobs that require a high school diploma or less. Among the US population aged 25 and over, 47% of the foreign-born population has a high school diploma (or equivalent) or less, compared to 36.5% of the overall population. Many occupations that make up the greatest share of these openings are in service, maintenance, and transportation positions, which tend to also be disproportionately held by foreign-born workers. Foreign-born workers have a higher likelihood to be employed in service occupations (20.5% compared to 16.1% of general population), natural resources, construction and maintenance (12.2% compared to 8.5% of the general population), and production, transportation, and material moving (15.3% compared to 13% of the general population).<sup>16</sup>

**Figure 27:** Foreign-born population, 2022 (% of total population)



Source: American Community Survey 2018-2022.

<sup>14</sup> [Pew Research Center](#) (2018), “Key findings about US immigrants” and American Community Survey 2022.

<sup>15</sup> [Department of Workforce Services](#) (2023), “Wyoming Workforce Annual Report 2023.”

<sup>16</sup> <https://data.census.gov/table/ACSSPP1Y2022.S0201?q=foreign-born%20population>  
<https://data.census.gov/table/ACSSPP1Y2022.S0201>

## 4 Alleviating the Challenge

**Because the labor market challenges in the short- and long-term differ strongly from one another it is important to understand what the margins for action are to respond to each challenge.** The analytical work presented here and in much of the work of the Pathways to Prosperity project has been focused on areas that relate to the long-term approach. For the short-term approach, we collaborated in multiple smaller groups to identify possible avenues for action. These groups included relevant stakeholders connected to the respective labor pool. This section will discuss potential avenues to address the labor market challenges in Wyoming.

### 4.1 The Long-Term Approach: Conditions for a More Complex Economy

**The economy of Wyoming has seen low demand for skills in the long-term, on the remedy for which is creating the conditions for a more complex economy.** Previous sections have shown that the main problem over the long-term has been low demand for skills. To spur this demand Wyoming needs a more complex economy with a larger presence of knowledge-intensive industries. A critical factor in achieving this is scale. Many more knowledge-intensive industries tend to develop in places with larger urban agglomerations. Figure 20 shows how the average employment share in each industry grows in relative terms versus a baseline of 30,000 employees (approximately the total in Cheyenne or Casper), up to 100,000 total employees. These more complex industries are thus more likely to develop in areas of larger agglomerations.<sup>17</sup> Consequently, a focus of Wyoming's approach should be to enable growing cities such as Casper and Cheyenne to further agglomerate.

**One of the main ways forward for Wyoming in developing these industries is to focus on the forces of agglomeration.** This begs the question of why Wyoming has not developed larger agglomeration centers already. Our research has found housing to be a main constraint to further population growth in the state (Bùi et al. 2023). Several cities such as Casper and Cheyenne could be growing at a faster pace if the housing supply was responsive to demand. Our analyses have shown that housing supply has not been responsive to demand in Wyoming, which has excluded people from taking jobs in some of these cities. According to our research, the two main factors holding back housing supply are overly restrictive regulations as well as the availability of arterial infrastructure. There are ongoing efforts underway to address these constraints by reducing housing regulations<sup>18</sup> as well as providing more funding for arterial infrastructure. These efforts should reduce the barriers to constructing houses and through a larger supply of houses this will lower housing prices. Lower prices and a larger housing stock will in turn make it viable for more people to live in some of these growing Wyoming cities.

**Investing in places and putting them on the path for further agglomeration will enable them to grow a more diversified economy in the long term.** Given Wyoming's tax structure, cities, towns and counties often do not have enough funding to build new arterial infrastructure. An external source of funding can come from state and federal grants to fund these projects. Our research on this topic has shown that Wyoming's communities are severely underutilizing this opportunity and especially smaller communities are struggling to access these grants (Freeman et al. 2024). This leads to an underprovision of certain public goods at the local level. Addressing the availability to access these grants will allow cities and towns in Wyoming to provide the

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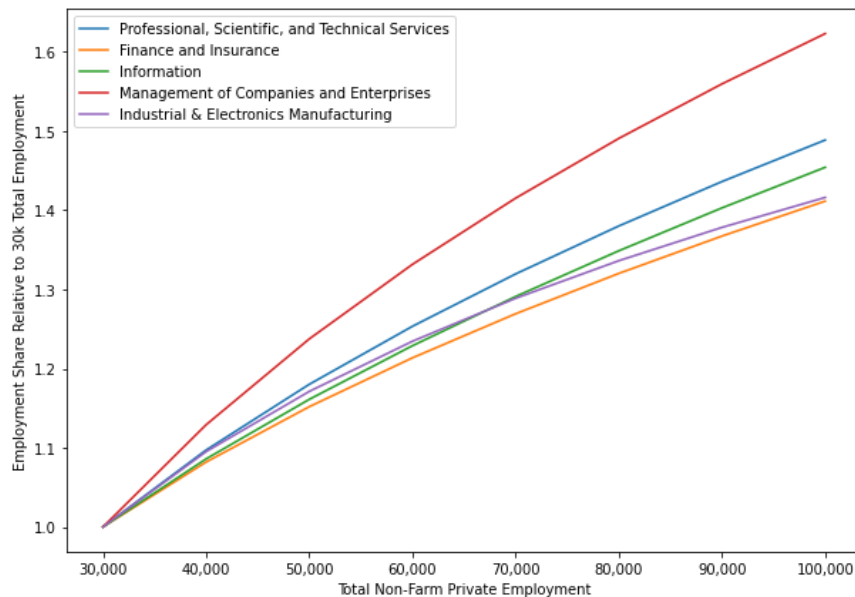
<sup>17</sup> This is tied to economies of scale that larger companies can benefit from and the benefits of locating in an area that will allow for other business linkages and a larger talent pool.

<sup>18</sup> The Regulatory Reduction Taskforce has focused on reducing housing regulations and there have also been successful efforts at the municipality level such as in Cheyenne.

necessary environment for larger agglomerations. Together with the housing work, these approaches are focused on investing in places to overcome the barriers that are hindering them from agglomerating. Having a few larger cities will enable the development of more diverse economic activities.

**An additional strategy to create larger demand is to make strategic bets in the attraction and development of specific industries.** This strategy involves choosing industries with the potential to demand skilled labor and attempting to attract them to the state of Wyoming. These bets require careful planning, strong governance, and a collaborative approach involving public and private stakeholders to ensure that the investments are effective and yield the desired economic benefits. A current example from Wyoming is the effort to establish a vertical farming industry surrounding the local company “Plenty”. Policymakers should be aware of the risks that come with making strategic bets as they include significant uncertainty. Therefore, committing significant public funds should be considered on a case-by-case basis considering the respective risk factors. Within the context of a long-term demand weakness in Wyoming, strategic bets can be one part of the strategy to increase the demand for high-skilled labor in the state.

**Figure 28:** Scaling of Employment Share by Sector, Relative to 30,000 Employees in City







#### 4.2 The Short-Term Approach: Increasing the Size of the Labor Pool

**In the current environment, many of Wyoming’s employers appear to be constrained by insufficient workforce availability.** This has not been the constraint over the long-term and is also tied to conditions in the national labor market, as the labor market is in a period of exceptional tightness across the US. While this tightness in Wyoming is likely to ease with an eventual easing of the national labor market, the state government should consider ways to address it, as it is currently constraining businesses from growing. The approaches should focus on increasing the pool of the available workforce in the state and ideally also have benefits beyond the current tightness of the labor market. An estimation of the size of labor pools that are currently underutilized and could be participating more in Wyoming’s economy led us to focus on the following four labor pools: a) Childcare-Constrained Population, b) Justice-Involved Population, c) Higher Education Graduates and d) Out-of-State Workforce.

Small groups with participants from different stakeholders in those areas have worked together to analyze why these labor pools are not fully utilized yet and what actions can be taken. Figure 29 provides a high-level overview and the following section describes the findings, recommendations and action items that are being undertaken.

**Figure 29: Labor Pools with Underutilized Potential in Wyoming**

Labor Pool	Size	Constraint	Recommendation
 <b>Childcare:</b>	10,000 parents that are not in the labor force	Supply of childcare is very low	Address key barriers to supply growth of childcare
 <b>Higher Education:</b>	Retention rate of UW graduates only at 46%	Alignment with private sector demand an issue	Improve information systems and program decisions
 <b>Justice-Involved:</b>	4,900 people on probation and 1,010 annual prison releases	Information gap on existing programs	Increase exposure of local employers and knowledge
 <b>Out-of-State Workers:</b>	Sizeable pool – interest shown in previous campaigns	Effective matching with employers	Embedding in local systems & new funding

### a) Childcare-Constrained

**Size of the Pool:** In Wyoming, there are currently an estimated 10,000 parents with children under the age of six who are not participating in the labor force. While some parents may opt out of working due to personal preferences, a significant portion of these parents are likely constrained by the high costs and limited availability of childcare services.

**Existing Constraints:** The primary issue within the existing childcare market is on the supply side. Many childcare providers have substantial waitlists, indicating that the current supply does not meet the demand for childcare services. Although subsidies to lower-income families can increase demand, this alone does not enhance access if the supply remains stagnant. The market is composed of several types of providers, each facing unique challenges. Childcare centers, which offer the most slots, operate with low margins, high costs, and often make decisions based on community impact rather than pure profit motives. Their largest constraint is finding and retaining a qualified workforce, which is likely driven by low salaries and limited benefits. Consequently, these centers can only viably operate in urban areas, making home-based childcare essential in smaller markets.

Home-based childcare operations, while generally profitable, face high fixed costs for necessary renovations and improvements to meet regulatory standards. Additionally, there is a significant information gap regarding the regulatory environment and potential tax benefits associated with operating a home-based childcare service. This gap hinders potential providers from entering the market or expanding their services.

**Recommendations** To address the constraints faced by childcare centers, one recommendation is to support parents working in childcare by subsidizing their own children’s care, independent of household income, thus improving the business’s bottom line. Public funds should be targeted

more towards expanding childcare capacity rather than merely increasing demand. Options could include using these funds to create danger-proofed facilities that potentially allow for looser staff-to-child ratios. Additionally, considering the implementation of a childcare visa program could help alleviate the workforce shortages faced by these centers.

For home-based childcare, closing the information gap is crucial. This includes disseminating information about the potential earnings and tax deductions available to home-based childcare providers, as well as providing clear guidance on the licensing process. Financial incentives should be provided to help cover the fixed investment costs required to meet safety regulations and renovation requirements. Steps should also be taken to ease the transition for unlicensed providers to become licensed, enabling them to increase their capacity and fully comply with regulatory standards.

## **b) Higher Education**

Size of the Pool: Each year, approximately 5,460 students graduate from college in Wyoming. However, a significant number of these graduates leave the state to find employment elsewhere. According to the First Destination Survey from the University of Wyoming, only 46% of graduates working after graduation remained in Wyoming. In contrast, larger labor markets such as Utah and Colorado retain 70% and 67% of their graduates, respectively. While these states benefit from larger and more diverse job markets, there is still considerable room for improvement in Wyoming's in-state retention rates.

Existing Constraints: Several factors influence graduates' decisions on where to start their careers. One primary reason is the lack of jobs that match their skills within Wyoming. Graduates often move to areas with better amenities, higher salary options, and more robust job markets. For instance, graduates in petroleum engineering face a significant skills mismatch, with only 22% staying in Wyoming due to the limited local demand for their qualifications. Additionally, professions like computer science and computer engineering see graduates earning significantly more outside the state, which drives their relocation. Graduates from the University of Wyoming in these disciplines earned over 30% more than their peers who stayed in Wyoming, contributing to retention rates of only 20-30%. This indicates that salary differentials play a crucial role in their decision to leave.

Another factor is search frictions, where graduates struggle to find suitable job opportunities within Wyoming due to the state's smaller and less connected job market compared to larger states with more established hiring processes. Large firms with experienced HR departments and clear hiring cycles often have an advantage over small and medium-sized enterprises, making it harder for graduates to find the right job in Wyoming. Additionally, the lack of amenities in Wyoming compared to larger states influences graduates' preferences to move elsewhere for better quality of life.

Recommendations: To retain more college graduates, it is crucial to increase their exposure to local employers. This can be achieved by expanding internship programs and institutionalizing mentorship initiatives. Implementing student planning tools where students identify potential employment and internship opportunities during annual career planning check-ins can also help. Furthermore, involving stakeholders such as the Wyoming Innovation Partnership, the Department of Workforce Services, the University of Wyoming, and community colleges in developing detailed opportunities for employment can enhance local job matches.

For community colleges, the focus should be on aligning educational offerings with local private sector demands. Although retention is less of a problem for community colleges, ensuring that graduates work in jobs that match their skills remains a concern. Currently, 71% of workers in Wyoming with associate degrees are overeducated for their jobs. Improved alignment between the supply of graduates and the demand from the private sector can be achieved by leveraging real-time labor market information. Gathering data from research programs like the Harvard Project on Workforce and constructing research questions for future iterations of the State Longitudinal Education Data System (SLEDS) will help improve this alignment. This approach will ensure that educational programs are tailored to meet the evolving needs of Wyoming's labor market.

Retention bonuses might be considered to make it more financially attractive for graduates to stay in the state, although this approach has limitations. For instance, lower salaries in Wyoming for certain occupations reflect lower productivity in these areas compared to other places. While subsidies might temporarily retain graduates, they may leave the state after the subsidy ends due to better wage opportunities elsewhere. Therefore, focusing on long-term solutions, such as improving job matching and aligning educational programs with market needs, is more sustainable for retaining graduates and boosting the local economy.

### **c) Justice-Involved**

Size of the Pool: In Wyoming, there are approximately 10,000 residents who are either incarcerated or under community supervision. This includes about 4,900 people on probation, 4,200 in prison or jail, and another 840 on parole. In 2019, the state released a total of 29,446 people from jail or prison, highlighting the significant size of the population that has faced criminal charges. Despite the lack of specific data for Wyoming, it is likely that many individuals within this group are not currently participating in the labor force.

Existing Constraints: The justice-involved population faces severe challenges in securing employment, even if they are not ultimately convicted. The severity of these challenges varies based on the type of conviction, duration of incarceration, and other factors. A Bureau of Justice study found that more than 60% of people released from federal prisons were unemployed over the four years following their release. This problem in Wyoming is compounded by a lack of comprehensive support services and an informational gap among employers regarding the potential of this labor pool. While new programs such as the Pathway Home 3 grant aim to provide skills and wraparound services to the justice-involved population, the immediate need is to raise awareness among employers about the benefits of second-chance hiring.

Recommendations: To enhance workforce participation among justice-involved individuals, it is crucial to focus on increasing interactions with employers and bridging the information gap. Organizing events focused on second chance hiring, in partnership with entities like the University of Wyoming, can help achieve this goal. Additionally, the Wyoming Business Council, in cooperation with other organizations, should engage with businesses to promote the benefits of hiring justice-involved individuals. By creating opportunities for higher participation in the workforce, Wyoming can help alleviate workforce shortages for employers and reduce recidivism among the targeted population.

#### **d) Out-of-State Workforce**

Size of the Pool: The largest labor pool that Wyoming can tap into consists of people who currently do not reside in the state, referred to as the “out-of-state workforce.” Recognizing this potential, Wyoming has developed workforce attraction programs such as Wyoming Grown and WyRelocate to promote the state and attract much-needed out-of-state workers. These programs received hundreds of inquiries during the COVID-19 pandemic, indicating the state’s attractiveness to certain populations looking to relocate. However, these programs have traditionally been under-capacitated, lacking the bandwidth to respond to the influx of inquiries.

Existing Constraints: Despite the potential, workforce attraction programs like Wyoming Grown and WyRelocate face significant constraints primarily due to limited capacity. During the pandemic, these programs were unable to manage the volume of inquiries, which hindered their effectiveness. Interviews with seven different workforce attraction programs across the US revealed that other states have successfully advertised their states as destinations and managed workforce attraction more effectively. These programs provide valuable insights into designing low-cost strategies to improve Wyoming’s capacity to respond to inquiries and support successful relocation.

Recommendations: The most promising low-cost approach identified for Wyoming is partnering with community and industry groups in the referral process for candidates interested in relocating. This strategy can relieve the capacity constraint that has limited the success of existing programs. A quicker and more direct referral to an industry group creates buy-in from those groups and facilitates continued interaction, fostering a learning process. In similar models in other states, participating groups did not receive monetary compensation but benefited from early access to new talent to meet the labor demands of businesses affiliated with the industry group. Potential partners in Wyoming could include the Next Generation Sector Partnerships, Chambers of Commerce, and other industry associations. Detailed recommendations have been shared with the WyRelocate team at the Department of Workforce Services, which are being considered in the design of updated programs.

To improve the capacity to match interested workers with the right employers, it is recommended to increase the information collected on the intake form to enable a more targeted approach from the start. Including more specific questions about the industry or location of interest to the job seeker can help refer them more quickly to relevant industry or community groups that can connect them to local employers. While it is important to gather additional information, it is also crucial to balance this with keeping the barrier to entry reasonably low for job seekers to ensure that the process remains accessible.

## 5 Conclusion

**Wyoming is currently experiencing a labor market characterized by both short-term tightness and long-term stagnation.** In the short-term, the state's employers are struggling to fill positions, leading to constraints on business growth and operations. This tight labor market is a phenomenon observed nationwide, with Wyoming in an exceptionally tight situation. However, in the long-term Wyoming has faced very different structural challenges, including low employment and wage growth. Our analyses have shown that in the long-term the demand for skills has been the predominant issue in Wyoming. Therefore, policy approaches need to be mindful of this long-term challenge.

**The long-term underperformance of Wyoming's labor market appears to have been driven by low demand for skills rather than insufficient supply.** The signals from the analyses of sections 2.1 and 2.2 indicate that there are significant issues on the demand side in Wyoming. While demand in Wyoming overall seems to have been problematic in the long-term, this appears to have been even more pronounced for knowledge-intensive occupations. The supply of skills, on the other side, does not seem to have been an issue. In turn, the lack of demand for highly educated Wyomingites likely forces young Wyomingites to leave the state for better job opportunities outside of the state. Addressing the demand-side issues would in turn create the environment to retain more young Wyomingites in the state.

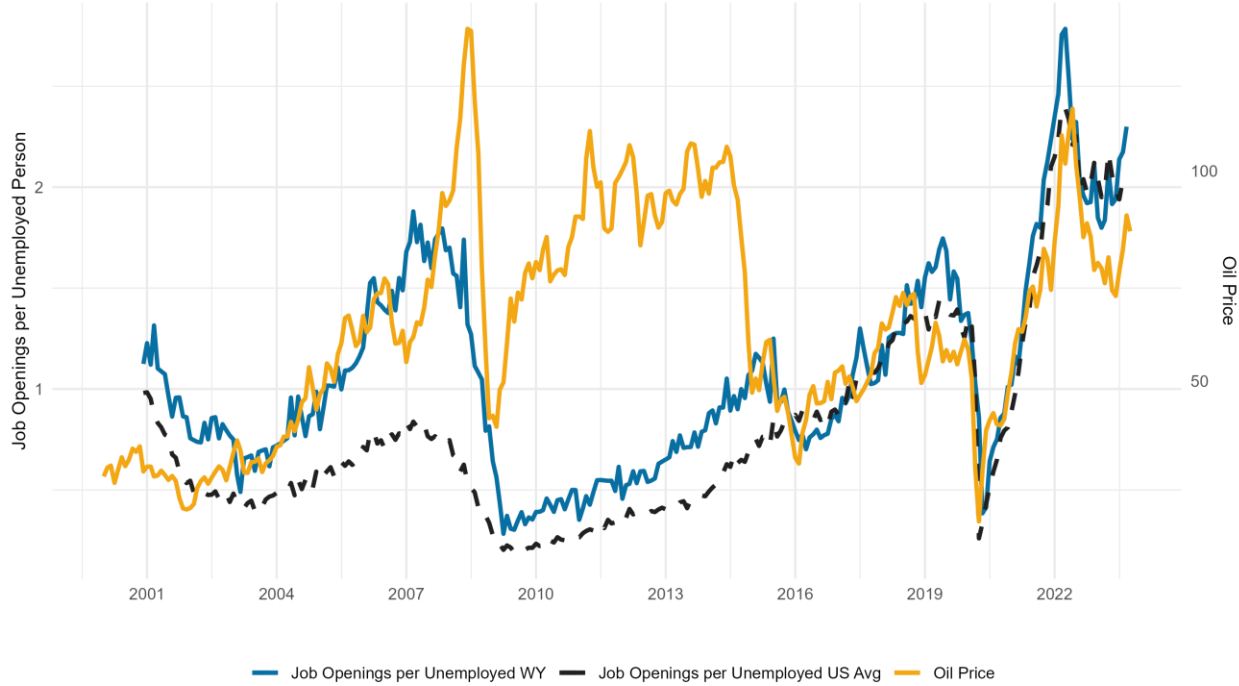
**To address these challenges, Wyoming must adopt a dual approach that tackles both short-term and long-term issues.** In the short-term, increasing the available labor pool within the state is important. This can be achieved by focusing on underutilized labor pools such as childcare-constrained individuals, justice-involved individuals, higher education graduates, and out-of-state workers. In the long-term, Wyoming needs to create conditions for a more complex economy that can fully utilize its human capital. This involves investing in urban agglomerations, reducing housing regulations to support population growth, and making strategic bets on industries with strong demand for skilled labor. By fostering a more diversified and knowledge-intensive economy, Wyoming can improve labor productivity, increase wage growth, and retain more of its educated workforce.

**Overall, addressing Wyoming's labor market challenges requires a comprehensive strategy that balances immediate needs with long-term structural changes.** By implementing targeted interventions and promoting a more dynamic economic environment, Wyoming can overcome its current constraints and build a more prosperous future for its workforce and businesses.

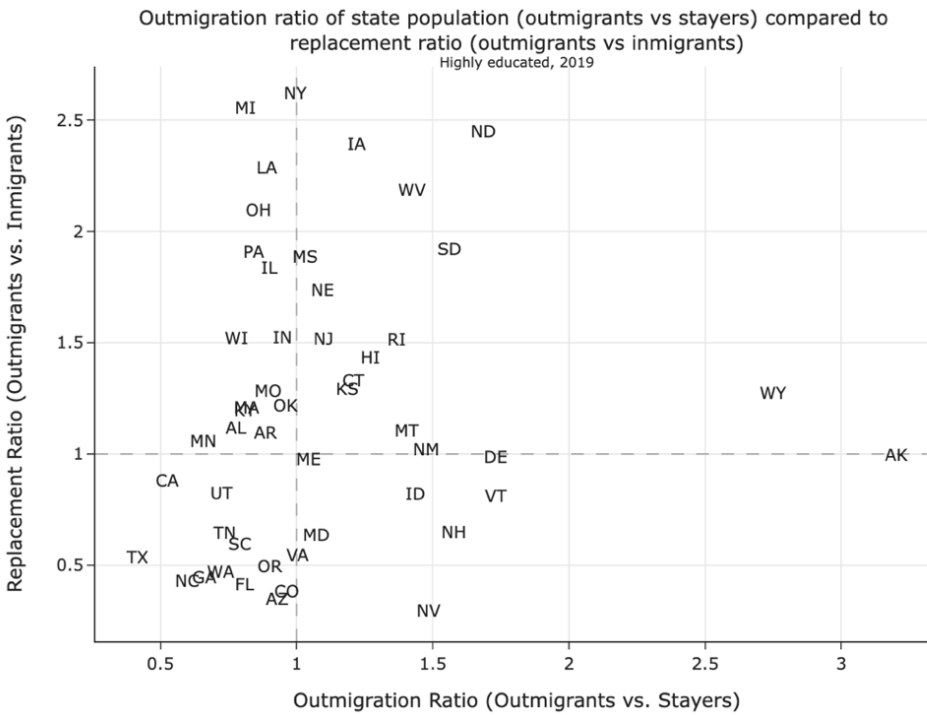


# Appendix

Figure A.1 Job Openings per Unemployed Person & Oil Price

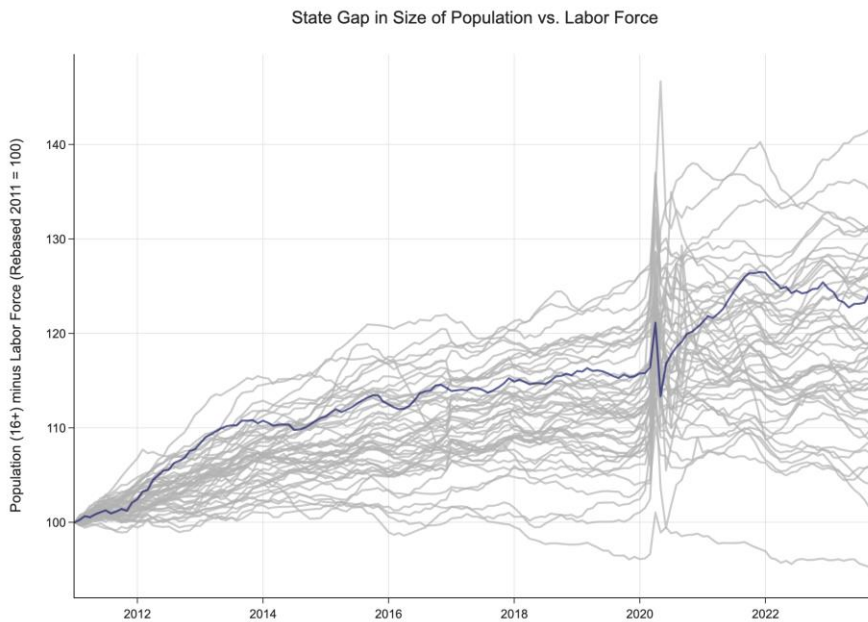


**Figure A.2:** Outmigration rate of state population (outmigrants vs stayers) compared to replacement ratio (outmigrants vs immigrants)



Source: Author's elaboration based on American Community Survey 2015-2019.

**Figure A.3:** State Gap in Size of Population and Labor Force indexed to 2011



Source: Author's elaborations based on Bureau of Labor Statistics – Job Openings and Labor Turnover Survey