

BETTER UNDERSTANDING HUMAN CAPITAL IN WEST VIRGINIA

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BETTER UNDERSTANDING HUMAN CAPITAL IN WEST VIRGINIA

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EXECUTIVE SUMMARY

In this report, we provide the most comprehensive work available that outlines the various factors relating to labor force and human capital in West Virginia. We do not test any particular hypothesis, but rather this information should serve as a reference on key issues related to human capital in the state.

Labor Force Participation

We begin with a focus on labor force participation because, in some sense, West Virginia's human capital deficiencies are manifest in the state's low rate of labor force participation. Key findings surrounding labor force participation are as follows:

- **Labor force participation in West Virginia is lowest among the 50 U.S. states**, lagging the nation by nine percentage points. Only 54 percent of adults in West Virginia are in the labor force.
- **West Virginia has significantly lagged the nation in terms of labor force participation for decades** – since at least 1940.
- **The labor force participation gap between West Virginia and the nation is present broadly across genders and age groups and therefore cannot be attributed to one particular segment of the population:**
- The labor force participation gap between West Virginia and the nation is present for both genders, although the gap is slightly more pronounced among men.
- West Virginia lags the nation in terms of labor force participation across all age groups. **The degree to which West Virginia lags the nation is most pronounced among those of prime working age** – those men and women aged 25 to 54.
- Labor force participation has been relatively stable across age groups in West Virginia over the long run. **This stability may suggest that it may be difficult to find a policy that will significantly stimulate labor force participation in a short-run time frame and that overcoming this challenge requires a long-run approach.**
- **Only the state's Eastern Panhandle region enjoys a higher rate of labor force participation than the nation. Otherwise, labor force participation tends to be higher in the more urban North Central and Metro Valley regions and lower in the state's more rural areas.**

Population and Migration: Patterns and Trends

We consider population and migrations trends; by examining how population is moving and evolving, we can obtain a better sense of where potential businesses might be able to find an appropriate workforce and therefore identify which regions potential businesses might be more attracted to.

- Overall, West Virginia's population has declined by around 10 percent since 1950, a period over which the nation's population has more than doubled.
- **West Virginia's population has aged significantly over recent decades with virtually no growth in the prime working age population** and high growth among the elderly population.
- **The state's Eastern Panhandle region is the clear outlier among the state's various region in that it has exhibited tremendous growth in recent decades**, far surpassing national population growth. **North Central West Virginia is the only other region in West Virginia to record population growth since 1980.** Population growth in these regions is driven by both positive net migration and natural population growth (births exceeding deaths).
- West Virginia is consistently observing natural population decline – where births fall short of deaths. Only the Eastern Panhandle and North Central regions are experiencing more births than deaths.
- In- and out-migration have been volatile in recent years. Only the North Central and Eastern Panhandle Regions have received substantial positive net migration flows in recent years. North Central West Virginia receives by far the largest number of net in-migrants from within West Virginia while the Eastern Panhandle receives by far the largest number of net in-migrants from other states.
- The largest net losses of out-migrants in recent years has come from the state's Southwestern and Southeastern regions.

Educational Outcomes

A key factor in explaining labor force participation in West Virginia is poor educational outcomes. It is likely that there are men and women who would like to work ideally, but do not look for work (and are therefore not part of the labor force) because they doubt that they will be able to find a job due to a lack of education, training and job skills.

- **West Virginia lags the nation in terms of educational attainment.** In particular, the share of the state's adult residents who hold at least a bachelor's degree stands at 20 percent, compared to 32 percent in the nation. West Virginia is last among the states in terms of this metric.
- **The state's North Central, Eastern Panhandle, and Metro Valley regions exhibit the highest rates of educational attainment, but every region of the state lags the nation.**
- **The number of high school- and college-aged men and women in West Virginia is shrinking. Further, the share of West Virginia high school graduate who go on to college has fallen slightly in recent years;** for the most recent year available, 55 percent of West Virginia high school graduates went on to college, compared to 67 percent in the nation. Altogether, these statistics suggest that it may become increasingly difficult to produce more highly educated and skilled young residents to attract potential businesses.

Drug Abuse and Health Outcomes

In a similar vein compared to education, it is likely that there are men and women in West Virginia who would work ideally, but they do not look for work, and are therefore not part of the labor force, due to some barrier related to drug abuse or health.

- **West Virginia leads the nation in the rate of drug related deaths.** In 2017, 58 people out of every 100,000 in West Virginia died due to drug misuse, a rate that is nearly triple the national figure. In 2017, the drug misuse death rate was nearly 10 points higher than the second highest state.
- **Drug abuse death is lowest in the state's North Central and Central regions.** The rate is highest in the state's Southwest and Southeast regions.
- **West Virginia posts the highest mortality rate among the 50 states** (after accounting for the age distribution of the population).
- **Overall mortality is lowest within the state's northern regions – primarily the North Central and Eastern Panhandle regions.**
- **West Virginia has the highest rate of disability among the 50 states.**
- **West Virginia posts the highest rate of smoking among the 50 states,** with lower rates of smoking in the state's northern regions and the Metro Valley, and highest rates in the state's Southwestern and Southeastern regions.
- In contrast to the other health outcome measures mentioned above, **West Virginia posts the second lowest rate of excessive drinking among the 50 states.**

Economic Gains from Improving Labor Force Participation

In our final section, we consider a hypothetical scenario in which the state were to observe a one percentage point increase in labor force participation. Assuming that only half of the men and women who enter the labor force actually obtain employment, **this hypothetical one percentage point increase in labor force participation would yield an estimated increase of 11,000 jobs and over \$900 million in economic output annually.**

1 Introduction

A primary long-run economic development challenge in West Virginia is a lack of available workers to support economic growth. The rate of labor force participation is a key statistic: In West Virginia, 54 percent of the adult population is either working or looking for work. This places West Virginia lowest among the 50 states along this metric, a full nine percentage points below the national figure. Further, since these data became available on an annual basis at the state level in the mid-1970s, West Virginia has consistently ranked 50th. This low rate of labor force participation represents one of the most severe impediments to economic progress in West Virginia as businesses that might potentially locate or expand in West Virginia would likely be deterred by a lack of available

qualified workers.

The labor force participation deficit that West Virginia faces is likely driven, in large part, by a human capital deficit. That is, for instance, there are likely men and women in the state who would be in the labor force ideally, but simply do not look for work due to the low chance of being hired due to a deficit in their education, training, job readiness, etc. In essence, these men and women do not join the labor force because of poor educational outcomes. Indeed, West Virginia ranks at or near the bottom among the 50 states in terms of numerous educational outcome measure. The same reasoning likely also applies to poor health outcomes and, more recently, to drug abuse.

The purpose of this report is to provide the most comprehensive examination available that outlines the various factors relating to labor force and human capital in West Virginia. It will not test any specific hypothesis, but rather the report should serve as a reference on all significant issues related to human capital in the state. Hopefully, this research will inspire future work to better understand specific mechanisms related to improving education, health, and drug abuse outcomes.

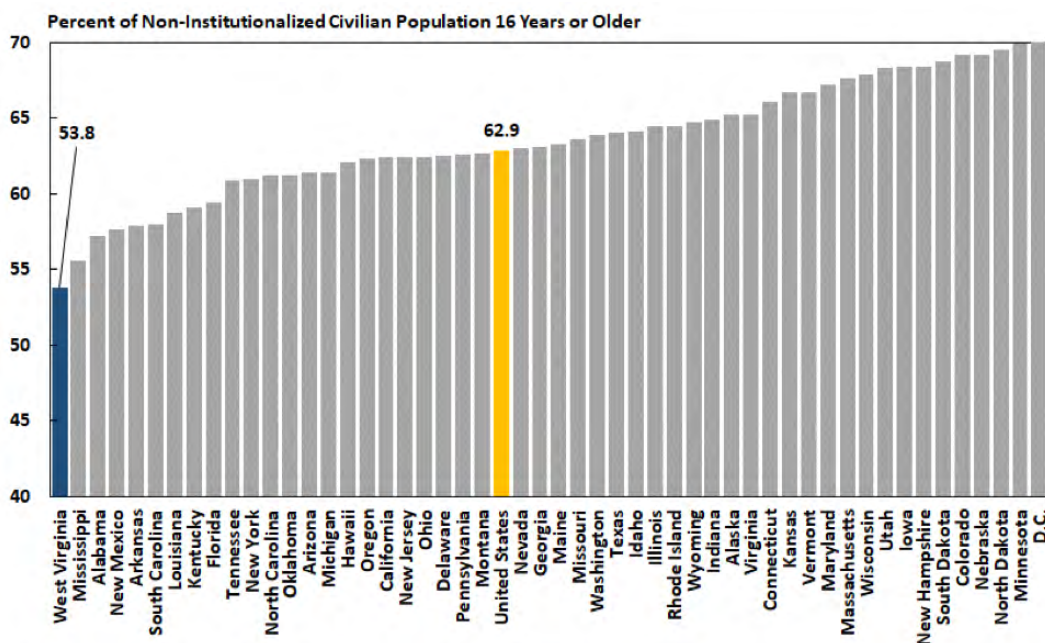
We begin the report by reviewing the basic facts surrounding labor force participation in West Virginia in Section 2 to form the foundation of our in-depth review of human capital. In Section 3, we consider population and migration trends in the state as these trends relate to the availability of human capital for economic development in the state or in a particular region. In Sections 4, 5, and 6, we provide a closer examination of the three primary pillars of human capital – education, drug abuse, and health. Through Section 6, our analysis focuses on the supply of potential well-educated and well-trained, drug free, and healthy workers to fuel economic growth. As such, in Section 7 we turn to a consideration of several factors relating to the demand for workers in West Virginia. We close in Section 8 with a brief discussion of the economic impact that increasing labor force participation would have on the state.

2 West Virginia Labor Force Participation

In this section we begin our research into human capital in West Virginia by examining labor force participation, since human capital is a primary driver of the labor force participation rate. In some sense, West Virginia’s weak labor force participation figure is a manifestation of human capital outcomes in the state.

As reported in Figure 2.1, West Virginia has the lowest labor force participation rate among the U.S. states with a rate of 53.9 percent. The state falls nine percentage points below the nation in terms of labor force participation. Generally speaking, this report focuses on this nine-percentage-point gap between labor force participation in the state versus the nation and how this gap relates to human capital.

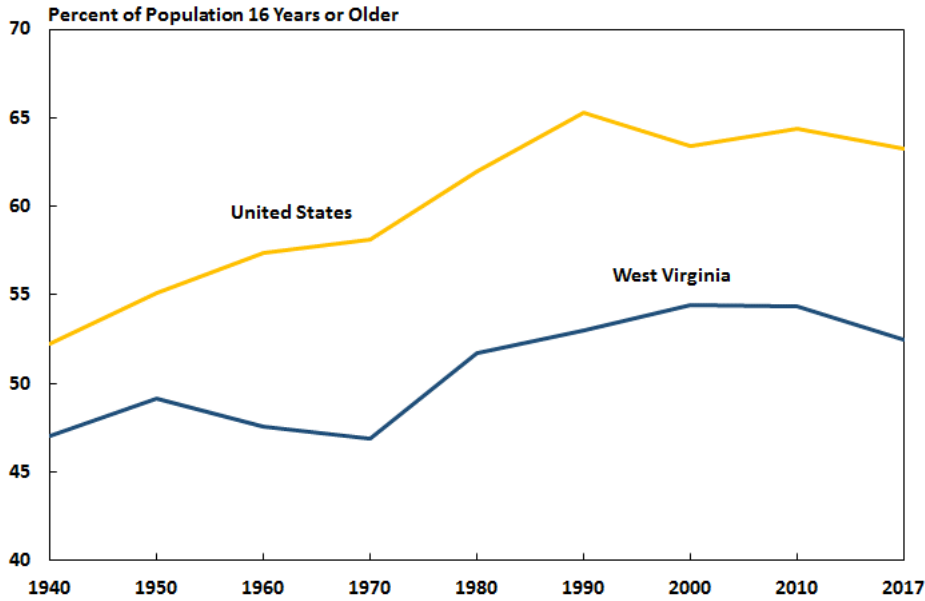
Figure 2.1: Labor Force Participation by State, 2018



Source: US Bureau of Labor Statistics

In Figure 2.2, we consider how labor force participation has evolved over the long-run in West Virginia. As illustrated, West Virginia has exhibited a labor force participation gap relative to the nation for many decades – at least since 1940. The gap stood at only around five percentage points in 1940 and then it widened over the course of the 1950s, 1960s, 1970s and 1980s as labor force participation grew at a relatively healthy pace in the nation. The labor force participation gap between the state and the nation has remained relatively steady since around 1990.

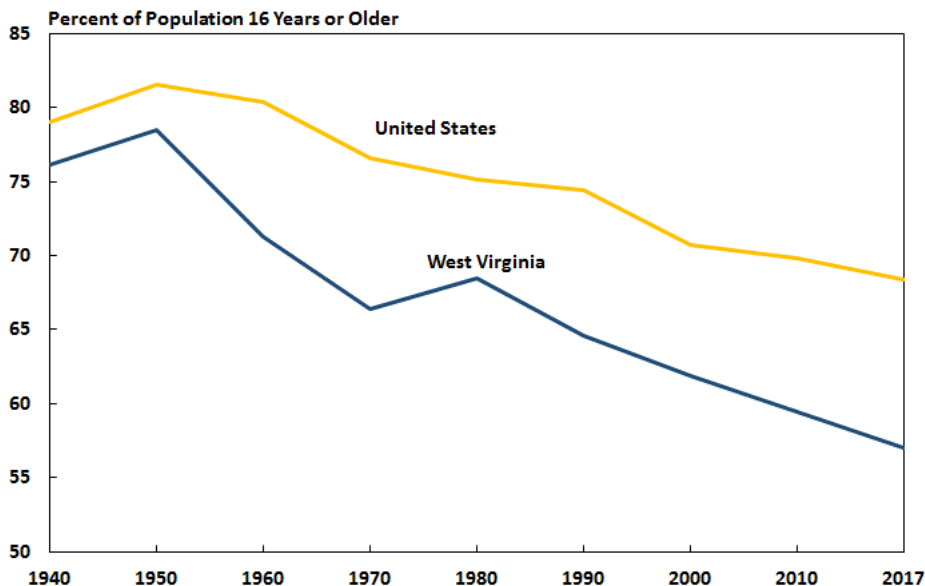
Figure 2.2: Labor Force Participation, West Virginia and the United States



Source: 1940-2000 Decennial Censuses, 2010 and 2017 American Community Surveys, US Census Bureau
 Note: 1940 rates represent the rates for civilian population 14 years or older.

In Figure 2.3 we consider labor force participation for men specifically. As illustrated, West Virginia was very close to the national figure in terms of male labor force participation in 1940 and 1950. While male labor force participation has fallen for both geographic areas over the long run, the decline has been more pronounced in West Virginia. As of 2017, West Virginia lags the nation by around 11 percentage points for men. Overall, this indicates that the state’s labor force participation gap is slightly higher for men, compared to women.

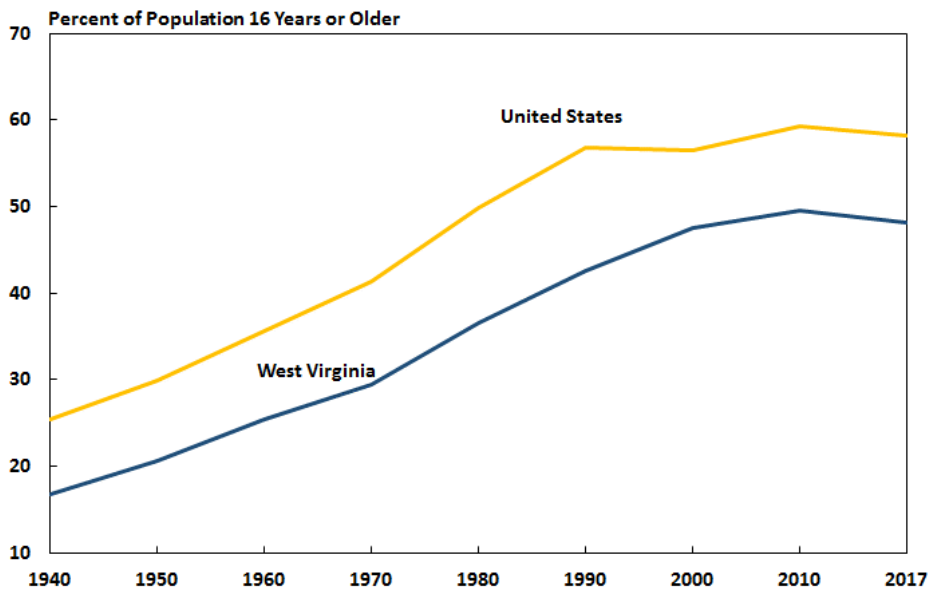
Figure 2.3: Male Labor Force Participation, West Virginia and the United States



Source: 1940-2000 Decennial Censuses, 2010 and 2017 American Community Surveys, US Census Bureau
 Note: 1940 rates represent the rates for civilian population 14 years or older.

In Figure 2.4 we report labor force participation among females. As illustrated, West Virginia lags the nation by around 10 percentage points in terms of female labor force participation, which is slightly lower than the gap among men. In contrast to the pattern observed for men, the female labor force participation gap has generally been steady over the long run.

Figure 2.4: Female Labor Force Participation, West Virginia and the United States

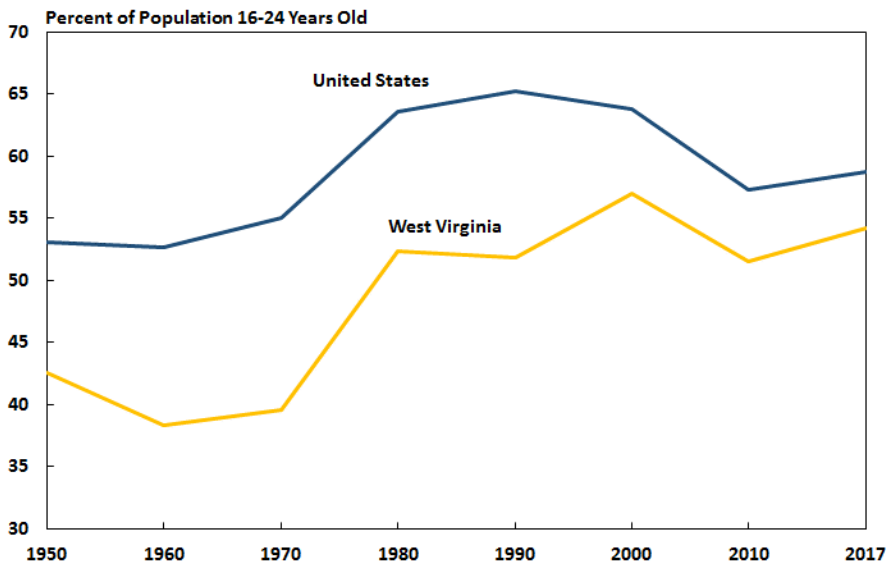


Source: 1940-2000 Decennial Censuses, 2010 and 2017 American Community Surveys, US Census Bureau
 Note: 1940 rates represent the rates for civilian population 14 years or older.

2.1 Labor Force Participation by Age

With the next few figures we examine labor force participation across various age groups. With Figure 2.5, we consider labor force participation among the youngest working adults – men and women ages 16 to 24. Here we see a relatively narrow gap: West Virginia lags the nation by only around four percentage points – the lowest of any age grouping. This gap has narrowed in recent years, although this narrowing is primarily driven by a reduction in the figure nationally rather than an improvement in the West Virginia figure. If much of West Virginia’s labor force participation gap is driven by a deficit in health and education outcomes, it stands to reason that the gap is lower for this group since health and education shortcomings are less pronounced among this group.

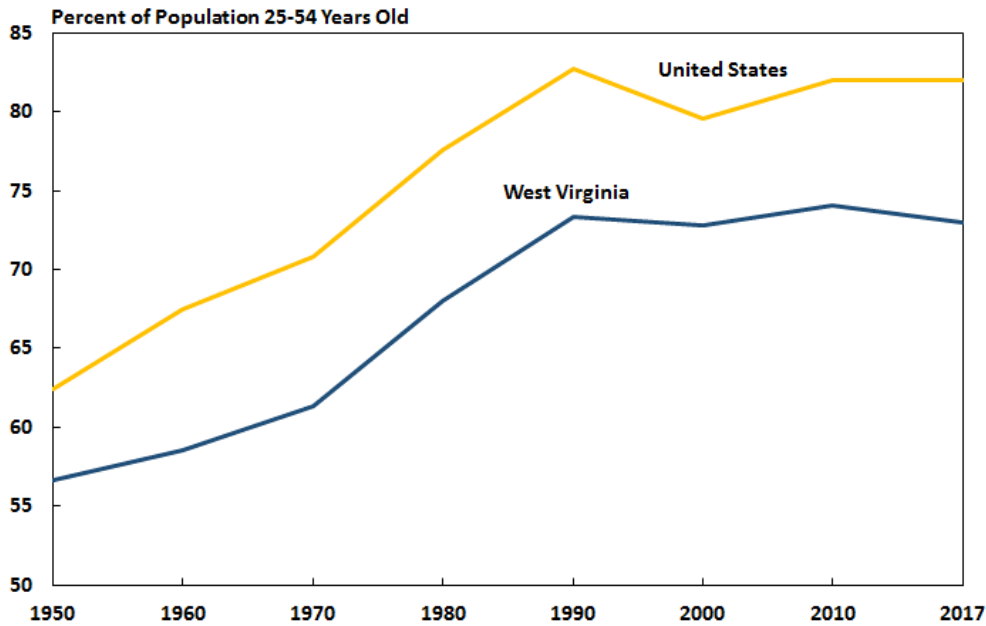
Figure 2.5: Labor Force Participation for People 16-24 Years Old, West Virginia and the United States



Source: 1950-2000 Decennial Censuses and 2010 and 2017 American Community Surveys, US Census Bureau

Next, we turn to labor force participation among the prime working age - those aged 25 to 54. Here we observe a deficit this is roughly equal to the overall deficit. For this demographic, the state lags the nation by around nine percentage points and the gap has been consistent for many decades. Figures 2.5 and 2.6 refute the misconception that the state's labor force participation deficit is simply because the state has one of the oldest populations among the 50 states.

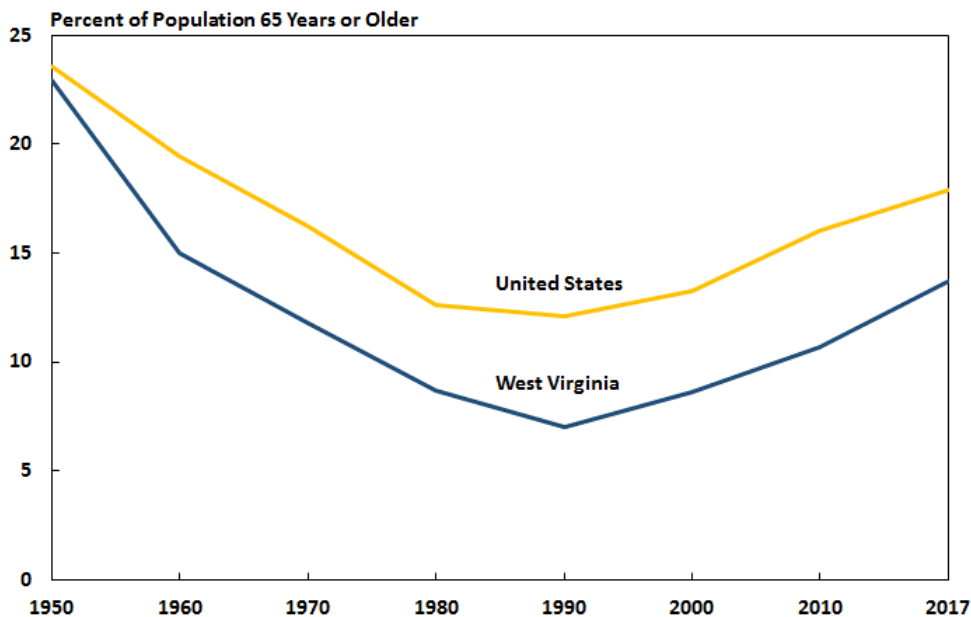
Figure 2.6: Labor Force Participation for People 25-54 Years Old, West Virginia and the United States



Source: 1950-2000 Decennial Censuses and 2010 and 2017 American Community Surveys, US Census Bureau

We close with an examination of labor force participation among those of retirement age. By this measure, the state lags the nation by only around four percentage points, although labor force participation is, unsurprisingly, very low among this age group overall.

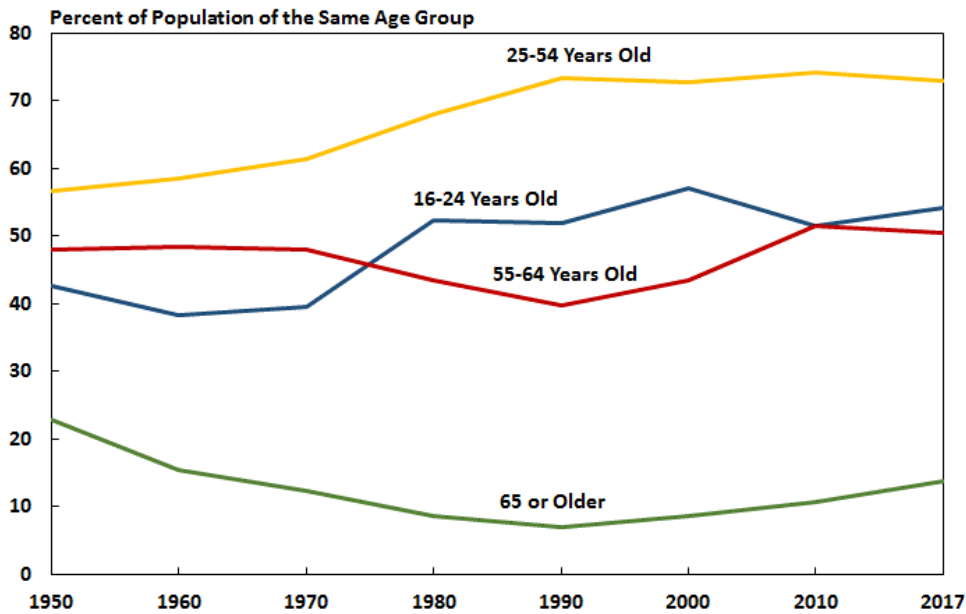
Figure 2.7: Labor Force Participation for People 65 Years or Older, West Virginia and the United States



Source: 1950-2000 Decennial Censuses and 2010 and 2017 American Community Surveys, US Census Bureau

In Figure 2.8 we present a summary of labor force participation among all adult age groupings. The figure illustrates the overall stability in the labor force participation figures. This stability may suggest that it may be difficult to find a policy that will significantly stimulate labor force participation in a short-run time frame, and that overcoming this challenge likely requires a long-run approach.

Figure 2.8: Labor Force Participation by Age Group, West Virginia



Source: 1950-2000 Decennial Censuses and 2010 and 2017 American Community Surveys, US Census Bureau

2.2 Labor Force Participation by Region

Next, we turn to an examination of labor force participation in West Virginia by region and county. For reference, in Figure 2.9 we illustrate how we define the state’s various regions for this report.

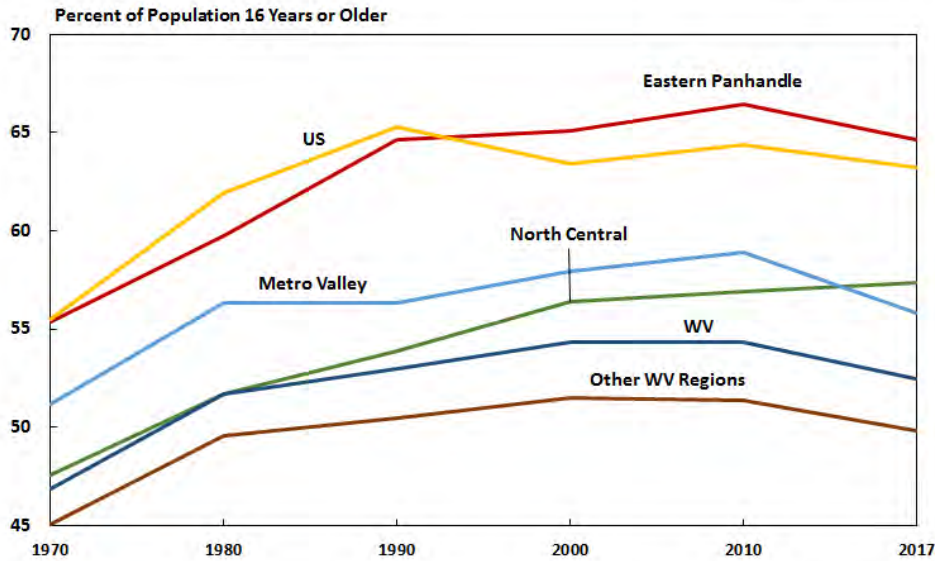
Figure 2.9: West Virginia Regions



In Figure 2.10 we report labor force participation for the state’s three largest regions (defined by population), along with an aggregate measure for the state’s more rural areas. As reported, the Eastern Panhandle surpasses the national figure by one to two percentage points. The Eastern Panhandle is the only region in the state to do

so. The Metro Valley and North Central West Virginia exceed the state figure by around four to five percentage points. Overall, the state's more rural areas tend to lag the state in terms of labor force participation. Interestingly, North Central West Virginia is the only geographic area reported, including the nation overall, that did not observe a decline in labor force participation in recent years. Indeed, the North Central region has exhibited a consistent increase in labor force participation since 1970.

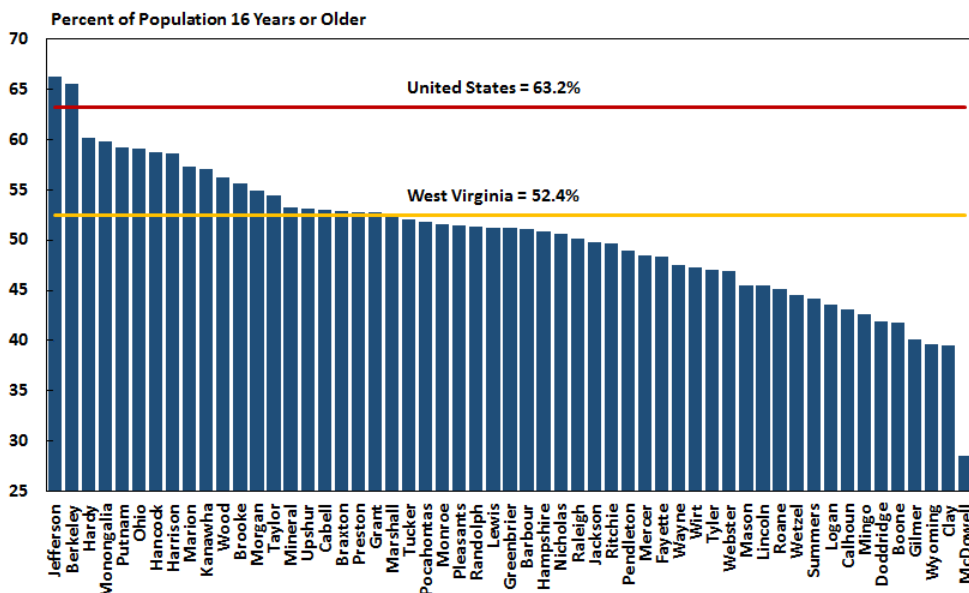
Figure 2.10: Labor Force Participation by Region, 1970-2017



Source: 1970-2000 Decennial Censuses, 2010 and 2017 American Community Survey, 5-Year Estimates for Counties and 1-Year Estimate for WV and US, US Census Bureau

Next, we examine labor force participation by county. Consistent with the above patterns, only Jefferson and Berkeley counties enjoy a rate of labor force participation that is higher than the nation. Otherwise, the state's more urban counties tend to show higher rates of labor force participation than the state average – counties such as Monongalia, Putnam, Ohio, and Harrison, along with a few more rural counties, such as Hardy. While several of the state's southwest counties fall near the bottom in terms of labor force participation, McDowell County in particular exhibits a shockingly low figure – around 11 percentage points below the next lowest county – leaving it as an outlier among the counties. Indeed, only three counties in the nation (the nation is comprised of more than 3,000 counties in total) have a lower labor force participation rate than McDowell. A separate study is needed to examine why McDowell differs so substantially from other counties in the state's southwestern region.

Figure 2.11: Labor Force Participation by County, 2017



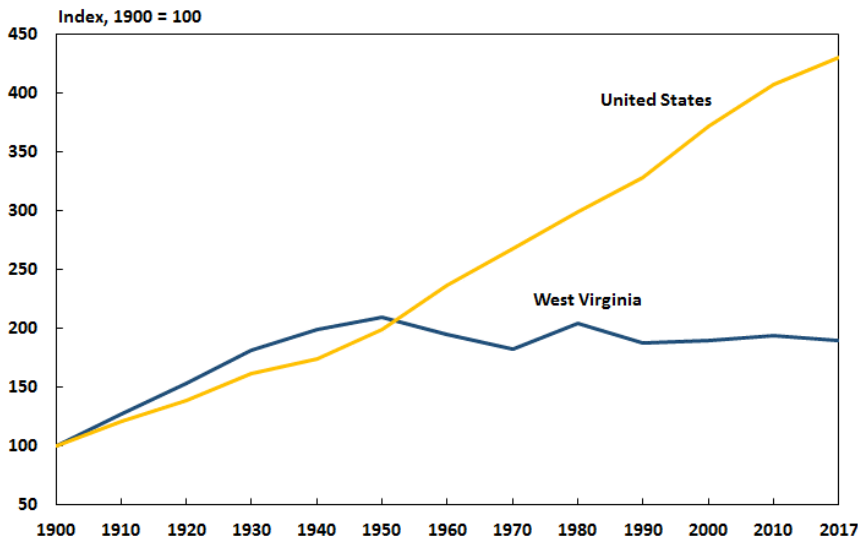
Source: 2017 American Community Survey, 5-Year Estimates for Counties and 1-Year Estimate for WV and US, US Census Bureau

3 West Virginia Population and Migration: Patterns and Trends

In section 3, we turn to a fundamental driver of labor force participation: population and migration. In other words, by examining how population is moving and evolving, we can obtain a better sense of where potential businesses might be better able to find an appropriate workforce and therefore identify which regions potential businesses might be more attracted to.

In Figure 3.1, we report total population for the state and nation. While West Virginia outperformed the nation in terms of population growth over the first half of the 20th century, the state’s population has declined by around 10 percent since 1950, while the nation’s population has more than doubled.

Figure 3.1: Total Population, West Virginia and the United States

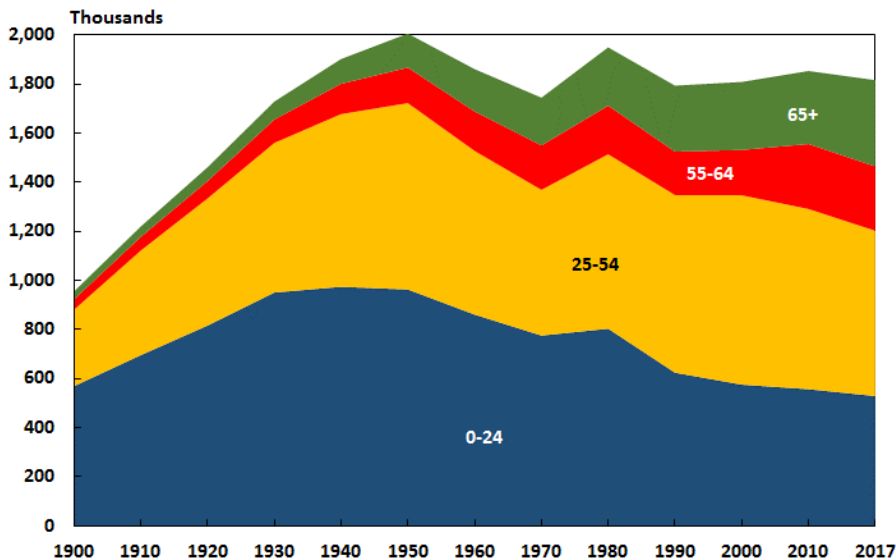


Source: 1900 to 2010 Decennial Censuses and 2017 Population Estimates, US Census Bureau

3.1 Population Trends by Age

In Figure 3.2, we report the state’s population by age group. As illustrated, since 1950, the largest decline has been in the state’s youngest population group while the number of residents over age 65 has increased substantially. Certainly, this evolution toward an older population is one driver of the state’s overall rate of labor force participation, although this pattern does not explain the trends reported above within age groups.

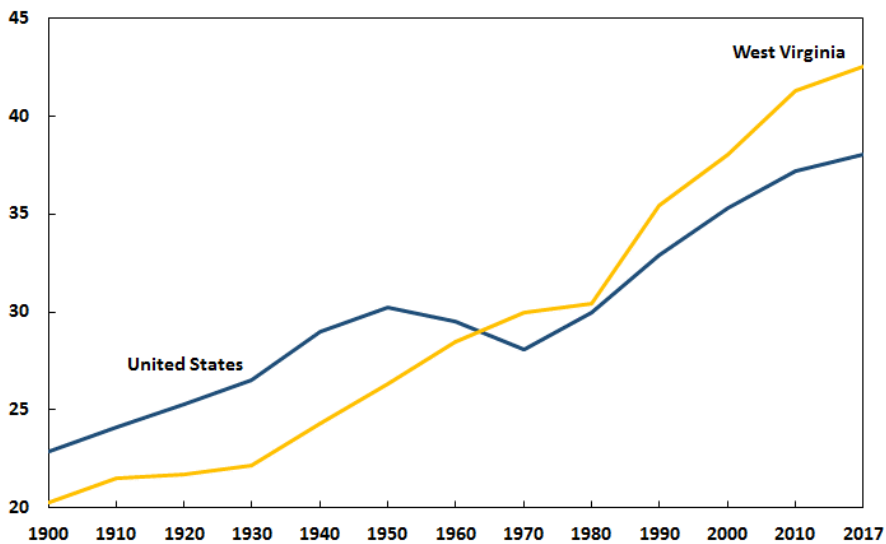
Figure 3.2: West Virginia Population by Age Group, 1900-2017



Source: 1900 to 2010 Decennial Censuses and 2017 Population Estimates, US Census Bureau

In Figure 3.3 we report the median age for West Virginia and the nation. Consistent with the previous figure, here we observe a similar pattern in which the state ages significantly in comparison to the nation over the long run. Since the 1960s, West Virginia has had a higher median age compared to the nation. Currently, with a median age of 42.5 years, the state's media age is around 4.5 years above the nation.

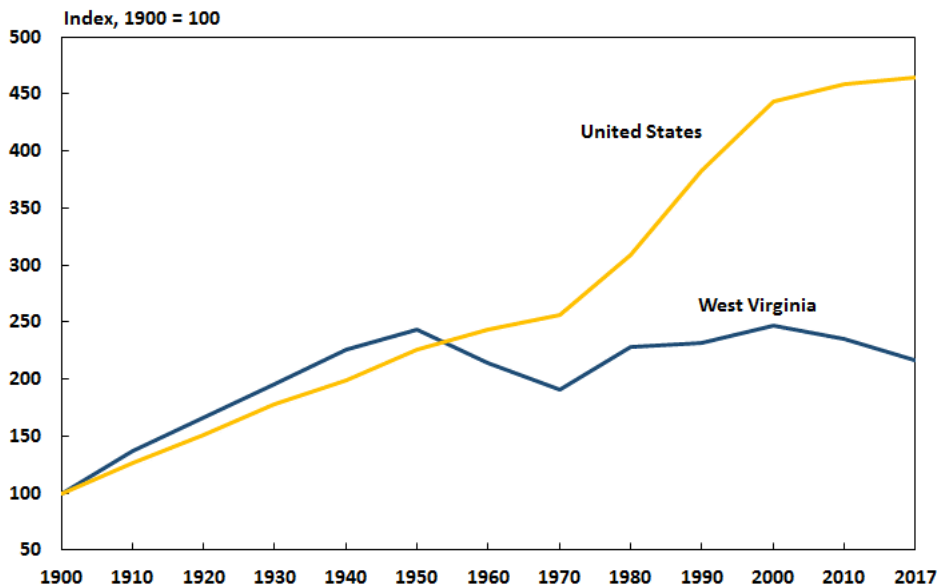
Figure 3.3: Median Age, West Virginia and the United States



Source: 1900 to 2010 Decennial Censuses and 2017 Population Estimates, US Census Bureau
 Note: Elderly population age is defined as 65 years or older.

In Figure 3.4 we report the prime working age population specifically (ages 25 to 54). Here we see a similar pattern to overall population in the sense that the state has been relatively flat since 1950, with an overall decline of around 11 percent over the period, with sharper declines over the past 20 years or so. In contrast, the nation has exhibited strong growth overall over the period, but has been relatively flat over the past two decades or so.

Figure 3.4: Prime Working Age Population, West Virginia and the United States

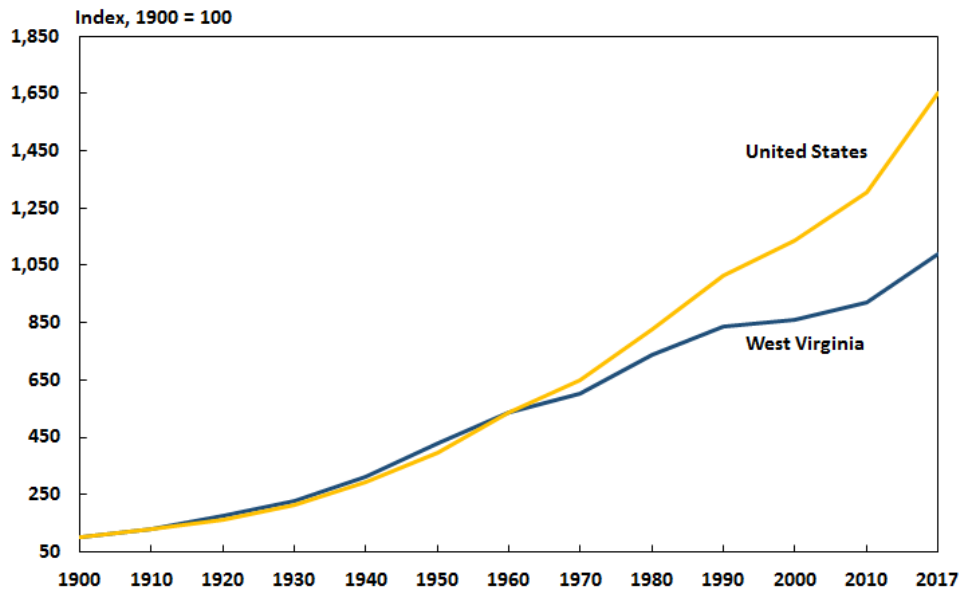


Source: 1900 to 2010 Decennial Censuses and 2017 Population Estimates, US Census Bureau
 Note: Prime working age is defined as 25 to 54 years old.

In Figure 3.5 (*Next Page*) we report that the elderly population has continued to increase in both the US and West Virginia since at least 1900. Starting in 1960, however, growth in the US outpaces the state. The overall trends of population growth by age group show that while population aging occurs in both the US and West Virginia, it has different underlying drivers. In the US aging is driven by growth of the elderly population outpacing growth of the

younger population, in West Virginia it is driven by growth of the elderly population that is accompanied by a decline or stall of population in the younger age groups.

Figure 3.5: Elderly Population, West Virginia and the United States

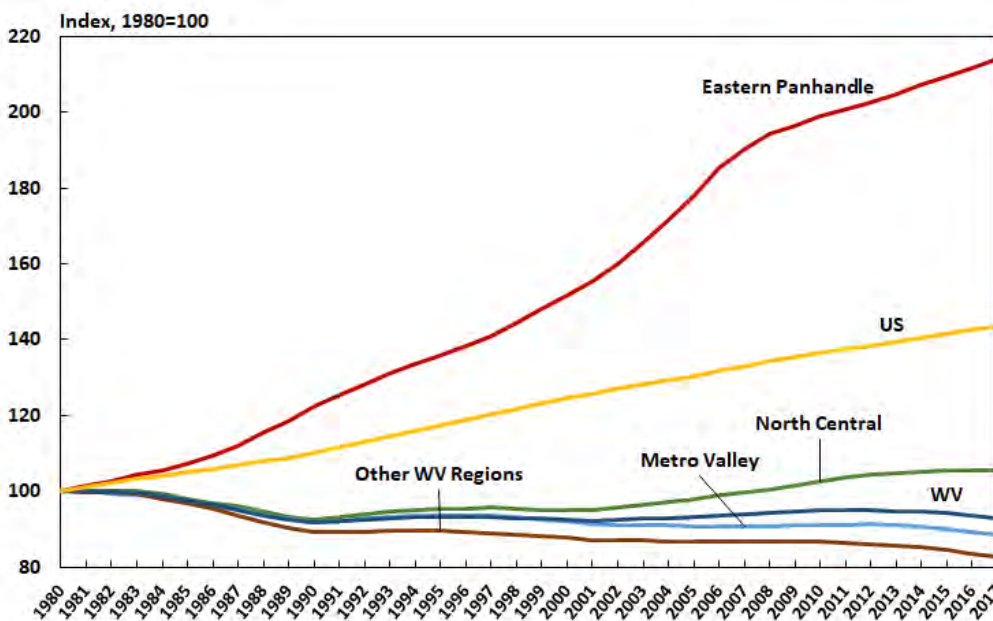


Source: 1900 to 2010 Decennial Censuses and 2017 Population Estimates, US Census Bureau
 Note: Elderly population age is defined as 65 years or older.

3.2 Population Trends by Region

Next, we consider population trends across the various regions of West Virginia. As reported in Figure 3.6, the Eastern Panhandle has experienced a surge in population over the period, with more than a doubling of the population. The only other region of the state to experience growth over the period is North Central West Virginia, though growth has been much smaller overall at just over five percent. Population in the state as a whole has declined by around seven percent over the period.

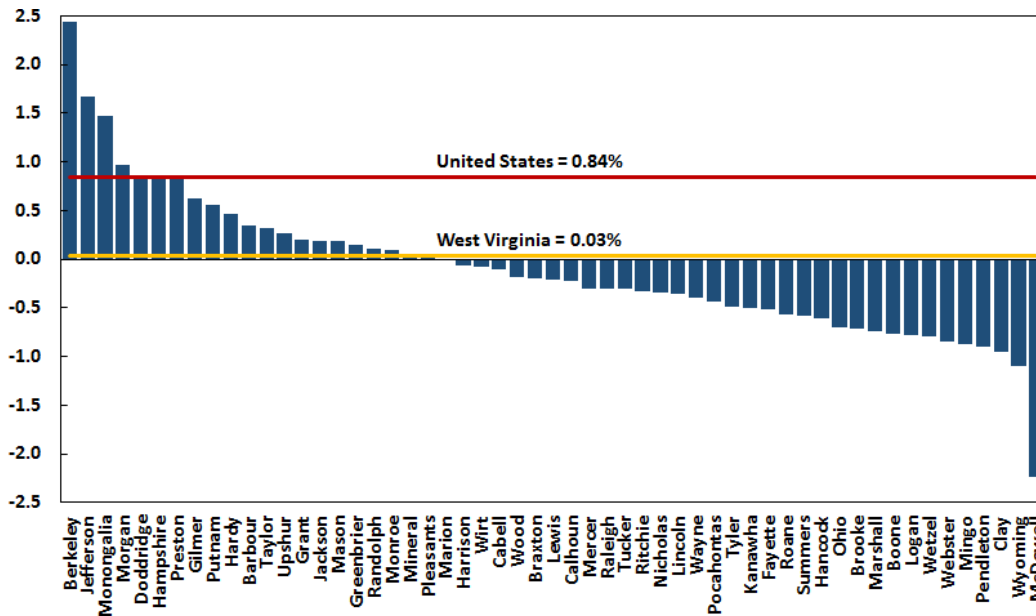
Figure 3.6: Total Population by Region, 1980-2017



Source: 1980-2009 Intercensal Estimates and Vintage 2017 Population Estimates, US Census Bureau

In Figure 3.7, we report population growth by county over the more recent past, since 2000. Although the time frame is slightly different, here we observe a similar pattern to the previous figure in which Berkeley, Jefferson, and Monongalia counties show the highest rates of population growth by far. These three counties, along with Morgan, have outpaced even the nation in terms of population growth over the period. Thirty-three of the state's counties have lost population since 1980.

Figure 3.7: 2000-2017 Annual Population Growth by County

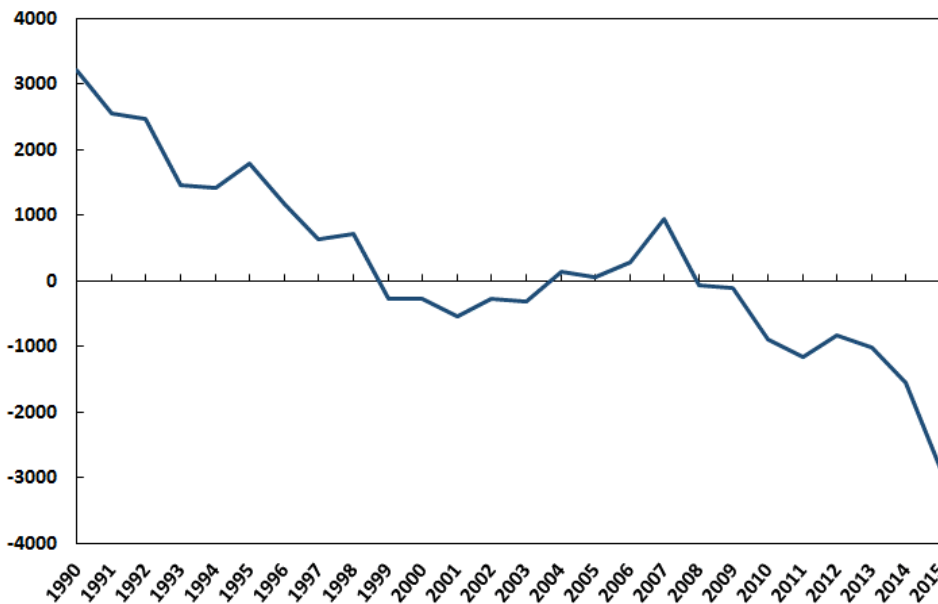


Source: 2000-2009 Intercensal Estimates and Vintage 2017 Population Estimates, US Census Bureau

3.3 Natural Population Change

Next, we turn to the first component of population change – natural population change, which is defined as the difference between births and deaths. As illustrated, the state began experiencing negative natural population growth – where births fall short of deaths – in the late-1990s, and has done so for most of the years since. The natural population decline became quite pronounced over the last few years that data are available, largely as death rates have increased. In 2015, the most recent year for which data are available, deaths exceeded births by more than 2,800.

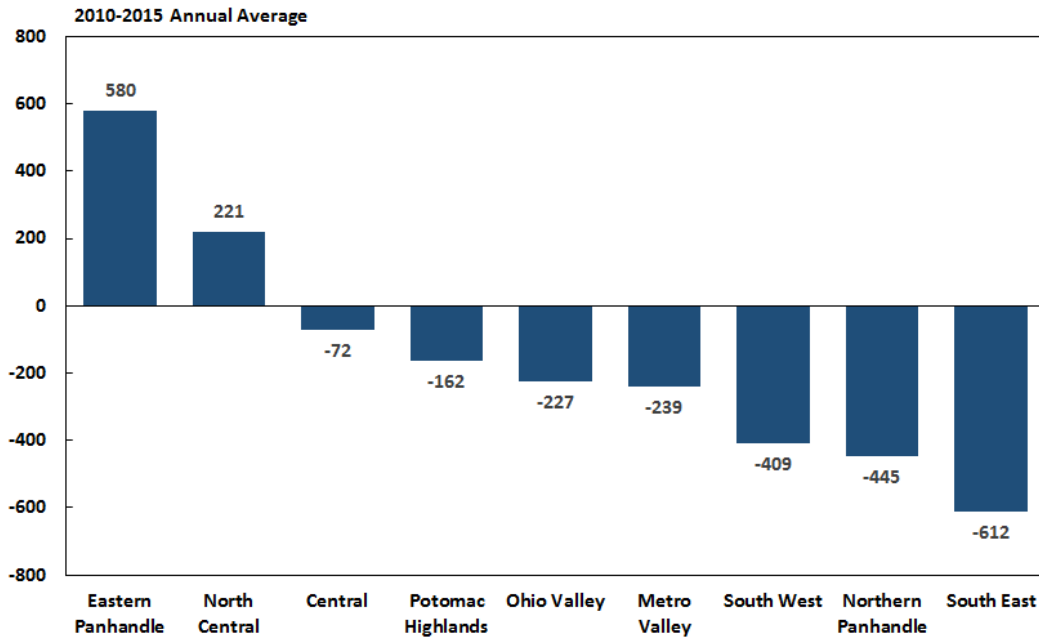
Figure 3.8: Births - Deaths, West Virginia



Source: West Virginia Department of Health and Human Services

Figure 3.9 reports natural population change across the various regions of West Virginia. Consistent with the figures above, natural population growth is occurring in the state's Eastern Panhandle and North Central regions, while all other regions have experienced natural population decline.

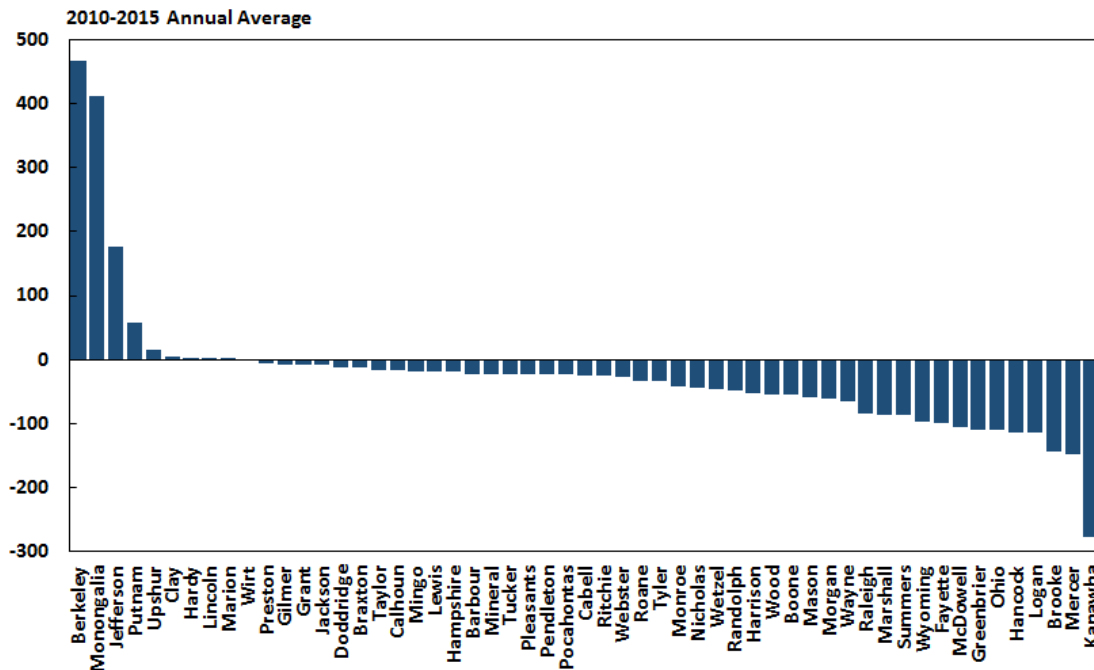
Figure 3.9: Births - Deaths by Region



Source: Authors' calculations of the County-to-County Migration, 2016 American Community Survey, 5-Year Estimates, US Census Bureau

Following the previous figure, in Figure 3.10 we report natural population change by county. Here we observe that only five of the state's counties have recorded appreciable levels natural population growth – two counties from the Eastern Panhandle, one from North Central West Virginia, along with Putnam and Upshur counties. The problem of natural population decline plagues 45 of the state's 55 counties.

Figure 3.10: Births - Deaths by County

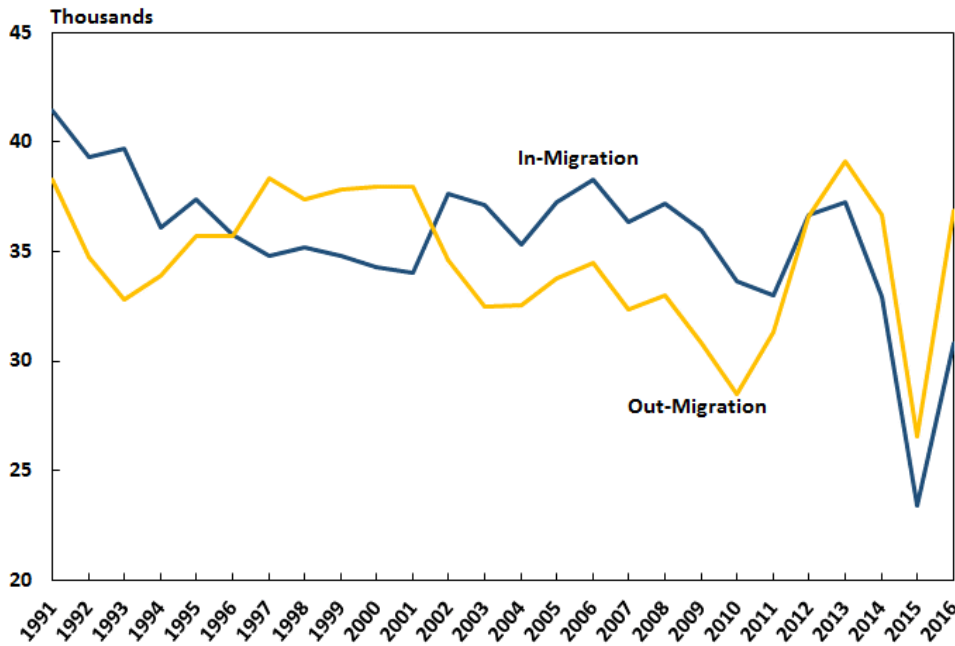


Source: West Virginia Department of Health and Human Services

3.4 Migration Patterns

With Figure 3.11, we turn to the second component of population change – migration. In the figure we report the two components of migration – in- and out-migration. These series are volatile, changing quite regularly such that the state frequently moves between positive and negative net migration. Net migration was negative – with more out-migration – in the most recent years available. However, since both components of migration typically respond to economic opportunities, the situation has likely improved in more recent years as the state’s economy has been much stronger during 2017 and 2018.

Figure 3.11: West Virginia In-Migration and Out-Migration



Source: IRS Tax Returns

In the next few figures we look at migration patterns into and out of West Virginia’s various regions. These figures consider patterns of annual migration in the average year over the 2012 to 2016 period. The green arrow represents positive net migration where a region’s in-migration outnumbers out-migration, the red arrows represents the opposite trend. The directions of the arrow simply represent net outflow or net inflow and do not point in the direction of destination or origin regions specifically.

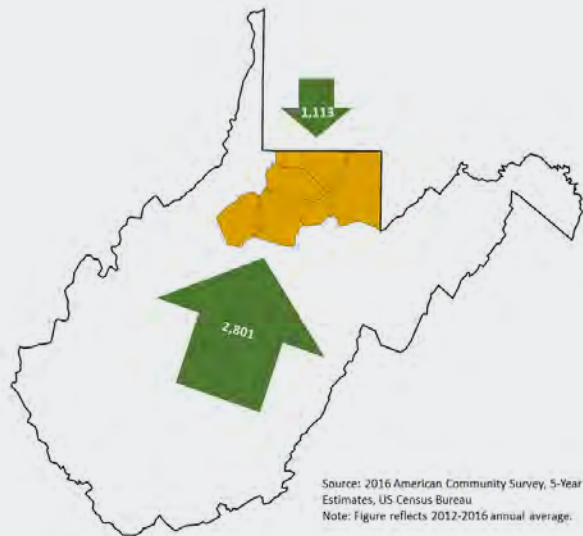
We begin with the Northern Panhandle in Figure 3.12. The figure shows that the region actually received positive net migration from the rest of West Virginia. In particular, data indicate that the number of people moving into the region from other parts of West Virginia, exceeded the number of people moving from the region to other parts of West Virginia by 166 people per year (as indicated by the green arrow). However, the region experienced a net loss of migrants to other states. In particular, the number of people moving from the region to other states exceeded the number of people moving into the region from other states by 923 people per year (as indicated by the red arrow).

Figure 3.12: Inter-Regional and Inter-State Net Migration, Northern Panhandle Region



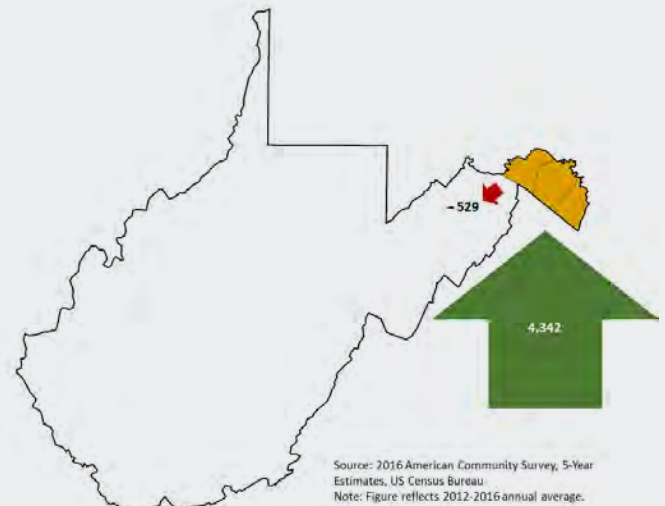
Turning to North Central West Virginia, the region has enjoyed a positive net in-migration of just over 2,800 residents from other parts of West Virginia in recent years in addition to a positive net in-migration of over 1,100 residents per year from other states. These figures, in conjunction with the natural population growth figure above, indicate that North Central West Virginia is growing by over 4,000 residents per year and is therefore one of the two strong regions of the state in terms of a growing population and workforce.

Figure 3.13: Inter-Regional and Inter-State Net Migration, North Central Region



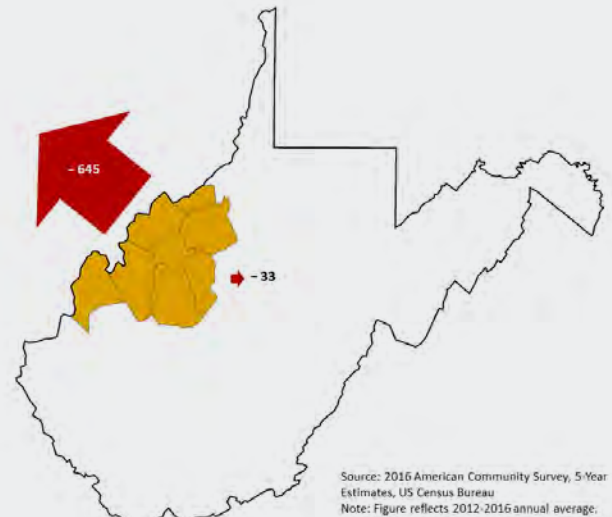
As reported in Figure 3.14, the state's Eastern Panhandle Region is attracting more than 4,300 residents from outside of West Virginia on balance annually. In contrast, the region is actually losing migrations to other parts of West Virginia by an annual average of 529 residents. Ultimately, it is clear that North Central West Virginia and West Virginia's Eastern Panhandle are key forces in maintaining and attracting residents to the state overall.

Figure 3.14: Inter-Regional and Inter-State Net Migration, Eastern Panhandle Region



Turning to the Ohio Valley Region, the region has lost population to net out migration to other states on the order of 645 residents per year in recent years. The region has lost a few migrants to other parts of West Virginia.

Figure 3.15: Inter-Regional and Inter-State Net Migration, Ohio Valley Region



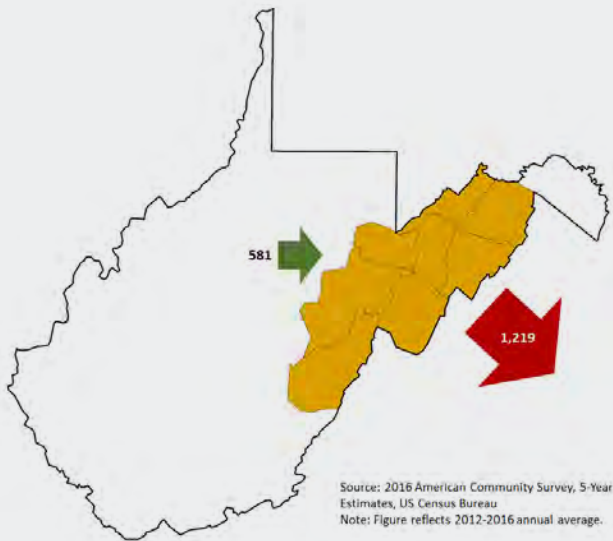
Central West Virginia has enjoyed a net gain in population from migration overall in recent years. The region has lost residents to other parts of West Virginia in recent years, but the region has gained residents from out of state. Here, however, both the inter-regional and inter-state migration figures are relatively small, reflecting the low population of the area, which lacks an urban core.

Figure 3.16: Inter-Regional and Inter-State Net Migration, Central Region



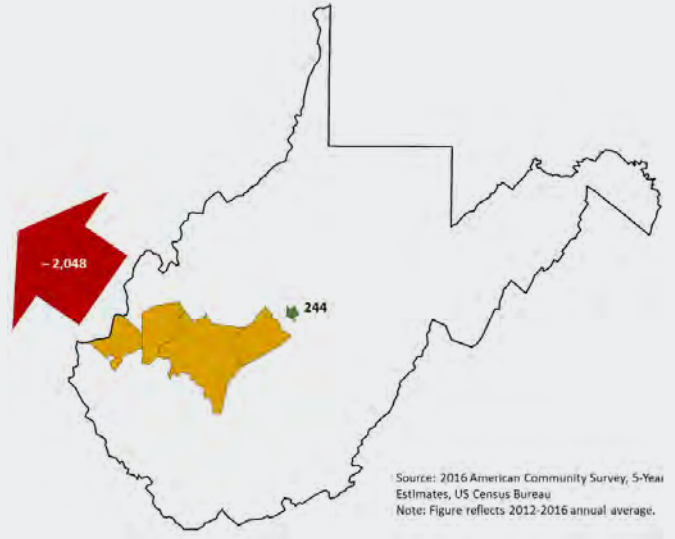
West Virginia's Allegheny-Potomac Highlands region has lost population overall to net migration, with losses to other states of over 1,200 residents per year in recent years. However, this loss contrasts with the fact that the region has seen a positive net migration from other parts of West Virginia that offset nearly half of the net migration loss to other states.

Figure 3.17: Inter-Regional and Inter-State Net Migration, Allegheny-Potomac Highlands Region



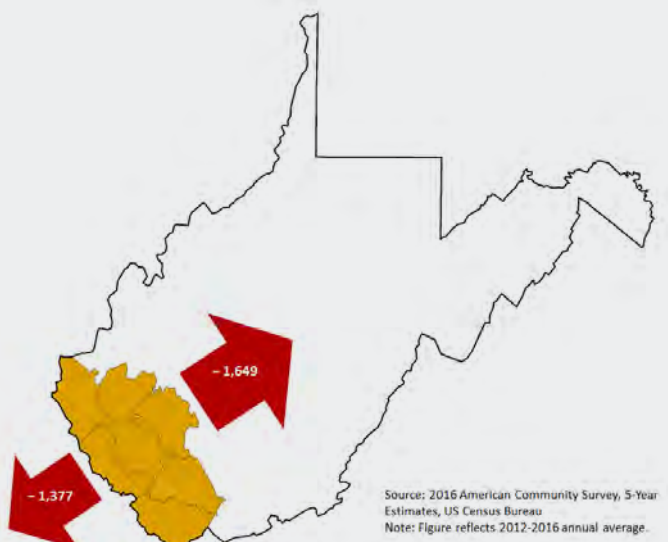
West Virginia's Metro Valley Region has also lost resident overall to net out-migration in recent years with a net loss of migrants to other states of over 2,000 per year. However, this loss is offset to some degree by a net in-migration to the Metro Valley from other parts of the state of 244 people per year.

Figure 3.18: Inter-Regional and Inter-State Net Migration, Metro Valley Region



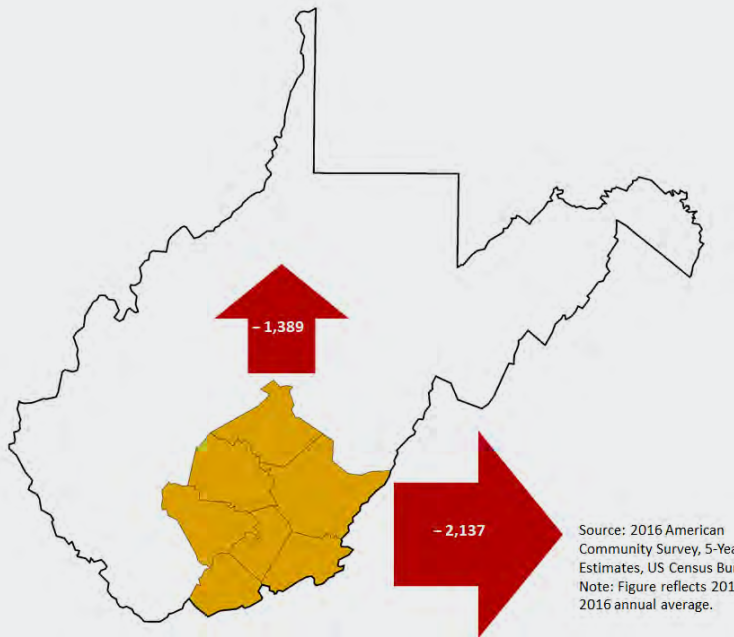
The state's Southern Coalfields region has lost a significant number of residents both to other states and to other parts of West Virginia in recent years. Combined, the seven-county region has lost over 3,000 men and women each year in recent years to net out-migration.

Figure 3.19: Inter-Regional and Inter-State Net Migration, South West Region



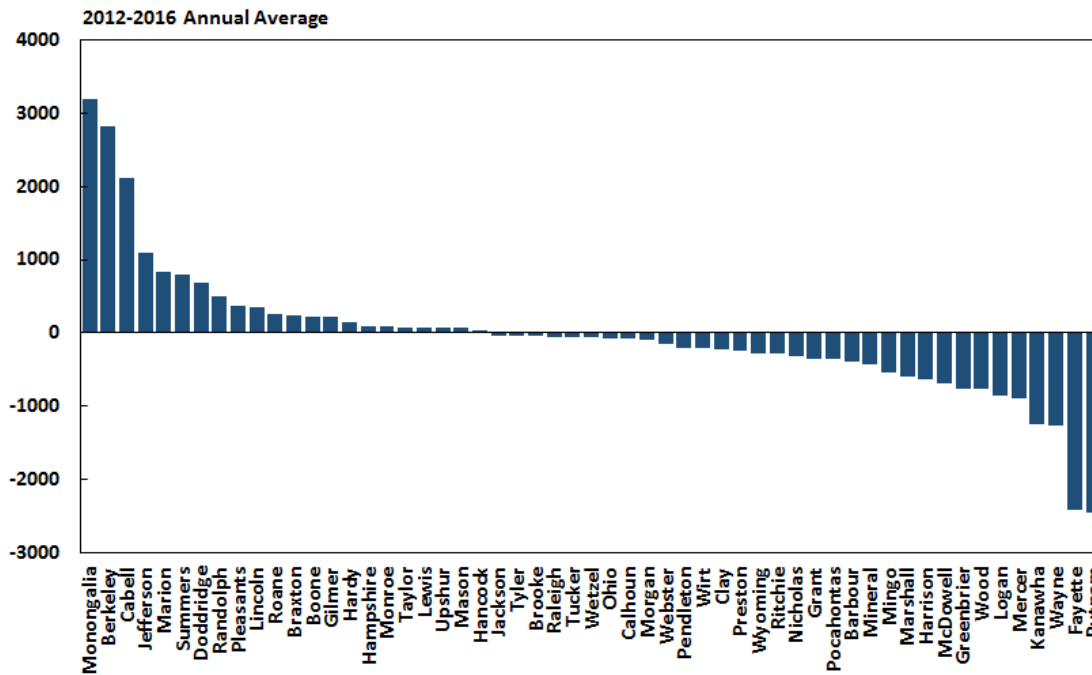
The state's Southeast Region has suffered the greatest population losses in recent years to net out-migration in an absolute sense. Overall, the region lost more than 3,500 residents on average annually in recent years to other states and other parts of West Virginia.

Figure 3.20: Inter-Regional and Inter-State Net Migration, South East Region



In Figure 3.21 we present a county-specific depiction of overall annual net migration in recent years, irrespective of whether the migration has moved to or from other parts of the state or the nation. As reported, 22 counties overall have reported positive net migration in recent years. The Eastern Panhandle counties of Berkeley and Jefferson, Monongalia County in North Central West Virginia, and Cabell County in North Central West Virginia, and Cabell County are the only counties to report gains of more than 1,000 residents per year on average as a result of migration during the period listed.

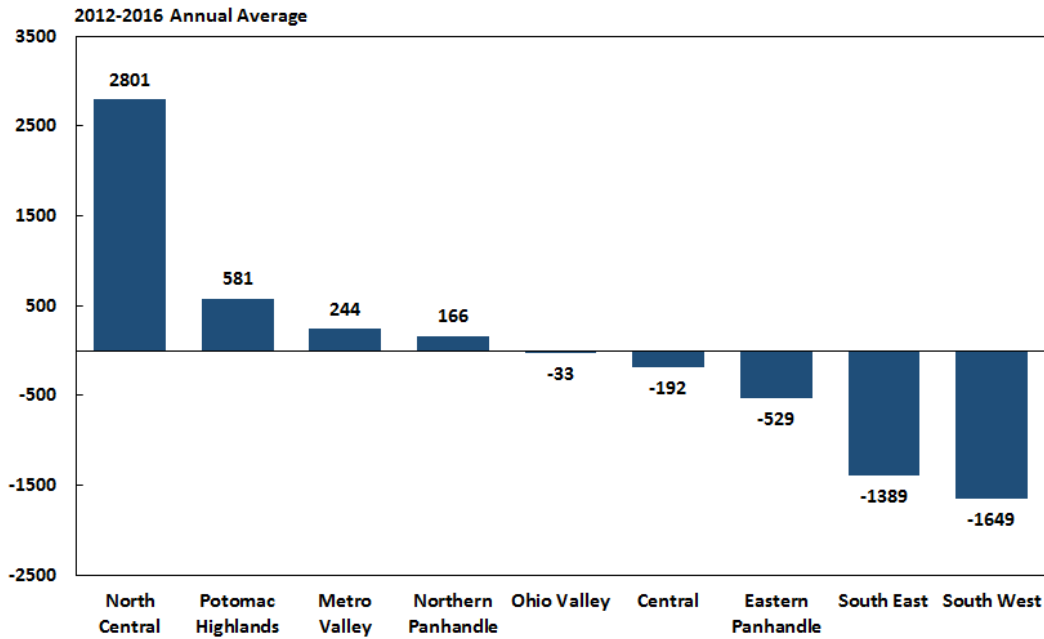
Figure 3.21: Net Domestic Migration by County



Source: 2016 County to County Migration West Virginia, US Census Bureau

In Figure 3.22, (Next Page) we report a summary of net migration within West Virginia, ignoring out of state residents who migrate into West Virginia and the state residents who migrate out to other states. Here we see four areas within West Virginia that have attracted other West Virginians in recent years – North Central, the Potomac Highlands, the Metro Valley, and the Northern Panhandle. However, North Central has been, by far, the most attractive region for migrants from other parts of West Virginia, attracting nearly three times as many number of men and women from the three other growth regions combined. All other parts of West Virginia have lost residents to these four regions overall.

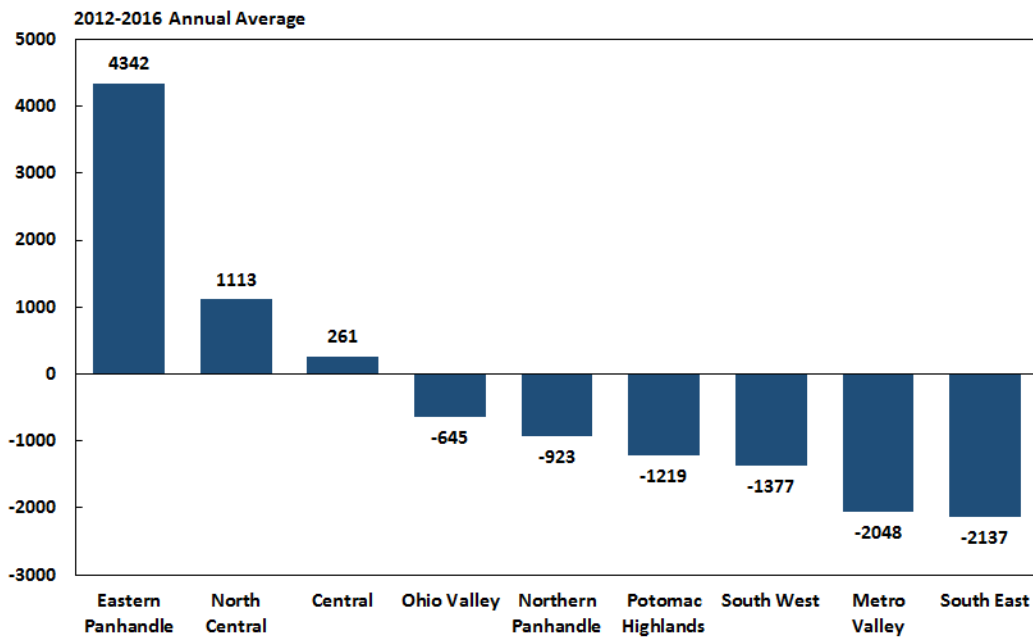
Figure 3.22: Inter-Regional Net Domestic Migration within West Virginia



Source: Authors' calculations of the County-to-County Migration, 2016 American Community Survey, 5-Year Estimates, US Census Bureau

In a similar vein to the previous figure, in Figure 3.23 we summarize net migration to the various regions of West Virginia from other states, ignoring migration within West Virginia. Here we see only three regions that are attracting migrants from out of the state overall. The Eastern Panhandle is by far the largest attractor of migrants, with more than three times the net migration of the other two positive-net-migration regions combined. Indeed, the out-of-state migration into the Eastern Panhandle is enough to make up for the losses from the Ohio Valley, Northern Panhandle, Potomac Highlands, and South West regions combined.

Figure 3.23: Inter-State Net Domestic Migration by West Virginia Region

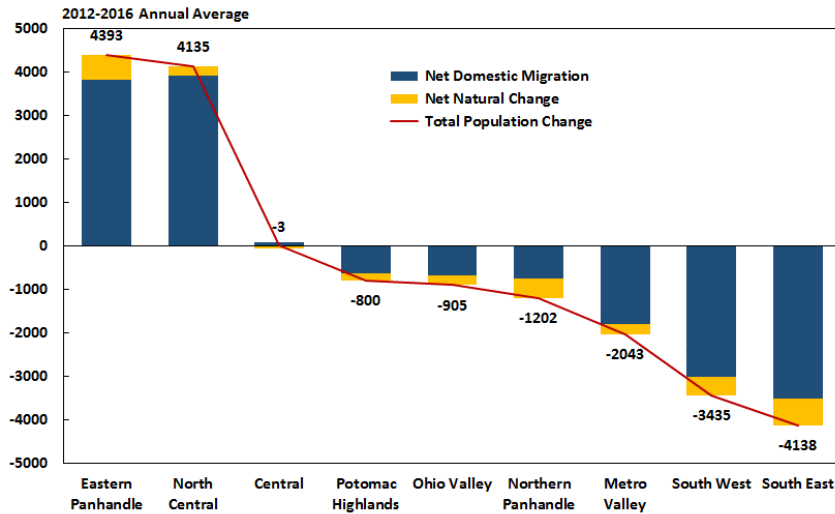


Source: Authors' calculations of the County-to-County Migration, 2016 American Community Survey, 5-Year Estimates, US Census Bureau

We close this subsection in Figure 3.24 with a summary of population change for each region in recent years. As illustrated, the state's Eastern Panhandle and North Central regions have added population in roughly equal

amounts over the period presented, while all other regions have lost population (with the exception of the Central region, which has been roughly stable). It is interesting to note that, in all but one case, the regions with positive natural population change also have positive net migration, and vice versa.

Figure 3.24: Summary of Components of Population Change by Region

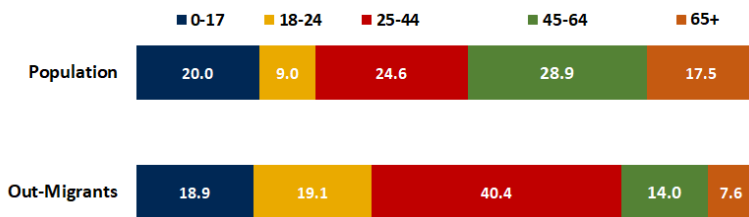


Source: Authors' calculations of the County-to-County Migration, 2016 American Community Survey, 5-Year Estimates, US Census Bureau

3.5 Characteristics of Migrants

Before we close the section on migration trends, we briefly examine two characteristics of migrants: age and education. In Figure 3.25, we report the age breakdown of migrants moving out of West Virginia in recent years and the state's overall population. As illustrated, out-migrants are more likely to be younger, between the age of 18 to 44, than the state's overall population.

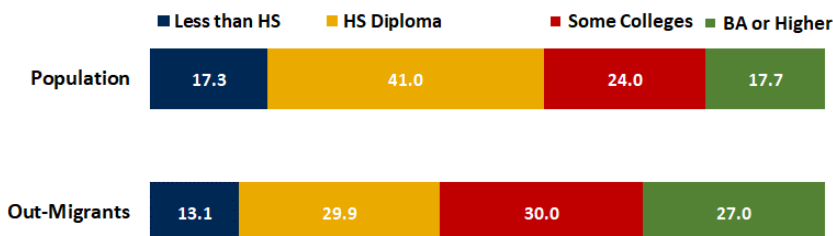
Figure 3.25: Age Distribution, Out-Migrants vs. Overall Population, 2011-2015 Average



Source: 2015 American Community Survey, 5 Year Estimates
 Note: Universe = Population one year or older living in West Virginia one year ago.

In Figure 3.26, we compare the educational attainment breakdown between out-migrants and the state's population overall. Data are based on the average year over the period 2007 through 2011. As illustrated, out-migrants are far more likely to have higher levels of education, with some college or a bachelor's degree or higher, than the state's overall population.

Figure 3.26: Educational Attainment, Out-migrants vs. Overall Population, 2007-2011



Source: 2011 American Community Survey, 5 Year Estimates
 Note: Universe = population 25 years or older living in West Virginia one year ago.

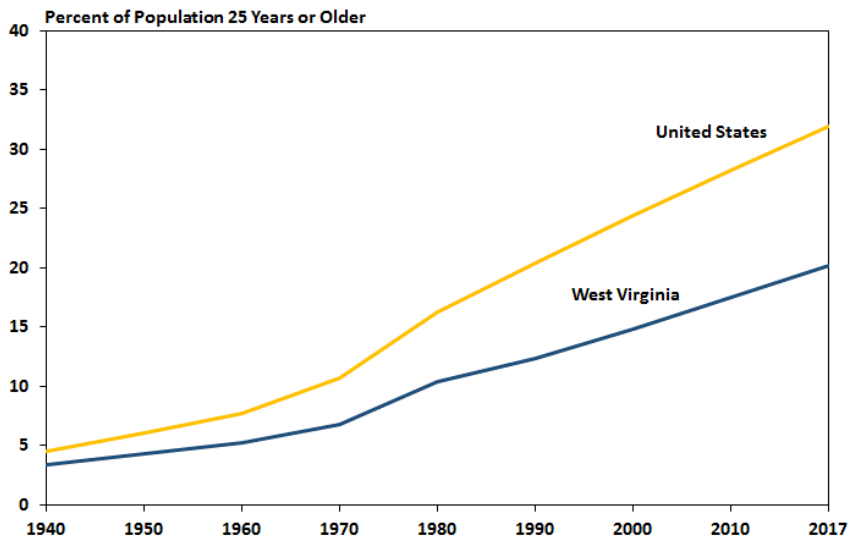
4 Educational Outcomes in West Virginia

A key factor in explaining labor force participation in West Virginia is poor educational outcomes. It is likely that there are men and women who would like to work ideally, but do not look for work (and are therefore not part of the labor force) because they doubt that they will be able to find a job due to a lack of education and training and job skills. As such, in this section we examine educational outcomes in West Virginia. We focus on the attainment of a bachelor's degree for brevity; however, these same principles apply to various measures of technical training.

4.1 Basic Overview of Educational Outcomes

In Figure 4.1 we report the share of the adult population in West Virginia and the nation who hold a bachelor's degree or higher. As illustrated, the state and the nation were very close by this metric in 1940, but as the bachelor's attainment rate has increased nationally to over 30 percent from around 5 percent, the figure has only improved to around 20 percent in West Virginia, leaving West Virginia 50th among the states in terms of this metric.

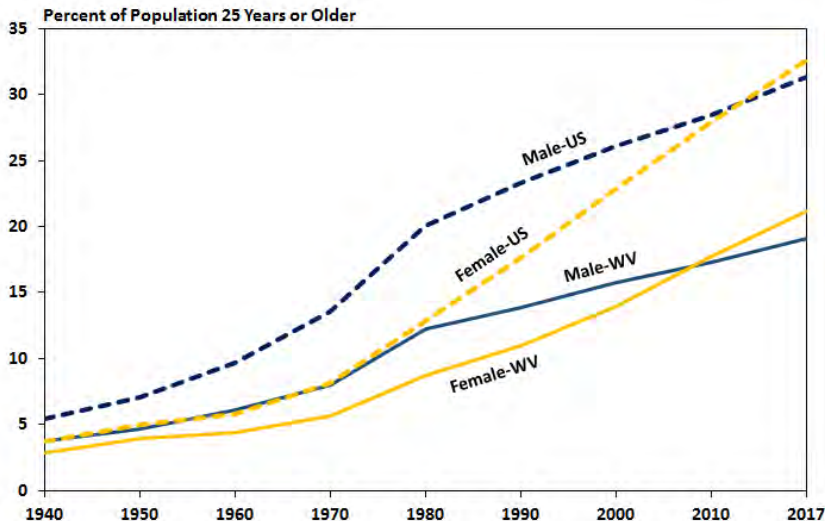
Figure 4.1: Bachelor's Degree or Higher Attainment



Source: 1940-2000 Decennial Censuses and 2010 and 2017 American Community Surveys, US Census Bureau
Note: 1940 to 1950 rates are calculated without including non-reported individuals.

In Figure 4.2, we consider bachelor's degree attainment for men and women specifically. As illustrated, the gap between the state and the nation is similar across both men and women.

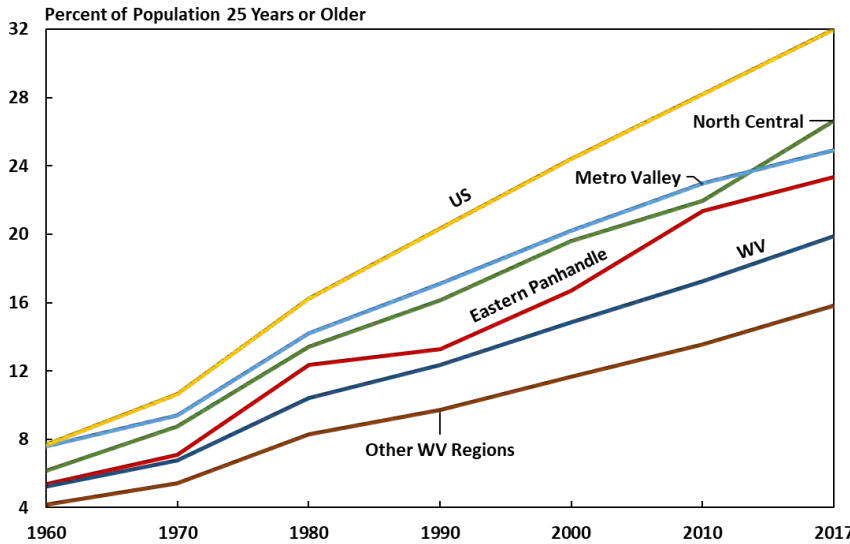
Figure 4.2: Bachelor's Degree or Higher Attainment: Male and Female



Source: 1940-2000 Decennial Censuses and 2010 and 2017 American Community Surveys, US Census Bureau
Note: 1940 to 1950 rates are calculated without including non-reported individuals.

In Figure 4.3, we present information on bachelor’s degree attainment by region. As illustrated, all regions of the state lag the nation by this metric. North Central West Virginia exhibits the smallest gap with the nation, lagging by around five percentage points. The Metro Valley and Eastern Panhandle also exhibit higher educational attainment by this metric compared to the state overall. The state’s more rural areas tend to exhibit the lowest levels of educational attainment.

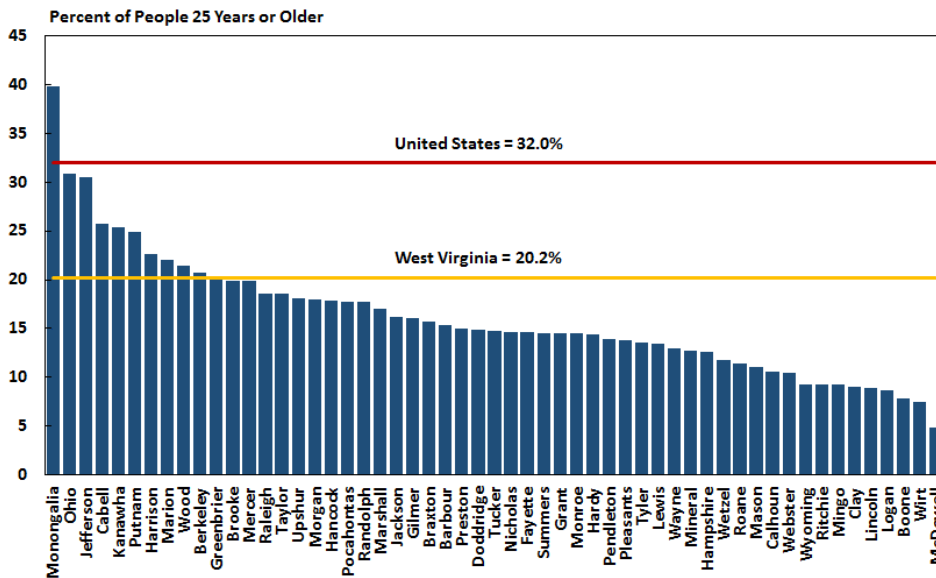
Figure 4.3: Bachelor’s Degree or Higher Attainment by Region



Source: 1960-2000 Decennial Censuses and 2010 and 2017 American Community Surveys, US Census Bureau

In a similar vein, in Figure 4.4 we report the share of the adult population who holds a bachelor’s degree or higher by county. Only Monongalia County surpasses the national average by this metric. Otherwise, the largest and most urban counties – such as Ohio, Jefferson, Cabell, and Kanawha – exceed the statewide figure. Many of the state’s more rural counties fall far below the national figure; more than half of the counties in the state have a bachelor’s degree attainment rate of less than half the national figure.

Figure 4.4: Bachelor’s Degree or Higher Attainment by County, 2017



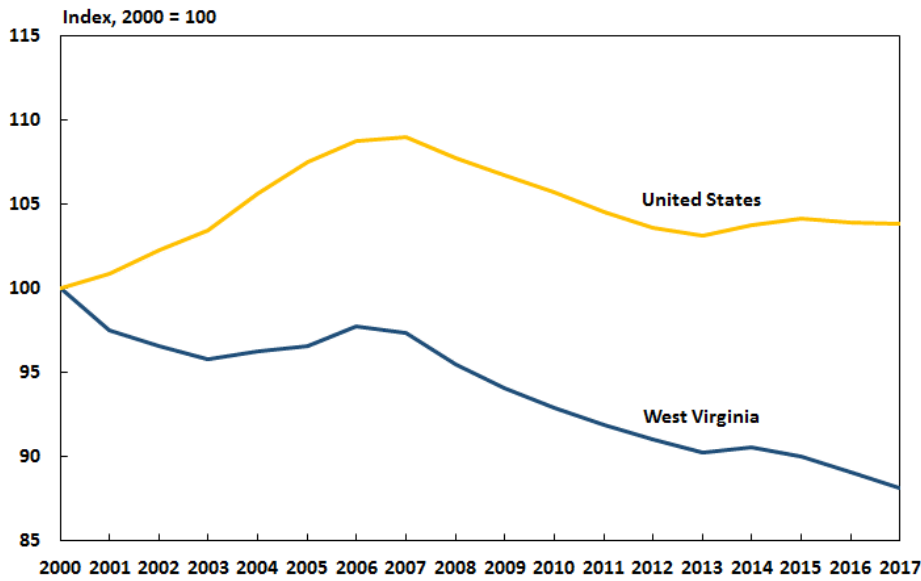
Source: 2017 American Community Survey, US Census Bureau

4.2 Drivers of Long-Run Educational Outcomes

As a follow-up to the previous two figures, it is important to consider trends in the youth population in the state since they are a primary channel through which higher levels of educational attainment can be achieved over the long run. As such, the Figure 4.5 (*Next Page*) we present high-school-aged population for the state and the nation.

While the high-school-aged population has been relatively stagnant in the nation in recent years, the figure has fallen by nearly 12 percent in the state since the year 2000. Unsurprisingly, the number of young men and women enrolled in high school has fallen in a similar pattern (not shown). Fewer young people can present a challenge to increasing the availability of highly educated workers to potential businesses in the state in the long run.

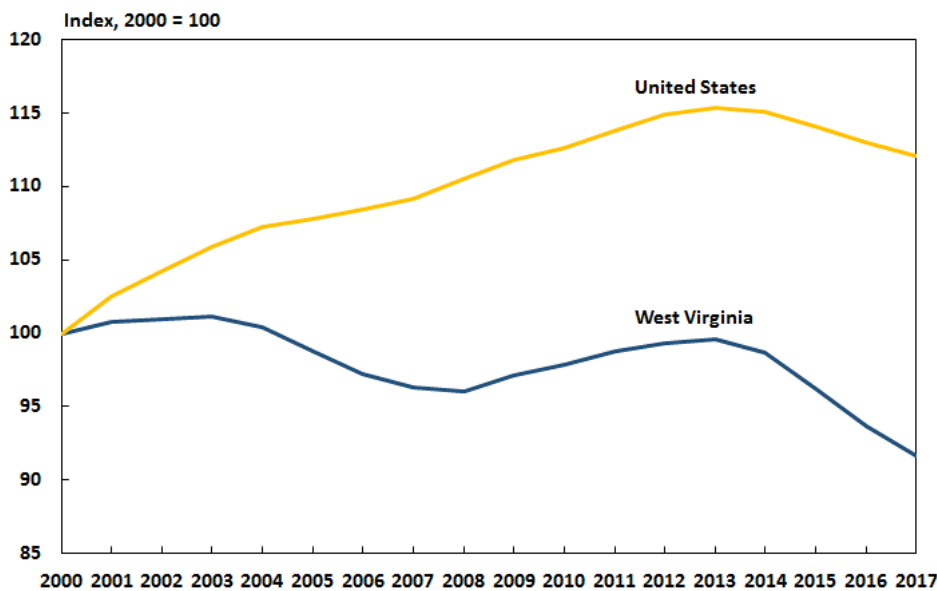
Figure 4.5: High School Age Population, West Virginia and the United States



Source: Intercensal Estimates and 2017 Population Estimates, US Census Bureau
 Note: High-school age population is defined as population aged 14 to 17 years old.

In a similar vein, in Figure 4.6 we present the college-aged population for the state and nation. Here we see a similar pattern to that of the higher school aged population; the college aged population has fallen by more than eight percent in the state since the year 2000.

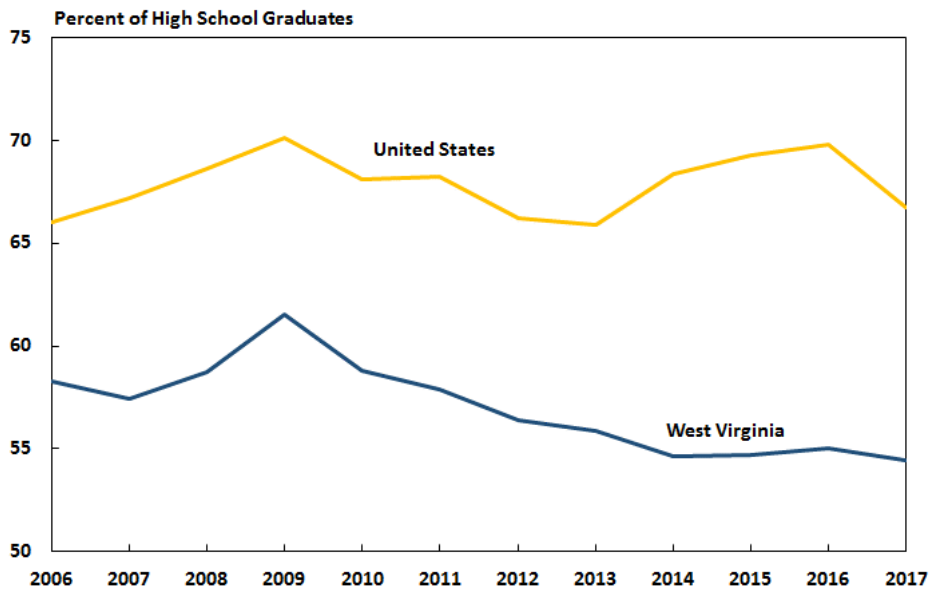
Figure 4.6: College Age Population, West Virginia and the United States



Source: Intercensal Estimates and 2017 Population Estimates, US Census Bureau
 Note: College-age population is defined as population aged 18 to 24 years old.

To examine the issue more in depth, in the next figure we present the college going rate for the state and the nation. The figure has been relatively stable for the nation of the past decade or so with a college going rate of around 67 percent. In West Virginia, around 55 percent of high school graduates attend college, down from around 58 percent a decade ago.

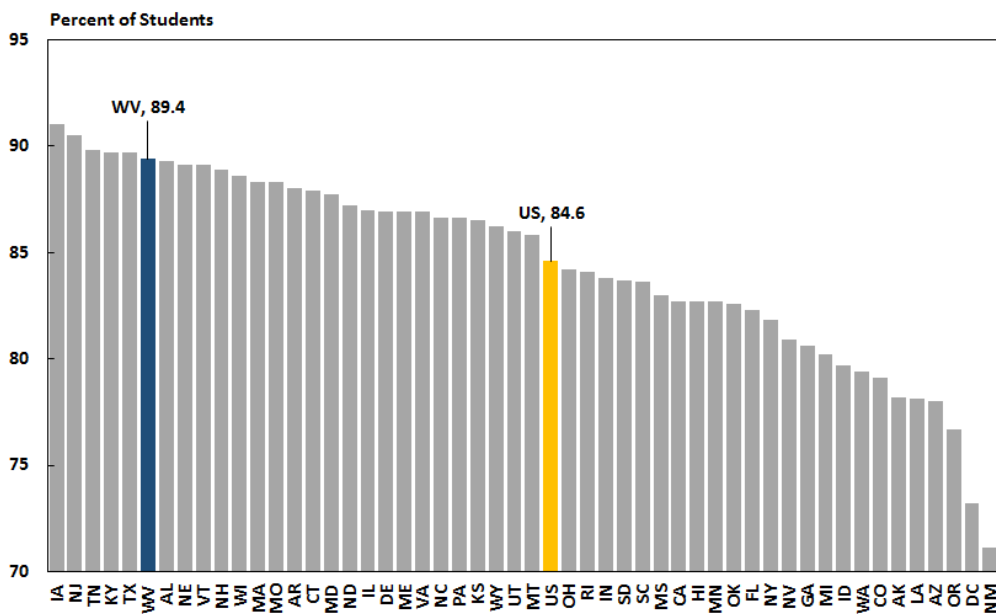
Figure 4.7: College Going Rate, West Virginia and the United States



Source: US National Center for Education Statistics and West Virginia Higher Education Policy Commission

To close this subsection, in the next figure we present the high school graduation rate (public high schools only). West Virginia fares very well by this metric with the sixth-highest rate in the nation with more than 89 percent of high school students ultimately graduating, compared to less than 85 percent for the nation.

Figure 4.8: Public School 4-Year Adjusted Cohort Graduation Rate, 2016-2017



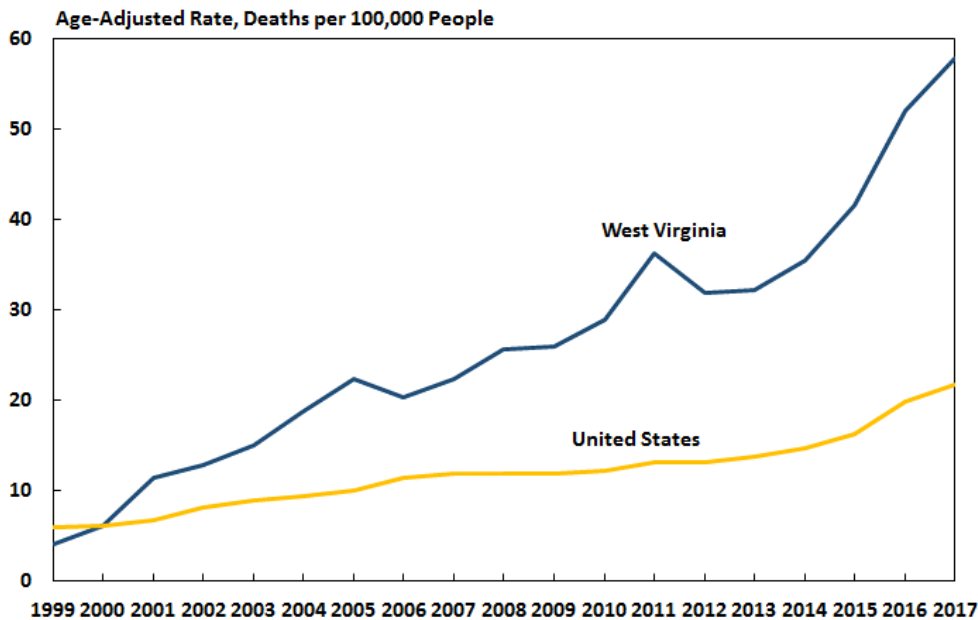
Source: National Center for Education Statistics

5 Drug Abuse in West Virginia

In this section we turn to a second major component of the human capital drivers of labor force participation – drug abuse. As stated above, it is likely that there are men and women in West Virginia who would ideally be part of the labor force, but they do not look for work, and are therefore not part of the labor force, due to some barrier related to drug abuse.

We begin with an overall measure of drug abuse – drug misuse related deaths. As illustrated, the drug misuse death rate in the nation has increased substantially over the last two decades – rising to nearly 22 deaths per 100,000 people, from around six in 1999. The rate has skyrocketed in West Virginia, rising to nearly 58 deaths per 100,000 people, from only four in 1999.

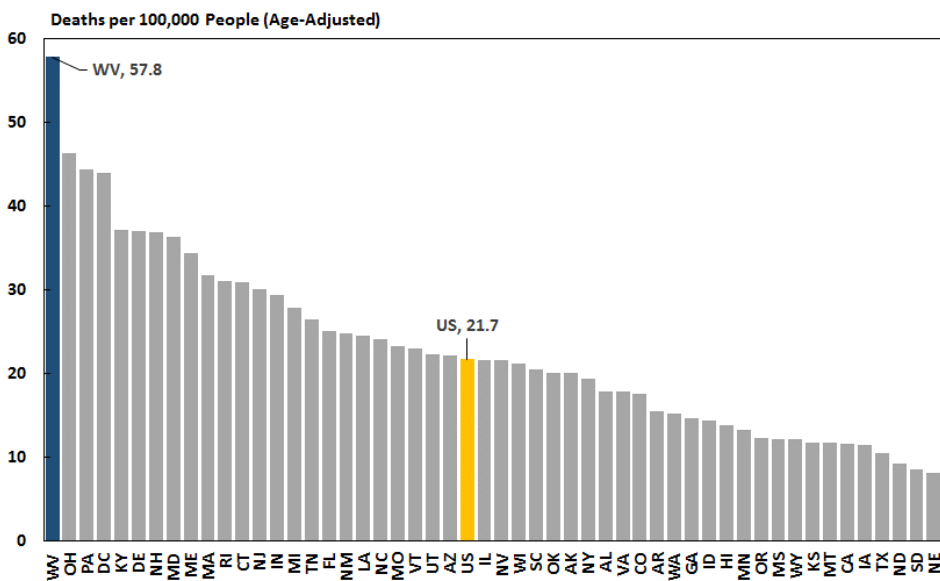
Figure 5.1: Drug Misuse Related Deaths, West Virginia and the United States



Source: CDC Wonder, US Center for Disease Control and Prevention

Figure 5.2 reports the same statistic as Figure 5.1, but in this instance provide the 2017 rate for all states. As illustrated, West Virginia suffers the highest rate of drug related death among the 50 states, surpassing the national average by a multiple of nearly 3 and exceeding the second-highest state by more than 10 deaths per 100,000.

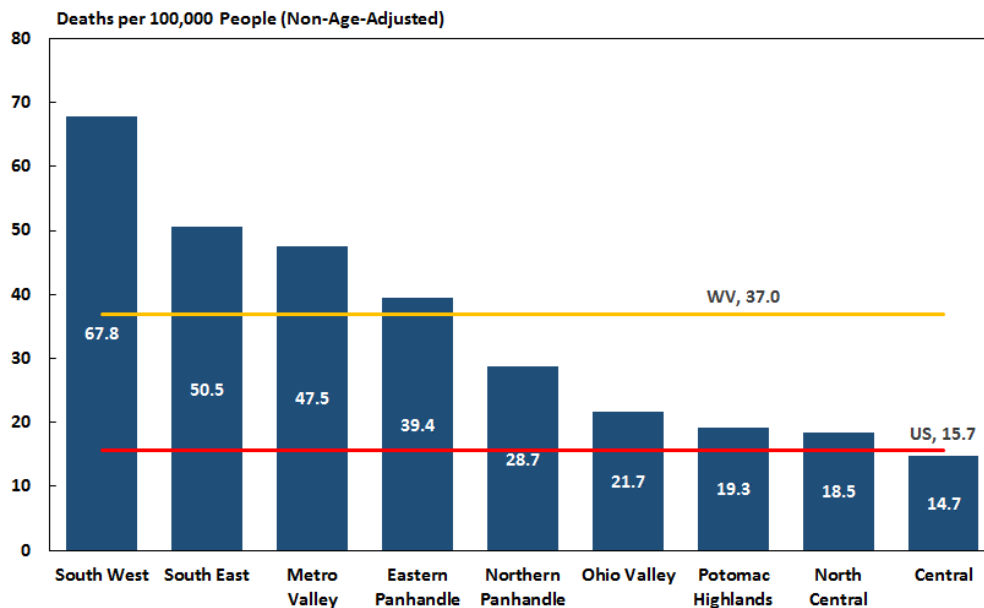
Figure 5.2: Drugs-Related Death by State, 2017



Source: CDC Wonder, US Center for Disease Control and Prevention

In Figure 5.3 (*Next Page*) we report the drug-related death rate for the West Virginia’s economic regions. As reported, the figure is highest for the Southwestern and Southeastern regions of the state, along with the Metro Valley and Eastern Panhandle. Southwestern West Virginia has a drug-related death rate that is over four times as high as the national average and nearly double the statewide average.

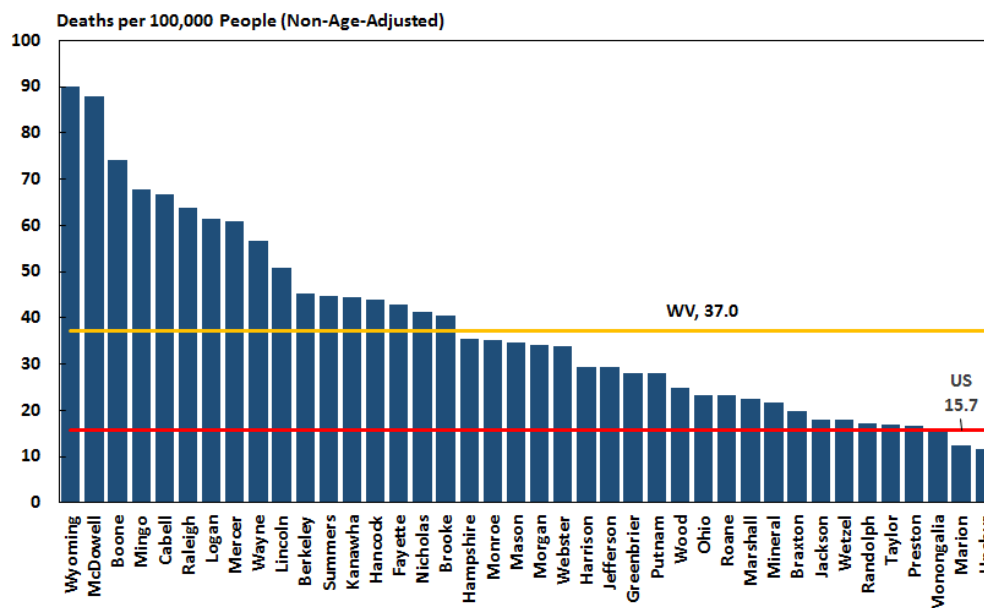
Figure 5.3: Drugs-Related Death by Region, 2010-2017 Average



Source: CDC Wonder, US Center for Disease Control and Prevention and Population Estimates, US Census Bureau

Following in this same vein, in Figure 5.4 we report drug related deaths by county. Only Upshur, Marion, and Monongalia counties have drug-related death rates that are lower than the nation. The highest rates tend to be in the state’s southwestern counties, such as Wyoming and McDowell.

Figure 5.4: Drugs-Related Death by County, 2010-2017 Average



Source: CDC Wonder, US Center for Disease Control and Prevention and Population Estimates, US Census Bureau
 Note: Counties with zero or insignificant number of deaths between 2010 and 2017 are excluded.

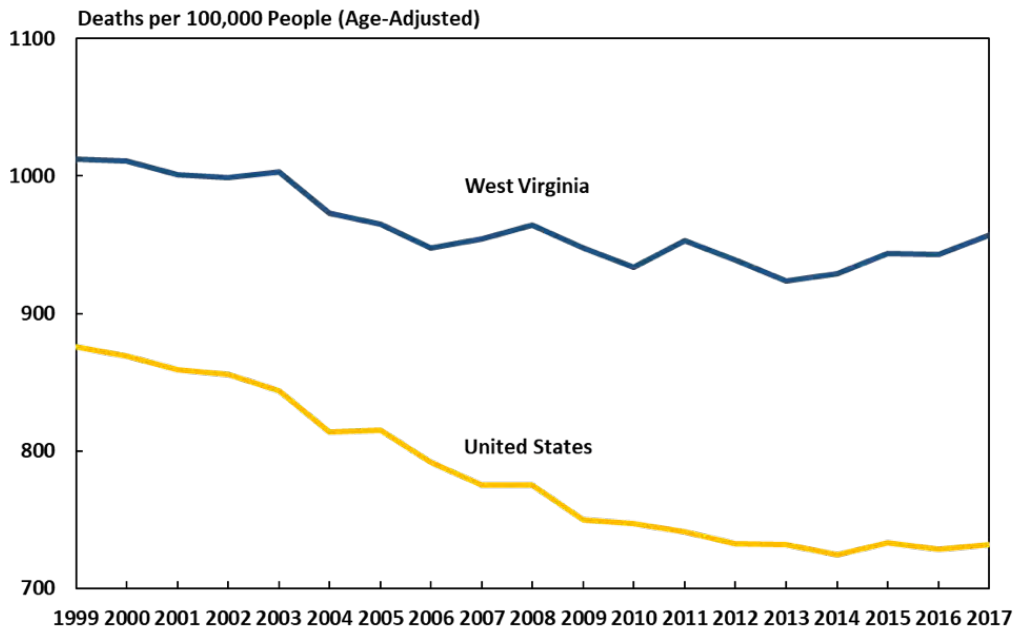
6 Health Outcomes in West Virginia

In this section we turn to the third major component of the human capital drivers of labor force participation – health. In a similar vein with education and drug abuse, it is likely that there are men and women in West Virginia who would ideally be part of the labor force, but they do not look for work, and are therefore not part of the labor force, due to some barrier related to health.

6.1 Overall Mortality

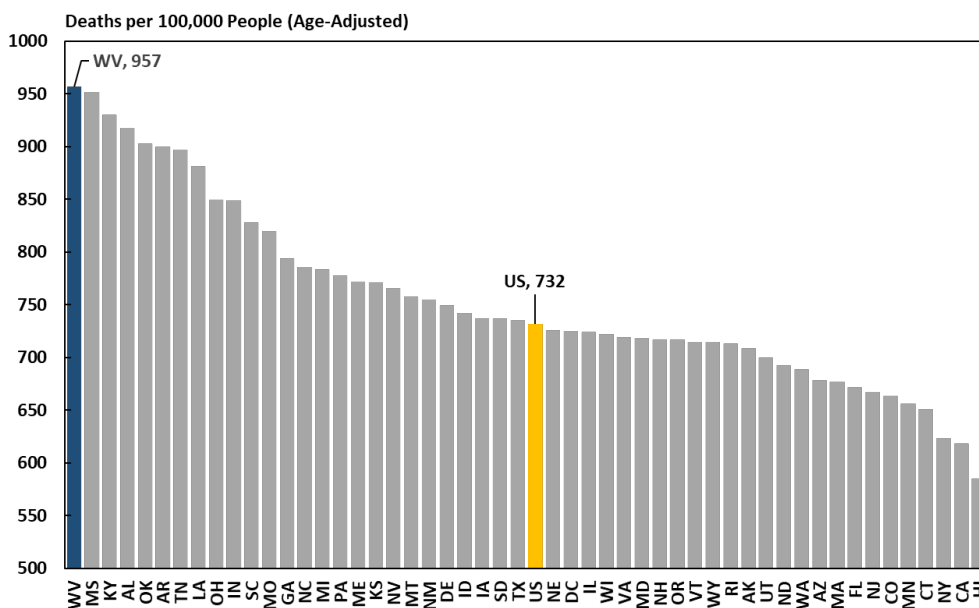
We begin this section with an examination of overall mortality, the broadest measure of health outcomes. As reported in Figure 6.1, the overall mortality rate in West Virginia stands at 957 (measured as deaths per 100,000 residents), which is substantially higher than the national figure of 732. Further, while the state has enjoyed some improvement in the mortality rate over the past two decades, improvement in the state has lagged that in the nation. As shown in Figure 6.2, West Virginia suffers from the highest mortality rate among the 50 states (after accounting for the age distribution of the population).

Figure 6.1: Mortality in West Virginia and the United States



Source: CDC Wonder, US Center for Disease Control and Prevention

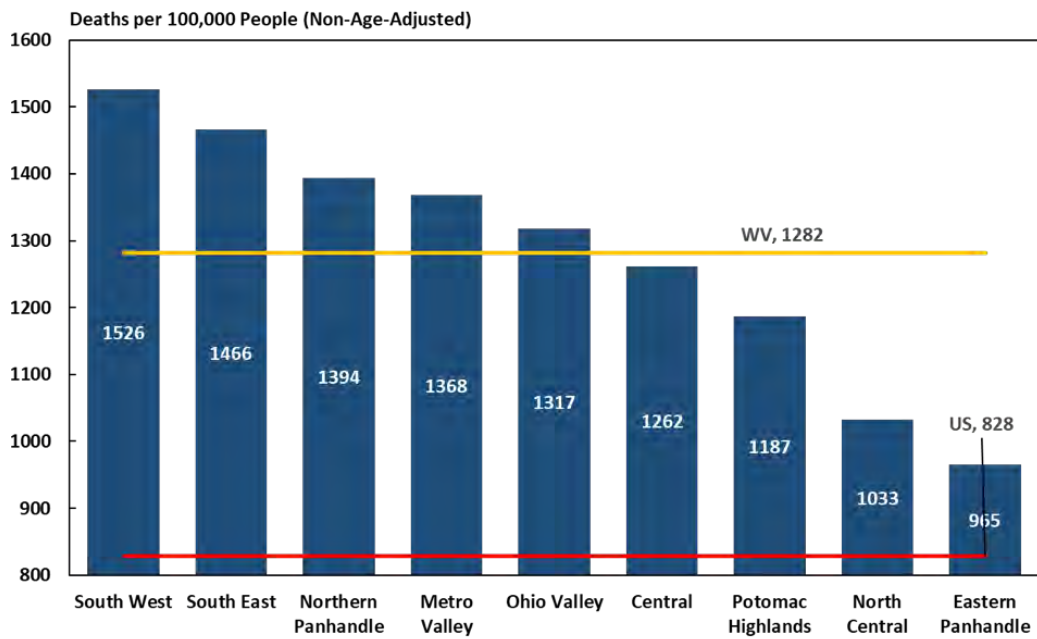
Figure 6.2: Mortality by State, 2017



Source: CDC Wonder, US Center for Disease Control and Prevention

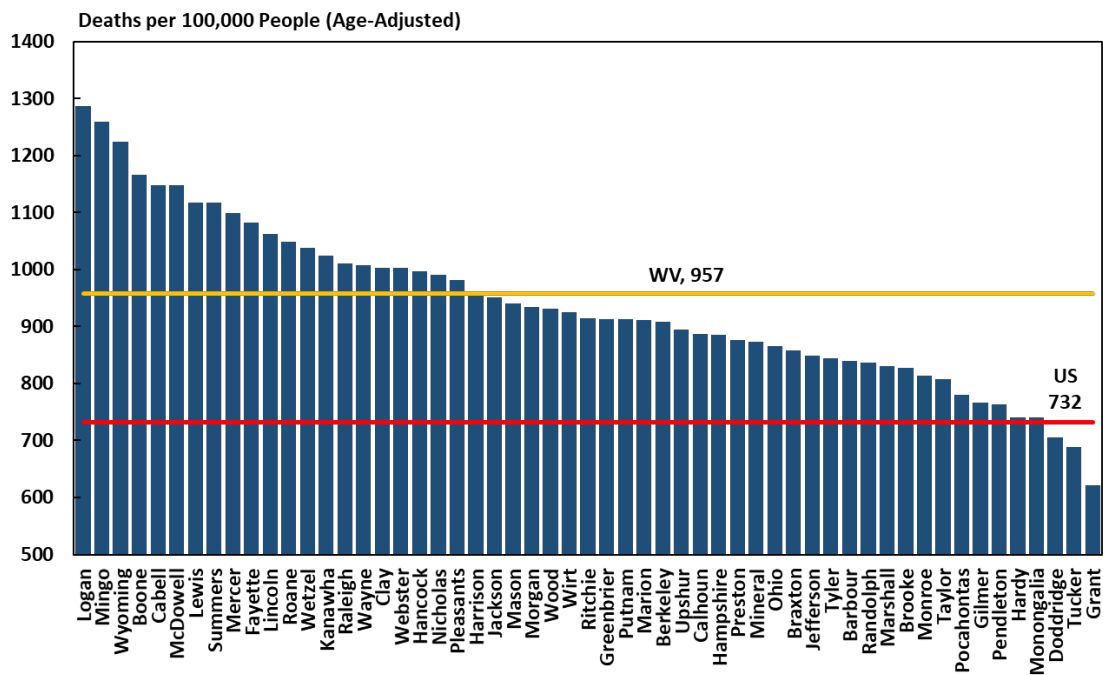
In the following two figures we consider mortality across the regions and counties of West Virginia. As shown in Figure 6.3, (Next Page) the state's Eastern Panhandle, North Central, and Potomac Highlands regions show the lowest mortality rates. However, every region posts a higher mortality rate than the nation. The highest rates of mortality in the state are found in the Southwestern and Southeastern regions. As reported in Figure 6.4, only three West Virginia counties post lower mortality rates than the nation.

Figure 6.3: Mortality by Region, 2017



Source: CDC Wonder, US Center for Disease Control and Prevention and Population Estimates, US Census Bureau

Figure 6.4: Mortality by County, 2017

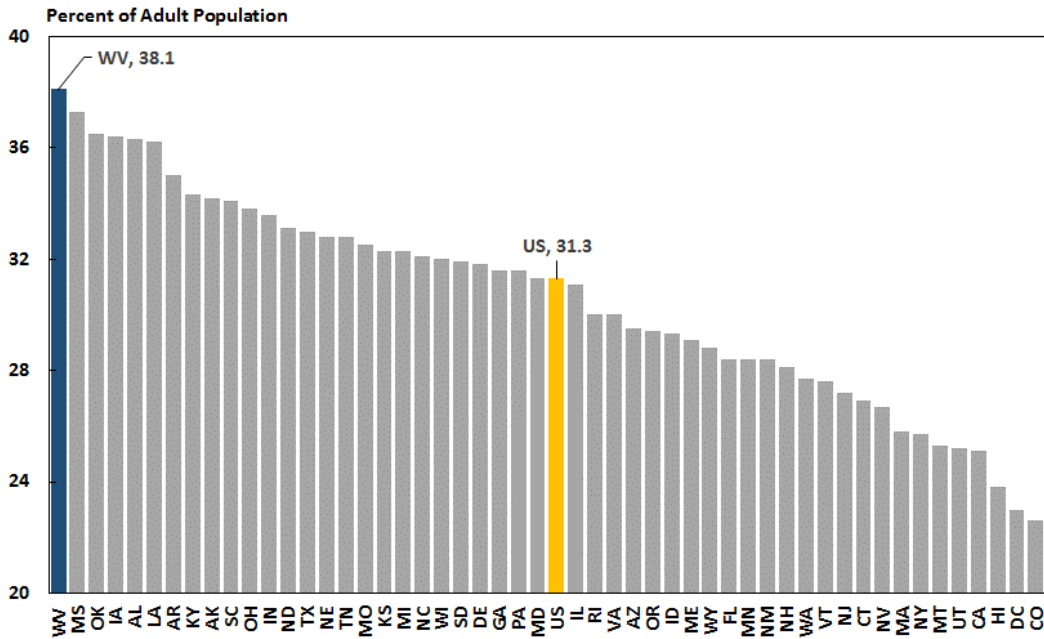


Source: CDC Wonder, US Center for Disease Control and Prevention and Population Estimates, US Census Bureau

6.2 Obesity and Diabetes

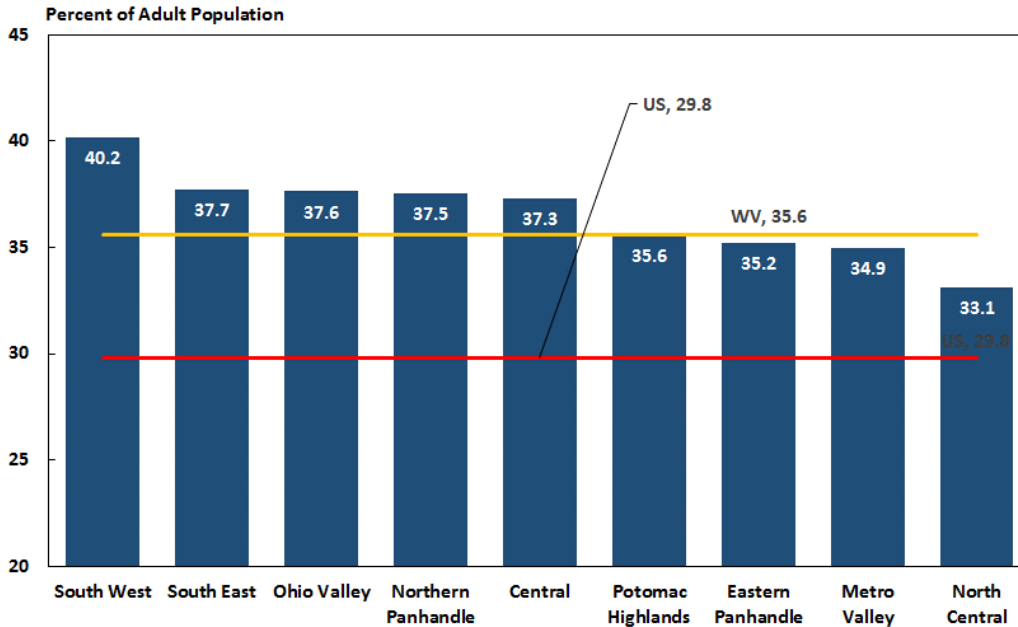
Next, we turn to two specific factors within our broad examination of health – obesity and diabetes. As reported in the figure, for 2017, West Virginia posted the highest rate of obesity among the 50 states. In West Virginia, 38 percent of the adult population is obese, compared to around 31 percent for the national figure. As shown in Figure 6.6, the more urban regions of West Virginia – the Eastern Panhandle, the Metro Valley, and North Central – have the lowest obesity rates in the state. Monongalia County has the lowest rate of obesity in the state, with a rate that is only marginally higher than the national rate (not shown). McDowell County has West Virginia’s highest obesity rate as 46 percent of its adult population is classified as obese.

Figure 6.5: Obesity by State, 2017



Source: 2018 America's Health Ranking, United Health Foundation

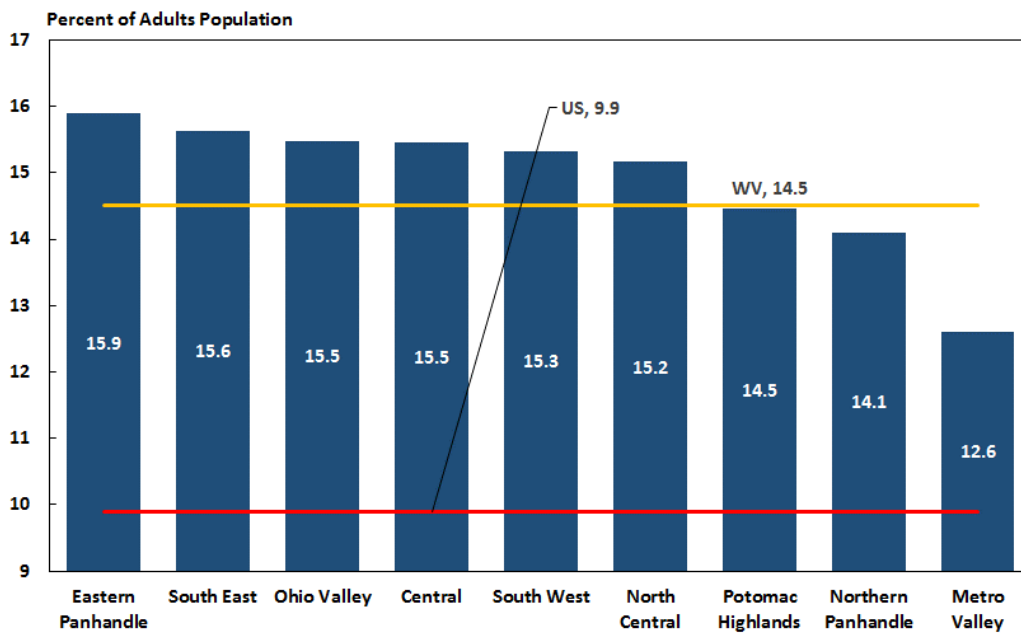
Figure 6.6: Obesity by Region, 2015



Source: Region-level rates are estimated based on the 2019 County Health Ranking county data, State/US rates are from the 2016 America Health Ranking

Similarly, during 2017 West Virginia posted the highest rate of diabetes among the 50 states, with a rate of just over 15 percent, compared to 11 percent or the nation (not shown). As reported in Figure 6.7, (Next Page) all of the state's regions experience diabetes rates that are higher than the nation, with the lowest rates found in the Metro Valley and the Northern Panhandle. The lowest diabetes rates are found in Monongalia and Jefferson counties, where the rate is on par with the nation (not shown).

Figure 6.7: Diabetes by Region, 2015

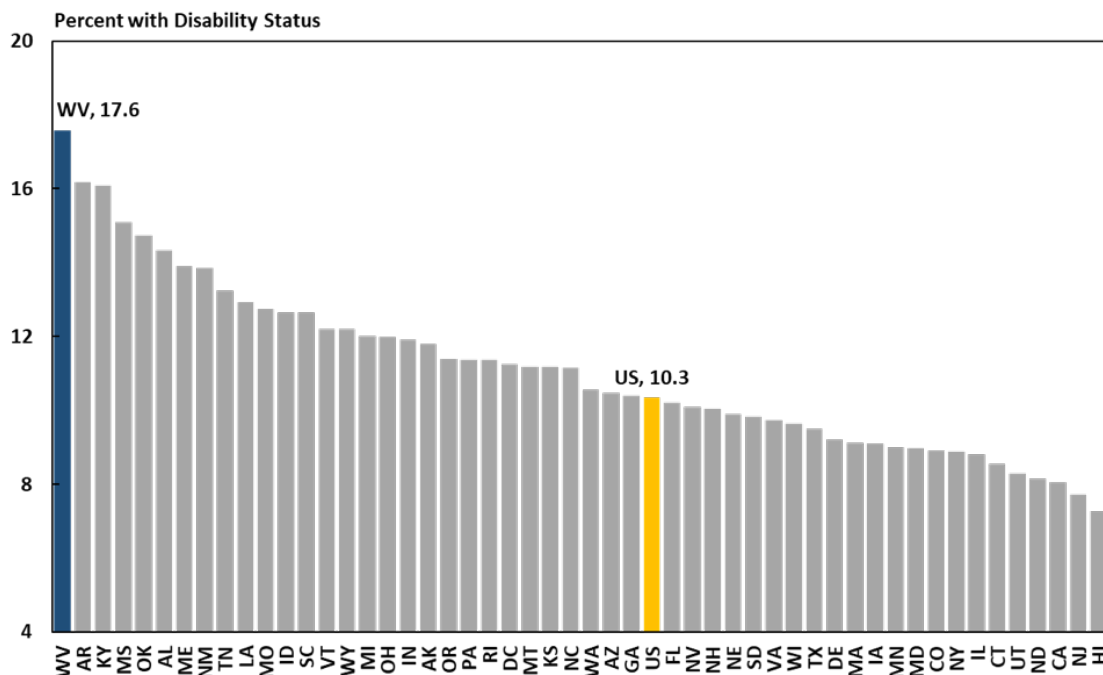


Source: Region-level rates are estimated based on the 2019 County Health Ranking county data, State/US rates are from the 2016 America's Health Ranking

6.3 Disability

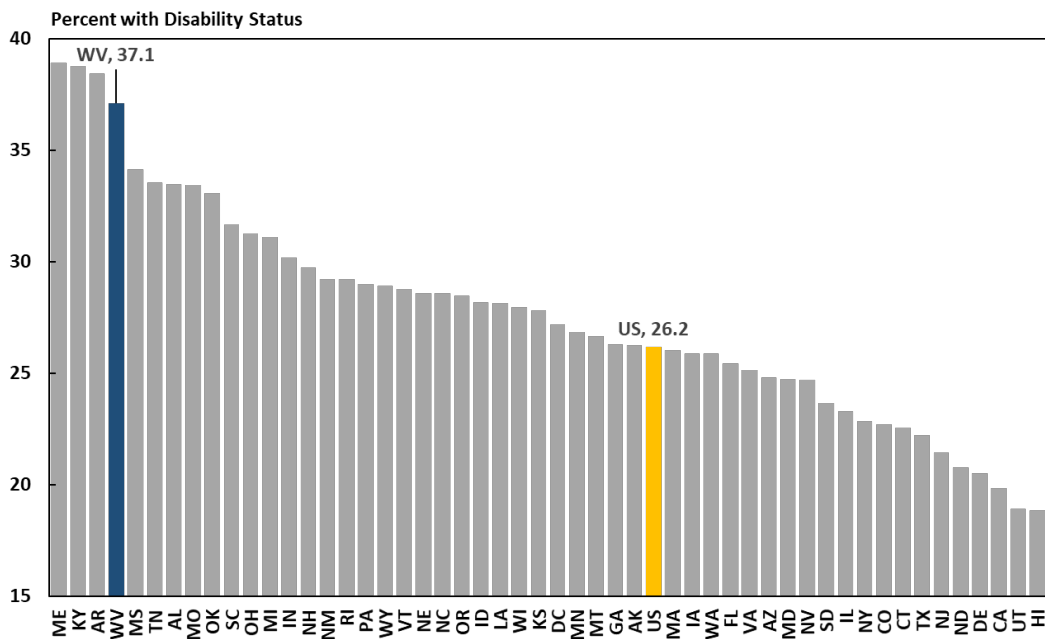
In the next two figures we examine disability status. In Figure 6.8, we report the share of the adult population who reports a disability. West Virginia posts the highest reported disability rate in the nation with nearly 18 percent of adults considered to have a disability that impairs their ability to work, compared to around 10 percent nationally. In Figure 6.9 we report the share of those who are not in the labor force who report a disability. As illustrated, West Virginia the nation's fourth-highest among the states in terms of disability of labor force non-participants.

Figure 6.8: Disability by State, 2017



Source: 2017 American Community Survey, US Census Bureau
 Note: Universe: Civilian noninstitutionalized population 18 to 64 years old

Figure 6.9: Disability of Labor Force Non-Participants by State, 2017

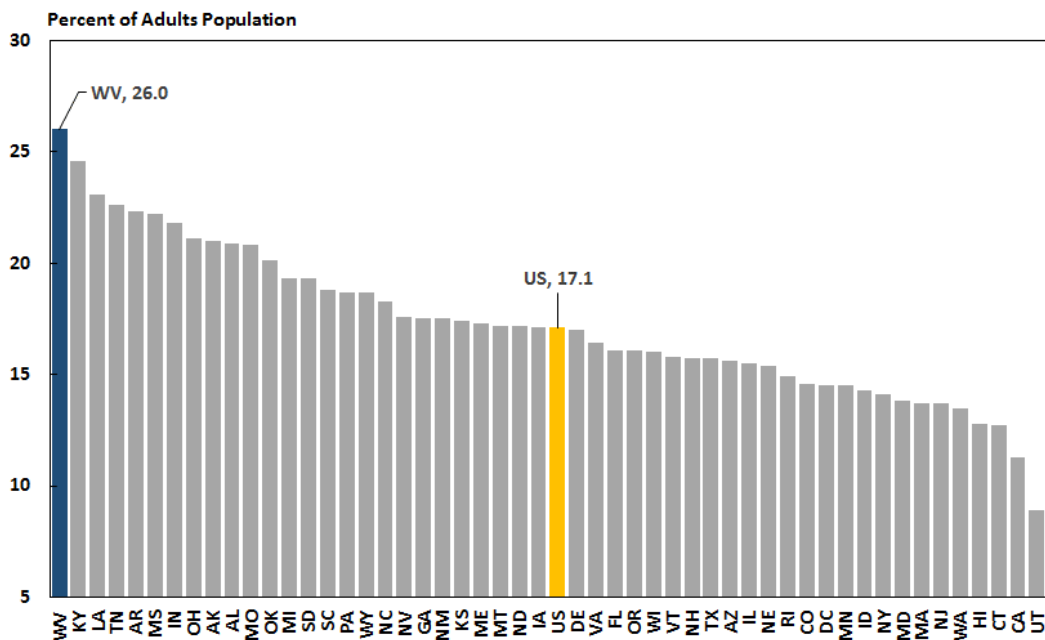


Source: 2017 American Community Survey, US Census Bureau
 Note: Universe: Civilian noninstitutionalized population 18 to 64 years old

6.4 Smoking and Excessive Drinking

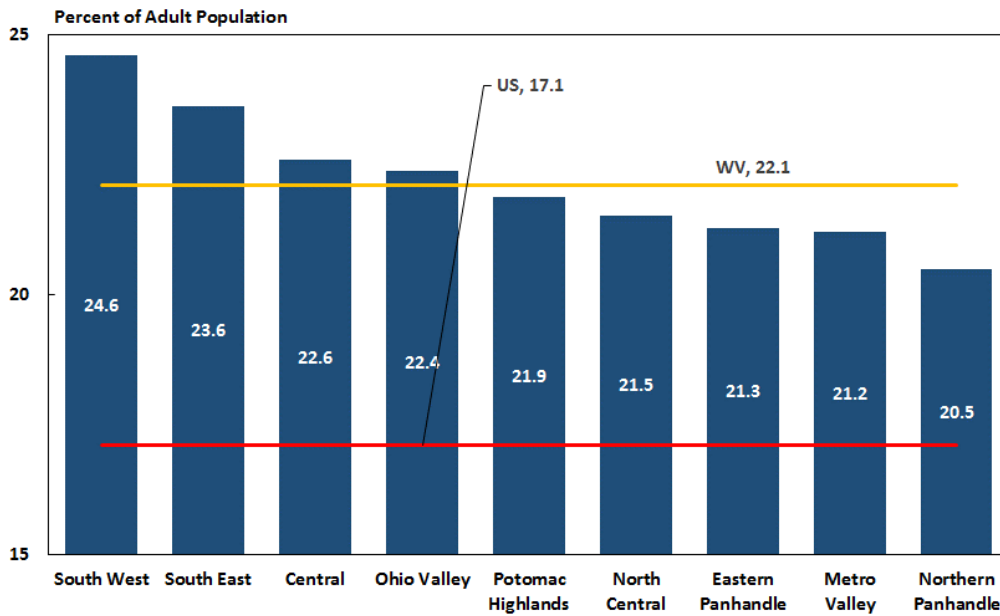
We close our examination of health with a consideration of smoking and excessive drinking. According to Figure 6.10, West Virginia has the nation’s highest rate of smoking in the nation with 26 percent of adults who are smokers, compared to 17 percent for the nation as a whole. As shown in Figure 6.11, smoking rates are the lowest in the northern regions of West Virginia – the Northern Panhandle, the Eastern Panhandle, and North Central – along with the Metro Valley. Southwestern and Southeastern West Virginia have the highest smoking rates.

Figure 6.10: Smokers by State, 2017



Source: 2018 America’s Health Ranking, United Health Foundation

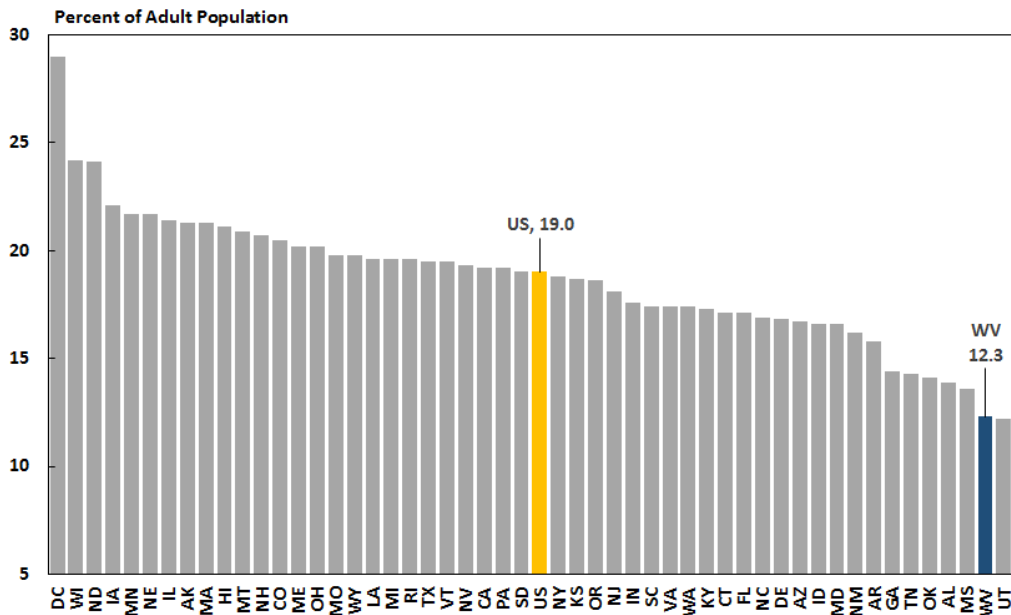
Figure 6.11: Smokers by Region, 2016



Source: Region- and state-level rates are estimated based on the 2019 County Health Ranking county data, US rates are from the 2017 America's Health Ranking

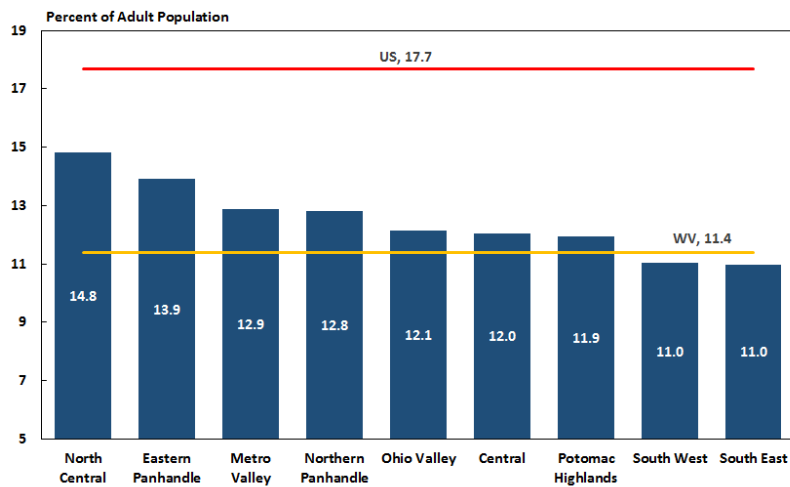
As reported in Figure 6.12, West Virginia has the second lowest rate of excessive drinking in the nation. Approximately 12 percent of West Virginia adults are excessive drinkers, according to these data, compared with 19 percent of adults in the nation. As shown in Figure 6.13, excessive drinking is lowest in the state's southwestern and southeastern regions, and highest in North Central West Virginia and the Eastern Panhandle.

Figure 6.12: Excessive Drinking by State, 2017



Source: 2018 America's Health Ranking, United Health Foundation

Figure 6.13: Excessive Drinking by Region, 2016



Source: Region-level rates are estimated based on the 2019 County Health Ranking county data, State/US rates are from the 2017 America's Health Ranking

7 Factors Affecting the Demand for West Virginia Workforce

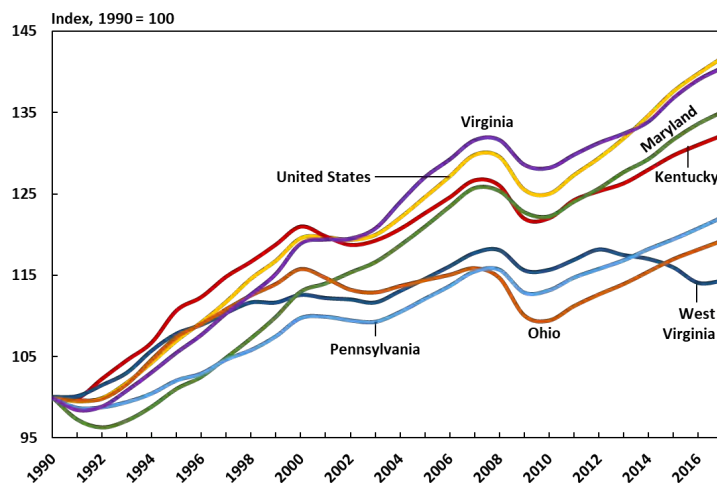
Thus far, this report has generally focused on the supply of qualified workers in West Virginia. In this section we turn to a consideration of the demand for available workers in West Virginia. Here we consider factors such as the number of jobs in the state, earnings in the state compared to other states, industrial diversity, and the availability of financial capital to support business growth. It should be noted that we speak loosely, however, because the demand and supply of qualified workers are closely intertwined and cannot be separated neatly.

7.1 Employment Overview

We begin this section with a basic presentation of job growth for West Virginia compared to neighboring states for the past few decades. As illustrated, overall employment growth is lowest in West Virginia among the neighboring states and the overall national figure.

This finding of relatively slow long-run growth in West Virginia is intimately related to the human capital information presented above. To some extent, the state's weak human capital outcomes deter businesses from coming to West Virginia, thereby limiting employment growth. Further, however, the state's weak employment growth entices some West Virginians to leave the state in search of employment opportunities, and since out migrants tend to be younger and more highly educated, as shown above, this out-migration further weakens the state's human capital stock. Overall, this pattern can be described as a vicious cycle that ultimately impedes economic growth.

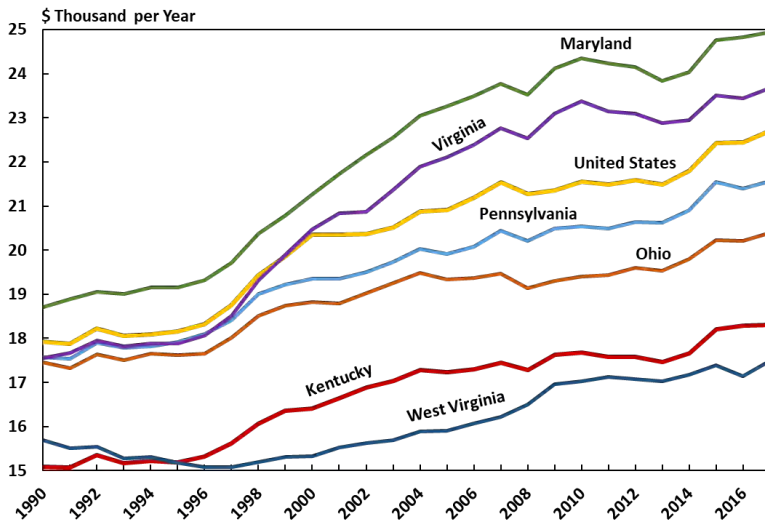
Figure 7.1: Employment Growth, West Virginia and Neighboring States



Source: Bureau of Economic Analysis
 Note: Figures represent jobs by place of work

In Figure 7.2 we illustrate wage and salary income per worker for West Virginia and the neighboring states. As shown, average wages and salaries in the state have consistently been the lowest among the comparison group. Low wages likely contribute to the out-migration mentioned above as men and women move in search of higher incomes.

Figure 7.2: Wage and Salary per Worker, West Virginia and Neighboring States

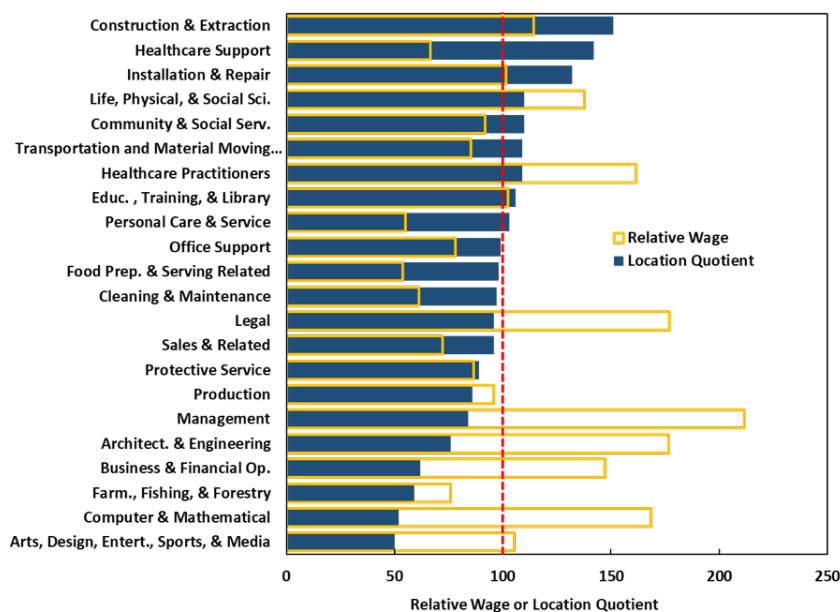


Source: Bureau of Economic Analysis
 Note: Figures are adjusted to inflation based on the national CPI (1982-84 = 100).

With Figure 7.3 we further investigate wage and salary income in West Virginia. In the figure the blue bars represent the location quotient, which is a measure of an industry's presence in West Virginia compared to its size nationally. A location quotient of more than 100 indicates that the industry has a greater presence in the state compared to the nation, and vice versa. As such, the industries in the figure are ordered from a greater presence in West Virginia on the top of the figure to a lower presence at the bottom. Further, the yellow bars represent average wages paid in a particular industry relative to the average wage nationally for all industries. As such, a yellow bar to the right of the red line indicates an industry that generally pays higher wages than average.

As illustrated, there is some tendency for West Virginia to have a higher concentration of economic activity in lower wage industries and a lower concentration of activity in higher wage industries. Two exceptions to this are construction and extraction and healthcare practitioners, as shown in the figure.

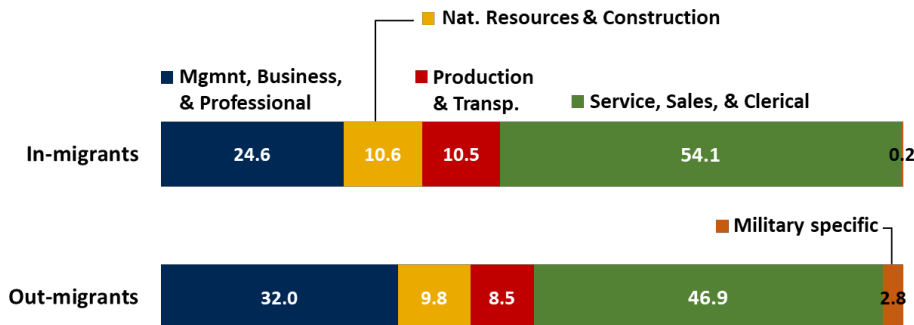
Figure 7.3: Location Quotient and Relative Wage by Occupation, May 2018



Source: Bureau of Labor Statistics
 Note: Relative wage represents wage for each occupation relative to the average wage in the state. Location quotient represents the employment share for each occupation in the state relative to that in the US.

We continue our examination of wage and salary income by looking at the industries in which those who migrate into West Virginia are employed when they arrive versus the industries in which out-migrants are employed once they reach their destination. As illustrated, the service, sales, and clerical industry group tends to employ significantly more in-migrants; although group here in very broad terms, this grouping of industries tends to offer lower wages compared to most industries. In contrast, out-migrants tend to be employed more heavily in the management, business, and professional industry grouping, where wages tend to be higher.

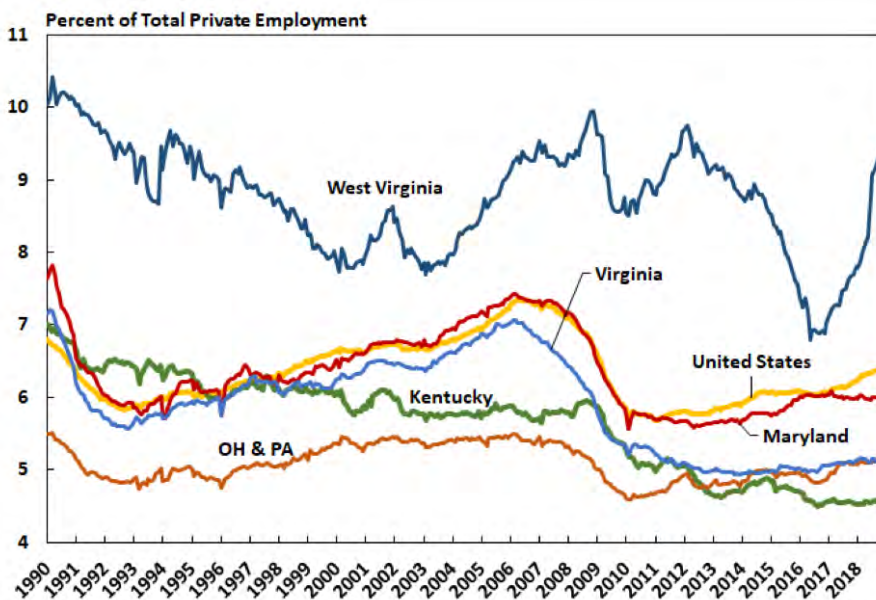
Figure 7.4: In- and Out-migrants by Occupation 2008-2012 Average



Source: 2012 American Community Survey, 5 Year Estimates

In Figure 7.5 we report the share of total private-sector employment that is in the mining, logging, or construction industries. We choose to group these goods-producing industries together because they tend to be more volatile over the business cycle, compared to most industries. As illustrated, West Virginia has a much higher employment concentration in these industries, compared to neighboring states and the US overall, likely rendering the state's economy more volatile over the business cycle.

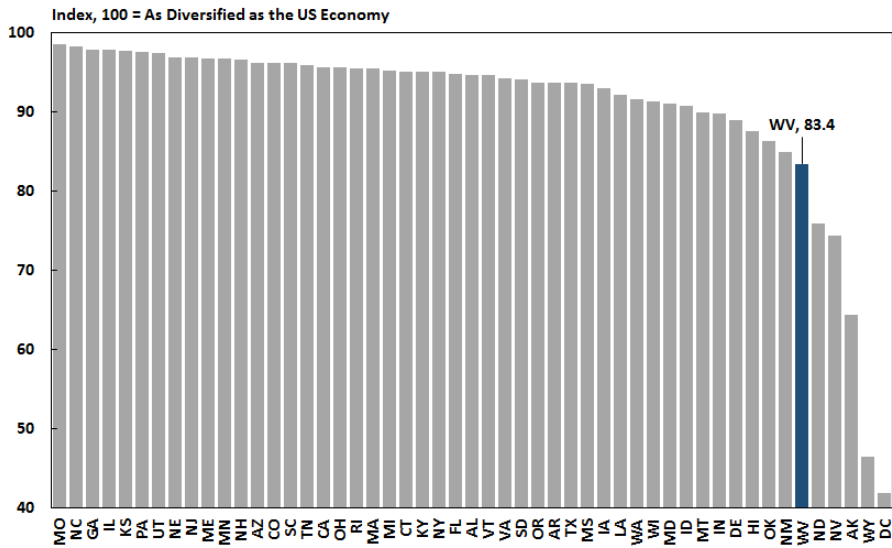
Figure 7.5: Mining, Logging, and Construction Employment Share



Source: Current Employment Survey, Bureau of Labor Statistics

In following the previous figure, in Figure 7.6 (*Next page*) we present the Hachman Index, which measures the industry diversity of employment in a state compared with the nation. The index is on a scale from 0 to 100, where a 100 indicates that the state has an identical industry employment distributions as the nation, and a 0 indicates that the distribution of employment within the state is completely different from the nation. Since the nation has high employment diversity, this index proves to be useful in showing the levels of employment diversity in a state relative to the other states. As illustrated, West Virginia ranks sixth-lowest among the 50 states (plus D.C.) indicating a relatively less diversified employment profile. Notice that many of the less diversified states are heavily involved in energy production.

Figure 7.6: Hachman Industrial Diversity Index by State, 2016

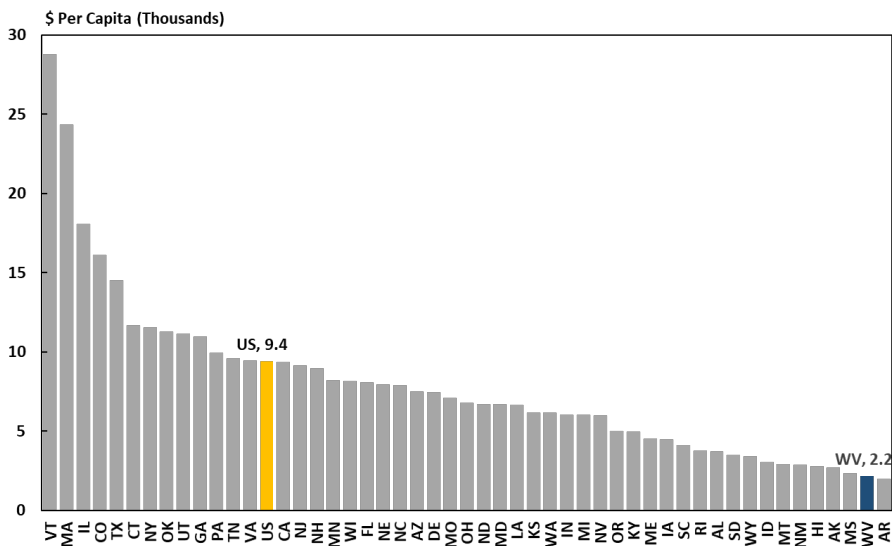


Source: An excerpt of a report by Shaleen, Tracy, 2018, "There's an Index for That: Measuring State and County Industrial Diversity." (https://www.dws.state.nm.us/Portals/0/DM/LMI/Measuring_State_and_County_Industrial_Diversity.pdf)

7.2 Financial Capital

We close our examination of some of the drivers of employment demand with a brief consideration of the availability of financial capital to support new business formation or business growth. In Figure 7.7 we report private equity investment across the 50 states, which is a broad measure of the availability of financial capital in the private sector. As illustrated, West Virginia suffers from a severe shortage of available financial capital compared to the other states, coming in at second lowest by this metric.

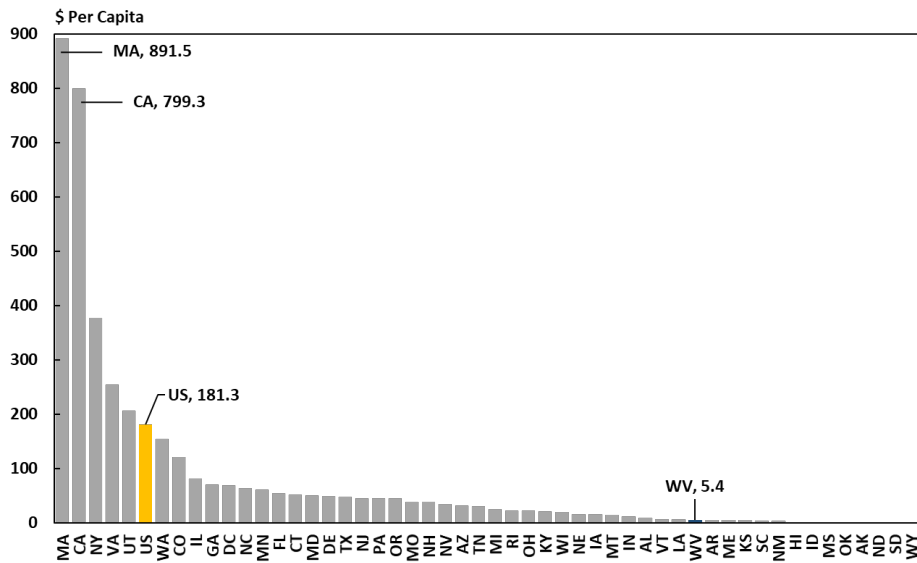
Figure 7.7: Private Equity Investment, 2012 to 2017



Source: Private Equity Across America, American Investment Council and 2018 Population Estimates, US Census Bureau
 Note: Figures are calculated as total private equity invested in each state from 2012 through 2017 divided by 2014-2015 average population.

In Figure 7.8 (Next page) we present the availability of venture capital across the 50 states. This is a more narrow measure of the availability of financial capital, compared to the previous figure. As illustrated, venture capital dollars are dominated by Massachusetts and California. West Virginia comes in as part of the long-tail of states that receive a negligible volume of venture capital by comparison.

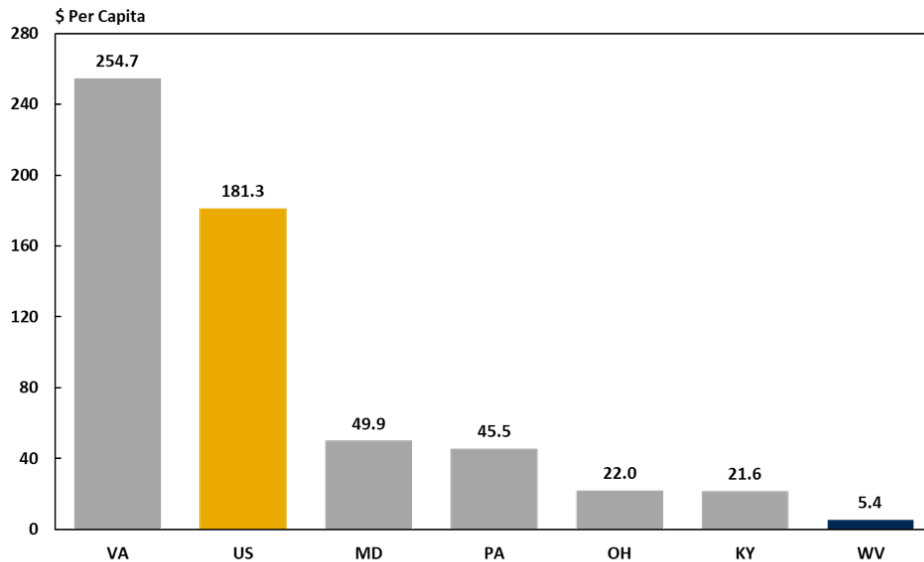
Figure 7.8: Venture Capital Dollars by State, 2016



Source: PricewaterhouseCoopers and CB Insights' 2016 MoneyTree report

Due to the scaling issues presented in the previous figure, we present a subsection of the previous figure in Figure 7.9. Here we show the availability of venture in capital only for West Virginia and the neighboring states. Here we see that West Virginia ranks lowest among the comparison groups.

Figure 7.9: Venture Capital Dollars, West Virginia and Neighboring States, 2016



Source: PricewaterhouseCoopers and CB Insights' 2016 MoneyTree report

8 Economic Gains from Increasing Labor Force Participation

In this final section we provide a brief commentary on the degree to which improving labor force participation can improve economic prosperity. For this section, we do not investigate any particular mechanism through which the state could generate an increase in labor force participation; we simply assume that the rate increases by one percentage point from the projected rate for the 2020 through 2025. We then estimate the overall economic impact of this surge of men and women entering into the labor force.

We use a regional input-output economic model calibrated specifically for West Virginia's economy to estimate the economic impact. This model recognizes that as labor force increases the number of jobs will likely increase as well

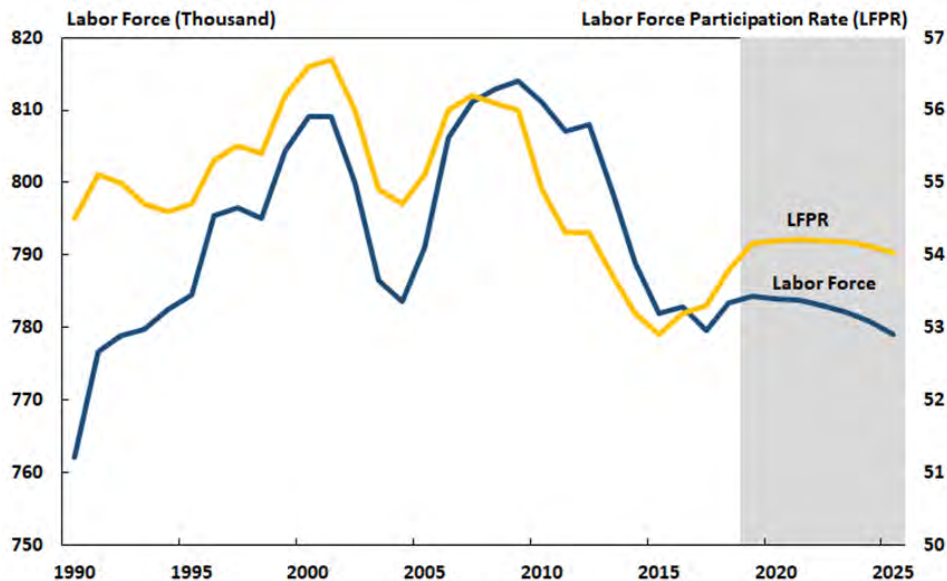
over the long-run. The more jobs are created the greater the impact. The first step of the analysis is to estimate how many jobs would be directly added into the economy as a result of the labor force participation increase. This initial increase in jobs will generate new economic activities in the state economy, which will in turn generate subsequent economic activities in the related industries. The initial increase represents the direct impact while the subsequent increases represent the indirect impact. Moreover, a significant part of wages and salaries earned by workers involved in these direct and indirect activities will be spent back into the economy, generating additional economic activities. These latter activities represent the induced impact. The total economic impact attributed to the increase in the labor force participation rate is the sum of these direct, indirect, and induced impacts.

In Figure 8.1 we present our forecast for the state’s labor force and its labor force participation rate in coming years. As illustrated, we expect the labor force participation rate to roughly hold steady around an average of 54.2 percent over the 2020 through 2025 period. As such, in our hypothetical scenario, we assume a labor force participation rate of 55.2 percent for the period.

Our assumed increase in the labor force participation rate to an average of 55.2 percent between 2020 and 2025 will translate into around 14,400 additional men and women into the labor force. To produce a conservative estimate, we assume that only half of these 14,400 men and women obtain employment, resulting in 7,200 actual new jobs. This job increase represents the direct employment impact. The next step we use IMPLAN to estimate the economic value of this increased employment, taking into account its direct and induced impacts. We assume that the new workers added into the economy will be distributed proportionally across West Virginia’s existing industries and that they exhibit the same productivity as existing workers.

In Figure 8.2 we show our estimated employment and GDP impact of these new workers. Our estimated direct employment impact of 7,200 jobs will further generate another 4,100 jobs, resulting in a total employment impact of 11,400 thousand jobs. In terms of state GDP, we estimate that the one percentage point increase in the state’s labor force participation rate will ultimately generate overall \$900 million annually in economic output in the state.

Figure 8.1: West Virginia Labor Force and Labor Force Participation Forecast



Source: Bureau of Labor Statistics and BBER Economic Forecast.
 Note: Labor Force Participation Rate (LFPR) is calculated as the ratio of labor force to civilian non-institutionalized population

Figure 8.2: Economic Impact of Increasing WV LFPR by One Percentage Point

Type of Impact	Direct	Indirect and Induced	Total
Employment (Thousand Jobs)	7.2	4.1	11.4
State GDP (\$ Million, 2018\$)	598.5	322.7	921.3

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