

# MINNESOTA'S WORKFORCE to 2050

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# Minnesota's Workforce to 2050

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# **Executive Summary**

Compared to most other states, Minnesota performs well on per capita welfare measures, such as GDP and Personal Income per capita. In both, we are above the national average.

But these numbers are driven by the fact that Minnesota has a hard-working population, as seen in the share of the population in employment—67.7 percent in 2018—the second highest in the United States. A relatively greater share of the population producing goods and services—GDP—to be divided among the population means a relatively high level of GDP per capita.

These numbers mask our state's below average labor productivity. In 2018, the average Minnesota worker produced \$123,348 of GDP, 6.7 percent below the national average of \$131,571. And, as economists agree, increases in productivity drive increases in per capita incomes in the medium to long term.

Considering how important this high employment ratio is to Minnesota's relative economic strength, its forecast decline raises concerns. Our state's participation rate is forecast to fall to 64.6 percent in 2035, lower than at any time since at least 1976.

This is often ascribed to an aging population. By 2050, the share of Minnesota's population aged over 65 will rise to 21.3 percent.

But that is not the whole story. Since 2000, the employment ratios of Minnesotans aged 55 to 64 and 65 and over have increased by 9.5 and 4.5 percentage points, respectively. By contrast, for Minnesotans aged 16 to 19 and 20 to 24, participation rates fell by 15.6 and 11.9 percentage points, respectively—a greater fall than similar declines seen at the national level. If employment ratios in these two categories could be returned to 1999 levels, an extra 86,000 Minnesotans would be employed.

This suggests that fatalism about a shrinking workforce is misplaced, at least to some degree. What has caused employment ratios in these other groups to fall and how might these falls be reversed?

A large body of empirical research into declining employment ratios has identified expanded trade with China and the adoption of industrial robots as major contributing factors, and increased receipt of disability benefits, higher minimum wages, increased rates of incarceration, and a rise in occupational licensing as significant contributing factors.

Minnesota has shielded manufacturing workers from the full impact of the "China Shock" with uncharacteristically low tax rates on capital intensive manufacturers we rank 2<sup>nd</sup> lowest nationally. These low tax rates should be maintained and taken as a lesson on how state fiscal policy can support economic growth.

Increased exposure to technology lowers female participation rates, which have fallen in Minnesota more than nationally since 2000. The state has, so far, had only average exposure to industrial robots, but research suggests it could be of "upper medium vulnerability" to job losses in the future. But improved technology and mechanization are a key driver of the increased labor productivity we want to see. Policymakers need to enable those who lose out initially to retrain so they can take advantage of these productivity enhancing developments.

While receipt of Social Security Disability Insurance (SSDI) in Minnesota has increased in recent years, it still lags the nation. Minnesota leads the national average on Veterans Affairs Disability Compensation (VADC) recipients as a share of the population, but these recipients typically receive lower payouts than the average. This might suggest that increased receipt of these benefits has played little part in Minnesota's declining employment ratio. But research shows—strongly in the case of SSDI—that these increases have lowered employment at the margin. The same is likely to be true also for state programs. Increased use of these benefits has reflected policy choices rather than increased clinical need, so state authorities need to keep a tight grip of eligibility requirements.

Higher minimum wages have been shown to have a negative impact on teen employment particularly. Minnesota's minimum wage, which is above the federal rate, can reasonably be blamed for at least some of the above average decline in teen employment seen in the state. To increase teen employment, policymakers need to at least hold the minimum wage to facilitate a real terms reduction over time. The optimal policy would be to abolish it.

Minnesota's incarceration rate is one of the lowest in the country, but disparities between rates for white and

black residents are 4<sup>th</sup> highest nationally. Research shows that this has a disproportionate negative impact on rates of black employment, so this could explain at least some of the greater decline in employment among black Minnesotans than nationally. A balance needs to be struck between law and order and economic efficiency, and a "Clean Slate" law, such as those enacted in Pennsylvania and Utah recently, coupled with a repeal of the "Ban the Box" law would be a start.

Occupational licenses have been found to lower the labor supply of white workers especially. At present, Minnesota's occupational licensing burden is not especially onerous. However, research shows that, between 2012 and 2017, our burden rose at the 11<sup>th</sup> fastest rate in the country, which could partially explain a greater decline in white employment ratios in Minnesota than nationally. While this trend needs to be stopped and reversed, one way to ameliorate many of the effects would be to enact a mutual recognition bill, such as the one Arizona recently passed.

In summary, Minnesota's current economy is relatively strong compared to the rest of the country, but weaknesses in a number of areas should cause concern. There are specific actions policymakers can take to help shield Minnesotans from the effects of a forecast decline in the state employment ratio and a potential economic downturn:

- Maintain low tax rates on capital intensive manufacturers to encourage business investment.
- Retrain workers displaced by industrial robots to preserve their workforce participation.
- Closely monitor eligibility requirements for state benefits to encourage workforce participation for able-bodied adults.
- Abolish the minimum wage, or at least hold it to the current rate, to increase teen employment.
- Enact a "Clean Slate" law and repeal the "Ban the Box" law to strike a balance between law and order and economic efficiency.
- Enact a mutual recognition bill to reduce hurdles for occupational licensing.



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# Introduction

A growing economy is vital for increased prosperity and rising living standards, as measured by growing per capita Gross Domestic Product (GDP).<sup>1</sup> In the long run, increased productivity drives per capita GDP growth. But, in the short run, increases in the employment ratio—the share of the population working to produce GDP—can make a difference.

# Outline

We will examine the determinants of and outlook for the growth of worker productivity at the state level in subsequent papers. Here we will look at the prospects for Minnesota's workforce in the coming decades, the drivers behind these changes, and what policy measures could be implemented, particularly at the state level, to maintain our high employment ratio.

This paper begins by looking at data on GDP and Personal Income. We find that, while Minnesota leads the national average on per capita numbers, it is a relatively low labor productivity state and lags on per worker numbers. Minnesota's impressive per capita numbers rest on its population's hard work, rather than its productivity.

Next, we look at what has been happening with Minnesota's workforce since 2000 and the outlook for its participation rate and employment ratio in the coming decades. Here, as elsewhere, population growth is forecast to slow, the population will age, and participation rates and employment ratios will decline until 2035. This will negatively impact per capita income growth.

Then we look at the empirical literature exploring the causes of declining population ratios and find that the story is more complex than simply an aging population. Other drivers of lower employment rates since the turn of the century include increased openness to trade, increased exposure to technology, the greater availability of welfare benefits like Social Security Disability Insurance (SSDI), increased minimum wage rates, higher rates of incarceration, and a rise in occupational licensing requirements.

Finally, based on the research, we outline several policies that would help Minnesota maintain the high participation rates and employment ratios its economic wellbeing depends on.

# 1 - Minnesota's economic strength is based on hard work

Compared to most other states, Minnesota performs well on measures such as GDP and Personal Income per capita. But our state lags the national average on GDP per worker because it is a relatively low labor productivity state. Minnesota's impressive per capita numbers are a result of high levels of employment in the state, not the productivity of its workforce.

# Per capita vs per worker numbers

Compared to most other states, Minnesota scores well on per capita numbers. Figure 1 shows Minnesota's per capita GDP compared to the other 49 states and the District of Columbia and also the national average for 2018. Our state performs better than the nation as a whole. Minnesota ranked 14<sup>th</sup>, with a per capita GDP of \$65,640. By comparison, average GDP per capita for the U.S. in general was \$62,641—4.6 percent lower.<sup>2</sup>



#### Figure 1: Gross Domestic Product per capita, 2018 (2018 dollars)

Source: Bureau of Economic Analysis



Source: Bureau of Economic Analysis and Bureau of Labor Statistics

We see a different picture, however, when we look at Minnesota's per worker numbers. On these measures, our state compares less favorably. Figure 2 shows Minnesota's GDP per worker compared to the other 49 states and the District of Columbia and also the national average for 2018. On this measure, our state performs worse than the nation as a whole. The average Minnesota worker produced \$123,348 of GDP that year, ranking 20<sup>th</sup>, compared to \$131,571 for the average U.S. worker, 6.7 percent higher.<sup>3</sup>



Figure 3: Private sector GDP per hour, 2007-2018 (2012 dollars)

Source: Bureau of Economic Analysis and Bureau of Labor Statistics

Another way to look at labor productivity is to divide output by the number of hours worked. Here, as Figure 3 shows, we see a similar story with Minnesota lagging the national average. In 2018, GDP per hour worked in the private sector was \$70.39 in Minnesota, 5.9 percent lower than the figure of \$74.80 for the United States.

It is important to note that per capita numbers and per worker numbers are not different measures of the same thing; they are measures of different things. Per worker numbers are a measure of how productive a state's workers are. Per capita numbers are a measure of how well off they are, on average.<sup>4</sup> Ultimately, welfare depends on productivity, but this should not confuse the difference between a welfare measure and a productivity measure.

# How do we explain the difference between per capita and per worker outcomes?

On the face of it, this difference in results between per capita and per worker outcomes might appear to be a puzzle. In fact, the answer is quite simple: Minnesota's above average employment offsets its below average worker productivity.



Source: Bureau of Labor Statistics

Figure 5: Gross Domestic Product per capita, 2018, if Minnesota had the U.S. average employment to population ratio (2018 dollars)



Source: Center of the American Experiment

Per capita figures divide GDP by the population. Per worker figures divide it by the workforce. In both cases the numerator—total GDP—is the same, but the denominator—population or the workforce—is different. Because of Minnesota's high employment ratio, when workforce is the denominator the numerator is divided by a relatively greater number than when it is divided by the population. The numeric example shown in Table 1 illustrates this. State A has a lower employment ratio (50 percent) but higher productivity (2 units of GDP per worker). State B (corresponding to Minnesota) has a higher employment ratio (75 percent) but lower productivity (1.5 units of GDP per worker). As a result, State B has a higher level of GDP and GDP per capita, but a lower level of GDP per worker.

	State A	State B
GDP	100	110
Labor Force	50	75
Population	100	100
GDP per Capita	1	1.1
GDP per Worker	2	1.5

Table 1:

# Minnesota's participation rates and employment ratios

Minnesotans are some of the hardest working people in America and this is evidenced by their high participation rates and employment ratios.

The Labor Force Participation rate is the share of the state's working age population that is either employed or unemployed but seeking work. The ratio of those employed to the total working age population is the employment ratio. Where unemployment rates are low, as they are in Minnesota, the difference between the participation rate and the employment ratio is not great. Because of this, we will use the two terms more or less interchangeably, but it should be noted that, for GDP, it is the employment ratio that matters.

On both participation rates and employment ratios, Minnesota leads the national averages. In 2018, the state's Labor Force Participation rate of 69.7 percent was the third highest in the country, behind the District of Columbia and Nebraska. Its employment ratio of 67.7 percent was second nationally, only fractionally below that of Nebraska, as Figure 4 shows.<sup>5</sup>

To see how much Minnesota's favorable per capita rankings depend on its high employment ratio, consider how those per capita numbers would be different if the employment ratio changed. As Figure 5 illustrates, if Minnesota's employment ratio in 2018 was the same as the national average—60.4 percent—then its ranking for per capita GDP would slip from 14<sup>th</sup> to 21<sup>st</sup>. GDP per capita would be \$4,691 (or 7.1 percent) lower. Indeed, without a high employment ratio to mask below average labor productivity, Minnesota would now lag the national average on this measure.

# 2 - The outlook for Minnesota's workforce

As demonstrated by their above national average employment ratios and participation rates, Minnesotans are some of the hardest working people in America. But, since the turn of the century, these numbers have been declining in Minnesota as elsewhere. While the common explanation of an aging population holds much truth, employment declines in younger age groups show that there is more to the story than that. While these above average ratios remain a source of economic strength for the state now, that is set to erode in coming decades as population growth slows and participation rates fall. That will have a negative impact on the state's economic growth and living standards.

## Minnesota's participation rates in the 21st century

As Figure 6 shows, Minnesota's Labor Force Participation rate has led the national average since at least 1976. Both the U.S. at large and Minnesota saw their participation rates climb—67.2 percent in 1997 and 1998 for the U.S. and 76.1 percent in 2001 for Minnesota. Since then, both have seen these ratios fall. In 2018, the participation rate in Minnesota was down to 69.7 percent—a fall of 6.4 percentage points—and for the U.S. it was 62.9 percent—a decline of 4.3 percentage points. Employment ratios have likewise fallen. For the U.S. generally, the employment ratio fell by 4.1 percentage points between 2000 and 2018, from 64.5 percent to 60.4 percent. The fall for Minnesota over that period has been even greater. It fell from 72.6 percent to 67.7 percent, a decline of 4.9 percentage points.





#### Source: Bureau of Labor Statistics

# Minnesota's participation rates by group since 2000

# THE AGING POPULATION

The common explanation for declining participation rates is the aging of the population.<sup>6</sup>

Between 1946 and 1964, nearly 76.5 million Americans were born. This was the largest generation ever to become adults in the U.S., and they became known as the "Baby Boomers." Furthermore, women in this generation were more likely to be employed. Between 1950 and 1999, the female participation rate rose from a low of 33.9 percent to a peak of 60.0 percent. As a result of these two factors, the labor force swelled. In the 18 years from 1964 to 1982, the Civilian Labor Force in the U.S. grew by 50.8 percent. But this Boom was followed by a "Baby Bust," which saw a reduction in birthrates between 1965 and 1975, and the birthrate has not regained those post-war highs since. As a result, the growth in the Civilian Labor Force slowed. In the 18 years from 1982 to 2000, the Civilian Labor Force in the U.S. grew by 29.4 percent. And, as the Baby Boomers were born together and entered the labor market together, so, as they age, they are leaving that labor market together. In 2012, the first Boomers reached the age of full Social Security benefits, and by 2050 they will all have moved into the 65+ age category, the age at which nearly all are eligible for Medicare benefits.

These trends have been seen and will continue to be seen in Minnesota. Figure 7 shows the Baby Boom working its way through Minnesota's population. The bulge in those aged under 18 in 1960 and 1970—37.5 percent and 36.3 percent respectively—is the Baby Boomers in childhood. As they exit the prime age group 18 to 64, the share of the state's population aged over 65 is forecast to rise from 12.8 percent to 21.1 percent between 2010 and 2030. By then, one in five Minnesotans will be over 65.<sup>7</sup>



Figure 7: Historical and projected population by three major age groups, Minnesota, 1950-2050

Source: Minnesota State Demographic Center

# A CLOSER LOOK AT PARTICIPATION RATES

While the aging of the state's population has been and will continue to be a major factor shaping Minnesota's workforce, it is not the only one. The fall in Minnesota's participation since the turn of the century was not uniform across the workforce. There are variations between age groups, genders, and ethnic groups.

While the state's overall participation rate has been falling since 2001, rates in some categories actually rose over that period. Figure 8 shows that the employment ratio in Minnesota increased for all workers, male and female, over the age of 55, and for women aged 25 to 34 and men aged 45 to 54. Compared with the same categories nationwide, Minnesota performed particularly well in the 55 to 64 category but less well among those over 65.

Of course, as the decline in overall participation rates and employment ratios shows, these increases must have been more than offset by decreases elsewhere in the labor force. Figure 9 shows where. We see that, overall, the steepest falls in employment ratios have been among younger Minnesotans. The largest decline has been among those aged 16 to 19 years. The next two largest falls are found among male and female Minnesotans, aged 20 to 24. The story is broadly similar nationally, with the larger declines being found among younger workers, especially young men. But Minnesota has underperformed the national average by some margin in some of these categories, particularly in the 20 to 24 category. On youth employment, this century Minnesota has performed poorly compared to the U.S. generally. In fact, in 15 of the 24 categories in Figures 8 and 9, Minnesota has performed worse than the U.S. average.



## Figure 8: Percentage point changes in employment ratios, 2000-2018

#### Source: Bureau of Labor Statistics



#### Figure 9: Percentage point changes in employment ratios, 2000-2018

## Source: Bureau of Labor Statistics

These declines in participation rates and employment ratios in younger age groups are obviously a different phenomenon with different causes from declines driven by the aging of the workforce. Given the negative economic impact of declines in employment ratios stemming from an aging population—about which we can do comparatively little—it is important to look at the causes of these declines in other categories and ask whether they can be reversed.

If these declines could be reversed, it would pay economic dividends. If Minnesota could regain its employment ratio in the categories where it has fallen since 1999, 215,660 more Minnesotans would be employed. With an average GDP per worker of \$123,348 in the state, this would translate to a boost in GDP of \$26.6 billion—7.2 percent of GDP or \$4,741 dollars for each Minnesotan in 2018. Figure 10 shows how this increased employment would be spread across the state's population. For example, if Minnesota's employment ratio for its black or African American residents could be returned to its 1999 level, there would be a further 13,832 in employment.



## Figure 10: Increased employment by group, 2018, with 1999 employment ratios

## Source: Center of the American Experiment

# MINNESOTA'S SLOWING POPULATION GROWTH

Minnesota's rate of population increase is set to slow in coming decades.

Figure 11 shows Minnesota's population growth from 1929 to 2018 with a projection to 2065. While the state's population rose by 45.7 percent—from 3.8 million to 5.6 million—in the 48 years from 1970 to 2018, in the 48 years to 2065 it is forecast to increase by just 14.9 percent, to 6.4 million. Figure 12 shows that, while the average annual population increase in the 1950s was 1.4 percent annually, by the 2040s that is projected to fall to 0.2 percent.



Figure 11: Minnesota's population, 1929 to 2065

Source: Bureau of Economic Analysis and Minnesota State Demographic Center



#### Figure 12: Minnesota's average annual rate of population change, 1950s to 2060s, percentage points

#### Source: Minnesota State Demographic Center

## MINNESOTA'S DECLINING LABOR FORCE PARTICIPATION RATE

Not only is Minnesota's rate of population increase set to decline in the coming decades, it is also forecast that a smaller share of the population will be working.

Minnesota's overall participation rate is forecast to fall from now until 2035. Figure 13 shows Minnesota's Labor Force Participation rate since 1976 and a projection for this from 2019 to 2050.<sup>8</sup> It shows that our state's participation rate is forecast to fall from 69.7 percent in 2018 to 64.6 percent in 2035, lower than it has been at any time since at least 1976. After that, it will begin to rise slowly again. Minnesota is not alone in this. For the U.S. generally, the participation rate is forecast to decline from 62.9 percent to 60.4 percent in 2050.<sup>9</sup> Indeed, across the developed world the outlook is much the same.<sup>10</sup>



#### Figure 13: Minnesota's Labor Force Participation rate, 1976-2050

## Source: Minnesota State Demographic Center

As with declines since 2000, this story is not uniform across the labor force. There are variations within it. As Figure 14 shows, with the exception of 35 to 44 year olds, the participation rate of all age groups from 25 to 75 is forecast to increase between 2020 and 2045. Indeed, the largest increase in the participation rate will be seen among those aged 62 to 64, while the steepest decline is forecast to be among those aged 16 to 19.



#### Figure 14: Change in Minnesota's Labor Force Participation rates, 2020-2045, percentage points

# Source: Minnesota State Demographic Center

# Minnesota's slowing employment growth

These two trends—the slowing growth rate of the population and the declining participation rate—will have the effect of slowing the growth in Minnesota's workforce.

Figure 15 shows Minnesota's total employment since 1950 and a projection to 2045.<sup>11</sup> Between 1950 and 2000, the number of people employed in the state increased by an average of 1.5 percent annually. Since then, that rate of growth has fallen to 0.5 percent. Between now and 2045, it is forecast to fall still further, to 0.3 percent. In the 27 years from 1991 to 2018, total employment in Minnesota rose by 37.7 percent, from 2.1 million to 2.9 million. Over the 28 years from 2018 to 2045, it is forecast to rise by just 7.4 percent, to 3.2 million.



#### Figure 15: Total employment in Minnesota, 1950-2045

#### Source: Bureau of Labor Statistics and Minnesota State Demographic Center

# The consequences for economic growth in Minnesota

A lower rate of population growth will mean, all else being equal, a lower rate of GDP growth in Minnesota.

Growth of total GDP comes from an increase in the number of workers and/or an increase in their productivity. Holding productivity constant, as the share of Minnesota's population that is working to produce GDP continues to decline in years to come, the amount of GDP to be divided among the population will shrink relative to that population. This means lower per capita incomes. We estimate that, while per capita GDP growth in Minnesota averaged 1.5 percent annually in the 27 years from 1991 to 2018, in the 27 years from 2018 to 2045 it will average 0.9 percent annually, as Figure 16 shows. This might not sound like a big difference, but it compounds over time. Over our forecast period of 27 years it is the difference between an increase of 49.5 percent and one of 27.4 percent. Over the 27 years from 2018 to 2045, per capita GDP in Minnesota is forecast to rise from \$65,640 to \$83,294, a real terms increase of 26.9 percent. This compares to a 43.2 percent increase in the 27 years prior to 2018.



#### Figure 16: Minnesota's GDP per capita, 1963-2045 (2018 dollars)

#### Source: Center of the American Experiment

Minnesota is not the only state facing these demographic pressures. But, while Minnesota's participation rate is forecast to fall by 4.4 percentage points, from 69.7 percent in 2018 to 65.3 percent in 2050, for the U.S. generally the decline is set to be just 2.5 percentage points, from 62.9 percent to 60.4 percent.<sup>12</sup> Minnesota's lead of 6.8 percentage points over the national average would fall to 4.9 percentage points, eroding one of the state's main sources of economic advantage.

# 3 - Why is the participation rate falling?

As the figures examined in Section 2 indicate, the phenomenon of declining employment ratios is a complex one which will have a number of drivers. There is a large body of empirical research into these drivers and they fall into three categories.

The first of these is a decline in the demand for labor. Two possible causes of this are increased exposure to international trade and the development of labor-saving technology.

The second category relates to a fall in the supply of labor. There are several possible causes of this. Firstly, the alternatives available to workers, such as welfare benefits or increased spousal income, might have become relatively more attractive. Alternative ways of spending time, such as computer gaming or drug use, may also have become more palatable. Secondly, it may also have become costlier to participate in the labor force, owing to a lack of workplace and child care support for working parents. Increases in the number of immigrants in the workforce could also have contributed to declines in employment among groups of workers for whom immigrants are a close substitute.

The final category relates to institutional factors. These include increases in the effective minimum wage and in the prevalence of occupational licensing requirements. There may also have been an increasing mismatch between available jobs and available workers across both skill type and geographic space.

The results of this empirical literature can be broken down into major contributing factors, insignificant factors, and factors for which the evidence is, so far, indeterminate. Table 2 shows the results. Major contributing factors are expanded trade and the adoption of industrial robots. Significant contributing factors are increased disability benefits (SSDI, VADC), higher minimum wages, increased rates of incarceration, and the rise in occupational licensing. Insignificant factors include SNAP expansions, public health insurance expansions, more generous Earned Income Tax Credits, increased rates of spousal employment, increased difficulties due to family leave, expanded immigration, and a decline in unionization. Factors for which the evidence is, so far, indeterminate, include changes in leisure options/social norms, increased difficulties due to lack of child care, and increases in institutional frictions/mismatch.<sup>13</sup>

Table 2. 1 actors contributing to the decime in employment-to-population ratio noin 1777-2010	Table 2: Factors contributir	g to the decline in	employment-to-po	opulation ratio from	1999-2016
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Major co	ntributing factors
	Expanded trade with China
	Adoption of industrial robots
Significa	nt contributing factors
	Increased receipt of disability benefits (SSDI, VADC)
	Higher minimum wages
	Increased rate of incarceration
	Rise in occupational licensing
Insignifi	cant factors
	SNAP expansions
	Public health insurance expansions
	More generous EITC
	Increased rates of spousal employment
	Increased difficulties due to lack of family leave
	Expanded immigration
	Decline in unionization
Indetern	ninate given state of evidence
	Changes in leisure options / social norms (including video games and opioids)
	Increased difficulties due to lack of childcare
	Increases in institutional frictions and / or mismatch

## Source: Abraham and Kearney, 2018

Focusing on those factors deemed major and significant contributing factors, we examine each in turn to see what the situation is in Minnesota.

# Trade

In 2001, China became a member of the World Trade Organization. In the years since, manufacturing employment in the U.S. has fallen. Between January 1999 and December 2018, manufacturing employment fell by 26.5 percent nationwide, a loss of 4.6 million jobs. It held up better in Minnesota, where it fell over the same period by 18.1 percent, a loss of 72,000 jobs, as Figure 17 shows.

On balance, research investigating a possible causal link between these two phenomena has found that increased openness to trade has caused a loss of manufacturing jobs,<sup>14</sup> particularly for non-college educated workers,<sup>15</sup> and in areas where employment was more exposed to competition from China, with a greater initial share of employment in import-competing manufacturing.<sup>16</sup> Other research finds that, owing to input-output linkages, these effects have been felt more broadly than just manufacturing<sup>17</sup> and also that there have been temporary gains in employment elsewhere to mask this decline.<sup>18</sup>



Figure 17: Change in manufacturing employment in Minnesota and the United States, 1999-2018, 1999=100

## Source: Bureau of Labor Statistics

The data seem to suggest that Minnesota bucks this trend. In 1999, as Figure 17 shows, manufacturing accounted for 12.5 percent of all employment in Minnesota compared to 11.0 percent nationally, ranking it 16<sup>th</sup>. According to the literature, this would make Minnesota more likely to have seen relatively large manufacturing jobs losses. But, as Figure 17 shows, the state actually saw manufacturing employment fall by less than the nation as a whole.

A possible explanation can be found in Minnesota's regime for taxation of manufacturing. The Tax Foundation calculated the effective tax rates on manufacturers by state and found that, for labor intensive manufacturers, Minnesota ranked 17<sup>th</sup> lowest nationally but 2<sup>nd</sup> lowest for capital intensive manufacturers, as shown in Figure 18.<sup>19</sup> In other words, low state taxes on manufacturers have shielded them to some extent from the impact of the "China Shock."



# Figure 18: Manufacturing employment as a share of total employment, 1999

Source: Bureau of Economic Analysis

# Figure 19: Total effective state and local tax rate on a mature capital-intensive manufacturing facility, 2014



#### Source: The Tax Foundation

## Technology

The years of declining employment rates have coincided with industrial robots becoming more prevalent. Between the early 1990s and the late 2000s, the number of industrial robots per thousand workers in the U.S. rose from 0.4 to 1.4. To an extent, these robots allow businesses to substitute capital for labor.

As yet, there has been little academic research on the impact of technology on net employment rates. Much of the work that has been done has focused on the *potential* for disemployment.<sup>20</sup> The research that does exist on current impacts suggests modest negative effects on employment. The increased exposure of an area's workers to technology in the form of computerization is associated with no overall change in employment rates, although there is a significant negative effect on the employment rate of women. Indeed, since 2000, the employment ratio for Minnesota's female workers has declined by 3.6 percentage points compared to a national decline of 2.9 percentage points. Computing technology affects only routine-task-intensive occupations, and employment losses in those occupations tend to be offset by employment gains in abstract and manual-task-intensive occupations.<sup>21</sup> Looking at the impact of industrial robots, research finds that an increased ratio of robots to workers in a given area reduced the employment ratio.<sup>22</sup>

Evidence suggests that Minnesota's workers have been only averagely exposed to competition from industrial robots in recent years. In 2015, Minnesota ranked 22<sup>nd</sup> nationally in terms of robots per thousand workers. But, as Figure 20 shows, over the period 2010 to 2015, the state ranked 21<sup>st</sup> nationally for the growth of industrial robots.<sup>23</sup> However, a report by Oxford Economics ranks Minnesota as "upper medium vulnerability" to job losses to robots. This is because sectors such as health device and electronic product manufacturing, which are sizeable in the state, are comparatively easily mechanized.<sup>24</sup>



Source: The Brookings Institution

# Federal disability insurance programs

The fall of employment rates in recent decades has coincided with increased receipt among working-age adults of benefits such as Social Security Disability Insurance (SSDI) and Veterans Affairs Disability Compensation (VADC).<sup>25</sup> By offering an alternative source of income, at the margin these might impact decisions whether or not to work.

Researchers have found robust evidence that the increased availability of SSDI benefits has caused individuals at the margin of eligibility to work at lower rates than would have been the case had those benefits not been available.<sup>26</sup> This effect has been estimated to be greater in more recent years as more recent cohorts of SSDI beneficiaries have higher work potential, owing to the fact that they are younger and more likely to have non-terminal qualifying conditions.<sup>27</sup>

The trend of increased receipt of SSDI benefits seen nationally has been seen in Minnesota also. Between 2001 and 2017, SSDI recipients rose as a share of the state's population from 2.6 percent to 3.9 percent. But this was and remained below the national average, which increased from 3.4 percent to 4.6 percent over the same period, as Figure 21 shows. Both of these are down from the peaks of 2013 and 2014.<sup>28</sup>





# Source: Social Security Administration

Research suggests that the increase in VADC receipt has lowered employment levels among veterans.<sup>29</sup> Evidence on the effects of this in Minnesota specifically is mixed, however. On the one hand, Minnesota has more VA Disability Compensation and Pension Recipients per 100,000 than the average for the U.S. In 2017, the state had 1,738 recipients per 100,000 compared to 1,380 per 100,000 nationally. These numbers were up in each case from 2014: 1,571 recipients per 100,000 in Minnesota and 1,231 for the U.S. On the other hand, the levels of benefits received are lower here. As Figure 22 shows, in 2017 Minnesota had both the *lowest* share of recipients receiving near to full benefits—22.5 percent compared to 38.0 percent nationally—but also the *highest* share of recipients receiving near to no benefits—49.9 percent compared to 29.2 percent nationally.



Source: Department of Veterans Affairs, Office of Data Governance and Analytics, United States Veterans Eligibility Trends & Statistics (USVETS)

# Minimum wages

Since 2000, the federal minimum wage has risen from \$5.15 to \$7.25 in nominal terms, but, adjusted for inflation, it has fallen by 3.5 percent over that period. However, the federal minimum wage has become binding in fewer places in recent years as states and municipalities across the U.S. have raised their own legally mandated minimum wages. Whereas the federal minimum wage was binding in all but eight states and the District of Columbia as of the beginning of 1988, by 2016 there were 29 states plus the District of Columbia that had minimum wages above the federal minimum, with a difference of \$1.00 per hour or more in 20 of these jurisdictions.

The employment effects of minimum wage increases is one of the most contested areas of empirical economics. These recent minimum wage increases have stimulated a wave of empirical research into their effects. Many of these studies have compared changes in employment rates in states—or in counties within states—where the state minimum wage has increased to the changes in states or counties deemed to be similar where no such increase occurred. Some of these studies have found no detectable adverse employment effects due to minimum wage increases,<sup>30</sup> while others have found significant negative employment impacts.<sup>31</sup>

But these studies rely on subsets of the available comparisons between states that increased minimum wages and states that did not. By comparison, research that uses the broadest possible set of comparisons—and is, thus, less prone to charges of data mining—finds that minimum wage increases do reduce employment.<sup>32</sup> Papers using a variety of best-practice methodologies have concluded that minimum wage increases reduce employment,<sup>33</sup> particularly among teens.<sup>34</sup>

Whereas these studies attempt to analyze hundreds of distinct events simultaneously, a number of recent studies take an alternative approach: they analyze compact historical episodes in isolation. This is standard practice in other areas of economic research, including analyses of major health and tax policy reforms. Research in this vein finds that minimum wage increases reduce employment among low-skilled individuals either by reducing the number employed,<sup>35</sup> or the amount of hours they work.<sup>36</sup>

Minimum wage hikes may well be a factor in observed labor market outcomes in Minnesota in recent years; especially teen employment, which has fallen by 15.6 percentage points in Minnesota since 2000 compared to 15.2 percentage points nationally. It is one of those states that has chosen to raise its minimum wage independently of the federal government. As a result, while the federal minimum wage has fallen in real terms since 2000, Minnesota's minimum wage has risen by 28.5 percent, as Figure 23 shows.



#### Figure 23: Minimum wage rates in Minnesota and the United States (2018 dollars)

Source: Department of Labor

# Incarceration

The incarceration rate has also increased at the same time that employment ratios have fallen. Defined as the number of inmates per 100,000 U.S. residents, it increased from 220 in 1980 to 756 in 2008, before falling slightly to 710 in 2012.<sup>37</sup> This increase is especially relevant for particular demographic groups, namely young minority males. By one estimate, in 2005, a 30 to 34-year-old African American male without a high school diploma would have had nearly a 70 percent chance of having been imprisoned at some point in his life thus far.<sup>38</sup>

People who are imprisoned are not counted in statistics for unemployment, which is derived from the civilian non-institutional population. But the effects of imprisonment linger. Ex-prisoners might find it hard to get work owing to stigma and a deterioration of their skills while incarcerated. Alternatively, in other cases, well designed rehabilitation programs might actually enhance inmates' labor market skills. Research on the impact of incarceration on employment finds that among those with significant previous earnings a prison term lowers subsequent employment rates and that the estimated labor market impacts increase with previous earnings and time spent in prison.<sup>39</sup>

The rise in the incarceration rate could account for some of the decline in the employment rate, particularly among black Minnesotans, which has been greater than the national decline. In 2017, Minnesota's imprisonment rate was the 47<sup>th</sup> highest in the U.S. But, in terms of racial disparity between blacks and whites, the state ranked 4<sup>th</sup> nationally.<sup>40</sup>



# Figure 24: Racial disparity in incarceration rates for black and white U.S. residents

Source: Bureau of Justice Statistics, 2016

# Rise in occupational licensing

The period of declining employment rates in the U.S. coincides with more widespread occupational licensing requirements. The share of workers in occupations for which a state or local government license is required to work has risen from just five percent of workers in the late 1950s to nearly 30 percent of workers today.<sup>41</sup> Occupational licensing laws not only make entry into a regulated occupation more expensive and limit the number of people choosing that occupation, but they may also increase the supply of labor to the non-licensed sector, lowering wages there. This might make work in the non-licensed sector less attractive.

Indeed, empirical research shows that occupational licensing does slow employment growth.<sup>42</sup> These effects are found to be particularly large for white workers; indeed, the employment ratio for Minnesota's white workers has fallen by 4.8 percentage points since 2000 compared to 4.4 percentage points nationally.

Any impact of occupational licensing on employment rates in Minnesota is likely to have grown in recent years. In 2012, the Institute for Justice estimated that Minnesota had the 29<sup>th</sup> most burdensome licensing laws and was the 46<sup>th</sup> most broadly and onerously licensed state.<sup>43</sup> This is positive, but research from the Mercatus Center at George Mason University gives cause for concern. They found that Minnesota's occupational licensing burden was the 11<sup>th</sup> fastest growing in America between 2012 and 2017, as Figure 25 shows.<sup>44</sup> This suggests that while, relatively speaking, occupational licensing laws might not have been a large factor in driving down Minnesota's employment rates, their effects might have grown in recent years.

# 4 - What can be done?

Trade – Increased openness to trade, especially with China, tends to negatively impact the employment of non-college educated workers. It will have played some role in reducing employment for these workers in Minnesota in recent years, particularly in manufacturing.

But trade also has benefits which have to be set against these costs. A consistent finding of recent research is that trade reforms have a positive impact on economic growth, on average.<sup>45</sup> Besides, trade policy is largely decided at the federal level rather than the state level.

Even so, there are things state policymakers can do—as indeed they have been doing in Minnesota—to shield workers from the worst of the "China Shock." The state's relatively light taxation of capital intensive manufacturing industries should continue. Indeed, it ought to be an example for policymakers in other settings.

Technology – So far, evidence suggests that the increased use of computers negatively impacts levels of female employment. Minnesota has been only averagely exposed to these pressures and it has seen its employment ratio for female workers decline by more than the national average between 2000 and 2018, by 3.6 percentage points compared to 2.9.

Technology, too, is a double-edged sword. Increasing the quantity and quality of the capital which workers have to work with is one way to make them more productive and raise their incomes. But while a labor saving technology benefits the workers who use it, it can, in the short term, negatively impact those workers whose labor is "saved."

Policy here should be geared towards facilitating the retraining and reemploying of displaced workers. We should also aim to increase the technology available so that displaced workers have the same opportunity to benefit from increased productivity and higher wages that their former colleagues do.

# Figure 25: Change in breadth and burden of licensure by state, 2012-2017



Source: Mercatus Center at George Mason University

# WHAT CAN BE DONE FOR EMPLOYMENT IN MINNESOTA?



# Trade

Keep taxes on capital intensive manufacturers low

AMERICAN Xperiment



# Training

Support for reskilling through lifelong learning



# **Disability benefits**

Restrict eligibility to those genuinely in need



# Minimum wage laws

At least freeze minimum wages at current levels



# Incarceration

Pass a "Clean Slate" bill like those in Pennsylvania and Utah and repeal our "Ban the Box" law



# **Occupational licensing**

Halt the growth in occupational licensing coverage in Minnesota and enact a mutual recognition law such as that passed in Arizona Disability benefits – The increase in SSDI receipt in Minnesota has matched that of the nation generally, while remaining at a lower level. Overall, this has been found, in more recent years, to have had a negative effect on employment, especially for younger workers. In Minnesota, the employment ratios for all workers, male and female, under 25, have declined more than they have nationally since 2000.

Increases in availability of disability benefits have been driven by policy decisions as much as demographics. In addition to the increase in the number of recipients, the composition of SSDI recipients has changed in recent decades. More SSDI recipients are now qualifying for benefits with hard-to-verify impairments.<sup>46</sup> The rapid growth of the VADC program since 2001 has also been put down, in part, to liberalization of the medical eligibility criteria.<sup>47</sup>

These programs are administered federally so there is little state government could do.<sup>48</sup> However, the state does offer a range of supplemental payments over and above this.<sup>49</sup> Eligibility rules should be assessed to make sure they reflect a real increase in people's medical needs.

Minimum wage – The above national average declines in youth employment ratios in Minnesota since 2000 have already been noted. Research has found that minimum wage hikes, such as those Minnesota has enacted, drive such declines.

The optimal policy here would be elimination of Minnesota's state minimum wage. Then the state would just be bound by the federal rate. Failing that, further increases must be shelved and more exemptions for young workers carved out to allow them to start accruing experience in the workplace.

Incarceration – The employment ratio for black Minnesotans has declined by 5.4 percentage points since 2000, compared to 2.6 percentage points nationally. Research finds that incarceration can reduce employment rates, and Minnesota has a disproportionately high number of black prisoners.

Academic research suggests that increases in crime cannot explain the growth in the incarceration rate since the 1980s. Rather, that growth appears to be attributable to changes in policy, such as sentencing guidelines and mandatory sentencing laws for drug-related offenses that have increased both the likelihood of going to prison and sentence lengths.<sup>50</sup> We should not shy away from locking up violent criminals to boost employment, but something like the federal government's First Step Act at the state level might go some way towards mitigating the worst employment effects.

Occupational licensing – Occupational licensing laws have been found to reduce employment, curiously enough for white workers especially. In this category, Minnesota's employment ratio has fallen by 4.8 percentage points since 2000 compared to 4.4 percent points nationally. While Minnesota ranks quite low on measures of occupational licensing, that burden has grown quickly in recent years.

While some of these licensing requirements may be sensible—such as for physicians, dentists, teachers, and electricians—for others the rationale is much less obvious—auctioneers, florists, locksmiths, ballroom dance instructors, hair braiders, manicurists, interior designers, and upholsterers.<sup>51</sup> Our state government should work towards lowering its occupational licensing requirements and making sure the remaining requirements are genuinely in the interests of consumers, not merely intended to stifle competition.

# Appendix: Employment ratios and per capita economic growth

Economic growth comes from two sources. The first is an increase in the number of people working to produce the goods and services that comprise GDP. The second is an increase in the productivity of these workers. This is the efficiency with which they can turn inputs, such as land, labor, or capital, into outputs: GDP.

Ultimately, it is productivity that drives per capita economic growth. With constant average per worker productivity, adding new workers to the labor force will increase *total* GDP at the same rate as the labor force grows, but it will do nothing for per *capita* GDP, as Table 3 illustrates.

% Growth rate	-	t	t+1	t+2	t+3	t+4	t+5	t+6	t+7	t+8	t+9	t+10	% change
10	Workers/Population >	100	110	121	133	146	161	177	195	214	236	259	159%
	Per worker productivity >	\$ 10	0%										
	Total GDP >	\$ 1,000	\$ 1,100	\$ 1,210	\$ 1,331	\$ 1,464	\$ 1,611	\$ 1,772	\$ 1,949	\$ 2,144	\$ 2,358	\$ 2,594	159%
	Per capita GDP >	\$ 10	0%										

Table 3: GDP per capita with increasing population and constant productivity

# Source: Center of the American Experiment

Per capita GDP is what matters for average living standards. This divides the amount of output by the population. To see why this matters, consider that China's GDP in 2017, \$23.3 trillion, was 8.2 times larger than that of the United Kingdom, \$2.9 trillion. But average living standards are much higher in the U.K. This is because China's population (1.4 billion) is 21 times larger than that of the U.K. (66 million), so China's GDP is divided among many more people. As a result, per capita incomes in the U.K. are, on average, 2.6 times higher than in China.<sup>52</sup> Per capita GDP is a useful "summary statistic" of the level of economic development, and it is strongly correlated with other measures of quality of life.<sup>53</sup>

In the short run, however, changes in the share of the population working—the employment ratio—can affect per capita GDP. Table 4 illustrates how. Here, unlike Table 3, population and workforce are not the same, as is the case in the real world. At time t, out of a population of 100, there are 70 working to give an employment ratio of 70 percent. At t+5, the employment ratio rises to 90 percent. As a result of a greater share of the population working, there is a relatively greater amount of GDP to divide among the population and GDP per capita increases. Of course, the opposite also applies: if the employment ratio falls so, too, will per capita GDP.

# Table 4: GDP per capita with changing employment ratio

% Growth rate		t	t+1	t+2	t+3	t+4	t+5	t+6	t+7	t+8	t+9	t+10	% change
10	Population >	100	110	121	133	146	161	177	195	214	236	259	159%
	Workforce >	70	77	85	93	102	145	159	175	193	212	233	233%
	Employment ratio >	70%	70%	70%	70%	70%	90%	90%	90%	90%	90%	90%	-
	Per worker productivity >	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	0%
	Total GDP >	\$ 700	\$ 770	\$ 847	\$ 932	\$ 1,025	\$ 1,449	\$ 1,594	\$ 1,754	\$ 1,929	\$ 2,122	\$ 2,334	233%
	Per capita GDP >	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 9	\$ 9	\$ 9	\$ 9	\$ 9	\$ 9	29%

## Source: Center of the American Experiment

This is not to suggest that boosting the population will necessarily increase per capita GDP. Table 5 illustrates this. Here, population growth is 10 percent in each period from t to t+4. From t+5 the growth rate is 15 percent. But the new population has the same employment ratio and the same labor productivity as the old one. As a result, these new workers do not increase per capita incomes. The only way increasing the population increases *per capita* GDP is if the employment ratio and/or per worker productivity of the new residents is higher than that of the population already resident. Indeed, if these are lower, then per capita incomes will be lowered by their arrival.<sup>54</sup>

## Table 5: GDP per capita with increased population

% Growth rate t-t+4	% Growth rate t+5-t+n		t	t+1	t+2	t+3	t+4	t+5	t+6	<u>t</u> +7	t+8	t+9	t+10	% change
10	15	Population >	100	110	121	133	146	168	194	223	256	294	339	239%
		Workforce >	70	77	85	93	102	118	136	156	179	206	237	239%
		Employment ratio >	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	-
		Per worker productivity >	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	0%
		Total GDP >	\$ 700	\$ 770	\$ 847	\$ 932	\$ 1,025	\$ 1,179	\$ 1,355	\$ 1,559	\$ 1,793	\$ 2,061	\$ 2,371	239%
		Per capita GDP >	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	0%

## Source: Center of the American Experiment

Increasing the employment ratio is not, then, a strategy for long term per capita income growth. If the ratio is low to begin with, when it rises to the maximum, growth will stop unless labor productivity increases pick up the slack. If the ratio is high, as it is in Minnesota, there is little room for improvement to begin with. In that case, what the state needs for per capita incomes to rise further is increased per worker productivity.

But, in the short run, the employment ratio matters. It matters in Minnesota because the state's high employment ratio is a driver of its above average numbers of GDP and Personal Income per capita. It matters now, particularly, because in years to come Minnesota's employment ratio and overall participation rates are forecast to fall. This will erode a particular source of economic strength for Minnesota and put downward pressure on per capita income growth.

# Endnotes

1 GDP is the most commonly used measure of economic performance. It measures the total market value of goods and services produced within an economy in a given period. Personal Income measures how much money is received by people in an economy from their economic activity. It includes wages, benefits, proprietor income, dividends, interest, rent, and transfer payments like Social Security and veteran's benefits.

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54 It has been argued that more people means more productivity enhancing ideas so that population growth can increase per capita incomes. However, this is an argument for having more children, not moving around the adults that there are. See Michael Kremer, "Population Growth and Technological Change: One Million B.C. to 1990," *Quarterly Journal of Economics*, 1993, 108(3): 681-716.



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