

Accounting for Growth in Minnesota:

Performance and prospects

John Phelan, Economist

Minnesota's economy: Performance and prospects

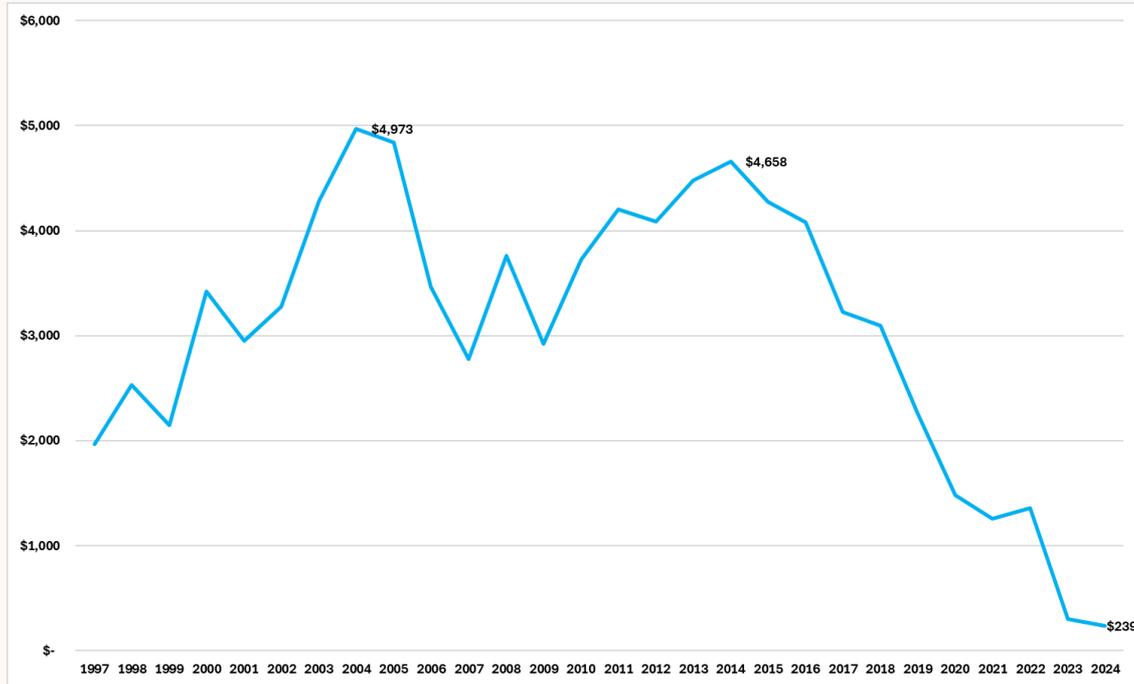
- Per capita Gross Domestic Product (GDP) in Minnesota
- Growth accounting: The components of per capita economic growth
- Human capital: “raw labor” and “knowledge capital”
- Physical capital
- Total Factor Productivity
- Conclusions

GDP per capita in Minnesota

- Gross Domestic Product (GDP) per capita is a key measure of economic welfare
- Minnesota's recent performance on this measure has been relatively poor
- Minnesota's "premium" over the United States generally in per capita GDP has fallen from \$4,658 in 2014 to \$239 in 2024
- Minnesota's per capita GDP growth has lagged that of the United States generally in 9 of the last 10 years
- **Why?**

GDP per capita in Minnesota

GDP per capita in Minnesota minus GDP per capita for the United States, 2017\$

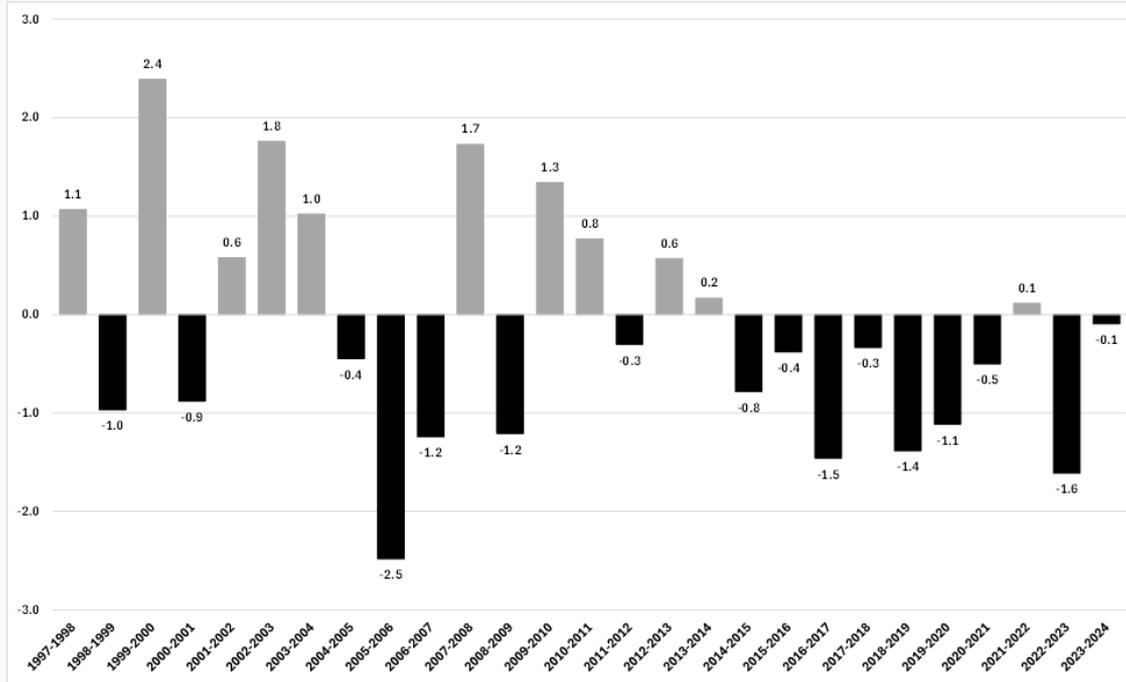


Source: Bureau of Economic Analysis



GDP per capita in Minnesota

Growth of real per capita GDP in Minnesota minus growth of real per capita GDP for the United States, percentage points



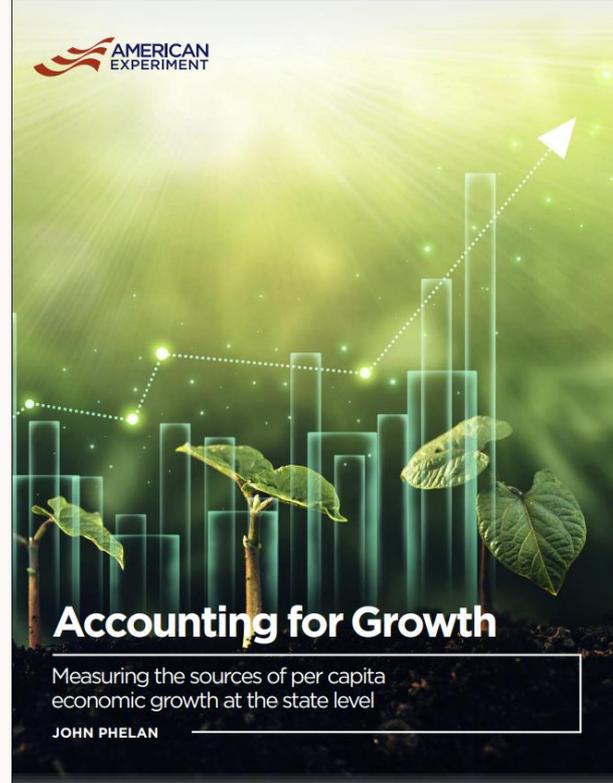
Source: Bureau of Economic Analysis



Growth accounting

FULLY *Why a Stagnant Economy* GROWN *Is a Sign of Success* DIETRICH VOLLRATH

"A must-read."—Financial Times



AMERICAN EXPERIMENT

Accounting for Growth

Measuring the sources of per capita economic growth at the state level

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AmericanExperiment.org



Growth accounting

- Growth accounting breaks down the rate of growth of per capita GDP (y) into that coming from its three components:
 - 1) Human capital per capita (h): The quantity and quality of labor provided in an economy
 - 2) Physical capital per capita (k): The tools those workers have to work with
 - 3) Total Factor Productivity (TFP): The efficiency with which inputs are combined
- $g_y = g_h + g_k + g_{TFP}$
- **Minnesota lagged the national growth rate for each source of per capita GDP growth between 2014 and 2024**

Growth accounting

Growth accounting for Minnesota and the United States, 2014 to 2024

Per capita >	GDP	Human capital (weighted)	Physical capital (weighted)	Total Factor Productivity
United States	1.9%	0.2%	0.7%	1.0%
Minnesota	1.1%	0.0%	0.4%	0.7%
Difference (percentage point)	-0.8	-0.2	-0.3	-0.3
Minnesota's rank	38	44	39	28

Source: Center of the American Experiment

Human capital

- Accounts for none of Minnesota's growth since 2014 and 28% of the per capita GDP deficit with the United States
- The quantity and quality of labor provided in an economy
- "Raw labor"
 - - Total employment
 - - Average hours worked annually
- "Knowledge capital"
 - - Per worker skills arising from education
 - - Per worker skills arising from experience
- **Minnesota lagged the national growth rate for three of four sources of per capita human capital growth**



Human capital

Growth accounting for Minnesota and the United States, human capital, 2014 to 2024

	Human capital per capita (unweighted)	Raw labor		Knowledge capital	
		Employment ratio (E/N)	Average annual hours worked ($hours$)	Education per worker ($eEduc$)	Experience per worker ($eExp$)
United States	0.6%	0.5%	0.0%	0.2%	-0.1%
Minnesota	-0.1%	0.0%	-0.2%	0.1%	0.0%
Difference (percentage point)	-0.7	-0.4	-0.2	-0.1	0.0
Minnesota's rank	44	45	32	47	20

Source: Center of the American Experiment



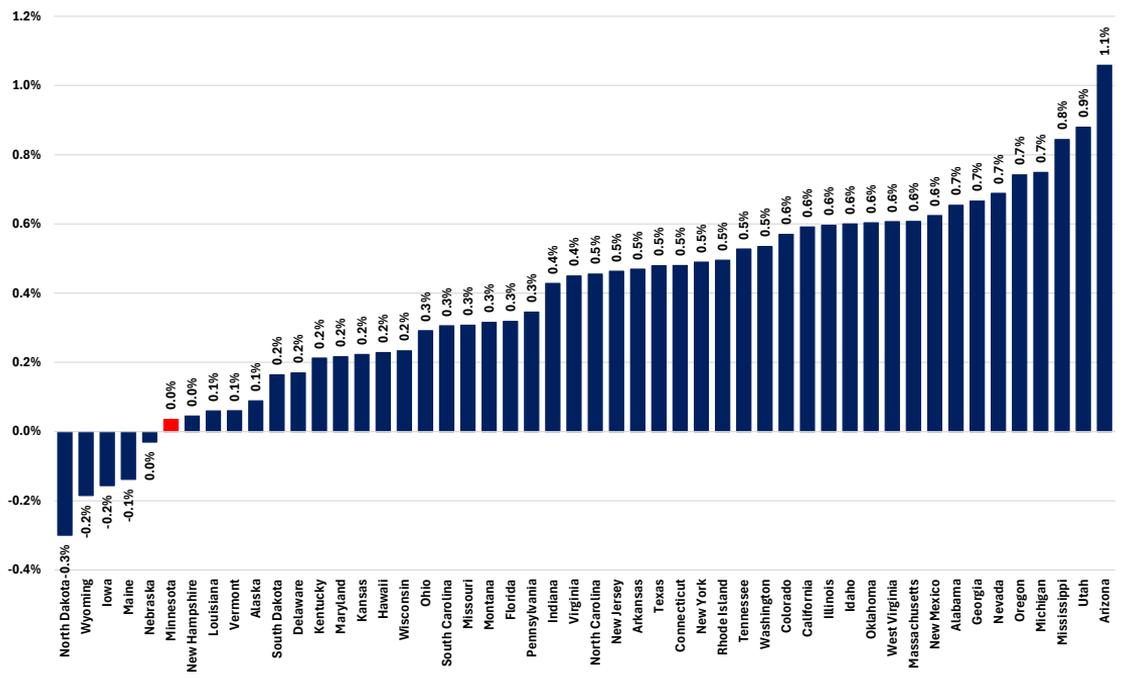
Human capital

- “Raw labor”
- Minnesota’s rate of employment ratio growth is slower than in 44 other states
- Changes in the employment ratio are driven by changes in the levels of population or employment
- Minnesota’s rate of population growth – which ranked 19th out of 50 states – matched its rate of employment growth, which ranked 32nd
- Minnesota has less scope to drive faster per capita human capital and real GDP growth by increasing its employment ratio than most states
- Minnesota had the 5th highest share of its population employed in 2024



Human capital

Average annual change in the employment ratio, 2014-2015 to 2023-2024

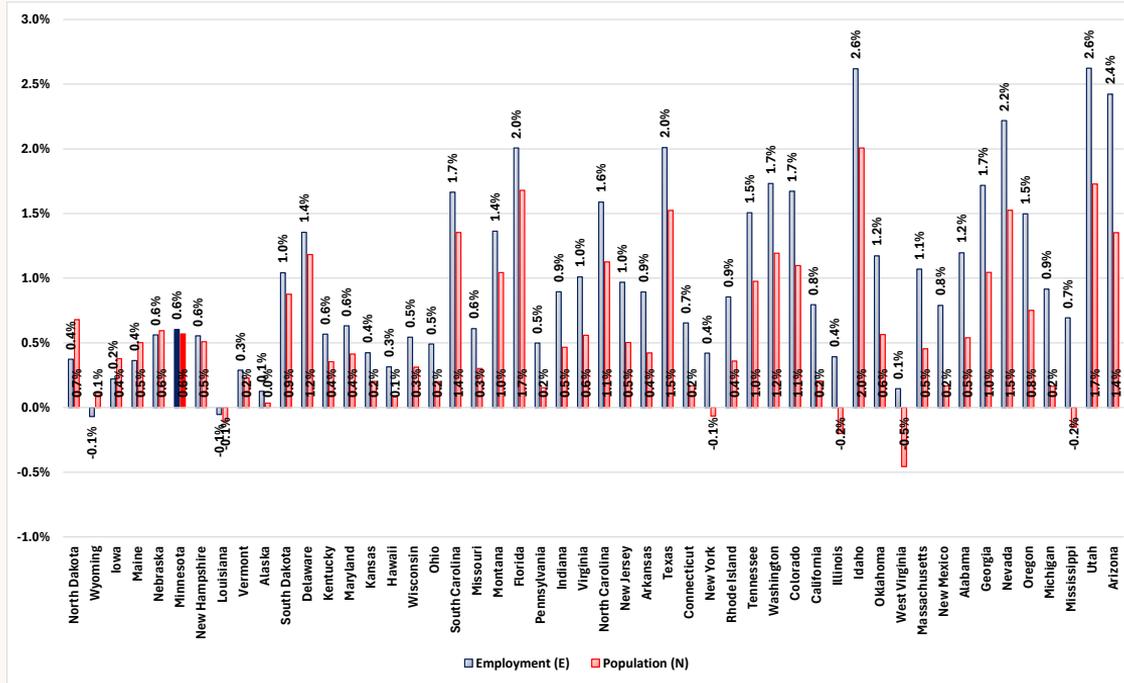


Source: Bureau of Economic Analysis, Bureau of Labor Statistics, and Center of the American Experiment



Human capital

Average annual change in employment and population, 2014-2015 to 2023-2024

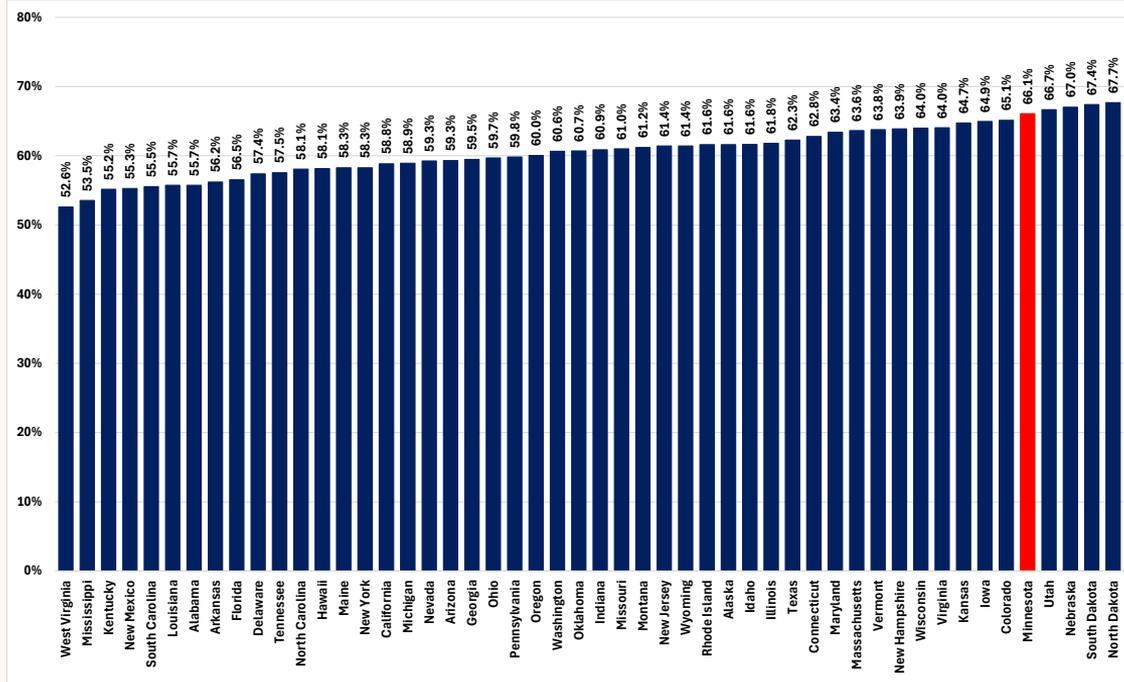


Source: Bureau of Economic Analysis, Bureau of Labor Statistics, and Center of the American Experiment



Human capital

Employment as a share of the Civilian Non-Institutional Population, 2024



Source: Bureau of Labor Statistics and Center of the American Experiment



Human capital

- “Raw labor”
- Average hours worked annually...

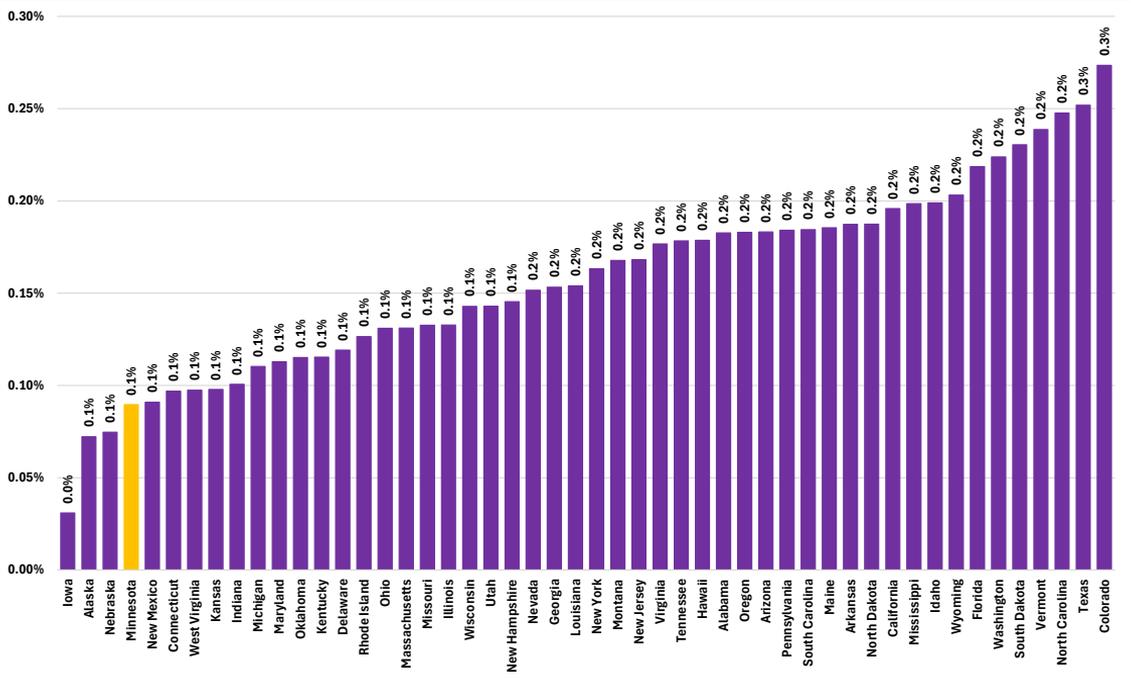


Human capital

- “Knowledge capital”
- Per worker skills arising from education in Minnesota rose by 0.1% annually between 2014 and 2024, half the national rate and below 46 other states
- Minnesota was just one of 10 states where the share of the workforce with less than a regular high school diploma rose, a performance worse than in 47 other states
- Minnesota ranks 12th out of 50 states for its average per worker level of skills arising from education
- There is scope for our state to drive faster human capital and per capita GDP growth here

Human capital

Average annual change in per worker skills arising from education, 2014-2015 to 2023-2024

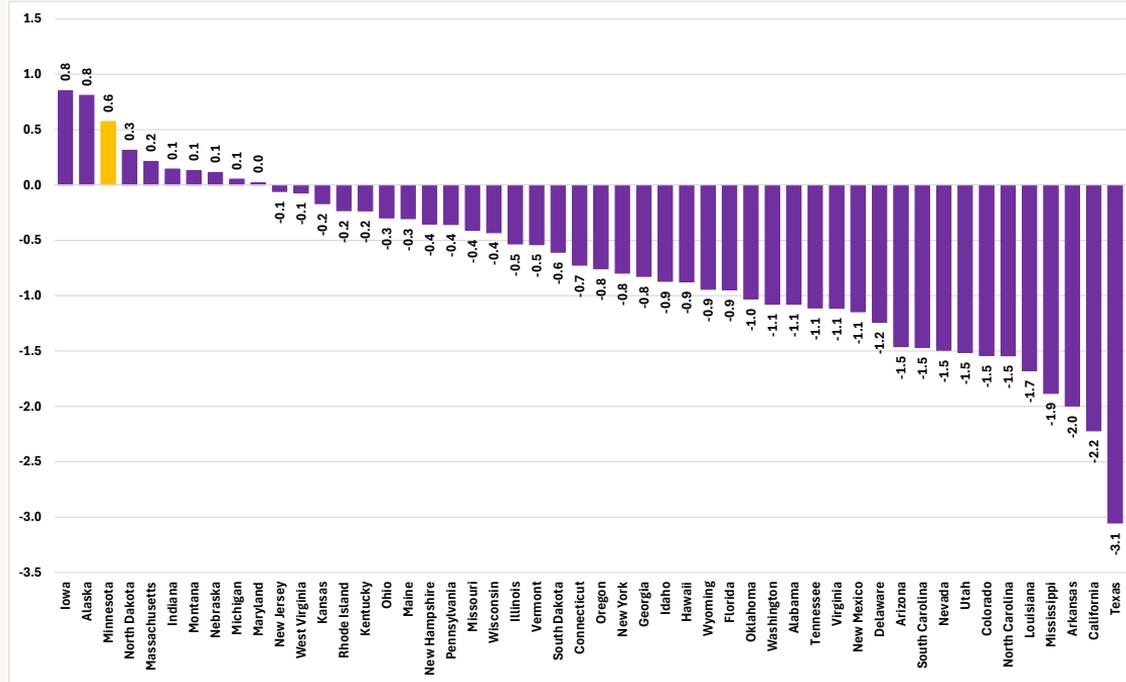


Source: Census Bureau, Bureau of Labor Statistics, and Center of the American Experiment



Human capital

Percentage point change in share of the workforce with less than a regular high school diploma, 2014 to 2024

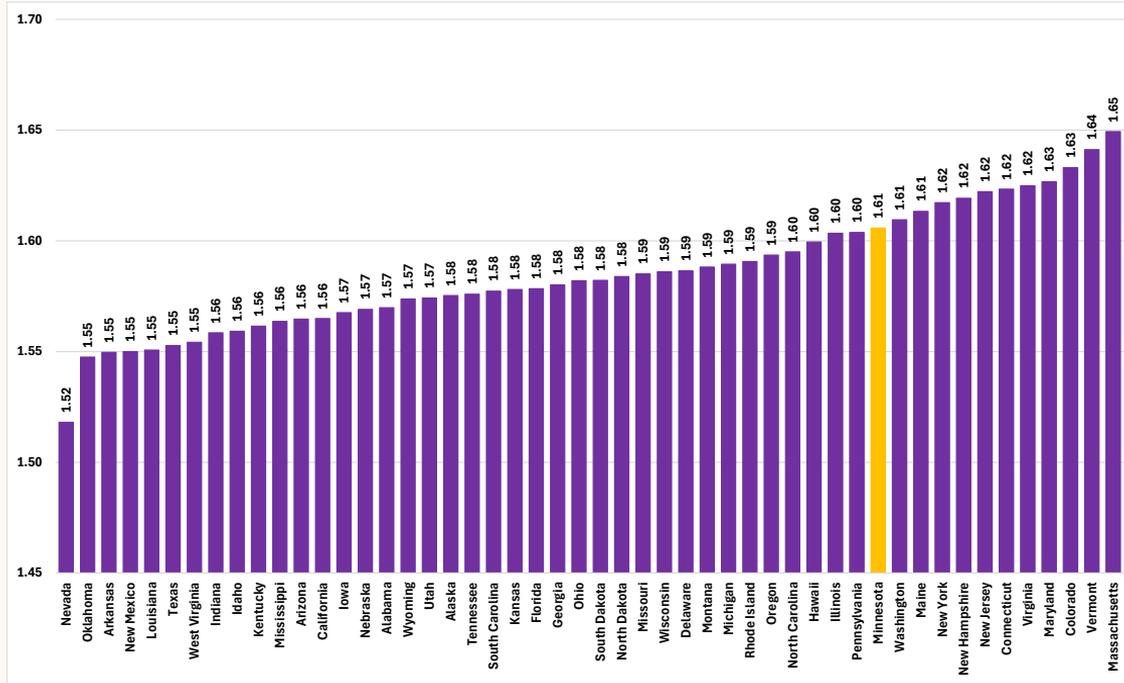


Source: Census Bureau, Bureau of Labor Statistics, and Center of the American Experiment



Human capital

Human capital arising from education per worker, 2024



Source: Census Bureau, Bureau of Labor Statistics, and Center of the American Experiment

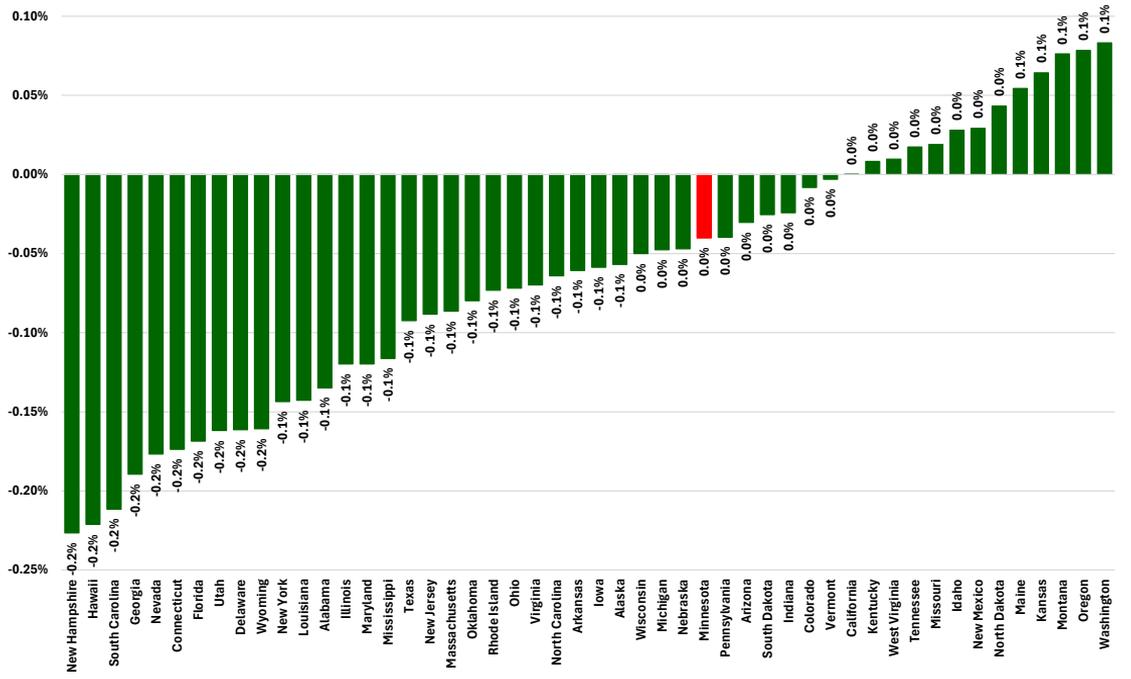


Human capital

- “Knowledge capital”
- Per worker skills arising from experience stagnated in Minnesota between 2014 and 2024, better than the national rate and above 30 other states
- The share of Minnesota’s workforce aged between 25 and 44 – the peak years for skills derived from experience – fell by -1.5% annually between 2014 and 2024
- Minnesota’s level of per worker skills derived from experience is below 17 other states
- There is scope for our state to drive faster human capital and per capita GDP growth here

Human capital

Average annual change in per worker skills arising from experience, 2014-2015 to 2023-2024

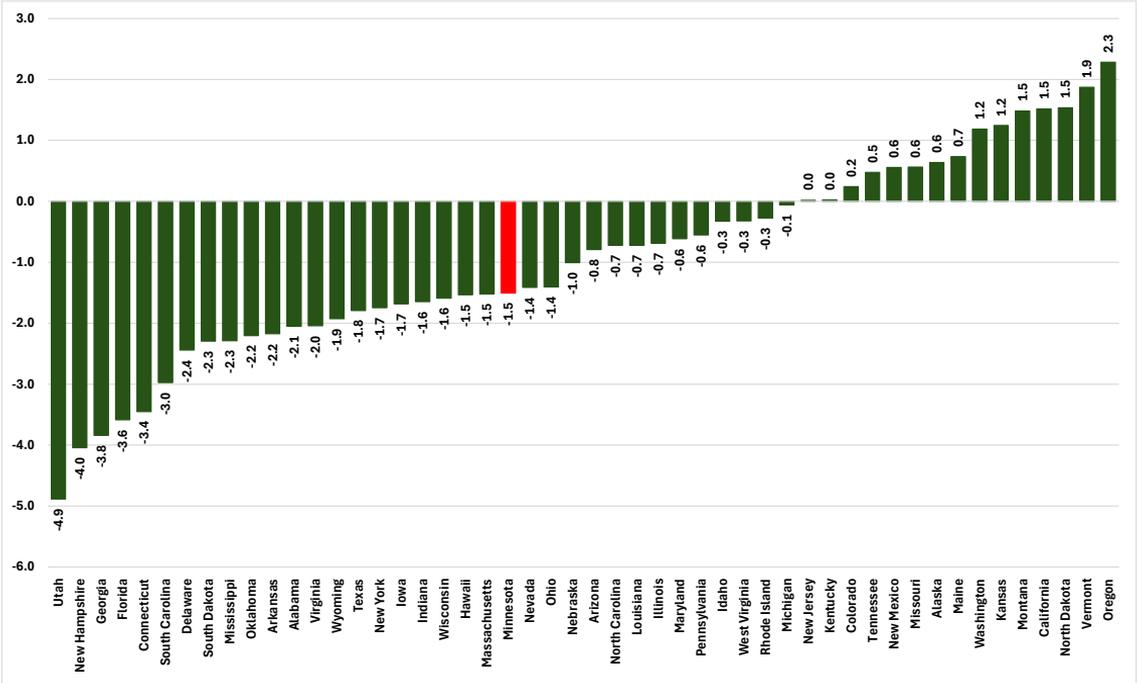


Source: Bureau of Labor Statistics and Center of the American Experiment



Human capital

Percentage point change in the share of the workforce aged 25 to 44, 2014 to 2024

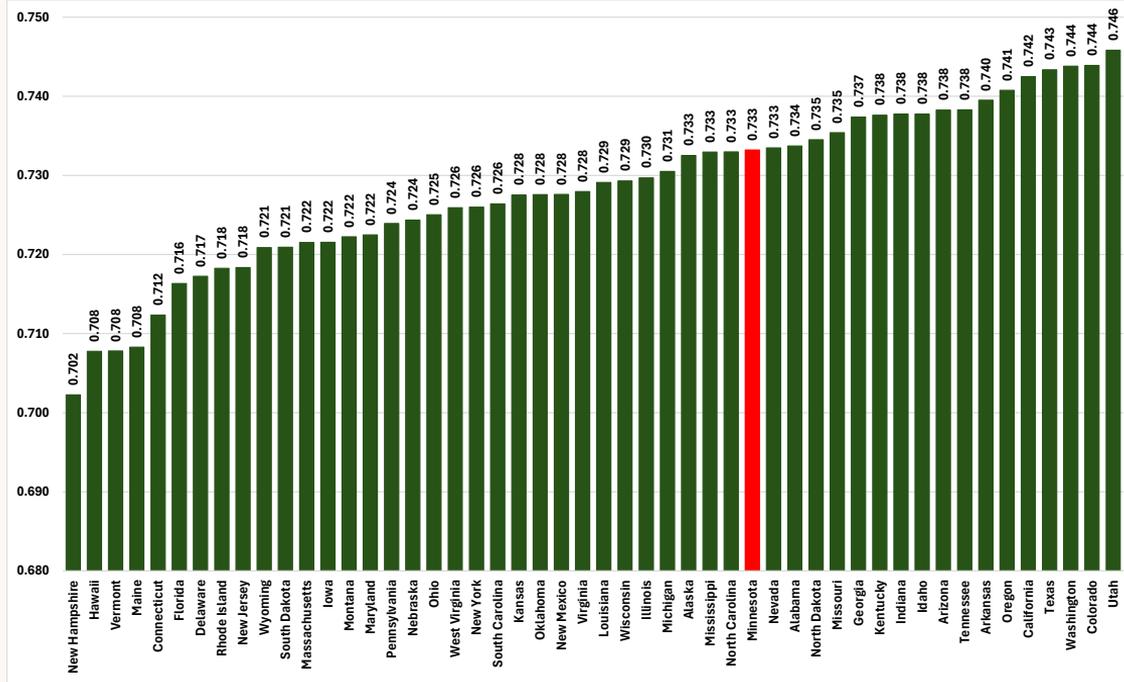


Source: Bureau of Labor Statistics and Center of the American Experiment



Human capital

Human Capital Arising from Experience Per Worker, 2024



Source: Bureau of Labor Statistics and Center of the American Experiment

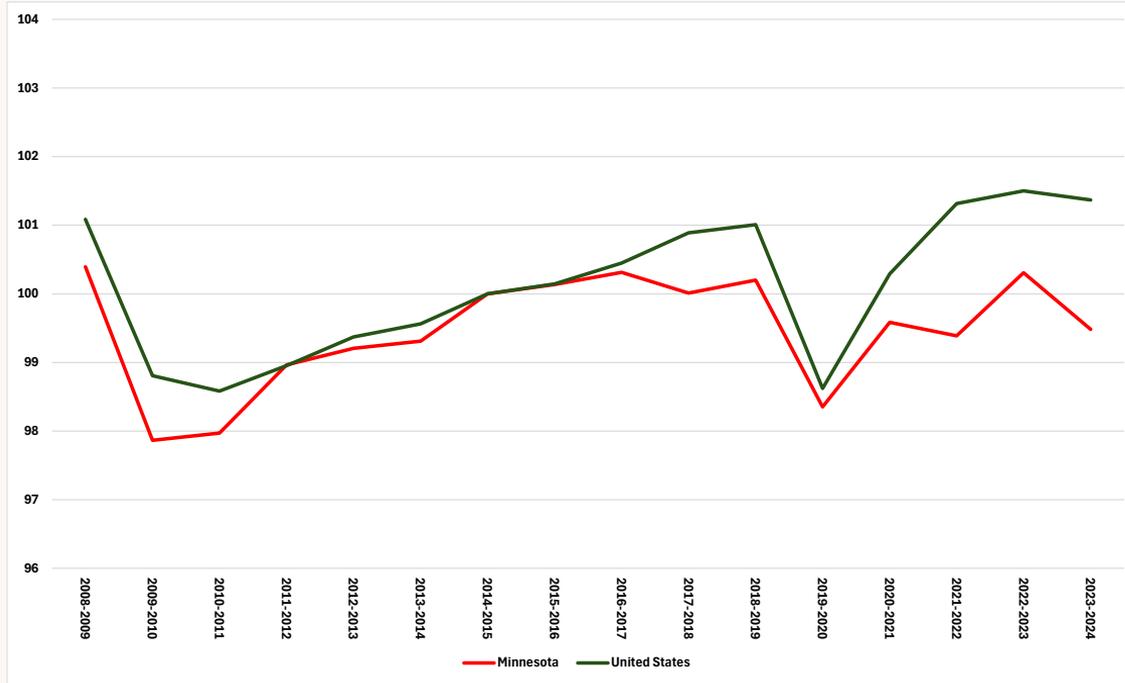
Human capital

- Minnesota's growth rate of human capital used to track that of the United States, but it has lagged since 2016/2017



Human capital

Change in weighted human capital per capita, 2014 = 100



Source: Center of the American Experiment

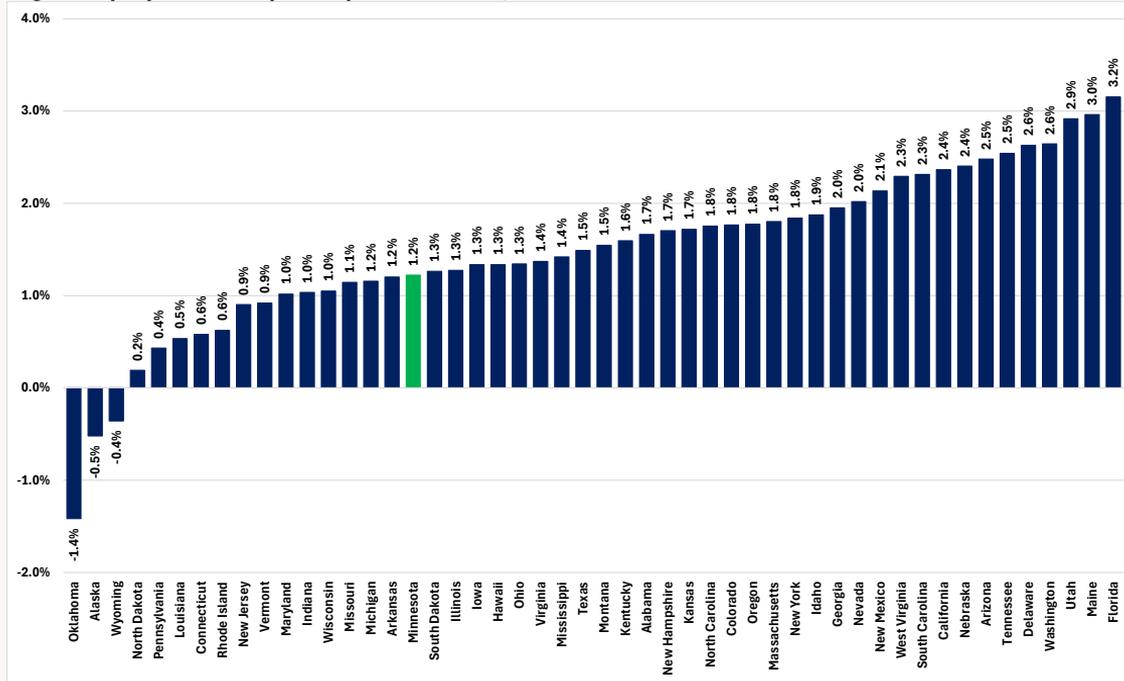


Physical capital

- Accounts for 37% of Minnesota's growth since 2014 and 35% of the per capita GDP deficit with the United States
- Minnesota's rate of per worker physical capital growth between 2014 and 2024 – 1.2% – ranked 34th out of 50 states
- While Minnesota performed well in the “Mining” sector on job and per worker physical capital growth, it did less well in other capital-intensive sectors like “Real estate and rental and leasing” and “Information”
- At \$378,389, Minnesota's level of per worker physical capital ranks below 23 other states
- There is scope for our state to grow per capita GDP with faster physical capital growth
- Our state's growth of per worker physical capital generally tracks that of the United States, but has not recovered from a stagnation between 2014 and 2020

Physical capital

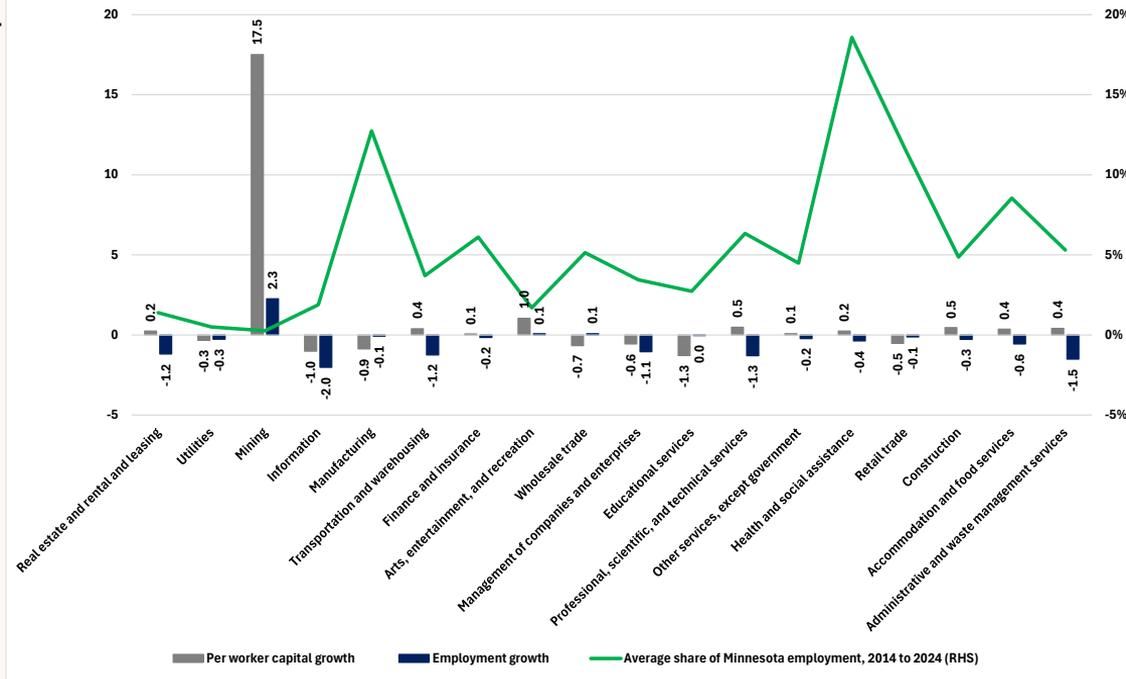
Average annual real change in physical capital per worker, 2014-2015 to 2023-2024



Source: Bureau of Economic Analysis and Center of the American Experiment

Physical capital

Difference in United States and Minnesota's average real per worker capital and employment growth and average share of employment, 2014 to 2024

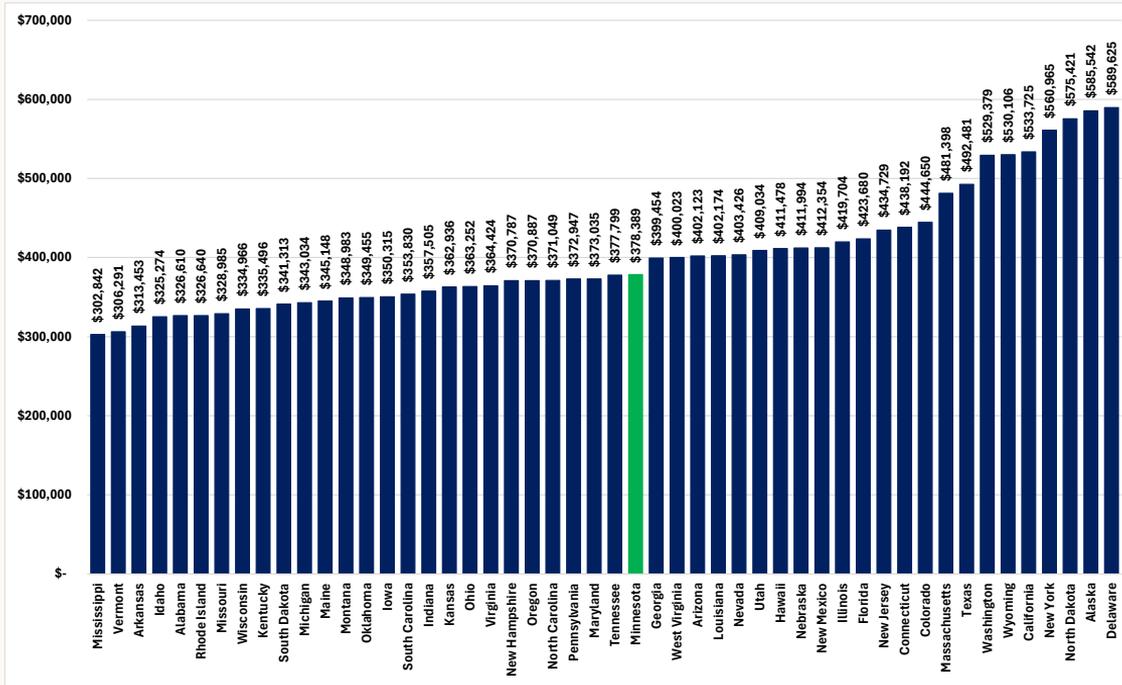


Source: Bureau of Economic Analysis and Center of the American Experiment



Physical capital

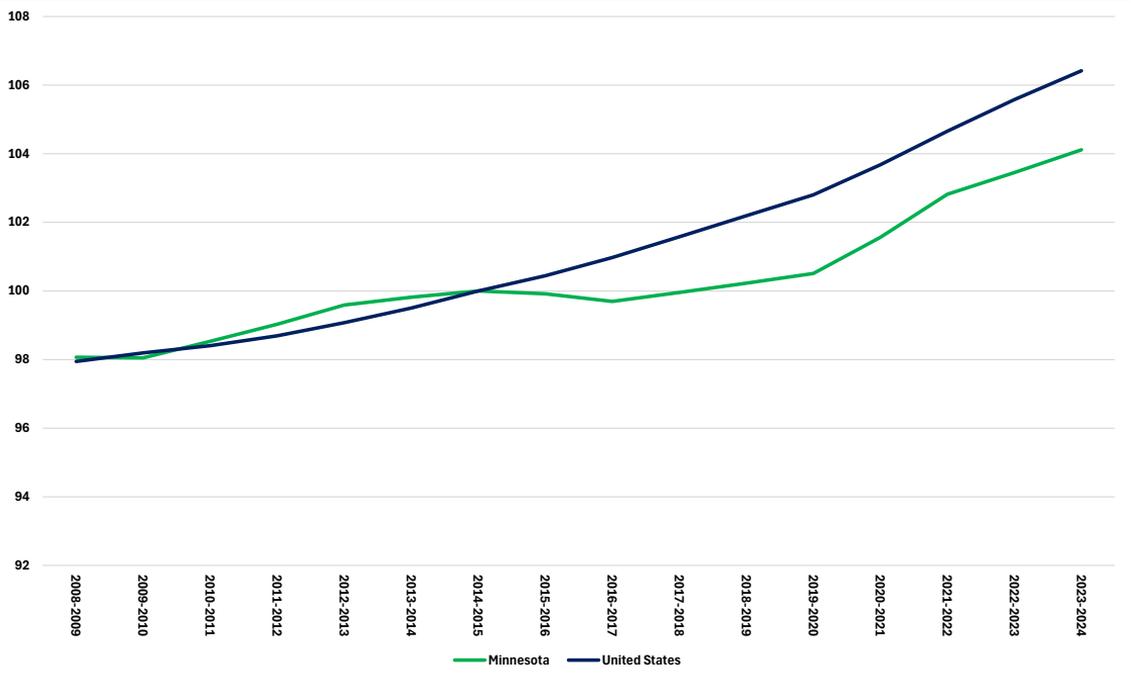
Physical capital per worker, 2024, (2017\$)



Source: Bureau of Economic Analysis and Center of the American Experiment

Physical capital

Change in weighted physical capital per capita, 2014 = 100



Source: Center of the American Experiment



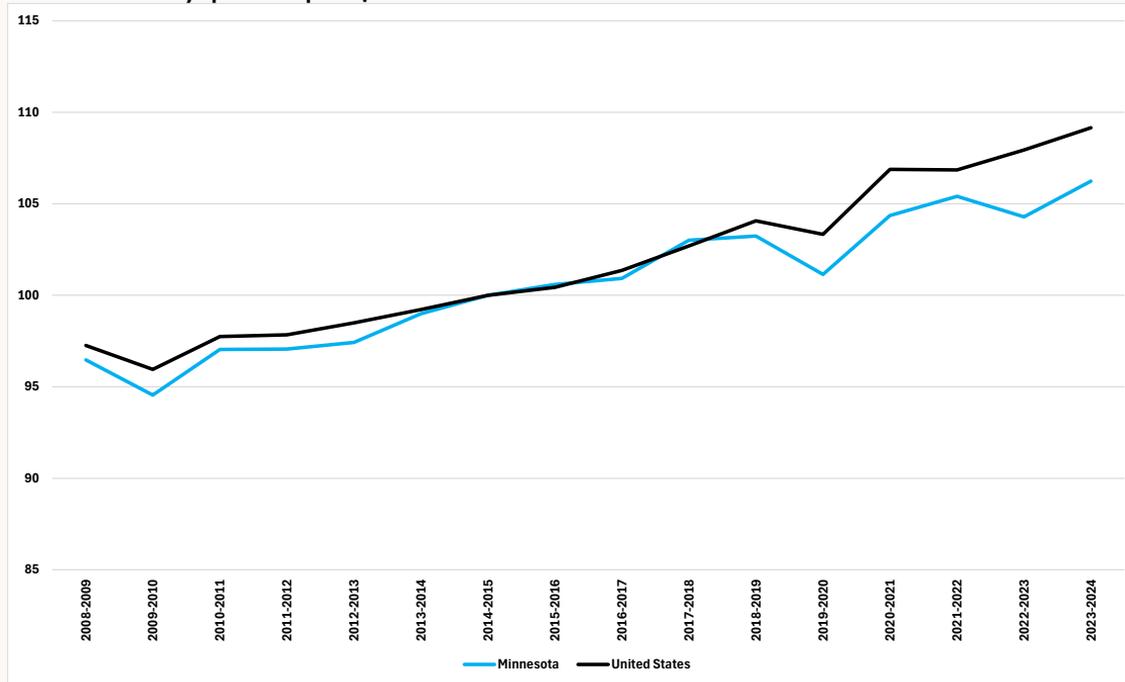
Total Factor Productivity

- Accounts for 66% of Minnesota's growth since 2014 and 37% of the per capita GDP deficit with the United States
- Minnesota can aim to increase the growth rate of per capita GDP by raising the level of TFP growth
- Our state used to track TFP growth at the national level, but has not closed a gap opened in 2019-2020



Total Factor Productivity

Change in Total Factor Productivity per capita, 2014 = 100



Source: Center of the American Experiment



Conclusions

- Our state has little scope to expand “raw labor”
- Immigration of skilled workers would help
- Minnesota needs to retain and attract more educated workers and those in the prime of their working lives
- We should look to boost employment and investment in capital intensive sectors
- State policy should encourage entrepreneurship and innovation
- How to do this? Watch this space...



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Thank You!

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