

# The Phases of Response to our New Economy: Where are we? What is in store for the State of Indiana?

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## Background

Nearly three years now after we were first introduced to COVID-19 and its unprecedented supply shock to our global production systems, leaders throughout the world continue responding to vexing economic conditions, akin to some of our bravest heroes battling fire amidst unpredictable wind and heat in the American West.

In last year's Indiana business outlook, we suggested a slow level of growth at 2.2 percent alongside a continuance of tight labor markets throughout the state, noting a discontinuous drop in labor force participants.<sup>1</sup> In that article, we wrote:

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<sup>1</sup> <https://www.ibrc.indiana.edu/ibr/2021/outlook/indiana.html>

*“The current supply chain structure, which is built upon international trade important to Indiana’s economy, is experiencing unprecedented bottlenecks on a grand scale.”*

The connections to international trade remain important for Indiana, and world economic authorities have had another year to attempt to digest what happened in late 2019, how we have responded to it, what likely next would be, and how all of that will affect our Indiana projections for 2023.

[Firefighting Viruses with Human Isolation and Money](#)

Initially, in lieu of catastrophic yet seemingly necessary business shutdowns, emergency economic response focused on historic drops in output and employment, which required stimulus. The drop in U.S. output from Q1 to Q2 of 2020 was 8.8 percent, an annualized rate of about 40 percent.<sup>2</sup> In April of 2020, the U.S. unemployment rate had risen to 14.7 percent from 4.4 percent at the previous month’s reading,<sup>3</sup> translating into approximately 17.6 million job losses.<sup>4</sup> From Asia to Europe to North America, these kinds of numbers were common.

The initial multi-governmental response around the world was to (a) shut down and go home, (b) issue several rounds of fiscal stimulus,<sup>5</sup> and continuing to mirror the emergency

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<sup>2</sup> [St. Louis FED US Output](#)

<sup>3</sup> [Bureau of Labor Statistics - Unemployment Rate by Month](#)

<sup>4</sup> [Omair Sharif - September 2022 - connection between US UE3 and Jobs Lost](#)

<sup>5</sup> [COVID-19 Fiscal Stimulus By Country](#)

economics playbook from 2008, (c) accelerate consumer spending with accommodative monetary policies.<sup>6</sup>

Infusions of capital flowed into antiviral research eventually resulting in the development of vaccines and remedies.

Before medicines were available, remote working technologies such as Zoom were enhanced and proliferated, allowing people to return to computer-facing jobs, from home. Public masking was required in many countries as reopening began, in many cases allowing the world's factories to reopen. Jobs not lost to retirement or other "quit" choices were restored, and output resumed.

The stimulus-enhanced recovery plan seemed to be working, at least at first...

#### Problems Underneath

*1. Work from home:* Arising from an understandably urgent appetite to reopen the economy, structural changes to office work developed, resulting in a "new normal" of working from home. Oftentimes this experience was fortified with freshly appointed home offices, increasing demand for various construction goods and services.<sup>7</sup> With historically low mortgage rates, 4.9 million people in white-collar work moved away from cities since 2020, with millions more planning similar changes.<sup>8</sup> The additional emphasis on home office construction stoked remote-work demand everywhere, with city centers now confronted with that fallout from

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<sup>6</sup> [Monetary Policy by Quarter by Country](#)

<sup>7</sup> [New York Times - August 2020 - renovating a new normal](#)

<sup>8</sup> [Forbes - Americans moving away from cities](#)

business evacuations.<sup>9</sup> QUESTIONS → How will Indiana cities adapt to the reduced weekday business traffic? What will the long-term business traffic eventually be?

*2. College enrollment declines:* Undergraduate college enrollment dropped in America in 2021 from 2020 levels by 5.9 percent, with two-year programs suffering a 10.9 percent decline. With most graduate program enrollments rising, the overall effect was a loss of 4.2 percent. Indiana did not see an increase in graduate student enrollment.<sup>10</sup> Across America in 2021, higher education lost nearly 613,000 students.<sup>11</sup>

Indiana's college enrollment from high schools dropped from 59 percent in 2019 to 53 percent in 2020. The rate was 65 percent in 2015.<sup>12</sup> The low unemployment rate and changes to instructional modalities are thought to be central to this trend. The unemployment rates for those having earned a baccalaureate degree or higher in March of 2021 was 3.7 percent, while the unemployment rate for those having only completed high school was 6.7 percent – a 44.8 percent improvement for college graduates.<sup>13</sup> Furthermore, college graduates earn on average nearly \$1 million more in lifetime earnings versus those having only a high school diploma, and the more education a person earns, the higher their lifetime earnings are expected to be.<sup>14</sup> The wage gap

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<sup>9</sup> [PEW - Cities Struggle with Businesses Leaving due to remote work](#)

<sup>10</sup> [Forbes - college enrollments post-pandemic](#)

<sup>11</sup> [Bouchrika - October 4 2022 - Research.com](#)

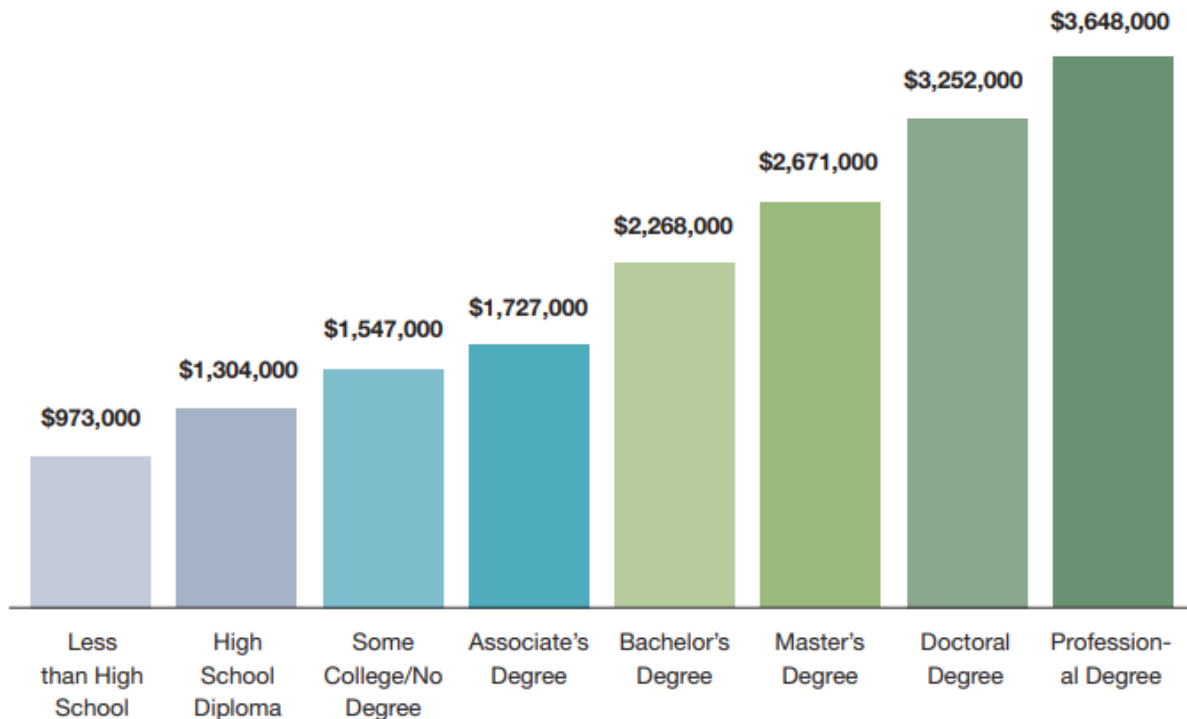
<sup>12</sup> [Chalkbeat Indiana June 2022](#)

<sup>13</sup> [BLS - College Graduates Enjoy Employment Insurance](#)

<sup>14</sup> [Education Leads to More Earnings](#)

between high school graduates and college graduates hit an all-time record high in 2022.<sup>15</sup>

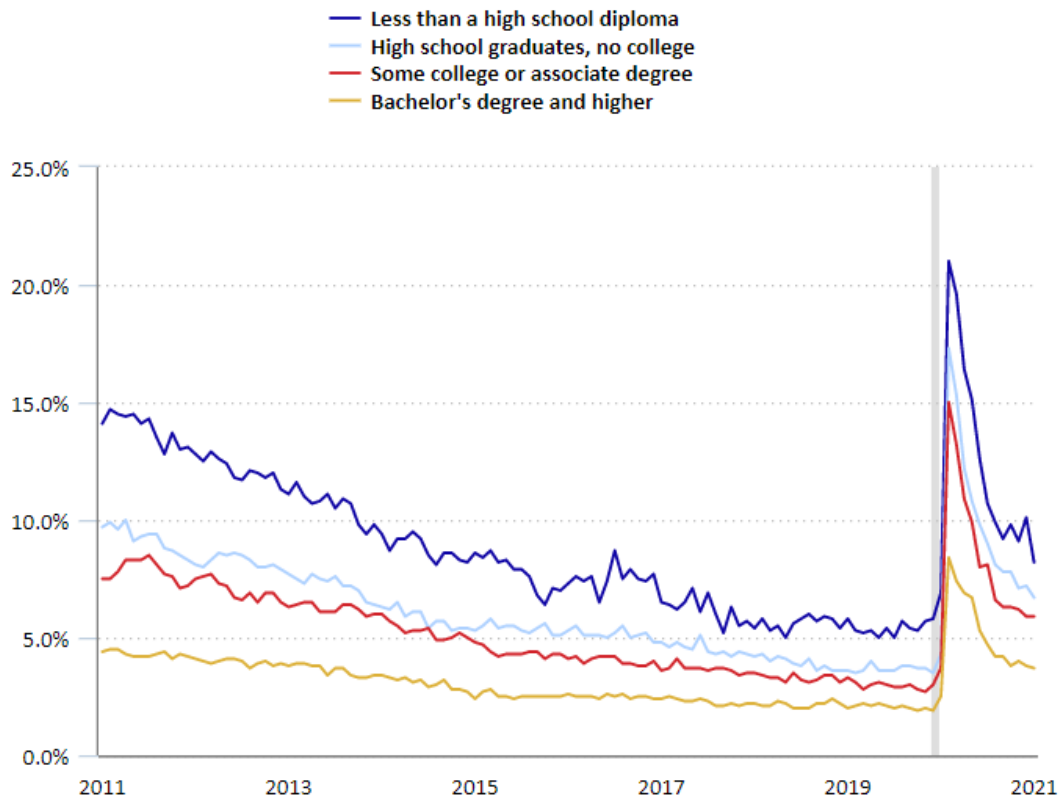
**Figure 1:** Median Lifetime Earnings by Highest Educational Attainment, 2009 Dollars



Courtesy: Carnevale, Rose, and Cheah, 2011. Georgetown University.

<sup>15</sup> [Money - wage gap for college hits record high](#)

**Figure 2:** Unemployment rates for people 25 years and older by educational attainment, seasonally adjusted



Click legend items to change data display. Hover over chart to view data.  
The vertical line at February 2020 represents the start of a recession, as determined by the National Bureau of Economic Research. When this chart was published, the NBER had not yet determined an endpoint for that recession.  
Source: U.S. Bureau of Labor Statistics.



Courtesy: U.S. Bureau of Labor Statistics, 2022.

QUESTIONS → What will the effects of fewer educated Hoosiers be on the Hoosier labor force of the future? What will Indiana leadership do to promote a return to college for graduating high school students in Indiana?

3. *Manufacturing Reliance*: At the time the pandemic began in late 2019, global supply chains were significantly interconnected with trading routes and shipping routes commonly traversing the Pacific and Atlantic Oceans. Since the pandemic hit, disruptions to the global supply chain have affected Indiana industries, including automotive,<sup>16</sup> transportation,<sup>17</sup> and pharmaceuticals.<sup>18</sup> Indiana has historically led the nation in manufacturing output as a percent of gross state product, thus disruptions to the supply chain affect our expectations for production and labor opportunities in Indiana.<sup>19</sup>

The effects of the stimulus piled atop supply chain disruptions from 2020-2021 resulted in worldwide inflation, which began to get noticed in 2Q of 2021 – initially in April of 2021 (4.16 percent) and confirmed in May last year (4.99 percent). Prior to 2Q 2021, inflation rates had been below 3 percent since 1989-1991. Additionally, on February 24, 2022, the Russian Federation invaded Ukraine, sparking a second global supply shock.<sup>20</sup> This time, the effect has been to spike energy and food costs even higher during a time when inflation has already been the key economic concern. That war rages on also to present day as of this writing, with no resolution in sight. The combination of these events has inflation at rate levels unseen since the early 1980's.<sup>21</sup>

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<sup>16</sup> [Automotive Supply Chain Update - Center for Automotive Research \(cargroup.org\)](#)

<sup>17</sup> [ACT Research - Freight Forecast for 2023](#)

<sup>18</sup> [Solved Eli Lilly \(LLY\) SWOT Analysis / TOWS Matrix / Weighted SWOT Solution \(oakspringuniversity.com\)](#)

<sup>19</sup> [Indiana Manufacturing Output as a Percentage of Gross State Product](#)

<sup>20</sup> [Reuters - March 1 2022 - Russia Invasion of Ukraine](#)

<sup>21</sup> [Historical Inflation Rates in the U.S](#)

To combat inflation, the Federal Reserve of the U.S. alongside many other central banks throughout the world have initiated a swift protocol of monetary tightening, increasing the cost of debt capital. This has led to the cost of debt financing of automobiles and other durable goods made in Indiana go from very low to rather high, all in a time span of eight months – so far. The rationale is to raise credit costs to curb demand, thereby shifting price points down.<sup>22</sup> In spite of the rapid and considerable monetary tightening executed thus far, the effects have yet to curb inflation measures.<sup>23</sup> This fact is not surprising, given the time required for monetary tightening to whittle inflation down has been estimated to range between nine months and two years.<sup>24</sup> If we select the median point, we can expect the war on inflation to linger for another seven to ten months before we see reason for the Federal Reserve to ease monetary conditions, and lower the effective cost of durable goods made in Indiana. This places us at about mid-July 2023 for a reasonable timeframe to reverse tightening and loosen credit levels.

*4. More on Automotive Production, and the effect on Gross State Product expectations in 2023:* The economic shocks outlined above from shutting down production operations in supplier countries to combat COVID-19 to overloading the transportation sector of the supply chain and the beginning of durable goods demand destruction as a result of higher interest rates, vehicle sales and production in the U.S. has yet

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<sup>22</sup> [Brewer - 3 26 2020 - What the Federal Reserve Does to Shift Demand](#)

<sup>23</sup> [Time - November 1 2022 - How Raising Interest Rates Curbs Inflation](#)

<sup>24</sup> [Marketplace - April 4 2022 - Time Lag for Interest Rate Hikes to Curtail Inflation](#)

to recover to pre-2020 levels. While vehicle sales softened in 2019, the level was only slightly below the record levels in the 2015 to 2018 period. However, at the outset of the pandemic lockdown, the vehicle sales rate declined to a level not seen since 1981. While a quick rebound can be observed in **Figure 3**, the effects of supply chain and chip availability becomes evident in the second half of 2021 and continues until today.

**Figure 3: Total Annual U.S. New Vehicle Unit Sales**



Note: Data are seasonally adjusted.

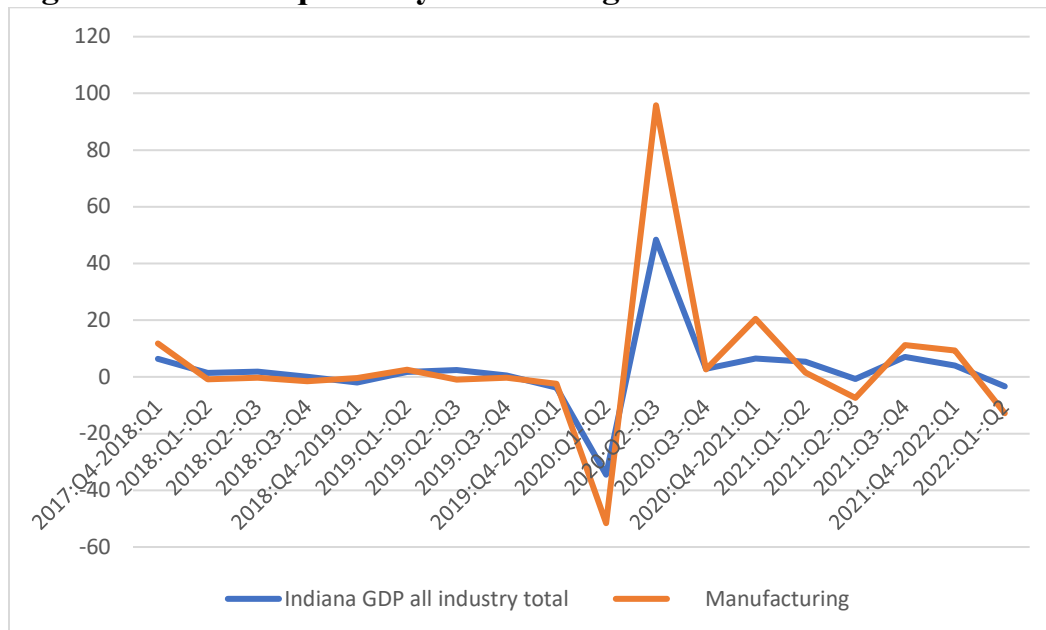
Source: U.S. Bureau of Economic Analysis, Total Vehicle Sales [TOTALNSA], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/TOTALNSA>.

For Indiana, the supply chain challenges and monetary tightening impact on durable goods and vehicle assembly

production have a notable impact on Indiana’s state gross product since durable goods manufacturing constitutes approximately 16% of the state gross product. Manufacturing still constitutes the largest portion of Indiana’s gross state product. Currently, U.S. vehicle assembly production in the most recent 12 months remains more the 10% below the levels of 2016 – 2018. However, as **Figure 3** suggests, a modest increase in production off of shut-down lows may lift the automotive industry slightly in 2023 even as the headwinds of higher interest rates attenuate demand.

In **figure 4**, quarterly gross state product for Indiana reflects the roller coaster pattern of a manufacturing heavy economy. The state gross product declined in five of the past 16 quarters, as vehicle production ebbed and flowed.

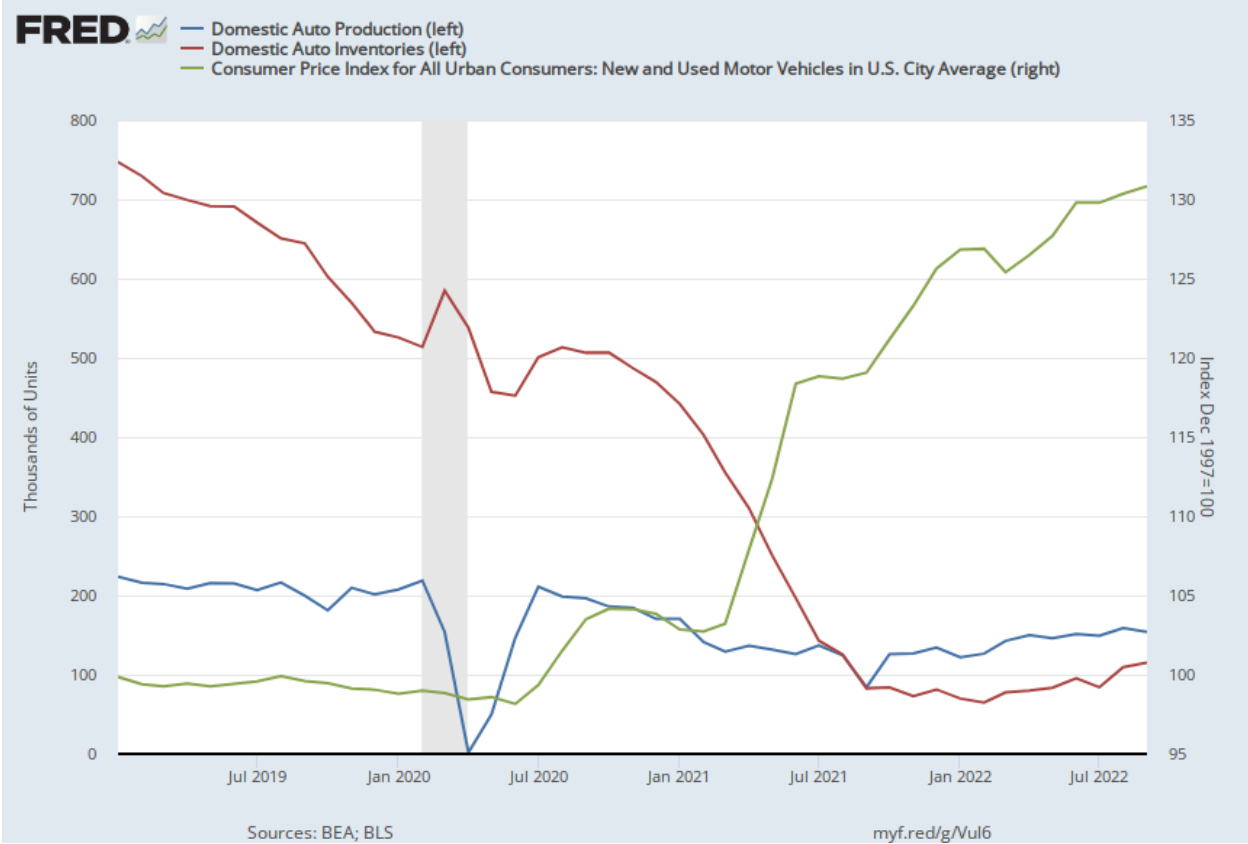
**Figure 4: Indiana quarterly GDP change**



Sources: U.S. Bureau of Economic Analysis, Real GDP by state [SQGDP9], retrieved from Bureau of Economic Analysis: <https://www.bea.gov/data/gdp/gdp-state>, October 27, 2022.

The cyclical nature of automotive and light truck sales are affected by Federal Reserve tightening constraints, which will hinder the Hoosier economy in the manufacturing sector. This will be offset by strength in the pharmaceutical industry and to some degree, inventory replenishment of vehicles.

**Figure 4: U.S. monthly vehicle production, inventory, and CPI**



Sources: U.S. Bureau of Economic Analysis, Domestic Auto Production [DAUPSA], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/DAUPSA>.

U.S. Bureau of Economic Analysis, Domestic Auto Inventories [AUINSA], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/AUINSA>, November 2, 2022.

U.S. Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers: New and Used Motor Vehicles in U.S. City Average [CUSR0000SETA], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/CUSR0000SETA>, November 2, 2022.

*5. Ultra-tight Labor Market in Indiana Hiders Growth Prospects for 2023:* As a manufacturing center for the U.S., Indiana experiences elevated levels of volatility in employment as cyclical firms flex their employment in reaction to changes in environmental conditions that influence demand and production inputs. Naturally this affects automotive and durable goods, and as our economy cools, Indiana typically leads the way in terms of job losses. We are at or near a multi-decades low in the rate of unemployment, giving indication we are at or very near the end of a business cycle. This implies we have risk in terms of job losses coming, possibly in 2023. Thankfully, once we enter a recovery period, Indiana usually gains jobs at a faster rate than most other states.

At 2.8 percent, Indiana’s unemployment rate currently ranks tied with Georgia and Idaho for 14<sup>th</sup> best in the country.<sup>25</sup> Notable states for comparison are shown below in **Table 1**.

**Table 1:** September 2022 Unemployment (UE3) Rates for Certain U.S. States

STATE	UE3 (Sep 22)	U.S. RANK (of 51)
U.S.A.	3.7 percent	---
Iowa	2.7 percent	13
Indiana	2.8 percent	14
Wisconsin	3.2 percent	19

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<sup>25</sup> [BLS - Unemployment Rates by State](#)

Tennessee	3.4 percent	25
Kentucky	3.8 percent	35
Ohio	4.0 percent	38
Michigan	4.1 percent	43
Pennsylvania	4.1 percent	43
Illinois	4.5 percent	50

The U.S. Labor Force Participation Rate (LFPR) was measured at 62.2 percent as of October 2022. The low reading was 60.2 percent, in April 2020.<sup>26</sup> This implies that at the low point after the pandemic, 157 million people were in the labor force in the U.S. Now, that number has recovered to over 162 million, as the UE3 number has fallen.

In Indiana, the LFPR as of October 2022 was 63.4, up from a low of 60.8 in April of 2020. Indiana’s labor force in September 2022 was about 3.401 million, when the LFPR was also at 63.4 percent. This implies the labor force at the low point after the pandemic hit, in April 2020, was 3.262 million, which means about 139,400 people rejoined the labor force as the unemployment rate dropped. Also, for each LFPR point, that reflects about 53,600 Hoosiers either in or out of the labor force.<sup>27</sup>

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<sup>26</sup> [LFPR - St. Louis FED](#)

<sup>27</sup> Author’s calculations

Also in April of 2020, the UE3 measure for Indiana was 16.8 percent, one of the higher rates among U.S. states. This implies that for every percentage change in UE3, we get about a 0.186 percent change in labor force participation.<sup>28</sup> This results in about 6,300 Hoosiers leaving the work force in the UE3 rises by a point.

The current labor force in Indiana includes about 3,401,000 Hoosiers. With the UE3 measuring 2.8 percent, this implies 95,000 Hoosiers looking for work currently. It also follows that for each one percent unemployment in Indiana, about 34,000 Hoosiers are looking for work.

Ultimately, this combination effect means that for each change in the unemployment rate, we lose about 40,000 workers from doing jobs in Indiana.

## Conclusions

The last three years has brought about more moving parts in the economy than at any time since the 4Q 2008 period, as we entered the Great Recession. Because of the various moving parts, we created a simulation model that provides stochastic variation in some of the inputs affecting GDP and Employment. We ran the model 1,500 times for three results in the Indiana economy: (1) Effect on UE3, (2) Effect on LFPR, and (3) Effect on GDP. The results of this analysis is shown below in **Table 2**.

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<sup>28</sup> Author's calculations

**Table 2: Simulation Results (N = 1,500) for Changes to Three Variables in the Indiana Economy Expected in 2023**

Monte Carlo Simulation (N = 1500)			
INDIANA 2023 EXPECTATIONS	UE3	LFPR	CHANGE IN GSP
Mean	4.77%	62.32%	0.28%
Median	4.78%	62.32%	0.26%
Min	4.11%	61.50%	-1.46%
Max	5.36%	63.23%	1.88%
Standard Deviation	0.23%	0.53%	0.63%
Employment & Real Output Changes	62,072	57,824	978,952

## OUTLOOK

Thus, it would appear that for 2023, Indiana as a manufacturing leader will feel the pressure of the Federal Reserve tightening cycle, and ultimately sustain a flat or relatively flat trajectory in terms of real output, while confronting a real possibility of losing about 120,000 jobs.