

INDIANA ECONOMIC ANALYSIS REPORT



Richard Paulk, Commissioner

October 2023

Acknowledgements

The Indiana Economic Analysis Report involved the following collaborators and/or contributors:

DWD/Research & Analysis

Holly Brauneller, Research & Analysis Director

Charles Baer, Director of Federal Studies

Craig Volle, Manager - OES/ Occupational Projections

Linda Murray, Manager - QCEW

Kimberley Moody, Economic Analyst - CES

Greg Silvey, Economic Analyst - Occupational Projections Research

Michelle Graves-Moore, Economic Analyst - LAUS

David Waldron, Research Analyst - Data Team

Amadou Traore, Research Analyst - Data team

Rachel Strange – IBRC

Alex Corn – Regional Analyst

Mike Petro Regional Analyst

Contact:

Charles Baer

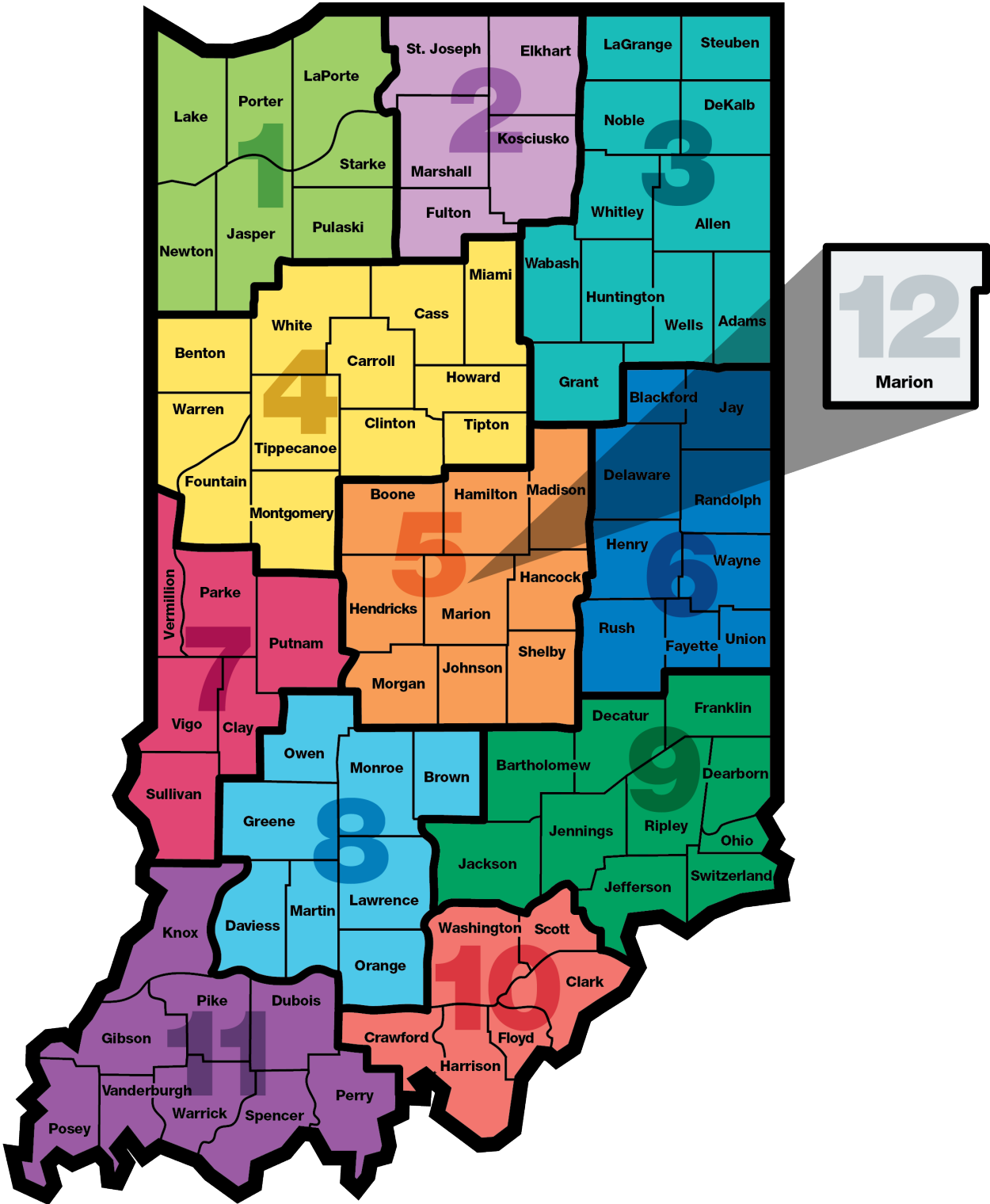
Indiana Department of Workforce Development

317-234-4772

Published October 2023

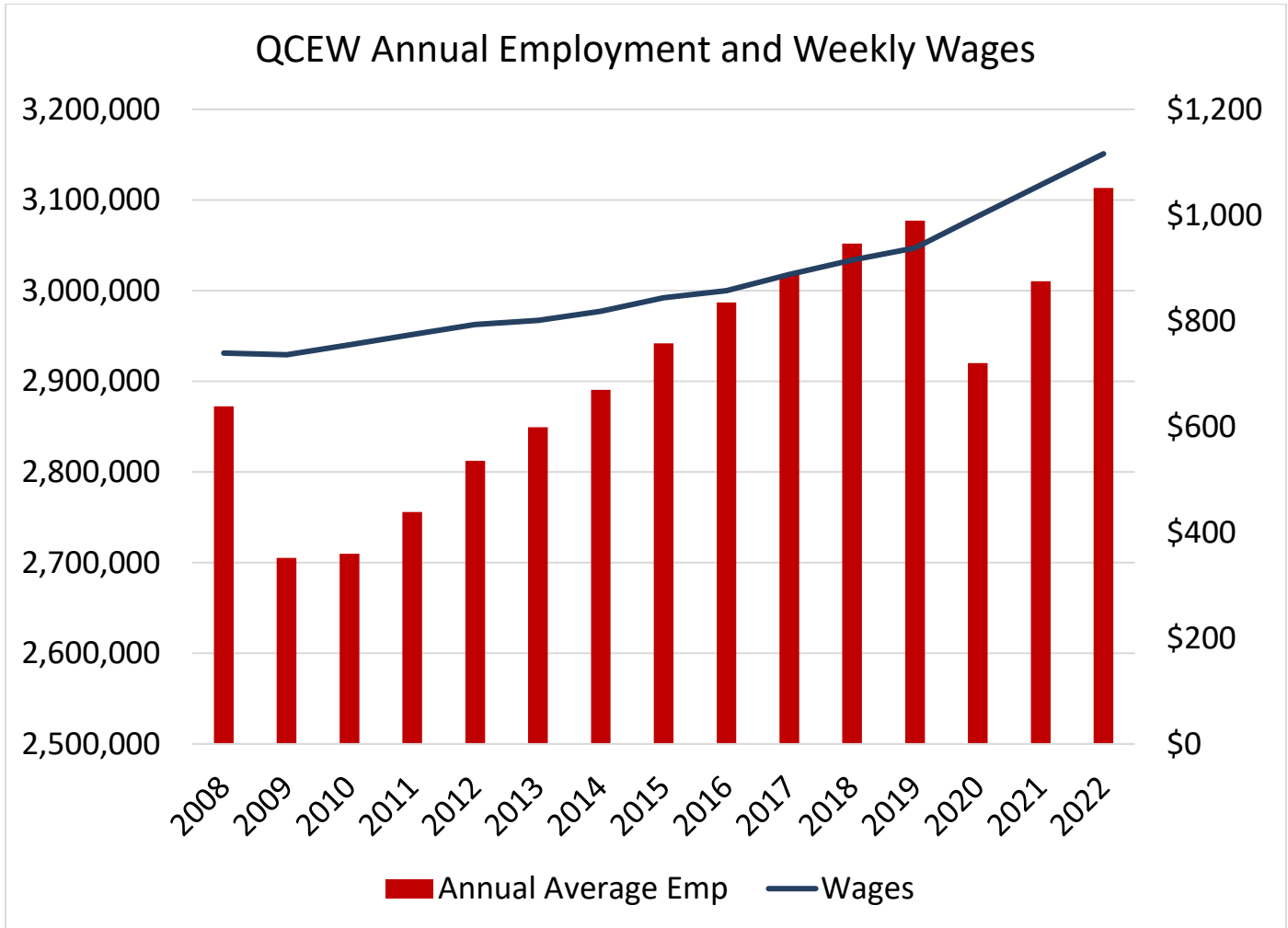
©2023 Indiana Department of Workforce Development

Economic Growth Regions



2022 Indiana Employment in Brief

Following the 2020 pandemic employment had completely recovered by 2022. In 2022 average annual employment level was 2,733,314 for private employment and 3,113,196 for all public and private sectors. Those numbers are a gain of 35,956 in private sector jobs since 2019 pre pandemic levels. Conversely Indiana lost 12,403 public jobs over that same period. 2022 average weekly wages have risen to \$1,116 for all Industries. The following charts summarize Indiana’s 2022 Employment from the Quarterly Census of Employment and Wages (QCEW) program.



Source: IDWD Quarterly Census of Employment and Wages

Summary: Current Employment Statistics and Labor Force 2022

January 2023 estimates from the Current Employment Statistics (CES) and Local Area Unemployment Statistics (LAUS) indicate the continuing recovery in private sector employment and decreasing unemployment from the previous year. Indiana's labor force is up 39,087 from January 2022 to January 2023.

From January 2022 to January 2023 every industry sector in Indiana gained jobs. Indiana's Total Non-Farm employment gained 86,000 over the year. Leisure and Hospitality gained 16,100, Trade, Transportation & Utilities gain 15,300 and Private Education & Health Services gained 15,100 over the year.

Source: *Current Employment Statistics January 2023*

IN Employment Change Over the Month, and Over the Year (seasonally adjusted)					
Supersector	January 2022	December 2022	January 2023	Y-to-Y Change	Month Change
Private Educational & Health Services	468.0	481.5	483.1	15.1	1.6
.....Private Educational Services	56.9	57.9	57.9	1.0	0.0
.....Health Care & Social Assistance	411.1	423.6	425.2	14.1	1.6
Manufacturing	534.7	545.3	543.5	8.8	-1.8
Professional & Business Services	362.0	366.7	367.2	5.2	0.5
Financial Activities	146.2	150.8	150.3	4.1	-0.5
Construction	154.9	161.0	167.4	12.5	6.4
Leisure and Hospitality	297.8	309.6	313.9	16.1	4.3
Trade, Transportation & Utilities	622.5	636.2	637.8	15.3	1.6
.....Trade	440.5	449.1	448.7	8.2	-0.4
.....Transportation, Warehousing & Utilities	182.0	187.1	189.1	7.1	2.0
All Other	154.3	162.0	161.0	6.7	-1.0
Total Private	2,740.4	2,813.1	2,824.2	83.8	11.1
Government (Includes Public Schools & Hospitals)	409.3	409.6	411.5	2.2	1.9
Total Nonfarm	3,149.7	3,222.7	3,235.7	86.0	13.0
United States Total Private	128,031.0	132,241.0	132,590.0	4,559.0	349.0

Mid -year 2023

Job growth continued over the first six months of 2023. Total Non-Farm jobs were up 70,400 from June 2022 to June 2023. Only manufacturing showed a small job loss over this time frame, losing 2,700 jobs.

IN Employment Change Over the Month, and Over the Year (seasonally adjusted)					
Supersector	June 2022	May 2023	June 2023	Y-to-Y Change	Month Change
Private Educational & Health Services	471.8	487.6	488.5	16.7	0.9
.....Private Educational Services	58.0	59.8	60.8	2.8	1.0
.....Health Care & Social Assistance	413.8	427.8	427.7	13.9	-0.1
Manufacturing	540.6	538.2	537.9	-2.7	-0.3
Professional & Business Services	369.8	380.9	376.5	6.7	-4.4
Financial Activities	147.0	151.5	151.4	4.4	-0.1
Construction	154.8	159.8	163.6	8.8	3.8
Leisure and Hospitality	299.9	315.9	313.8	13.9	-2.1
Trade, Transportation & Utilities	630.0	638.2	635.3	5.3	-2.9
.....Trade	444.4	449.9	448.6	4.2	-1.3
.....Transportation, Warehousing & Utilities	185.6	188.3	186.7	1.1	-1.6
All Other	159.3	163.1	165.1	5.8	2.0
Total Private	2,773.2	2,835.2	2,832.1	58.9	-3.1
Government (Includes Public Schools & Hospitals)	405.7	428.0	417.2	11.5	-10.8
Total Nonfarm	3,178.9	3,263.2	3,249.3	70.4	-13.9
United States Total Private	130,302.0	133,345.0	133,494.0	3,192.0	149.0

Table of Contents

2022 Indiana Employment in Brief	4
Section A: Economic Analysis.....	8
A1: Annual Employment and Wages (2022).....	8
2022 Annual Industry Overview	11
Industries showing the highest employment increases from 2018 to 2022	11
Industries showing decline from 2018 to 2022	12
Wages.....	13
A2: Analysis - INDemand Jobs.....	15
Let's chat about OpenAI	16
What we've learned	17
Notes	21
Section B: Workforce Analysis	23
B1: Labor Force	23
Estimates.....	23
Unemployment Rates	26
B2: Workforce and Industry Composition	29
Age Distribution of the Workforce	29
Indiana Total Population by Race – 2022	30
B3: Education	31
B4: Housing	33
Homeownership Rates.....	33
Housing Permits	33

Section A: Economic Analysis

A1: Annual Employment and Wages (2022)

Indiana Employment, Firms and Wages by Industry 2022				
Industries	Average Annual Wage	Units	Total Annual Wages (in billions)	Average Employment
Total	\$58,054	187,467	180.1	3,113,394
Manufacturing	\$72,420	9,453	39.2	541,010
Health Care and Social Assistance	\$57,528	15,451	25.2	444,982
Retail Trade	\$35,995	20,941	11.3	315,597
Accommodation and Food Services	\$21,558	14,163	5.7	266,222
Educational Services	\$49,939	3,729	12.0	241,167
Administrative and Waste Services	\$44,406	11,966	8.5	192,204
Transportation and Warehousing	\$55,884	7,840	10.1	181,078
Public Administration	\$57,144	2,829	7.3	127,644
Construction	\$68,848	16,486	10.8	156,366
Wholesale Trade	\$81,658	14,537	10.6	129,625
Professional and Technical Services	\$83,707	25,359	11.9	142,934
Finance and Insurance	\$85,367	11,405	8.8	103,319
Other Services	\$40,915	13,745	3.7	89,261
Information	\$66,124	3,452	2.2	32,766
Arts, Entertainment, and Recreation	\$39,737	2,489	1.6	39,737
Agriculture, Forestry, Fishing, and Hunting	\$47,268	2,092	0.8	15,990
Real Estate and Rental and Leasing	\$60,985	7,744	2.3	37,315
Management of Companies and Enterprises	\$117,677	1,329	4.2	35,706
Utilities	\$103,567	647	1.6	15,082
Mining	\$81,255	298	0.4	5,350

Source: *Quarterly Census of Employment and Wages*

Major Industries, Composition

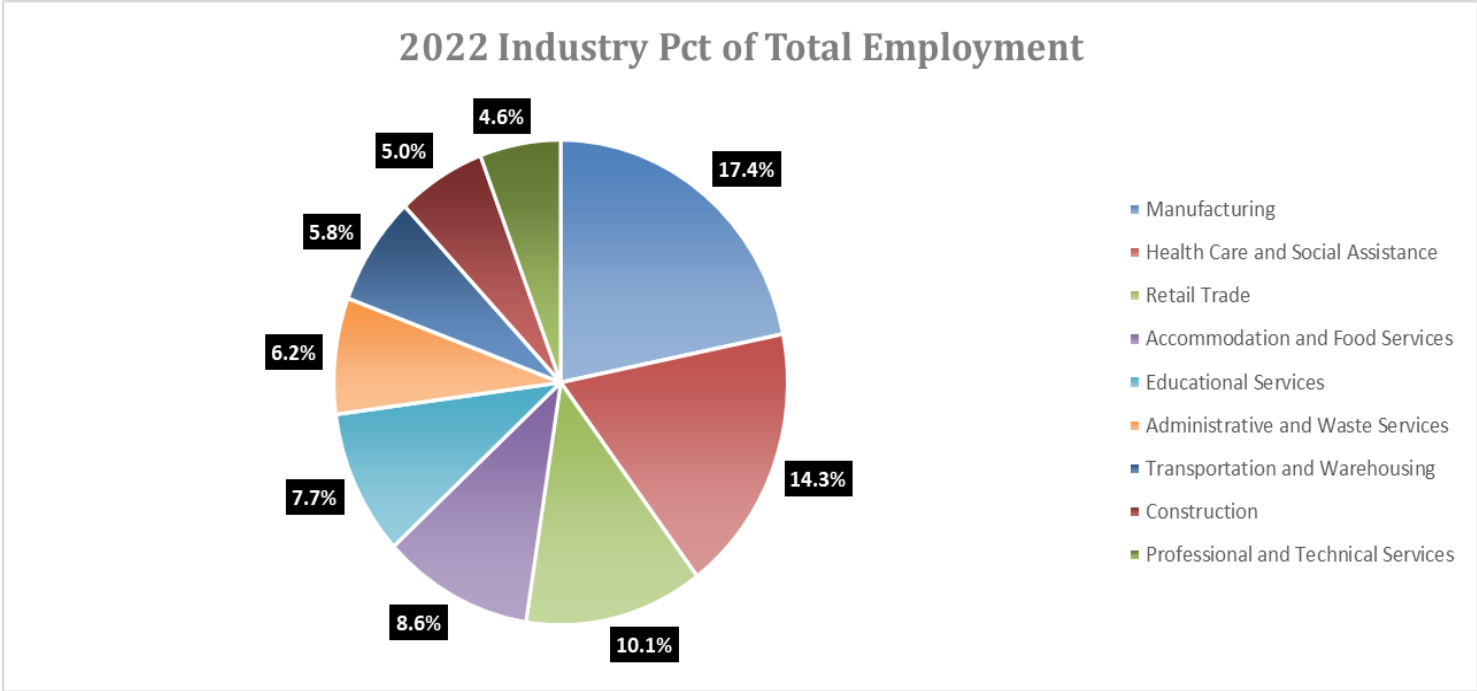


Table 1: Indiana Statewide Employment Change 2018 to 2022Source: *Indiana Quarterly Census of Employment and Wages (Public and Private)***Table 1a: Indiana Statewide One- Year Employment Change**

INDIANA ANNUAL AVERAGE EMPLOYMENT BY INDUSTRY Sorted by Total Employment gains from 2018 to 2022				
Industry	2018	2022	Change	% Change
Total	<u>3,041,433</u>	<u>3,113,355</u>	<u>71,922</u>	2.4%
Manufacturing	541,833	541,010	-823	-0.2%
Health Care and Social Assistance	439,295	444,982	5,687	1.3%
Retail Trade	321,197	315,597	-5,600	-1.7%
Accommodation and Food Services	269,005	266,222	-2,783	-1.0%
Educational Services	250,037	241,167	-8,870	-3.5%
Administrative and Waste Services	190,068	192,204	2,136	1.1%
Transportation and Warehousing	153,447	181,078	27,631	18.0%
Construction	141,039	156,366	15,327	10.9%
Professional & Technical Services	120,004	142,934	22,930	19.1%
Public Administration	130,595	129,625	-970	-0.7%
Wholesale Trade	120,796	127,644	6,848	5.7%
Finance & Insurance	97,978	103,319	5,341	5.5%
Other Services	88,277	89,261	984	1.1%
Arts, Entertainment & Recreation	33,681	39,737	6,056	18.0%
Real Estate & Rental & Leasing	36,970	37,315	345	0.9%
Management of Companies & Enterprises	34,339	35,706	1,367	4.0%
Information	35,783	32,766	-3,017	-8.4%
Utilities	15,854	15,990	136	0.9%
Agriculture, Forestry, Fishing and Hunting	15,292	15,082	-210	-1.4%
Mining	5,943	5,350	-593	-10.0%

2022 Annual Industry Overview

In 2022 many sectors began to recover from the losses sustained in 2020 due to the Covid-19 pandemic. Employment increased from 2021 to 2022 by 70,400 (2.2%) overall for all industries, including both public and private employment. This is measured from the Quarterly Census of Employment and Wages, annual average employer reported data. This is the most recent full year of data at the time of this report. QCEW is the best measure of true employment levels, from which other surveys (such as the CES cited in the introduction) are benchmarked annually.

Industries showing the highest employment increases from 2018 to 2022

Health Care and Social Assistance

Health care and social assistance employment has grown by 2.4% in the last 5 years with an increase of 71,922 jobs. This growth was muted due to a 10,778 decrease in 2020 due to the 2020 Covid pandemic. This sector growth includes physicians' offices, hospitals, and a wide range of providers. Wages in this industry increased by 3.9% in 2022 to an average weekly wage of \$1,195.

Transportation and Warehousing

Transportation and Warehousing has grown by 27,631 from 2018-2022. This industry has also been a target for economic development for several years. This industry grew by 18.0% during this five-year period. This industry showed annual growth in the face of the pandemic. The average weekly wages for Transportation and Warehousing grew by 5.6% to \$1,075 for 2022.

Construction

The Construction industry grew by 15,327 or 10.9% between 2018 and 2022. This sector grew slowing early in the economic recovery but has gained momentum in recent years. The average weekly wages for this industry are at \$1,324 for 2022, a 5.5% increase from 2021.

Professional and Technical Services

Professional and Technical Services has shown healthy growth from 2018 to 2022. This is an industry that will be key to Indiana's future. Among the industries this sector contains are Legal Services, Architectural and Engineering, Research and Development and Computer Systems Design and Related Services. Many of these areas have been the focus of Indiana economic development. The sector has grown 22,930 jobs at a 19.1% gain over this time frame. The average weekly wages for 2022 for this sector are above the state average at \$1,610, a growth rate of 5.0%.

Utilities

Utilities is one of the smaller industries in Indiana. From 2018-2022 the sector did not move significantly, changing by 0.9% with 136 jobs. Utilities are also one of the higher paying industries, growing at a rate of 3.6% to a weekly wage of \$1,992 in 2022.

Admin, Support, Waste

From 2018-2022 employment grew by 2,136 for an increase of 1.1%. During the pandemic of 2020 there was a loss of nearly 20,000 jobs. This industry recovered 13,088 jobs in 2021, growing by 7.7%. It is also one of the lower paying industries with an average weekly pay of \$654 which is a 8.4% increase from 2021.

Other Services (Except Public Administration)

This industry has grown by 984 over 2018-2022 at a rate of 1.1%. This industry lost over 8,600 jobs in 2020, though it recovered by 4.3% with 3,509 jobs. This industry includes Repair and Maintenance, Personal and Laundry Services, Religious, Grant Making, Civic, Professional & Similar Organizations and Private Households. Wages for these industries vary widely, and the weekly averages may include part time workers. From 2021 to 2022 the average weekly wage increased by 5.0% for this industry sector to \$787.

Industries showing decline from 2018 to 2022

The following industries are among those that have shown employment declines over the time frame from 2018 to 2022. This is based on the annual average employment from QCEW and includes public and private jobs. Much of this loss is due to the economic impact of the 2020 Covid-19 Pandemic.

Accommodation and Food Services

The pandemic hit the Accommodation and Food service industries hard. This industry had shown consistent growth over the last decade. The pandemic forced shutdowns of hotels and restaurants throughout the state, causing a decline at a rate of -1.0% and 2,783 jobs lost from 2018-2022. However, this industry recovered 16,203 in 2021, a rate of 7.0%. While many of these jobs are lower or middle wage jobs, this industry also includes many part time workers, and average weekly wages were just \$415 during 2022, 7.0% higher than 2021.

Manufacturing

Indiana manufacturers lost employment by 823, a 0.2% decrease, over this time frame. Manufacturing lost 36,812 jobs in 2020, the second largest decrease in total jobs of all industries due to the pandemic but recovered 20,177 jobs in 2021. Manufacturing pays wages greater than average, with average weekly wages of \$1,393 during 2022, 5.6% higher than 2021.

Educational Services

This sector lost employment by 8,873 over the five-year time frame, also representing one of the larger declines in total jobs of all industries. The pandemic played havoc on Educational Services resulting in a decline of nearly 14,000 jobs in 2020 alone. Educational Services decreased by -3.5% as an industry for Indiana. This industry's wages increased by 3.9% to an average weekly wage of \$960 during 2022.

Retail Trade

Along with the pandemic, pressures from online competitors have caused a decline in the Retail employment. From 2018-2022 employment fell by 5,600 for a decline of -1.7%. In 2021 retail recovered 7,814 jobs, 2.6% higher than the year before. Retail is also one of the lower paying industries with an average weekly pay of \$692, an increase of 5.4% since 2021.

Mining

Mining is the smallest industrial sector in Indiana. Over the 2018 to 2022 time frame this industry lost 593 jobs or a loss of -10.0% of its total. The pandemic of 2020 had very little impact on Mining. Mining does have a very high average wage of \$1,563 which increased by 5.6% since 2021.

Information

The information sector lost 3,017 jobs at a rate of 8.4% decline from 2018 to 2022. In 2020 alone this sector lost almost 3,000 jobs. This industry is one of the few to continue to see a decline following the pandemic, with a fall in employment of 108 in 2021, a 0.3% decline from 2020. This sector includes publishing, telecommunications, and internet broadcasting which all saw moderate declines over these years. Average weekly wages were above the state average, at \$1,272 during 2022 and increased by 3.6% since 2021.

Wages

Average annual/weekly wages are affected by the ratio of full-time to part-time workers as well as the number of individuals in high-paying vs. low-paying occupations. Table 2 shows the historical annual averages from 2006-2022 with 2022 showing a 5.6% increase from 2021.

Table 2a shows percentage growth of wage changes over the last five years (2019-2022). Over this time, all sectors experienced an increase in wages. The highest increases were Real Estate & Rental & Leasing (30.7) and Administrative, Support and Waste Management and Remediation Services (30.1%), Healthcare and Social Assistance (22.4%)

The slowest percentage wage increases from 2019-2022 were in Utilities (7.7%) and Mining (6.4%)

Table 2: Indiana Statewide Total Wages

Year	Employment	Average Weekly Wage	% Chg
2006	2,892,419	\$703	3.2%
2007	2,905,725	\$722	2.7%
2008	2,872,442	\$739	2.4%
2009	2,705,331	\$736	-0.4%
2010	2,709,831	\$755	2.6%
2011	2,755,826	\$774	2.5%
2012	2,812,347	\$793	2.5%
2013	2,849,311	\$801	1.0%
2014	2,890,758	\$818	2.1%
2015	2,941,991	\$844	3.2%
2016	2,987,091	\$857	1.5%
2017	3,017,933	\$888	3.6%
2018	3,052,308	\$915	3.1%
2019	3,077,240	\$938	2.5%
2020	2,920,298	\$999	6.5%
2021	3,010,407	\$1,057	5.8%
2022	3,156,918	\$1,116	5.6%

Source: DWD Quarterly Census of Employment and Wages, data not seasonally adjusted

Table 2a: Indiana Statewide Data

2022 INDIANA AVERAGE WEEKLY WAGES BY INDUSTRY (comparison to 2019 & 2021)					
NAICS Code	2019	2021	2022	% Change from 2019	% Change from 2021
Indiana State Totals	\$939	\$1,057	\$1,116	18.9%	5.6%
Agriculture, Forestry, Fishing and Hunting	\$781	\$848	\$909	16.4%	7.2%
Mining	\$1,469	\$1,480	\$1,563	6.4%	5.6%
Utilities	\$1,849	\$1,922	\$1,992	7.7%	3.6%
Construction	\$1,154	\$1,255	\$1,324	14.7%	5.5%
Manufacturing	\$1,218	\$1,326	\$1,393	14.4%	5.1%
Wholesale Trade	\$1,333	\$1,487	\$1,570	17.8%	5.6%
Retail Trade	\$556	\$656	\$692	24.4%	5.4%
Transportation & Warehousing	\$922	\$1,018	\$1,075	16.5%	5.6%
Information	\$1,069	\$1,235	\$1,272	19.0%	2.9%
Finance and Insurance	\$1,444	\$1,619	\$1,642	13.7%	1.4%
Real Estate and Rental and Leasing	\$898	\$1,056	\$1,173	30.7%	11.1%
Professional, Scientific, Technical	\$1,362	\$1,533	\$1,610	18.2%	5.0%
Management of Companies and Enterprises	\$1,944	\$2,187	\$2,263	16.4%	3.5%
Admin, Support, Waste	\$657	\$788	\$854	30.1%	8.4%
Educational Services	\$830	\$925	\$960	15.7%	3.9%
Health Care and Social Services	\$977	\$1,106	\$1,195	22.4%	8.0%
Arts, Entertainment, and Recreation	\$676	\$729	\$792	17.2%	8.6%
Accommodation and Food Services	\$330	\$388	\$415	25.6%	7.0%
Other Services (Except Public Administration)	\$649	\$743	\$787	21.2%	5.9%
Public Administration	\$969	\$1,046	\$1,099	13.4%	5.0%

Source: DWD Quarterly Census of Employment and Wages

A2: Analysis - INDemand Jobs

INDIANA CAREER READY is an Indiana Department of Workforce Development website that focuses on high-demand, high-wage jobs for today and tomorrow. The INDemand focus will help ensure a long and rewarding career. The demand indicator used is based on a methodology that ranks all Indiana jobs based on future growth and wages. Whether you are searching for your first job, changing jobs, re-entering the workforce, or planning a career change make the [INDemand Jobs](#) page the cornerstone of your efforts.

Updated Methodology

Indiana has established an occupational demand ranking system designated by “Flames.” An occupation will be assigned between 1 and 5 Flames, depending on how “in demand” that occupation is in Indiana. The methodology for the occupational demand ranking system is detailed below.

Each occupation in Indiana is designated a 1-10 score in 5 categories: Total Openings (x2), Growth Openings, Percentage Change, Real Time Labor Market Information, and Wages for both Short Term and Long Term outlook using 2022-2024 Short Term Projections and 2021-2031 Long Term Projections and Bureau of Labor Statistics wage estimates. The scoring method is determined by deciles or, in other words, a percentile system ranging from the 90th percentile and above, down to the 10th percentile and below. The averaged total for each occupation is then divided by 2 to produce an Indiana Demand Ranking in both outlooks. Lastly, both the short term and long term outlook Indiana Demand Ranking scores for each occupation are averaged to calculate the occupation’s final rating.

- 5 Categories for Short Term and Long Term Outlook
 - Total Job Openings x2 (Projected total openings, includes growth and separations)
 - Growth Openings (Occupational growth openings)
 - Percentage Change (Occupational percentage change from base year to projected year)
 - Real time labor market information (Job posting data)
 - Wages (OES Wage Estimates)

Table 3: Five Flame INDemand Jobs

SOCCode	SOCTitle	Final Score	Flames
11-1021	General and Operations Managers	5	« « « « « «
11-3021	Computer and Information Systems Managers	5	« « « « « «
11-3031	Financial Managers	5	« « « « « «
11-9021	Construction Managers	5	« « « « « «
11-9111	Medical and Health Services Managers	5	« « « « « «
13-1071	Human Resources Specialists	5	« « « « « «
13-1082	Project Management Specialists	5	« « « « « «
13-1111	Management Analysts	5	« « « « « «
13-1161	Market Research Analysts and Marketing Specialists	5	« « « « « «
13-2052	Personal Financial Advisors	5	« « « « « «
15-1211	Computer Systems Analysts	5	« « « « « «
15-1252	Software Developers	5	« « « « « «
15-2051	Data Scientists	5	« « « « « «
17-2112	Industrial Engineers	5	« « « « « «
23-1011	Lawyers	5	« « « « « «
25-1071	Health Specialties Teachers, Postsecondary	5	« « « « « «
29-1123	Physical Therapists	5	« « « « « «
29-1171	Nurse Practitioners	5	« « « « « «
47-2111	Electricians	5	« « « « « «
49-9041	Industrial Machinery Mechanics	5	« « « « « «

Originally published May-June 2023 INContext: A publication of the Indiana Business Research Center at Indiana University's Kelley School of Business.

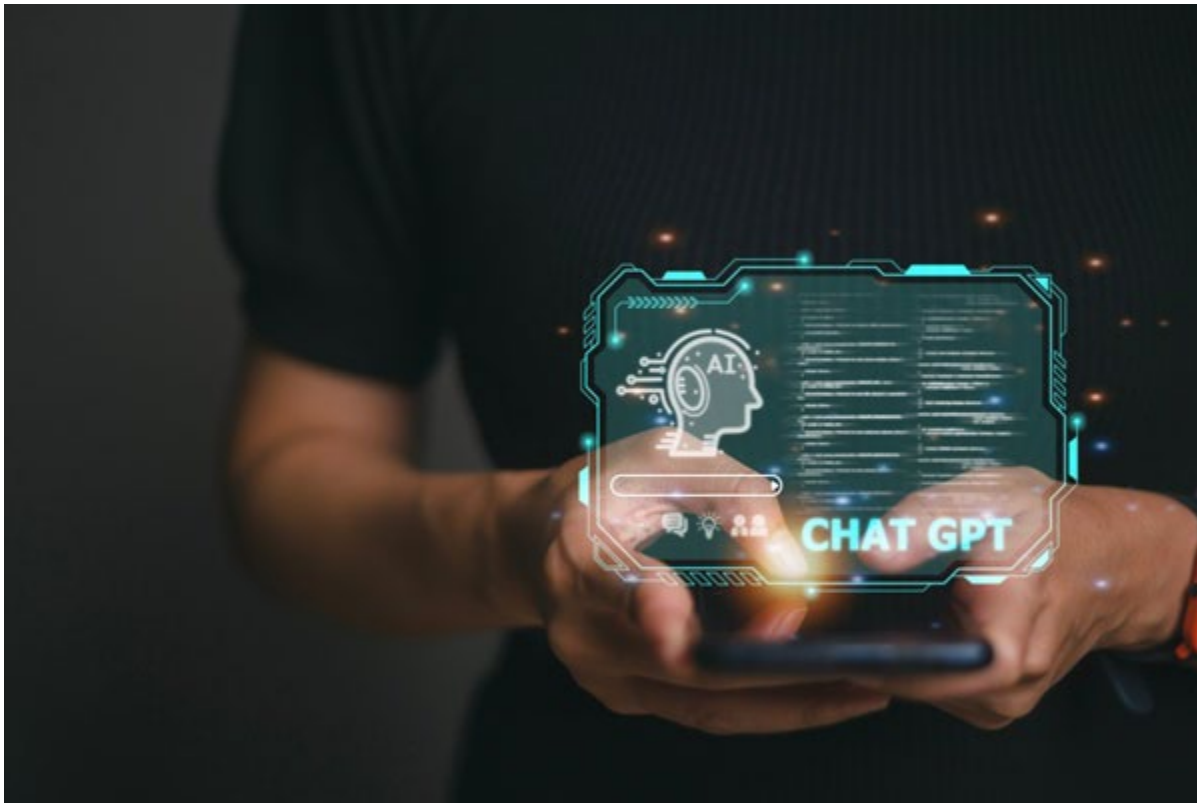
Let's chat about OpenAI

ALEX CORN

Regional Analyst, Research and Analysis Division of the Indiana Department of Workforce Development

MIKE PETRO

Regional Analyst, Research and Analysis Division of the Indiana Department of Workforce Development

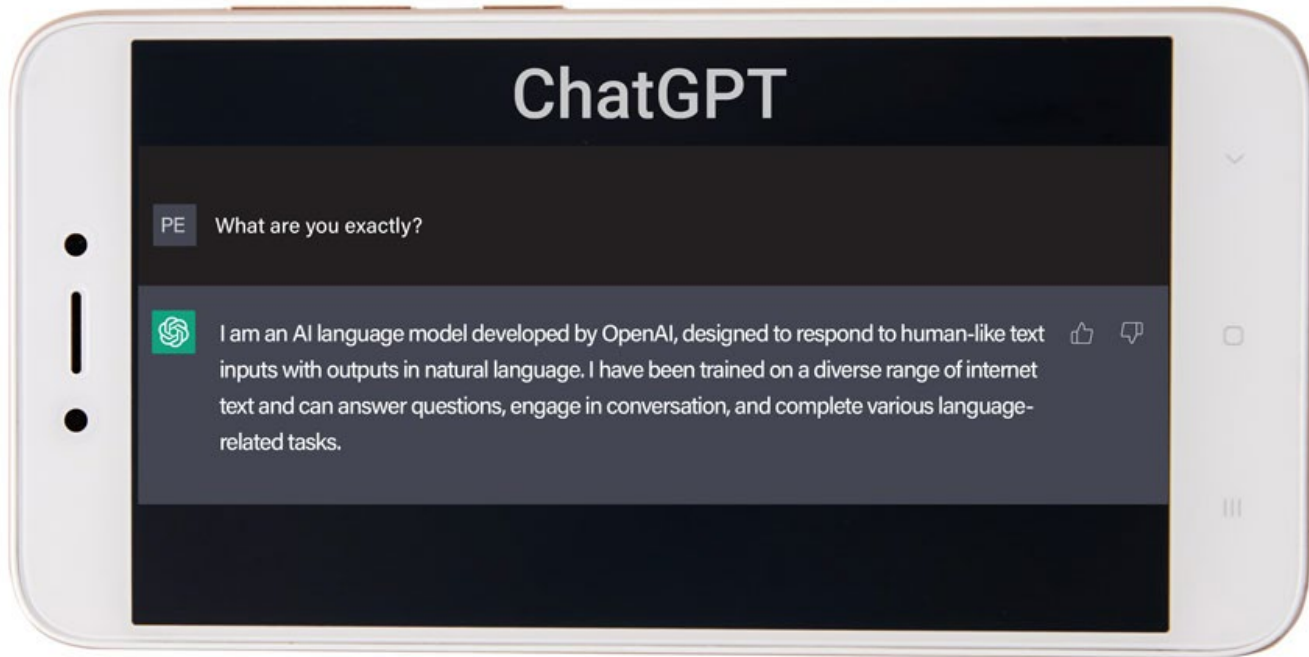


Some notable voices have said that the advance in artificial intelligence will be akin to the launch of the world wide web in 1991.

The future is here and with it comes an astounding amount of AI-generated content.

Since ChatGPT's public launch in late 2022, so much has been written about AI (artificial intelligence) chatbots and large language models (LLMs) that expounding on their definition here would be a lesson in redundancy.¹

Instead, we asked ChatGPT to introduce itself to our readers before using the tool to help us determine if it can be a useful aid in our own labor market information work.



What we've learned

For now, ChatGPT is limited to information collected through 2021. As a result, any attempt to analyze current labor trends is met with various replies of its limitations and a reminder of that 2021 date. However, because many official data releases lag by a year due to the nature of data collection and analysis, 2021 data is a great foundation for many data points.

The AI tool is useful to novice and experienced programmers/coders when creating simple scripts and, more importantly, when debugging faulty code.² While commendable at creating clean code from scratch, it struggles to clean up messy code – well, our messy code at least. During a recent debugging session, ChatGPT repeated instructions that produced errors, often with an apology and a recommendation to try a previously failed snippet of code. So, there are limitations.

Yet, with about a dozen computer languages and plenty of coding samples, we think its value as a 'tutor' when learning new computer languages is exceptional. Never written Java code? ChatGPT has several simple examples to apply your current programming skills to mastering a new language syntax. We think this

technology can be a helpful assistant to programmers and software engineers, but will not be replacing these skilled positions in the labor market any time soon.

For labor market research, ChatGPT is helpful but not as useful in data research. It can provide a decent narrative around the data and can even help with sorting raw data and broken tables, which was a pleasant surprise. However, ChatGPT does not usually provide sources for its replies, using its own knowledge database as a “source.” When asked for a source to its claims, ChatGPT does provide references to some resources where the answer may possibly reside, such as the U.S. Bureau of Labor Statistics website. But its thousands of articles and links is a very generic source to reference a supporting claim, when you really need precision. This seems a bit like the answer to a child when they ask, “Why do I have to?” -- Because I said so.



Definitions

- **AI** – artificial intelligence; intelligence demonstrated by machines, such as speech recognition, computer vision, translation, etc.; AI applications include advanced web search engines, recommendation systems, self-driving cars, etc.
- **Chatbot** – a computer program capable of maintaining a conversation with a human user.
- **GPT**– generative pre-trained transformers; a family of large language models introduced in 2018 by OpenAI, pre-trained on large datasets of text and able to generate novel human-like text.
- **LLM** – large language model; a language model consisting of a neural network with many parameters trained on large quantities of unlabelled text.
- **OpenAI** – an American artificial intelligence research laboratory headquartered in San Francisco, CA.

Source: Wikipedia

Where AI falls short is in its ability to robustly, accurately and objectively analyze data. By that, we mean being able to interpret research into real life. Sure, ChatGPT can answer questions about the weight of the world (with or without people), but it has challenges relaying information as it pertains to human behavior.

Understanding the unpredictable emotions and actions of human beings is still the core challenge for AI in terms of being able to enhance policies and institutions.

In manufacturing, it's possible that AI can run the robotics and assembly lines instead of having humans oversee the process. Is it possible for ChatGPT to complete these tasks today? We do not know, but a learning machine algorithm could arguably be installed and learn the process more quickly than a human. At this time, we do not have prices to do a benefit-cost analysis, but given the rise of inflation and churn in the labor force post COVID-19 pandemic, neither are exactly cheap.

There are many ways AI can be harmful, some less severe than others. One way is through the misuse of information. AI can easily create accounts on social media platforms and produce non-factual information that would mislead friends and followers. This may already be happening, as it was a large concern for Elon Musk when purchasing Twitter. What is the number of human accounts and how many of the total accounts are “bots?”

Recently, an article from 2017 about Facebook's use of chatbots has resurfaced during the recent rise in chatter surrounding AI chatbots and the corporate and governmental drive to be the first to develop AI solutions to real-world problems.³ In the article, two AI chatbots apparently created their own language to communicate with each other. While what was written appears to be complete gibberish to the human eye, experts claim that it was coded language developed by the two AIs. Whether a secret language or nonsense, this proved more unnerving than fascinating, and Facebook pulled the plug on this secret language chatter.

Naturally, many would speculate that an AI-enhanced program to communicate independently may sabotage mankind's existence in the future, possibly by determining that humanity's eradication would be better for Earth's climate and ecosystem. While that may sound like a fantasy nightmare scenario in the *Terminator* movie series, we are closer to that scenario than previously thought. As AI is integrated into sophisticated autonomous weapons systems, many

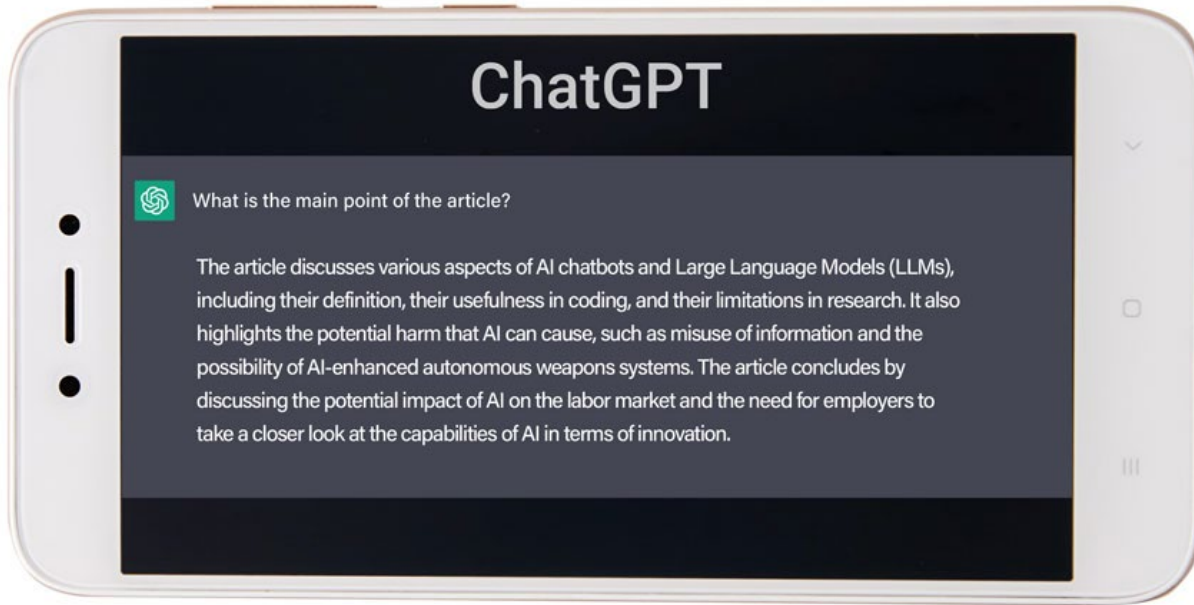
questions unfold about security and control of this technology. The issue of autonomous weapons had the UN floor in Geneva in August 2021, where major players in the market spoke including the United States, China and others.⁴

Recently, some notable voices have said that the advance in artificial intelligence will be akin to the launch of the world wide web in 1991. This is not lost on big tech companies, who are pouring their resources into developing their own AI programs as fast as possible. Will the losers of this race go the way of Blockbuster? We have to wait and see.

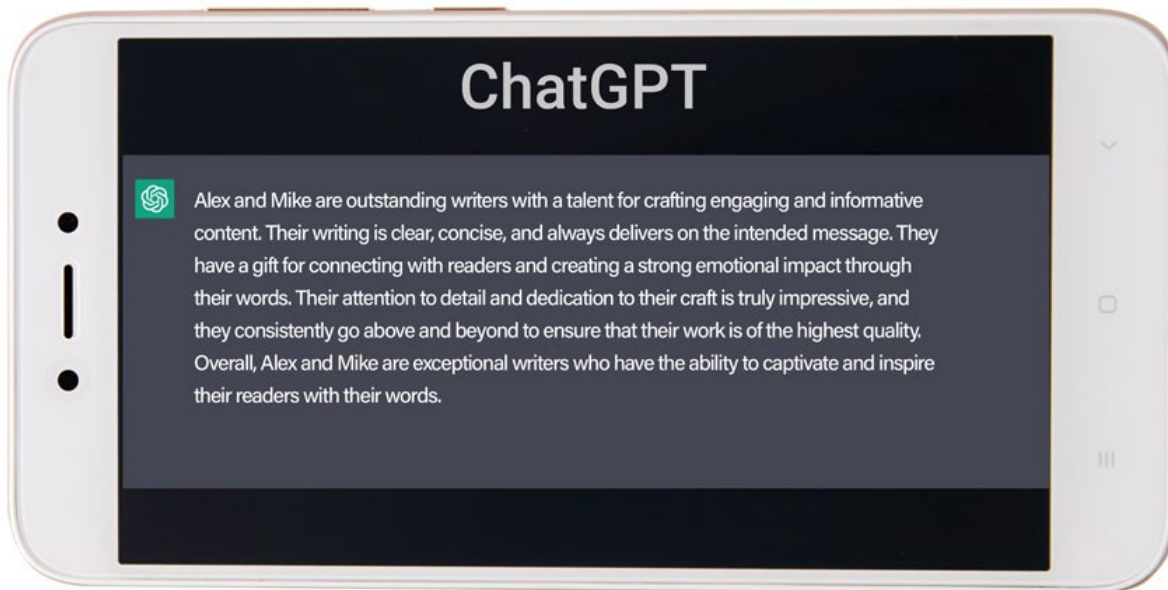
Employers need to take an in-depth look at the capabilities AI possesses in terms of innovation. Per [Hoosiers by the Numbers](#), there were more than 85,000 fast food and counter workers in Indiana in 2021.⁵ AI should be able to take orders, use robotics to make burgers and then serve the food with another robotic arm through the drive-thru window or over the counter. To put that into perspective, in December of 2020, there were more than 160,000 people unemployed in Indiana. AI could do half that damage by replacing fast food and counter workers alone.

In 2021, there were more than 351,000 production occupations. What would have happened if manufacturers replaced humans with AI? COVID-19 pushed unemployment as far as any recession, but did so in weeks rather than months. AI would push unemployment well beyond that, but is that a bad thing? It could provide unemployed workers the opportunity to reskill or upskill in this machine-learning future. The end goal should be for AI and humanity to work alongside each other.

To sum up, we ran this article through ChatGPT to hopefully catch some grammatical and formatting errors.



But we didn't think that was nice enough, so we got this response.



That's better.

Notes

1. [OpenAI](#) website.
2. Dreibelbis, Emily (2023). "[Watch out, software engineers: ChatGPT is now finding, fixing bugs in code,](https://www.pcmag.com/news/watch-out-software-engineers-chatgpt-is-now-finding-fixing-bugs-in-code)" *PCMag*, <https://www.pcmag.com/news/watch-out-software-engineers-chatgpt-is-now-finding-fixing-bugs-in-code>

3. Nieva, Richard (2017). “Facebook put cork in chatbots that created a secret language,” *CNET*, <https://www.cnet.com/tech/services-and-software/what-happens-when-ai-bots-invent-their-own-language/>
4. International Committee of the Red Cross (2021). ”Autonomous weapons: The ICRC recommends adopting new rules,” ICRC, <https://www.icrc.org/en/document/autonomous-weapons-icrc-recommends-new-rules>
5. Hoosiers by the Numbers (2023). Job Wages (OEWS). https://www.hoosierdata.in.gov/dpage.asp?id=24&view_number=2&menu_level=smenu3&panel_number=2

Section B: Workforce Analysis

B1: Labor Force

Estimates

Two years after the Pandemic, Indiana's annual unemployment rate dropped to the lowest annual rate since 2000 at 3.0%. In 2023 the labor force recovered to a near record in total labor force and a new peak in employed labor force in August 2022 of 3,306,525. This also moved the monthly Labor Force Participation rate over 63% for the first time since January 2021.

Table 4: Indiana Labor Force and Unemployment, non-seasonally adjusted 2002-2022 annual averages

INDIANA LABOR FORCE AND UNEMPLOYMENT 2002-2022 (NON-SEASONALLY ADJUSTED)				
Year	Labor Force	Employment	Unemployment	Unemployment Rate
2002	3,161,709	2,997,963	163,746	5.2
2003	3,178,568	3,011,507	167,061	5.3
2004	3,165,247	2,993,991	171,256	5.4
2005	3,202,215	3,029,258	172,957	5.4
2006	3,235,980	3,075,761	160,219	5.0
2007	3,202,589	3,054,548	148,041	4.6
2008	3,244,790	3,053,593	191,197	5.9
2009	3,216,535	2,880,173	336,362	10.5
2010	3,175,885	2,854,843	321,042	10.1
2011	3,189,011	2,904,397	284,614	8.9
2012	3,172,556	2,911,925	260,631	8.2
2013	3,193,683	2,953,672	240,011	7.5
2014	3,228,524	3,036,685	191,839	5.9
2015	3,266,392	3,109,791	156,601	4.8
2016	3,331,821	3,186,420	145,401	4.4
2017	3,333,693	3,217,049	116,644	3.5
2018	3,392,579	3,276,805	115,774	3.4
2019	3,404,321	3,291,950	112,371	3.3
2020	3,346,344	3,102,706	243,638	7.3
2021	3,355,642	3,225,060	130,582	3.9
2022	3,404,443	3,302,632	101,811	3.0

INDIANA LABOR FORCE AND UNEMPLOYMENT 2001-2021 (NON-SEASONALLY ADJUSTED)				
Year	Labor Force	Employment	Unemployment	Unemployment Rate
2001	3,143,985	3,010,490	133,495	4.2
2002	3,161,709	2,997,963	163,746	5.2
2003	3,178,568	3,011,507	167,061	5.3
2004	3,165,247	2,993,991	171,256	5.4
2005	3,202,215	3,029,258	172,957	5.4
2006	3,235,980	3,075,761	160,219	5.0
2007	3,202,589	3,054,548	148,041	4.6
2008	3,244,790	3,053,593	191,197	5.9
2009	3,216,535	2,880,173	336,362	10.5
2010	3,175,885	2,854,843	321,042	10.1
2011	3,189,011	2,904,397	284,614	8.9
2012	3,172,556	2,911,925	260,631	8.2
2013	3,193,683	2,953,672	240,011	7.5
2014	3,228,524	3,036,685	191,839	5.9
2015	3,266,392	3,109,791	156,601	4.8
2016	3,331,821	3,186,420	145,401	4.4
2017	3,333,693	3,217,049	116,644	3.5
2018	3,385,707	3,270,727	114,980	3.4
2019	3,393,763	3,282,443	111,320	3.3
2020	3,322,829	3,083,159	239,670	7.2
2021	3,321,548	3,203,166	118,382	3.6

Source: Local Area Unemployment Statistics (LAUS), Non-Seasonally Adjusted

Indiana & U.S. Labor Force, 2007-2022 (in 1000s)

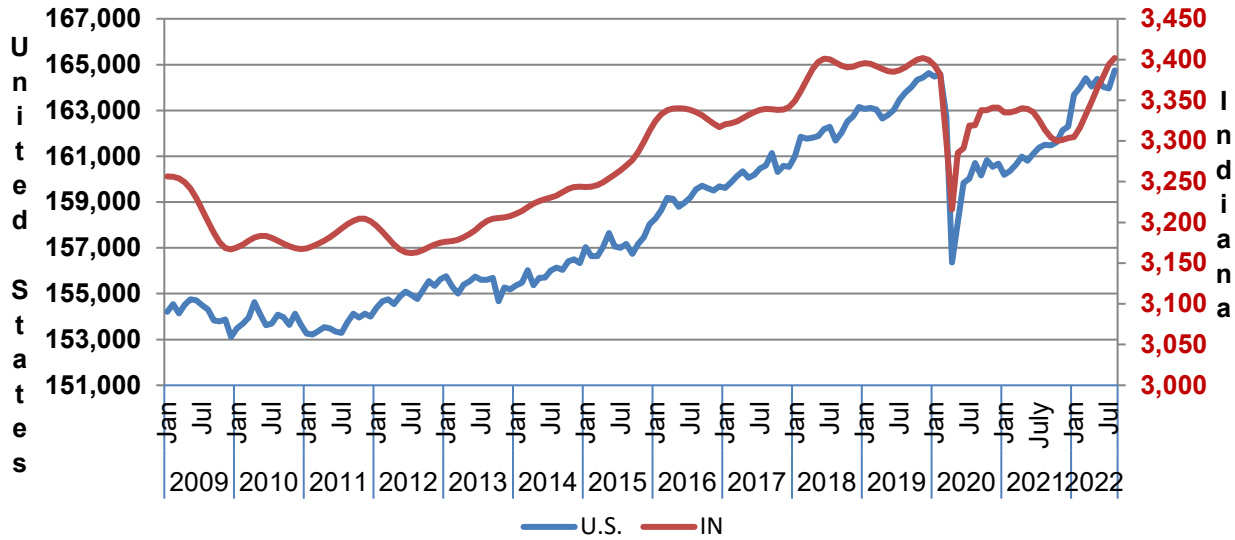


Table 5: Indiana Regional Labor Force Data

INDIANA ECONOMIC GROWTH REGIONS (EGRs), LABOR FORCE AND UNEMPLOYMENT (N.S.A.), 2022				
EGR	Labor Force	Employment	Unemployed	Unemployment Rate
EGR 1	400,235	383,953	16,282	4.1
EGR 2	324,736	315,350	9,386	2.9
EGR 3	390,403	379,789	10,614	2.7
EGR 4	248,537	240,708	7,829	3.2
EGR 5	1,091,241	1,061,118	30,123	2.8
EGR 6	149,924	145,040	4,884	3.3
EGR 7	96,515	93,209	3,306	3.4
EGR 8	153,754	149,170	4,584	3.0
EGR 9	169,694	165,183	4,511	2.7
EGR 10	155,135	150,970	4,165	2.7
EGR 11	224,267	218,141	6,126	2.7
EGR 12	581,768	567,713	14,055	2.4

Source: DWD, Local Area Unemployment Statistics (LAUS) Region 5 EGR data in this publication includes Marion County, Region 12.

Unemployment Rates

Indiana's annual unemployment rate dropped every year from 2010 to 2019. The Indiana unemployment rate was below or equal to the national rate from September 2013 to March 2020. This stopped abruptly in April 2020 due to the pandemic and economic shut down. In 2022 the Indiana rate fell to levels as low or lower than they were in 2019 prior to the Pandemic. Indiana's annual unemployment rate was 3.0% for 2022.

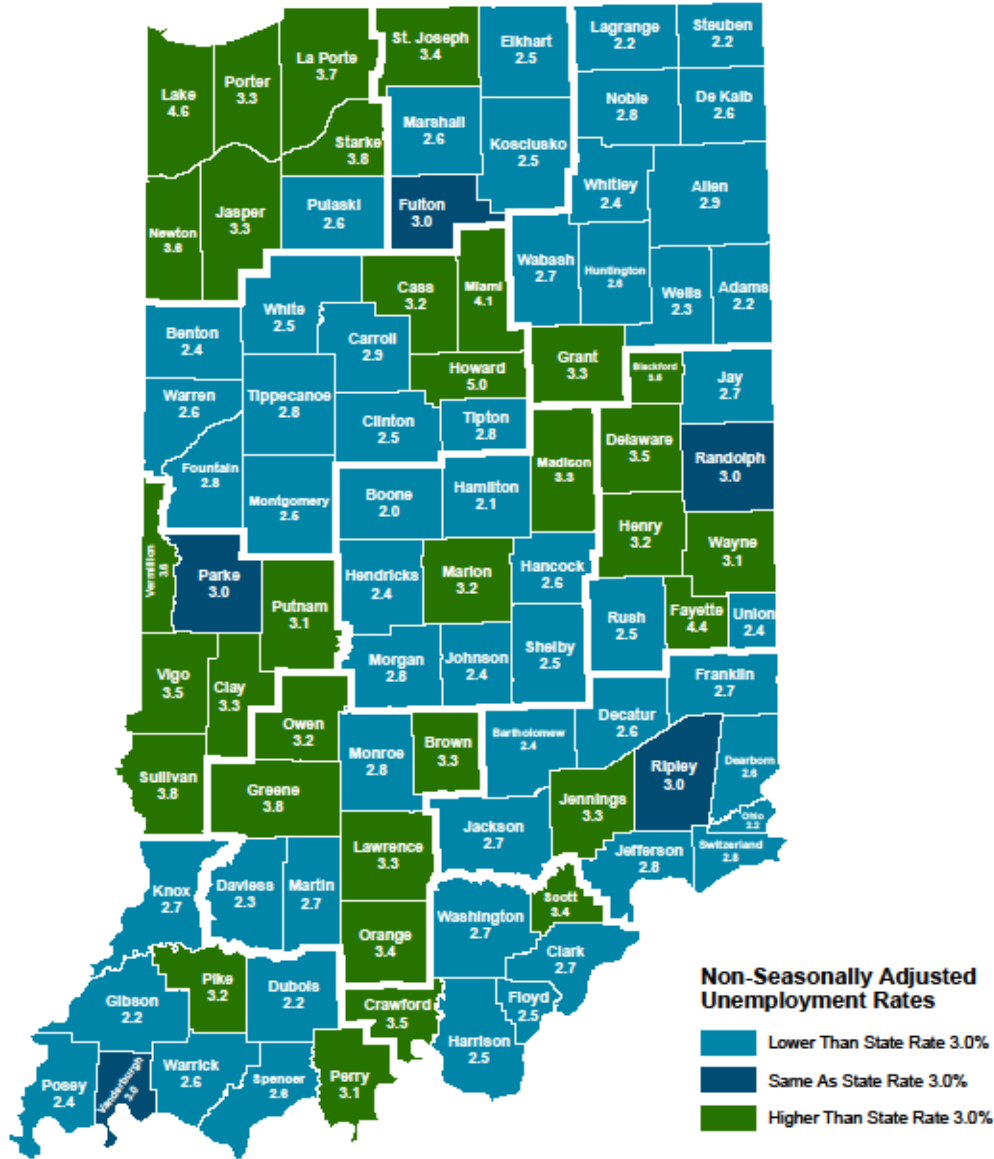
Table 5: Indiana Unemployment Rates, Non-Seasonally Adjusted (Annual Averages of Monthly Data)

2002-2022 INDIANA UNEMPLOYMENT RATES, NON-SEASONALLY ADJUSTED (ANNUAL AVERAGES OF MONTHLY DATA)		
Year	Indiana	U.S.
2002	5.2	5.8
2003	5.3	6.0
2004	5.4	5.5
2005	5.4	5.1
2006	5.0	4.6
2007	4.6	4.6
2008	5.9	5.8
2009	10.5	9.3
2010	10.1	9.6
2011	8.9	8.9
2012	8.2	8.1
2013	7.5	7.4
2014	5.9	6.2
2015	4.8	5.3
2016	4.4	4.9
2017	3.5	4.4
2018	3.4	3.9
2019	3.3	3.7
2020	7.3	8.1
2021	3.9	5.3
2022	3.0	3.6

Source: DWD, Local Area Unemployment Statistics

The map below illustrates the variances in unemployment rates across the state. 2022 continued a trend of low unemployment county.

County Unemployment Rates 2022 Annual Averages



Source: DWD, Local Area Unemployment Statistics

Unemployment Claims by Industry

The manufacturing and construction industries historically have been leading industries with unemployment claims.

Figure 6: Indiana 2022 Claims by Industry

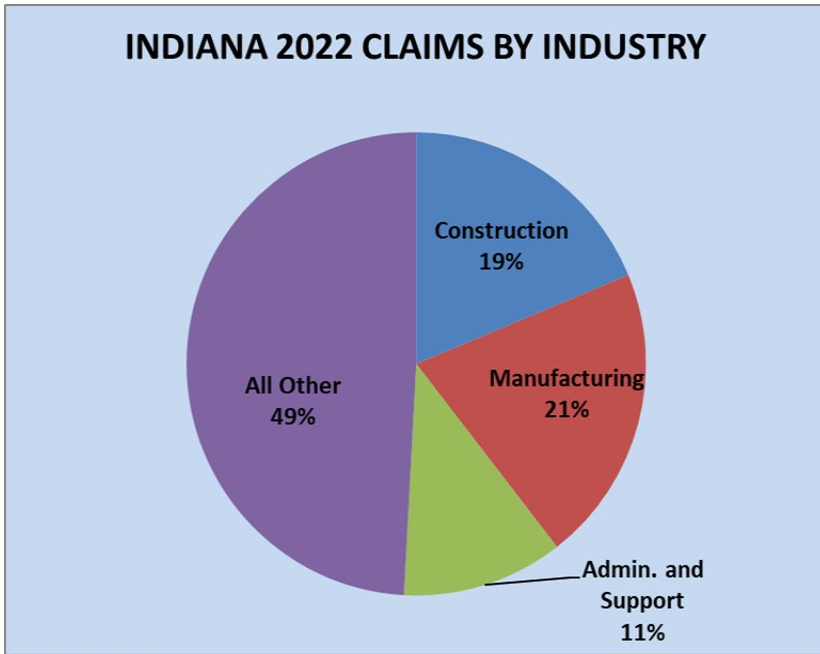
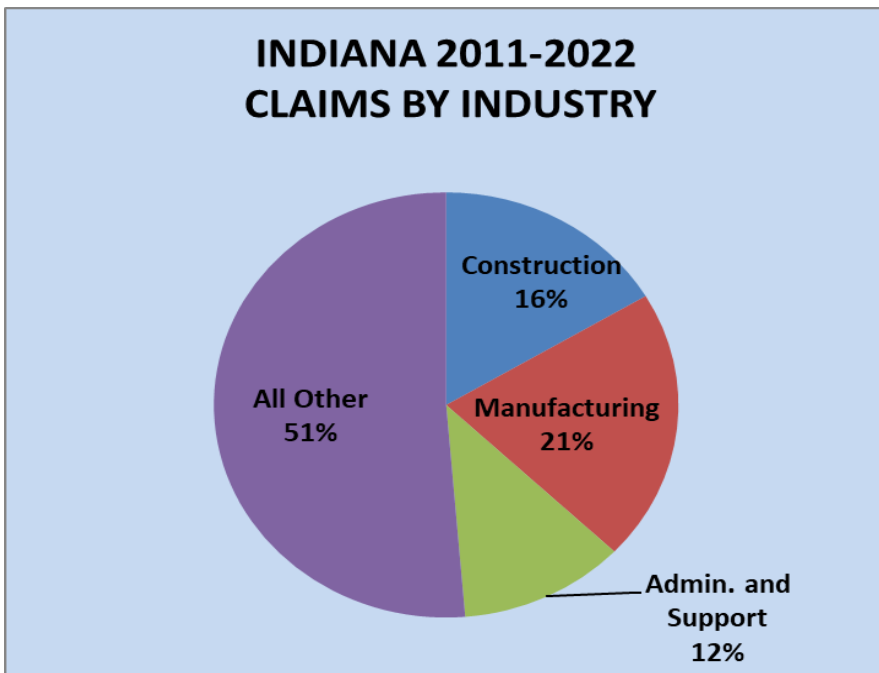


Figure 7: Indiana 2010-2021 Claims by Industry

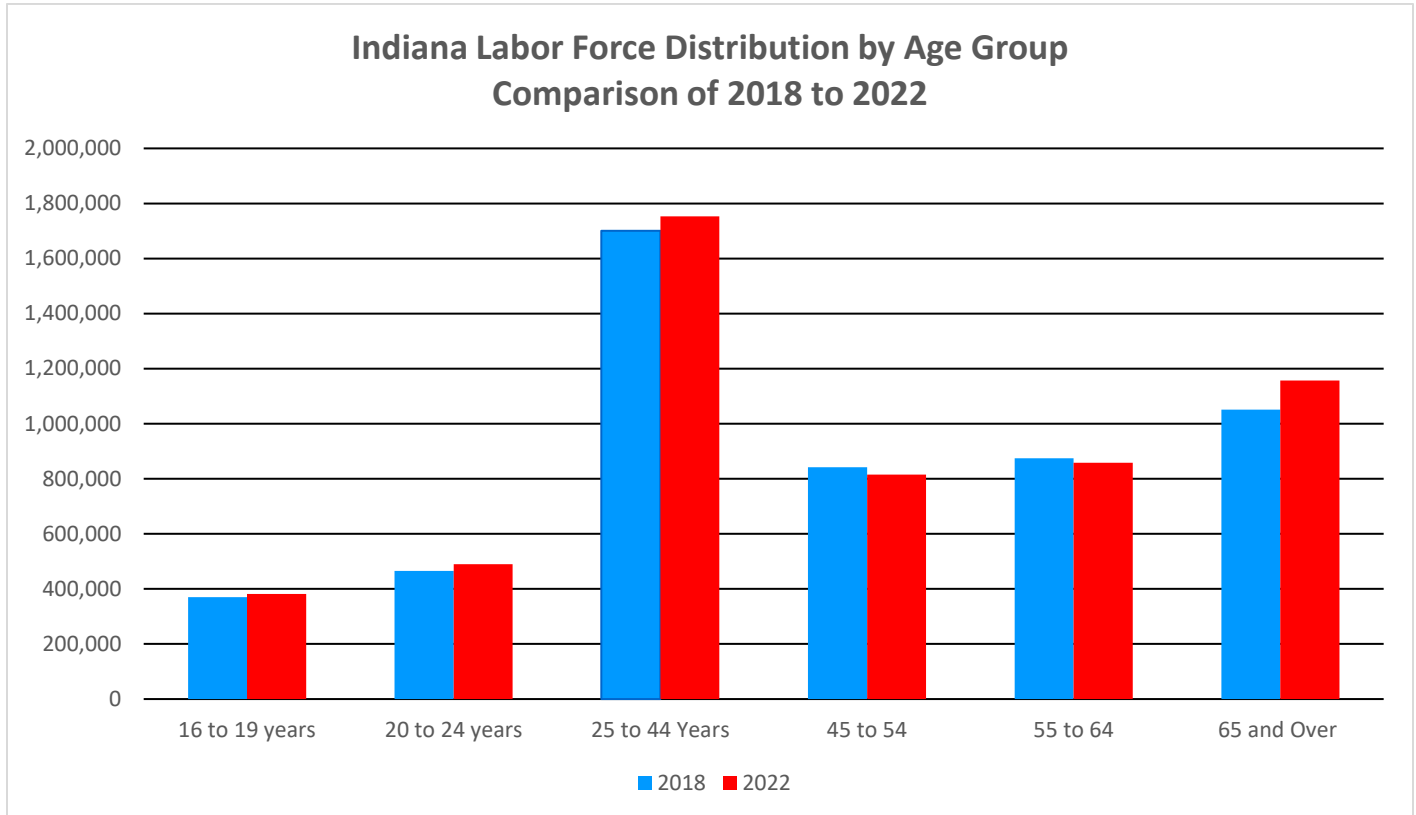


B2: Workforce and Industry Composition

Age Distribution of the Workforce

The age distribution of Indiana’s workforce is shown in Figure 8. Between the 2018 and 2022 estimates of the age distribution, Indiana’s workforce increased for 25 to 44 years of age but decreased in every except 65 and over category.

Figure 8: Indiana Labor Force Distribution by Groups



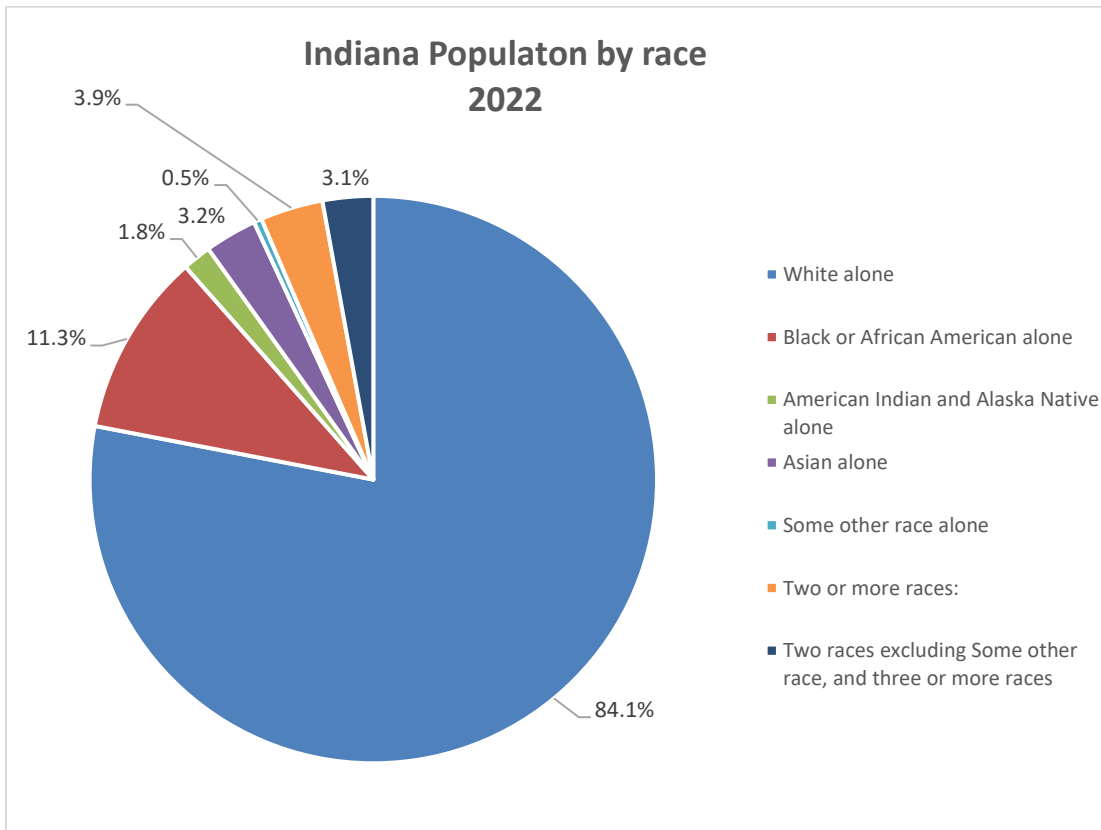
Source: 2018 & 2022 ACS 1-year estimates

		Civilian labor force						
		Civilian non-institutional population	Labor Force	Percent of Labor Force	Employed	Employment to Population	Unemployed	Unemployment Rate
	Population Group							
Indiana	Total	5,356	3,415	63.7	3,305	61.7	110	3.2
Indiana	Men	2,618	1,838	70.2	1,783	68.1	55	3.0
Indiana	Women	2,738	1,576	57.6	1,522	55.6	55	3.5
Indiana	White	4,530	2,857	63.1	2,777	61.3	81	2.8
Indiana	White, men	2,218	1,543	69.6	1,500	67.6	43	2.8
Indiana	White, women	2,311	1,314	56.9	1,277	55.2	37	2.8
Indiana	Black or African American	507	352	69.3	332	65.4	20	5.6
Indiana	Black or African American, men	243	179	73.7	171	70.5	8	4.4
Indiana	Black or African American, women	264	173	65.3	161	60.9	12	6.9
Indiana	Hispanic or Latino ethnicity	401	275	68.5	264	65.8	11	4.0
Indiana	Hispanic or Latino ethnicity, men	207	166	80.4	160	77.4	6	3.7

Source: CPS Annual Averages 2022

Please note some races and genders are omitted due to small sample size.

Indiana Total Population by Race – 2022

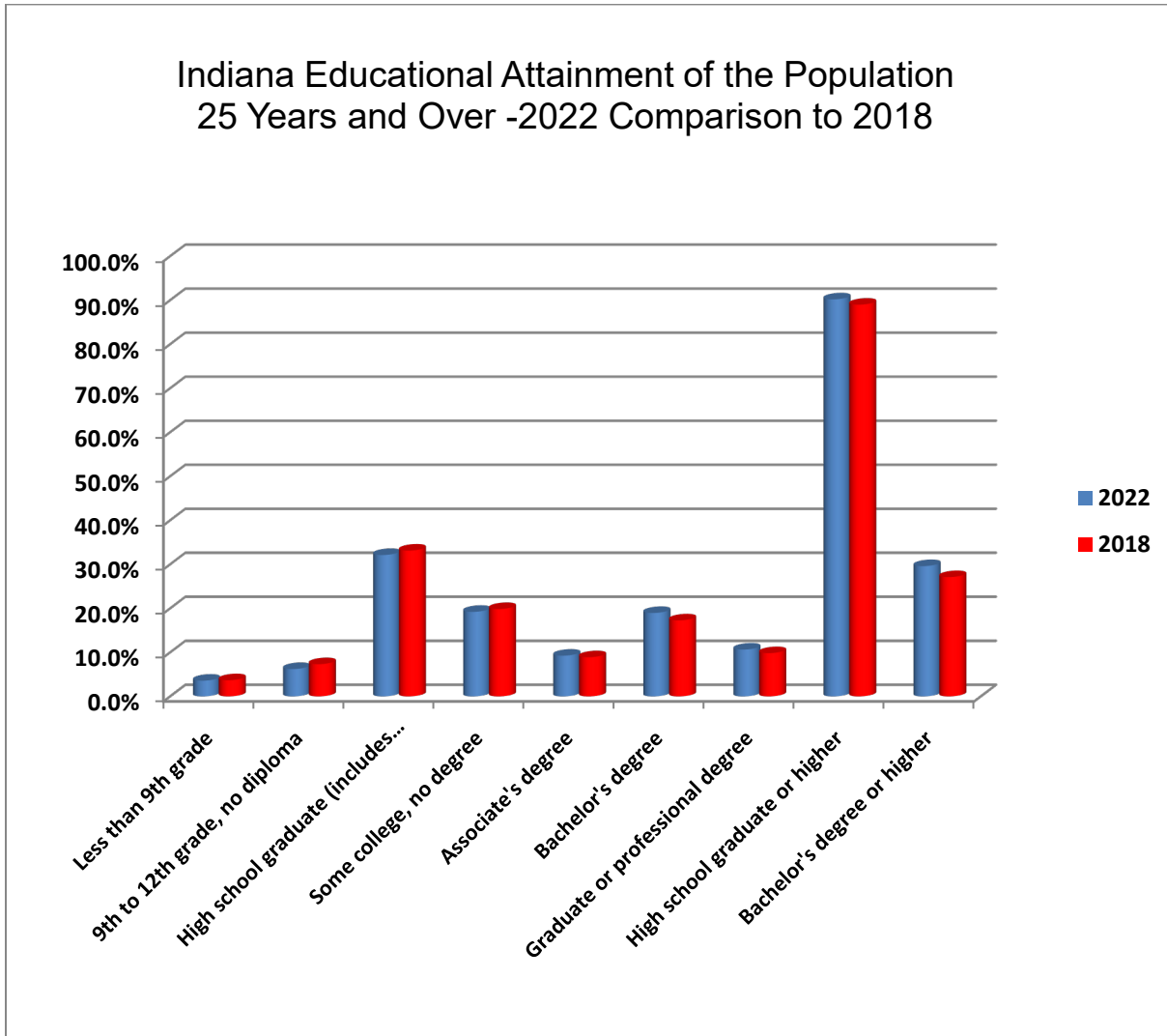


B3: Education

Rates of educational attainment continue to rise Indiana. In 2022 the percent of the population 25 and older with at least a Bachelor’s degree rose to 29.6% compared to 2018 average of 27.1%.

The percent of the population without a high school diploma fell from 11.0% in 2018 to 9.8% in 2021, but there are still significant portions of Indiana’s population without a high school diploma. Certain areas of the state illustrate greater numbers at risk and in need of continued higher education programs.

Chart 6: Indiana Educational Attainment in from 2016 to 2020 aggregate compared to 2021



Source: 2010 Census and 2016, 2017 ACS 5-year estimates

Adults Age 18 to 64 without a High School Diploma or HSE, 2021

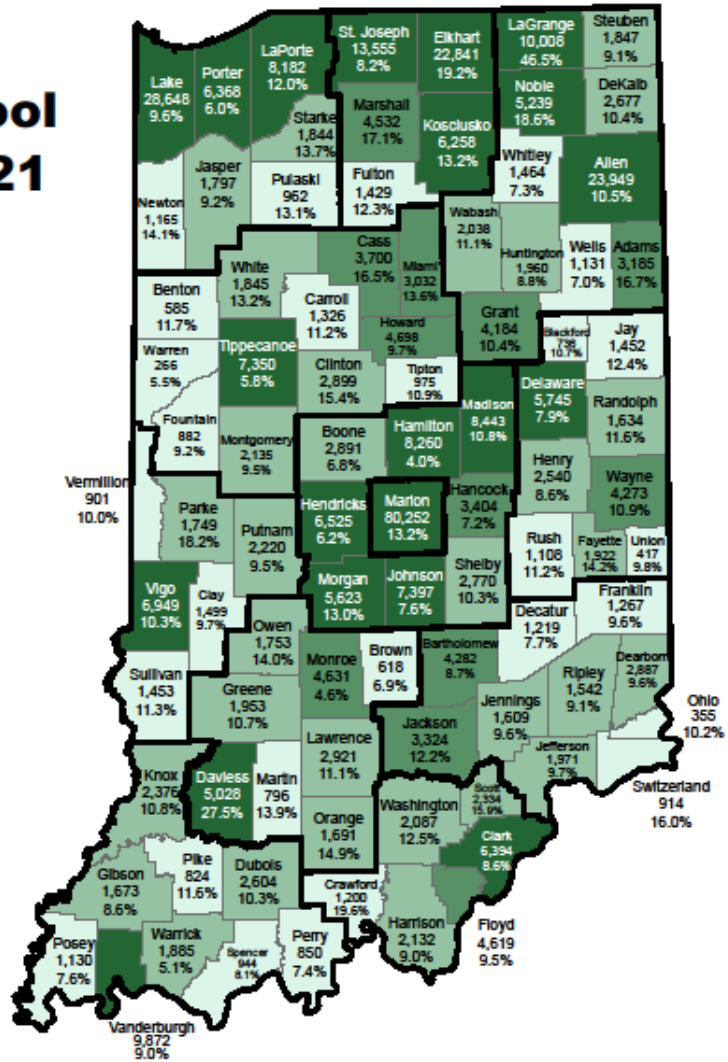
Indiana = 424,804 adults
(10.4% of total age group)

Number of Adults

- 266 - 1,500 (28)
- 1,501 - 3,000 (31)
- 3,001 - 5,000 (12)
- 5,001 - 80,252 (21)

Economic Growth Region

Labels also show the percent of adults in this age group without a high school diploma or high school equivalency (HSE).



Map produced by the Indiana Business Research Center, using the American Community Survey 2017-2021 five-year estimates that were released by the U.S. Census Bureau in December 2022.

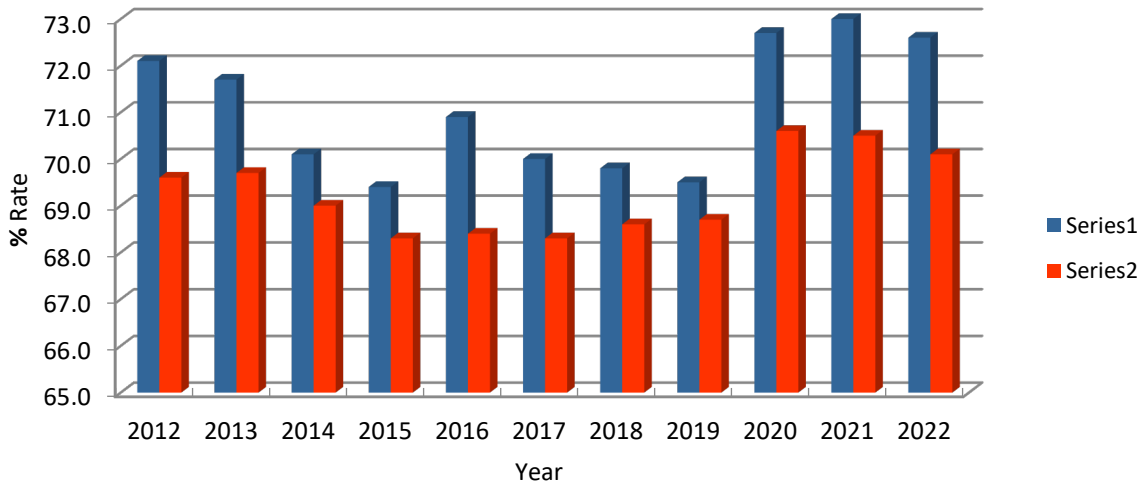
B4: Housing

Homeownership Rates

According to data from the U.S. Bureau of Census’s Housing Vacancy Survey (HVS), from 2012 to 2022 Indiana maintained a higher percentage of homeownership in comparison to the Midwest region. In 2020 and 2021 Indiana had an increase in homeownership. In 2022, the state finished with a homeownership rate of 72.6% compared to the Midwest’s 70.1%. For a year by year comparison, see Figure 7.

Figure 9: Indiana and Midwest Homeownership Rates 2012-2022

Indiana and Midwest Homeownership Rates
(2012 - 2022)



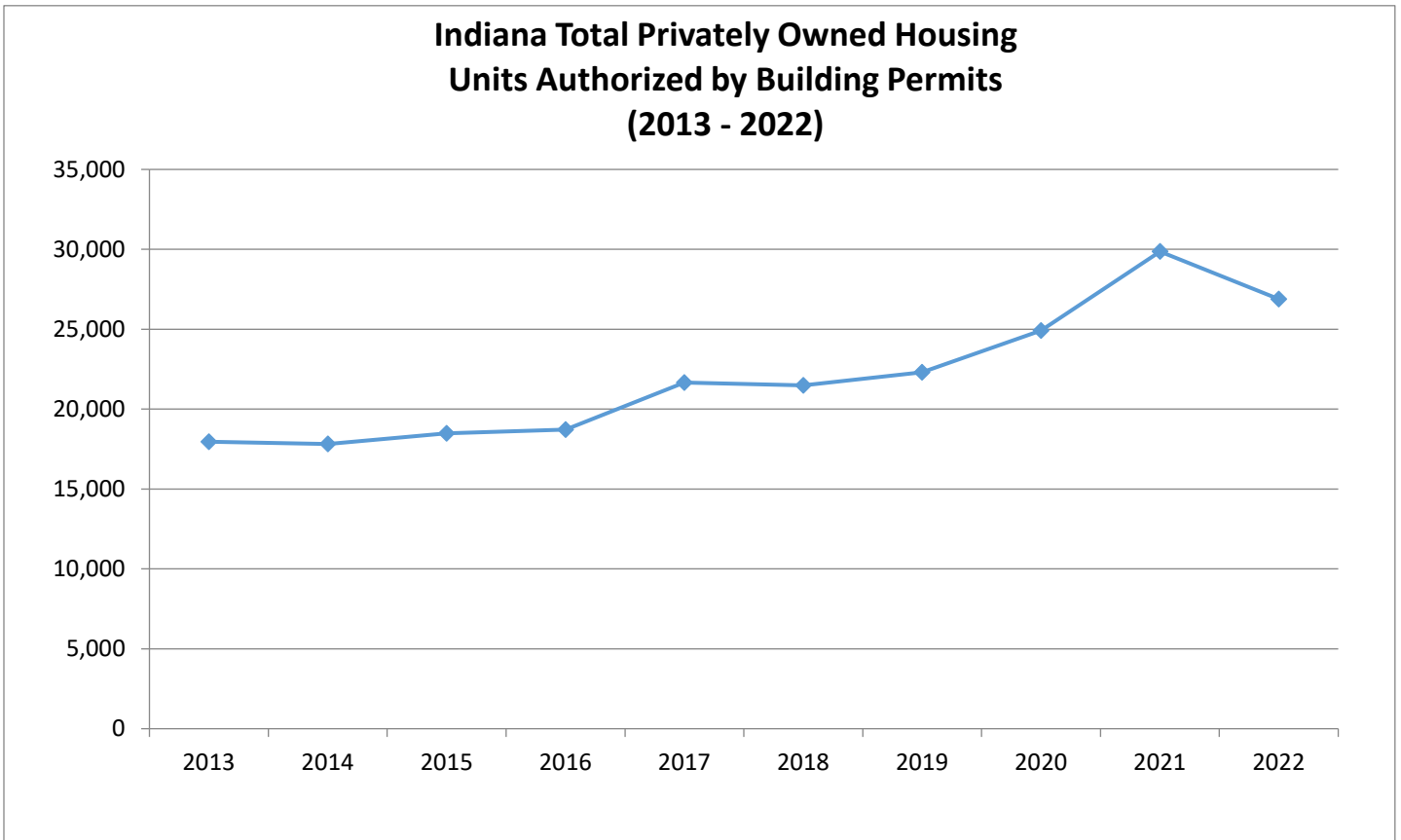
Source: U.S. Bureau of Census, Housing Vacancy Survey (HVS)

Midwest: Illinois, Indiana, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

Housing Permits

Indiana number of home building permits declined in 2022. In 2022 there were 26,883 home building permits compared to 2021 with 29,860.

Figure 8: Indiana Total Privately Owned Housing Units Authorized by Building Permits, 2013-2022



Source: U.S. Bureau of Census