Census Bureau's

Business Trends and Outlook Survey (BTOS)

Jennifer C. Boettcher

FDLP Webinar December 3, 2024

Why BTOS is the Best

Timely

Data released every 2 weeks, with only 2 week delay. High-frequency survey

Consistent

Same 25 questions about current & future conditions, Occasionally adding

Geographic

US, States, DC, PR, And 25 populous MSA

Industries

Most Sectors and Subsectors

Access

Visualizations, Downloads, API, Microdata at FSRDC

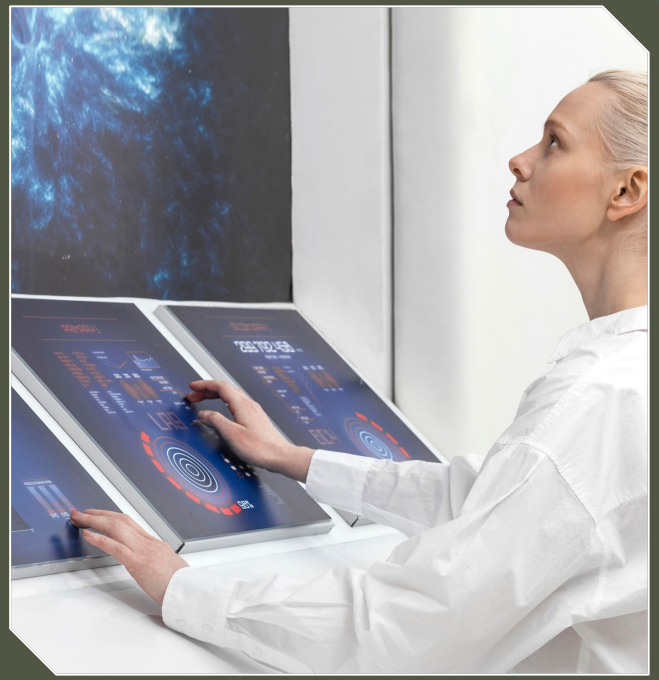
Topics

Conditions and Predictions in:
- Performance
- Operating revenues/sales/receipts
- Employee Size
- Hours worked
- Supply Chain
- Inventories
- Demand
- Output prices
- Input prices
- Artificial Intelligence use
- Open or Closed Business

Interest rates impact

Monetary losses due to weather & type

Work from home (WFH)



Estimates are acceptable and encouraged

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Jennifer C. Boettcher

Education

BA in Art History, UNH
MLS, SUNY-Albany
MBA, Georgetown U
Many workshops

Employment

Strawbery Banke Museum
National SBDC Library
Texas A&M
Georgetown University 25+

Service

GU Faculty Senate
Cap Area Bus Acad Lib
ALA RUSA BRASS
SLA DMV & B&F

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Scholarship

- Books about Economic Census and Data Quality Literacy (FREE)
- Articles & Presentations
  - North American Industry Classification System & Government Information
  - Data, Competencies, Tenure, Library Services, Tourism, & Scholarly Comm
- Digital Project (in progress)
  - ZombieList: reincarnation of business reference sources
- Recent Award
  - 2023 ALA RUSA Isadore Gilbert Mudge Award sponsored by EBSCO

Why is Intellectual Property important?

Understand where your data comes from before using it.

Federal information is in the public domain

- Public Domain: No ownership
- Open Data policies: Owned, but generous license
  - Both are FAIR
  - FAIR: Findable, Accessible, Interoperable, Reusable

ALWAYS provide ATTRIBUTION through Citation

"In a world of more data, the companies with more data -literate people are the ones that are going to win."

– Miro Kazakoff, MIT Sloan

Other Free High-Frequency Economic Data

	Sample Size	Sample Coverage	Geography-level	Year Started	Frequency	Most Recent Release 12/2/24	Industry-Level
Aruoba-Diebold-Scotti Business Conditions Index (ADS)	Depends: BEA, BLS, CB, DOL, FRB		US	1960	Weekly- Quarterly	November 27. 2024	ALL
Weekly Economic Index (WEI)	Depends: See link		US	2019	Weekly	November 27, 2024	All
Business Formation Statistics (BFS)	IRS's EIN (Form SS-4), Nonemployers		US, States, DC, PR	2006	Monthly, no longer weekly	October 2024	2/3 Digits-sector/subsector
Small Business Pulse Survey (SBPS)	1.7 million	<499 employees	US, States, DC, PR, 50 MSA*	April 2020	Weekly	April 2022	2/3 Digits-sector/subsector
Business Trends and Outlook Survey (BTOS), V1	1.2 Million	Single unit locations	US, States, DC, PR, 25 MSA*	July 18, 2022	Every 2 weeks	September 10, 2023	2/3 Digits-sector/subsector
Business Trends and Outlook Survey, current	1.2 Million	All*	US, States, DC, PR, 25 MSA*	September 11, 2023	Every 2 weeks	December 2, 2024	2/3 Digits-sector/subsector

01

What is an Industry Sector?

Introduction to the North American Industry Classification System (NAICS)

More about NAICS

North American Industry Classification System: NAICS

pronounced nākes, like snakes 

- Standard used by Federal statistical agencies
- Classifying **business establishments** (places)
  - Firm=Business
- For the purpose of collecting, analyzing, and publishing **statistical data**
  - Related to the U.S. business economy.

NAICS Home Page

Automobile Industry?

Sector	Description
33	Chassis, automobile, manufacturing
42	Junk yard, auto, merchant wholesalers
44	Auto parts dealers
52	Automobile finance
53	Automobile leasing
54	Automobile industrial design services
61	Automobile driving schools
81	Automobile repair and maintenance

24 NAICS Sectors

11 Agriculture, Forestry, Fishing and Hunting
21 Mining
22 Utilities
23 Construction
31-33 Manufacturing
42 Wholesale Trade
44-45 Retail Trade
48-49 Transportation and Warehousing
51 Information
52 Finance and Insurance
53 Real Estate and Rental and Leasing
54 Professional, Scientific, and Technical Services
55 Management of Companies and Enterprises
56 Administrative and Support and Waste Management and Remediation Services
61 Education Services
62 Health Care and Social Assistance
71 Arts, Entertainment, and Recreation
72 Accommodation and Food Services
81 Other Services (except Public Administration)
92 Public Administration

North American Industry Classification System (NAICS) Structure

Level	Code	Description
Sector	33	Manufacturing*
Subsector	336	Transportation Equipment Manufacturing* BTOS
Industry Group	3361	Motor Vehicle Manufacturing*
Industry	33611	Automobile and Light Duty Motor Vehicle Manufacturing*
U.S. Industry	336110	Automobile and Light Duty Motor Vehicle Manufacturing

* Mexico & Canada Compatible

336110 Automobile and Light Duty Motor Vehicle Manufacturing

This industry comprises establishments primarily engaged in (1) manufacturing complete automobiles and light duty motor vehicles (i.e., body and chassis or unibody) or (2) manufacturing automobile and light duty motor vehicle chassis only. Vehicles made include passenger cars, light duty trucks, light duty vans, pick-up trucks, minivans, and sport utility vehicles.

Cross-References. Establishments primarily engaged in--

- Manufacturing car, truck, and bus bodies and assembling vehicles on purchased chassis and manufacturing kit cars for highway use--are classified in U.S. Industry 336211, Motor Vehicle Body Manufacturing;
- Manufacturing motor homes on purchased light duty truck chassis--are classified in U.S. Industry 336213, Motor Home Manufacturing; and
- Manufacturing race cars--are classified in U.S. Industry 336999, All Other Transportation Equipment Manufacturing.

2012 NAICS	2017 NAICS	2022 NAICS	Corresponding Index Entries
336112	336112	336110	Assembly plants, light trucks on chassis of own manufacture
336112	336112	336110	Assembly plants, minivans on chassis of own manufacture
336111	336111	336110	Assembly plants, passenger car on chassis of own manufacture
336112	336112	336110	Assembly plants, sport utility vehicles on chassis of own manufacture
336111	336111	336110	Automobiles assembling on chassis of own manufacture
336112	336112	336110	Cab and chassis, light trucks and vans, manufacturing
336111	336111	336110	Cars, electric, for highway use, assembling on chassis of own manufacture
336111	336111	336110	Chassis, automobile, manufacturing
336112	336112	336110	Chassis, light truck and utility, manufacturing
336111	336111	336110	Electric automobiles for highway use manufacturing

Who assigns NAICS to a company/firm?

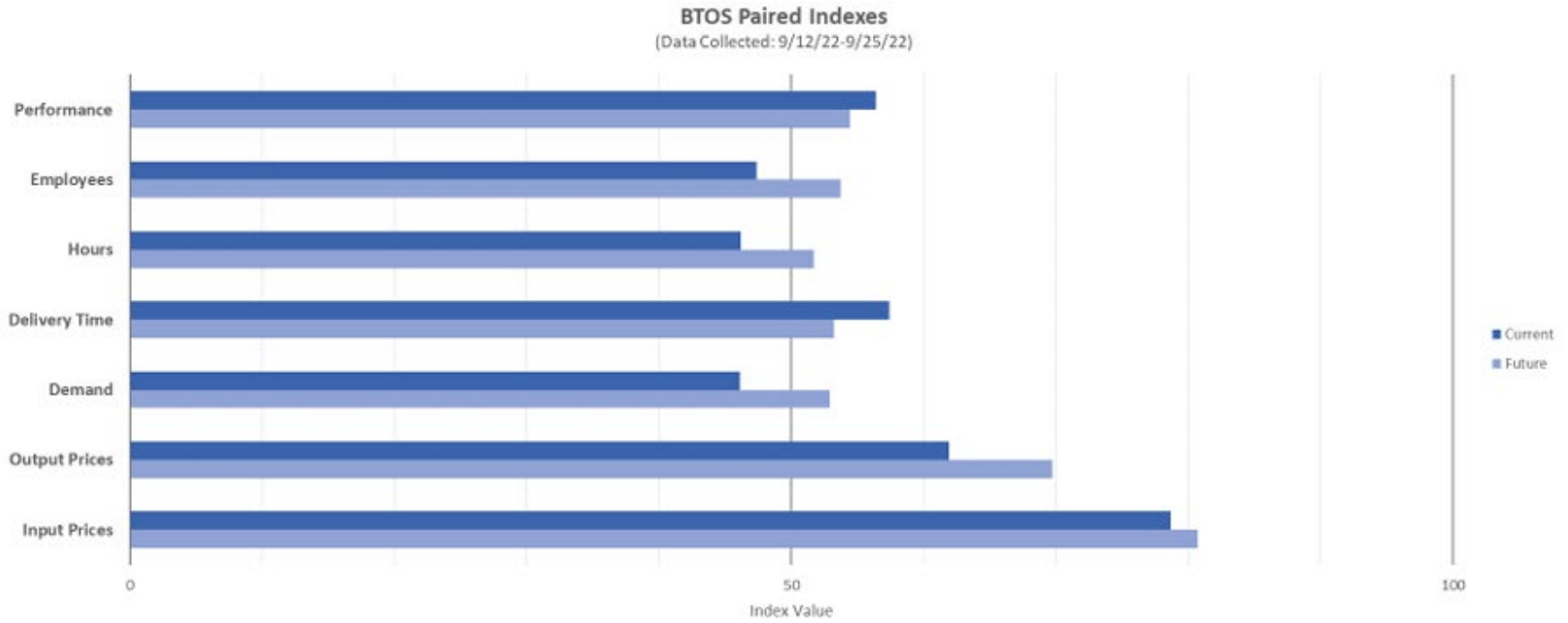
self-assigned

02

Census Bureau's Business Trends and Outlook Survey

Visualizations

Appendix: Current/Future Index Pairs

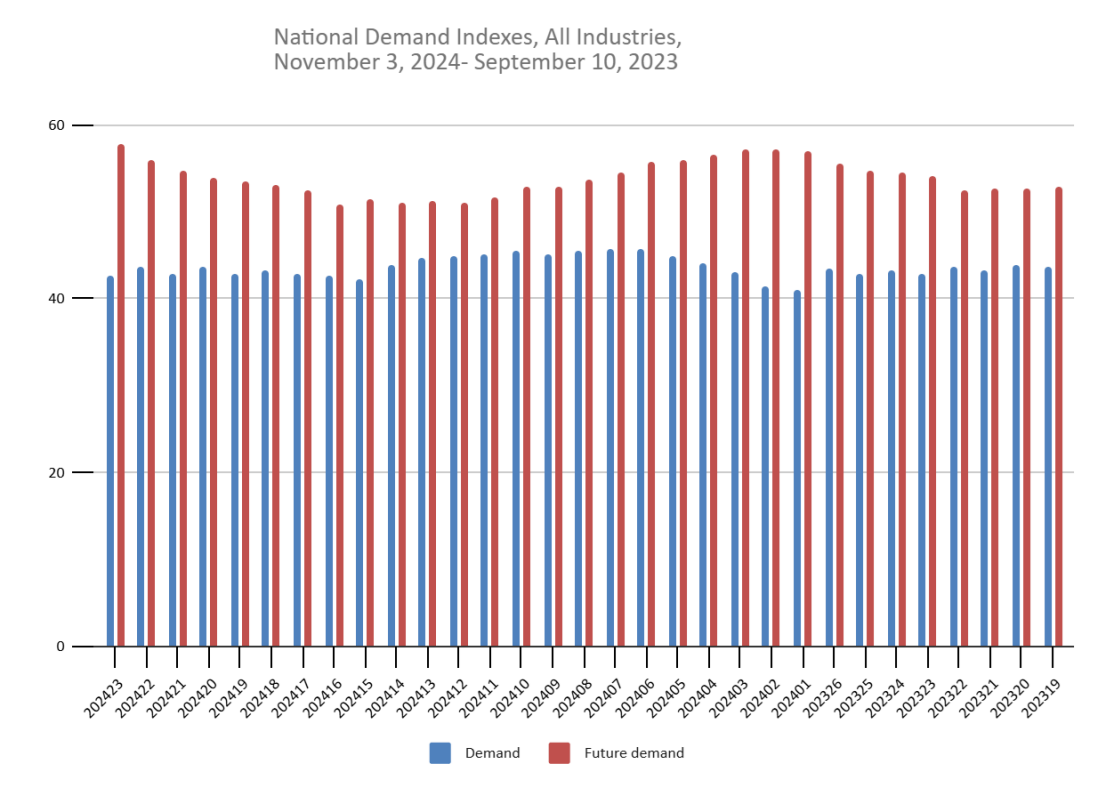


United States Census Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

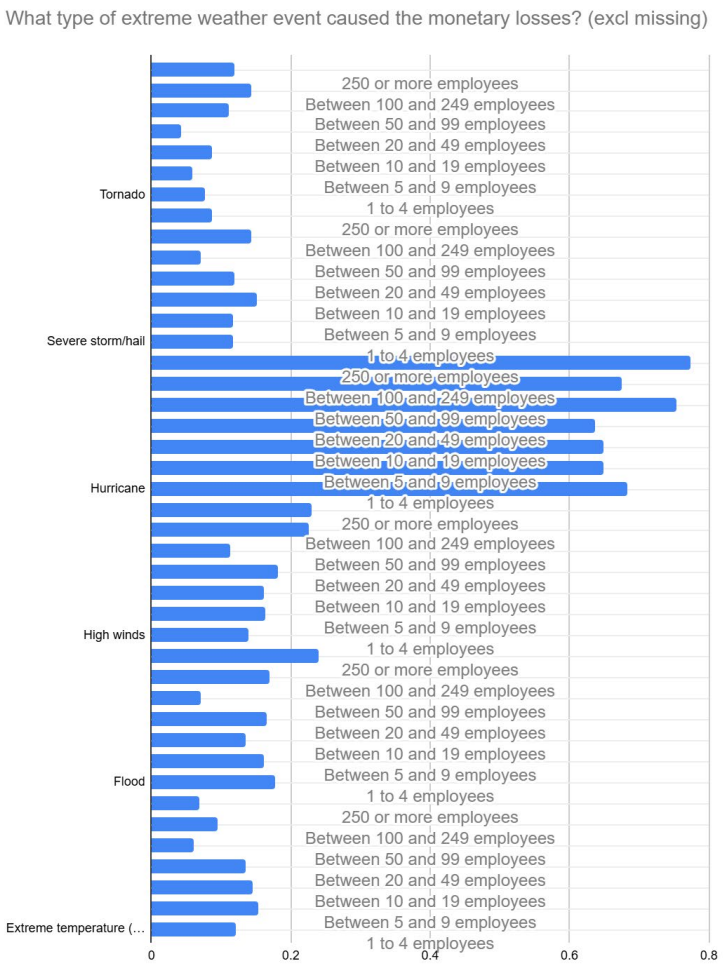
Image from: Cory Breaux, BTOS, 10/4/23

Trends in demand for businesses goods or services indexed



Note: Table created by Jennifer C. Boettcher, from Data from U.S. Census Bureau. Business Trends and Outlook Survey: National. https://www.census.gov/hfp/btos/data_downloads. Date: 202423 thru 202319 Questions: 11 & 22, indexed

Dates in BTOS



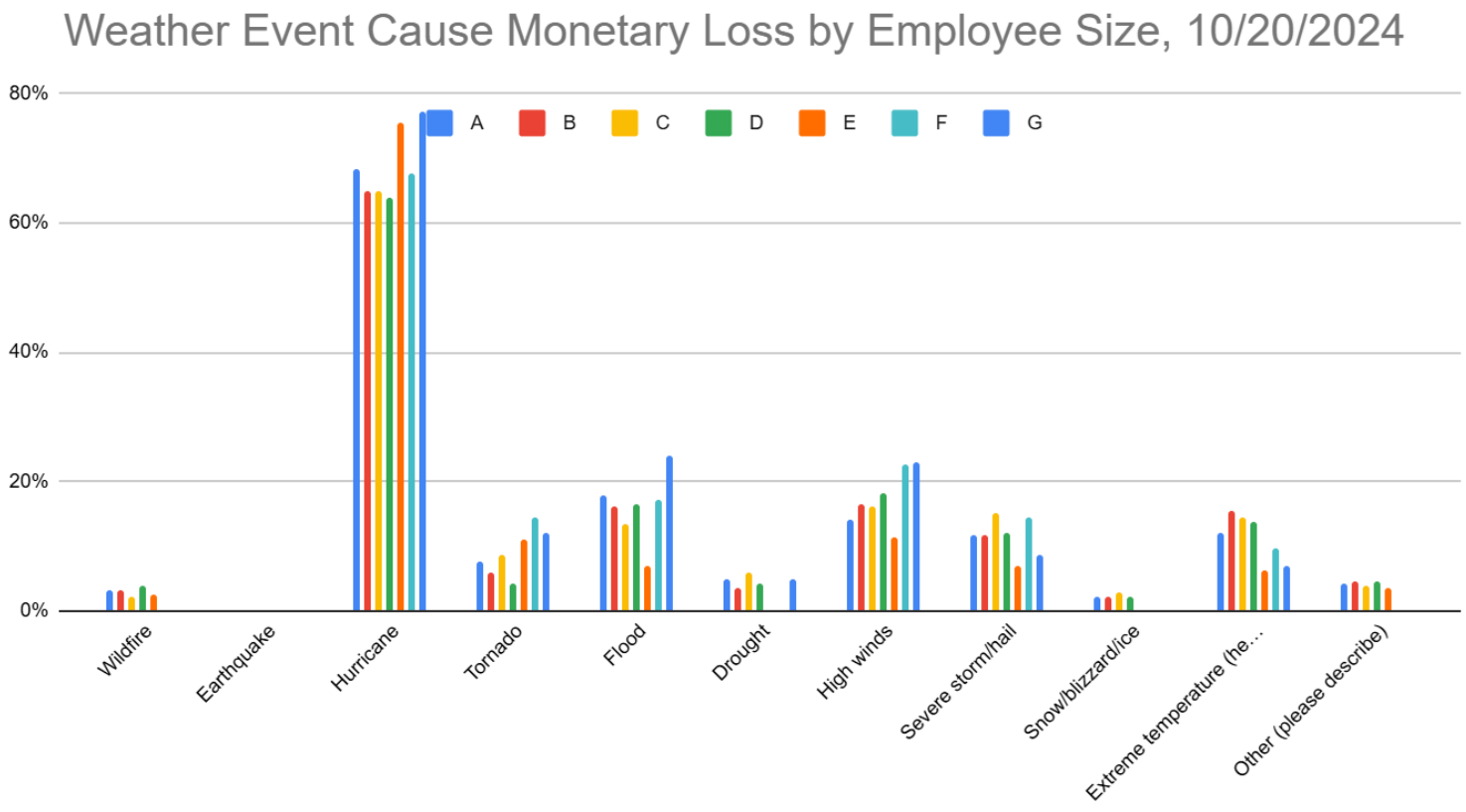
What type of extreme weather event caused the monetary losses for small business, Nov 3, 2024

Note: Table created by Abby Sheetz, from Data from U.S. Census Bureau. Business Trends and Outlook Survey: Employment size class. https://www.census.gov/hfp/btos/data_downloads. Date:202423 Question: 16.

APA Citation/Reference:
U.S. Census Bureau. (November 21, 2024). Business Trends and Outlook Survey: Employment size class. [Statistical Database]. Retrieved November 30, 2024, from https://www.census.gov/hfp/btos/data_downloads.

Another way to look at it

A	1 to 4 employees
B	Between 5 and 9 employees
C	Between 10 and 19 employees
D	Between 20 and 49 employees
E	Between 50 and 99 employees
F	Between 100 and 249 employees
G	250 or more employees



Changes in Work from Home

MSA	11/03/2024	09/08/2024	Change
Tampa-St. Petersburg-Clearwater, FL MSA	43.9%	34.7%	0.092
Dallas-Fort Worth-Arlington, TX MSA	42.5%	38.5%	0.04
Atlanta-Sandy Springs-Alpharetta, GA MSA	40.9%	37.4%	0.035
Washington-Arlington-Alexandria, DC-VA-MD-WV MSA	46.4%	44.5%	0.019
Portland-Vancouver-Hillsboro, OR-WA MSA	38.5%	37.1%	0.014
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA	33.4%	32.1%	0.013
Seattle-Tacoma-Bellevue, WA MSA	41.1%	39.9%	0.012
New York-Newark-Jersey City, NY-NJ-PA MSA	29.1%	29.1%	0
Charlotte-Concord-Gastonia, NC-SC MSA	33.9%	34.0%	-0.001
San Francisco-Oakland-Berkeley, CA MSA	43.2%	43.7%	-0.005
Los Angeles-Long Beach-Anaheim, CA MSA	33.6%	34.7%	-0.011
Detroit-Warren-Dearborn, MI MSA	28.2%	29.5%	-0.013
Riverside-San Bernardino-Ontario, CA MSA	27.1%	28.5%	-0.014
Boston-Cambridge-Newton, MA-NH MSA	39.8%	41.5%	-0.017
Chicago-Naperville-Elgin, IL-IN-WI MSA	34.1%	35.9%	-0.018
Denver-Aurora-Lakewood, CO MSA	42.7%	45.4%	-0.027
San Antonio-New Braunfels, TX MSA	30.2%	33.0%	-0.028
Orlando-Kissimmee-Sanford, FL MSA	33.8%	36.7%	-0.029
Minneapolis-St. Paul-Bloomington, MN-WI MSA	42.0%	45.0%	-0.03
St. Louis, MO-IL MSA	25.0%	28.2%	-0.032
Miami-Fort Lauderdale-Pompano Beach, FL MSA	35.8%	39.5%	-0.037
Baltimore-Columbia-Towson, MD MSA	34.4%	38.2%	-0.038
Phoenix-Mesa-Chandler, AZ MSA	39.8%	43.7%	-0.039
San Diego-Chula Vista-Carlsbad, CA MSA	37.2%	41.8%	-0.046
Houston-The Woodlands-Sugar Land, TX MSA	29.8%	35.8%	-0.06

Note: Table created by Jennifer C. Boettcher, from Data from U.S. Census Bureau. Business Trends and Outlook Survey: Top 25 MSA. https://www.census.gov/hfp/btos/data_downloads. Date:202423 and 202419 Question: 6. Response: Yes

Retail Supply Chain

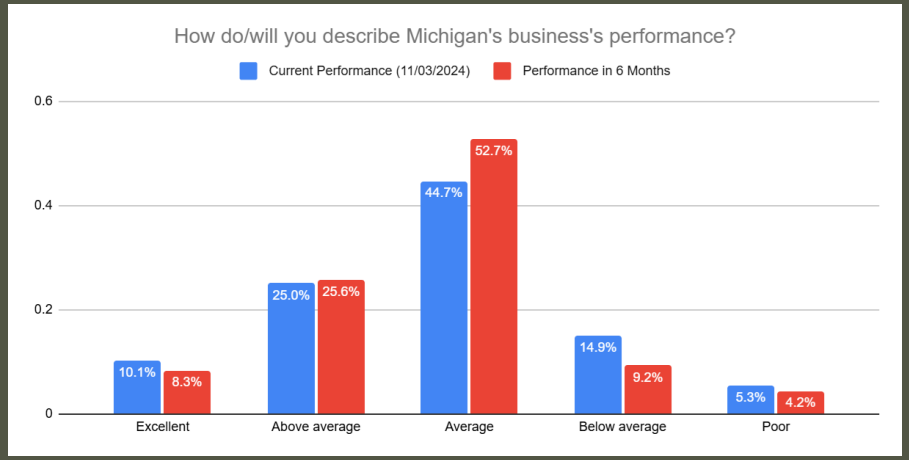
In the last two weeks, how did the time it takes for this business to receive deliveries from suppliers change? Retail Trade. November 5, 2024

Name	Decrease	Increase
Building Material and Garden Equipment and Supplies De	2.80%	7.70%
Clothing and Clothing Accessories Stores	5.70%	9.20%
Electronics and Appliance Stores	11.90%	4.10%
Food and Beverage Stores	9.90%	4.20%
Furniture and Home Furnishings Stores	7.40%	7.30%
Gasoline Stations	8.40%	3.90%
Health and Personal Care Stores	1.20%	8.30%
Miscellaneous Store Retailers	5.60%	8.60%
Motor Vehicle and Parts Dealers	3.80%	6.60%
Nonstore Retailers	6.20%	10.90%
Sporting Goods, Hobby, Musical Instrument, and Book Stc	5.60%	9.40%

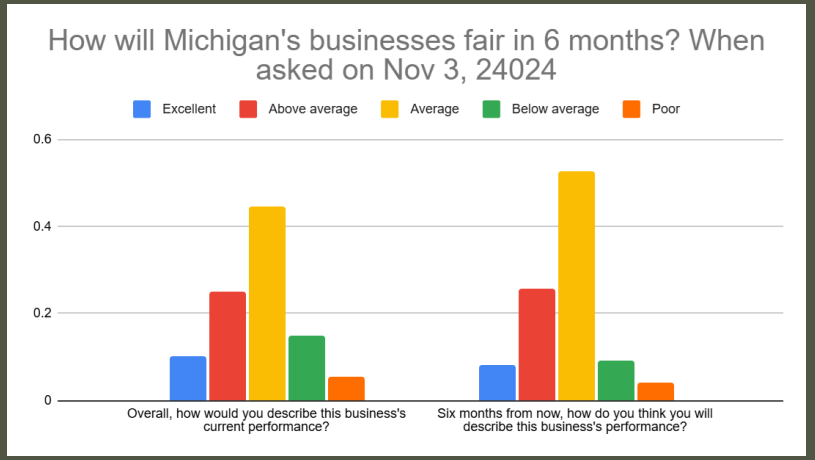
Note: Pivot table created by Jennifer C. Boettcher, from Data from U.S. Census Bureau. Business Trends and Outlook Survey: Subsector. https://www.census.gov/hfp/btos/data_downloads. Date:202423 Question: 9 Subsectors: Retail

Performance - Q2&Q17, by State

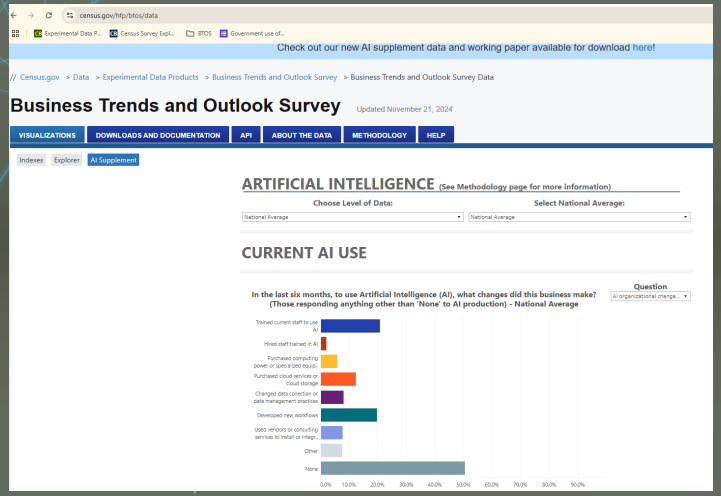
Michigan Performance



Another way



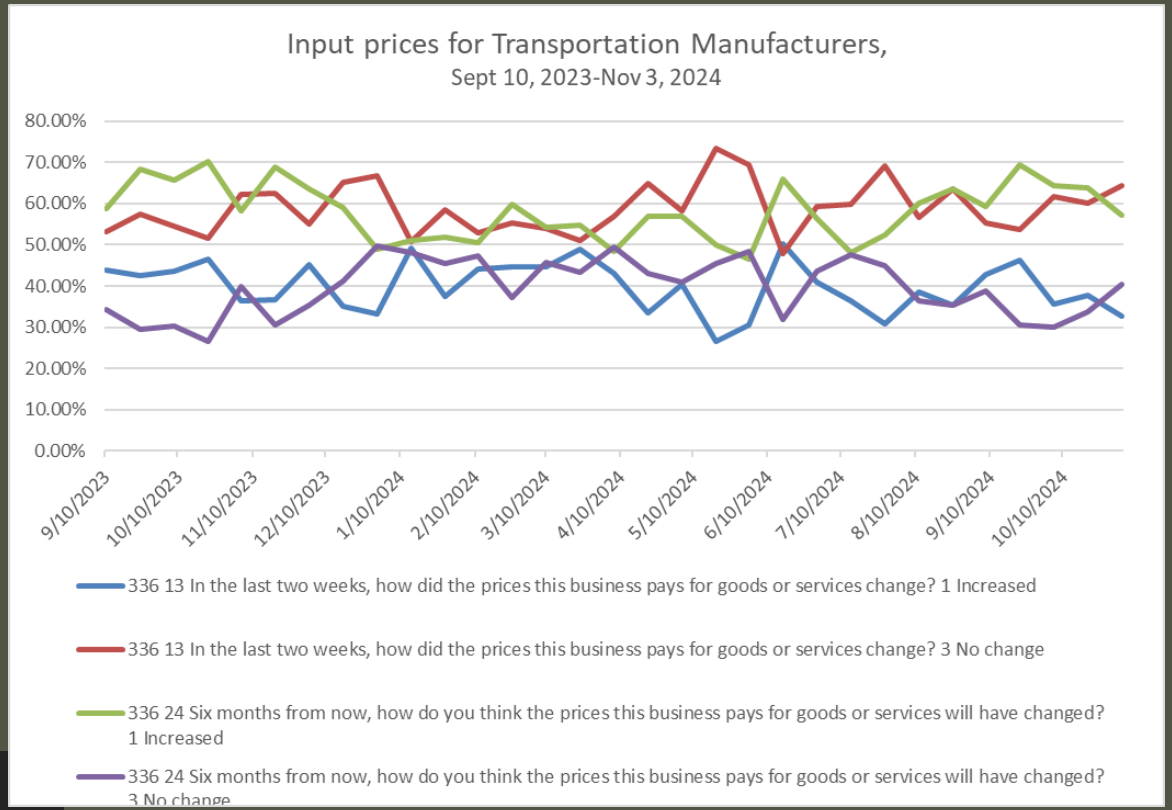
Note: Tables created by Abby Sheetz, from Data from U.S. Census Bureau. Business Trends and Outlook Survey: State. https://www.census.gov/hfp/btos/data_downloads. Date:202423, Questions: 2 and 17. State: Mi



BTOS Data

https://www.census.gov/hfp/btos/data

How not to create chart



Note: Table created by Jennifer C. Boettcher, from Data from U.S. Census Bureau. Business Trends and Outlook Survey: Subsector. https://www.census.gov/hfp/btos/data_downloads. Date: Sept 10, 2023 thru Nov 3, 2024. Questions: 13 &24. Subsector: 336

BTOS Visualization & Explorer

Think again

- BTOS estimates may be subject to nonresponse bias if businesses that respond to the survey are systematically different from businesses that do not.
- BTOS estimates may also be subject to other types of nonsampling error, such as coverage error, measurement error, and processing error.
- There are business that are out of scope, including tax exempt and non employers

- Citation elements:
- Who is responsible for the data?
- Title of the Data Program
- File title
- Retrieval date
- URL

Notes: under graph or table, who created it, and elements that when into the creation.

03

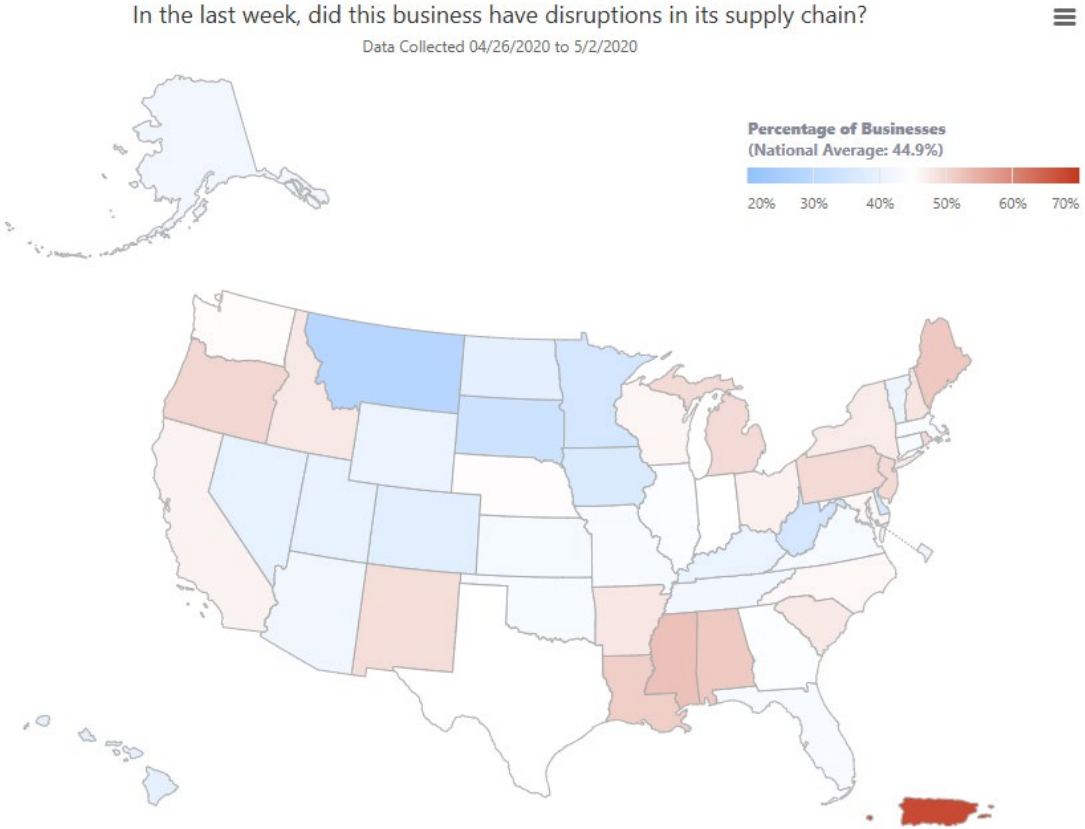
Census Bureau's Small Business Pulse Survey (SBPS)

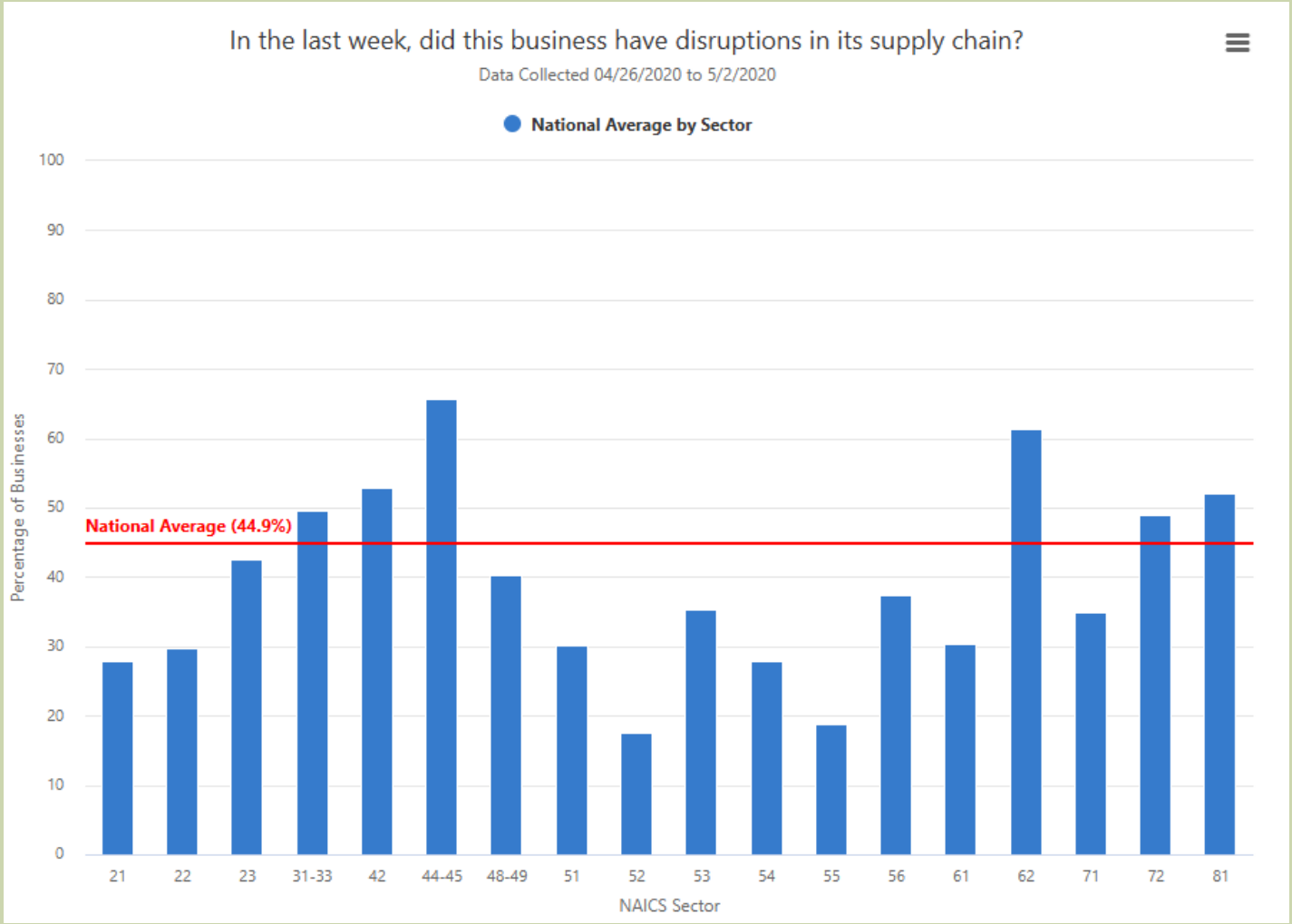
COVID & Small Business

Collection Dates: 04/26/2020 to 05/02/2020

Survey Question: Supply chain

Survey Answer: Yes





Go to Visualizations

How to read

NAICS

A little history about BTOS

- **Started as the Small Business Pulse Survey (April 2020 until May 2022), in response to COVID**
  - **1.7 million business with emails from Business Register with receipts of more than $1000**
  - **Survey of small business, between 1 and 499 employees, single establishments only**
  - **Sent to 91,000 emails, weights were applied by state and sector for full representation.**
  - **9 Panels of questions, <u>all questions</u>**
  - **21 or fewer questions about the effect of the Coronavirus pandemic on the business**
- Business Trends and Outlook Survey (July 2022-September 2023)
  - Sample 200,000 single establishments, no nonemployer businesses
  - Same questions about current (past 2 weeks) and future (next 6 months) perceptions of changing business conditions
  - Asked to report for the previous two weeks and looking forward six-months
- Business Trends and Outlook Survey (September 2023- Present)
  - Sample 200,000 employer businesses (single and multi-location)
  - Contains approximately 25 core questions
  - **Artificial Intelligence Supplement** (12/04/2023 to 02/25/2024)
    - 1.2 million business sample

Small Business Pulse Survey (SBPS)

“The Small Business Pulse Survey (SBPS) measures the effect of changing business conditions during the Coronavirus pandemic on our nation's small businesses. It has also proven valuable in measuring the impact of other major events such as hurricanes on our nation’s small businesses.”

1 Sampling

- 1.7 million sample
- Sample is sorted by sector x state x MSA
- Single-location w/ email
- Weights were applied
- Company name associated with the sampled EIN

2 Segments

National, States, District of Columbia, Puerto Rico, 50 MSA, Sector, Subsector/
Overall effect, Total revenue, Change in revenues, Location open/close, Change in hours, Supply chain delays/difficulties, and Return to normal

Additional variables

3 Quality Measures

Nonresponse Adjustment,

Estimation,

Sampling error,

Nonresponse error,

S= suppressed

Methodology

Indexes of SBPS

- The Overall Sentiment Index (OSI) assesses the overall effect of the pandemic on businesses.
- The Operational Challenges Index (OCI) assesses the overall effect of the pandemic on business operations.
- The Market Challenges Index (MCI) assesses the degree of tightness businesses face in the markets for labor, goods and services purchased by businesses, and the businesses' own goods. (Phases 6 and 7 only)
- The Financial Stress Index (FSI) assesses the financial difficulties experienced by businesses. (Discontinued in phase 4)
- The Expected Recovery Index (ERI) summarizes the length of the expected recovery of businesses.

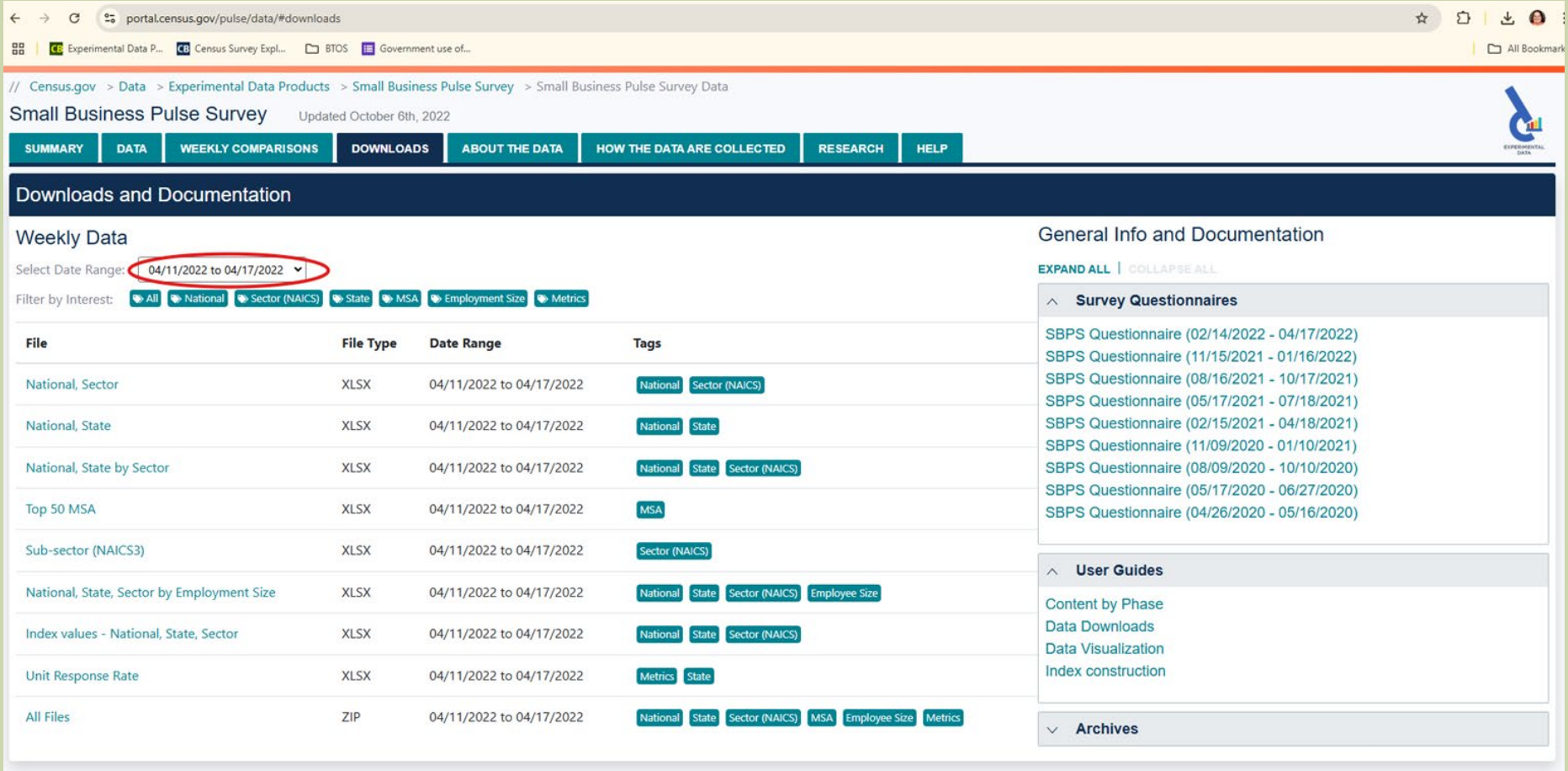
For both the OSI and the OCI, negative values up to -1 of the index indicate a negative effect, zero indicates little or no effect, and positive values up to +1 indicate a positive effect.

For the FSI, negative values up to -1 of the index indicate a negative financial impact and zero indicates little or no financial impact. (Discontinued in phase 4)

For the MCI, the index is bound conceptually by [+1, -1] with +1 representing the highest level of tightness and -1 the lowest. (Phases 6 and 7 only)

For the ERI, negative values up to -1 of the index indicate that the business needs time to recover (and an increasing recovery period as the index value approaches -1), while zero indicates little or no recovery period.

Indexes where done for States, Sectors, and National data



https://portal.census.gov/pulse/data/#downloads

example

04

Census Bureau's Business Trends and Outlook Survey

Questions and Methods

Business Trends and Outlook Survey (BTOS) Data

EXPERIMENTAL DATA

September 8, 2023

The Business Trends and Outlook Survey (BTOS) provides insight into the state of the economy by providing timely data for key economic measures and business expectations about future conditions. By providing detailed geographic and subsector data, BTOS provides local, state, and federal officials near real-time data for policy and decision-making including after natural disasters or during economic crises. The BTOS provides insight into recovery after these events.

The BTOS sample consists of approximately 1.2 million businesses split into six panels (approximately 200,000 cases per panel). Businesses in each panel will be asked to report once every 12 weeks for a year. Data collection will occur every two weeks. The BTOS is comprised of a set of core questions and supplemental content, which is included as needed.

For the data period from July 2022 to September 2023, BTOS data are representative of all single location employer businesses in the U.S. economy, excluding farms. For data released after September 2023, the BTOS sample includes all employer businesses (single location and multi-location) in the U.S., excluding farms. Data are released every two weeks and are available by 2017 North American Industry Classification System (NAICS) sector, by state and for the 25 most populous Metropolitan Statistical Areas. Data are also available by subsector (three-digit NAICS) and state by sector. Data released after September 2023 are also available by additional employment size classes.

Why BTOS is the Best:

Economic trends in all phases of the business cycle: during economic and other emergencies

Timely

Data released 2 weeks, with only 2 week delay. High-frequency survey

Consistent

Same 25 questions about current & future conditions, Occasionally adding

Geographic

US, States, DC, PR, And 25 populous MSA

Industries

Most Sectors and Subsectors

Access

Visualizations, Downloads, API, Microdata at FSRDC

Questions Topics

Conditions and Predictions in:

- Performance - 2, 17
- Operating revenues/sales/receipts - 3, 18
- Employee Size - 4, 18
- Hours worked - 5, 19
- Supply Chain - 9, 20
- Inventories - 10, 21
- Demand - 11, 22
- Output prices - 12, 23
- Input prices - 13, 24
- Artificial Intelligence use - 7, 26
- Open or Closed Business - 8, 25

Interest rates impact - 14

Monetary losses due to weather - 15, 16

Work from home (WFH) - 6

Business Classification

National

States & District of Columbia

Puerto Rico

Top 25 MSA

Sector (2 digits)

Subsector (3 digits)

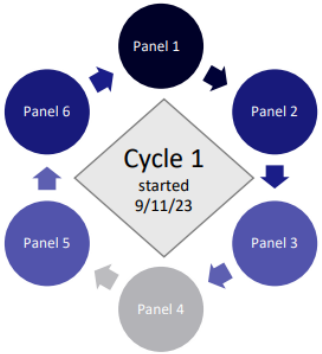
Employment Size

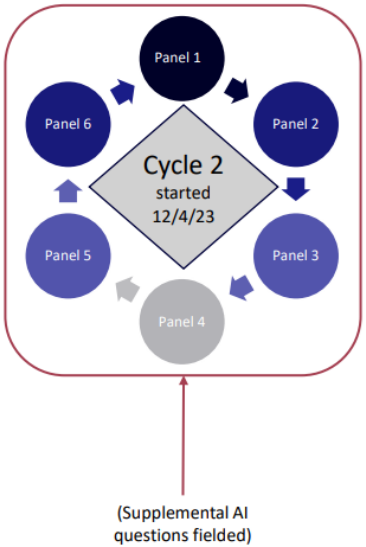
A	1 to 4 employees
B	Between 5 and 9 employees
C	Between 10 and 19 employees
D	Between 20 and 49 employees
E	Between 50 and 99 employees
F	Between 100 and 249 employees
G	250 or more employees

A little history about BTOS

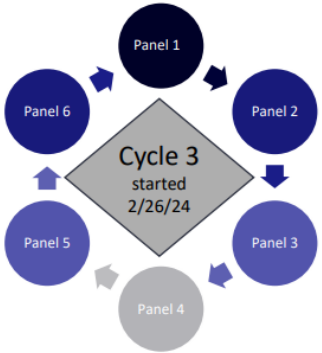
- Started as the Small Business Pulse Survey (April 2020 until May 2022), in response to COVID
  - 1.7 million business with emails from Business Register with receipts of more than $1000
  - Survey of small business, between 1 and 499 employees, single establishments only
  - Sent to 91,000 emails, weights were applied by state and sector for full representation.
  - 9 Panels of questions, all questions
  - 21 or fewer questions about the effect of the Coronavirus pandemic on the business
- **Business Trends and Outlook Survey V1 (July 2022-September 2023)**
  - **1.2 million, Sample 200,000 single establishments, no nonemployer businesses, Businesses classified without a 2-digit NAICS (NAICS = "00") were not included.**
  - **6 biweekly panels, Contains approximately 25 core questions, questions**
  - **Same questions about current (past 2 weeks) and future (next 6 months) perceptions of changing business conditions, Estimates are published every other Thursday.**
  - **Each index is a weighted average of the percentage estimates for that question. Methodology**
  - **Adjustments are weighted on States, NAICS and employee size**
  - **State by employment size class and State by Sector in V1 only**
- **Business Trends and Outlook Survey (September 2023- Present)**
  - **Sample 200,000 employer businesses (single and multi-location)**
  - **Businesses with more than one NAICS, State, or MSA are classified as XX**

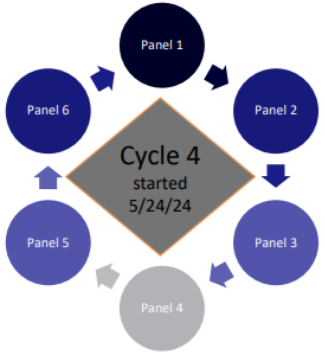
Timing: not to overburden





- 1.2M sample / 6 bi-weekly panels = Cycle
- Each panel includes two weeks of data collection
- Same companies in panel 1, panel 2, etc.
- Cycle 1 includes a mailed letter
- Cycle 2 received artificial intelligence supplement





United States Census Bureau | U.S. Department of Commerce U.S. CENSUS BUREAU census.gov

Image from: Census Academy Webinar on BTOS, June 18, 2024

Business Trends and Outlook Survey

"The Business Trends and Outlook Survey (BTOS) provides insight into the state of the economy by providing timely data for key economic measures and business expectations about future conditions. By providing detailed geographic and subsector data, BTOS provides local, state, and federal officials near real-time data for policy and decision-making including after natural disasters or during economic crises."

1 Sampling

- 1.2 million sample
- Sample is sorted by sector x state x MSA x annual payroll
- Sent out to approximately 200,000 businesses every two weeks.
- Systematically assigned to one of six biweekly panels.
- Each firm gets survey once every 12 weeks

2 Segments

National
States & Puerto Rico
25 MSA
Sector & Subsector
Employment Size/
Hours worked
Revenue
Employment
Input/output prices
Demand/Delivery time
Interest rates
Loss due to weather
Work from home
Artificial Intelligence

3 Quality Measures

Nonresponse Adjustment,
Estimation,
Sampling error,
Coverage error,
Nonresponse error,
Measurement error,
Estimation,
S= suppressed
Methodology

Unique to BTOS 2

Artificial Intelligence Supplement (12/04/2023 to 02/25/2024)

Work From Home Supplement (out March 2025)

Sample 200,000 employer businesses (single and multi-location)

Businesses with more than one NAICS, State, or MSA are classified as XX

Added questions about AI, Weather, and WFH

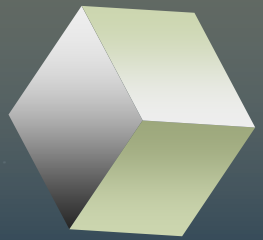
Known Issues

What could go wrong?

- Out of Scope
- New experimental “pulse” survey - might get cut
- Caution should be used in drawing conclusions from the estimates and comparisons shown.
- How do you know when a business is closed?
- Differences between estimates may be attributed to sampling or non sampling error, rather than to differences in underlying economic conditions.
- Details may not add to total due to noise and nonresponse adjustment.

Can be confusing

- In SBPS each weekly visualization is independent of previous and subsequent releases
- Not in data.census.gov
- Indexing vs Questions
- Can’t download visualizations or Explorer
- Have to download data to get into details
- Due to real-time data, not subject to editing or corrections
- AI Supplement does not have MSA data



05

BTOS: Artificial Intelligence (AI) & Work From Home (WFH)

AI Questions asked:

Snapshot of economic activity every 2 weeks

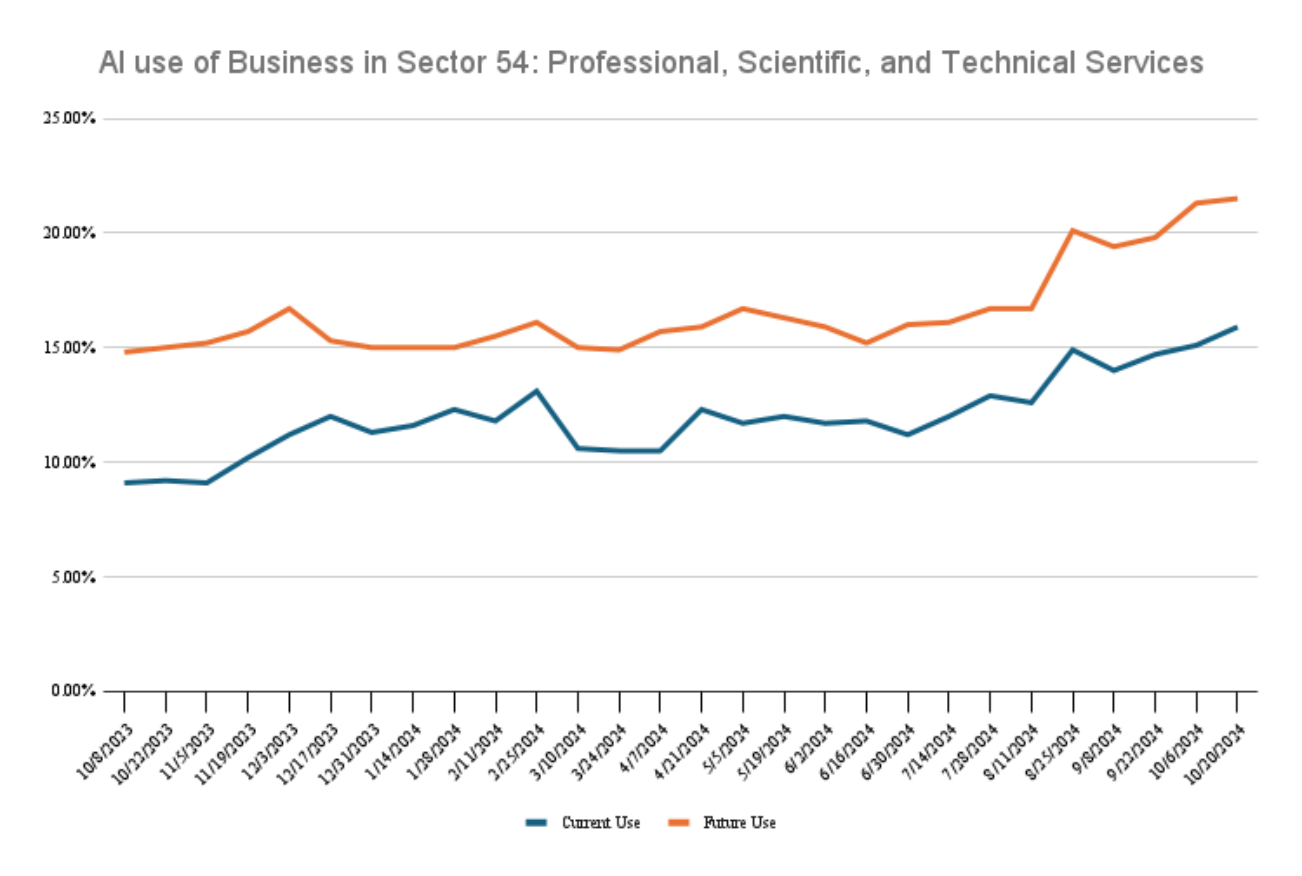
7. Between MMM DD – MMM DD, did this business use Artificial Intelligence (AI)[1] in producing goods or services? (Examples of AI: machine learning, natural language processing, virtual agents, voice recognition, etc.) Yes No Do not know

25. During the next six months, do you think this business will be using Artificial Intelligence (AI)[1] in producing goods or services? (Examples of AI: machine learning, natural language processing, virtual agents, voice recognition, etc.) Yes No Do not know

1 (Added 10/23/23) AI Definition: Computer systems and software that are able to perform tasks normally requiring human intelligence, such as decision-making, visual perception, speech recognition, and language processing. Types or applications of AI include machine learning, natural language processing, virtual agents, predictive analytics, machine vision, voice recognition, decision making systems, data analytics, image processing, etc.

Full Questionnaire

Trends


AI use of Business in Sector 54: Professional, Scientific, and Technical Services
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
10/8/2023
10/22/2023
11/5/2023
11/19/2023
12/3/2023
12/17/2023
12/31/2023
1/14/2024
1/28/2024
2/11/2024
2/25/2024
3/10/2024
3/24/2024
4/7/2024
4/21/2024
5/5/2024
5/19/2024
6/2/2024
6/16/2024
6/30/2024
7/14/2024
7/28/2024
9/11/2024
9/25/2024
9/8/2024
9/22/2024
10/6/2024
10/20/2024
Current Use
Future Use

Artificial Intelligence Supplement in BTOS

Panel done: 12/04/2023 to 02/25/2024

All 1.2 million were asked, not just one panel.

Additional 13 questions

Time Difference- last 6 month, instead of last 2 months

Download the questions and answers, Excel
https://www.census.gov/hfp/btos/downloads/Supplement%20Table.xlsx

AI Supplement Questions

24. In the last six months, what types or applications of Artificial Intelligence (AI) did this business use in producing goods or services? Select all that apply.

25. In the last six months, did this business use Artificial Intelligence to perform tasks previously done by employees in producing goods or services?

26. In the last six months, how many tasks previously done by employees were instead performed by Artificial Intelligence?

27. In the last six months, did this business use Artificial Intelligence to perform operations previously performed by existing equipment or software in producing goods or services?

28. In the last six months, how did the use of Artificial Intelligence affect this business's total employment?

28. In the last six months, how did the use of Artificial Intelligence affect this business's total employment?

AI Supplement Questions continued

30. During the next six months, do you think this business will be using Artificial Intelligence (AI) in producing goods or services? (Examples of AI: machine learning, natural language processing, virtual agents, voice recognition, etc.)

31. During the next six months, what types or applications of Artificial Intelligence (AI) do you think this business will use in producing goods or services? Select all that apply.

32. During the next six months, do you think this business will use Artificial Intelligence to perform tasks currently done by employees in producing goods or services?

33. During the next six months, how many tasks currently done by employees will instead be performed by Artificial Intelligence?

34. During the next six months, do you think this business will use Artificial Intelligence to perform operations currently performed by existing equipment and software in producing goods or services?

AI Supplement Questions continued

35. During the next six months, how do you think the use of Artificial Intelligence will affect this business's total employment?

36. During the next six months, to use Artificial Intelligence, what changes do you think this business will make? Select all that apply.

37. Why does this business not plan to use Artificial Intelligence (AI) during the next six months in producing goods or services? Select all that apply.

- Too expensive
- AI is not a mature enough technology yet
- Lack of knowledge on the capabilities of AI
- Concerns about privacy/security
- Concerns about bias
- Lack of skilled workforce
- Lack of required data
- Laws and regulations prevent or restrict use of AI
- Previous or current use of AI did not meet expectations
- Other
- AI is not applicable to this business

Tracking Firm Use of AI in Real Time: A Snapshot from the Business Trends and Outlook Survey (Boney, 2024)

Findings based on the September 2023 to February 2024 Business Trends and Outlook Survey.

- During this period, bi-weekly estimates of AI use rate rose from 3.7% to 5.4%, with an expected rate of about 6.6% by early Fall 2024.
- The fraction of workers at businesses that use AI is higher, especially for large businesses and in the Information sector.
- AI use is higher in large firms but the relationship between AI use and firm size is non-monotonic [not consistently increasing or decreasing]. In contrast, AI use is higher in young firms although, on an employment weighted basis, is U-shaped in firm age.
- Common uses of AI include marketing automation, virtual agents, and data/text analytics.
- AI users often utilize AI to substitute for worker tasks and equipment/software, but few report reductions in employment due to AI use.
- Many firms undergo organizational changes to accommodate AI, particularly by training staff, developing new workflows, and purchasing cloud services/storage.
- AI users also exhibit better overall performance and higher incidence of employment expansion compared to other businesses.
- The most common reason for non-adoption is the inapplicability of AI to the business.

Work From Home (WFH) in BTOS forthcoming

Panel done: October 2024, out in March 2025

All 1.2 million were asked, Whole Cycle, not just one panel.

Additional 11 questions

Time Difference- last 6 month, instead of last 2 months

https://www.census.gov/hfp/btos/downloads/BTOSContentV311.20.24Cycle2WFHSupplement.pdf

WFH Supplement Questions

27. Approximately what percentage of this business's paid employees currently work from home any of their workdays? A workday is 6 or more hours. Total must equal 100% of paid employees. Estimates are acceptable.

28. Five years ago (in 2019), approximately what percentage of this business's paid employees worked from home any of their workdays? A workday is 6 or more hours. Total must equal 100% of paid employees. Estimates are acceptable.

29. Looking forward to five years from now (in 2029), approximately what percentage of this business's paid employees do you think will work from home any of their workdays? A workday is 6 or more hours. Total must equal 100% of paid employees. Estimates are acceptable.

30. Does this business pay its fully remote employees based partly on the cost of living where they live (locality pay)?

WFH Supplement Questions Continued

31. What factors limit the ability of this business's paid employees to work from home? Select all that apply.

32. Does this business have a work from home policy with any minimum in-person (onsite) requirements?

33. How does this business track whether paid employees meet the minimum in-person (onsite) requirements? Select all that apply.

34. How does this business monitor the activity of paid employees working from home? Select all that apply.

35. How does this business monitor the activity of paid employees working in-person (onsite)? Select all that apply.

36. Has this business observed differences in productivity for paid employees based on whether they are working from home or in-person (onsite)?

06

Census Bureau's Business Trends and Outlook Survey

How to get the data

Questions Topics

Conditions and Predictions in:

- Performance - 2, 17
- Operating revenues/sales/receipts - 3, 18
- Employee Size - 4, 18
- Hours worked - 5, 19
- Supply Chain - 9, 20
- Inventories - 10, 21
- Demand - 11, 22
- Output prices - 12, 23
- Input prices - 13, 24
- Artificial Intelligence use - 7, 26
- Open or Closed Business - 8, 25

Interest rates impact - 14

Monetary losses due to weather - 15, 16

Work from home (WFH) - 6

Business Classification

National

States & District of Columbia

Puerto Rico

Top 25 MSA

Sector (2 digits)

Subsector (3 digits)

Employment Size

A	1 to 4 employees
B	Between 5 and 9 employees
C	Between 10 and 19 employees
D	Between 20 and 49 employees
E	Between 50 and 99 employees
F	Between 100 and 249 employees
G	250 or more employees

Known Issues

What could go wrong?

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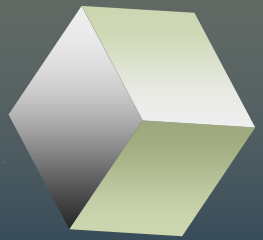
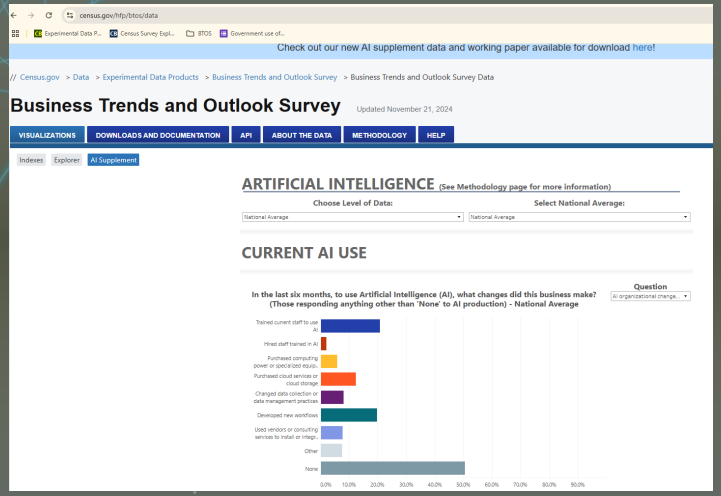
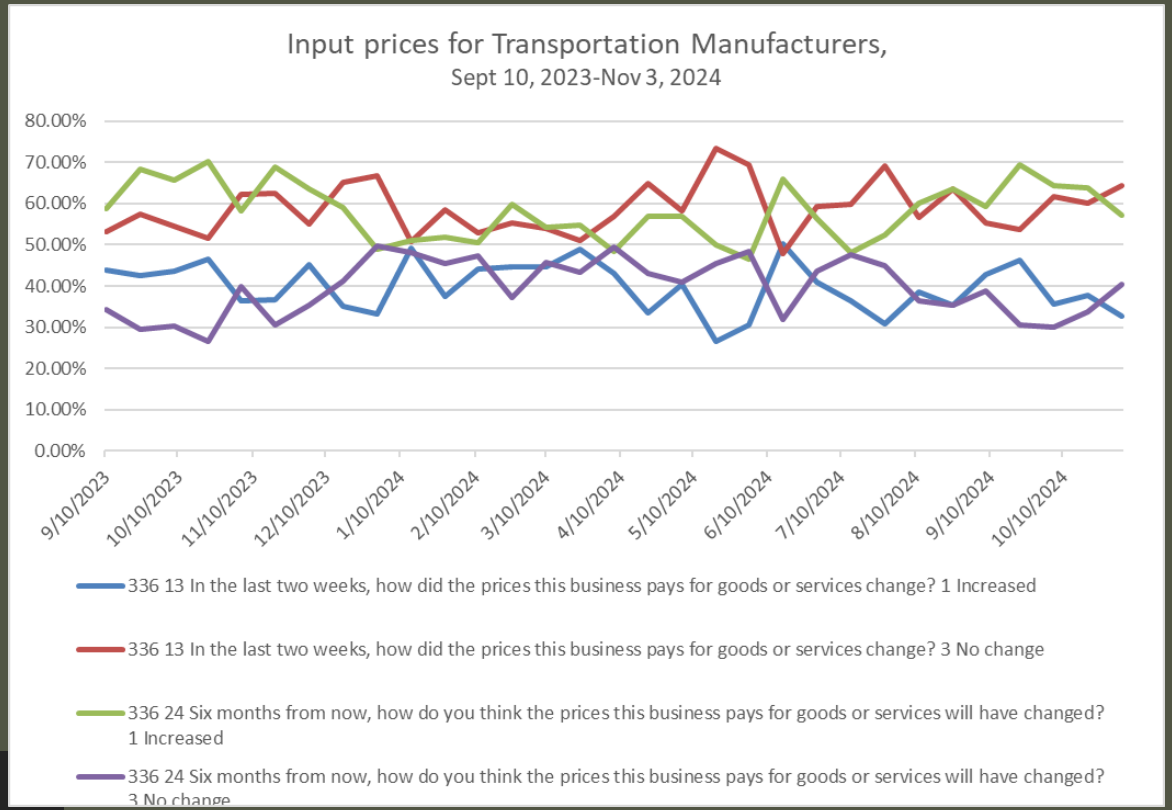




BTOS Data

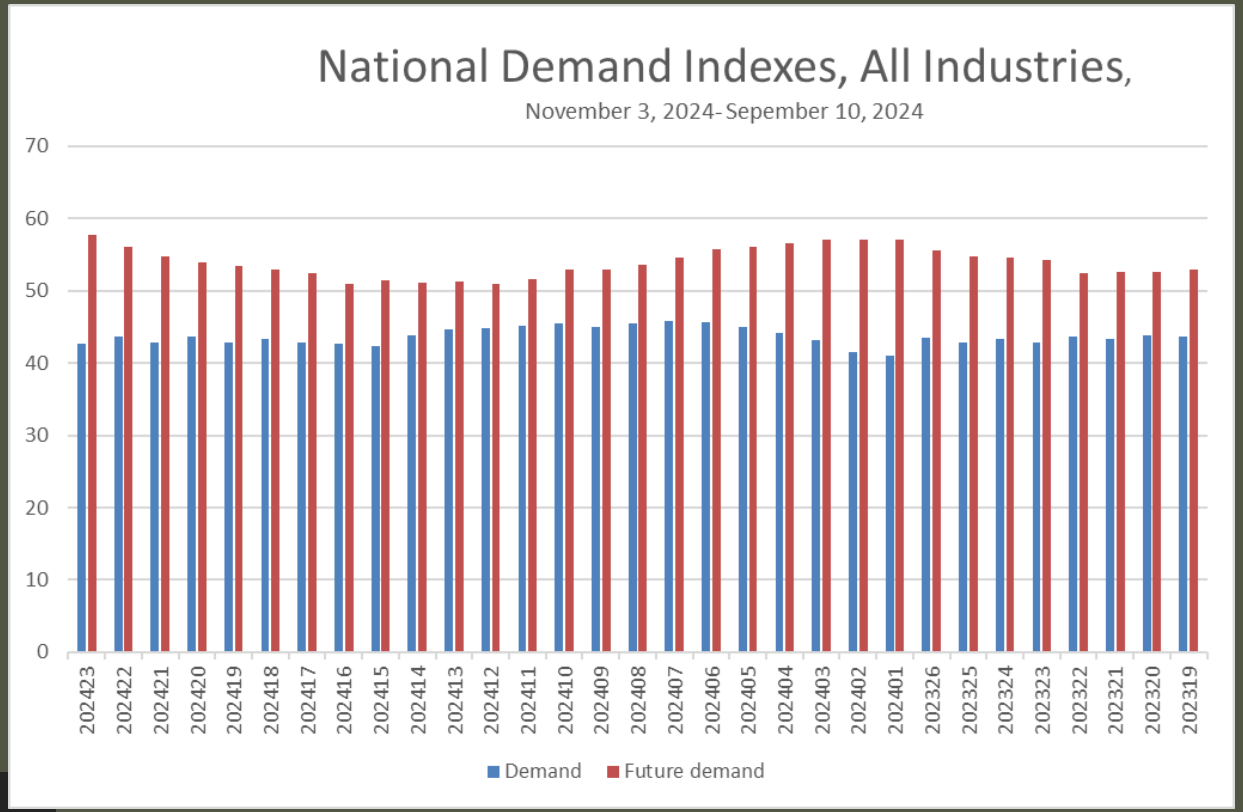
https://www.census.gov/hfp/btos/data

How not to create chart



Note: Table created by Jennifer C. Boettcher, from Data from U.S. Census Bureau. Business Trends and Outlook Survey: Subsector. https://www.census.gov/hfp/btos/data_downloads. Date: Sept 10, 2023 thru Nov 3, 2024. Questions: 13 &24. Subsector: 336

Trends in demand for businesses goods or services indexed



Note: Table created by Jennifer C. Boettcher, from Data from U.S. Census Bureau. Business Trends and Outlook Survey: National. https://www.census.gov/hfp/btos/data_downloads. Date: 202423 thru 202319 Questions: 11 & 22, indexed

What is an BTOS Index?

An example can provide some insight into the interpretation of the index. Businesses are asked how revenue has changed in the last two weeks and can answer either increased, decreased, or no change. The following formula is used throughout the example.

Index = 100*(1*Increased + ½*NoChange + 0*Decreased)

(1) Assume that 10% of businesses reported an increase in revenue, 60% reported no change, and 30% reported a decrease in revenue. Using the following formula gives an estimate of Index = 100*(10% + ½*60% + 0*30%) = 40

Methodology

Why BTOS is the Best

Timely

Data released 2 weeks, with only 2 week delay. High-frequency survey

Consistent

Same 25 questions about current & future conditions, Occasionally adding

Geographic

US, States, DC, PR, And 25 populous MSA

Industries

Most Sectors and Subsectors

Access

Visualizations, Downloads, API, Microdata at FSRDC

THANKS!

Do you have any questions?

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Learn more from Boettcher

NAICS/NAPCS

"*Knowing NAPCS, the North American PRODUCT Classification System: Its Origin, Structure, Uses, and Limitations,*"2023, (Slides)
"*The Shifting Ground of NAICS: Retail, Information, and Other Subsectors Have Changed,*" 2022, (Slides)
"Using NAICS Codes Effectively to Research Industries," *Online Searcher* 46, no. 5 (September/October 2022): 15-25.
"Changes to NAICS Revises Industry Research," *Online Searcher* 46, no. 4 (July/August 2022): 16-21.

Economic Census

Jennifer C. Boettcher and Leonard M. Gains. *Industry Research Using the Economic Census*. Greenwood Press: Phoenix, AZ. 2004.
"*Industry Research using the Economic Census*," NCLA 2019, Webinar. (Slides)
Jennifer Boettcher, Vicki Mack, and Maria Valdisera. "*American Community Survey (ACS) and the Economic Census: Gathering and Interpreting Powerful Data that is Already at Your Fingertips*," 2024, (Slides)

Writing

"Supporting Authors in Our Midst," *SLA Information Outlook.* Fall 2024.
"*Where Do You Find the Time: Writing Leave,*" (SOUCABL), March 9, 2024, (Slides)
"*Autonomy & Time: Microgrants and Writing Leave*," Washington Research Library Consortium Annual Meeting, Online Presentation. May 23, 2024 (Slides)

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