NATIONAL BANK OF ARIZONA

PERCEPTIONS VS. REALITY

WINTER 2023

APPLIED ANALYSIS

Perceptions

Reality

Local

Image Source: (Oriol Domingo/shutterstock.com)

Image Source: (Oriol Domingo/shutterstock.com)

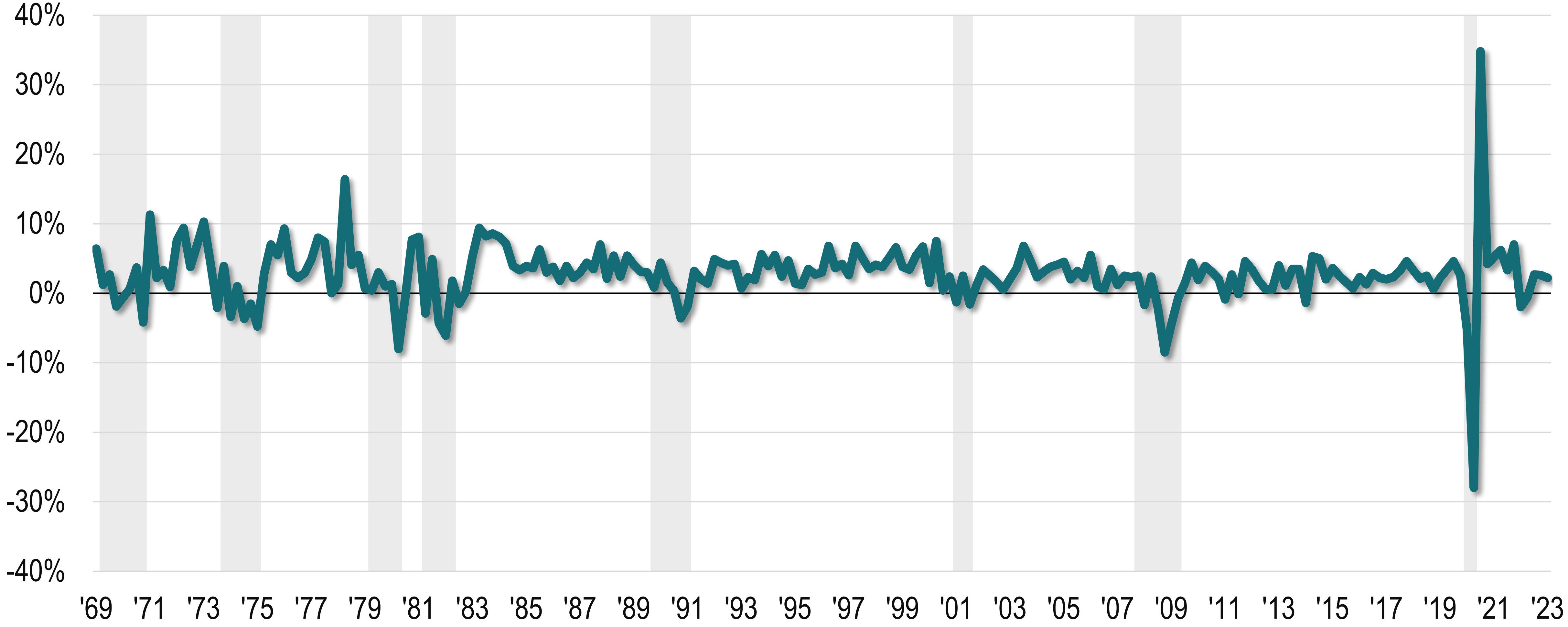
Perceptions

Reality

Local

Real GDP Growth

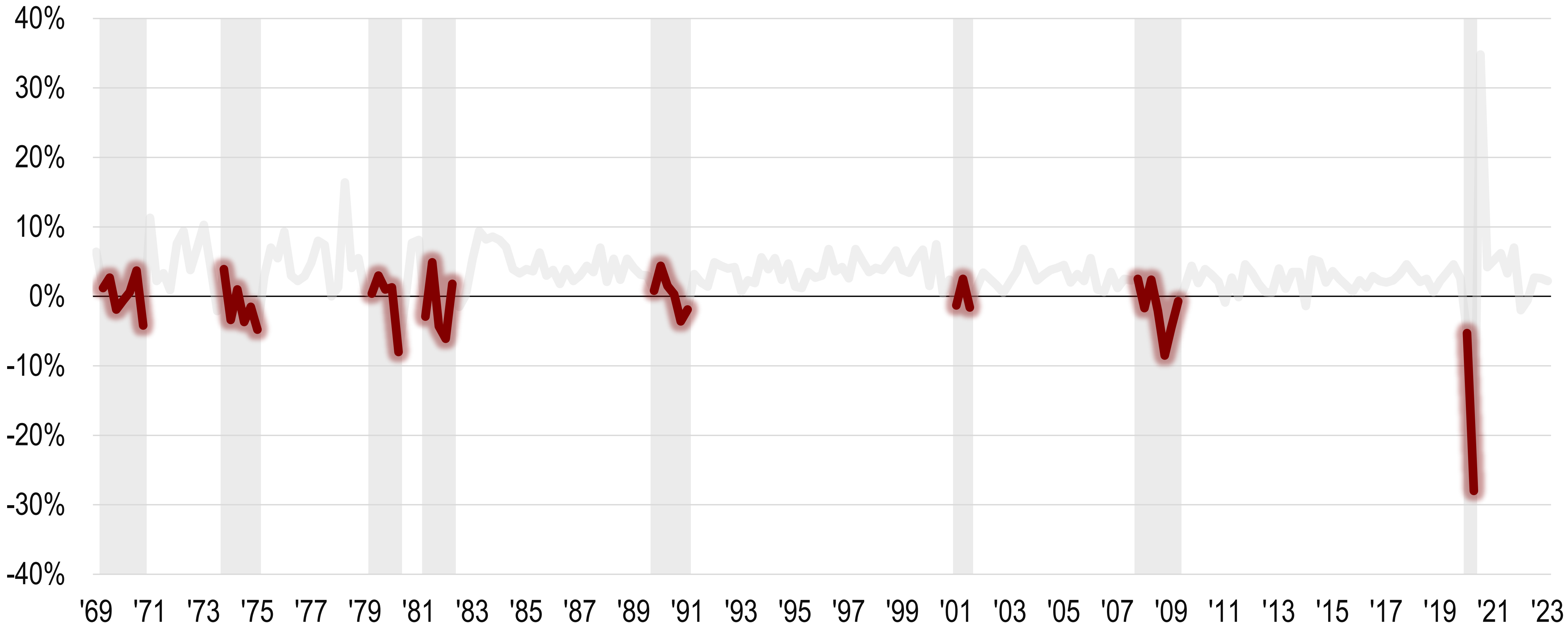
United States | Change From Preceding Period



Source: U.S. Bureau of Economic Analysis

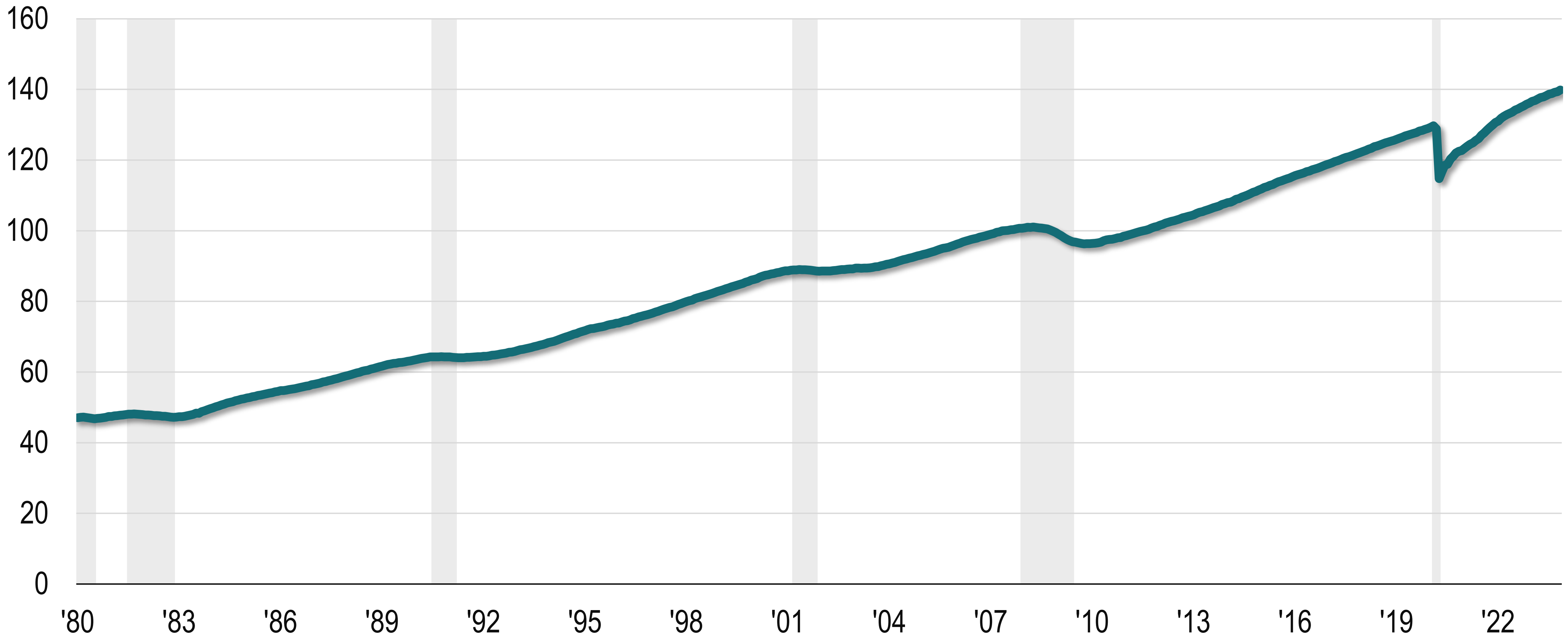
Real GDP Growth

United States | Change From Preceding Period



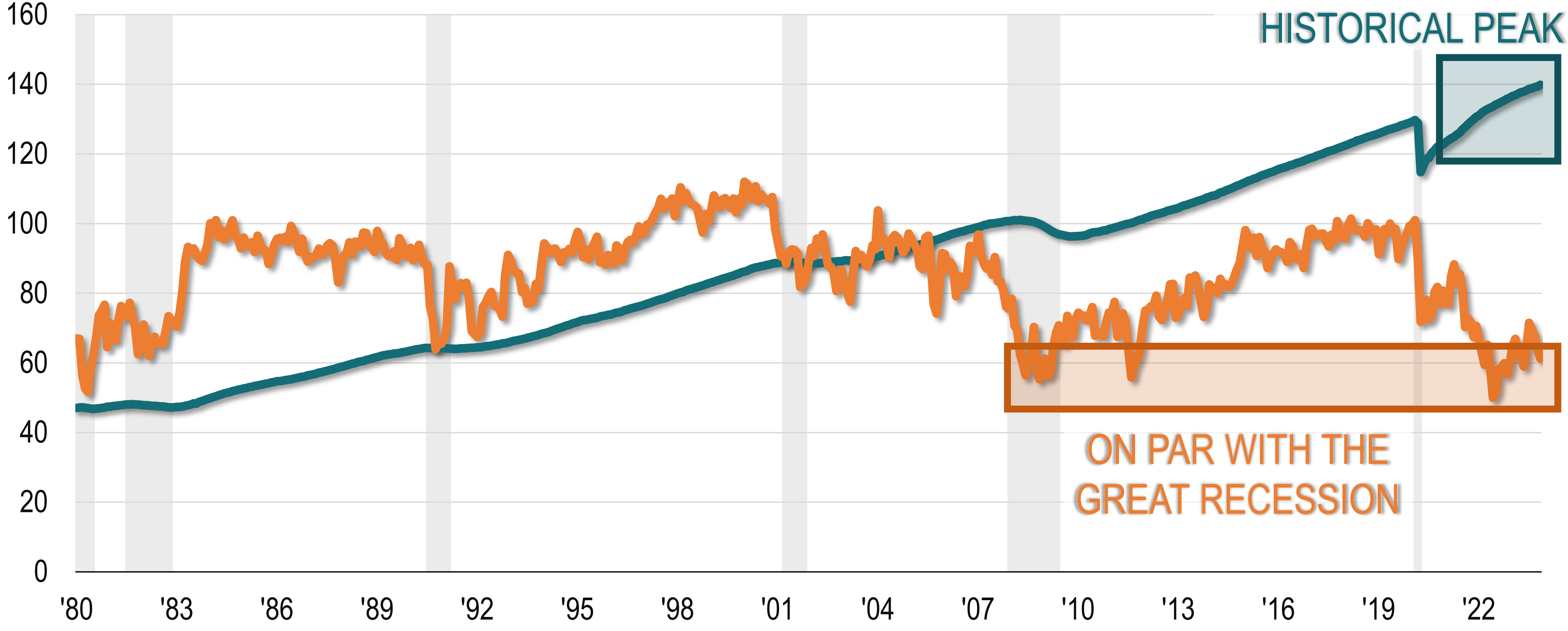
Source: U.S. Bureau of Economic Analysis

Coincident Economic Activity Index



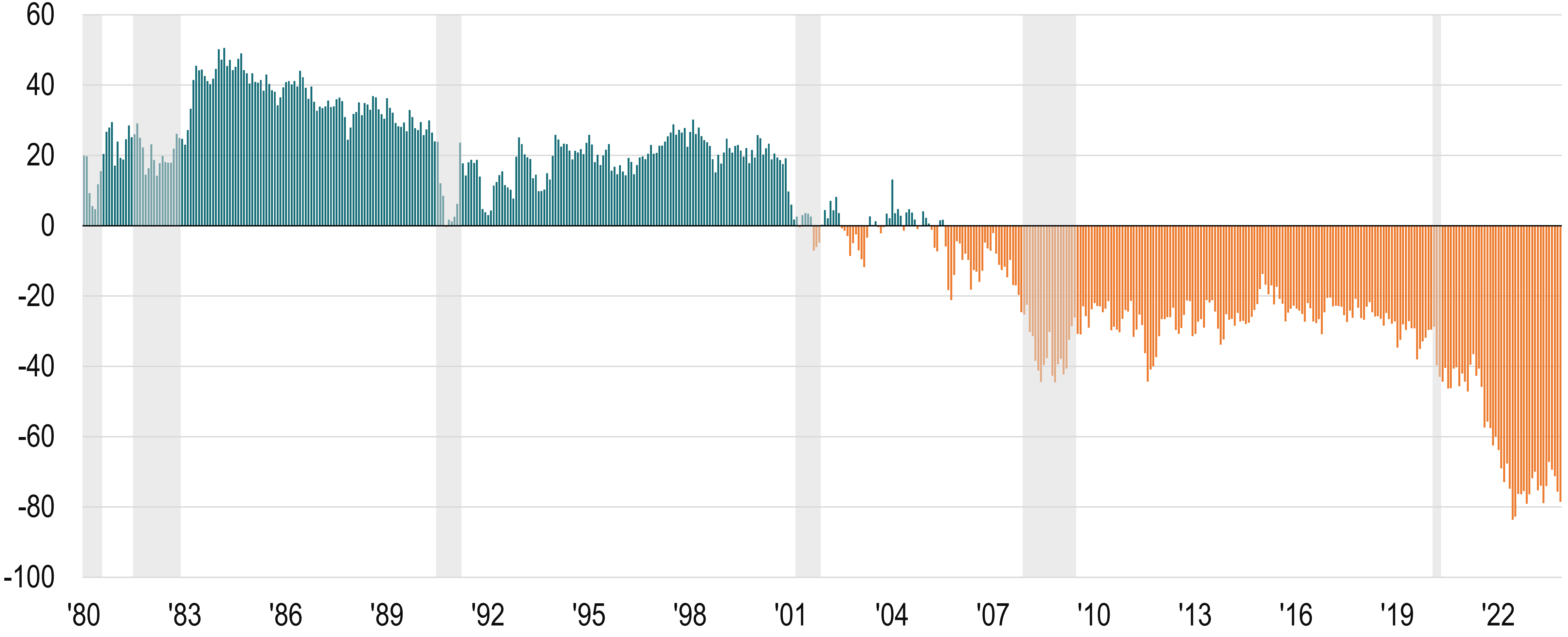
Source: Federal Reserve Bank of Philadelphia

Coincident Economic Activity Index vs. Consumer Sentiment



Source: Federal Reserve Bank of Philadelphia; University of Michigan

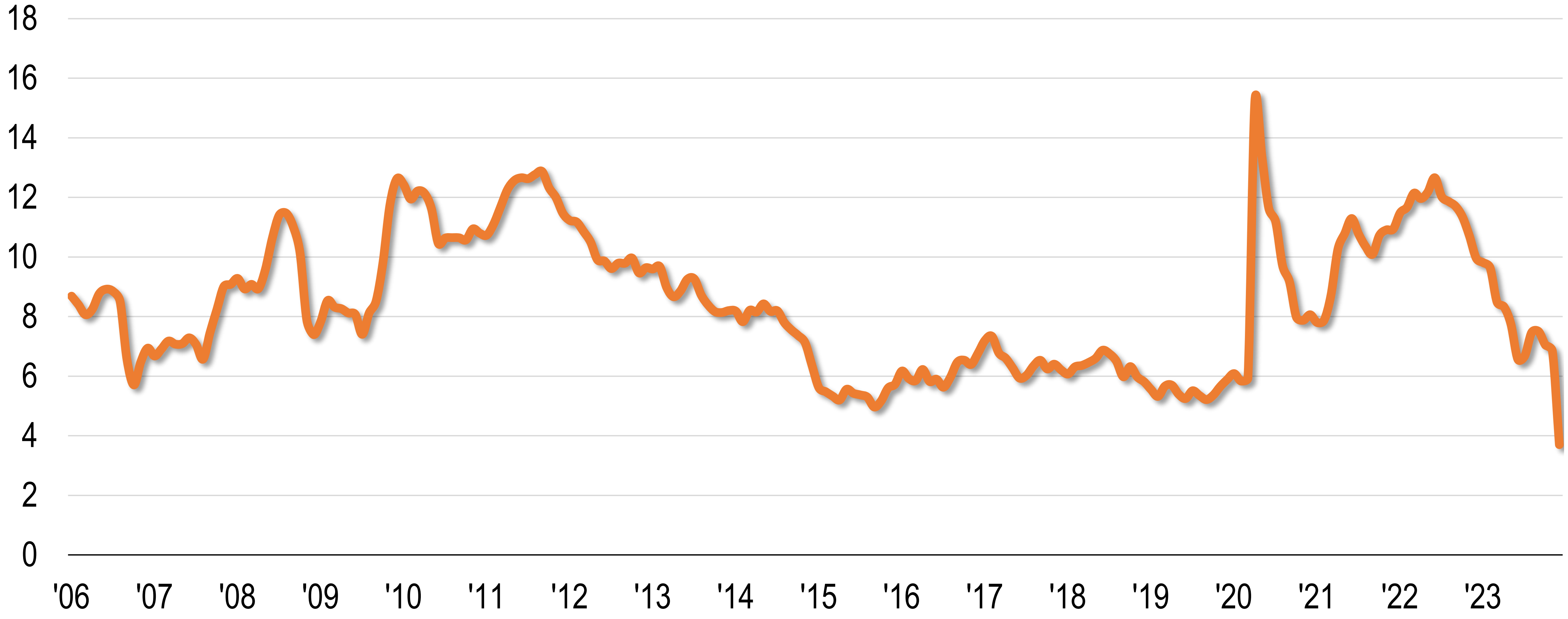
Coincident Economic Activity Index vs. Consumer Sentiment Variance



Source: Federal Reserve Bank of Philadelphia; University of Michigan

Misery Index

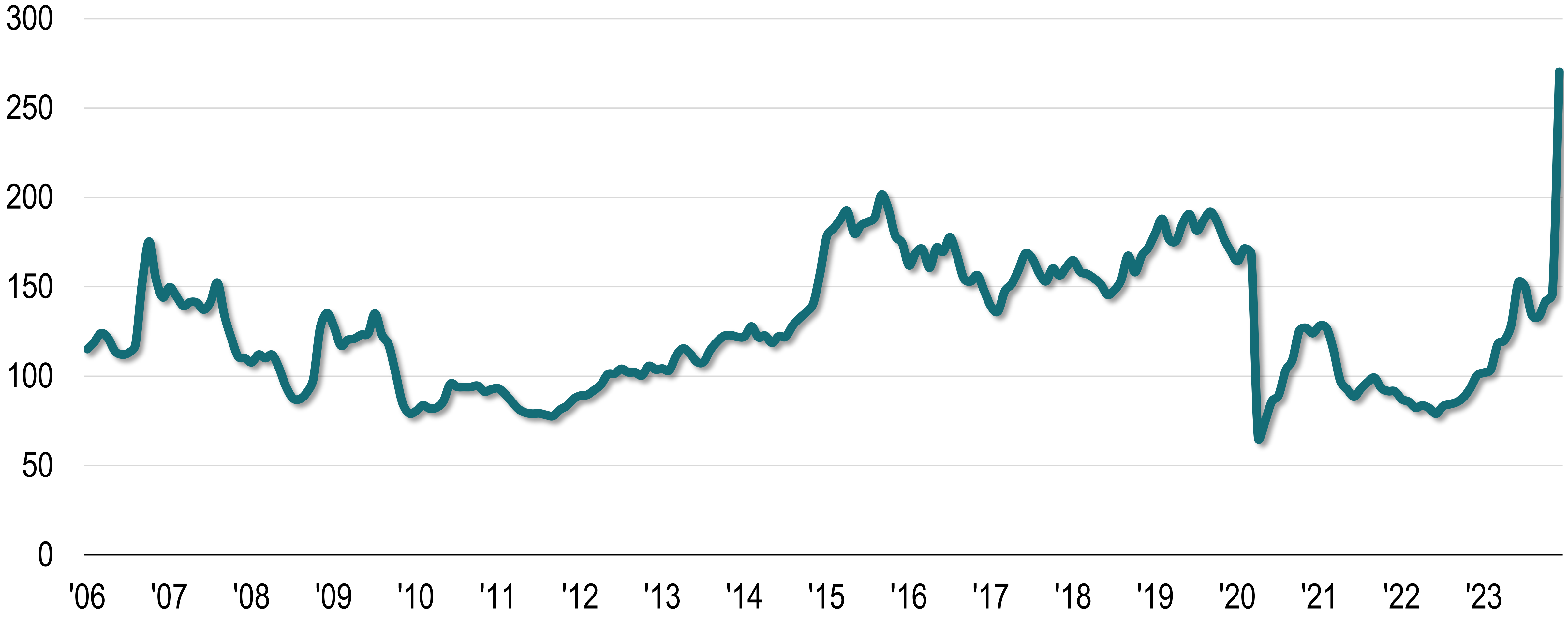
United States



Source: U.S. Bureau of Labor Statistics

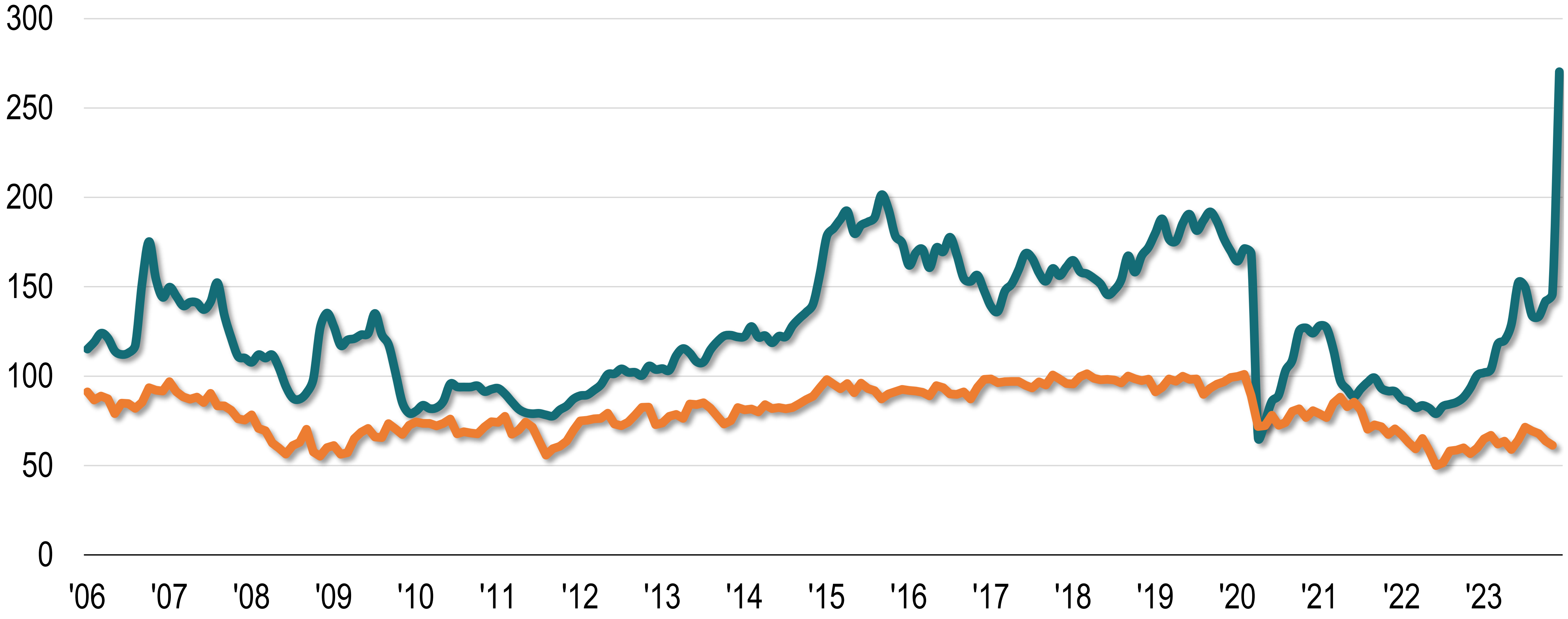
Happiness Index

United States



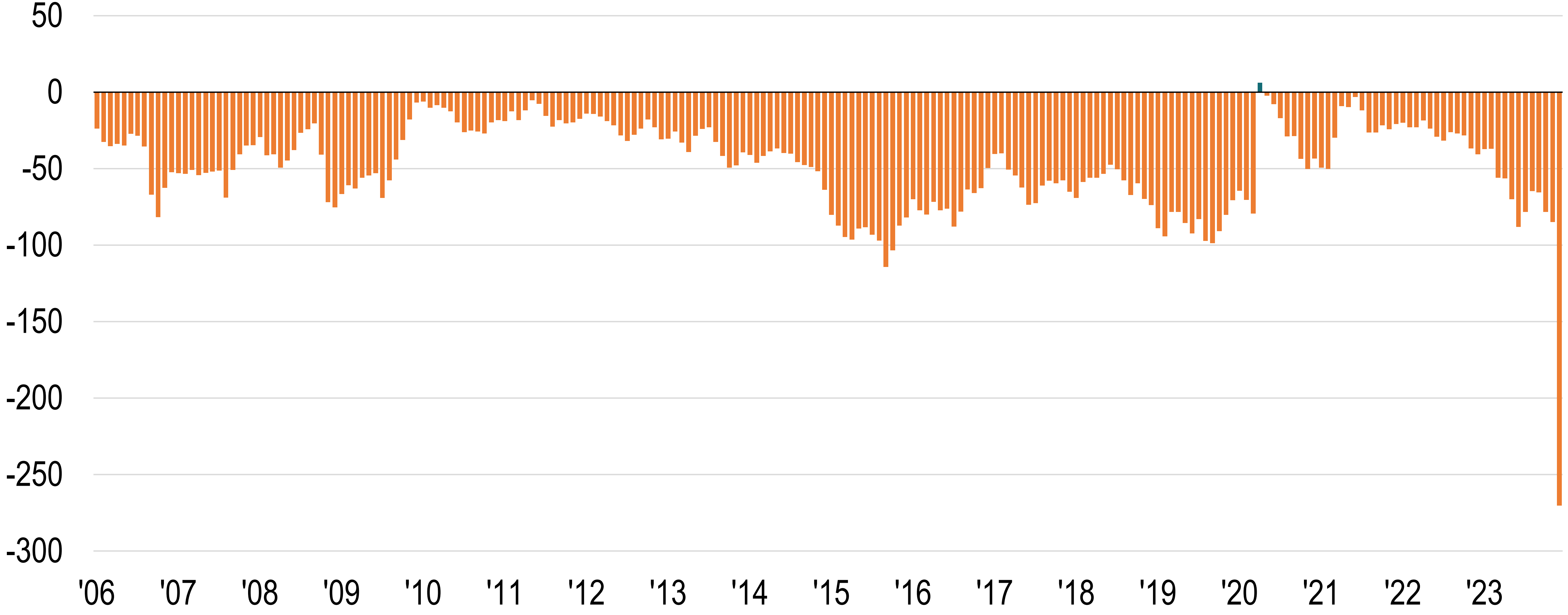
Source: U.S. Bureau of Labor Statistics

Happiness Index vs. Consumer Sentiment



Source: U.S. Bureau of Labor Statistics; University of Michigan

Happiness Index vs. Consumer Sentiment Variance



Source: U.S. Bureau of Labor Statistics; University of Michigan

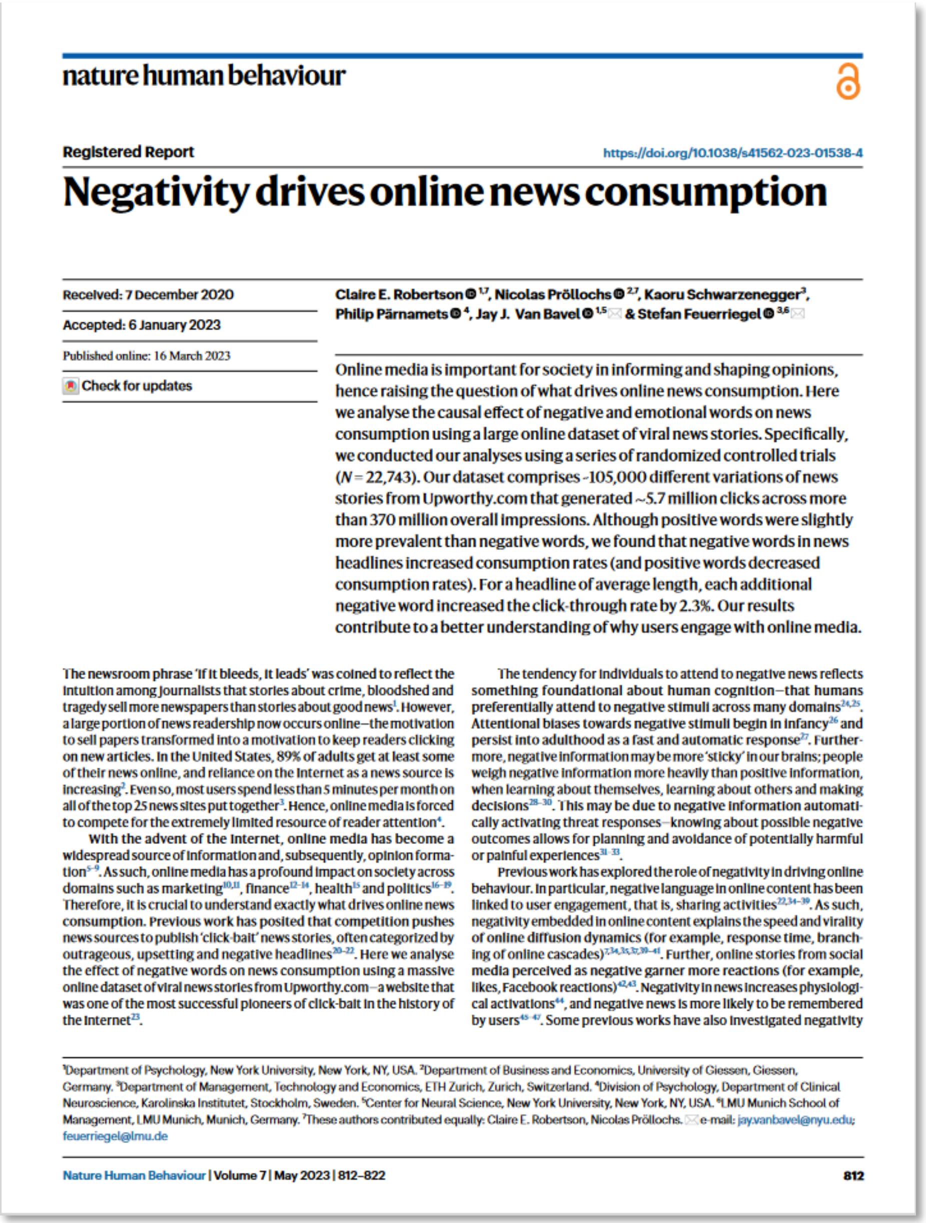
Why Are We Seeing This Happen?

Image Source: (Summit Art Creations/shutterstock.com)

2 MILLION+

NEWS ARTICLES EACH DAY

Image Source: (Mint Pixels/shutterstock.com)



nature human behaviour

Registered Report

https://doi.org/10.1038/s41562-023-01538-4

Negativity drives online news consumption

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Check for updates

Claire E. Robertson[1,7], Nicolas Pröllochs[2,7], Kaoru Schwarzenegger[3], Philip Pärnamets[4], Jay J. Van Bavel[1,5] & Stefan Feuerriegel[3,6]

Online media is important for society in informing and shaping opinions, hence raising the question of what drives online news consumption. Here we analyse the causal effect of negative and emotional words on news consumption using a large online dataset of viral news stories. Specifically, we conducted our analyses using a series of randomized controlled trials (N = 22,743). Our dataset comprises ~105,000 different variations of news stories from Upworthy.com that generated ~5.7 million clicks across more than 370 million overall impressions. Although positive words were slightly more prevalent than negative words, we found that negative words in news headlines increased consumption rates (and positive words decreased consumption rates). For a headline of average length, each additional negative word increased the click-through rate by 2.3%. Our results contribute to a better understanding of why users engage with online media.

The newsroom phrase 'If it bleeds, it leads' was coined to reflect the intuition among journalists that stories about crime, bloodshed and tragedy sell more newspapers than stories about good news[1]. However, a large portion of news readership now occurs online—the motivation to sell papers transformed into a motivation to keep readers clicking on new articles. In the United States, 89% of adults get at least some of their news online, and reliance on the Internet as a news source is increasing[2]. Even so, most users spend less than 5 minutes per month on all of the top 25 news sites put together[3]. Hence, online media is forced to compete for the extremely limited resource of reader attention[4].

With the advent of the Internet, online media has become a widespread source of information and, subsequently, opinion formation[5–9]. As such, online media has a profound impact on society across domains such as marketing[10,11], finance[12–14], health[15] and politics[16–19]. Therefore, it is crucial to understand exactly what drives online news consumption. Previous work has posited that competition pushes news sources to publish 'click-bait' news stories, often categorized by outrageous, upsetting and negative headlines[20–22]. Here we analyse the effect of negative words on news consumption using a massive online dataset of viral news stories from Upworthy.com—a website that was one of the most successful pioneers of click-bait in the history of the Internet[23].

The tendency for individuals to attend to negative news reflects something foundational about human cognition—that humans preferentially attend to negative stimuli across many domains[24,25]. Attentional biases towards negative stimuli begin in infancy[26] and persist into adulthood as a fast and automatic response[27]. Furthermore, negative information may be more 'sticky' in our brains; people weigh negative information more heavily than positive information, when learning about themselves, learning about others and making decisions[28–30]. This may be due to negative information automatically activating threat responses—knowing about possible negative outcomes allows for planning and avoidance of potentially harmful or painful experiences[31–33].

Previous work has explored the role of negativity in driving online behaviour. In particular, negative language in online content has been linked to user engagement, that is, sharing activities[22,34–39]. As such, negativity embedded in online content explains the speed and virality of online diffusion dynamics (for example, response time, branching of online cascades)[7,34,35,37,39–41]. Further, online stories from social media perceived as negative garner more reactions (for example, likes, Facebook reactions)[42,43]. Negativity in news increases physiological activations[44], and negative news is more likely to be remembered by users[45–47]. Some previous works have also investigated negativity

[1]Department of Psychology, New York University, New York, NY, USA. [2]Department of Business and Economics, University of Giessen, Giessen, Germany. [3]Department of Management, Technology and Economics, ETH Zurich, Zurich, Switzerland. [4]Division of Psychology, Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden. [5]Center for Neural Science, New York University, New York, NY, USA. [6]LMU Munich School of Management, LMU Munich, Munich, Germany. [7]These authors contributed equally: Claire E. Robertson, Nicolas Pröllochs. e-mail: jay.vanbavel@nyu.edu; feuerriegel@lmu.de

FOR A HEADLINE OF AVERAGE LENGTH, EACH ADDITIONAL NEGATIVE WORD INCREASED THE CLICK-THROUGH RATE BY

2.3%

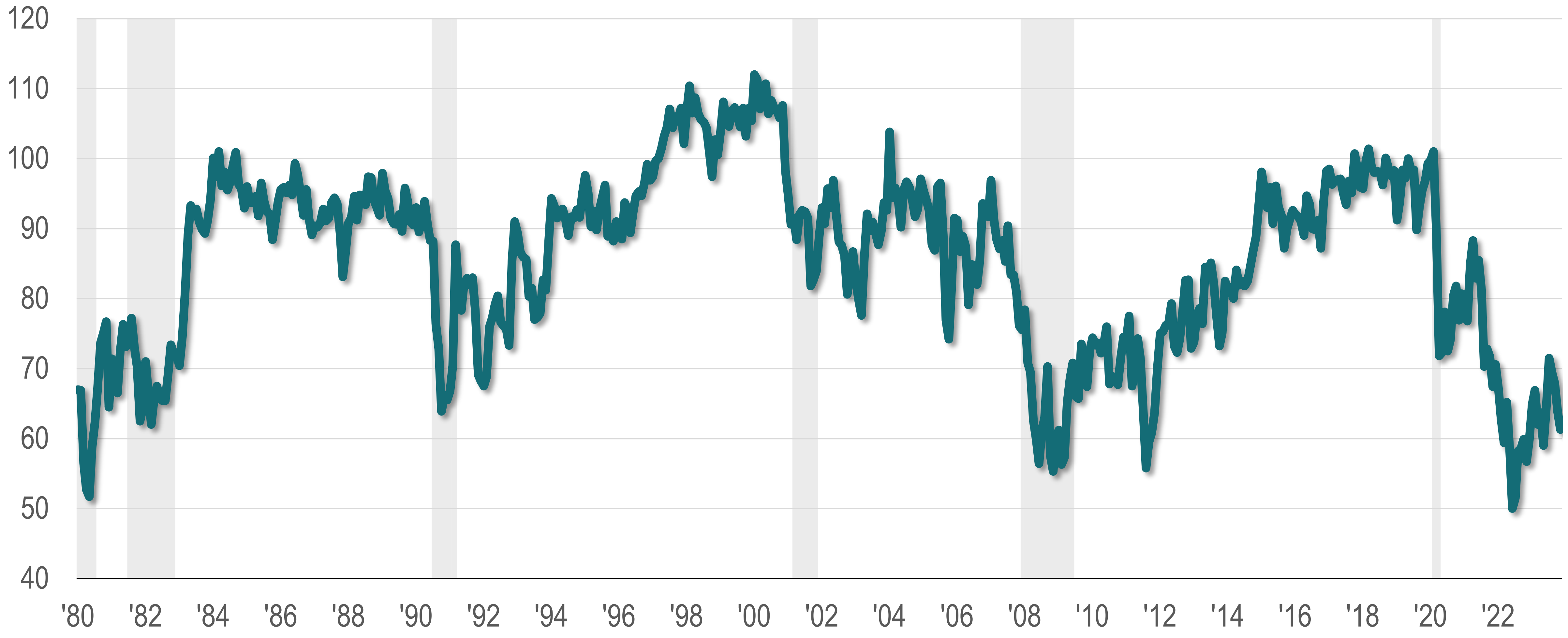
"If it bleeds, it leads."

-- William Randolph Hearst

Image Source: History.com

Consumer Sentiment

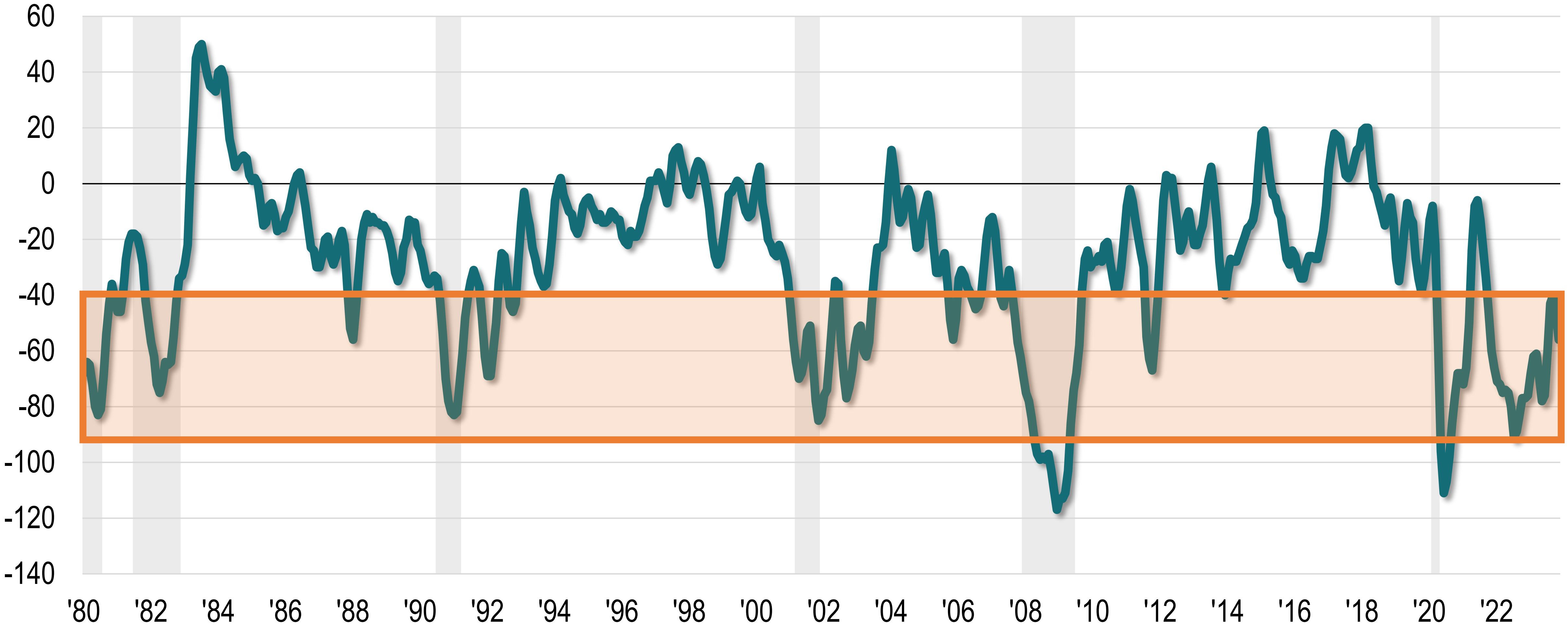
United States



Source: University of Michigan

News Heard – Favorable Minus Unfavorable

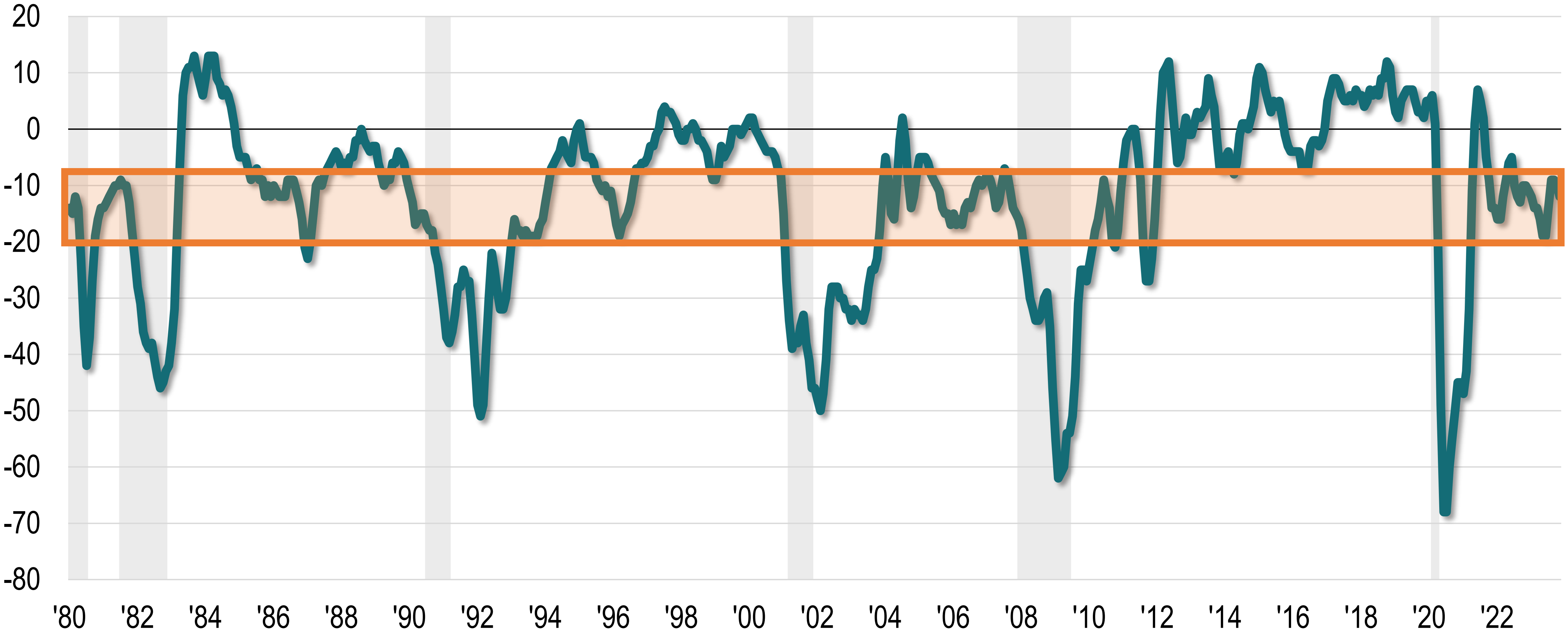
Recent Changes in Business Conditions



Source: University of Michigan

News Heard – Favorable Minus Unfavorable

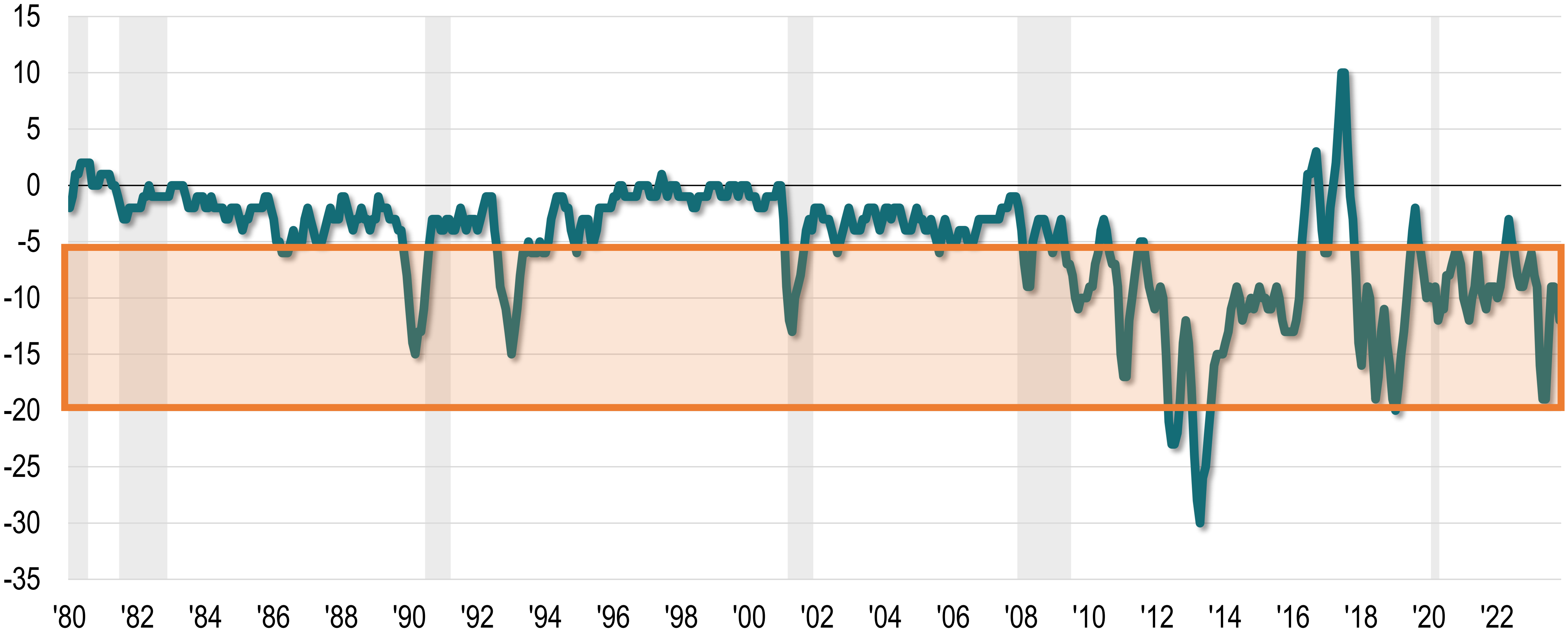
Changes in Employment



Source: University of Michigan

News Heard – Favorable Minus Unfavorable

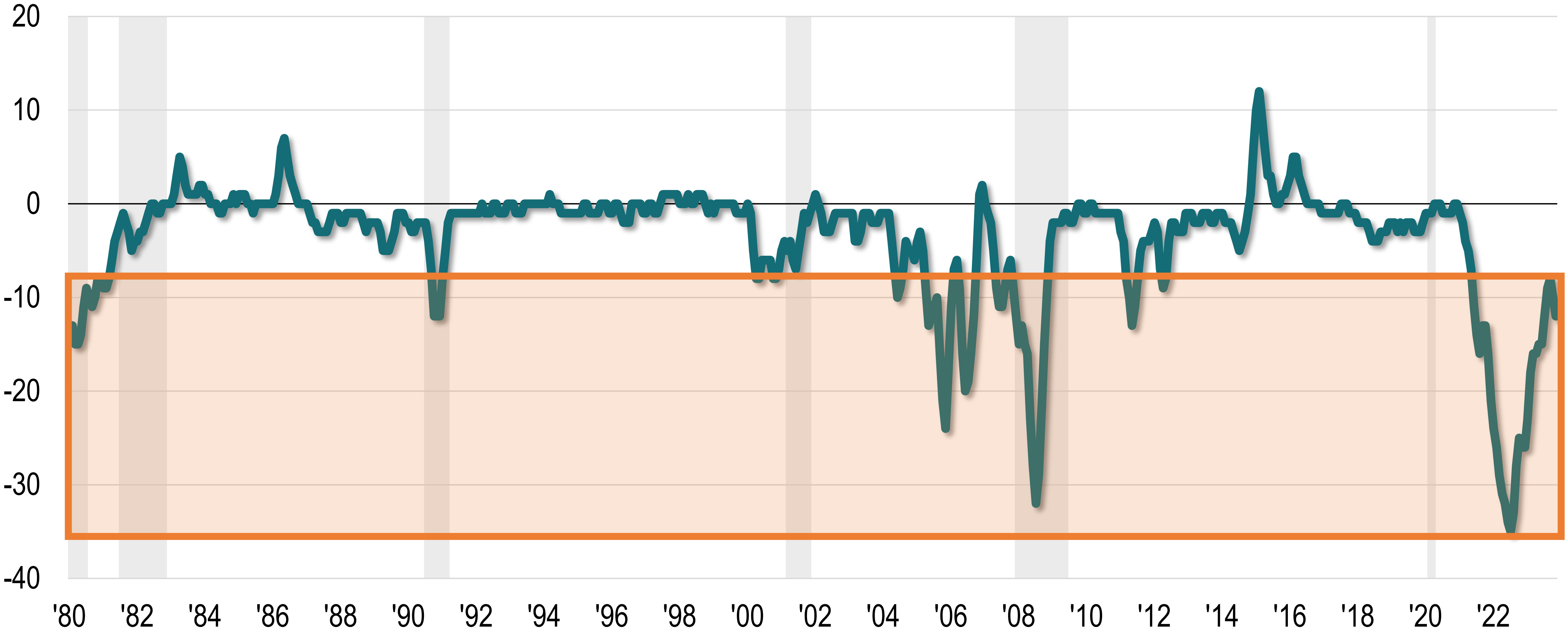
Government Economic Policies



Source: University of Michigan

News Heard – Favorable Minus Unfavorable

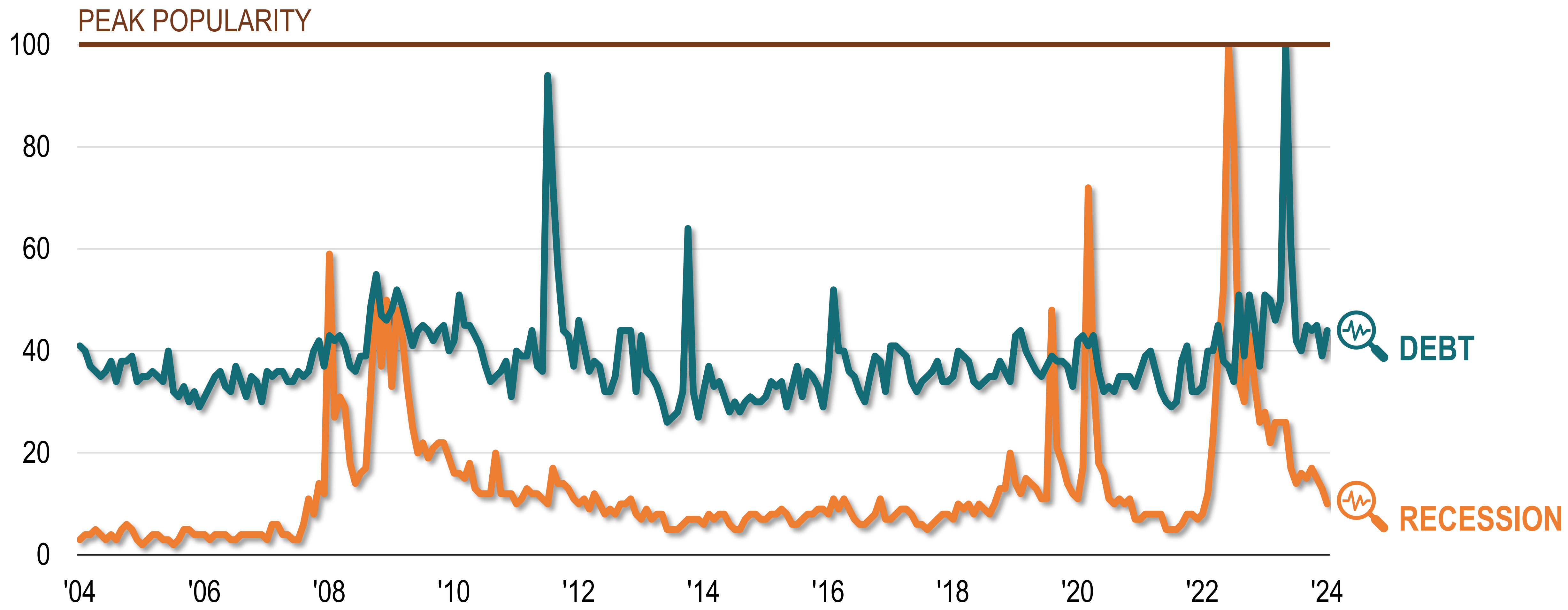
Price Changes



Source: University of Michigan

Internet Searches

United States | Last Ten Years



Source: Google Trends

TIME

Is It Bad for You to Read the News Constantly?

More than half of Americans say the news causes them stress, and many report feeling anxiety, fatigue or sleep loss as a result. Yet **one in 10 adults checks the news every hour**, and fully 20% of Americans report "constantly" monitoring their social media feeds.

Image Source: (Billion Photos/shutterstock.com)

Image Source: (Pixelove/shutterstock.com)

Image Source: (BongkarnGraphic/shutterstock.com)

Perceptions

Reality

Local

Image Source: (Oriol Domingo/shutterstock.com)

So, How is the Economy *Actually* Performing?

Image Source: (Summit Art Creations/shutterstock.com)

Economic Performance Indicators

Indicator	Current Period	Current Value	Pre-Pandemic Value	Percent Change	
Gross Domestic Product *(Billions)*	Q3 '23	$22,506	$20,665	8.9%	▲
Unemployment Rate[1]	Nov '23	3.6%	3.7%	(0.1%)	▼
Real Wage and Salary Growth	Nov '23	5.2%	3.7%	1.5%	▲
Producer Price Index	Nov '23	253.8	196.7	29.0%	▲
Retail Sales *(Millions)*	Nov '23	$610,995	$456,676	33.8%	▲
Industrial Production[1]	Nov '23	102.7	102.4	0.3%	▲
Housing Starts[1]	Nov '23	16,893	16,651	1.5%	▲
Building Permits	Nov '23	1,460	1,440	1.4%	▲
Balance of Trade	Oct '23	($64,255)	($40,611)	58.2%	▲
Value of U.S. Dollar	Nov '23	120.5	113.2	6.5%	▲
Corporate Profits After Tax	Q3 '23	$3,029.1	$2,009.6	50.7%	▲

[1] Trailing 12-month value

Unconventional Indicators

First Date Index

Note: All images are sourced to shutterstock.com.

Starbuck Index

Note: *All images are sourced to shutterstock.com.*

Men's Underwear Index

Note: All images are sourced to shutterstock.com.

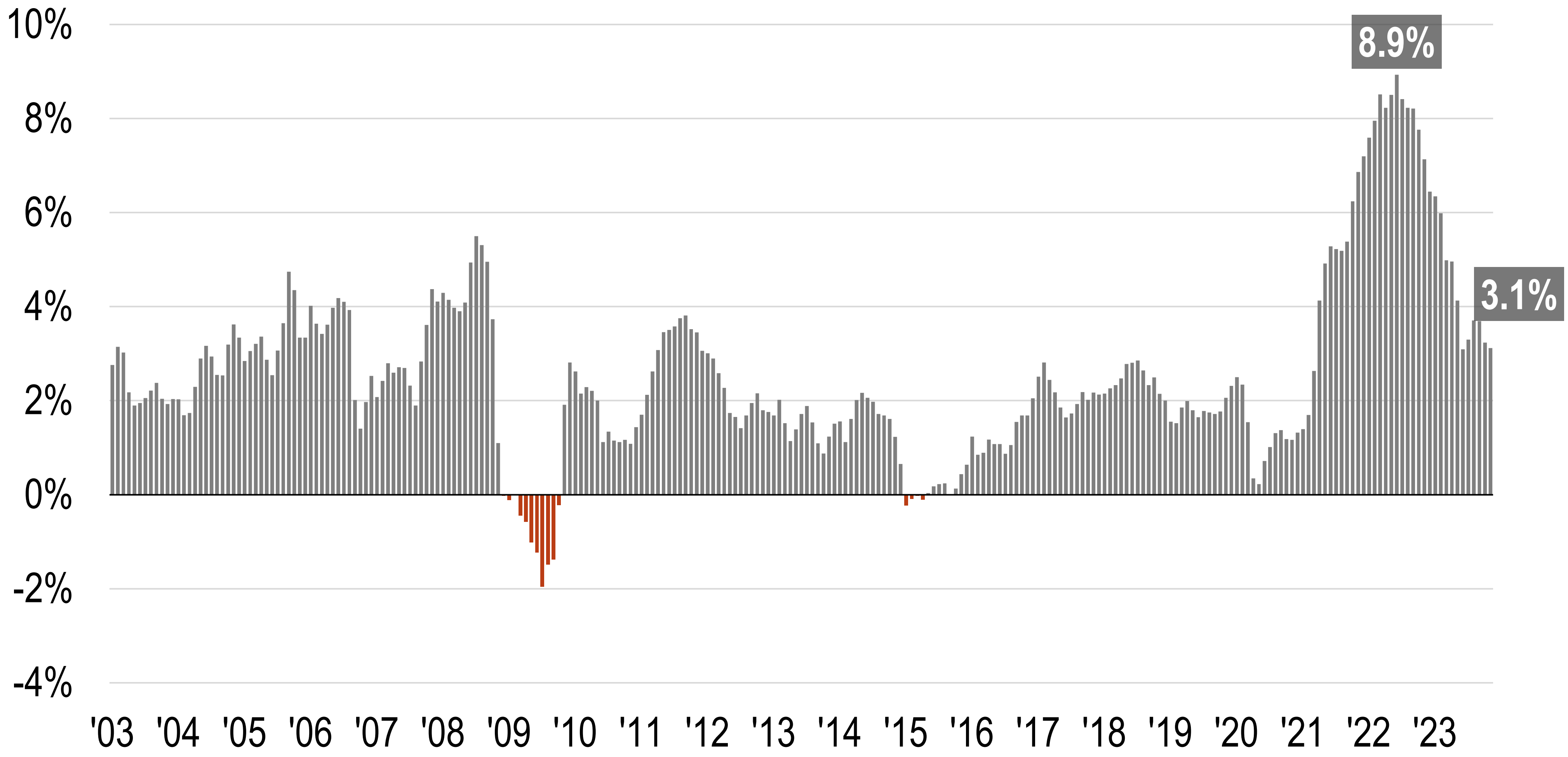
Garbage Index

Note: All images are sourced to shutterstock.com.

Are Consumers Experiencing Some Kind of *Mass Delusion?*

Consumer Price Index

United States | Year-Over-Year Growth

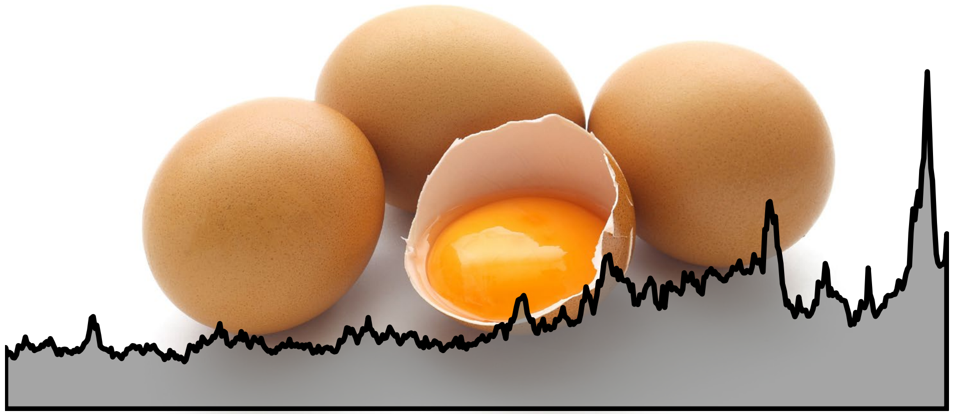


Source: University of Michigan

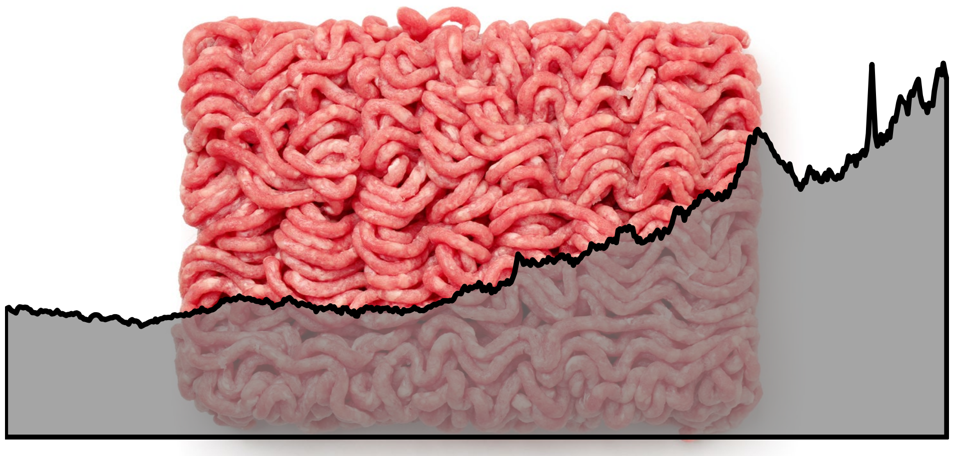
Disposable Income
Cost of Housing
Inflation

Bread

Eggs



Ground Beef

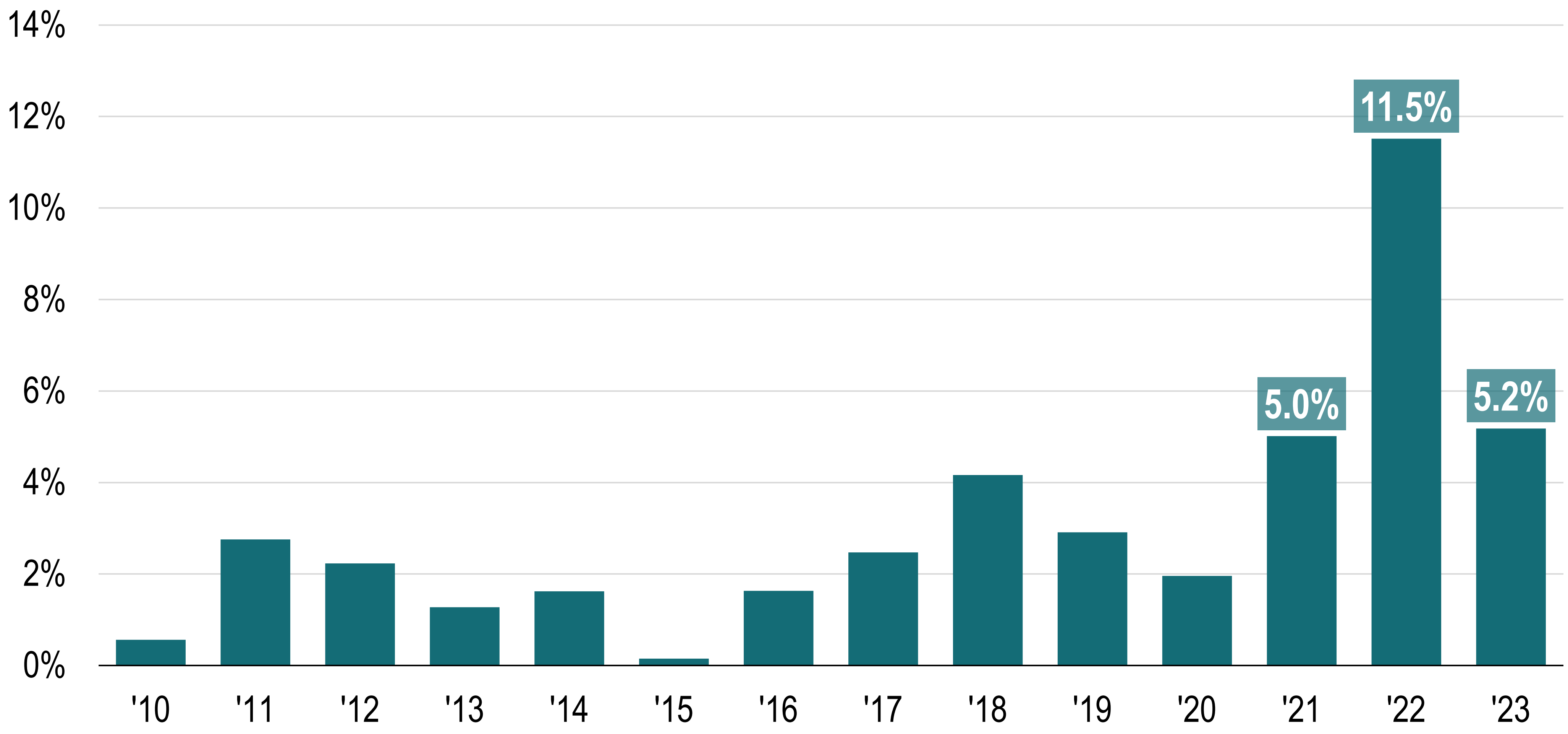


Electricity

Source: U.S. Bureau of Labor Statistics. Note: All images are sourced to shutterstock.com.

Consumer Price Index

Phoenix | Annual Change



Source: University of Michigan

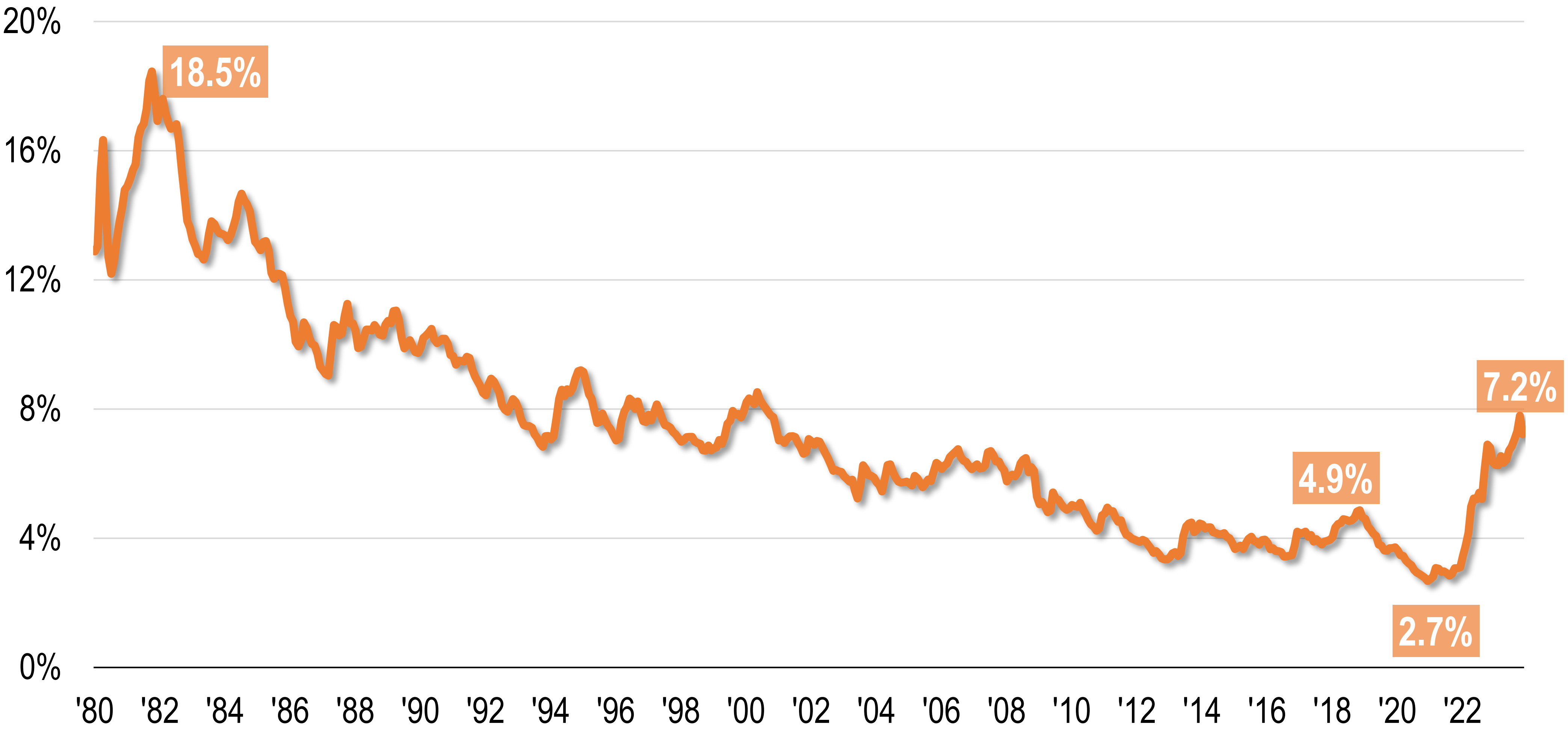
Disposable Income

Cost of Housing

Inflation

Mortgage Interest Rates

30-Year Fixed Rate



Source: Freddie Mac

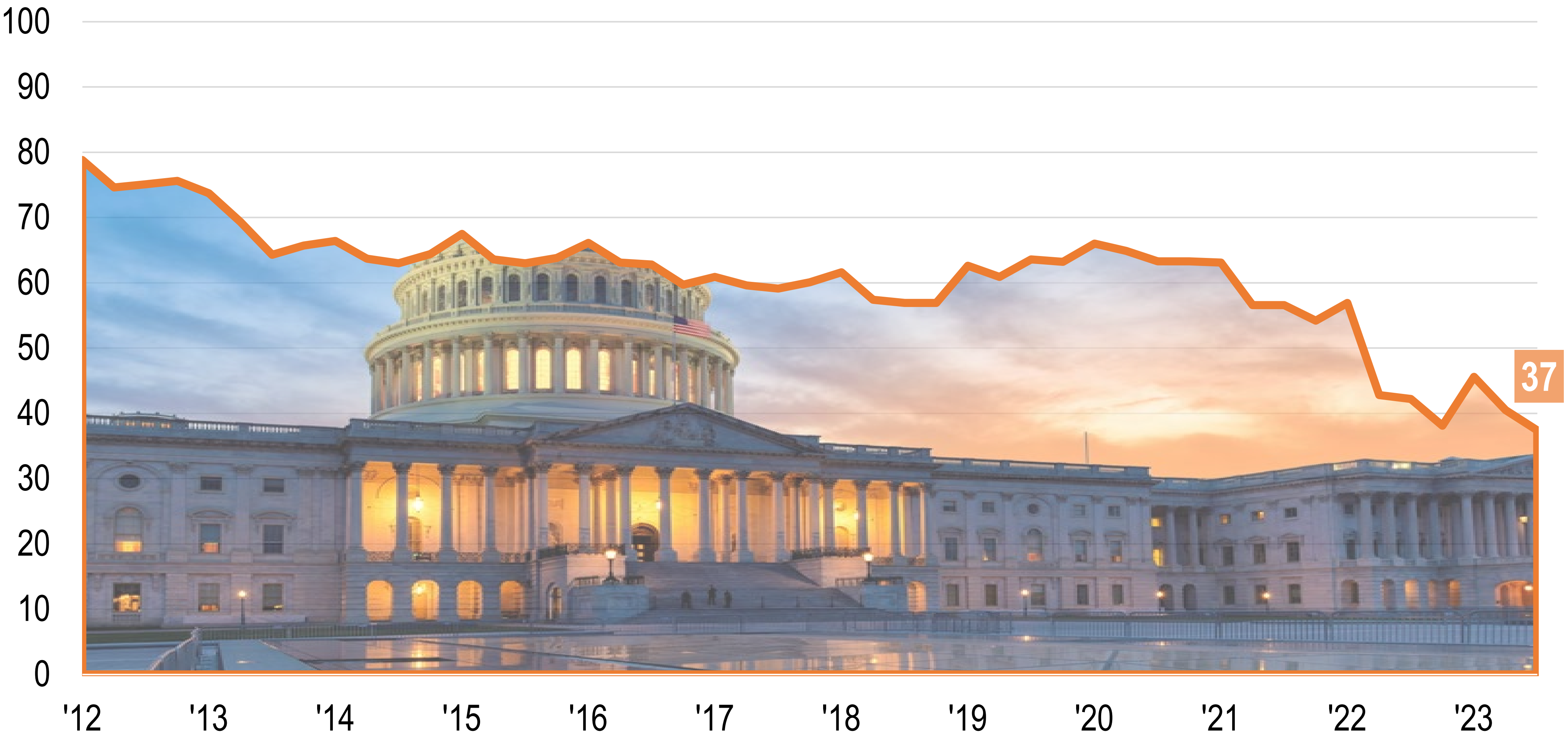
Disposable Income

Cost of Housing

Inflation

Housing Opportunity Index

National Average



Source: National Association of Home Builders. Note: Image is sourced to (Lucky-photographer/shutterstock.com).

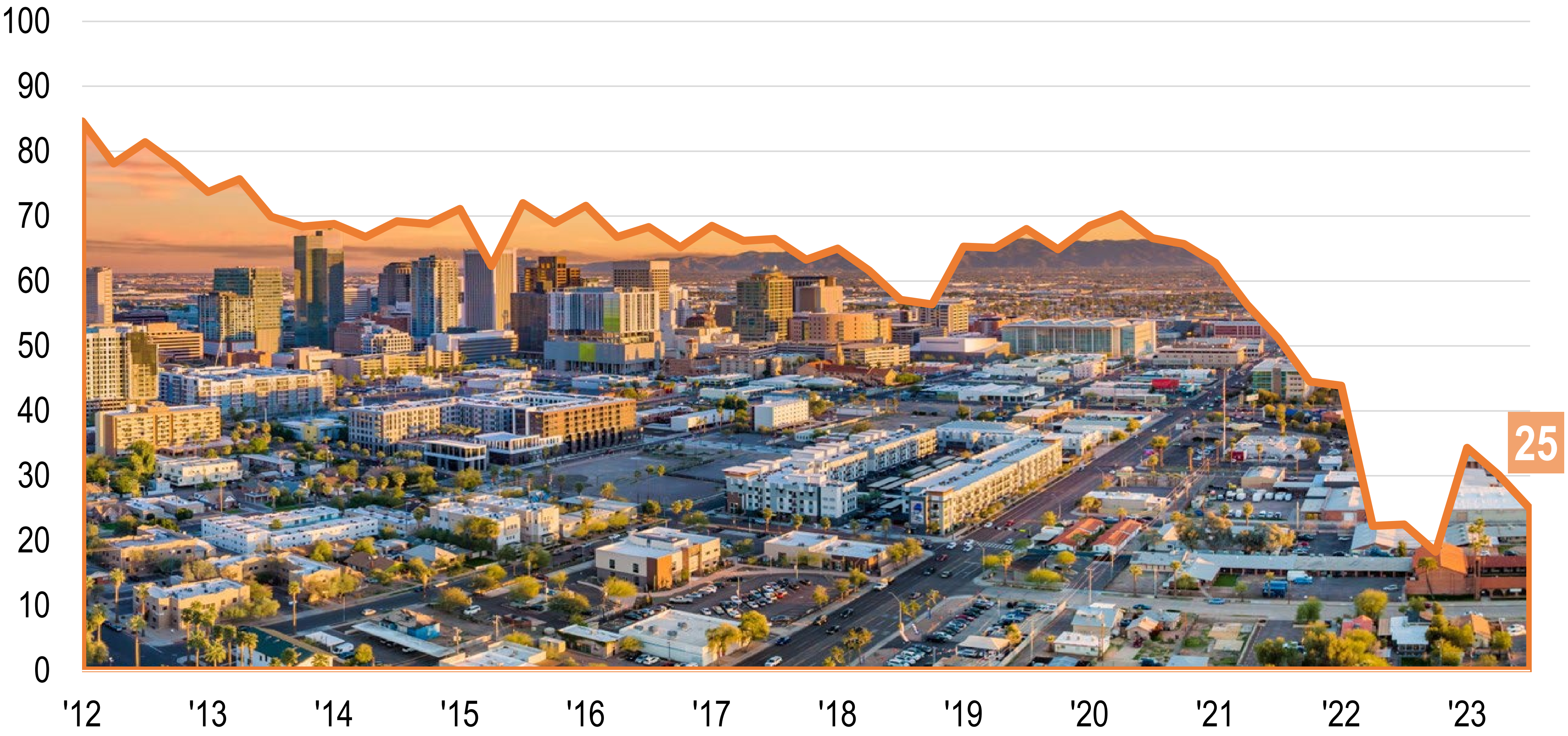
Disposable Income

Cost of Housing

Inflation

Housing Opportunity Index

Phoenix MSA



Source: National Association of Home Builders. Note: Image is sourced to (Kevin Ruck/shutterstock.com).

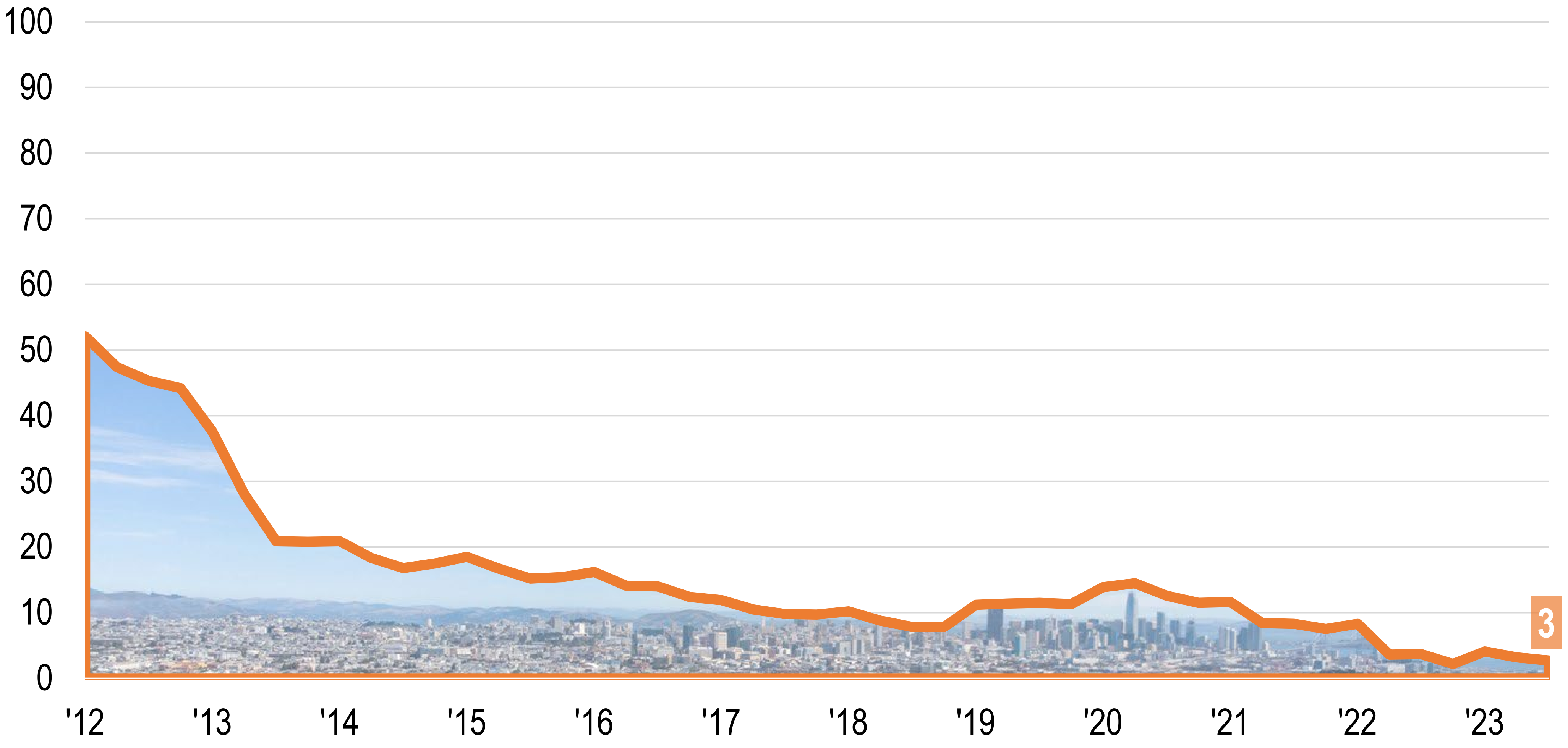
Disposable Income

Cost of Housing

Inflation

Housing Opportunity Index

Los Angeles



Source: National Association of Home Builders. Note: Image is sourced to shutterstock.com.

Disposable Income

Cost of Housing

Inflation

Monthly Mortgage Payment

$500,000 House

PRE-COVID	TODAY
$2,600	**$3,400**
	+$800

Source: SalesTraq

Housing Affordability

PRE-COVID

70%

Of Residents Can Afford Buying

TODAY

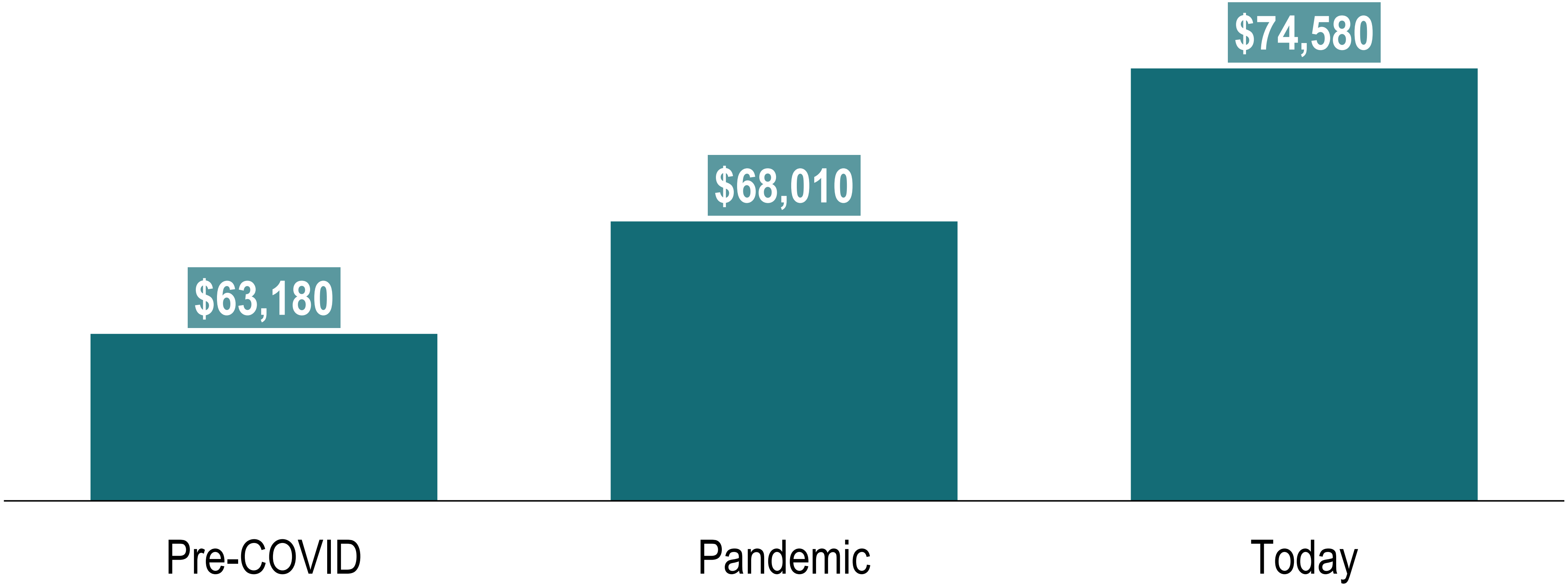
25%

Of Residents Can Afford Buying

Source: SalesTraq

Median Household Income

United States



Source: U.S. Census Bureau; U.S. Bureau of Economic Analysis

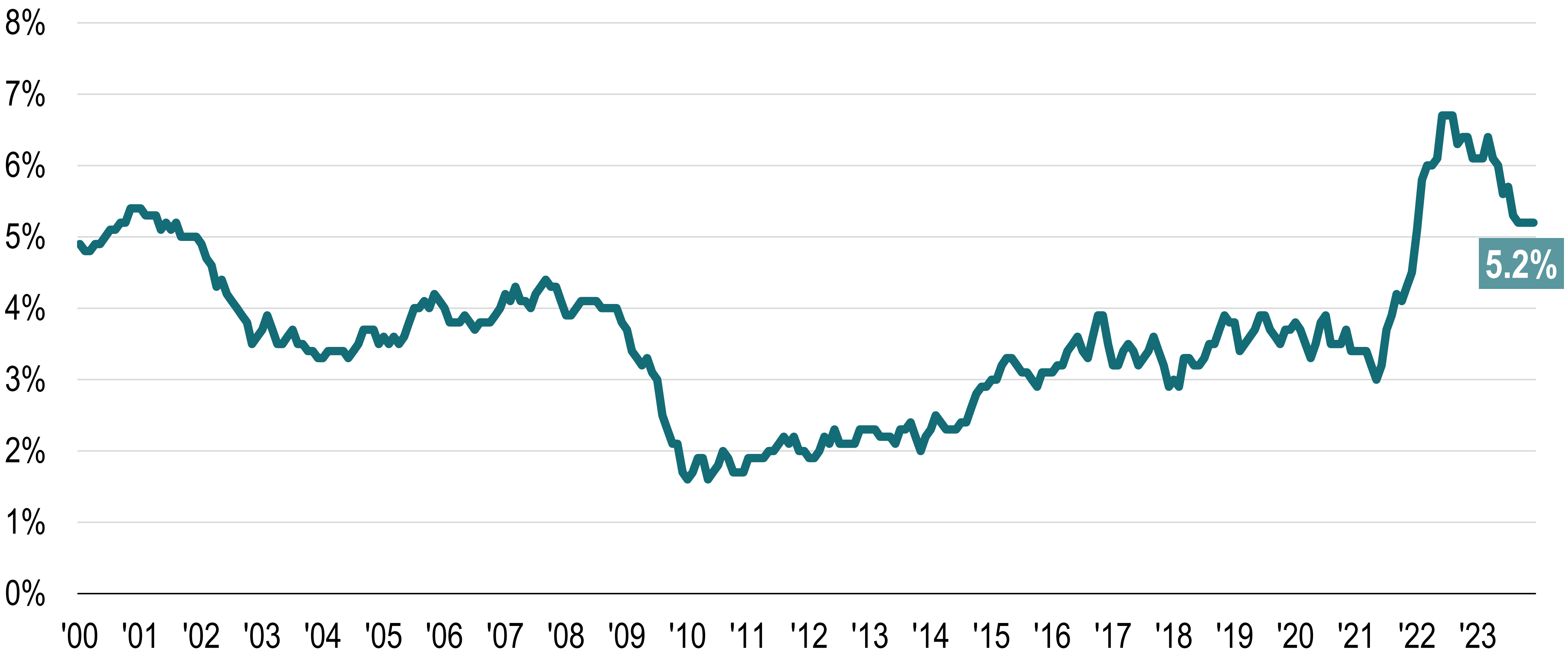
Disposable Income
Cost of Housing
Inflation

Source: CNBC. Note: Image is sourced to (gualtiero boffi/shutterstock.com).

Disposable Income
Cost of Housing
Inflation

Wage Growth Tracker

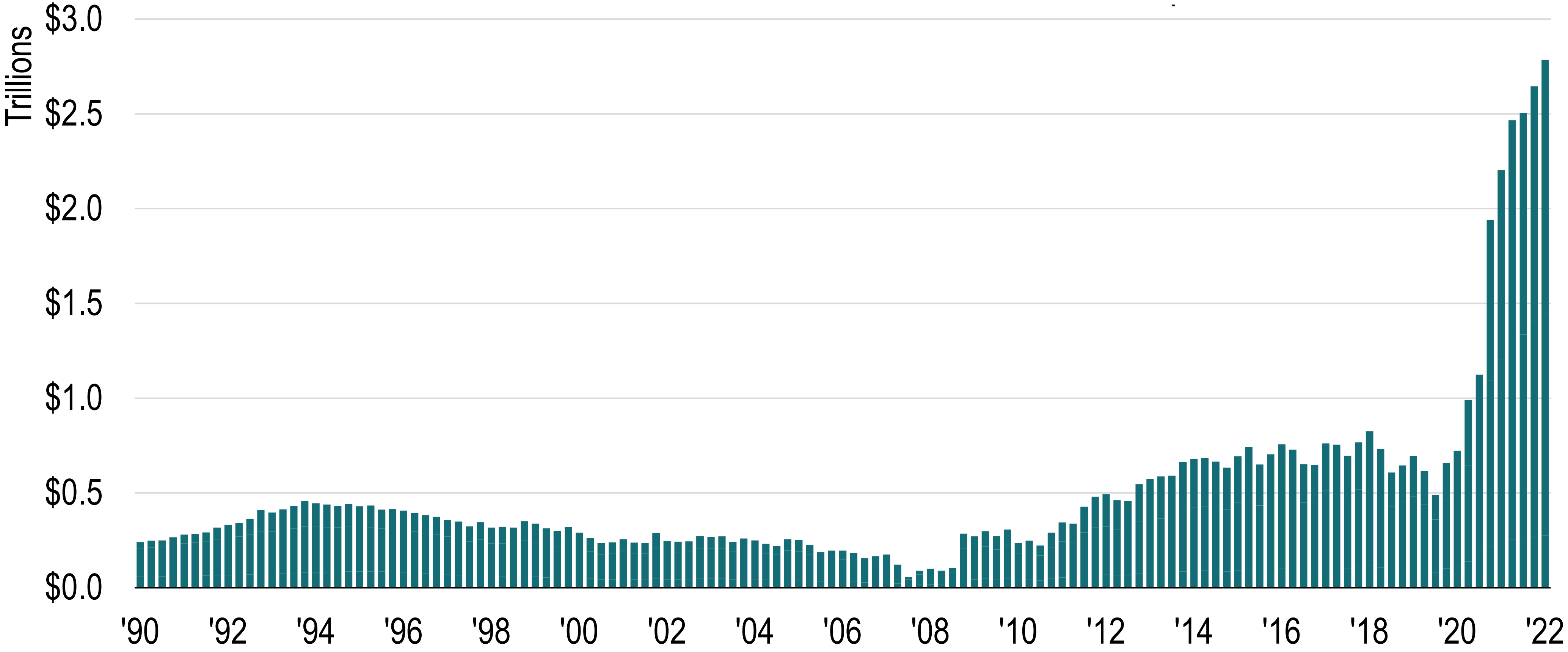
United States



Source: Federal Reserve Bank of Atlanta. Note: Three-month moving average of median wage growth (hourly).

Checkable Deposits & Currency

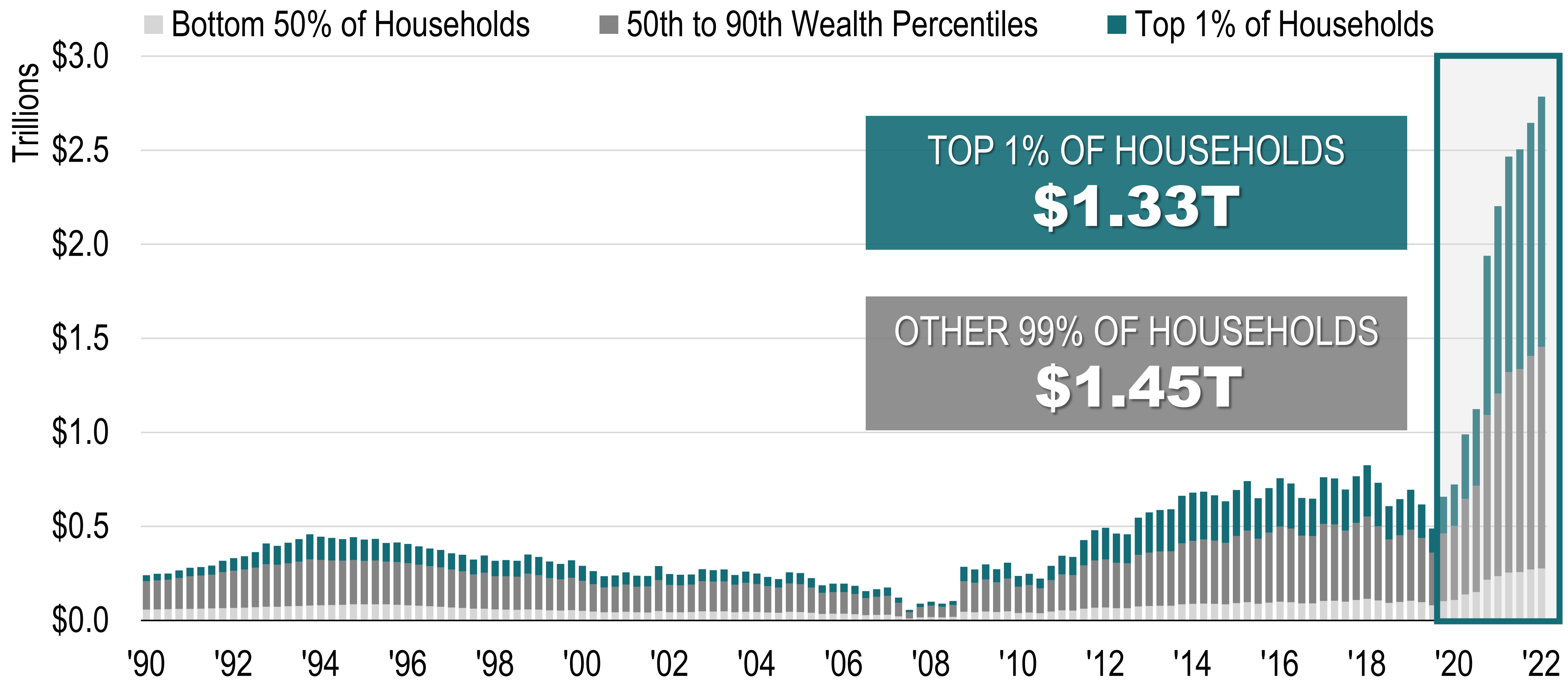
United States



Source: Board of Governors of the Federal Reserve System

Checkable Deposits & Currency

United States | By Wealth Percentiles

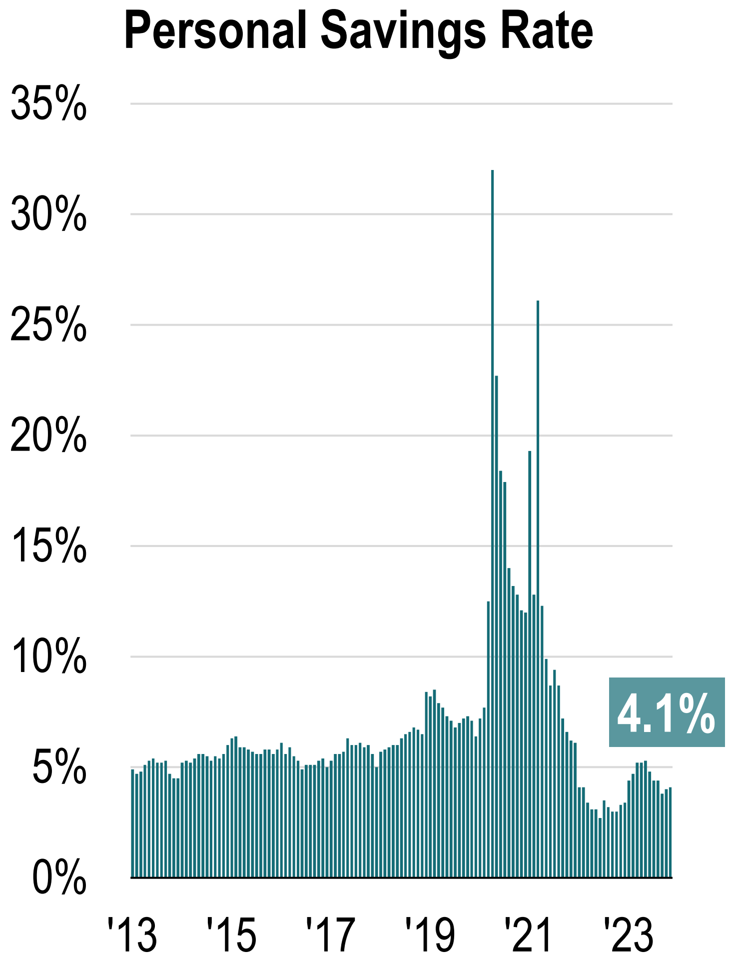


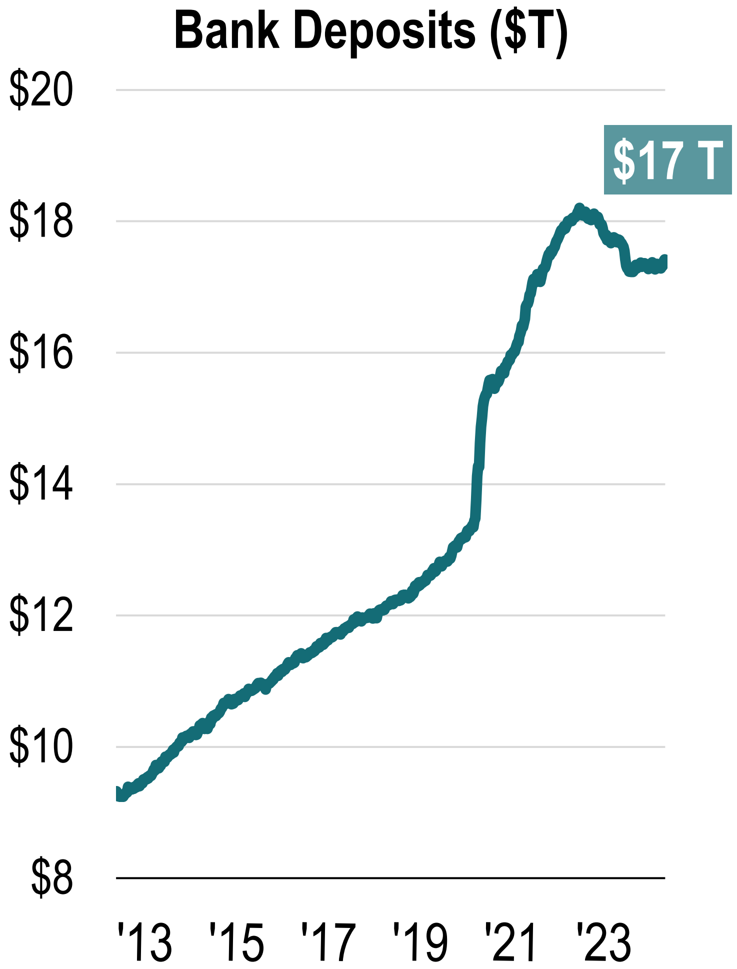
Source: Board of Governors of the Federal Reserve System

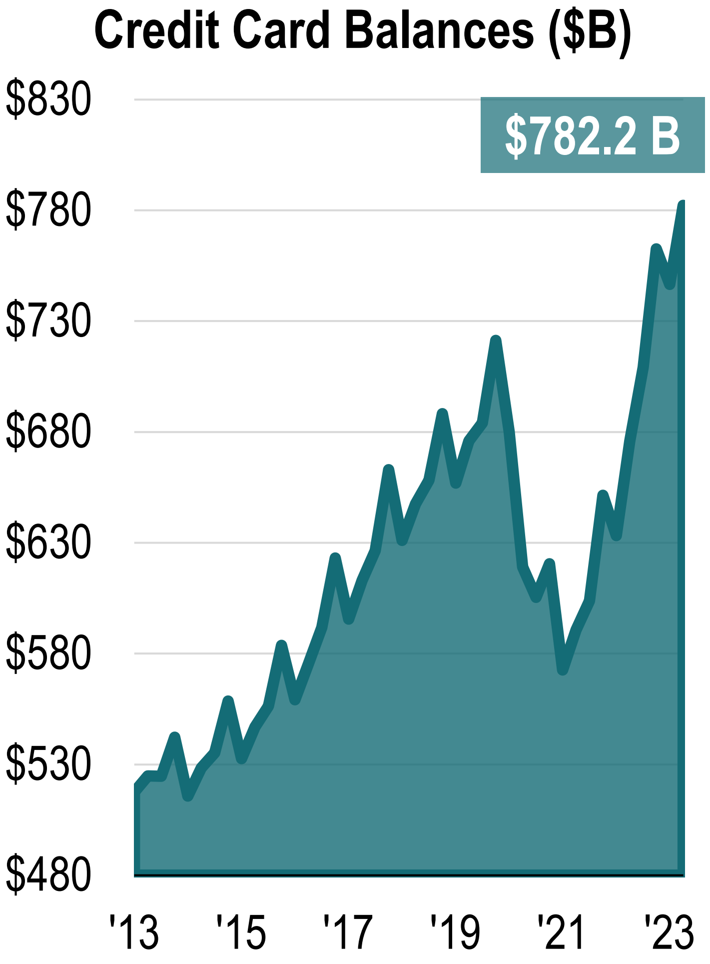
Disposable Income
Cost of Housing
Inflation

Consumer Banking Habits

United States







Source: Board of Governors of the Federal Reserve System

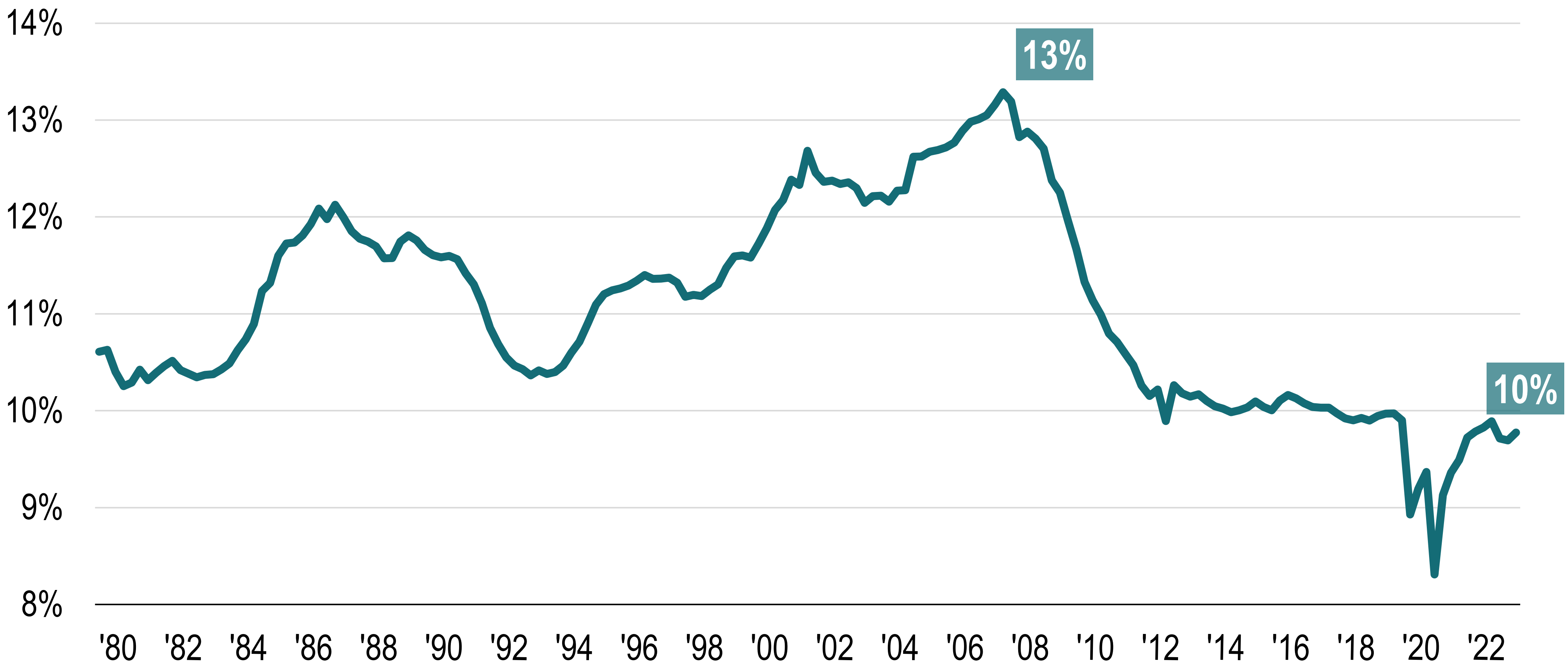
Disposable Income

Cost of Housing

Inflation

Household Debt Payments

United States | Percent of Disposable Income



Source: Board of Governors of the Federal Reserve System

Image Source: (Oriol Domingo/shutterstock.com)

Perceptions

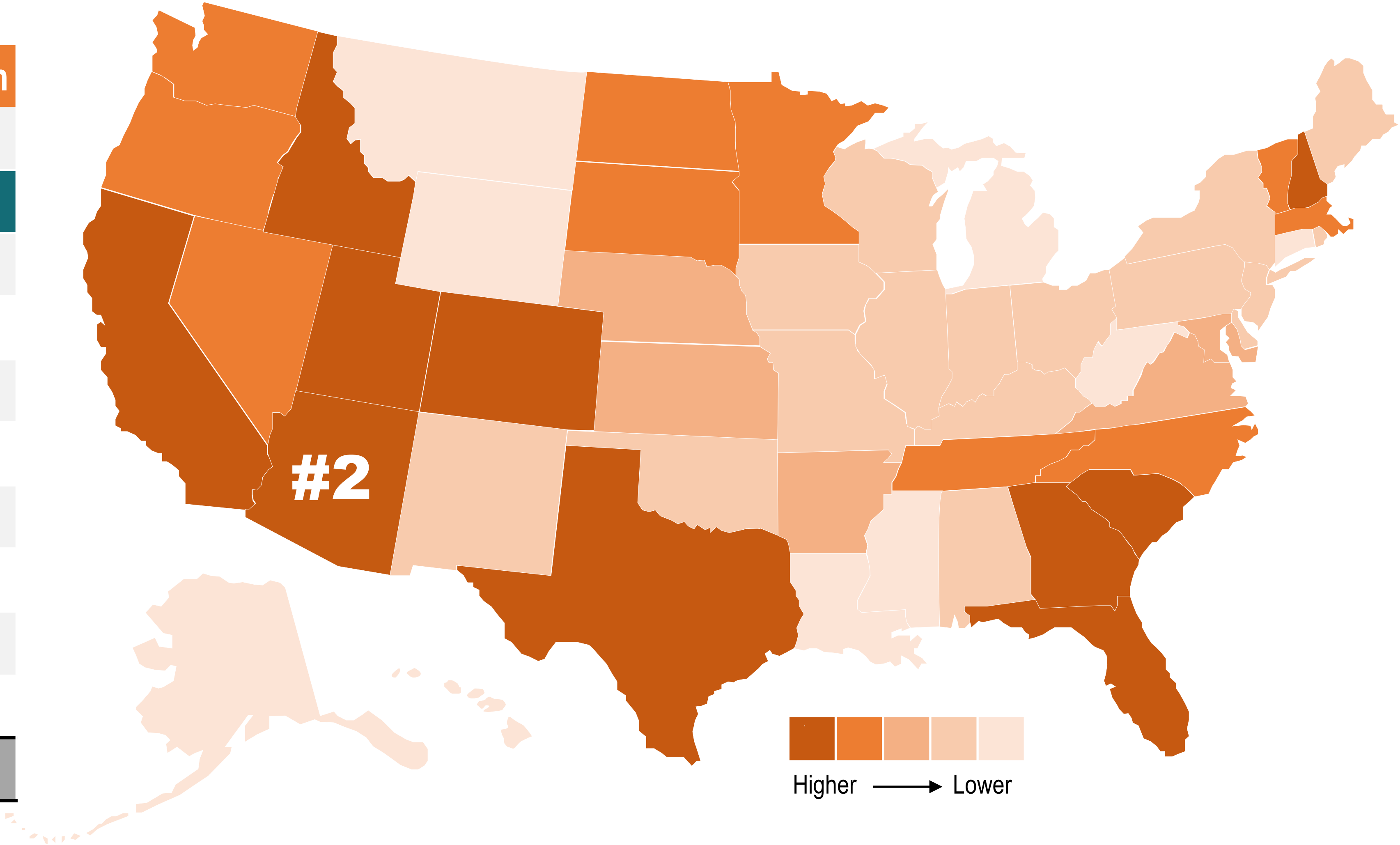
Reality

Local

Coincident Economic Activity Index

November 2023

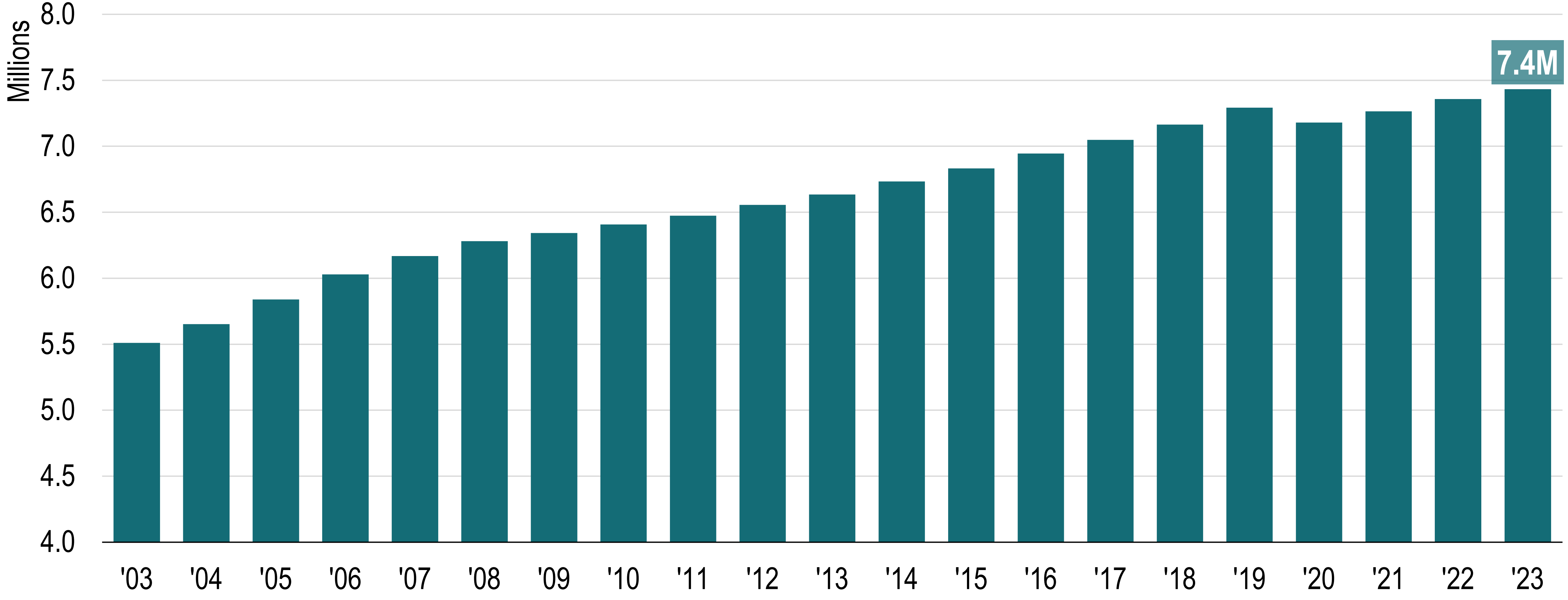
Rank	State	Growth
1	Utah	173.4
2	Arizona	171.6
3	Texas	165.5
4	South Carolina	165.1
5	Idaho	164.5
6	California	163.7
7	Georgia	163.6
8	Florida	162.3
9	Colorado	162.2
10	New Hampshire	161.1
	United States	139.8



Source: Federal Reserve Bank of Philadelphia

Population

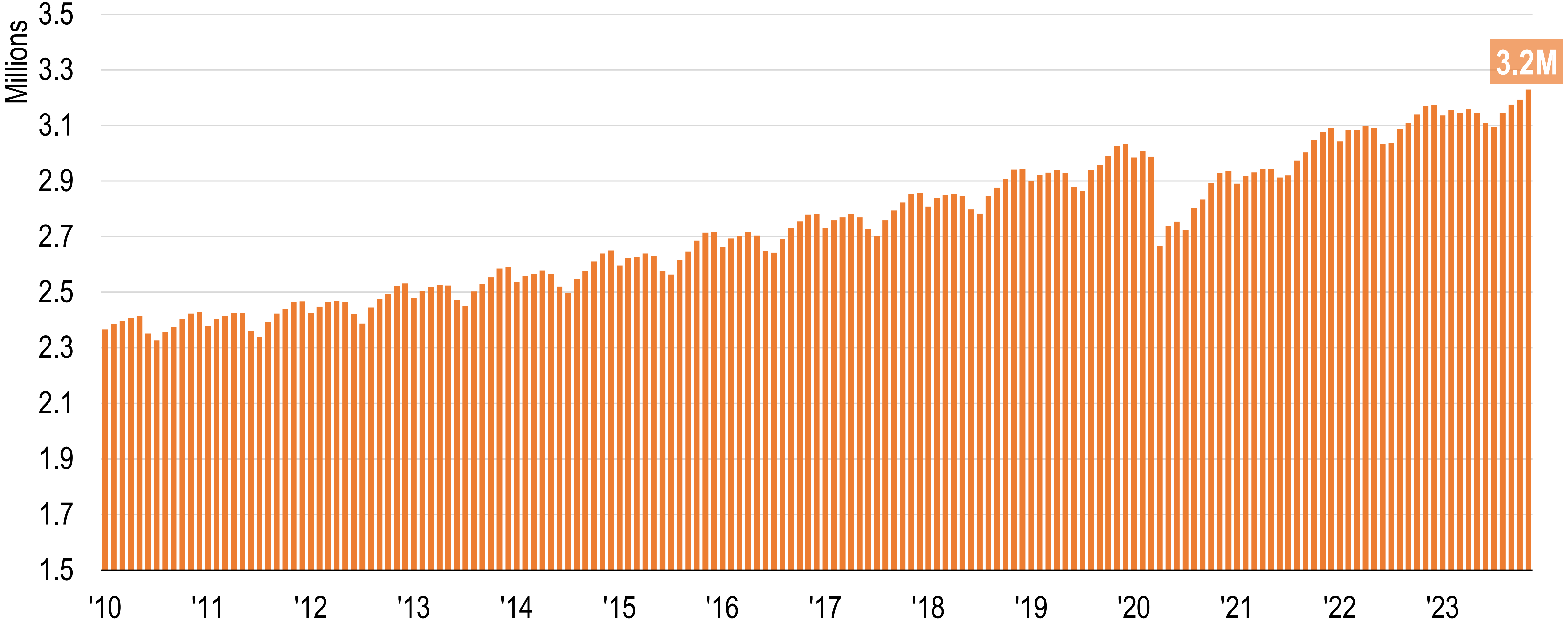
Arizona



Source: U.S. Census Bureau

Employment

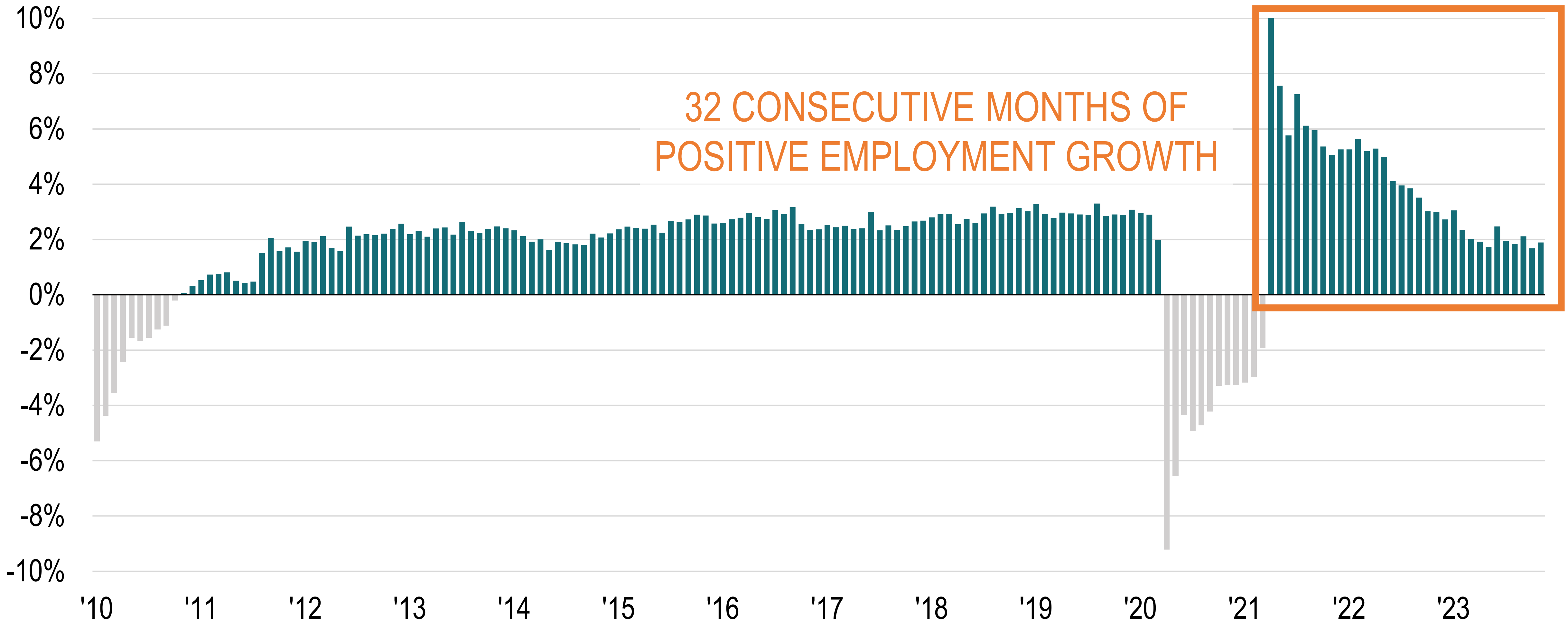
Statewide



Source: Bureau of Labor Statistics

Employment Growth

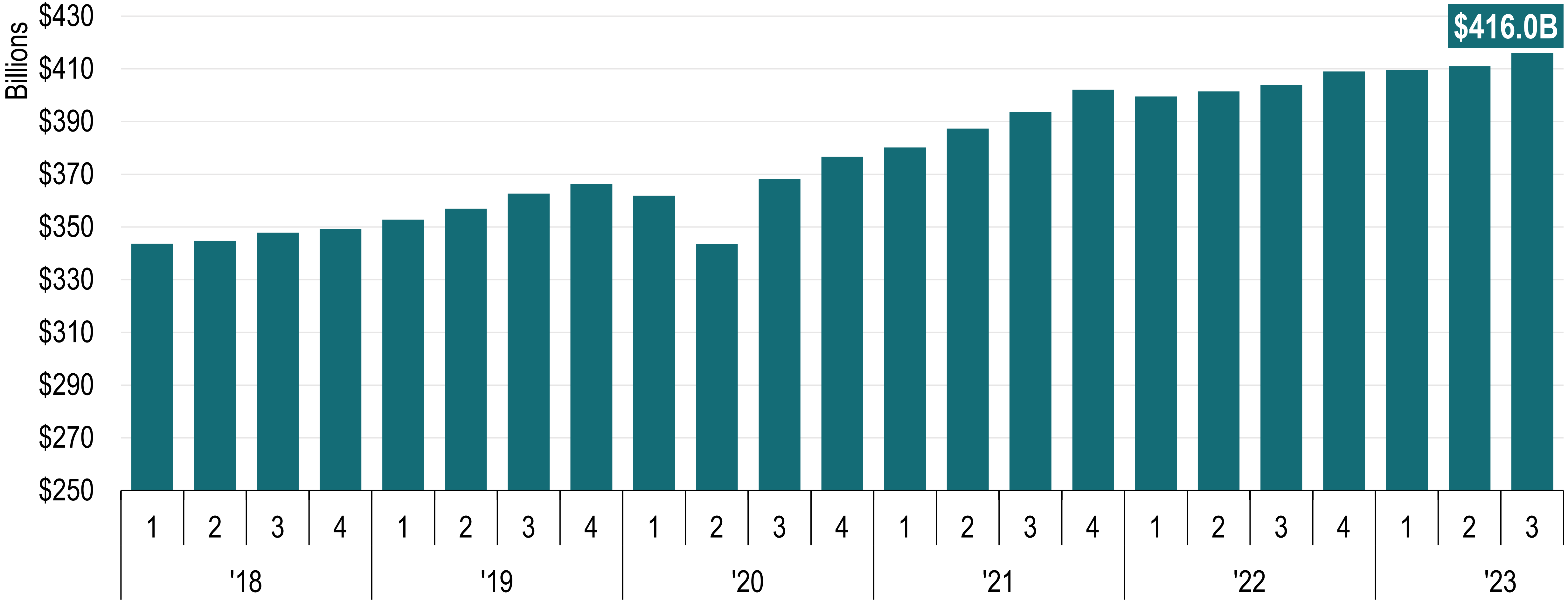
Statewide



Source: Bureau of Labor Statistics

Real Gross Domestic Product

Arizona

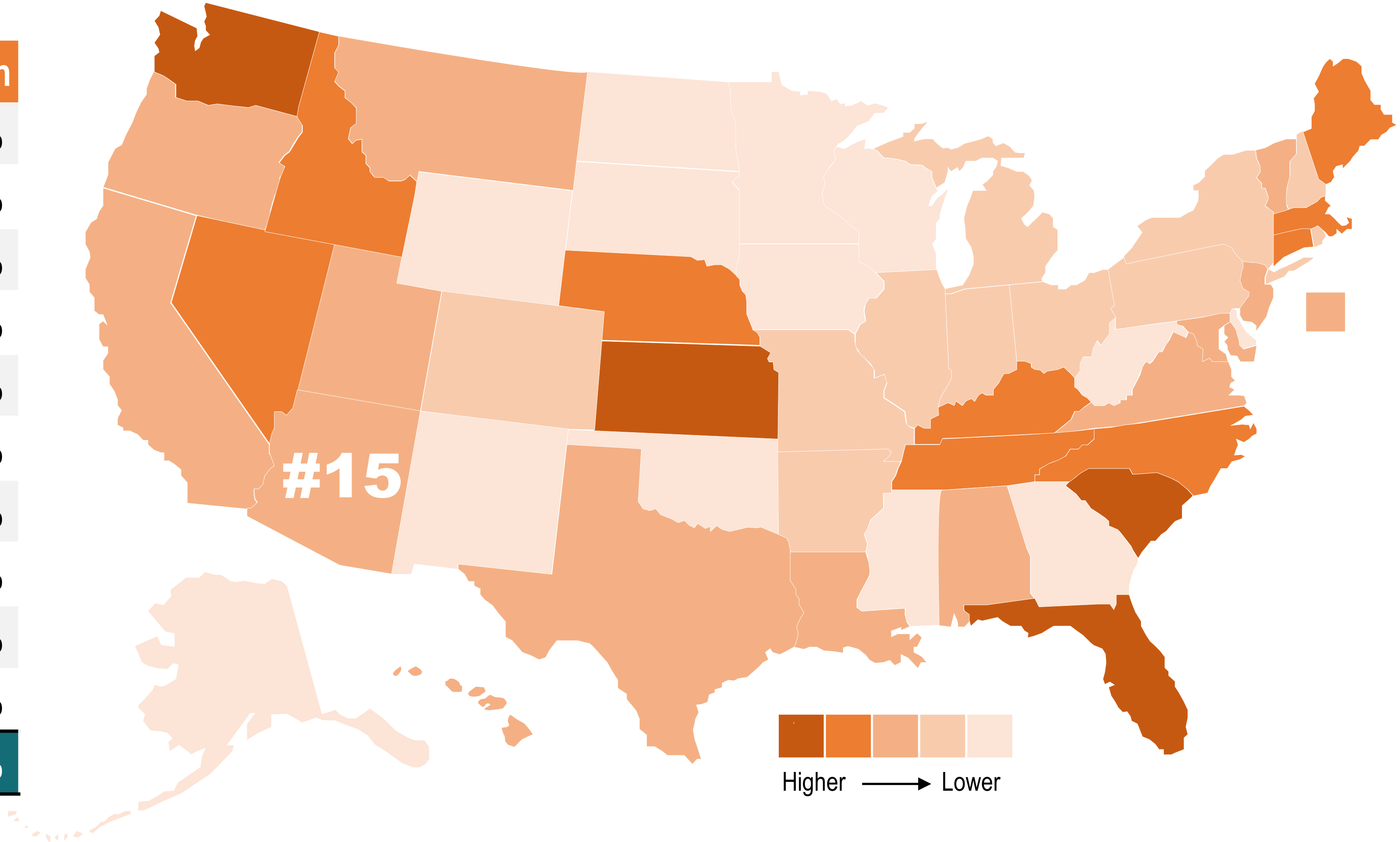


Source: U.S. Bureau of Economic Analysis

Gross Domestic Product

Year-Over-Year Growth, 2023 Q3 v 2022 Q2

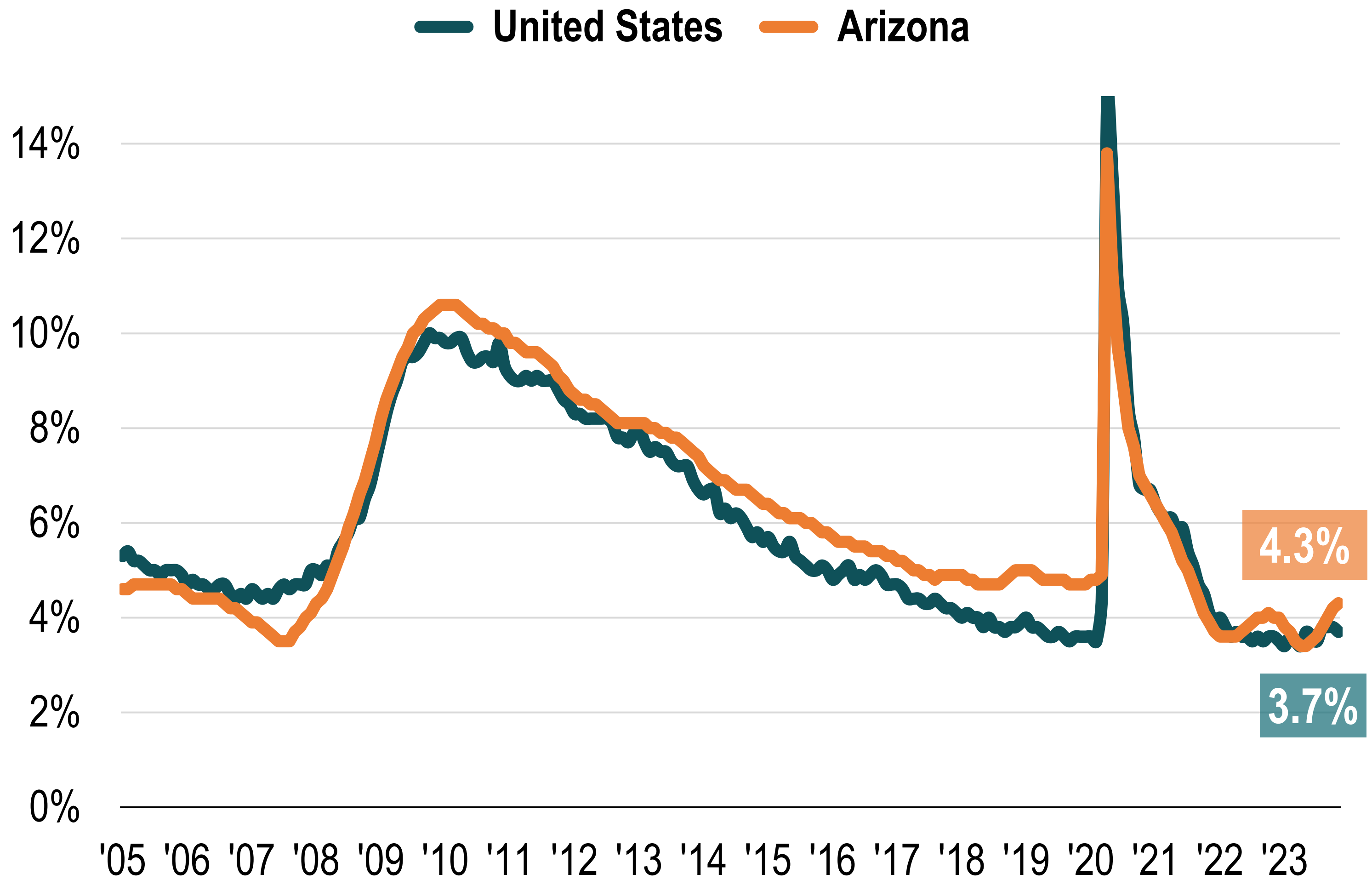
Rank	State	Growth
1	Florida	9.3%
2	Kansas	8.9%
3	South Carolina	8.2%
4	Washington	8.1%
5	Nebraska	7.8%
6	Tennessee	7.8%
7	North Carolina	7.7%
8	Massachusetts	7.3%
9	Maine	7.2%
10	Kentucky	7.1%
15	Arizona	6.7%



Source: Bureau of Economic Analysis

Unemployment Rate

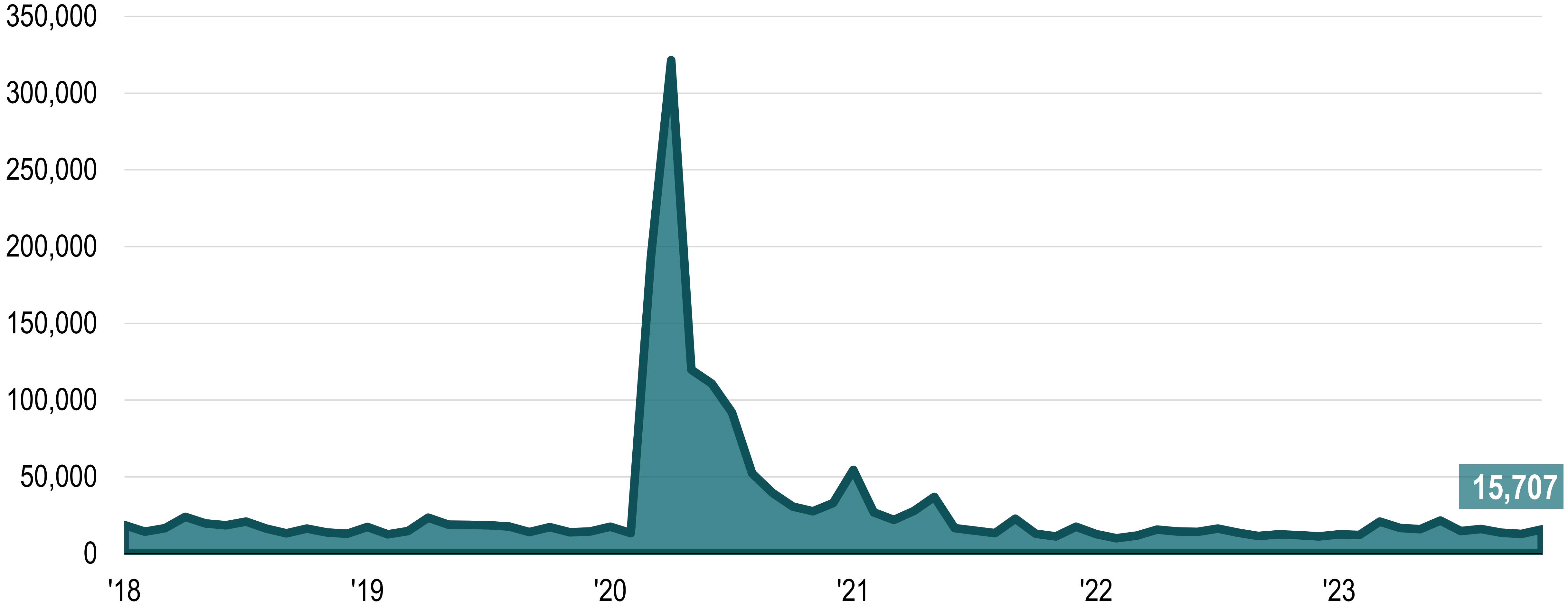
November 2023



Source: Bureau of Labor Statistics

Initial Unemployment Claims

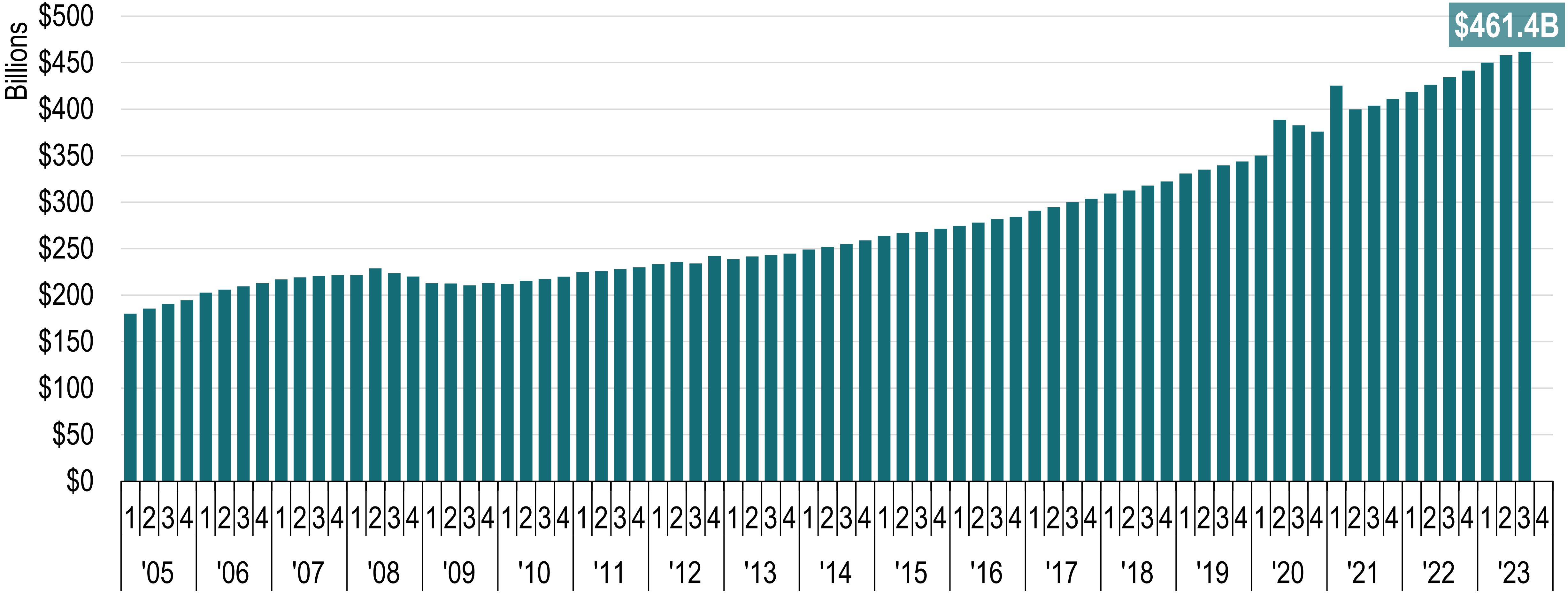
Arizona



Source: Bureau of Labor Statistics

Personal Income

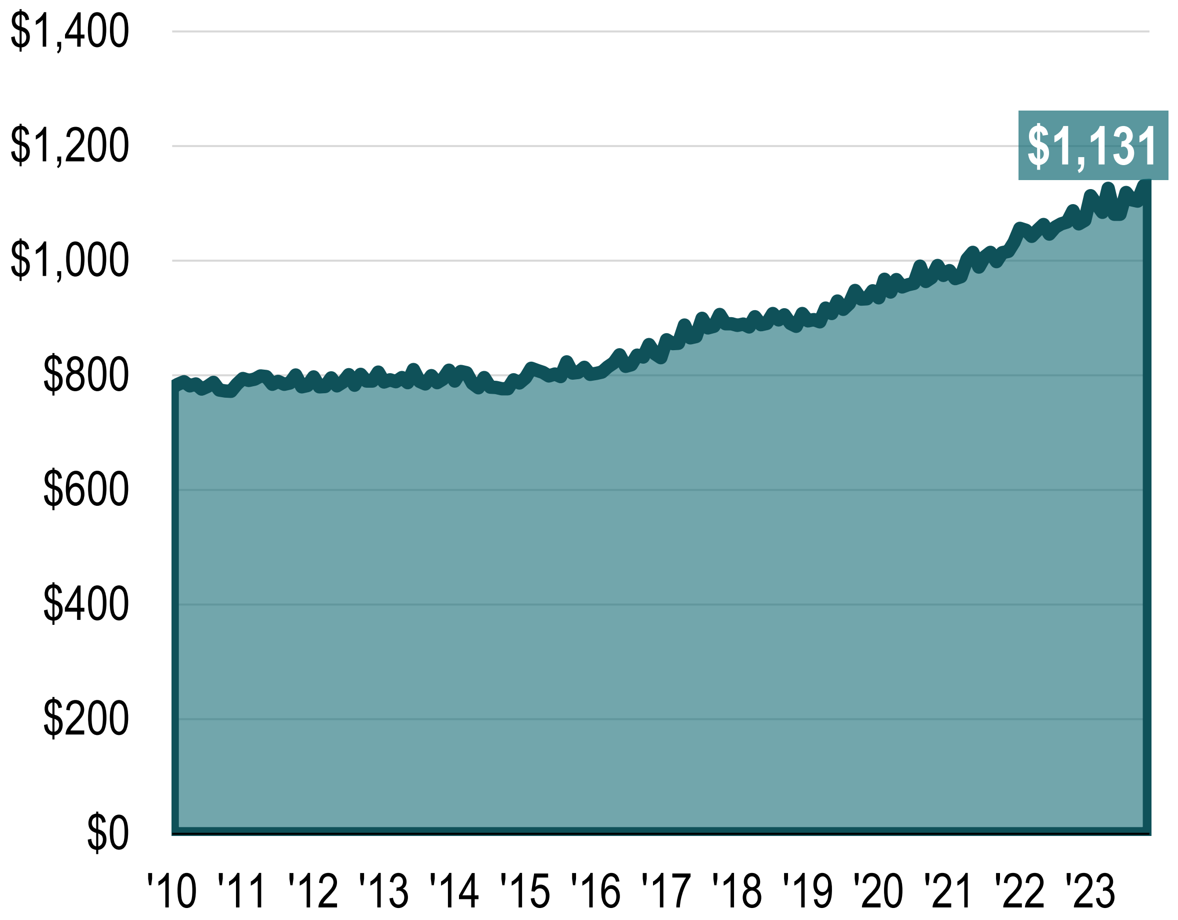
Arizona

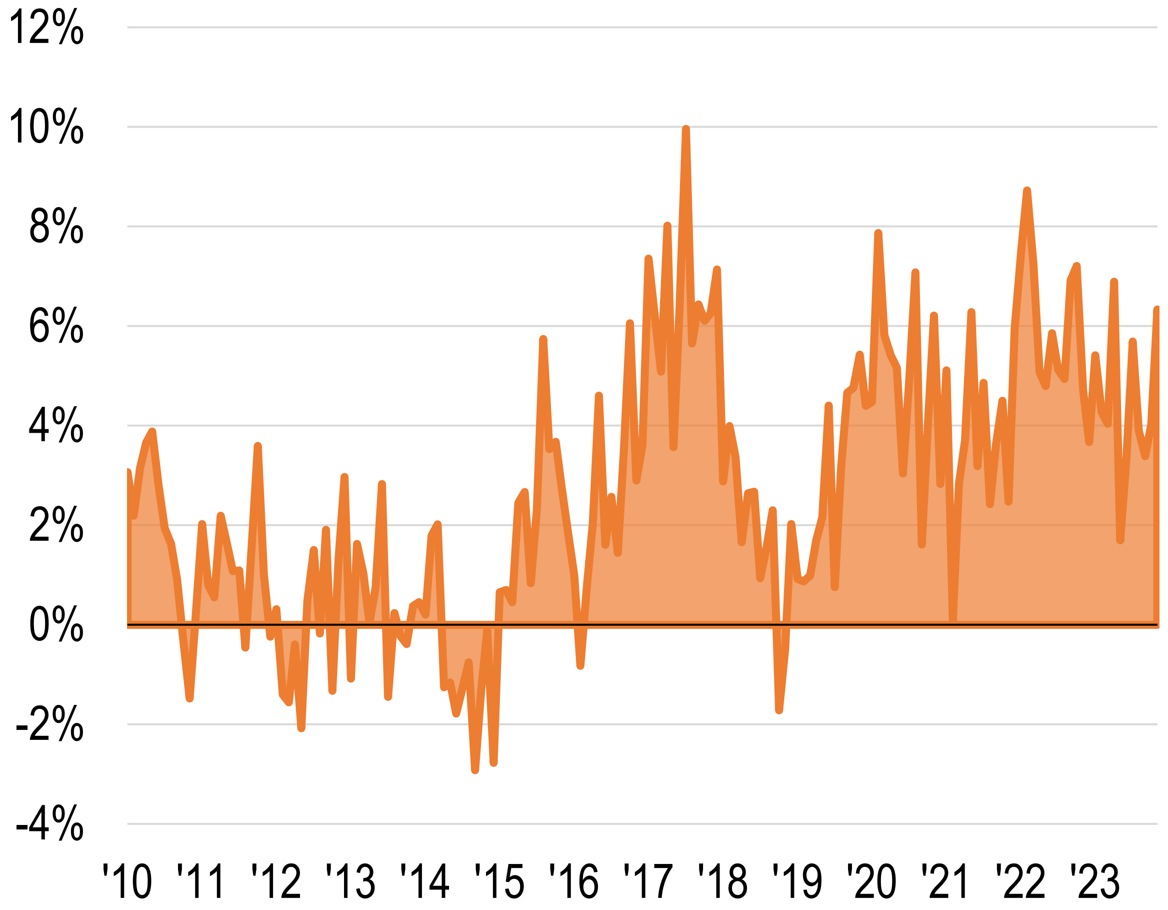


Source: U.S. Bureau of Economic Analysis

Average Weekly Wages

Arizona

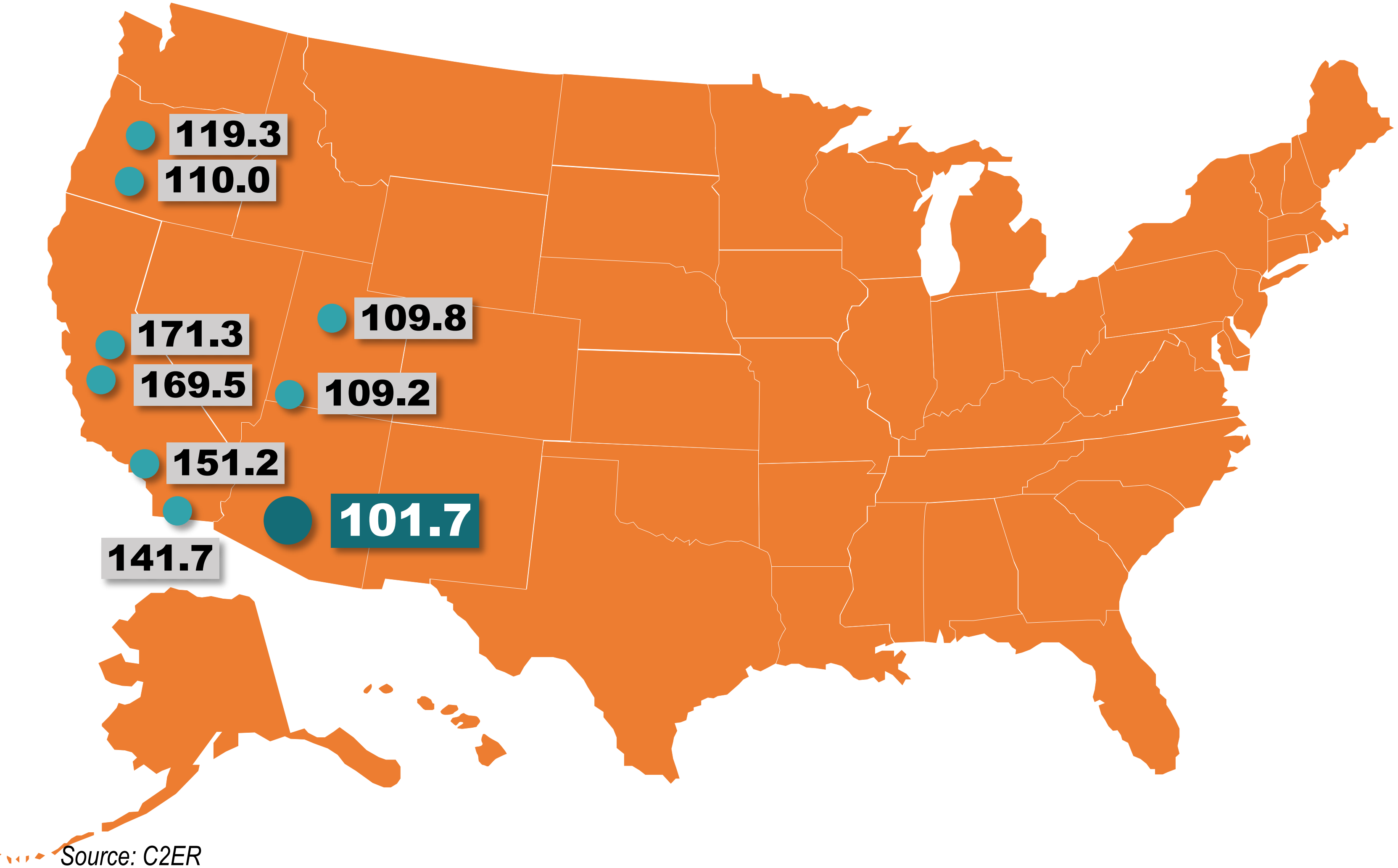




Source: Bureau of Labor Statistics

Cost of Living

2023 Q3 Index

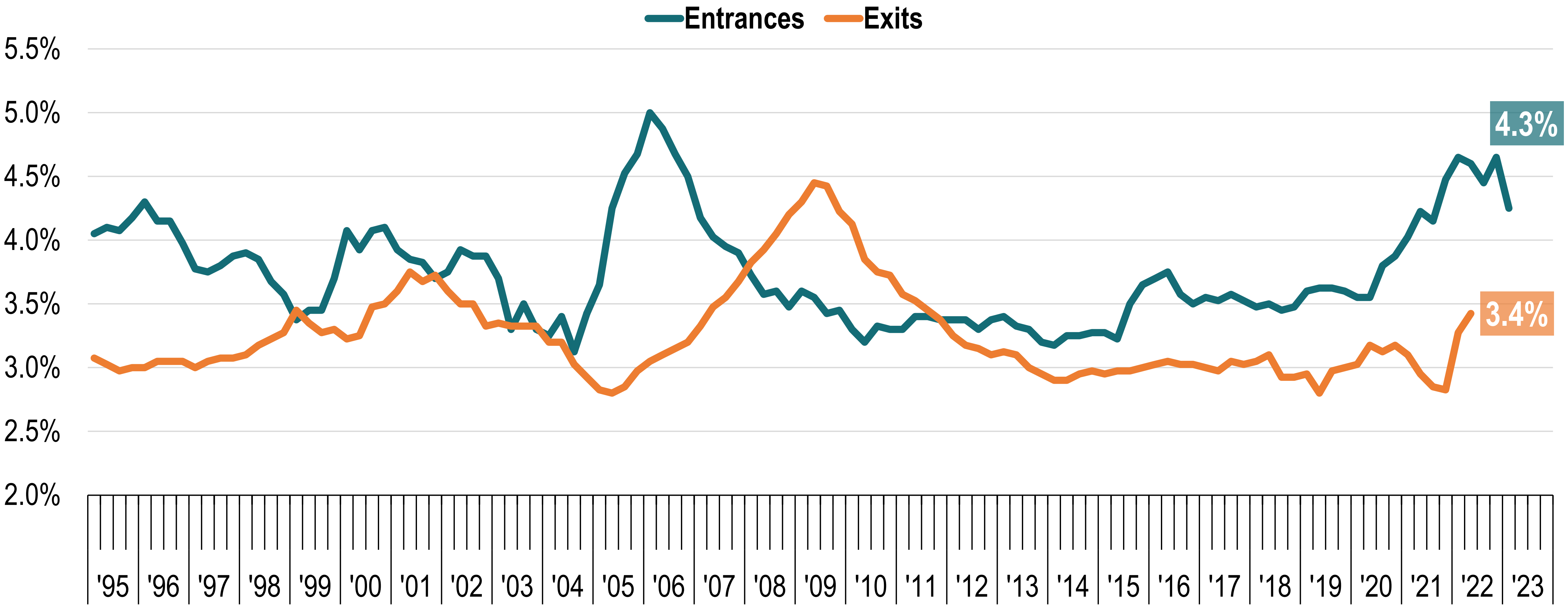


Source: C2ER

Phoenix is just above the national average **(+1.7 percentage points)** in terms of overall costs, while markets in California, Oregon and Utah range between 9.2 and 71.3 points above the average

New Business Entrances and Exits

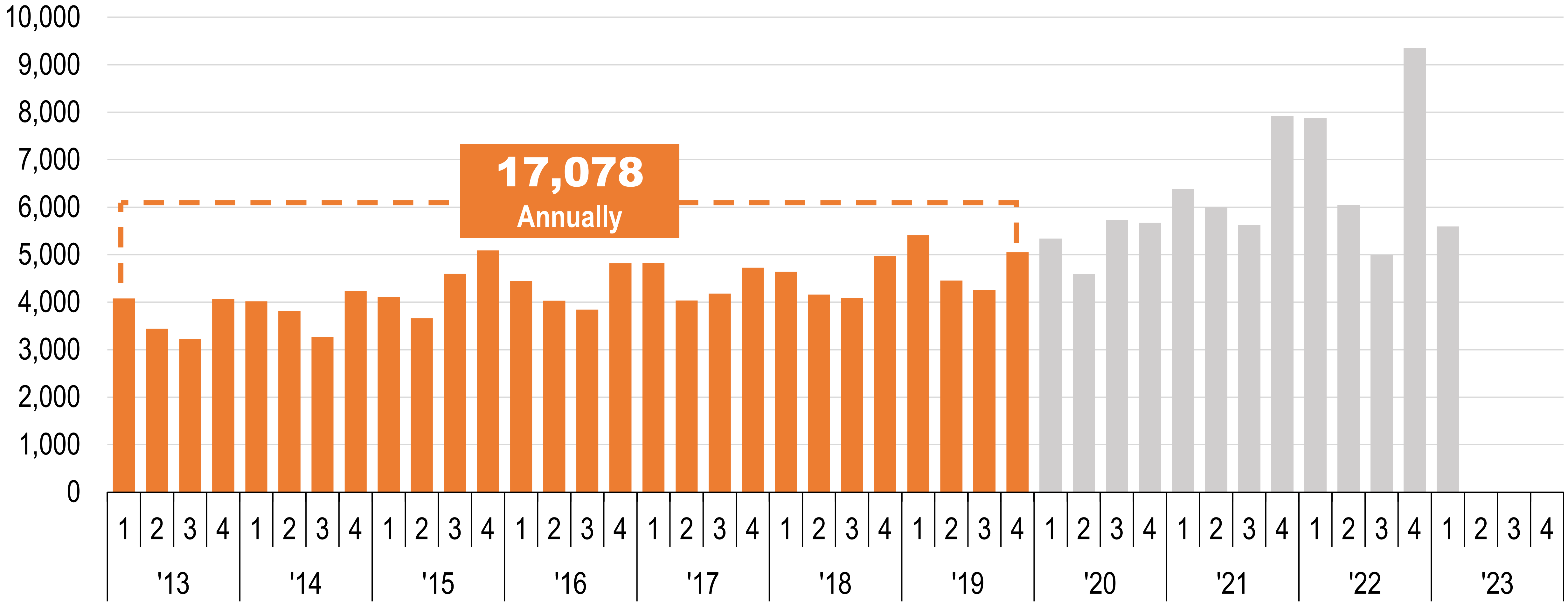
Arizona | Total Private Trailing 12-Month Average



Source: Bureau of Labor Statistics

New Businesses

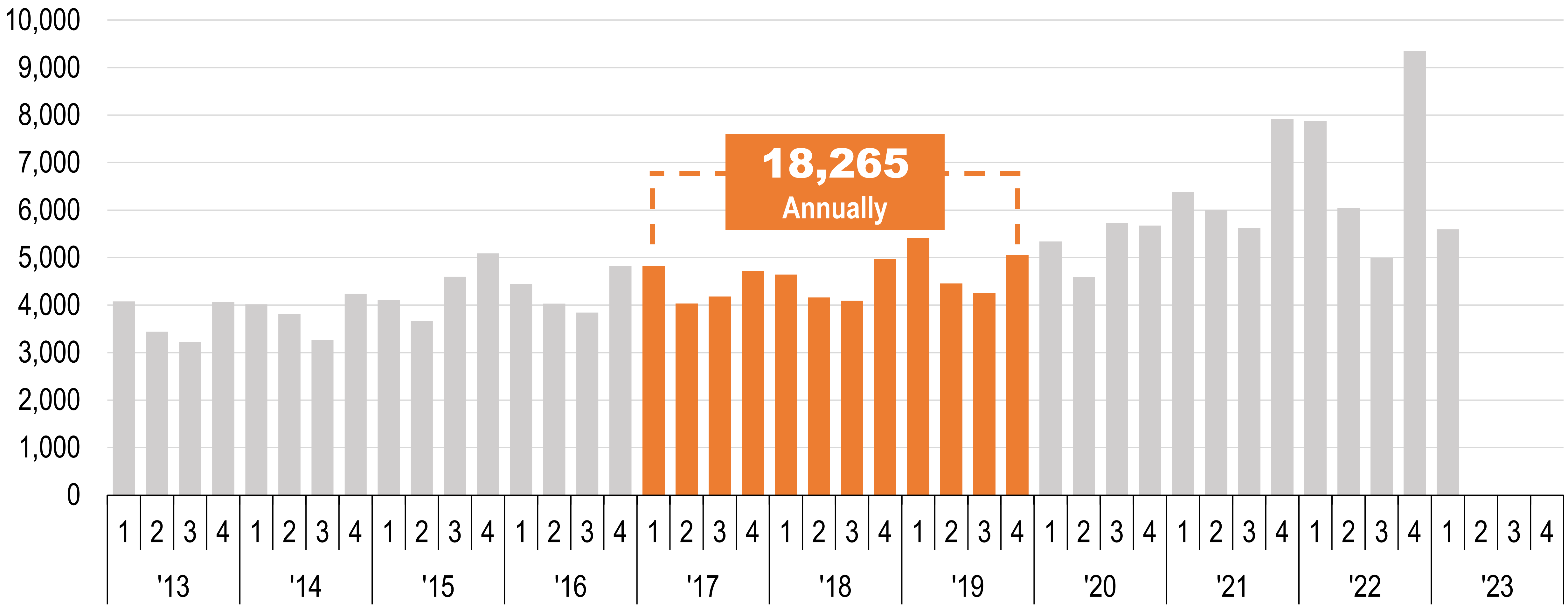
Total Private | Arizona



Source: Bureau of Labor Statistics

New Businesses

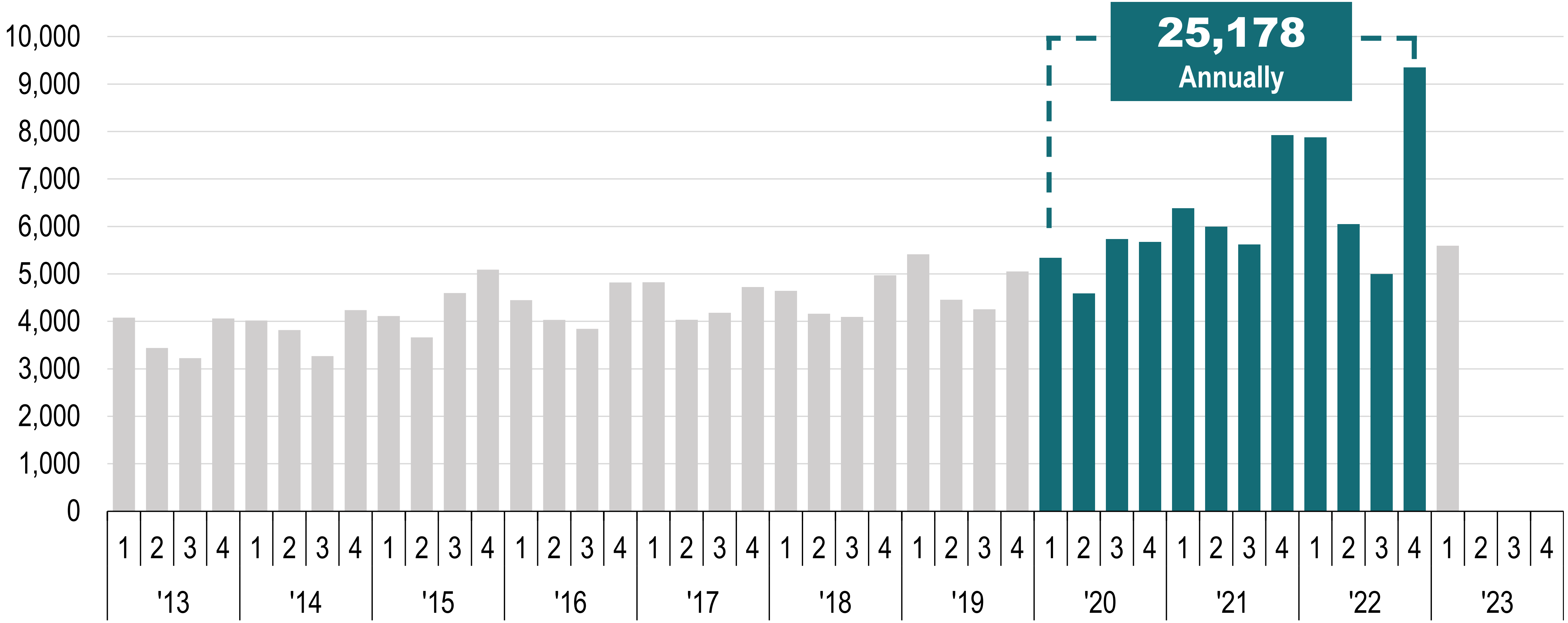
Total Private | Arizona



Source: Bureau of Labor Statistics

New Businesses

Total Private | Arizona



Source: Bureau of Labor Statistics

Image Source: (Marquess789/shutterstock.com)

97.9%

Of All Businesses in Arizona are Small Businesses

Source: Bureau of Labor Statistics. Note: Image is sourced to (giggsy25/shutterstock.com).

$5.1 B

Source: Greater Phoenix Economic Council. Note: Video is sourced to TikTok.

$22 B

Goods Exported by 7,600 Arizona Firms

Source: Small Business Association Office of Advocacy

Small Businesses in Arizona

76.6%

Of Arizona's workforce employed by a small business.

2.1 M

Individuals are employed by over 210,000 small businesses.

95.0%

Of all small businesses employ a staff of < 50 people.

Image Source: (canadastock/shutterstock.com)

#1

Fastest-growing startup city in the country is Scottsdale, Arizona

Source: York IE. Note: Image is sourced to (BCFC/shutterstock.com).

+300%

Growth in tech leasing activity across Phoenix

Source: CBRE. Note: Image is sourced to (metamorworks/shutterstock.com).

#1

Top county for attracting talent is Maricopa County

Source: Clever Real Estate. Note: Image is sourced to (Vitalii Vodolazskyi/shutterstock.com).

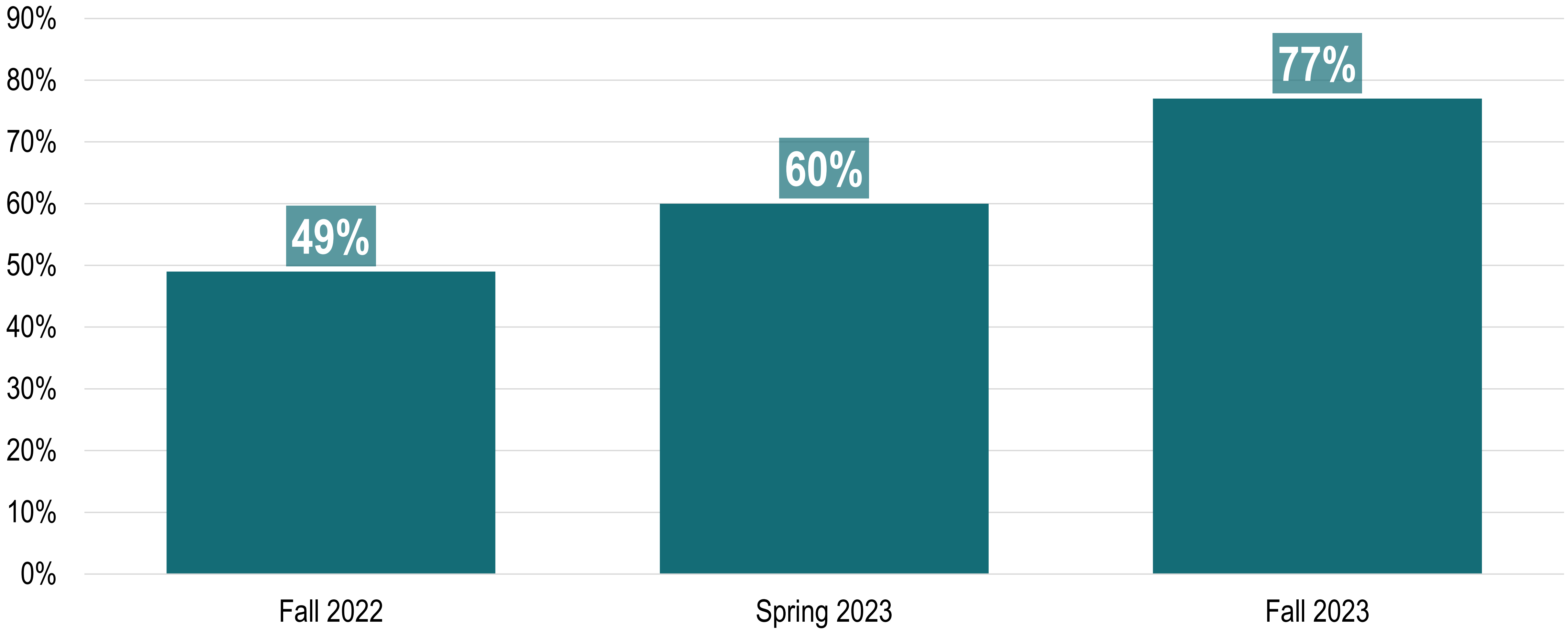
#1

LinkedIn recognizes Arizona as first in workforce confidence

Source: LinkedIn. Note: Image is sourced to (Jacob Lund/shutterstock.com).

Small Business Optimism

21-Year High

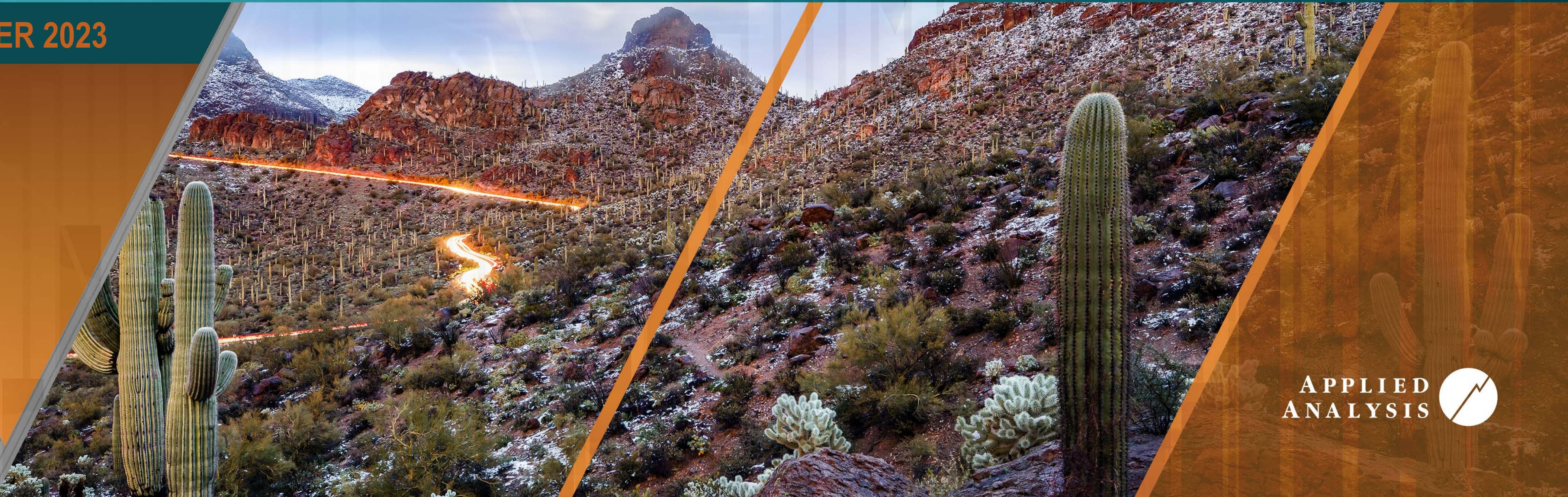


Source: PNC

NATIONAL BANK OF ARIZONA

PERCEPTIONS VS. REALITY

WINTER 2023



APPLIED ANALYSIS