



THE 10TH ANNUAL MASSACHUSETTS INVESTOR CONFERENCE

Thursday October 20, 2022

Boston Convention & Exhibition Center in Seaport

Welcome

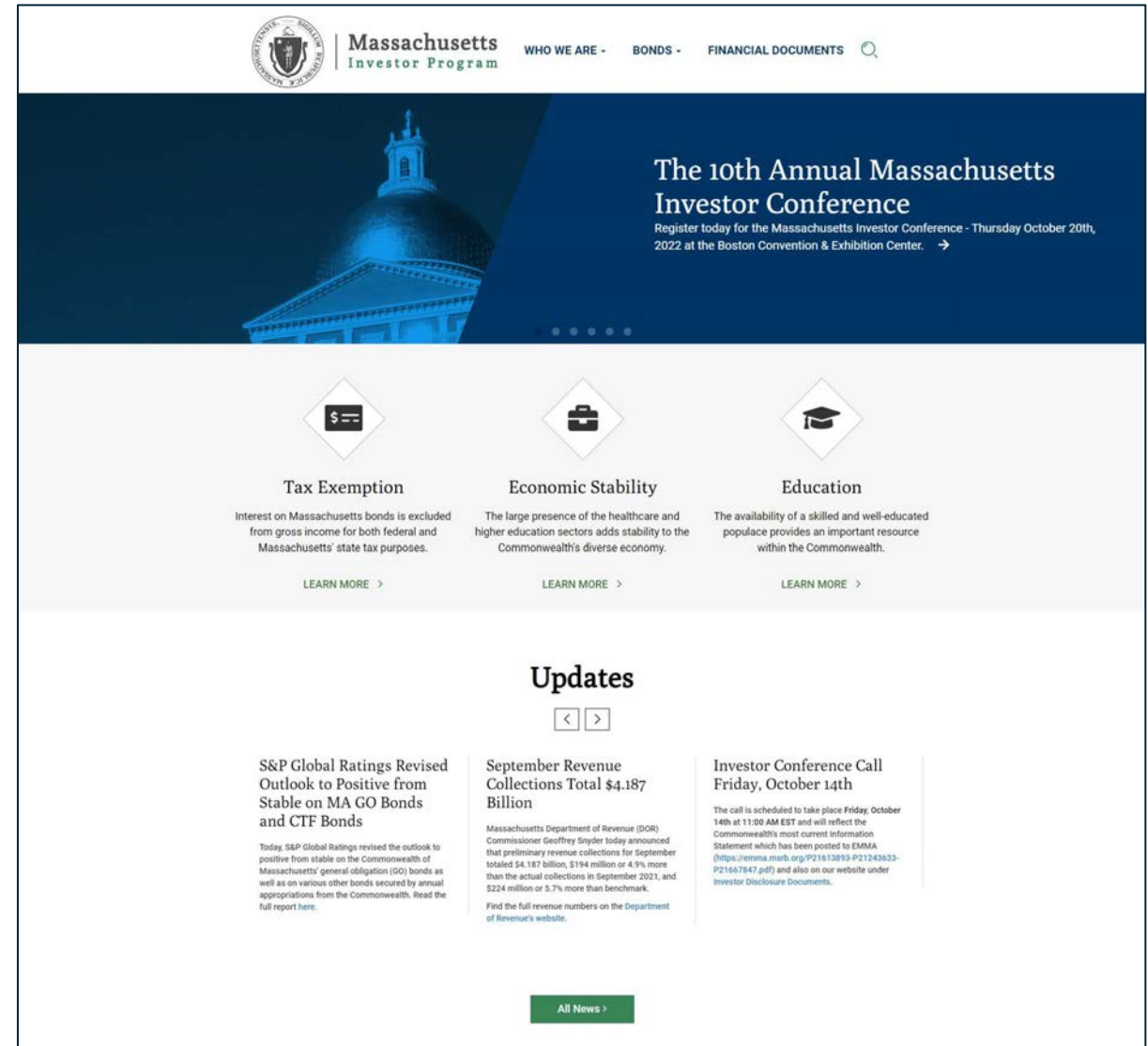
Sue Perez, Deputy Treasurer of Debt Management

WELCOME

The Massachusetts Bond Holder website is for the benefit of its investors – housing information detailing the state's:

- ***Finances***
- ***Investor Disclosures***
- ***Previous Bond Sales***
- ***Upcoming Bond Offerings***

And much, much more!



FINANCIAL DOCUMENTS

We pride ourselves on our dedication to transparency. Our **Financial Documents** section is composed of investor disclosure documents, ratings, investor call presentations, and relevant resources available on related websites.

- Click the **Quarterly State Economic Information** icon to view our new *SocioEconomic Report* from the Economic and Public Policy Research Group at UMass Donohue Institute.
- Click the **Massachusetts Investor Conference** icon on the bottom middle row to view materials for today's event!



Financial Documents

HOME / FINANCIAL DOCUMENTS



Budgets



Capital Plan



Financial Reports



Investor Disclosure Documents



Official Statements



Pension, OPEB, & Worker's Comp Reports



Revenue



Bonds and Ratings



Debt Affordability



Quarterly State Economic Information



Green Bond Reports



EMMA



Budget Stabilization Fund



Commonwealth Debt Breakdown



Cash Management



Investor Calls & Presentations



Massachusetts Investor Conference



Procurements

SOCIOECONOMIC INDICATORS REPORT



- **Report has four sections**
 - **Economy**
 - **Workforce**
 - **Environment**
 - **Residents**
- **Special sections – each issue provides a special topic. The August issue was Transportation/Mobility**

MASSACHUSETTS INVESTOR CONFERENCE

Under the **2022** tab you will find today's conference materials including:

- ***Agenda***
- ***Borrower Guide***
- ***Bond Sale Calendar***
- ***Slide Presentations***
- ***Speaker Bios***

These materials will be always be available for attendees to review at any time.



2022 BORROWER GUIDE

Our new **2022 Borrower Guide** features information about all the state's issuers and include links to their respective websites and resources.



The Commonwealth of Massachusetts

Sue Perez, Deputy Director of Debt Management | sperez@tre.state.ma.us
Kathy Bramlage, Senior Debt Analyst | kbramlage@tre.state.ma.us

Responsible for managing the Commonwealth's short-term and long-term borrowing needs. Short-term borrowing is done through the sale of revenue anticipation notes and other liquidity facilities. Long-term borrowing is done through the sale of Commonwealth General Obligation (GO) bonds, Commonwealth Transportation (CTF) Bonds and Federal Highway Grant Anticipation Notes (GANs) to finance certain authorized capital projects within the state.

The GO bonds constitute general obligations of the Commonwealth of Massachusetts, and the full faith and credit of the Commonwealth is pledged to the payment of principal and interest on the bonds. General Laws impose a limit on state tax revenue growth. The limitation for each fiscal year is equal to the average positive rate of growth in total wages and salaries during the three preceding calendar years. In addition, the law provides for a limit on annual issuance known as the "Bond Cap."

Website: www.massbondholder.com



Massachusetts Bay Transportation Authority (MBTA)


Mary Ann O'Hara, Chief Financial Officer | maohara@mbta.com
Jillian Linnell, Director of Capital Program Planning | jlinnell@mbta.com
Patrick F. Landers, Treasurer | planders@mbta.com

The Massachusetts Bay Transportation Authority, more commonly known as the T, is one of the oldest public transit systems in the United States. It's also the largest transit system in Massachusetts. As a division of the Massachusetts Department of Transportation (MassDOT), the MBTA provides subway, bus, Commuter Rail, ferry, and paratransit service to eastern Massachusetts and parts of Rhode Island.

Bond proceeds are used to fund the Authority's Capital Investment Plan, an ambitious program designed to improve our core infrastructure and advance key expansion initiatives, with the goal of expediting projects to increase safety, reliability, resiliency, and modernization of the system. This includes the procurement and overhauls of subway cars, buses, and commuter rail locomotives and coaches; the repair, rehabilitation, and replacement of bridges and tunnels; improvements to passenger facilities, including accessibility upgrades; modernization of bus maintenance facilities; and critical track, signal, and power upgrades, among other key initiatives we are taking on to Build a Better T.

Website: www.mbta.com

2022 BOND SALE CALENDAR

 The Commonwealth of Massachusetts • New Issue Calendar (through 2023)				
Issuer	Tentative Sale Date*	Par Amount	Structure	Type
Commonwealth, General Obligation (GO)	October 2022	\$1,200 MM	Fixed-Rate, Tax-Exempt	New Money, Refunding
MassHousing (MF)	October 2022	\$190 MM	Fixed-Rate, Tax-Exempt	New Money
MassHousing (SF)	October 2022	\$75 MM	Fixed-Rate, Tax-Exempt	New Money, Refunding
Commonwealth, GO	November - December 2022	\$150 MM	Fixed-Rate, Tax-Exempt	New Money
Massachusetts Clean Water Trust	November 2022	\$325 MM	Fixed-Rate, Tax-Exempt	New Money, Refunding
Commonwealth, GO	December 2022	\$900 MM	Fixed-Rate, Tax-Exempt	New Money, Refunding
MassHousing (MF)	December 2022	\$105 MM	Fixed-Rate, Tax-Exempt	New Money
MassHousing (SF)	December 2022	\$50 MM	Fixed-Rate, Tax-Exempt	New Money, Refunding
MassHousing (MF)	March 2023	\$125 MM	Fixed-Rate, Tax-Exempt	New Money
Commonwealth, GO	Q1, 2023	\$750 MM	Fixed-Rate, Tax-Exempt	New Money
Massachusetts Bay Transportation Authority	April 2023	\$500-700 MM	Fixed-Rate, Tax-Exempt	New Money
Massachusetts State College Building Authority	Spring 2023	\$20 MM	Fixed-Rate, Tax-Exempt	New Money, Refunding
Massachusetts State College Building Authority	Spring 2023	\$40 MM	Fixed-Rate, Tax-Exempt	New Money
Massachusetts Water Resource Authority	April 2023	\$200 MM	Fixed-Rate, Tax-Exempt	New Money
MassHousing (SF)	May 2023	\$50 MM	Fixed-Rate, Tax-Exempt	New Money, Refunding
Commonwealth, GO	Q2, 2023	\$900 MM	Fixed-Rate, Tax-Exempt	New Money
Commonwealth, Commonwealth Transportation Fund (CTF)	Q2, 2023	\$350 MM	Fixed-Rate, Tax-Exempt	New Money
MassHousing (MF)	September 2023	\$125 MM	Fixed-Rate, Tax-Exempt	New Money
MassHousing (SF)	October 2023	\$50 MM	Fixed-Rate, Tax-Exempt	New Money, Refunding
MassHousing (MF)	December 2023	\$125 MM	Fixed-Rate, Tax-Exempt	New Money
MassHousing (SF)	December 2023	\$50 MM	Fixed-Rate, Tax-Exempt	New Money, Refunding
Massachusetts Clean Water Trust	Q4, 2023	\$350 MM	Fixed-Rate, Tax-Exempt	New Money, Refunding

* Sale dates are preliminary and subject to change.



SCAN THIS SLIDE TO VIEW MATERIALS

As a green initiative, we've decided to make today's materials available online. Just scan the **QR code** outside at the **registration tables**, or on this slide to view the Investor Conference materials!



—THE 10TH
ANNUAL
MASSACHUSETTS
INVESTOR
CONFERENCE—

www.massbondholder.com

Building Bridges – Community Development in Massachusetts

Michael Heffernan, Secretary of Administration & Finance [Moderator]

Mike Kennealy, Secretary of Housing & Economic Development

Ashley Stolba, Undersecretary of Community Development

Sean Cronin, Senior Deputy Commissioner for Local Services

Another Brick in the Wall – Educating in the Commonwealth

Jim MacDonald, First Deputy Treasurer & CEO of MSBA [Moderator]

Mary Pichetti, Director of Capital Planning at MSBA

James Peyser, Secretary of Education

Rosalin Acosta, Secretary of Labor and Workforce Development

Massachusetts School Building Authority

Deborah B. Goldberg
State Treasurer and Receiver-General
Chairperson

James A. MacDonald
Chief Executive Officer

Jack McCarthy
Executive Director

MSBA Overview



Dennis-Yarmouth Mattacheese Middle School



Springfield Brightwood Elementary School



Board of Directors – Membership



Deborah Goldberg

Chairperson of the MSBA, Treasurer and
Receiver General of the Commonwealth



Anne Brockelman

Appointed
Member, Senior
Associate, Perry
Dean Rogers
Partners Architects
(PDR)



Sean Cronin

Designee of the
Secretary of
Administration
and Finance



Sheila Vanderhoef

Appointed
Member, Former
Town
Administrator,
Town of Eastham



Matt Deninger

Designee of the
Commissioner of
Education



Terry Kwan

Appointed
Member,
Former teacher/
School
Committee
member

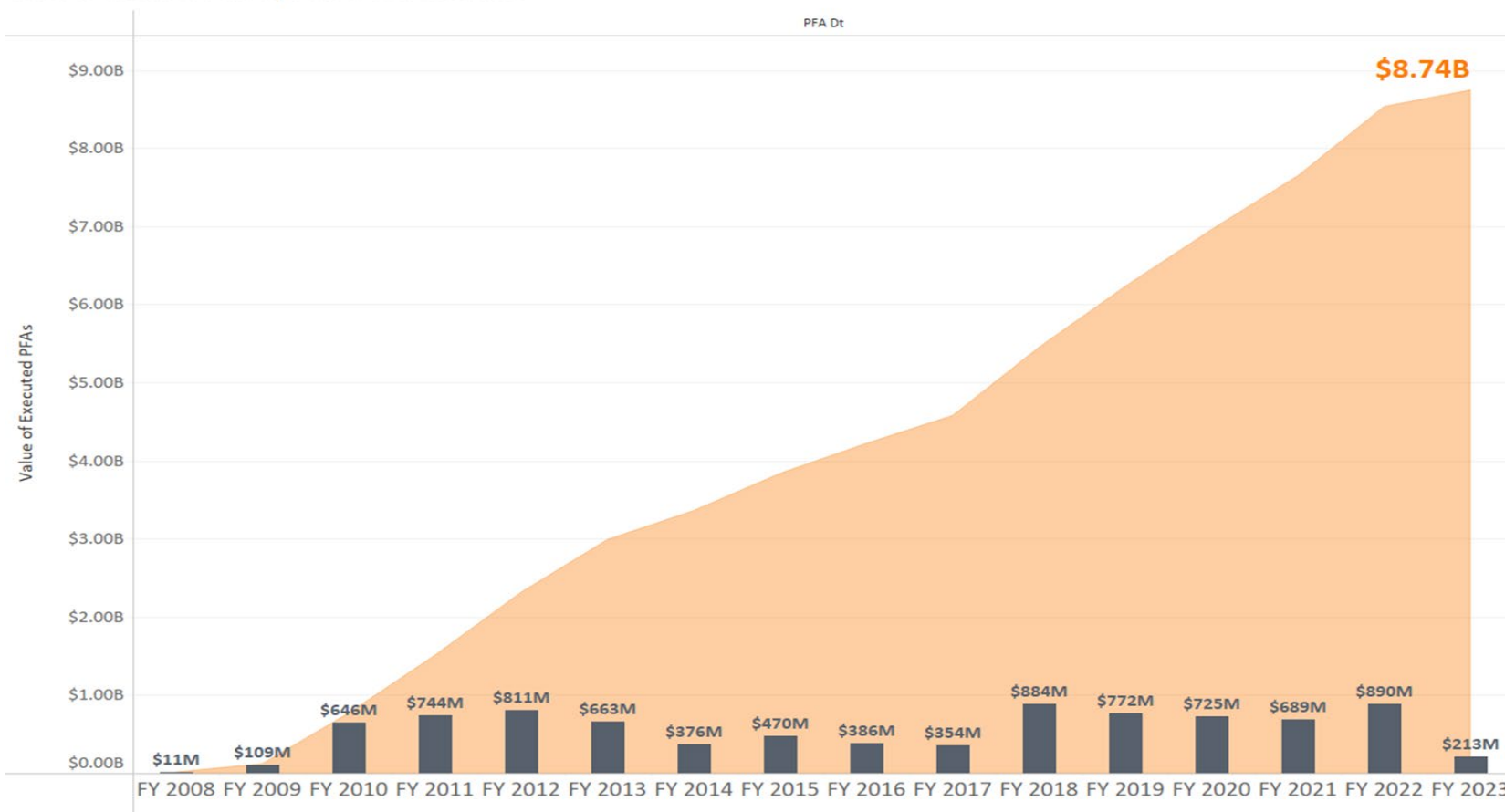


**VACANT
BOARD SEAT**



Executed Funding Agreements

Value of Executed PFAs by Year of PFA Execution



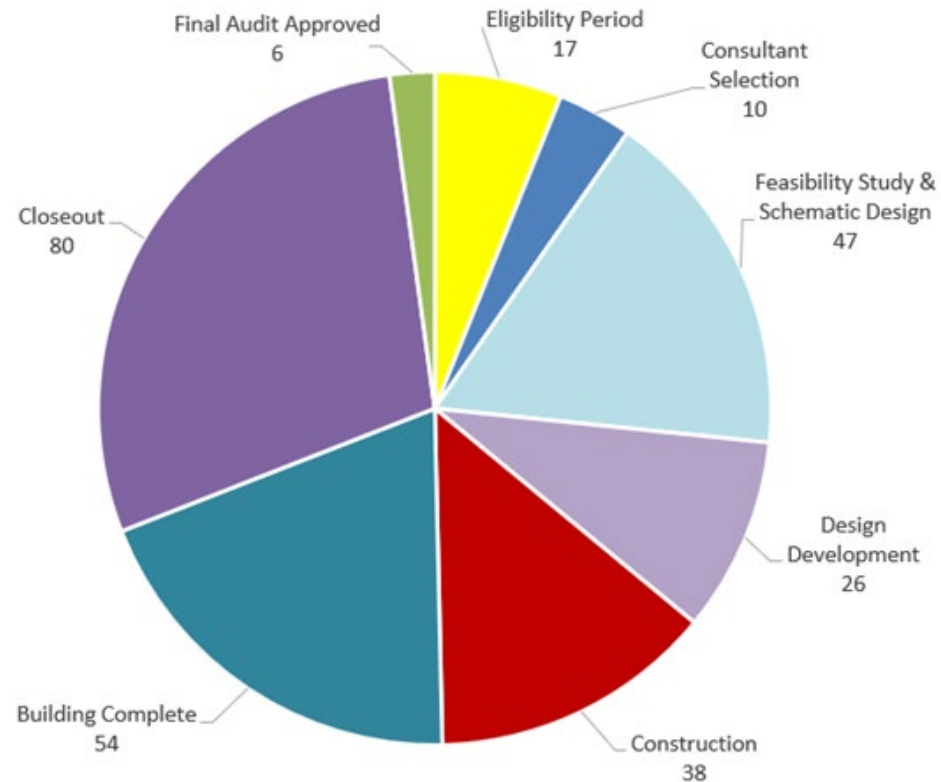
Cumulative Executed PFA Value and PFA Grant Amt for each PFA Dt Year. Color shows details about Cumulative Executed PFA Value and PFA Grant Amt. The data is filtered on Project Type Name, which keeps Accelerated Repair, Core Program, Green Repair and Science Lab Initiative. The view is filtered on PFA Dt Year, which excludes Null.

Orange Cumulative Executed PFA Value
Dark Blue PFA Grant Amt



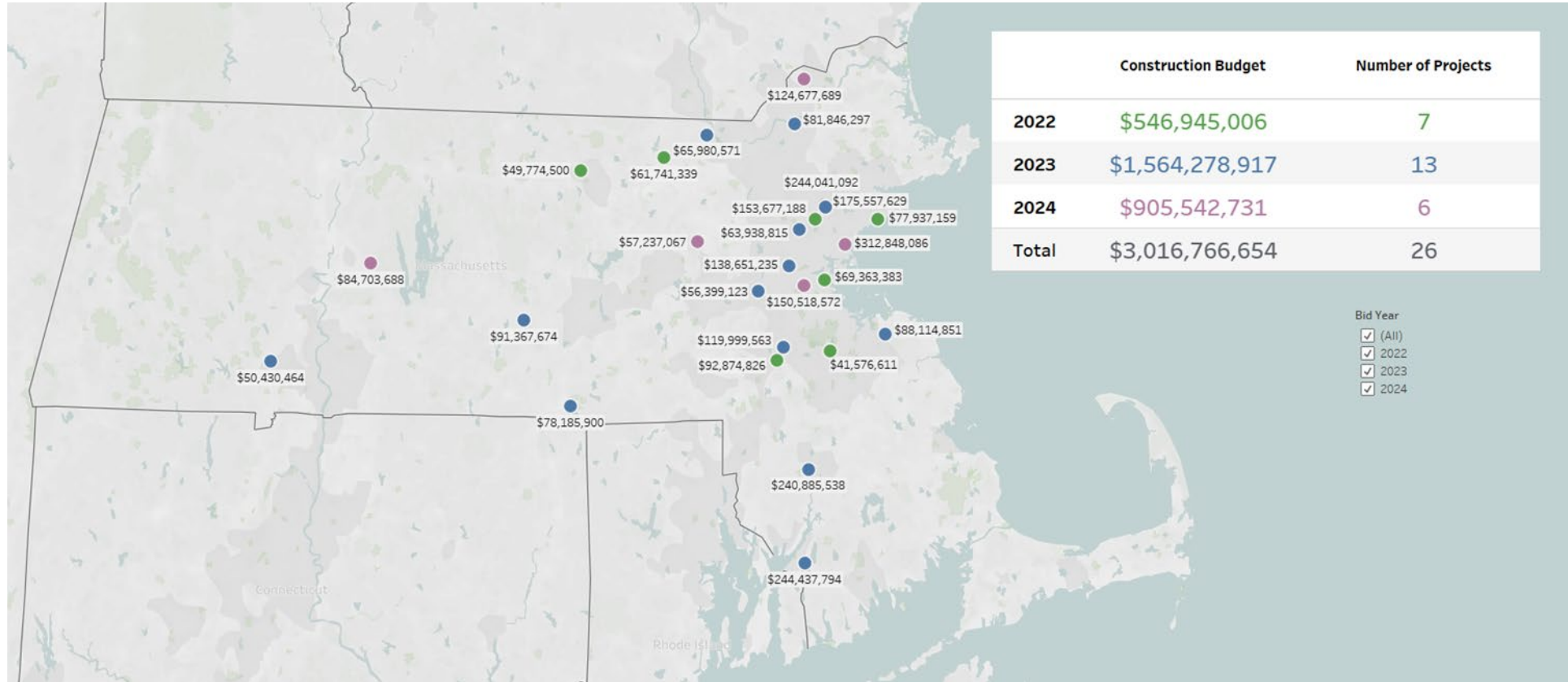
Current Project Status

A total of 278 projects that have received invitations from the Board of Directors (“Board”) to collaborate with the Massachusetts School Building Authority (“MSBA”) are currently in the MSBA’s Eligibility Period and Capital Pipeline.





Upcoming Bids



Massachusetts School Building Authority

Deborah B. Goldberg

State Treasurer and Receiver-General

Chairperson

James A. MacDonald

Chief Executive Officer

Jack McCarthy

Executive Director



Our Mission

Partner with Massachusetts communities to support the design and construction of educationally-appropriate, flexible, sustainable, and cost-effective public school facilities.



Pentucket Middle/High School



Amesbury Elementary School



Scituate Lester J. Gates Middle School

CAFETERIA AND LOBBY



Danvers High School



Sharon High School



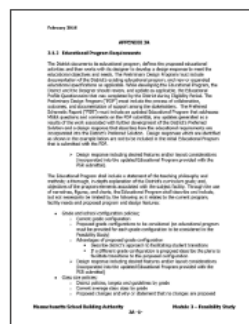
Auburn Middle School



Educationally Appropriate

Educational Program Requirements

To ensure that school projects are responsive to the educational needs of a District, the MSBA requires the district to document its educational program and define proposed educational activities. Only then can the district work effectively with its designer, OPM, and local stakeholders to develop, evaluate, and select a design that supports its educational objectives and needs. Establishing a comprehensive and thoughtful educational program also helps to provide for future flexibility to adapt to changes in programming or teaching methodologies over the useful life of the school. The MSBA offers the following template which may prove helpful in: initiating local discussions regarding current educational programming; considering potential adjustments or improvements the district could realize with a proposed project; and generating an educational program that clearly articulates a district's educational goals and needs.



[Educational Program](#)

Sample Educational Programs

[Leicester, Leicester Middle/Elementary School \(K-8\)](#)

[Orange, Dexter Park Innovation School \(PK-6\)](#)

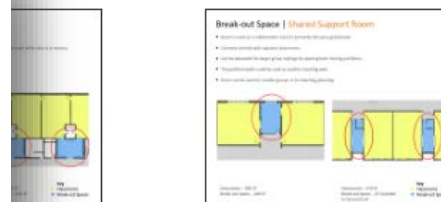
[Sharon, Sharon High School \(9-12\)](#)

[Shrewsbury, Beal Early Childhood Center \(K-4\)](#)

Science Laboratories and STE Learning Spaces Guidelines

Break-Out Spaces (in Elementary Schools)

In 2015, the MSBA has developed a [Break-out Spaces Presentation](#) based on design features found in the 18 Elementary Schools that have been constructed in partnership with the MSBA within the previous 10 years. As a result of these projects, the MSBA has concluded that there are five general



[Shared Support Room](#)



[Multiple Types Combined](#)



[Differentiated Learning \(within the classroom\)](#)

with the Department of Elementary and Secondary Education and other stakeholders for science laboratories in high school facilities. These spaces should support all types of science curriculum as well as other hands-on learning activities, STEAM Labs, fabrication laboratories "fab-labs") to allow for future changes in curriculum delivery and academic structure.

with an outside consultant to review National, Massachusetts, and MSBA best practices regarding the size, configuration, outfitting, and use of educational spaces for Science and Technology/Engineering K-8, while revisiting the previous work done for High School Science room space, classrooms dedicated to STE, Middle and High School areas not dedicated exclusively to STE education. The result of this report can be read [here](#). The report outlines:

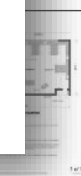
ing STEM in Massachusetts schools
pe and grade levels
ons for STEM learning including policy and systems

space summaries and guidelines refer to the [2018 Area Guidelines](#).



[Guidelines for Science Labs](#)

[High School Science Lab Guidelines Presentation - 2010](#)



[High School Science Lab Prototypical Plans - 2010](#)



[High School Science Lab Guidelines Presentation - 2010](#)



[High School Science Lab Fly-Through Video](#)



Boston Dearborn School



Nashoba RSD Center School



Billerica Memorial High School



New Bedford Lincoln School

BREAKOUT SPACES



Longmeadow High School



Ayer Shirley High School



Lexington Hastings Elementary School



Amesbury Elementary School



Saugus Middle/High School



Winchester High School

**SCIENCE ROOMS,
STE
AND
MAKER SPACES**



Lexington Diamond Middle School



Middleborough High School



Danvers High School



Thurgood Marshall Middle School



South High School

CAREER VOCATIONAL TECHNICAL EDUCATION



Bristol County Agricultural High School



Bristol County Agricultural High School



Minuteman High School

SUSTAINABLE





Norwood High School



Taunton Mulcahey Elementary



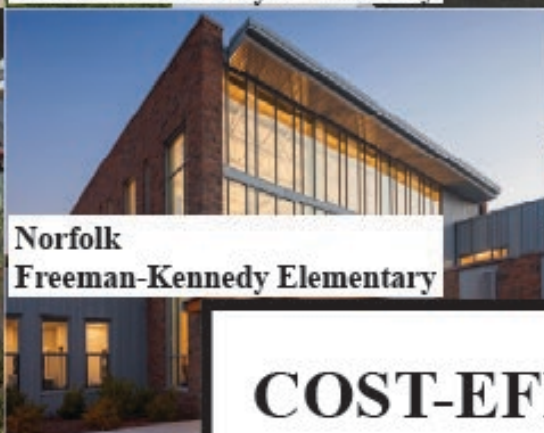
Burlington Memorial Elementary



New Bedford Lincoln Elementary



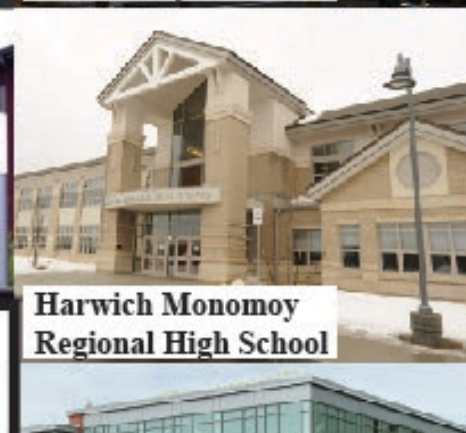
Lexington Estabrook Elementary



Norfolk Freeman-Kennedy Elementary



West Bridgewater Middle High School



Harwich Monomoy Regional High School



Hanover High School

**COST-EFFECTIVE
MODEL SCHOOLS**



Woburn Hurld-Wyman Elementary



Uxbridge High School



Dedham Early Childhood Education Center



Shrewsbury Sherwood Middle





Healthy Materials Initiative

An MSBA Initiative: Healthy Materials

Executive Director Jack McCarthy has indicated a mission to ensure schools have healthy interiors. He has been messaging his interest in requiring school furniture and materials be free of harmful chemicals.

The C.P.P. offers healthy products to MSBA schools at a discounted cost.

- Reduce interior products manufactured with harmful chemicals
- Approximately 80,000 chemicals on market not adequately evaluated for safe use in everyday products.
- Initiative fostered by Harvard University.
- Pilot project at Bristol Plymouth Regional Technical School
- Effective June 2022, the MSBA established higher standards for indoor air quality for all MSBA Core-Program projects by requiring minimum thresholds within the LEED-S and NE-CHPS guidelines for building product material ingredients disclosures and low emitting materials.



Abington Middle/High School



Granby East Meadow School



Dedham Early Childhood Center



Marathon Elementary School



Gates Middle School



Clark Avenue Middle School

**POST-OCCUPANCY
EVALUATION**



Athol Elementary School



Florida Ruffin Ridley School



Billerica Memorial High School



Irwin Jacobs Elementary School

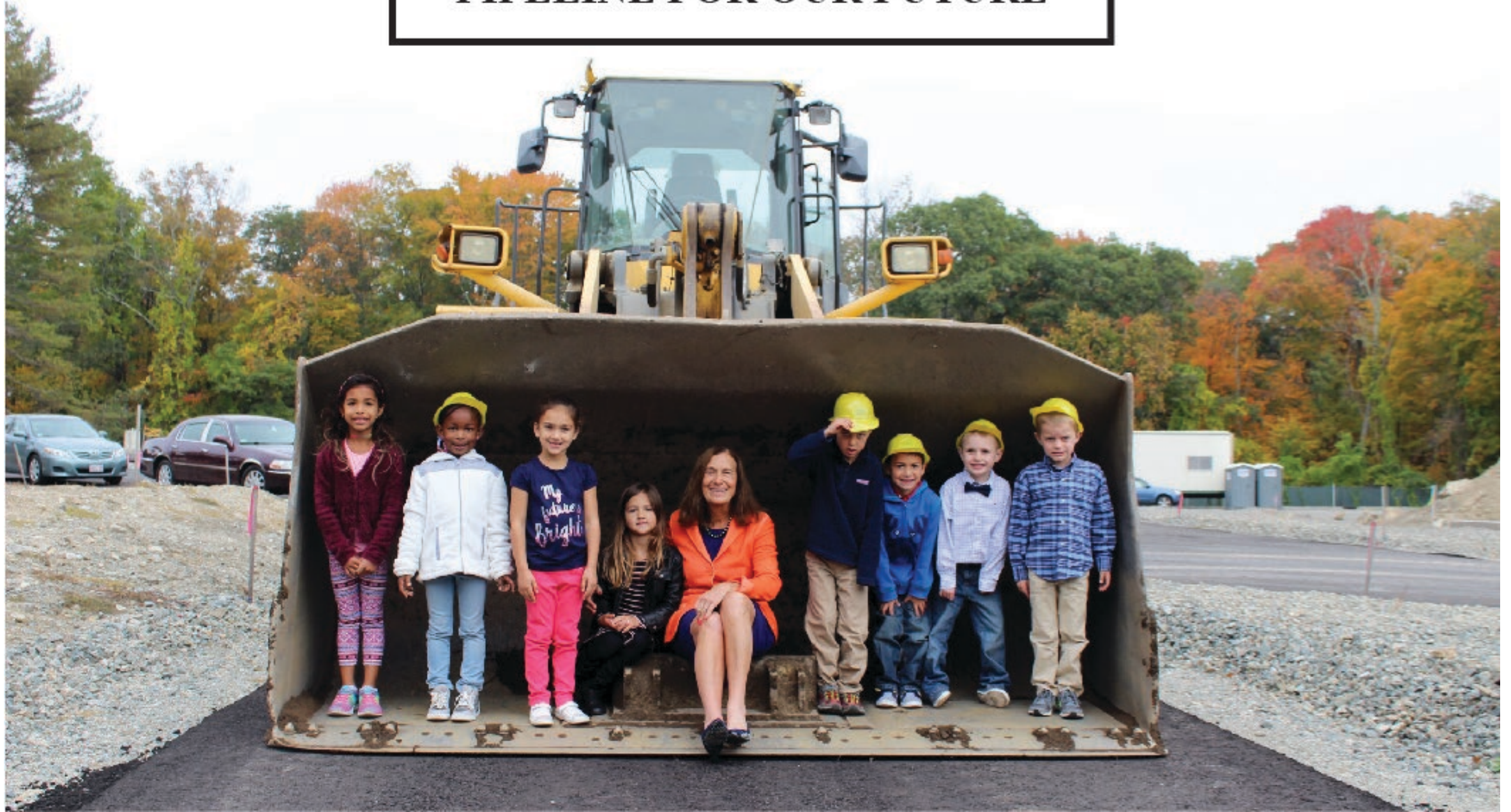


Taconic High School



Plymouth South High School

PIPELINE FOR OUR FUTURE



Update on the **Massachusetts Economy**

***Dr. Michael Goodman**, Professor of Public Policy & Senior Advisor to the Chancellor
at UMass Dartmouth*



The State of the State Economy

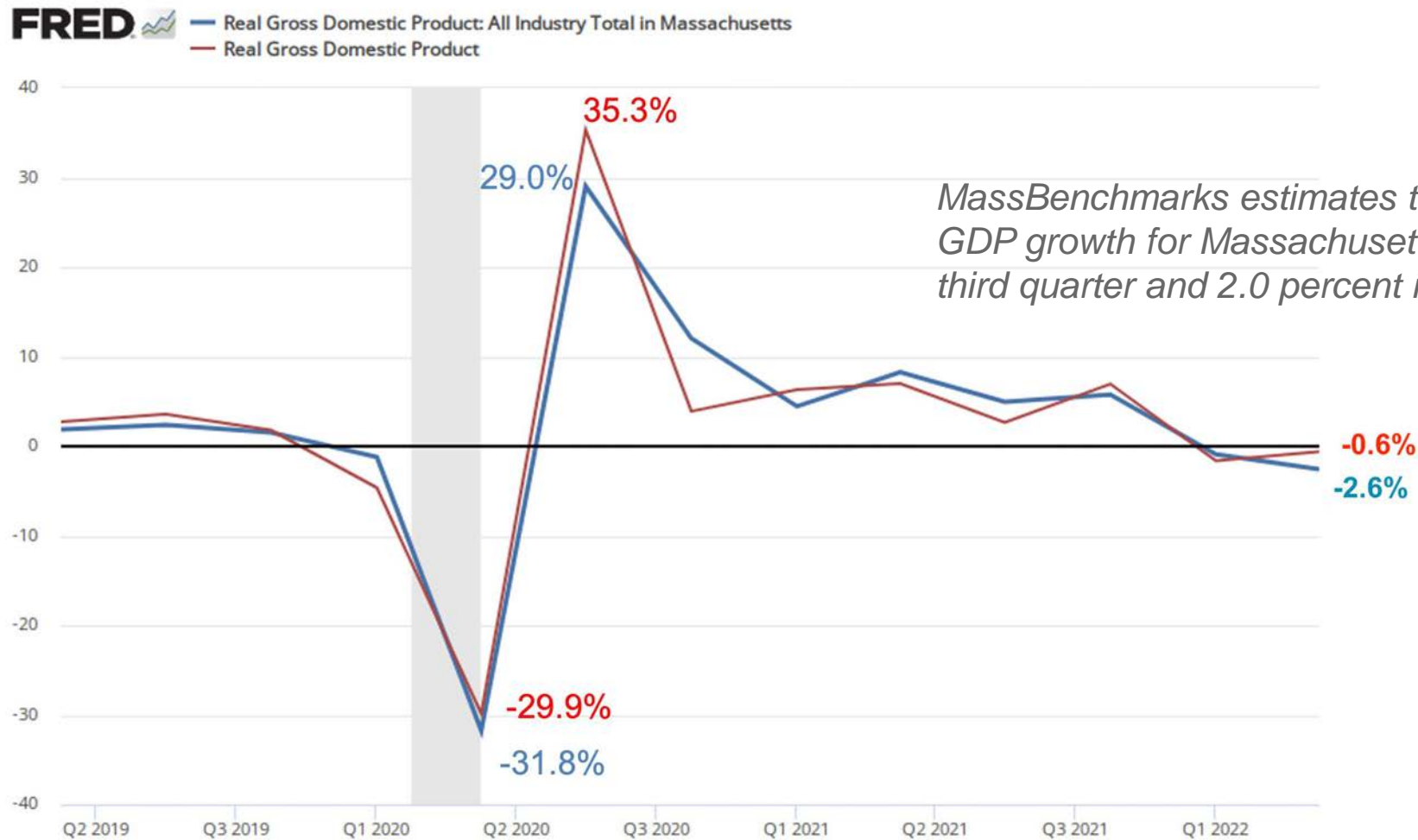
Michael D. Goodman, Ph.D.
Professor of Public Policy
Senior Advisor to the Chancellor
University of Massachusetts Dartmouth
Co-Editor, MassBenchmarks

October 20, 2022

The following reflects my personal and professional assessment of the available evidence. It does not necessarily represent the views of my employer.



State economic growth has steadily slowed in 2022

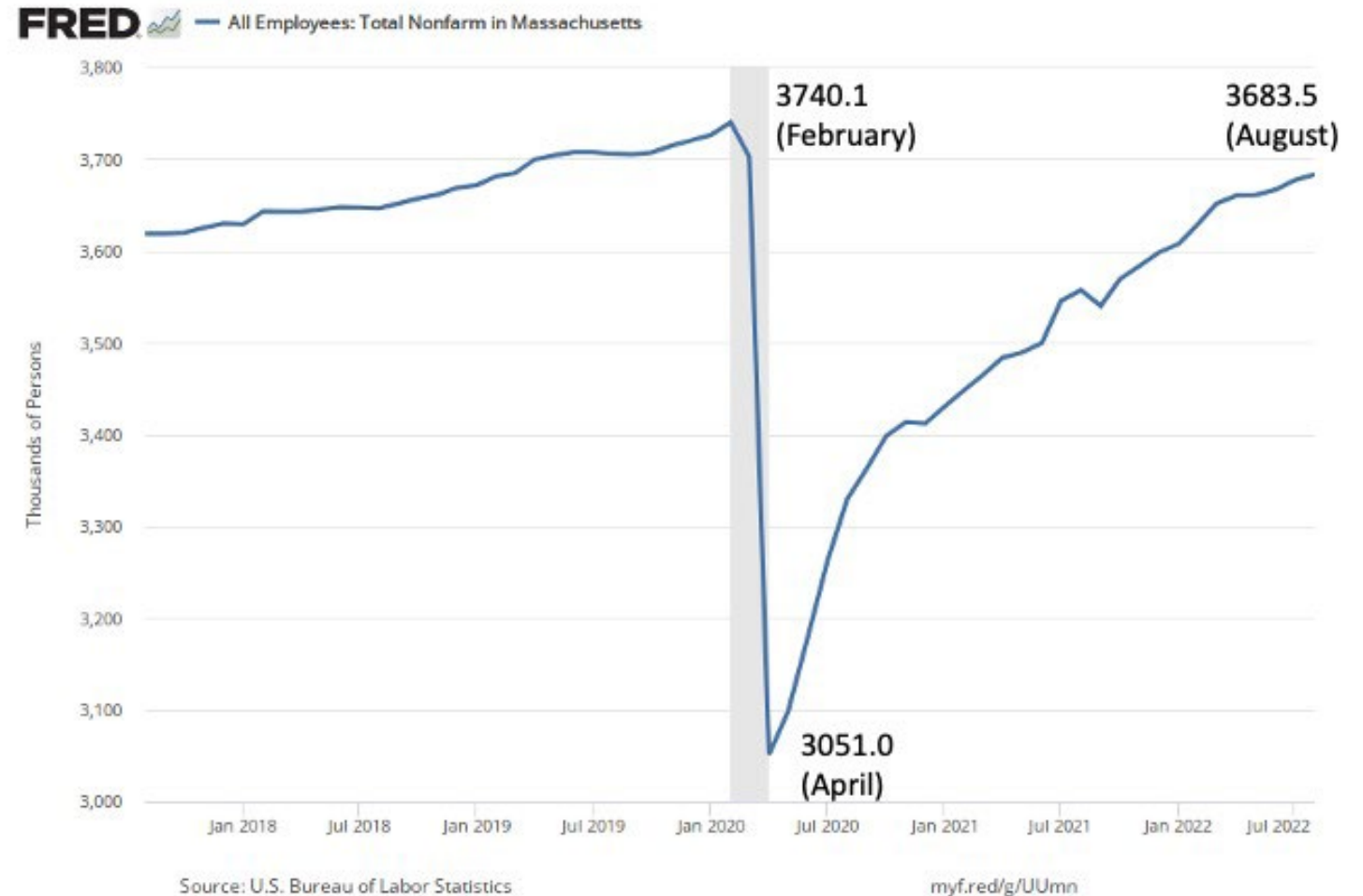


Annualized
Quarterly
Growth Rates



It has been a rapid but uneven recovery

- Massachusetts has regained 632,500 of the 689,100 jobs lost in Q2 2020
- Leisure and Hospitality, Health Care & Social Assistance, & other Service sectors have been hit hard and are struggling to find suitable workers





Main Street businesses that require face to face interactions continue to cope with reduced demand

OPPORTUNITY INSIGHTS ECONOMIC TRACKER

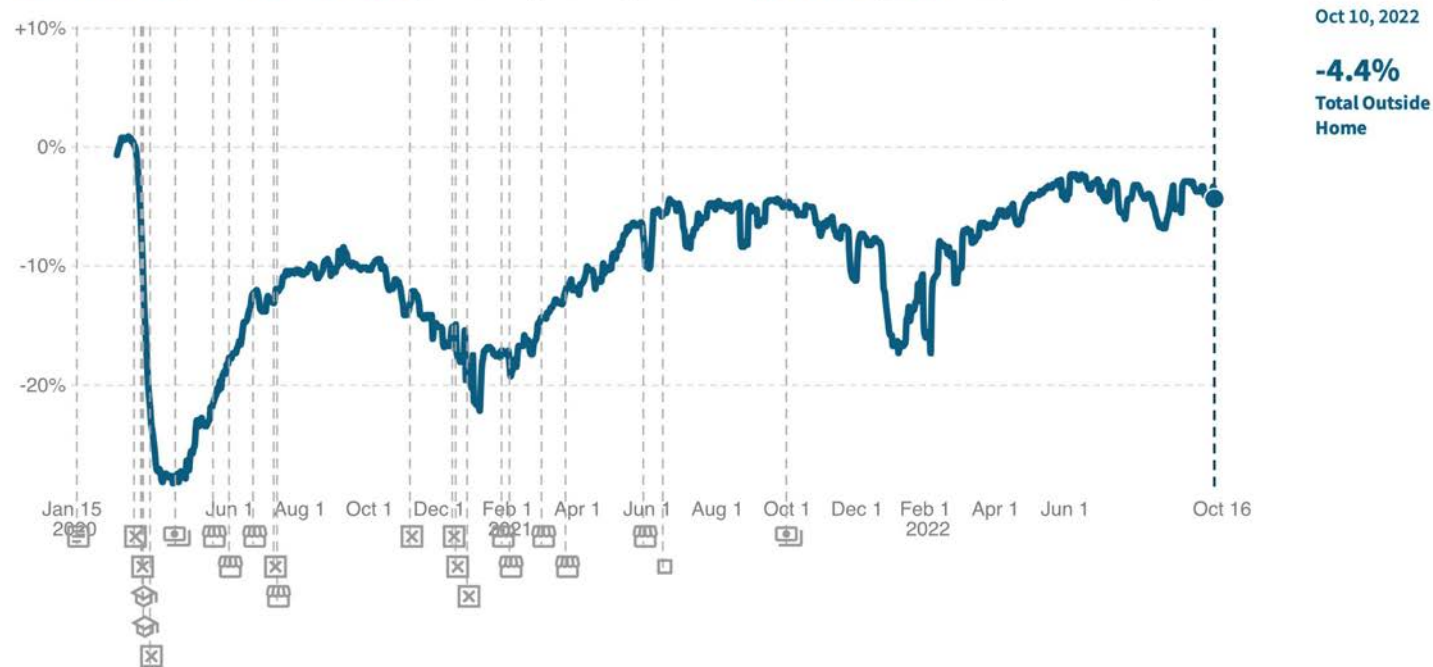
HARVARD UNIVERSITY

BROWN UNIVERSITY

BILL & MELINDA GATES FOUNDATION

Percent Change in Time Spent Outside Home*

In Massachusetts, as of **October 10 2022**, total time spent away from home **decreased** by **4.4%** compared to January 2020.



data source: Google COVID-19 Community Mobility Reports

*Change in the average time spent outside of residential locations indexed to the period between Jan 3-Feb 6 2020. This series uses data from Google's COVID-19 Community Mobility reports.

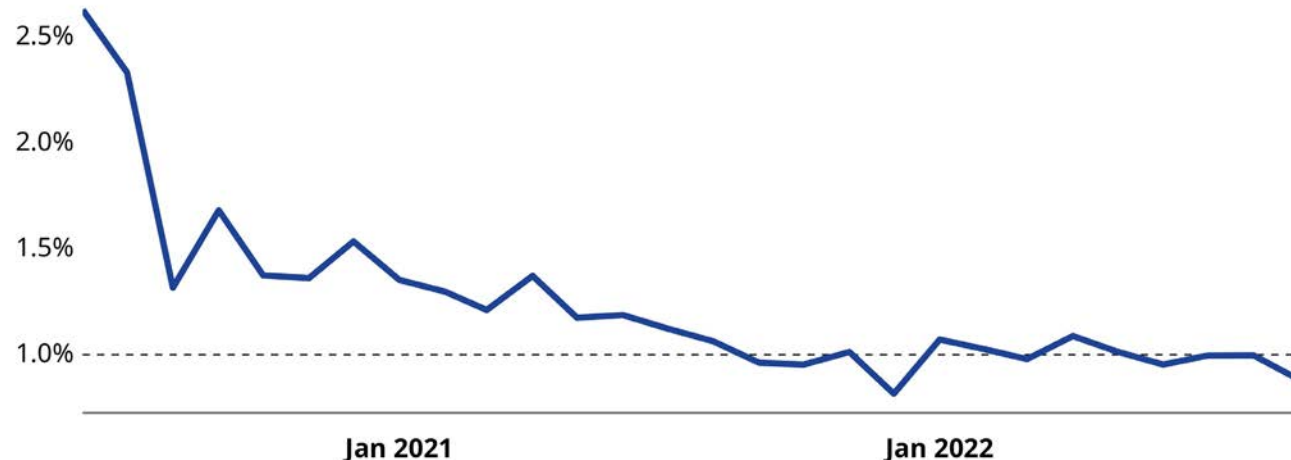
last updated: October 14, 2022 next update expected: October 18, 2022



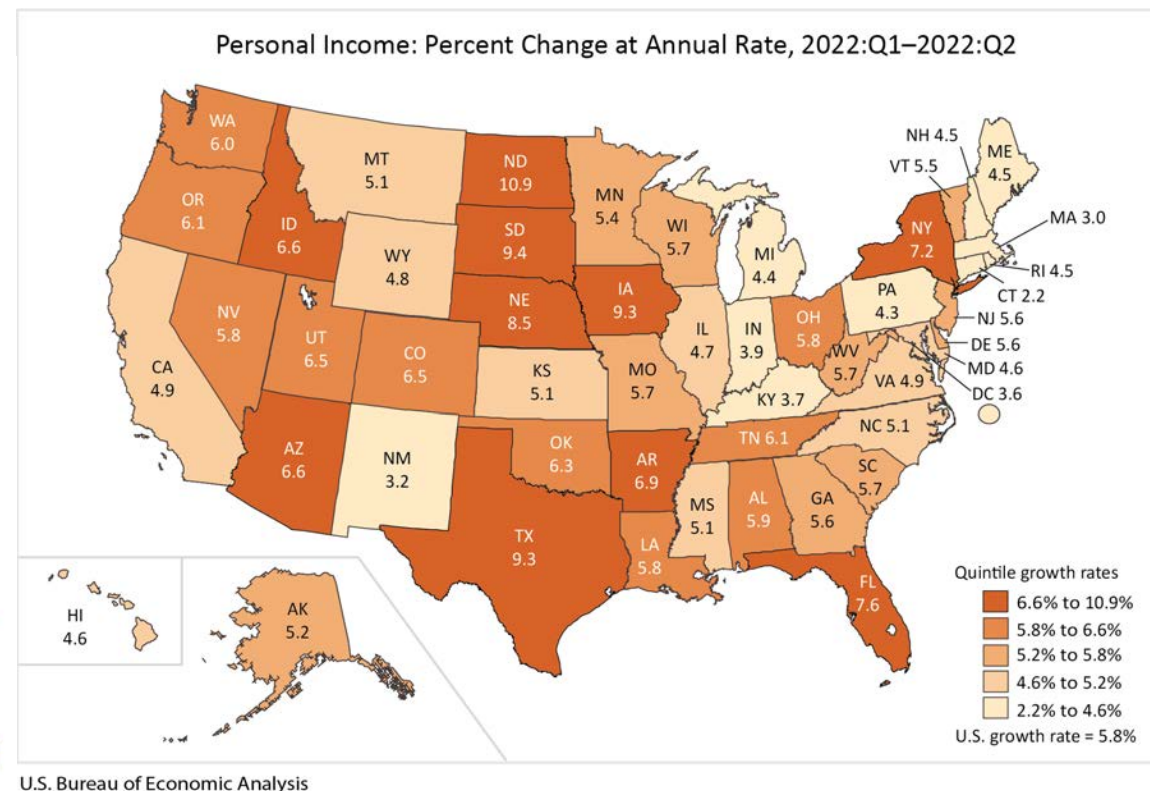
Despite slowing growth, the labor market has remained strong and income growth has been solid

The job loss rate remains low

Flows out of employment into unemployment,
% of employment, Jun 2020 - Sep 2022



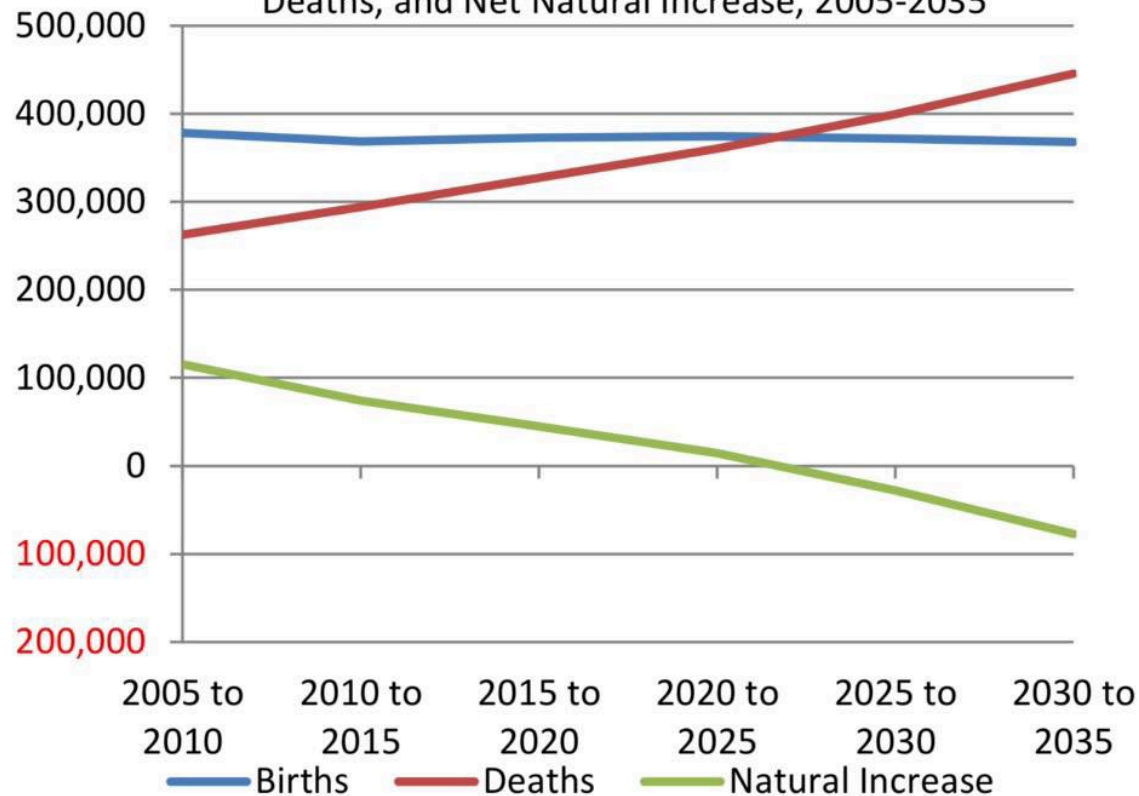
Source: BLS. Note: dashed line is 2017 - 2019 average of outflow rate





Our population isn't growing fast enough the old-fashioned way

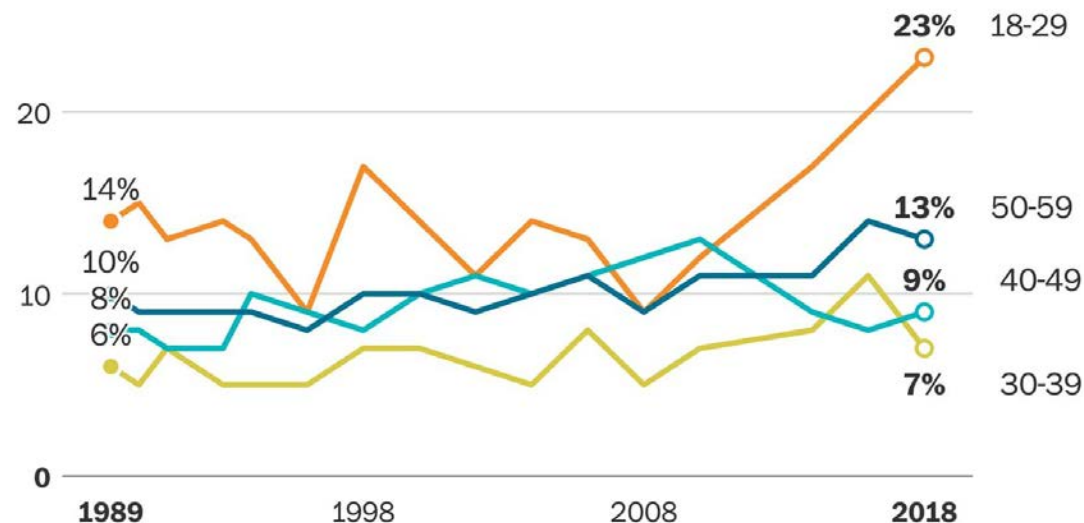
Figure 2.3: Massachusetts Actual and Projected Births, Deaths, and Net Natural Increase, 2005-2035



Source: UMass Donahue Institute

Lack of sex is driven mainly by the young

Percent reporting no sex in the past year, by age



Note: Rates of no sex among adults over age 60 have consistently hovered around 50 percent and are not shown here.

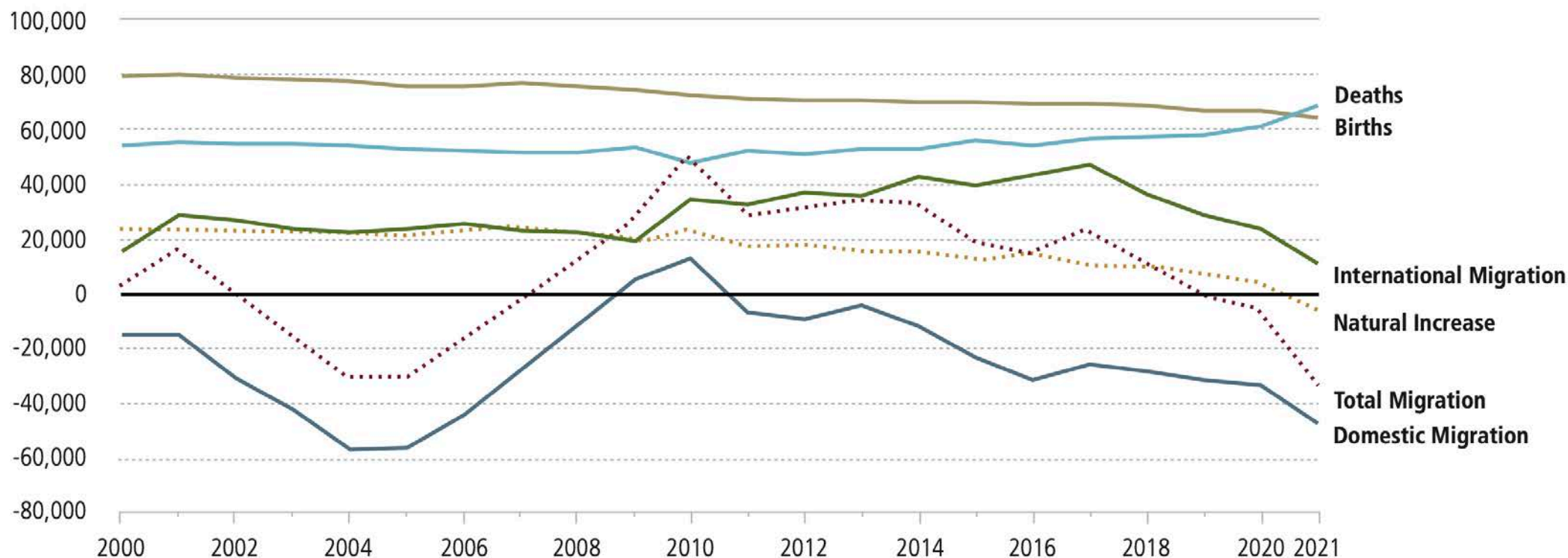
Source: General Social Survey

THE WASHINGTON POST



State demographic trends are not encouraging

■ Figure 7. Massachusetts Estimated Components of Population Change, 2000 – 2021



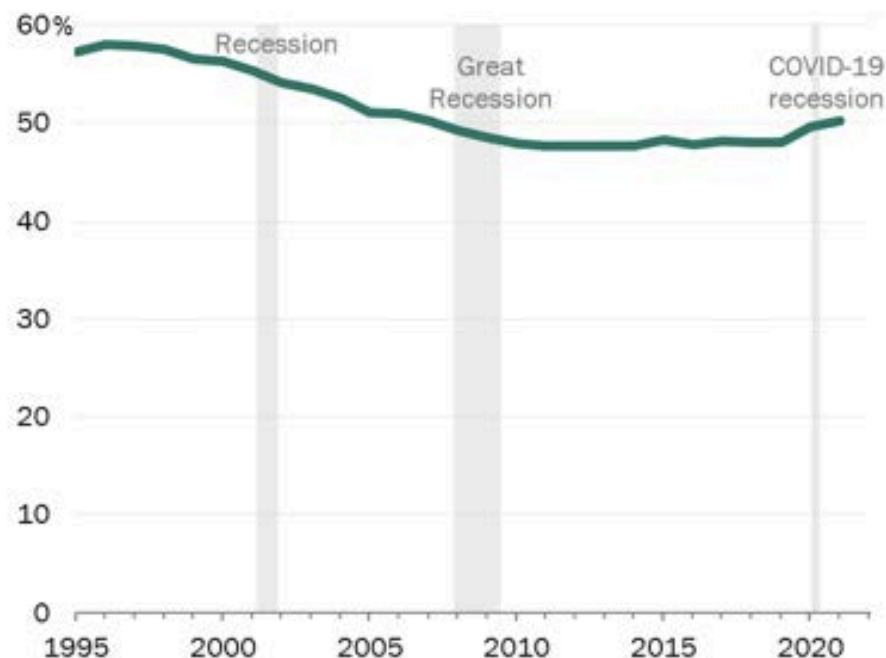
■ Source: U.S. Census Bureau Population Division, ST-2000-7, CO-EST2020-ALLDATA, and NST-EST-2018-ALLDATA; UMDI analysis

Source: MassBenchmarks, UMass Donahue Institute



Unlike in other recent recessions, the pandemic has increased retirement among older adults

% of U.S. adults ages 55 and older who are retired

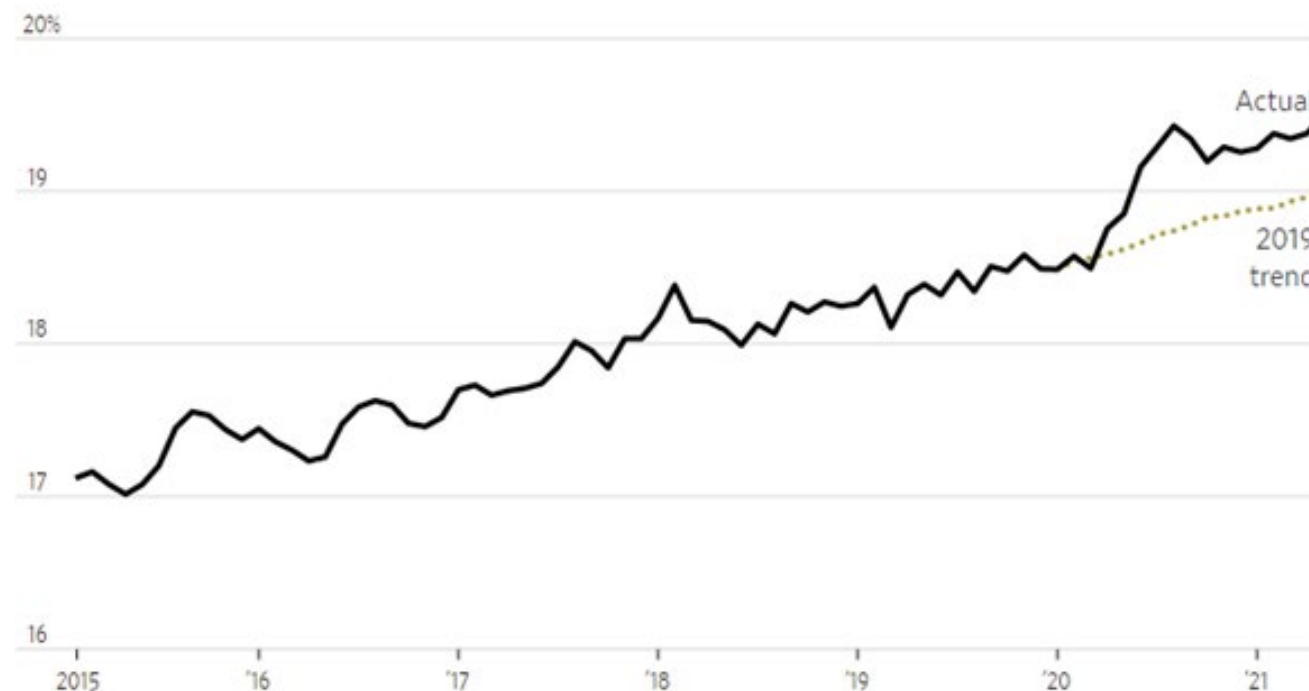


Note: "Retired" refers to those not in the labor force due to retirement. The COVID-19 recession began February 2020 and ended April 2020.
Source: Pew Research Center analysis of July, August and September Current Population Survey monthly files (IPUMS).

PEW RESEARCH CENTER

Retirements have been increasing at an above trend rate since the onset of the pandemic

Share of U.S. population retired



Source: IPUMS-CPS, University of Minnesota via Federal Reserve Bank of Dallas

Source: Pew Research Center



Wages are rising fastest for job switchers and the lowest paid workers

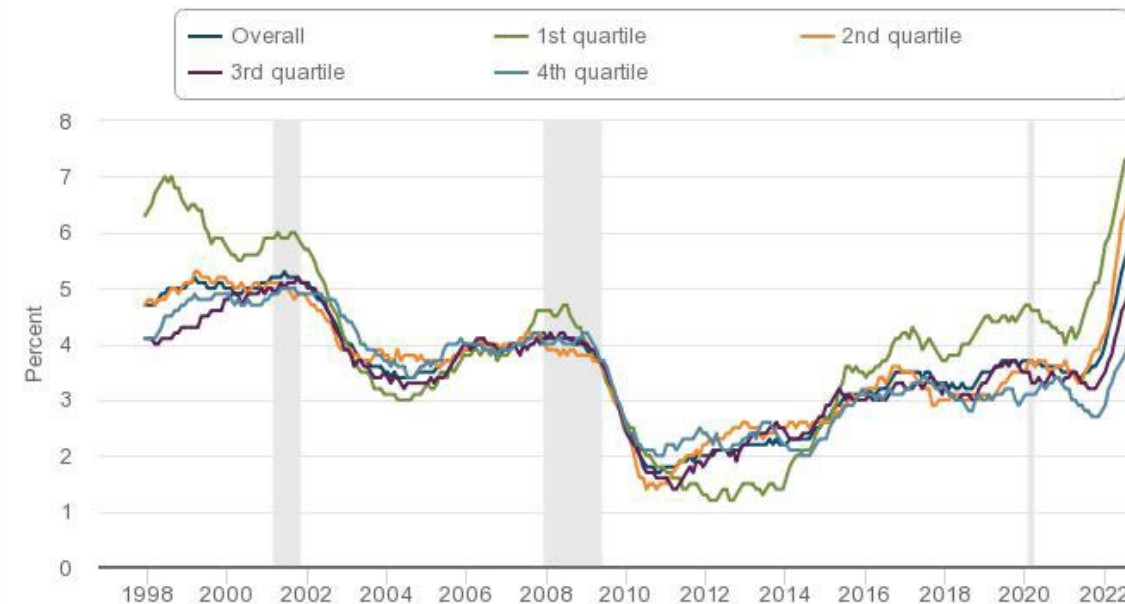
Monthly median wage growth for job switchers



Note: 3-month moving averages of median hourly wage growth
Source: Atlanta Fed

Wage Growth Tracker by Wage Level

12-month moving average of median wage growth for each category, hourly data



Sources: Current Population Survey, Bureau of Labor Statistics and author's calculations

Source: Federal Reserve Bank of Atlanta



Cost of living challenges have exacerbated the labor supply crunch

Annual cost in Massachusetts

College: \$12,778



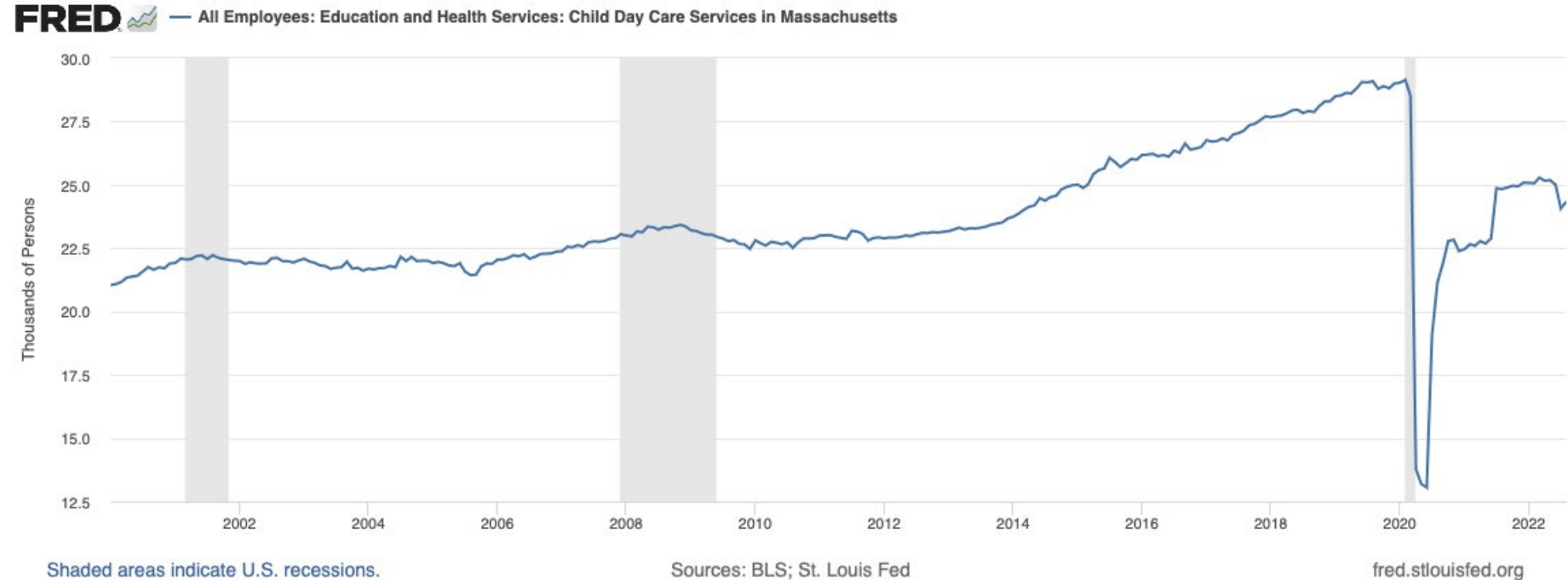
Housing: \$14,419



4-year-old care: \$15,095

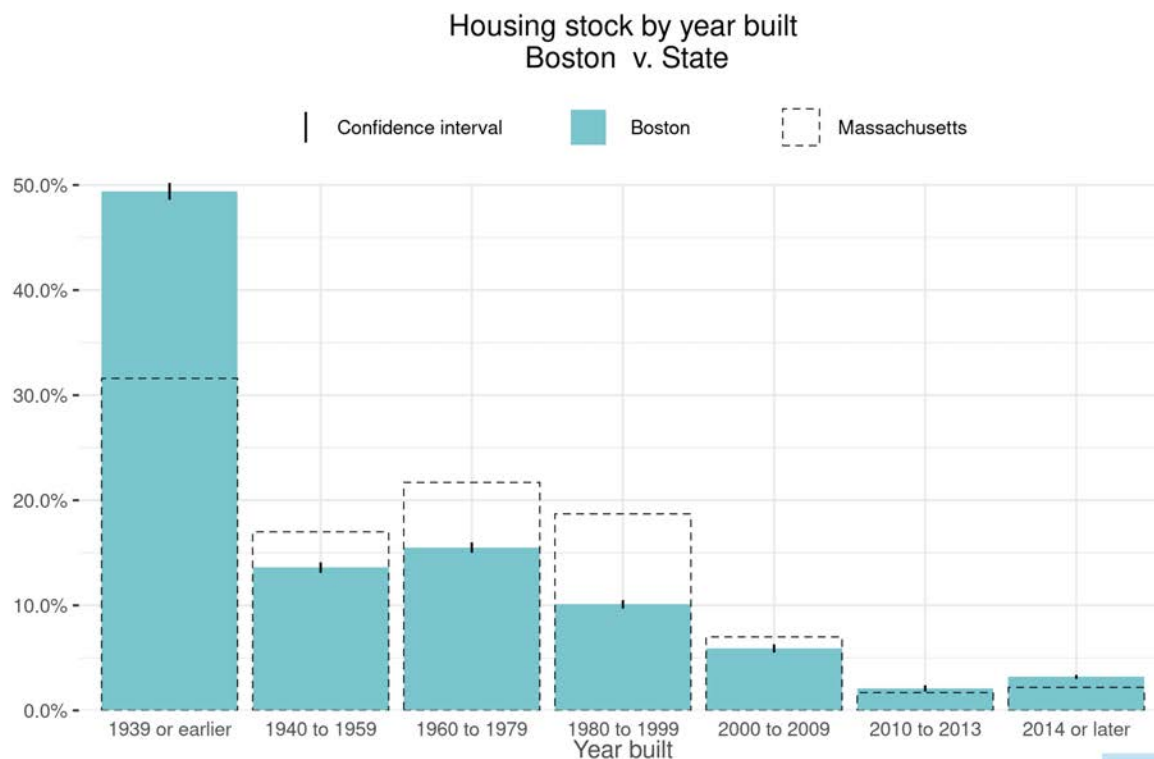


Infant care: \$20,913



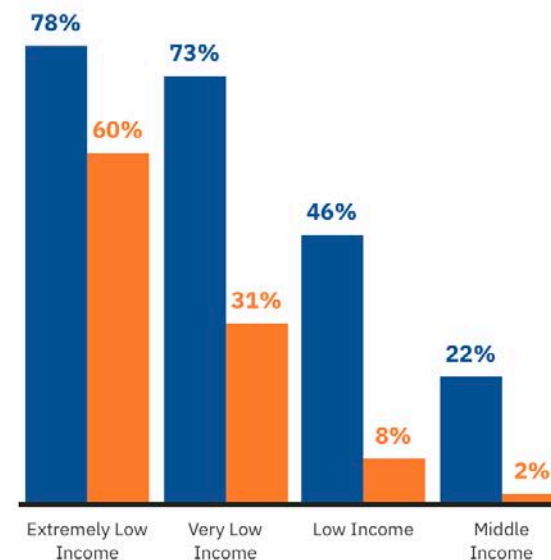


If you don't build it, they can't come



HOUSING COST BURDEN BY INCOME GROUP

Cost Burdened Severely Cost Burdened



Note: Renter households spending more than 30% of their income on housing costs and utilities are cost burdened; those spending more than half of their income are severely cost burdened.

Source: NLIHC tabulations of 2020 5-Year ACS PUMS

KEY FACTS

305,367
OR
30%
Renter households that are extremely low income

-163,318
Shortage of rental homes affordable and available for extremely low income renters

\$31,960
Maximum income for 4-person extremely low income household (state level)

\$78,984
Annual household income needed to afford a two-bedroom rental home at HUD's Fair Market Rent.

60%
Percent of extremely low income renter households with severe cost burden



Rising interest rates have begun to cool the red-hot housing market

Massachusetts Housing Market Overview

What is the housing market like right now?

In August 2022, home prices in Massachusetts were up 6.8% compared to last year, selling for a median price of \$583,900. On average, the number of homes sold was down 12.6% year over year and there were 7,943 homes sold in August this year, down 9,088 homes sold in August last year. The median days on the market was 20 days.

[Show Less ^](#)

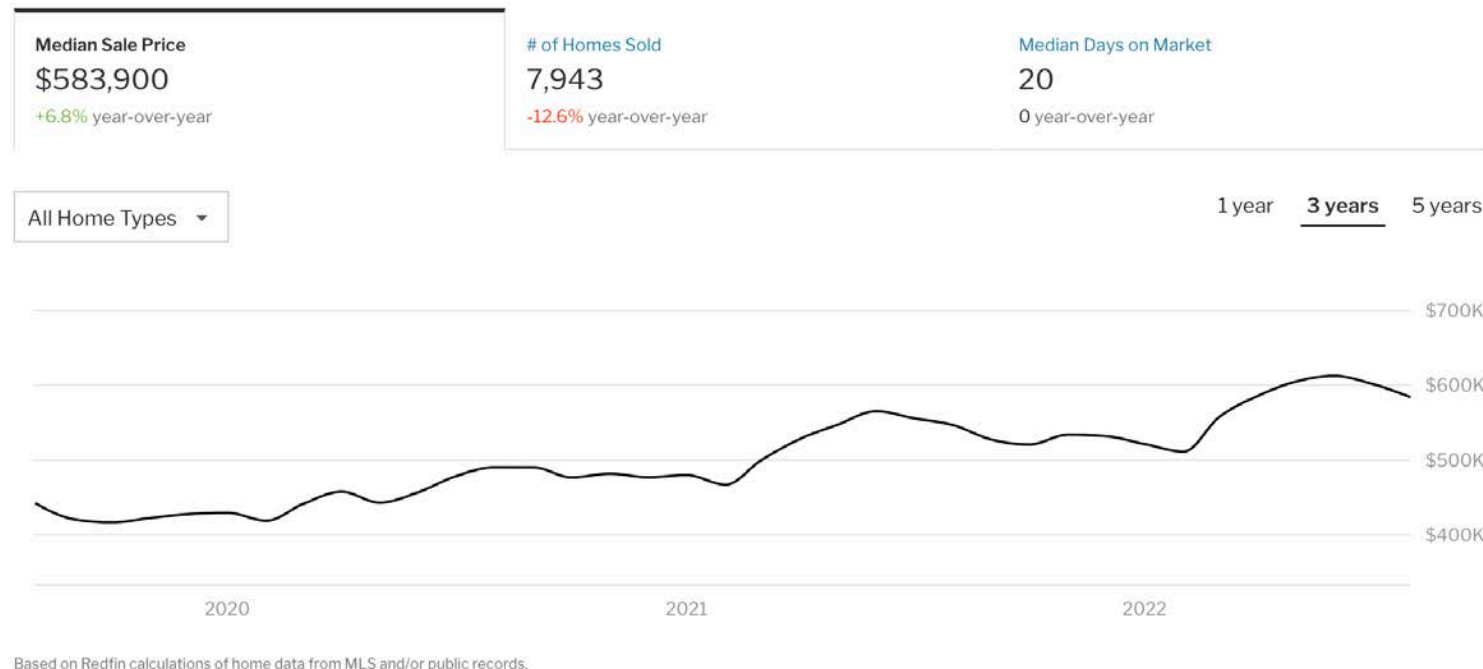
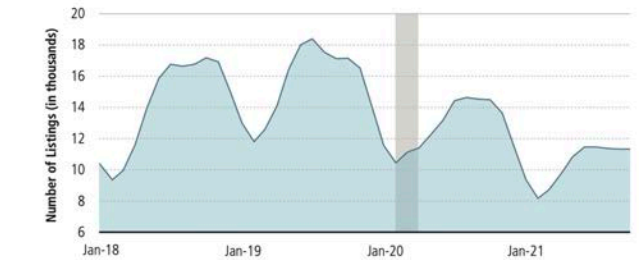
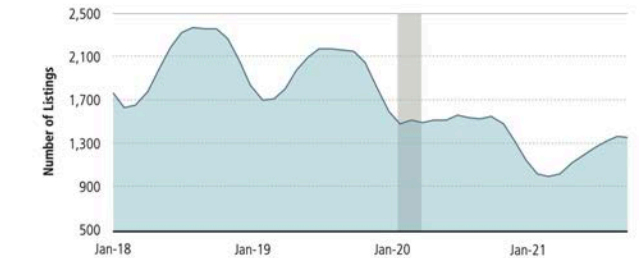


Figure 6. Inventory/Sales All Homes Boston Metro Area
Jan 2018 – Oct 2021



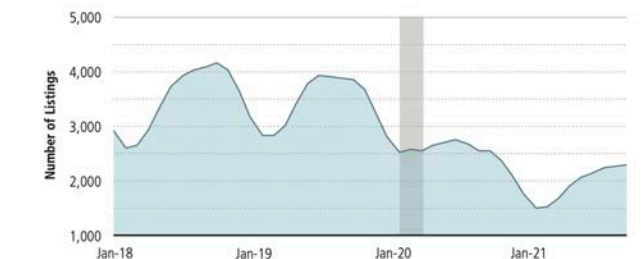
Source: Inventory/sales data from Zillow's For-Sale Inventory. Note: The trend of inventory/sales of all homes in Boston, MA, metro area from January 2018 to October 2021. Vertical shading indicates a recession (recession data from Federal Reserve Economic Data).

Figure 7. Inventory/Sales All Homes Springfield Metro Area
Jan 2018 – Oct 2021



Source: Inventory/sales data from Zillow's For-Sale Inventory. Note: The trend of inventory/sales of all homes in Springfield, MA, metro area from January 2018 to October 2021. Vertical shading indicates a recession (recession data come from Federal Reserve Economic Data).

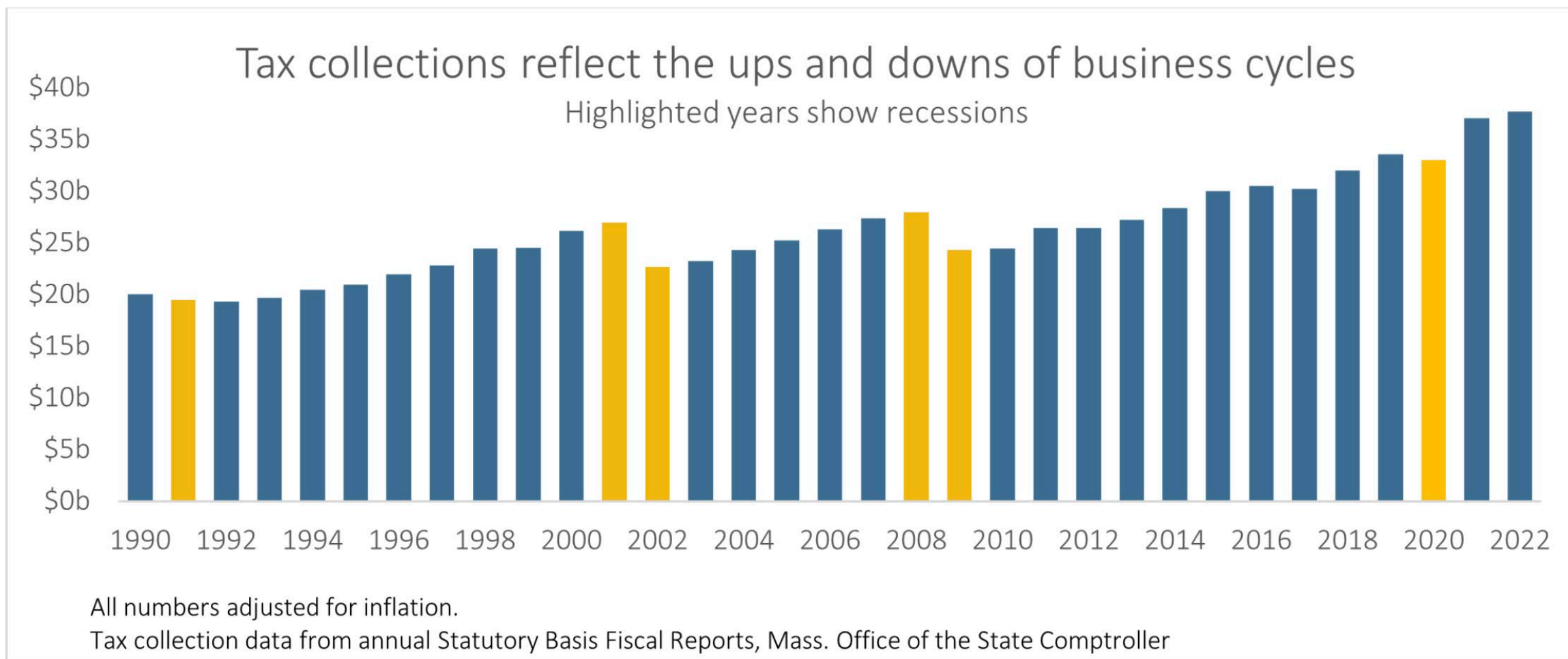
Figure 8. Inventory/Sales All Homes Worcester Metro Area
Jan 2018 – Oct 2021



Source: Inventory/sales data from Zillow's For-Sale Inventory. Note: The trend of inventory/sales of all homes in Worcester, MA, metro area from January 2018 to October 2021. Vertical shading indicates a recession (recession data come from Federal Reserve Economic Data).



The Commonwealth is in a very strong financial position

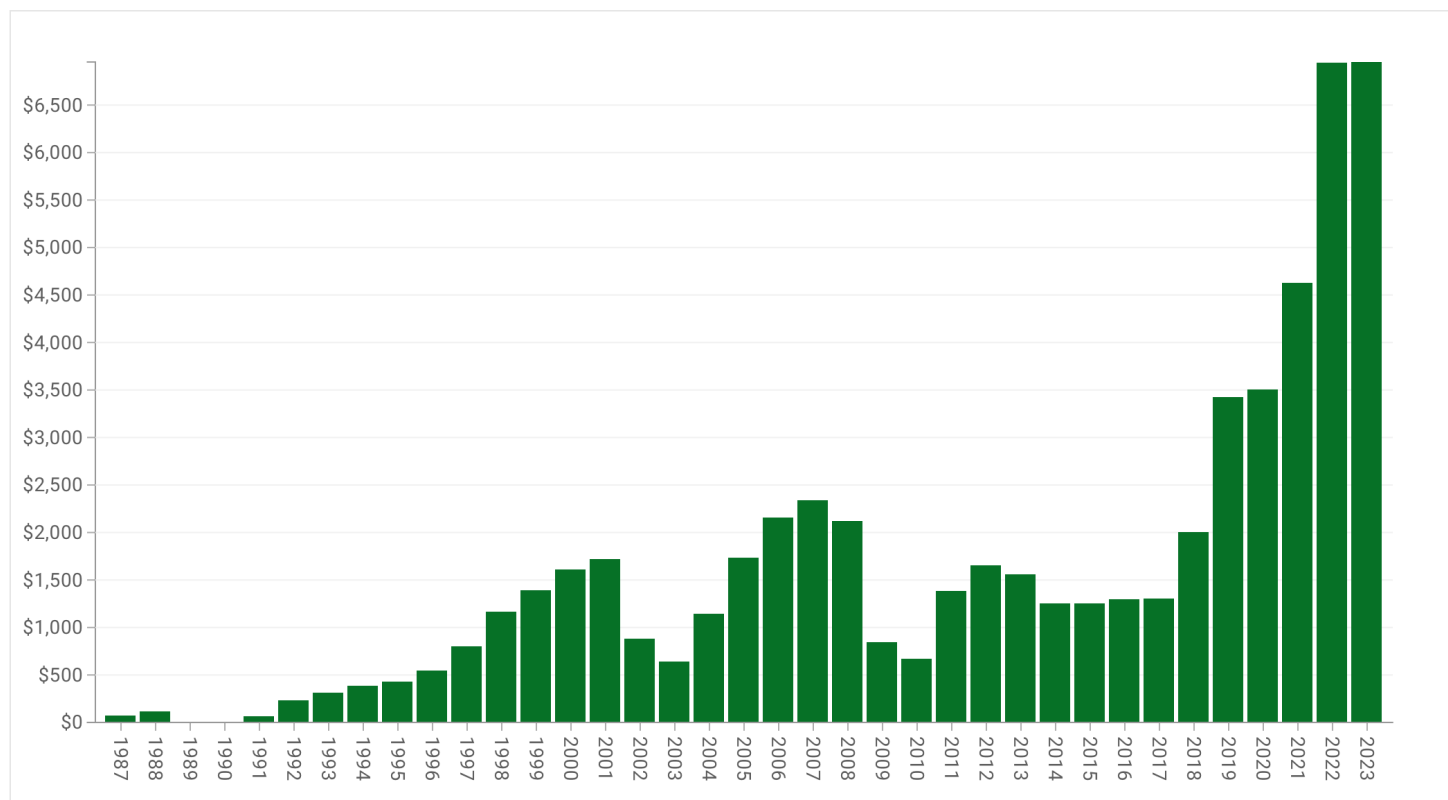




MA is fiscally well prepared for a downturn and is taking steps to address the growing risks of coastal living

Fiscal Year-End and Current Stabilization Fund Balances (In \$ Millions)

(FY2023 Balance is as of August 22, 2022)



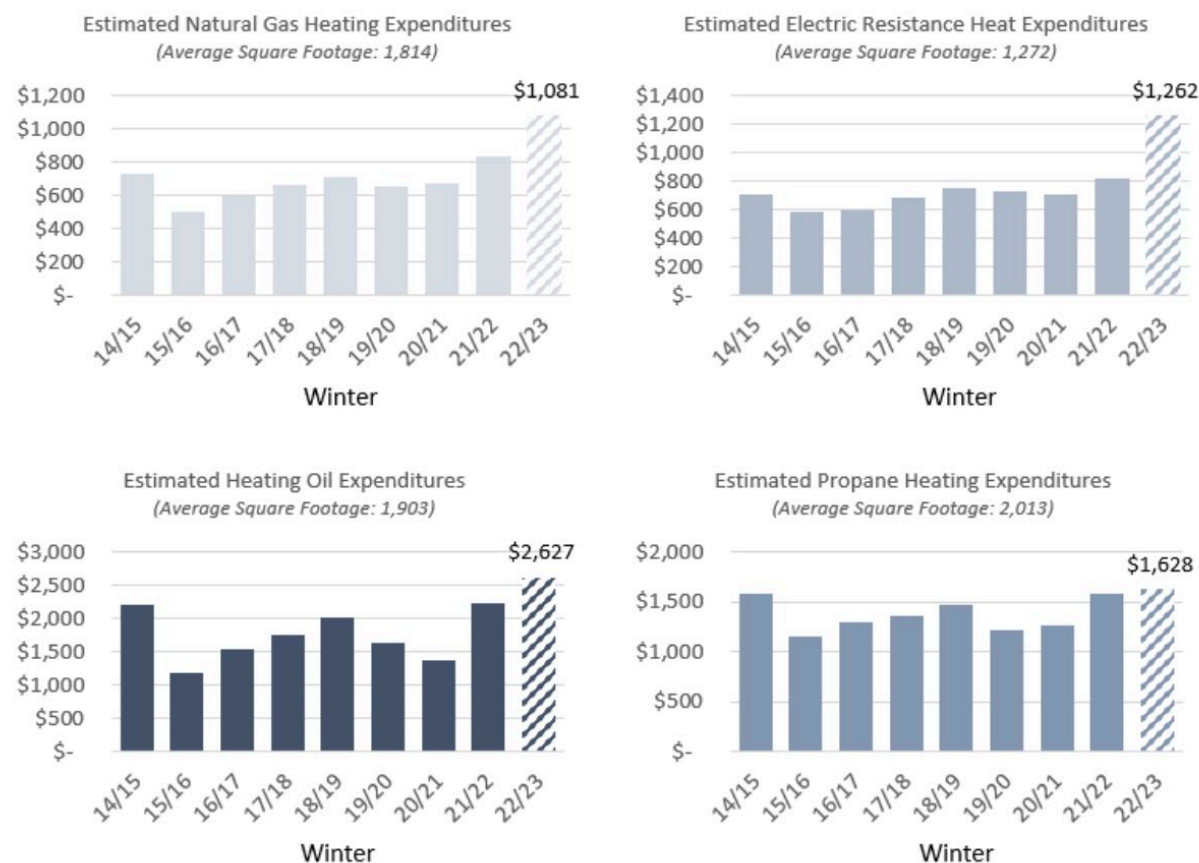
“We consider Massachusetts’ environmental risks moderately negative in our credit rating analysis because of the commonwealth’s coastal exposure, with about two-thirds of its population in the Boston MSA and substantial property value in the combined Boston and Cape Cod area exposing the state to significant economic disruption following a high-impact event.”

-- Standard & Poors



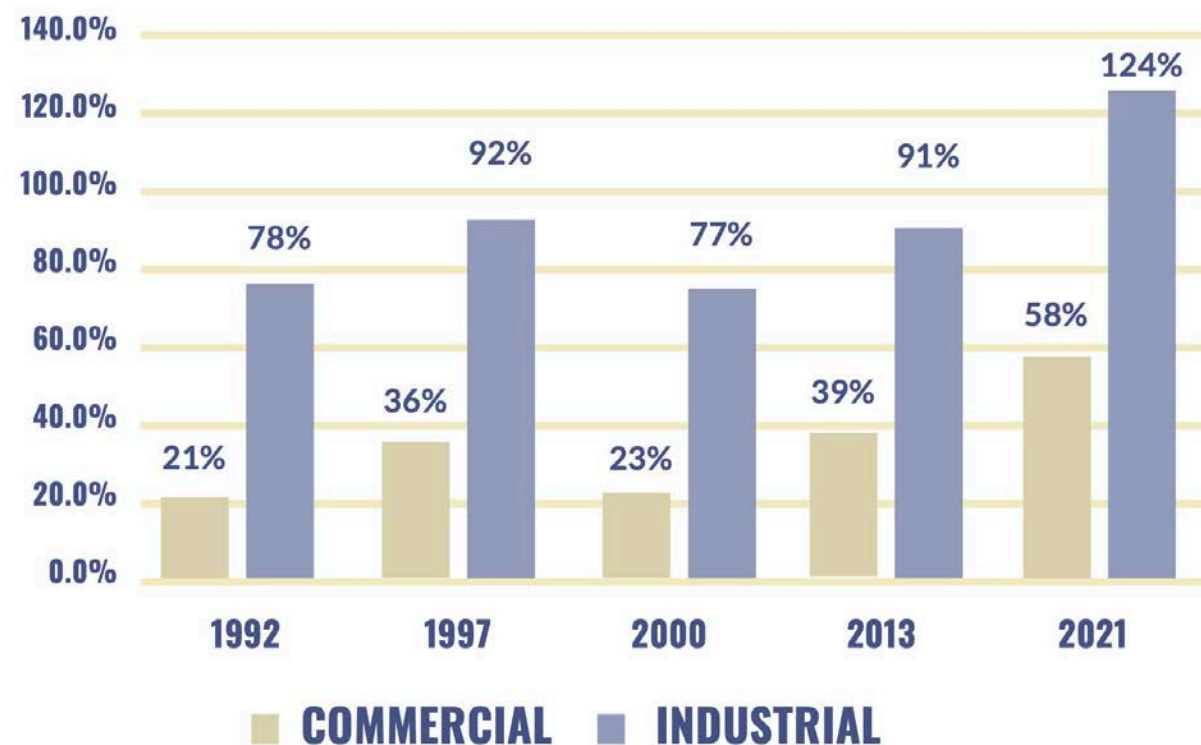
Winter is coming

Figure 3: Winter Season Average Residential Household Space Heating Expenditures



Source: DOER Analysis

Figure 9 - Massachusetts Electricity Rates Compared to National Average



Sources: Massachusetts Department of Energy Resources
Massachusetts Taxpayers Foundation



Numerous wild cards weigh heavily on the economic outlook

"For the first time since the Cuban Missile Crisis, we have a direct threat to the use of nuclear weapons, if in fact things continue down the path they'd been going." -- President Joseph Biden



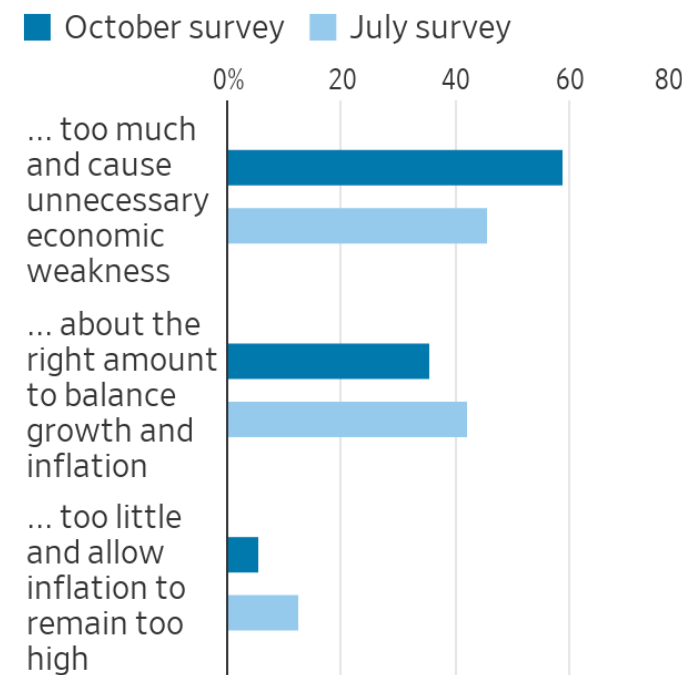
Steven Day/AP

"This is the most complex, disparate and cross cutting set of challenges that I can remember in the 40 years I've been paying attention to such things." -- Lawrence Summers

Fed Consequences

Economists in October were more likely to say that the Fed will raise interest rates too much, causing unnecessary economic weakness.

The Fed will raise interest rates ...



Source: Wall Street Journal surveys of economists



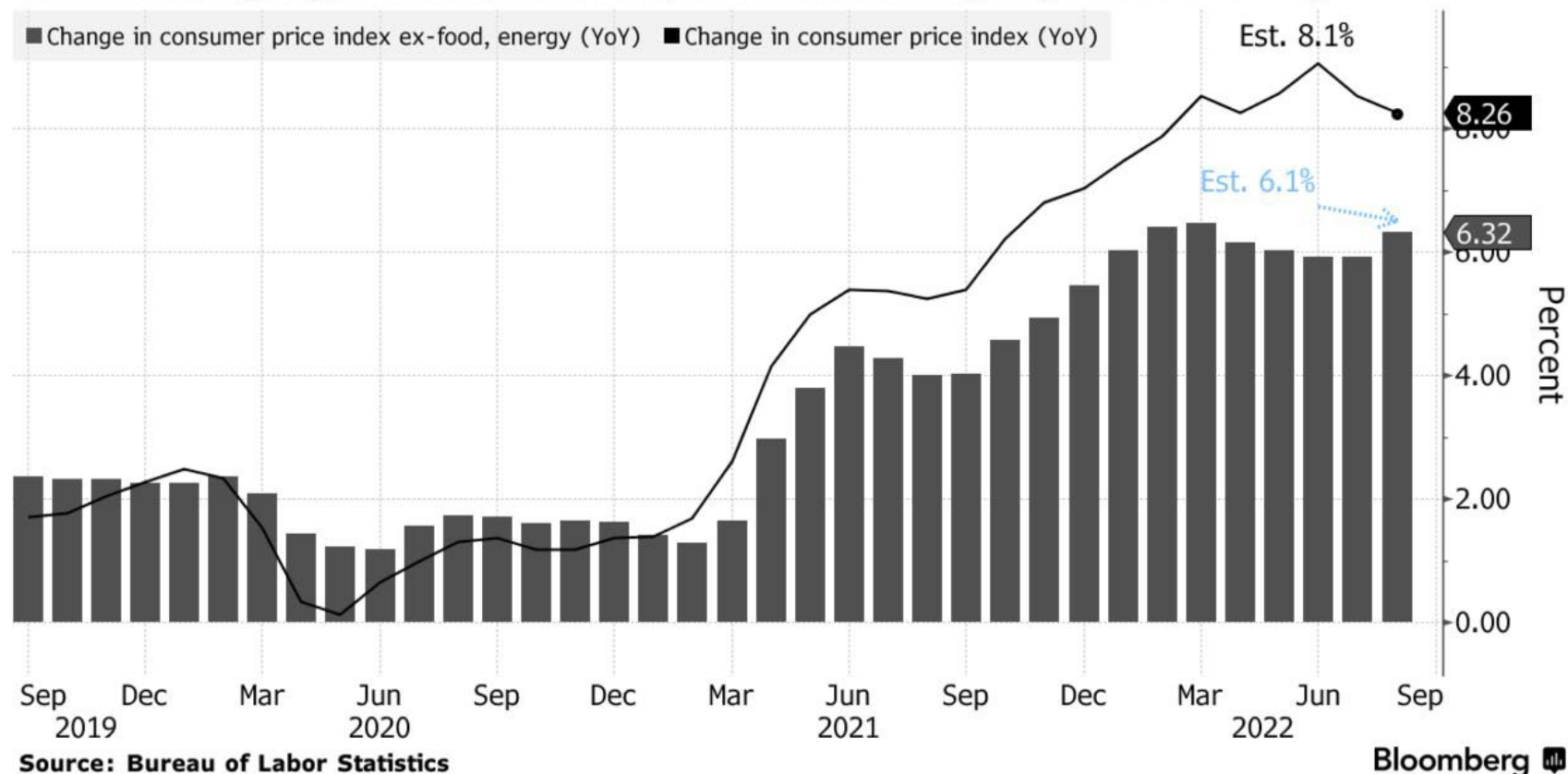
Monetary policymakers seem determined to reduce growth

"Reducing inflation is likely to require a sustained period of below-trend growth. While higher interest rates, slower growth, and softer labor market conditions will bring down inflation, they will also bring some pain to households and businesses. These are the unfortunate costs of reducing inflation. But a failure to restore price stability would mean far greater pain."

-- Jay Powell, Chair
Federal Reserve Board

Persistent Price Pressures

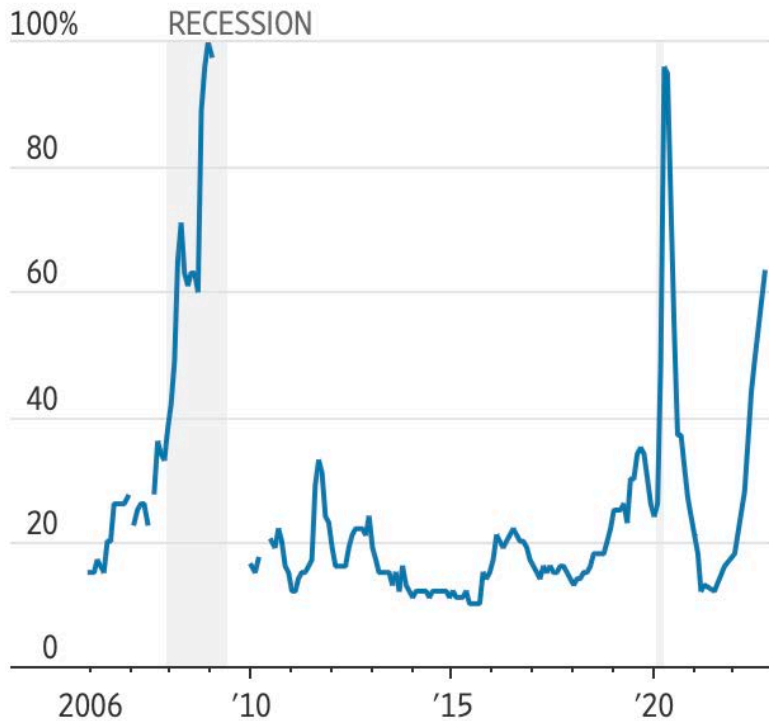
US inflation gauges exceed forecast, show stubbornly high cost of living





Private forecasters are increasingly pessimistic about the economic outlook for 2023

Probability the U.S. is in a recession in next 12 months including today



Note: Gaps indicate question not asked or data unavailable.

Source: Wall Street Journal surveys of economists

On average, the economists now predict GDP will contract at a 0.2% annual rate in the first quarter of 2023 and shrink 0.1% in the second quarter. In July's survey, they expected a 0.8% growth rate in the first quarter and 1% growth in the second.



Questions?

Michael D. Goodman, Ph.D.
Professor of Public Policy
Senior Advisor to the Chancellor
University of Massachusetts Dartmouth
Co-Editor, MassBenchmarks

October 20, 2022

Understanding ESG

Kathy Bramlage, Senior Debt Analyst at the Office of the State Treasurer [Moderator]

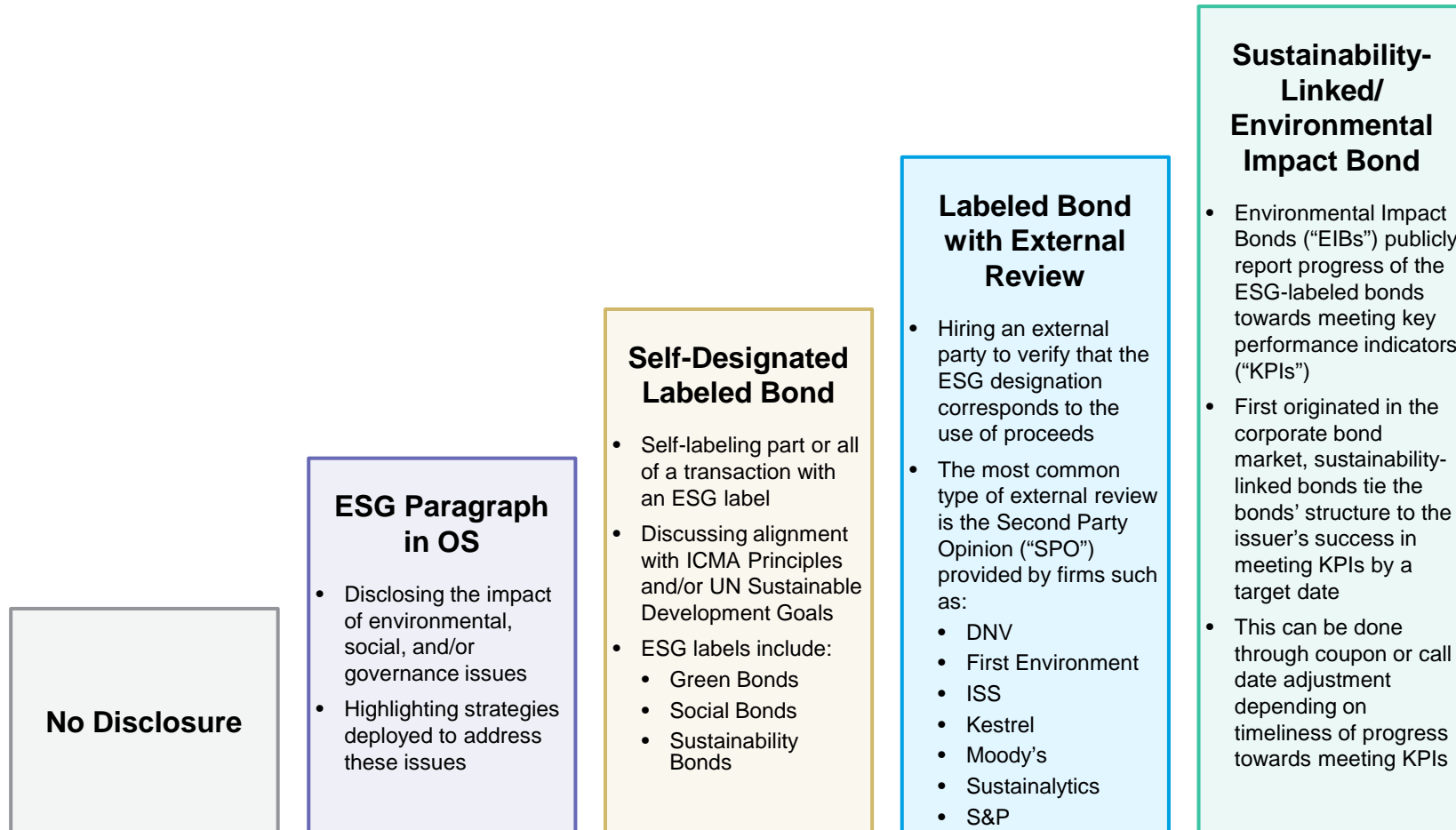
Poonam Patidar, Member at Mintz Levin

Zach Solomon, Executive Director, Head of Tax-Exempt Project Finance & Sustainable Infrastructure at Morgan Stanley

Ruth Ducret, Senior Analyst, Municipal Research at Breckinridge Capital Advisors

ESG Disclosure Options for Muni Issuers

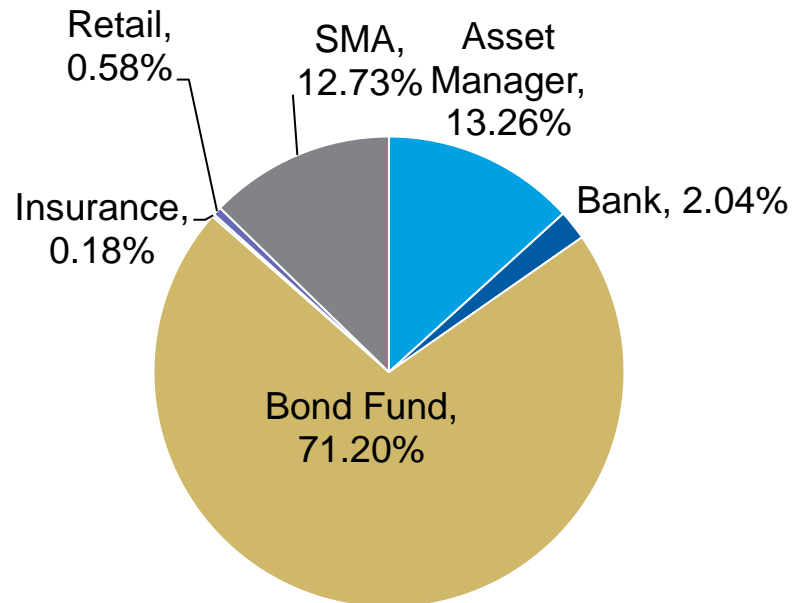
Spectrum of Approaches



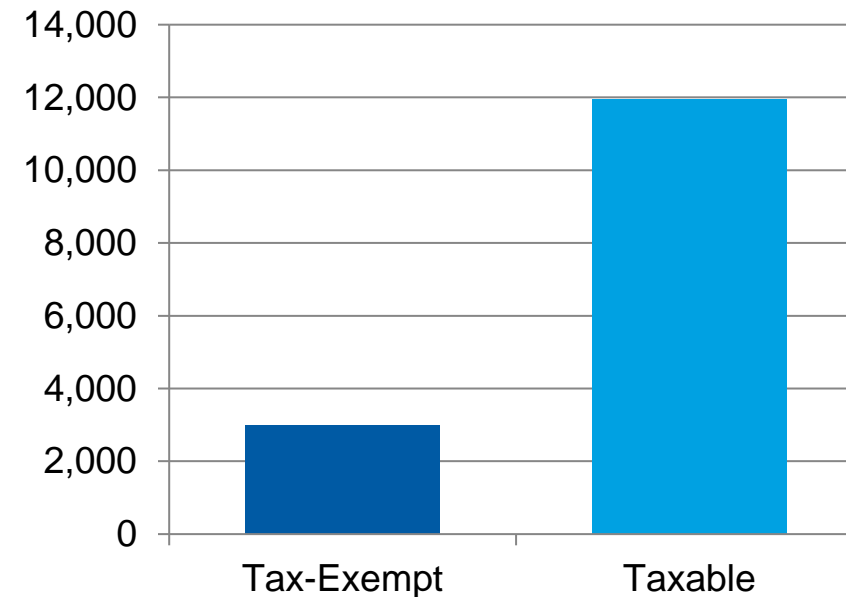
ESG Demand for Munis Varies by Execution and Tax Status

Choosing an ESG Label Helps Increase Visibility of a Transaction

ESG-Influenced Orders by Investor Type
(%)



Average ESG-Influenced Order Size by Tax Status
2019-2021, Order Size (\$000)



Treasurer's Address

State Treasurer, Deborah B. Goldberg

Keynote Speaker

Dr. Christopher Foote, Senior Economist and Policy Advisor at the Federal Reserve Bank of Boston

The Economic Outlook

Chris Foote

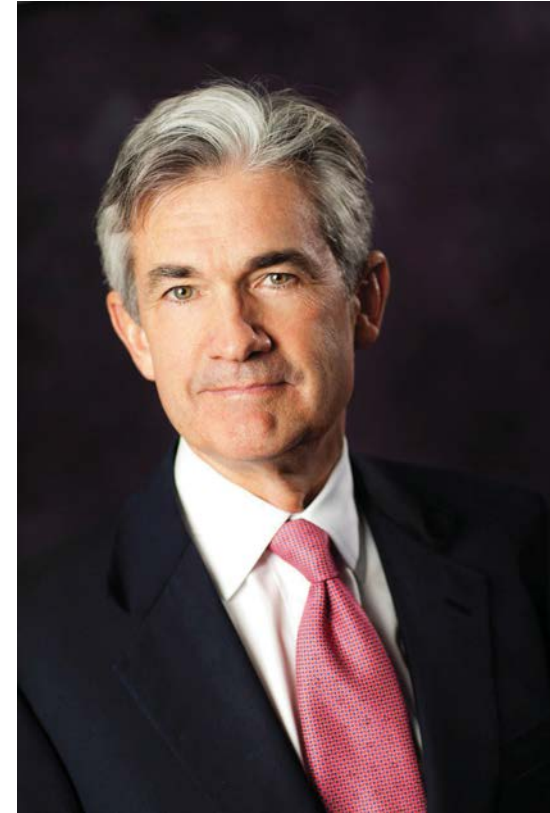
October 20, 2022



Disclaimer: I do not speak for:



Susan M. Collins, Pres. of Boston Fed

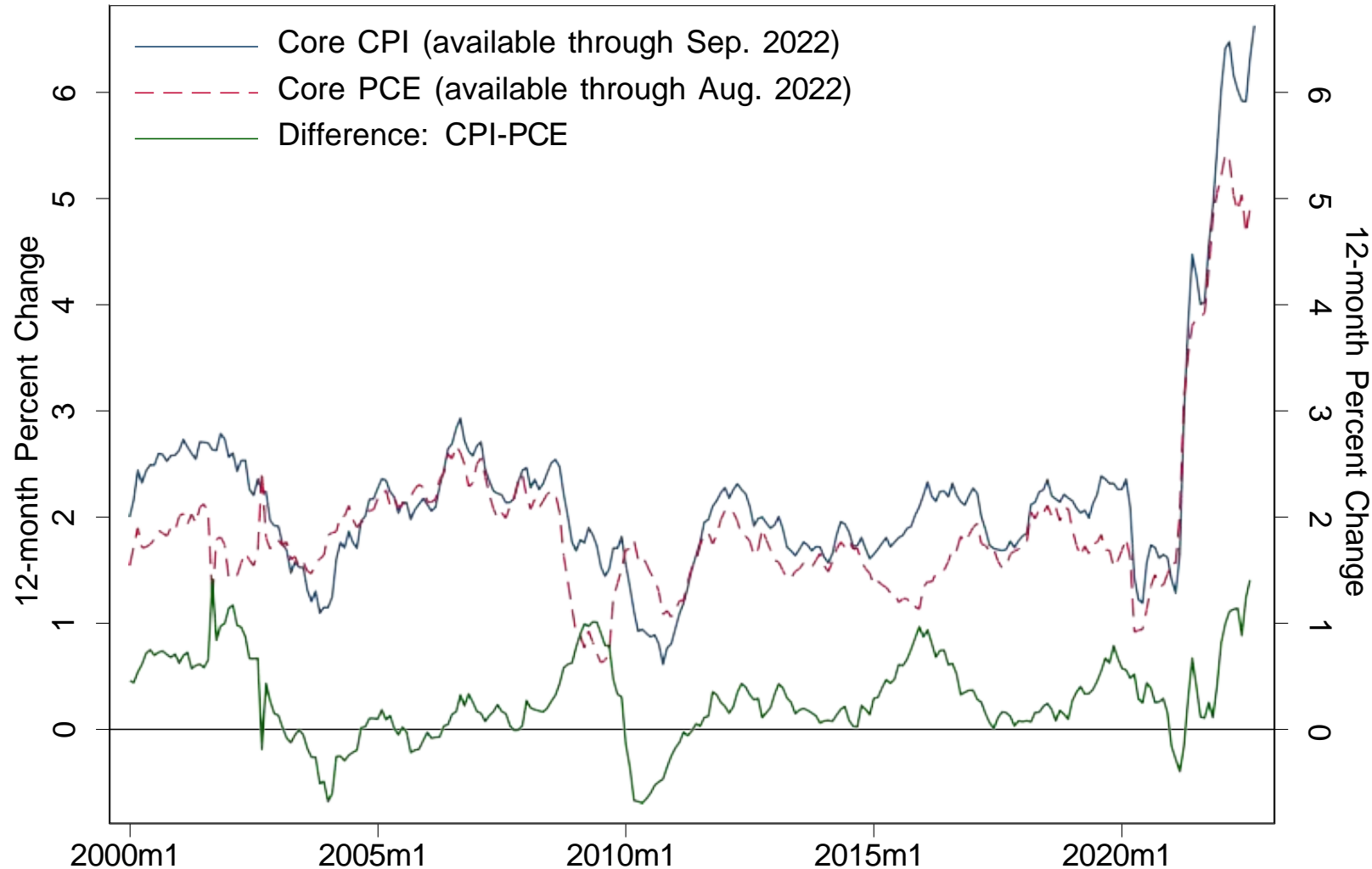


Jerome Powell, Chair of Federal Reserve

Outline

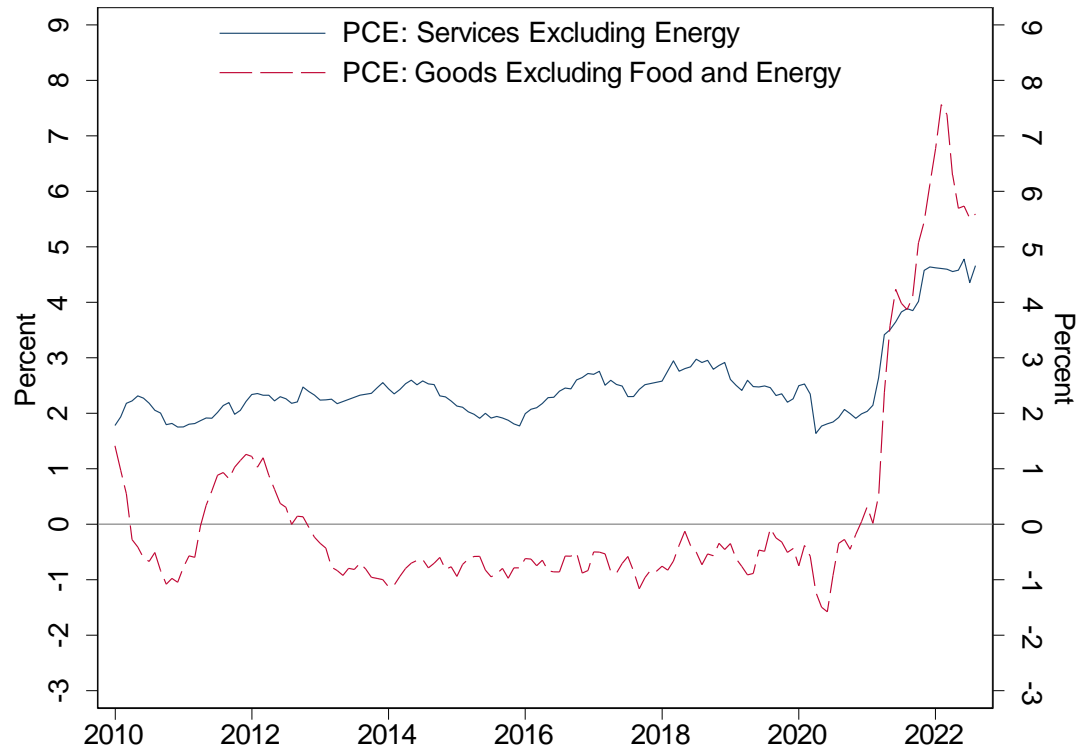
- 1 [Nature of Inflation in 2022](#)
- 2 [Monetary Policy Response](#)
- 3 [The Labor Market: Is This Time Different?](#)

Core CPI vs. Core PCE Comparison

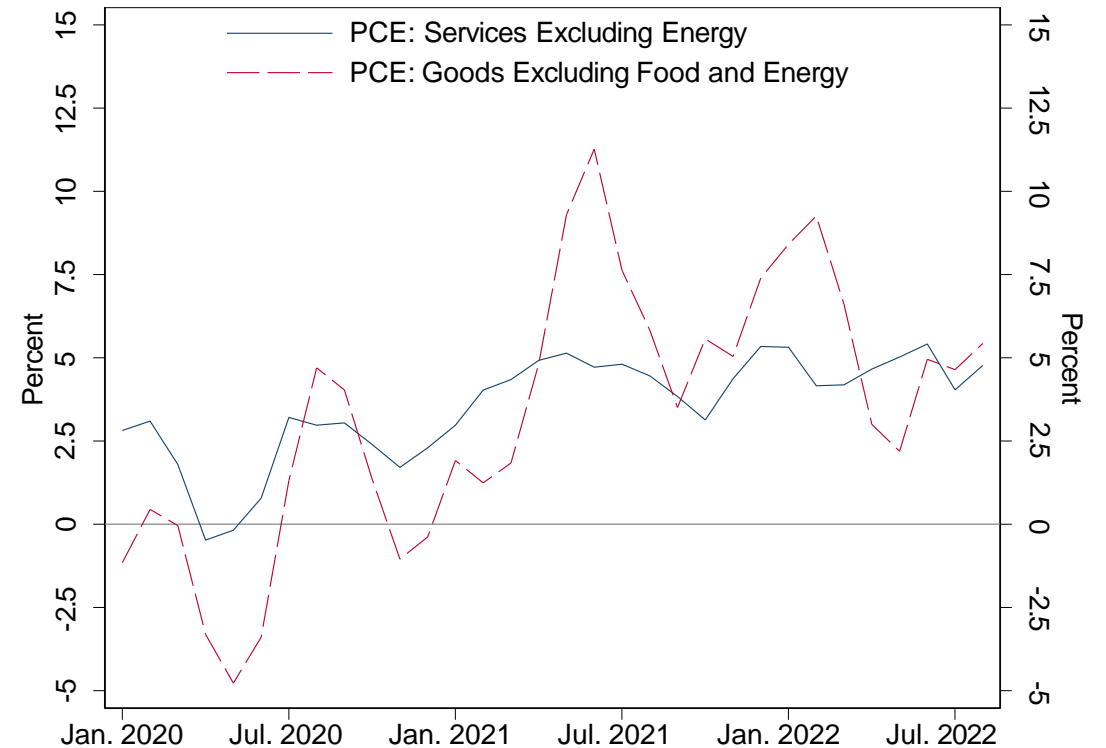


Recent Behavior of Core PCE Inflation Measures

12-month Percent Change



3-month Percent Change (annualized)



From *NY Times*: May 5, 2021

The New York Times | <https://www.nytimes.com/2021/05/05/business/economy/federal-reserve-overheating-worries.html>

Fed Officials Tamp Down Overheating Worries as Investors Fret

Markets gyrated this week on concern that the Federal Reserve may lift rates earlier. But its policymakers stuck with their patient script on Wednesday.

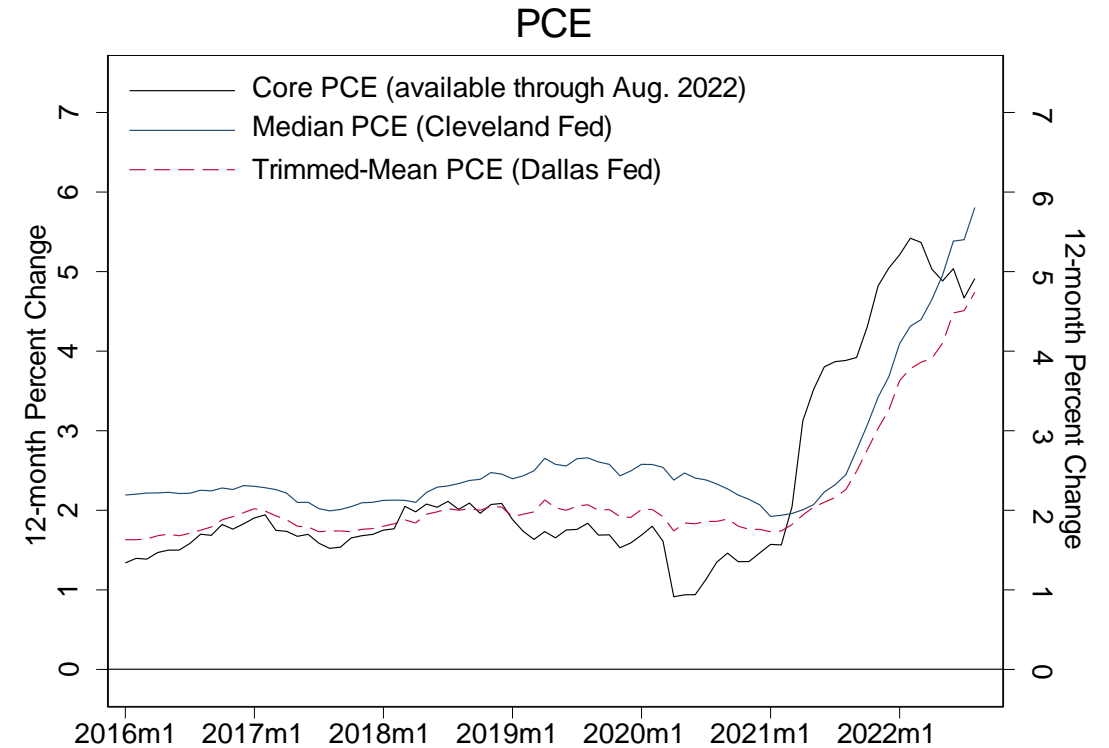
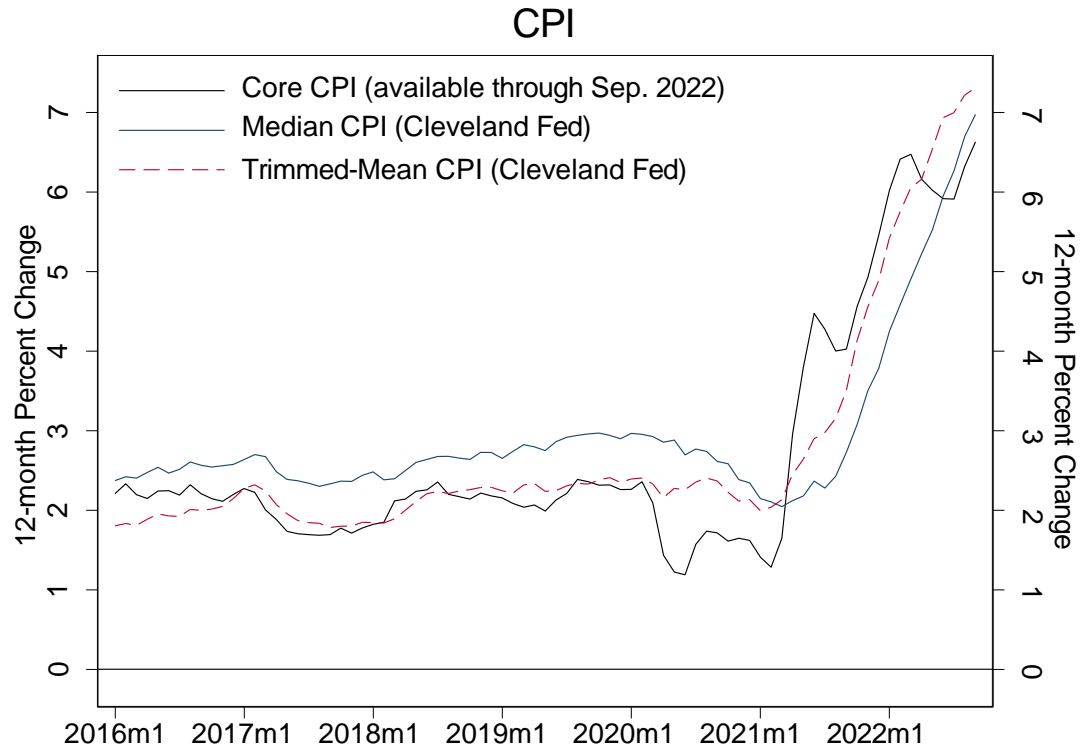


By Jeanna Smialek

May 5, 2021

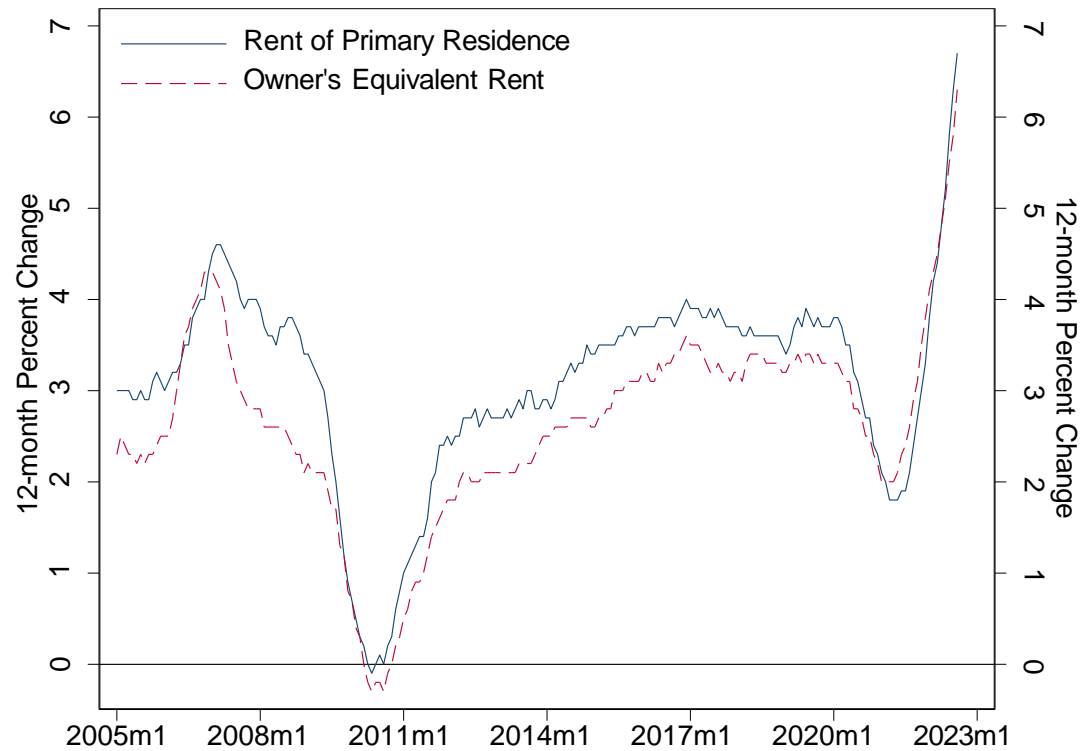
Inflation jitters are popping up in earnings call chatter, spooking investors and dominating business television talk shows. One place they aren't taking over, it appears, is the Federal Reserve.

Alternative Measures of Underlying Inflation

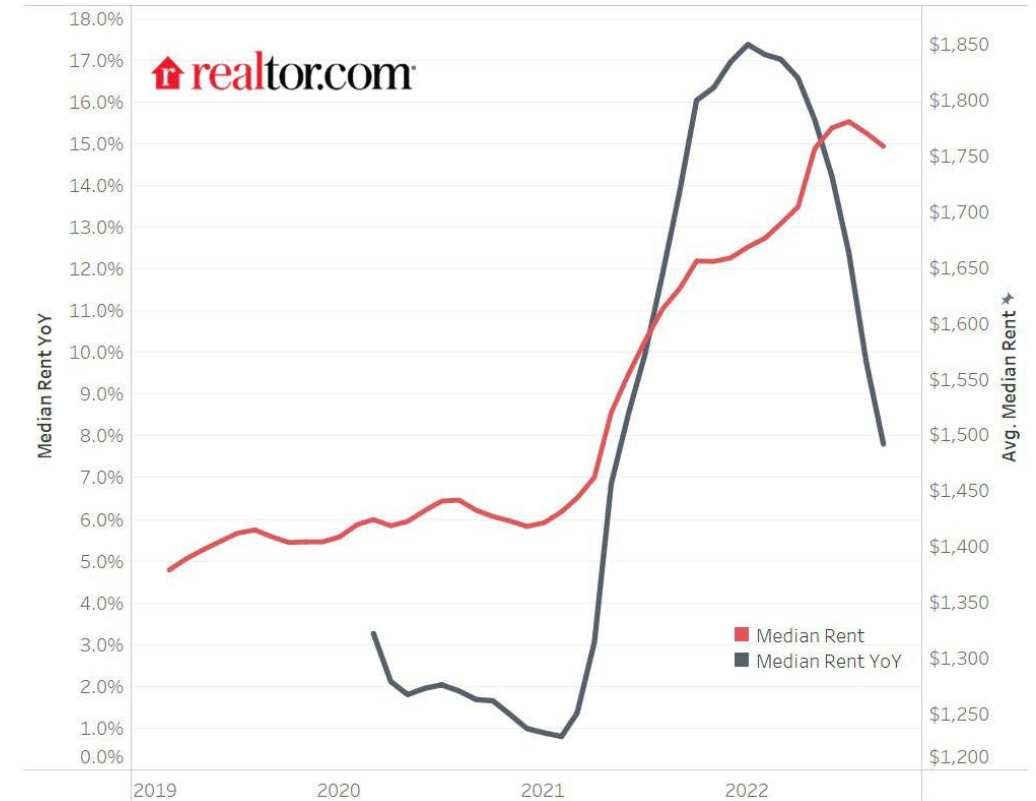


Rent Growth

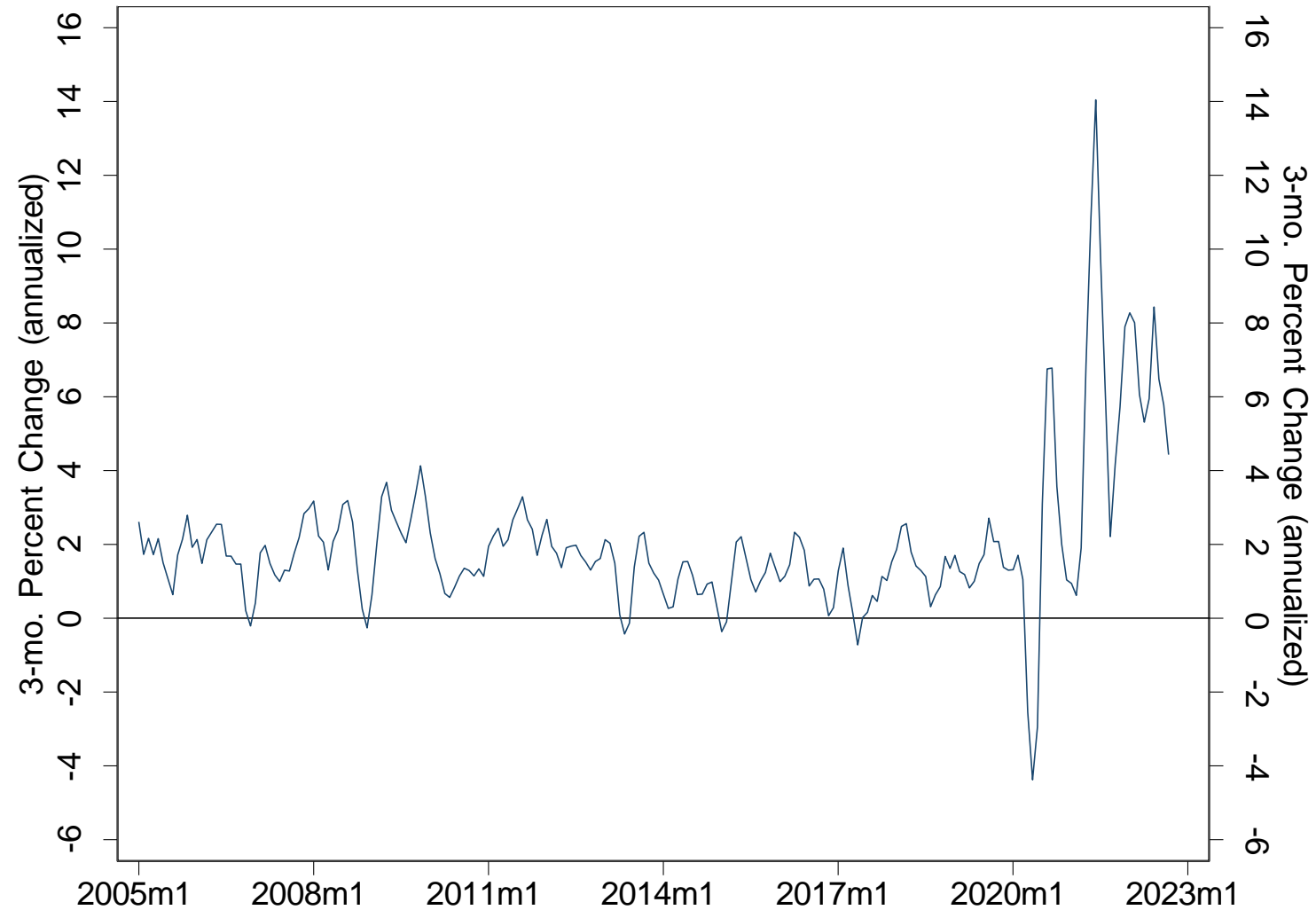
BLS Rents



Asking Rents

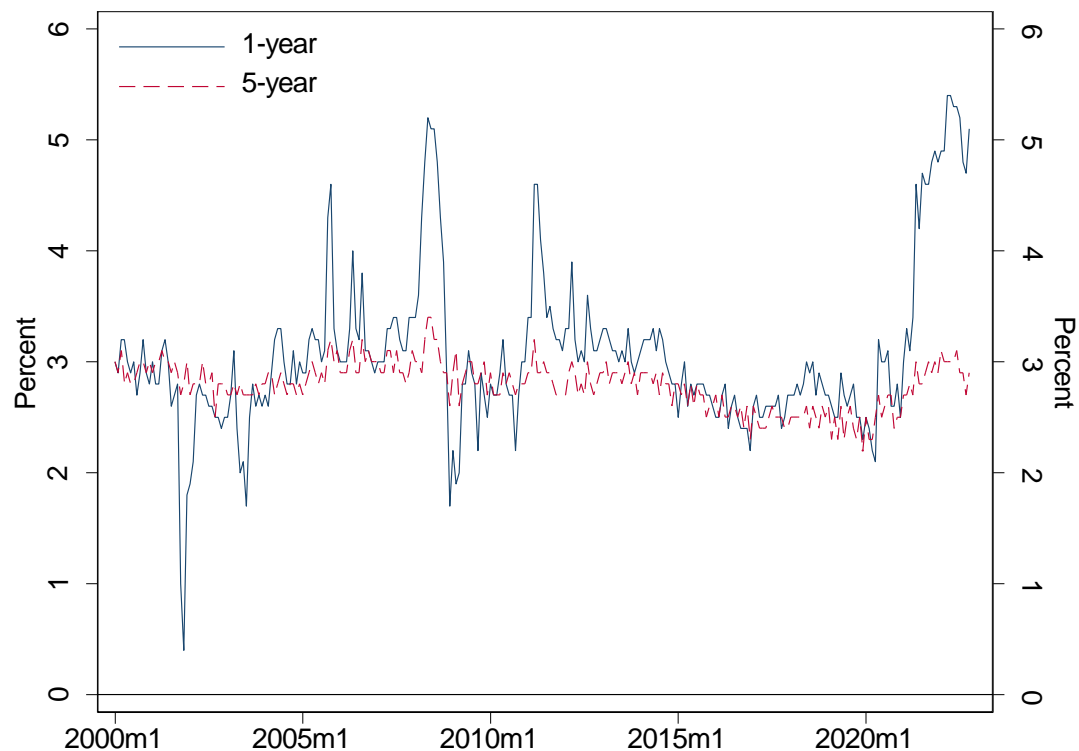


CPI Less Food, Energy, and Shelter (3-mo. % chg, annualized)

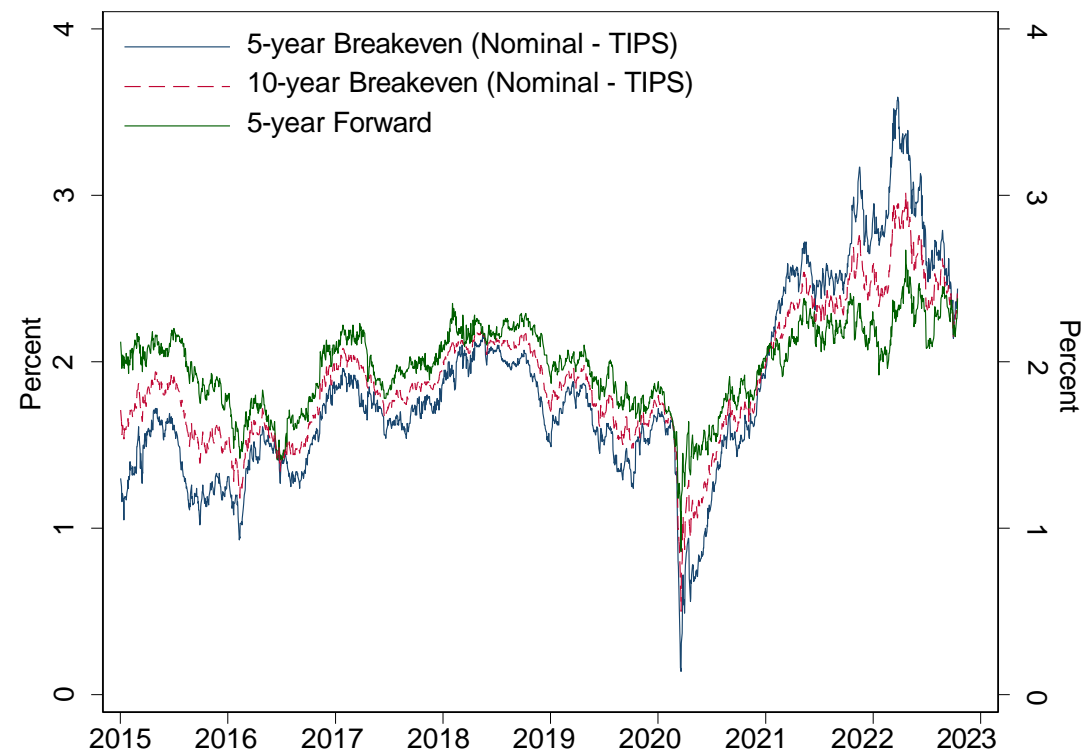


Inflation Expectations

From Households (U. Michigan)

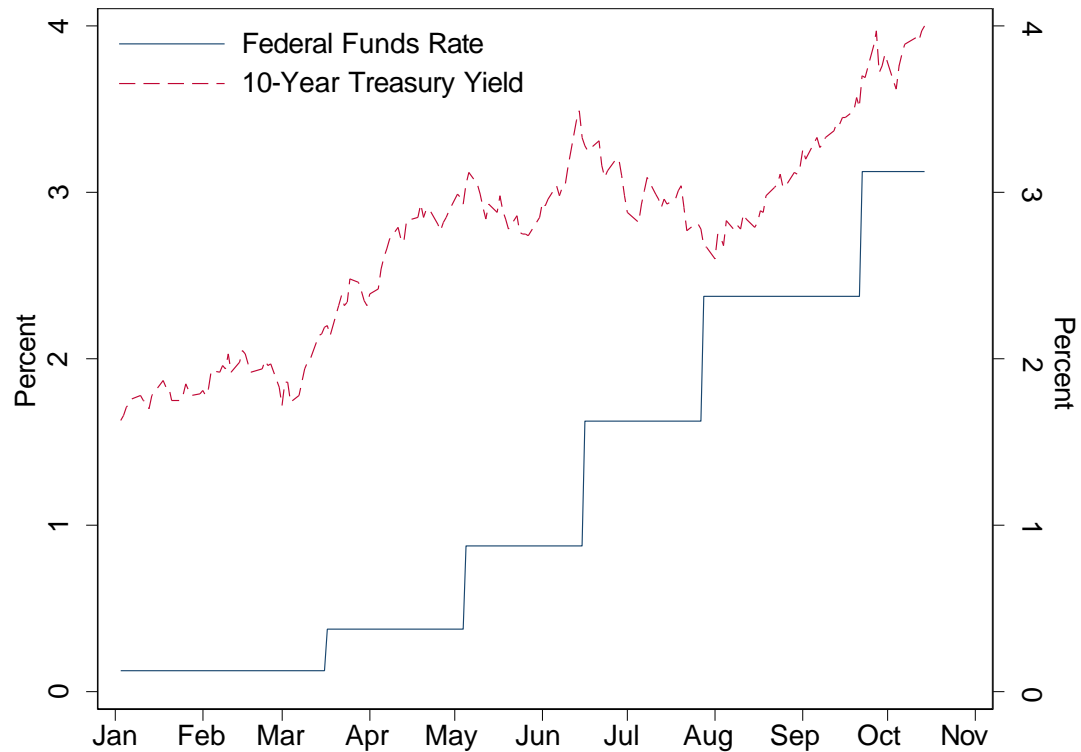


From Indexed Bonds

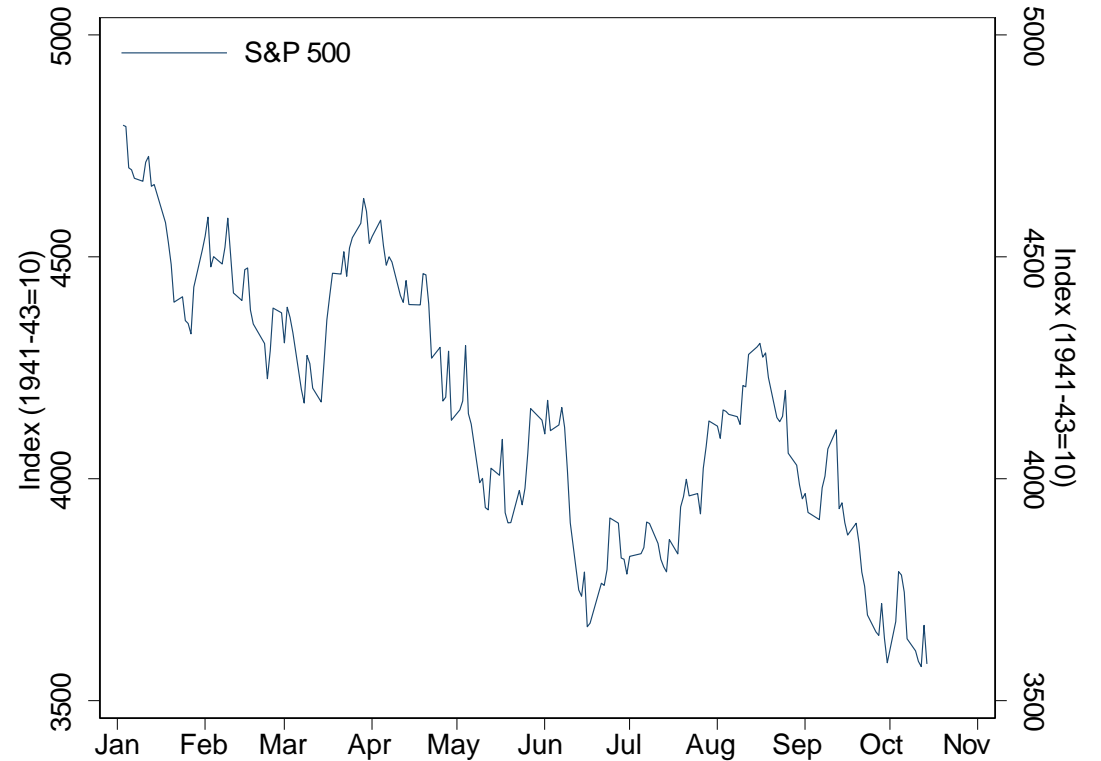


Tightening of Financial Conditions in 2022

Fed Funds Rate & 10-Year Treasury Yield

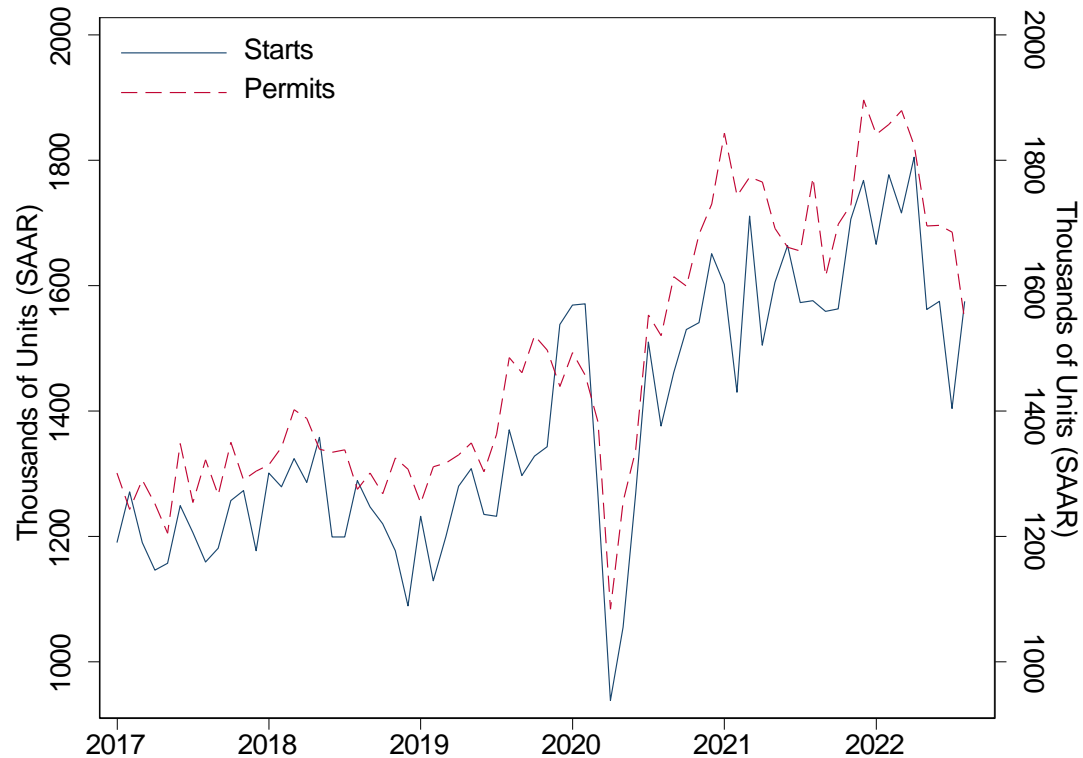


Equities

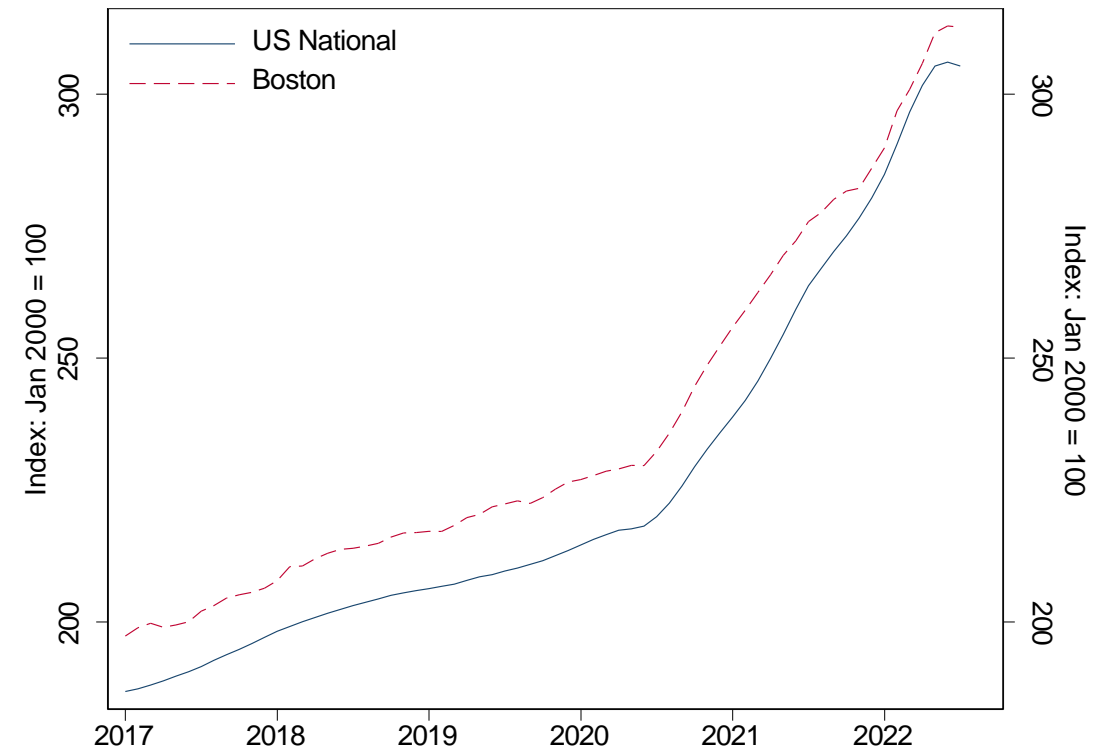


Housing Market

Housing Starts and Permits

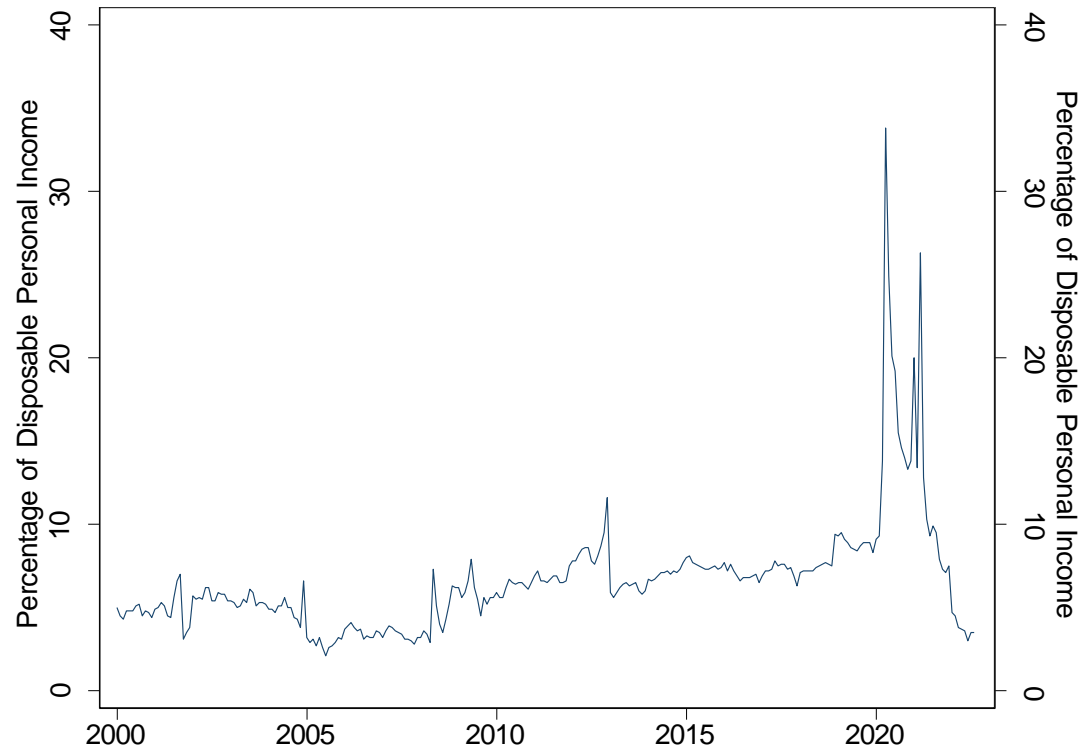


Case-Shiller Price Indexes

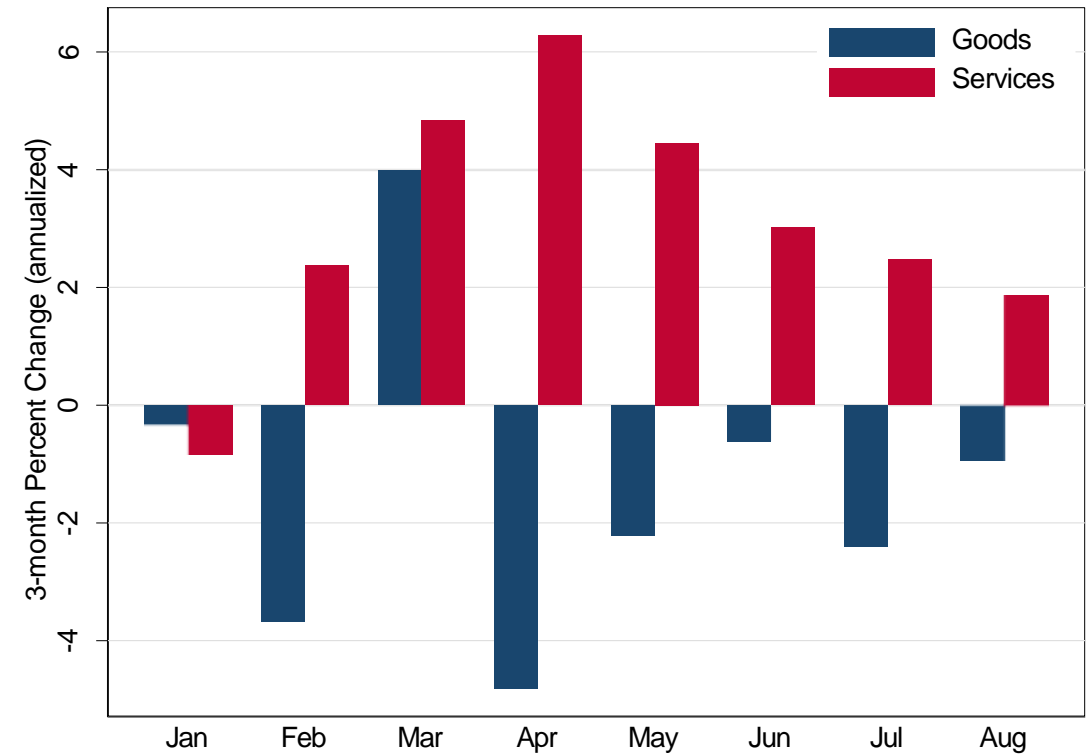


Saving and Consumption

Saving Rate

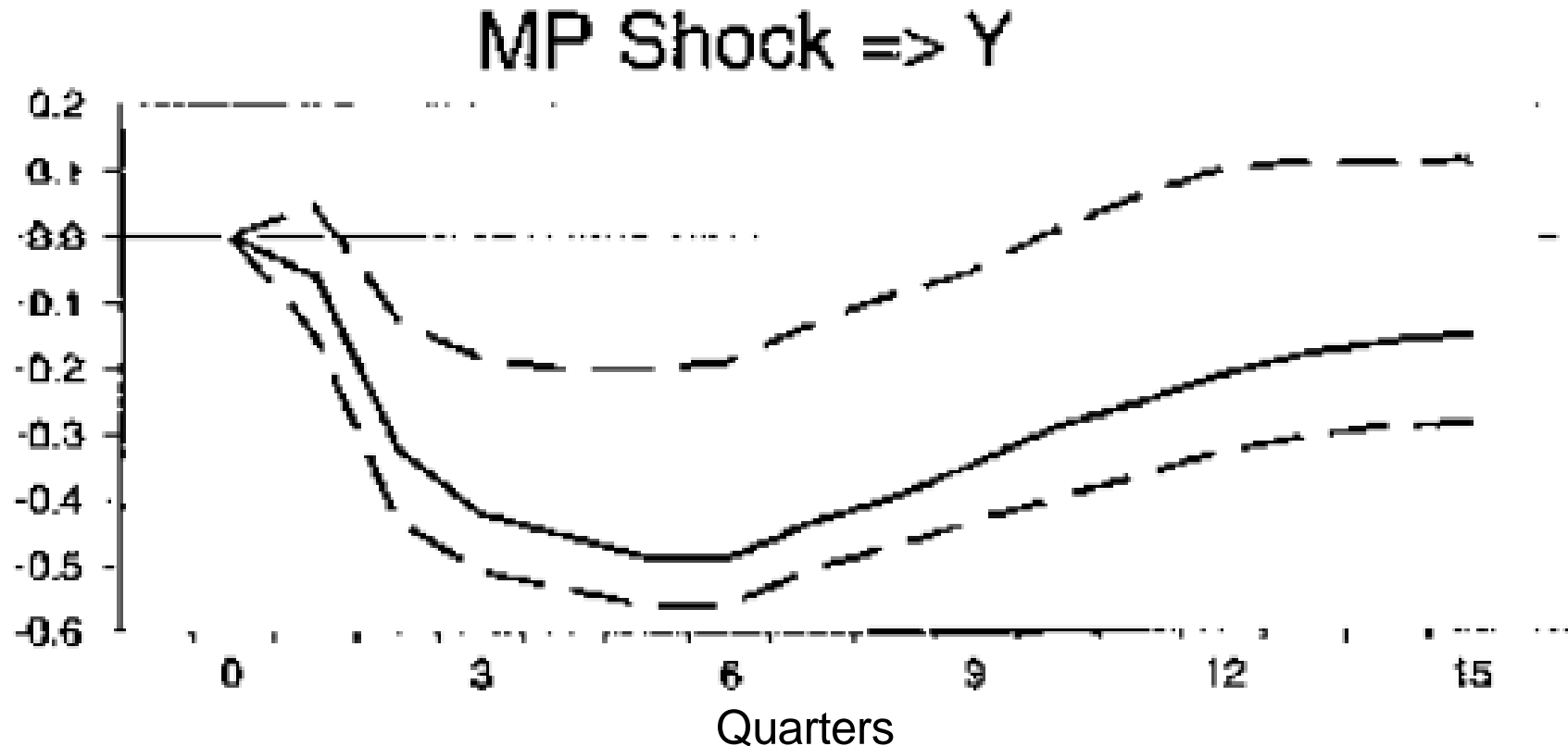


Consumption Growth



Challenge for Monetary Policy: “Long and Variable Lags”

Estimated Response of Output to Contractionary Monetary Policy Shock (≈ 70 basis points)

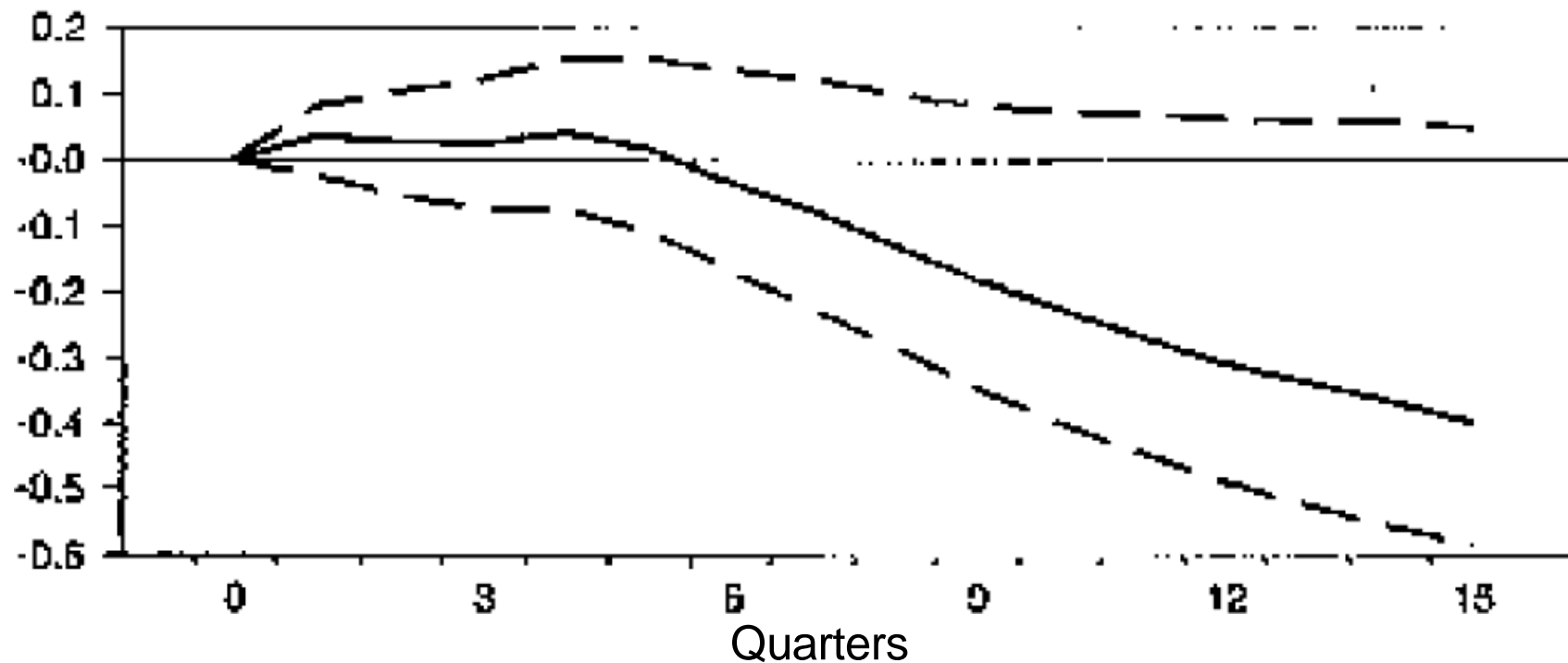


Source: Christiano, Eichenbaum, and Evans (1999).

Challenge for Monetary Policy: “Long and Variable Lags”

Estimated Response of Price Level to Contractionary Monetary Policy Shock (≈ 70 basis points)

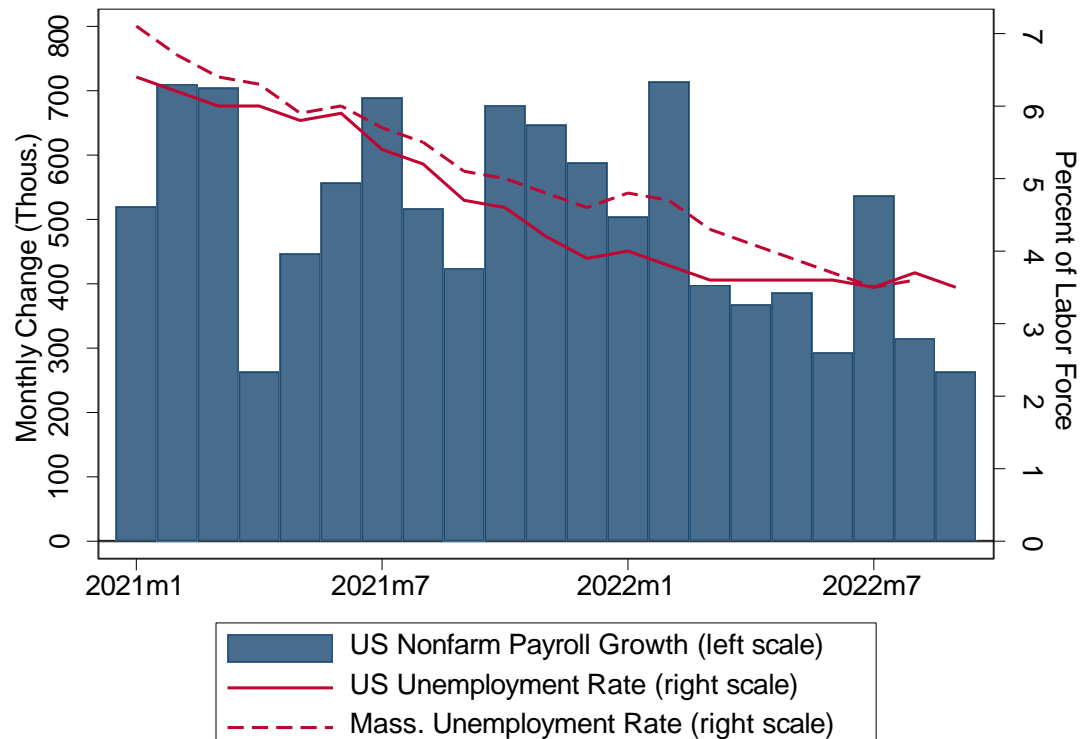
MP Shock \Rightarrow Price



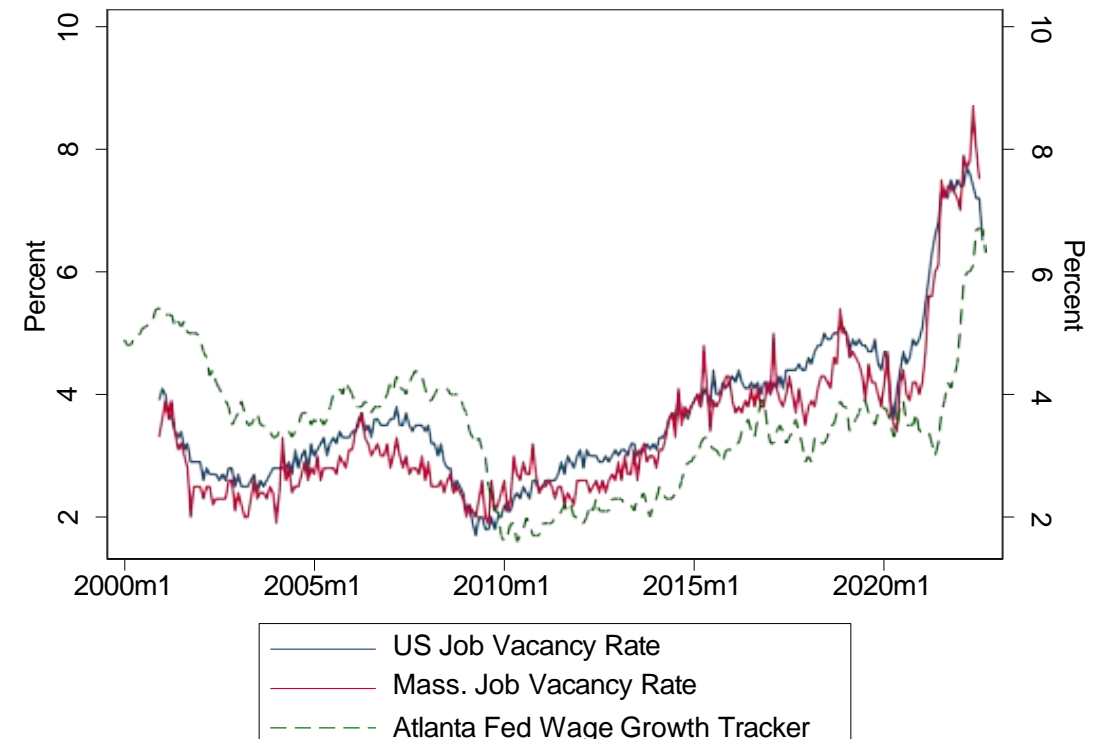
Source: Christiano, Eichenbaum, and Evans (1999.)

Recent Labor Market Data

Payroll Growth and Unemployment Rate



Vacancies and Wage Growth



From *NY Times*: Oct. 12, 2022

The New York Times

<https://www.nytimes.com/2022/10/12/business/economy/companies-hoarding-workers.html>

Companies Hoarding Workers Could Be Good News for the Economy

Employers have been burned by a labor shortage. Will that make them act differently if the economy slows down?

By Jeanna Smialek and Sydney Ember Photographs by Kim Raff

Oct. 12, 2022

PROVO, Utah — Chad Pritchard and his colleagues are trying everything to staff their pizza shop and bistro, and as they do, they have turned to a new tactic: They avoid firing employees at all costs.

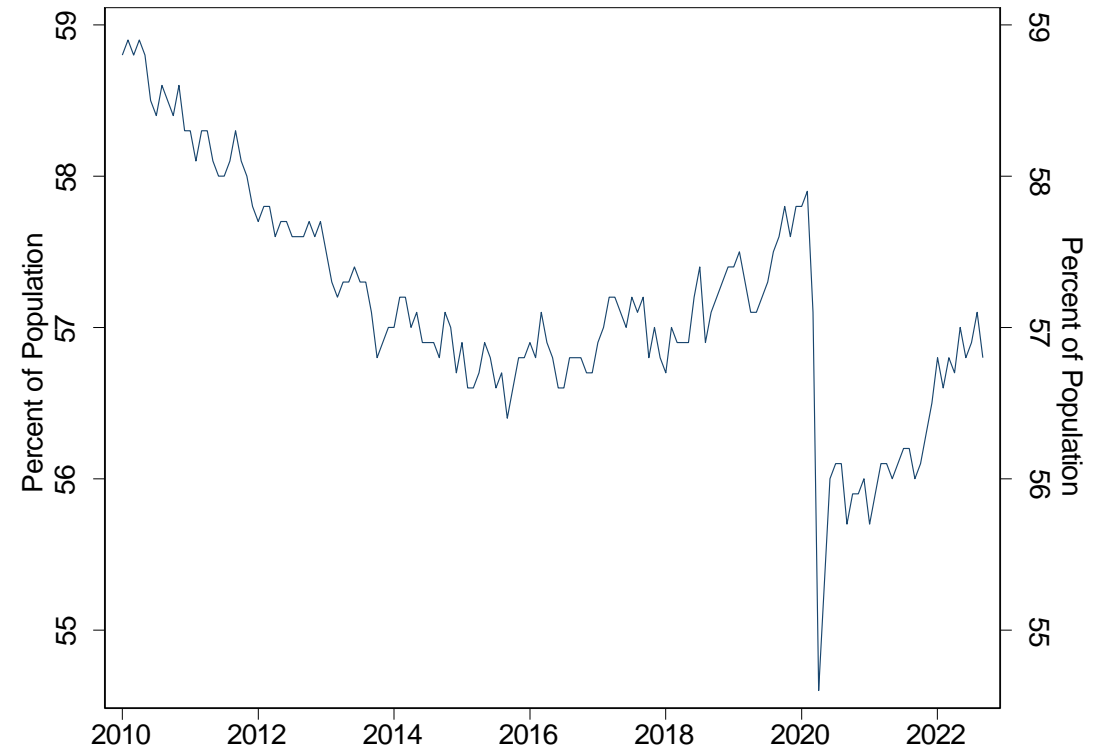
Infractions that previously would have led to a quick dismissal no longer do at the chef's two places, Fat Daddy's Pizzeria and Bistro Provenance. Consistent transportation issues have ceased to be a deal breaker. Workers who show up drunk these days are sent home to sober up.

Labor Force Participation Rates: Total (Ages 16+)

Men

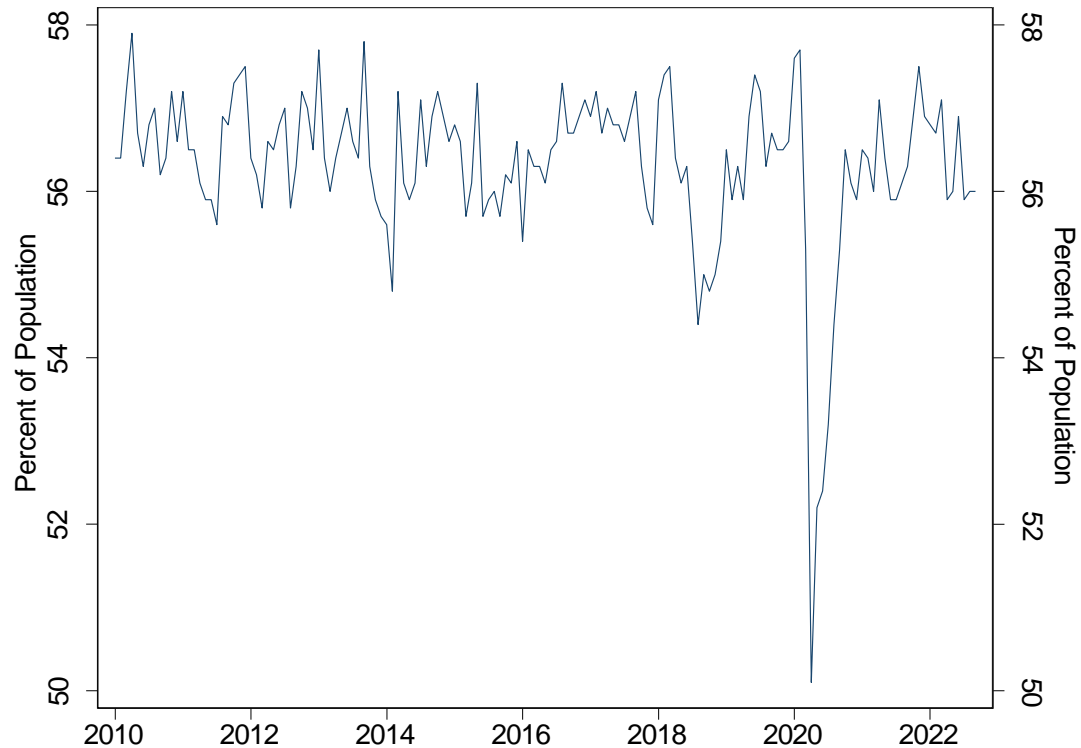


Women

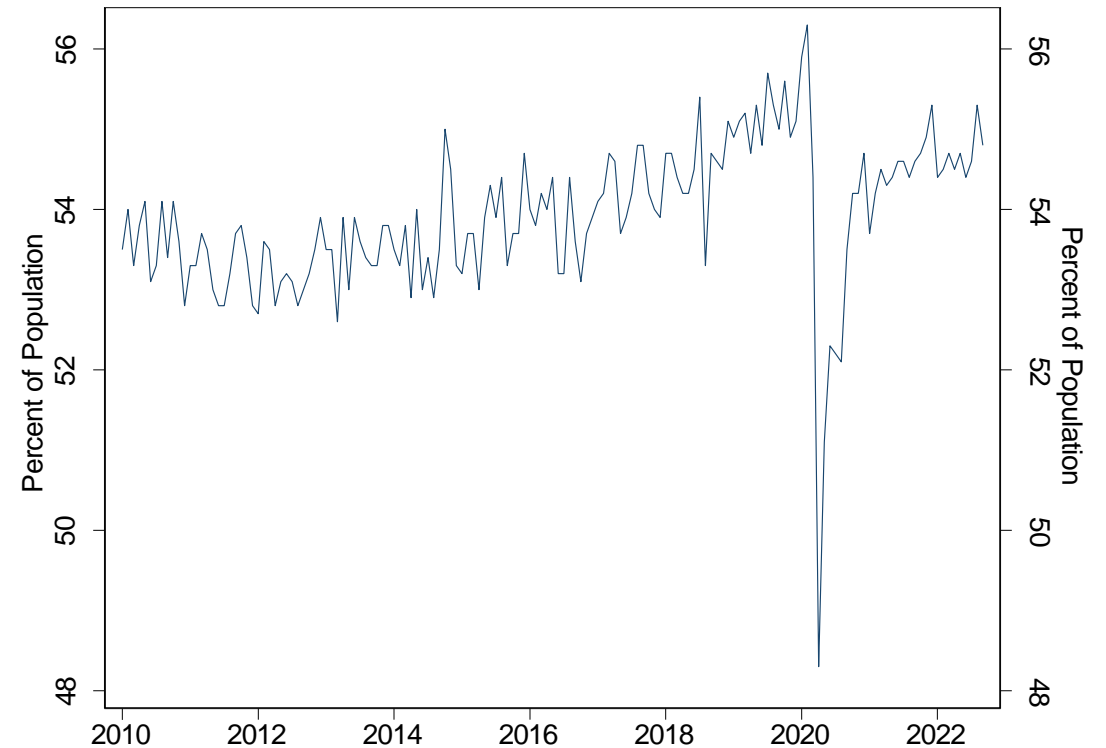


Labor Force Participation Rates: Young Persons (Ages 16–24)

Men

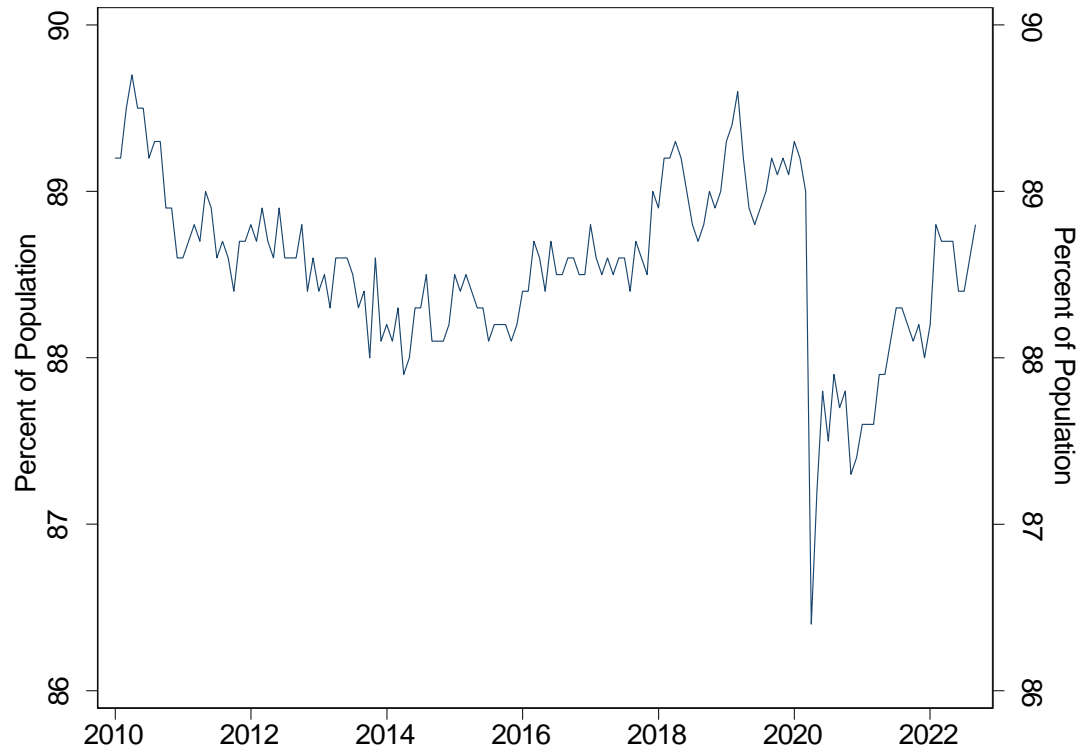


Women

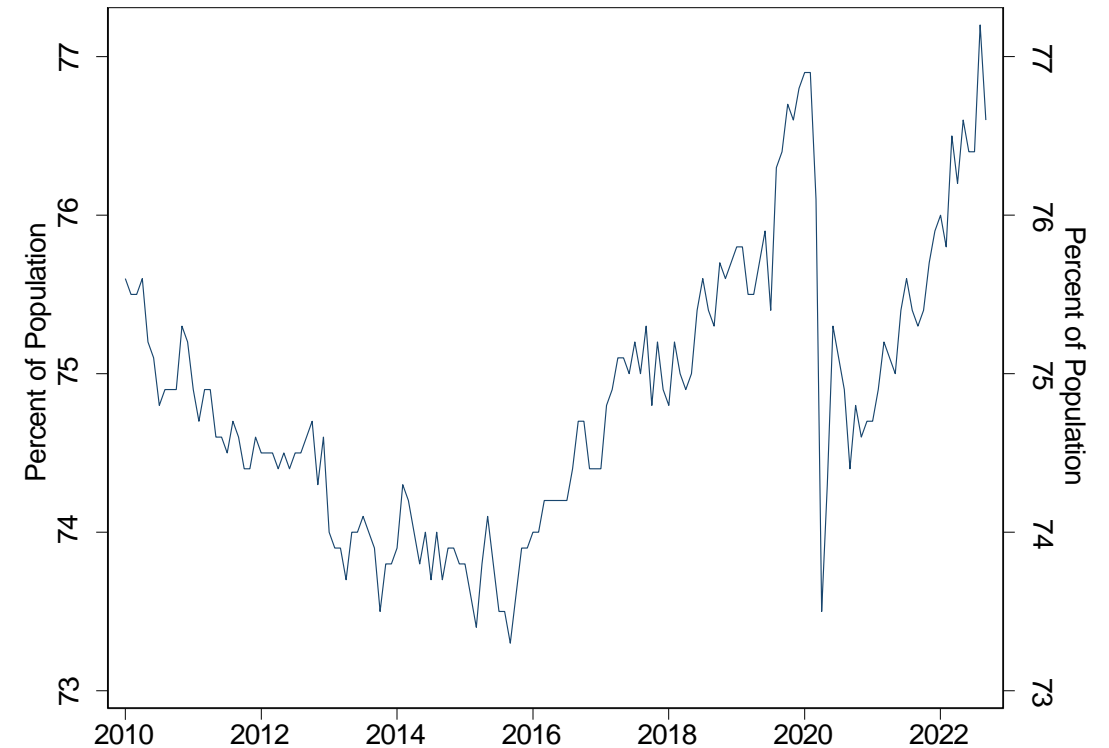


Labor Force Participation Rates: Prime-Age Persons (Ages 25–54)

Men

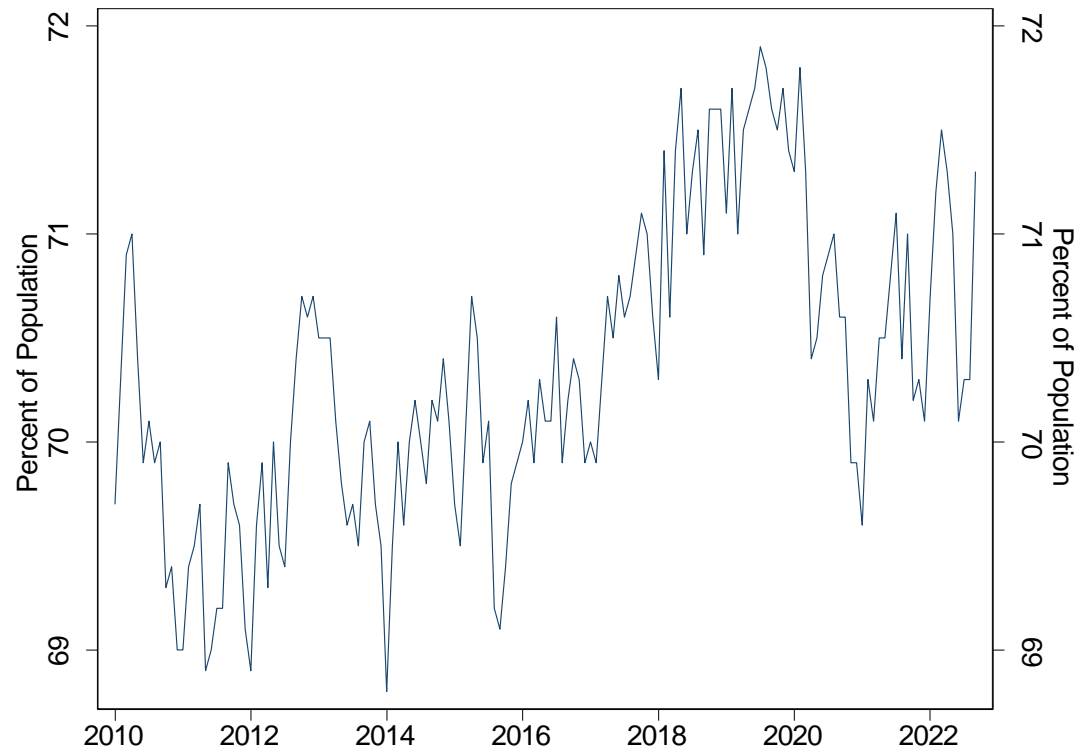


Women

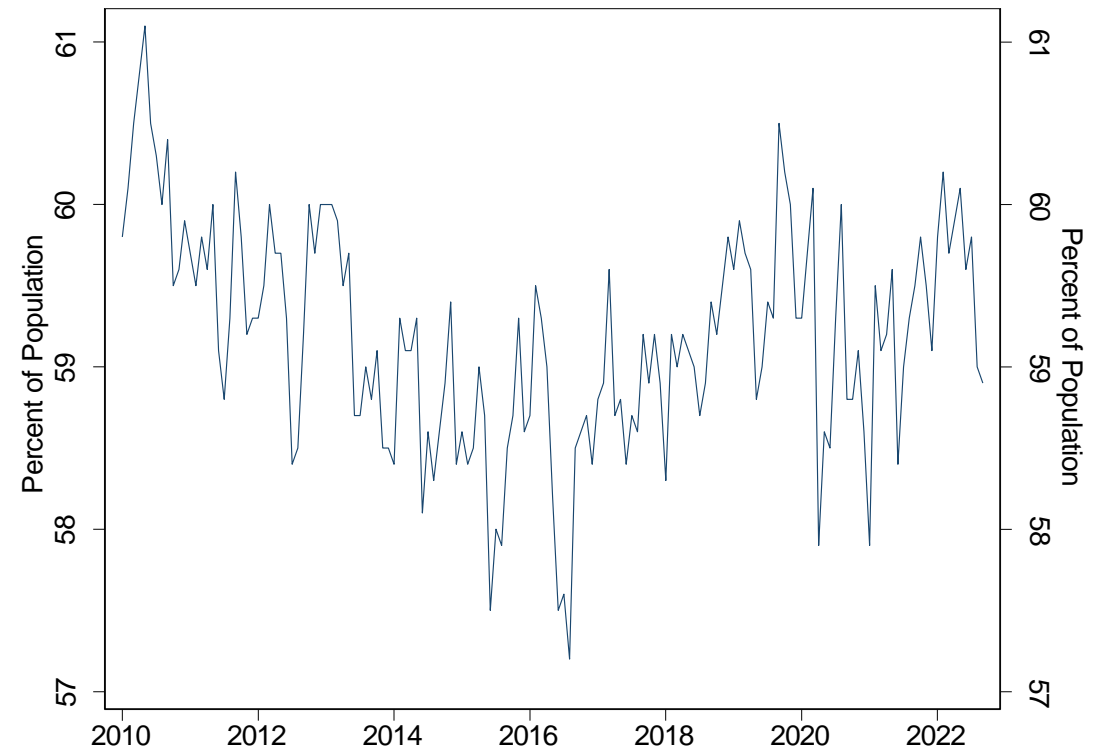


Labor Force Part. Rates: Persons Aged 55–64 (Not. Seas. Adj.)

Men

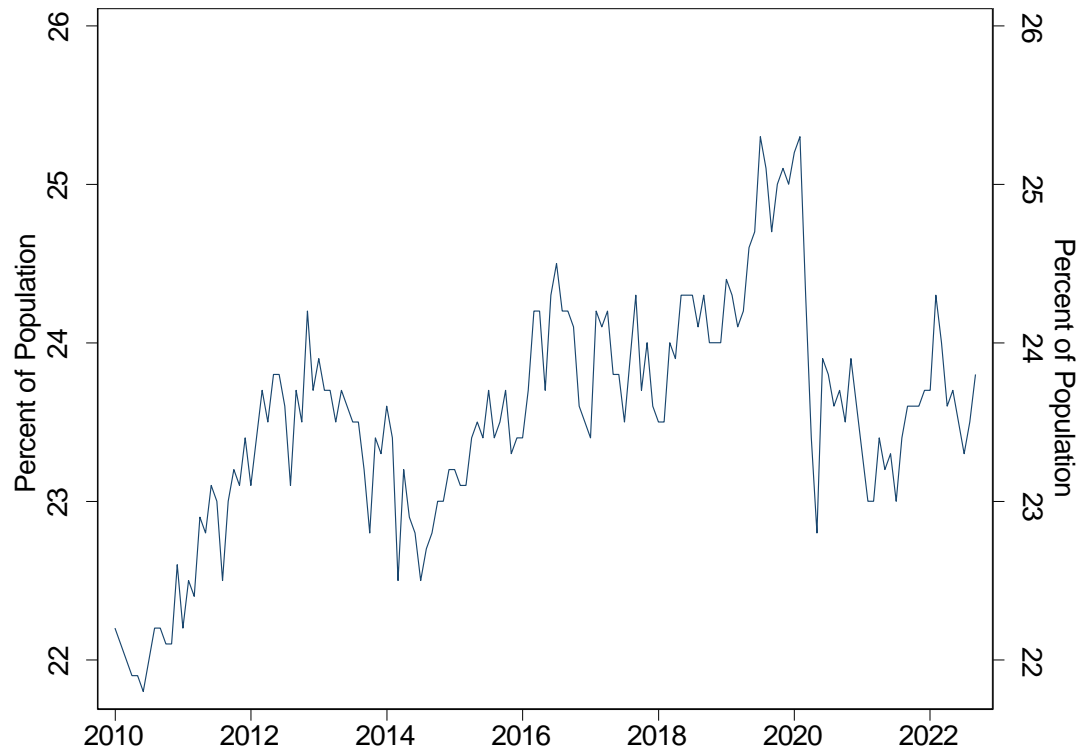


Women

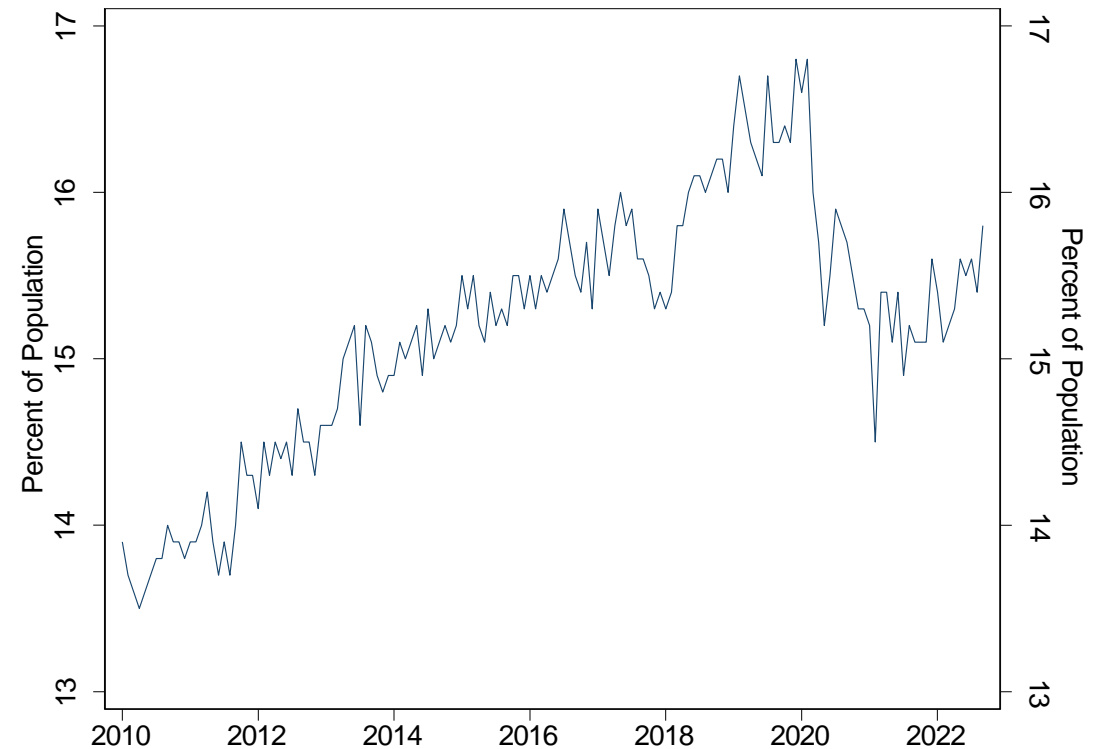


Labor Force Participation Rates: Persons Aged 65+

Men



Women



Bottom Lines

- Inflation has “broadened” over the past year, but inflation expectations have remained anchored.
- Recent financial tightening is starting to slow interest-sensitive sectors, but the full effect of tightening has yet to be felt.
- The unique nature of today’s labor market may allow inflation to be reduced with a minimum of lost jobs.
- Due to the ongoing effects of population aging, labor force participation is unlikely to increase in the future.