

NPE 2024 | **MADE
FOR YOU**
The Plastics Show

Produced by  **PLASTICS**
INDUSTRY ASSOCIATION



The Construction Outlook, and Implications for Plastics Demand

Kermit Baker

Chief Economist

The American Institute of Architects

Overview

- Economy is reasonably healthy, but persistent inflation threats leading Fed to hold interest rates at elevated levels.
- Housing recovery being held back by rising mortgage rates; signs of a slowing in nonresidential construction activity are emerging.
- Commercial outlook is concerning, but institutional activity expected to hold up relatively well.



Major monthly leading economic indicators continue to remain generally positive

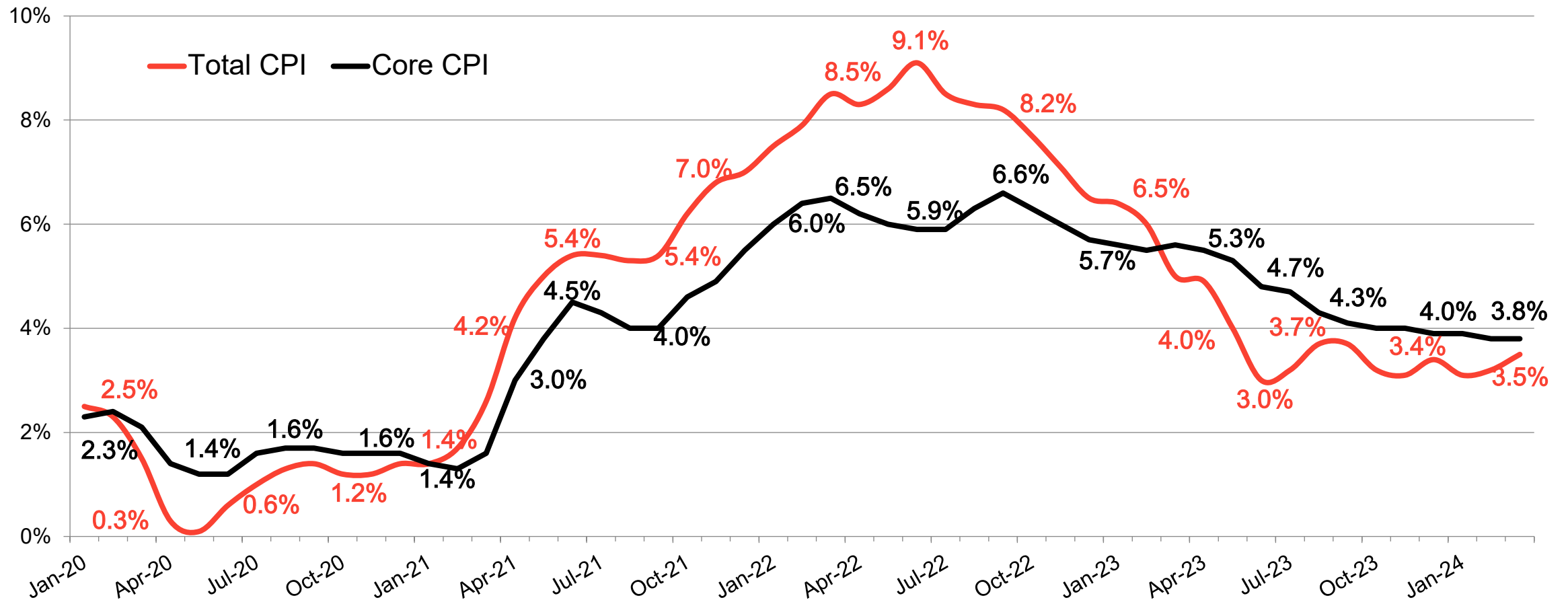
	Apr. '23	Apr. '24	Change since Apr. 2023
Consumer prices (change from year ago)*	6.0%	3.2%	-2.8 pct. points
3-mo. T-bills	4.91%	5.24%	+0.33 pct. points
30-yr fixed rate mortgage	6.34%	6.99%	+0.65 pct. points
Consumer sentiment (index: Q1 1966=100)*	62.0	79.4	+17.4 points
Housing starts (SAAR)*	1.38M	1.32M	-4.3%
Retail sales (\$B, seasonally adj.)*	\$690.4	\$700.7	+1.5%
Nonfarm payrolls (change in number, 000s)	278	175	+2,802

* Data for March 2023 and 2024

Sources: Bureau of Labor Statistics; Conference Board; University of Michigan; U.S. Census Bureau

Overall consumer price inflation has been falling faster than expected, but the core rate has been sluggish

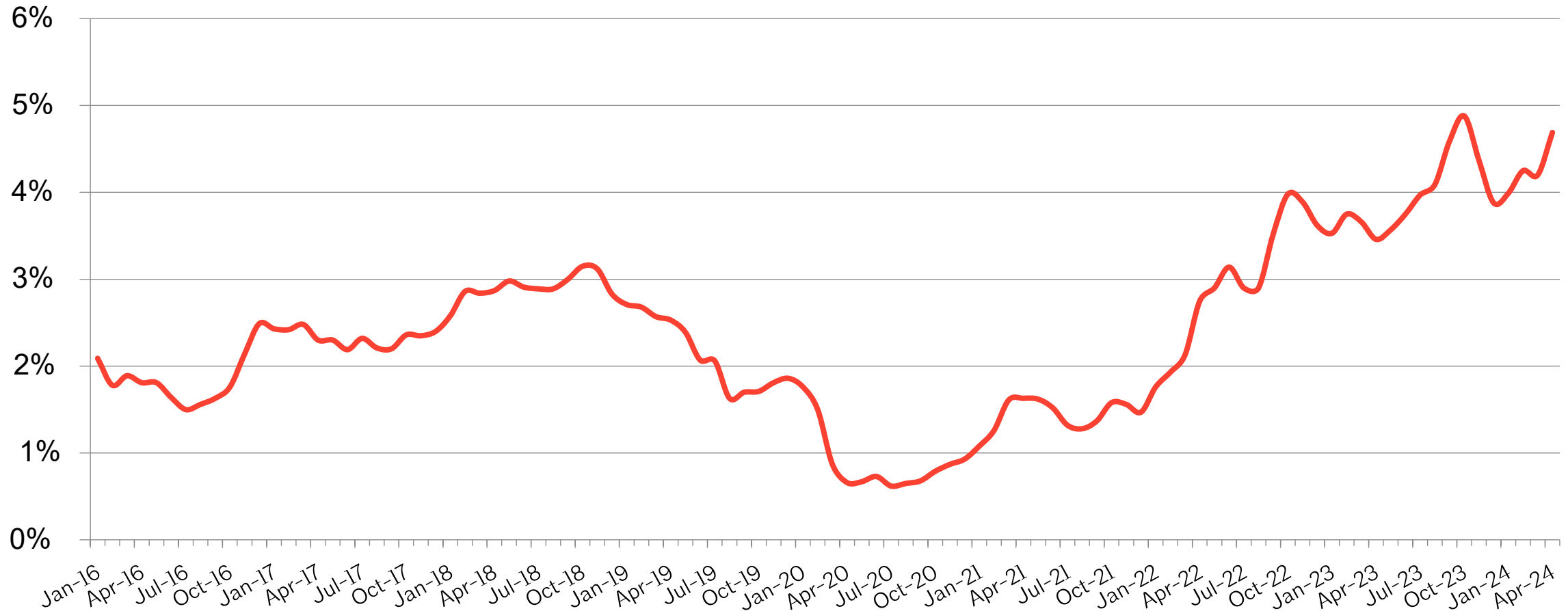
Monthly year/year total CPI and core CPI



Source: Bureau of Labor Statistics

10-year treasury bills have been volatile recently and are approaching 5%, near their highest level in over 15 years

Annual yield on 10 year treasury bills, end of month figures



Source: Macrotrends (www.macrotrends.net)

Population growth has slowed nationally, and has stalled in most of the Northeast and Midwest

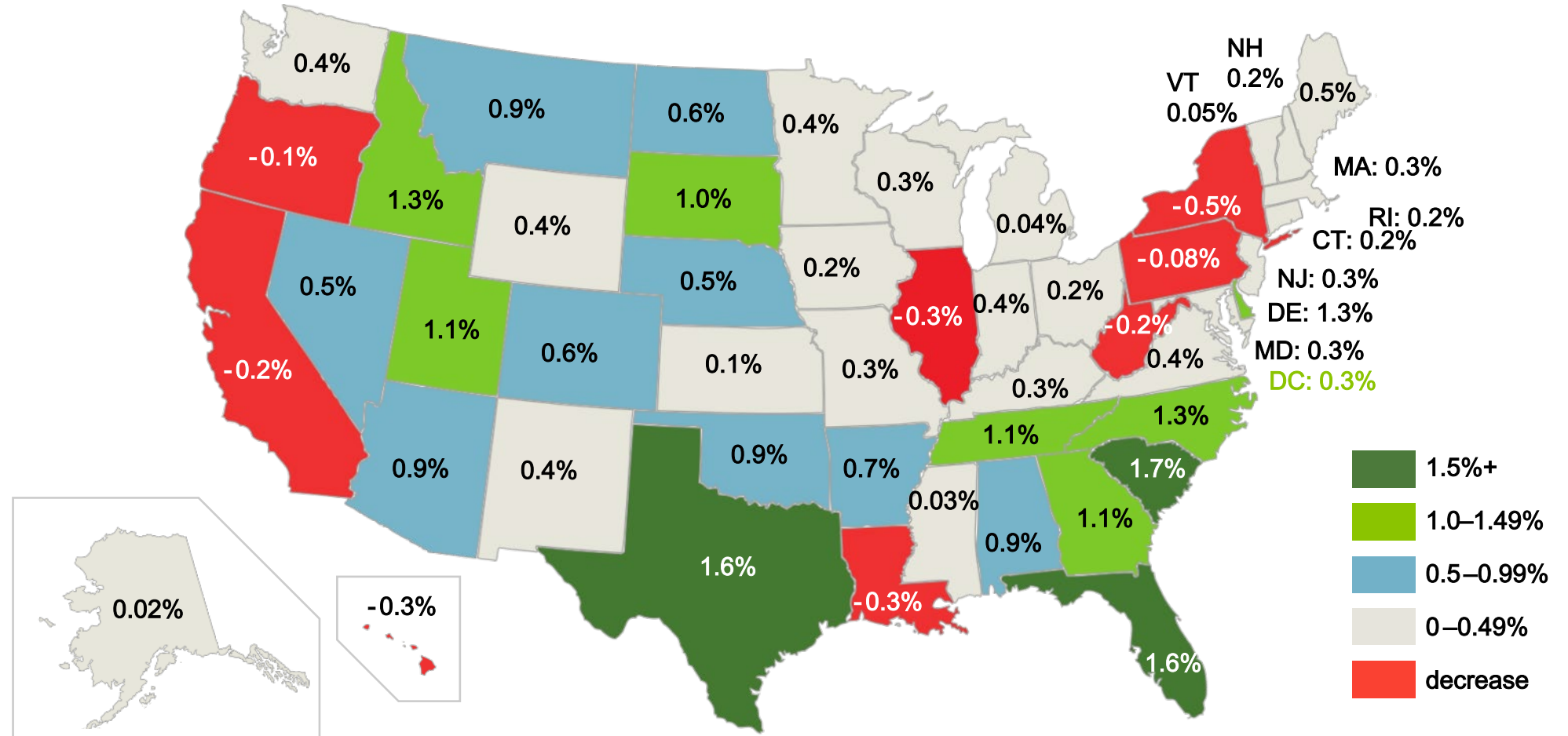
Population change by state, July 2022–July 2023; US: 0.49%

TOP 5

SC	1.7%
FL	1.6%
TX	1.6%
ID	1.3%
NC	2.3%

BOTTOM 5

NY	-0.5%
LA	-0.3%
HI	-0.3%
IL	-0.3%
WV	-0.2%



Source: Created by AGC using U.S. Census Bureau, Dec. 2023 population estimates, www.census.gov/popest

Federal programs will boost construction over coming years

1. **Infrastructure Investment and Jobs Act** (November 2021): \$550B in new spending over coming decade.

Progress to date: Complicated selection process; only small share of funds awarded to date. Impact on housing and buildings will only follow infrastructure investment.

2. **Inflation Reduction Act** (August 2022) : \$260B in new spending/tax breaks over coming decade.

Progress to date: Effective in encouraging the electrification of homes and buildings and in encouraging energy efficient upgrades.

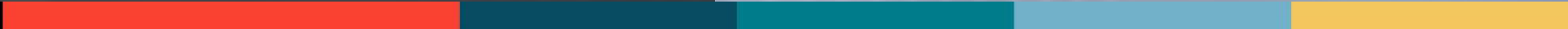
3. **CHIPS and Science Act**(August 2022): \$80B in funding for high-tech hubs; semiconductor manuf.

Progress to date: Program has leveraged significant private investment; industry began investing even before funds were distributed.



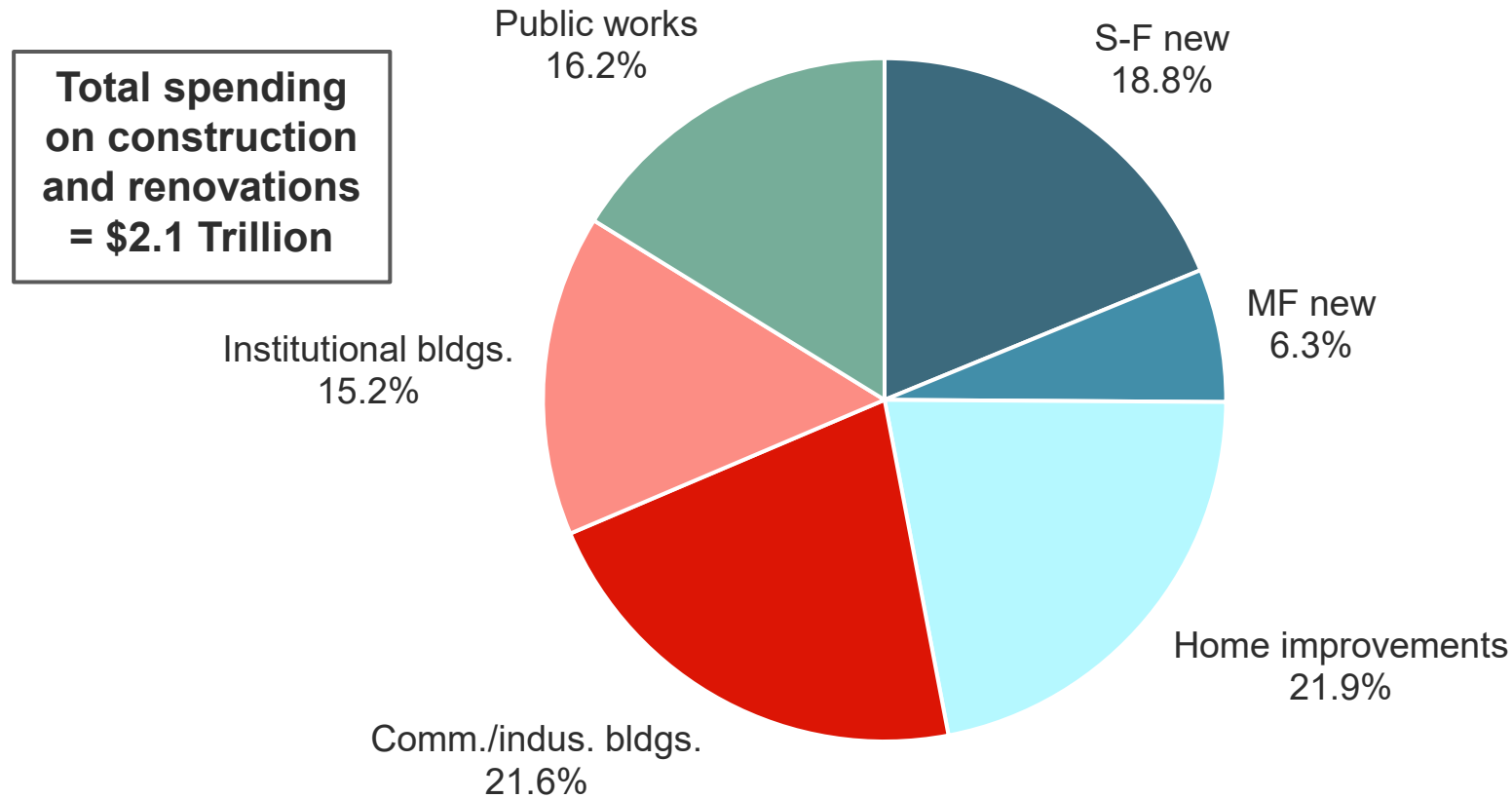
Overview

- Economy is reasonably healthy, but persistent inflation threats leading Fed to hold interest rates at elevated levels.
- Housing recovery being held back by rising mortgage rates; signs of a slowing in nonresidential construction activity are emerging.
- Commercial outlook is concerning, but institutional activity expected to hold up relatively well.



Spending on residential and nonresidential buildings totaled over \$2.1 trillion last year, 7.2% of our GDP

Share of total US residential and nonresidential building construction market, 2023

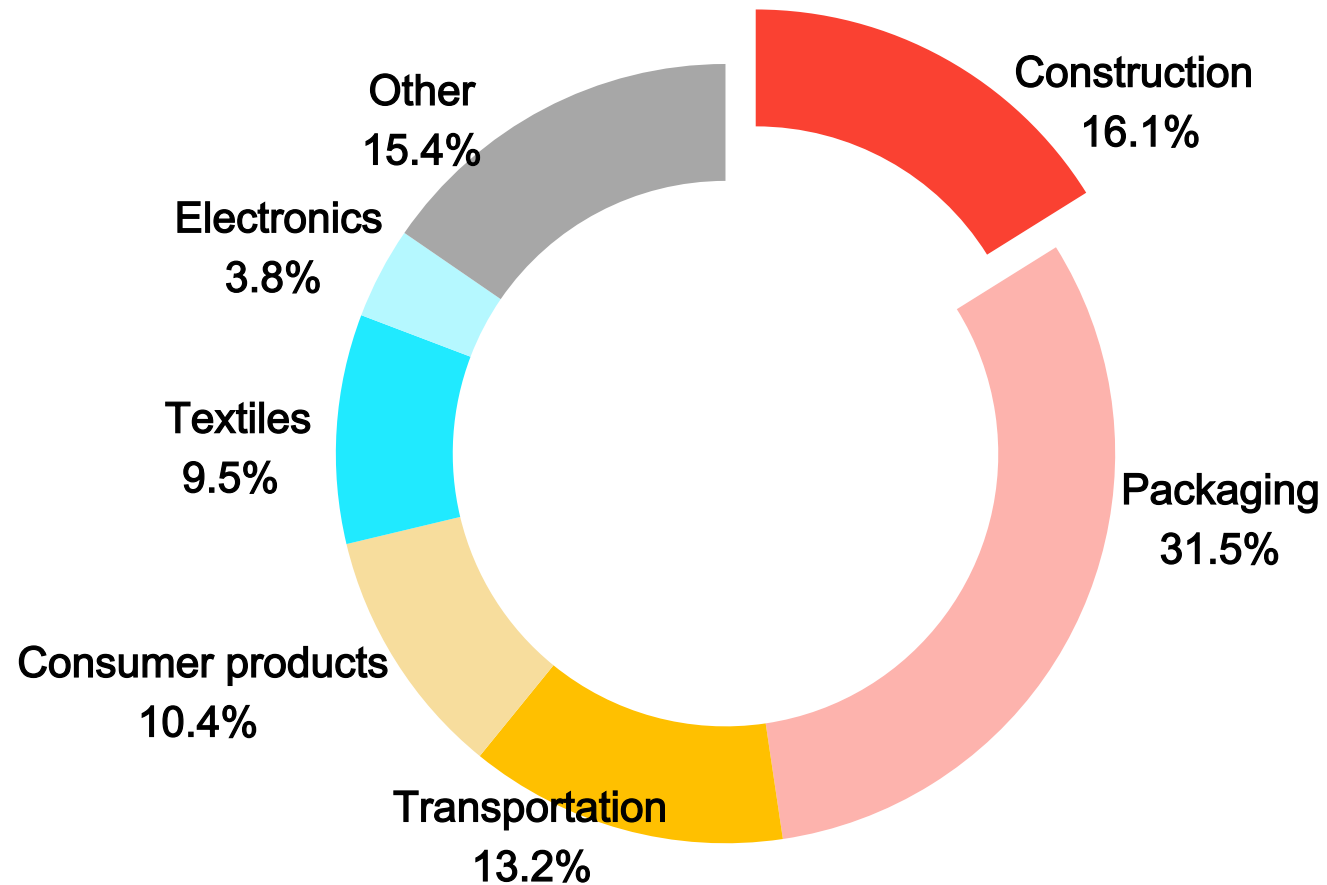


Note: Home improvements estimate includes improvements to single-family and multifamily structures, but not maintenance and repairs.

Sources: JCHS and U.S. Census Bureau, Construction Spending Put in Place.

Construction is the #2 end - market for plastics

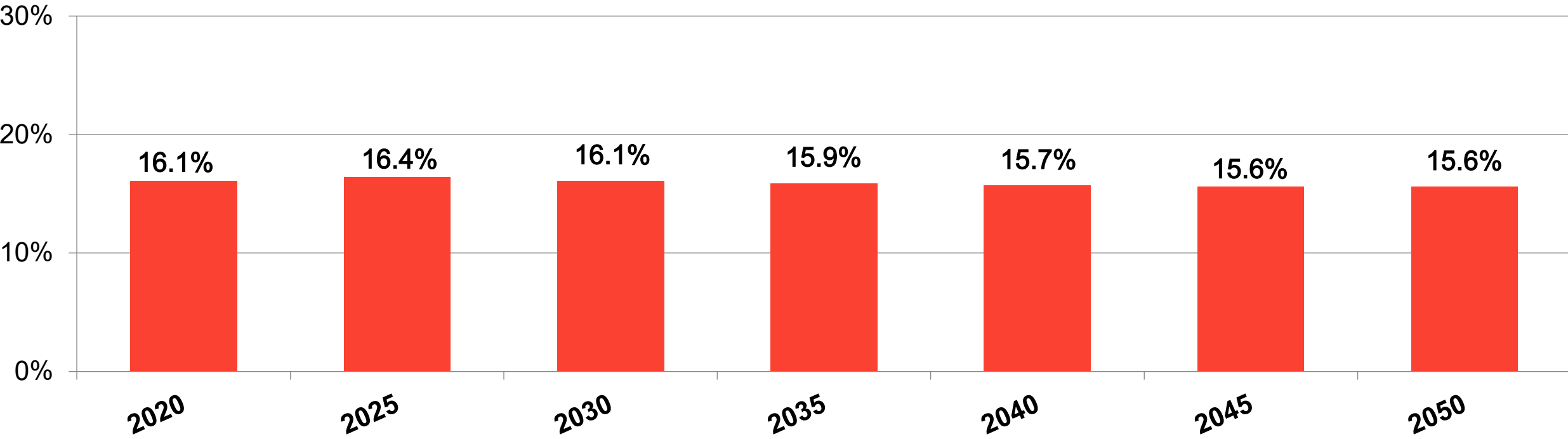
2020 global shares of plastics use by applications



Source: 2020 data from the Organization for Economic Cooperation and Development

Construction share of plastics consumption projected to remain fairly steady over coming decades

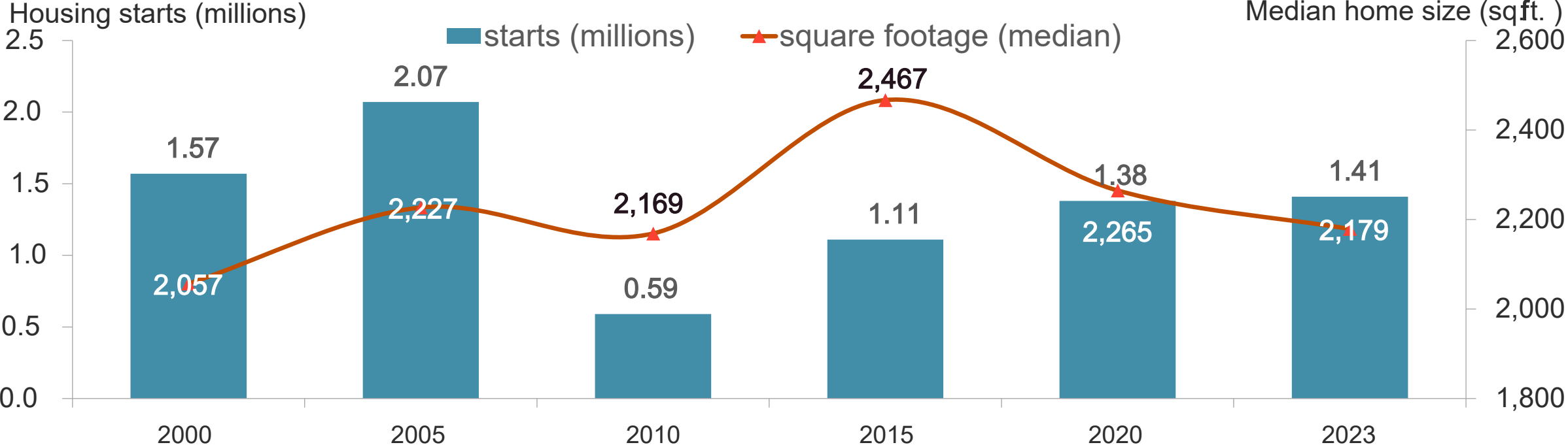
Construction share of global plastics use



Source: 2020 data and projections from the Organization for Economic Cooperation and Development

Plastic resins account for 8% of materials used in new homes, but impact dependent on number and size of homes

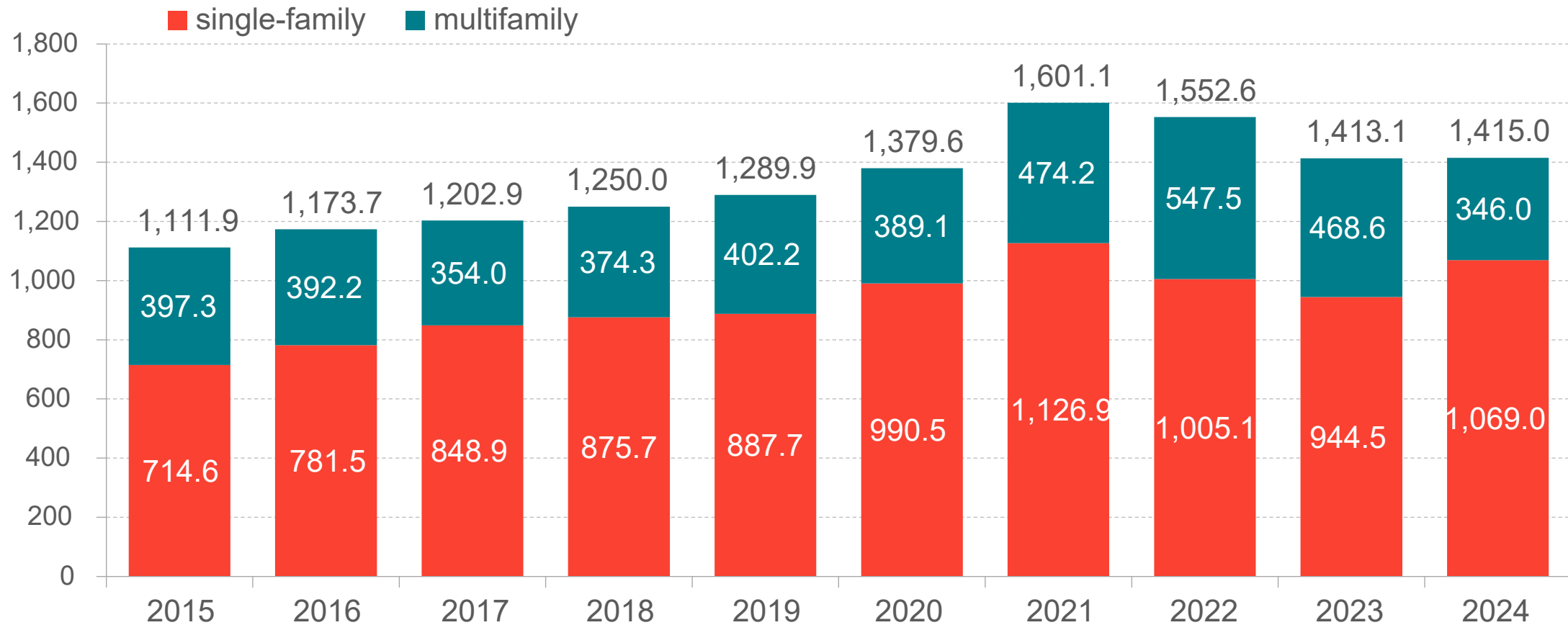
National housing starts and median size of new homes



Source: U.S. Census Bureau.

After surging during the pandemic, rising mortgage rates have slowed homebuilding activity

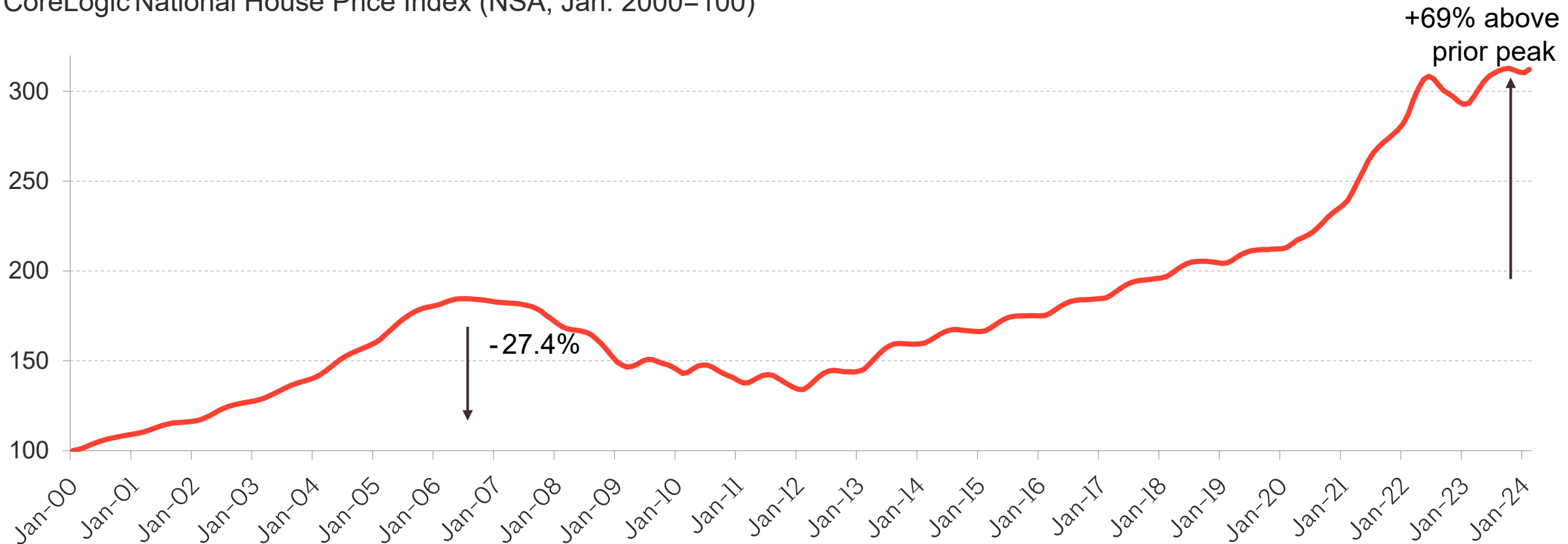
Annual housing starts (000's), 2024 figures are annualized year-to-date figures through March



Source: U. S. Department of Commerce

Nationally, house prices have been on a tear, although higher mortgage rates have slowed the growth

CoreLogic National House Price Index (NSA, Jan. 2000=100)

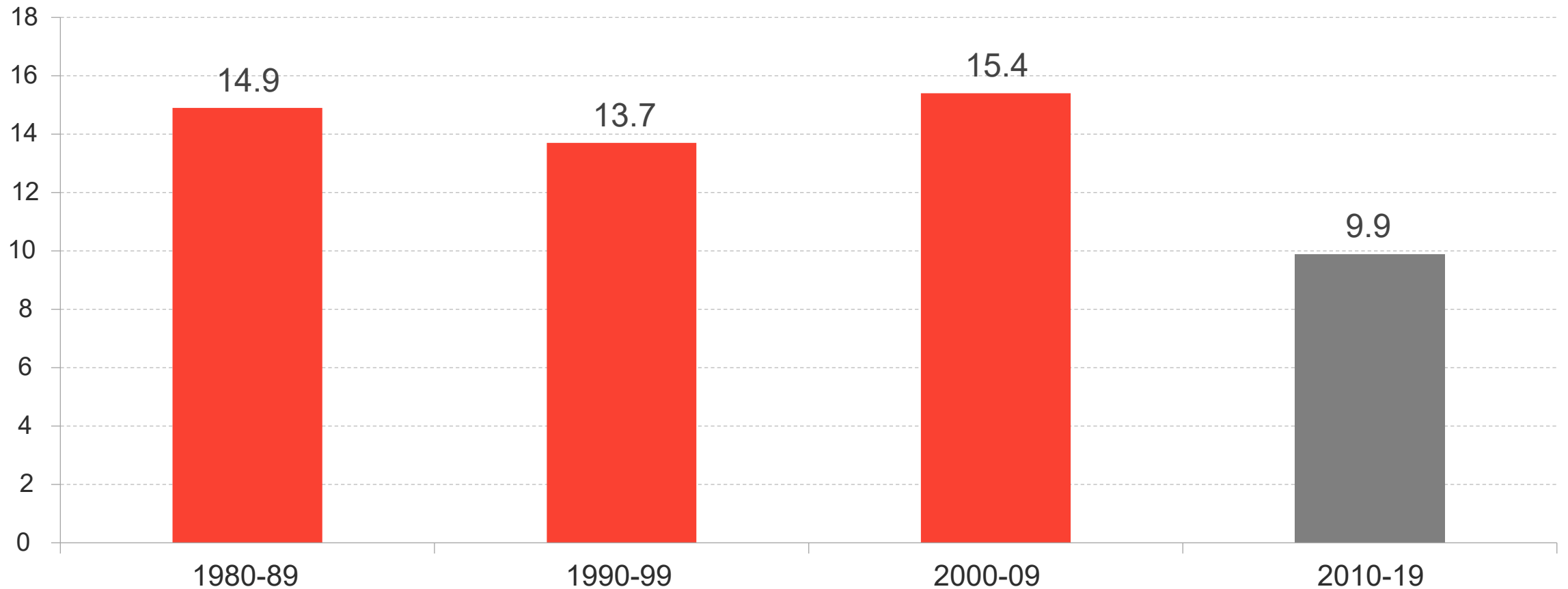


Notes: Index includes single family attached and detached structures. Data accessed on 5/3/24

Source: S&P CoreLogic CaseShiller Home Price Indices: National Home Price Index (HPI).

Do we have a housing shortage? Last decade saw historically low levels of homebuilding

Housing starts over the decade (millions of units)



Source: US Department of Commerce

How many homes do we need? Total new housing demand projected at just over 15 million units over coming decade

Components of projected housing demand 2018-2028, millions

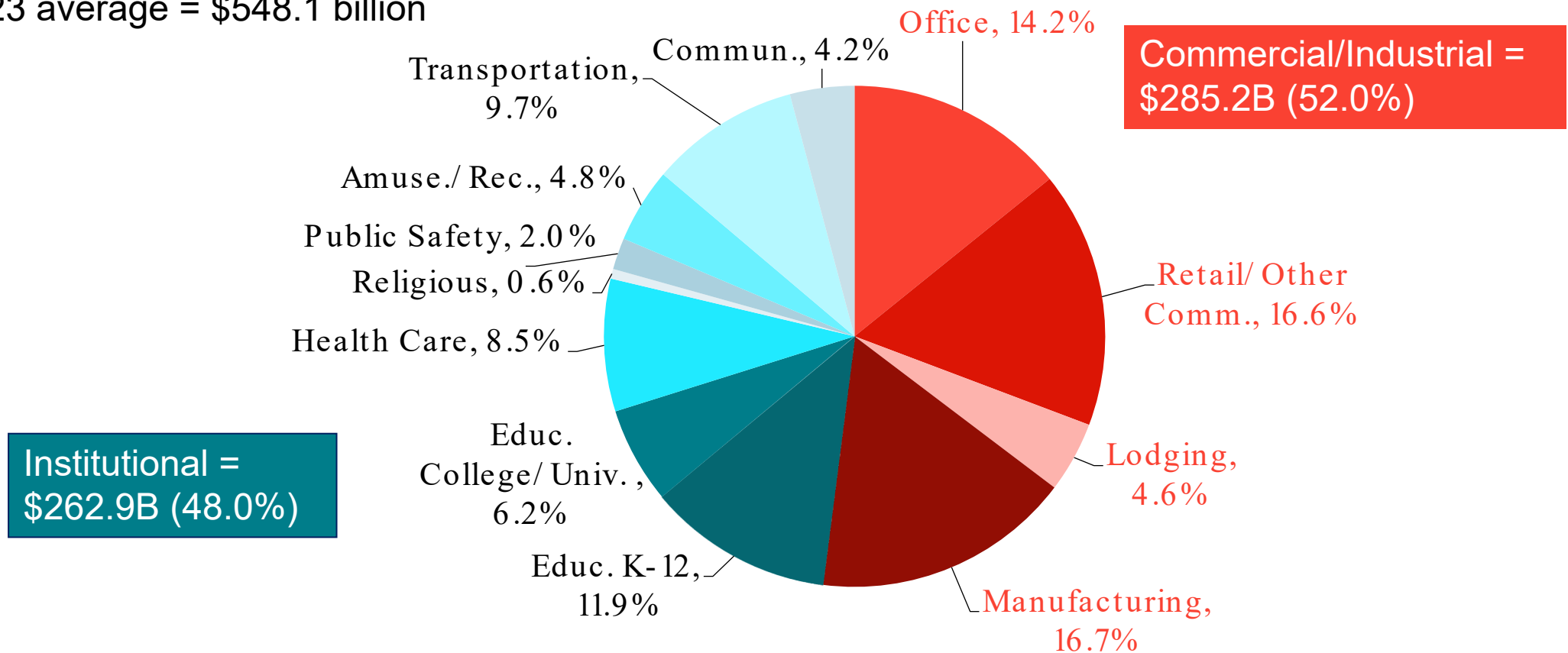
Component of Growth	Projected Annual Average Increase
Household growth	12.2
Second homes, etc.	1.2
Housing stock losses	1.7
Total	15.1

Source: Dan McCue, Joint Center for Housing Studies. "JCHS Updated Household Projections: 2018-2028 and 2028-2038". Published 2018.

Institutional categories account for over half the spending on nonresidential buildings

Share of U.S. nonresidential building construction spending, 2014-2023

2014-2023 average = \$548.1 billion



Spending on the construction of buildings was very strong in 2023...

Billions of \$, Jan-Dec 2023 vs. Jan-Dec 2022 totals

	2022	2023	% Change
Total Nonresidential Building Construction	\$631.8	\$766.0	21.2%
Commercial/ Industrial	\$347.4	\$449.6	29.4%
Lodging	\$19.7	\$23.6	19.3%
Office	\$91.6	\$98.8	7.8%
Commercial (retail & other)	\$121.4	\$131.6	8.5%
Manufacturing	\$114.7	\$195.6	70.5%
Institutional	\$284.4	\$316.5	11.3%
Healthcare	\$54.8	\$62.9	14.9%
Education	\$102.1	\$115.8	13.4%
Religious	\$2.9	\$3.4	16.3%
Public Safety	\$11.6	\$13.2	14.4%
Amusement & Recreation	\$30.0	\$32.5	8.2%
Transportation	\$58.7	\$63.8	8.7%
Communication	\$24.3	\$24.9	2.3%

Source: U.S. Census Bureau, Value of Construction Put in Place

... And spending remains strong early in 2024, but commercial sector is beginning to slow

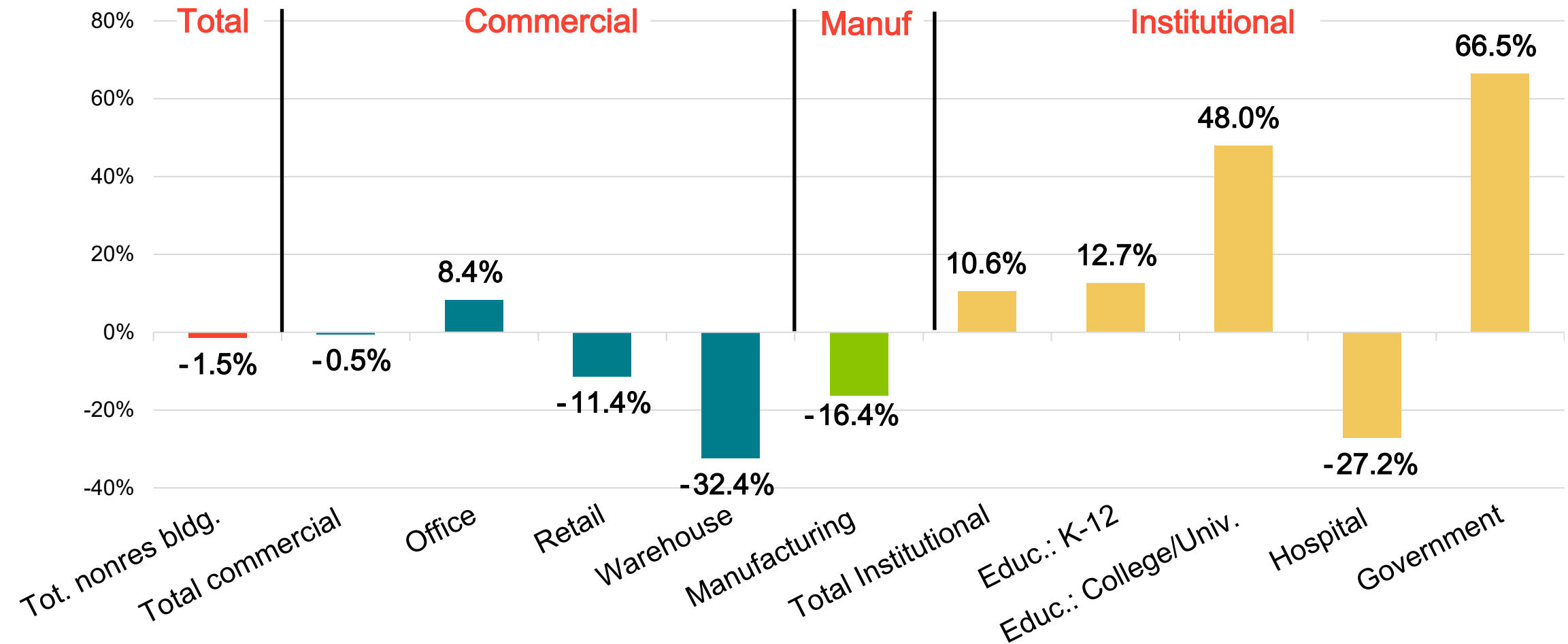
Billions of \$, Jan-Mar 2024 vs. Jan-Mar 2023 totals

	2023	2024	% Change
Total Nonresidential Building Construction	\$164.3	\$188.9	15.0%
Commercial/ Industrial	\$97.3	\$111.7	14.8%
Lodging	\$5.5	\$5.5	0.7%
Office	\$22.4	\$23.7	5.8%
Commercial (retail & other)	\$29.4	\$30.2	2.5%
Manufacturing	\$40.0	\$52.3	30.7%
Institutional	\$67.0	\$77.2	15.2%
Healthcare	\$14.3	\$16.1	12.8%
Education	\$23.2	\$27.7	19.4%
Religious	\$0.7	\$1.0	27.8%
Public Safety	\$2.7	\$4.0	48.9%
Amusement & Recreation	\$6.8	\$8.0	18.9%
Transportation	\$13.6	\$14.4	6.0%
Communication	\$5.7	\$6.0	4.2%

Source: U.S. Census Bureau, Value of Construction Put in Place

While construction spending increased, 2023 starts were weak in commercial/industrial; healthy for institutional

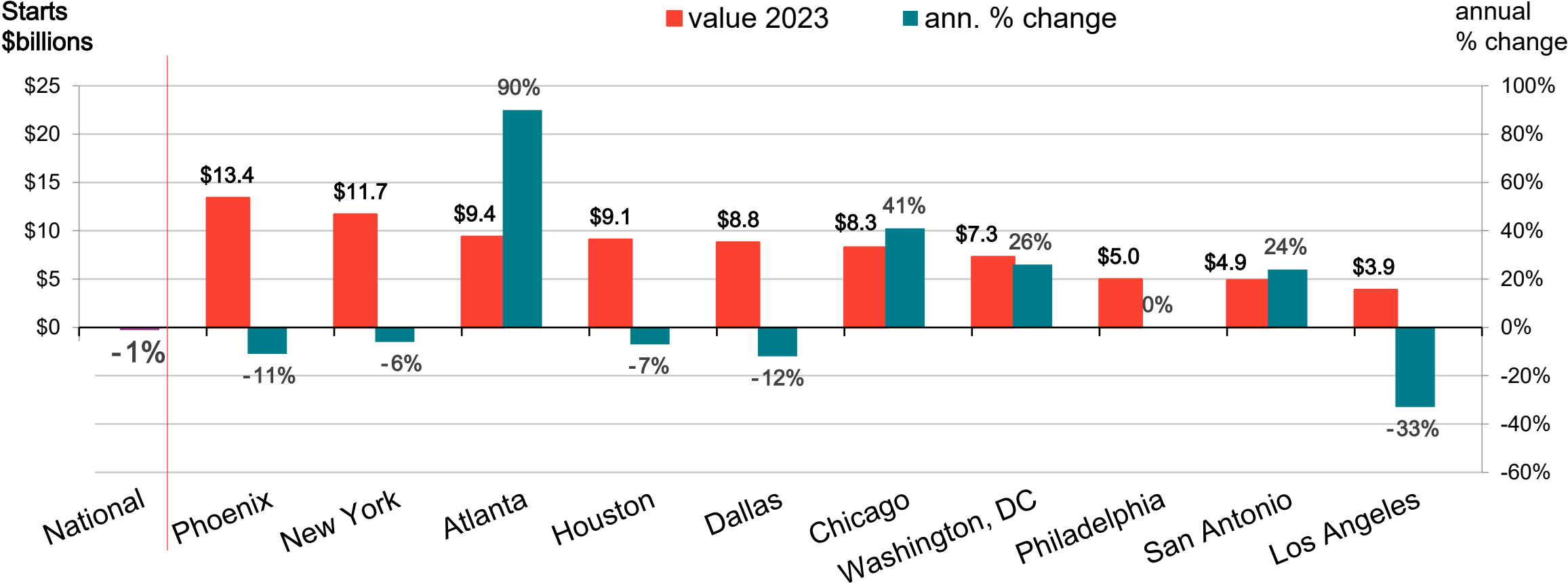
Percentage change in value of nonresidential construction starts, 2023 vs. 2022



Source: ConstructConnect, January 2024

Construction starts flat in 2023, but key metro areas show considerable variation in performance

Billions \$ / % change—commercial and multifamily construction starts



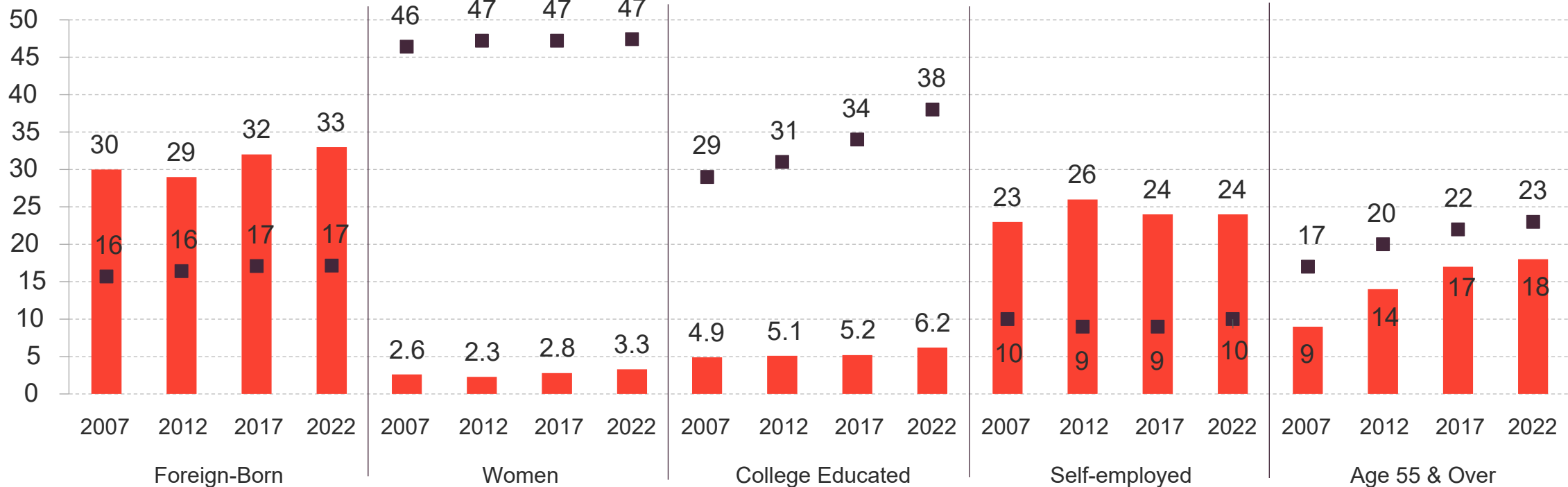
Source: ConstructConnect, January 2024

Construction Trades Heavily Reliant on Foreign -Born; Lower Shares of Women, College Educated, Older Workers

Share of Workers (Percent)

■ Construction Trades

■ US Labor Force

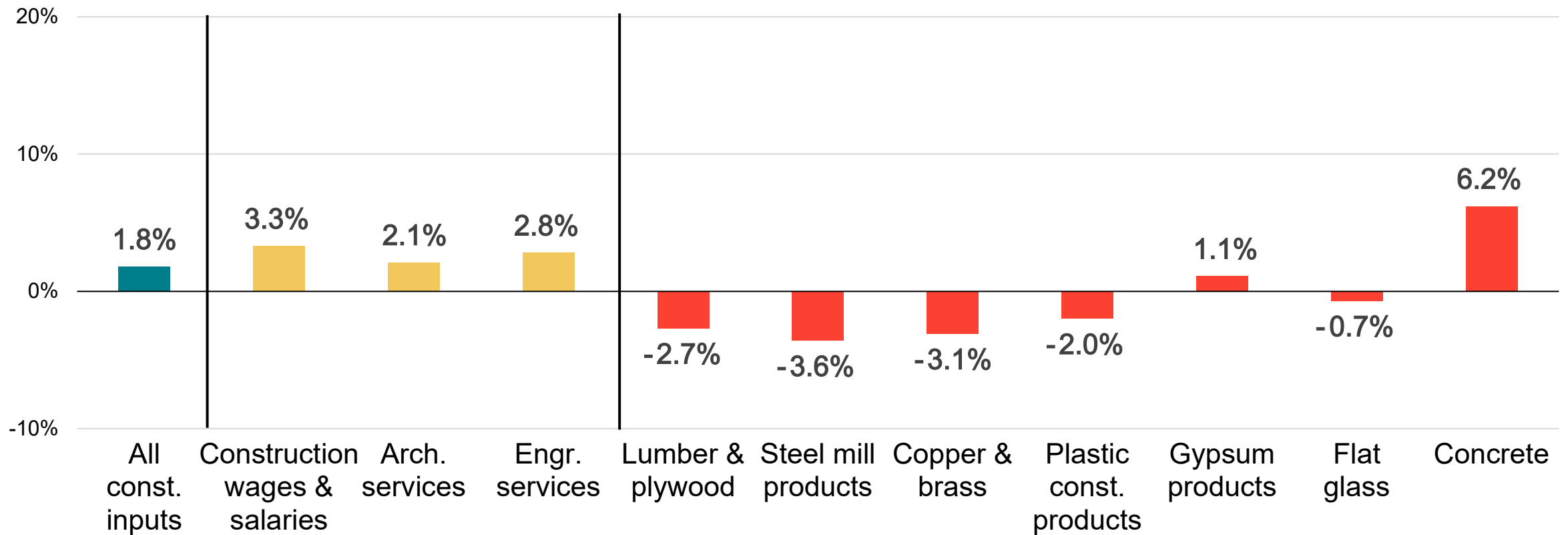


Notes: The construction trades labor force includes workers with construction management and trades occupations within the construction industry. Data include workers housed in non-group quarters that are either employed or unemployed but available for and seeking work.

Source: JCHS tabulations of US Census Bureau, American Community Surveys.

Recently, key construction input costs have become significantly less volatile

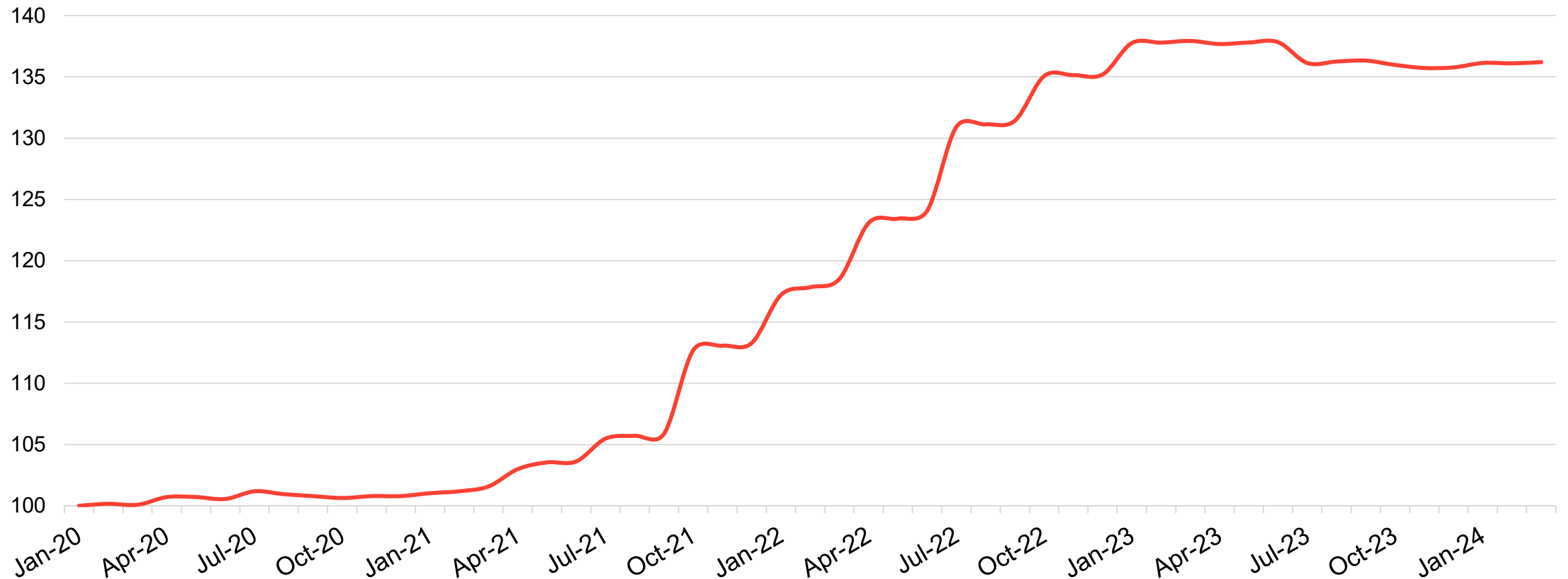
Change in construction costs, Mar 2023 to Mar 2024



Source: Bureau of Labor Statistics

Inputs to building construction have stabilized recently, but are almost 40% above pre-pandemic levels

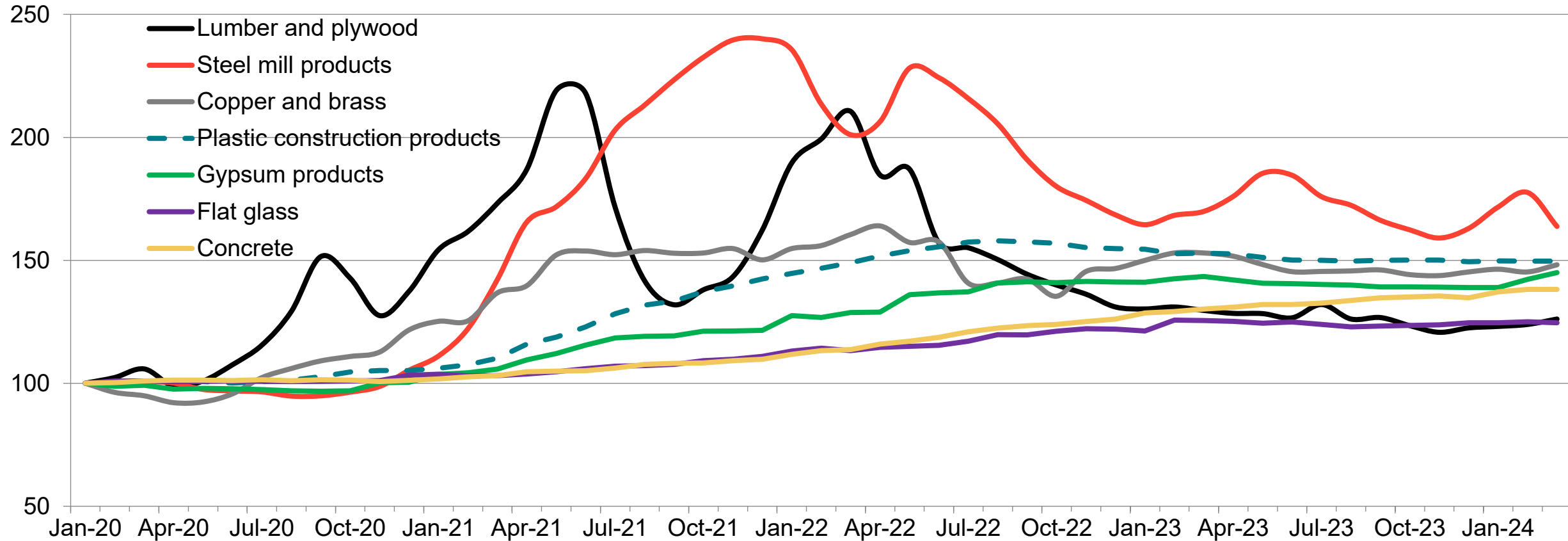
Producer price index for inputs to new nonresidential building construction, January 2020=100, not seasonally adjusted



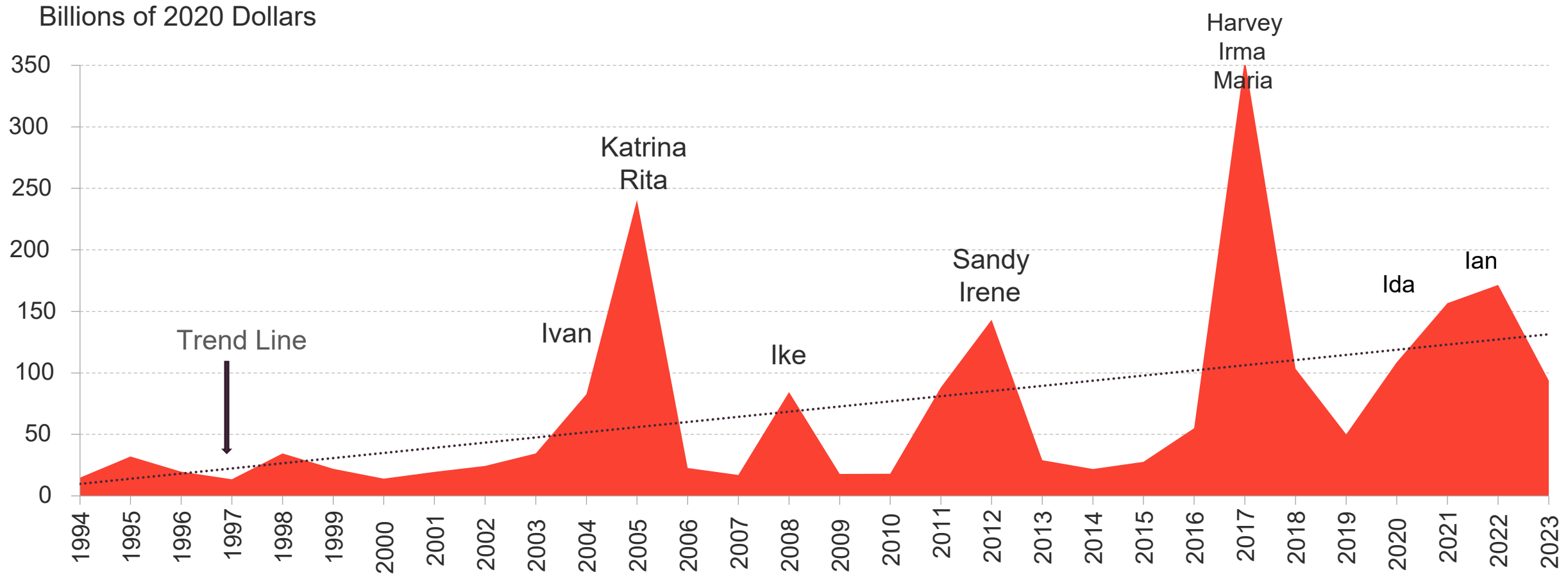
Source: U.S. Bureau of Labor Statistics

Prices of some commodities used in construction have been very volatile since pandemic hit; others more stable

Producer price index for inputs to construction, January 2020=100, not seasonally adjusted



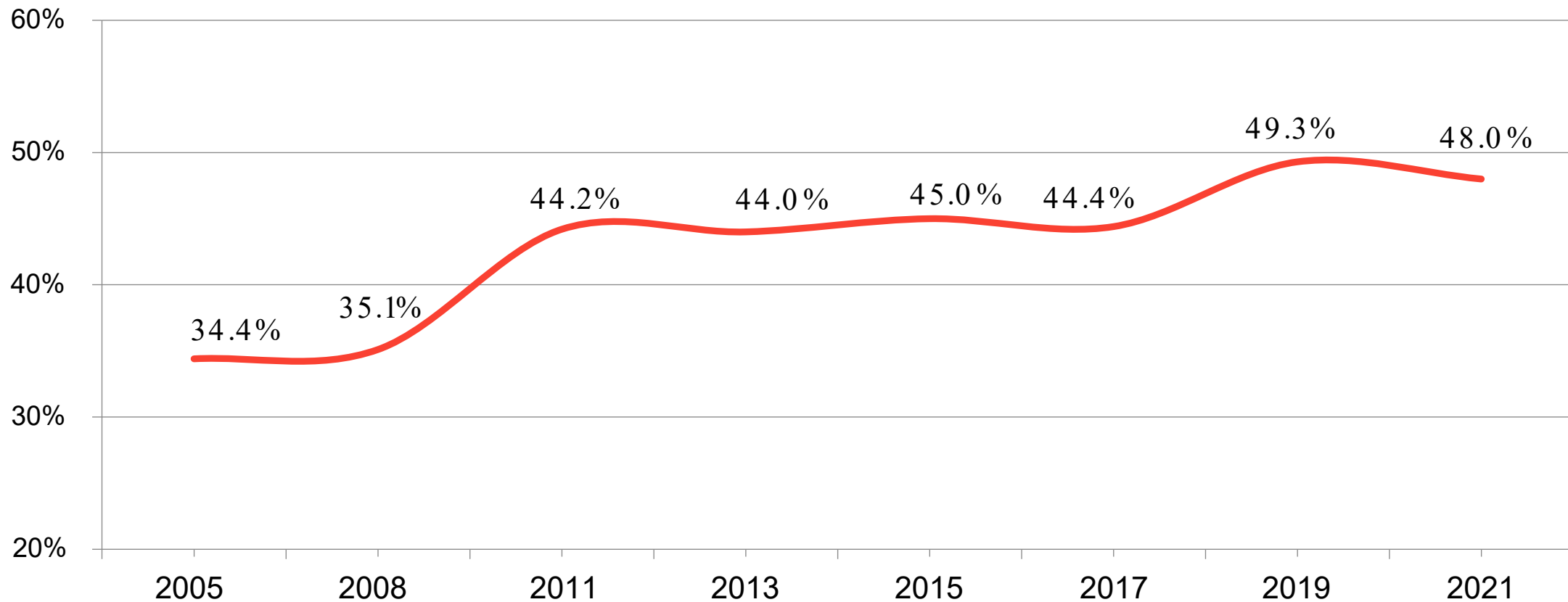
Though volatile, natural disaster losses from large -scale events have dramatically increased



Notes: Dollar values are adjusted for inflation using CPI-U. Costs include only natural disaster events that generate over \$1 billion in damages after adjusting for inflation
Source: JCHS tabulations of National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters, <https://www.ncdc.noaa.gov/billions/>

Work on existing facilities accounts for about half of design activity

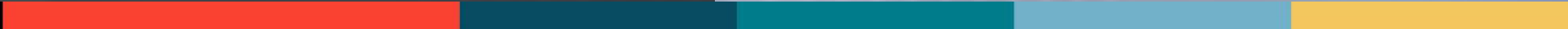
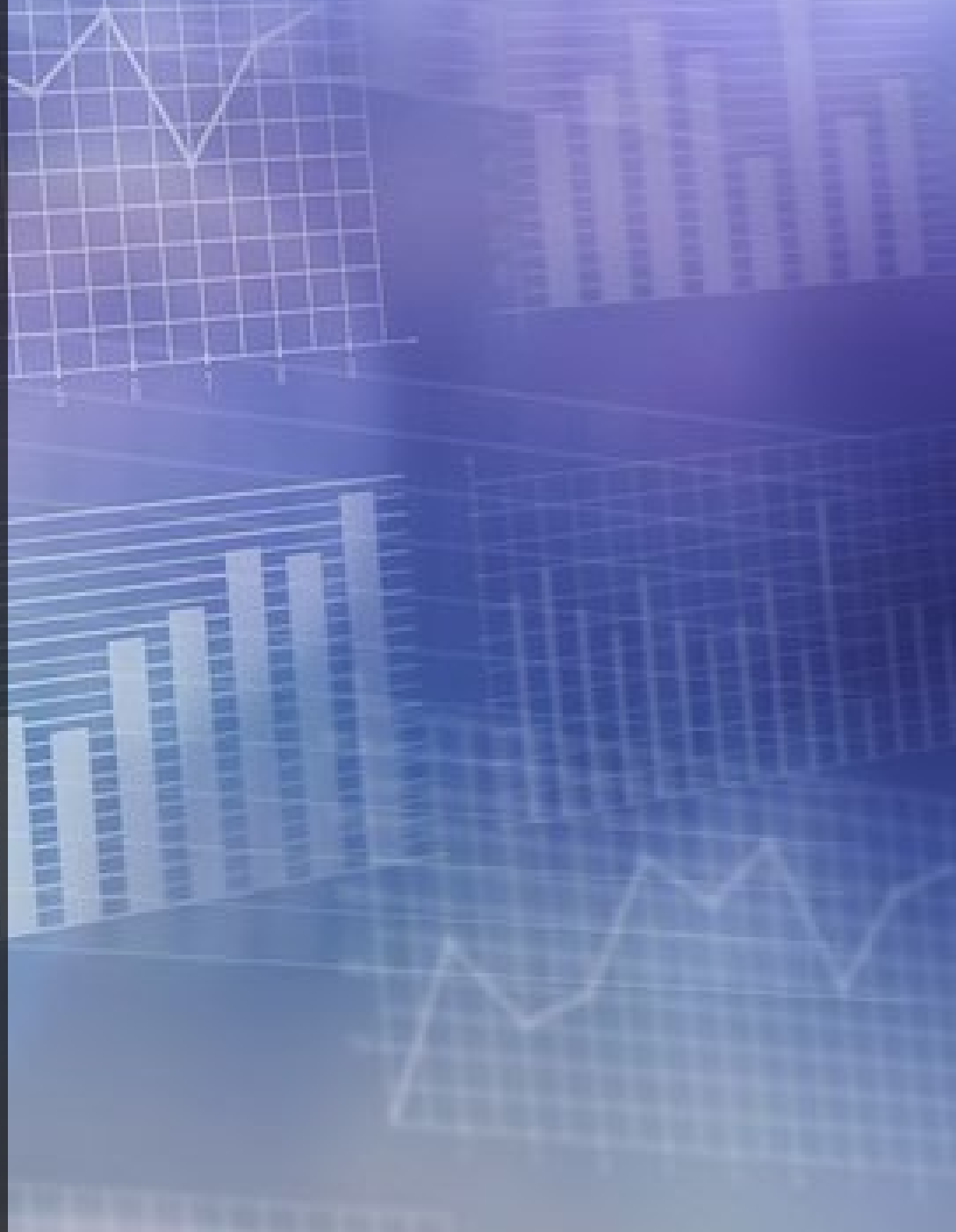
Renovations, rehabilitations, additions, and historic preservation as percent of firm building design billings



Source: AIA Firm Survey Report, The Business of Architecture, various years

Overview

- Economy is reasonably healthy, but persistent inflation threats leading Fed to hold interest rates at elevated levels.
- Housing recovery being held back by rising mortgage rates; signs of a slowing in nonresidential construction activity are emerging.
- Commercial outlook is concerning, but institutional activity expected to hold up relatively well.



The AIA/ Deltek Architecture Billings Index

Monthly survey of business conditions at US architecture firms; covers multifamily residential, commercial, industrial, and institutional sectors.

Panel of participating firms is representative of all firms nationally in terms of size, location, and practice specialization.

Almost 30 years of historical information to track previous cyclical patterns.

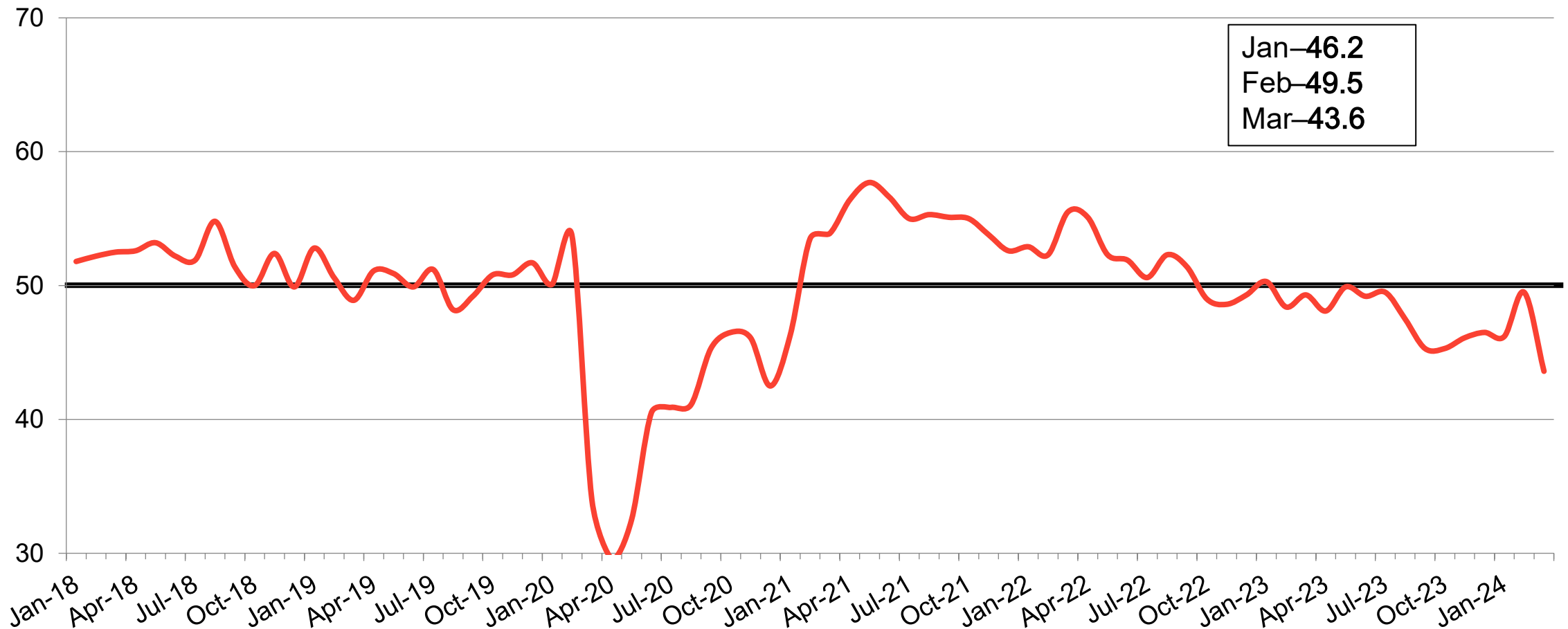
ABI **leads construction spending activity by 9-12 months** with high degree of accuracy.

Index centered around 50; scores above 50 indicate national increase in billings; scores below 50 a decline.



Architecture firm billings have been generally weak since Q-3 2022, but have been more volatile recently

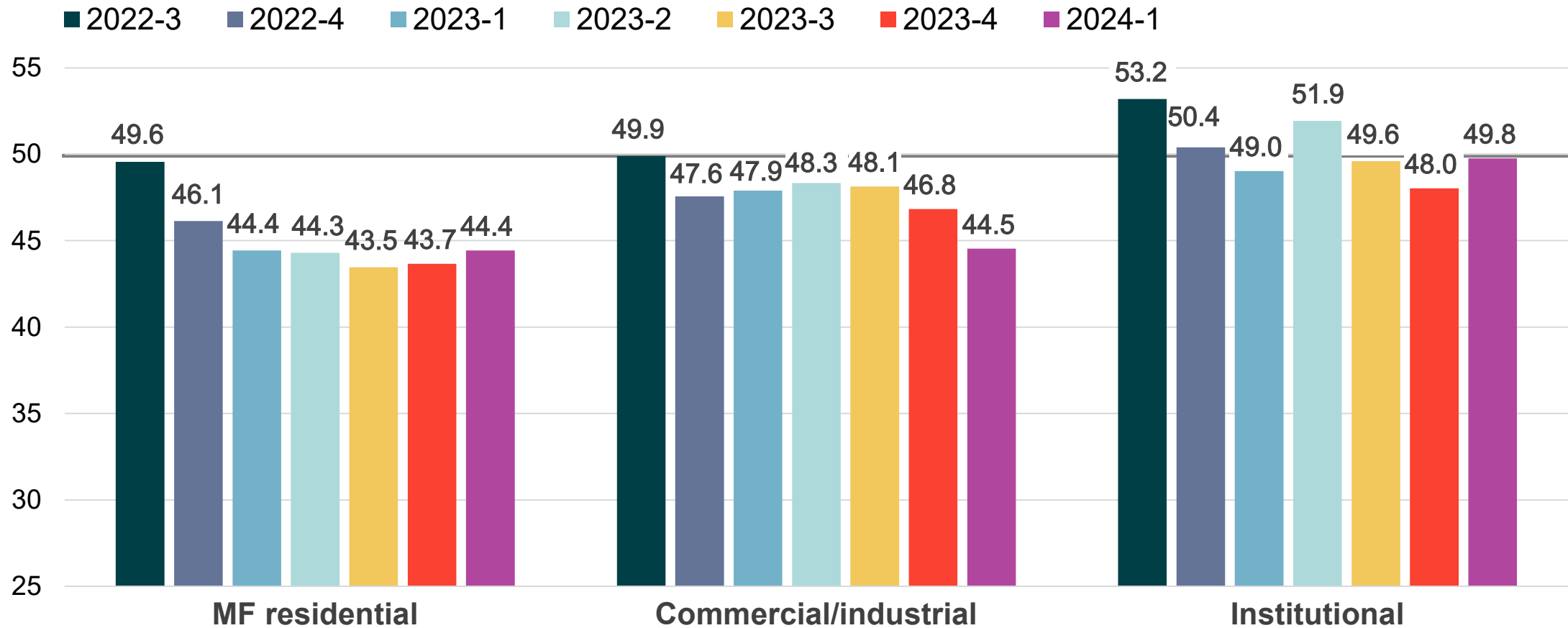
Diffusion index: 50 = no change from previous month, seasonally adjusted



Source: AIA/Deltek Architecture Billings Index

MF residential is main sector pulling down scores; institutional sector seems to have most upside potential

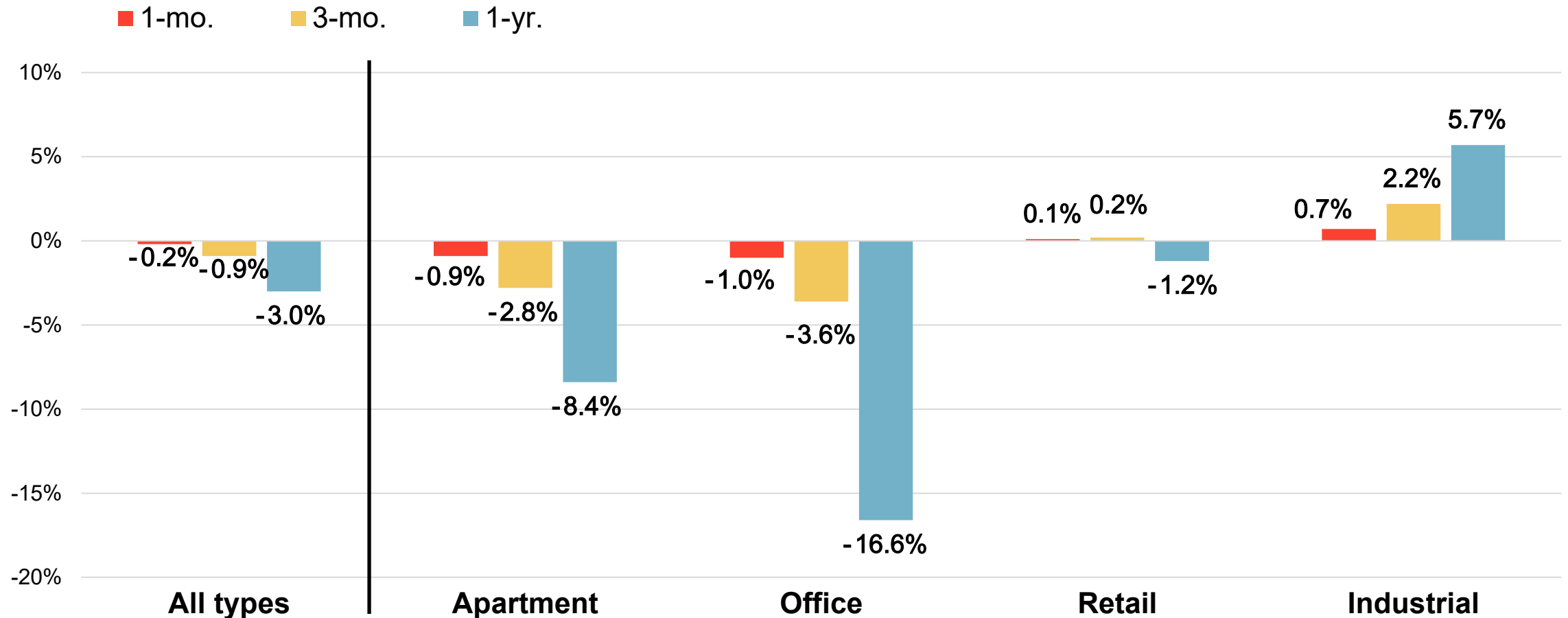
ABI scores by quarter for 2022 and 2023



Source: AIA/Deltek Architecture Billings Index

Commercial property beginning to firm; office declines accelerating, industrial values increasing

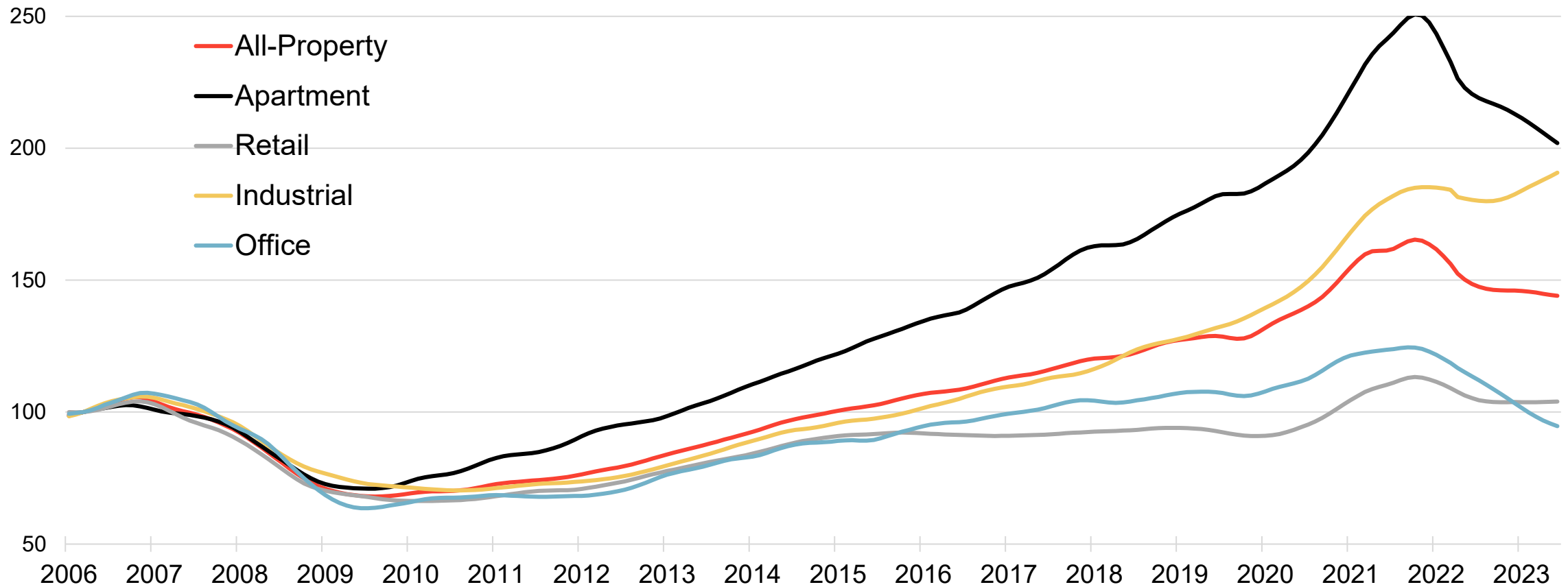
Change in price index for March 2024



Source: RCA Commercial Property Price Indexes

Apartment property value declines from a high base; offices from a low one

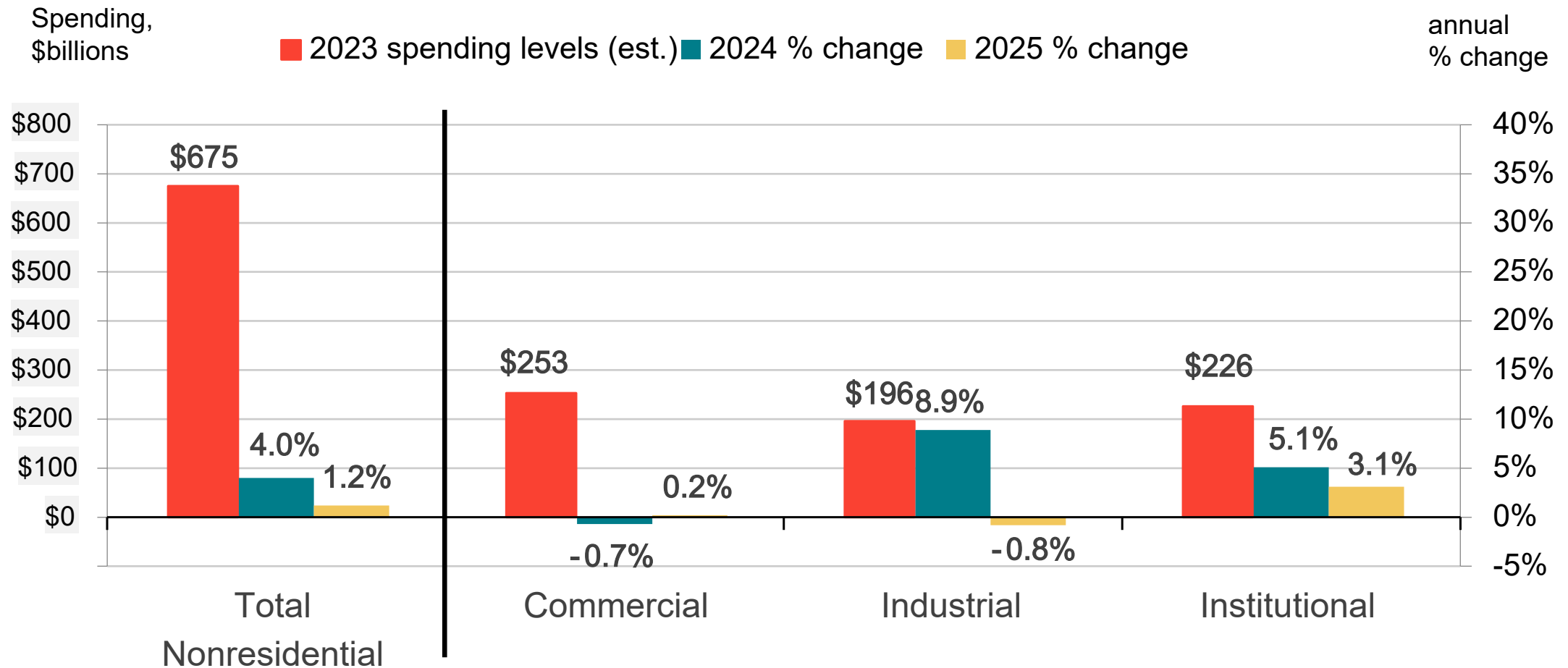
Index of repeat sale property values: 2006:4 = 100



Source: MSCI Commercial Property Price Indexes

Construction spending expected to see only very moderate growth this year before slowing more in 2025

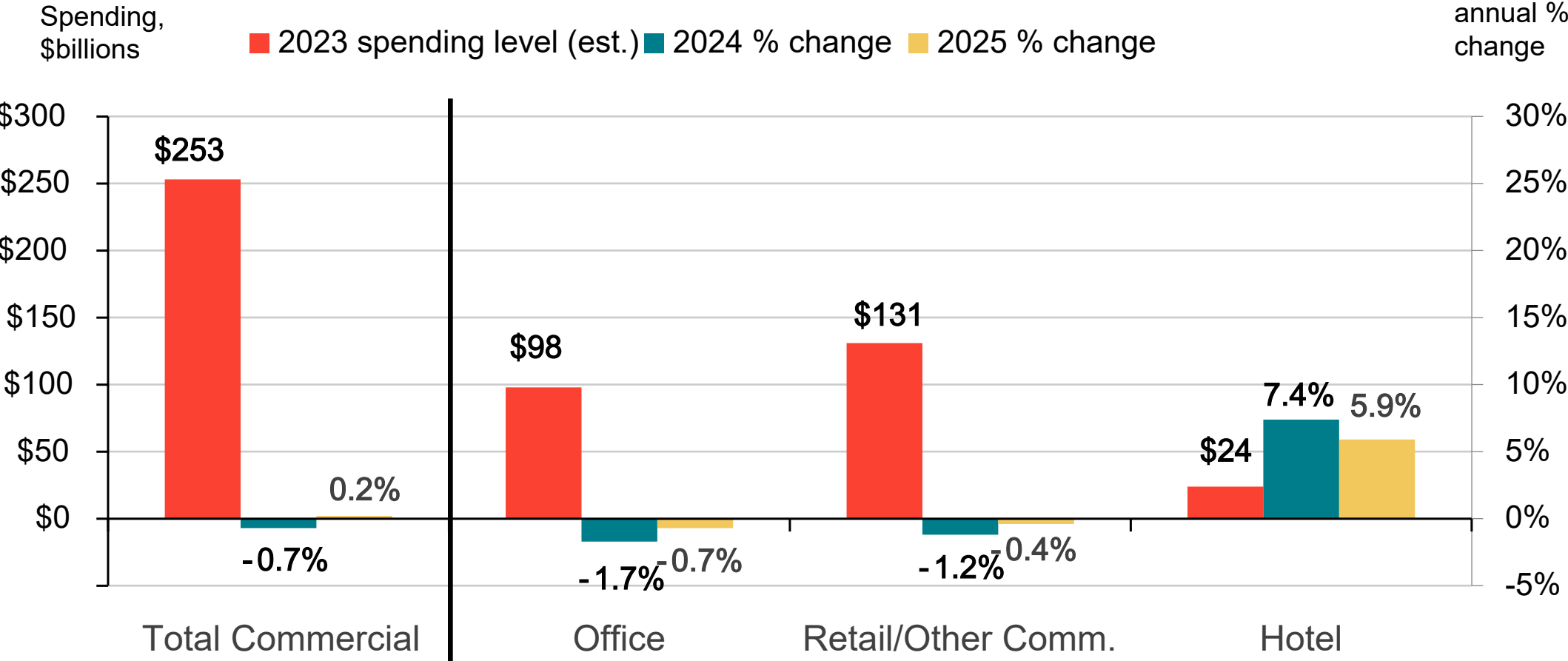
Billions \$ / % change—construction spending on nonresidential buildings



Source: AIA Consensus Construction Forecast Panel, December 2023

Hotel construction seeing healthy growth this year and next; office and retail expected to slip both years

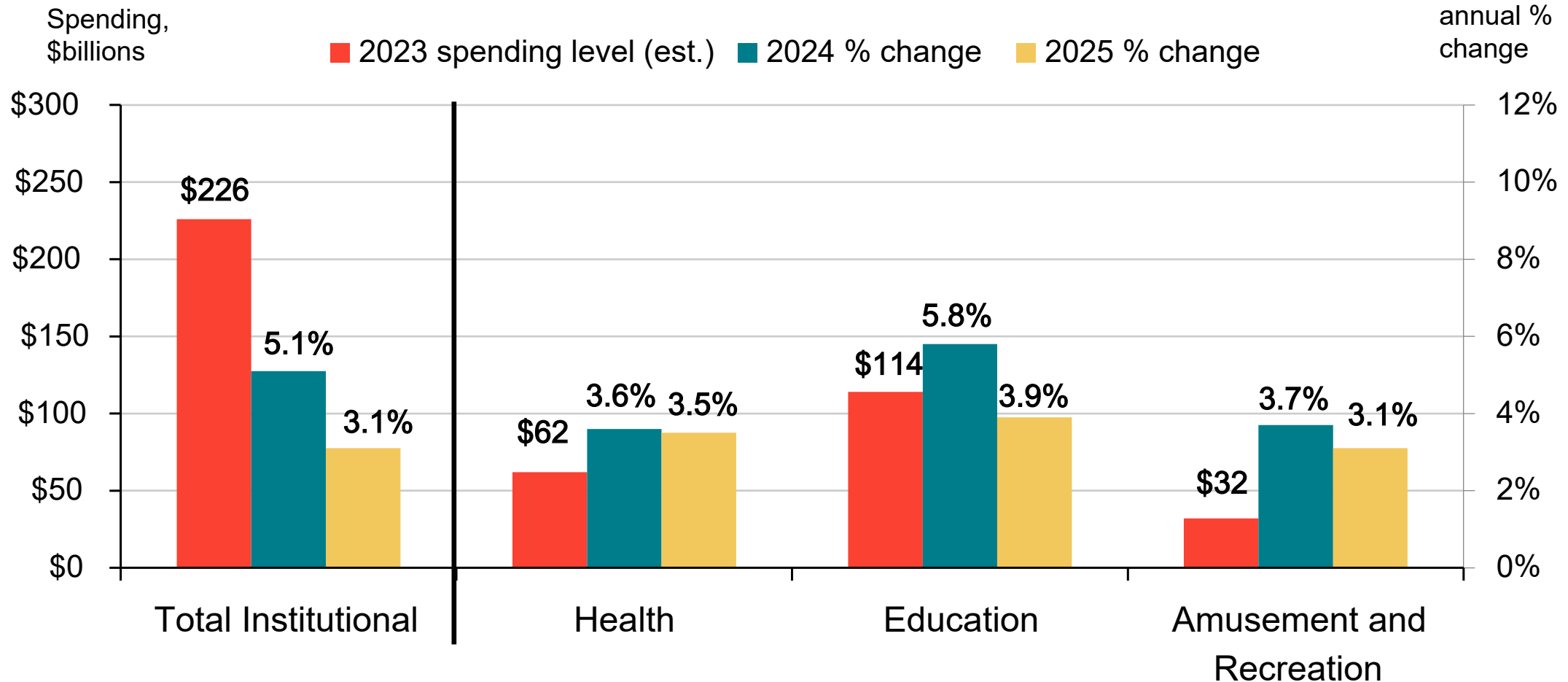
Billions \$ / % change—construction spending on nonresidential buildings



Source: AIA Consensus Construction Forecast Panel, December 2023

Institutional sector remains relatively healthy both this year and next

Billions \$ / % change—construction spending on nonresidential buildings



Source: AIA Consensus Construction Forecast Panel, December 2023

Summing Up

- ❑ Construction is a major end-market for plastics, but an unusually volatile one.
- ❑ The residential sector accounts for about half of construction spending, but despite a housing shortage, high prices and mortgage rates have depressed activity.
- ❑ The nonresidential sector had been on a tear, but signs of slowing are appearing.
- ❑ Commercial construction is expected to see no growth this year and next; institutional markets are looking healthier.

