



CENTER FOR
AUTOMOTIVE
RESEARCH

Economic Outlook and U.S. Light Vehicle Sales Forecast

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MISSION:

to produce independent research, convene stakeholders, and analyze critical issues facing the mobility industry and its impact on the economy and society.

THE CENTER FOR AUTOMOTIVE RESEARCH (CAR)

Automotive industry contract research and service organization (non-profit) with more than 30 years experience forecasting industry trends, advising on public policy, and sponsoring multi-stakeholder communication forums.



RESEARCH

Independent research and analysis on critical issues facing the industry.



EVENTS

Industry-driven events and conferences that deliver content, context, and connections.



CONNECT

Consortia that bring together industry stakeholders to participate in working groups, networking opportunities, and access to CAR staff.

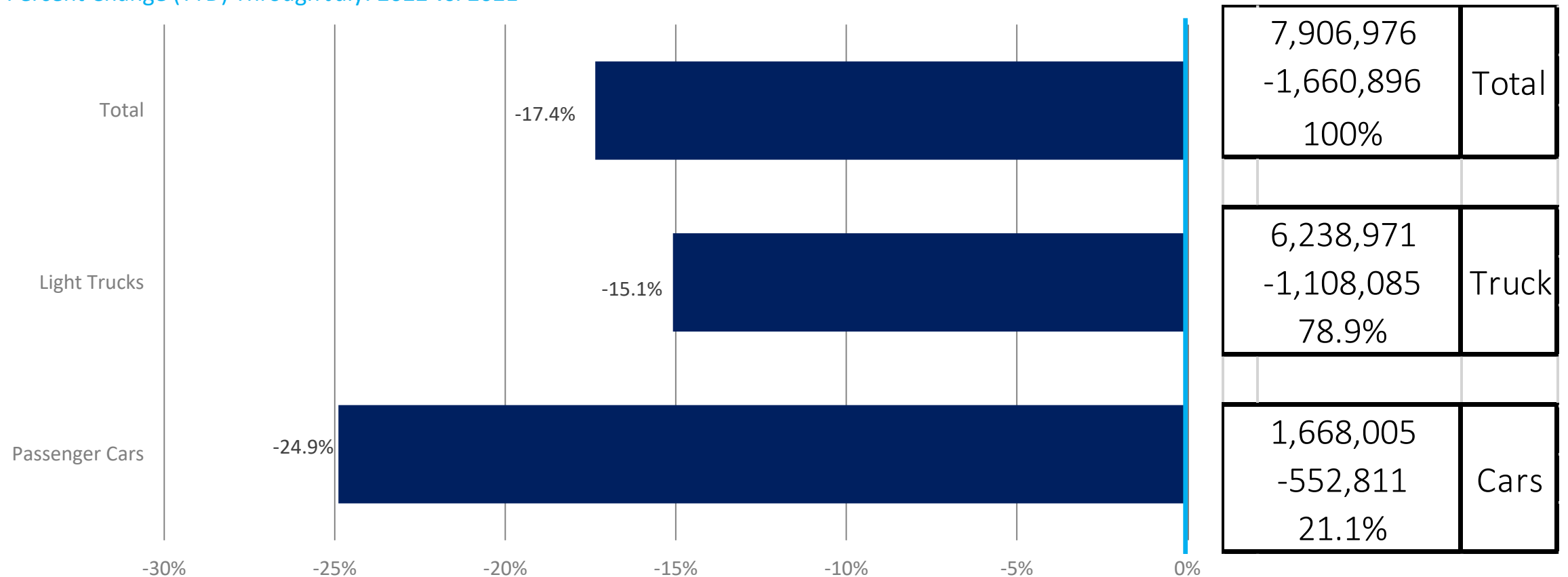


Industry Update

Year-to-date sales are down compared to 2021

U.S. Light Vehicle Sales

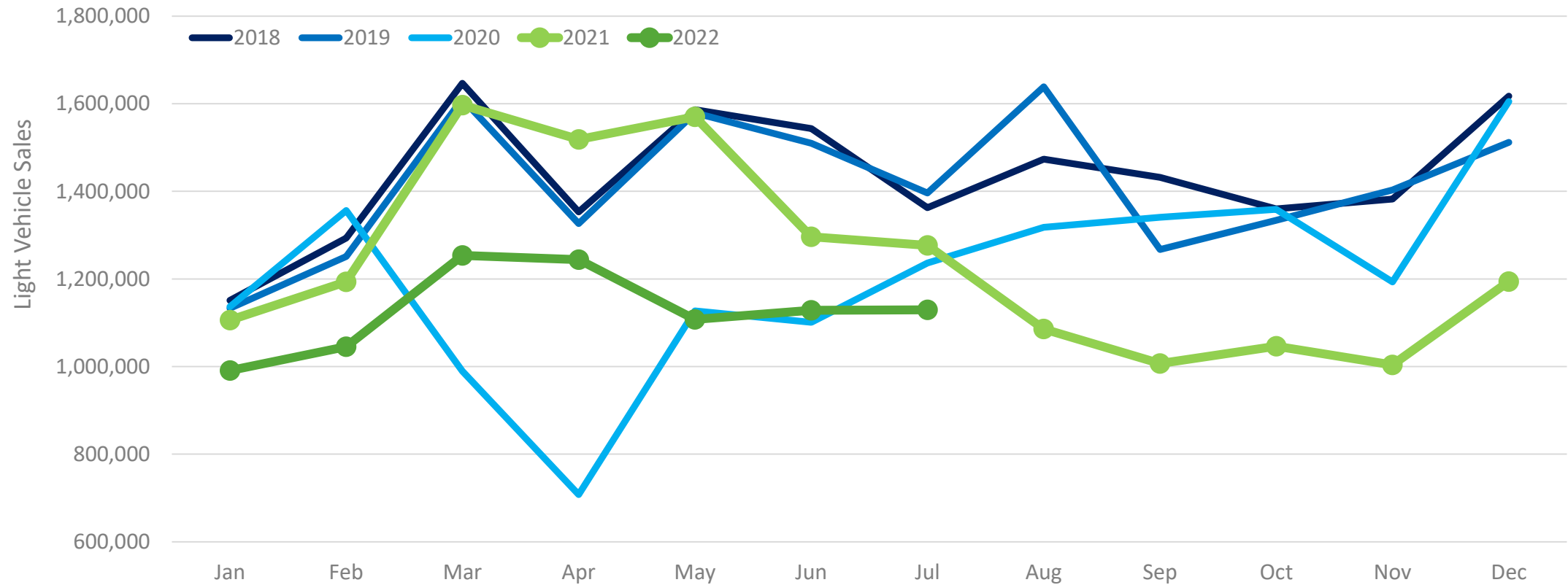
Percent Change (YTD) Through July: 2022 vs. 2021



Monthly sales trend below last year's level

U.S. Light Vehicle Monthly Sales

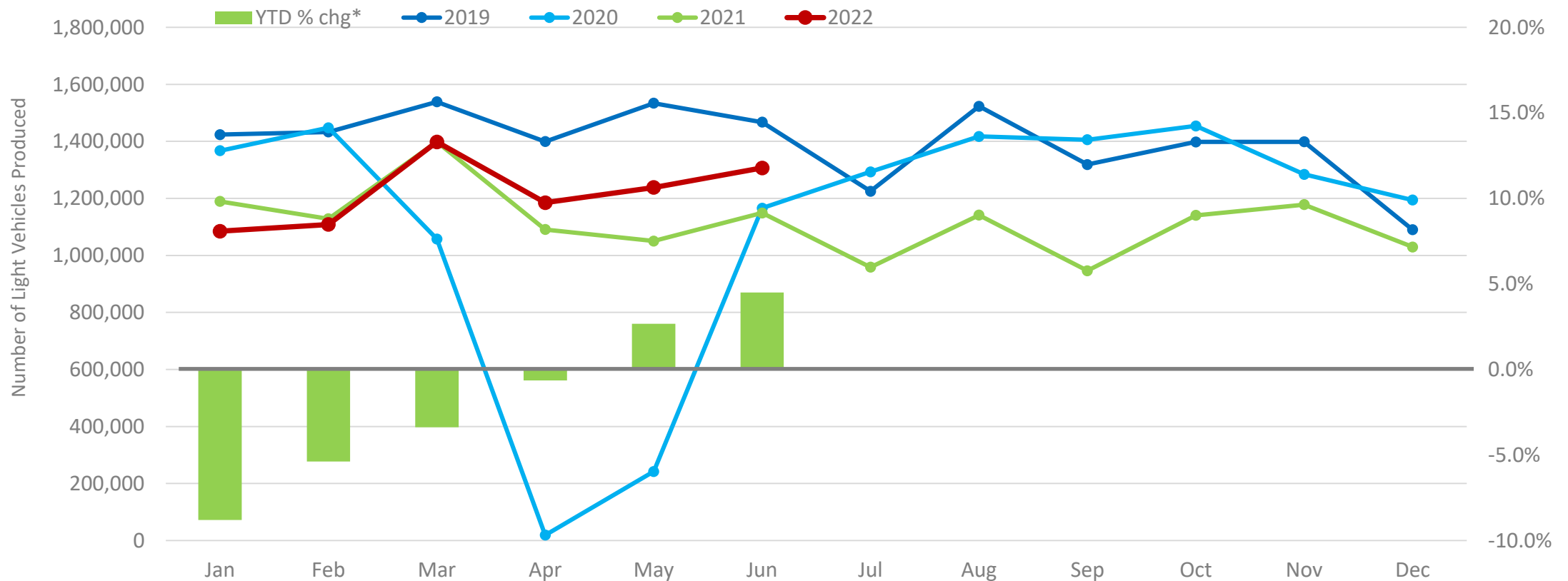
January 2018 – July 2022



North American production levels remain low due to the ongoing chip shortages

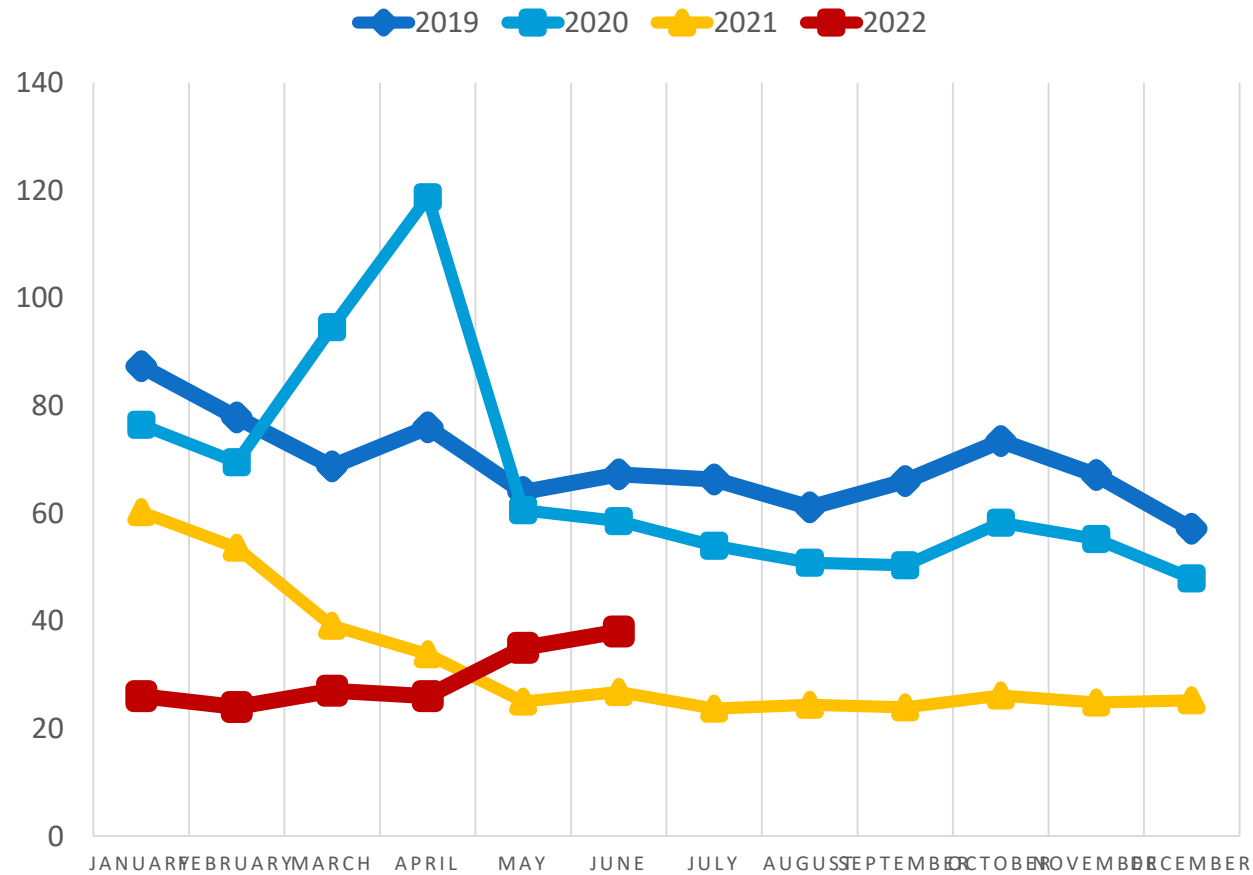
North America Monthly Vehicle Production

2018 – 2022 YTD May



* Includes Medium Duty. YTD % change may not match other estimates due to data availability

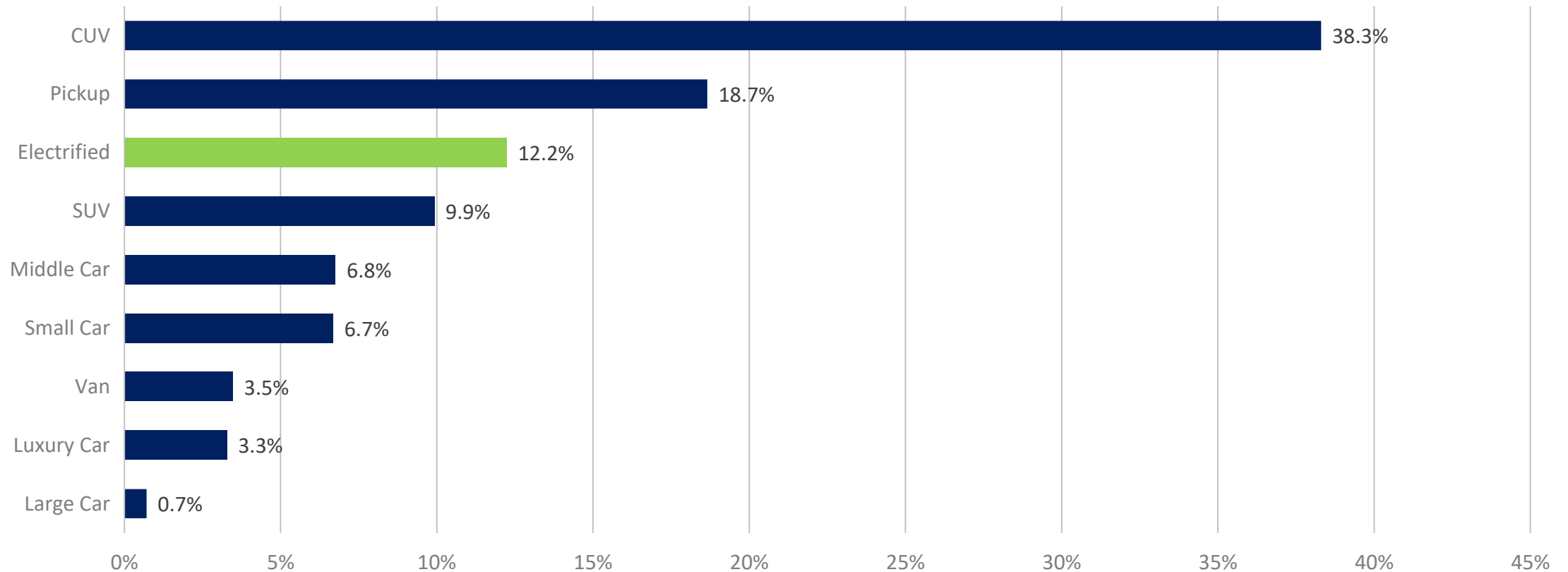
New vehicle inventories are at their lowest levels since October 2009.



Electrified vehicles take up 12.2% of the LV market

Market Share: Segment Breakdown

U.S. Light Vehicle Sales 2022 YTD Through July



Note: Electrified Segment consists of BEVs, HEVs and PHEVs; all other segments are sales exclusive of Hybrid models

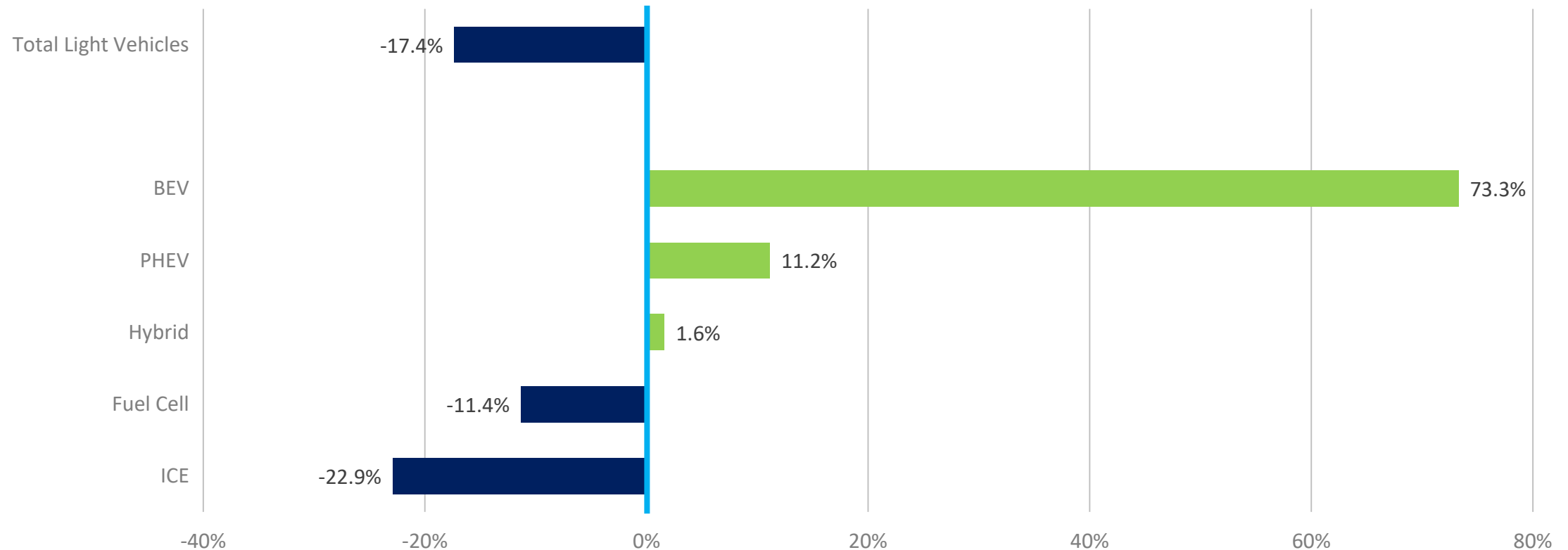
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Source: Wards Automotive Reports and CAR Research

Electrified vehicles see a massive increase in year-to-date sales since last year

Segment Breakdown: U.S. Light Vehicles Sales Percent Change

2022 YTD vs. 2021 YTD Through July

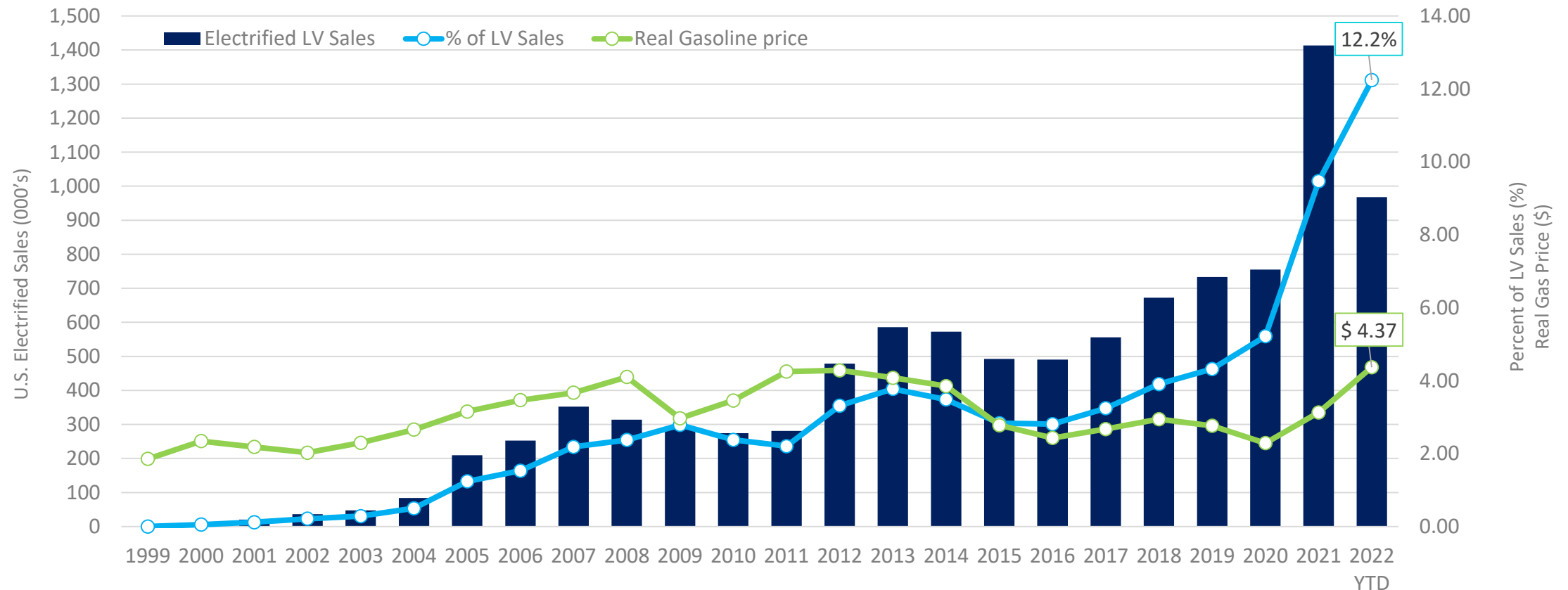


Note: All other segments are sales exclusive of Hybrid models

U.S. electrified vehicle sales no longer rise & fall with the real price of gasoline

U.S. Electrified Light Vehicle Sales & Market Share

1999 – 2022 July YTD



Note: Electrified vehicles consist of BEV, HEV, Fuel Cell, and PHEV

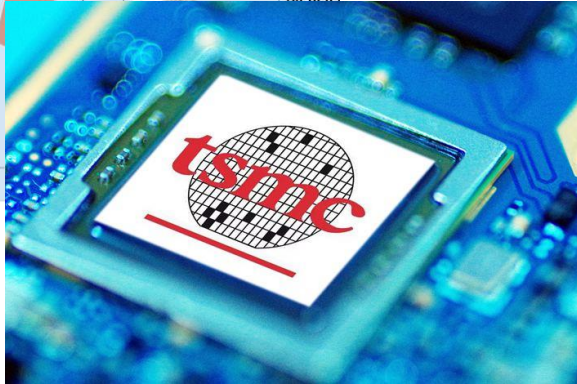
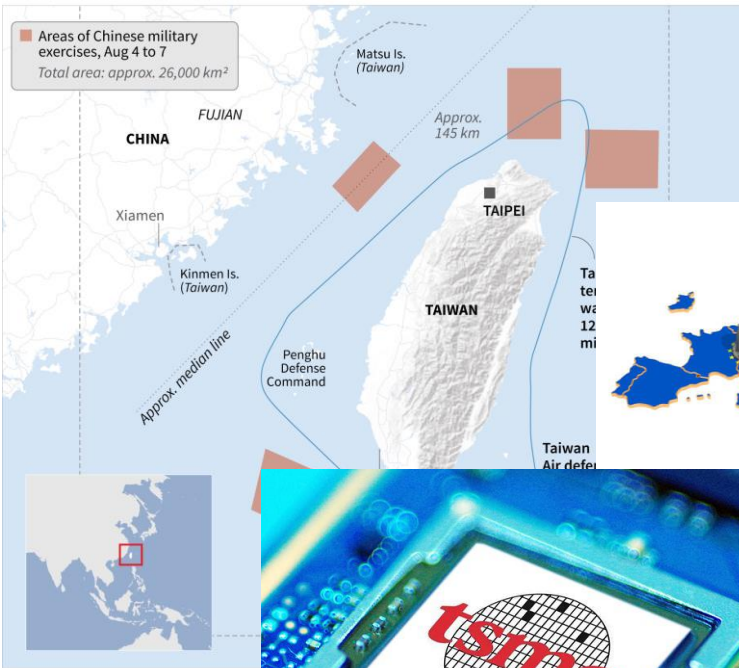


Economic and Automotive Outlook

A perfect storm?

Chinese military exercises

A series of drills in waters around Taiwan would include "long-range live ammunition shooting" in the Taiwan Strait: Chinese military



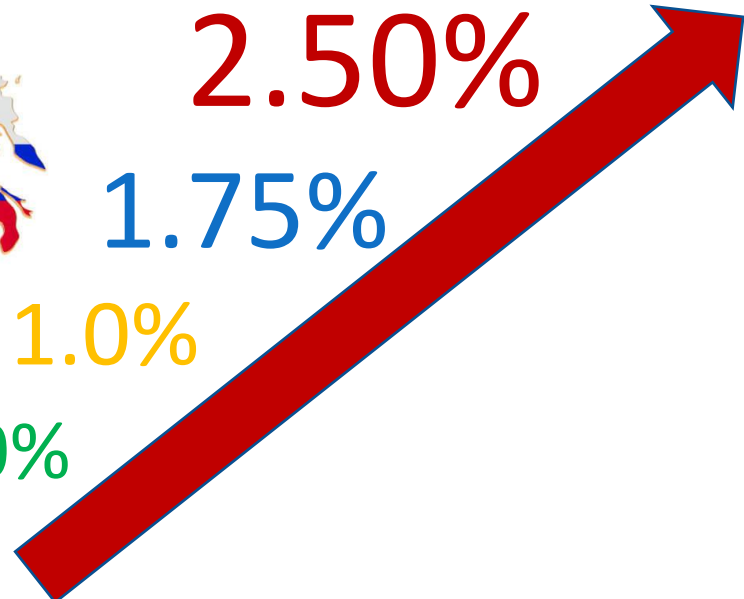
3.25%?

2.50%

1.75%

1.0%

.50%



CAR Forecast, August 2022 – Good News

- The unemployment rate dropped to 3.5 percent in July, the lowest level since the pandemic started in March 2020
- Private sector employment is returning to 130 million; non-farm employment is reaching 152 million. Both returned to the levels before the pandemic
- The U.S. average gasoline price has since declined to \$4.04 in August
- North American motor vehicle production continues to improve in Q2 2022. Year-to-date motor vehicle output increased by 5.0 percent
- Consumer price inflation reached a 42-year high in June, but the rate has declined since July
- Disposable personal income increased by 6.6 percent in Q2, in contrast to a 1.3 percent decline in Q1
- No interest rate hike in August. The next FOMC meeting is in September

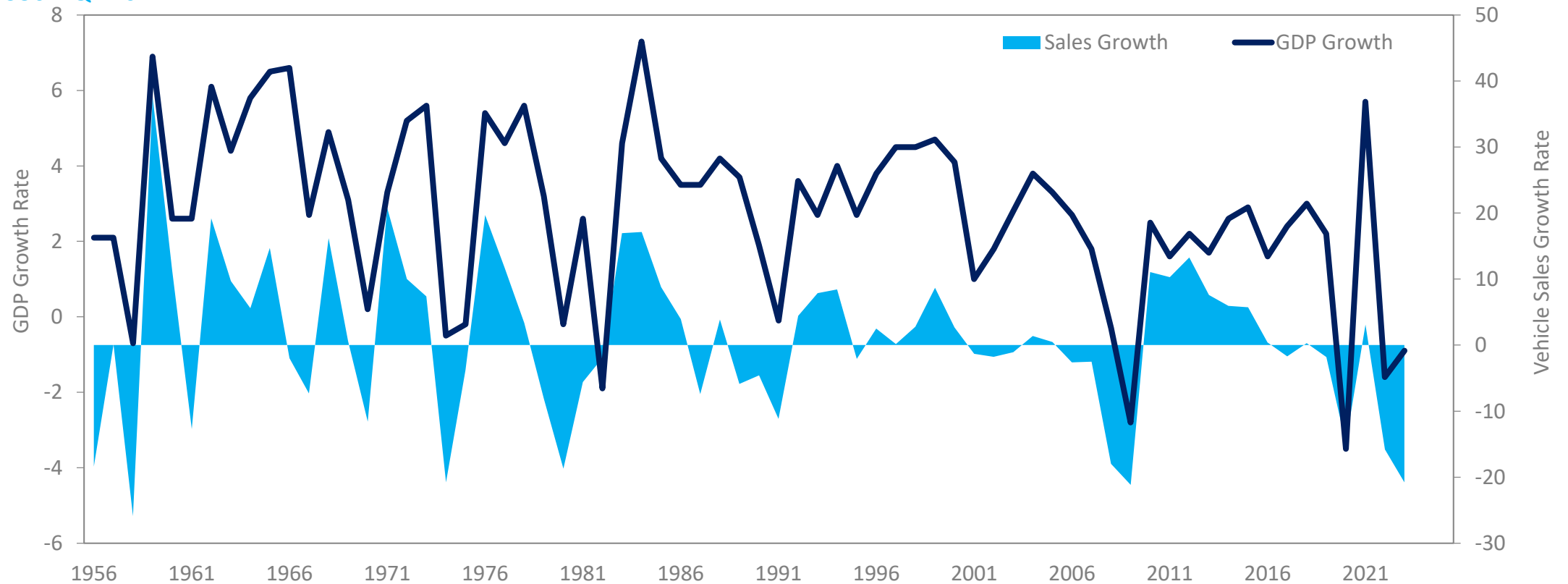
CAR Forecast, August 2022 – Not So Good News

- U.S. GDP contracted by 0.9 percent in Q2, following a 1.6 percent decline in Q1, the first consecutive quarters economic contraction in two years. “Not a recession”.
- The GDP decline was due to a weakening private inventory investment and softening residential fix investment. Federal and state government spending and personal consumption expenditure also declined in Q2.
- Since March 2022, the Federal Reserve increased the targeted federal funds rates four times and the rate now stands at 2.25 percent to 2.50 percent.
- 10-year Treasury bond yield has reached a recent peak at 3.49 percent in June, but has since declined to 2.80 percent due to a fear of economic recession.
- The University of Michigan Consumer Sentiment Index fell to 50.0 in June and 51.1 in July, the worst levels ever recorded.
- Geopolitical conflicts continue in Ukraine; U.S. – China tensions escalated rapidly over Taiwan.

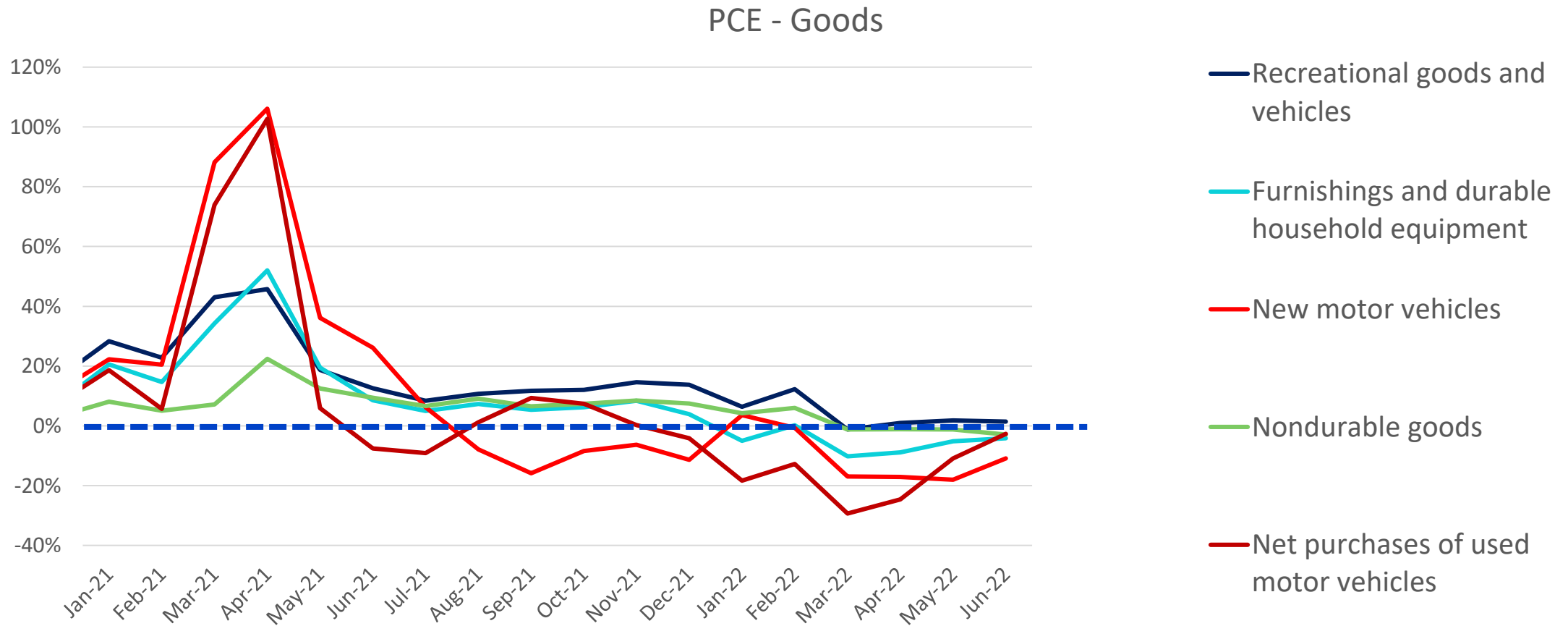
Q2 2022 GDP declined by 0.9%; Auto Sales Fell by 15.8%

U.S. GDP Growth Rate and Vehicle Sales Correlation

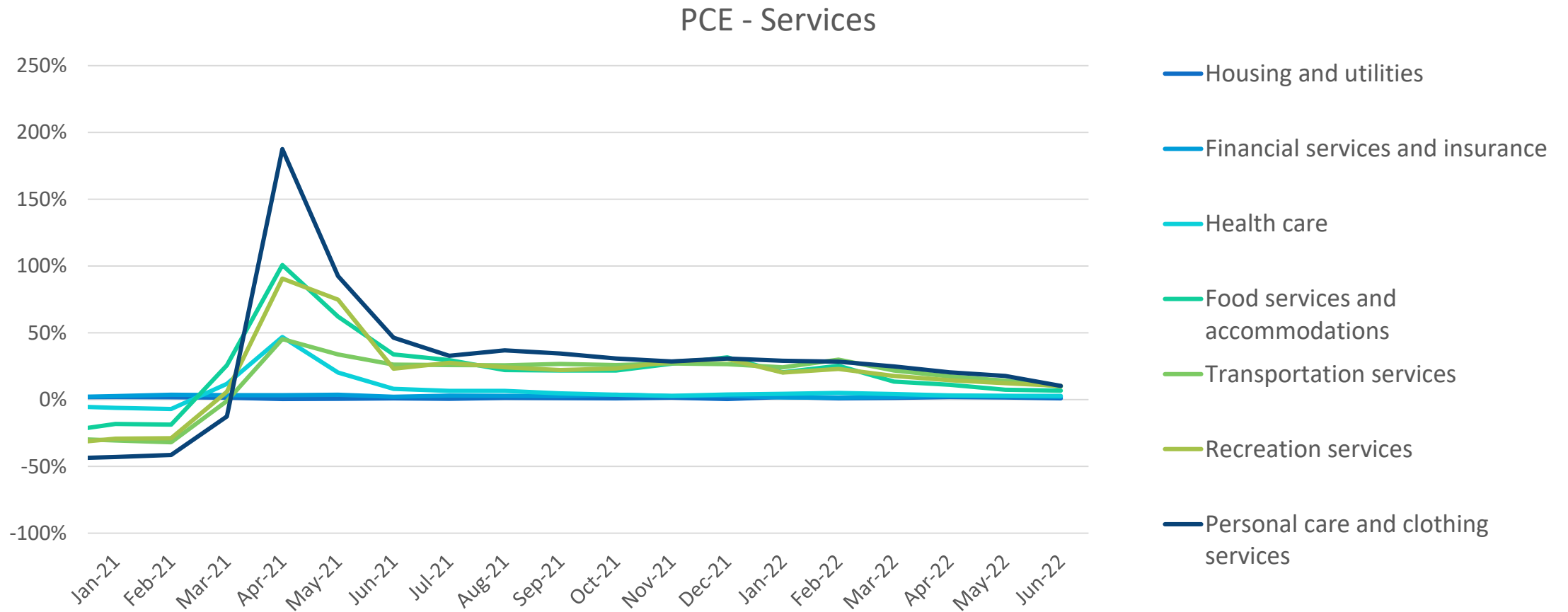
1956 – Q2 2022



Real Personal Consumption Expenditures By Type 2021-2022 Year-Over-Year Changes



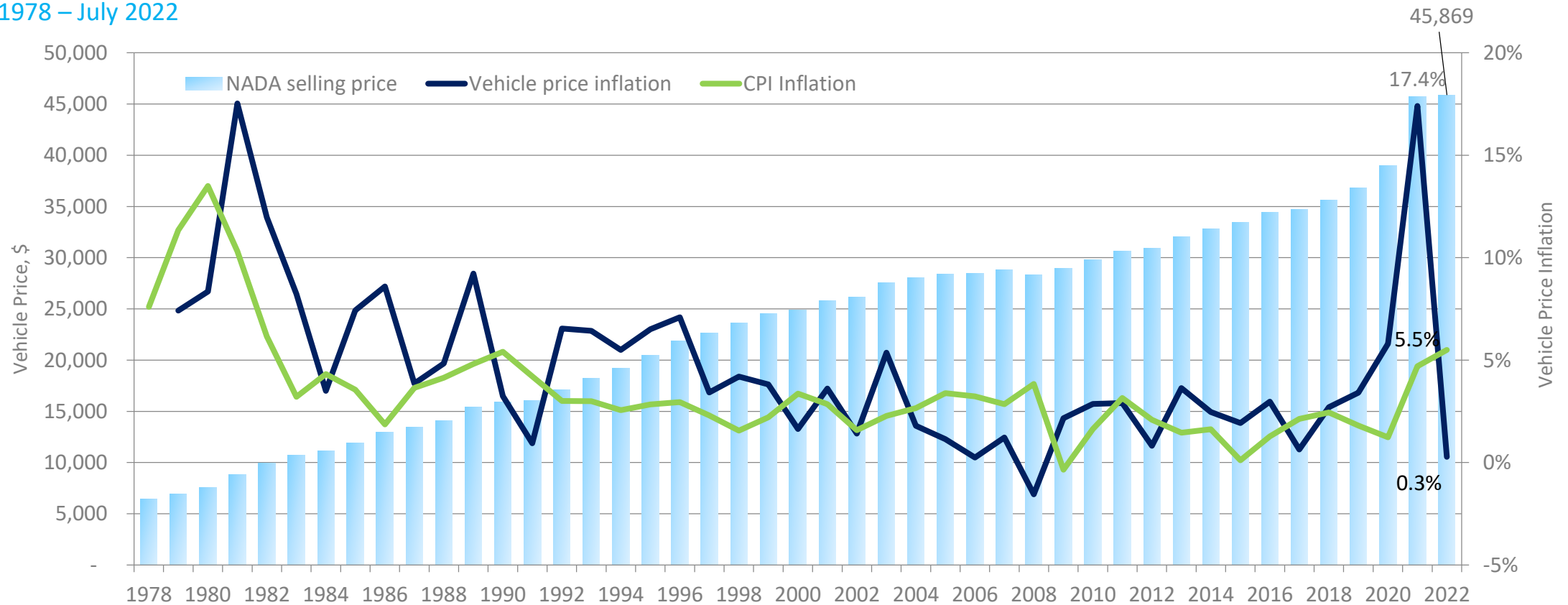
Real Personal Consumption Expenditures By Type 2021-2022 Year-Over-Year Changes



NADA New Vehicle Selling Price

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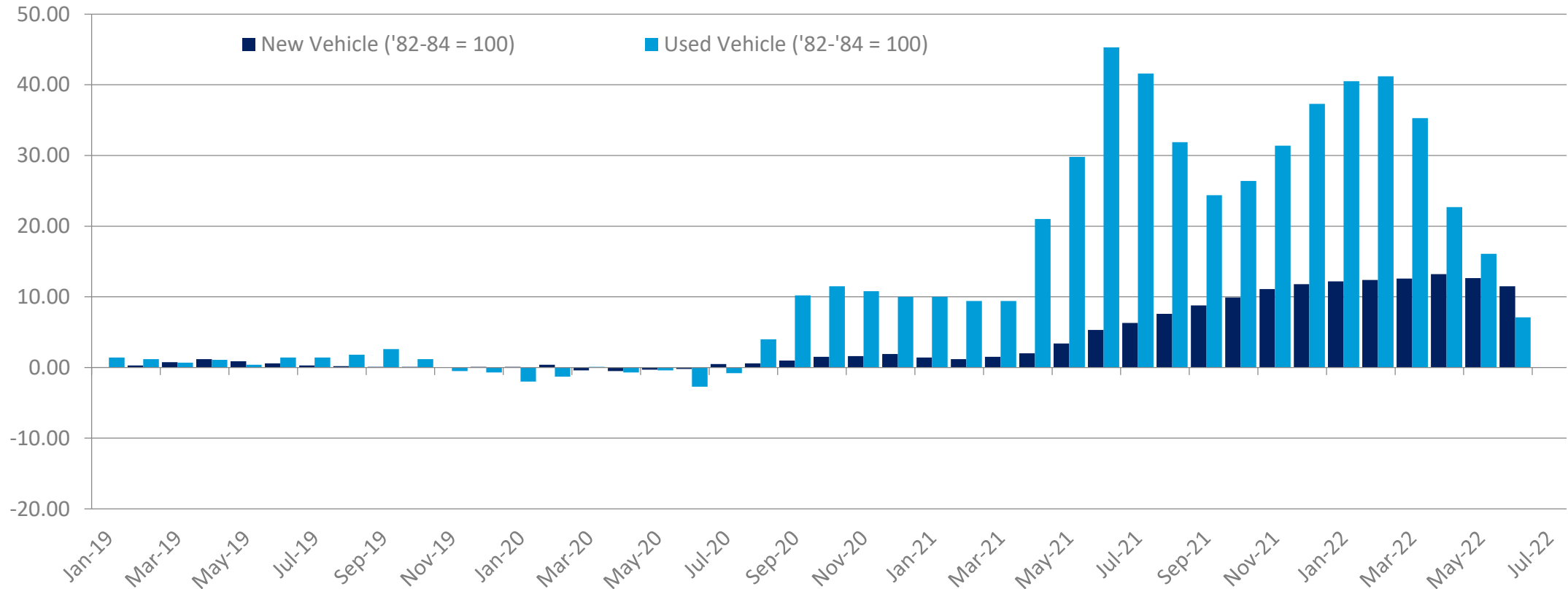
1978 – July 2022



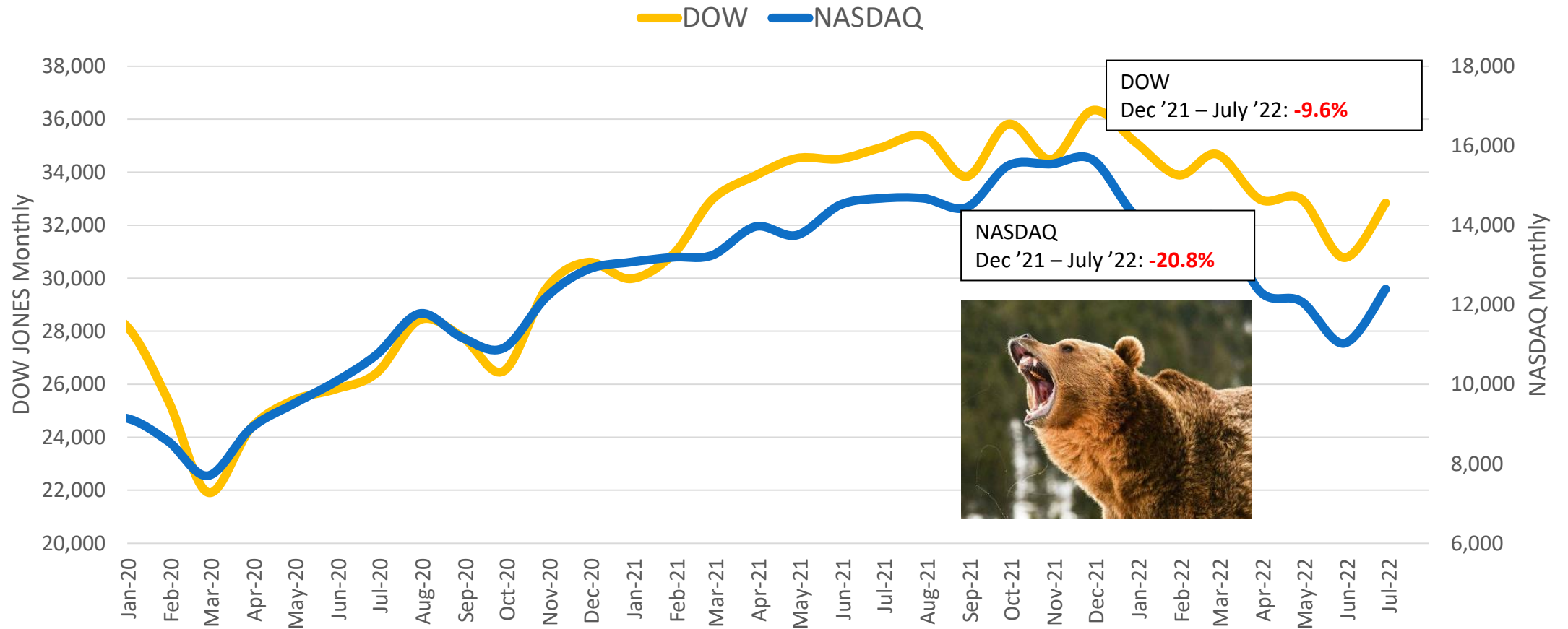
New Vehicle CPI and Used Vehicle CPI 12-Month Percent Change

New Vehicle CPI and Used Vehicle CPI 12-Month Percent Change

January 2019 – July 2022



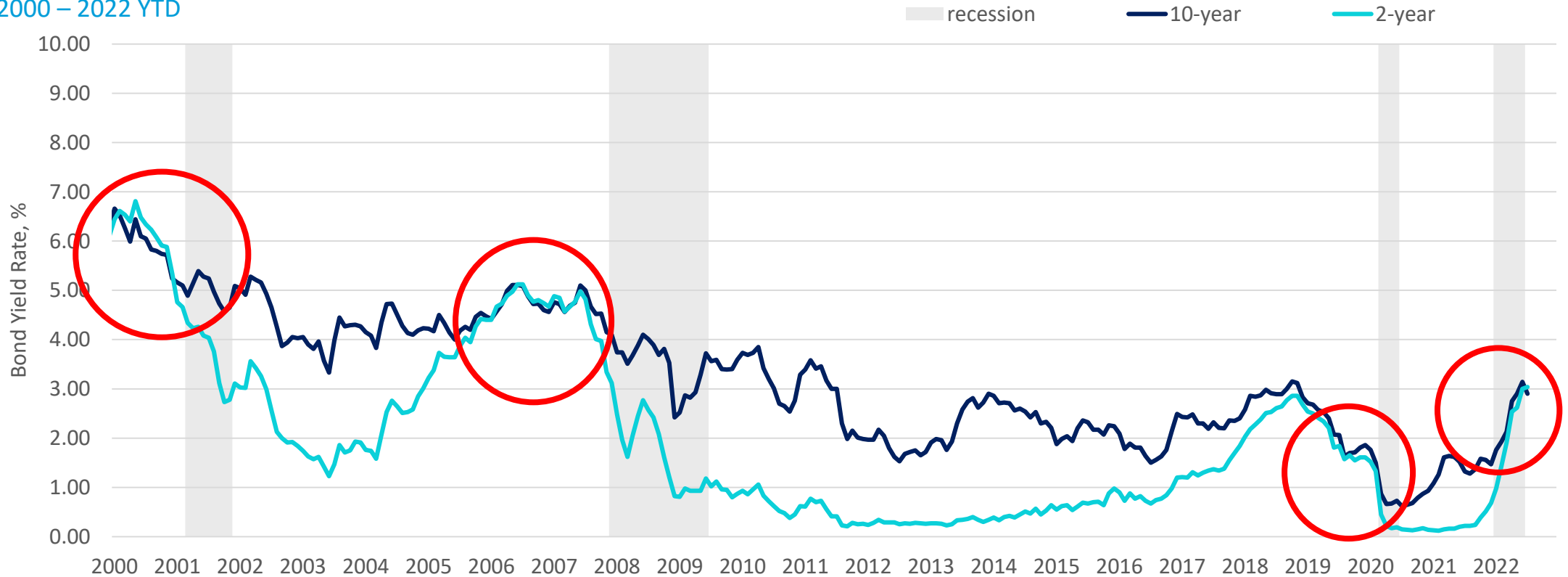
Equity Markets: NASDAQ's worst decline since dot-com bubbles; Dow's worst performance since pandemic



2-year and 10-year treasury yields and “recessions”

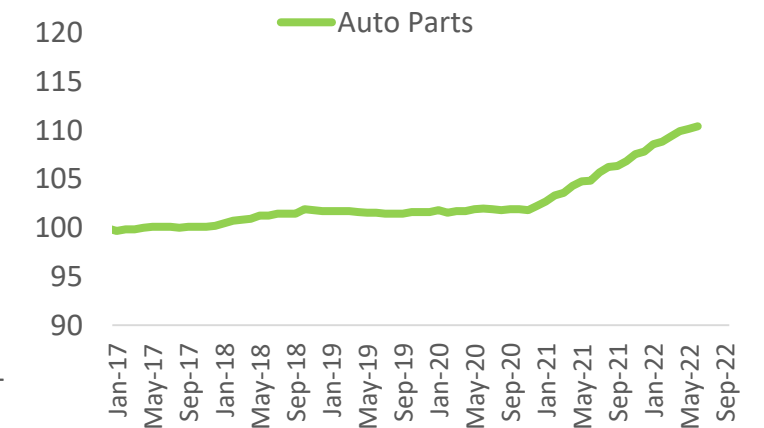
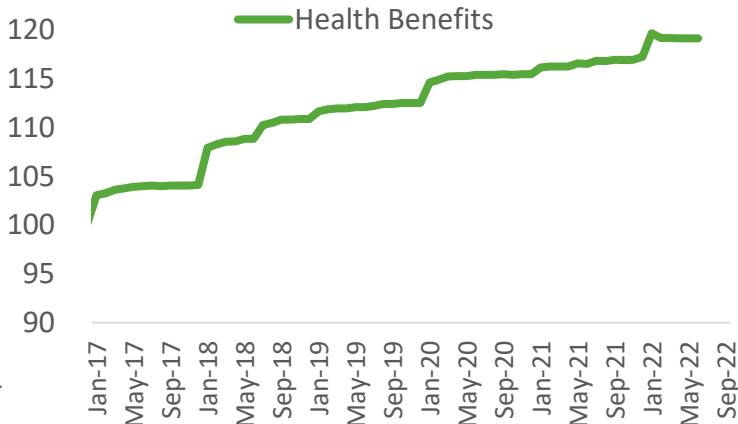
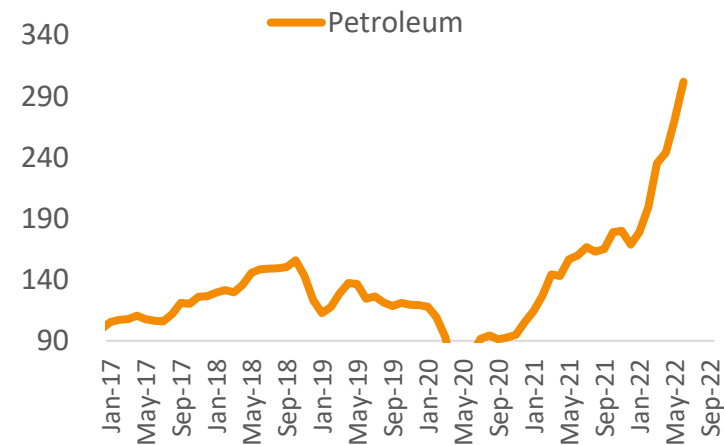
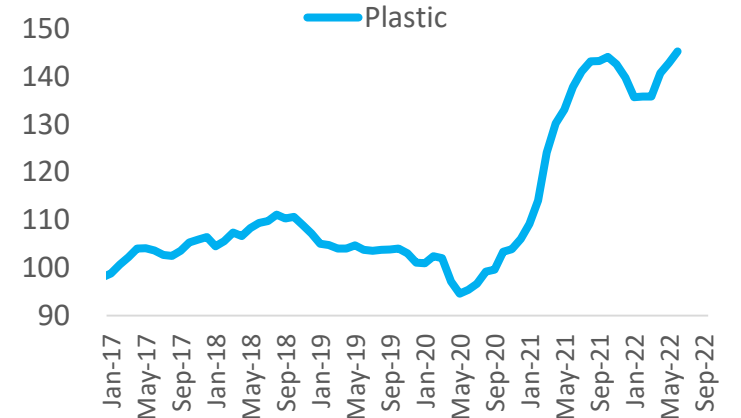
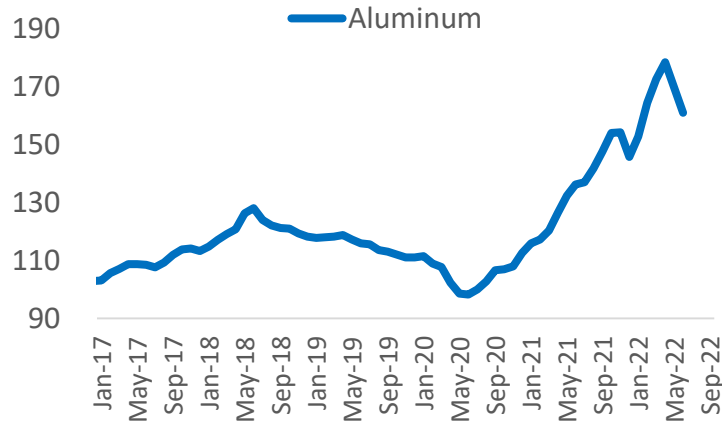
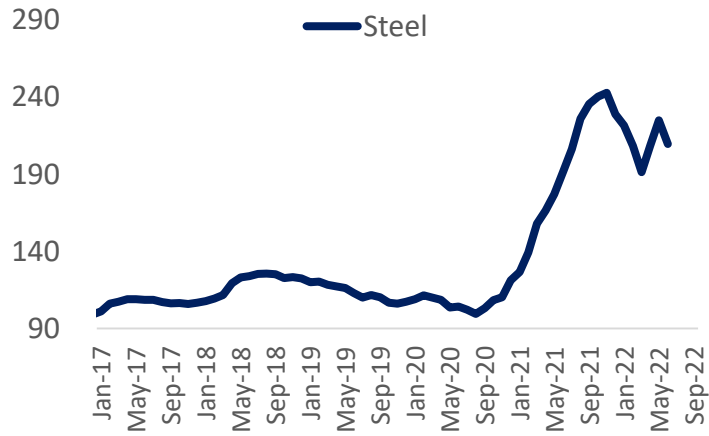
2-year and 10-year Treasury Yields and “Recessions”

2000 – 2022 YTD



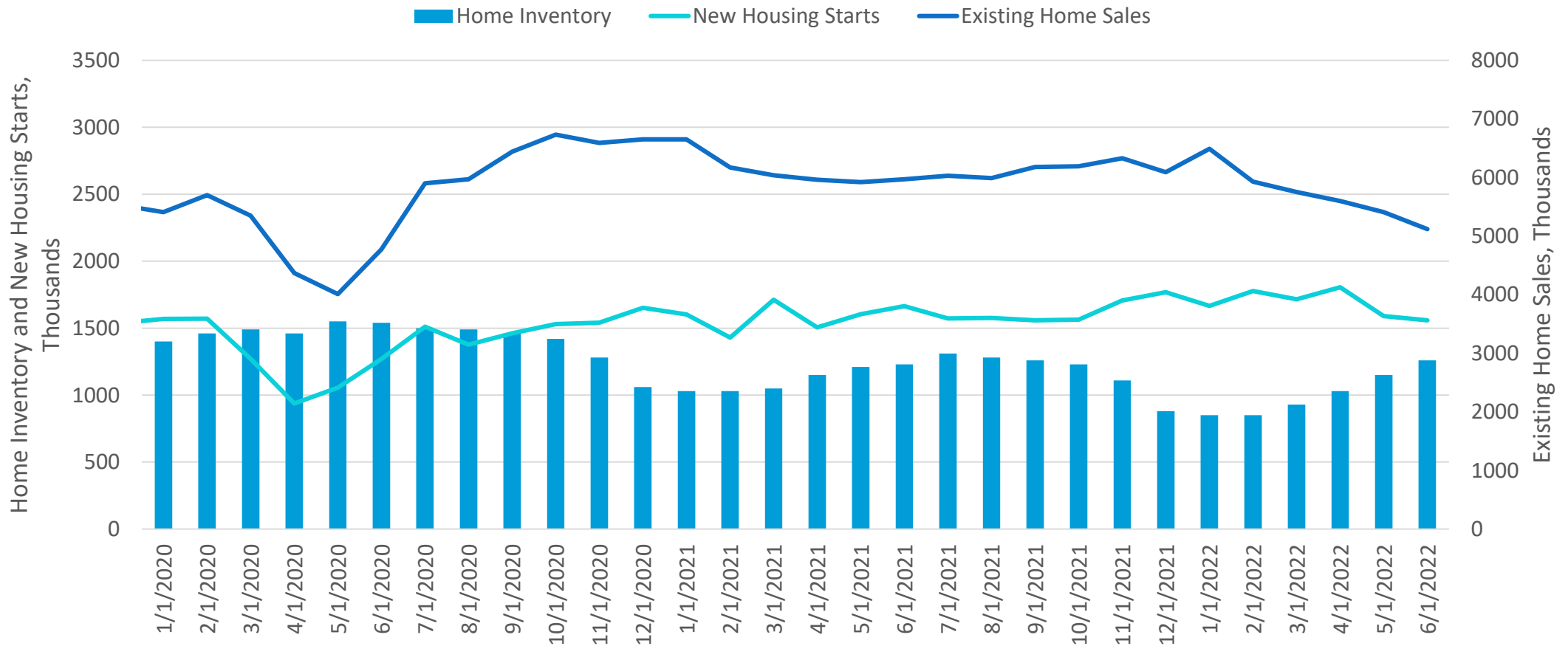
Commodity price inflation highest since Oil Crisis of 1972

Changes in PPI since 2017 – June 2022



Housing market condition

January 2020 – June 2022



U.S. Dollar Value Reached the Highest Level Since March 1985

Trade Weighted Currency Exchange Rate – Real Broad Dollar Index

Indexes 1975 – May 2022



EURO and JPY is at the lowest level in decades

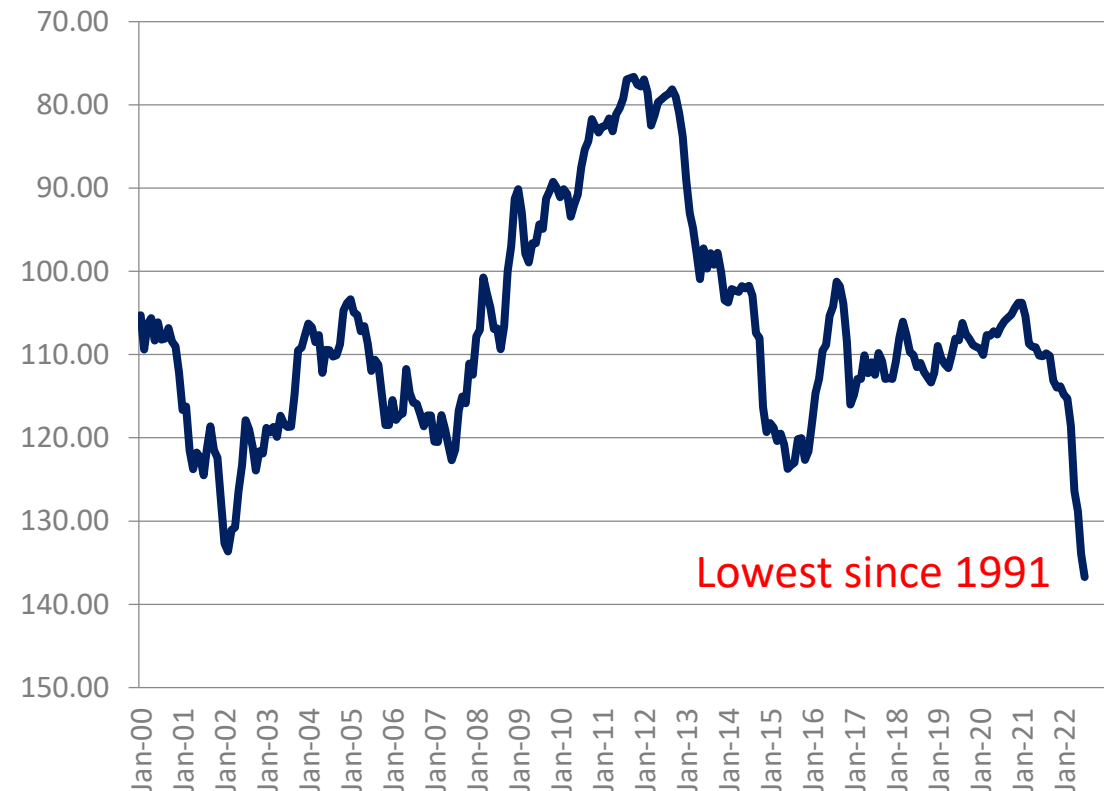
Exchange Rate USD/EUR

June 2005 – May 2022



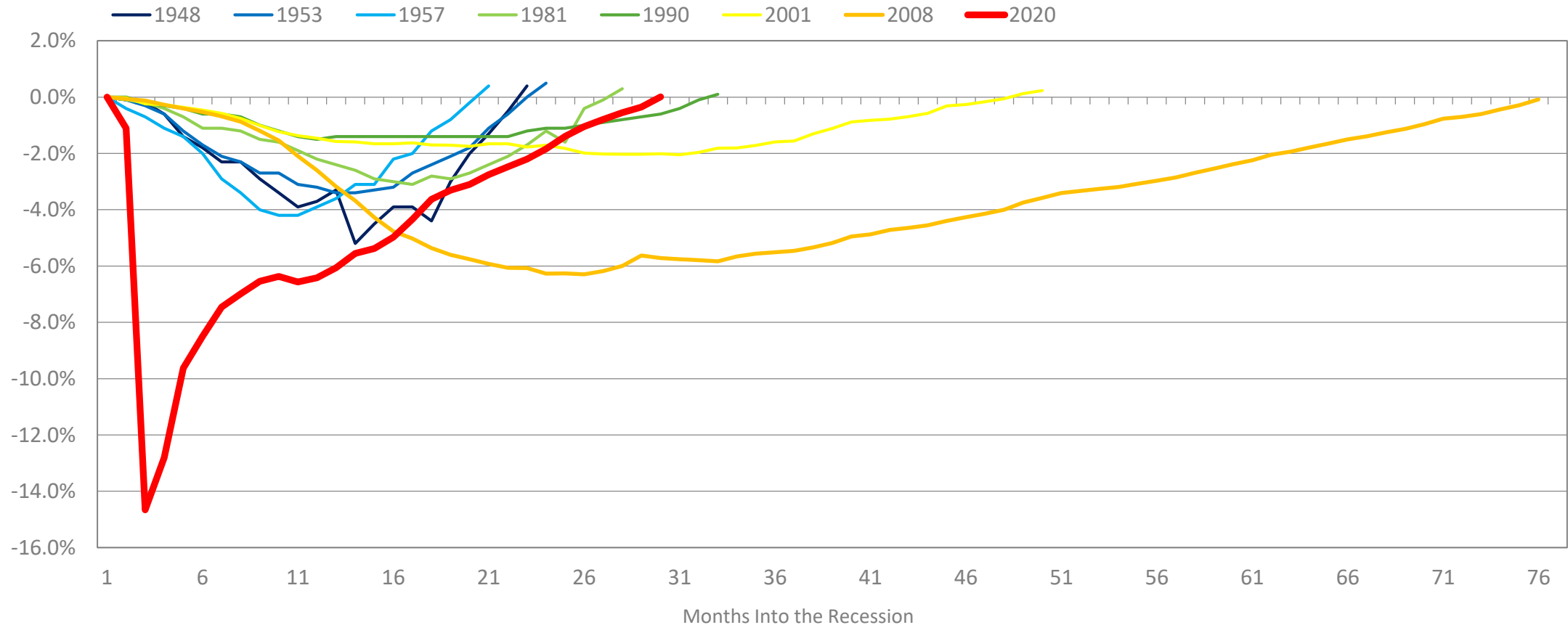
Exchange Rate YEN/USD

June 2005 – May 2022



Employment steadily recovering since the trough in March 2020

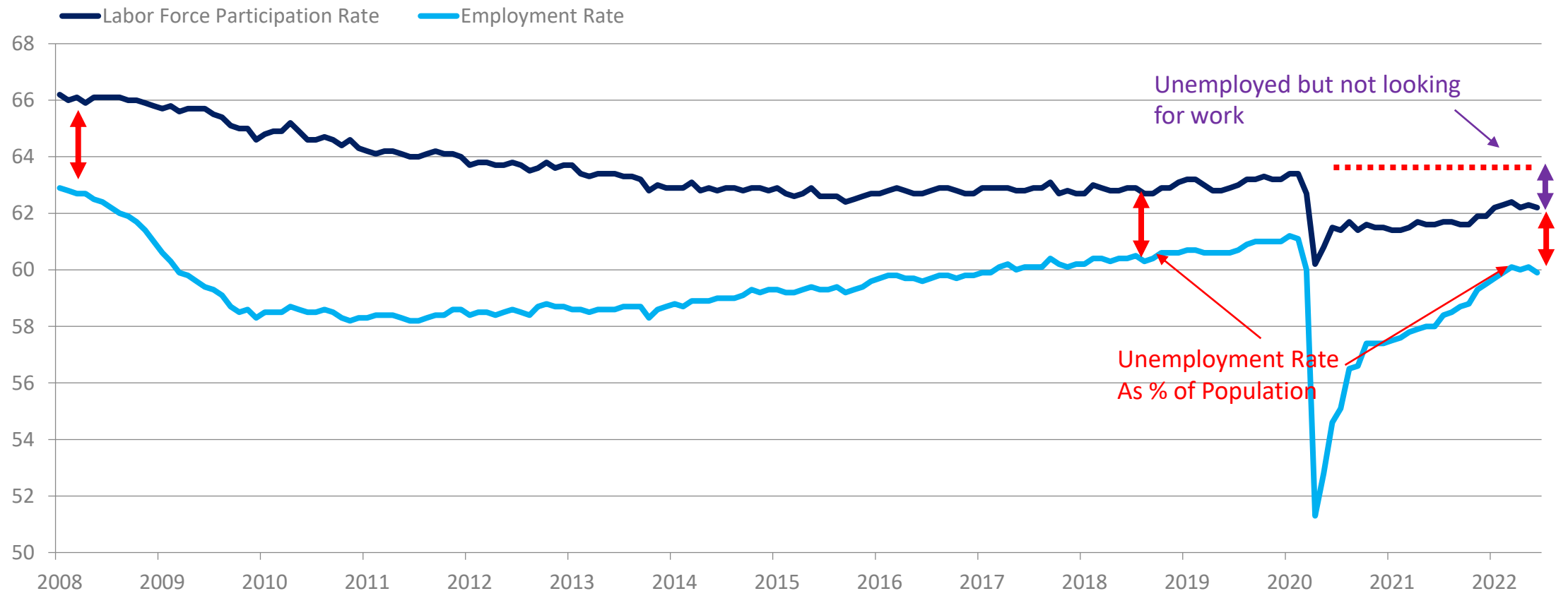
Accumulated Employment Losses as a Percent of Pre-Recession Employment



Employment rate and labor force participation remain lower as the pandemic's effects continue

Employment Rate vs Labor Force Participation Rate

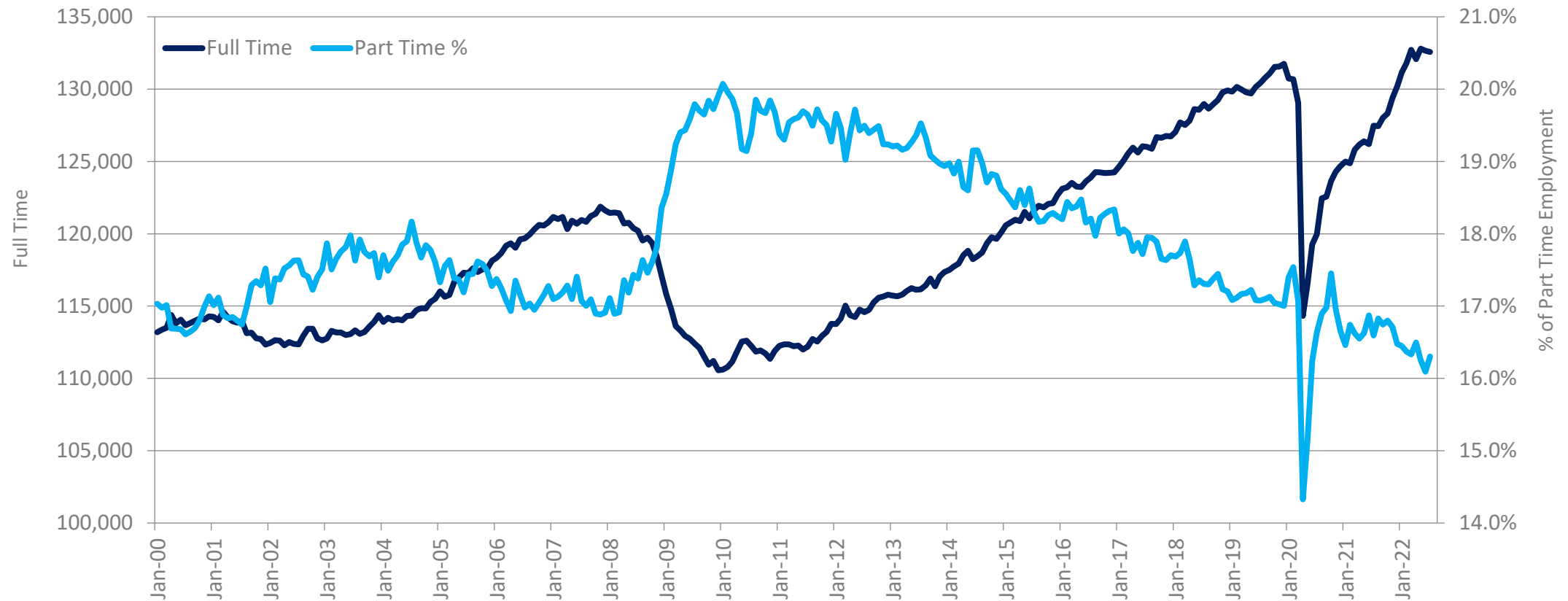
2008 – 2022 (June)



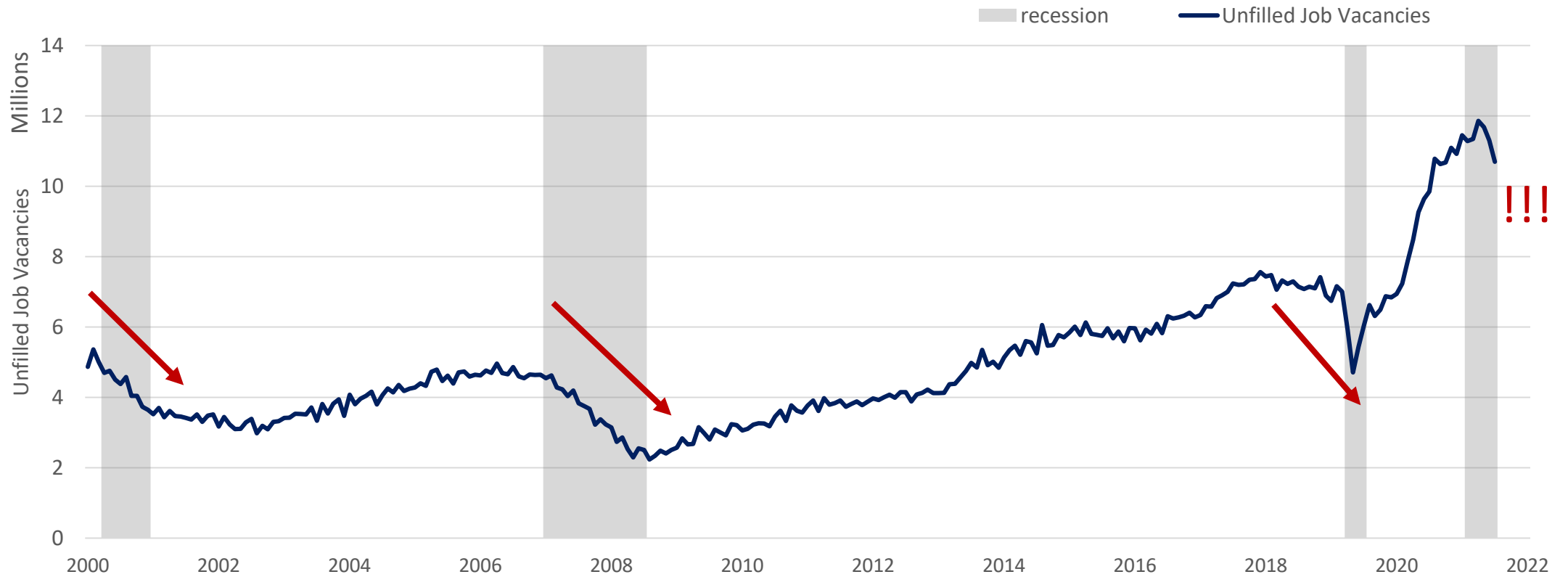
Full time employment recovery is slowing down; part time employment is gone

Full Time & Percent of Part Time Employment

(Thousands, Seasonally Adj.) January 2000 – July 2022



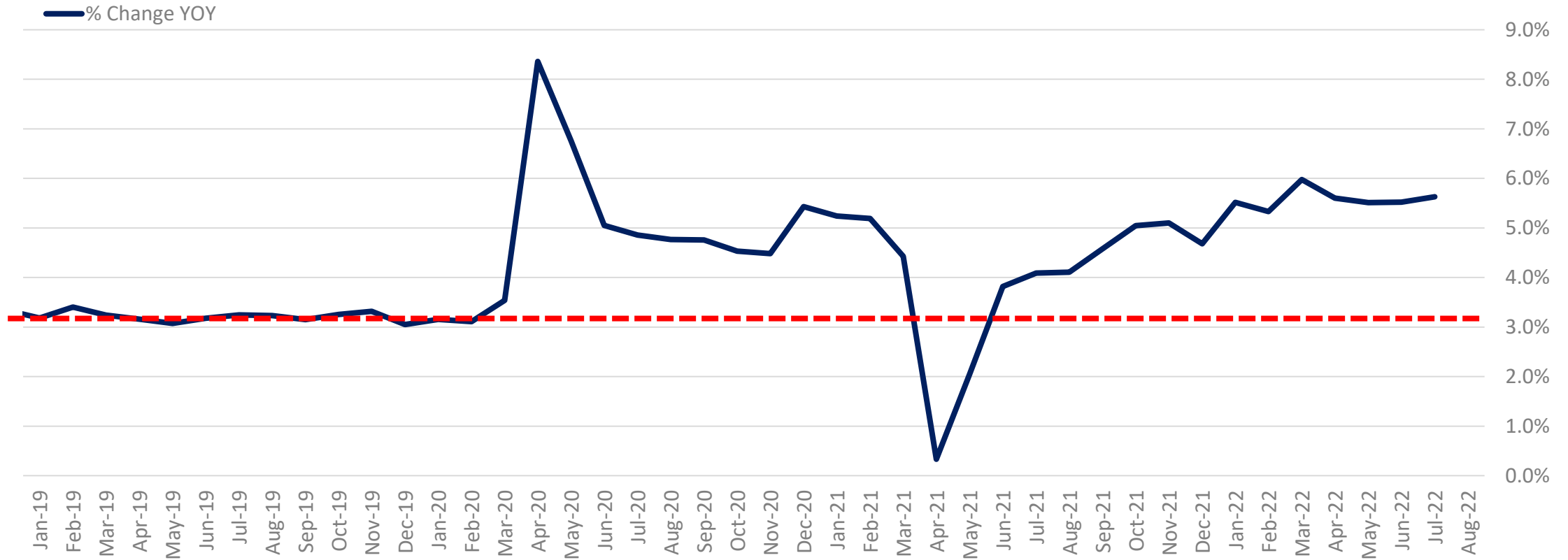
Unfilled Job Vacancies and recessions 2000 – 2022



National hourly earnings on the rise since April 2021

Year-Over-Year Change in National Hourly Earnings (average, seasonally adjusted)

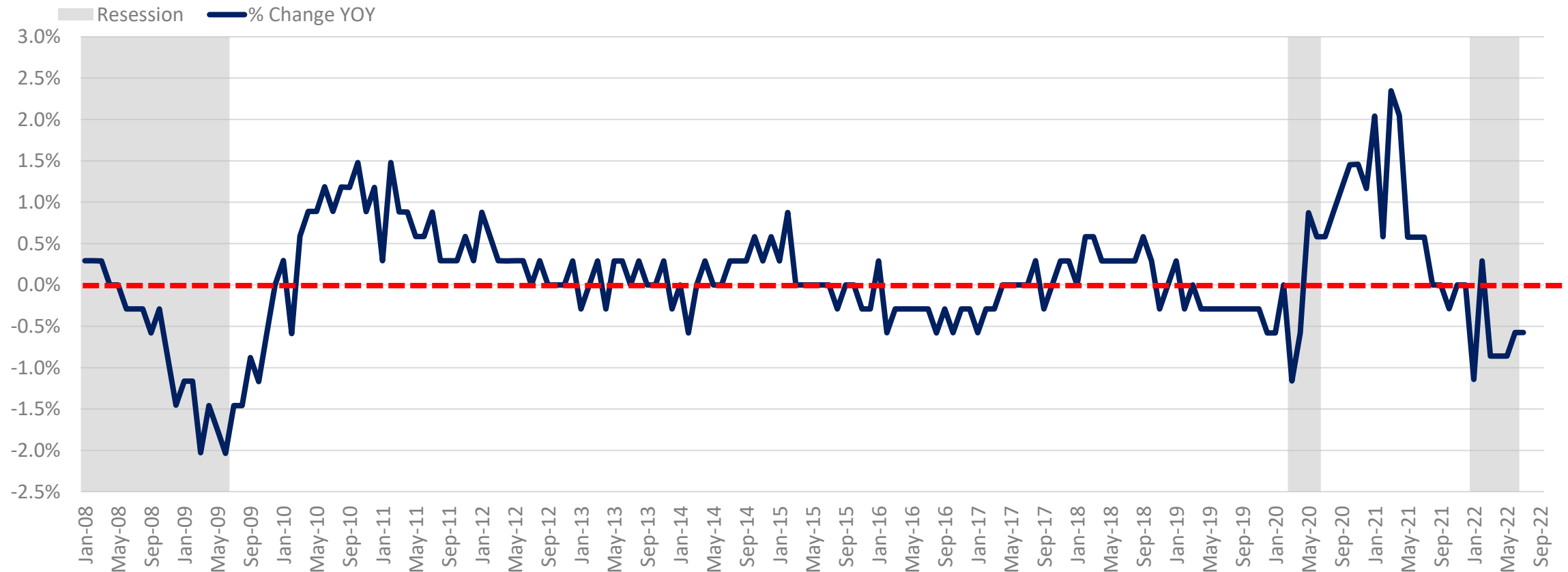
January 2019 – June 2022



National weekly hours of all employees declining since March 2021

Year-Over-Year Change in National Weekly Hours (average, seasonally adjusted)

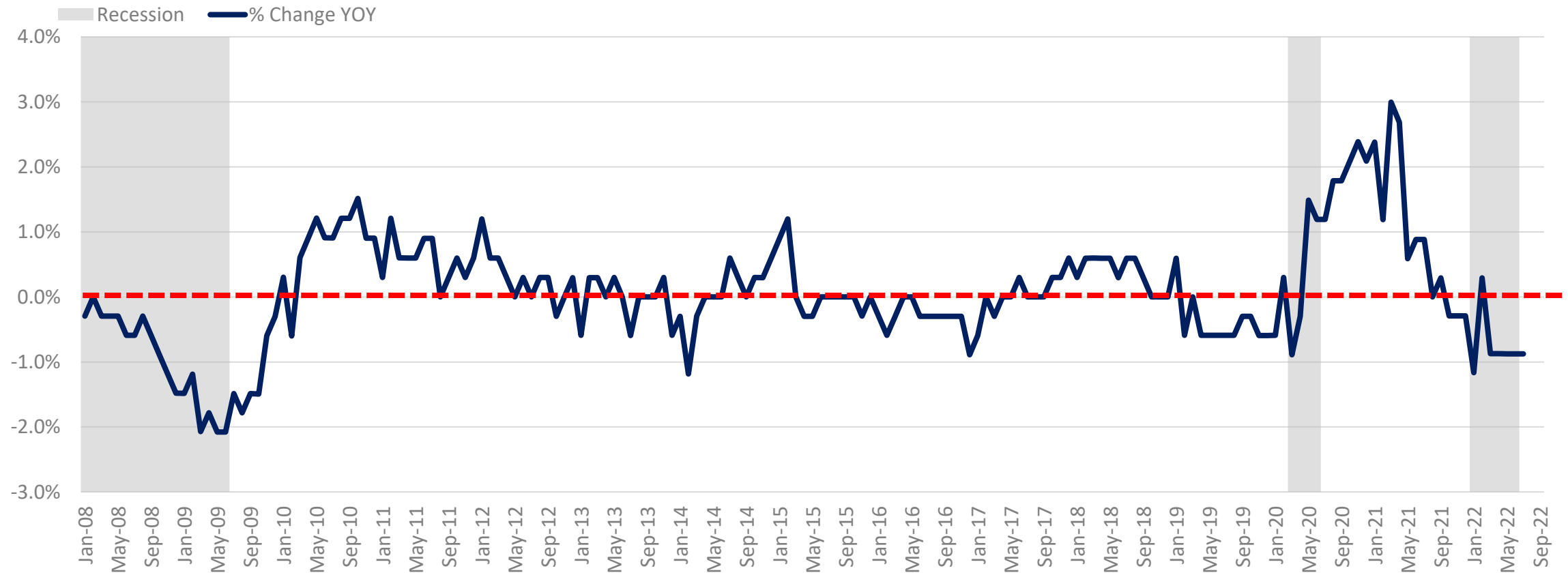
January 2008 – June 2022



National weekly hours of all production and nonsupervisory employees declining since March 2021

Y-O-Y Change in National Weekly Hours of Prod. & Nonsup. (average, seasonally adjusted)

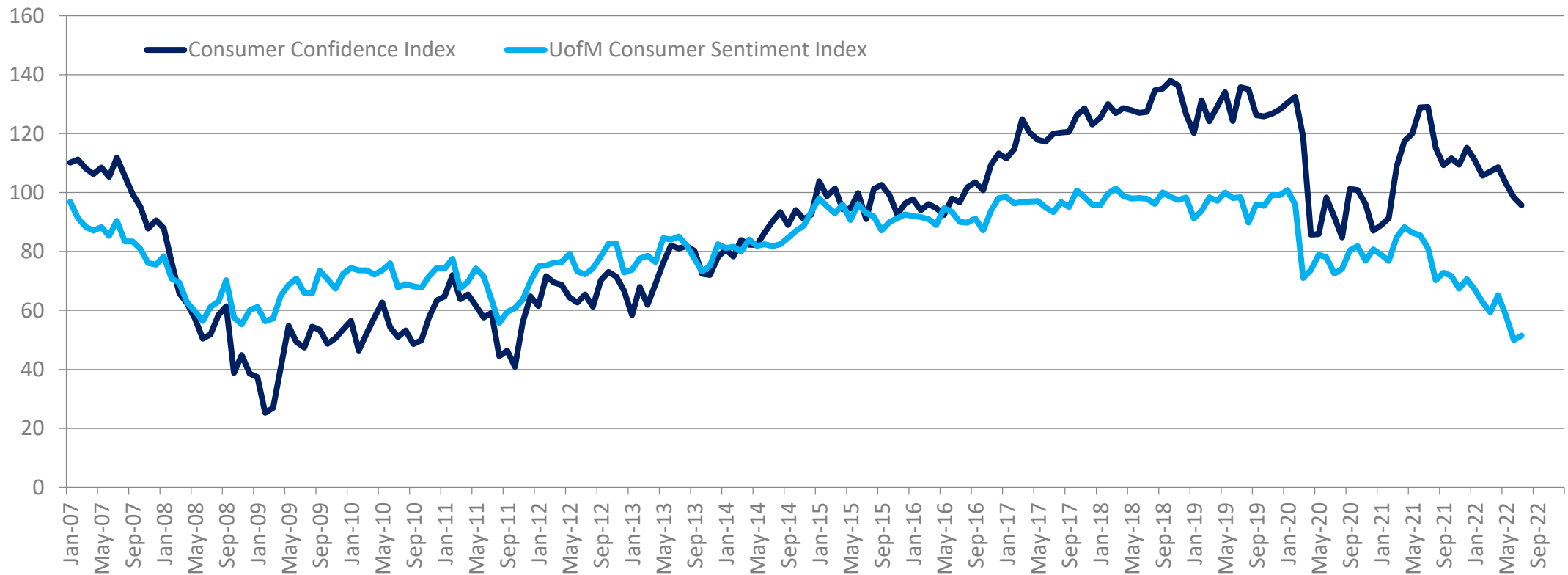
January 2008 – June 2022



Consumer Confidence & Sentiment

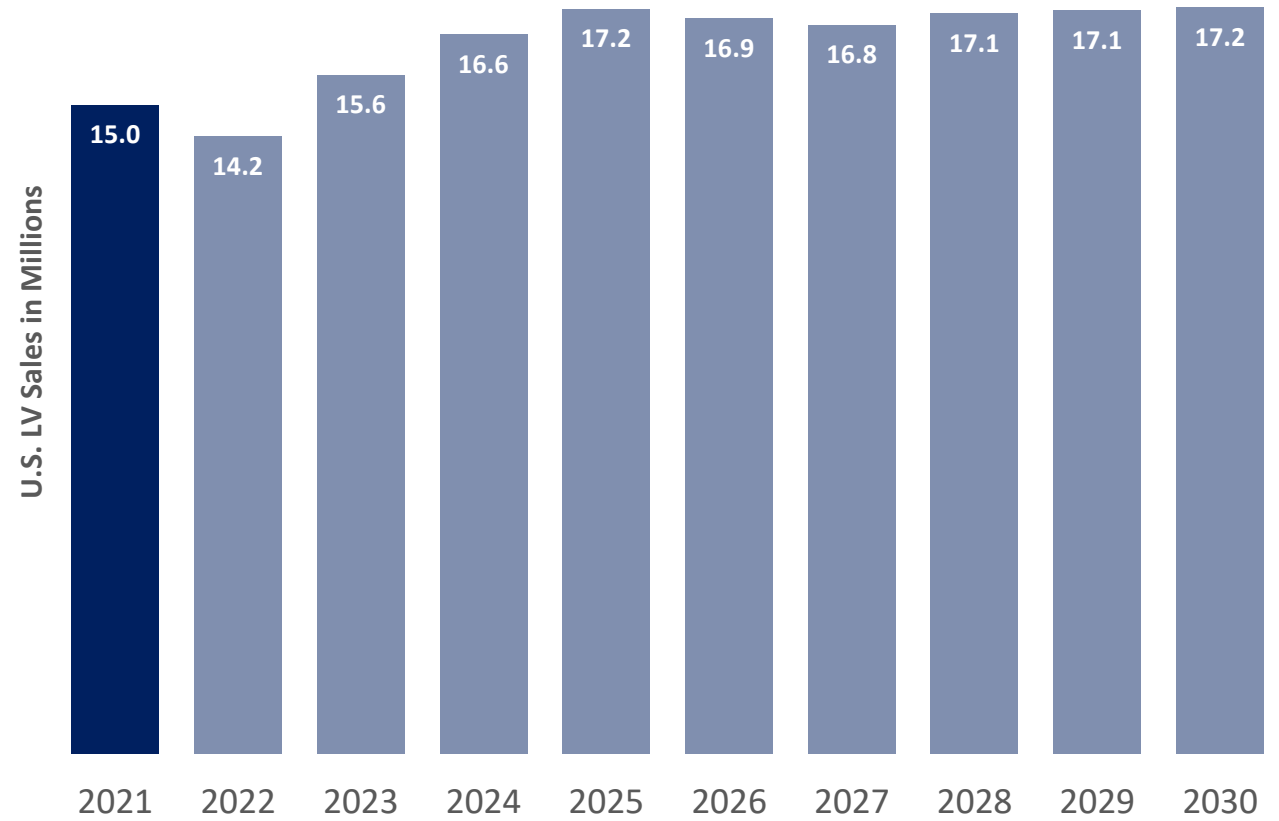
Consumer Confidence & Sentiment

January 2007 – July 2022



CAR's U.S. Light Vehicle Sales Forecast 2022-2030

U.S. Light Vehicle Sales



Light Vehicle Sales Forecast – Recap

- GDP contracted for two consecutive quarters. The U.S. economy is weakening if not in a recession.
- Vehicle supply has partially recovered, but demand is hampered by vehicle prices. Many would-be new car buyers can only afford used cars.
- Employment is fully recovered. But the growth trend is slowing down. Weekly hours worked is in decline, too.
- Job opportunities are abundant, but most are low-paid part-time.
- Price inflation and interest rate hike are the largest threat to economic growth in next 6-18 months.
- Labor cost is rising twice as fast as pre-pandemic. It leads to permanent price inflation.
- Geopolitical conflicts remain the greatest threat to global economy.

Thank You



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