

READING THE METER

*A look inside a cleaner, safer,
smarter auto industry.*



ALLIANCE FOR AUTOMOTIVE INNOVATION

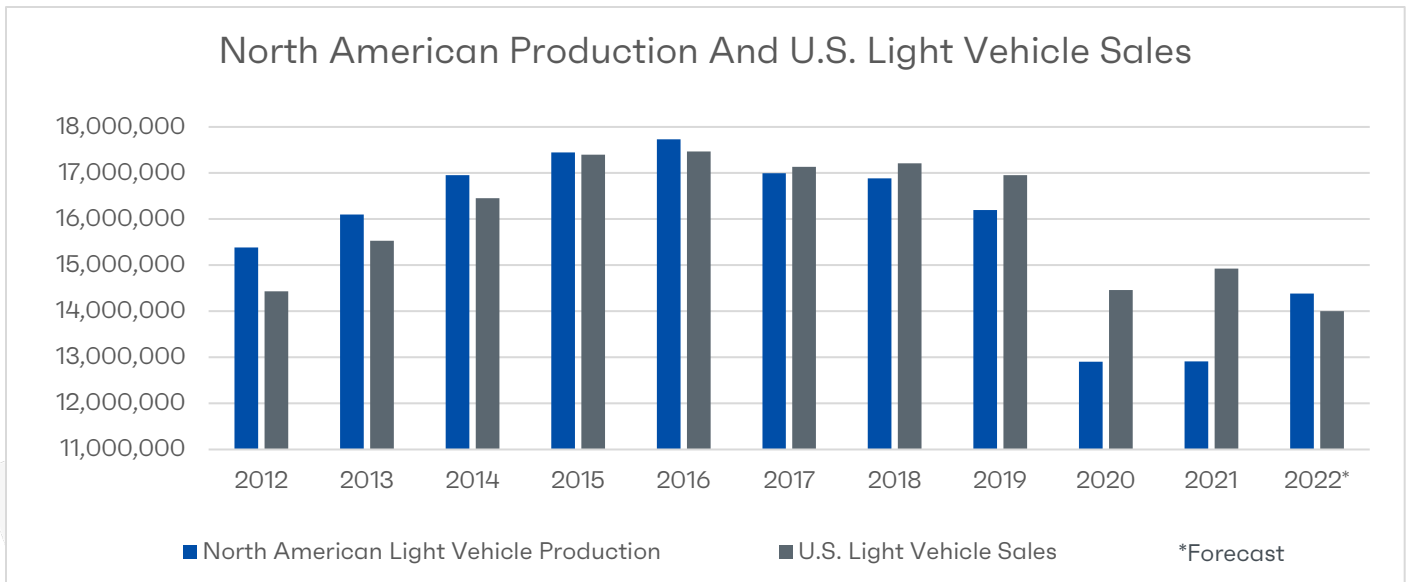
Contents – September 29, 2022

| | |
|---|----|
| Forecast Meter..... | 2 |
| Sales & Production Summary and Forecast (Updated 9/29)..... | 2 |
| U.S. Light Vehicle Sales Outlook (Updated 9/29)..... | 3 |
| North American Production & Inventory Outlook (Updated 9/29)..... | 4 |
| Market Meter | 5 |
| U.S. Light Vehicle Sales (Updated 9/7)..... | 5 |
| Segments vs. Gas Prices (Updated 9/7)..... | 7 |
| EV Powertrain Sales (Updated 9/7)..... | 8 |
| Seasonally Adjusted Annual Rates (Updated 9/7)..... | 9 |
| Average Transaction Price (Updated 9/29)..... | 9 |
| Auto Loan Financing (Updated 9/29)..... | 10 |
| Crude Oil and Gas Prices (Updated 9/29)..... | 12 |
| Production Meter | 13 |
| U.S. Light Vehicle Production (Updated 9/29)..... | 13 |
| U.S. Light Vehicle Inventory and Days' Supply (Updated 9/7)..... | 13 |
| Global Meter..... | 14 |
| Global Light Vehicle Sales (Updated 9/7)..... | 14 |
| Global Light Vehicle Production (Updated 9/29)..... | 15 |
| Recovery Meter..... | 18 |
| Roadway Travel (Updated 9/7)..... | 18 |
| Economic News (Updated 9/29)..... | 18 |
| Consumer Confidence and Sales (Updated 9/29)..... | 19 |
| Employment (Updated 9/29)..... | 20 |
| Sources..... | 22 |

Forecast Meter

Sales & Production Summary and Forecast (Updated 9/29)

| 2021-2022 Sales, ¹ Extended Sales Forecast ² and Production Forecasts ³ | | |
|---|-----------------------------------|---------------------------------------|
| | U.S. Sales & Forecasts | North American Production |
| January '21 | 1,094,689 (-3.6% YoY) | 1,175,940 (-14.0% YoY) |
| February '21 | 1,180,506 (-5.3% YoY) | 1,120,200 (-22.9% YoY) |
| March '21 | 1,581,067 (+59.7% YoY) | 1,376,904 (31% YoY) |
| April '21 | 1,512,186 (+111.4 YoY) | 1,094,891 (-21% YoY) |
| May '21 | 1,577,941 (+41% YoY) | 729,879 (+271% YoY) |
| June '21 | 1,296,517 (+17% YoY) | 1,107,958 (-1.9% YoY) |
| July '21 | 1,288,494 (-7.9% YoY) | 926,035 (3% YoY) |
| August '21 | 1,090,446 (-11% YoY) | 1,113,327 (-19% YoY) |
| September '21 | 1,006,875 (-25% YoY) | 907,470 (-33.4% YoY) |
| October '21 | 1,046,282 (-20% YoY) | 1,140,383 (-22.1% YoY) |
| November '21 | 1,001,351, (-20% YoY) | 1,168,245 (-9% YoY) |
| December '21 | 1,194,313 (-22.9% YoY) | 1,029,501 (-13.8% YoY) |
| January '22 | 991,156 (-10% YoY) | 1,111,390 (-4% YoY) |
| February '22 | 1,052,524 (-11.8% YoY) | 1,112,429 (-1% YoY) |
| March '22 | 1,246,336 (-22% YoY) | 1,350,102 (-.1% YoY) |
| April '22 | 1,226,950 (-22% YoY) | 1,177,851 (+8% YoY) |
| May '22 | 1,104,993 (-23.8% YoY) | 1,215,000 (+20.4% YoY) |
| June '22 | 1,126,724 (-16.8% YoY) | 1,259,515 (+13.8% YoY) |
| July '22 | 1,129,371 (-8.4% YoY) | 977,485 (+7% YoY) |
| August '22 | 1,128,200 (-.7% YoY) | 1,413,262 (+29 %) |
| 1st Quarter '22 | 14.01 million-unit SAAR | 3,458,480 (-1.4% YoY) |
| 2nd Quarter '22 | 13.4 million-unit SAAR | 3,584,093 (+13.2% YoY) |
| 2021 Full Year | 14,926,933 (+3.1% YoY) | 12,919,000 (+4% YoY) (U.S. 8,871,661) |
| 2022 Full Year Estimate | 14 million units | 14,386,000 (+11.4% YoY) |



U.S. Light Vehicle Sales Outlook (Updated 9/29)

Wards Intelligence Outlook (9/29)⁴: “U.S. light-vehicle sales in September are expected to record a 5-month high on an annualized basis, primarily due to rising inventory. September’s seasonally adjusted annual rate is tracking to 13.7 million units, highest since April’s 14.5 million, and a solid gain on August’s 13.2 million. The September SAAR is above year-ago’s 12.3 million units and will be the second straight year-over-year increase.

“The main reason for the increase is greater availability, as inventory entered September at a 14-month-high 1.27 million units.

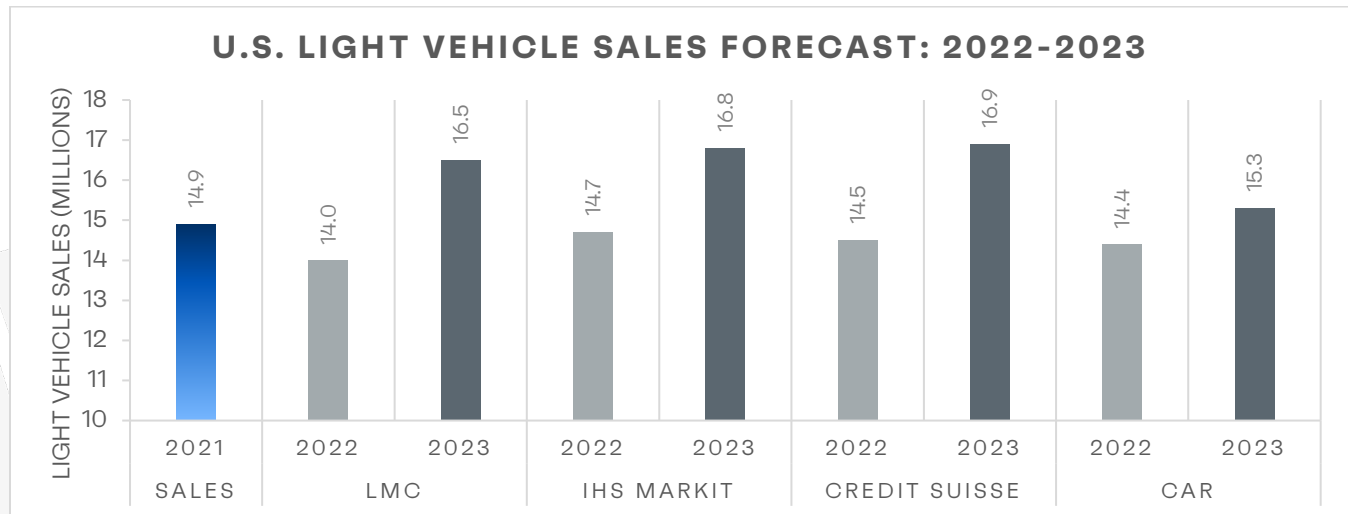
“However, there does seem to be evidence of slowing demand related to the mix of vehicles that are available. The inventory-to-sales ratio averaged a flat one-to-one from August 2021 through June. It is a small increase – arguably splitting hairs – but including September’s forecast, the Q3 ratio is 1.1-to-1. If the August-to-June ratio had continued, the Q3 SAAR would be 13.7 million units, slightly above the expected 13.4 million.

“However, with rising interest rates and elevated fuel prices feeding into it, and low consumer confidence also playing a part, higher costs of buying and owning a new vehicle appear to be further limiting sales growth. ...

“September’s raw volume is forecast at 1.135 million units, 11.7% above year-ago. The daily selling rate of 45,400 also is 11.7% above like-2021’s 44,954 – 25 selling days both periods.”

Credit Suisse Outlook For 2022 (7/6)⁵: “We reduce our 2022 US auto sales forecast to 14.5mn from 15.1mn prior. The central theme of the US auto sales market YTD (and for that matter over the past

year) has been historic inventory constraints limiting sales volume. Indeed, 1H22 SAAR ended at 13.8mn, and to meet our prior forecast would have required an overly-challenging 2H ramp. Given inventory constraints are likely to linger in 2H, even if easing, we reduce our forecast; our revised forecast implies 2H SAAR of ~15.0mn, which is still below the normalized SAAR we would expect of 16-17mn.”



North American Production & Inventory Outlook (Updated 9/29)

“Wards Intelligence Inventory Outlook (9/29)”⁶: “Inventory is forecast to increase 13.9% from the prior month to 1.44 million units, and up a whopping 48.5% from September 2021. Days’ supply is pegged at 32, up from August’s 29 and like-2021’s 24.”

Wards Intelligence Production Outlook (9/29)”⁷: “September is tracking close to month-ago’s outlook for the period, although an increase in trucks was slightly short of totally offsetting a drop in cars. Production in the month is tracking to 1.328 million units, 40.2% above year-ago. Light vehicles in September are pegged at 1.283 million units, 41.0% above year-ago.

“Production for entire-Q3 is tracking to 3.808 million units, 25.9% above year-ago, but 7.7% below the 2019 July-September total. The projected Q3 total is 34,500 units above month-ago’s expectations. Light vehicles in Q3 are expected to total 3.674 million units, also 25.9% above like-2021, but 7.6% below the 2019 total.

“In the first look at the period, production in Q4 is tracking to 3.791 million units, 12.3% above the same year-ago quarter, and only 2.7% below like-2019. The projection for light-vehicle output in Q4 is 3.664 million units, 13.2% above year-ago but 2.9% below like-2019.

“Production for entire 2022 is estimated at 14.904 million units, 11.2% above 2021’s 13.407 million. Based on the tracking for the final four months of the year, light vehicles will end the year at 14.386 million units, 11.4% above 2021’s 12.919 million.”

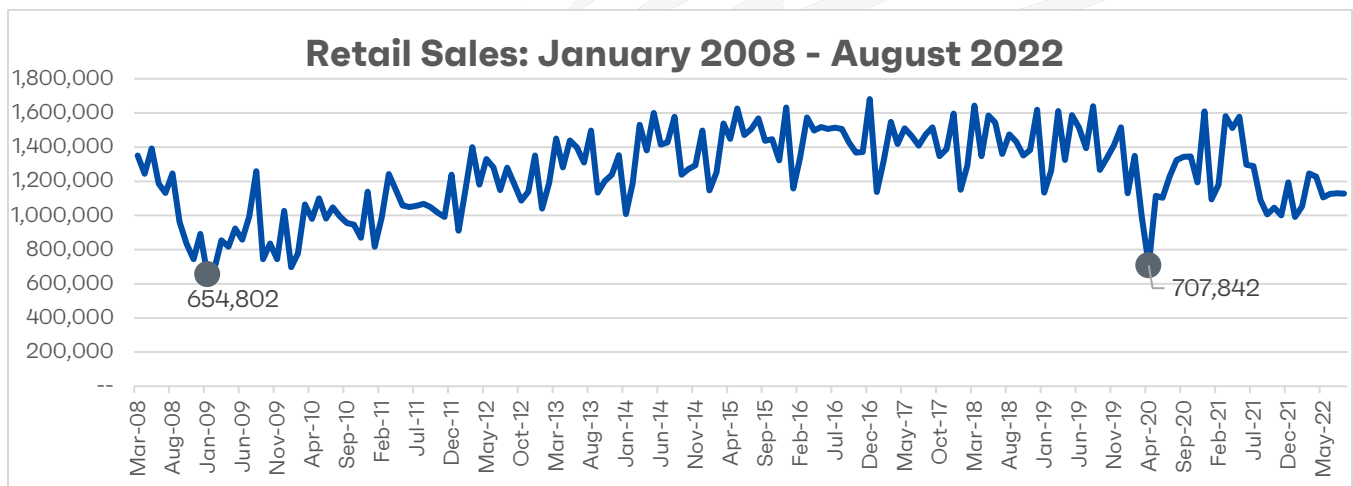
S&P Global Mobility Production Outlook (9/29) ⁸: “The outlook for North America light vehicle production was largely unchanged for 2022 and reduced by 211,000 units for 2023 (and was reduced by 42,000 units for 2024). The outlook for North America light vehicle production for 2022 remains steady at 14.58 million units on continued supply chain, labor, and logistic issues. While semiconductor related downtime has slowed, manufacturers’ ability to produce vehicles at normal operating levels remains problematic, particularly among the Japanese transplants. The short-term production forecast continues to be derived from automakers’ ability to produce vehicles remaining divorced from economic, demand and inventory conditions amid ongoing supply chain issues. Concerns surrounding supply chain constraints, most notably for semiconductors, results in the outlook for 2023 being revised down 1.3% to 15.62 million units. With the outlook for US demand sharply reduced, inventory creation has entered its formative stages and projected to reach nearly 2.0 million units by the end of 2023. Following significant reductions last month due to production constraints extending further into 2024 along with the effects of demand destruction, the outlook for 2024 was revised down 0.3% to 16.21 million units.”

Market Meter

U.S. Light Vehicle Sales (Updated 9/7)

Monthly Sales (Updated 9/7)

This chart helps to put into context the monthly retail sales due to the COVID pandemic and showing the relative drop in sales compared to the 2008 financial crisis.



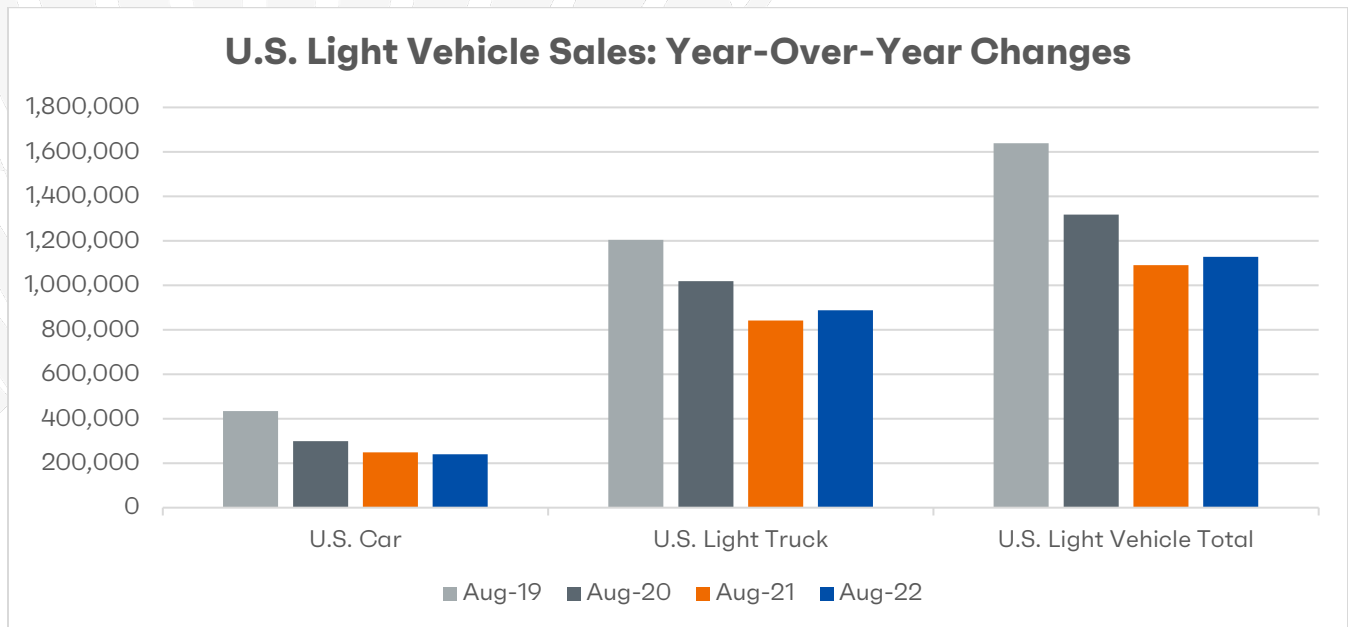
August Sales (Updated 9/7)

WardsIntelligence⁹: “U.S. light-vehicle sales in August finished slightly weaker than expected and fell from the prior month on an annualized basis.

“The large-truck juggernaut, plus a surge by Hyundai-Kia, was not enough to offset minor shortfalls from expectations among most other automakers as the month’s seasonally adjusted annual rate totaled 13.2 million units, down from the July’s 13.3 million. Raw volume of 1.28 million units was even with July.

“August’s SAAR did represent the first time since June 2021 a month’s results finished above the same year-ago period. August 2021’s SAAR was 13.1 million units and marked the point that the dearth of inventory caused by the semiconductor shortage put a full stranglehold on the market.

“August’s volume was 3.3% above like-2021’s 1.09 million units. The month’s daily selling rate of 43,392 over 26 selling days was 0.7% below August 2021’s 43,706 – 25 selling days.”



Fleet Sales (Updated 9/7)

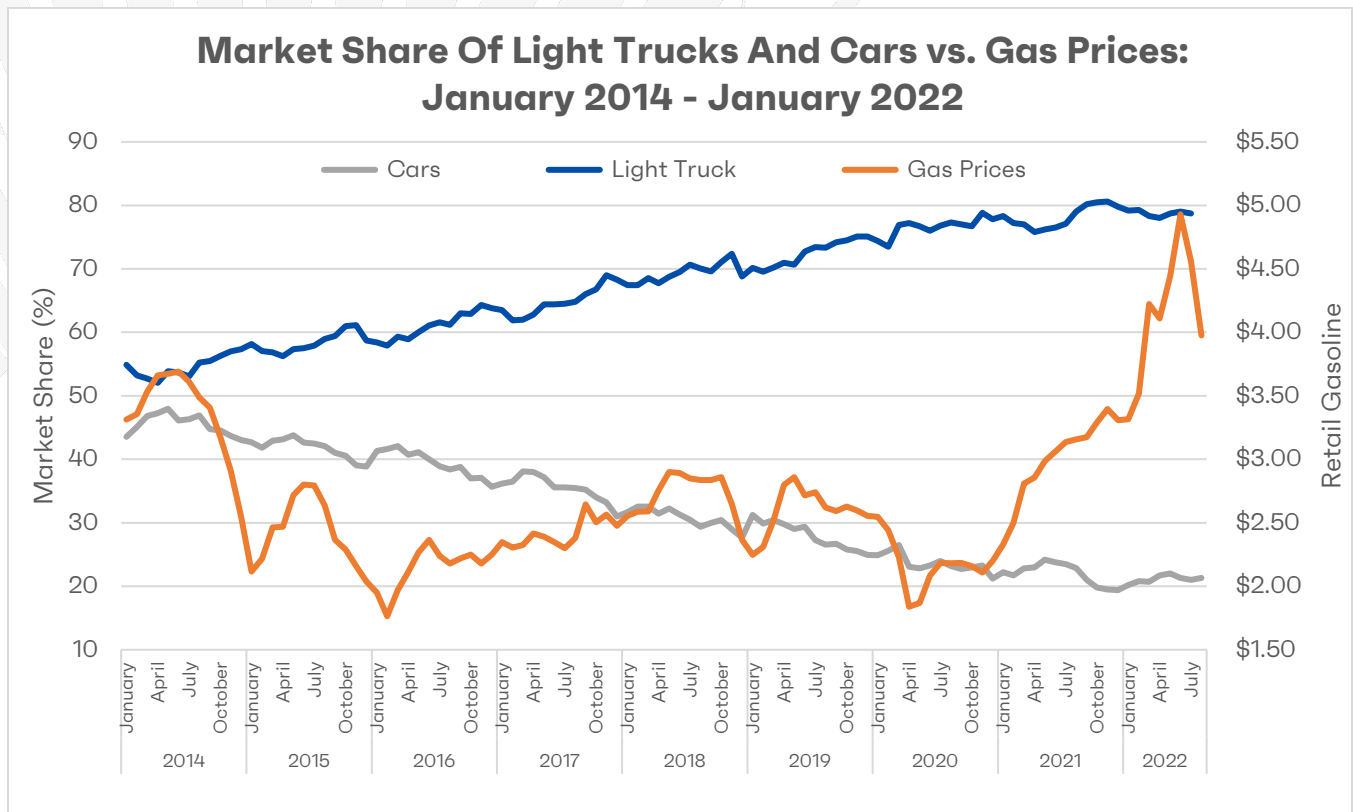
TrueCar¹⁰: “Fleet sales for August 2022 are expected to be up 40% from a year ago and down 12% from July 2022 when adjusted for the same number of selling days.”

J.D. Power ¹¹: “Fleet sales are expected to total 156,300 units in August, up 26% from August 2021 on a selling day adjusted basis. Fleet volume is expected to account for 14% of total light-vehicle sales, up from 11% a year ago.”

Segments vs. Gas Prices (Updated 9/7)

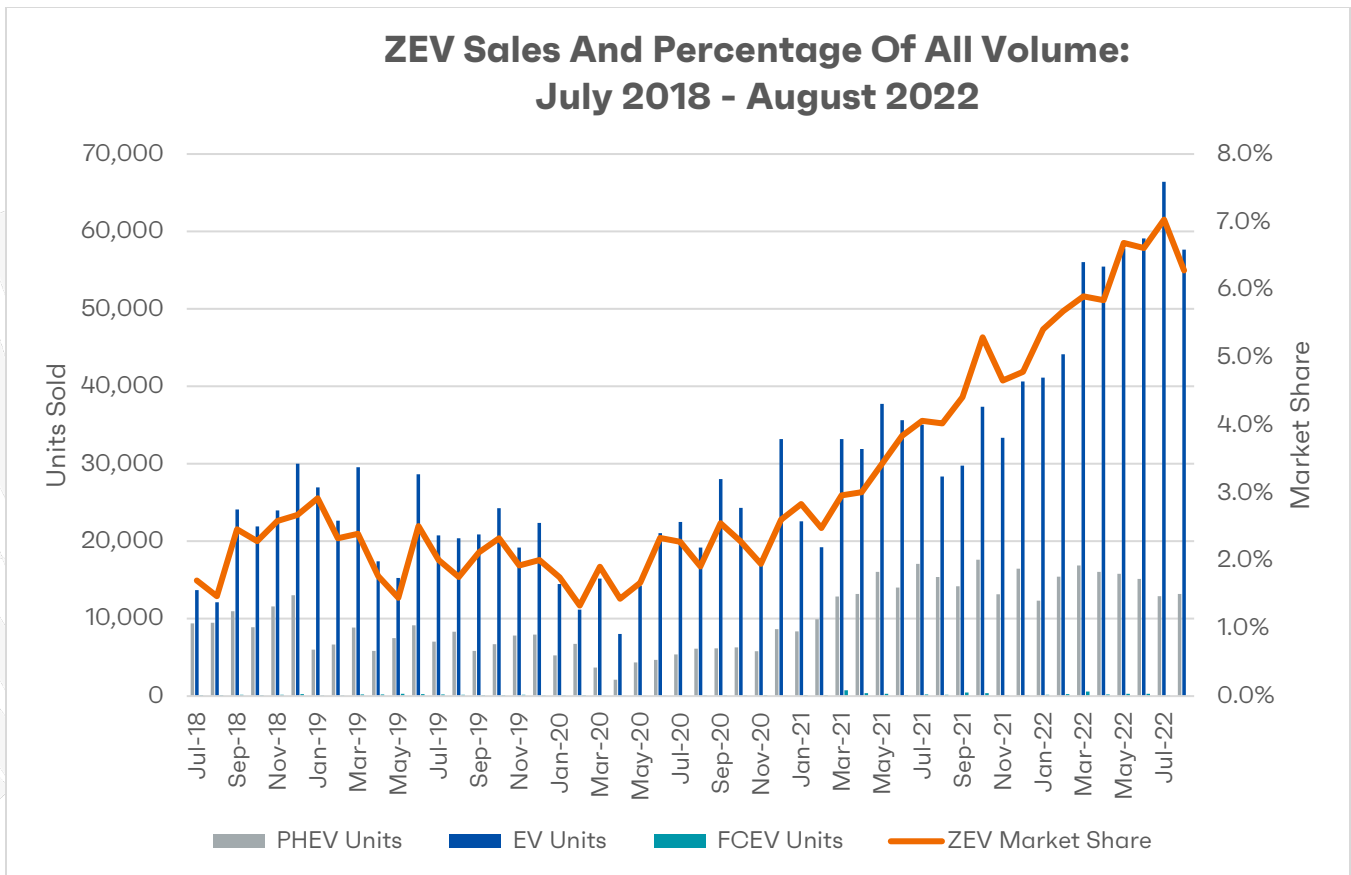
Monthly Sales For August: Light trucks accounted for nearly 79 percent of sales in August, a 0.3 pp decrease in market share from a year ago. Compared to the same period in 2021, sales of cars are down nearly 8,000, and down more than 190,000 from August 2019, when cars comprised 26.5% of the market as opposed to the 21% of the market passenger cars have now.

Historic Perspective: The upward trend in the popularity of light trucks over cars has been steady since 2013, when only 2% of annual market share separated the two segments ¹² and gas was over \$3.00 ¹³ a gallon. As fuel prices dropped below the \$3.00 mark in mid-September 2014, light truck sales began to take off. Gas prices since have averaged only \$2.80 a gallon (through August 2022) and when combined with increased fuel economy for light trucks, an increase of 4 mpg since 2013, the perfect conditions existed to continue fueling light truck market growth. ¹⁴



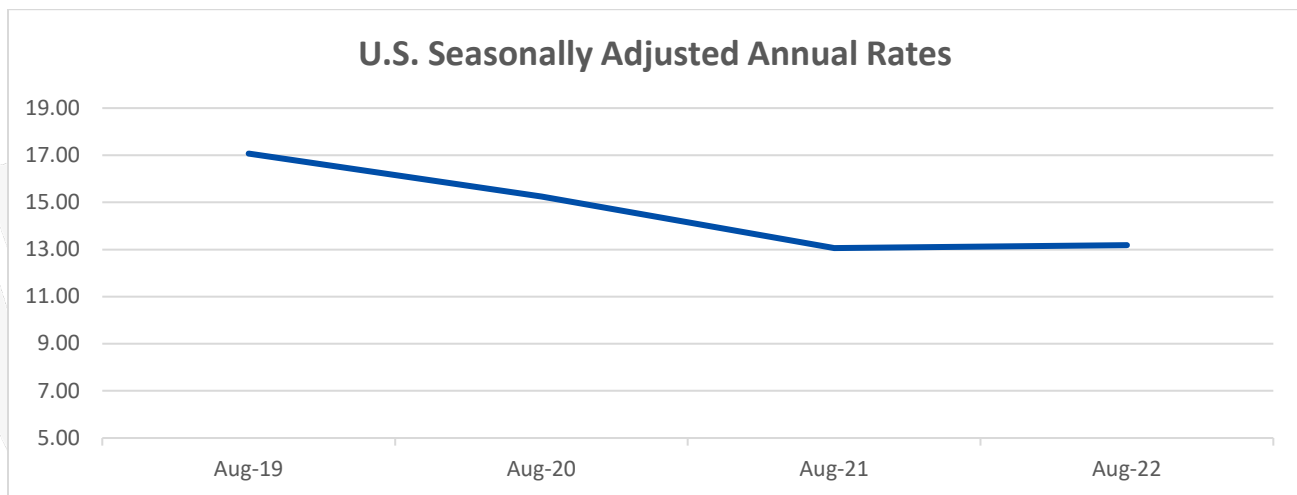
EV Powertrain Sales (Updated 9/7)

Sales of electric vehicles (BEV, PHEV, & Fuel Cell) accounted for 6.3% of total vehicle sales in August 2022 (70,899 units), up 2.3 pp from a year ago and down 0.7 pp from July 2022. Sales of battery electric vehicles led the way for ZEVs, accounting for 5.1% of total sales, up 2.5 pp from August 2021. Plug-in hybrids accounted for 1.17%, down 0.24 pp than the same time last year.¹⁵



Seasonally Adjusted Annual Rates (Updated 9/7)

WardsIntelligence: “[T]he month’s seasonally adjusted annual rate totaled 13.2 million units, down from the July’s 13.3 million. Raw volume of 1.28 million units was even with July. August’s SAAR did represent the first time since June 2021 a month’s results finished above the same year-ago period. August 2021’s SAAR was 13.1 million units and marked the point that the dearth of inventory caused by the semiconductor shortage put a full stranglehold on the market.¹⁶



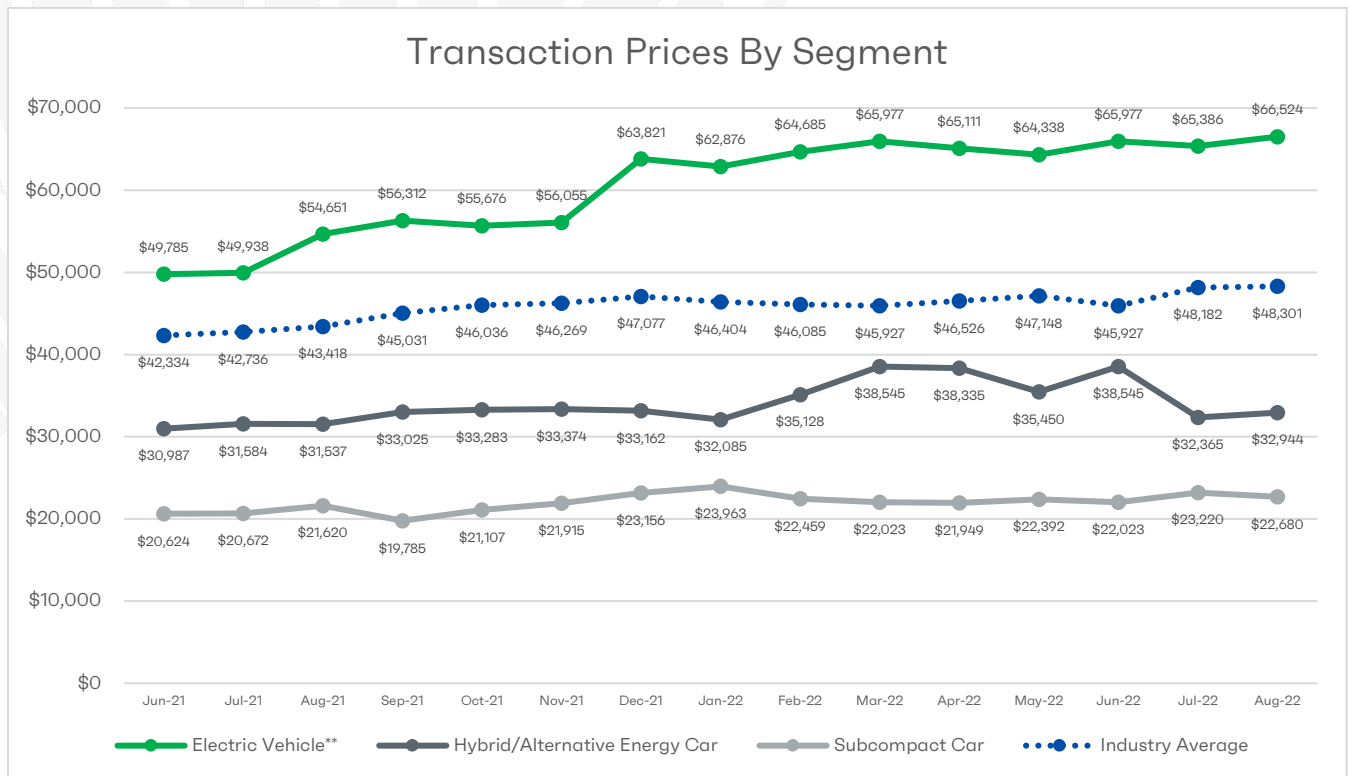
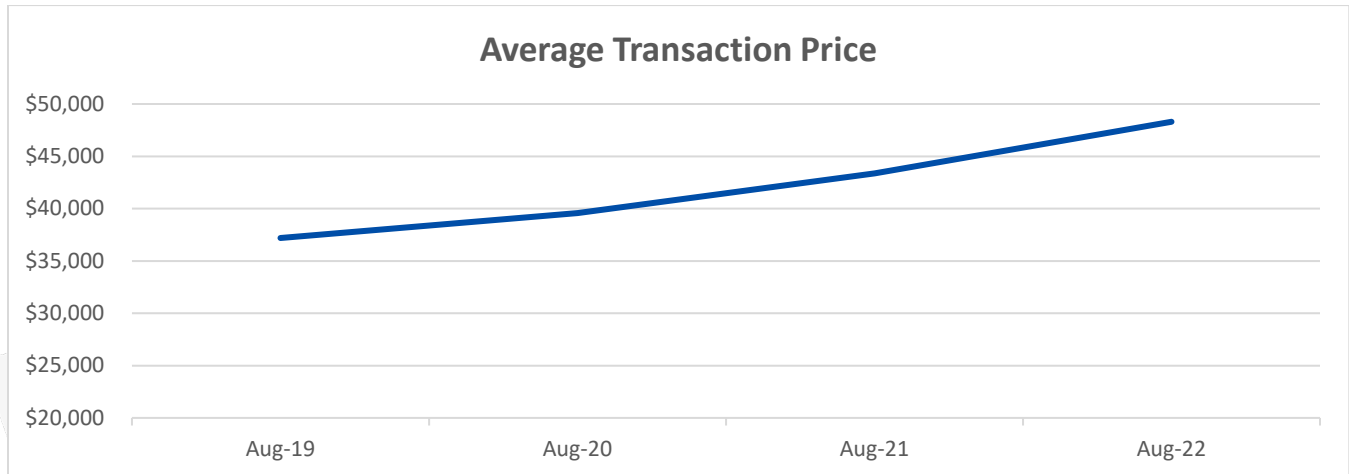
Average Transaction Price (Updated 9/29)

Kelley Blue Book (July) (Updated 8/24)¹⁷: “The average price paid for a new vehicle in the U.S. in August topped July’s record and kept the average transaction price (ATP) solidly above the \$48,000 mark, according to new data released today by Kelley Blue Book, a Cox Automotive company. The Kelley Blue Book new-vehicle ATP increased to \$48,301 in August 2022, beating the previous high of \$48,080 set in the prior month. August 2022 prices rose 0.5% (\$222) month over month from July, and 10.8% (\$4,712) year over year from August 2021.

- “Luxury vehicle share remains historically high as well, although share decreased to 17.5% of total sales in August from 17.7% in July. The high share of luxury sales is helping to push the overall industry ATP higher.
- “The average price paid for a new electric vehicle (EV) rose in August by 1.7% compared to July and increased by 15.6% versus a year ago. The average price for a new electric vehicle – over \$66,000, according to Kelley Blue Book estimates – remains well above the industry average, aligning more with luxury prices versus mainstream prices.”

J.D. Power (Updated 9/7)¹⁸: “For August, new-vehicle prices continue to set records, with the average transaction price expected to reach \$46,259—an 11.5% increase from a year ago and the highest on record. Therefore, even though the sales pace is down 2.6% year over year, buyers will still spend nearly

\$45.4 billion on new vehicles this month, the second-highest level ever for the month of August and up 13.0% from August 2021.”

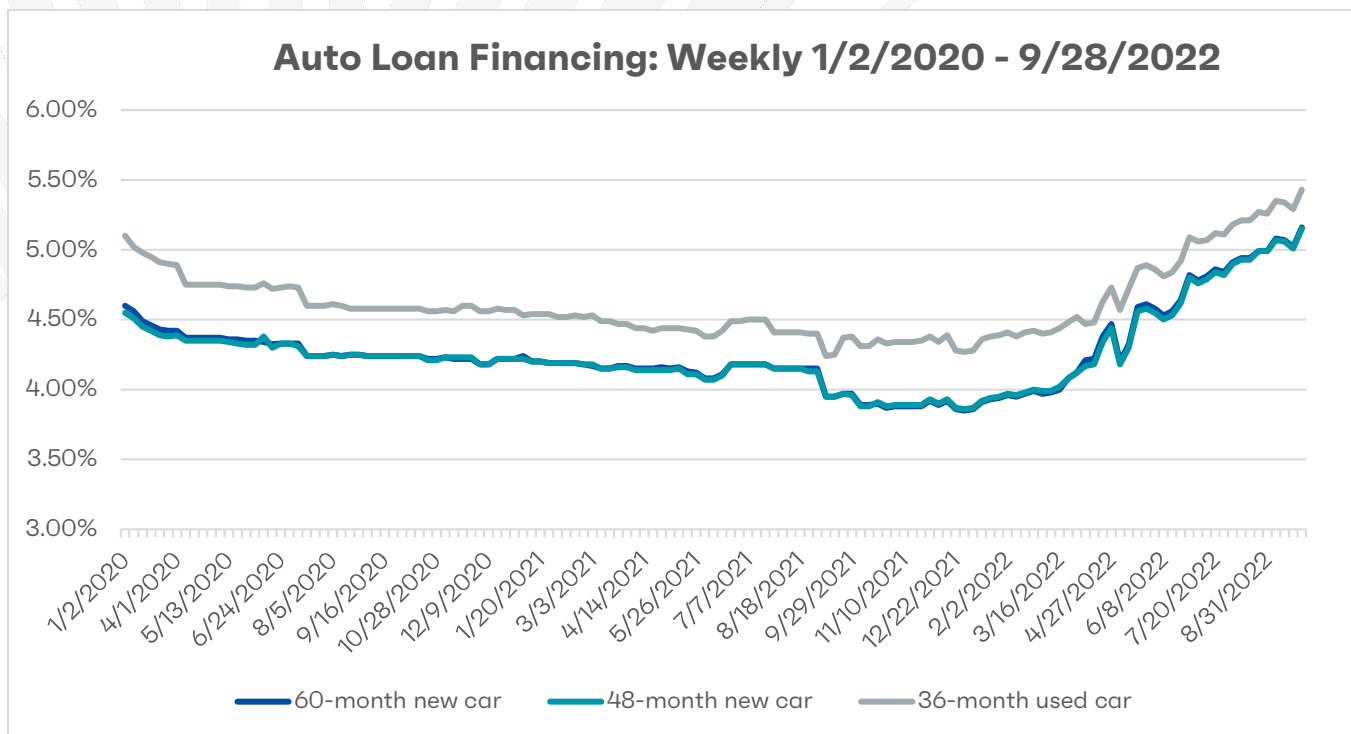


Auto Loan Financing (Updated 9/29)

JD Power (9/7)¹⁹: “Higher prices coupled with a rising interest rate environment are leading to monthly loan payments reaching new all-time highs. After breaking the \$700 level for the first time ever in July, the average monthly finance payment in August is on pace to hit a record \$716, up \$78 from August 2021. That translates to a 12.2% increase in monthly payments from a year ago, which is above the 11.5% increase in transaction prices. The average interest rate for new-vehicle loans is expected to increase 137 basis points from a year ago to 5.51%.

Interest Rates: Interest rates increased 0.14 pp for the 60-month, 48-month, and 36-month used car, and now stand at 5.16%, 5.15%, and 5.43%, respectively. Since the beginning of 2020, 60-month rates are up 0.59 pp, and are up 1.19 pp since the same time a year ago.²⁰

| Dates | 60-month new car | 48-month new car | 36-month used car |
|---------------------|------------------|------------------|-------------------|
| 1/2/2020 | 4.60% | 4.55% | 5.10% |
| 9/29/2021 | 3.97% | 3.96% | 4.38% |
| 9/21/2022 | 5.02% | 5.01% | 5.29% |
| 9/28/2022 | 5.16% | 5.15% | 5.43% |
| One Week Change | 0.14% | 0.14% | 0.14% |
| Two Week Change | 0.09% | 0.09% | 0.09% |
| Change since 1/3/20 | 0.56% | 0.60% | 0.33% |
| One Year Change | 1.19% | 1.19% | 1.05% |

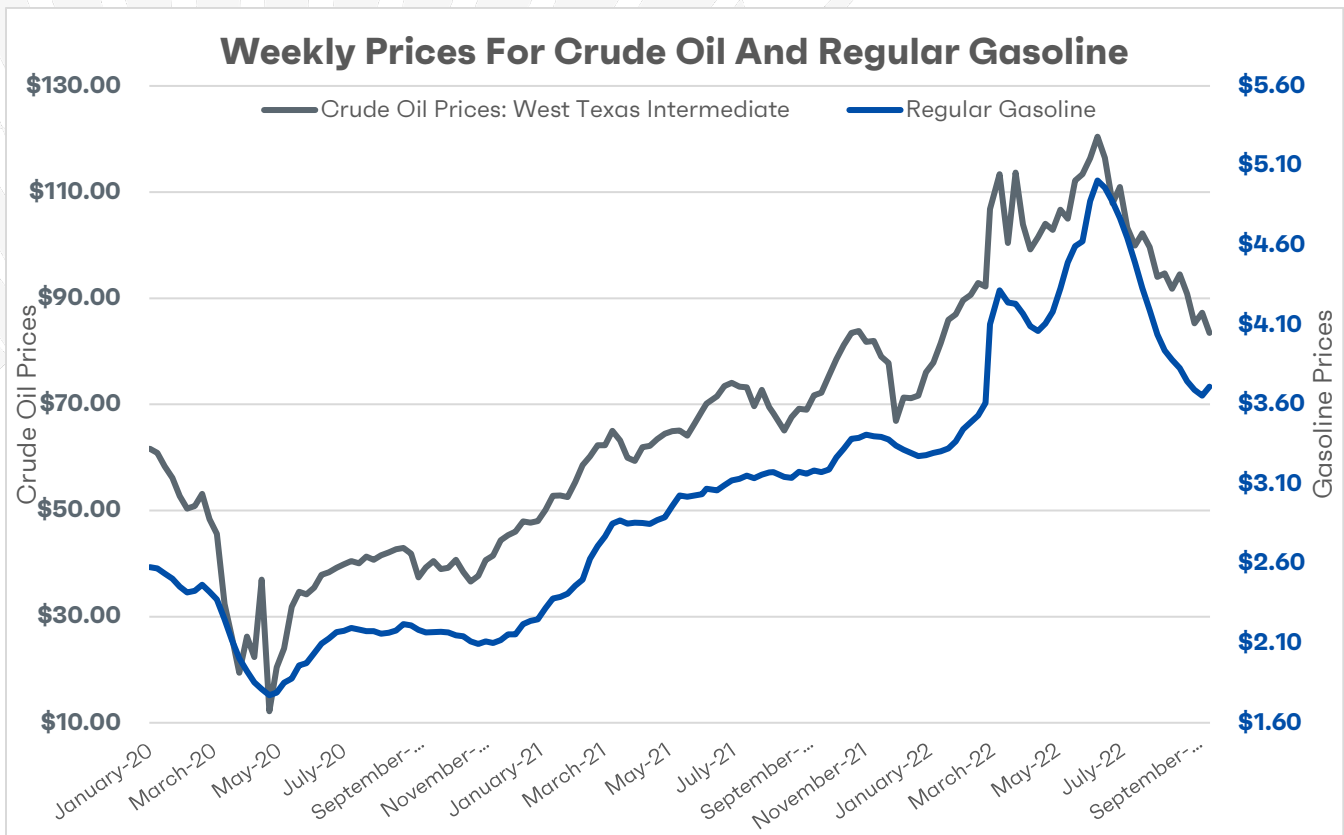


Crude Oil and Gas Prices (Updated 9/29)

EIA Outlook For Gasoline (9/29)²¹: “We expect retail gasoline prices will average \$3.60 per gallon (gal) in 4Q22 and \$3.61/gal in 2023. Retail diesel prices in our forecast average \$4.90/gal in 4Q22 and \$4.28/gal in 2023.”

EIA Outlook For Oil (9/29)²²: “The Brent crude oil spot price in our forecast averages \$98 per barrel (b) in the fourth quarter of 2022 (4Q22) and \$97/b in 2023. The possibility of petroleum supply disruptions and slower-than-expected crude oil production growth continues to create the potential for higher oil prices, while the possibility of slower-than-forecast economic growth creates the potential for lower prices. U.S. crude oil production in our forecast averages 11.8 million barrels per day (b/d) in 2022 and 12.6 million b/d in 2023, which would set a record for the most U.S. crude oil production during a year. The current record is 12.3 million b/d, set in 2019.”

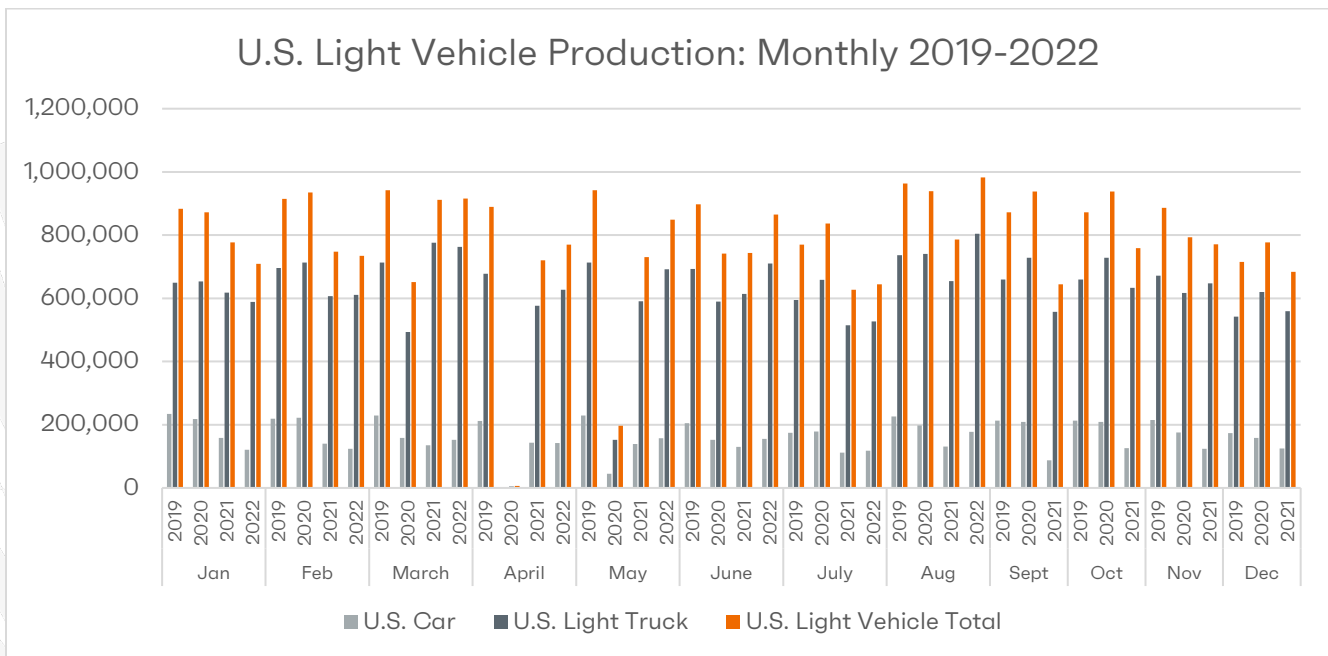
Gas And Oil Remain High, Continue Downward Trend: Oil prices, as benchmarked at West Texas Intermediate, fell \$3.78 to \$83.46 a barrel for the last week of September. Since election day 2020, oil prices are \$47 a barrel higher. Gas prices increased \$0.06 to \$3.71. Gas is 44% higher than the beginning of 2020.²³



Production Meter

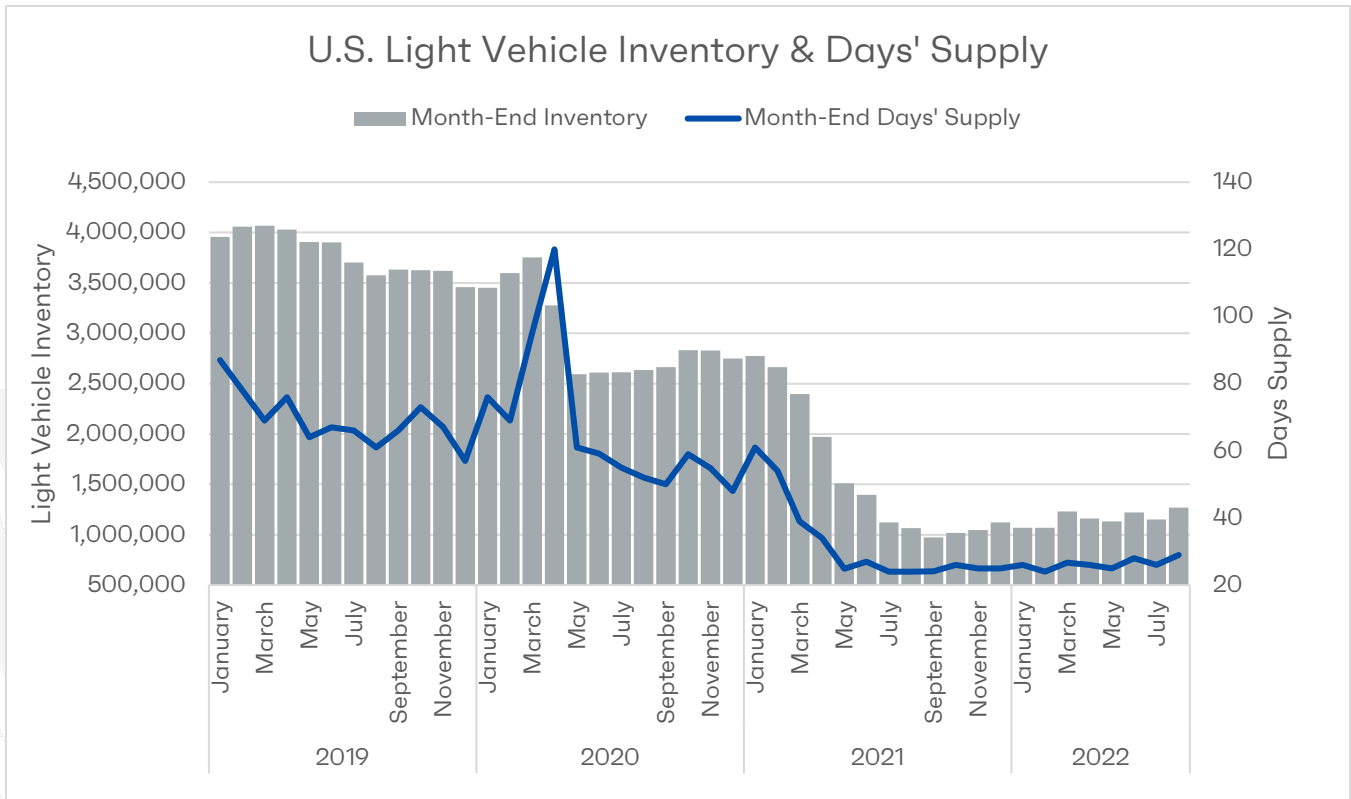
U.S. Light Vehicle Production (Updated 9/29)

U.S. Light vehicle production for August 2022 increased month-over-month by 52 percent, totaling 982,161 vehicles (177,634 cars, 804,527 light trucks), year-over-year, production is up 28 percent from 2021. ²⁴



U.S. Light Vehicle Inventory and Days' Supply (Updated 9/7)

WardsIntelligence Inventory Update (9/7) ²⁵: “U.S. light-vehicle inventory increased a solid 10.2% from the prior month at the end of August to 1.27 million units, 18.8% above the same year-ago period and highest for any month since 1.39 million in June 2021. The long-time high in new-vehicle availability, and that production for the U.S. market – especially from North America plants which source close to 80% of U.S. sales volume – is expected to total big double-digit year-over-year gains for both August and September, points to inventory generally rising over the final four months of the year. . . Light-vehicle days’ supply ended August at 29, up from July’s 27 and like-2021’s 24. Aug. 31 inventory included 1.07 domestically built vehicles, 31.8% above same-month 2021, and highest since 1.10 million in May 2021. Days’ supply rose to 32 from the prior month’s 27 and like-2021’s 25. Import inventory totaled 201,595 units, 21.9% below like-2021, but highest since March 2022. Days’ supply totaled 21, down from 23 in both July and the year-ago month.”



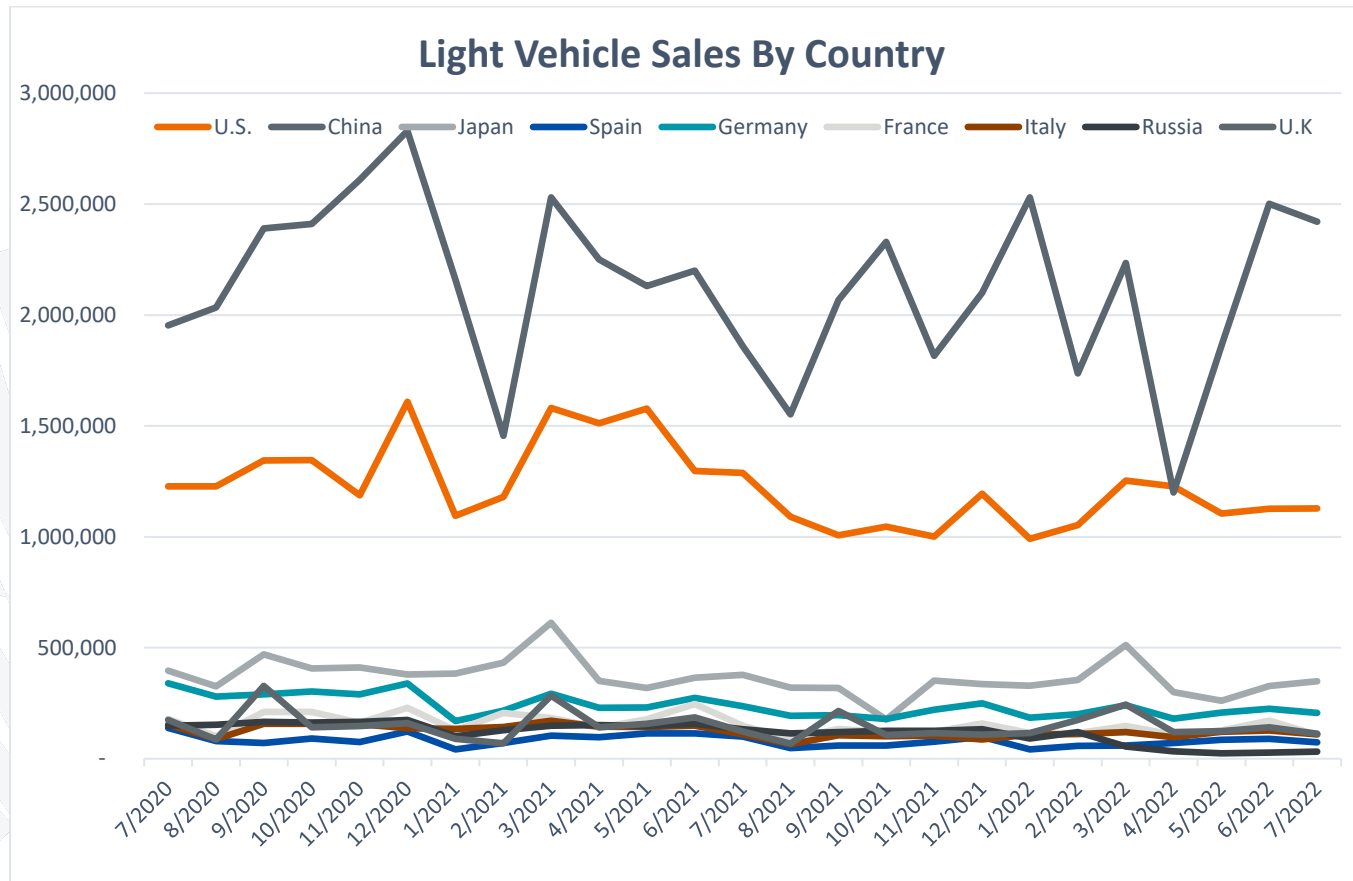
Global Meter

Global Light Vehicle Sales (Updated 9/7)

Wards Intelligence ²⁶: “Global vehicle sales increased year-over-year in July for the first time since June 2021. Based on the countries Wards Intelligence collects data for, including some estimates, July global sales volume totaled 6.99 million units, up 4.1% from same-month 2021’s 6.71 million. Excluding medium- and heavy-duty trucks, light-vehicle sales totaled 6.73 million units, 4.3% above like-2021’s 6.46 million. Due to seasonal trends, volume declined from June. Total vehicles fell 4.5% from the prior month and light vehicles were down 4.8%.

Growth in July was strongest in the Asia-Pacific region – with global market leader China accounting for nearly the entire gain – and in South America. The AP’s July volume was up 19.7% year-over-year – light vehicles increased 20.5% - and South America rose 4.5%, including light-vehicle volume up 4.8%.

The gains offset big year-over-year declines in Europe and North America of 18.4% and 9.5%, respectively. Declines in the light-vehicle totals in both regions were nearly the same as the drops in total vehicles. The year-to-date global total - including in all major regions - through July remains below same-period 2021. Global volume year-to-date totals 46.77 million units, down 7.8% year-over-year. Light-vehicle volume of 45.03 million units is down 6.8%.”



Global Light Vehicle Production (Updated 9/29)

S&P Global Mobility Forecast (8/24)²⁷: “The global auto industry continues to be influenced by near-term challenges of navigating ongoing supply chain pressures coupled with economic headwinds and intermediate-to-longer term dynamics involving a structural shift from internal combustion to electric propulsion. While semiconductor availability continues to improve, having the right chip for the right vehicle at the right plant can still prove elusive and impact the ability to accelerate production. Further, in several markets, we continue to adjust for macro deterioration contributing to demand destruction. In the longer term, vehicle pricing will be a key consideration and a potential headwind to demand, particularly as many markets shift to much higher levels of electrification. The September 2022

forecast update reflects a near-term upgrade for Greater China due to stronger demand post-COVID lockdowns and robust stimulus effects as well as a stronger near-term outlook for South Asia and Middle East/Africa. However, equally important are the near-to-intermediate term downward revisions particularly focused on Europe and North America, among other regions. In the extreme near-term, semiconductor availability remains a key factor in the ability to accelerate production growth. Further, we continue to see demand destruction pulling ahead into 2023 for key markets which has direct implications to production and impacts the magnitude/need for inventory restocking. The more noteworthy regional adjustments with the latest forecast update are detailed below:

“Europe: The outlook for Europe light vehicle production was reduced by 211,000 units and by 349,000 units for 2022 and 2023, respectively (and reduced by 250,000 units for 2024). This month’s forecast update for Europe now reflects a baseline that embeds production disruptions related to pressures on gas supplies and energy prices. We believe that the situation will cause rescheduling in the supply chain to save on the cost of power and will eventually impact vehicle production on top of other supply constraints. However, we are not adopting our pessimistic scenario that anticipates mandatory gas rationing. This could materialize if additional adverse elements such as prolonged severe weather or failure of another source of gas arises this winter. The near-term forecast revisions for this month follow already sizable downgrades made to the Europe forecast last month. Beyond 2023, we expect supply chain shortages will give way to demand challenges influenced by a weakening macro environment and heightened pressure due to rising costs amid the proliferation of electrification. The resulting negative impact carries through the forecast horizon.

“Greater China: The outlook for Greater China light vehicle production was increased by 504,000 units and by 351,000 units for 2022 and 2023, respectively (and reduced by 167,000 units for 2024). Despite electric power shortages under the summer heat, particularly in the middle-west provinces, mainland China light vehicle production maintained its momentum and outperformed expectations in August. Passenger vehicles achieved close to 2.1 million units of production with year-over-year growth of 40%. Conversely, light commercial vehicle production remains challenged and declined by 6%, impacted by economic headwinds and stagnate domestic demand. Production for Q3-2022 and Q4-2022 was upgraded by 452,000 and 52,000 units, respectively, and full-year 2022 production for the region now stands at 25.8 million units representing year-over-year growth of 3.8%. The outlook for 2023 was increased based on the expectation that NEV incentives will be extended and support momentum in the domestic market in spite of macroeconomic headwinds. Consequently, Greater China light vehicle production is expected to post gains of 3.3% in 2023 and 5.8% in 2024.

“Japan/Korea: Full-year 2022 Japan production volume was reduced by 102,000 units relative to the August forecast. The primary focus of the downward revision was related to Toyota due to ongoing semiconductor availability constraints, volume loss from the Hino emission-related production halt, and production challenges at the Motomachi plant triggered by Toyota bZ4X quality issues. In the intermediate-term, Japan production volumes were upgraded for 2023 and 2024 primarily due to Mazda planning to continue to sell the CX-5 in the US market in order to maintain market share. Also, the next-generation version of the CX-5 was added starting in 2026. Full-year 2022 South Korea

production was increased by 27,000 units relative to the previous forecast. Although the domestic market remains challenged, production continues to recover due to an increase in exports with improved semiconductor supply. The upward momentum is expected to continue through 2023, resulting in an upgrade of 19,000 units. However, production was reduced by 9,000 units for 2024 as additional demand destruction is expected from high inflation, particularly for the US and Europe. In the long-term, production was reduced primarily due to ongoing global economic headwinds. However, an increase in demand for electric vehicles is expected to lead production recovery starting in 2028.

“North America: The outlook for North America light vehicle production was largely unchanged for 2022 and reduced by 211,000 units for 2023 (and was reduced by 42,000 units for 2024). The outlook for North America light vehicle production for 2022 remains steady at 14.58 million units on continued supply chain, labor, and logistic issues. While semiconductor related downtime has slowed, manufacturers’ ability to produce vehicles at normal operating levels remains problematic, particularly among the Japanese transplants. The short-term production forecast continues to be derived from automakers’ ability to produce vehicles remaining divorced from economic, demand and inventory conditions amid ongoing supply chain issues. Concerns surrounding supply chain constraints, most notably for semiconductors, results in the outlook for 2023 being revised down 1.3% to 15.62 million units. With the outlook for US demand sharply reduced, inventory creation has entered its formative stages and projected to reach nearly 2.0 million units by the end of 2023. Following significant reductions last month due to production constraints extending further into 2024 along with the effects of demand destruction, the outlook for 2024 was revised down 0.3% to 16.21 million units.

“South America: The outlook for South America light vehicle production was increased by 6,000 units and by 2,000 units for 2022 and 2023, respectively (and reduced by 1,000 units for 2024). The outlook for 2022 was upgraded modestly based largely on stronger actual production results; however, volumes for 2023 and 2024 were largely unchanged with only fairly minimal revisions. The longer-term outlook was slightly upgraded over the full forecast horizon by 0.2% (around 7,000 units added per year on average). The uptick is mostly centered around 2026/2027 as we have applied new timings for most Volkswagen models (with earlier redesigns than previously expected).

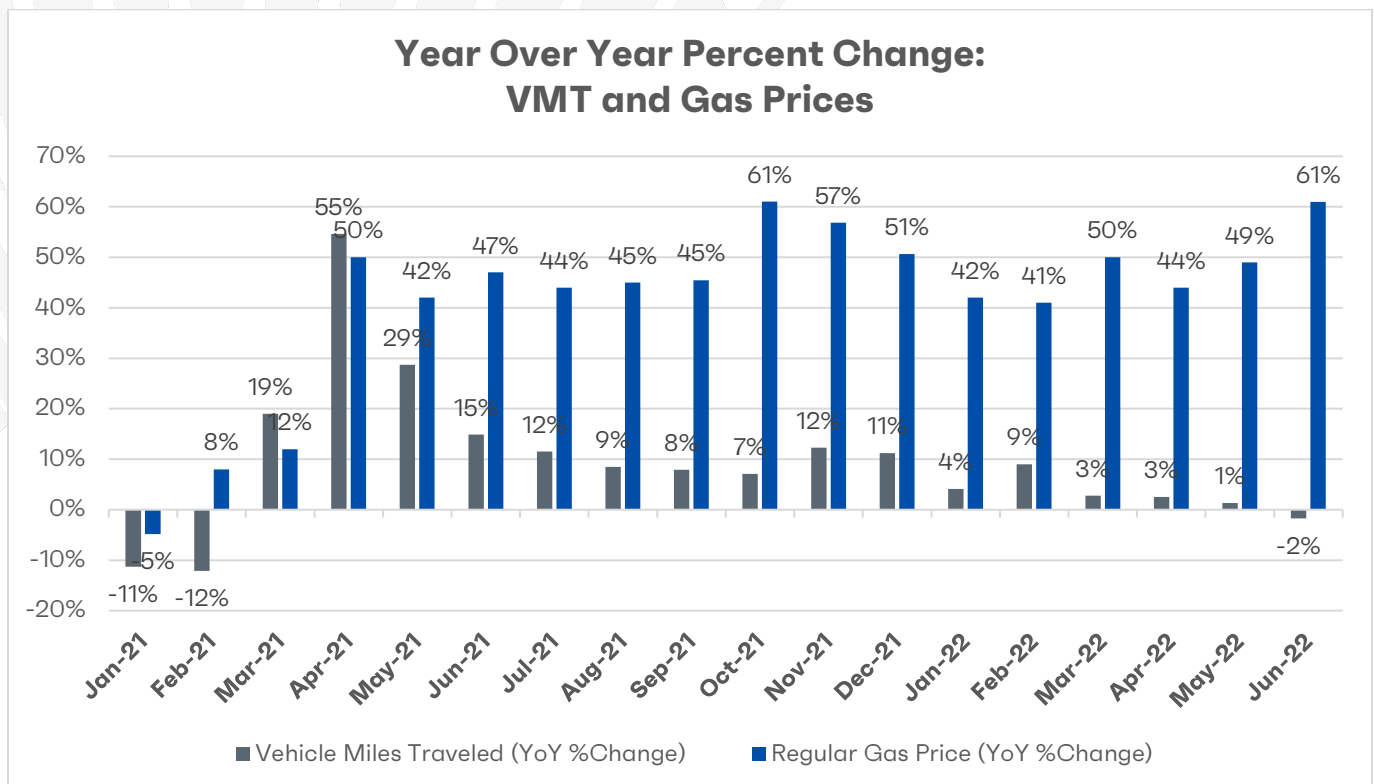
“South Asia: The outlook for South Asia light vehicle production was increased by 121,000 units and by 93,000 units for 2022 and 2023, respectively (and increased by 91,000 units for 2024). The upgraded outlook for 2022 was largely driven by stronger actual production for both the India subcontinent and the ASEAN market. India continues to post solid production growth on renewed demand for personal mobility and improved consumer confidence in rural and semi-urban markets. Further, market participants have thus far rather effectively navigated semiconductor and other supply chain challenges. Regarding the ASEAN market, a somewhat cautious upgrade reflects recent supply chain improvements resulting in stronger actualized production, yet the forecast continues to incorporate some risk to automaker planning schedules through the balance of 2022. The improved production outlook for 2023 and 2024 focuses on the India subcontinent as a result of growing auto demand in the market.

Recovery Meter

Roadway Travel (Updated 9/7)

According to the U.S. Department of Transportation, seasonally-adjusted vehicle miles traveled in June declined 1.7% from the same time a year ago. The cumulative travel estimate for 2022 is 1,587.1 billion vehicle miles.²⁸

- Travel on all roads and streets changed by -1.7% (-4.8 billion vehicle miles) for June 2022 as compared with June 2021. Travel for the month is estimated to be 282.1 billion vehicle miles.
- The seasonally adjusted vehicle miles traveled for June 2022 is 268.0 billion miles, a -1.80% (-4.8 billion vehicle miles) change over June 2021. It also represents a -1.0% change (-2.7 billion vehicle miles) compared with May 2022.
- Cumulative Travel for 2022 changed by +2.8% (+43.2 billion vehicle miles). The cumulative estimate for the year is 1,587.1 billion vehicle miles of travel.



Economic News (Updated 9/29)

Manufacturing Gained 22,000 Jobs In August, Though Motor Vehicles And Parts Lost 1,900.

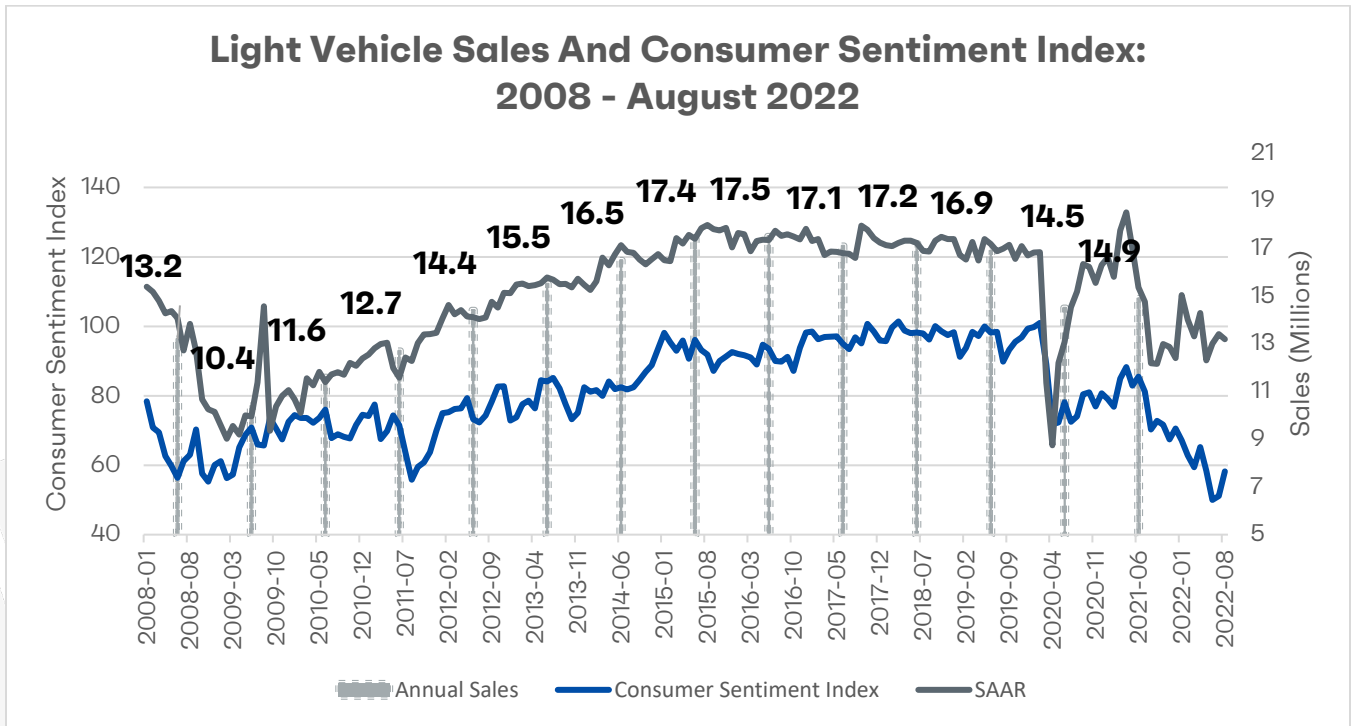
“Manufacturing employment rose by 22,000 jobs in August, mostly in durable goods, the Bureau of Labor Statistics reported today. Durable goods accounted a gain of 19,000 jobs, according to a breakdown by sector. Industries with job increases included fabricated metal products (up 4,700), computer and electronic products (up 4,500), and machinery (up 2,800). Transportation equipment had mixed results. The overall category had an increase of 2,400 jobs. That was despite a decrease of 1,900 jobs in motor vehicles and parts.”²⁹

The ISM Index Held Steady In August. “Manufacturing remained on a steady course in August, the Institute for Supply Management said today. The Tempe, Ariz.-based group’s manufacturing index, known as the PMI, registered at 52.8 percent last month, the same as July.”³⁰

Consumer Confidence and Sales (Updated 9/29)

Surveys of Consumers Director Joanne Hsu³¹: “Consumer sentiment was essentially unchanged in September, just 1.3 index points above August. The one-year economic outlook continued lifting from the extremely low readings earlier in the summer, but these gains were largely offset by modest declines in the long run outlook. Personal finance components of the index as well as buying conditions for durables remained at similar, relatively low levels from last month. After the marked improvement in sentiment in August, consumers showed signs of uncertainty over the trajectory of the economy.

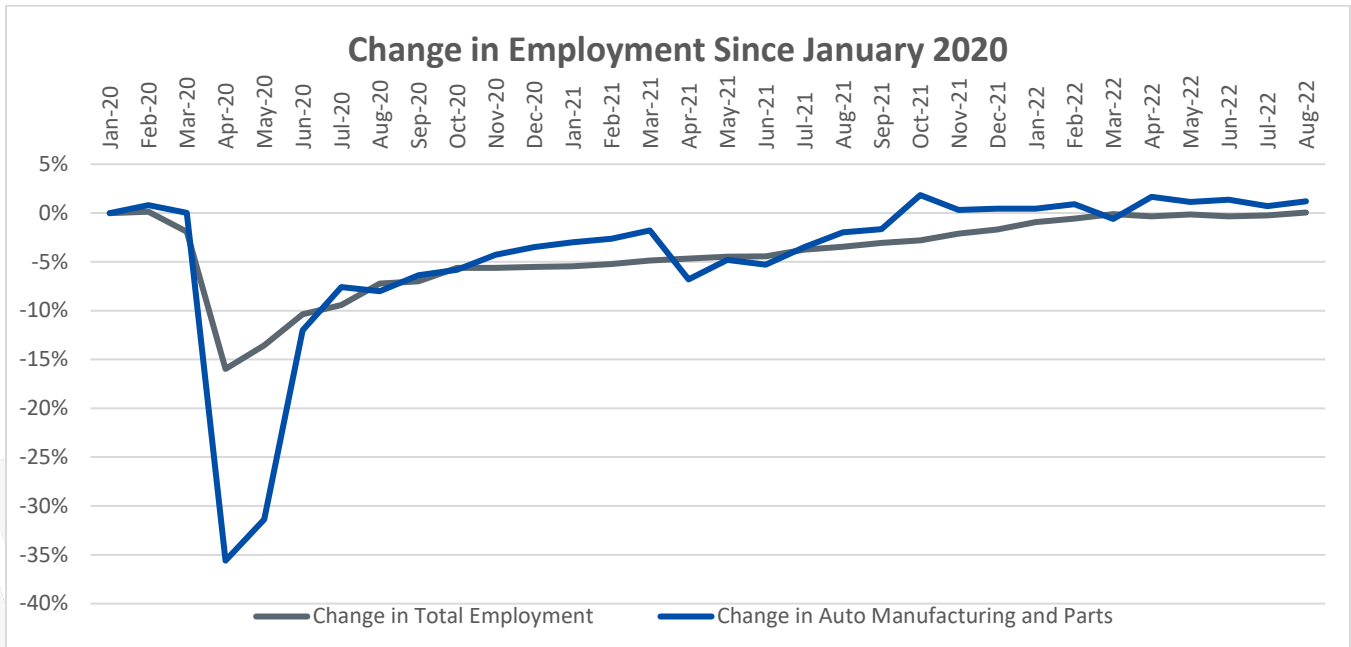
With continued declines in energy prices, the median expected year-ahead inflation rate declined to 4.6%, the lowest reading since last September. At 2.8%, median long run inflation expectations fell below the 2.9-3.1% range for the first time since July 2021. However, it is unclear if these improvements will persist, as consumers continued to exhibit substantial uncertainty over the future trajectory of prices (see chart). Uncertainty over short-run inflation reached levels last seen in 1982, and uncertainty over long run inflation rose from 3.9 to 4.5 this month, well above the 3.4 level seen last September.”



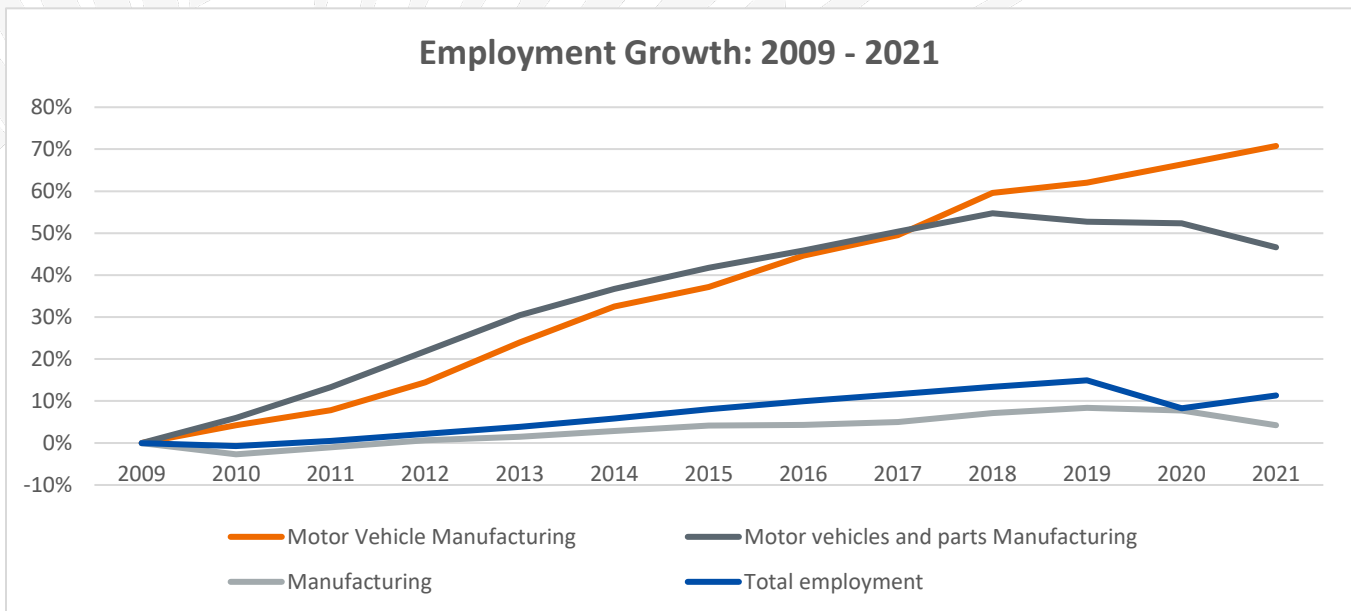
Employment (Updated 9/29)

Motor Vehicle And Parts Manufacturing Lost 1,900 Jobs In August. ³²

After a loss of nearly 350,000 employees (about 35% of the workforce) in the height of the pandemic, employment in the Automobile Manufacturing and Parts sectors raced back but is now fighting losses due to supply chain disruptions with semiconductors. ³³



After the recession in 2009, the auto industry was credited with being on the leading edge of the recovery, which began a ripple effect through other parts of the country.³⁴ Additionally, the chart below shows how the recovery of jobs in motor vehicle manufacturing alone and motor vehicle and parts manufacturing far outpaced the recovery of manufacturing and total jobs.



Sources

- ¹ WardsIntelligence, U.S. Light Vehicle Sales, January 2021 – December 2021
- ² WardsIntelligence, North America Production, January 2021 – December 2021
- ³ WardsIntelligence, North America Platform by Plant Production Forecast, Q1
- ⁴ Haig Stoddard, “September U.S. Light-Vehicle Sales Tracking to 5-Month High,” *WardsIntelligence*, 9/23/22
- ⁵ Credit Suisse, Email, “US Autos & Auto Parts: June US Sales Report Card,” 7/5/22
- ⁶ Haig Stoddard, “September U.S. Light-Vehicle Sales Tracking to 5-Month High,” *WardsIntelligence*, 9/23/22
- ⁷ Haig Stoddard, “North America Automakers Outdo August Expectations” *WardsIntelligence*, 9/22/22
- ⁸ S&P Global Mobility, email, “S&P Global Mobility Monthly Automotive Update – September 2022,” 9/15/22
- ⁹ Haig Stoddard, “Fullsize Trucks Lead U.S. Light-Vehicle Sales in August to First Gain in 14 Months,” *WardsIntelligence*, 9/1/22”
- ¹⁰ TrueCar, Press Release, “TrueCar Releases Analysis of August Industry Sales,” 8/30/22
- ¹¹ J.D. Power, Press Release, “Vehicle Inventory Shortages Constrain August Sales Pace as Average Transaction Prices Reach All-Time High,” 8/24/22
- ¹² WardsIntelligence, U.S. Light Vehicle Sales, January 2013 – August 2022
- ¹³ U.S. Energy Information Administration, Weekly Retail Gasoline and Diesel Prices, Regular price per gallon, including taxes
- ¹⁴ WardsIntelligence, Fuel Economy Index, December 2013 & 2019
- ¹⁵ WardsIntelligence, U.S. Light Vehicle Sales, August 2020; U.S. Light Vehicle Sales, August, 2021
- ¹⁶ Haig Stoddard, “Fullsize Trucks Lead U.S. Light-Vehicle Sales in August to First Gain in 14 Months,” *WardsIntelligence*, 9/1/22,”
- ¹⁷ Kelley Blue Book, Press Release, “New-Vehicle Prices Increase for Fifth Straight Month, Set Record Again in August, According to Kelley Blue Book,” 9/12/22
- ¹⁸ J.D. Power, Press Release, “Vehicle Inventory Shortages Constrain August Sales Pace as Average Transaction Prices Reach All-Time High,” 8/24/22
- ¹⁹ J.D. Power, Press Release, “Vehicle Inventory Shortages Constrain August Sales Pace as Average Transaction Prices Reach All-Time High,” 8/24/22
- ²⁰ Bankrate, “[Current Car Loan Interest Rates](#),” Accessed 9/29/22
- ²¹ EIA, “[Short-Term Energy Outlook](#),” 9/22
- ²² EIA, “[Short-Term Energy Outlook](#),” 9/22
- ²³ U.S. Energy Information Administration, Regular Gasoline, www.eia.gov, Accessed 9/29/22; U.S. Energy Information Administration, Weekly Cushing, OK WTI Spot Price, www.eia.gov, Accessed 9/29/22
- ²⁴ WardsIntelligence, “North America Production, August,” 2019, 2020, 2021, 2022
- ²⁵ Haig Stoddard, “U.S. Light-Vehicle Inventory in July Records First Year-Over-Year Increase Since 2019,” *WardsIntelligence*, 8/3/22
- ²⁶ Haig Stoddard, “Global Sales in July Rise for First Time in 13 Months,” *WardsIntelligence*, 8/30/22
- ²⁷ S&P Global Mobility, email, “S&P Global Mobility Monthly Automotive Update - September 2022,” 9/15/22
- ²⁸ U.S. Department of Transportation, https://www.fhwa.dot.gov/policyinformation/travel_monitoring/21septvt/, Accessed 8/4/2021
- ²⁹ Bill Koenig, “Manufacturing Adds 22,000 Jobs in August,” *SME*, 9/2/2022
- ³⁰ Bill Koenig, “Manufacturing Stays Steady in August,” *SME*, 9/1/2022
- ³¹ University of Michigan, Survey of Consumers, <http://www.sca.isr.umich.edu/>, Accessed September 29, 2022
- ³² Bureau of Labor Statistics, Table B-1. Employees on nonfarm payrolls by industry sector and selected industry detail, October 2021
- ³³ Bureau of Labor Statistics, Current Employment Statistics, Accessed 11/11/2021
- ³⁴ Jerry Hirsch, “[Auto Industry Has Soared Since 2010, Leading Economic Recovery](#),” *Los Angeles Times*, 1/3/14