

READING THE METER

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



ALLIANCE FOR AUTOMOTIVE INNOVATION

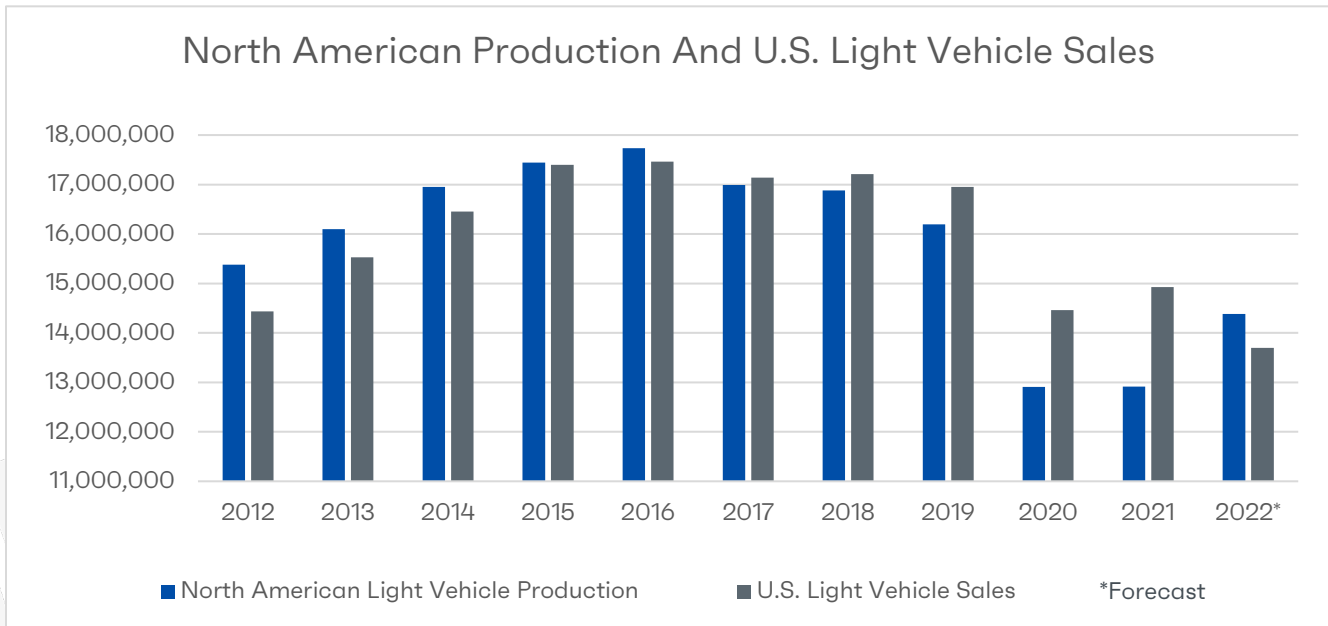
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Forecast Meter

Sales & Production Summary and Forecast (Updated 12/7)

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 %)
September '22	1,112,245 (+3.9% YoY)	1,258,501 (+38% YoY)
October '22	1,151,774 (+13.8% YoY)	1,299,707 (+12.4% YoY)
November '22	1,120,067 (+6% YoY)	
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)
3rd Quarter '22	3,358,116 (-.9% YoY)	3,636,418 (+24.6% YoY)
2021 Full Year	14,926,933 (+3.1% YoY)	12,919,000 (+4% YoY) (U.S. 8,871,661)
2022 Full Year Estimate	13.7 million units (WardsIntelligence)	14,386,000 (+11.4% YoY)



U.S. Light Vehicle Sales Outlook (Updated 12/7)

Wards Intelligence Outlook (12/7) 4: “Inventory in November continued the month-to-month upswing that began in August, but, despite huge pent-up demand, it will not necessarily translate to stronger sales on an annualized basis in the near term.

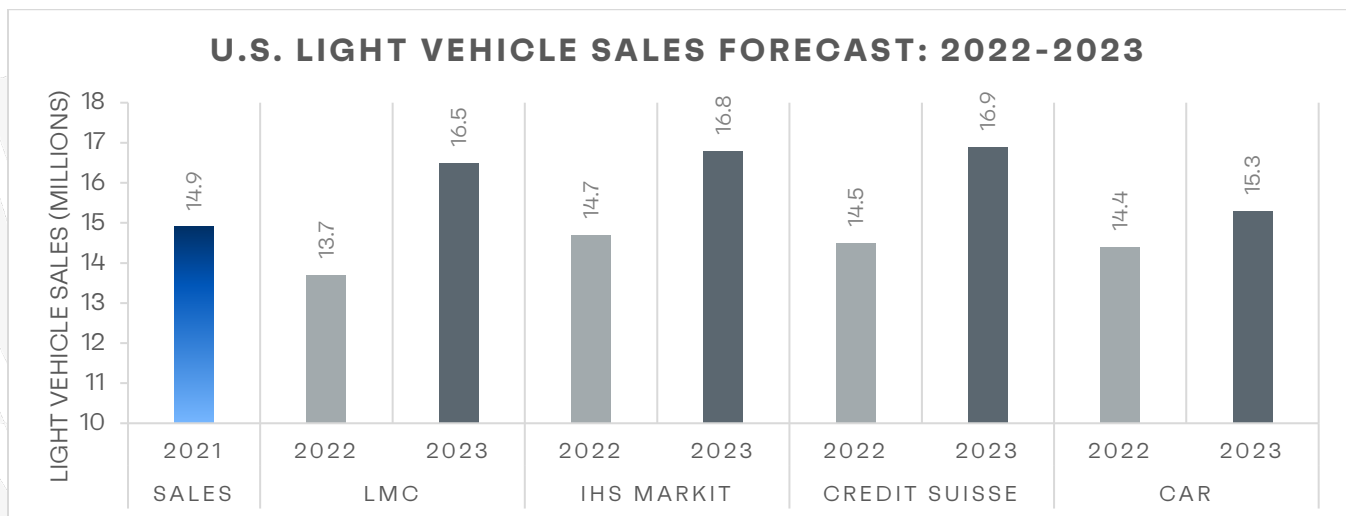
“Nov. 30 inventory totaled 1.65 million units, a 6.9% increase on October and 57.0% above the same period last year. The total remains extremely lean by historical standards and is the primary reason sales have not returned anywhere near annualized levels of 17 million, as was normal in the five years prior the onset of the pandemic in early 2020.

“However, other headwinds have emerged, such as increased prices combined with lower incentives, exacerbated by the mix of available vehicles heavily skewed toward higher price models, plus rising interest rates in conjunction with fears that the U.S. economy could enter a recession anytime in the next 12 months. Furthermore, although recently declining, elevated fuel prices, as well as surging inflation in general, also pose barriers by digging deeper into consumer pocketbooks.

“The additional headwinds likely are why sales gains are lagging as much as they are behind rising inventory. Using the inventory-to-sales ratio – a month’s beginning inventory vs. its sales – as a measure, the ratio, after averaging 1-to-1 from August 2021 through June 2022, climbed to 1.3 at the end of November. Basically, despite the replacement demand that has been building since the pandemic first impacted the U.S. market, sales on a volume basis since June have remained flat while inventory increased 34%.

“The trend points to a downturn in December sales from November’s 14.1 million-unit seasonally adjusted annual rate – December volume will rise from November. Without a big cutback in prices by dealers – dealers are charging above sticker price on roughly half the vehicles they sell – as well as increases in incentives, sales are not even poised to record significant growth in the first quarter of 2023 from Q4-2022, which currently is expected to total a 14.2 million to 14.3 million SAAR.

“Assuming no significant movement on incentives, sales for entire-2022 are projected to total 13.7 million units. December’s SAAR will have to total 13.6 million units for the year to hit 13.8 million units (which would be a rounding up from 13.75 million).”



North American Production & Inventory Outlook (Updated 12/7)

“Wards Intelligence Inventory Outlook (12/7)”⁵: “If December sales don’t at least match November’s 14.1 million-unit SAAR, inventory could rise again. Not necessarily bad, but December, because it is a low-volume month for production due to holiday-related plant shutdowns, usually ends with lower inventory from November. A sequential increase in inventory at the end of the year could be another sign of flagging demand that continues into 2023.”

Wards Intelligence Production Outlook (11/23)⁶: “The revised projection for the fourth quarter is 3.687 million units, a cut of 96,900 from month-ago’s outlook. The Q4 total is 9.2% above like-2021’s 3.375 million units. Light-vehicle output in Q4 is tracking to 3.550 million units, 9.6% above October-December 2021.

“Despite the solid year-over-year increase, the Q4 projection is 5.4% below pre-pandemic-2019’s total. Production is not likely to get back to pre-Covid levels until late-2023.

“For the year production is tracking to 14.774 million units, 10.2% above 2021’s 13.407 million. Light vehicles are projected to total 14.235 million units in 2022, also up 10.2%.

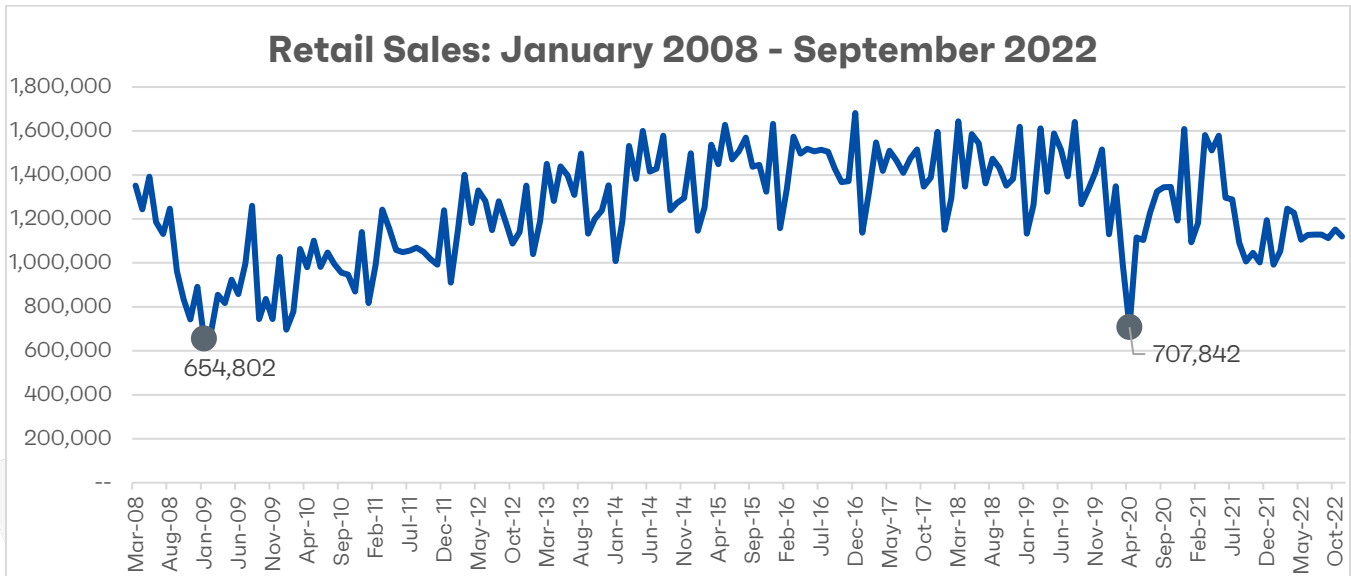
S&P Global Mobility Outlook⁷: “North America: The outlook for North America light vehicle production was reduced by 109,000 units and by 234,000 units for 2022 and 2023, respectively (and was reduced by 53,000 units for 2024). The outlook for North America light vehicle production for 2022 was reduced 0.7% to 14.47 million units on continued supply chain, labor and logistic issues. A recent uptick in unplanned downtime relating to a broad array of supply chain issues has curbed production with manufacturers still challenged to produce vehicles at normal operating patterns. The near-term production forecast continues to be derived from automakers’ ability to produce remaining divorced from economic, demand and inventory conditions amid ongoing supply chain issues. Concerns surrounding ongoing supply chain challenges and demand destruction amid recessionary fears results in the outlook for 2023 being revised down 1.5% to 15.39 million units. With the outlook for US demand sharply reduced, inventory creation has entered its formative stage and is projected to reach 2.0 million units by the end of 2023. Following reductions last month due to production constraints extending into 2024 along with the effects of demand destruction, the outlook for 2024 was revised down a further 0.3% to 16.16 million units. Greater demand destruction amid a recessionary outlook results in the risk for additional cuts to the outlook for 2024 with output in 2023 serving as an inventory restocking buffer.”

Market Meter

U.S. Light Vehicle Sales (Updated 12/7)

Monthly Sales (Updated 12/7)

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.



November Sales (Updated 12/2)

WardsIntelligence[®]: “U.S. light-vehicle sales in November, as expected, weakened from the prior month on an annualized basis but also did finish below forecast.

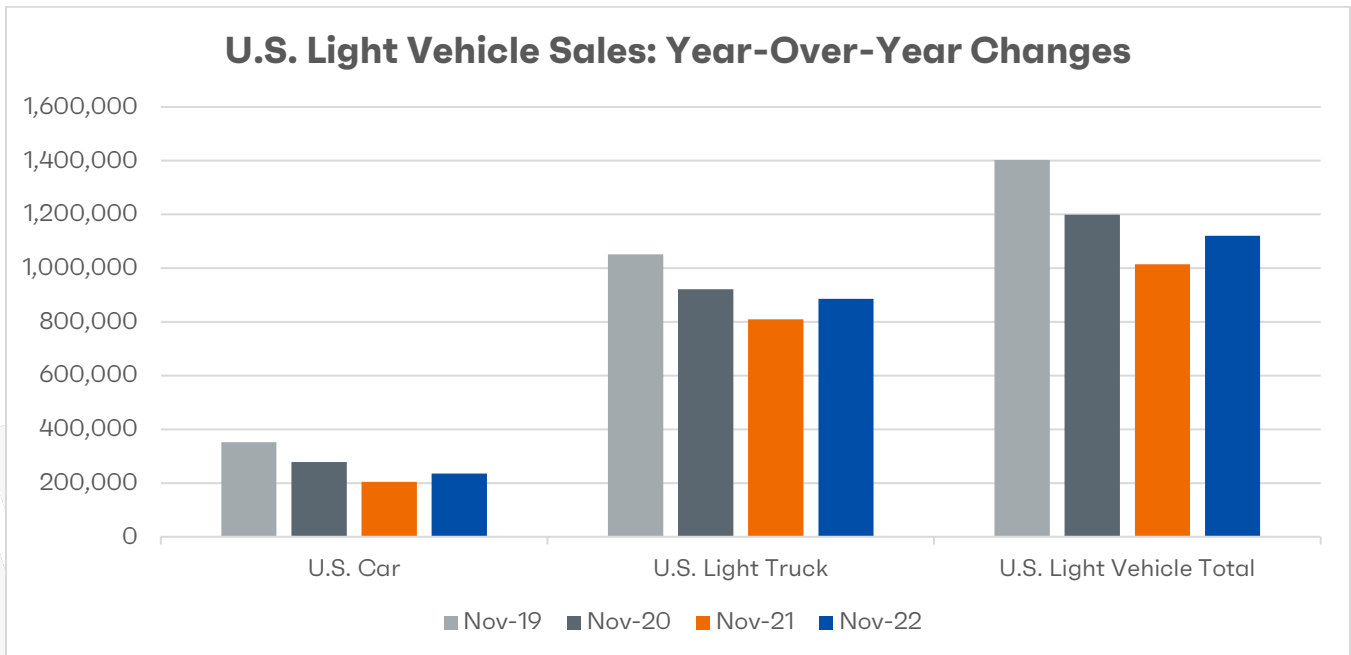
“November sales posted a 14.1-million-unit seasonally adjusted annual rate, down from October’s 15.1 million and up from like-2021’s 13.1 million. Sales were expected to total a 14.5 million-unit SAAR in November.

“Volume totaled 1.120 million units, up 10.4% from same-month 2021’s 1.014 million. November’s daily selling rate over 25 selling days totaled 44,803, 6.0% above like-2021’s 42,267 – 24 selling days. It was the third straight increase for the DSR.

“Presumably, talk of recession is aiding in capping demand on top of other headwinds, such as elevated prices, higher interest rates and lack of inventory – and that what inventory is available remains skewed to higher price models and trim levels.

“Although still extremely low by historical standards, inventory has been rising – and along with it some moderation in price increases – but sales, despite an ongoing build-up in pent-up demand that began in March 2020 when the Covid-19 pandemic first hit the U.S. market, are not keeping up with the increase in availability.

“The curtailment in demand appears with light trucks, specifically pickups and SUVs, which posted year-over-year declines, based on daily selling rates, of 2.5% and 9.2%, respectively. Most of these vehicles are traditional body-on-frame trucks, which generally receive higher prices, as well as being the least fuel-efficient segments.”



Fleet Sales (Updated 12/2)

TrueCar⁹: “Fleet sales for November 2022 are expected to be up 68% from a year ago and up 21% from October 2022 when adjusted for the same number of selling days.”

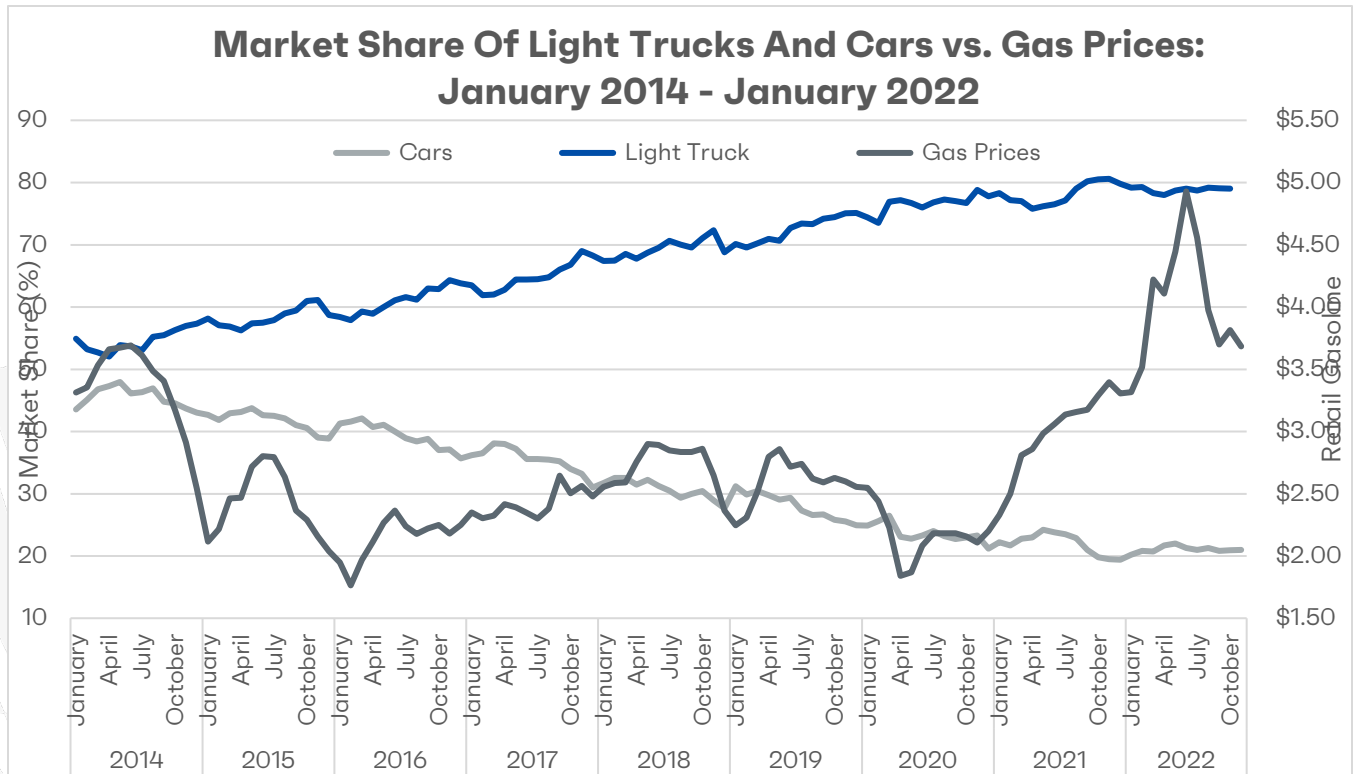
J.D. Power¹⁰: “Fleet sales are expected to total 168,900 units in November, up 56.8% from November 2021 on a selling day adjusted basis. Fleet volume is expected to account for 15% of total light-vehicle sales, up from 10% a year ago.”

Segments vs. Gas Prices (Updated 12/7)

Monthly Sales For November: Light trucks accounted for nearly 79 percent of sales in November, a .8 pp decrease in market share from a year ago. Compared to the same period in 2021, sales of cars are up nearly 30,000, and down more than 117,000 from November 2019, when cars comprised 25% of the market as opposed to the 21% of the market passenger cars have now.

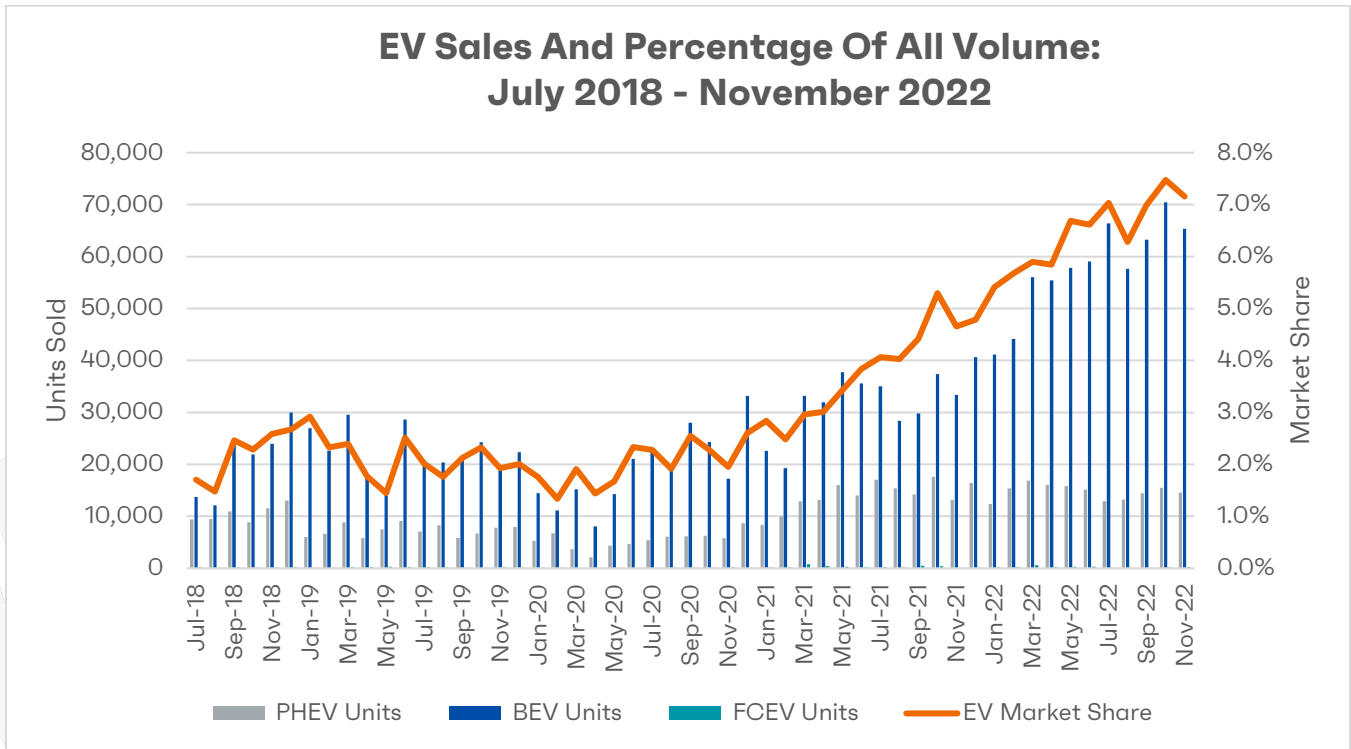
Historic Perspective: The upward trend in the popularity of light trucks over cars has been steady since 2013, when only 2% of annual market share separated the two segments¹¹ and gas was over \$3.00¹² a gallon. As fuel prices dropped below the \$3.00 mark in mid-September 2014, light truck sales began 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.¹³



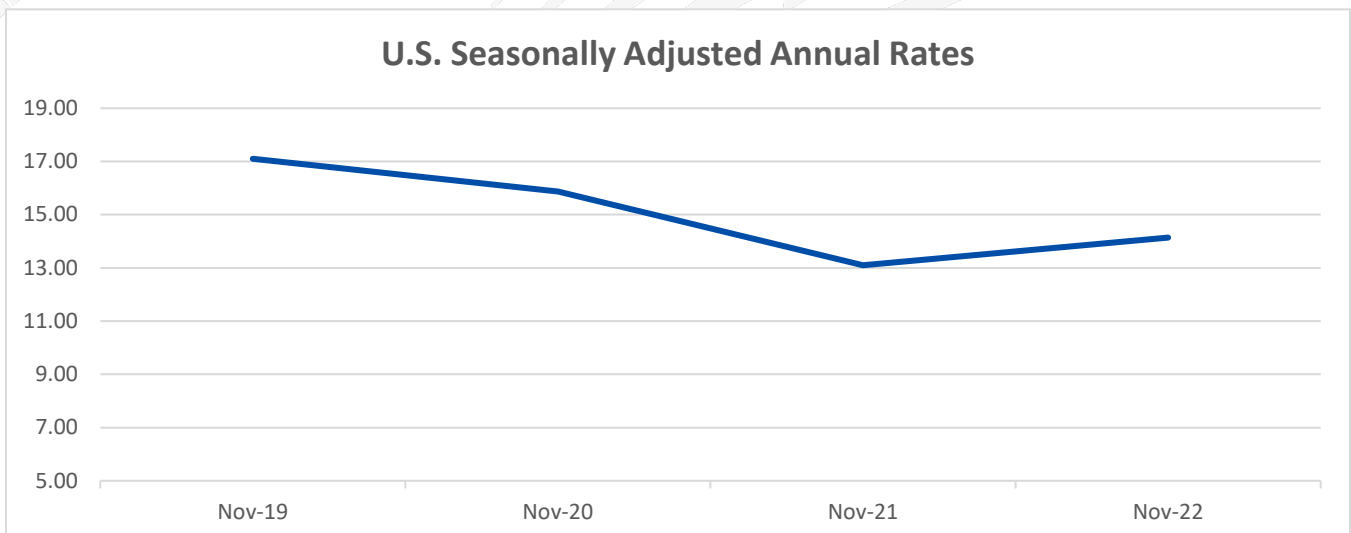
EV Powertrain Sales (Updated 12/7)

Sales of electric vehicles (BEV, PHEV, & Fuel Cell) accounted for 7.2% of total vehicle sales in November 2022 (80,145 units). November's EV market share is up 2.5 pp from a year ago and down 0.3 pp from October 2022. Sales of battery electric vehicles led the way for ZEVs, accounting for 5.8% of total sales, up 2.5 pp from November 2021. Plug-in hybrids accounted for 1.3%, unchanged from the same time last year.¹⁴



Seasonally Adjusted Annual Rates (Updated 12/7)

WardsIntelligence: “November sales posted a 14.1-million-unit seasonally adjusted annual rate, down from October’s 15.1 million and up from like-2021’s 13.1 million. Sales were expected to total a 14.5 million-unit SAAR in November.”¹⁵

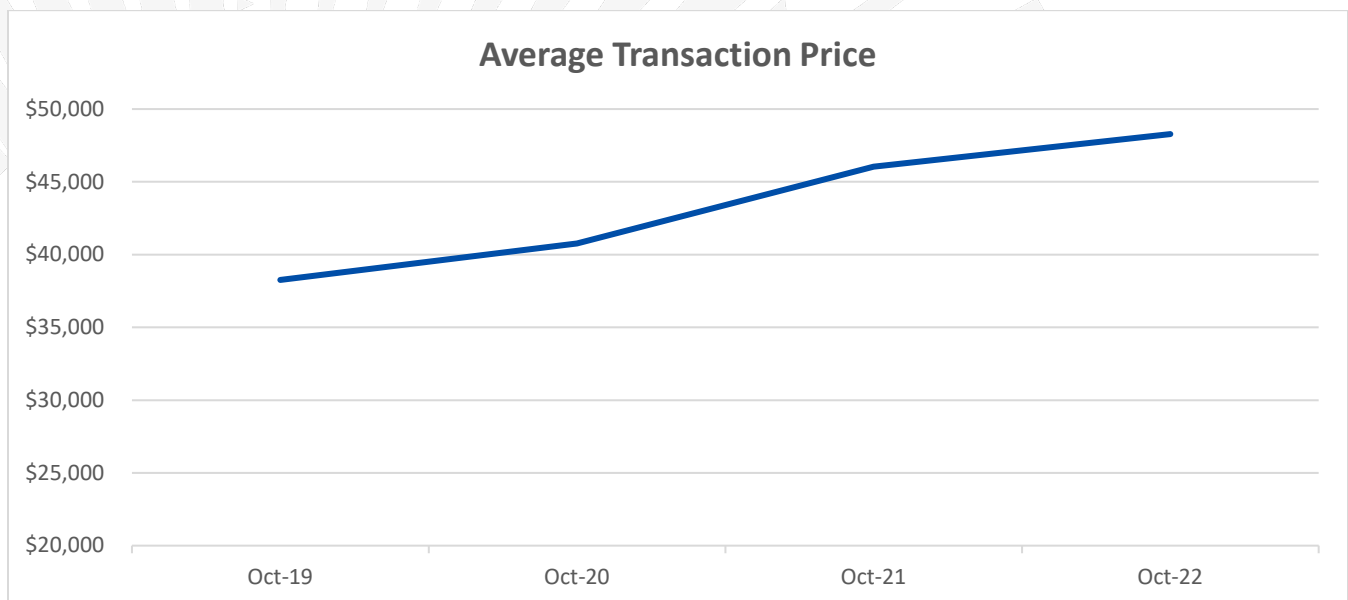


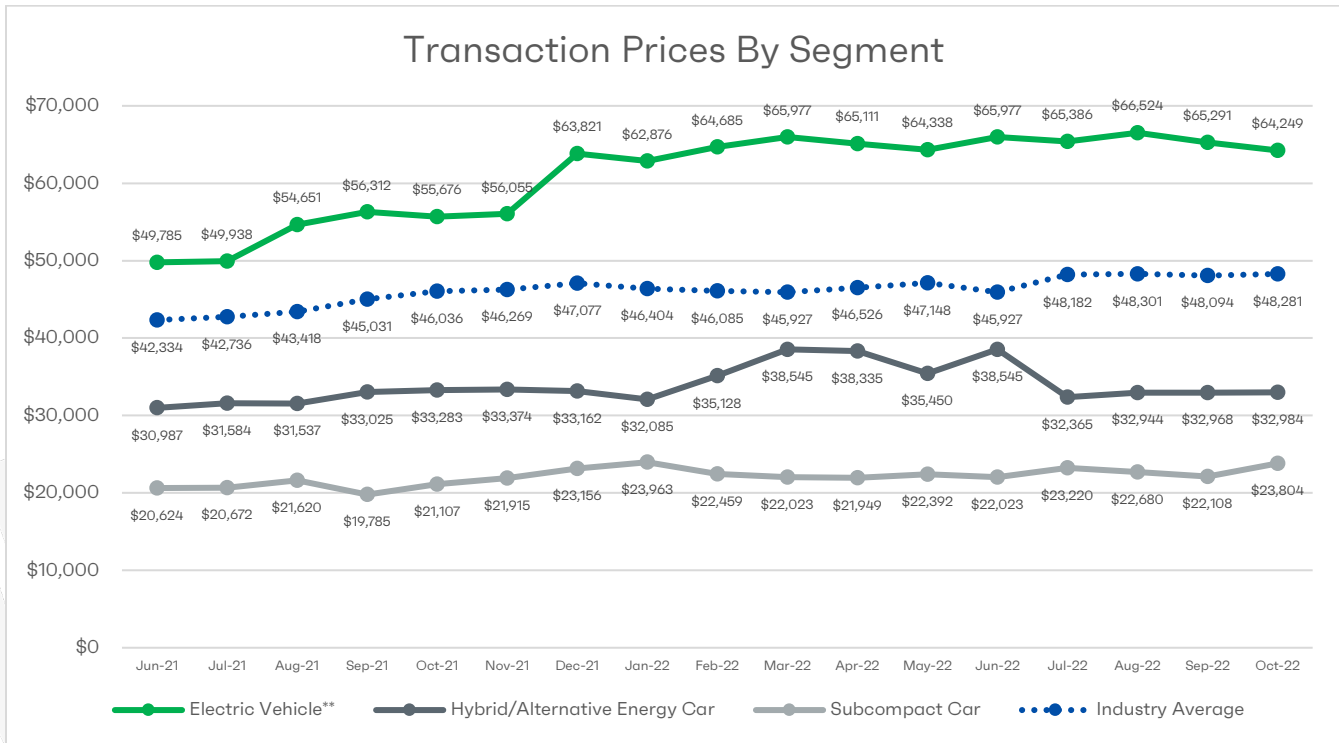
Average Transaction Price (Updated 12/7)

J.D. Power (Updated 12/2) ¹⁶: “New-vehicle transaction prices continue to rise but at slower pace than earlier this year. The average price in November will set a record for the month of \$45,872, an increase of 3.1% from a year ago. The record transaction prices mean that buyers are on track to spend nearly \$42.8 billion on new vehicles this month—the highest level ever for the month of November and a 7.0% increase from November 2021.”

Kelley Blue Book (October) (Updated 11/23) ¹⁷: “The average price paid for a new vehicle in the United States in October 2022 was up from September and remains above the \$48,000 mark, according to data released today by Kelley Blue Book, a Cox Automotive company. The Kelley Blue Book new-vehicle average transaction price (ATP) increased to \$48,281 in October, slightly lower than the revised all-time high of \$48,301 set in August. October 2022 prices rose 0.2% (\$187) month over month from September and were up 3.8% (\$1,775) year over year from October 2021.

“According to Kelley Blue Book calculations, October marks a record 17th straight month that new-vehicle ATPs were higher than the average manufacturer's suggested retail price (MSRP), also known as the sticker price. Strong luxury vehicle sales have been a primary reason for overall elevated new-vehicle prices. Luxury vehicle share remains historically high, slightly decreasing to 17.8% of total sales in October from 17.9% in September. The high share of luxury sales helps to push the overall industry ATP higher. The average price paid for a new EV declined in October by \$2,286 (or down 2.3%) compared to September but was up by 7% compared to a year ago in October 2021. The average new EV price was \$64,249, according to Kelley Blue Book estimates, well above the industry average and aligning more with luxury prices versus mainstream prices.”



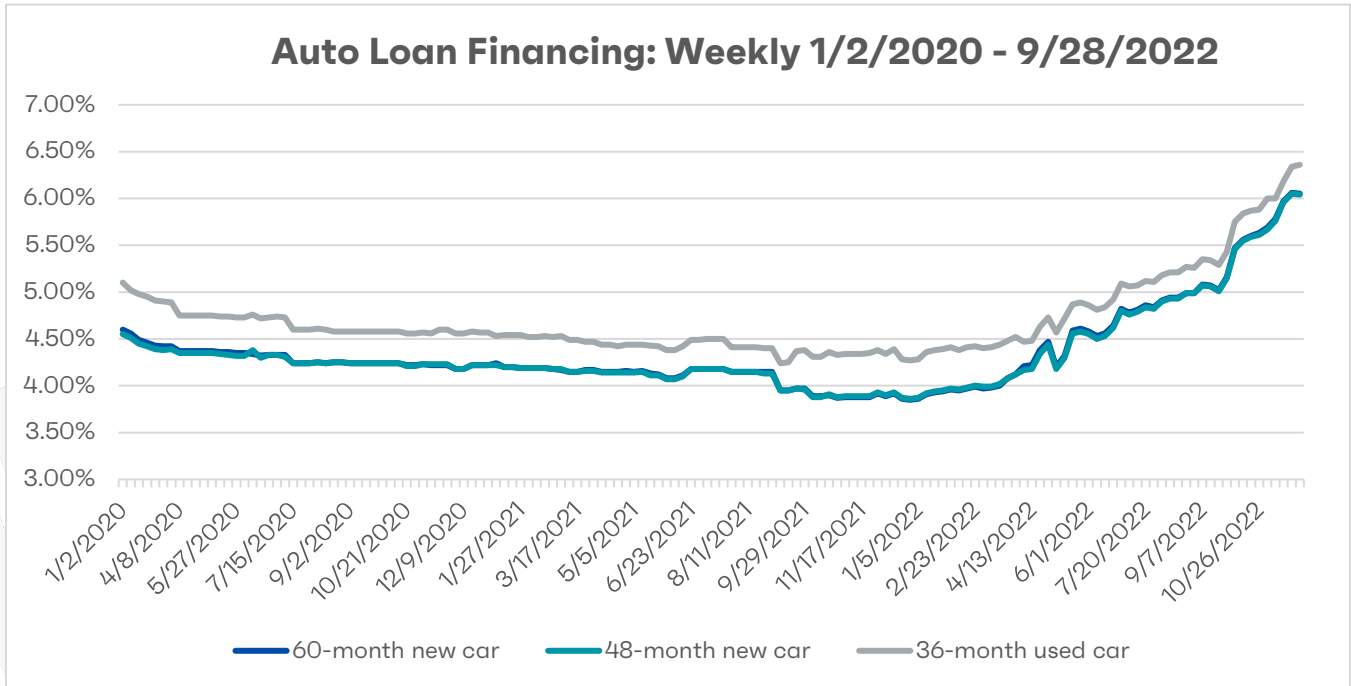


Auto Loan Financing (Updated 12/7)

JD Power (12/2)¹⁸: “Elevated pricing coupled with interest rate increases are inflating monthly loan payments. After breaking the \$700 level for the first time ever in July, the average monthly finance payment in November is on pace to be \$712, up \$48 from November 2021. That translates to a 7.2% increase in monthly payments from a year ago. The average interest rate for new-vehicle loans is expected to increase 238 basis points from a year ago to 6.37%.”

Interest Rates (updated 12/2): Interest rates decreased 0.01 pp for the 60-month and 48-month, and increased 0.02 pp for the 36-month used car. Rates now stand at 6.05%, 6.04%, and 6.36%, respectively. Since the beginning of 2020, 60-month rates are up 1.45 pp, and are up 2.13 pp since the same time a year ago.¹⁹

Dates	60-month new car	48-month new car	36-month used car
1/2/2020	4.60%	4.55%	5.10%
12/1/2021	3.92%	3.93%	4.38%
11/16/2022	6.06%	6.05%	6.34%
11/22/2022	6.05%	6.04%	6.36%
One Week Change	-0.01%	-0.01%	0.02%
Two Week Change	0.08%	0.08%	0.18%
Change since 1/3/20	1.45%	1.49%	1.26%
One Year Change	2.13%	2.11%	1.98%

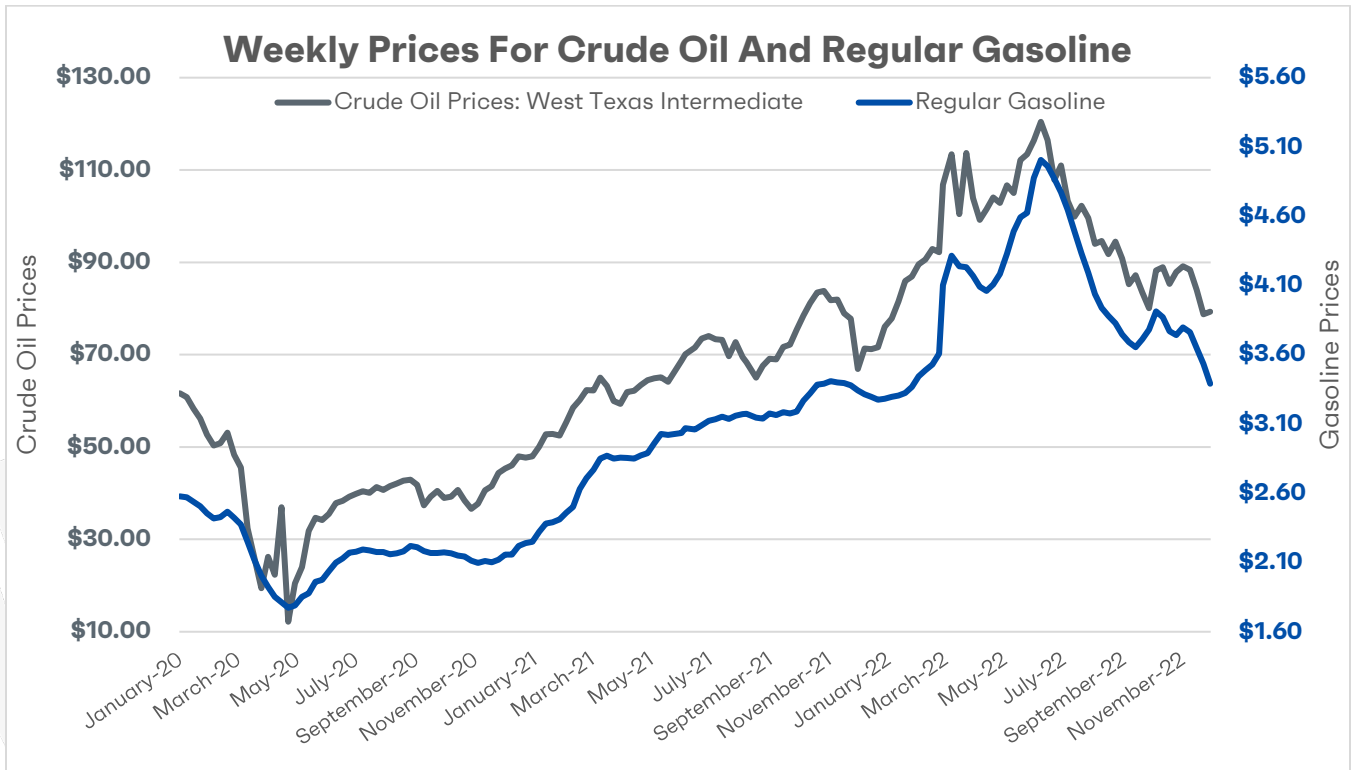


Crude Oil and Gas Prices (Updated 12/7)

EIA Outlook For Gasoline (11/23)²⁰: “After falling for three straight months, U.S. retail gasoline prices increased in October. We expect gasoline prices to resume their decline in November, as refiners increase production to meet distillate demand and gasoline inventories begin increasing. Rising gasoline production contributes to inventory builds in our forecast that will return gasoline stocks to levels within the five-year range by early 2023. The U.S. average retail price in our forecast falls from \$3.82/gal in October 2022 to \$3.60/gal in February 2023, with the largest price decrease on the West Coast. Following this decrease, we expect U.S. retail gasoline prices to remain relatively flat for the rest of 2023.

EIA Outlook For Oil (11/23)²¹: “Growth in OPEC and non-OPEC oil production—most notably production in the United States keeps the Brent crude oil price in our forecast lower on an annual average basis in 2023 than in 2022. However, we expect the Brent crude oil price will begin rising in 2H23.”

Gas And Oil Continue Declining: Oil prices, as benchmarked at West Texas Intermediate, fell \$0.55 to \$79.29 at the beginning of December. Since election day 2020, oil prices are \$43 a barrel higher. Gas prices fell \$0.14 to \$3.39. Gas is 31% higher than the beginning of 2020.²²



Production Meter

U.S. Light Vehicle Production (Updated 11/23)

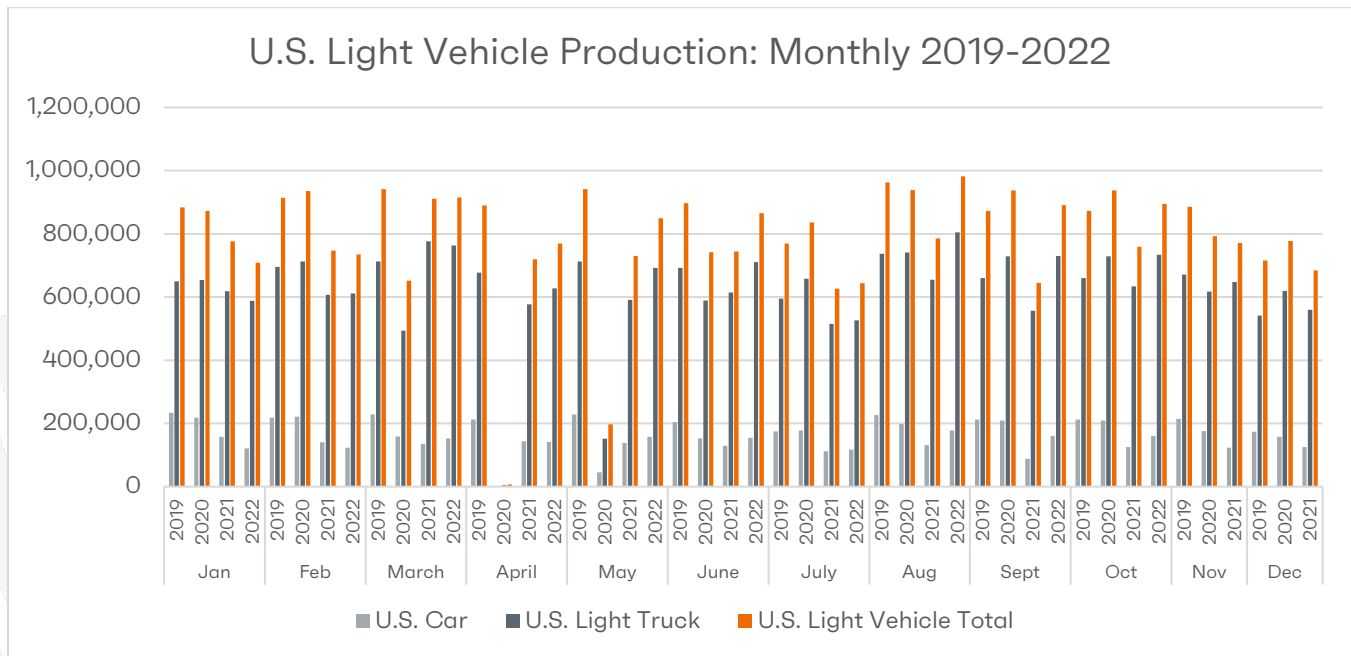
WardsIntelligence (Updated 11/23)²³: “Production of cars and trucks – including medium-/heavy-duty – rose 12.4% year-over-year in October, the ninth straight increase. However, production was over 99,000 units below expectations, somewhat a setback after the volatility caused by the pandemic and supply-chain disruptions seemed to have largely subsided.

“Output in October totaled 1.300 million units, down from September’s 1.315 million and August’s 1.449 million. Excluding the big trucks, light vehicles totaled 1.251 million units, up 12.7% from same-month 2021.

“The October shortfall from what production was tracking at for the period a month ago won’t stop inventory from rising again at the end of November – unless sales far exceed expectations.”

Monthly Production (Updated 11/23)

U.S. Light vehicle production for October 2022 increased month-over-month by less than 1 percent, totaling 894,941 vehicles (160,968 cars, 733,973 light trucks), year-over-year, production is up 15.2 percent from 2021. ²⁴



U.S. Light Vehicle Inventory and Days' Supply (Updated 12/7)

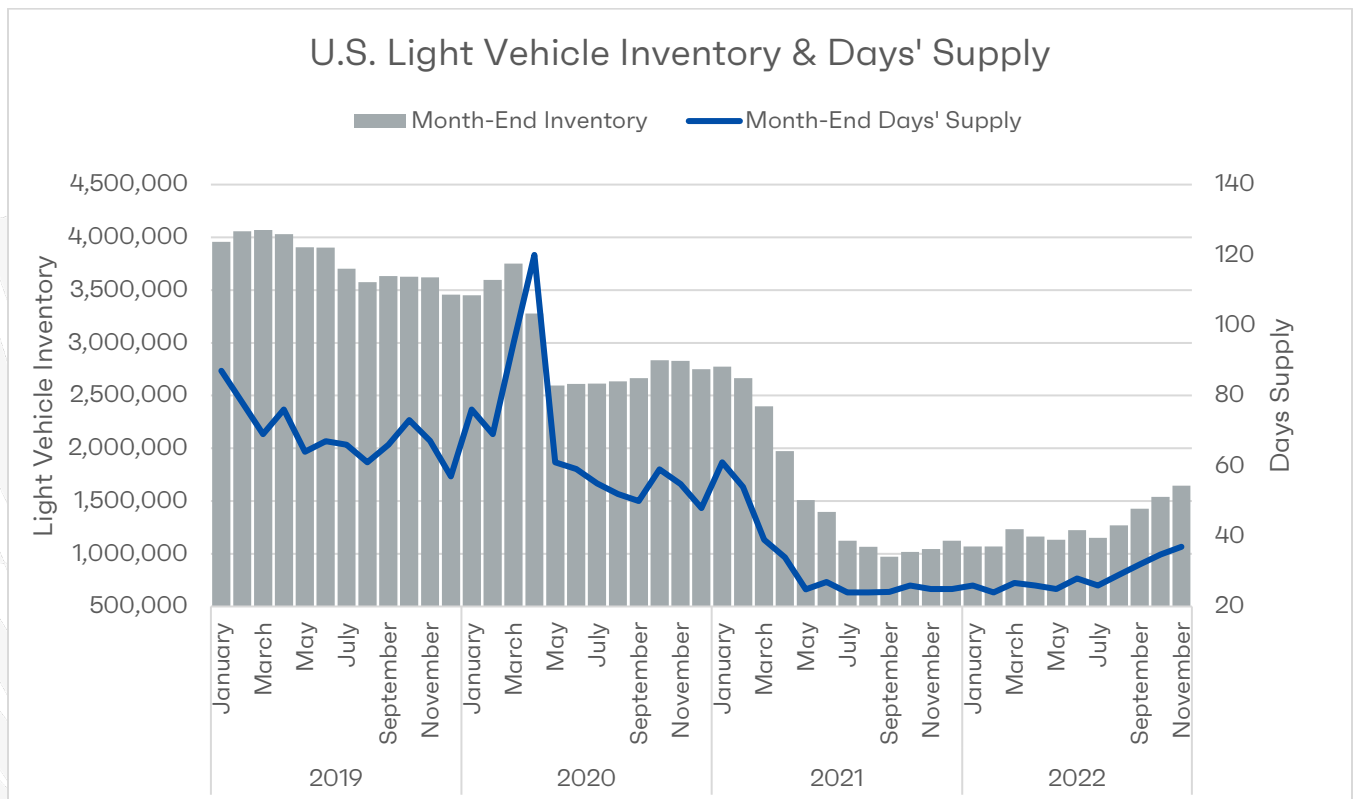
WardsIntelligence Inventory Update (12/2) ²⁵: “Inventory in November continued the month-to-month upswing that began in August, but, despite huge pent-up demand, it will not necessarily translate to stronger sales on an annualized basis in the near term.

“Nov. 30 inventory totaled 1.65 million units, a 6.9% increase on October and 57.0% above the same period last year. The total remains extremely lean by historical standards and is the primary reason sales have not returned anywhere near annualized levels of 17 million, as was normal in the five years prior the onset of the pandemic in early 2020.

“Last year, inventory of pickups ended November at a 1.3-to-1.0 ratio of that month’s sales. That total climbed to 2.2 last month. SUVs during that period rose to 1.7 from 1.1. All light vehicles since November 2021 increased to 1.3 from 1.0. Cars are shooting so fast through the pipeline their ratio remains below 1.0, while CUVs, the largest segment in the industry, accounting for roughly 45% of sales, are at 1.1, up from 0.8 a year ago.

“In raw volume, inventory of pickups ended November up 72.7% year-over-year. SUVs were up 27.0%. Of other major groupings, cars were up 34.0%; CUVs, 68.3%; and vans, 48.7%.

“Thus, traditional trucks, or pickups and SUVs, especially the fullsize versions, appear to be the main sector where consumers are pulling back.”



Global Meter

Global Light Vehicle Sales (Updated 12/7)

Wards Intelligence ²⁶: “Global sales continued to grow in October, rising 7.1% from the same year-ago period, the fourth straight increase.

Including some initial estimates, volume of light vehicles and medium-/heavy-duty trucks totaled 7.09 million units, up from like-2021’s 6.62 million. October’s total was 5.8% below the prior month’s 7.53 million, but volume typically declines from September. Wards Intelligence partner LMC Automotive pegs October’s seasonally adjusted annual rate of 86 million units as in line with September.

With Europe posting its first year-over-year increase in 16 months, October's results marked the first time since May 2021 that all regions recorded gains.

Total-vehicle sales rose 0.7% year-over-year in Europe during October to 1.19 million units. However, year-to-date 2022 volume of 11.98 million units was 14.7% below like-2021. Among other regions, only North America – down 9.7% - is below its year-ago 10-month total.

October volume in North America increased 10.1% year-over-year to 1.43 million units. It was the region's third straight increase. Year-to-date through October, deliveries numbered 13.95 million, compared with like-2021's 15.45 million.

The Asia-Pacific region recorded its fifth consecutive year-over-year gain in October. Volume totaled 3.84 million units, up 8.6% from same-month 2021. YTD volume through October totaled 35.79 million units, up 5.5% year-over-year.

Gains in China mostly accounted for the AP's positive results. Deliveries rose 4.8% in October from like-2021 to an estimated 2.50 million units. Year-over-year increases in China averaged 26% over the previous four months. October's slower growth likely is mostly attributable to an increase in Covid-19 cases and subsequent lockdown measures, which continued in November.

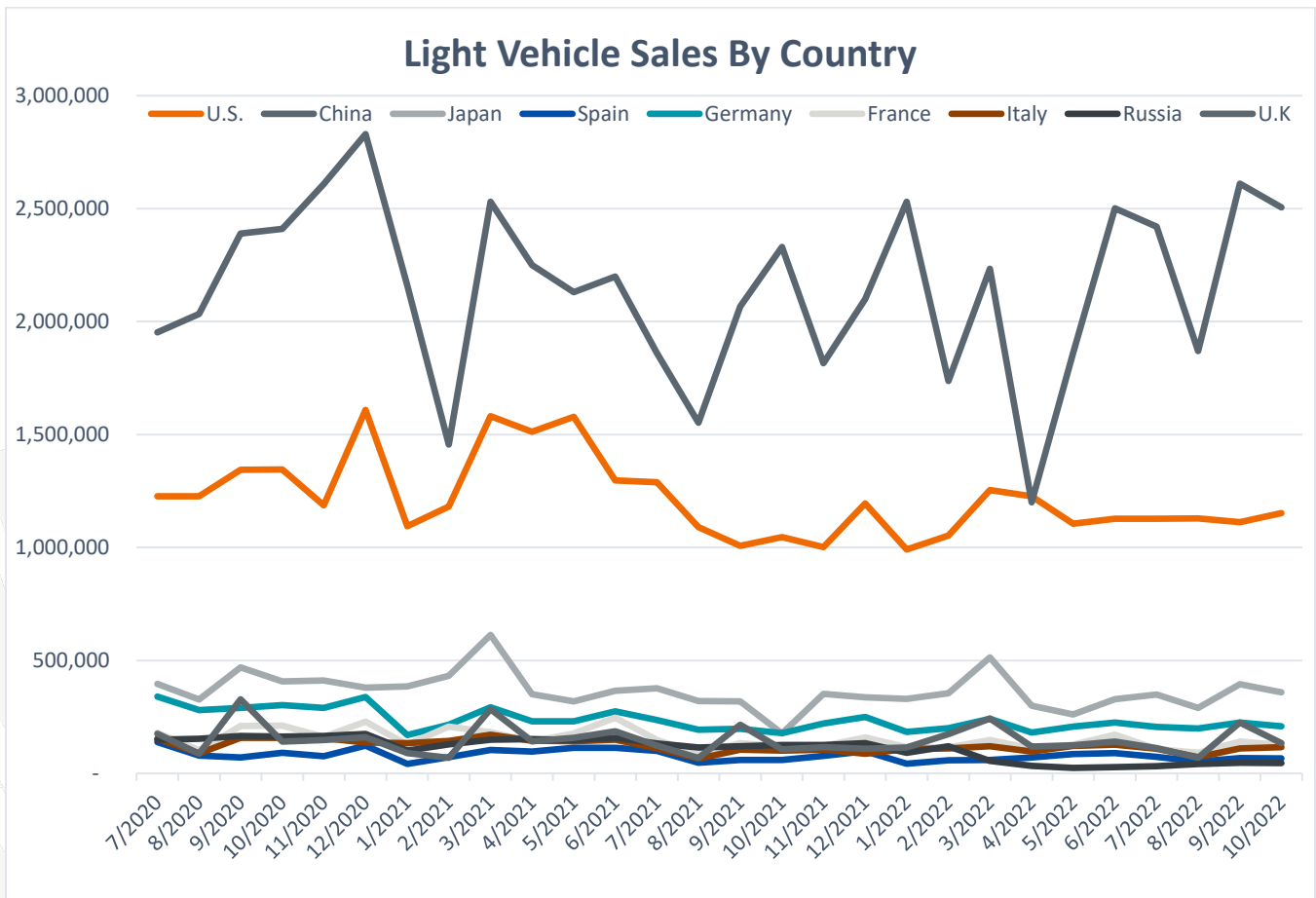
Still, with YTD volume up 3.7% from same-period 2021 to 22.56 million units, China remains a growth engine for global sales.

Excluding China, volume in the rest of the AP rose 16.4% year-over-year to 1.34 million units in October. Several countries posted increases, but growth was sparked by the AP's second largest market, India, which recorded a 25.4% year-over-year surge to 413,923 units. Sales in India have increased every month in 2022, and YTD volume at 4.00 million units is 26.9% above like-2021.

Japan, the AP's third largest market, also boosted the region with a 28.6% year-over-year increase in October to 359,159 units. However, YTD volume, at 3.48 million units, was 7.4% below 10-months 2021.

With a fourth straight year-over-year increase in October, and fifth in the past six months, South America's YTD volume rose above the same-period year-ago results for the first time this year. October sales totaled 284,000 units, up 4.8% year-over-year. YTD volume of 2.81 million units is slightly above 10-month 2021's 2.80 million.

Excluding big trucks, October light-vehicle sales globally totaled 6.64 million units, up 4.1% from same-month 2021's 6.38 million. YTD light-vehicle volume totaled 65.58 million units, down 1.7% from 10-month 2021's 66.70 million.”



Global Light Vehicle Production (Updated 11/23)

S&P Global Mobility Forecast (11/23) ²⁷: “The ongoing theme of near-term supply chain pressures transitioning to demand-oriented concerns continues to prevail and influence the general automotive outlook. When digging deeper, it is important to note the continued production strength in Greater China and South Asia supporting the forecast for 2022 while potentially deeper and extended demand destruction, due to deteriorating economic fundamentals, impacts the forecast in 2023 and beyond. Further, as many markets shift to greater levels of electrification, we expect vehicle pricing to be pressured to the upside, presenting a headwind to demand in the intermediate-to-longer term. The November 2022 forecast update reflects upgrades for this year for Greater China on the continuing strength of demand stimulus and South Asia as the region benefits from a stabilized supply chain supporting efforts to clear order backlogs. However, the forecast also reflects important near-to-intermediate term downward revisions particularly focused on North America, Europe and even Greater China, among other regions. While semiconductor availability remains an important consideration and continues to impact operations, demand destruction is expected to play a more

fundamental role and accelerate in 2023 and 2024 in several key markets, impacting production through the intermediate-term and influencing 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 52,000 units and by 48,000 units for 2022 and 2023, respectively (and reduced by 43,000 units for 2024). The near-term outlook for Europe through 2022 continues to be influenced by supply-side challenges, particularly with semiconductor supplies which are improving, yet not as strongly as previously expected. This is expected to remain a factor for production going into 2023. However, we continue to forecast sequential improvement, with volumes climbing to 4.1 million units in Q4-2022 (versus 4.0 in Q2-2022), 4.2 million units in Q1-2023 and 4.3 million units in Q2 2023. We expect the pace to slow in the second half of 2023 as the need to rebuild inventory and fulfill residual pent-up demand is offset by still challenging macroeconomic conditions that will have a lingering impact on the market. Overall forecast revisions for 2023 and 2024 were focused primarily on developments in Russia as Hyundai is now expected to exit the market in the near-term.

“Greater China: The outlook for Greater China light vehicle production was increased by 286,000 units for 2022 and was reduced by 294,000 for 2023 (and was reduced by 51,000 units for 2024). Despite expanding COVID restrictions after Golden Week, mainland China passenger vehicle production continued to exhibit strength, growing 13% year-on-year in October, driven particularly by solid demand for NEVs. Conversely, light commercial vehicle production declined by 36% year-on-year, constrained by economic headwinds and demand destruction. Export activity, particularly for NEVs, remains a key strength supporting production in the region. Full-year 2022 production for the region now stands at 26.7 million units representing year-over-year growth of 7.5%. Given an expected payback effect relative to strong production results in 2022, the outlook for 2023 was reduced and now stands at 26.4 million units for the broader region. Meanwhile, the production outlook for 2024 was reduced due to economic and geopolitical uncertainties impacting the market. Consequently, Greater China light vehicle production is expected to contract by 1.3% in 2023 and post a gain of 5.4% in 2024.

“Japan/Korea: Full-year 2022 Japan production was upgraded by 16,000 units relative to last month. Toyota was boosted by 47,000 units due to stronger production actuals in the third quarter of this year. On the other hand, Nissan was downgraded by 25,000 units due to volatile operations related to labor shortages and other plant-level challenges. Long-term production volumes for Japan were upgraded by an average of 26,000 units per year. This was primarily related to the timing of three BEV models for Mazda advancing one year relative to the prior month forecast. Full-year 2022 South Korea production was increased by 16,000 units relative to the previous forecast. While exports have been steadily increasing, domestic demand has also maintained an upward trend recently further supporting production. The upward trajectory is expected to continue in the near-term with improved supply of semiconductors. As a result, production in 2023 and 2024 was increased by 20,000 units and 51,000 units, respectively, compared to last month. In the long-term, South Korea production was modestly

reduced by about 10,000 units primarily due to the removal of Arrival and Edison Motors from the forecast.

“North America: The outlook for North America light vehicle production was reduced by 190,000 units and by 322,000 units for 2022 and 2023, respectively (and was reduced by 273,000 units for 2024). With a sudden resurgence in short-lead downtime, the outlook for North America light vehicle production for 2022 was cut 1.3% to 14.28 million units as supply chain, labor, and logistics issues hinder production. Semiconductor related production losses in the fourth quarter are on pace for the highest losses since fourth quarter 2021, totaling nearly 300,000 units. With production in the region facing increasing volatility, production as measured on a seasonally adjusted annual rate (SAAR) basis totaled an estimated 13.80 million units in October 2022, up 14.2% from a year ago but also disappointingly the lowest level since February 2022 when chip related issues were more prominent. Concerns surrounding ongoing supply chain volatility, most notably for semiconductors, and demand destruction amid recessionary fears results in the outlook for 2023 being cut 2.1 % to 15.07 million units. With the outlook for US demand sharply reduced, inventory creation has entered its formative stages and is projected to reach 2.0 million units by the end of 2023. Further cuts extend into 2024 amid the effects of demand destruction with production revised down 1.7% to 15.89 million units.

“South America: The outlook for South America light vehicle production was increased by 6,000 units and reduced by 15,000 units for 2022 and 2023, respectively (and reduced by 15,000 units for 2024). The outlook for 2022 was upgraded slightly based on observed strength with Argentina production as momentum does not appear as impacted by the uncertain conditions influencing the broader region. The downgrades implemented for 2023 and 2024, while fairly modest, were focused primarily on Brazil and reflect the ongoing dynamic market environment given challenging macroeconomic conditions.

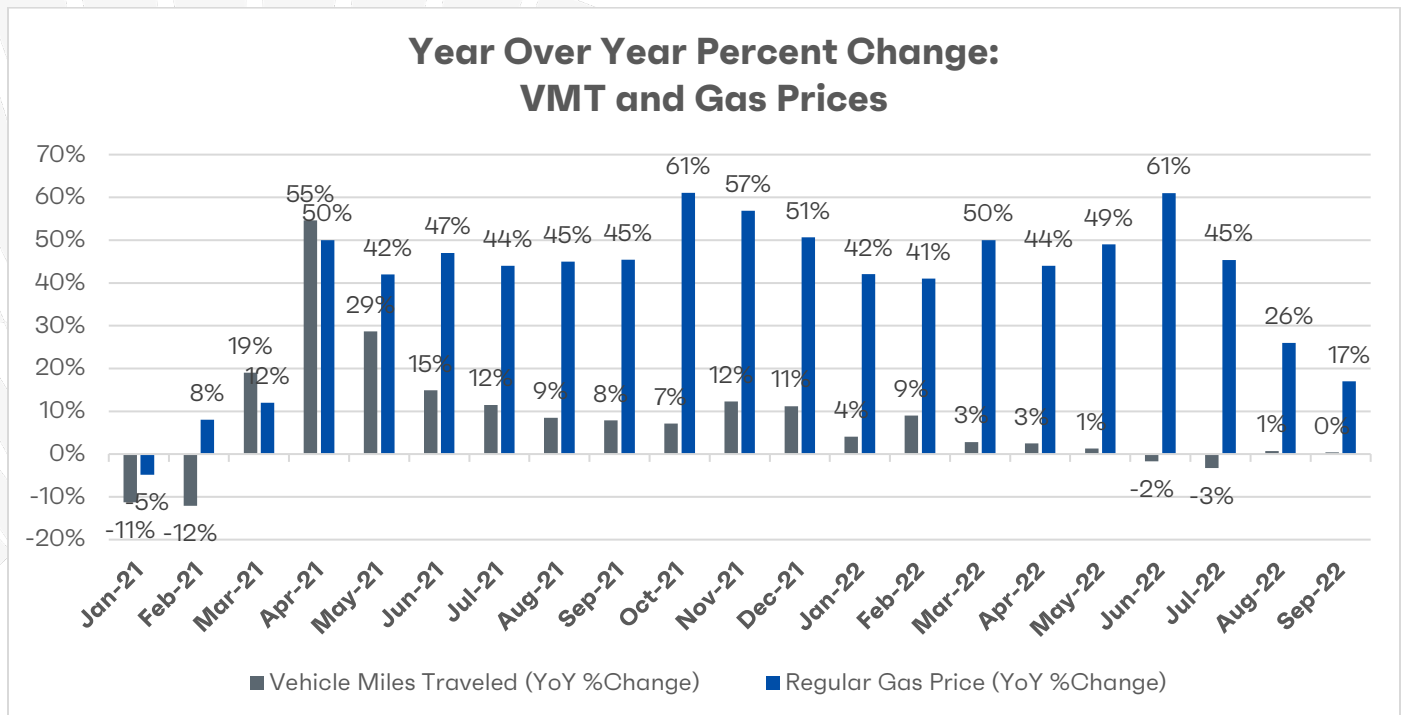
“South Asia: The outlook for South Asia light vehicle production was increased by 144,000 units and reduced by 22,000 units for 2022 and 2023, respectively (and was increased by 66,000 units for 2024). The upgraded outlook for 2022 was largely driven by stronger actual production for the ASEAN and Indian markets as recorded in September and October on easing supply chain pressures. Automakers in the region continue to ramp-up production in a bid to fulfill large backlogs which may extend into 2023. However, we continue to monitor the lagging demand impact of deteriorating economic fundamentals and broader geopolitical concerns. The outlook for 2023 was downgraded rather modestly owing to growing economic headwinds and the potential to weaken vehicle demand for the broader region.”

Recovery Meter

Roadway Travel (Updated 12/7)

According to the U.S. Department of Transportation, seasonally-adjusted vehicle miles traveled in September increase 0.4% from the same time a year ago. The cumulative travel estimate for 2022 is 2,444.7 billion vehicle miles.²⁸

- Travel on all roads and streets changed by +1.0% (+2.8 billion vehicle miles) for September 2022 as compared with September 2021. Travel for the month is estimated to be 280.8 billion vehicle miles.
- The seasonally adjusted vehicle miles traveled for September 2022 is 274.4 billion miles, a 0.40% (1.0 billion vehicle miles) change over September 2021. It also represents a 0.70% change (1.9 billion vehicle miles) compared with August 2022.
- Cumulative Travel for 2022 changed by +1.6% (+39.0 billion vehicle miles). The cumulative estimate for the year is 2,444.7 billion vehicle miles of travel.



Economic News (Updated 12/7)

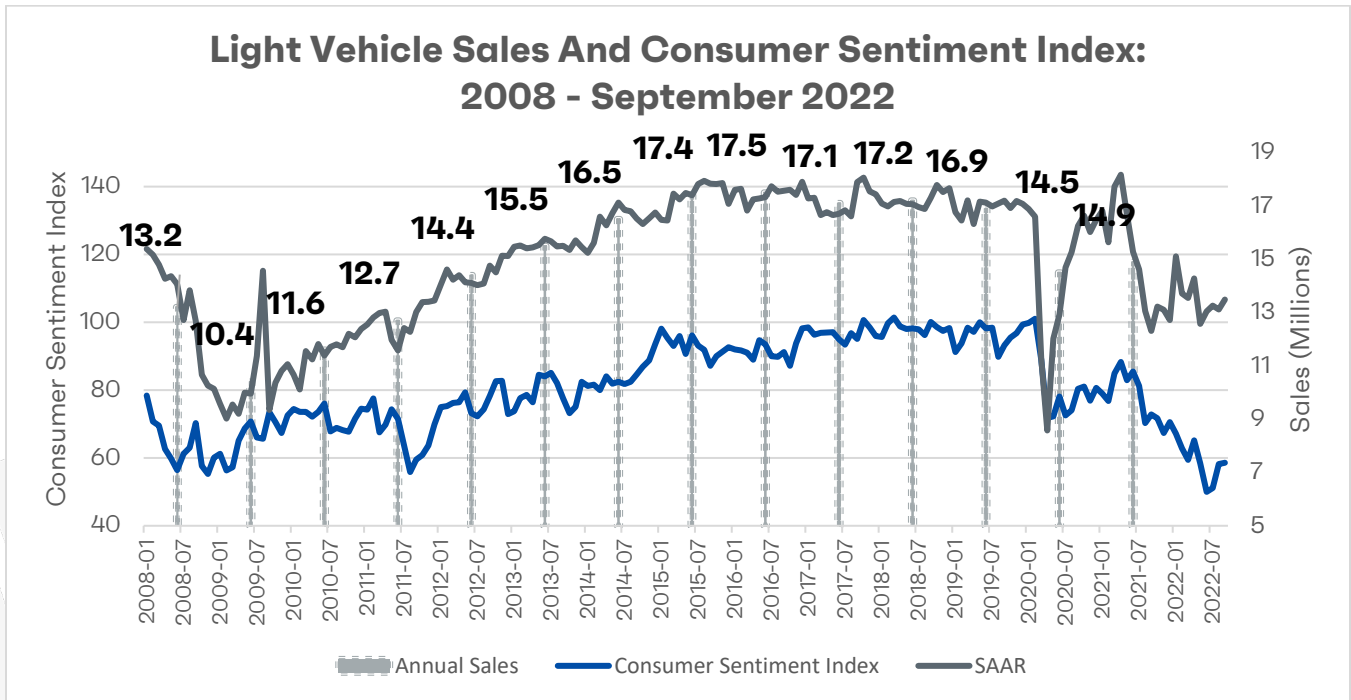
Manufacturing Gained 14,000 Jobs In November, With Motor Vehicles And Parts Gaining 1,900.²⁹
 “Manufacturing added 14,000 jobs in November, with transportation equipment leading the way. Transportation boosted employment by 6,100 jobs, according to a breakdown by industry issued today by the U.S. Bureau of Labor Statistics. Within transportation, motor vehicles and parts posted a gain of 1,900 jobs.”

The ISM Index Fell Below 50, Putting The Manufacturing Sector Into Contraction. “The manufacturing economy fell into contraction in November after a 29-month streak of expansion, the Institute for Supply Management said today. Tempe, Ariz.-based ISM’s manufacturing index, known as the PMI, slipped to 49 percent. It was the lowest index level since May 2020 when the economy was in the grip of the COVID-19 pandemic. The index registered 43.5 percent that month. With the PMI, a reading above 50 percent indicates the manufacturing economy is expanding while below that level shows contraction.”³⁰

Consumer Confidence and Sales (Updated 11/23)

Surveys of Consumers Director Joanne Hsu³¹: “Consumer sentiment fell 5% below October, offsetting about one-third of the gains posted since the historic low in June. Along with the ongoing impact of inflation, consumer attitudes have also been weighed down by rising borrowing costs, declining asset values, and weakening labor market expectations. Buying conditions for durables, which had markedly improved last month, decreased most sharply in November, falling back 19% to its September level on the basis of high interest rates and continued high prices. Long-term business conditions declined a more modest 6%, while short-term business conditions and personal finances were essentially unchanged.

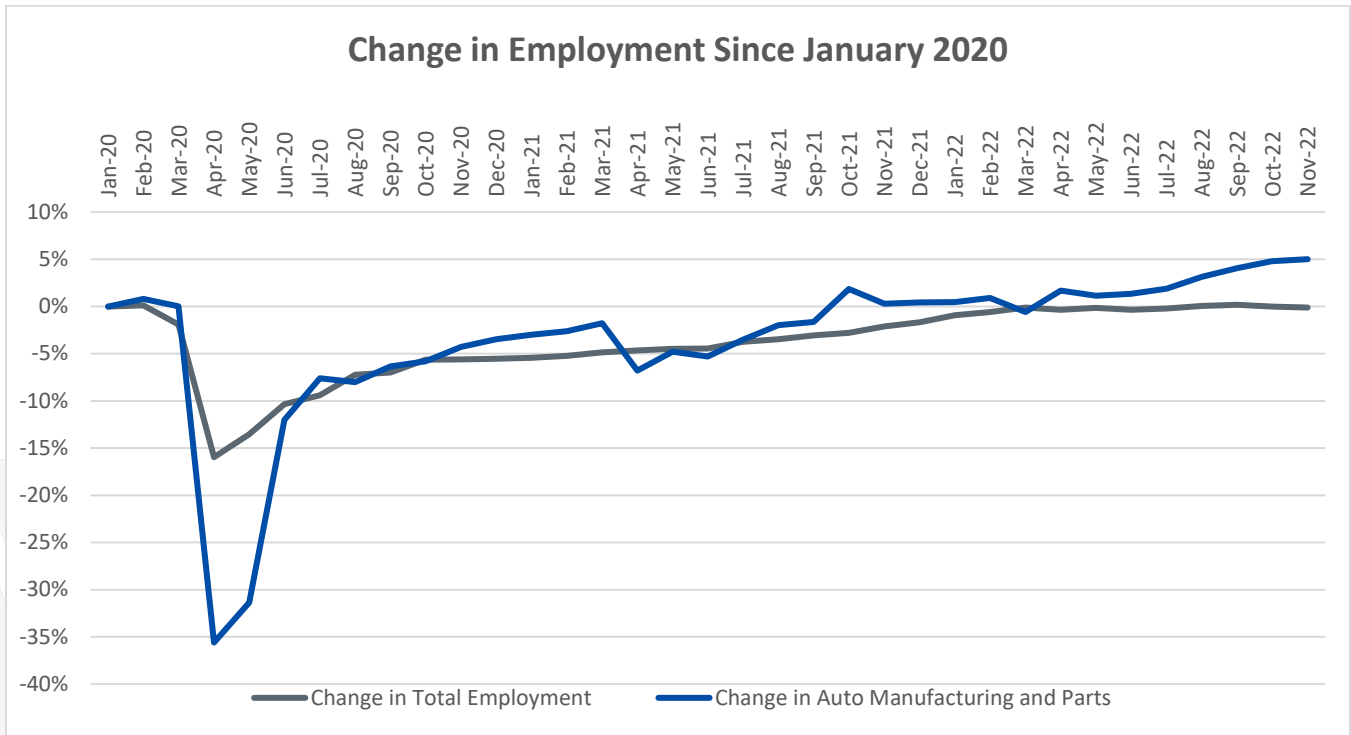
“Inflation expectations were also little changed from October. The median expected year-ahead inflation rate was 4.9%, down slightly from 5.0% last month. Long run inflation expectations, currently at 3.0%, have remained in the narrow (albeit elevated) 2.9-3.1% range for 15 of the last 16 months. Uncertainty over these expectations remained at an elevated level, indicating that the general stability of these expectations may not necessarily endure.”



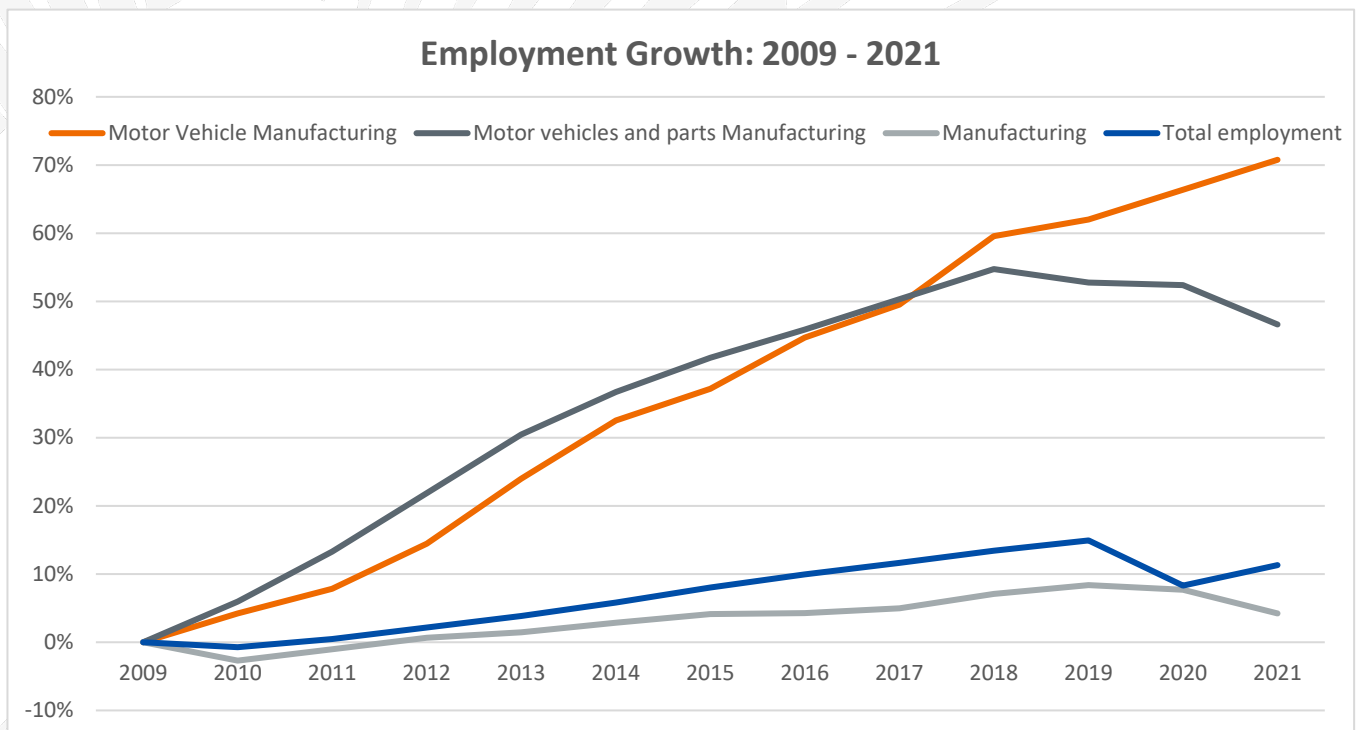
Employment (Updated 12/7)

Motor Vehicle And Parts Manufacturing Gained 1,900 Jobs In November.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.



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