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Auto's Contribution to Core CPI: Pandemic Effects

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CPI and Core CPI

Brief Intro of the Consumer Price Index

- The Consumer Price Index (CPI) measures the change in prices paid by consumers for goods and services, from the reference base period of 1982-84
- Relative Importance (or category weights) captures the weight of the components in average urban consumer spending (CPI-U)

Table 1. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, May 2023

[1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Apr. 2023	Unadjusted indexes			Unadjusted percent change		Seasonally adjusted percent change		
		May 2022	Apr. 2023	May 2023	May 2022- May 2023	Apr. 2023- May 2023	Feb. 2023- Mar. 2023	Mar. 2023- Apr. 2023	Apr. 2023- May 2023
All items.....	100.000	292.296	303.363	304.127	4.0	0.3	0.1	0.4	0.1
Food.....	13.436	302.038	321.566	322.249	6.7	0.2	0.0	0.0	0.2
Food at home.....	8.632	285.953	302.328	302.535	5.8	0.1	-0.3	-0.2	0.1
Cereals and bakery products.....	1.168	319.930	353.742	354.195	10.7	0.1	0.6	0.2	0.0
Meats, poultry, fish, and eggs.....	1.799	314.929	318.996	315.968	0.3	-0.9	-1.4	-0.3	-1.2
Dairy and related products.....	0.799	257.678	271.102	269.573	4.6	-0.6	-0.1	-0.7	-1.1
Fruits and vegetables.....	1.467	341.594	346.269	350.986	2.7	1.4	-1.3	-0.5	1.3
Nonalcoholic beverages and beverage materials.....	1.043	199.166	215.833	216.460	8.7	0.3	0.2	-0.1	0.7
Other food at home.....	2.354	247.300	269.657	269.999	9.2	0.1	0.4	0.2	0.4
Food away from home ¹	4.804	325.952	351.237	352.892	8.3	0.5	0.6	0.4	0.5
Energy.....	6.978	316.761	283.352	279.816	-11.7	-1.2	-3.5	0.6	-3.6
Energy commodities.....	3.732	402.040	325.269	319.876	-20.4	-1.7	-4.6	2.7	-5.6

Source: U.S. Bureau of Labor Statistics

What is in Core CPI?

- All items less food and energy is generally referred to as the “Core CPI”; ~80% of CPI weights
- Core goods: Commodities less food and energy; ~21% of CPI weights
- Core services: Services less energy services; ~58% of CPI weights
- “Auto” is an important component of Core CPI

All items less food and energy.....	79.586	292.506	306.899	308.096	5.3	0.4	0.4	0.4	0.4
Commodities less food and energy commodities.....	21.347	165.140	167.833	168.499	2.0	0.4	0.2	0.6	0.6
Apparel.....	2.565	126.970	131.762	131.382	3.5	-0.3	0.3	0.3	0.3
New vehicles.....	4.278	171.350	178.892	179.329	4.7	0.2	0.4	-0.2	-0.1
Used cars and trucks.....	2.673	208.373	193.394	199.576	-4.2	3.2	-0.9	4.4	4.4
Medical care commodities ¹	1.456	386.273	400.755	403.358	4.4	0.6	0.6	0.5	0.6
Alcoholic beverages.....	0.836	272.293	283.961	285.285	4.8	0.5	0.1	0.5	0.5
Tobacco and smoking products ¹	0.496	1,338.572	1,414.924	1,423.094	6.3	0.6	0.8	0.1	0.6
Services less energy services.....	58.238	370.937	393.769	395.295	6.6	0.4	0.4	0.4	0.4
Shelter.....	34.564	350.580	376.636	378.776	8.0	0.6	0.6	0.4	0.6
Rent of primary residence.....	7.542	365.116	394.898	396.726	8.7	0.5	0.5	0.6	0.5
Owners' equivalent rent of residences ²	25.432	358.469	385.366	387.323	8.0	0.5	0.5	0.5	0.5
Medical care services.....	6.423	594.243	594.346	593.738	-0.1	-0.1	-0.5	-0.1	-0.1
Physicians' services ¹	1.799	410.249	411.951	409.885	-0.1	-0.5	-0.2	0.0	-0.5
Hospital services ^{1, 3}	1.909	375.273	385.355	389.166	3.7	1.0	-0.4	0.5	1.0
Transportation services.....	5.884	357.437	390.805	393.836	10.2	0.8	1.4	-0.2	0.8
Motor vehicle maintenance and repair ¹	1.106	333.258	375.890	378.182	13.5	0.6	0.3	0.5	0.6
Motor vehicle insurance.....	2.591	594.437	684.166	695.929	17.1	1.7	1.2	1.4	2.0
Airline fares.....	0.630	344.853	294.550	298.489	-13.4	1.3	4.0	-2.6	-3.0

Source: U.S. Bureau of Labor Statistics

Automobile Components

Auto Related CPI Components

- Auto prices and related services made up **13.4%** of core CPI weights as of May 2023
- Category weights are updated each year

Category	2023 CPI Weights	2023 Core CPI Weights
New MV	4.3%	5.4%
Used MV	2.7%	3.4%
MV maintenance and repair	1.1%	1.4%
MV insurance	2.6%	3.3%
Total		13.4%

Source: U.S. Bureau of Labor Statistics

Auto Weights – 2022 vs. 2023

- Auto prices and related services made up **14.4%** of core CPI weights as of December 2022
- Used MV weight is noticeably lower after the weights update in 2023

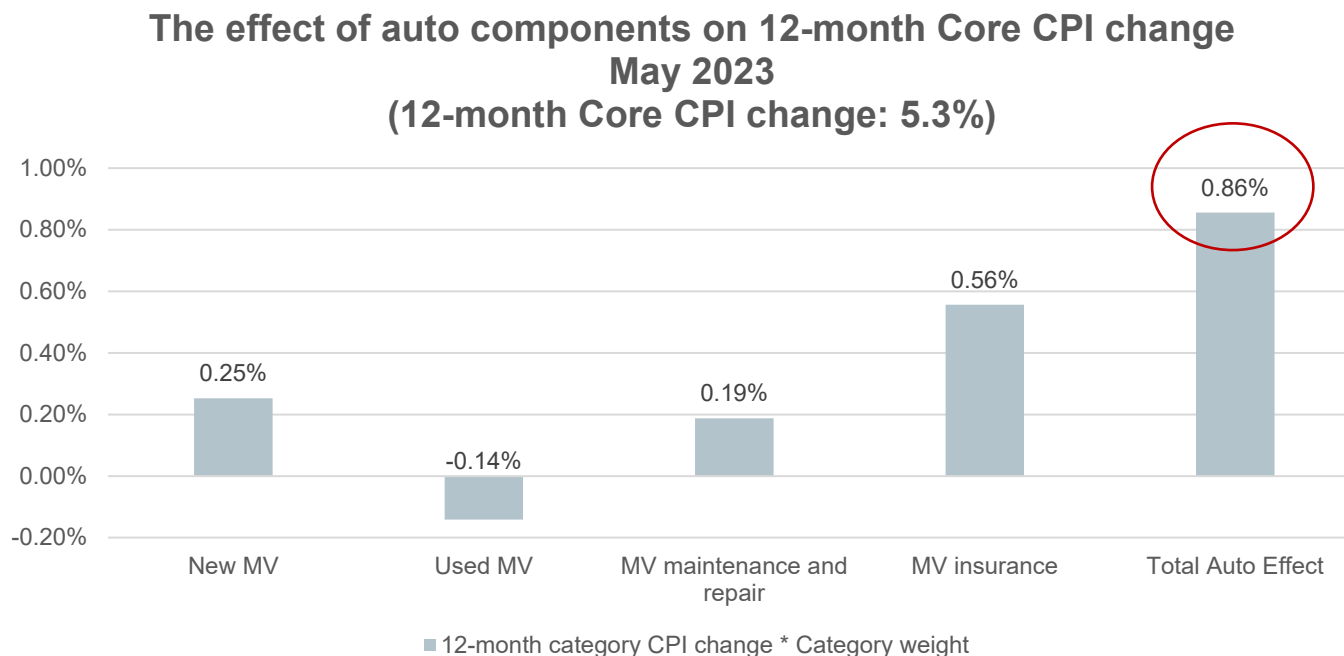
Category	2022 Core CPI Weights
New MV	5.2%
Used MV	4.6%
MV maintenance and repair	1.4%
MV insurance	3.2%
Total	14.4%

Category	2023 Core CPI Weights
New MV	5.4%
Used MV	3.4%
MV maintenance and repair	1.4%
MV insurance	3.3%
Total	13.4%

Source: U.S. Bureau of Labor Statistics

Core CPI Contribution

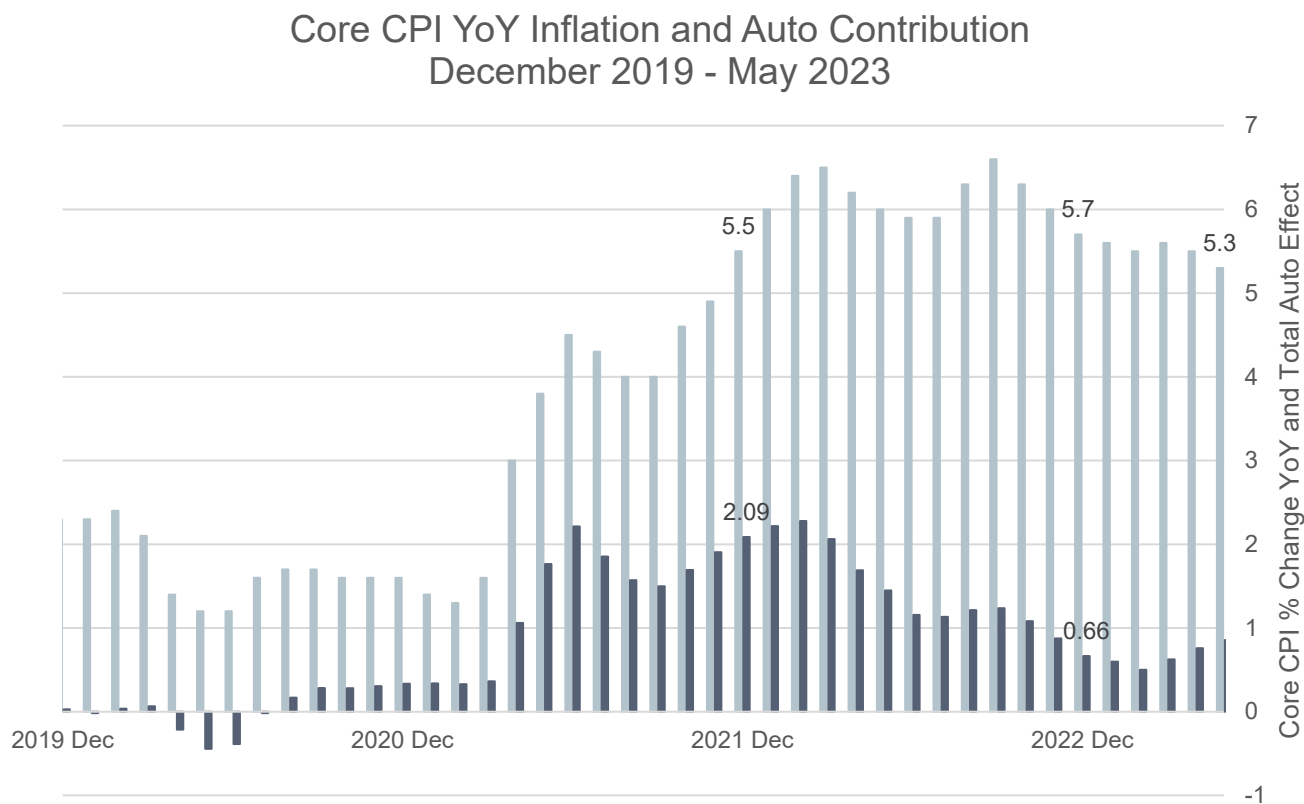
- In May 2023, auto-related CPI components contributed 0.86 pp (16.1%) to the YoY Core CPI change of 5.3%



Source: U.S. Bureau of Labor Statistics

Core CPI Contribution during Pandemic

- Auto components contributed significantly to Core CPI inflation during the Pandemic
- Auto contribution is ticking up again after its significant decrease in 2022

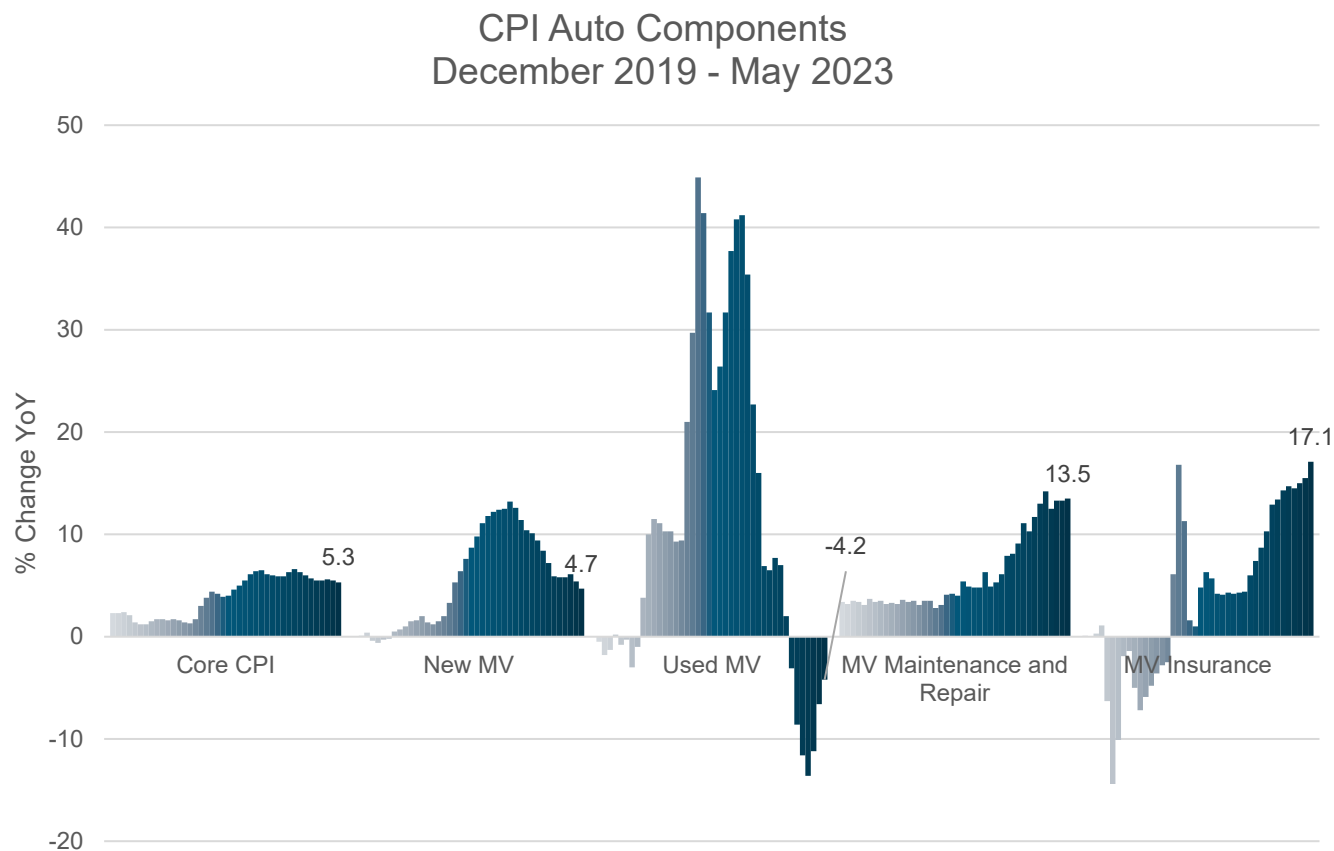


Source: U.S. Bureau of Labor Statistics

■ Core CPI ■ Total Auto Effect

Auto Components during Pandemic

- As new and used car prices are moderating, auto service components remain inflationary



Source: U.S. Bureau of Labor Statistics

Auto Maintenance & Repairs and Insurance

- MV Maintenance and Repair increased by 13.5% and MV Insurance increased by 17.1% YoY
- Labor costs contribute to a larger share of the cost of producing services than producing goods, and they has been persistently high due to the tight labor market conditions
- Additional pressures from the rebound in travel demand

Number of unemployed persons per job opening, seasonally adjusted
Click and drag within the chart to zoom in on time periods



Source: U.S. Bureau of Labor Statistics.

Data sources: U.S. Bureau of Labor Statistics

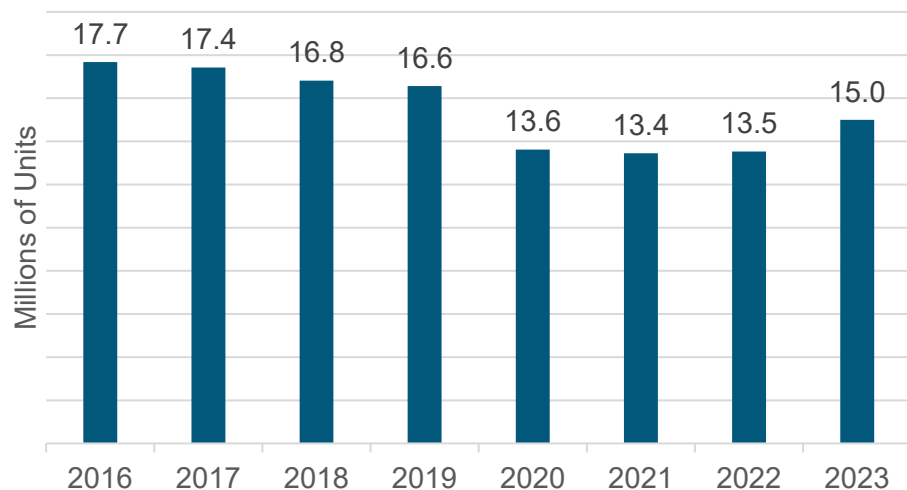
- Persistently high auto insurance index could also be driven by high replacement cost of vehicles and auto parts, repair costs, and hospital services

Pandemic Factors

Increasing incentives help to calm new car prices

- North American vehicle production continues to improve in 2023
- Incentives took a heavy hit during the pandemic but continue to improve since late 2022
- The ongoing UAW negotiation could be the X factor for new car production

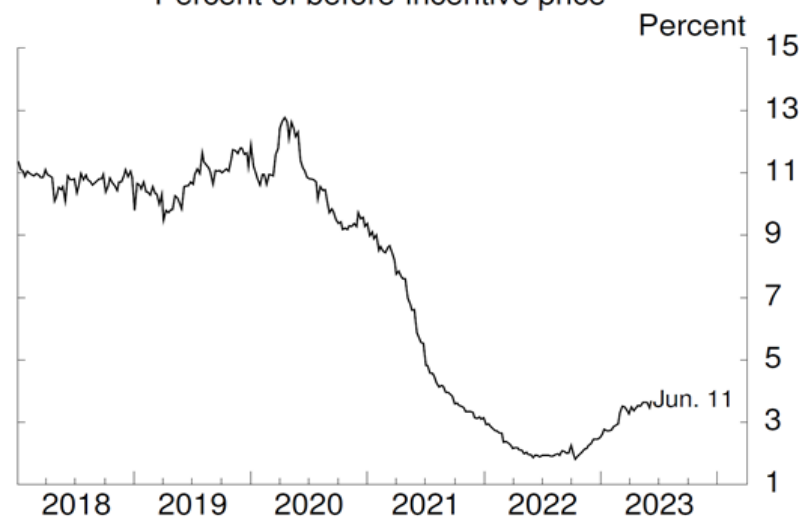
North American Light Vehicle Production



Data sources: Wards Automotive

Light Vehicle Incentives

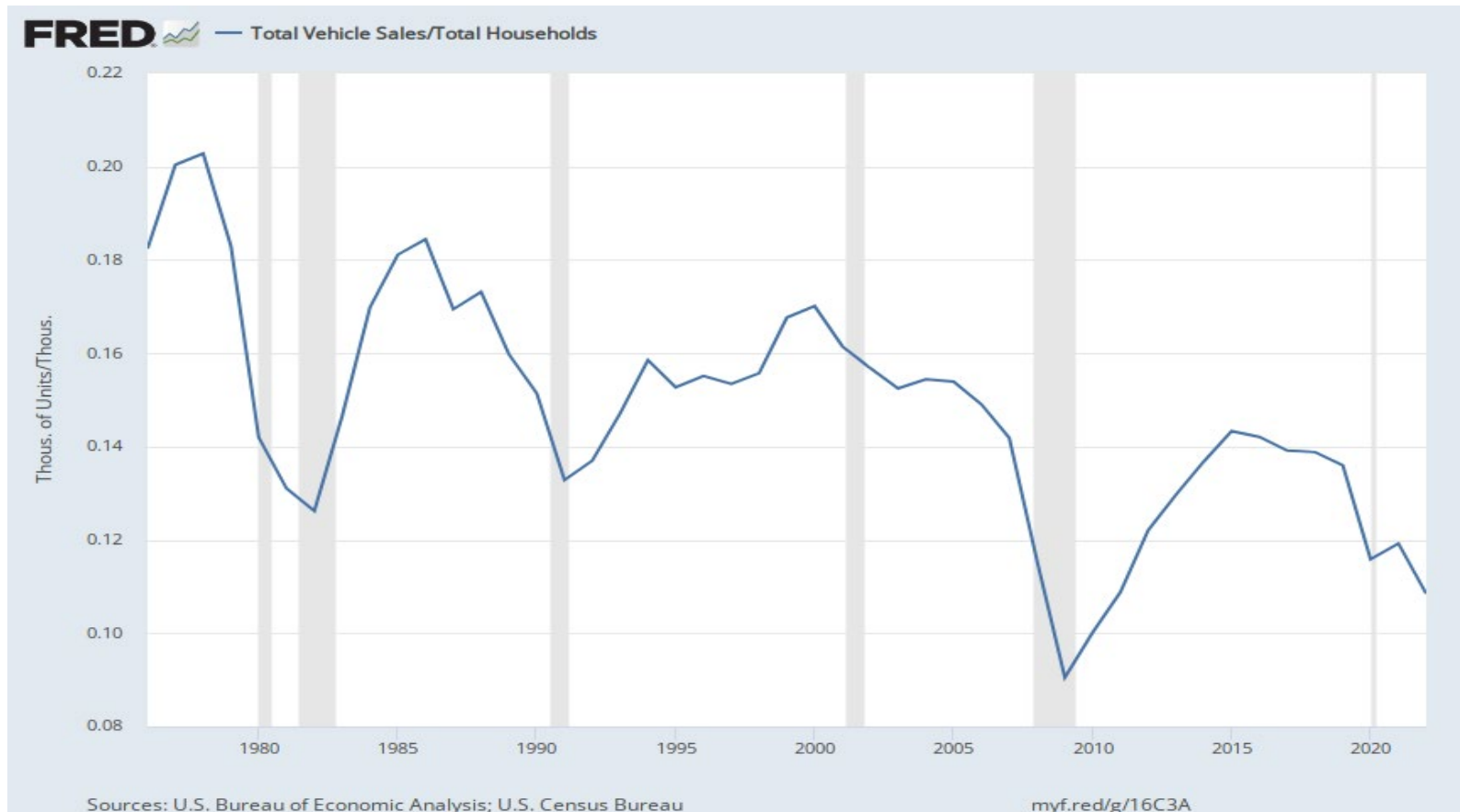
Percent of before-incentive price



Data sources: JD Power

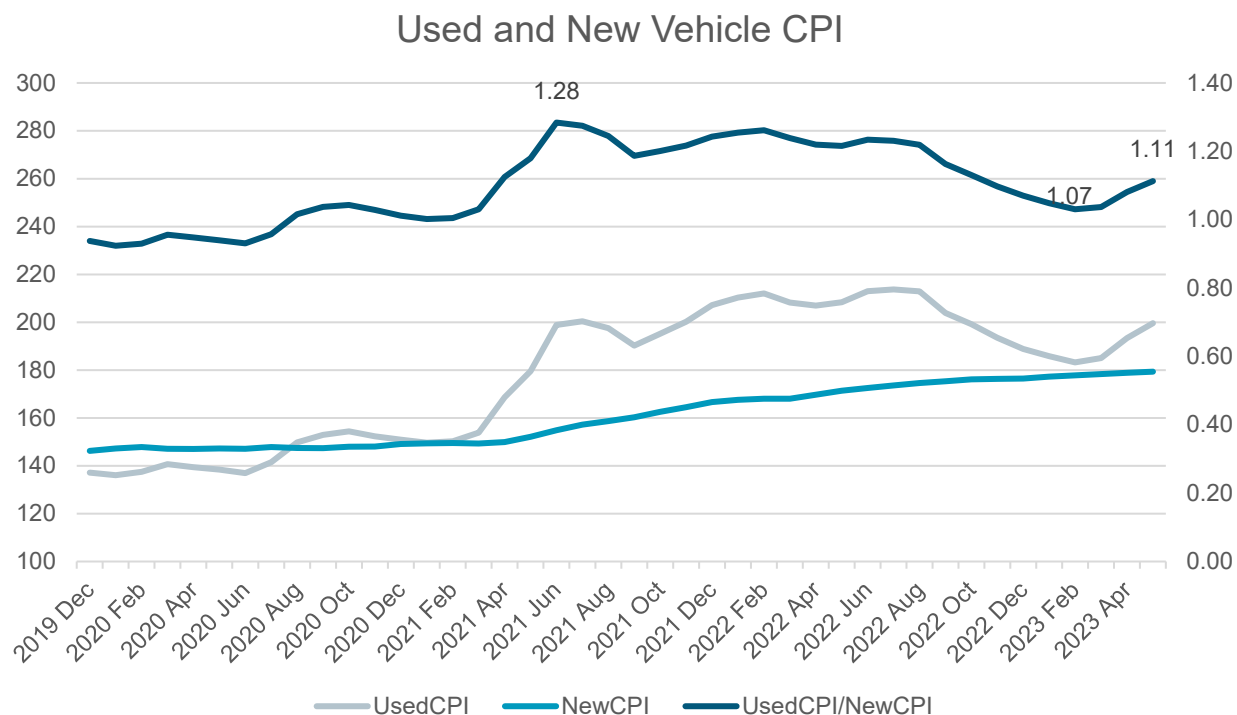
Pent-up Demand?

- In general, new car sales per household has been declining for decades
- The declining affordability of new cars is pushing buyers to delay purchase



Disrupted New/Used CPI Ratio

- The average of used/new CPI ratio is ~1.00 since 1982, with S.D. of 0.07
- Used Car CPI is diverging from its long-term trend again in 2023

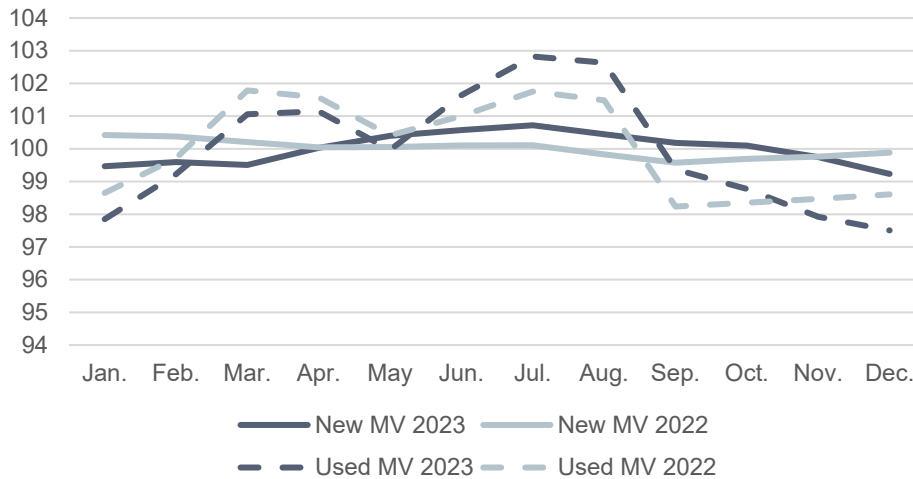


Data sources: U.S. Bureau of Labor Statistics

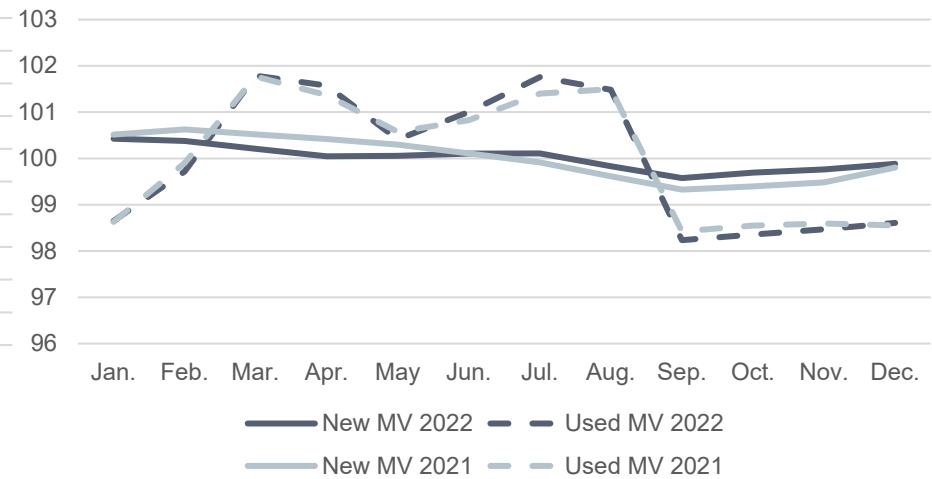
Seasonal Factors

- 2023 seasonal factor revisions have been significant
- There is uncertainty about factor revisions

CPI seasonal factors 2023 vs 2022



CPI seasonal factors 2022 vs 2021



Data sources: U.S. Bureau of Labor Statistics

Main Takeaways

- Auto service components of CPI inflation have been persistently high even though vehicle prices have been moderating
- Pandemic related factors add uncertainty to short-term analyses
- Pandemic factors:
 - Disrupted new vehicle production and new vehicle prices
 - Large swing of used vehicle prices
 - Persistent service inflation is linked to post-pandemic labor market tightness, and rising replacement costs
 - Significant update of CPI weights
 - Disrupted consumer spending and seasonal patterns

Q&A

