

Nationwide Used Car Data is Leading Indicator for Consumer Confidence



BABEL STREET DATA

The COVID-19 pandemic made the used car market even more challenging to understand for consumers, investors, and analysts alike. Organizations shifting to a remote work model, supply chain disruptions, and labor shortages all factored into the rising costs and lack of inventory within the used car market during that time.

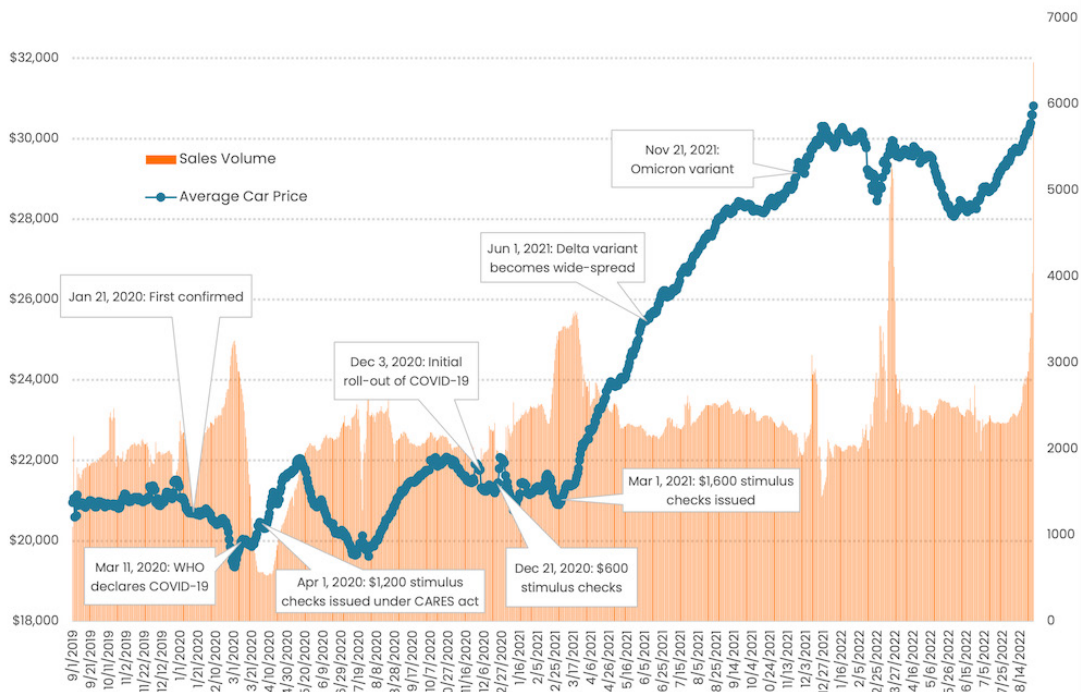
Each month, the U.S. Bureau of Labor Statistics releases the Consumer Price Index (CPI) to report the average trend of prices throughout various market categories. One category is used cars and trucks, which reflects the market conditions within the used car market.

In this study, we compared used car data from 2019–2022 collected by Babel Street Data with the Used Car and Truck CPI data reported by the Bureau of Labor Statistics to learn how time-sensitive data collection can be used as a leading indicator of future CPI values.

Collection Details

Babel Street Data tracks daily key metrics for removals (sales) and returns (purchases) of vehicles from a U.S.-based, nationwide used car dealer that makes its inventory available online. The data collected includes vehicle year, make, model, color, mileage, and pricing.

This collection allows analysts to predict company performance on a national and dealership level. Dealership data includes location, unique ID, physical address, on-hand inventory, reported volume, revenue, and same-store sales. These data points act as a useful performance indicator for specific dealerships, car brands, and regional car market trends.



Used car and truck prices and sales volume during COVID pandemic

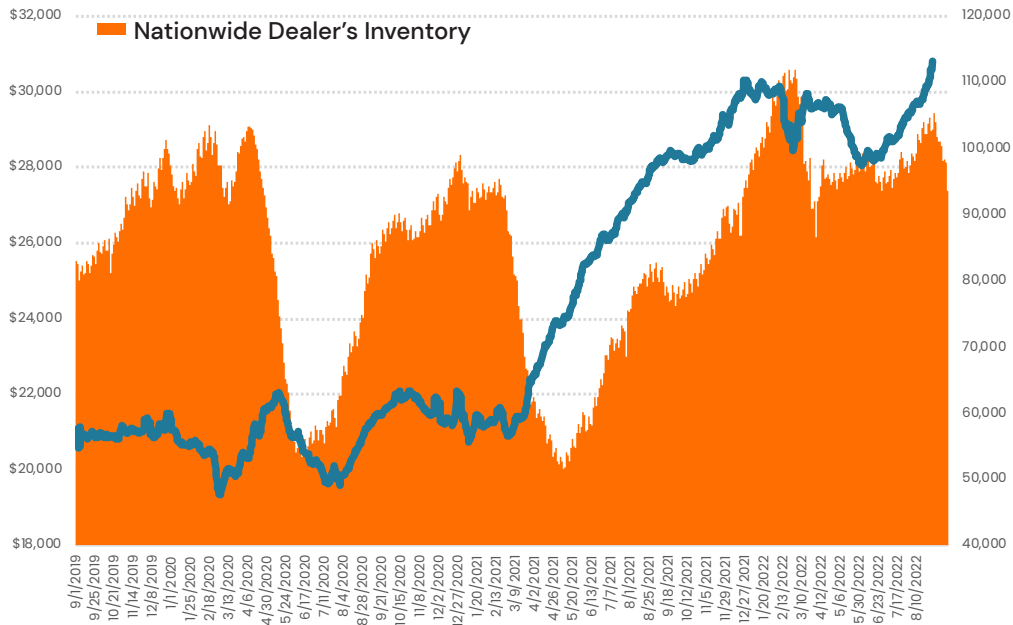
COVID-19 Impact on Used Vehicle Sales and Prices

During the last quarter of 2019, the national dealer's sales volume averaged 1,920 vehicles sold daily, with an average price of \$21,025. As the media began to raise awareness of the COVID-19 virus appearing in areas outside of China in early 2020, there was an increase in used car sales. However the average price of used vehicles decreased.

On March 11, 2020, the World Health Organization declared COVID-19 a pandemic. At this point, used car sales had already started to plummet while prices began to rise to compensate for lost revenue. With the U.S. on lockdown, most consumers had little need to drive, and many began to sell their used cars without purchasing new ones to make ends meet from lost wages.

On April 1, 2020, the Trump Administration issued the first \$1,200 stimulus check under the CARES Act to give Americans financial relief. Over the next few weeks, used car sales began to pick back up rapidly.

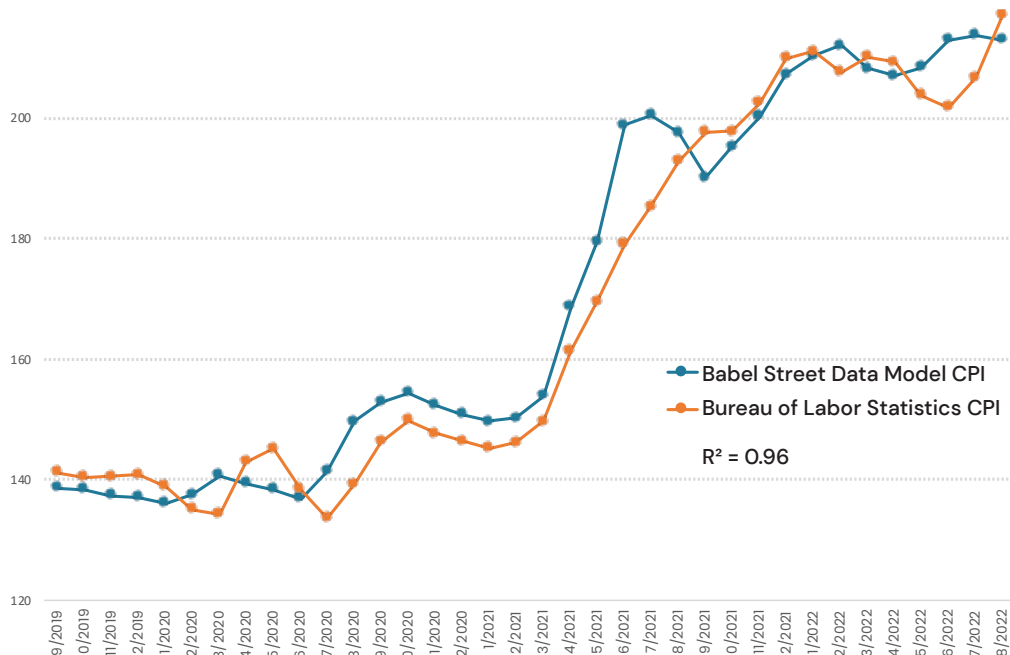
From mid-2020 to March 2021, the U.S. saw supply chains unraveling, stimulus checks being spent, manufacturing plants closing down¹, and a shift in travel patterns with many consumers choosing driving over flying to their destinations. New car dealerships suffered due to an inability to produce new vehicles, while the used car industry was able to meet consumer needs.



Used car and truck prices and total daily inventory of nationwide dealer

Moving into late 2021–2022, our analysis showed increased used car prices, with more stimulus funding and further supply chain disruptions among the factors affecting them. But we also found that traditional “supply and demand” rules were not at play. While a significant inventory

drop did cause prices to soar, stabilized supply didn’t result in a lower price point. In fact, we found that the average cost of a new car increased by 11.9% from June 2021 to June 2022, and buyers continued to pay above MSRP every month during this year.²



60-day predictive model vs actual U.S. Bureau of Labor Statistics CPI



Key Findings

To highlight the usefulness of having immediate access to used car sales data through our data collection, a data model back test was performed to show that the dealer's used car sales data can be used as a leading indicator of the future U.S. Bureau of Labor Statistics Used Car and Truck CPI. Several models were tested, from a basic generalized linear model (GLM) to more advanced Random Forests.

Ultimately, an XGBoost model was found to perform best. Testing the model's accuracy using sales data from 60-days before the posted CPI data, the model performed with a coefficient of determination of 0.96. Back testing this model over the last two years of CPI data confirmed the validity of this approach and made an excellent use case for the value of this data collection as an accurate leading indicator to future CPI values.

In 2019, the nationwide dealer's daily inventory was around 80,000-100,000 cars within their database. When the pandemic began, we saw inventory drop to nearly half of 2019 numbers before steadily rebuilding over a few months. However, in Q2 2021, we saw an even larger plummet in inventory, which prompted the prices to soar to new levels even though inventory caught up to demand.

In 2022, the inventory levels bounced back to pre-pandemic levels. However, the average vehicle price stabilized at a price point 50% higher. In other words, even as more vehicles were added to inventory, prices continued to rise, contravening the theory that supply shortages drove higher costs due to demand.

Endnotes

¹ <https://wardsintelligence.informa.com/WI965563/US-Vehicle-Production-by-Model-by-Month-2020>

² <https://www.prnewswire.com/news-releases/new-vehicle-prices-set-record-in-july-2022-according-to-kelley-blue-book-as-inventory-improves-year-over-year-and-luxury-share-remains-elevated-301603225.html>



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