From the Dealer or from Your Neighbor: Used Car Price Divergence During the Pandemic*

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Abstract

Used car prices increased dramatically during the pandemic years. The published used car price index tracks only transactions at dealerships. Using data from the Consumer Expenditure Survey, we document that price increased at a substantially slower pace for used cars purchased from individuals. We further show that this divergence in price trend cannot be accounted for by composition shifts of vehicle make, model, and age. Taking private individual transactions into account, we estimate that used car price increase in 2019–2022 would be over 40 percent (15 percentage points) lower relative to that of dealership transactions alone.

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1 Introduction

The COVID-19 pandemic triggered unprecedented disruptions in consumer goods markets, with used vehicles experiencing some of the most dramatic price increases. According to the Bureau of Labor Statistics' Consumer Price Index, used car and truck prices rose by over 40 percent between 2019 and 2022, contributing significantly to overall inflation and attracting considerable attention from policymakers, researchers, and the general public.

However, the CPI's used vehicle index captures only transactions involving dealers or wholesalers, excluding the sizable volume of consumer-to-consumer (C2C) sales that occur in private-party markets. This exclusion is methodologically justified for two main reasons. First, conceptually, C2C transactions represent asset transfers rather than net consumption: when one household sells a vehicle to another, no new production occurs and aggregate consumption is unchanged. Second, data constraints make C2C transactions impractical to measure reliably: unlike dealer sales, which generate real-time transaction records through commercial auction platforms and retail reporting systems, private-party sales are not recorded in a timely and complete fashion. Such C2C has to be inferred from surveys, which can be conducted months after the transaction and may suffer from small sample sizes, recall bias, and incomplete transaction details. As an additional implication, the quality adjustments central to CPI methodology may be particularly difficult to construct for C2C transactions. While these justifications reflect standard practices in price index construction and serve important methodological objectives, they necessarily involve a trade-off between measurement precision and coverage comprehensiveness that may become particularly consequential when price trends differ substantially between formal and informal markets.

This paper documents a striking divergence in used vehicle price trends across transaction types during the pandemic years. Using data from the Consumer Expenditure Survey (CE), we show that while dealership prices surged dramatically—consistent with the published CPI index—prices for vehicles purchased directly from individuals rose at a substantially slower pace. Specifically, dealership prices peaked in 2022 at levels 36 percent above 2019, whereas individual-sale prices increased by only 6.6 percent over the same pe-

riod, reaching their peak one year later at 20 percent above 2019 levels. This divergence cannot be explained by compositional shifts in vehicle characteristics such as make or age at purchase. After controlling for these factors through detailed fixed-effects regressions, we find that the dealership price premium over individual sales widened from under $1,900 in 2019 to over $6,300 in 2022, a statistically significant increase that suggests a differential impact of supply chocks across markets rather than quality differences.

Our findings have important implications for understanding inflation measurement and household welfare during the pandemic. When we weight dealership and individual transactions according to their estimated shares in the total used vehicle market (approximately 50 percent each), the aggregate used car price increase between 2019 and 2022 falls to roughly 21 percent, nearly 15 percentage points lower than dealership data alone would suggest.[1] This substantial gap highlights how official statistics, while methodologically sound and internally consistent, may overstate the inflation experienced by households with access to alternative purchasing channels. More broadly, our results contribute to the longstanding literature on CPI measurement issues, including Boskin et al.'s 1998 critique, by documenting how differences in market structure and household access to different transaction types can create meaningful divergences between measured and experienced inflation.[2]

The remainder of this paper proceeds as follows. Section 2 describes our data sources, primarily the Consumer Expenditure Survey, and documents the consistency of survey-based vehicle purchase estimates with external benchmarks. Section 3 presents our main empirical findings on price trend divergence, including baseline estimates and robustness checks with restricted samples. Section 4 quantifies the potential upward bias in used car inflation estimates when C2C transactions are excluded, while Section 5 examines heterogeneity across the price distribution. Section 6 concludes with a discussion of implications for inflation measurement.

[1] In the same spirit, Cho et al. (2024) demonstrate that a user-cost approach that combines depreciation, opportunity cost, and recurring expenses produces consumption vehicle measures that have been lower than acquisition-based expenditure series, currently used in the CPI, in recent years.

[2] More recently, a growing body of research documents that the inflation rate households actually experience—due to differences in consumption baskets or prices paid—can differ substantially from aggregate measures like the CPI or PCE. For example, Kaplan and Schulhofer-Wohl (2017) and Jaravel (2021) show large variation in inflation rates across households.

2 Data Description

We use data from the Consumer Expenditure Survey (CE), conducted quarterly by the Bureau of Labor Statistics (BLS) to collect detailed information on U.S. household expenditures.[3] The survey was originally developed for providing consumption basket weights needed to construct the Consumer Price Index, but the data collected have been used broadly in economic and policy research.

The CE collects extensive information on household light vehicle inventory that includes vehicle make, year of the model, year of purchase, and purchase price. Motor vehicle purchases in the CE survey data are broadly consistent with the aggregate sales data used by policymakers and industry watchers. For example, Dunbar et al. (2024) show the number of new vehicle outlays from the survey track the IHS Markit data on retail purchases reasonably well. In addition, the yearly contour of the count of used car purchases estimated with CE data is also similar to that estimated with the Experian AutoCount registration data, with a correlation coefficient of 0.83.

Particularly relevant for our analysis is that the survey asks whether the vehicle was purchased from a dealership or a private individual. Our analysis focuses on used vehicles purchased during the 30-year period between 1994 to 2024. The share of dealership purchase estimated with the CE data is broadly consistent with that estimated using the vehicle registration data.

3 Trends in Used Car Prices

Figure 1 plots the price trends of used cars purchased from dealerships and individuals, respectively. While both series trended up over the previous 30 years, prices at dealerships accelerated appreciably in 2020 (the blue series), following the onset of the pandemic, a change not obvious for individual-sold vehicles (the green series). The average price of cars bought at dealerships peaked in 2022 at a level 36 percent higher than 2019. By contrast, The average price of cars bought from individuals was only 6.6 percent higher in the same

[3]CE data are available on the BLS' website.

year. When it peaked one year later in 2023, the average price of individual purchases was 20 percent higher than its 2019 levels.

The comparison of unconditional mean of used car prices may ignore compositional shifts that differed between dealership- and individual-purchases. For example, average price of individual purchases may grow slower than dealership purchases if people buy older and cheaper cars from individuals during the pandemic years. To account for this potential compositional change, we estimate the following model at the vehicle level,

$$P_{i,y} = \alpha^T + \mathbf{Y}^T + Make_i^T + Age_i^T + \varepsilon_{i,y}, \tag{1}$$

where the price of the vehicle i purchased in year y is projected on fixed effect vectors of purchase year ($\mathbf{Y}^T$), vehicle make, and vehicle age at purchase. Note that the model is estimated separately for $T \in \{Dealership(D), Individual(I)\}$ to allow the fixed effects to differ by transaction type. The R-squared statistics indicate that these fixed effects account for between 50 and 60 percent of used car price variations in our sample.

We are interested in comparing $\mathbf{Y}^D$ and $\mathbf{Y}^I$, illustrated in figure. From mid-1990s, the average price of used cars at dealership grew at a faster pace than that from individuals. The divergence widened after 2020 as the dealership average dramatically accelerated while the trend change of the individual average is less pronounced.

While illuminating, there are two limitations of figure 2. First, it does not readily test if the widening gap is statistically significant. Second, the trends are estimated using equation (1), which imposes the make and vehicle age fixed effects are stationary over time. Accordingly, we estimate the following variant.

$$P_i^y = \alpha^y + Dealer^y + Make_i^y + Age_i^y + \varepsilon_i, \tag{2}$$

Rather than estimating the purchase year fixed effects along with vehicle make and age fixed effects in the same model, equation (2) estimate a different model for each year, y, pooling both types of transactions and adding a dealership purchase dummy. The coefficient of the *Dealer* dummy reflects the premium of used cars purchased from dealerships over those purchased from individuals. Relative to equation (1), this specification allows vehicle make

and age fixed effects to vary over time but restricts them to be the same for both transaction types. We are interested in whether *Dealer* jumped after 2019. As illustrated in figure 3, the estimated dealership premium fluctuated between 1995 and 2019 within a relative narrow range. However, between 2019 and 2022, the series rose from below $1,900 to $6,300, and the jump is statistically significant as indicated by the 95-percent confidence intervals.

Furthermore, we calculate the share of used vehicles purchased from individuals of luxury makes and economy makes, respectively.[4] As shown in figure 6, the shares of luxury and economy makes purchased from individuals shared a similar trend and did not diverge during the pandemic years.

As a robustness analysis, we re-estimate figures 2 and 3 using a subsample of used cars with greater presence in both dealership and individual purchases. Specifically, we restrict the vehicle age at purchase to be lower than 11 years as dealers, unlike individuals, sold only a limited number of older cars. We further restrict the sample to include only makes that have over 100 observations to ensure a reasonable estimate of the vehicle make fixed effects. The results, shown in figures 4 and 5, are qualitatively similar to our baseline estimates.

4 Potential Upward Biases in Used Car Price Inflation Estimates

If we focus on only the used cars purchased at dealerships, the three-year cumulative price increase between 2019 and 2022 is 36 percent. If between-individual transactions are taken into account, the overall price change, π can be approximately calculated as

$$\pi = \omega\pi_D + (1-\omega)\pi_I, \tag{3}$$

where π_D and π_I are price changes of dealership and individual purchases, respectively. ω is the dealership transaction share, which we estimate to be around 0.5 among all used car

[4]Luxury makes include Acura, Audi, BMW, Cadillac, Infiniti, Lexus, Lincoln, Mercedes-Benz.

transactions using the Experian Velocity Market data. Our estimate of π_I between 2019 and 2022 is about 6.6 percent. Accordingly, the overall price changes during this period is about 21.3 percent, nearly 15 percentage points lower than what dealership data alone imply.

5 A Distributional View

We have shown that the average price grew at a much slower pace for used cars purchases from individuals relative to purchases at dealerships. This is not uniformly true across the price distribution. As shown in table 1, the 2019–2022 cumulative price increase was larger for individual transactions at the bottom of the price distribution, roughly similar at the median, and larger for dealership transactions at the upper quartile and deciles of the distribution.

6 Conclusion

This paper documents a striking divergence in used vehicle price trends during the pandemic years: while dealership prices—the basis for the published CPI—surged 36 percent between 2019 and 2022, vehicles purchased directly from individuals rose only 6.6 percent over the same period. This divergence cannot be explained by compositional differences in vehicle characteristics; after controlling for make, model, and age, the dealership premium over private-party sales widened from under $1,900 in 2019 to over $6,300 in 2022. Accounting for the substantial share of private-party transactions in the total used vehicle market, we estimate that aggregate used car price inflation during this period was approximately 21 percent—or nearly 15 percentage points lower than dealership data alone would suggest. These findings have important implications for understanding inflation measurement and household welfare during supply shocks. While the BLS's exclusion of consumer-to-consumer transactions is consistent with the CPI methodology—reflecting constraints in data availability, quality adjustment, and conceptual alignment with market-based consumption—our results demonstrate that this exclusion becomes economically

consequential during periods when supply disruptions differentially affect formal dealer channels. Households with access to private-party markets may have experienced substantially lower inflation than official statistics indicated, suggesting that the CPI may overstate cost-of-living increases for some segments of the population.

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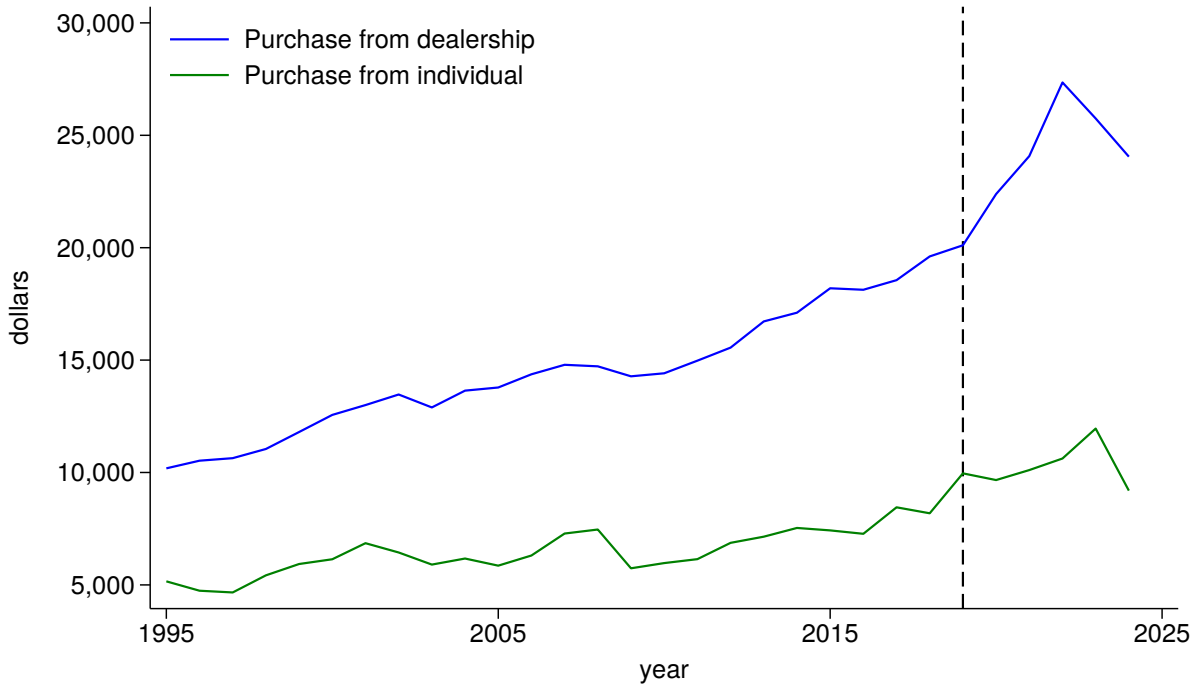


Figure 1: Average Prices of Used Vehicles by Transaction Type

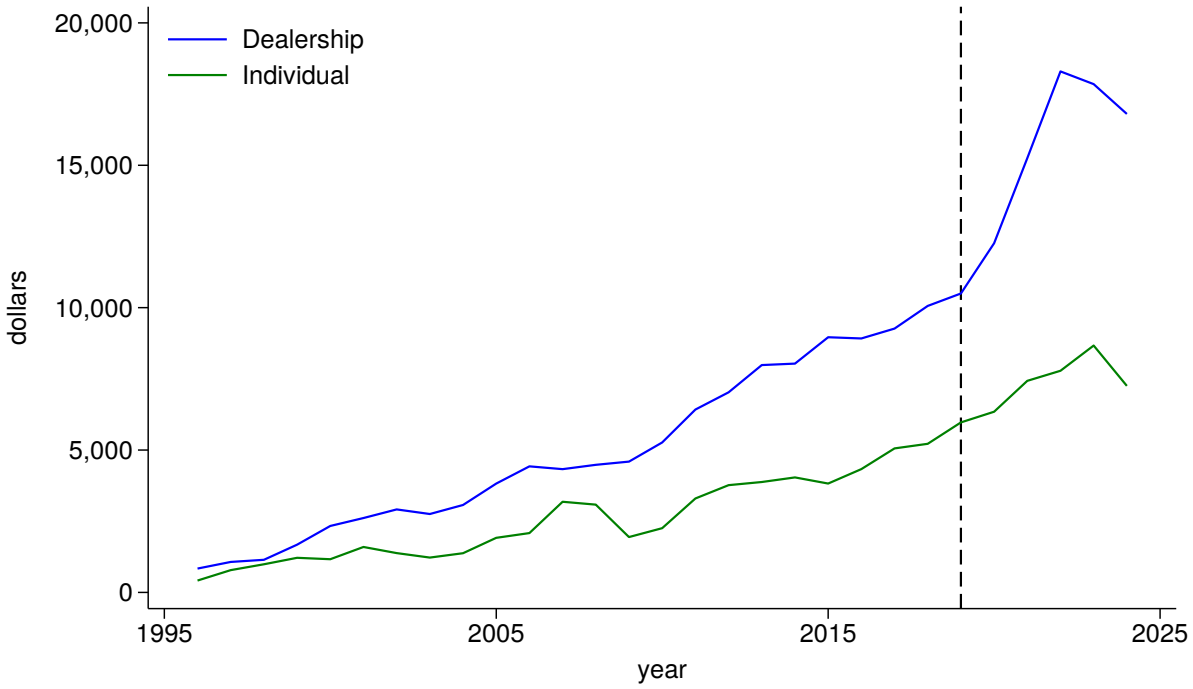


Figure 2: Used Vehicle Purchase Prices after Controlling for Vehicle Make and Age

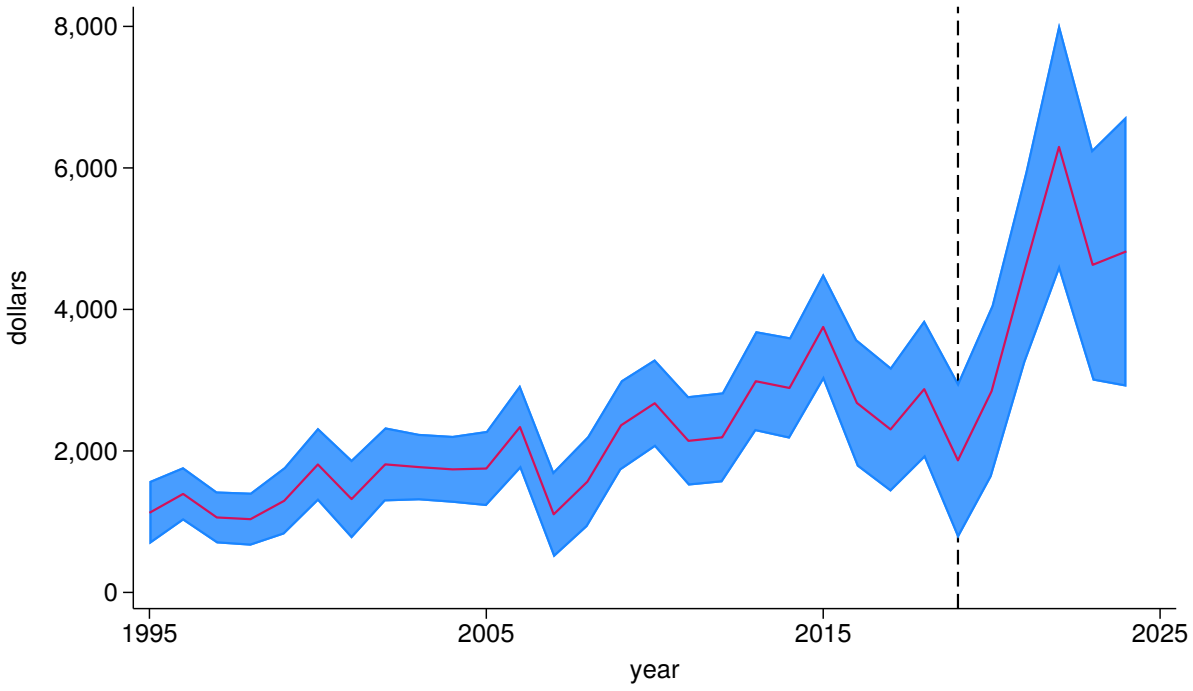


Figure 3: Price Gap between Dealership and Individual Purchases

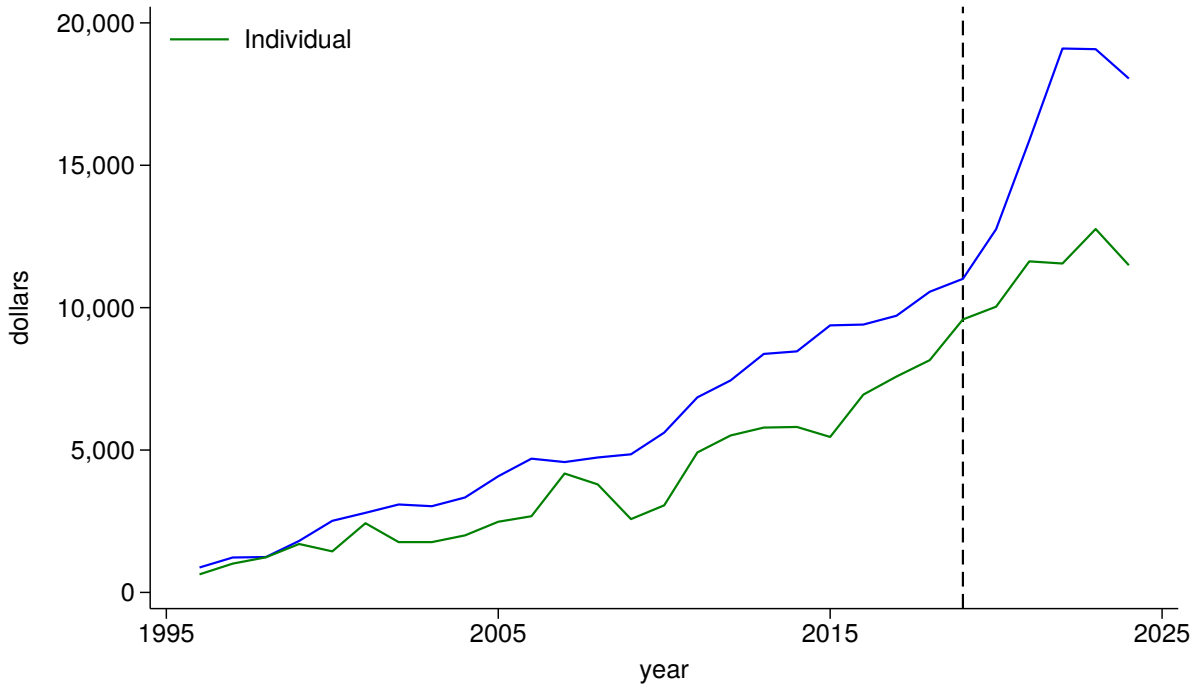


Figure 4: Used Vehicle Prices—Purchase Age Lower than 11 Years

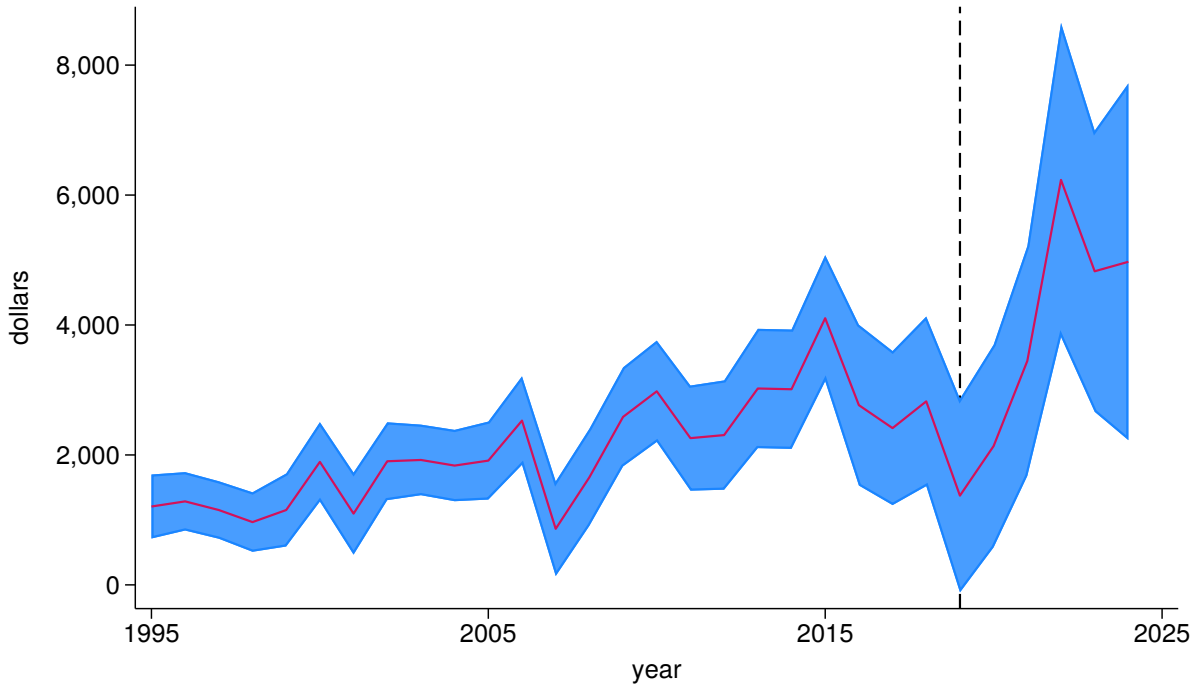


Figure 5: Use Vehicle Price Gap—Purchase Age Lower than 11 Years

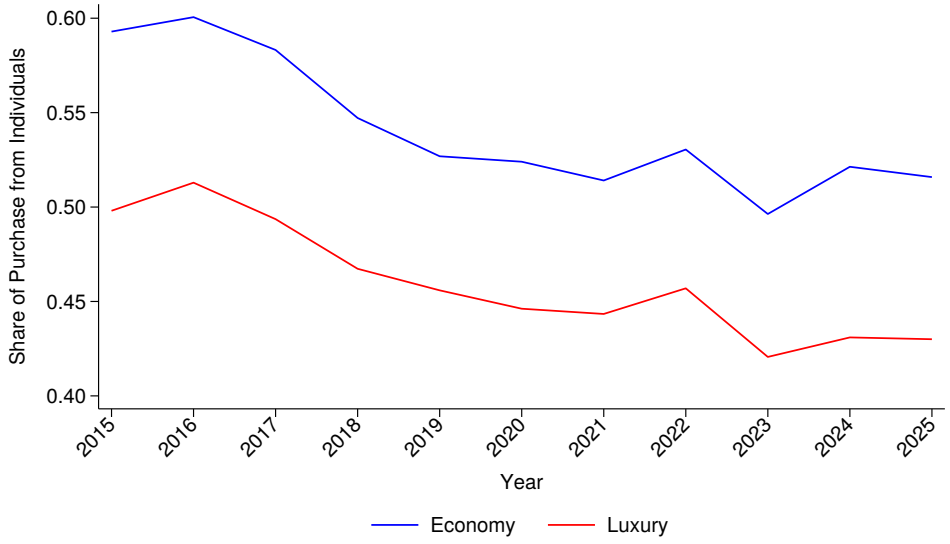


Figure 6: Share of Purchase from Individuals of Luxury and Economy Makes

Table 1: Used Car Price Changes During the Pandemic across Price Distributioin

Mean		25th		Median		75th		90th	
Ind.	Dealer	Ind.	Dealer	Ind.	Dealer	Ind.	Dealer	Ind.	Dealer
6.6	36.0	41.6	28.5	37.2	33.7	9.0	35.9	4.2	39.1

Note: The table shows mean and various percentiles of the distribution of the the cumulative used car price changes between 2019 and 2022 by type of transaction.