



Q2 2017

Value Discovery: How Rental Fleet Sales Affect Residual Values

AT A GLANCE

Used supply effect

Statistical impact

Brand effect

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Introduction

Every day a significant portion of vehicles sold in the United States do not pull into a residential driveway, but instead pull into rental lots to carry travelers to a vacation destination or business meeting. Calling this activity a heroic one for the automotive industry may be pushing it, yet it is important, nonetheless. The percentage of total new vehicle sales sold to rental companies is termed “rental fleet penetration” [RFP]. Each year roughly 1.5 to 2 million vehicles are sold to rental fleet companies, amounting to industry-wide RFP figures of 10% to 13%.

While an important channel for new vehicle sales, rental fleet activity also carries significant implications for used vehicle prices. First, new vehicles sold into rental fleets ultimately flow through the used vehicle market post-rental service. Their entrance into the used market generally occurs within one to two years after being purchased new—or much sooner than the typical retail consumer purchase or lease. In addition, rental fleet companies tend to sell large quantities of off-rental units around the same time. More often than not, the concentrated influx of off-rental supply places negative downward pressure on used vehicle prices.

A second concern involves the relationship between high RFP and automaker brand value. For example, brands or models consistently associated with high RFP frequently exhibit weaker quality or reliability characteristics—or are perceived less favorably by consumers.

So, the open questions are:

1. How large is the negative pressure on used vehicle prices from increased supply resulting from new vehicle sales to rental companies?
2. Supply impact aside, do rental fleet sales have a longer-term impact on brand value factors, or is high RFP more a symptom of pre-existing brand weakness?

To divine answers to these questions, this report explores the relationship between rental fleet sales and used vehicle residual values specific to the key areas of used vehicle supply and brand value.

Used Supply Effect

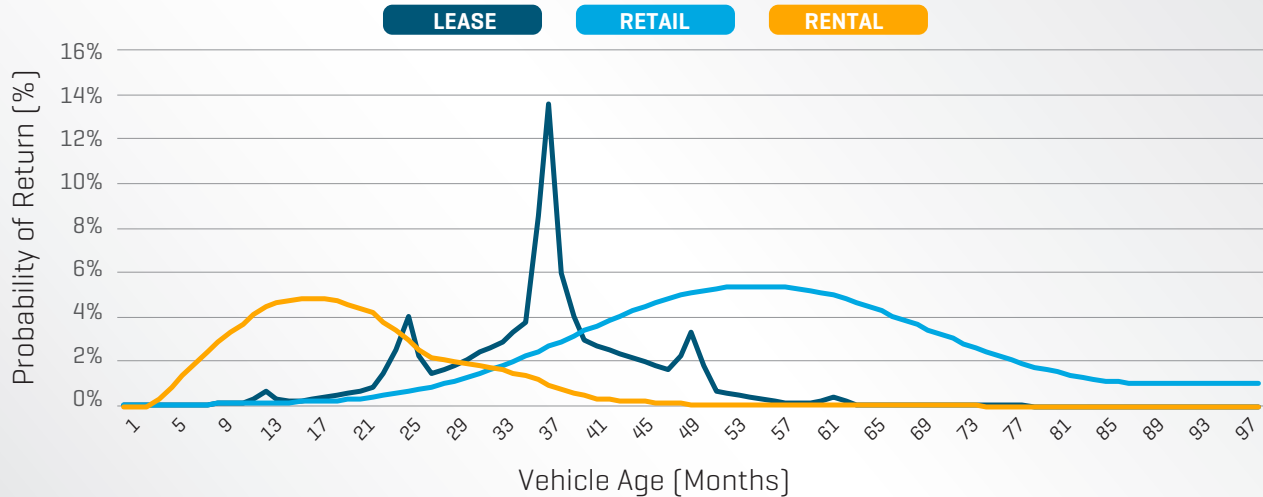
Since supply change is the easiest measure to predict and analyze, it provides a good starting point to understand the impact of rental sales on used prices. When rental companies are finished using vehicles they must figure out how to effectively dispose of them in a manner that minimizes losses and maximizes profits. In many cases, automakers agree to repurchase off-rental units from rental companies at specific times or mileages, subject to certain terms and conditions. Manufacturers are then responsible for shepherding repurchased off-rental units through the used market.

However, some rental companies choose to dispose of off-rental units themselves. In this disposal model, vehicles are either sold to consumer-facing rental company sales offices (e.g., Enterprise Car Sales), directly to dealers or wholesalers, or at dealer-only auctions. No matter who is responsible for selling off-rental units—the rental company or OEM—the fact remains large quantities must clear the used wholesale market over a compressed period.

Consider Figure 1 [page 3], for example. In general, new vehicles that are sold in the retail market have a broad range of dates they are resold on the used market. However, for both rental and lease vehicles, these return dates are more closely grouped.

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Figure 1. Probability of Return to Used Market



Source: J.D. Power Valuation Services

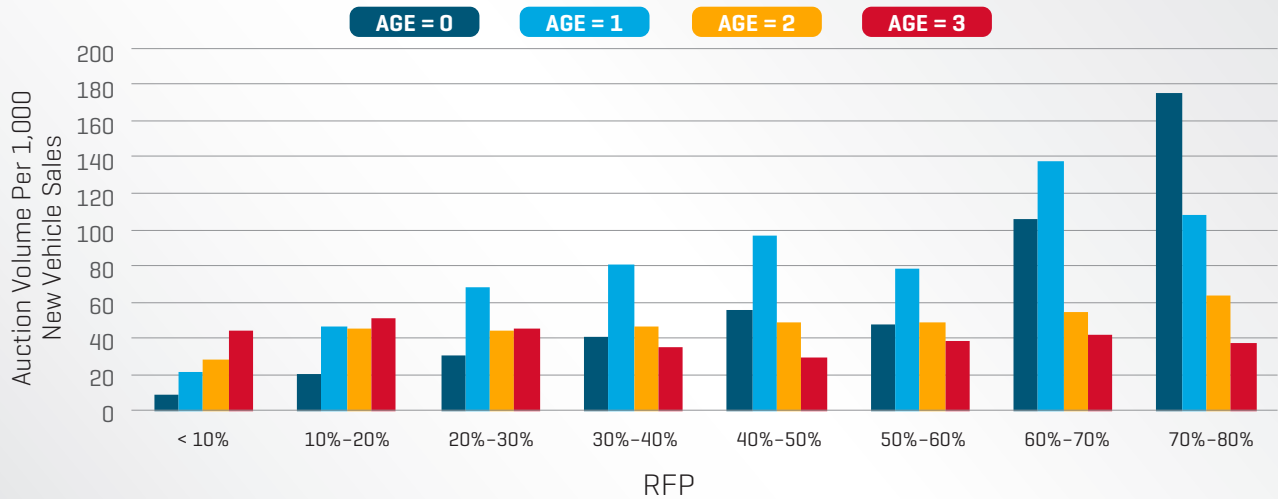
Since the cadence of buying and selling rental vehicles is controlled by a few large companies, there is a very predictable return cycle. For example, rental companies find it to be a good business practice to maintain modern fleets and to only rent out vehicles less than two model years old. Therefore, rental vehicles usually enter the used vehicle market within two years after being purchased new compared to 36 months for leased vehicles. The timespan is even longer for vehicles purchased by consumers. It should be noted, as Figure 1 illustrates, there is a much tighter distribution when rental vehicles return to market.

This predictable return cadence can be observed via the difference in volume flow through wholesale auto auctions. Below, Figure 2 shows the number of sales within the National Auto Auction Association (NAAA)/J.D. Power AuctionNet wholesale auction database¹ for different ages of vehicles. The values are based on the relative number of units going through auction for every 1,000 sales in the new market. For example, for every 1,000 new sales of vehicles with RFP between 30% and 40%, 80 will make their way through auction as 1-year-old units. Models with RFP between 60% and 70% experience a ratio of 138-to-1,000. Both figures are much higher than the 21 unit count for vehicles with RFP less than 10%.

1. J.D. Power Valuations Services' AuctionNet data includes approximately 85% of all wholesale transactions occurring in the United States.

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Figure 2. Auction Volume by Vehicle Age and Rental Fleet Penetration (RFP)



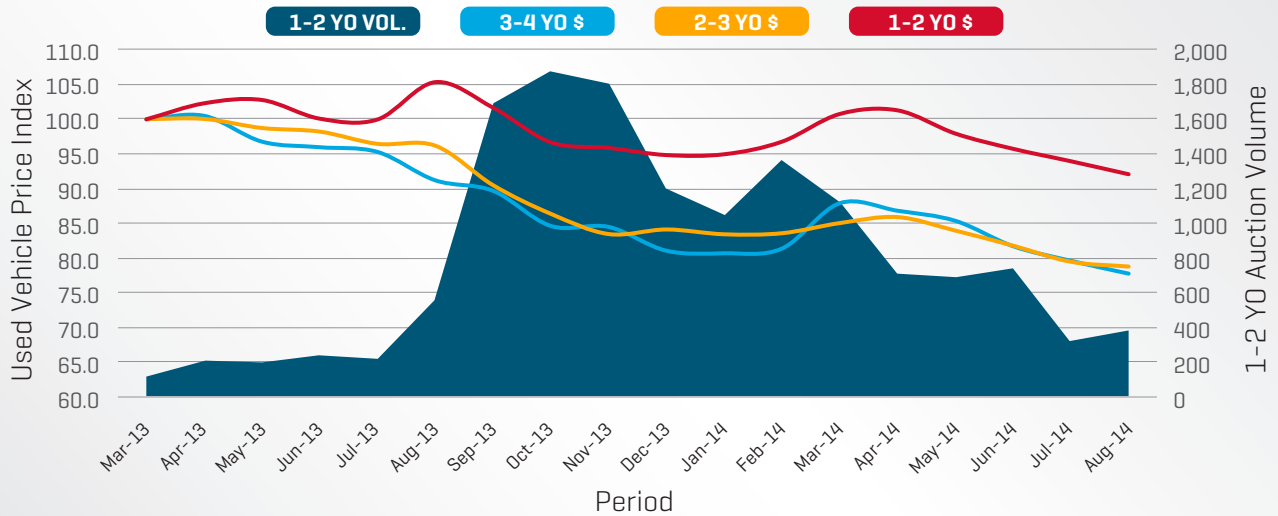
Source: J.D. Power Valuation Services

Following the laws of supply and demand, higher auction supply drives down auction prices. General and individual price patterns suggest the impact is short lived, but with significant effects. For example, let's look at midsize vans, the indispensable family-hauling workhorse of the rental fleet industry. Typical for the segment, 1- to 2-year-old off-rental volume quickly escalates at auction post-rental service, and the resulting influx depresses both recent

model year prices and those of slightly older units. As shown in Figure 3 (page 5), prices of 1- to 2-year-old midsize vans fell nearly 7% as auction volume rose from an average of roughly 200 units per month (July and August 2013), to more than 1,800 (November 2013). Making room for newer models, prices of 2- to 3-year-old midsize vans fell even further, dropping more than 13% over the period.

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Figure 3. Used Vehicle Prices and Off-Rental Auction Volume: Midsize Van Segment



Source: J.D. Power Valuation Services

The supply impact goes well beyond this isolated case. An analysis of several brands—with both positive and negative changes to rental fleet penetration—indicates strong support to conclude rental penetration has a strong negative correlation with future used prices (with emphasis on the rental model year in question during the period when the supply shock occurs).

Figure 4 (page 6) shows changes made to fleet strategy² from calendar year 2013 to 2014 and the corresponding changes in used vehicle prices. Price impacts are classified for different age vehicles returning to market at the same time two years later (or after they had reached

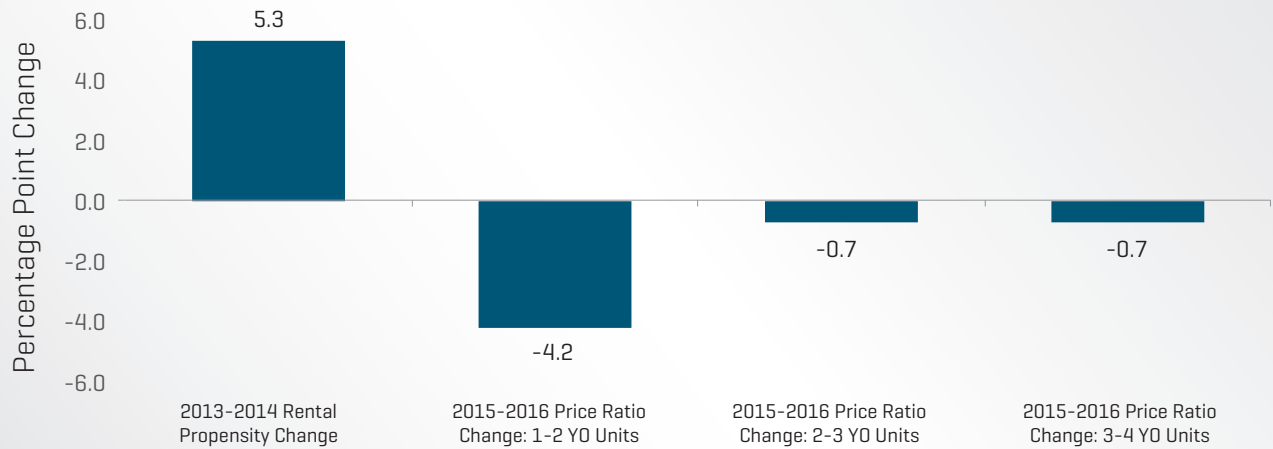
the end of rental service). A comparison of the year-over-year change in price for each model within a brand relative to its corresponding segment provides a metric to gauge if prices for each age bucket showed differences in competitive performance when fleet strategy changed.

The 1- to 2-year-old classification primarily represents rental vehicles, while the 3- to 4-year-old classification better represents lease returns. The observations suggest a strong negative impact occurs on auction prices when higher volumes of rental vehicles return to market, while the impact on lease maturities is much lower when a brand has more reliance on fleet.

2. Brand fleet strategy is represented as "Rental Propensity Change" which measures each individual model's rental fleet penetration relative to the segment average and then averages this difference to develop a year-over-year comparison.

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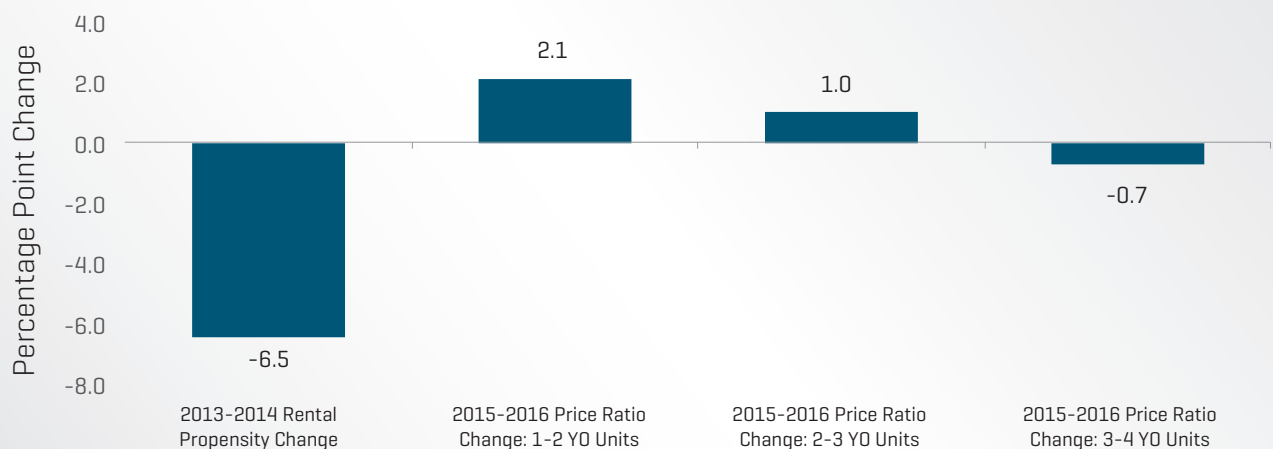
Figure 4. Increase in New Vehicle Rental Propensity v. Changes in Used Vehicle Prices



Source: J.D. Power Valuation Services

In contrast, Figure 5 shows the opposite effect when fleet propensity declines. In this case, a strong negative correlation on rental return prices is observed along with an increase in price when rental propensity declines. As in the previous figure, the impact is not evident on older cohorts.

Figure 5. Decrease in New Vehicle Rental Propensity v. Changes in Used Vehicle Prices



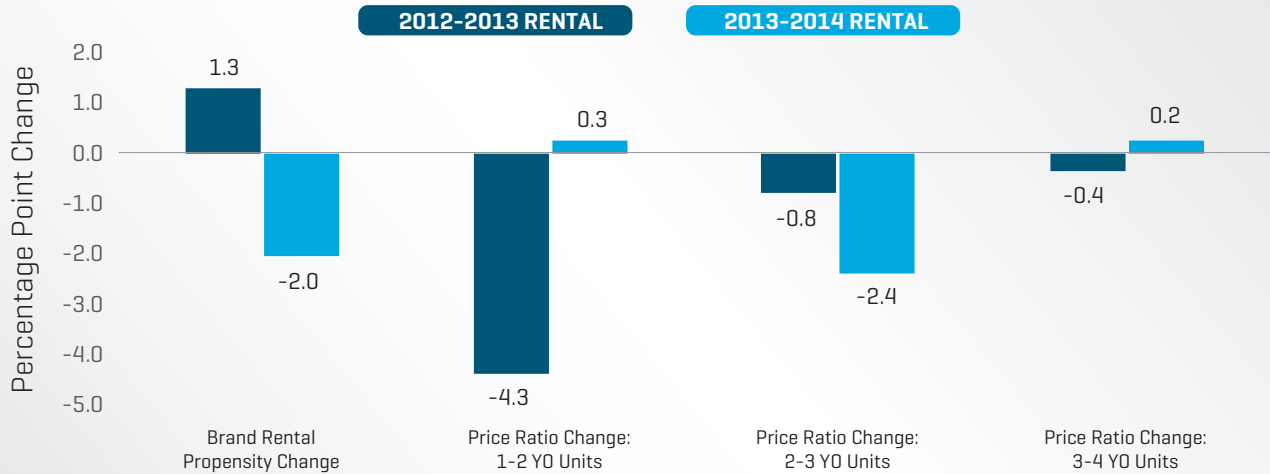
Source: J.D. Power Valuation Services

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The effects are consistent for all brands used in this analysis for the 2013 to 2014 period. Further tests of this relationship using a two-year trend ensured estimates were not isolated to this period. The following example shows a two-year trend with similar results (Figure 6). This particular brand increased rental propensity from 2012 to 2013, then reduced it from 2013 to 2014. Two years

later, the results reveal a dramatic price decline relative to competitive segments following the initial increase in rental propensity, followed by a moderate increase in prices when fleet propensity was reduced. In general, the observations suggest there is a stronger inverse relationship to price movement when rental propensity is increased compared to when rental propensity is reduced.

Figure 6. Change in New Vehicle Rental Propensity v. Changes in Used Vehicle Prices



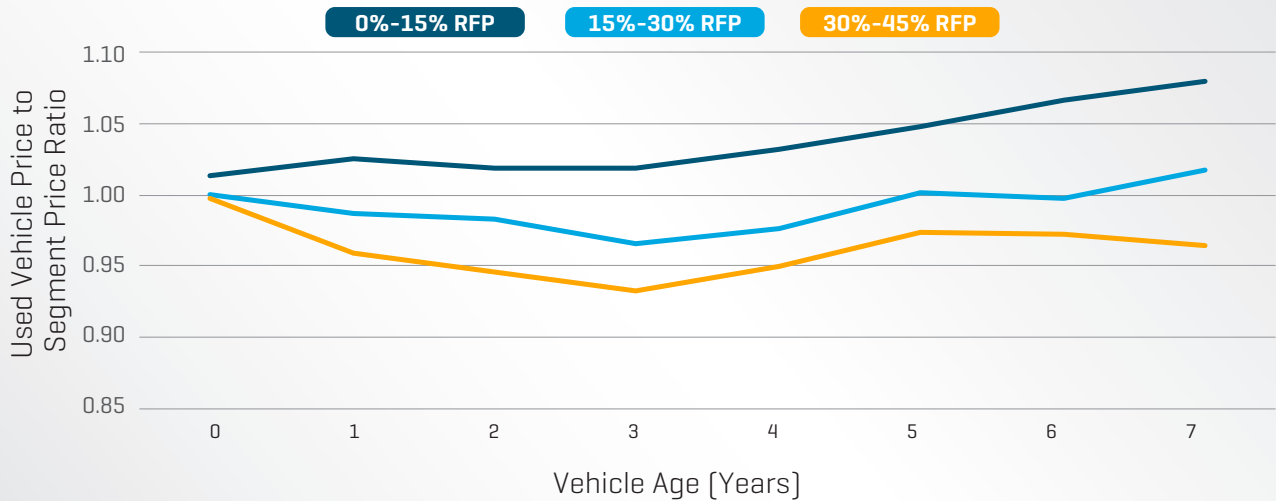
Source: J.D. Power Valuation Services

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When viewed as a summary of the industry, the observed detrimental impact related to higher RFP on used vehicle prices is even clearer. Figure 7 shows the evolution of average vehicle prices relative to vehicles of the same age and within competitive segments, bucketed by 15% percent RFP increments. The x-axis represents vehicle age, while the y-axis is the price of a given vehicle divided by the average competitive segment price. As vehicles with RFP levels between 0% and 15% age, they

become more valuable relative to those in their segment. Meanwhile, vehicles with significant penetration levels of 15% to 30% experience a marked decrease in prices relative to the segment average through four years of age, with prices improving modestly in subsequent years. Vehicles with a RFP of 30% or higher lose value even faster early on, and prices remain more depressed than otherwise as time passes.

Figure 7. Used Vehicle Price to Segment Price Ratio by RFP



Source: J.D. Power Valuation Services

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Statistical Impact

The observed impact of rental fleet on used prices is statistically measured using J.D. Power's residual value model. The hedonic, or comparative, portion of the model estimates the impact certain variables have on a vehicle's current resale and future residual value performance.

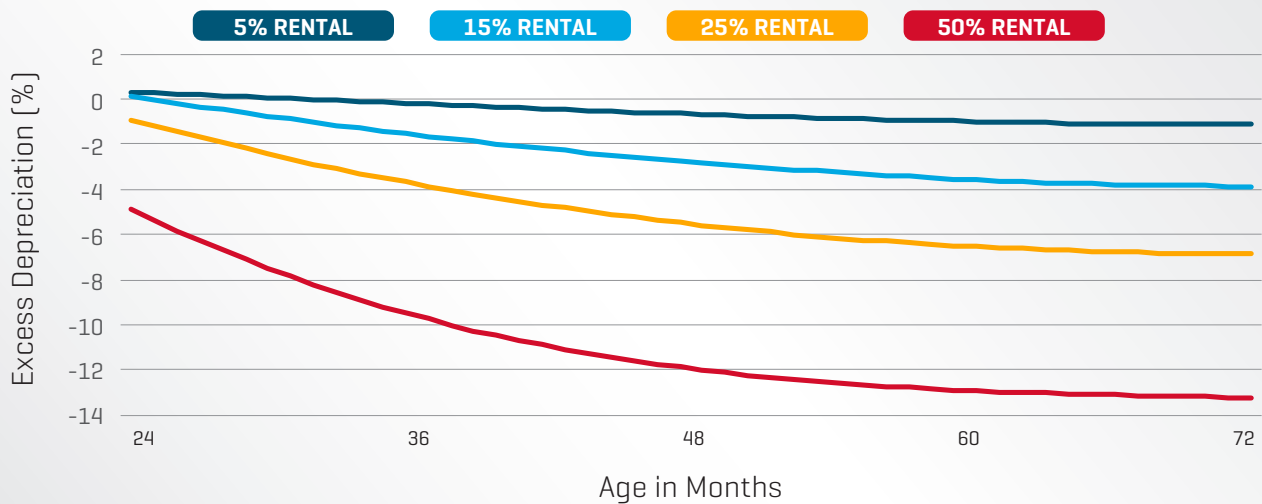
Just as a house's value is based on the number of bedrooms and bathrooms it contains, a vehicle's value can be estimated by measuring physical features such as body type (sedan, convertible, etc.), drivetrain (diesel, hybrid, etc.) and performance-related characteristics (horsepower, torque, fuel economy, etc.). In addition, variables are included to account for market-based factors like new vehicle incentives, the impact of redesigns or new model launches, and rental fleet penetration. The model is made even more powerful with the inclusion of J.D. Power Voice of the CustomerSM (VOC) data,³ which

provides deep insight into brand value defining characteristics such as initial quality, long-term durability and emotive appeal.

The incorporation of carefully vetted variables helps give a more comprehensive explanation as to why a vehicle's price is what it is and better ensures the impact associated with a given factor—like rental fleet penetration—is appropriately estimated.

Hedonic model results reveal that, on average, rental penetration does decrease used vehicle values. Following the earlier descriptive analysis, the impact is relatively small for vehicles with low levels of rental penetration, but the impact grows markedly as rental penetration increases. For example, at 36 months, depreciation for a vehicle with 15% RFP is just 1.5% above the norm, while a vehicle with 50% RFP experiences a substantial 10% increase in depreciation (Figure 8).

Figure 8. Cumulative Excess Depreciation Due to Rental Penetration



Source: J.D. Power Valuation Services

3. The model includes data from the J.D. Power Initial Quality StudySM (IQS), J.D. Power Vehicle Dependability StudySM (VDS), J.D. Power Auto Avoicer StudySM (Avoicer), and J.D. Power Automotive Performance, Execution, and Layout StudySM (APEAL).

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Assuming the same baseline depreciation curve, covering age and mileage only, and an equipped MSRP of \$25,000, a vehicle with a 25% rental penetration rate would carry a \$14,550 residual value at 36 months. That is approximately \$435 [3%] below a comparable vehicle with a RFP of just 10%. The deficit jumps to \$700 when RFP is raised to 35%. The impact to residual values results in meaningful 1.7 and 2.8 percentage point reductions, respectively, versus the model with 10% RFP.

The effect of RFP on vehicle prices for a given model are noticeable and important, but are there further effects that are not captured when looking at model-by-model comparisons in a statistical model? Specifically, is overall RFP for a brand an important contributor to brand value or more of a byproduct?

Brand Effect

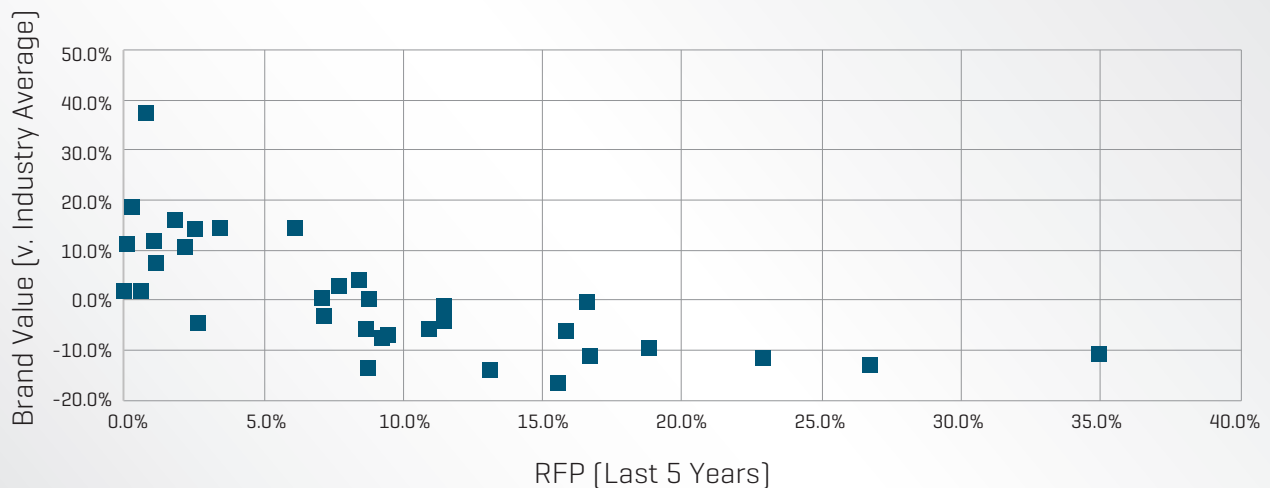
There is a clear relationship between RFP and the value of a brand, both when measured through new and used vehicle price movement or through J.D. Power's numerous customer surveys. Figure 9 includes current

brand values—relative to the industry average—measured statistically from wholesale transactions. Individual brand value figures are then associated with average rental fleet penetration rates spanning the last five years.

The highest brand value is nearly 40%, meaning that after controlling for the value of equipment, horsepower and many other physical characteristics of the vehicle, consumers are willing to pay nearly 40% more for a used vehicle simply because it is associated with this particular brand. Note the clear tendency of brands with low RFP to have higher brand values, and vice versa. What isn't clear is the specific causality involved. This is critical to understanding the relationship between rental fleet sales and brand value.

Two things could be at work here. For one, high RFP could cause the value of a brand to decline. The second thing could be the same challenges that lead brands to have very high rental fleet penetration also cause low brand value. Examples of these challenges include very long design cadences, a lineup that is out of touch with consumer preferences, and quality problems.

Figure 9. Brand Value and Rental Fleet Penetration



Source: J.D. Power Valuation Services

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If the first is true, then a clear solution to increase brand value—and thus used vehicle prices—would be to lower rental fleet sales volume. If a brand toward the bottom of the brand value spectrum can move toward the top by doing this, it would essentially be a case of shorter-term pain from a new sales standpoint. Over the longer term, however, it would be more rewarding due to higher residual values. If the second is true, then such efforts may be valuable, but not of the highest priority.

Unravelling the Brand Effect

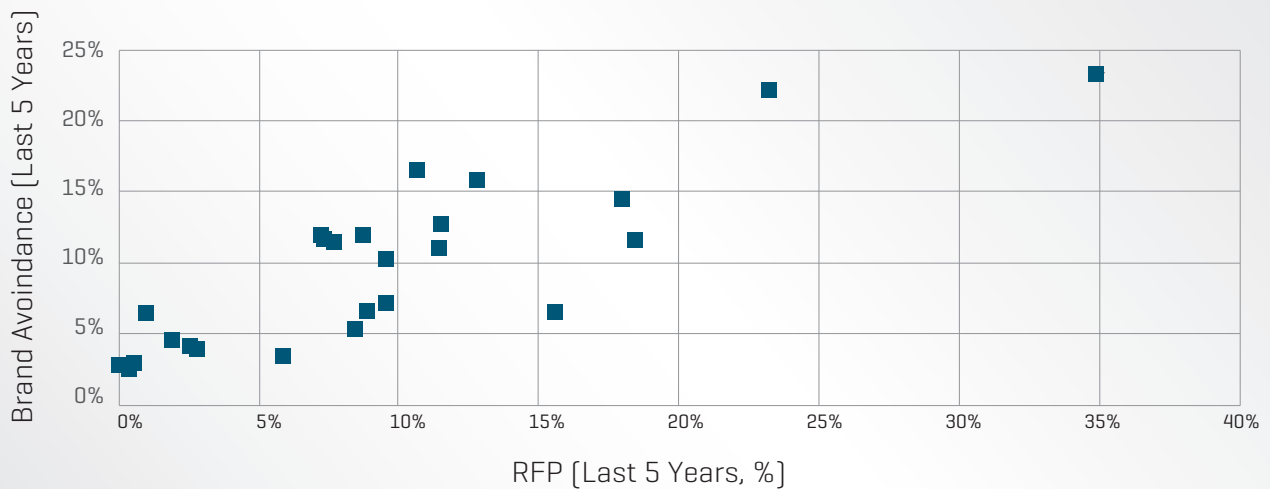
Some careful analysis is required to further understand the brand effect.

Approached prudently, automaker profits from new rental fleet sales can counterbalance the negative effect on used vehicle prices. Frequently, however, manufacturers use rental fleet sales as a lever to arbitrarily control or increase new vehicle sales volume. In general, manufacturers would prefer to sell the clear majority of

vehicles to consumers, but in certain cases weak demand, over-production—or aggressive new sales targets—lead to an increased dependence on rental fleet sales. The varying reasons for pulling the rental fleet lever creates an analytical complication because in certain cases changes in RFP have less to do with brand value defining factors [stretching to achieve new vehicle sales goals, for example].

One approach to this challenge is to analyze changes in rental fleet impact alongside changes in brand reputation as measured by the *J.D. Power Auto Avoider Study*.SM Specifically, the measure quantifies the portion of customers that avoided purchasing a vehicle from a brand due to concerns over reputation, with a higher value indicating more avoidance. As illustrated in Figure 9, strong brands don't tend to sell their vehicles to rental fleets in large proportions. Naturally, the connection between a brand's reputation and its rental fleet penetration is also significant, as illustrated below [Figure 10].

Figure 10. Brand Avoidance Due to Reputation v. Rental Fleet Penetration



Source: J.D. Power Valuation Services

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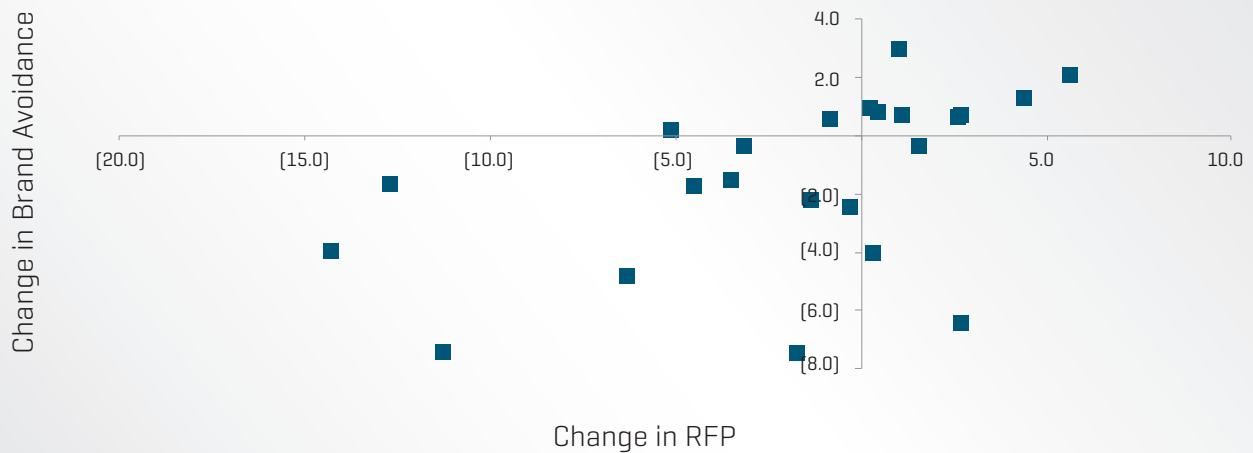
While this shows that during a given period brand avoidance due to reputation is associated with rental penetration, the connection is much weaker when analyzing changes in reputation along with changes in rental fleet penetration. Since it takes time for consumer perceptions of brands to change, it would not be surprising for an association between RFP and brand reputation to be ambiguous over one or two years. However, if rental fleet penetration does indeed have noticeably harmful effects on brand value, there should be a clear connection between changes in rental fleet penetration and changes in brand reputation in a time span long enough for consumer perceptions to evolve.

Figure 11 addresses this point by comparing the average avoidance due to reputation and RFP between the years 2006 to 2009 and 2013 to 2016—or a timeframe long enough to observe any coincident changes in reputation avoidance and RFP.

As illustrated, while there is some evidence supporting the relationship between changes in brand avoidance and RFP—e.g., a small number of brands in the upper right-hand quadrant grew RFP and experienced greater reputation avoidance—there are also cases where RFP changes little while reputation avoidance deteriorates [and vice versa].

Analyzing RFP and brand avoidance as a time series reinforces the loose association between changes of the two. Simply put, there is no consistent, discernable pattern suggesting a significant change in reputation is preceded by a significant change in RFP. In fact, in the clear majority of cases, meaningful changes in reputation were more closely aligned with market-related events [e.g., Toyota following its series of recalls related to unintended acceleration in 2009 to 2010] or longer-term changes in more important brand value defining factors [e.g., Hyundai quality and reliability improving over time].

Figure 11. Change in Brand Avoidance due to Reputation v. Change in RFP*



*CY06-CY09 v. CY13-CY16, percentage point change

Source: J.D. Power Valuation Services

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The distinction between the expected brand values of high and low RFP vehicles is indeed stark. Per the hedonic model expressed in figure 10, as a vehicle's RFP decreases from 15% to 5%, its brand value could potentially increase from about a 5% discount to a 5% premium.

For a \$25,000 vehicle, this represents a consumer going from being willing to pay \$1,250 less for a brand name, to \$1,250 more—a swing of \$2,500. However, as described in this section, it would be an oversight to conclude a manufacturer can expect such a boost to brand value from changing rental penetration rates alone. The data strongly suggests if RFP is influencing brand value, its impact is happening in very small increments over long periods of time and it is generally co-occurring with other more significant drivers. Thus, it is important to discover the actual causes of the value consumers place on a brand rather than viewing RFP as a lever to influence brand value.

Conclusion

This paper explores the relationship of rental fleet sales to used vehicle prices through two conjectural mechanisms: the first is through an increase in supply volume; the second is through damage to brand reputation and brand value. There is clear evidence rental fleet sales increase supply. This is not to be confused with a redistribution of supply from one period to another, which also happens,

but rather is an actual significant increase in the flow of volume through the marketplace. This increase in supply does have a negative impact on the value of vehicles, especially those with very high levels of RFP.

With the above stated, however, no compelling evidence of a direct relationship between rental fleet sales and brand reputation and the more general brand value category is found. There is undoubtedly an indirect relationship between brand reputation and rental fleet sales, however, evidence suggests higher rental fleet penetration is a function of lower brand value rather than the opposite.

At the end of the day, rental fleet sales are an integral component of the automotive industry. If used as a portion of a well-balanced vehicle sales channel strategy, RFP results in a small degree of negative pressure on prices with little to no impact on long-term value, while meeting many other goals of automotive producers.

Where a company can run into issues is when they have an overreliance on sales to rental fleets. Overreliance for a single model within a brand can lead to large negative pressure on residual values, whereas brand overreliance as a whole is often a symptom of other underlying issues.

AT J.D. POWER VALUATION SERVICES [FORMERLY NADA USED CAR GUIDE]

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J.D. Power Valuation Services [formerly NADA Used Car Guide] is a leading provider of vehicle valuation products, services and information to businesses. Its team collects and analyzes over 1 million combined automotive and truck wholesale and retail transactions per month, and delivers a range of guidebooks, auction data, analysis and data solutions. J.D. Power acquired NADA Used Car Guide in 2015, forming a powerful combination that brings the automotive industry rich data sets, strong analytics and over 130 years of market experience. Residual Values is the first product to be launched by J.D. Power Valuation Services.

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J.D. Power Valuation Services' market intelligence team leverages a database of nearly 200 million automotive transactions and more than 100 economic and automotive market-related series to describe the factors driving current trends to help industry stakeholders make more informed decisions. Analyzing data at both wholesale and retail levels, the team continuously provides content that is both useful and usable to the automotive industry, financial institutions, businesses and consumers.

Complemented by J.D. Power Valuation Services' analytics team, which maintains and advances its internal forecasting models and develops customized forecasting solutions for automotive clients, the market intelligence team is responsible for publishing white papers, special reports and the Used Car & Truck Blog. Throughout every piece of content, the team strives to go beyond what is happening in the automotive industry to confidently answer why it is happening and how it will impact the market in the future.



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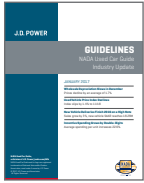
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ADDITIONAL RESOURCES



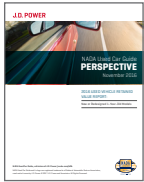
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Updated monthly with a robust data set from various industry sources and J.D. Power Valuation Services' proprietary analysis, Guidelines provides the insight needed to make decisions in today's market.



White Papers

J.D. Power Valuation Services' white papers and special reports aim to inform industry stakeholders on current and expected used vehicle price movement to better maximize today's opportunities and manage tomorrow's risk.



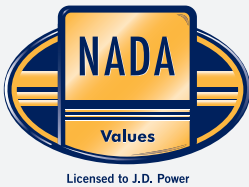
Perspective

Leveraging data from various industry sources and J.D. Power Valuation Services' analysts, Perspective takes a deep dive into a range of industry trends to determine why they are happening and what to expect in the future.



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