

# Volatility in Used Vehicle Depreciation: Historical Trends & Future Outlook

## AT A GLANCE

Why we've seen so much volatility  
in depreciation in the past

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What to expect in terms of depreciation  
through 2014

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How external factors influence depreciation trends

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Which vehicle segments face a greater  
upturn in depreciation

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## Introduction

It's widely known that used vehicle prices and the rate of depreciation have improved dramatically over the past few years. Ask any used car manager or consumer who has had to pay vehicle-related personal property tax and they will be quick to attest to this fact.

Reduced pressure from the new vehicle market, falling used supply and economic conditions have all played important roles in driving this trend. And no matter how you measure it—whether by design, efficiency or reliability—vehicles are just plain better today than they were a few short years ago. This too has had a positive effect on depreciation.

In most instances, slower depreciation and sharp improvements in value are viewed positively, and the sentiment is no different in this case. However, the significant price volatility and extreme decrease in the rate of depreciation witnessed over the past few years present a challenge in predicting future outcomes.

In this paper, NADA utilizes its wealth of data and analytical expertise to provide insight into how and why used vehicle depreciation has changed in the past, and to give background on the prediction that overall market depreciation will increase mildly over the next few years.

## HISTORICAL TRENDS IN USED VEHICLE DEPRECIATION

For the better part of the last 20 years, used vehicle depreciation has been extremely volatile, with annual loss rates ranging from a low of 11.1 percent in 2009 to a high of 26.5 percent in 2008. In other words, a used vehicle worth \$12,000 would have declined in value by as much as \$3,180 in 2008 or as little as \$1,332 in 2009.

A number of factors have influenced these extreme changes:

Encouraged by steady new vehicle sales growth over the latter half of the 1990s, and pressured by rising operational costs, manufacturers (mostly domestic) began

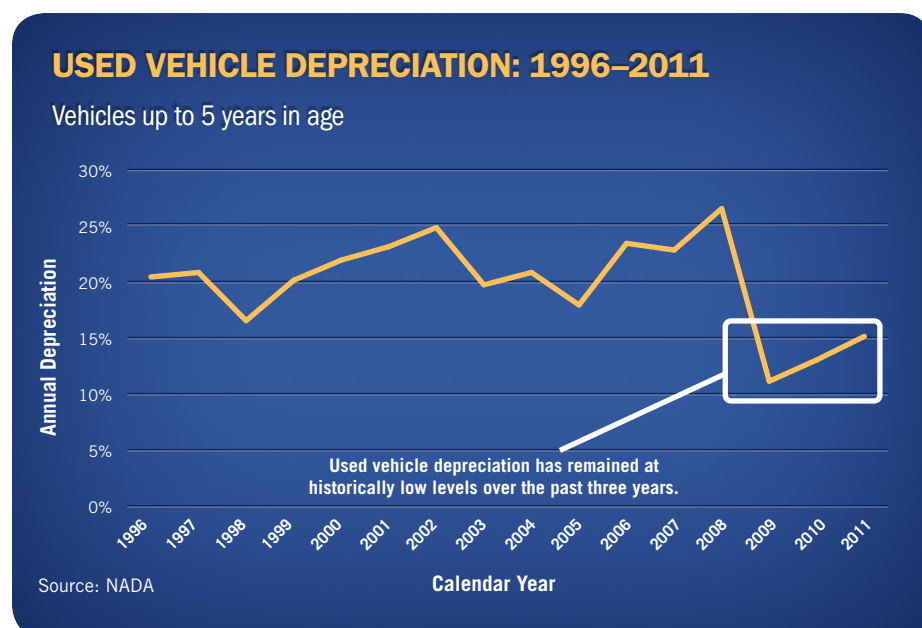
the last decade by raising production to a level that exceeded retail demand.

To force momentum, manufacturers used overly generous lease strategies and offered ever-larger incentives “on the hood” to tempt buyers into purchasing the thousands of new vehicles being rolled out.

While this low-margin, high-volume strategy worked to sustain new vehicle sales for a while, used vehicle depreciation swelled from the mass of volume entering the used market and the downward pressure applied by hefty new vehicle incentives.

In 2008, the global recession, record-high gasoline prices and the financial market collapse caused used vehicle depreciation to soar to an unprecedented level of 26.5 percent.

Over the next three years, however, depreciation improved dramatically because significant cuts in new vehicle production severely limited the availability of late-model used vehicle supply, which NADA estimates fell by 14 percent from 2009 to 2011. Lower production levels also allowed for a move toward targeted incentive spending, which helped reduce downward pressure on used vehicle prices.



In addition, although the economy had been expanding at a comparatively slow pace following the recession, the rate of growth over this period was enough to stimulate additional used vehicle demand.

As a result, annual depreciation averaged just 13.1 percent from 2009 to 2011. To use the example of a \$12,000 used vehicle once again, the decline

in value would have been only \$1,572 during a given year—a substantial \$1,608 improvement over the rate of loss in 2008.

### TRENDS IN USED VEHICLE DEPRECIATION: 1996–2011

The average annual loss in value experienced by a \$12,000 used vehicle

Calendar Year	Annual Depreciation %	Annual Depreciation \$	Monthly Depreciation \$
1996	20.4%	\$2,448	\$204
1997	20.8%	\$2,496	\$208
1998	16.5%	\$1,980	\$165
1999	20.1%	\$2,412	\$201
2000	21.9%	\$2,628	\$219
2001	23.1%	\$2,772	\$231
2002	24.8%	\$2,976	\$248
2003	19.7%	\$2,364	\$197
2004	20.8%	\$2,496	\$208
2005	17.9%	\$2,148	\$179
2006	23.4%	\$2,808	\$234
2007	22.8%	\$2,736	\$228
2008	26.5%	\$3,180	\$265
2009	11.1%	\$1,332	\$111
2010	13.0%	\$1,560	\$130
2011	15.1%	\$1,812	\$151

Source: NADA

### DEPRECIATION OUTLOOK

The slower rate of loss over the past few years means that the value of—and equity position on—a given used vehicle is significantly greater than what has been seen in the past. But what direction will depreciation take in the coming years?

The short answer is that NADA is forecasting only modest increases in depreciation through 2014. Specifically, NADA projects that used vehicle depreciation will grow by just over half a percentage point to 15.7 percent in 2012, and that the annual rate of loss in 2013 and 2014 will reach 15.9 and 16.6 percent, respectively.

NADA’s estimates are based in part on conservative projections for economic growth, particularly in employment. Current forecasts by many economists, including our own, point to minimal gains in the labor market through 2013. This will act as a counterweight to the positive effect the continued decline in late-model used vehicle supply will have on depreciation. NADA is projecting that late-model used vehicle supply will fall by another 11 and 10 percent in 2012 and 2013, respectively, before rising by 2 percent in 2014.

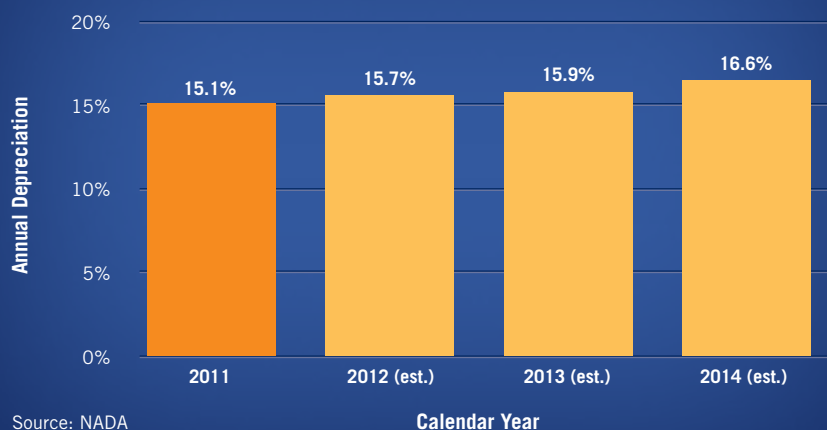
NADA's forecast also contains a small negative adjustment for the expectation that an increasingly competitive new vehicle environment will translate into mild hikes in incentive spending over the next few years.

Regarding gasoline prices, NADA assumes the cost of fuel will moderate through 2013 before rising again in 2014. This means gasoline prices will have a slightly positive effect on depreciation next year before having a more negative impact the following year.

Even though NADA projects that market-level depreciation will rise over the next few years, it is expected to remain low by historical standards. The 16.6 percent estimated rate of depreciation in 2014 would still be well below the 21 percent average rate seen from 1996 to 2007. In dollar terms, a \$12,000 used vehicle is expected to depreciate by \$1,884 over the course of 2012—just \$72 more than the loss experienced in 2011. In 2014, this amount is projected to grow to \$1,992—\$108 more than 2012's estimate.

### USED VEHICLE DEPRECIATION: MARKET FORECAST

Vehicles up to 5 years in age



Source: NADA

### NADA USED SUPPLY FORECAST: 2012–2014

Annual change in used supply for vehicles up to 5 years in age



Source: NADA

## OBSERVED VS. ACTUAL DEPRECIATION

It has been discussed how external factors have or will influence observed depreciation over the years, but how does this compare to the actual state of depreciation once these factors are removed?

NADA's used price forecast model, which evaluates the relationships between used vehicle prices and key influencing factors such as supply volume, fuel prices and other economic factors, will be used to determine this.

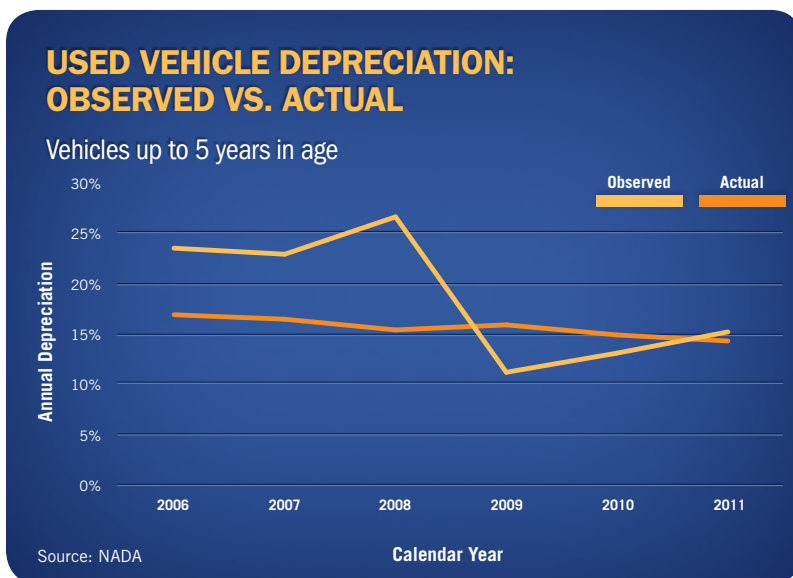
By understanding these relationships, we can estimate what movements in depreciation would have occurred had all of these key factors remained constant, and we can better estimate depreciation in the future.

The chart below shows the volatile swings in observed depreciation that occurred over the past few years, alongside the smoother trend of actual depreciation. Here we can clearly see how the relationship between the two has shifted over the years due to changes in the external factors described earlier.

The spike in observed depreciation in 2008 illustrates just how influential these factors can be. The price of regular-grade gasoline reached a historic high of \$4.11 per gallon in July, and the financial collapse occurred in the second half of that year.

Considering these shocks, it's not surprising that gas prices and economic factors accounted for 97 percent of the 11.2 percentage point gap between observed and actual depreciation in that tumultuous year.

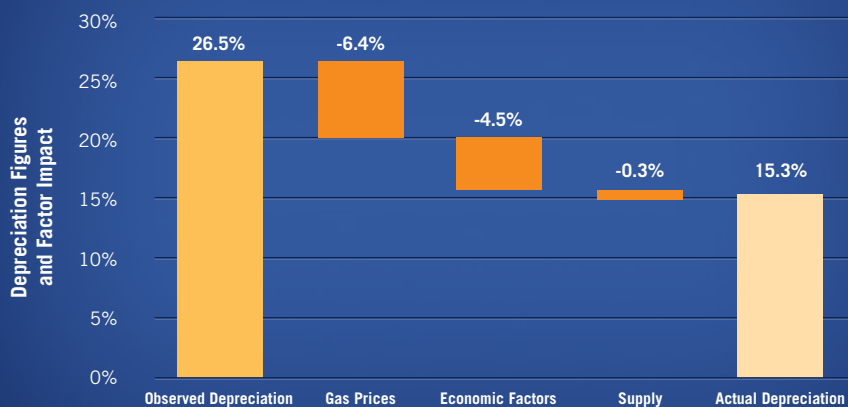
Setting observed depreciation aside for a moment, we see actual depreciation steadily declined from 16.8 percent in 2006 to 14.2 percent in 2011.



The consistent improvement in actual depreciation is a positive trend that can be attributed in no small part to advancements in product quality, design and efficiency. Simply put, the pool of poorly executed vehicles continues to shrink with each passing model year.

### ISOLATING ACTUAL DEPRECIATION: CY 2008

Actual depreciation is derived by estimating and removing the effects of outside factors from observed depreciation



Source: NADA

In addition, manufacturer certified pre-owned programs and more effective dealer management and retailing processes have raised the profile of used vehicles over the years; these factors have also helped to improve actual depreciation.

Since it's highly unlikely that product development will slow any time soon or that manufacturers and dealers will neglect investments made in used vehicle operations,

this trend is expected to continue over the coming years.

### SEGMENT SPOTLIGHT: LARGE PICKUPS

Even though NADA is estimating relatively minor increases in depreciation at a market level, certain segments — mostly truck-related — are expected to experience changes well above the market as a whole.

Consider the large pickup truck segment, which has been on a near-unmatched depreciation roller coaster ride over the past few years.

Demand for large pickups, which nearly dried up in 2008 when gasoline prices exceeded \$4 per gallon, rebounded strongly over the course of 2009 and

2010, as fuel prices fell to an average of \$2.50 per gallon.

At the same time that demand for the segment surged, the supply of late-model units began to fall. For example, by 2010 NADA estimates that supply had fallen by 18 percent relative to 2008. This compares to a decline of 11 percent for the market as a whole.

This combination of low gasoline prices and contracting supply translated into a massive swing in depreciation from 2008 to the period of 2009/10, as depreciation plummeted from 26.7 percent to an average of just 7.1 percent.

This means a used, \$20,000 large pickup went from losing \$5,340 of its value in 2008, to an average of only \$1,420 per year over the next two years.

Even though 2011 gas prices of nearly \$4 per gallon increased large pickup depreciation, the 12.4 percent loss rate was still better than the 15.1 percent rate for the overall vehicle market.

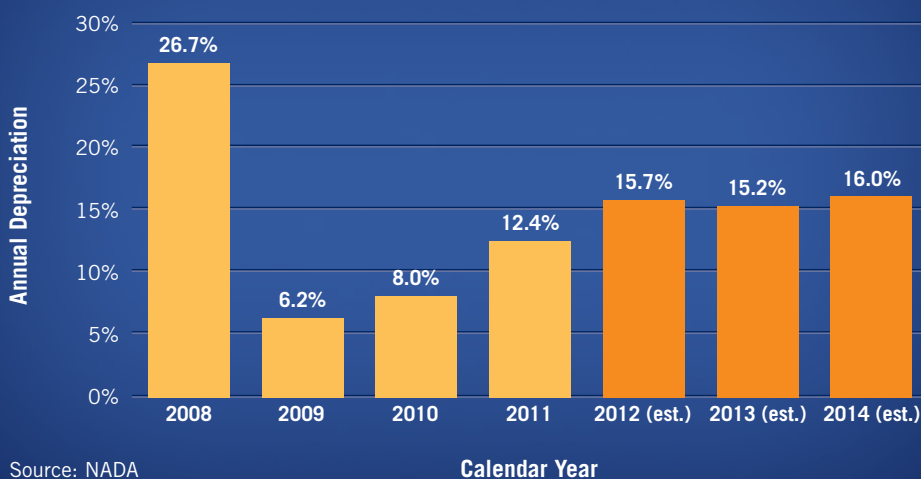
Looking ahead, however, persistently high gasoline prices, especially in 2014 due to the anticipated acceleration of global economic expansion, will be primarily

responsible for the passing of this unusually strong era of depreciation.

Over the next three years, NADA is estimating that large pickup depreciation will rise to an average of 15.6 percent per year, or nearly seven points more than the 8.9 percent average witnessed from 2009 through 2011. This is the second-largest increase expected over this

### USED VEHICLE DEPRECIATION: LARGE PICKUPS

Vehicles up to 5 years in age. 2012-2014 data is estimated.





period of time, and falls between estimated depreciation growth for mid-size pickups and large SUVs.

In dollar terms, the price of a used, \$20,000 large pickup would fall by \$3,200 over the course of 2014—\$720 more than 2011's loss of \$2,480.

### **SUMMARY**

Used vehicle depreciation has gone through a remarkable period of volatility over the past few years, mainly because of substantial changes in economic conditions, used vehicle supply and gasoline prices.

By combining unique and abundant data assets with market-leading analytical expertise, NADA is able to estimate the impact these factors have had on used vehicle depreciation and predict future severity.

This is of paramount importance to those with long-term interests in used vehicles, such as banks and investment firms. These organizations must find a balance that maximizes present-day opportunities, while at the same time minimizes future risk.

The following key points should be considered important takeaways from this report:

- With tepid economic improvement and higher gasoline prices, we should see industry-wide depreciation steadily worsen from 2012 to 2014. Slow economic growth will have a greater impact in 2013, and rising gas prices will be felt more in 2014.
- New market price pressure is expected to increase gradually over this period in the form of higher incentives, as manufacturers seek to balance production and market share goals with actual demand. This will also negatively impact depreciation.
- Even though depreciation is predicted to rise over the coming years, the annual rate of loss is expected to remain low by historical standards.

- The low annual rate of depreciation will be due in large part to the decline in late-model used vehicle supply, ongoing advancements in new products and investments made in used vehicle operations.
- Certain market segments—chiefly, trucks—are projected to experience a rise in depreciation significantly above what is expected for the market in general.

In addition to these points, the tenuous position of the global economy bears emphasizing and the gravity of the economic challenges currently faced—expiring Bush-era tax cuts, automatic reductions in government spending, Europe's persistent financial troubles and slower growth in other global economies—shouldn't be underestimated.

However, should the pace of economic expansion proceed cautiously, as expected, and automobile manufacturers remain consistent in their present approach to production, we should enjoy a period of used price stability that hasn't been seen in well over a decade.

# About NADA

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## **NADA Used Car Guide**

Since 1933, NADA Used Car Guide has earned its reputation as the leading provider of market-reflective vehicle valuation products, services and information to businesses throughout the U.S. and worldwide. NADA collects and analyzes more than one million combined wholesale and retail automotive-related transaction prices per month. Its guidebooks, auction data, analysis and data solutions offer automotive, financial, insurance and government professionals the timely information and reliable solutions they need to make better business decisions. Visit [www.nada.com/b2b](http://www.nada.com/b2b)

## **NADA Analytics & Consulting**

NADA's analytics team is charged with maintaining and advancing NADA's internal forecasting models and for developing customized forecasting solutions for automotive clients. NADA's analytics team has deep industry experience and is well versed in the nuance and complications involved with forecasting in the automotive market.

## **NAAA/NADA AuctionNet® Auction Data**

Find the most recent wholesale transaction data through AuctionNet Market Report, available online 24/7. Updated every week, it features more than 600,000 new records added each month. AuctionNet Market Report represents more than 80 percent of the nation's auction activity, giving you a clear view of the marketplace. Available exclusively from NADA, in joint partnership with the National Auto Auction Association (NAAA).

AuctionNet data is available either as an annual subscription or in back history for specific years, or it can be customized and/or aggregated based on client needs.

## **NADA's Used Supply Forecast**

NADA's used supply forecast is an estimate of the number of vehicles expected to be offered for sale in the future. NADA calculates used supply volume as the pool of potential vehicles that could return to the market—as represented by all new vehicle sales—and the probability that a vehicle will return from a particular source (i.e., rental, consumer lease, consumer purchase, etc.) after a predicted use period. For example, vehicles sold to rental car companies and consumers each have a specific probability curve associated with the historical likelihood to return to the used market after a given use period. The product of the vehicle pool and the return probability is the expected value of the volume of returned vehicles, which is aggregated to create the used supply volume. NADA calculates used vehicle supply down to the vehicle level.

NADA's used supply forecast data is available either as a one-time deliverable or an annual subscription and can be customized based on client needs.