

Measuring the Impact of Vehicle History on Automotive Lending Risk

An Experian Automotive Research Report



Contents

Executive Summary	2
Introduction	3
Research Methodology	4
Key Insights	5
Strategic Recommendations.....	11
Industry Insight	12
<i>How Lenders Use Vehicle History Data</i>	
Conclusion	13

Executive Summary

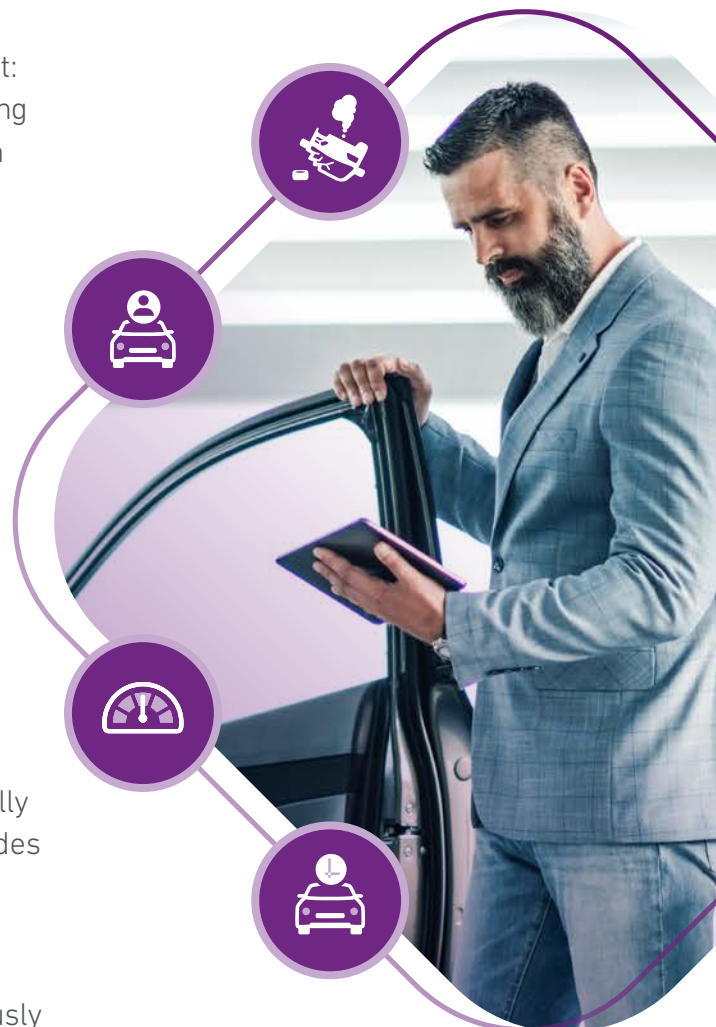
In the evolving landscape of automotive lending, traditional risk assessment models often overlook a critical component: the vehicle's history. This whitepaper explores how incorporating Vehicle History Data can significantly enhance consideration of loan defaults for collateral assessment and portfolio monitoring uses. Our extensive analysis of one million auto loans, spanning from 2018 to 2024, reveals the power of Vehicle History Data in improving collateral risk assessment models. By integrating this data, lenders can make more informed, data-driven decisions, leading to better loan performance, reduced risk exposure, and more efficient portfolio management.



One Million Auto
Loans Analyzed

The findings demonstrate that Vehicle History Data, especially as synthesized within the Experian AutoCheck Score[®], provides unique insights by applying vehicle history factors and events, including vehicle age, mileage, accident history, and ownership changes, to generate a single score. This holistic approach enhances predictive accuracy and reveals previously overlooked correlations between vehicle collateral quality and loan performance. In short, lenders who incorporate this data within their collateral assessment can reduce losses, identify growth opportunities, and maintain stronger loan portfolios.

Experian AutoCheck Scores and data elements are not provided or permitted for use in any assessment or decision relating to a consumer's creditworthiness. This study is intended to address the correlation between vehicle history characteristics and loan performance and to identify opportunities for lenders to use Experian AutoCheck Scores and data in vehicle collateral evaluation and monitoring to improve vehicle loan portfolio performance.



Introduction

CURRENT CHALLENGES IN AUTOMOTIVE LENDING

Automotive lenders traditionally rely heavily on borrower credit scores and other financial metrics when evaluating risk. While these metrics are crucial for understanding a borrower's financial health, they fail to account for a critical element—the characteristics of the vehicle itself. The vehicle's condition, usage history, and other underlying factors affect the collateral that secures the loan. Overlooking this essential component introduces a blind spot in risk assessment models. Issues such as unreported accidents, frequent ownership changes, or high mileage can significantly impact the vehicle's residual value and the borrower's ability or willingness to fulfill the loan obligation.

When lenders fail to integrate vehicle history insights into their collateral assessment, they underestimate the full scope of loan performance. While effective, traditional risk models lack the breadth required to navigate today's increasingly competitive and complex lending environment. The result is missed opportunities to manage collateral risk proactively with the potential consequence of greater likelihood of loan defaults.

OPPORTUNITY WITH VEHICLE HISTORY DATA

Vehicle History Data presents a unique opportunity to address this gap. By capturing events such as accidents, odometer readings, ownership changes, and title issues, Vehicle History Data provides lenders with a comprehensive view of collateral condition and lifecycle. The Experian AutoCheck Score applies proprietary algorithms to translate complex vehicle history into a simple, predictive score that can be seamlessly integrated into existing risk models.

Incorporating the Experian AutoCheck Score enables lenders to:

- Mitigate default risk by identifying vehicles with potential issues early.
- Gain deeper insights for both loan origination and ongoing portfolio monitoring.
- Explore better aligning loan terms and decisions with the quality of vehicle collateral.



Research Methodology

STUDY FOCUS

This study was conducted to:

- Examine the relationship between critical vehicle history factors and loan performance.
- Measure the predictiveness of Vehicle History Data, especially the Experian AutoCheck Score.
- Quantify the impact of integrating the Experian AutoCheck Score into traditional lending risk models.

DATA OVERVIEW

- Sample Size: Analysis of one million auto loans originated between January 2018 and January 2024.
- Loan Types: Both used and new vehicle loans spanning diverse borrower credit tiers.

KEY VARIABLES ANALYZED:

- Loan default incidence, defined as 60+ days past due.
- Loan characteristics, such as term length and origination amount.
- Borrower credit score at loan origination.
- Vehicle history variables, including accident history, odometer readings, number of prior owners, and Experian AutoCheck Score at origination.



Key Insights

1. EXPERIAN AUTOCHECK SCORE AS A PREDICTOR OF LOAN DEFAULT

Finding: Higher Experian AutoCheck Scores consistently correlate with lower probabilities of loan default.

Analysis: Vehicles with higher Experian AutoCheck Scores demonstrated significantly reduced default rates compared to those with lower scores.

Key Insight: The Experian AutoCheck Score effectively captures critical vehicle-related risks that traditional models overlook, giving lenders a stronger basis for predicting loan performance.

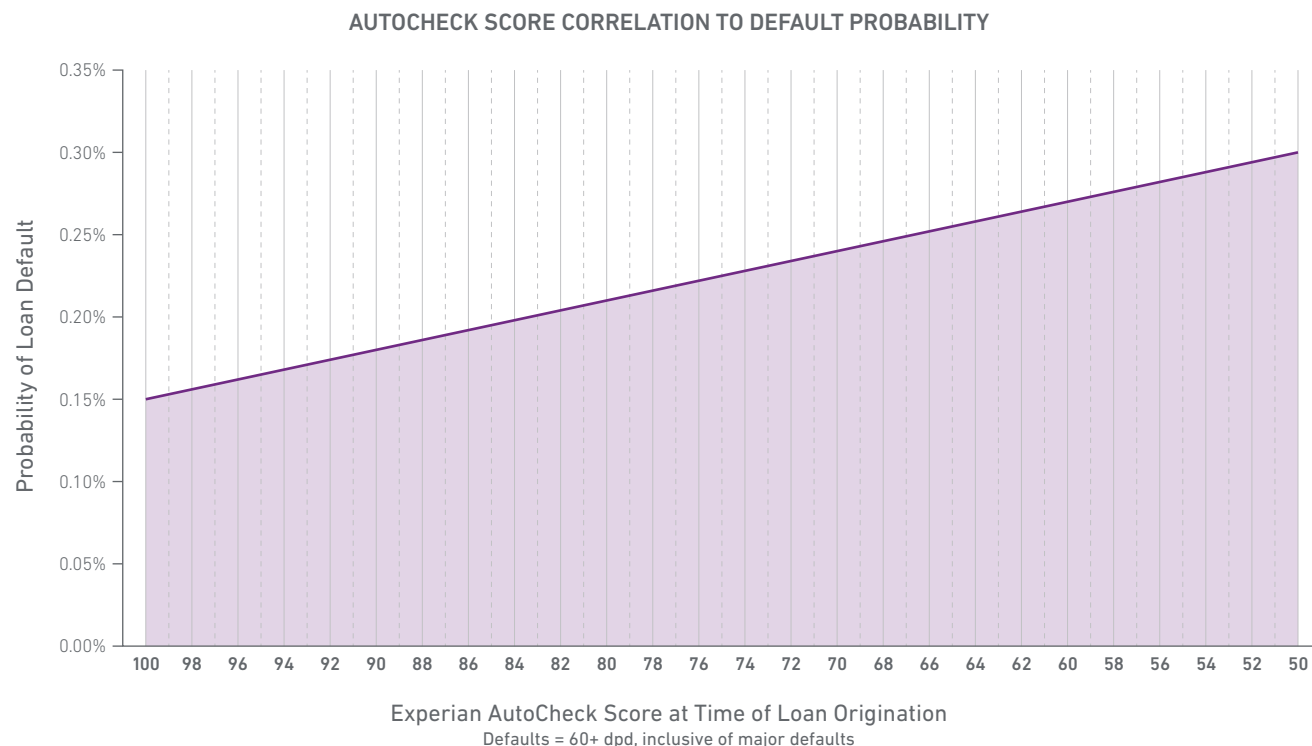
Implications:

- Lenders can improve their risk assessment by using Experian AutoCheck Scores in collateral assessment.
- This approach enables the identification of high-risk loans that might otherwise appear low-risk.

Research Results:

AutoCheck Score as a Predictive Variable for Loan Default

Experian AutoCheck Score is a statistically significant predictor of Auto Loan Default (New and Used)



Key Insights

2. ENHANCING RISK MODELS WITH EXPERIAN AUTOCHECK SCORE

Finding: Using the Experian AutoCheck Scores, in combination with traditional metrics, improves the overall predictive accuracy of risk models, irrespective of borrower credit tier.

Data Analysis: Including the Experian AutoCheck Score resulted in measurable improvements in the Kolmogorov-Smirnov (KS) statistic, gauging model performance.

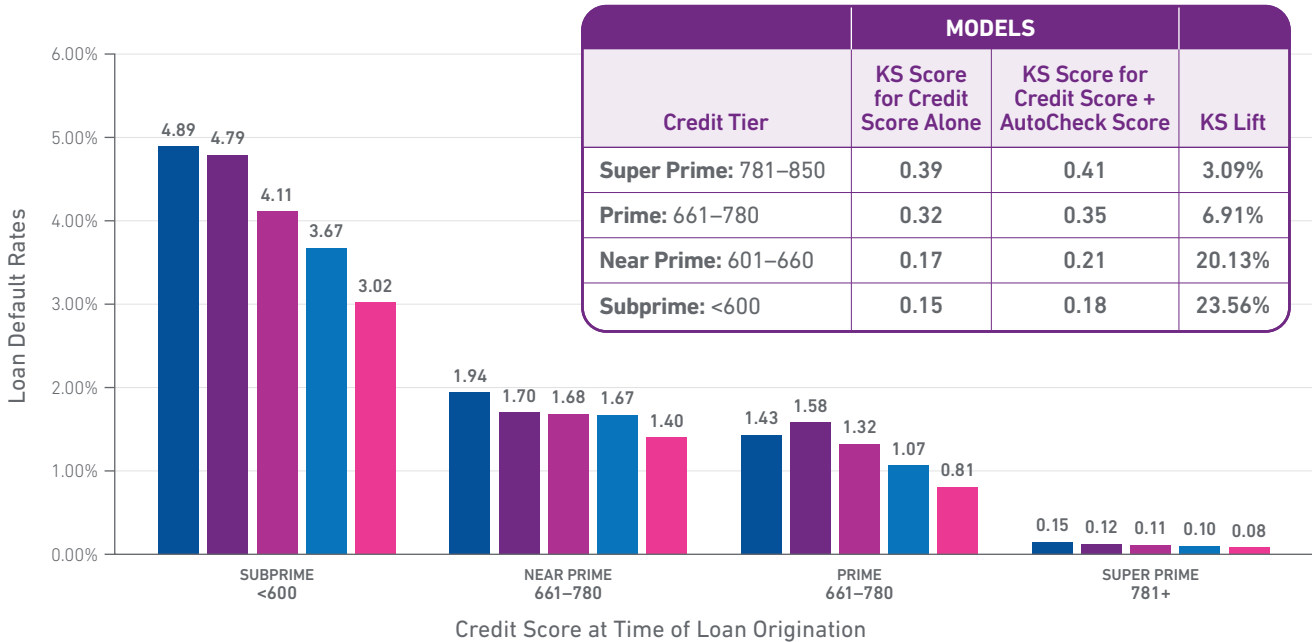
Example: For prime borrowers (credit scores 661-780), the KS score increased by nearly 7% when Experian AutoCheck Scores were added. For Subprime borrowers (credit scores <600), the KS score increased by about 23.5%.

Key Insights: This enhancement allows lenders to refine their models, leading to better differentiation between low-risk and high-risk loans.

Research Results:

Delinquency Rate by Credit Tier and Experian AutoCheck Score
Decreasing Delinquency Rates with Higher AutoCheck Scores

AUTOCHECK SCORE VS. DELINQUENCY RATE BY CREDIT SCORE BAND



AutoCheck Score at Time of Loan Origination



*Defaults = 60+ dpd, excluding major defaults
**Kolmogorov-Smirnov (KS) Score measures model performance. It ranges from 0 to 1, with higher values indicating better model performance.

Key Insights

3. IMPACT OF VEHICLE AGE AND MILEAGE

Finding: While vehicle age and mileage are critical risk indicators, their predictive power is significantly enhanced when combined with the Experian AutoCheck Score.

Data Analysis: Vehicles were grouped into two segments with higher and lower Experian AutoCheck Scores. Default rates were highest among older vehicles with higher mileage. However, vehicles with low Experian AutoCheck Scores exhibited even higher default probabilities, regardless of age and mileage.

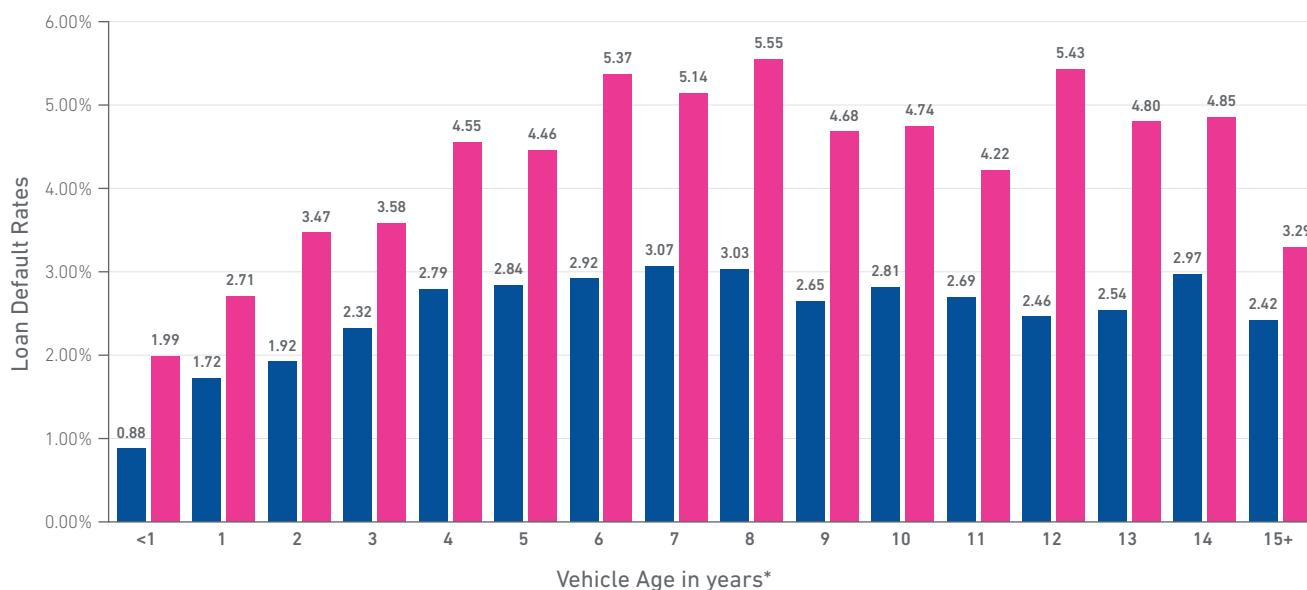
Key Insight: The Experian AutoCheck Score provides context to vehicle age and mileage data, accounting for additional risk factors like accident history and ownership changes.

Research Results:

Vehicle Age + AutoCheck Score

Experian AutoCheck Score + Age is more predictive of default risk than vehicle age alone

EXPERIAN AUTOCHECK SCORE IMPACT ON LOAN DEFAULT BY VEHICLE AGE
(*at time of origination)



MODEL	KS	KS LIFT
Age of Vehicle at Loan Origination Only	0.235	
Age of Vehicle at Loan Origination + AutoCheck Score	0.284	17.9%

■ Auto Check Score = >80
■ Auto Check Score = <80

*Defaults = 60+ dpd, inclusive of major defaults

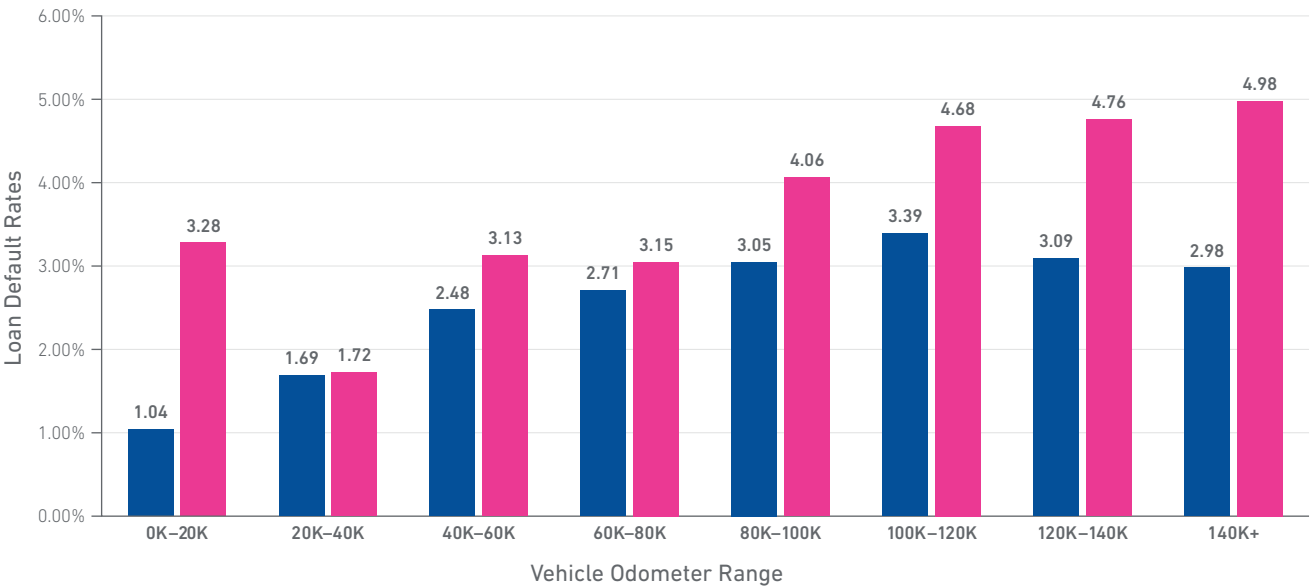
**Each vehicle age bracket represents at least 5k unique VINs

Key Insights

Vehicle Mileage + AutoCheck Score

Experian AutoCheck Score + Mileage is more predictive of default risk than vehicle mileage alone

EXPERIAN AUTOCHECK SCORE IMPACT ON LOAN DEFAULT BY ODOMETER RANGE
(*at time of origination)



MODEL	KS	KS LIFT
Vehicle Mileage at Loan Origination Only	0.23	
Vehicle Mileage at Loan Origination + AutoCheck Score	0.26	13%

■ Auto Check Score = >80
■ Auto Check Score = <80
*Defaults = 60+ dpd, inclusive of major defaults

Vehicle Age + Mileage + Experian AutoCheck Score

The three combined data points are more predictive of default risk than Age or Mileage, individually or combined

MODEL	KS	KS LIFT
Vehicle Mileage at Loan Origination + AutoCheck Score	0.235	
Vehicle Age + Mileage + AutoCheck Score at Loan Origination	0.284	20.64%

*Defaults = 60+ dpd, inclusive of major defaults
**Kolmogorov-Smirnov (KS) Score measures model performance. It ranges from 0 to 1, with higher values indicating better model performance.

Key Insights

4. EFFECT OF ACCIDENTS AND OWNERSHIP HISTORY

Accident History:

Finding: Vehicles with reported accident histories had default rates more than double those without accidents.

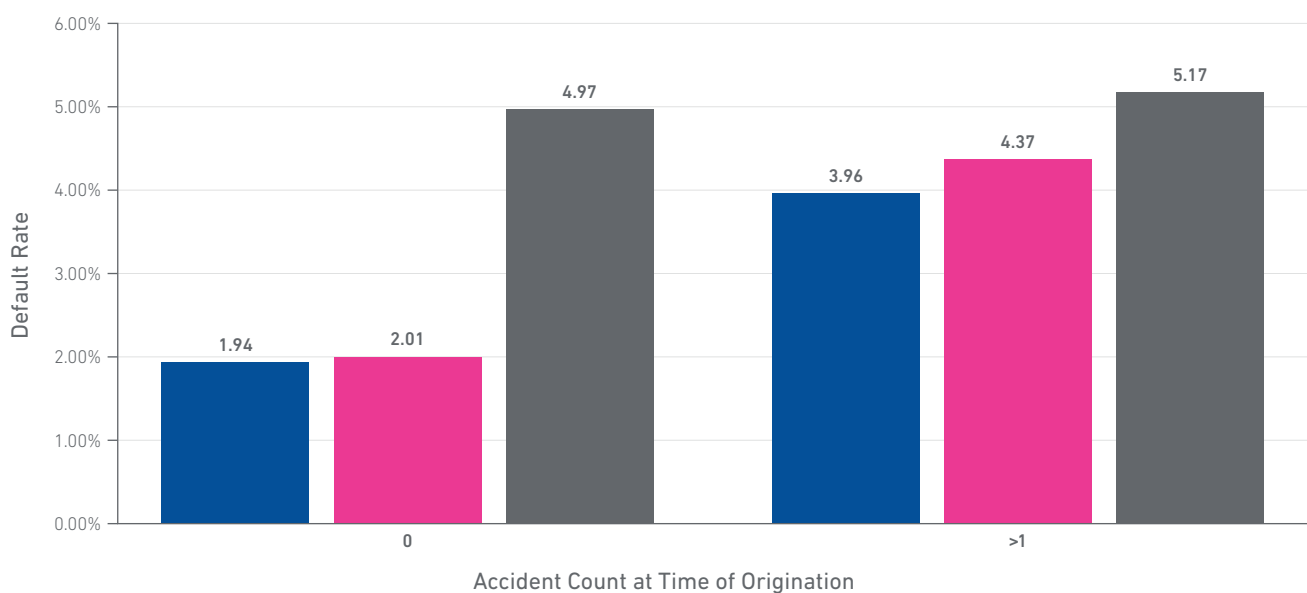
Key Insight: Experian AutoCheck Scores proved to be better predictors of risk than accident counts alone, as they incorporate the severity and recency of the incidents, along with all additional vehicle history details.

Research Results:

Accidents' Impact on Risk

Experian AutoCheck Score predicts default better than accident count alone

ACCIDENT HISTORY IMPACT ON RISK OF DEFAULT



MODEL	KS	KS LIFT
Accident Count alone	0.086	
AutoCheck Score alone	0.191	121.76%

■ Auto Check Score >=80
■ Overall Default Rate
■ Auto Check Score <80

Defaults = 60+ dpd, inclusive of major defaults

Key Insights

Ownership History:

Finding: Default rates increased with the number of prior owners, indicating a correlation between frequent ownership changes and higher risk.

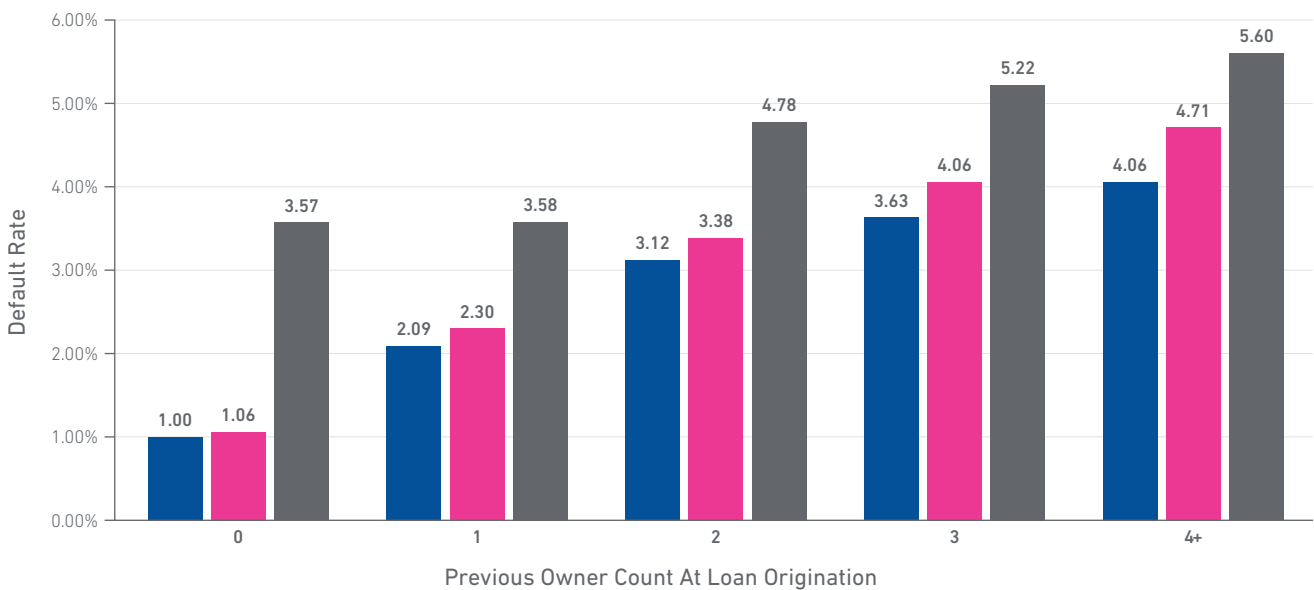
Key Insight: Experian AutoCheck Scores effectively outperformed ownership count in predicting defaults, providing a more nuanced understanding of the vehicle's lifecycle.

Research Results:

Previous Ownership Impact

Experian AutoCheck Score predicts default better than number of previous owners alone

INFLUENCE OF VEHICLE OWNER COUNT ON DEFAULT RISK



MODEL	KS	KS LIFT
Owner Count alone	0.21	
AutoCheck Score alone	0.24	14.29%

- Auto Check Score >=80
- Overall Default Rate
- Auto Check Score <80

Defaults = 60+ dpd, inclusive of major defaults

Strategic Recommendations



1. INTEGRATE THE EXPERIAN AUTOCHECK SCORE INTO RISK ASSESSMENT MODELS

Action: To enhance predictive accuracy, adopt the Experian AutoCheck Score as a standard input for collateral assessment in loan origination models.

Benefit: Reduce exposure to high-risk loans by better evaluating and accounting for vehicle collateral quality upfront.



2. LEVERAGE VEHICLE HISTORY DATA FOR PORTFOLIO MONITORING

Action: Implement ongoing Experian AutoCheck Score monitoring for vehicles within active loan portfolios.

Benefit: Identify emerging risks early and take proactive measures to manage delinquency and repossession rates better.



3. EXPAND LENDING OPPORTUNITIES WITH CUSTOMIZED STRATEGIES

Action: Develop lending products tailored to specific vehicle history profiles and risk segments.

Benefit: Unlock new growth opportunities while maintaining strong risk management practices.

Industry Insight: How Lenders Use Vehicle History Data

Lenders use vehicle data in their automotive risk assessments every day. For instance, almost every vehicle loan application includes vehicle age and mileage, which lenders use to evaluate against their Lending Policies. Vehicle information may also help lenders determine max loan-to-value (LTV) or loan term and to make other non-FCRA-related decisions.

Vehicle History Data, such as the presence of Title Brands, is also commonly used in these collateral evaluations. Additional types of Vehicle History Data should be treated similarly—to evaluate the quality and value of the vehicle collateral, never the borrower.

Lenders use vehicle data in their automotive risk assessments every day.

Experian's Vehicle History Data cannot be used to help evaluate borrowers or be considered "Adverse Actionable" according to the Fair Credit Reporting Act (FCRA). It is only helpful for evaluating vehicle collateral.

Lenders' approaches vary when dealing with vehicles that do not meet their policies. For example, some may respond to an application by explaining that the borrower is approved for the requested amount but that the vehicle on the application is not eligible according to their Lending Policies.

Naturally, lenders should consult with their own compliance advisors when developing their collateral evaluation strategies.



Conclusion

Integrating Vehicle History Data, particularly the Experian AutoCheck Score, represents a transformative shift in automotive lending risk assessment. By addressing the critical blind spot of vehicle collateral quality, lenders can improve their risk predictions, reduce loan defaults, and capitalize on new lending opportunities. This approach provides a more comprehensive, data-driven foundation for decision-making, enhancing both loan performance and portfolio health.

Going forward

Please contact your Experian Automotive representative to further explore how Vehicle History Data can transform your lending strategies.

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References:

- Experian Automotive data (2018-2024).
- Experian AutoCheck Score methodology and analysis.

