VantageScore
a higher level of confidence

White Paper Series | July 2014

# VantageScore 3.0 Validation

## Introduction

In April 2011, the Office of the Comptroller of the Currency (OCC) expanded long-standing guidelines titled, "Supervisory Guidance on Model Risk Management"[1]. The OCC issued these guidelines in response to the banking industry's increasing reliance on modeling and analytics to drive decision-making. The guidelines provide an invaluable road map that allows lenders to develop a robust model validation philosophy and function within their institution.

To assist lending institutions in this effort and to provide model transparency, VantageScore Solutions annually conducts validations on all of its models and releases the results publicly.

VantageScore 3.0 was validated on the June 2011 to June 2013 time period, which provides a fresh examination of how the model performs in a more current credit environment. The methodology used mirrored the methodology used at the time of model development and all prior validations. A validation overview and model performance detail is provided in this paper.

Contents



[1] Board of Governors of the Federal Reserve System, Office of the Comptroller of the Currency, Supervisory Guidance on Model Risk Management, April 4, 2011: http://www.occ.treas.gov/news-issuances/bulletins/2011/bulletin-2011-12a.pdf.

## June 2011-2013 Revalidation Highlights

- On a U.S. population representative of mainstream lender portfolios (Top 70% of scores 600-850[2]), VantageScore 3.0 outperforms by an average of 17% over the benchmark models[3] and 4% over earlier VantageScore models.
- On a primary decisioning zone within the U.S. population (Mid 40% of scores, 600-770), VantageScore 3.0 outperforms all by an average of 33% over the benchmark model and 10% over earlier VantageScore models.
- On a subprime U.S. population (Bottom 30% of scores, 300-599), VantageScore outperforms the benchmark model by an average of 12% and is performing marginally lower than earlier VantageScore models by an average of 1%.
- Score consistency between the three national credit reporting companies (CRCs)—Equifax, Experian and TransUnion—is maintained.
- Continued strong rank ordering is observed for all economic quadrants.
- Risk levels for Account Management[4] show continued improvement. Real Estate industry results continue to reflect conservative lending practices.
- Consumer score distributions reflect improving consumer performance in Account Management areas and a slight decrease in consumer quality in the Originations[5] space.

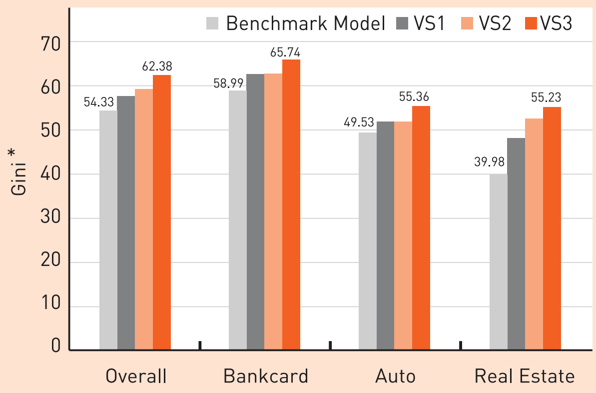
[2] The VantageScore 3.0 scale range is 300-850.
[3] The benchmark models were proprietary generic risk models provided by the three national credit reporting companies (CRCs).
[4] Account management: Accounts that are at least two years old at the time of performance measurement.
[5] Originations: Accounts that were opened within the 3 months prior to the time of performance measurement.

## Model Performance

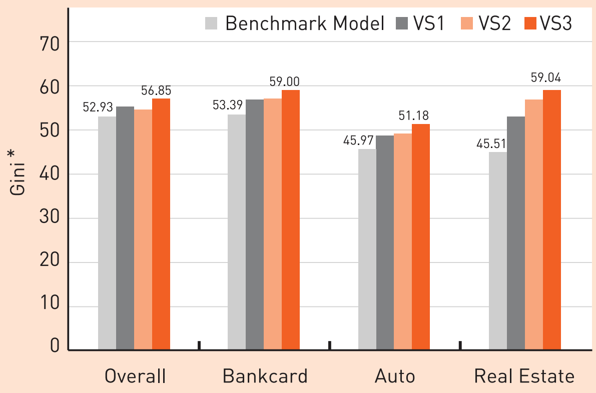
To demonstrate model performance relative to how a lender might segment consumers, the VantageScore 3.0 model was tested within several subpopulations.

The top 70% of credit scores (scores 600-850) is representative of mainstream lender portfolios. The primary risk decision zone in the U.S. population is the mid 40% of credit scores (scores 600-770). And, of course, many lenders target the subprime U.S. population, which is the bottom 30% of scores (scores 300-599). The VantageScore 3.0 model demonstrates highly predictive performance in all of these critical score bands across the mainstream credit product categories as well as when measured for overall performance.

**Account Management:** Top 70%



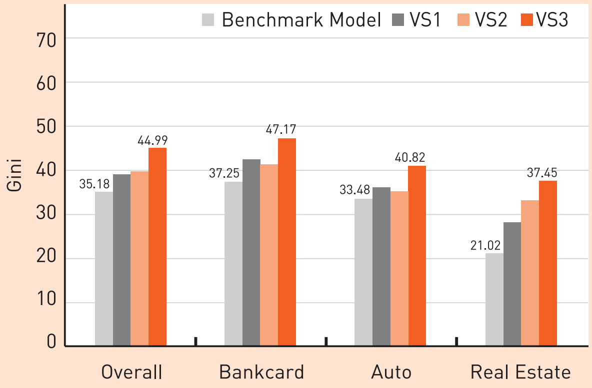

**Originations:** Top 70%



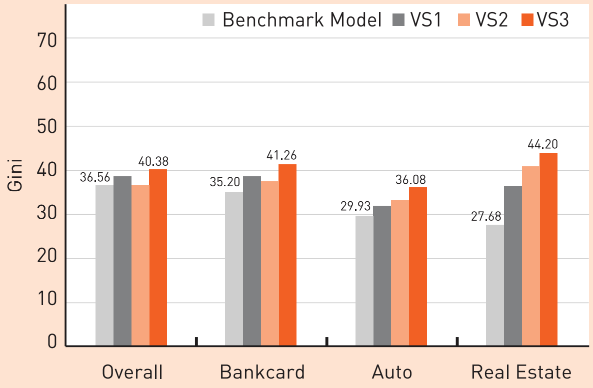

**For a credit score, the gini coefficient compares the distribution of defaulting consumers with the distribution of non-defaulting consumers across the credit score range. The coefficient has a value of 0 to 100. A value of 0 indicates that defaulting consumers are equally distributed across the entire credit score range, in other words, the credit score fails to assign more defaulting consumers to lower credit scores. A coefficient value of 100 indicates that the credit score has successfully assigned all defaulting consumers to the lowest score possible. A gini coefficient above 45 is a good result.*

## Model Performance Cont.

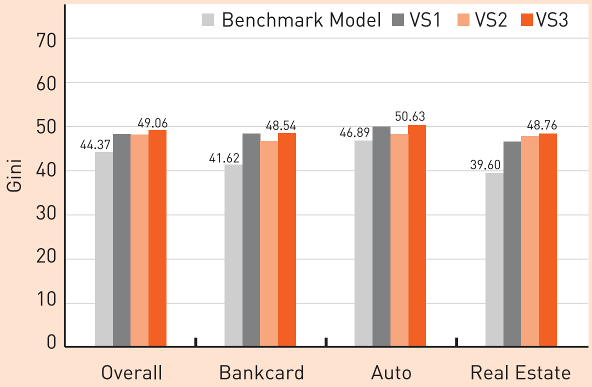
**Account Management:** Mid 40%



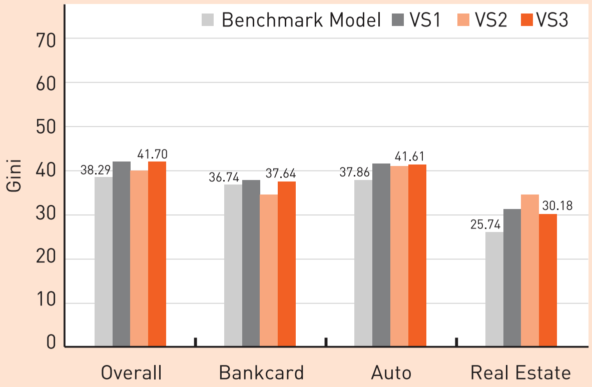

**Originations:** Mid 40%




**Account Management:** Bottom 30%




**Originations:** Bottom 30%

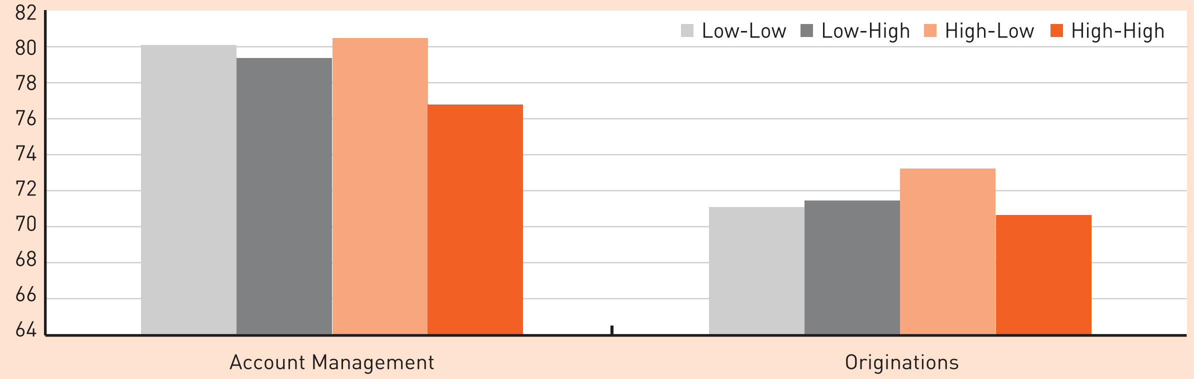


## Performance Across Economic Quadrants

The Great Recession and subsequent recovery had varying degrees of impact in different regions across the country. Consumer credit behaviors also trended differently. Risk managers need confidence that the credit score model used retains its predictiveness regardless of how economic conditions vary.

The predictive strength of the VantageScore 3.0 model was tested in regions where the employment and home price depreciation rates differed and the model delivers strong predictive strength for all economic quadrants, as demonstrated with Gini results exceeding 76 for account management and 70 for originations in the graph below.

**Economic Quadrants:** Gini Results




**Unemployment**

| Home Price Depreciations | High (>9.5%) | Low (<9.5%) |
|---|---|---|
| High (>15%) | **H-H** | **H-L** |
| Low (<15%) | **L-H** | **L-L** |

**High—High:** Consumers who live in states where unemployment is greater than 9.5% and home price depreciation is greater than 15%

**High—Low:** Consumers who live in states where unemployment is greater than 9.5% and home price depreciation is lower than 9.5%

**Low—High:** Consumers who live in states where unemployment is lower than 9.5% and home price depreciation is greater than 9.5%

**Low—Low:** Consumers who live in states where unemployment is lower than 9.5% and home price depreciation is lower than 9.5%

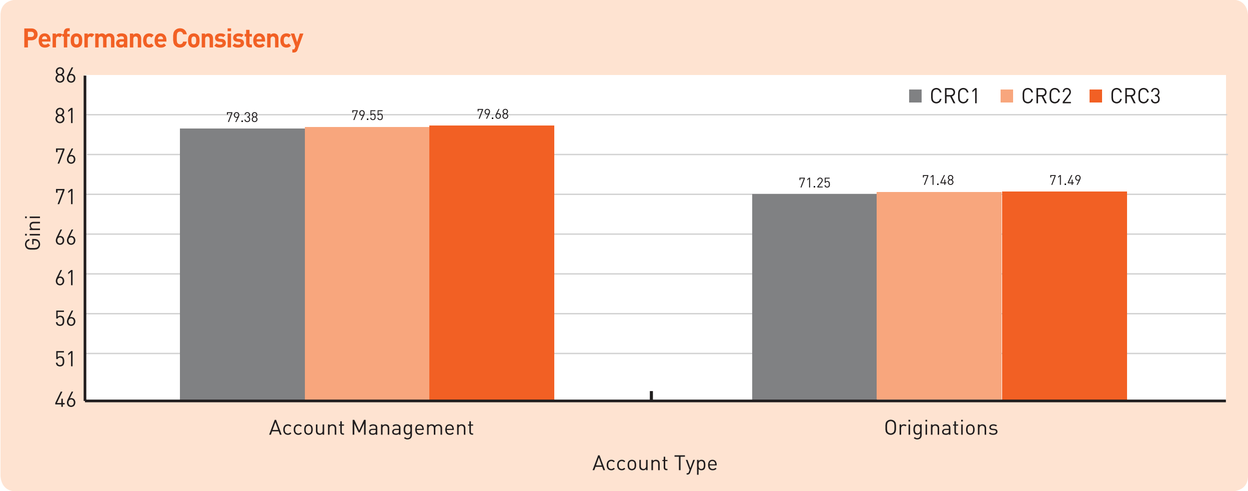
## Model Consistency

Often the credit file data for a specific consumer can vary slightly due to data being reported at different times to the three CRCs and because of variations in the ways in which CRCs define and store the data. This can result in consumers receiving different credit scores from different CRCs.

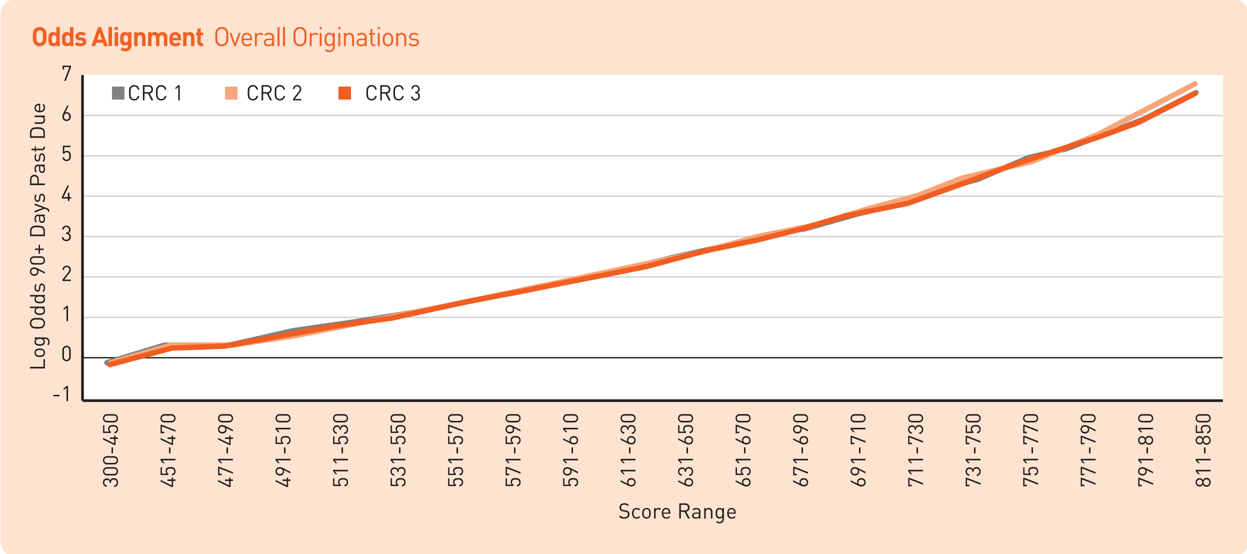
One of the hallmarks of the VantageScore model is its patented characteristic leveling process which yields consistent and equitable data definitions across multiple sources of information. Simply put, this ensures that when the same data is present in multiple sources it is interpreted the same way, even though there still may be differences in how the data is defined.  Consequently, the consumer credit scores are more tightly aligned.

For lenders, a model that levels credit behavior data definitions creates a more consistent picture of a consumer's credit payment behavior across the three national CRCs, regardless of which CRC provides the data.

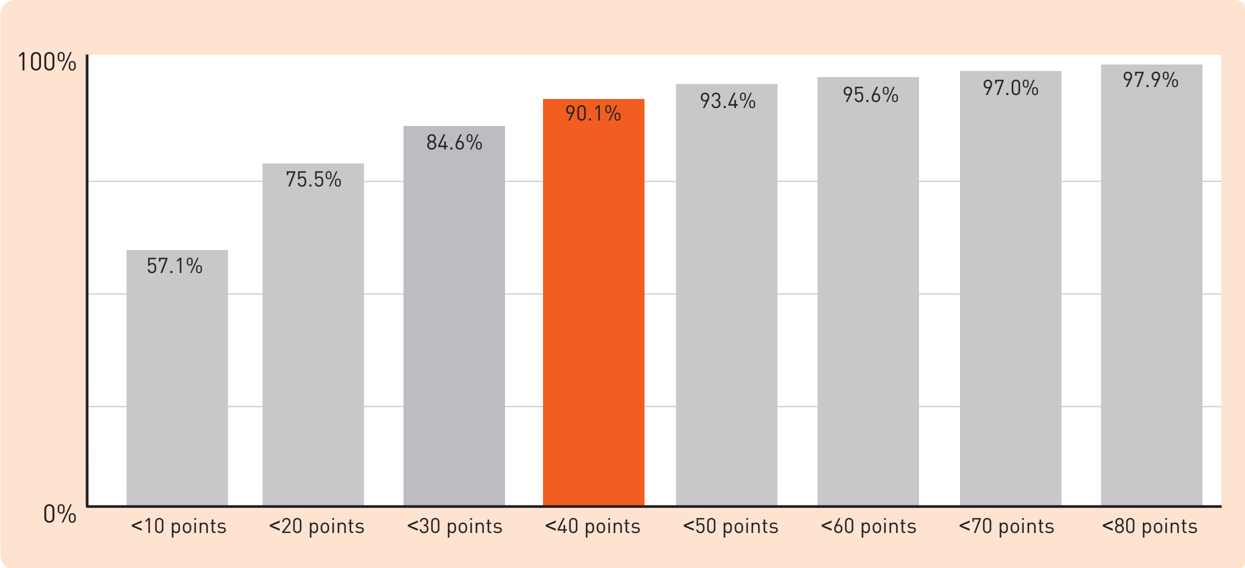
**Performance Consistency** VantageScore 3.0 Gini results among bureaus remain consistent for both Originations and Account Management.



**Risk Consistency** The score to risk level relationship (90+days past due) is consistent across all CRCs



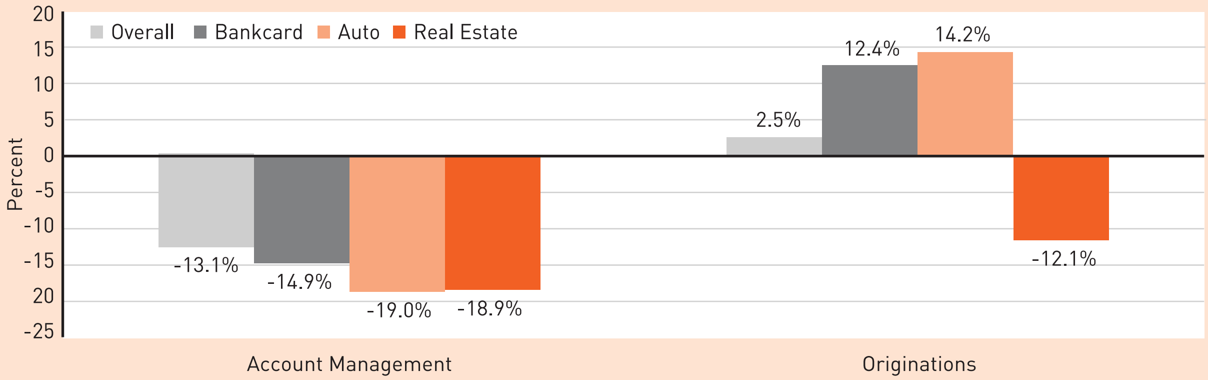

**Consumer Score Consistency** The percentage of consumers receiving a score within 40 points[6] at all three CRCs is 90.1%.




[6] Every 40 points on the VantageScore scale represents a doubling (or halving) of the odds.

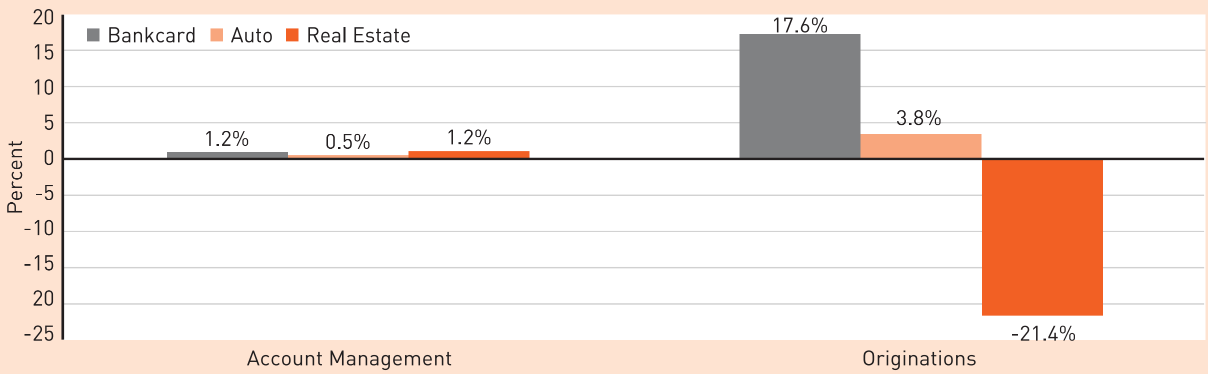
**Systemic Risk Levels and Consumer Score Distributions** Compared with the prior two-year performance window, default rates have improved for all major industries for account management. Generally, risk is beginning to increase in originations.

**Industry Default Rate Change:** 2011-2013 vs. 2010-2012

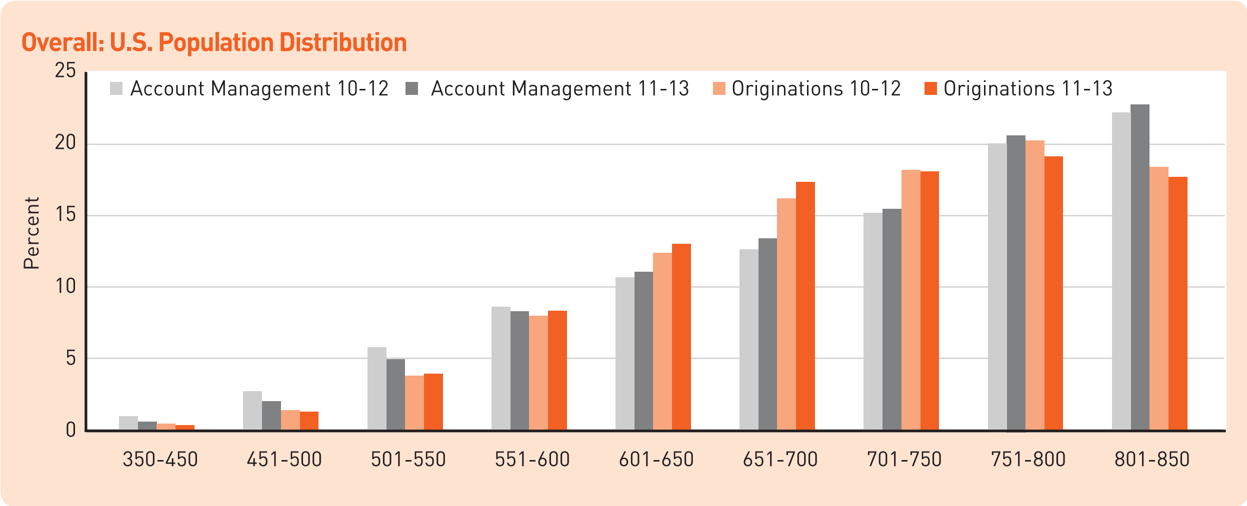


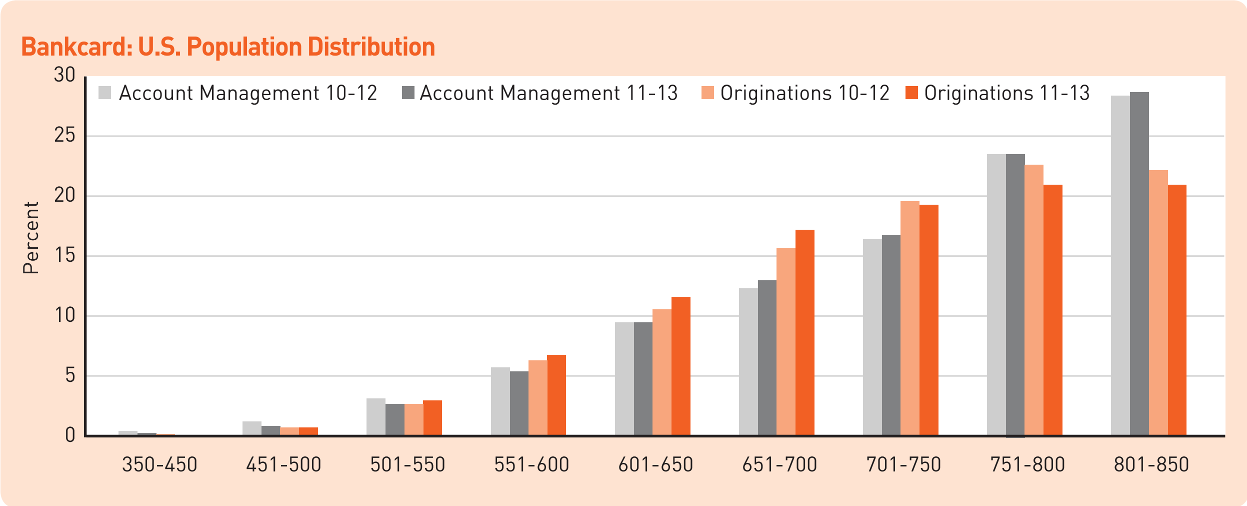

Compared with the prior two-year performance window, originations volumes are beginning to increase, with the exception of the Real Estate industry, which continues to reflect conservative lending practices.

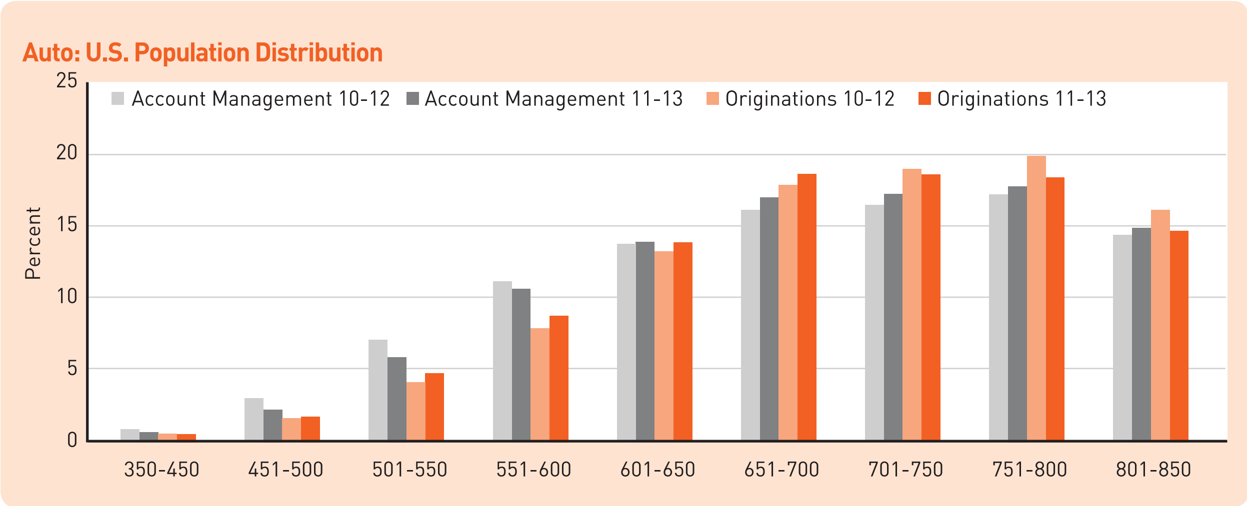
**Population Shifts:** 2011-2013 vs. 2010-2012

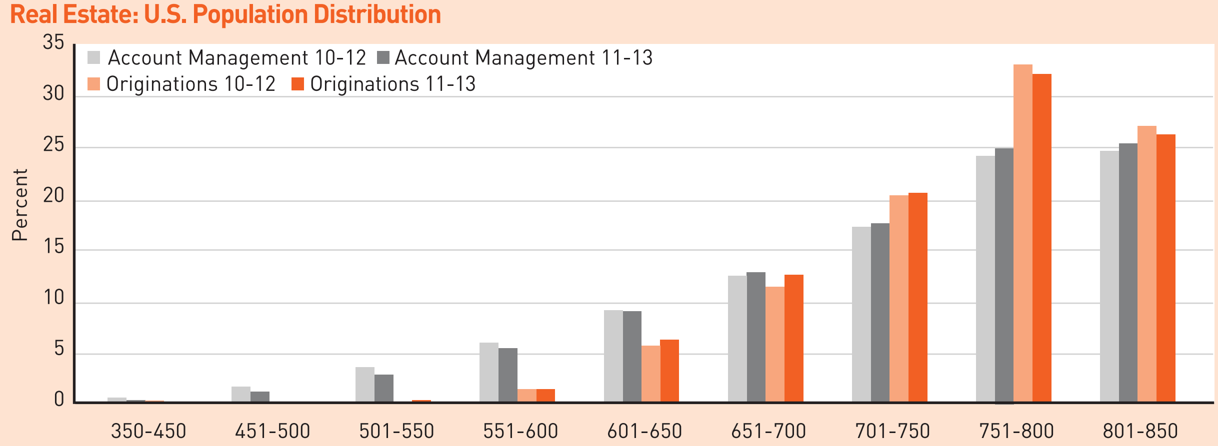


Consumer score distributions for Overall, Real Estate, Bankcard, and Auto segments reflect the observed shifts in economic conditions.






## Conclusion

It is imperative that credit scores provide the highest level of accuracy to enable lenders to have confidence in their decisioning. Moreover, when a credit score model loses predictiveness and loss ratios are impacted, additional costs may be passed on to the consumer. When models are working at peak performance levels, it is the proverbial win-win.

The validation of VantageScore 3.0 demonstrates that the model remains highly accurate, consistent, and stable across all major credit categories, and when examined geographically.

Further reading about validation procedures and best practices is available on the VantageScore website, including white papers focused on validating a credit score model in conjunction with additional underwriting criteria, and executing effective validations in a more generic environment.

The VantageScore model is licensed to the three major Credit Reporting Companies (CRCs) Equifax, Experian, and TransUnion who each in turn, market and sell the credit scores. Lenders and other commercial entities interested in learning more about the VantageScore models may contact one of the following CRCs listed at the right for additional assistance.

EQUIFAX

Call 1-888-202-4025

Visit www.equifax.com/vantagescore

Experian

Call 1-888-414-1120

Visit www.experian.com/consumer-information/vantagescore-lenders.html

TransUnion

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