

Universe Expansion: Is the Way You Score Customers State of the Art or State of Denial?



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INTRODUCTION

Perhaps the most critical question we can ask ourselves in a post-recession economy is: What can we learn from the last five years to improve our risk management tools? For VantageScore Solutions, this question led the team developing our latest model, VantageScore 3.0, to challenge every core assumption of the traditional consumer behavioral modeling process to determine whether the long-held “state of the art” data and modeling assumptions continue to be state-of-the-art!

By challenging those assumptions, the VantageScore scientists discovered that by leveraging sophisticated data and statistical modeling techniques, consumers who were previously unscorable because they used credit differently than conventional consumers can now be scored effectively and fairly, satisfying both risk and fair lending criteria.¹

IN SUMMARY

- A total of 30-35 million consumers, typically not scored by conventional models, can now be scored and assigned an effective probability of default estimate.
 - These consumers may not be scored by conventional models simply because they do not exhibit standard credit management behaviors such as using credit with sufficient frequency.
 - Ten million of these consumers score 600 or higher, i.e. near prime or above.
- The risk levels for new scoring consumers are aligned with risk levels for consumers who demonstrate conventional credit management behaviors.
 - In other words a new scoring consumer with a score of 600 reflects the same level of risk as a conventional scoring consumer with a score of 600.
- From a fair lending perspective, 9.5 million Hispanic or African American consumers are additionally scored by VantageScore 3.0.
 - 2.7 million of these consumers score above 600.

With the new VantageScore 3.0 credit scoring model, VantageScore Solutions continues to deliver on its mission to empower the industry with full knowledge about the consumer universe so that lenders, not scoring models, can make informed decisions.

This paper offers empirical insights into these new scoring consumers, specifically addressing the following:

1. Demographic and credit profile observations of consumers typically unscorable by conventional models
2. How these consumers score
3. Reliability of the score assigned to new scoring consumers

¹ FDIC-regulated institutions are subject to two Federal statutes that prohibit discrimination in lending. The Equal Credit Opportunity Act (ECOA) covers all credit transactions and prohibits discrimination on nine bases—race, color, religion, sex, national origin, age, marital status, receipt of public assistance, and the exercise of a right under the Consumer Credit Protection Act. The regulation that implements ECOA is 12 C.F.R., Part 202 (Regulation B). The Fair Housing Act covers residential real estate-related credit transactions. It prohibits discrimination on seven bases—race, color, religion, sex, national origin, handicap, and familial status. The regulation that implements the Fair Housing Act is 24 C.F.R., Part 100.

- a. Gini performance²
 - b. Default performance alignment with conventionally scored consumers
 - c. First payment default analysis
4. Can scoring these consumers ameliorate fair lending concerns?
- a. Are some minorities unscorable simply because they fail to satisfy sufficient credit management behaviors?

WHO IS TYPICALLY UNSCOREABLE BY CONVENTIONAL MODELS?

In Figures 1-4, 'Conventional' refers to consumers who have sufficient behavior on their credit files such that they are scored by conventional credit scoring models.

Both terms 'Unscorable' and 'New Scoring' refer to consumers who use credit differently than the majority of consumers and therefore do not have sufficient behavior on their credit file to be scored by a conventional model. However a large volume of these consumers may have sufficient behavior to be scored by VantageScore 3.0.

For consumers with trades on their credit file, unscorable consumers have slightly higher levels of non-delinquent behavior.

Unscorable consumers follow a product usage pattern similar to conventionally scored consumers, albeit at lower levels.

Unscorable consumers generally have thinner credit files with younger trades.³

- 2 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.
- 3 Trades refers to consumer accounts found in consumer credit files at the three national credit reporting companies – Equifax, Experian and TransUnion.

Figure 1: Payment History Profile

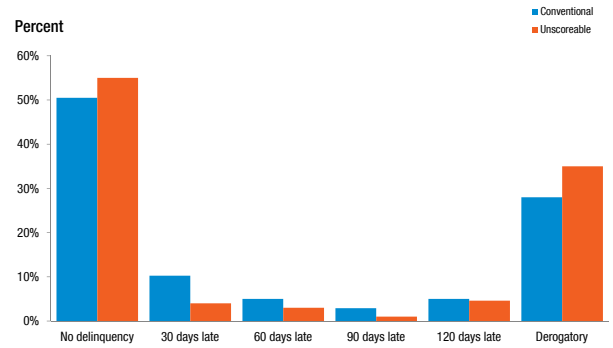


Figure 2: Product Profile

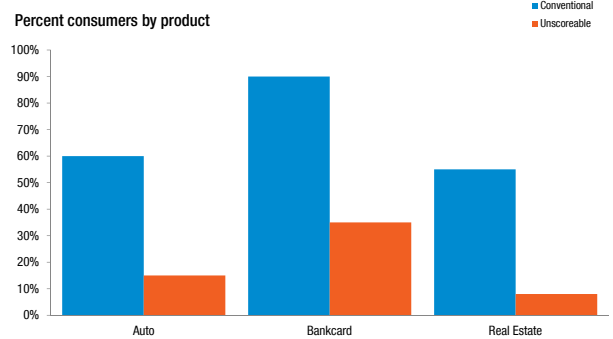


Figure 3: Credit File Thickness

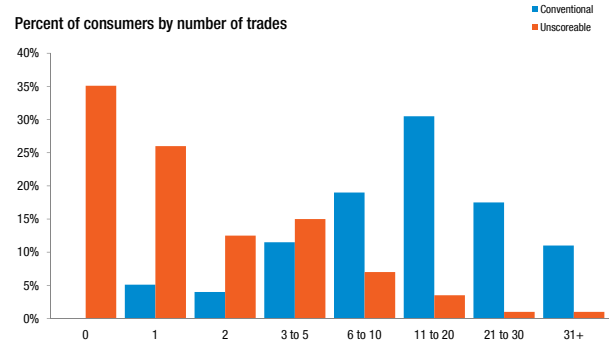


Figure 4: Age of Oldest Trade

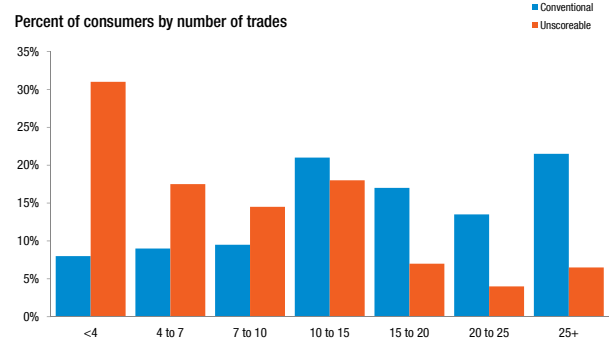


Figure 5: VantageScore 3.0 Score Distribution

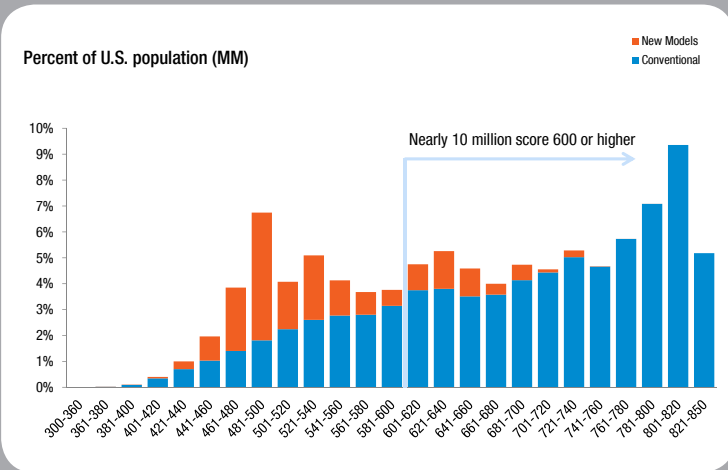


Figure 6: Score Performance Chart (90+ Days Past Due)

Score Band	Conventional	New Scoring
300-420	77.3%	78.1%
421-440	70.9%	70.3%
441-460	64.3%	60.2%
461-480	58.0%	56.3%
481-500	51.5%	51.7%
501-520	45.2%	44.6%
521-540	37.8%	36.9%
541-560	30.8%	29.6%
561-580	24.6%	25.5%
581-600	19.2%	19.4%
601-620	14.6%	14.1%
621-640	11.1%	9.2%
641-660	8.1%	7.0%
661-680	5.9%	4.5%
681-700	4.1%	3.6%
701-720	2.8%	2.6%
721-740	1.8%	2.0%
741-760	1.1%	
761-780	0.8%	
781-800	0.4%	
801-820	0.2%	
821-850	0.1%	

HOW DO THESE CURRENTLY UNSCORED CONSUMERS SCORE WITH VANTAGESCORE 3.0?

Using innovative segmentation and modeling techniques, four unique behavioral groups are newly scored:

- **New to market:** All trades are less than six months old
- **Infrequent user:** No trade has been updated within a six month window
- **Rare credit user:** No activity on their file in the last twenty-four months
- **No Trades:** A subprime population with only closed trades, public records and collections information available

The distribution in Figure 5 identifies where these consumers score. Nearly 10 million of these consumers score 600 or higher and could be considered credit eligible for mainstream lenders.

HOW RELIABLE IS THE SCORE ASSIGNED TO NEW SCORING CONSUMERS?

Predictive performance for new scoring consumers was evaluated using several methods.

- Statistical performance, Gini.
- Probability of default rate alignment with conventionally scoring consumers.
- Comparison of first year payment default rates for new scoring and conventionally scoring consumers.

Results of these tests demonstrate that the risk assessment for new scoring consumers is highly aligned with conventionally scoring consumers. In other words, their risk assessment is consistent.

Gini results for new scoring consumers are 54.78, reflecting strong rank ordering by VantageScore 3.0.

From the Score Performance chart (Figure 6), probability of default rates by score bands for conventional and new scoring consumers are highly aligned.

FIRST YEAR PAYMENT DEFAULT PROFILE COMPARISON

Conventionally scoring and New Scoring consumers who were given access to new credit were grouped by VantageScore 3.0. First year payment default profiles for each consumer group in the same score band were compared. Upper and lower confidence intervals were calculated to

define the range that represents statistically aligned performance.

As observed in Figure 7, new scoring consumers defaulted, in the first year after receiving credit, with a near identical profile as conventionally scored consumers. That is, the default rate in the first year after accessing credit is statistically aligned for consumers scoring between 551 and 600 regardless of whether they were scored under conventional criteria or new scoring criteria. These results are consistently observed for all score bands with sufficient sample size.

NEW SCORING CONSUMERS AND FAIR LENDING IMPLICATIONS

A study of new scoring consumer populations was conducted to determine whether a meaningful percentage of minorities are inadvertently excluded from being scored by conventional models because they fail to satisfy minimum behavior criteria needed by these models in order to be scored.

Approach:

Anonymous consumer credit file data was aligned by zip code with census data that indicated the concentration of African American or Hispanic consumers in the zip code. Each consumer was scored using VantageScore 3.0. Additionally, the consumer's behaviors were reviewed to identify whether the consumer satisfied conventional model requirements or fell into one of the four new scoring populations – new to market, infrequent user, rare credit user or no trades. Finally, the data was summarized by deciles from lowest concentration of minorities to highest concentration.

Insight:

As shown in Figures 8 and 9, in zip code areas of higher minority concentration, as much as 18% of Hispanic and 23% of African American populations are unscorable by conventional models.

Figures 8 and 9 demonstrate that many of these typically unscorable consumers can now be scored using VantageScore 3.0.

- For the new scoring population with scores above 600, 2.7 million consumers fall within Hispanic or African American segments.
- 6.8 million with scores below 600 fall within these minority segments.

Hispanic Class

For regions where the population has at least 50% Hispanic composition:

Figure 7: First Payment Default Rates (Scoreband 551-600)

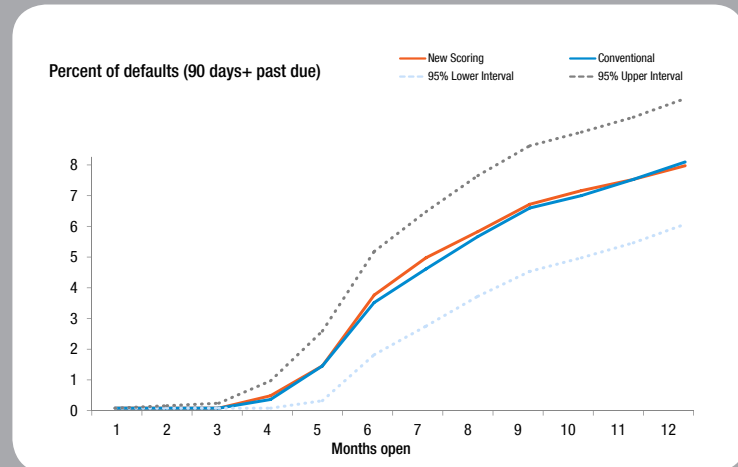


Figure 8: Hispanic Population: Scoreable Profile by Zip Code Concentration

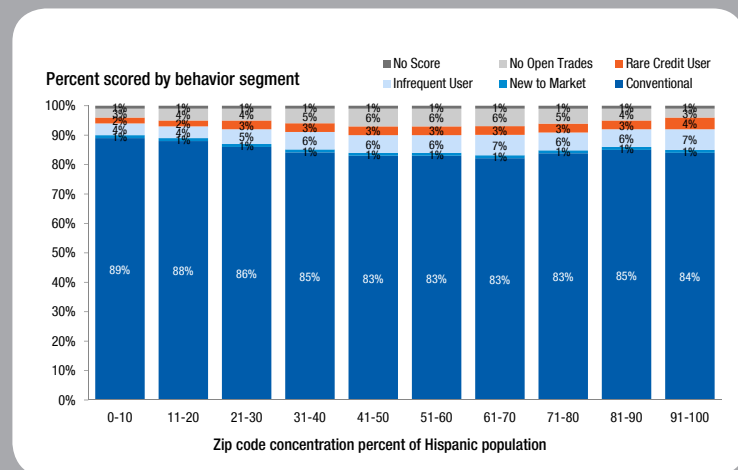
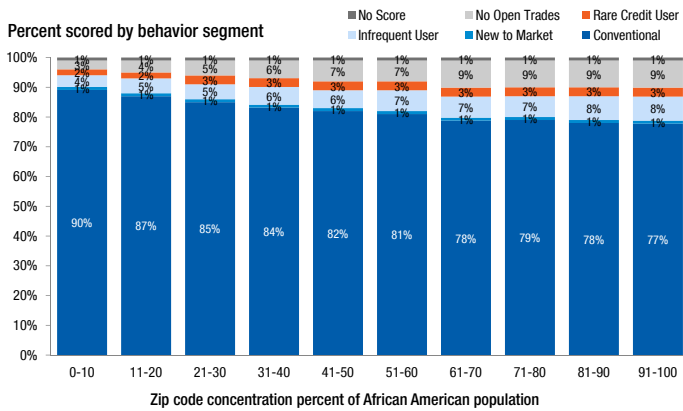


Figure 9: African American Population: Scoreable Profile by Zip Code Concentration



- An average of 84% of the Hispanic population exhibit sufficient credit management behaviors to be scored by conventional scoring models.
- Approximately 15% of the Hispanic population fail the conventional minimum behavior criteria, but meet the VantageScore 3.0 criteria and are therefore scored.
 - Approximately 7% of Hispanics are infrequent credit users.
 - Approximately 4% of Hispanics are rare credit users.
 - Approximately 3% of Hispanics have no open trades.
 - Approximately 1% of the Hispanics are new to market.
- The remaining 1% of the population fails the minimum VantageScore 3.0 criteria condition.

African American Class

For regions where the population has at least 50% African American composition:

- An average of 79% of the African American population exhibit sufficient credit management behaviors to be scored by conventional scoring models.
- Approximately 20% of the African American population fail the conventional minimum behavior criteria, but meet the VantageScore 3.0 criteria and are therefore scored.
 - Approximately 7% of these are infrequent credit users.
 - Approximately 3% of these are rare credit users.
 - Approximately 9% of these have no open trades.
 - Approximately 1% of these are new to market.
- The remaining 1% of the population fails the minimum VantageScore 3.0 criteria condition.

CONCLUSIONS

In this post-recessionary era, strengthening the economy requires tools that provide lenders with a comprehensive, accurate and fair assessment of as much of the credit universe as possible. With that requirement in mind, VantageScore 3.0 has leveraged improved data and analytic techniques to effectively score an additional 30-35 million consumers, 10 million of whom score 600 or higher. Critically from a fair lending perspective, 9.5 million Hispanic or African American consumers are additionally scored, reducing possible exposure to predatory lending.

The VantageScore credit score models are sold and marketed only through individual licensing arrangements with the three major credit reporting companies (CRCs): Equifax, Experian and TransUnion. Lenders and other commercial entities interested in learning more about the VantageScore credit score models, including the VantageScore 3.0 credit score model, may contact one of the following CRCs listed for additional assistance:

EQUIFAX[®]

Call 1-888-202-4025

www.equifax.com/vantagescore

 **Experian**

Call 1-888-414-4025

www.experian.com/consumer-information/vantagescorelenders.html

 **TransUnion**

Call 1-866-922-2100

www.transunion.com/corporatebusiness/solutions/financialservices/bank_acq_vantage-score.page