

Identifying Credit-Worthy Consumers in Underserved Populations

September 2008

VANTAGESCORE.

The New Standard in Credit Scoring

1. Overview

Credit reporting and automated credit scoring systems have become a vital component of the credit industry, affecting the lives of millions of consumers. A consumer's credit information is a critical component in the loan underwriting process, significantly aiding lenders in determining the amount and the terms of credit that they will offer an applicant. In some cases, automated systems rely solely on the information in a consumer's credit file to automatically and swiftly make a lending decision. This paper will demonstrate that the manner by which this information is treated in credit score models plays a major role in the process of expanding the number of people that are more accurately assessed, in turn driving a healthy economy, increasing auto and homeownership, giving increased access to education, as well as allowing more small business formation – all of which ultimately contributes to personal wealth and community vitality.

A substantial number of consumers do not have full or complete credit histories. According to the Center for Financial Services Innovation (CFSI), an estimated 40 million Americans are not part of the mainstream national credit pool and are excluded from credit opportunities because they do not have adequate credit histories¹. Specifically they do not have enough information regarding debt management behavior. This data is required by the statistical models that predict a consumer's future debt management behavior which lenders rely on in order to decision credit applications. Consequently, these consumers are underserved in terms of their ability to access mainstream credit. Note however that the definition of 'adequate history' has largely been defined by the statistical specifications of traditional credit risk score models rather than actual consumer behavioral patterns. Results later in the paper show that by using traditional data in new ways, credit scoring models can accurately provide scores for millions of these presently underserved consumers.

Three categories of consumers typically comprise this underserved population:

- Consumers that do not have at least one account with more than six months of activity. These '**New Entrants**' to the credit markets, are typically young adults, newly divorced, widowed or recent immigrants who have not had access to credit in the United States in the past.
- Consumers that have not been active on their accounts over the past six months (e.g. '**Infrequent Credit Users**') who prefer to use non- traditional credit tools for their financial needs.
- Consumers that have less than three accounts, also known as '**Thin File**' consumers, for which it is typically more difficult to analytically generate an accurate risk profile. In all likelihood, these individuals rarely use traditional credit and likely prefer using alternative credit tools.

With many traditional generic credit risk scoring models, these consumers are excluded because they do not meet the minimum information thresholds required by those credit scoring models. The New Entrants and Infrequent Credit Users consumers are often not scored at all by credit scoring models. Additionally, with minimal available credit history, the Thin File population is often inaccurately scored or not scored at all by traditional credit scoring models.

Lenders have often been challenged to successfully and efficiently serve these consumer groups. As a result, credit-worthy consumers may have little or no access to mainstream U.S. credit markets based solely on the fact that existing credit scoring models require more information than exists in their credit files. An accurate and predictive score available on these populations provides opportunities to the lenders to enter new emerging credit markets, while providing new financially sensible credit opportunities for underserved consumers with the information that already resides in traditional credit files.

VantageScore® is a generic credit risk score that, in addition to scoring mainstream populations, also scores these underserved populations by identifying credit-worthy consumers within these underserved populations so that lenders can include them in mainstream product offerings.

This paper analyzes these three pools of consumers to understand their behavior and credit profiles. Through superior risk identification, VantageScore can enable lenders to identify portions of these underserved populations that are candidates for mainstream credit opportunities.

Results Summary

New Entrant and Infrequent Credit Consumers – Universe Expansion and Superior Risk Assessment

For consumers that have at least one trade, VantageScore scores 71% of the New Entrant universe and 80% of the Infrequent Credit User universe. VantageScore offers lenders expanded opportunities for traditionally un-scored populations. Over 26% of scored consumers in the New Entrant population and 15% of scored consumers of the Infrequent Credit User population are credit-worthy consumers and are identified as viable credit opportunities by VantageScore. ('Credit-worthy' is defined as the population of consumers whose cumulative likelihood to become 90 days or more delinquent is less than 5 %.)

Thin File Consumers – – Universe Expansion and Superior Risk Assessment

When compared with a benchmark CRC generic credit risk score² used for this paper, VantageScore provides superior predictive risk assessment for ranking the risk of the 'Thin file' population by assigning more delinquent consumers to the lower risk tiers of the population. (Throughout this paper, the term 'delinquent' will mean a consumer who becomes 90 days or more past due). Compared with the

benchmark CRC credit score, VantageScore captures 19.5% more delinquent consumers in the bottom 10% of the population and 8.5% more delinquent consumers in the bottom 20% of the population

Furthermore, compared with the benchmark CRC credit risk score, VantageScore offers lenders a 2% increase in the number of credit-worthy consumers, as well as a 40 basis point reduction in delinquency risk exposure at the same population volume for 'Thin file' consumers.

Similarly, powerful results are observed for the Real Estate, Bankcard and Automotive industries. On average, for consumers that have at least one trade, 70% of these populations are scoreable by VantageScore of which, on average, 35% are credit-worthy. Generally there is an improvement in rank ordering capability for 'Thin File' populations of approximately 17%.

In conclusion, VantageScore offers an opportunity for mainstream lenders to (i) score millions more consumers more effectively by taking on higher volumes without taking on additional risk on a per consumer basis and (ii) reduce their risk level for the same volumes.

2. Details

Methodology

Three populations are analyzed:

- Consumers that do not have at least one account with more than six months of activity. These **'New Entrants'** to the credit markets, are typically young adults, newly divorced, widowed or recent immigrants who have not had access to credit in the United States in the past.
- Consumers that have not been active on their accounts over the past six months (e.g. **'Infrequent Credit Users'**) who prefer to use non- traditional credit tools for their financial needs.
- Consumers that have less than three accounts, also known as **'Thin File'** consumers, for which it is typically more difficult to analytically generate an accurate risk profile. In all likelihood, these individuals rarely use traditional credit and likely prefer using alternative credit tools.

New Entrants and Infrequent Credit Users populations are evaluated to determine the percentages that are eligible to receive a VantageScore, thereby making them eligible for the mainstream credit process. Secondly, these scored populations are then analyzed for credit performance to assess how accurately VantageScore predicted their actual performance over a two year window.

Credit-worthy consumers in the New Entrant and Infrequent Credit User populations are identified for the mainstream credit process. (For the purposes of this analysis, 'credit-worthy' is defined as the populations of consumers whose cumulative likelihood to become 90 days or more delinquent is less than 5 %.) The percentage of consumers that provide lenders with an incremental lift in their eligible universe without adjusting their risk expectations is also calculated.

Thin File consumers are scored with both VantageScore and a generic credit risk score developed by a credit reporting company (CRC) in the year 2000 timeframe. The generic credit risk score is used in this paper as a benchmark for comparison purposes. A similar analysis on credit performance, previously described, is conducted to assess VantageScore's ability to identify actual behavior.

[Appendix A includes a review of the demographic and economic structure for each population in order to develop an understanding of their respective behavior in the credit risk market.]

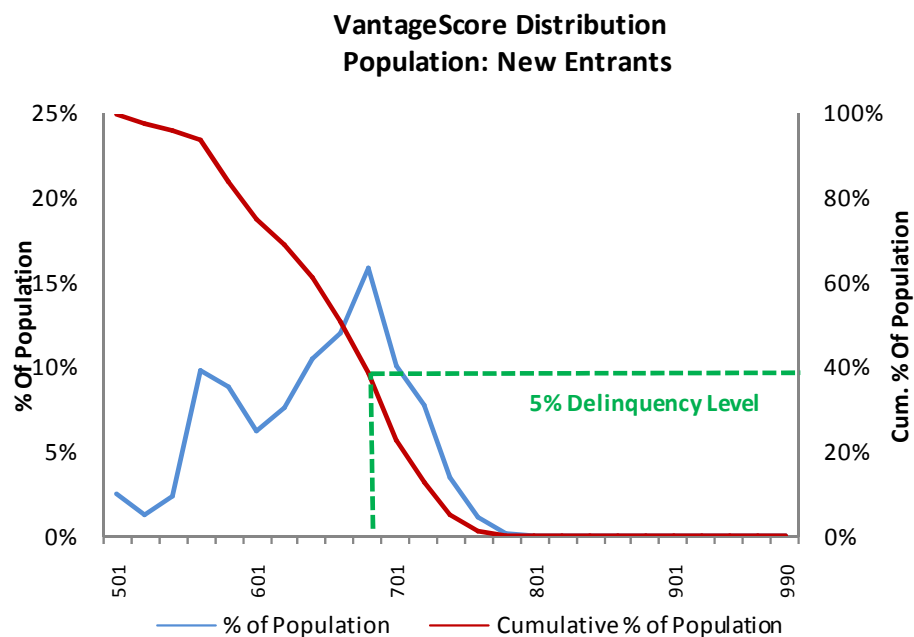
Analysis for Key Industries

The analysis was repeated for the Real Estate, Bankcard and Auto industries. Consumers were included in an industry analysis by randomly selecting consumers who met the previously stated criteria for New Entrant, Infrequent Credit User or Thin File populations AND had an industry-specific trade (Real Estate, Auto, and Bankcard) on their credit file.

New Entrants Population

Score Distribution

Consumers that have just entered the credit market are typically not scored with many generic credit risk scores. The chart below illustrates the score distribution for the New Entrant population.

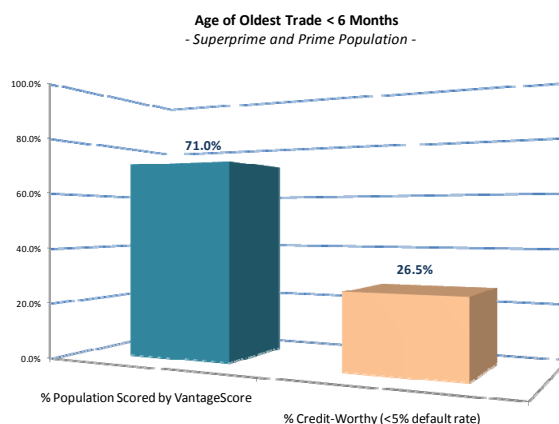


Delinquent Rate Analysis

Using a cumulative delinquent rate analysis, we analyze the population of consumers scored with VantageScore. Our objective is to determine how many of the consumers that become 90+ days past due are captured at each decile within the score range of the scored population. A highly predictive score will identify more delinquent consumers in the lower deciles. VantageScore classifies a high percentage of delinquent consumers in the lower score range deciles, demonstrating strong rank ordering capability.

'New Entrants'

Decile	90+ DPD Bad Rates*	
	VantageScore	
	Interval	Cum.
1	3.55%	3.55%
2	5.45%	4.50%
3	6.75%	5.25%
4	10.17%	6.48%
5	11.82%	7.55%
6	15.71%	8.91%
7	19.15%	10.37%
8	27.70%	12.54%
9	38.53%	15.43%
10	60.49%	19.93%
KS Value	43.09	



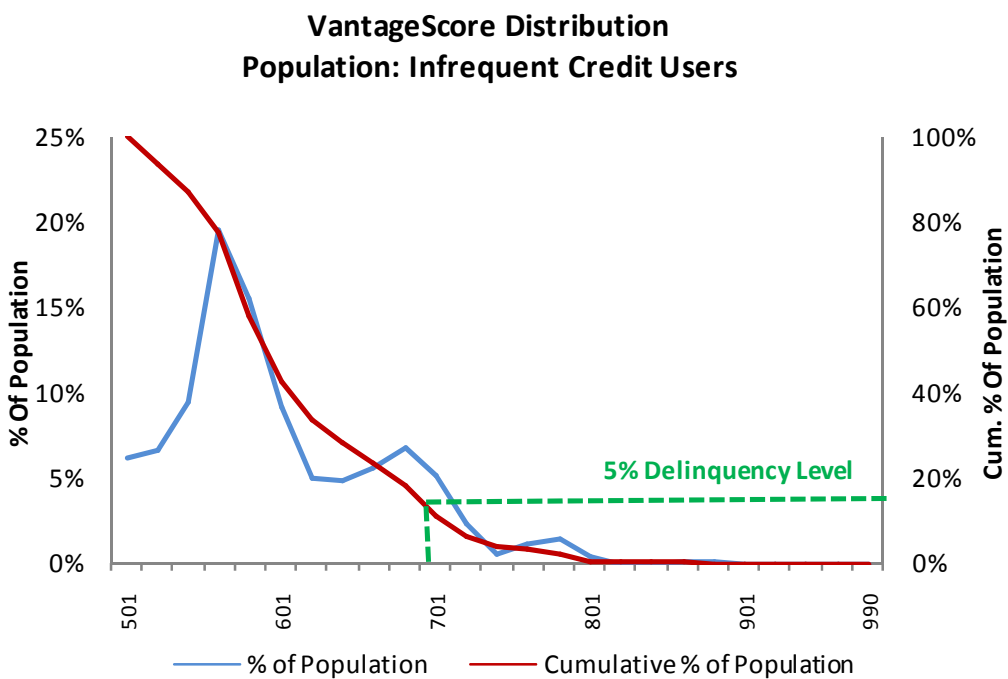
The table on the left above identifies the percent of the New Entrant population scored by VantageScore using a cut-off cumulative delinquent rate of 5%. At this cut-off, 26.5% of the New Entrant consumers scored by VantageScore are credit-worthy. The bar graph above on the right illustrates this point. Thus lenders are able to expand their lending universe without adjusting their risk goals. Alternatively, lenders can reduce risk exposure at a constant population.

Infrequent Credit Users Population

Score Distribution

Consumers that are infrequent users of traditional credit are typically un-scoreable with many generic credit risk scores. The chart below illustrates the score distribution for the Infrequent Credit User population.

*The percentage of consumers likely to become 90+ Days Past Due

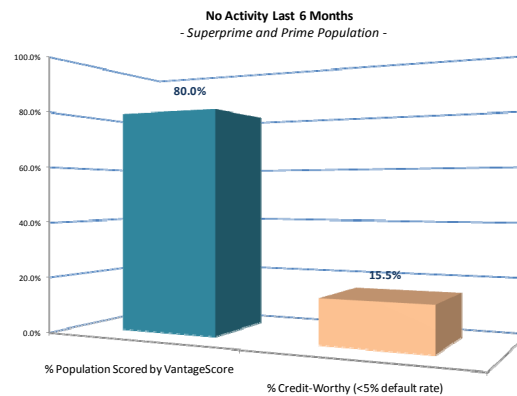


Delinquent Rate Analysis

As shown in the chart and graph below, for consumers without any credit activity in the last six months, VantageScore demonstrates strong rank ordering capability, identifying a high percentage of delinquent consumers for Infrequent Credit Users in the lower score range deciles.

'Infrequent Credit Users'

Decile	90+ DPD Bad Rates	
	VantageScore	
	Interval	Cum.
1	3.48%	3.48%
2	10.22%	6.85%
3	20.75%	11.49%
4	28.17%	15.66%
5	31.65%	18.86%
6	39.16%	22.24%
7	43.28%	25.25%
8	49.17%	28.24%
9	49.77%	30.63%
10	60.31%	33.60%
KS Value	34.15	

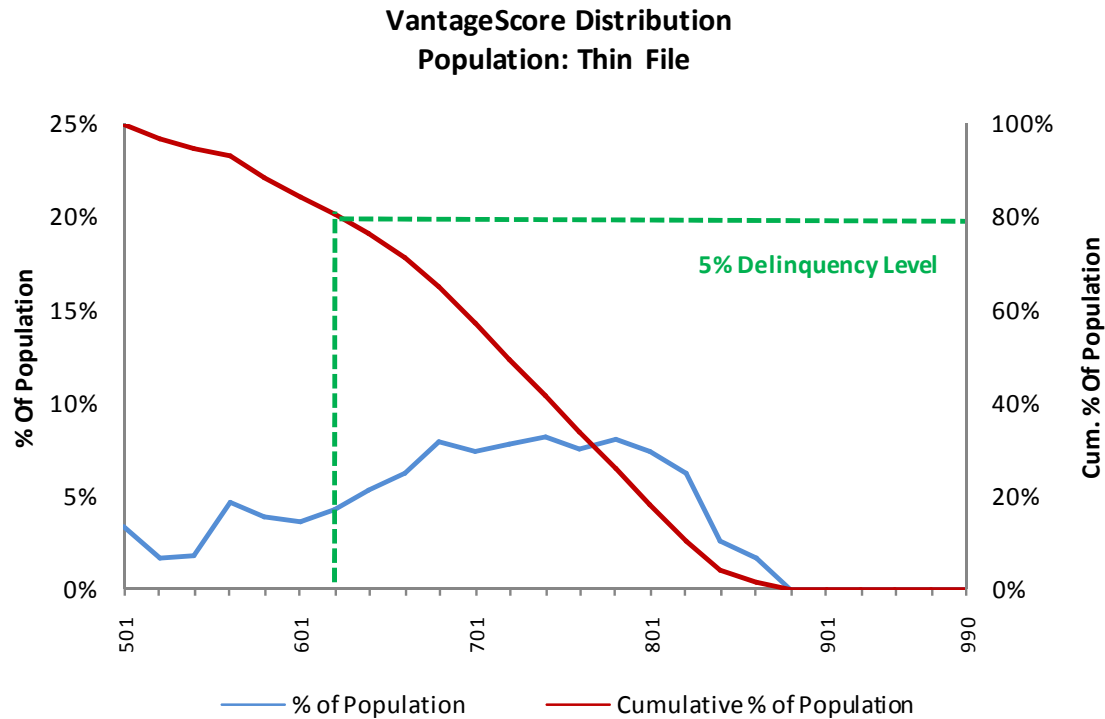


Again using a cut-off cumulative delinquent rate of 5%, 15.5% of the Infrequent Credit User consumers scored by VantageScore are credit-worthy.

Thin File Population

Score Distribution

The score distribution for the Thin File population is illustrated below:



Delinquent Rate Analysis

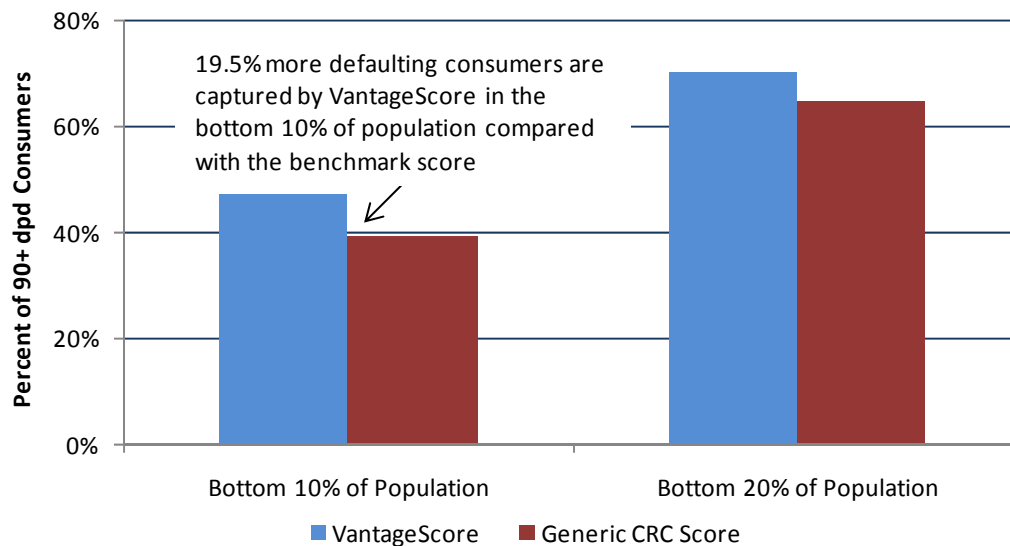
Using a cumulative delinquent rate analysis we analyze the population of commonly scored consumers by both VantageScore and a benchmark CRC generic credit risk score. We also combine this analysis with a comparison of the Kolmogorov-Smirnov test statistics (K-S statistics) between the two scores, evaluating their ability to separate between delinquent and non-delinquent consumers.

As shown in the table and chart below, for the Thin File consumers, VantageScore provides superior performance as compared to the benchmark CRC generic credit risk score. When compared against the benchmark CRC generic risk score, the K-S statistic is higher for VantageScore by almost 3 points.

Further delinquent rate analysis applied to a commonly scored Thin File population by VantageScore and the benchmark CRC generic risk score shows that VantageScore captures more delinquent consumers at the lowest score ranges than the benchmark CRC generic risk score.

Decile	Population 90+ Decumulative %		90+ DPD Bad Rates			
	VantageScore	Generic Risk Score	VantageScore		Generic Risk Score	
			Interval	Cum.	Interval	Cum.
1	100.0%	100.0%	0.52%	0.52%	0.41%	0.41%
2	99.6%	99.6%	0.69%	0.61%	0.52%	0.47%
3	99.0%	99.2%	0.92%	0.71%	0.90%	0.61%
4	98.2%	98.4%	1.69%	0.95%	1.78%	0.90%
5	96.7%	96.9%	2.71%	1.31%	3.43%	1.41%
6	94.4%	94.0%	4.80%	1.89%	5.58%	2.10%
7	90.3%	89.2%	8.52%	2.83%	10.01%	3.23%
8	83.0%	80.6%	14.76%	4.33%	18.36%	5.13%
9	70.3%	64.8%	26.98%	6.84%	29.55%	7.84%
10	47.2%	39.5%	55.03%	11.66%	46.06%	11.66%
KS Value			61.29		58.73	

Thin File



VantageScore identifies more delinquent consumers in the tiers of the population that contain the lowest score ranges. Compared with the benchmark CRC credit risk score, VantageScore captures 19.5% more delinquent consumers in the bottom 10% of the population and an incremental 8.5% more delinquent consumers in the bottom 20% of the population.

Also, at a cut-off 5% delinquent rate, VantageScore provides an almost 2% incremental lift in the volume of credit-worthy Thin File consumers compared with the benchmark CRC generic risk score. Alternatively for a constant population size, VantageScore reduces the risk level by 40 basis points (assuming a 5% delinquency cut-off).

KEY INDUSTRIES

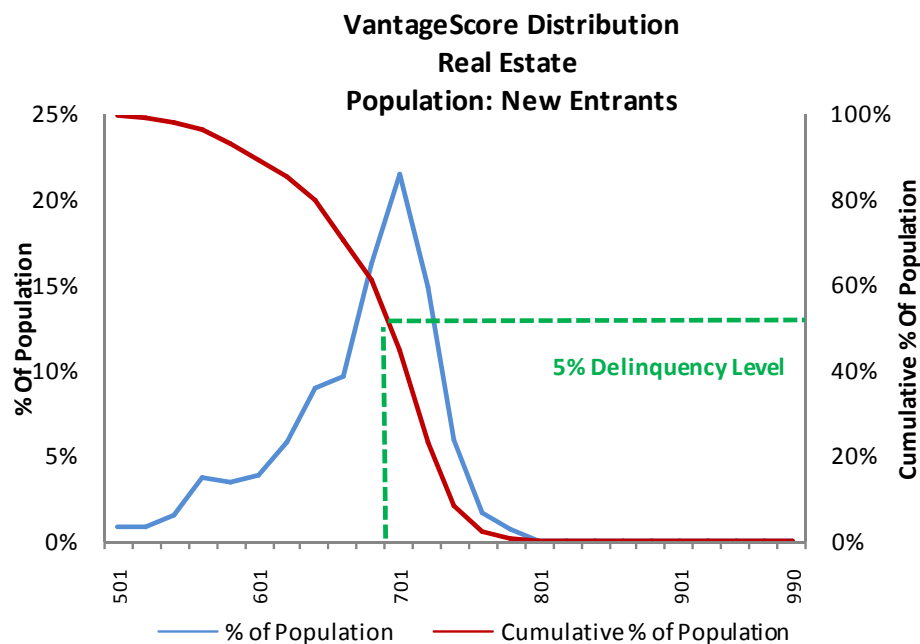
Residential Real Estate

Summary

- For consumers that have at least one trade, 49% of the New Entrant universe is scoreable using VantageScore, of which 61% is identified as credit-worthy.
- For consumers that have at least one trade, 79% of the Infrequent Credit User universe is scoreable using VantageScore, of which 29% is identified as credit-worthy.
- For the Thin File population, VantageScore delivers significant improvement in rank ordering capability as demonstrated by an additional 7 points in the Kolmogorov-Smirnov statistic. This translates to 27% more delinquent consumers identified in the bottom decile of the scored population.

New Entrant Results

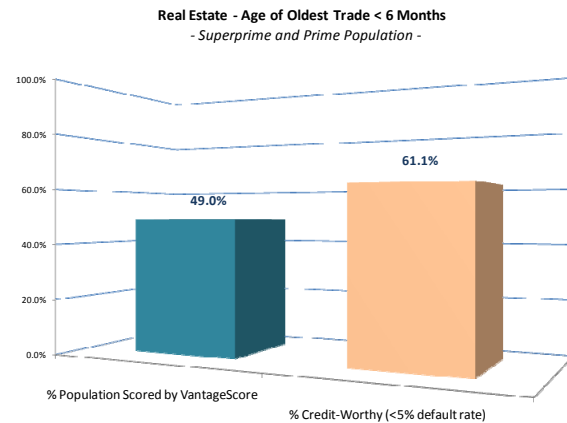
Score Distribution



Delinquent Rate Analysis

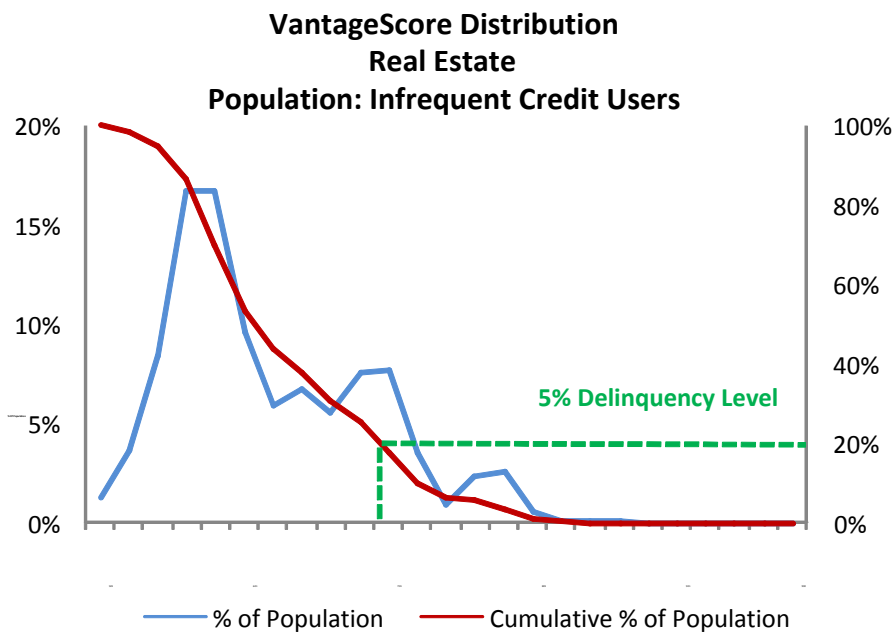
'New Entrants'

Decile	90+ DPD Bad Rates	
	VantageScore	
	Interval	Cum.
1	3.01%	3.01%
2	3.81%	3.41%
3	4.09%	3.64%
4	5.72%	4.16%
5	5.46%	4.42%
6	6.81%	4.82%
7	9.26%	5.45%
8	18.26%	7.06%
9	23.43%	8.88%
10	41.42%	12.13%
KS Value	45.86	



Infrequent Credit User Results

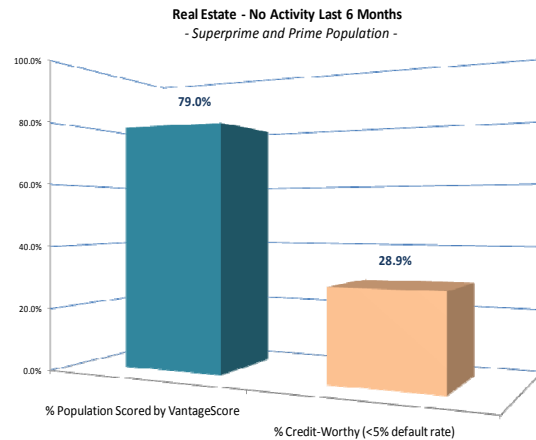
Score Distribution



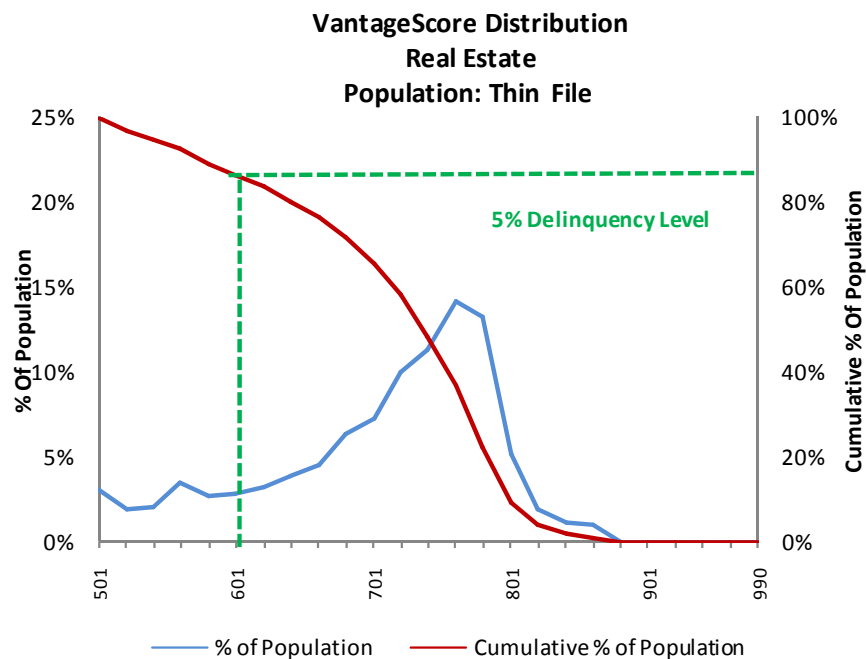
Delinquent Rate Analysis

'Infrequent Credit Users'

Decile	90+ DPD Bad Rates	
	VantageScore	
	Interval	Cum.
1	2.44%	2.44%
2	3.41%	2.93%
3	10.73%	5.53%
4	12.20%	7.20%
5	20.98%	9.95%
6	25.73%	12.59%
7	24.88%	14.35%
8	31.22%	16.45%
9	43.41%	19.45%
10	52.43%	22.76%
KS Value	39.21	



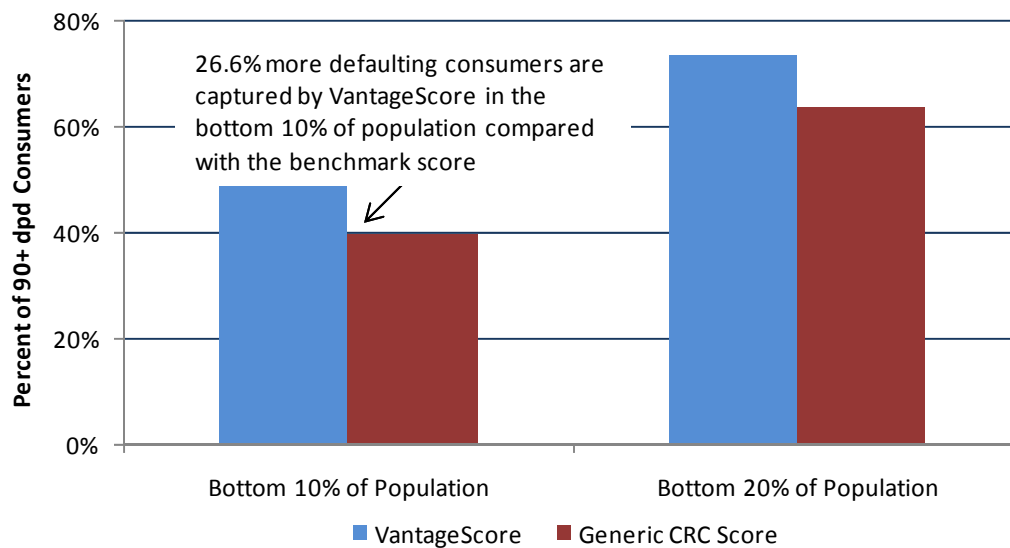
Thin File Results Score Distribution



Delinquent Rate Analysis

Decile	Population 90+ Decumulative %		90+ DPD Bad Rates			
			VantageScore		Generic Risk Score	
	VantageScore	Generic Risk Score	Interval	Cum.	Interval	Cum.
1	100.0%	100.0%	0.64%	0.64%	0.72%	0.72%
2	99.4%	99.3%	0.84%	0.74%	0.87%	0.79%
3	98.5%	98.4%	1.23%	0.90%	1.46%	1.01%
4	97.3%	96.9%	1.76%	1.12%	1.66%	1.18%
5	95.5%	95.3%	2.05%	1.30%	3.02%	1.54%
6	93.5%	92.2%	3.76%	1.71%	5.12%	2.14%
7	89.7%	87.1%	5.96%	2.32%	8.49%	3.05%
8	83.7%	78.6%	10.46%	3.34%	15.01%	4.54%
9	73.2%	63.5%	22.81%	5.50%	23.71%	6.67%
10	50.3%	39.7%	50.12%	9.96%	39.58%	9.96%
KS Value			63.21		56.26	

Real Estate - Thin File



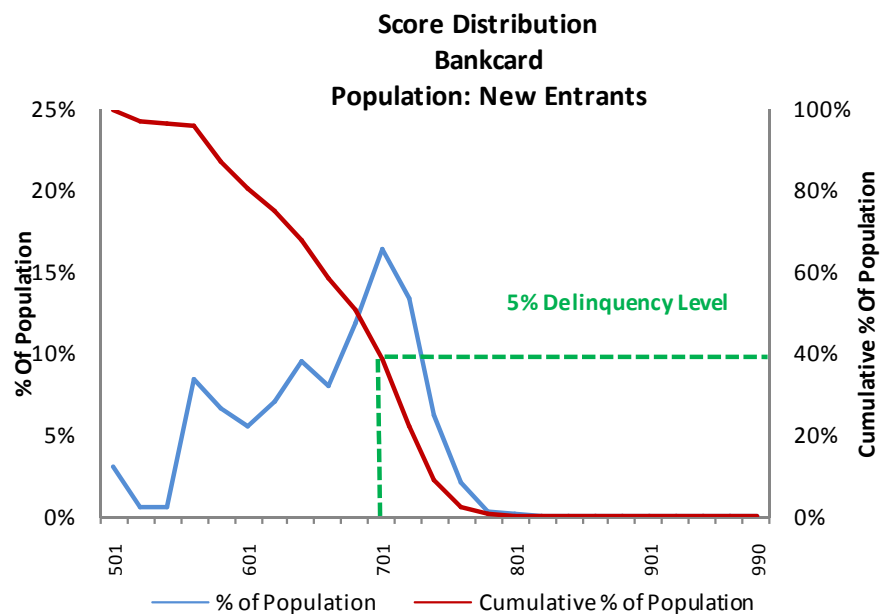
Bankcard Results

Summary

- For consumers that have at least one trade, 74% of the New Entrant universe is scoreable using VantageScore, of which 42% is identified as credit-worthy.
- For consumers that have at least one trade, 72% of the Infrequent Credit User universe is scoreable using VantageScore, of which 34% is identified as credit-worthy.
- For the Thin File population, VantageScore delivers improvement in rank ordering capability as demonstrated by additional 2 points in the Kolmogorov-Smirnov statistic. This translates to 6% more delinquent consumers identified in the bottom decile of the scored population.

New Entrant Results

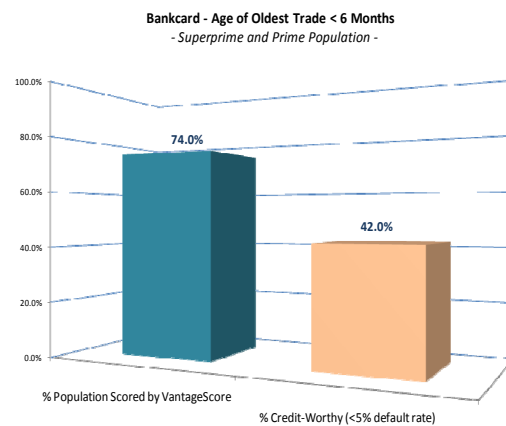
Score Distribution



Delinquent Rate Analysis

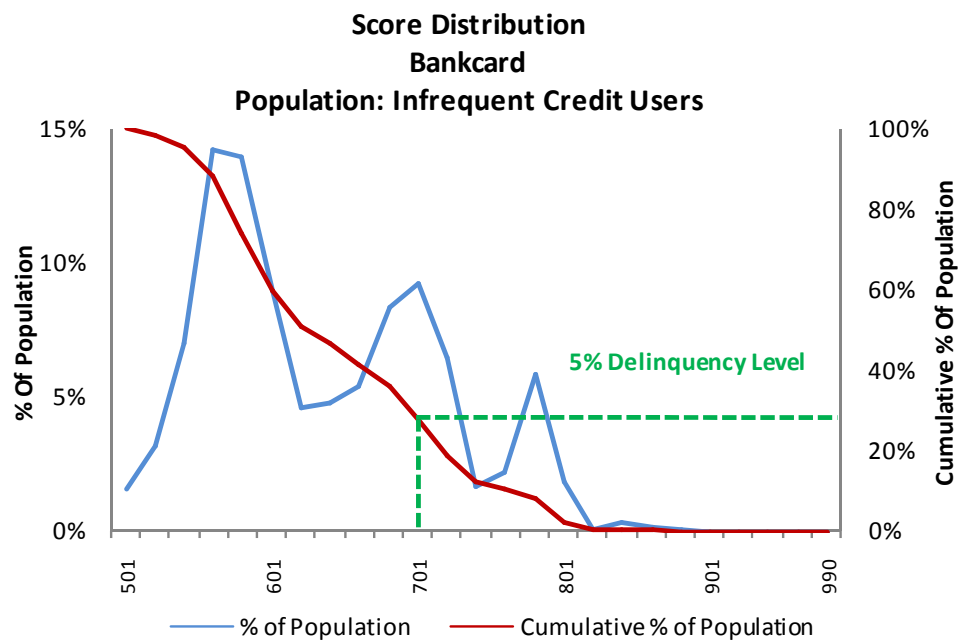
'New Entrants'

Decile	90+ DPD Bad Rates	
	VantageScore	
	Interval	Cum.
1	2.68%	2.68%
2	4.81%	3.75%
3	5.29%	4.26%
4	6.34%	4.78%
5	9.75%	5.78%
6	13.24%	7.02%
7	17.91%	8.58%
8	24.41%	10.56%
9	36.27%	13.41%
10	66.13%	18.69%
KS Value	47.60	



Infrequent Credit User Results

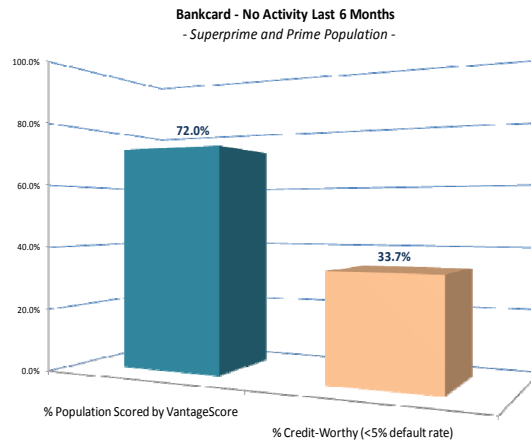
Score Distribution



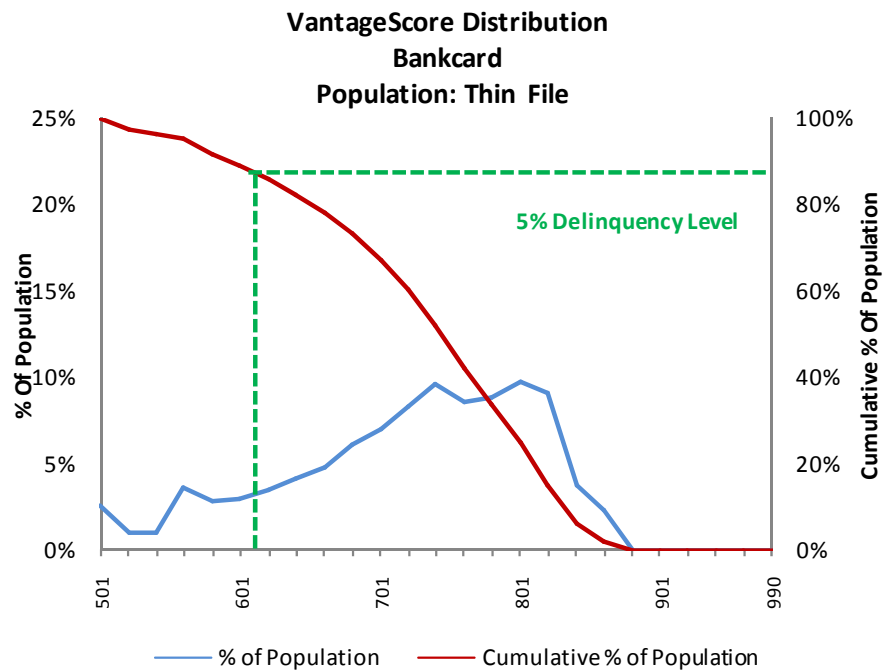
Delinquent Rate Analysis

'Infrequent Credit Users'

Decile	90+ DPD Bad Rates	
	VantageScore	
	Interval	Cum.
1	1.48%	1.48%
2	2.57%	2.03%
3	8.46%	4.17%
4	13.60%	6.53%
5	20.30%	9.28%
6	25.74%	12.02%
7	31.25%	14.77%
8	30.88%	16.79%
9	33.82%	18.68%
10	45.96%	21.41%
KS Value	38.10	



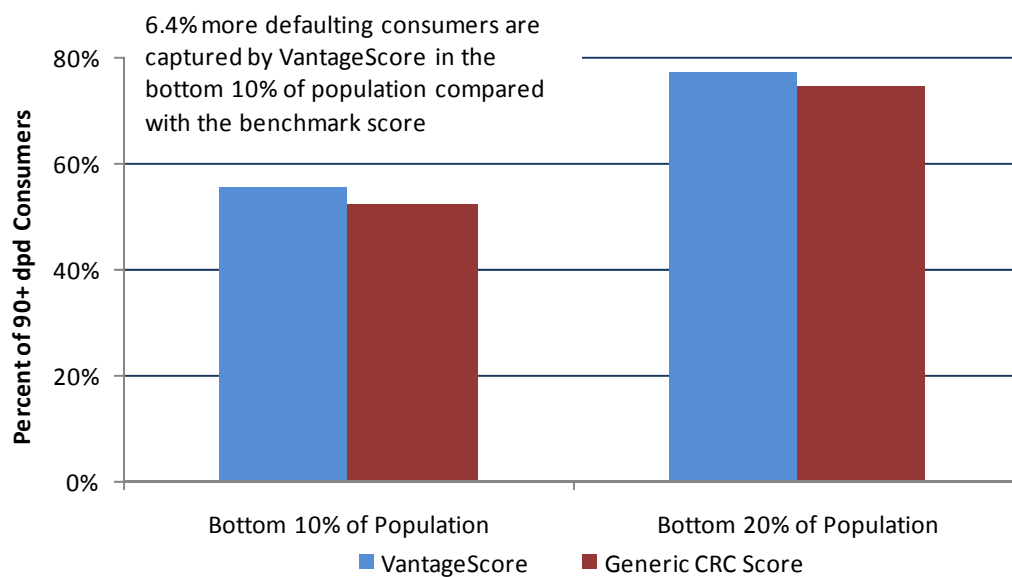
Thin File Results Score Distribution



Delinquent Rate Analysis

Decile	Population 90+ Decumulative %		90+ DPD Bad Rates			
			VantageScore		Generic Risk Score	
	VantageScore	Generic Risk Score	Interval	Cum.	Interval	Cum.
1	100.0%	100.0%	0.70%	0.70%	0.48%	0.48%
2	99.3%	99.5%	0.70%	0.70%	0.57%	0.52%
3	98.6%	98.9%	0.89%	0.77%	0.83%	0.63%
4	97.7%	98.1%	1.09%	0.85%	1.12%	0.75%
5	96.5%	96.9%	1.83%	1.04%	2.06%	1.01%
6	94.7%	94.8%	2.62%	1.31%	3.77%	1.47%
7	92.0%	91.0%	5.29%	1.88%	5.44%	2.04%
8	86.6%	85.4%	9.22%	2.79%	10.55%	3.10%
9	77.2%	74.6%	21.04%	4.82%	21.85%	5.19%
10	55.6%	52.3%	54.43%	9.78%	51.15%	9.78%
KS Value			64.99		63.21	

Bankcard - Thin File



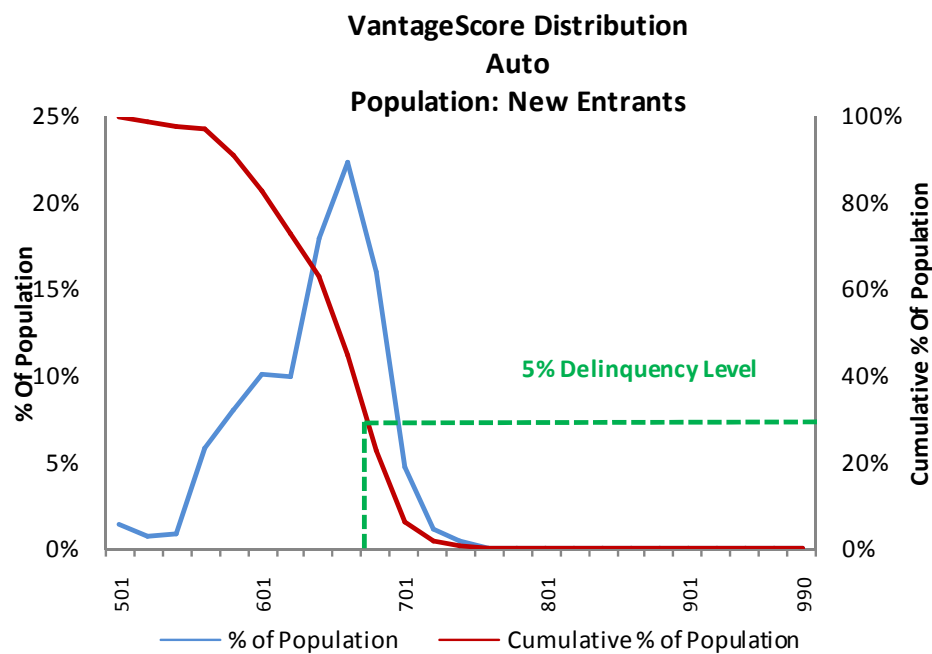
Auto Results

Summary

- For consumers that have at least one trade, 66% of the New Entrant universe is scoreable using VantageScore, of which 37% is identified as credit-worthy.
- For consumers that have at least one trade, 81% of the Infrequent Credit User universe is scoreable using VantageScore, of which 8% is identified as credit-worthy.
- For the Thin File population, VantageScore delivers improvement in rank ordering capability as demonstrated by additional 2 points in the Kolmogorov-Smirnov statistic. This translates to 17% more delinquent consumers identified in the bottom decile of the scored population.

New Entrant Results

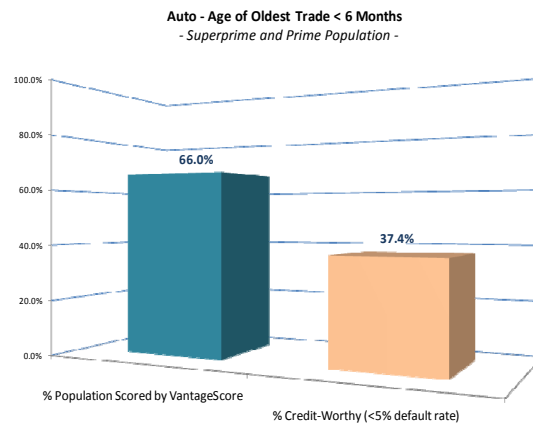
Score Distribution



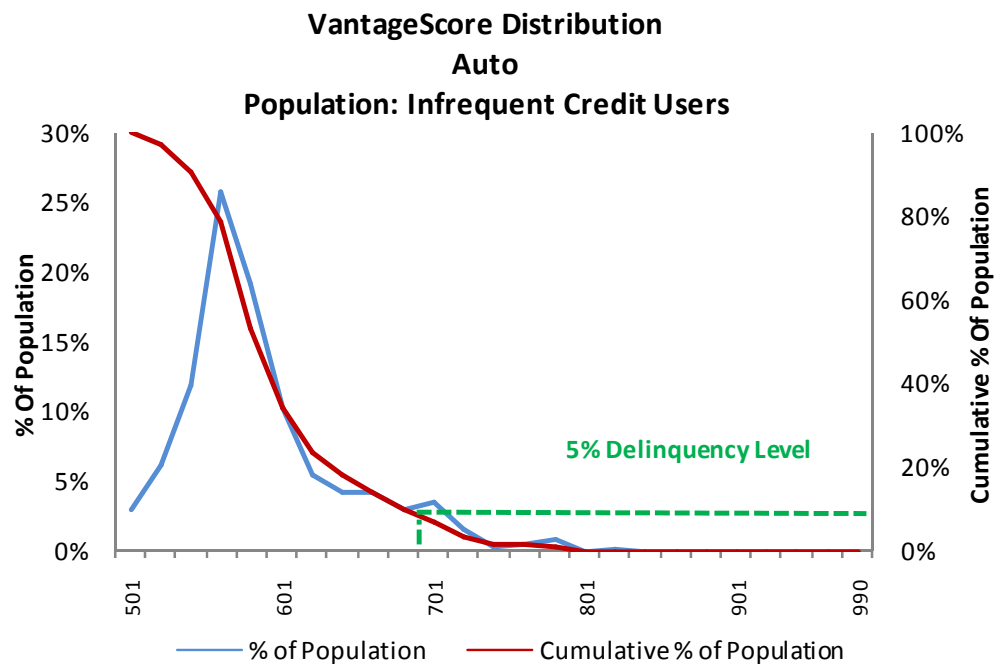
Delinquent Rate Analysis

'New Entrants'

Decile	90+ DPD Bad Rates	
	VantageScore	
	Interval	Cum.
1	3.55%	3.55%
2	4.46%	4.00%
3	5.59%	4.53%
4	8.00%	5.40%
5	11.12%	6.54%
6	12.08%	7.47%
7	15.90%	8.67%
8	22.07%	10.35%
9	27.77%	12.28%
10	38.99%	14.95%
KS Value	36.79	

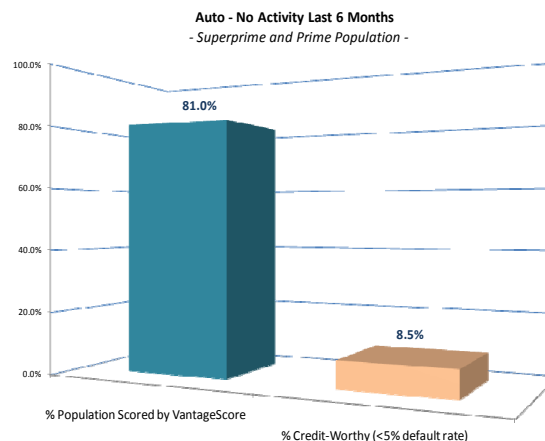


Infrequent Credit User Results Score Distribution

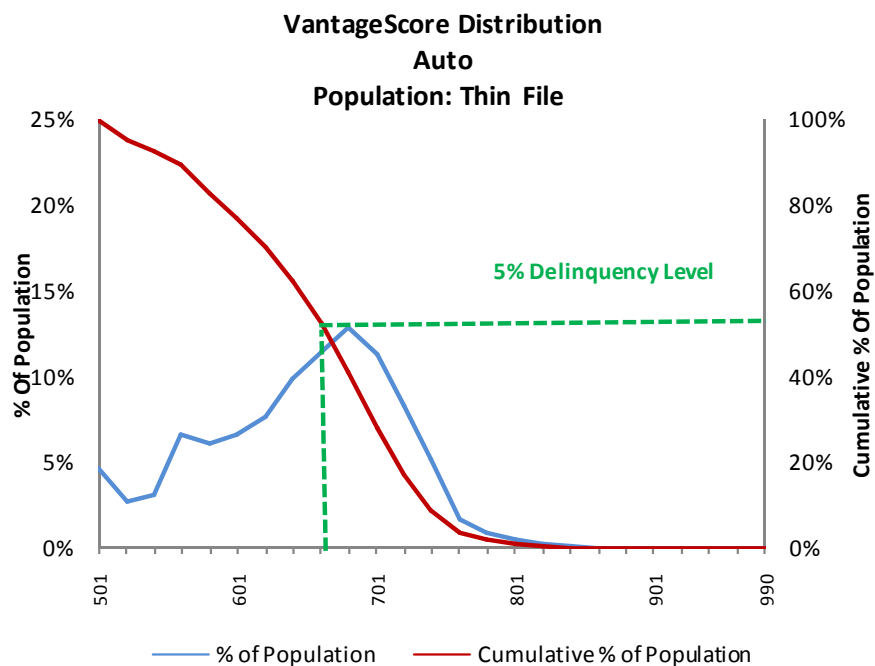


Delinquent Rate Analysis 'Infrequent Credit Users'

Decile	90+ DPD Bad Rates	
	VantageScore	
	Interval	Cum.
1	6.79%	6.79%
2	18.86%	12.83%
3	17.86%	14.51%
4	18.51%	15.51%
5	27.86%	17.97%
6	27.76%	19.61%
7	37.01%	22.10%
8	32.86%	23.44%
9	37.37%	24.99%
10	45.91%	27.08%
KS Value	24.60	



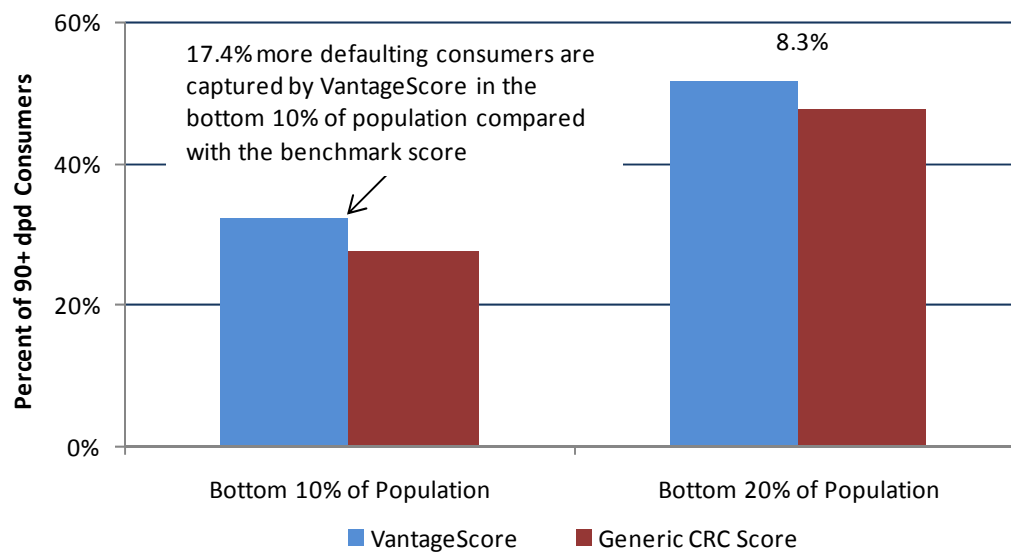
Thin File Results Score Distribution



Delinquent Rate Analysis

Decile	Population 90+ Decumulative %		90+ DPD Bad Rates			
			VantageScore		Generic Risk Score	
	VantageScore	Generic Risk Score	Interval	Cum.	Interval	Cum.
1	100.0%	100.0%	1.36%	1.36%	1.13%	1.13%
2	99.3%	99.1%	2.31%	1.83%	2.25%	1.69%
3	97.8%	97.6%	3.69%	2.45%	3.15%	2.18%
4	95.8%	95.2%	5.55%	3.23%	6.01%	3.14%
5	91.9%	91.6%	7.94%	4.17%	9.57%	4.42%
6	85.6%	86.5%	12.56%	5.57%	13.84%	5.99%
7	76.6%	78.3%	18.59%	7.43%	20.02%	8.00%
8	63.6%	66.2%	22.58%	9.32%	24.68%	10.08%
9	47.6%	51.6%	29.72%	11.59%	31.00%	12.41%
10	27.5%	32.3%	49.66%	15.40%	42.30%	15.40%
KS Value			47.36		45.12	

Auto - Thin File



Conclusions

For the New Entrants population, typically not scored by many generic credit risk scoring models, VantageScore provides strong rank ordering predictiveness and universe expansion opportunities. A substantial population (26.5% of total pool) is identifiable as credit-worthy and can consequently be included in mainstream credit strategies.

For the Infrequent Credit User population, typically not scored by many generic credit risk scoring models, VantageScore provides strong rank ordering predictiveness and universe expansion opportunities. An impressive 15.5% of the total population is identifiable as credit-worthy and can consequently be considered for mainstream credit strategies.

The Thin File population analysis shows that when compared with the benchmark CRC credit risk score, VantageScore captures 19.5% more delinquent consumers in the bottom 10% of the population and an incremental 8.5% more delinquent consumers in the bottom 20% of the population. Also, VantageScore offers an additional 2% universe expansion opportunity.

Importantly, VantageScore provides lenders with a 40-basis point reduction in delinquent risk exposure at a constant volume.

Similar results are observed for the Real Estate, Bankcard and Automotive industries. VantageScore offers universe expansion opportunities and superior rank ordering capability for the three populations in all of these industries.

This analytic discussion clearly demonstrates that credit-worthy consumers who are typically excluded from mainstream credit opportunities can be readily identified using VantageScore. VantageScore offers lenders a substantial financial benefit opportunity by permitting these consumer pools to be included in the lenders' eligible universe.

¹ Center for Financial Services Innovation: *The Power of Experience in Understanding the Underbanked Market*; p. 5, June 2007.

² Experian NES Score

Appendix A

Population Composition

The table below highlights the geographic profile of the populations under analysis. New Entrant, Infrequent Credit User and Thin File consumers are concentrated in five major states: California, Texas, New York, Florida, and Illinois.

<i>Geographic Composition</i>	New Entrants	Infrequent Users	Thin File
CA	12.2%	8.3%	12.0%
TX	7.0%	8.5%	6.3%
NY	7.2%	5.5%	6.1%
FL	6.0%	5.8%	5.6%
IL	3.8%	3.7%	3.6%
U.S. Average (State)	1.6%	1.6%	1.5%

12.2% of the New Entrant population resides in California

Using census data, population demographics are overlaid with the populations under review by aligning the data at a zip code level. Consumers in the three pools under discussion (New Entrant, Infrequent Credit User and Thin File) tend to have a greater concentration of racial and ethnic minorities than the U.S. average population demographic. Also, Infrequent Credit Users and Thin File consumers belong to households with lower than average median income.

<i>Demographic Composition</i>	New Entrants	Infrequent Users	Thin File	U.S. Average
White	73.9%	74.3%	74.3%	81.1%
Black or African American	12.5%	13.7%	12.1%	9.4%
Asian	3.9%	3.1%	3.9%	2.3%
Other	9.8%	8.9%	9.7%	7.3%
Hispanic or Latino	14.7%	13.3%	14.8%	8.8%
Median U.S. Income	\$40,080	\$37,577	\$37,930	\$39,726

The New Entrant population is approximately 12.9% African American as compared with the U.S. national average of 9.4%

Data Source: The U.S. Census - 2000 Summary Files with Zip Code Data Overlay

Appendix B

Glossary of Terms

Credit-Worthy Consumers: The population of consumers whose cumulative likelihood to become 90 days or more delinquent is less than 5%.

Delinquent: A consumer who becomes 90 days or more past due.

Infrequent Credit Users: Consumers that have not been active on their accounts over the past six months who prefer to use non- traditional credit tools for their financial needs.

New Entrants: Consumers that do not have at least one account with more than six months of activity. These New Entrants to the credit markets are typically young adults, newly divorced, widowed or recent immigrants who have not had access to credit in the United States in the past.

Thin File Consumers: Consumers that have less than three accounts for which it is typically more difficult to analytically generate an accurate risk profile. In all likelihood, these individuals rarely use traditional credit and likely prefer using alternative credit tools.