

VERDE AURORA™ & CORONA™

Automated AI Loan Origination, Underwriting & Pricing



Verde Aurora & Corona solve each with

2015
SME & Retail
Comparison
Verde Aurora™
vs.
Industry Best Scorecard
Verde Improvement:
+\$53 Million
\$1 Billion Requests
Full Automation

2016
SME & Retail
Comparison
Verde Aurora™
vs.
Expert + Scorecard
Verde Improvement:
+\$79 Million
\$1 Billion Requests
Full Automation

2017
SME Underwriting
Comparison
Verde Aurora™
vs.
Expert Underwriters
Verde Improvement:
+\$58 Million
\$1 Billion Requests
Full Automation



Big Data 10,000 Series
Many Sources

Automation 99.6%
Full Auto

Best Models 5X
Better

Optimal Pricing Best
Yes

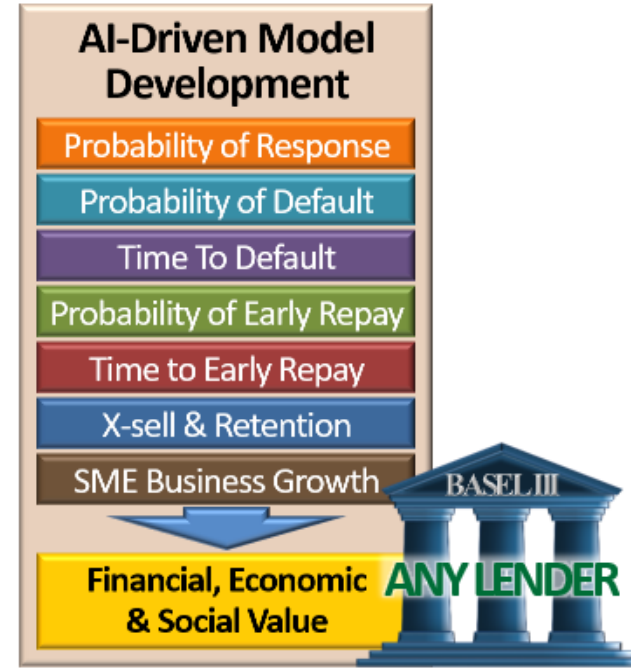
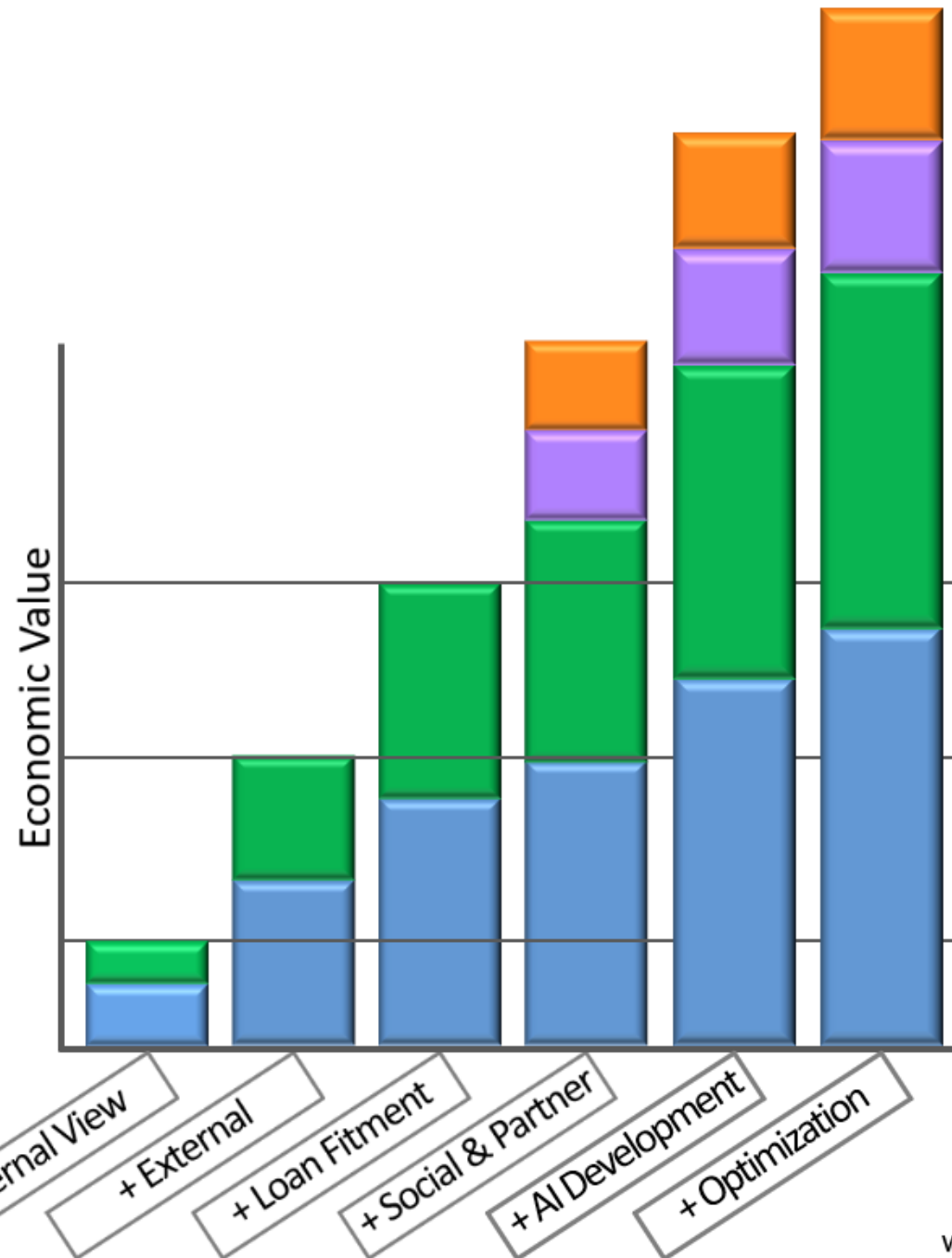


While underwriting \$1.4 trillion over 28 years, I've learned a few things about lending.

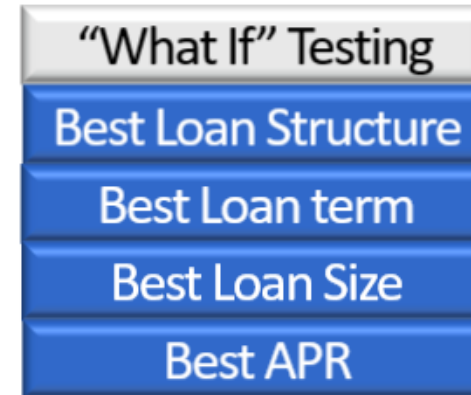
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Sales@VerdeIntl.com
Phone: 1.770.804.9363 x15
Patrick Reilly, CEO

VERDE LENDING SOLUTIONS

A Systematic Approach to Underwriting & Loan Management



2: Model Development & Form
AI-Driven **Reviewable** Econometric & Behavioral System



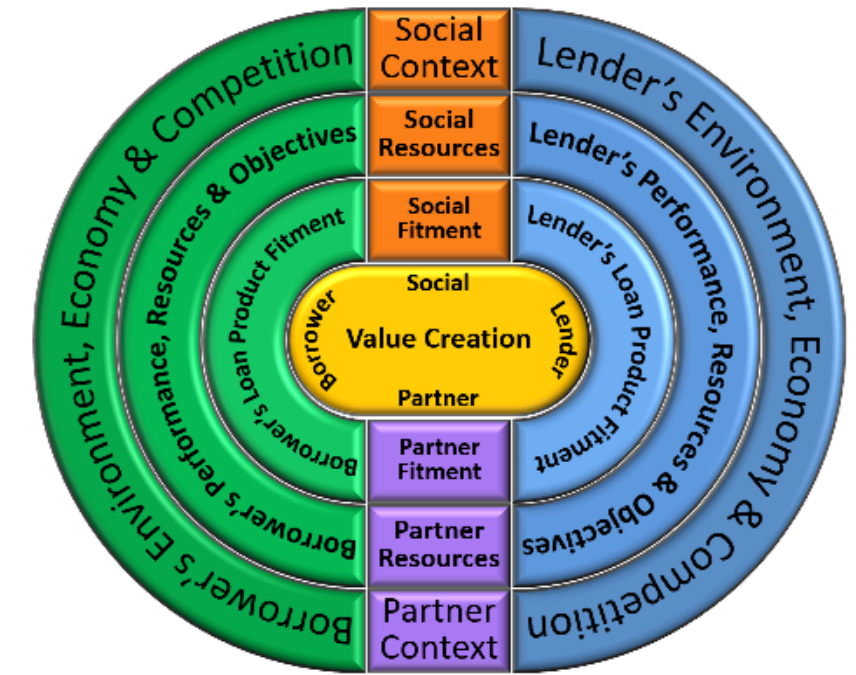
3: Loan Optimization & Stress Testing
w/ Economic & Loan Attributes, AI Systems Price, Structure & Stress Test Each Loan

Internal View:
Popularized by credit bureaus, FICO & Like
Borrower & Lender are assumed to be unchanging

+ External:
Recognizes Borrower & Lender performance behavior and objectives are influenced by the world around them

Loan Fitment:
Borrowers and lenders adapt behaviors based on loan pricing & packaging

Social & Partner:
Community, Capital Partners & 3rd Parties with development, inclusion and other objectives are considered



1: Big Data & Model Design
Predicting Behavior is Key to Predicting Value



ADVANCED UNDERWRITING

Conventional Underwriting vs. Verde Aurora™



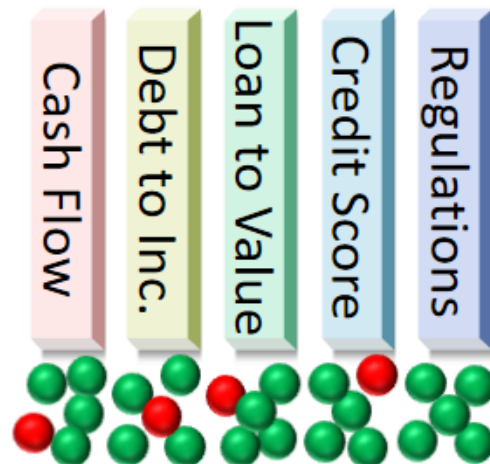
Conventional Underwriting

- Pass/fail filters used to avoid bad loans.
- This approach has major limitations:
 - No prediction of Probability of Default
 - No prediction of Loss Given Default
 - No prediction of Loan Life Cash Flows
 - No prediction of Profitability
 - Poor Pricing = Wasted Opportunity



Decline

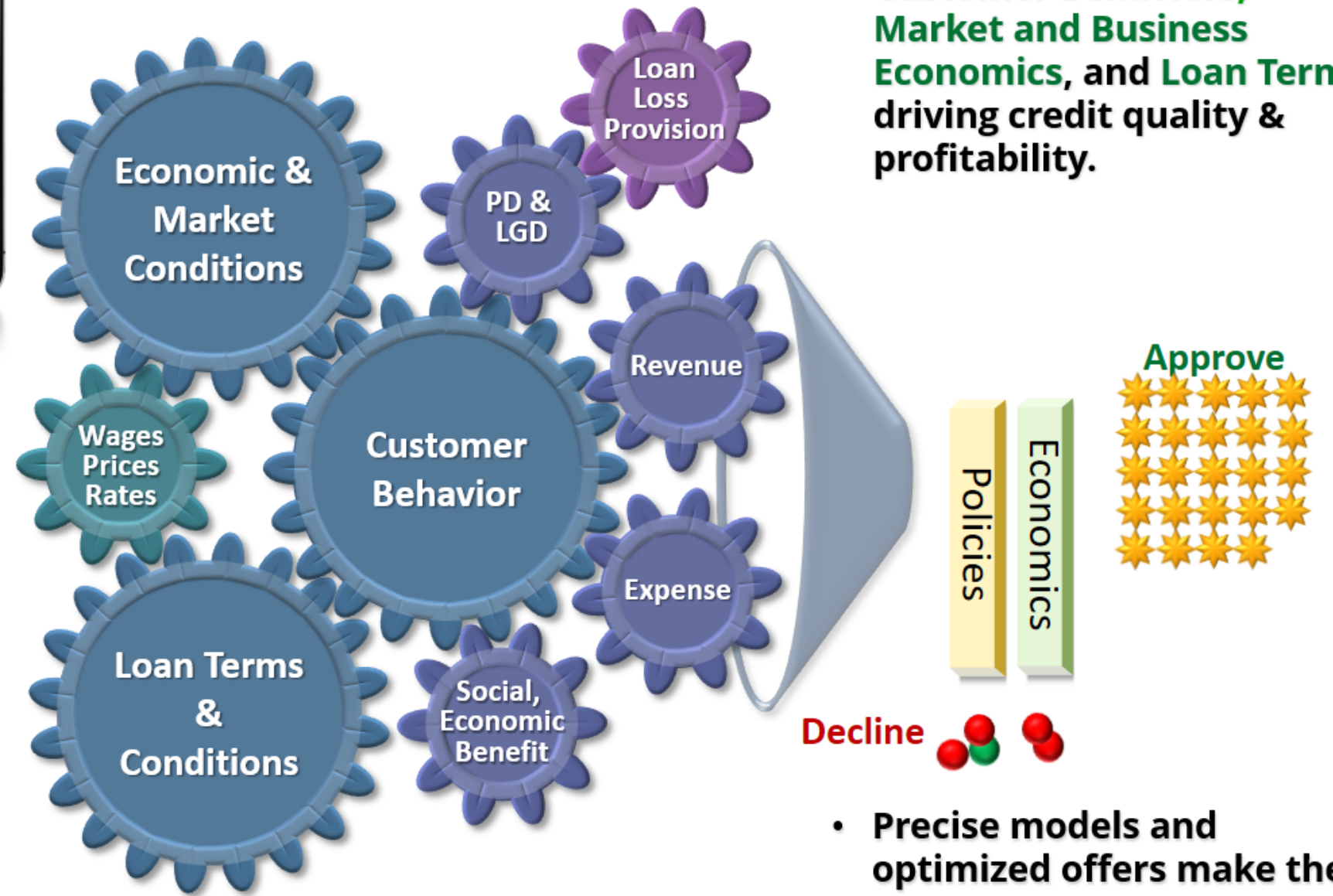
Pass/Fail Criteria



Approve

Underwriter Opinion

Verde Aurora™



- Aurora AI understands **Customer Behaviors, Market and Business Economics, and Loan Terms** driving credit quality & profitability.

Decline

- Precise models and optimized offers make the most of each opportunity.



PD✓ LGD✓ Cash Flows✓ Profits✓ Most Opportunity✓ Basel III AA✓

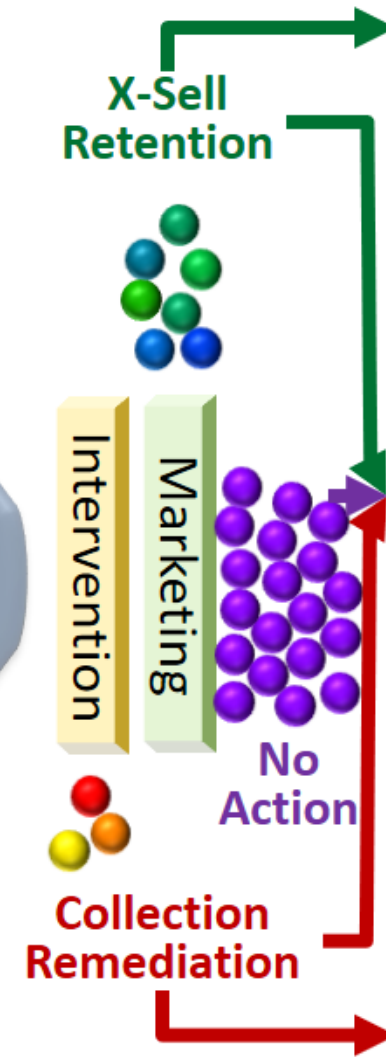
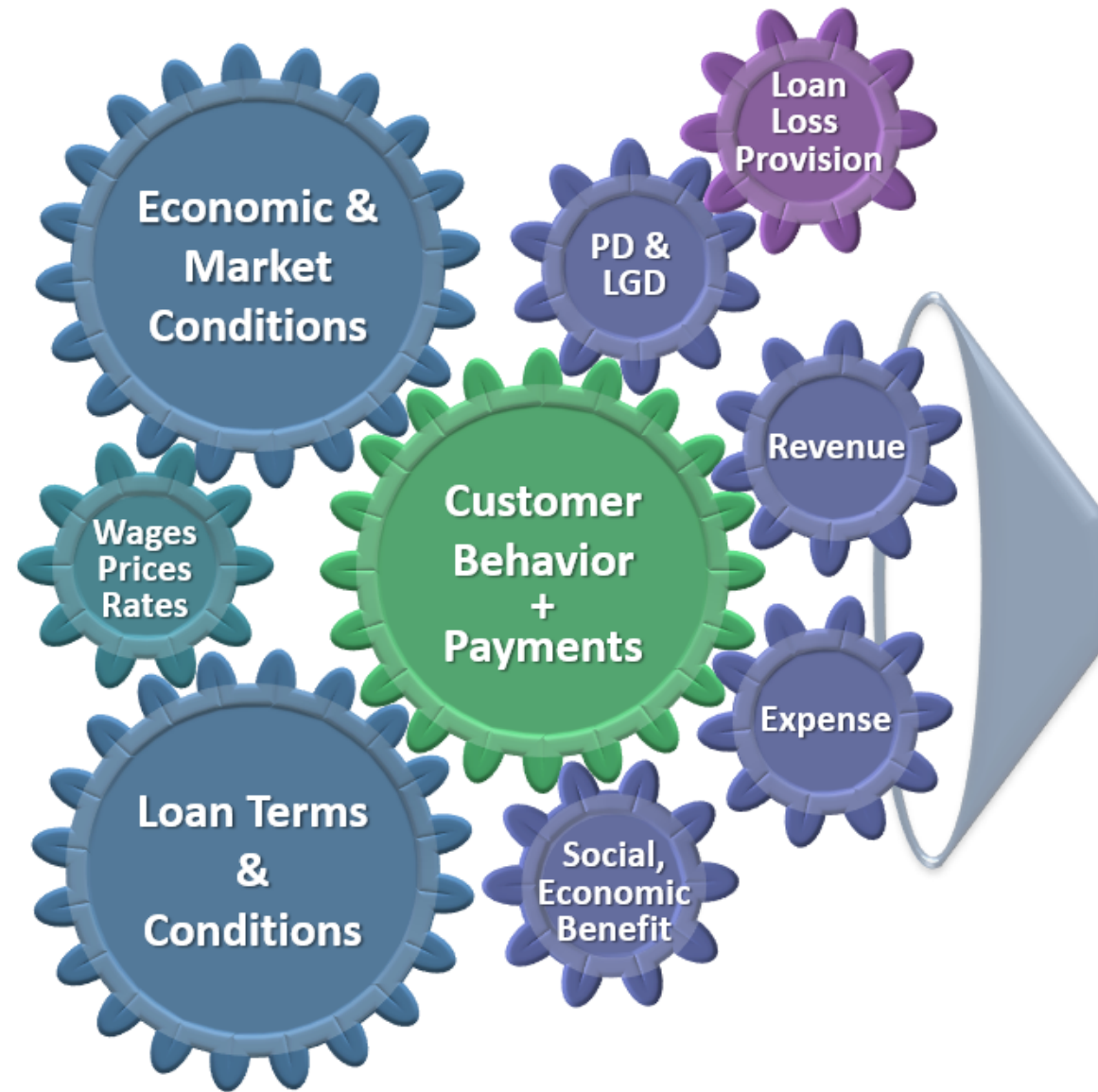
VERDE ALLELE™ Loan-Level Forecasting & Account Management

Make the Most of Existing Loan Relationships



- **Loan Loss Provisioning**
- **Continuous Customer Monitoring, Valuation & Stress Testing**
- **Targeting for Customer Management, Marketing, Collections**

Verde Allele™



The screenshot displays the Verde Allele software interface. The top section shows a "Marketing Queue" table with columns for Loan ID, Loan Type, Open Bal, Amount Paid, etc. Below this are several charts and graphs, including a line chart showing trends over time. The bottom section shows a "Collections Queue" table with similar columns. The interface is dark-themed with green accents.

Beyond rhetoric, hypotheses and conventional wisdom...

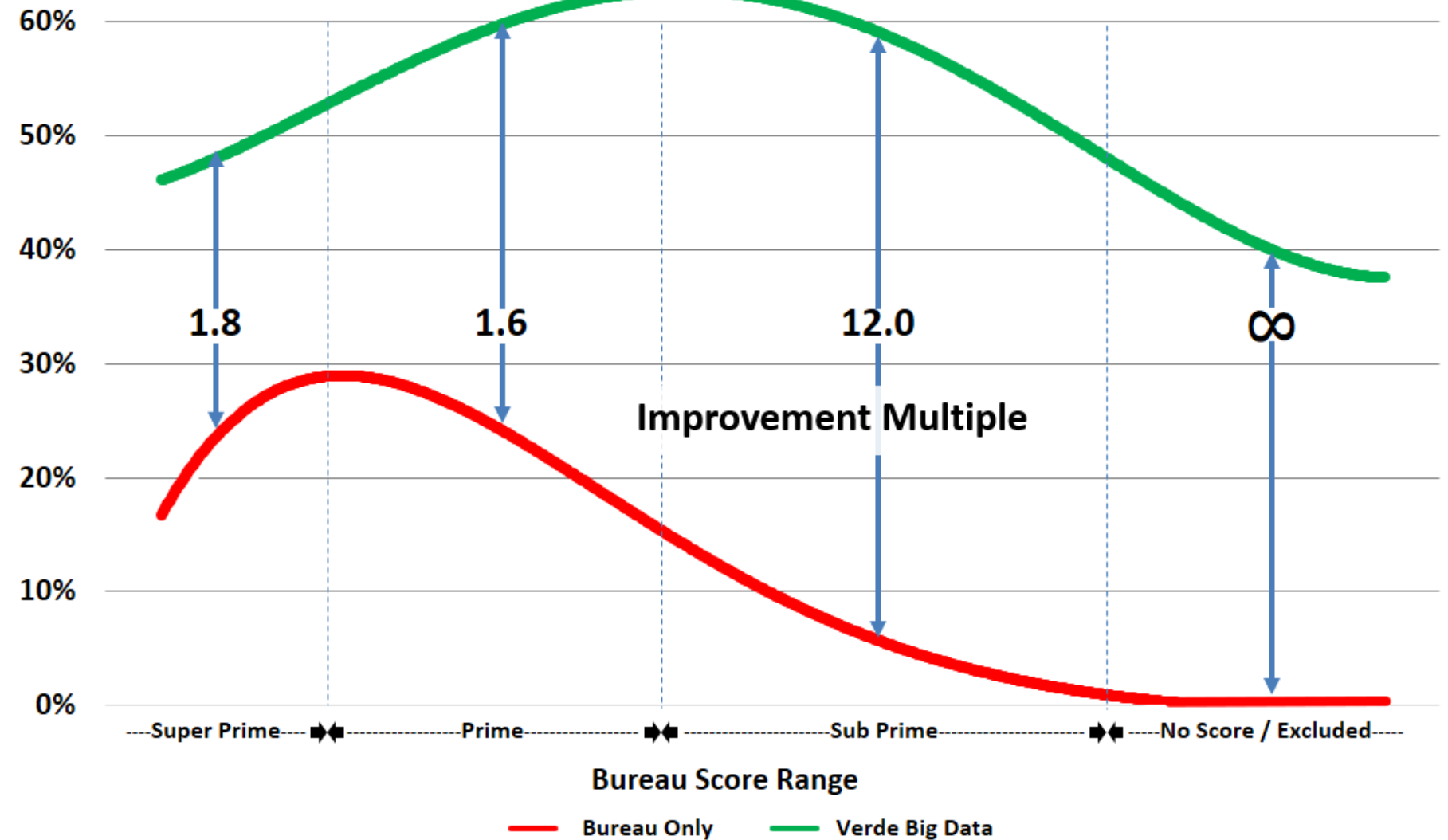
What is the impact of Big Data Underwriting?

- In Actual Use
- Large Volume & Multiple Years
- Regulated & Audited Lenders
- Basel III Advanced Approach
- Diverse Markets & Customers

Responsible Big Data Approach

- Approves More
- With Greater Inclusion
- Less Credit Risk = Lower APR

Percent of PD Variance Explained by Bureau & Verde Big Data Models



VERDE AURORA™ FORECAST PERFORMANCE

Aurora Outperforms the Next Best Model by 5x



Aurora delivers comprehensive, objective and accurate forecasts that drive:

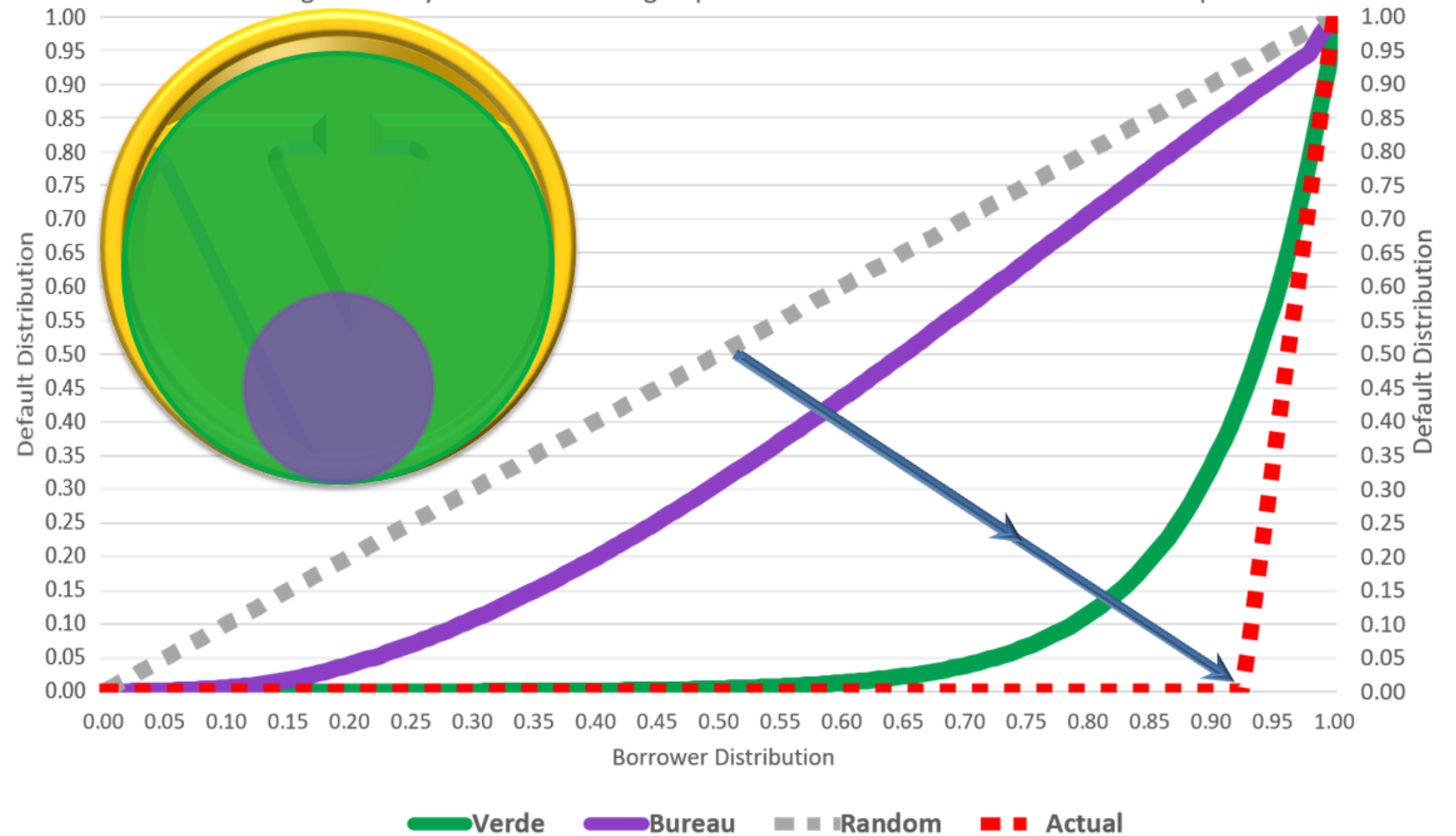
- Higher Approval Rates
- Greater Inclusion
- Higher Capital Flow
- Lower Losses
- More Favorable Pricing
- Better Lender Returns
- Greater Economic Development

That's a WIN for

- ✓ Borrowers
- ✓ Lenders
- ✓ Community

Comparison of Default Model Performance

Big Data & Systematic Modeling Improve PD Prediction 5X Over Nearest Competitor



- Application Queue
- Biz Application Queue
- New Application
- Message Queue
- Credit Bureau Log
- Loan Queue
- Core Request Log
- KBB Request Log
- OpenCNAM Log

- Dashboard
- Setup
- Help

Terms

Interest Rate	<input type="text" value="7.59%"/>
Term	<input type="text" value="48"/>
Collateral Price	<input type="text" value="63,750.00"/>
Down Payment	<input type="text" value="500.00"/>
Monthly Payment	<input type="text" value="1,531.97"/>
Net Amount Requested	<input type="text" value="63,250.00"/>
Total Financed	<input type="text" value="63,250.00"/>

Value

LTV

[Get Loan Decision](#) [Add-ons](#)

Decisions

	Loan Amt	Int Rate	Term	Pmt	DSCR	PD	NPV	Date	Status	Analysis
<input type="checkbox"/>	57,900.00	6.24%	54	1,232.57	54.11%	0.18%	12.33	10/26/17 17:41	APP OPT	
<input type="checkbox"/>	49,700.00	4.99%	36	1,489.33	59.37%	0.12%	3.72	10/26/17 17:41	APP IR	
<input type="checkbox"/>	49,700.00	4.99%	36	1,489.33	59.37%	0.12%	3.72	10/26/17 17:41	APP TERM	
<input type="checkbox"/>	51,800.00	5.99%	60	1,001.20	49.37%	0.13%	15.72	10/26/17 17:41	APP TERM	
<input type="checkbox"/>	58,921.20	5.99%	42	1,558.56	60.79%	0.19%	96.24	10/26/17 17:41	APP AMT	
<input type="checkbox"/>	51,800.00	5.99%	60	1,001.20	49.37%	0.13%	15.72	10/26/17 17:41	APP PMT	
<input type="checkbox"/>	63,250.00	7.59%	48	1,531.97	60.25%	0.25%	1,478.89	10/26/17 17:41	DEC	

Show Invalid

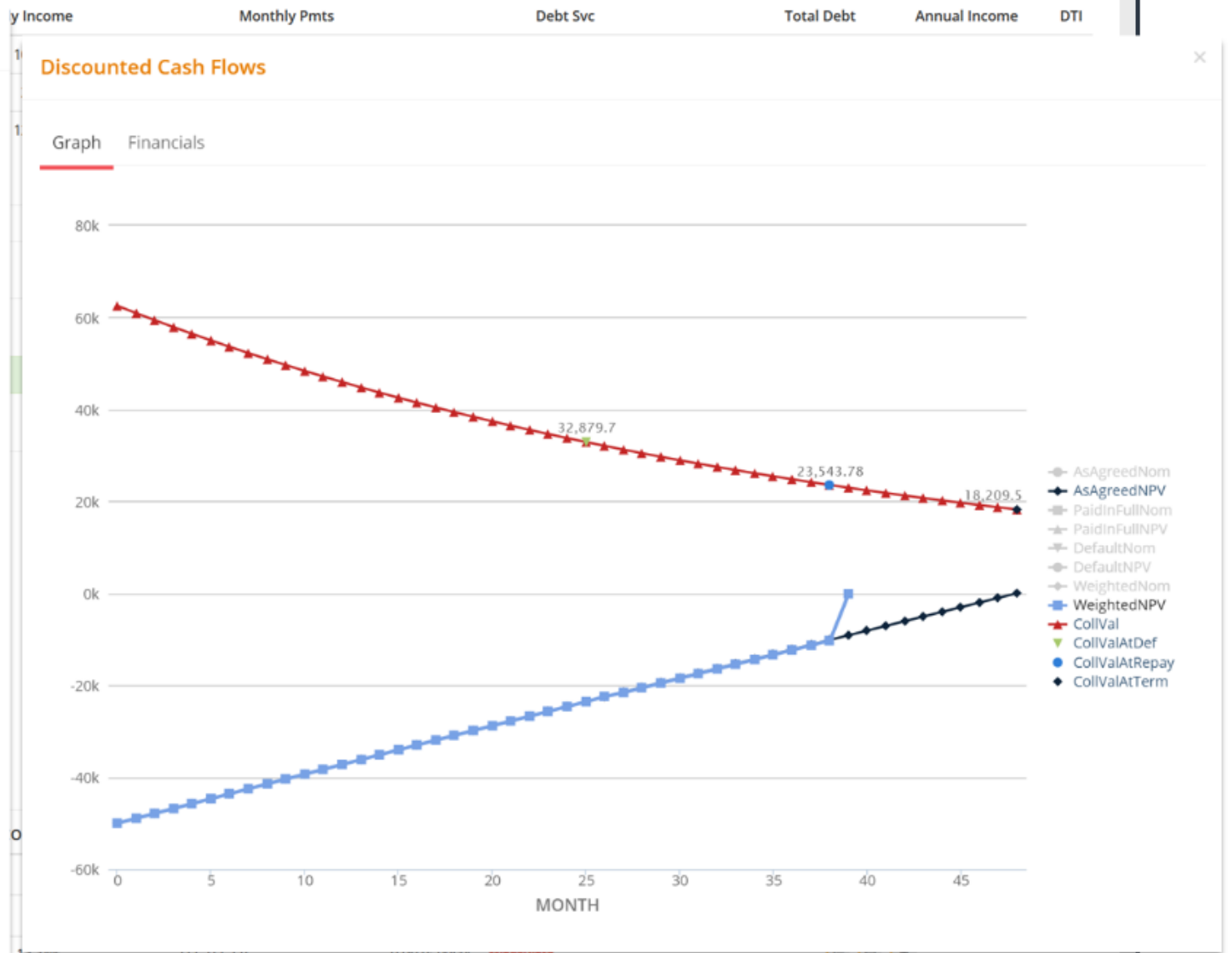
[Back to Application Queue](#) [Discard Changes](#) [< Prev](#) [Approve & Next >](#) [D](#)

Applicants Applicants

Discounted Cash Flows

Graph Financials

	Contract	Pay in Full	Default	Weighted
Term	48	38	25	38
Scenario Odds	-	99.57%	0.43%	-
Principal Paid (Less Payoff)	49,999.20	49,999.20	22,723.75	49,882.42
Principal Payoff	-	-	25,673.52	11,632.47
Interest Paid	6,904.71	6,559.57	5,533.05	6,555.17
Fees Paid	0.26	0.20	0.54	0.20
Cost of Debt	(2,617.16)	(2,486.34)	(2,097.25)	(2,484.67)
Account Maintenance	(144.00)	(114.00)	(75.00)	(113.83)
Collections Cost	(0.17)	(0.14)	(0.36)	(0.14)
Net Repo Recovery	-	-	22,911.77	98.10
Post-Repo Recovery	-	-	5,128.96	21.96
Unpaid Balance	-	-	(25,673.52)	(11,632.47)
Gross Loan Value	9,666.12	9,160.11	(17,967.69)	9,043.96
Taxes	-	-	-	-
Net Loan Value	9,666.12	9,160.11	(17,967.69)	9,043.96
Net Present Value	20.30	60.08	(4,610.78)	40.08



72,000.00 17.25% 48 2,086.89 27.34% 13.34% 260.25 7/18/16 09:34 APPROVED OPTIMIZED

Back to Application Queue < Prev

From application... to decision... w/ tools & reporting

Applicants

Name	Type
SUSAN'S MUFFINS	Prim
Miss MARIANA P SOCIEDADE	Join

Collaterals

Deposit : 1653592

Warnings

[Get Warnings](#) [Credit Committee Review](#)

Success! No warnings found.

Terms

Interest Rate	
Term	
Collateral Price	
Down Payment	
Monthly Payment	
Net Amount Requested	
Total Financed	

[Additional Add-ons](#) [Get Loan Decision](#)

Decisions

	Loan Amt	Int Rate
<input type="checkbox"/>	67,000.00	7.59%
<input type="checkbox"/>	67,000.00	14.50%
<input type="checkbox"/>	72,000.00	7.59%
<input type="checkbox"/>	72,000.00	17.25%

Decision Reasons

Loan Amount	Interest Rate	Loan Term	Monthly Payment	Default Odds	Net Present Value
67,000.00	14.50%	48	1,847.72	6.41%	220.63

Reason Codes

1	Total Loan Exposure	10.039
2	Lack of Recent Bank/National Revolving Information	1.238
3	Balance of Open Mortgage Trades	1.020
4	Total Loan Balance at This Lender	0.878
5	Too Few Accounts Currently Paid As Agreed	0.158
6	Loan Size Relative to Capacity to Pay	0.141
7	Collection History	0.118
8	Number of Inquiries	0.037
9	Number or Balance of Trades	0.019
10	Serious Delinquency, and Public Record or Collection Filed	-0.001
11	Number of Non-Depository Inquiries	-0.020
12	Number or Balance of Collection Trades	-0.246
13	Balance of Open Installment Trades	-1.311
14	Balance of Open Non-Medical Trades	-1.606

Policy Declines

Loan Amount	Under \$300	Over \$75,000
Interest Rate	Under 1.74%	Over 18.00%
Loan Term	Under 6	Over 84
Payment	Under \$50	Over \$7,781
Loan To Value	Over 105.81%	
Default Odds	Over 16.00%	
NPV	Negative	

History

Status	APPROVED OPTIMIZED
Date	9/14/16 10:11 AM
Decision	102284

Total Debt	Annual Income	DTI
361.00	125,000.00	0.29%
8,591.00	28,440.00	30.21%
8,952.00	153,440.00	5.83%

Analysis

Menu Refresh Close
Menu Refresh Close
Menu Refresh Close
Menu Refresh Close

[Back to Application Queue](#) [< Prev](#)



From application... to decision... w/ tools & reporting

Applicants

Name	Type
SUSAN'S MUFFINS	Primary
Miss MARIANA P SOCIEDADE	Joint Applicant

Collaterals

Deposit : 1653592

Warnings

[Get Warnings](#) [Credit Committee Review](#)

Success! No warnings found.

Terms

Interest Rate	7.59%
Term	48
Collateral Price	67,500.00
Down Payment	500.00
Monthly Payment	1,622.80
Net Amount Requested	67,000.00
Total Financed	67,000.00

[Additional Add-ons](#) [Get Loan Decision](#)

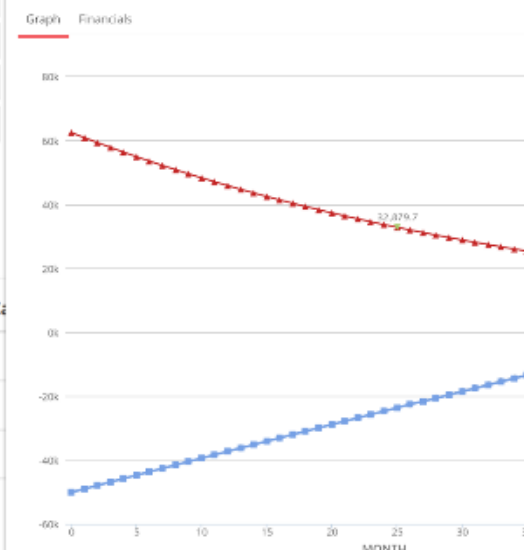
Decisions

	Loan Amt	Int Rate	Term
<input type="checkbox"/>	67,000.00	7.59%	48
<input type="checkbox"/>	67,000.00	14.50%	48
<input type="checkbox"/>	72,000.00	7.59%	48
<input type="checkbox"/>	72,000.00	17.25%	48

Discounted Cash Flows

	Contract	Pay In Full
Term	48	36
Scenario Odds	-	99.57%
Princola Paid (Less Payoff)	49,999.20	49,999.20
Princola Payoff	-	-
Interest Paid	6,904.71	6,559.57
Fees Paid	0.26	0.20
Cost of Debt	(2,617.16)	(2,486.34)
Account Maintenance	(144.00)	(144.00)
Collections Cost	(0.17)	(0.14)
Net Repo Recovery	-	-
Post Repo Recovery	-	-
Unpaid Balance	-	-
Gross Loan Value	9,666.12	9,160.11
Taxes	-	-
Net Loan Value	9,666.12	9,160.11
Net Present Value	20.30	60.08

Discounted Cash Flows



Sensitivity Analysis

	Loan Terms	PD	NPV	ROE
Loan Amount	67,000	0.10%	\$(90)	(0.16%)
Change per \$100 increase in Loan Amount				
Term Months	48	0.00%	\$(145)	0.13%
Change per 1 month increase in Loan Term				
Interest Rate	14.49	0.00%	\$1,738	4.17%
Change per 1% increase in Interest Rate				
Collateral Value	0	0.00%	\$(42)	0.09%
Change per \$100 increase in Collateral Amount				
Total		6.41%	\$221	37.69%
		PD	NPV	ROE

[Reset](#) [Save Terms](#) [Recalculate](#)

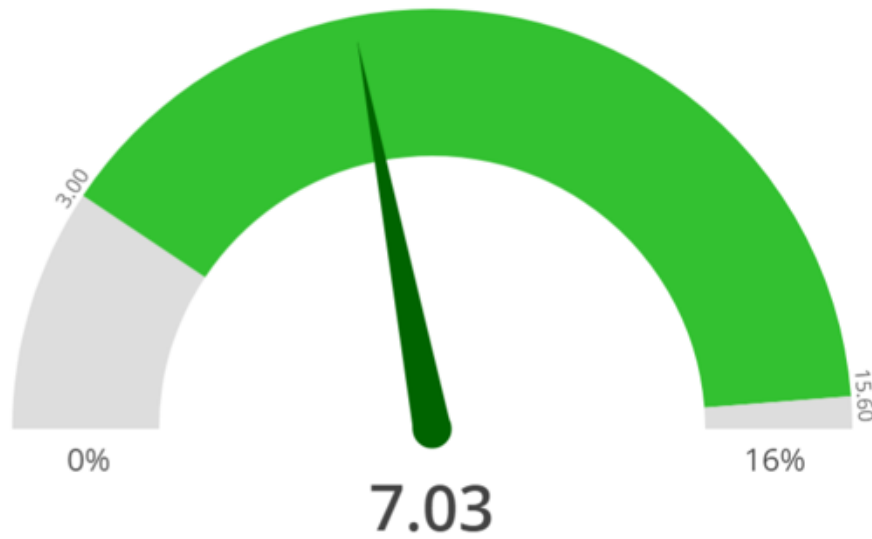
[Back to Application Queue](#) [Prev](#)



From application... to decision... w/ tools & reporting

80% PD Confidence Interval

- Applicants
 - Name
 - SUSAN'S MI
 - Miss MARIA
- Collaterals
 - Deposit : 1
- Warnings
 - Get Warn
 - Success
- Terms
 - Interest Rate
 - Term
 - Collateral Pr
 - Down Paym
 - Monthly Pay
 - Net Amount
 - Total Finan
- Decisions
 -
 -
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Loan Terms

Loan Amount

74,500

Term Months

48

Interest Rate

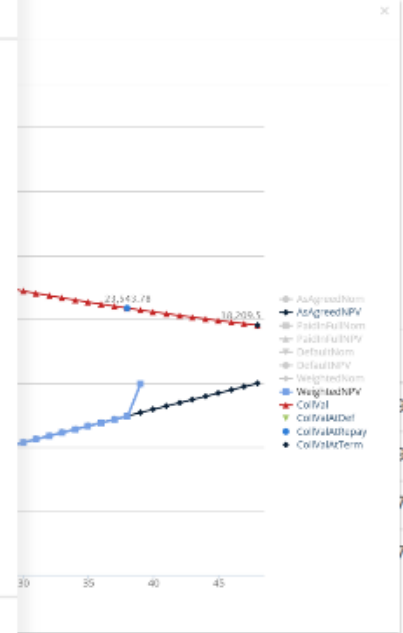
12.99

Collateral Value

45,600

Reset Save Terms Recalculate

Full	Default	Weighted
25	38	
0.43%	-	
22,723.75	49,882.42	
25,673.52	11,632.47	
5,533.05	6,555.17	
0.54	0.20	
(2,097.25)	(2,484.67)	
(75.00)	(13.83)	
(0.36)	(0.14)	
22,911.77	98.10	
5,128.96	21.96	
(25,673.52)	(1,632.47)	
(17,967.69)	9,043.96	
-	-	
(17,967.69)	9,043.96	
(4,610.78)	40.08	



Date	Status
9/14/16 10:11	DECLINED
9/14/16 10:11	APPROVED OPTIMIZED
7/18/16 09:34	DECLINED
7/18/16 09:34	APPROVED OPTIMIZED

Decision Reasons

Loan Amount	Interest Rate	Loan Term	Monthly Payment	Default Odds	Net Present Value
67,000.00	14.50%	48	1,847.72	6.41%	220.63

Reason Codes

1 Total Loan Exposure	10,039
2 Lack of Recent Bank/National Revolving Information	1,238
3 Balance of Open Mortgage Trades	1,020
4 Total Loan Balance at This Lender	0,878
5 Too Few Accounts Currently Paid As Agreed	0,158
6 Loan Size Relative to Capacity to Pay	0,141
7 Collection History	0,118
8 Number of Inquiries	0,097
9 Number or Balance of Trades	0,019
10 Serious Delinquency, and Public Record or Collection Filed	-0,001
11 Number of Non-Depository Inquiries	-0,020
12 Number or Balance of Collection Trades	-0,246
13 Balance of Open Installment Trades	-1,311
14 Balance of Open Non-Medical Trades	-1,606

Policy Declines

Loan Amount	Under \$200	Over \$75,000
Interest Rate	Under 1.74%	Over 18.00%
Loan Term	Under 6	Over 60
Payment	Under \$50	Over \$1,000
Loan To Value		Over 105.81%
Default Odds		Over 18.00%
NPV		Negative

History

Status: APPROVED OPTIMIZED

Date: 9/14/16 10:11 AM

Decision: 102284

Sensitivity Analysis

Loan Terms	PD	NPV	ROE
Loan Amount (74,500)	0.10%	\$(90)	(0.16%)
Term Months (48)	0.00%	\$(145)	0.13%
Interest Rate (14.49)	0.00%	\$1,738	4.17%
Collateral Value (0)	0.00%	\$(42)	0.09%
Total	6.41%	\$221	37.69%

Reset Save Terms Recalculate



From application... to decision... w/ tools & reporting

80% PD Confidence Interval

Applicants

Name

SUSAN'S MI

Miss MARIA

Collaterals

Deposit : 1

Warnings

Get Warn

Success!

Terms

Interest Rate

Term

Collateral Pr

Down Paym

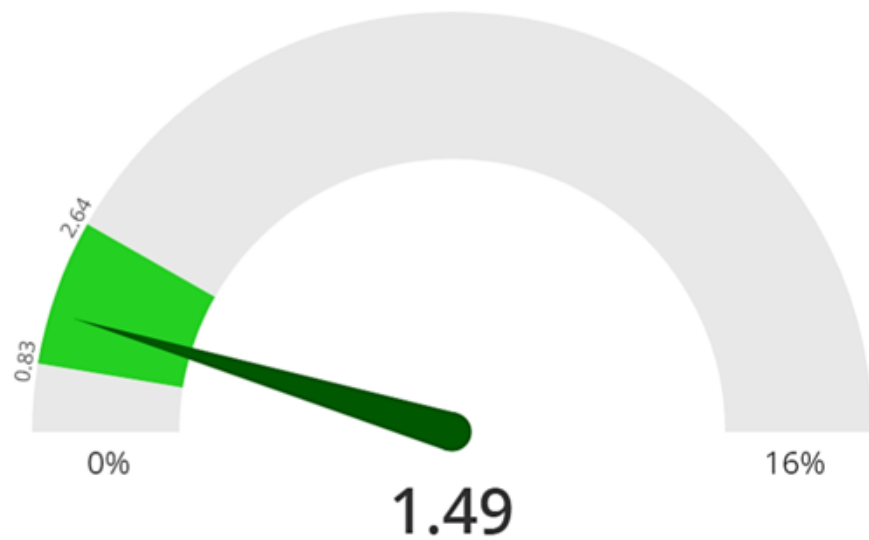
Monthly Pay

Net Amount

Total Financ

Additional

Decisions

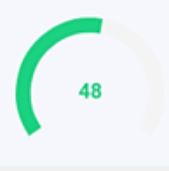


Loan Terms

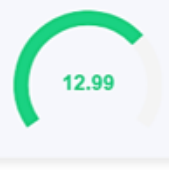
Loan Amount



Term Months



Interest Rate



Collateral Value



Reset

Save Terms

Recalculate

Debt Svc

4.38%

40.21%

11.02%

Full	Default	Weighted
25	38	
0.43%	-	
22,723.75	49,882.42	
25,673.52	11,632.47	
5,533.05	6,555.17	
0.54	0.20	
(2,097.25)	(2,484.67)	
(75.00)	(13.83)	
(0.36)	(0.14)	
22,911.77	98.10	
5,128.96	21.96	
(25,673.52)	(11,632.47)	
(17,967.69)	9,043.96	
-	-	
(17,967.69)	9,043.96	
(4,610.78)	40.08	

Decision Reasons

Loan Amount	Interest Rate	Loan Term	Monthly Payment	Default Odds	Net Present Value
67,000.00	14.50%	48	1,847.72	6.41%	220.63

Reason Codes	Value	Policy Declines
1 Total Loan Exposure	10,039	Loan Amount Under \$200 Over \$75,000
2 Lack of Recent Bank/National Revolving Information	1,238	Interest Rate Under 1.74% Over 18.00%
3 Balance of Open Mortgage Trades	1,020	Loan Term Under 6 Over 60
4 Total Loan Balance at This Lender	0,878	Payment Under \$50 Over \$1,000
5 Too Few Accounts Currently Paid As Agreed	0,158	Loan To Value Over 105.81%
6 Loan Size Relative to Capacity to Pay	0,141	Default Odds Over 18.00%
7 Collection History	0,118	NPV Negative
8 Number of Inquiries	0,097	
9 Number or Balance of Trades	0,019	
10 Serious Delinquency, and Public Record or Collection Filed	-0,001	
11 Number of Non-Depository Inquiries	-0,020	
12 Number or Balance of Collection Trades	-0,246	
13 Balance of Open Installment Trades	-1,311	
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History
Status APPROVED OPTIMIZED
Date 9/14/16 10:11 AM
Decision 102284

Sensitivity Analysis

Loan Terms	PD	NPV	ROE
Loan Amount	0.10%	\$(90)	(0.16%)
Change per \$100 increase in Loan Amount			
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Change per 1 month increase in Loan Term			
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Change per 1% increase in Interest Rate			
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Change per \$100 increase in Collateral Amount			
Total	6.41%	\$221	37.69%
	PD	NPV	ROE

Reset Save Terms Recalculate



From application... to decision... w/ tools & reporting

Ecosystem Perspective

Borrower's Economic World: Trends and Measures from Macro to Very Local

Borrower Behaviors: Determination, Resourcefulness, Resilience, Goal Attainment, Self Sacrifice, Tenacity, Obligation

Loan Purpose & Collateral: Practicality, Goal Fitment, Vested Interest, Efficiency, Realized Value, Confidence

ECONOMIC CONDITIONS

- Market Demand & Competition
- Local Market Conditions
- National & Global Conditions

REGULATORY EXPECTATIONS

- Safety & Soundness
- Fairness & Inclusivity
- Competitive Practice
- Economic Development

CAPITAL PARTNER INTERESTS

- Financial Performance & ROI
- Soundness & Reporting
- Development & Inclusivity

LENDER GOALS, COST & OPERATIONS

- Financial Performance
- Capital Optimization
- Operational Efficiency & Scalability

BORROWER GOALS, ABILITY & BEHAVIOR

- Goals & Economic Opportunities
- Financial Performance & Plasticity
- Financial Behavior & Resourcefulness

- **Roadways & Transportation**
 - Roadway KM
 - Traffic Counts
 - Construction
 - Transit Counts
 - Ubiquity
- **Mobile Data Detail**
 - Tower
 - Capability
 - Capacity
 - Utilization
 - Phone Ownership
 - Phone Usage
 - Data Usage
 - Mobile Payments
- **Collateral**
 - Valuations
 - Details
- **Population**

- **Labor Statistics**
 - Employment
 - Unemployment
 - Wages
 - Other Income
 - Employers
 - Occupations
 - Strike & Stoppage
- **Government**
 - Spending
 - Regulation
 - Permitting
 - Zoning
- **Weather**
 - Temperature
 - Precipitation
 - Air Quality
 - Inclemency
 - Pestilence
 - Migration

- **Commercial Statistics**
 - Production
 - Bus. Financials
 - Sales
 - Consumption
 - Pricing
 - Imports
 - Exports
 - Tariffs
 - Competition
- **Housing**
 - Home/Apt Pricing
 - Foreclosures
 - Permitting
 - Construction
 - HH Size
- **Community**
 - Tenure
 - Affiliation
 - References

- **Banking & Finance**
 - Interest Rates
 - Deposit Detail
 - Loan Detail
 - Equity Markets
 - Debt Markets
 - Payments & Flows
- **Bankruptcy**
- **Health & Education**
 - Attainment
 - Literacy
 - Facilities
 - Economics
- **Other Demographics**
- **Occupancy Rates**
 - Residential
 - Commercial
- **Internet**
 - Access
 - Usage



Ecosystem Perspective

ECONOMIC CONDITIONS

- Market Demand & Competition
- Local Market Conditions
- National & Global Conditions

REGULATORY EXPECTATIONS

- Safety & Soundness
- Fairness & Inclusivity
- Competitive Practice
- Economic Development

CAPITAL PARTNER INTERESTS

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- Soundness & Reporting
- Development & Inclusivity

LENDER GOALS, COST & OPERATIONS

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BORROWER GOALS, ABILITY & BEHAVIOR

- Goals & Economic Opportunities
- Financial Performance & Plasticity
- Financial Behavior & Resourcefulness

Borrower's Economic World: Trends and Measures from Macro to Very Local

Borrower Behaviors: Determination, Resourcefulness, Resilience, Goal Attainment, Self Sacrifice, Tenacity, Obligation

Loan Purpose & Collateral: Practicality, Goal Fitment, Vested Interest, Efficiency, Realized Value, Confidence

Potentially Useful Data Is More Plentiful Than Most Imagine.

For example, in **India:**

Verde analyzed nearly **2 billion data series** in a recent study for predicting lending behavior.

And, in **Bangladesh:**

Verde has amassed **over 60,000 data series**, and we expect the number to quickly double.

Throughout our relationships, we continually **identify new sources** and **work to build access.**



What's Not Useful? -- Data That's Not Repeatable, Reliable, Projectable, and Inclusive

Inclusion goals are important for achieving economic and social objectives.

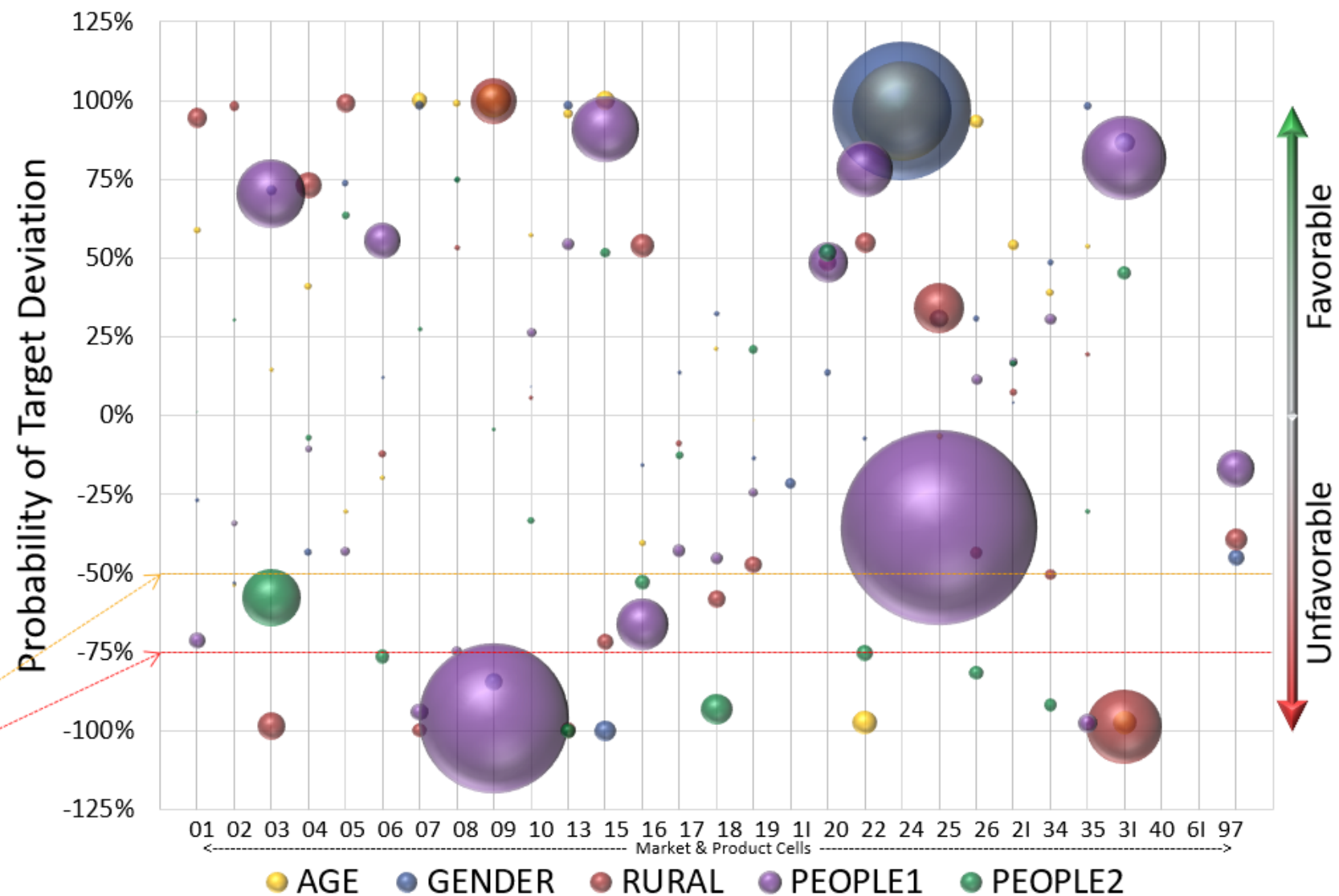
Conventional methods fail to support these objectives.

Verde uses big data to identify and estimate inclusion group affiliation.

Our solutions replicate BISG and other regulatory testing standards.

- **Real-time = Inclusive Decisions**
- **Automation = Compliance**
- **Action Rules = Self-Correcting**
- **Systematic = Easy Verification**

Inclusion Performance by Products & Markets



Note: Diameter = Financial Magnitude



The graph measures the likelihood that inclusion goals will be exceeded or fall short.