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Chasing a score credit score migration

Industry challenges

- Resources
- Posting inquiries
- Updating selection logic
- Choosing most predictive
- Variety
- Compliance
- Where to start

Agenda

Setting the stage
- Overview of generic risk scores
- Attributes that feed scores

What is score migration
- Trends in migration
- How to look for migration
- Identify lost opportunity

What action should be taken
- Model and attribute governance
- Validations

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Overview of generic scores and attributes

Experian

Generic risk scores

How they have changed

Source: pacificparatrooper.wordpress.com

Began appearing in the 1950's

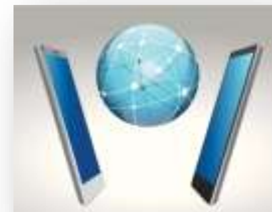
1989 true acceptance of credit score

Source: bbb.org

Source: bbb.org

No update last 12 months

Universe expansion



What's next?

Source: cakecredit.com

1971 FCRA became more prevalent, but still manual

No update last 6 months

Source: bbb.org

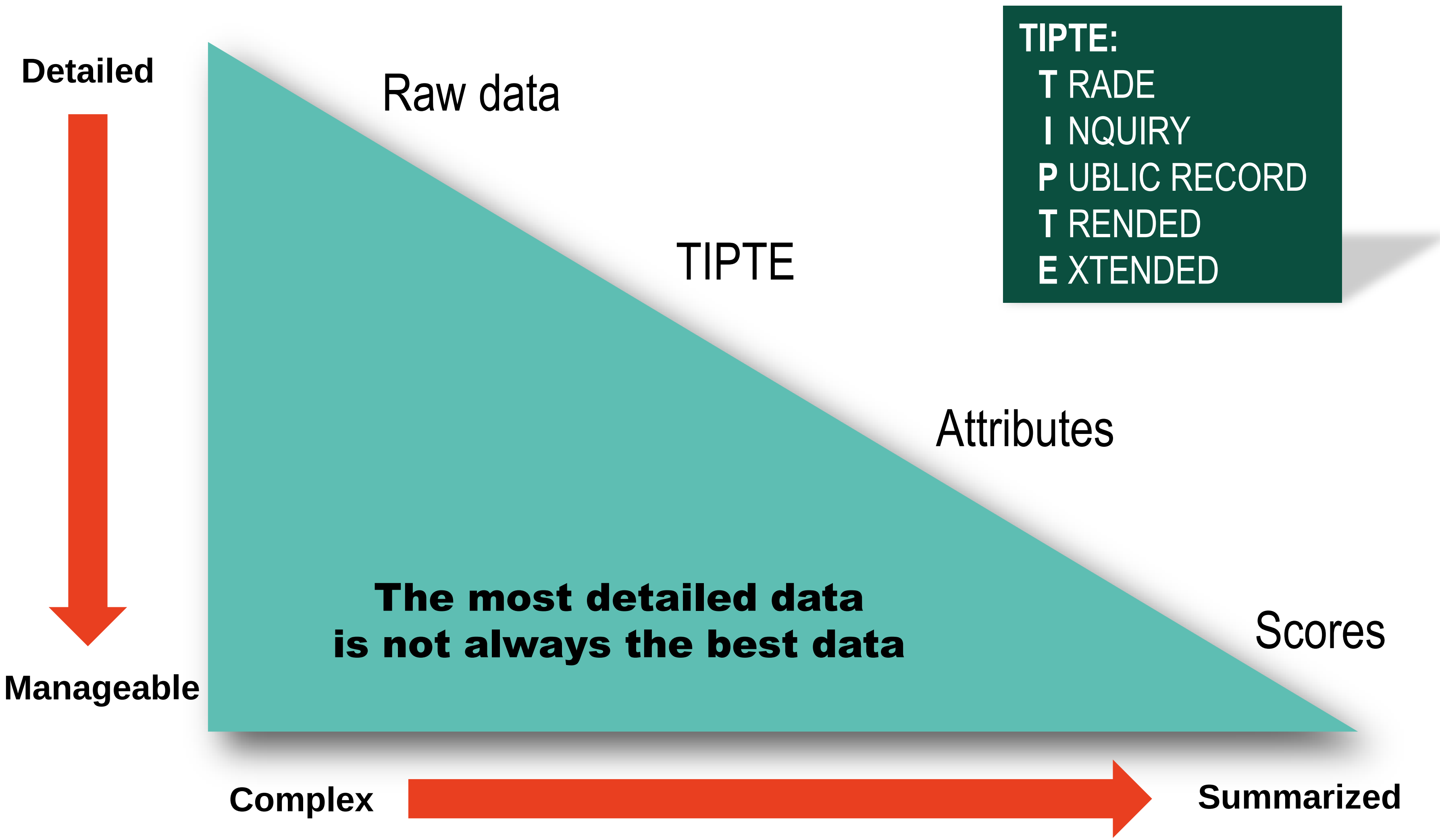
Source: creditcards.com

Authorized user trades

Medical collections

Source: doablefinance.com

Base data
Analysis data examples



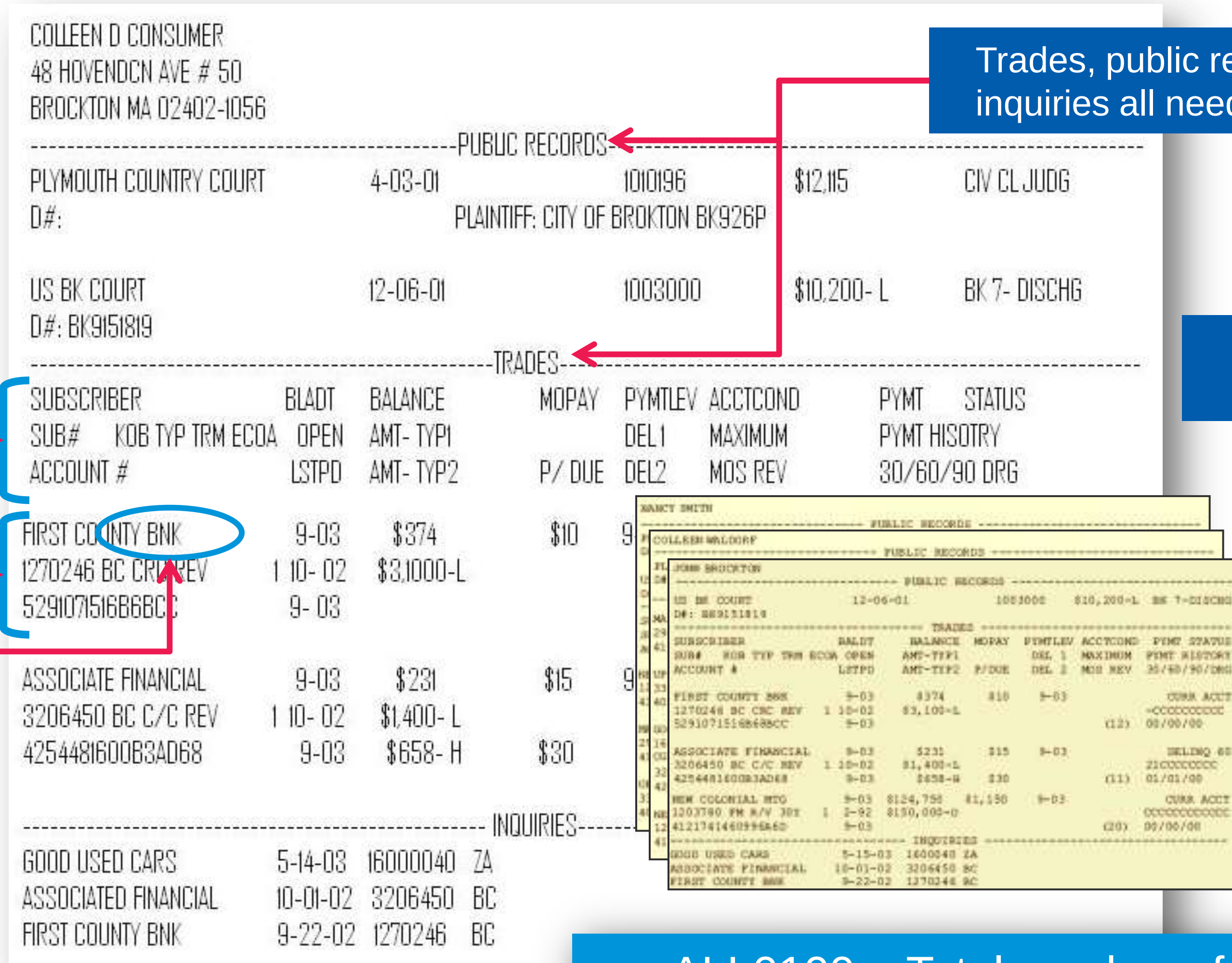
Base data
Complex consumer credit data

Consumers have multiple rows of account data to be considered

Trades, public records, and inquiries all need evaluation

Numerous consumers

Multiple fields of data available for lenders to consider when decisioning


COLLEEN D CONSUMER
48 HOVENDCN AVE # 50
BROCKTON MA 02402-1056

---PUBLIC RECORDS---

PLYMOUTH COUNTRY COURT	4-03-01	1010196	$12,115	CIV CL JUDG
D#:		PLAINTIFF: CITY OF BROKTON BK926P		
US BK COURT	12-06-01	1003000	$10,200- L	BK 7- DISCHG
D#: BK9151819				

---TRADES---

SUBSCRIBER	BLADT	BALANCE	MOPAY	PYMTLEV	ACCTCOND	PYMT	STATUS
SUB# KOB TYP TRM ECOA	OPEN	AMT- TYP1		DEL1	MAXIMUM	PYMT HISOTRY	
ACCOUNT #	LSTPD	AMT- TYP2	P/ DUE	DEL2	MOS REV	30/60/90 DRG	
FIRST COUNTY BNK	9-03	$374	$10	9			
1270246 BC CRC REV	1 10- 02	$3,1000-L					
5291071516B6BCC	9- 03						
ASSOCIATE FINANCIAL	9-03	$231	$15	9			
3206450 BC C/C REV	1 10- 02	$1,400- L					
4254481600B3AD68	9-03	$658- H	$30				

---INQUIRIES---

GOOD USED CARS	5-14-03	16000040	ZA
ASSOCIATED FINANCIAL	10-01-02	3206450	BC
FIRST COUNTY BNK	9-22-02	1270246	BC

ALL0100 – Total number of trades

Attributes the feed scores

Premier Attributes℠

Premier Attributes℠ is the credit industry's most robust, accurate and comprehensive set of tri-bureau leveled attributes that enable organizations to make more strategic and data-driven decisions across the Customer Life Cycle.

Predictive power and analytical precision

- Enhanced modeling opportunities and lending decisions
- Innovative attribute concepts and attributes as new data elements become available

Patented tri-bureau leveling

- Efficient model development – build one model on one data source
- Consistent decisioning across all three data sources

Attribute governance

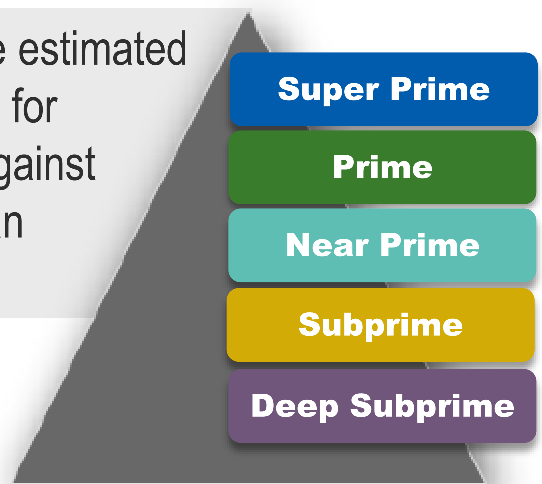
- Development protocol and documentation stands-up to regulatory scrutiny
- Rigorous monthly validation process to ensure continue integrity of attributes

Generic risk scores

Leading brands in the market:

- Predict the likelihood of future serious delinquencies (90 days late or greater) on any type of account
- 24-month performance window
- Score range of 300-850 (higher scores represent a lower likelihood of risk)

Loss values can be estimated by applying the PD for the credit scores against the outstanding loan balances.



VantageScore Experian

VantageScore® 3.0
FDIC Probability of Default Mapping Table

Product Group	Score	Probability of Default
Auto	850	0.0048
Auto	849	0.0049
Auto	301	1.0000
Auto	300	1.0000
Mortgage	850	0.0125
Mortgage	849	0.0126
Mortgage	848	0.0127
Mortgage	302	1.0000
Mortgage	301	1.0000
Mortgage	300	1.0000
HELOC	850	0.0062
HELOC	849	0.0063
HELOC	848	0.0063
HELOC	302	1.0000
HELOC	301	1.0000
HELOC	300	1.0000
HE loan	850	0.0120
HE loan	849	0.0122
HE loan	848	0.0123
HE loan	302	1.0000
HE loan	301	1.0000
HE loan	300	1.0000
Bankcard	850	0.0075
Bankcard	849	0.0076
Bankcard	848	0.0077
Bankcard	302	1.0000
Bankcard	301	1.0000
Bankcard	300	1.0000
Student loan	850	0.0099
Student loan	849	0.0100
Student loan	848	0.0101
Student loan	302	1.0000
Student loan	301	1.0000
Student loan	300	1.0000
All Other	850	0.0048
All Other	849	0.0049
All Other	848	0.0049
All Other	302	1.0000
All Other	301	1.0000
All Other	300	1.0000

Note: Probability of default rates do not reflect current time periods. The PD is the average of two, 24-month default rates observed from July 2007 to June 2009, and July 2009 to June 2011. See the FDIC final rule for Assessments, Large Bank Pricing.

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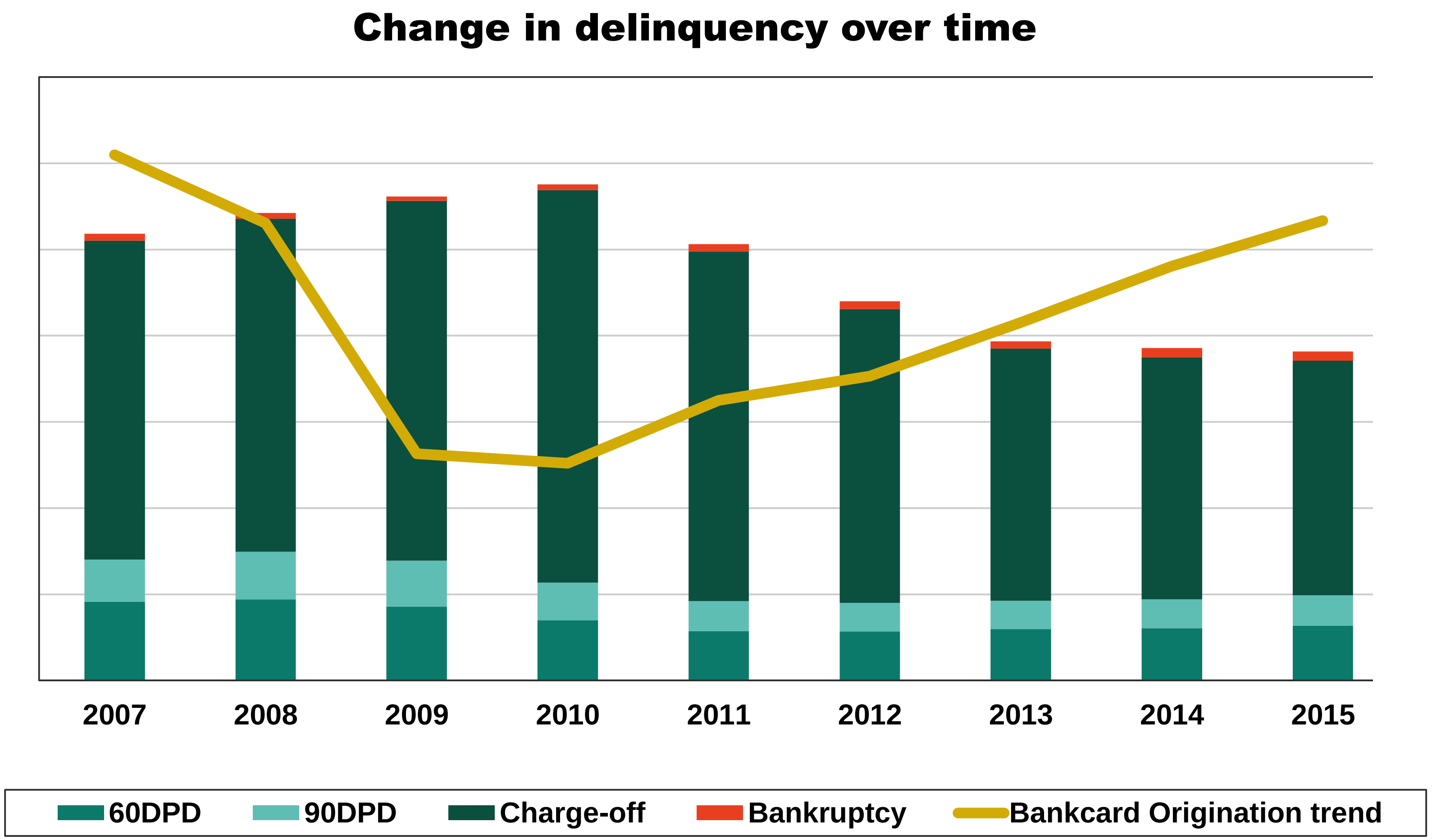
Trends in migration

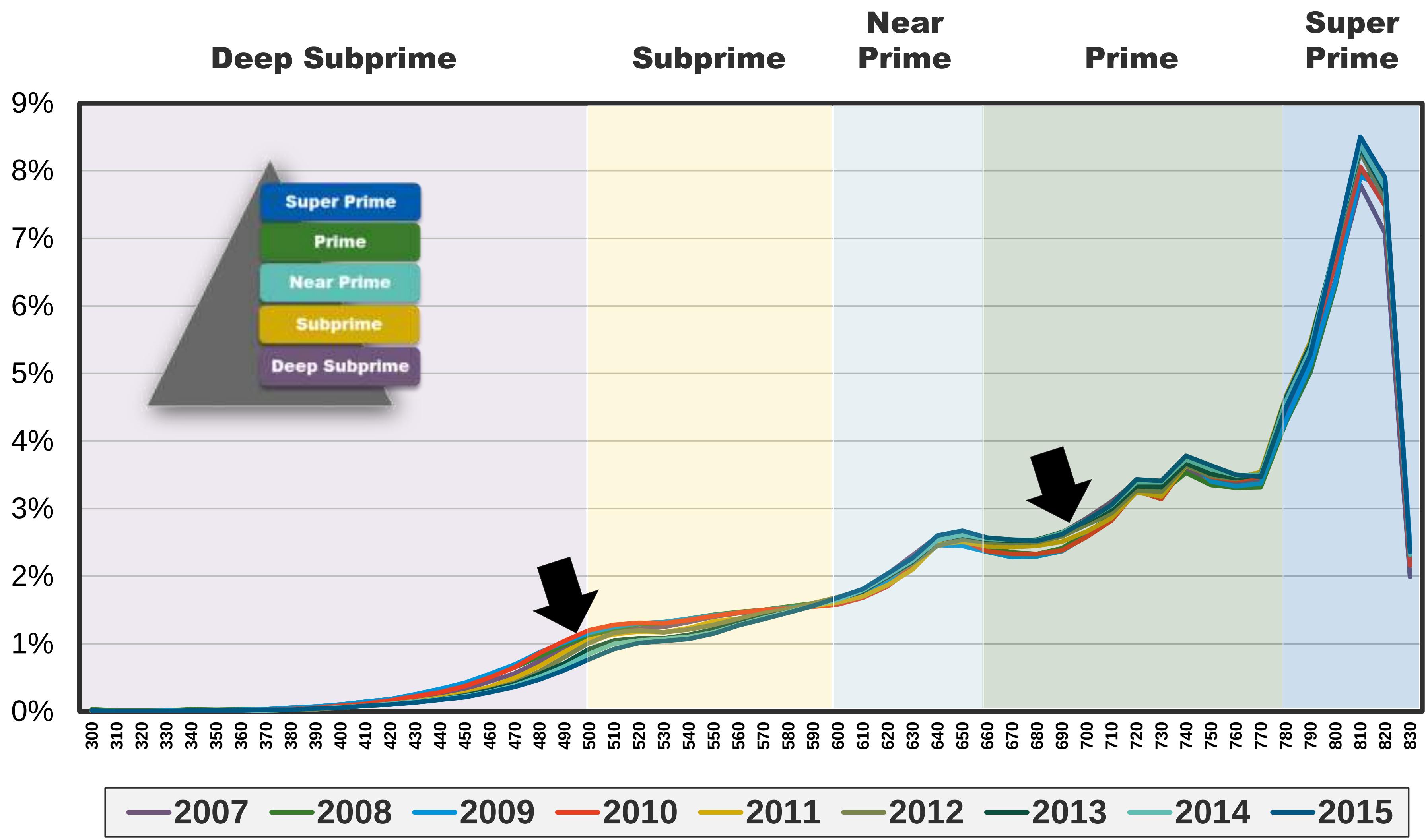
Experian

Trends in migration
Bankcard delinquency and credit trends



How to look for migration

Generic score cohort frequencies 2007-2015



WHAT DO YOU THINK?

27%

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How to look for migration
Market sizing

2014-2015 (1 year)

- **27% moved +/- at least one tier**
- 15% moved up at least one segment
- Those age **18-34 had the greatest upward movement** ~19% moving up at least one tier

		Linked consumers from 2014 - 2015				
		2015				
		300-499	500-600	601-660	661-780	781-850
2014	300 - 499	0.90%	1.29%	0.12%	0.03%	0.00%
	501-600	0.97%	6.15%	2.82%	0.82%	0.01%
	601-660	0.22%	2.28%	5.71%	4.28%	0.10%
	661-780	0.08%	0.89%	3.68%	28.03%	5.46%
	781-850	0.00%	0.03%	0.17%	4.28%	31.69%

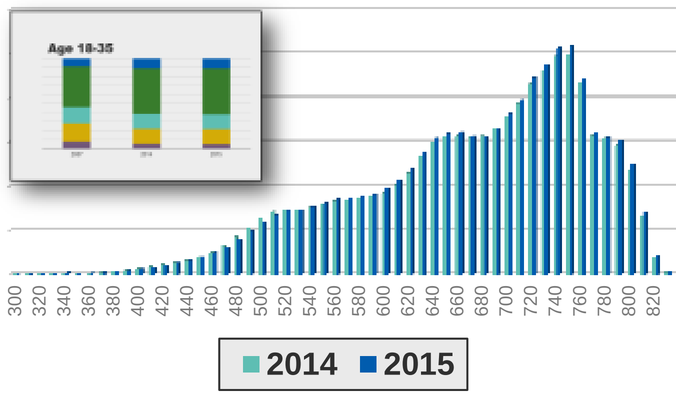
2007-2015 (8 years)

		Linked consumers from 2007 - 2015				
		2015				
		300-499	500-600	601-660	661-780	781-850
2007	300 - 499	0.30%	0.88%	0.46%	0.38%	0.01%
	501-600	0.67%	3.27%	2.60%	2.91%	0.24%
	601-660	0.35%	2.49%	3.15%	5.53%	1.02%
	661-780	0.32%	2.62%	4.73%	18.95%	13.49%
	781-850	0.03%	0.29%	0.85%	6.48%	27.98%

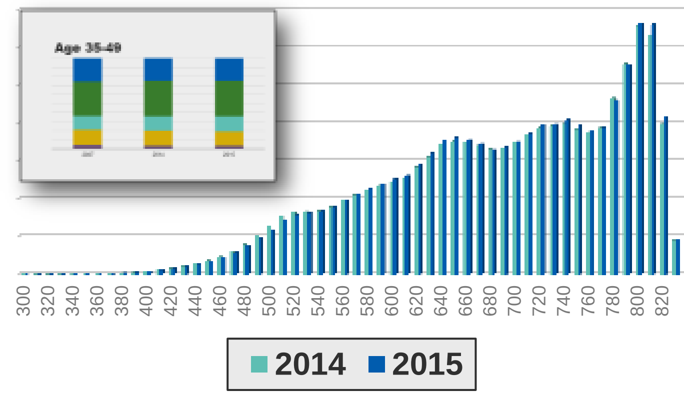
- **46% moved +/- at least one tier**
- 27% moved up at least one segment
- Those age **18-34 had the greatest upward movement** about 37% moving approximately one tier

How to look for migration
Cohort age by score frequencies (1 year)

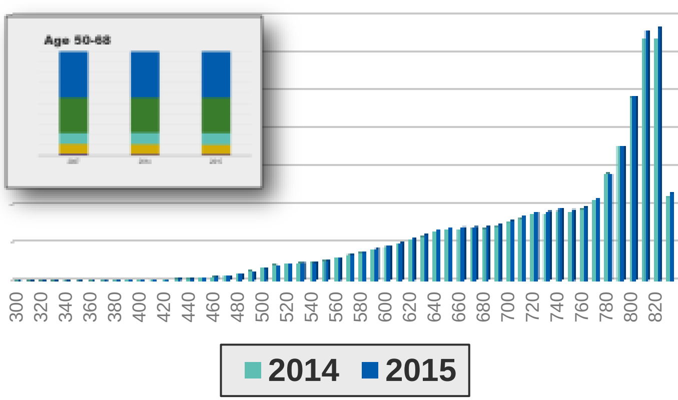
Age 18-35



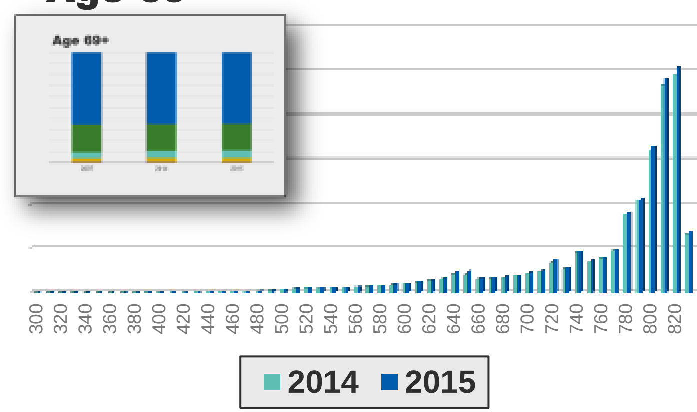
Age 35-49



Age 50-68



Age 69+



WHAT DO YOU THINK?

PD

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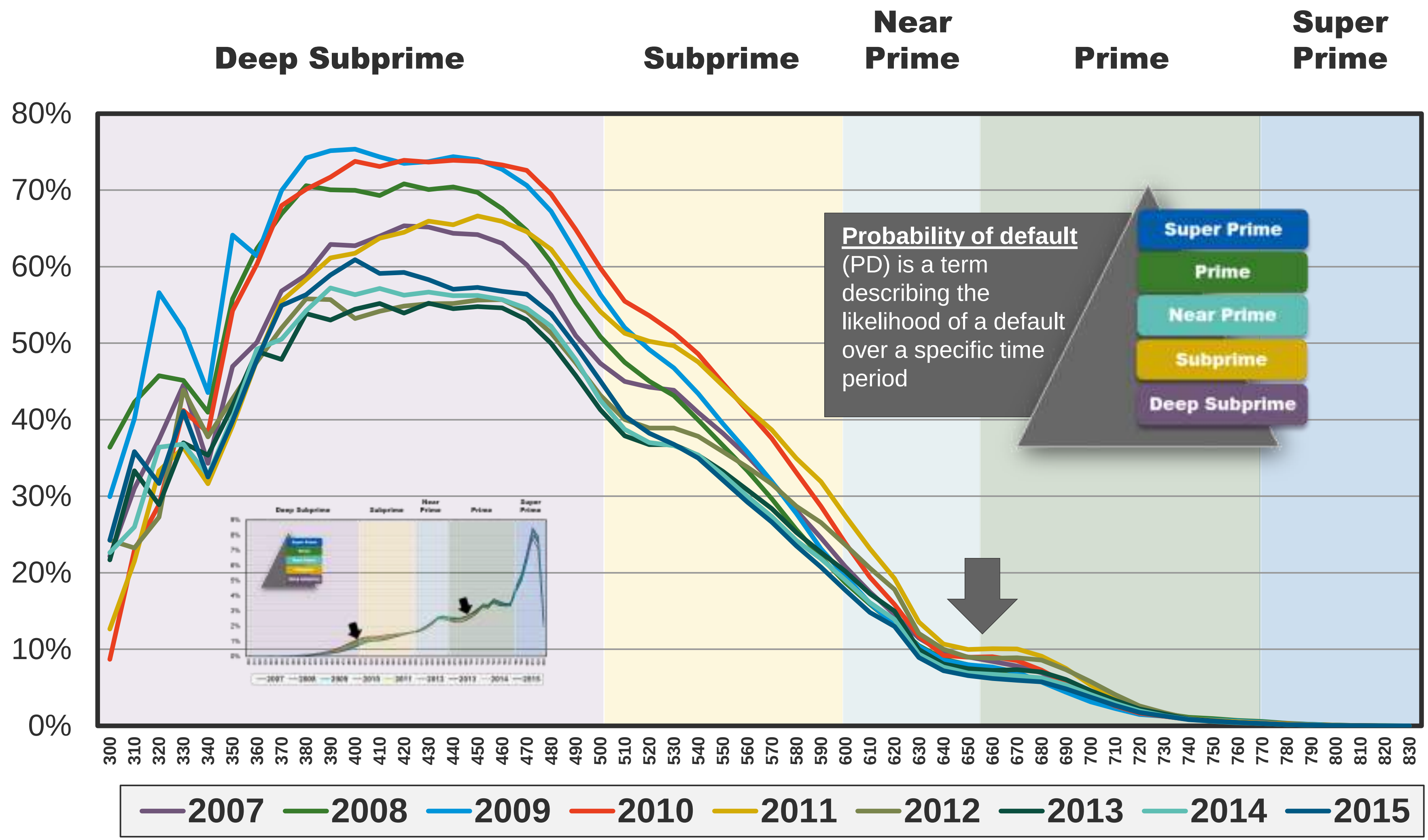
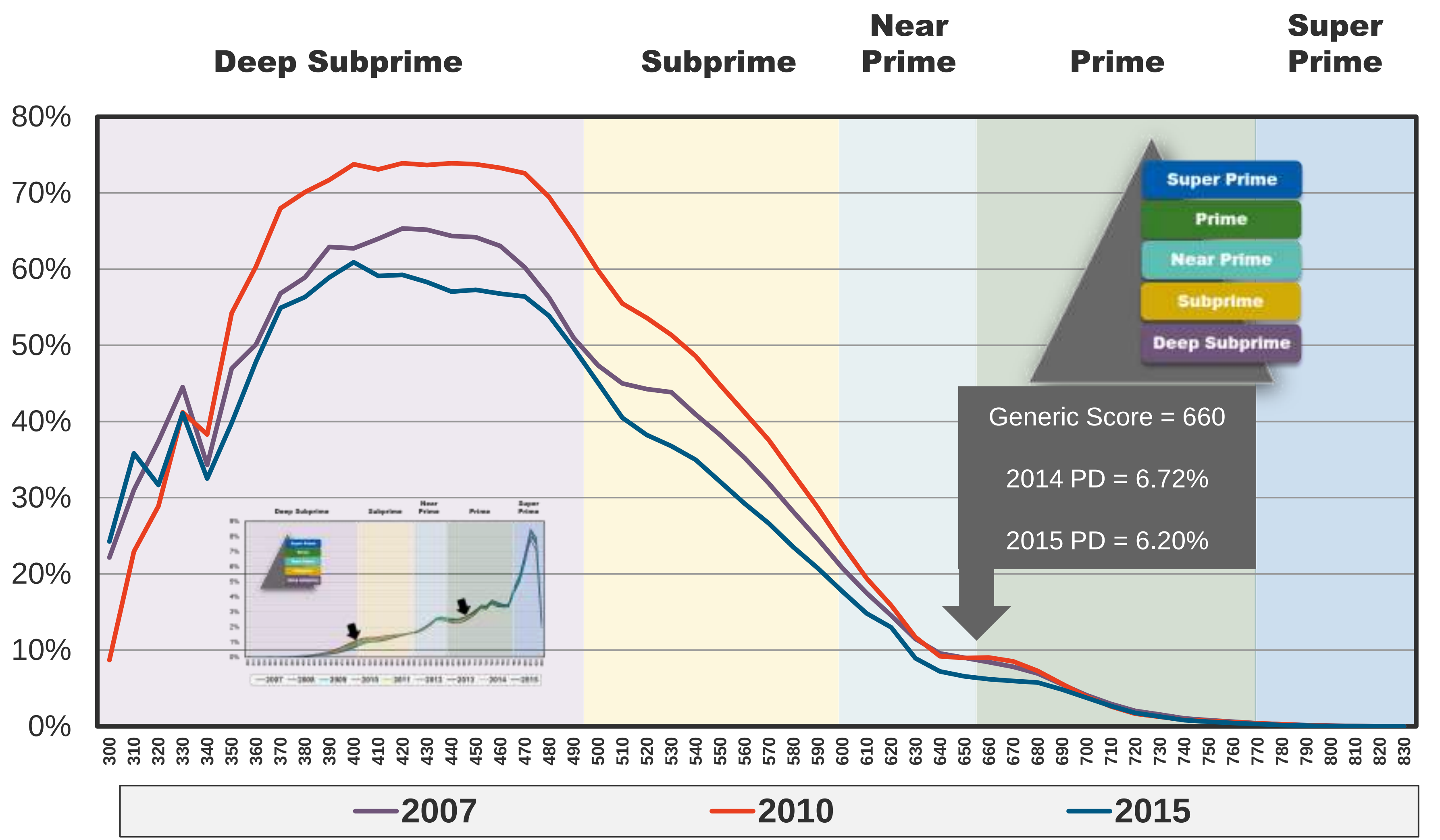
How to look for migration
Probability of default



Bad =90+DPD

How to look for migration

Probability of default pre-recession to recovery



Bad =90+DPD

Identify lost opportunity

2014

In 2014, 660 had a PD of 6.72%

What I know following a validation…

2015

In 2015, 660 had a PD of 6.20%

In 2015, 650 had a PD of 6.57%

Making the adjustment to 650 cut-off

(650-660) opportunity

- **3.6% lift** in number of consumer available
- ~ **$2 billion** in additional balances
- Average bankcard spend ~$16K with average balance ~$11K

Bad =90+DPD

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Take ACTION!!

Model validation
What and why?

What is a model validation?

- A process designed to measure how well a model works on a portfolio
- In an historical validation, accounts booked or monitored are scored at an observation date
  - For **new accounts**, this is typically at time of acquisition (e.g., accounts booked 12-24 months ago)
  - For **existing accounts**, this is typically all accounts that are open at a certain point in time
- The scores at observation date are then compared to the accounts' actual account performance during the performance window to validate how well the model performs

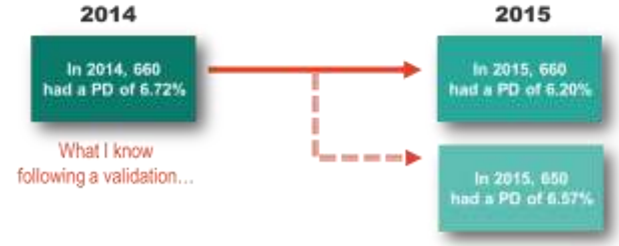
Attribute validation
Characteristic analysis

How does it work?

- Evaluates all scores and attributes selected and ranks which are the most predictive
- The analysis looks within a score or attribute to evaluate at what range it is the most predictive

	ALL2388	GOOD COUNT (A)	GOOD PERCENT (B)	BAD COUNT (C)	BAD PERCENT (D)	IND COUNT (E)	IND PERCENT (F)	CELL FREQ (G)	KNOWN G/B ODDS (H)	KNOWN G/B INDEX (I)	<<<<<---------- RATIO ---------->>>>>	WGT OF EVIDENCE (J)	INFO INCREMENT (K)	BAD RATE (L)
A	MISSING	17,455	3.49	2,044	1.05	0	0	2.81	8.54	331G	< 3.31 >	1.2	2.92	10.48
B	-3	2,749	0.55	1,045	0.54	0	0	0.55	2.63	102G	< 1.02 >	0.02	0	27.54
C	-1	388	0.08	167	0.09	0	0	0.08	2.32	111B	< -1.11 >	-0.1	0	30.09
D	0	35,687	7.14	19,534	10.08	0	0	7.96	1.83	141B	< -1.41 >	-0.35	1.02	35.37
E	1	55,020	11	25,542	13.18	0	0	11.61	2.15	120B	< -1.20 >	-0.18	0.39	31.7
F	2	58,208	11.64	25,666	13.24	0	0	12.09	2.27	114B	< -1.14 >	-0.13	0.21	30.6
G	3	55,600	11.12	23,605	12.18	0	0	11.41	2.36	110B	< -1.10 >	-0.09	0.1	29.8
H	4 TO 5	94,137	18.83	37,317	19.25	0	0	18.95	2.52	102B	< -1.02 >	-0.02	0.01	28.39
I	6 TO 7	65,653	13.13	24,225	12.5	0	0	12.95	2.71	105G	< 1.05 >	0.05	0.03	26.95
J	8	23,793	4.76	8,261	4.26	0	0	4.62	2.88	112G	< 1.12 >	0.11	0.05	25.77
K	9 TO 10	34,347	6.87	11,108	5.73	0	0	6.55	3.09	120G	< 1.20 >	0.18	0.21	24.44
L	11 TO 13	28,652	5.73	8,524	4.4	0	0	5.36	3.36	130G	< 1.30 >	0.26	0.35	22.93
M	14 TO 90	28,355	5.67	6,787	3.5	0	0	5.06	4.18	162G	< 1.62 >	0.48	1.05	19.31
		500,044	**100**	**193,825**	**100**	**0**	**0**	**100**					**6.33**	

Cross walk



Comparing the probability of default at different score ranges or points is one way to evaluate transition score cutoffs

SCORE1 | **SCORE2**

Score 1	Sum of _FREQ_	Sum of good	Sum of bad	Bad Rate %	Score 2	Sum of _FREQ_	Sum of good	Sum of bad	Bad Rate %
1	500	100	400	66.73%	1	500	50	450	66.73%
2	450	100	350	63.78%	2	450	50	400	61.56%
3	400	100	300	60.28%	3	400	50	350	54.72%
4	350	100	250	56.07%	4	350	50	300	45.36%
5	300	100	200	50.95%	5	300	50	250	31.90%
6	250	100	150	44.67%	6	250	200	50	11.33%
7	200	100	100	37.00%	7	200	175	25	7.00%
8	150	100	50	28.33%	8	150	145	5	3.33%
9	100	75	25	23.33%	9	100	95	5	3.33%
10	50	40	10	20.00%	10	50	50	0	0.00%

- A score of 4 in the in **SCORE1** translates to a score of 3 in **SCORE2**. The bad rate of **SCORE2** does not go above the bad rate of **SCORE1** maintaining the same risk tolerance
- Transitioning from **SCORE1** to **SCORE2** will provide the client with 400 additional customers within their current risk strategy

Summary

What causes a score to migrate:

- Economic trends
- Credit trends
- Regulatory trends

How to look for migration

- Validation

An historical validation can be used to:

- Compare different models and attributes
- Increase portfolio volume
- Lower portfolio bad rates
- Determine cutoff scores
- Assign various strategies or credit limits

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1. How would you rate the presenters' knowledge?
☐ Excellent ☐ Above average ☐ Average ☐ Below average ☐ Poor

2. How would you rate the presenters' delivery?
☐ Excellent ☐ Above average ☐ Average ☐ Below average ☐ Poor

3. How would you rate the presenters' time management?
☐ Excellent ☐ Above average ☐ Average ☐ Below average ☐ Poor

4. How useful was the session information?
☐ Very useful ☐ Somewhat useful ☐ Neutral
☐ Somewhat not useful ☐ Not useful

5. How would you rate the session on being current?
☐ Very current ☐ Somewhat current ☐ Neutral
☐ Somewhat not current ☐ Not current

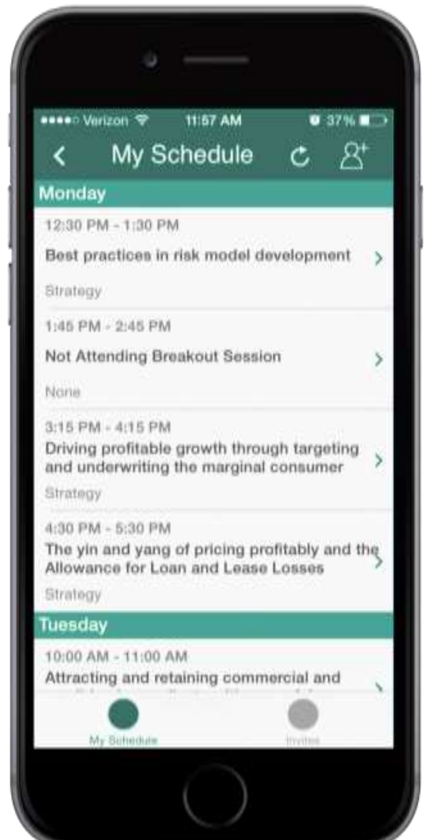
6. How relevant was the session content to the title and description?
☐ Very relevant ☐ Somewhat relevant ☐ Neutral
☐ Somewhat not relevant ☐ Not relevant

7. How would you rate the level of content?
☐ Too advanced ☐ Just right ☐ Too basic

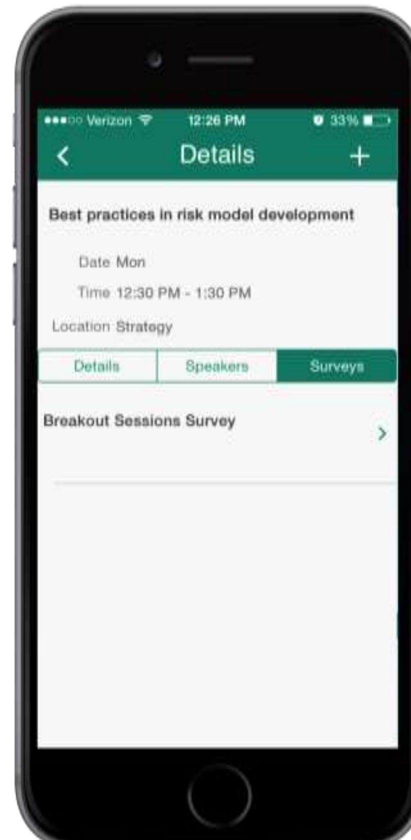
8. Why did you attend this session? (Check all that apply)
☐ Relates to my business ☐ The presenter(s) ☐ Interest in new product
☐ Compelling session description ☐ Increase product knowledge

9. Do you have any additional comments?

1 Select the Survey button and complete



2 Select the breakout session you attended



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