Applying ERM in Daily Operations

TCT RISK SOLUTIONS

Defining Risk

WHAT IS RISK?

- Possibility of incurring loss
- Vulnerability to a negative outcome

Defining ERM

The process by which organizations in all industries assess, control, exploit, finance and monitor risks from all sources for the purpose of increasing the organization's short and long term value to its stakeholders.

Applying ERM

- A common thread of enterprise risk management is that the overall risks of the organization are managed in aggregate, rather than independently.
- The level of decision making under enterprise risk management is also shifted, from the insurance risk manager to the chief executive officer, or board of directors, who would be willing to address all forms of risk.

Defining Risk

Risk Categories

- Credit Risk – the risk of non-repayment where your credit union invests or loans funds.
- Interest Rate Risk – the risk that your credit union won't adequately manage changes in market rates to maintain an appropriate net interest margin.
- Liquidity Risk – the risk your credit union won't be able to liquidate assets quickly and with minimal loss in value to meet your obligations.
- Transaction Risk – the risk that fraud or errors will cause a loss to your credit union. This risk is a function of internal controls, information systems, employee integrity, and operating processes.
- Compliance Risk – the risk that failure to comply with laws and regulations, prudent ethical standards, and contractual obligations will harm your credit union.
- Strategic Risk – the risk that poor business decisions or improper implementation of strategic goals will reduce your credit union's earnings and net worth.
- Reputation Risk – the risk that your credit union's public image will be tarnished due to improper actions on the part of officials, management, or staff.

Understanding ERM

- ERM represents a return to the original roots of risk management, a field that was first developed in the 1950s.

- The first risk management text, published in 1963, was titled Risk Management and the Business Enterprise.

Understanding ERM

- As initially introduced in this text, the objective of risk management is, to maximize the productive efficiency of the enterprise.
- The basic premise of this text was that risks should be managed in a comprehensive manner, and not simply insured.

Understanding ERM

- How did we move away from comprehensive management to simply insuring against risk?

How did we move away from Comprehensive Risk Management?

An historical review shows this process…

1. Businesses identified specific risk types
2. Risk managers developed expertise for specific risks
3. Risk managers built walls around their specialty risk areas

How can we move back to Comprehensive Risk Management?

Recognize that…

- ERM is not truly a new form of risk management.
- Risk management means total risk management, not some subset of risks.
- The process of addressing risks is not stagnant.
- Business risks increase and change as the operational environment changes.

Three Steps of Enterprise Risk Management

The following three steps will assist Credit Union management with the implementation of ERM.

1. Create targeted actions that are part of the strategic direction of the CU.
2. Identify all risks that may accrue to the CU from each action.
3. Employ risk management tools to assess and mitigate each risk.

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Practical ERM Implementation?

A Case Study

ACTION
Describe what you plan to do

RISKS
Identify all potential risk from the action

MITIGATION
Employ tools to measure and mitigate risks

Applications

Let’s examine a case study to see how this works.

ANY CREDIT UNION

USING 5300 DATA FROM 3/31/2020

VITAL SIGNS	2018	2019	2020	Recommended TCT Solution	Target Goal with TCT Solution
Equity Ratio	12.17%	12.33%	12.07%		8.00% - 15.00%
Loan to Share	47.65%	54.40%	53.51%	Loan Pricing	80.00% - 95.00%
ROA	0.66%	0.39%	0.36%	ALM	0.75%+
Core to High Yield Deposits	520.35%	582.18%	619.05%	Deposit Pricing	95.00%+
Cost of Funds	0.22%	0.21%	0.21%	Deposit Pricing	0.25% - 0.60%
Payout Ratio	5.82%	5.43%	5.54%	Deposit Pricing	3.00% - 8.00%
Asset Growth	0.06%	1.94%	2.86%		3.00% - 8.00%
Deposit Growth	-1.09%	1.25%	3.41%	Deposit Pricing	3.00% - 8.00%
Loan Growth	16.26%	15.59%	1.72%	Loan Pricing	6.00% - 12.00%
Loan Yield	5.39%	5.00%	5.23%	Loan Pricing	5.60% - 12.00%
Investment Yield	2.16%	2.65%	2.23%		2.00% - 5.00%
Earning Asset Yield	3.68%	3.95%	3.90%		4.00% - 8.00%
Net Interest Margin	3.06%	3.17%	3.08%	Pricing	3.00% - 8.00%
Operating Expense	4.51%	4.87%	4.67%		3.00% - 5.00%
Net Fee Subsidy	-1.45%	-1.69%	-1.60%	Pricing	0.00% - 2.00%
Deliquency Ratio	0.44%	0.24%	0.22%	Credit Migration	0.40% - 1.00%
Charge Off Ratio	0.22%	0.05%	-0.09%	Credit Migration	0.40% - 1.00%

ACTION

Add a combination of Loans in order to:

- Increase Loan to Share Ratio
- Increase Interest Income
- Increase Loan and Asset Yield
- Increase Net Margin
- Reduce Net Fee Subsidy
- Accept potential increase in DQ and C/O

MITIGATION

- Policy Review
- Loan Pricing
- IRR Limits Calculation
- Liquidity Shock Test
- Portfolio Management
- Deposit Pricing (follow up)

IDENTIFIED RISKS

Compliance Risk (Policy Creation and Maintenance)

- Forms
- Applications
- Rates
- Underwriting

Understanding ERM

Looking Out the Rear at Where We Have Been

Understanding ERM

In Front of Us the Road Is Very Different

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Expected Credit Losses

Predictions of future events can be troublesome

> "He who climbs the flagpole of prognostication exposes only one part of the anatomy to the general public."
>
> Sam Rayburn, former speaker of the US House of Representatives

Understanding ERM

Statistical Models for Predictions

- Specific statistical tests are available to create the roadmaps of future events.

- They use collected data to indicate which road we are on and which map we should be using.

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I know Stats can be a yawner

at times,

but...

Managing Risk

- Statistical modeling provides a course of action that can be validated and followed

- Probability – The likelihood that certain events will occur
- Causality - The link between cause and effect
- Correlation – An observation that two things share a relationship or connection

- *Correlation is not causality*

Risk Factors

Our goal is to identify causal links that can be used as predictors of expected outcomes

The outcome we are examining is loan loss

If we can identify statistically valid predictors, then we can use them to predict future loses

Some potential factors may be:

- Employment status
- Delinquency status
- Charge offs
- LTV
- Income or DTI
- Collections

Understanding Probability

Statistical Methods for Prediction

- Statistics provides valid models for predictions
- We can access proven tools to assist our estimations
- Know what tools to use and how to use them

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Understanding Probability

Occam’s Razor (Law of Parsimony)

- The principle in science that assumptions introduced to explain a thing must not be multiplied beyond necessity. Hence the simplest of several hypothesis is always the best in accounting for unexplained facts.

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Credit Migration

If you hear hoof beats...

Don’t look for Zebras.....

Understanding Probability

Statistical Methods for Prediction

The SIMPLEST Answer is Usually the Best!

Valid Risk Factors

For our purposes we will consider that:
Dependent variable = Expected Loan Losses
Independent variable(s) = Those factors that are connected to (or predict) losses

- The primary statistical tool for quantifying causality is **Multiple Regression**
- Regression is an analysis that estimates the **causal relationship** among variables
- Regression analysis is widely used for **prediction and forecasting**
- Focus on the relationship between a **dependent variable** and one or more **independent variables**

Sample Example of Risk Factors

Regression analysis identified the following factors as the primary predictors of impending loss

1. **Deterioration of credit score**
2. **Advanced delinquency**
3. Changing income or discretionary cash flow
4. **Changing economic conditions (relates to employment and cash flow)**
5. Loan to value (subject to existing risk change)

IDENTIFIED RISKS

Credit Risk

- Extended Risk
- Expended Risk

Validating Costs

"The key to successful risk-based lending is to ensure that ***prices (rates) correctly reflect the risk and costs involved.***"

NCUA Guidance Letter - 174

August 1995

Validating Costs

A statistically valid pricing system requires:

Identification of costs

- Cost of Funds
- Loan Operations (Activity Based Costing)
- Collections
- Charge-offs

Accurate measurement of costs

Application of costs to loan volume

Set rates that will cover all costs and feed equity.

IDENTIFIED RISKS

Let’s see how this works in the real world…

IDENTIFIED RISKS

Interest Rate Risk

- Establish NII and Equity and Risk Limits
- Apply those limits to planned actions

IDENTIFIED RISKS

Let’s see how this works in the real world…

IDENTIFIED RISKS

Interest Rate Risk

- Net Interest Margin at Risk (EAR)
- EAR facilitates SIMULATIONS that help control this risk.
- Are you maximizing your Balance Sheet? (Exploit)

IDENTIFIED RISKS

Let’s see how this works in the real world…

IDENTIFIED RISKS

Liquidity Risk

- Credit Unions remain in business because of TRUST.
- Losing that trust can be a DISASTER!
- Testing liquidity can assure that we maintain the trust.

IDENTIFIED RISKS

Liquidity Risk

- Maintaining adequate cash
- Maximizing your Balance Sheet

IDENTIFIED RISKS

Let’s see how this works in the real world…

IDENTIFIED RISKS

Credit Risk

- Loan Losses are a significant challenge for credit unions
- Are you maximizing the portfolio to control risk of loss?

Who Is Putting the Credit Union At Risk?

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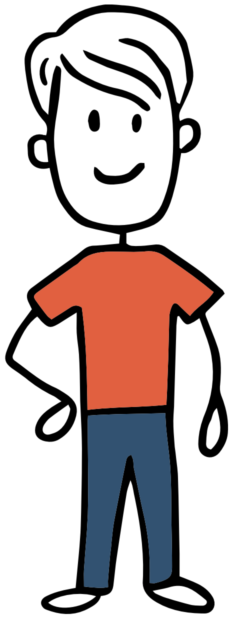
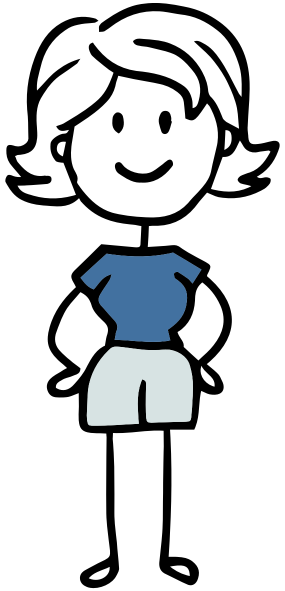
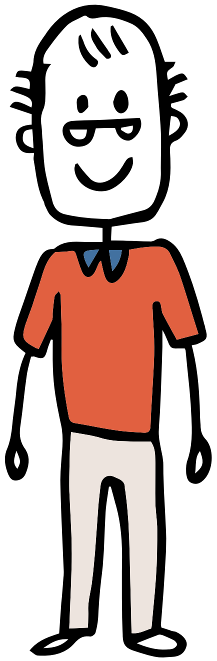


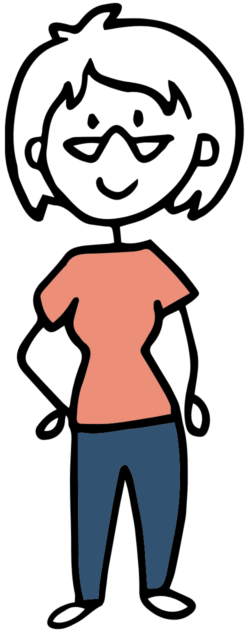


In this presentation we will tell the story of four individuals that represent all the members of your credit union.

Understanding their stories will help us improve loan management better serve our members.

Sit back and enjoy the story of CREDIT MIGRATION





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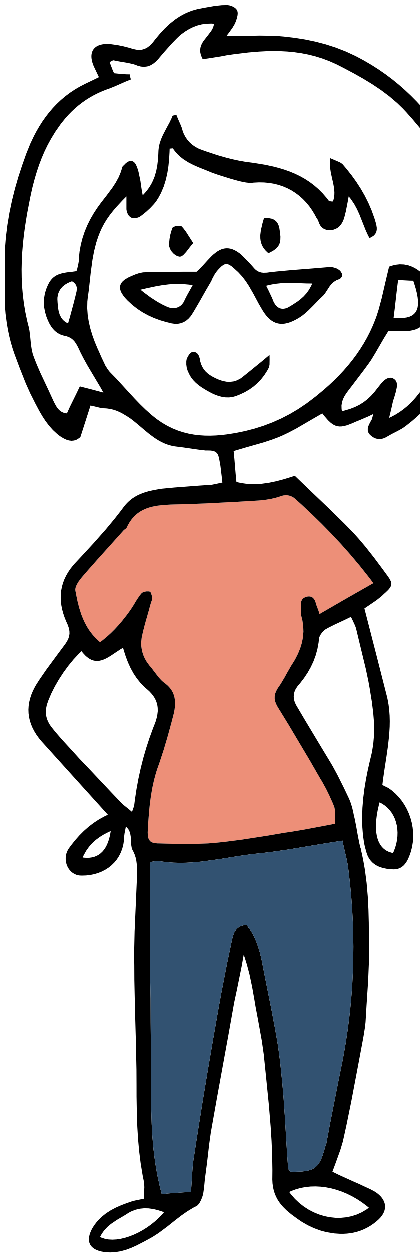
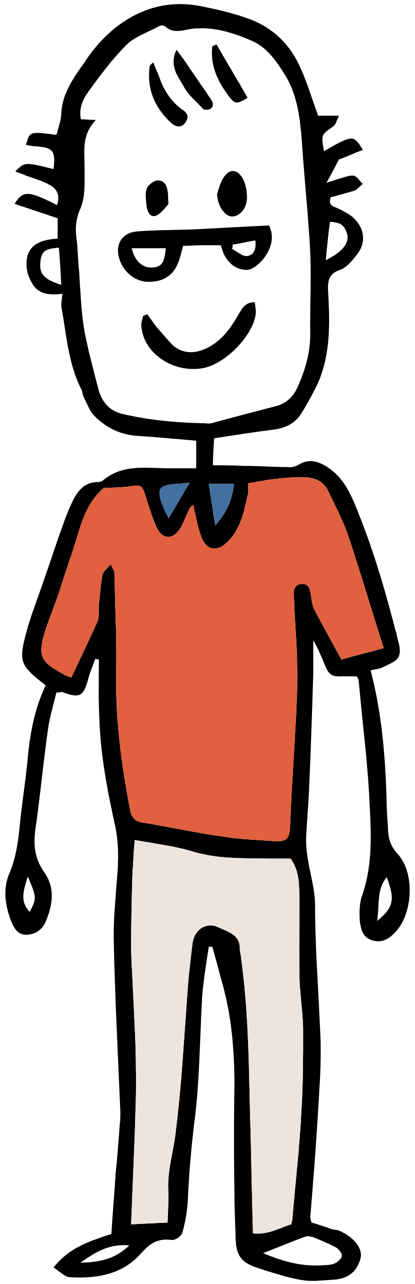


Ruth

Good ole' Ruthie has a high B credit score. She never gets too wild. She buys the same things month after month, she never overspends. Good Ole' Ruthie is still a high B today!



Henry

When Henry first came to your Credit Union, he had A+ credit. Several months ago, Henry lost his job, but he didn't change his lifestyle. He started living off of credit cards and today his credit score is a D.

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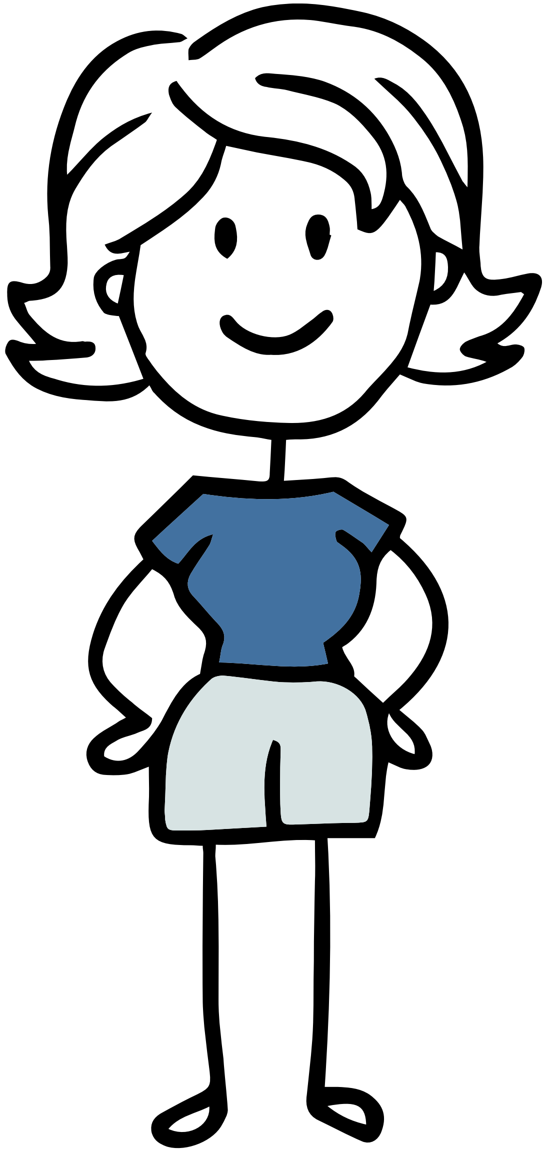

Liz

Liz is a credit newbie. Your credit union decides to take a chance and approve her for a car loan. Over the past few months she has built her credit up to an impressive A+.

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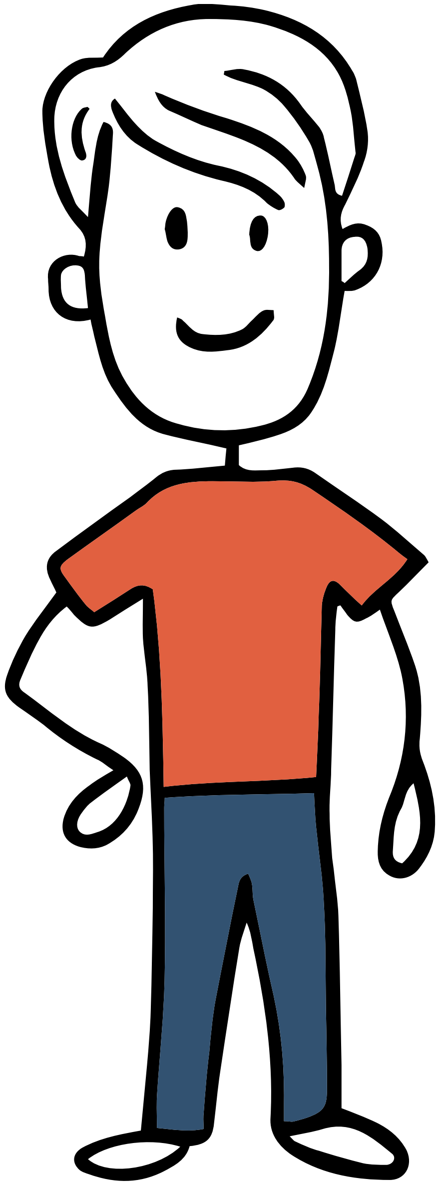

John

Was down on his luck when your credit union financed a car loan for him. His credit was a D. However, his luck turned around and he was able to find a job, make payments on time and even save a buck or two. Today his credit score is an A.

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HENRY
A+

RUTH
B

LIZ
NO CREDIT

JOHN
D

This was their credit scores a year ago.

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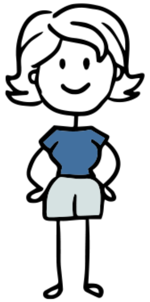
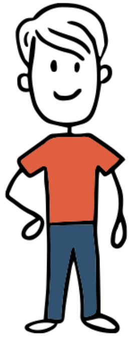
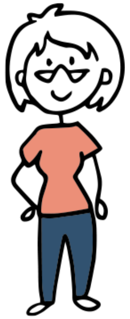
Take Charge Today



LIZ
NO CREDIT TO A+
IMPROVED



JOHN
D TO AN A
IMPROVED



RUTH
B CREDIT SCORE
STABLE

HENRY
A+ TO D
IMPAIRED

This is where they are today.

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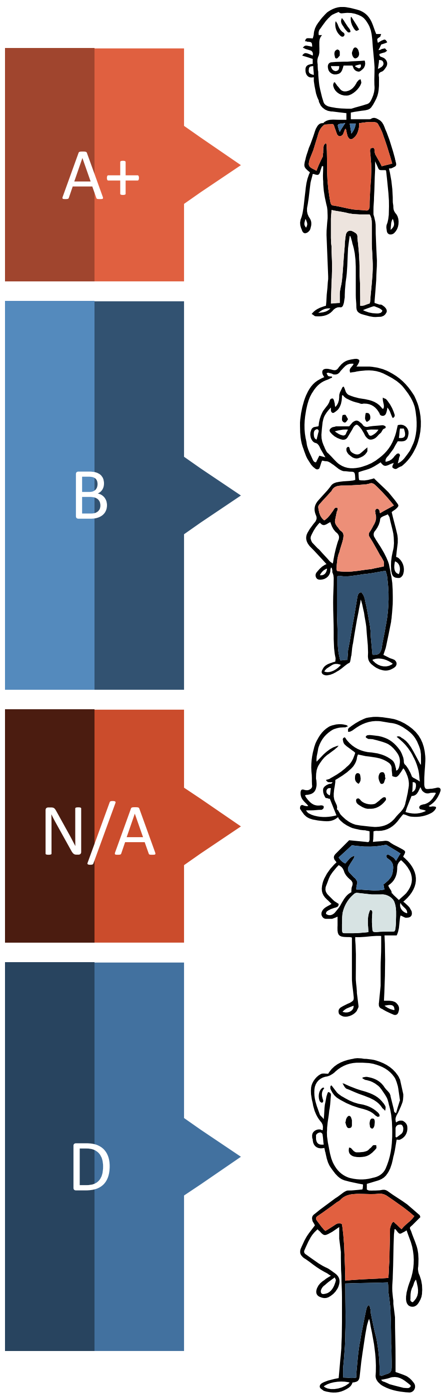
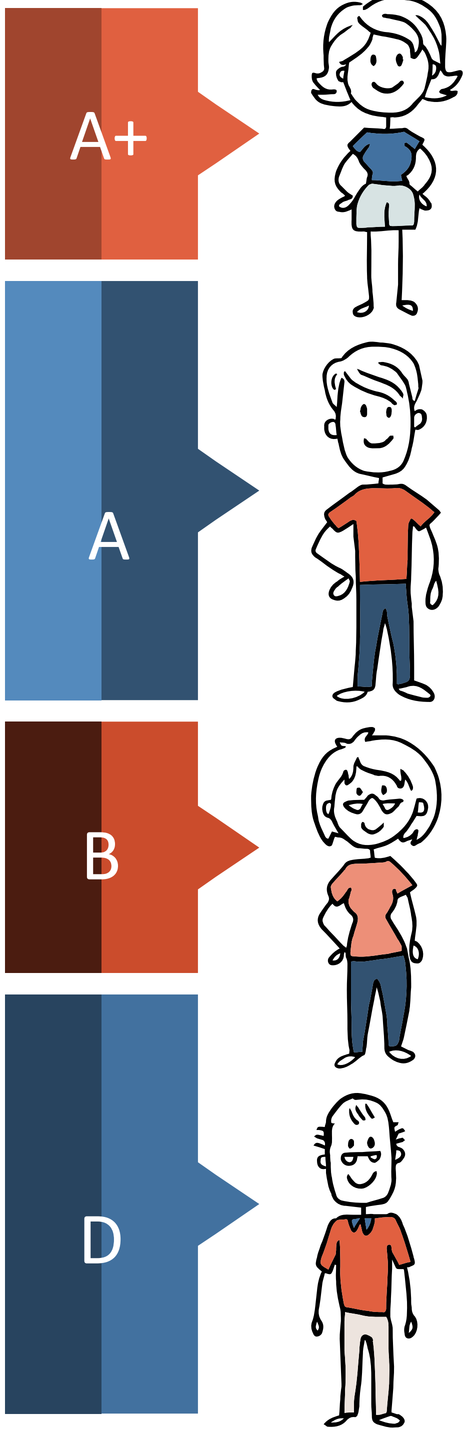


Are you still offering services based on their credit scores a year ago?



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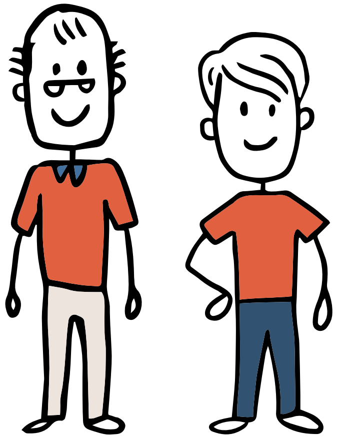
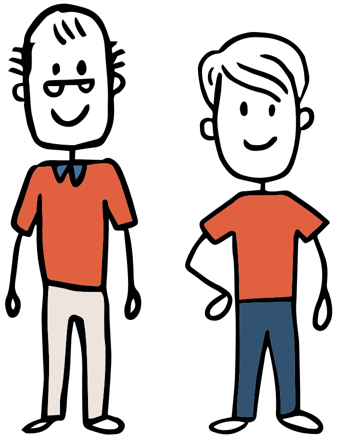
At any time the A+, A and B groups contain both Henrys and Johns (along with Ruth's)

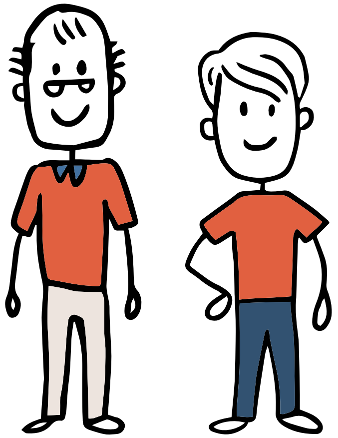
A+ Group



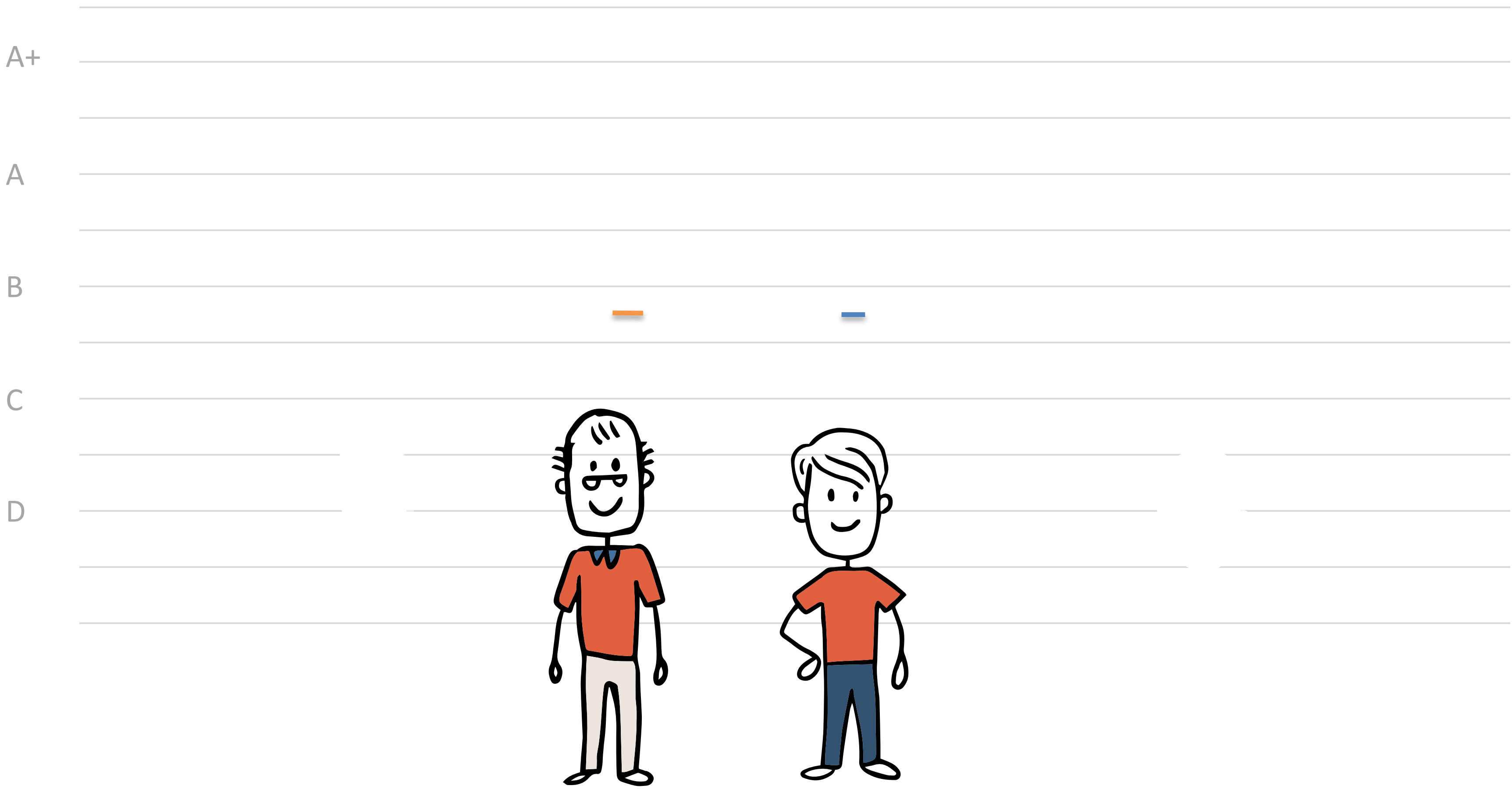
A Group



B Group



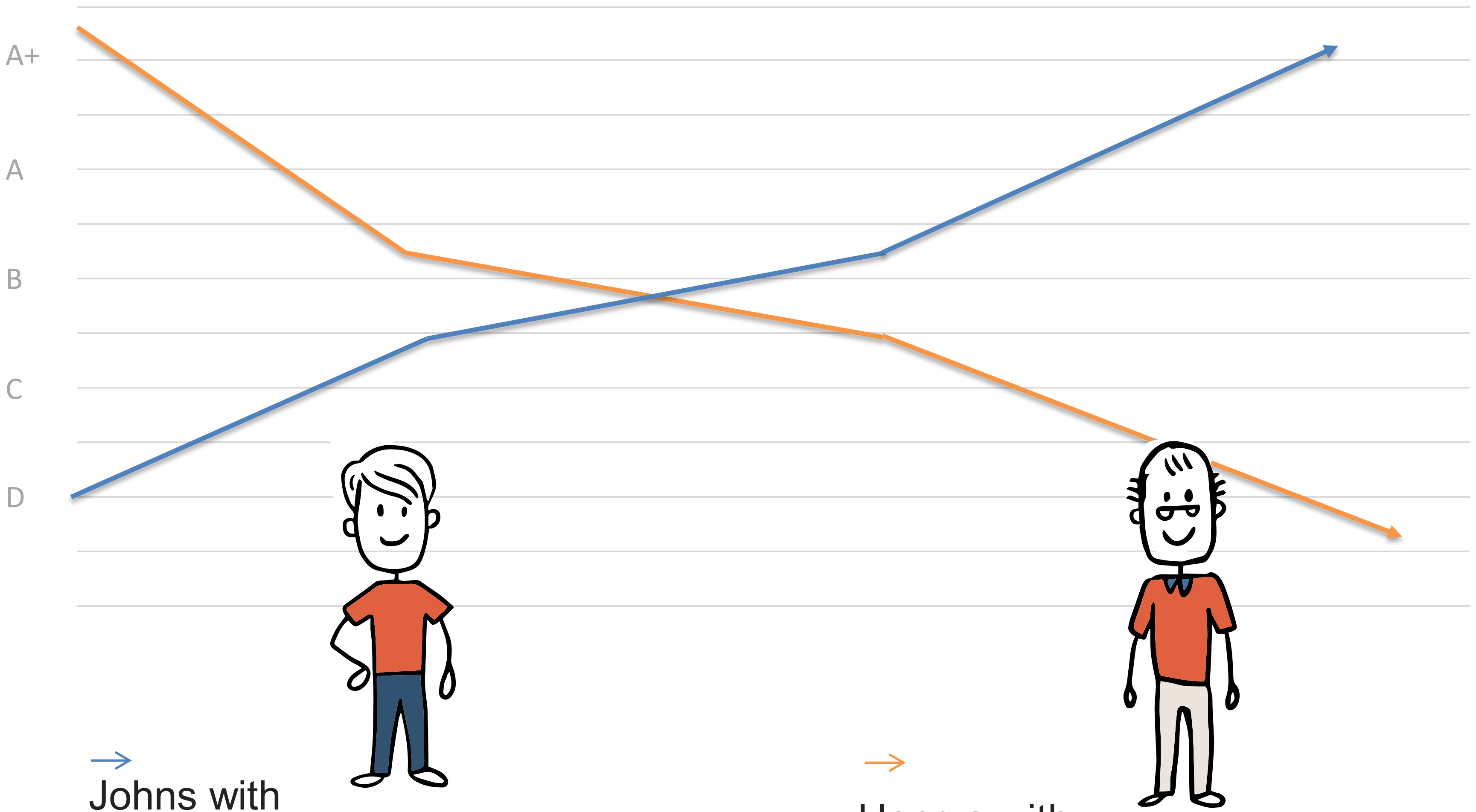
Let’s take a look at the B Group



Henry’s Credit Score 656

John’s Credit Score 656

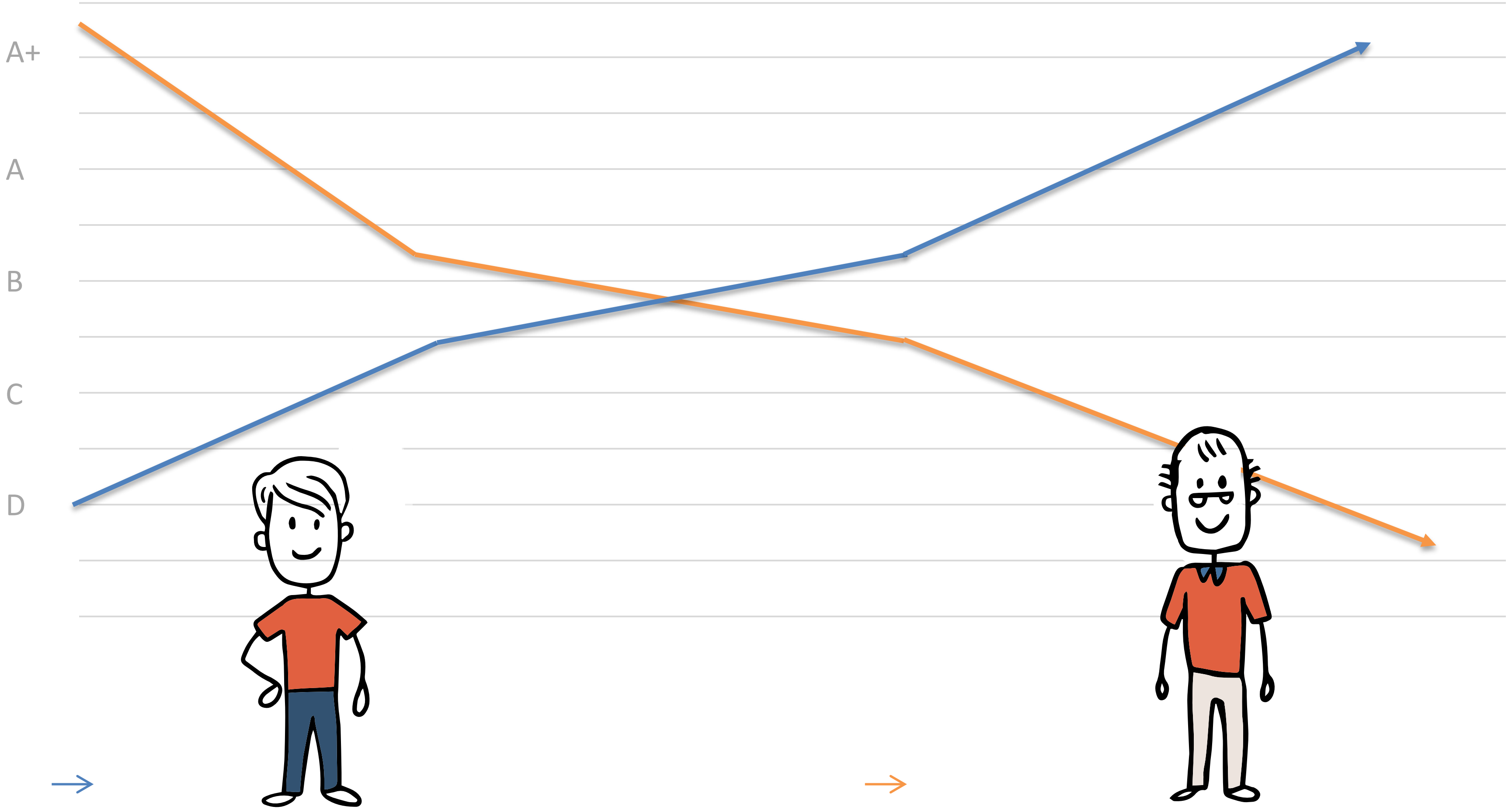
Let’s take a look at the B Group



Johns with
Decreasing or stable unsecured debt
Decreasing or stable loan balances
Increasing credit scores

Henrys with
Increasing unsecured debt
Increasing loan balances
Decreasing credit scores

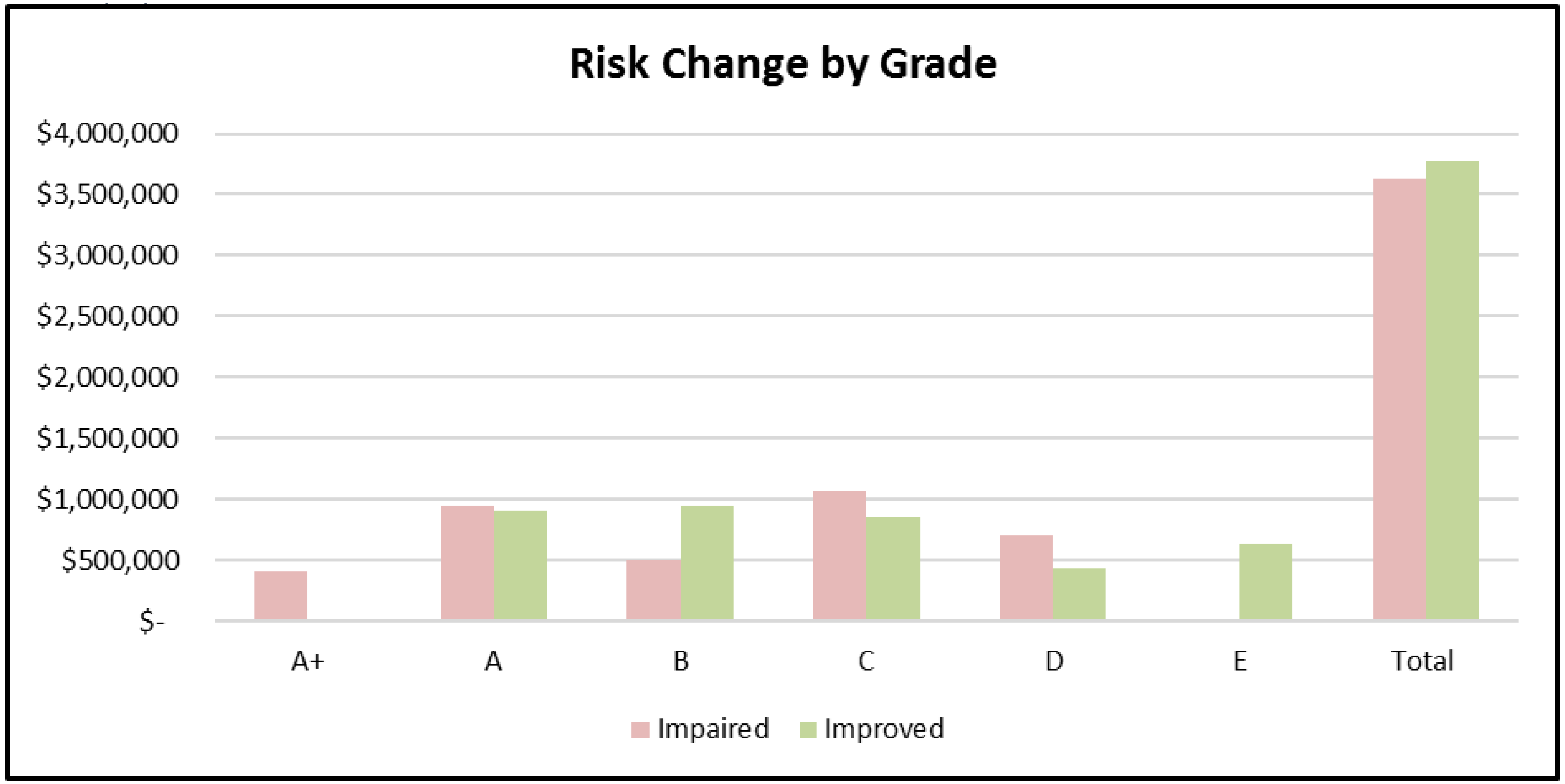
Let’s take a look at the B Group



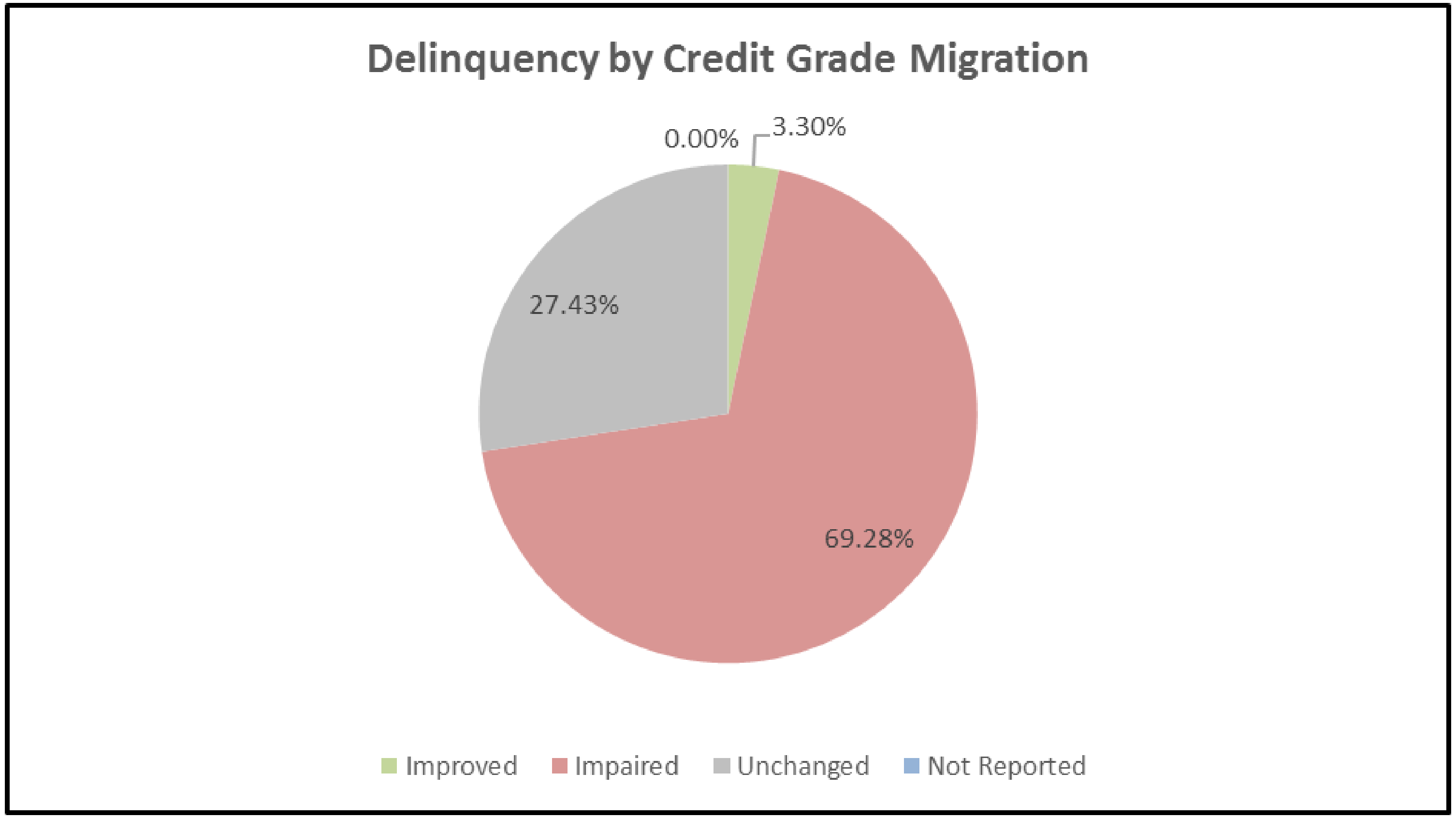
With Johns DQ Loans
Works to control and correct
Moves toward current

With Henry’s DQ Loans
He make little attempt to correct
Quickly moves toward 90+ Days

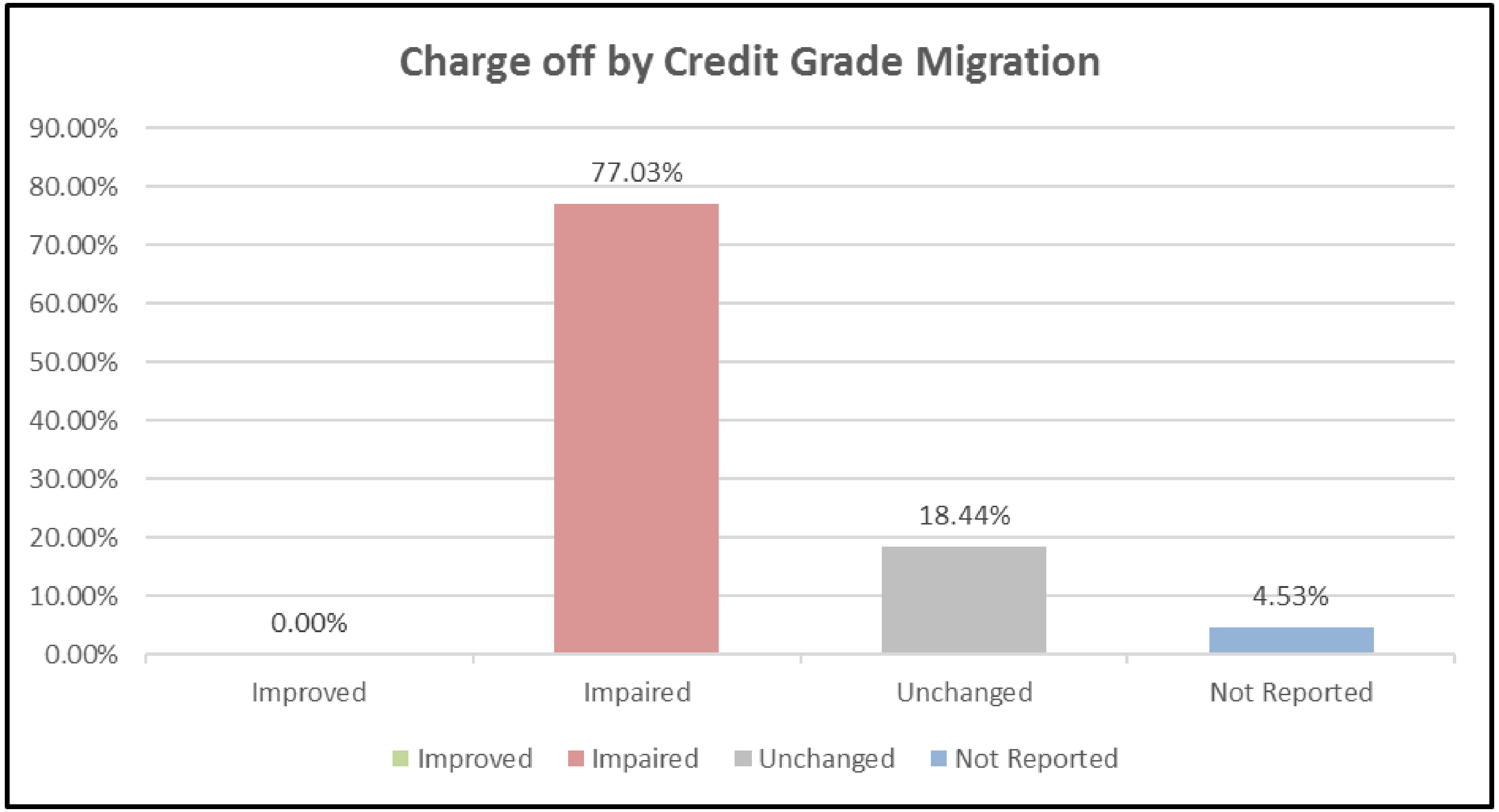
Understand Your Credit Portfolio

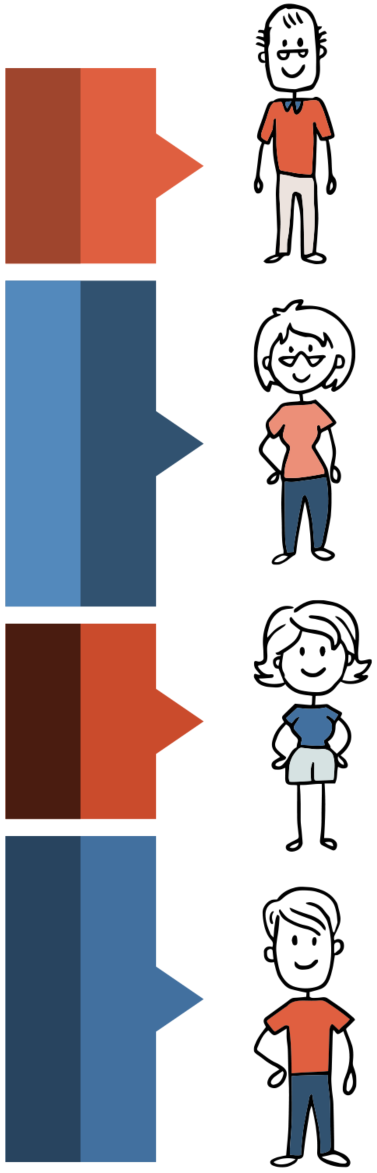


Understand Your Credit Portfolio



Understand Your Credit Portfolio





Understand Your Credit Portfolio

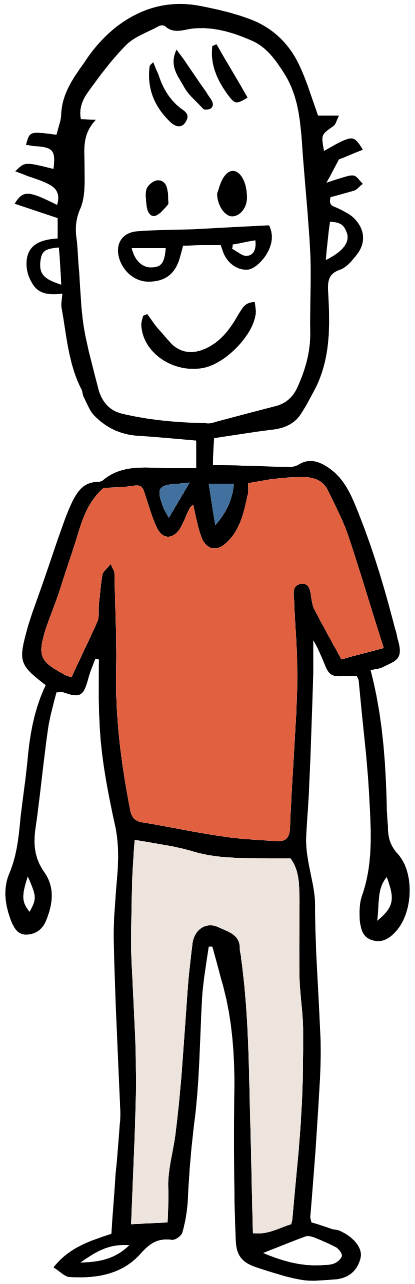
Sample Credit Union
Risk Change By Credit Score
For Period Ending 11/30/2012

Dollar		Original FICO Grades							
Current FICO		A+	A	B	C	D	E	Not Reported	Grand Total
A+	740+	$ 33,886,855	$ 4,911,282	$ 1,696,945	$ 425,522	$ 105,543	$ 63,014	$ 3,184,419	$ 44,273,580
A	690-739	$ 7,886,015	$ 11,359,190	$ 5,212,544	$ 857,840	$ 146,917	$ 147,464	$ 1,828,060	$ 27,438,030
B	660-689	$ 1,857,191	$ 4,601,064	$ 10,527,101	$ 2,055,535	$ 1,333,417	$ 158,714	$ 537,630	$ 21,070,652
C	630-659	$ 910,286	$ 910,852	$ 2,541,847	$ 2,547,064	$ 886,367	$ 848,199	$ 268,658	$ 8,913,273
D	600-629	$ 17,970	$ 123,766	$ 1,503,642	$ 2,480,152	$ 715,706	$ 525,812	$ 526,391	$ 5,893,438
E	<600	$ 91,237	$ 610,842	$ 1,026,951	$ 2,088,359	$ 717,708	$ 643,272	$ 563,043	$ 5,741,413
Not Reported		$ 75,089	$ 29,047	$ 481,778	$ 189,437	$ -	$ 300	$ 472,982	$ 1,248,632
Grand Total		**$ 44,724,643**	**$ 22,546,043**	**$ 22,990,809**	**$ 10,643,908**	**$ 3,905,658**	**$ 2,386,776**	**$ 7,381,182**	**$ 114,579,017**
Loans Not Risk Rated and Adjustments									$ 29,805,954
Total in Portfolio									**$ 144,384,972**

Percent		Original FICO Grades							
Current FICO		A+	A	B	C	D	E	Not Reported	Grand Total
A+	740+	75.77%	21.78%	7.38%	4.00%	2.70%	2.64%	43.14%	38.64%
A	690-739	17.63%	50.38%	22.67%	8.06%	3.76%	6.18%	24.77%	23.95%
B	660-689	4.15%	20.41%	45.79%	19.31%	34.14%	6.65%	7.28%	18.39%
C	630-659	2.04%	4.04%	11.06%	23.93%	22.69%	35.54%	3.64%	7.78%
D	600-629	0.04%	0.55%	6.54%	23.30%	18.32%	22.03%	7.13%	5.14%
E	<600	0.20%	2.71%	4.47%	19.62%	18.38%	26.95%	7.63%	5.01%
Not Reported		0.17%	0.13%	2.10%	1.78%	0.00%	0.01%	6.41%	1.09%
Grand Total		**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Migration matrix for total portfolio

Original FICO vs. Current FICO



Henry

Impaired Loans

Loan Type	Balance	Original FICO	Original Grade	Current FICO	Current Grade	Open Date	Rate	Days DQ	Rate Limit
Visa	$3,658.02	753	A+	635	C	6/15/2004	8.99	0	$ 9K

Bankruptcy Narrative

- Member has a quality cashflow and lifestyle
- They experience a trauma to cashflow
- They switch from cashflow to unsecured debt
- When unsecured loans max out declare bankruptcy

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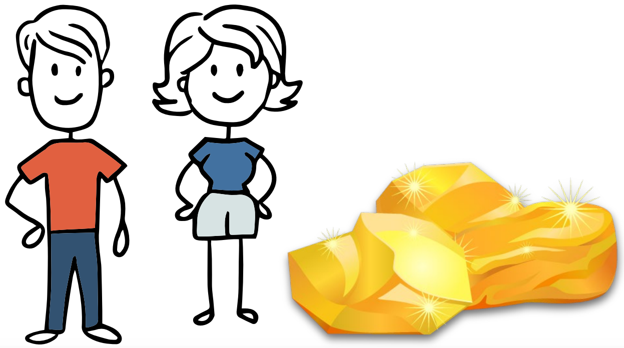
Identifying Emerging Opportunities: There's gold in them thar' hills!

John & Liz

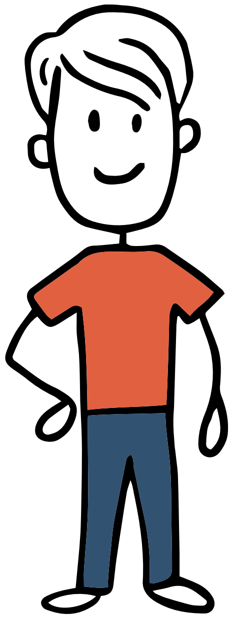
IDENTIFYING IMPROVED LOANS

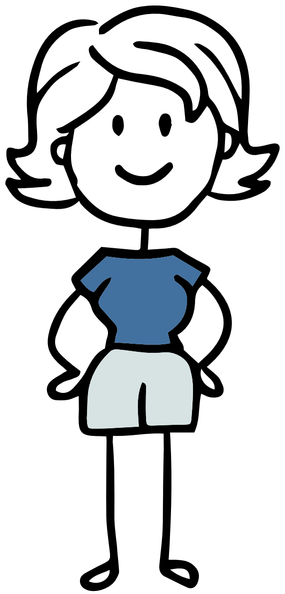


Risk Change By Credit Score								
For Period Ending MM/DD/20YY								
Dollar		Original Credit Grade						
Current Credit Grade		**A+**	**A**	**B**	**C**	**D**	**E**	**Not Reported**
A+	**740+**	$ 44,240,499	$ 2,713,196	$ 931,327	$ 355,450	$ 75,223	$ 16,765	$ 10,308,316
A	**700-739**	$ 6,145,533	$ 16,186,948	$ 1,411,524	$ 662,827	$ 268,604	$ 15,176	$ 2,667,577
B	**655-699**	$ 1,368,899	$ 3,219,075	$ 9,696,516	$ 869,699	$ 200,292	$ 135,009	$ 2,283,109
C	**625-654**	$ 1,142,494	$ 1,114,459	$ 1,813,307	$ 5,461,271	$ 461,091	$ 113,156	$ 779,646
D	**570-624**	$ 498,987	$ 723,410	$ 939,349	$ 1,149,676	$ 2,757,908	$ 212,973	$ 697,122
E	**< 570**	$ 90,753	$ 339,731	$ 286,460	$ 387,434	$ 350,146	$ 488,383	$ 603,848
Not Reported		$ -	$ -	$ -	$ -	$ -	$ -	$ 2,465,214
Total		**$ 53,487,165**	**$ 24,296,820**	**$ 15,078,483**	**$ 8,886,357**	**$ 4,113,264**	**$ 981,462**	**$ 19,804,831**

Check out these improved FICO opportunities…

Additional Services Extended to Member	Impact For Credit Union	Impact For Member
VISA HELOC DEBIT CARD	$37,500 in new loan balances $1,000 interchange income for debit transactions	Reduced interest rate and interest cost on loans Enhanced ability to financial services

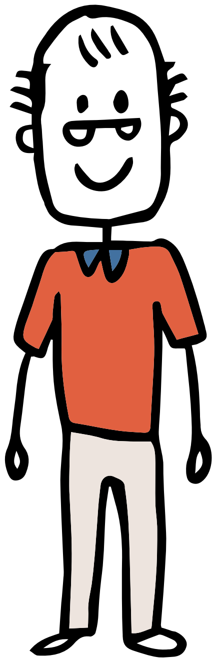


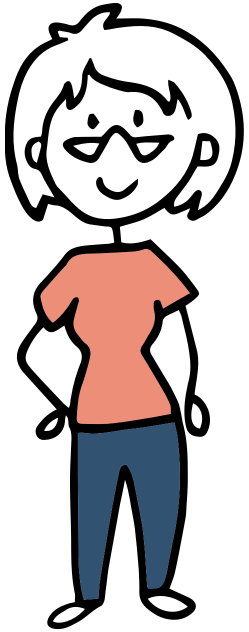


Credit migration is a win-win.

Early action minimizes losses on deteriorating loans and increases gains from improving loans.

Credit Union reduces losses, which reduces your CECL requirement.





TCT Risk Solutions
Take Charge Today

IDENTIFIED RISKS

Interest Rate Risk (on-going management)

- Interest rates are dynamic
- Connect your deposit rates to loan rates to control IRR

IDENTIFIED RISKS

Let’s see how this works in the real world…

TCT Risk Solutions
Take Charge Today

Practical ERM Implementation?

A Case Study

ACTION
Describe what you plan to do

RISKS
Identify all potential risk from the action

MITIGATION
Employ tools to measure and mitigate risks

Contact Us |208.939.8366 | djensen@tctrisk.com

100+ CREDIT UNIONS SERVED IN 22 STATES

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