



# Comprehensive Credit Risk Management at Credit Unions

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Brad Bauges



## What is Risk?

- Possibility of incurring loss
- Vulnerability to a negative outcome

# Defining Risk

# Defining Risk

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## 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.

# Key Elements



Comprehensive and Compliant Policies

Risk Based Loan Pricing

Credit Migration

# Credit Risk Management

Credit risk policies describe the amount of risk the credit union will tolerate in its portfolio as well as how the credit union will identify credit problems early and respond to those problems.

Credit Risk Management policies should also describe the tools the credit union will use to manage credit risk and describe how those tools will aid in carrying out policy.

Credit Risk Management policy should support other loan policies including Loan Concentration Risk, IRR and Liquidity Policies.



# Creating Compliant and Useful Policy

Making sure policies provide guidance to management and reflect the credit union's risk-management philosophy.

Loan policies have become much more detailed and encompassing as a result of regulations and the growing complexity in loan portfolios.



# Underwriting



Credit Unions create criteria for making loan decisions

Identify criteria that affect risk

Criteria must be valid, reliable & fair



Validity - Are you measuring what you intend to measure?

Reliable - Do you get the same results from repeated applications?

Fair - Do all similar people get the same outcomes?



# Risk Based Lending - Guidance

- NCUA Guidance Letter - 174
- “Risk-based lending allows credit union management to assess the risks involved in different **types of loan products and price** these products based upon the **inherent risk** associated with individual borrowers.
- The end result is a **more diversified loan portfolio** mixing lower-yielding, lower risk loans with higher-yielding, but riskier loans.”
- “Prior to beginning a risk-based lending program, it is important that the credit union board **determine the parameters** for the riskier loans based on the credit union's financial condition, business plan, lending and collection history, and asset liability management (ALM) program.”

August 1995



## Purpose of Risk Based Lending

- Diversify loan portfolio
- Extend loans to underserved
- Make loans we would otherwise avoid

# Risk Based Lending - Considerations

- NCUA Guidance Letter - 174

Risk-based lending involves setting a **tiered pricing structure** that assigns loan rates based upon an **individual's credit risk**.

Through a carefully planned risk-based lending program, credit unions may be able to make loans to **somewhat higher-risk borrowers**, as well as better serve their **more credit-worthy members.**"

August 1995

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

August 1995

# Risk Based Pricing

We define risk, in relation to the loan portfolio, as the likelihood that money that has been expended or extended by the credit union will not return.

- Money expended includes cost of funds, loan operations and collections.
- Money extended includes charge-offs of principle balances.

These items are identified as costs and as such can be statistically (stochastically) quantified and measured.

The consistent and complete measurement of these costs is foundational to an accurate and effective loan pricing system.

# Credit Migration



Many names for the same concept

- Credit Migration
- Multi-dimensional portfolio management
- On-going decisioning
- Migration Analysis

# Credit Migration

- An important tool for loan portfolio risk management
- Loan losses are directly tied to it
- Examiners are asking for, and in many cases, requiring it
- It provides a valid and understandable method to identify expected credit losses

## Credit Score



# Credit Migration

## Vital Statistic

60% to 80% of all losses come from loans that were made in higher grades and then experienced a falling FICO score.





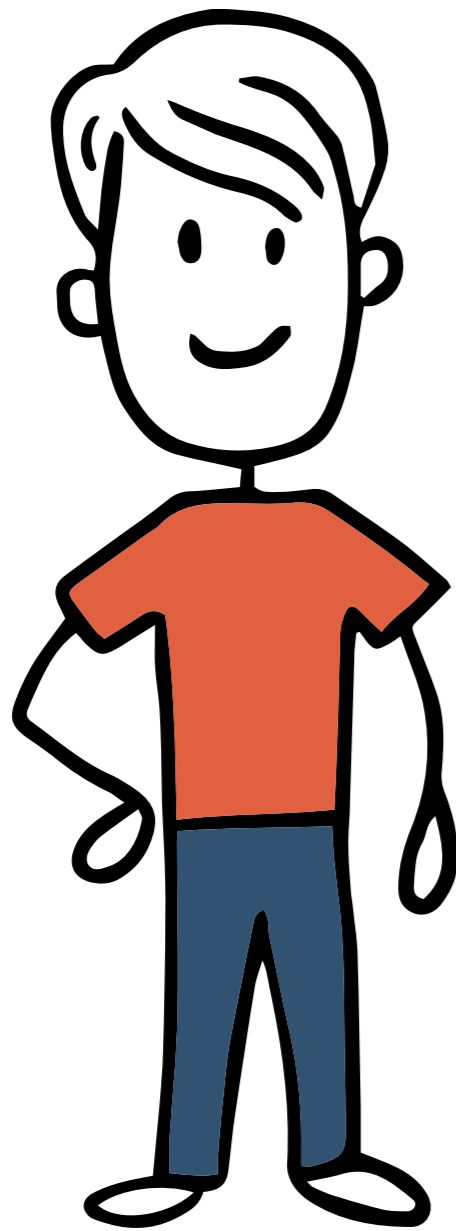
# Understanding Credit Scores



Credit Agencies continually monitor multiple risk indicators to calculate credit scores:

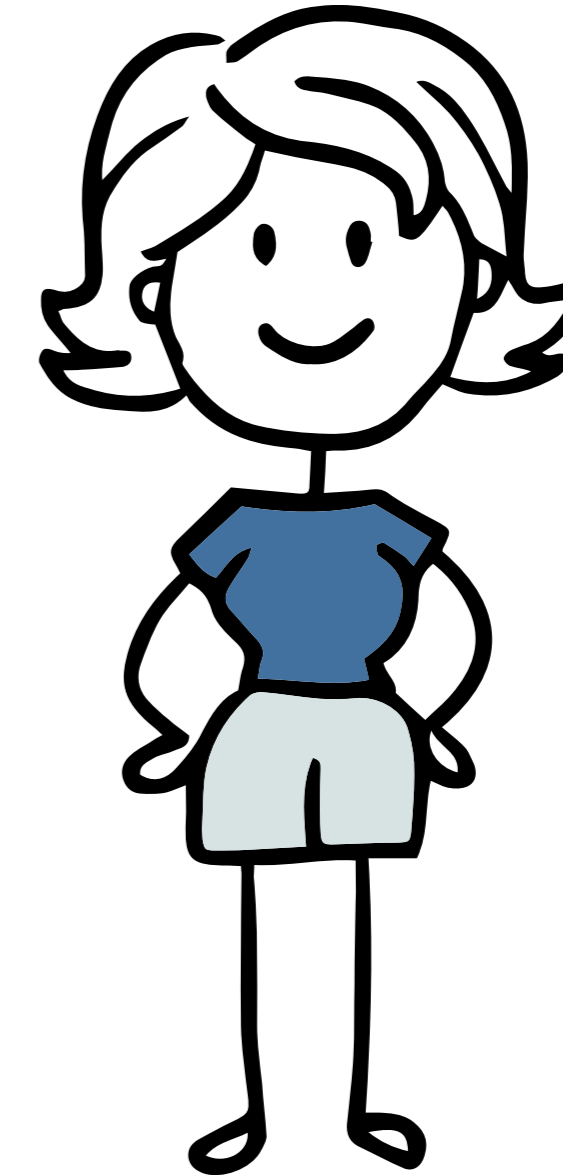
- Payment history
- Amount of credit
- Available credit
- Employment history
- Repossessions
- Bankruptcies
- Foreclosures

Using these variables they employ regression based models to predict loan losses



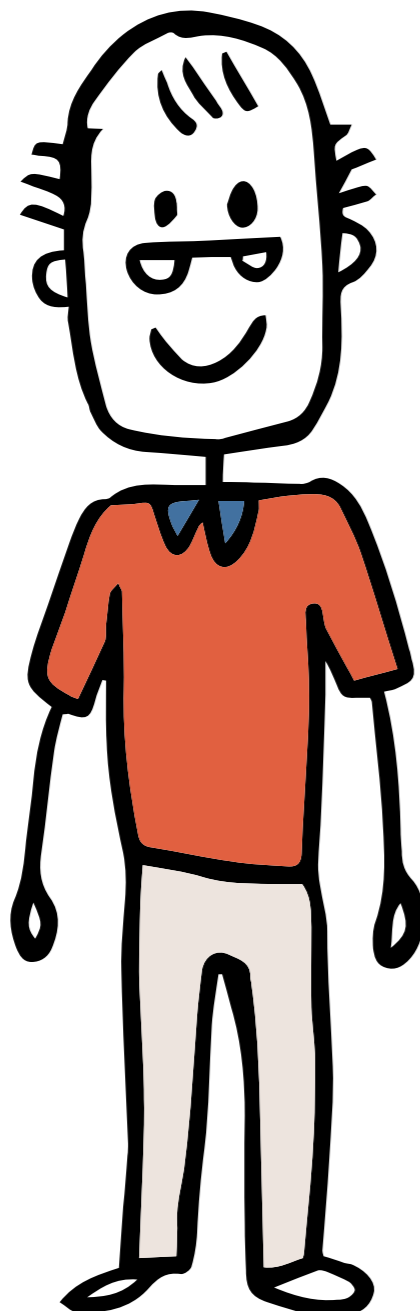
In this presentation we will tell the story of four individuals that represent credit union members.

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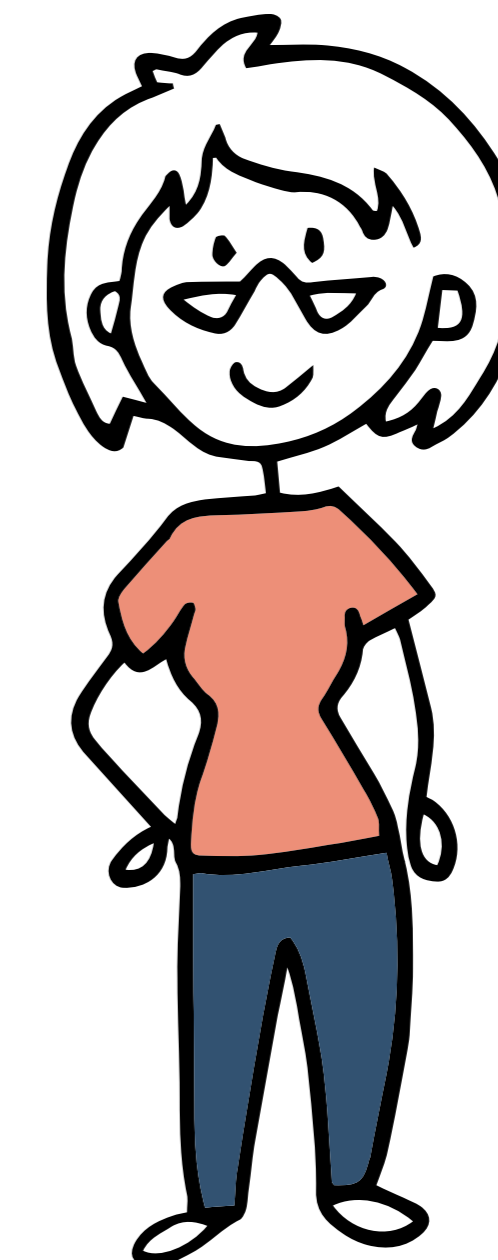


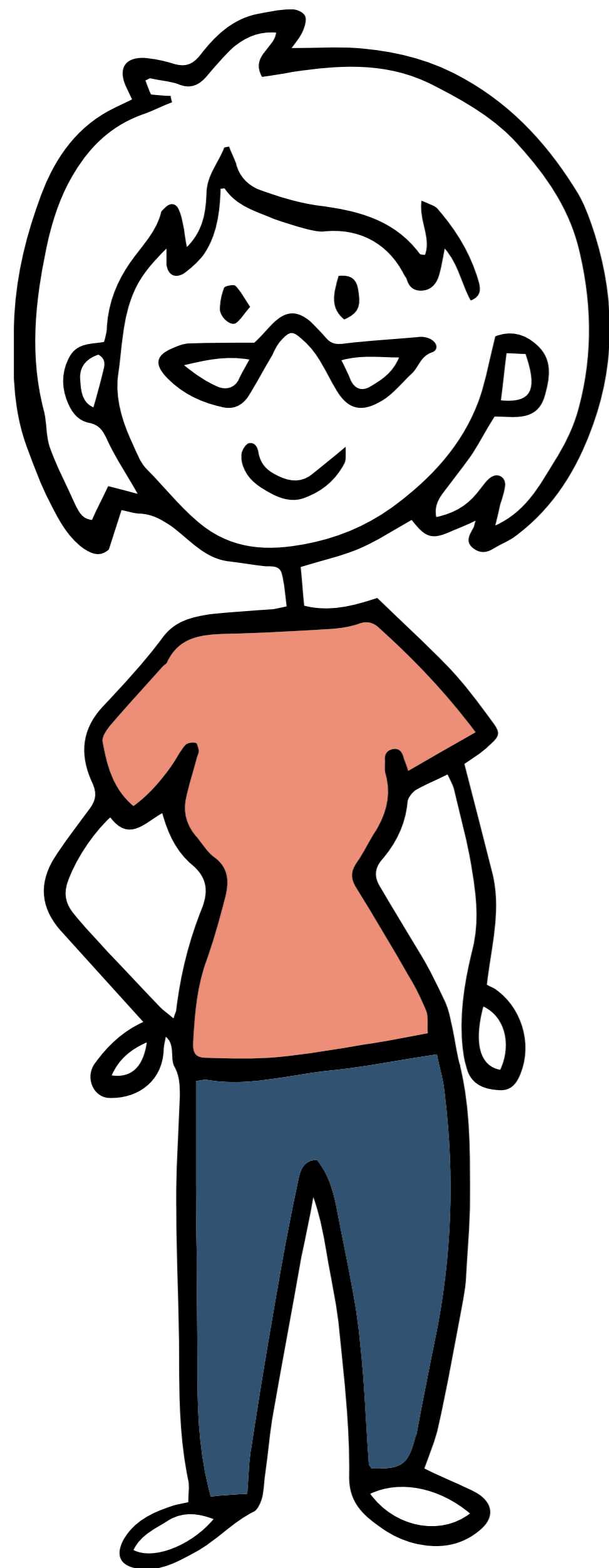
Understanding their stories will help us improve our lending and serve our members better.

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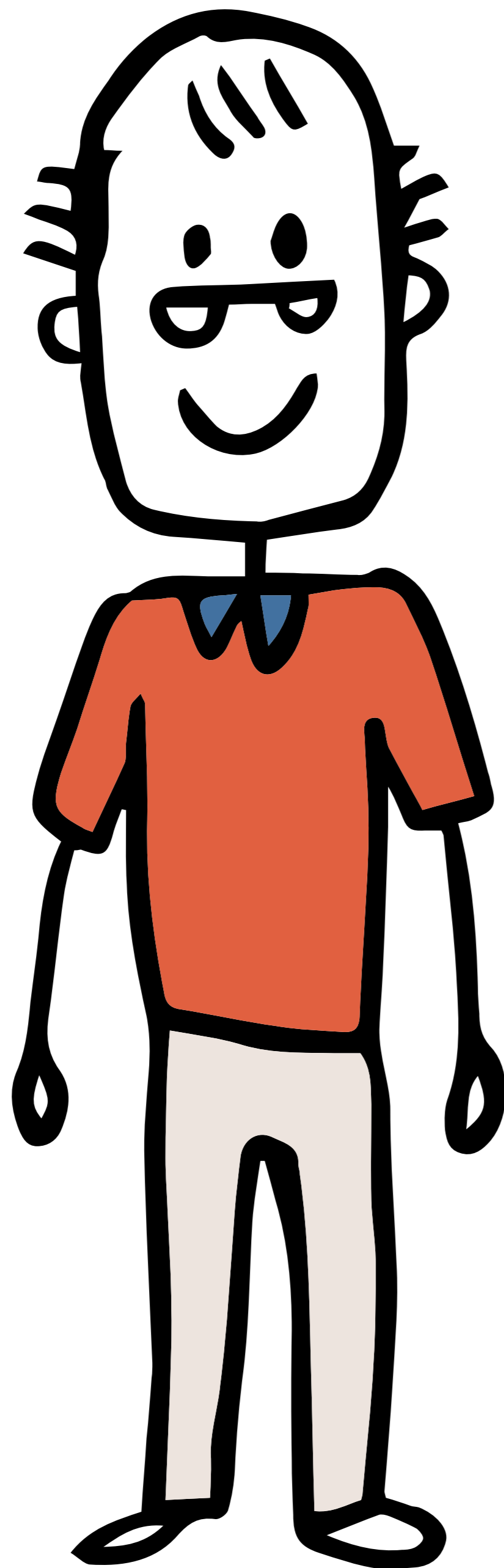
Sit back and enjoy the story of  
**CREDIT MIGRATION**





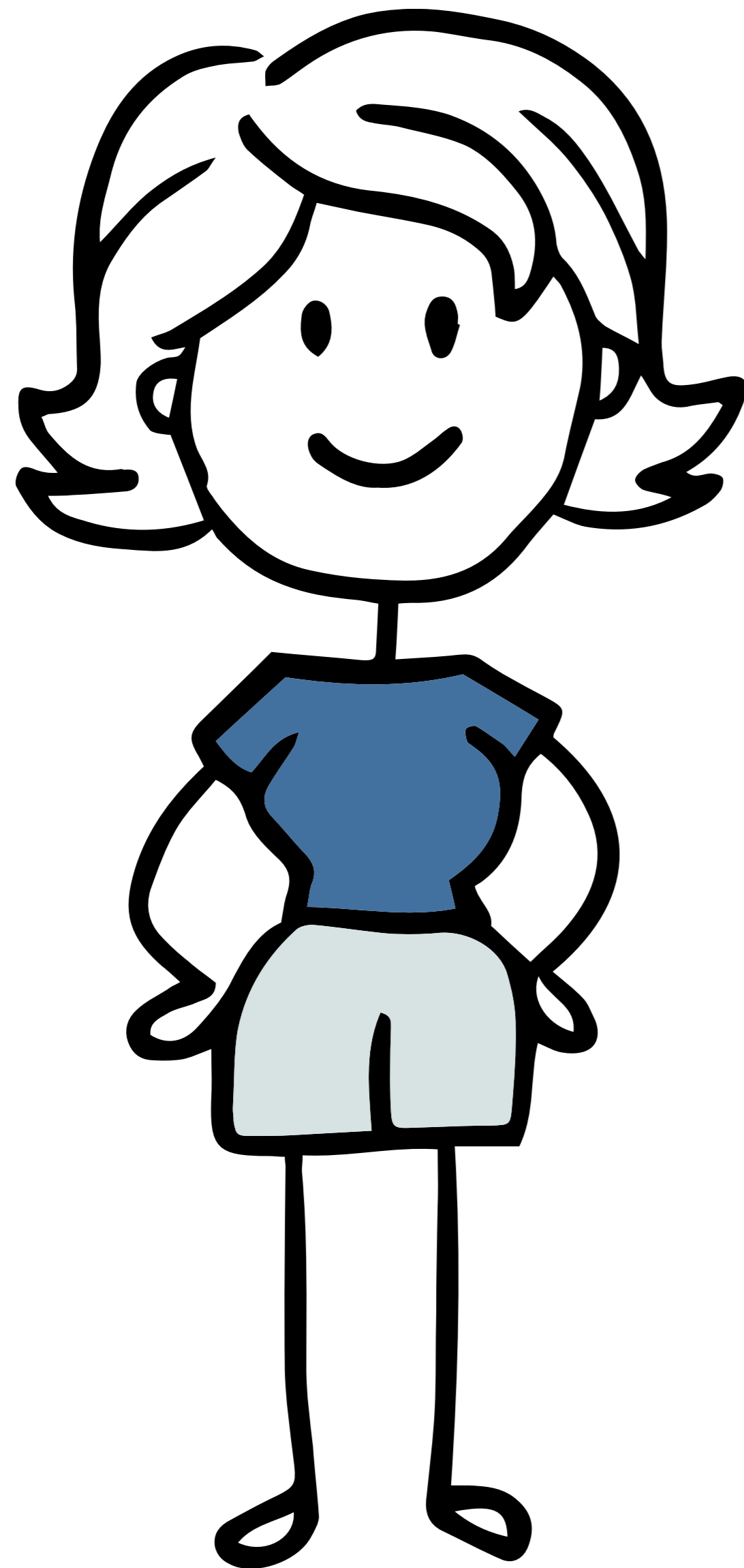
# Ruth

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!



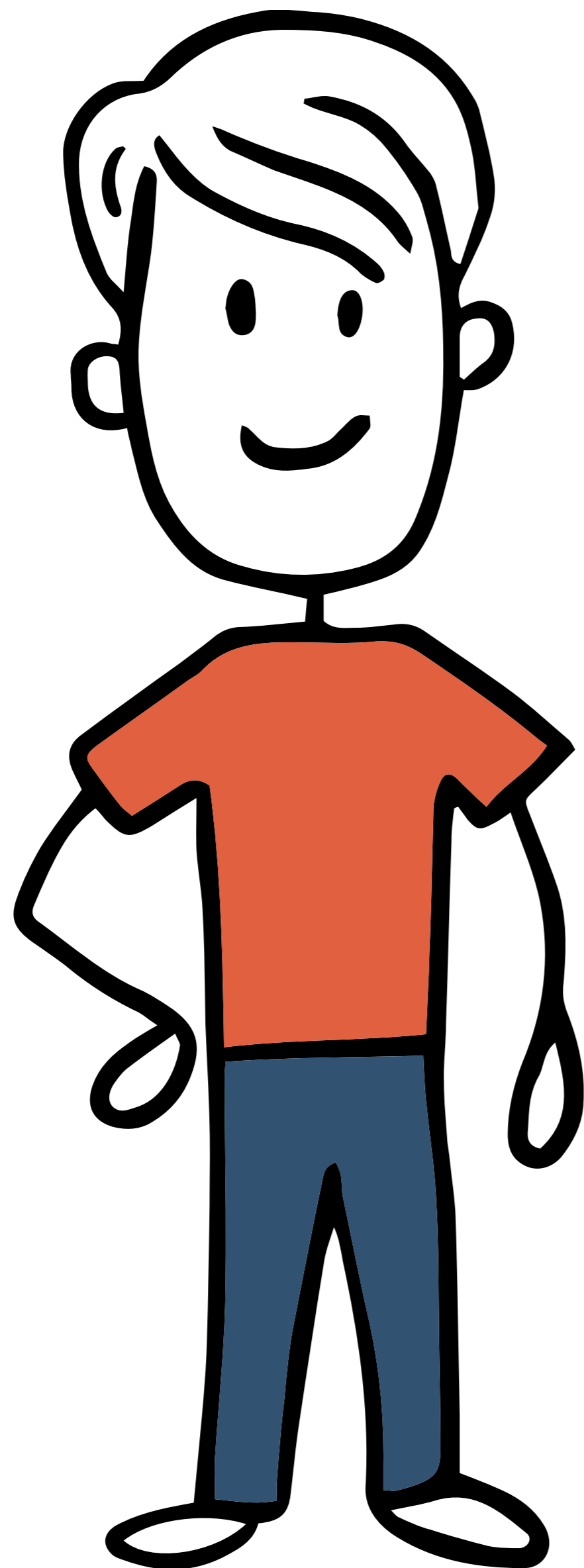
# Henry

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.



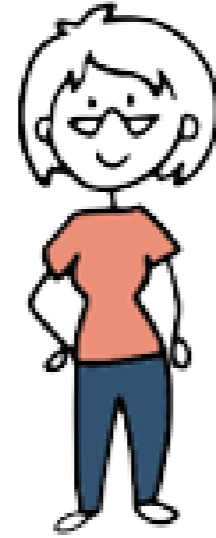
# Liz

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+.



# 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.



RUTH  
B



HENRY  
A+



LIZ  
NO CREDIT



JOHN  
D

This was  
their credit  
scores a year  
ago.



RUTH  
B CREDIT SCORE  
**STABLE**



HENRY  
A+ TO D  
**IMPAIRED**



LIZ  
NO CREDIT TO A+  
**IMPROVED**

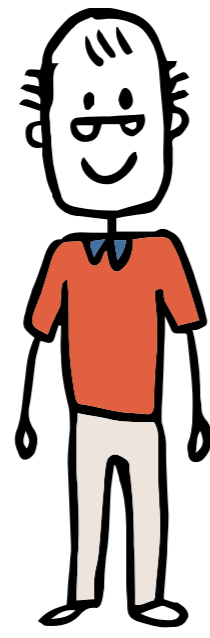


JOHN  
D TO AN A  
**IMPROVED**

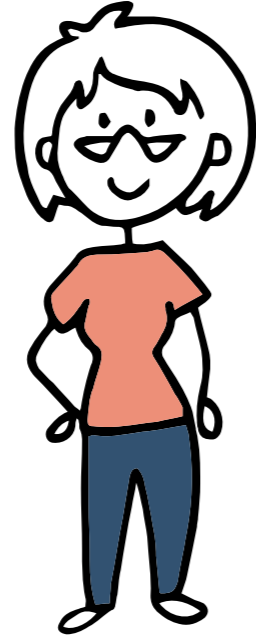
This is  
where they  
are today.



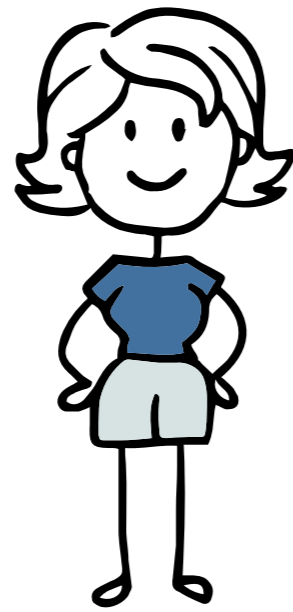
A+



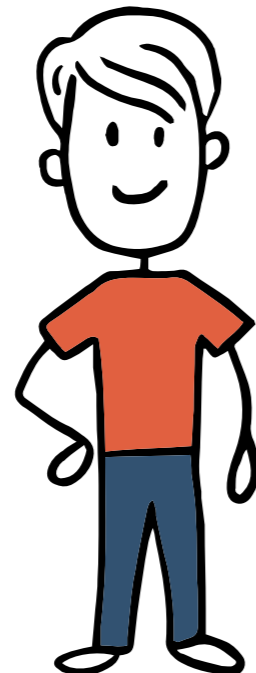
B



N/A

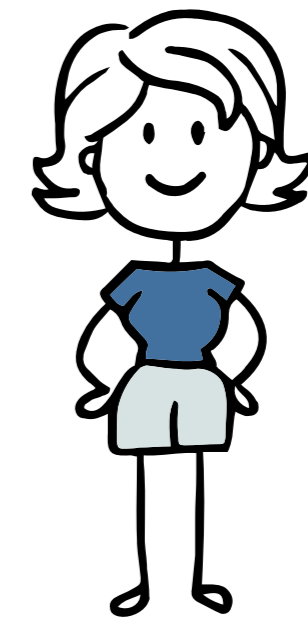


D

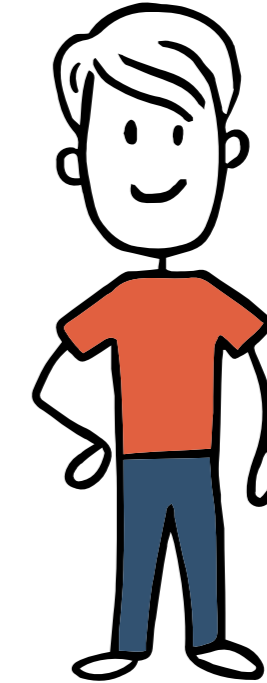


Are you still offering services based on their credit scores a year ago?

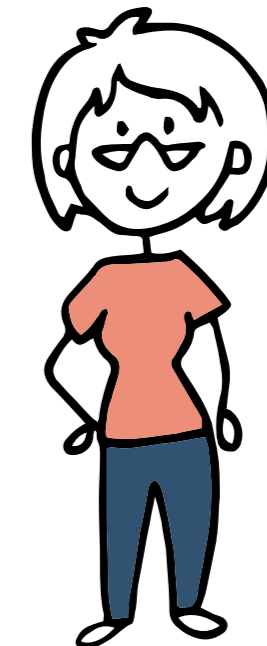
A+



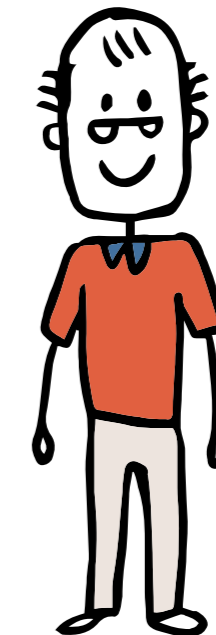
A

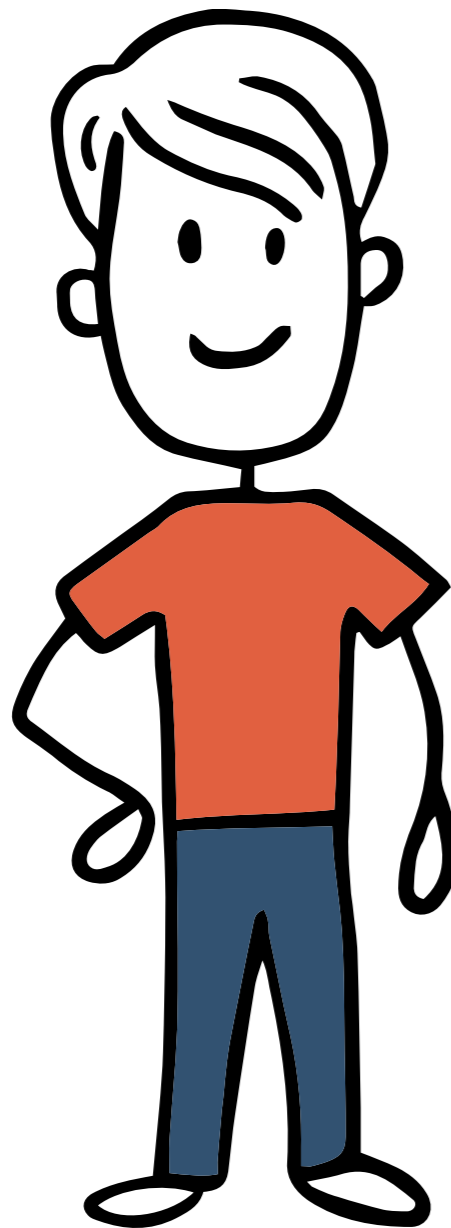


B



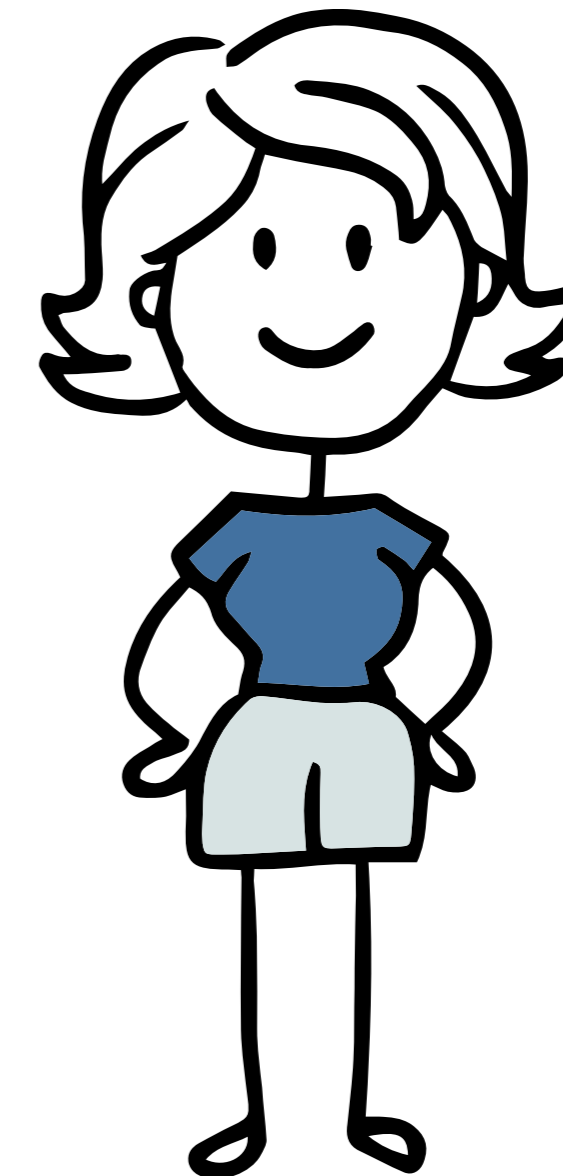
D





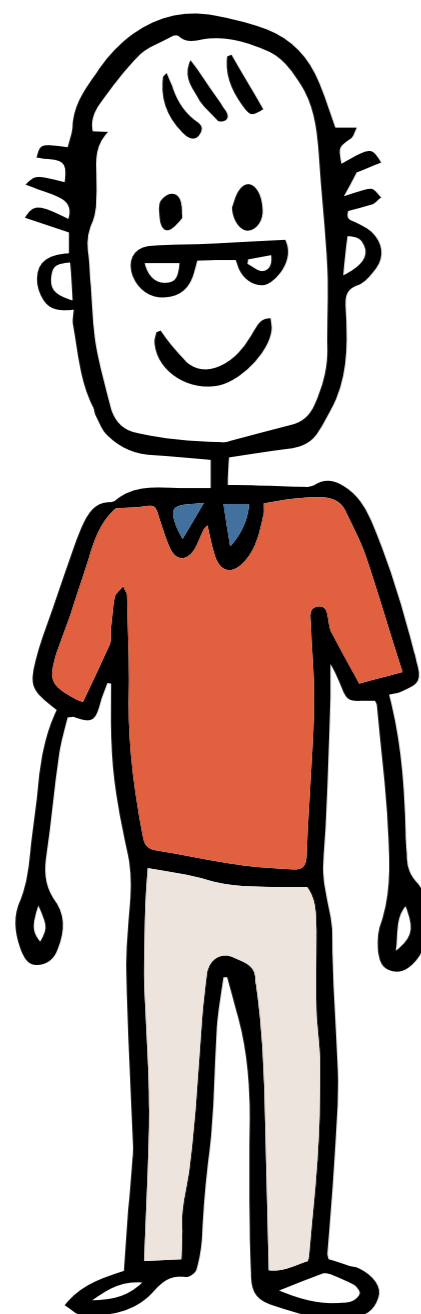
Individuals come to your credit union for loans from all different walks of life.

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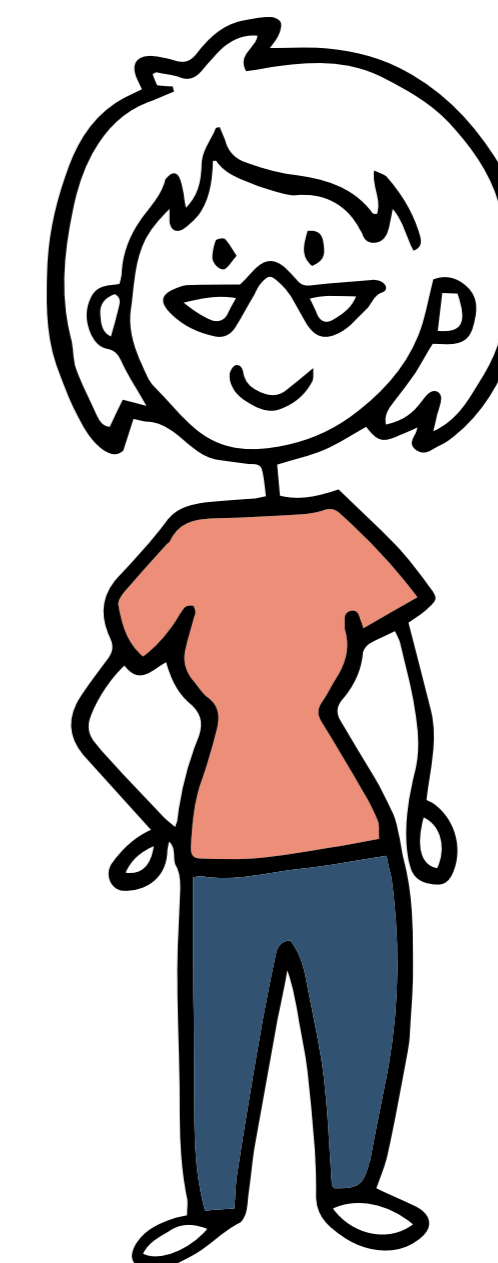


You serve people of varying ages, ethnicities, occupations and financial situations.

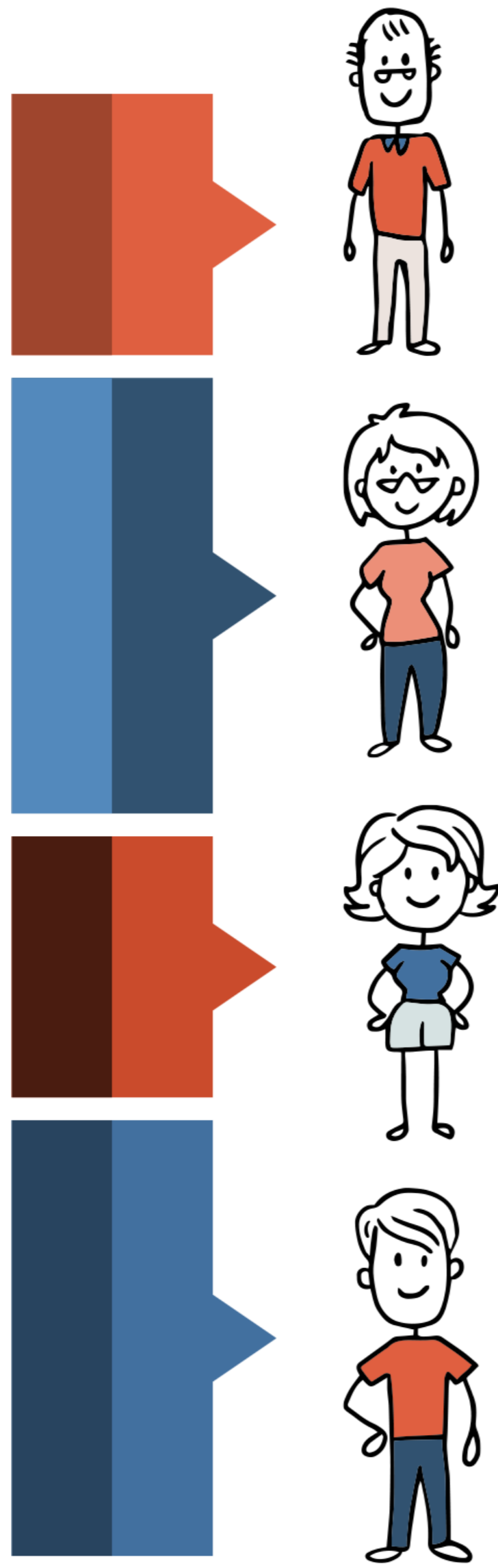
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Our job as lenders is to examine those differences and make good decisions to balance risk and member services.



# Understand Your Credit Portfolio



Sample Credit Union Risk Change By Credit Score For Period Ending 11/30/2012									
Dollar		Original FICO Grades							Grand Total
Current FICO		A+	A	B	C	D	E	Not Reported	
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
<b>Grand Total</b>		<b>\$ 44,724,643</b>	<b>\$ 22,546,043</b>	<b>\$ 22,990,809</b>	<b>\$ 10,643,908</b>	<b>\$ 3,905,658</b>	<b>\$ 2,386,776</b>	<b>\$ 7,381,182</b>	<b>\$ 114,579,017</b>
Loans Not Risk Rated and Adjustments									\$ 29,805,954
<b>Total in Portfolio</b>									<b>\$ 144,384,972</b>

Percent		Original FICO Grades							Grand Total
Current FICO		A+	A	B	C	D	E	Not Reported	
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%
<b>Grand Total</b>		<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Migration matrix for total portfolio

Original FICO vs. Current FICO



### RUTH UNCHANGED

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
<b>Total</b>		<b>\$ 53,487,165</b>	<b>\$ 24,296,820</b>	<b>\$ 15,078,483</b>	<b>\$ 8,886,357</b>	<b>\$ 4,113,264</b>	<b>\$ 981,462</b>	<b>\$ 19,804,831</b>



### JOHN IMPAIRED

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
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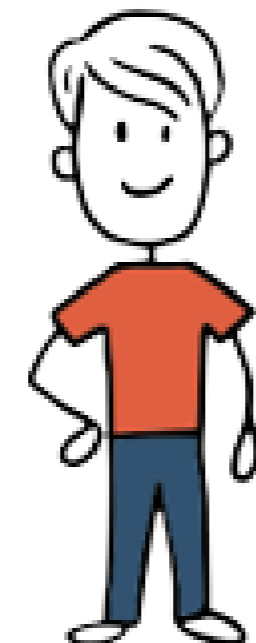
### LIZ IMPROVED

Sample CU

Risk Change By Credit Score

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Current Credit Grade		A+	A	B	C	D	E	Not Reported
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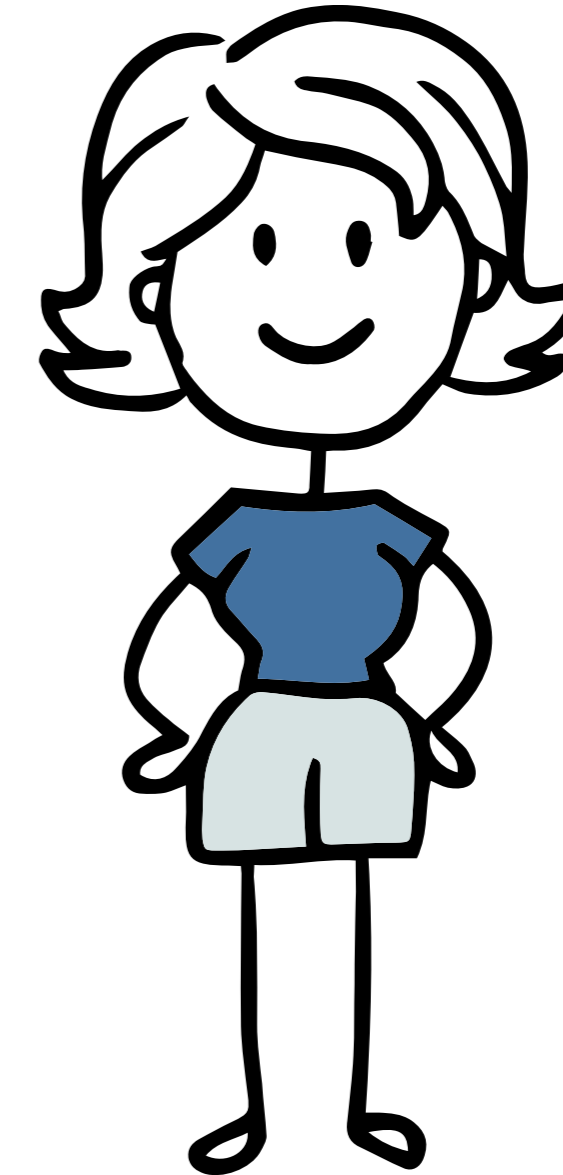
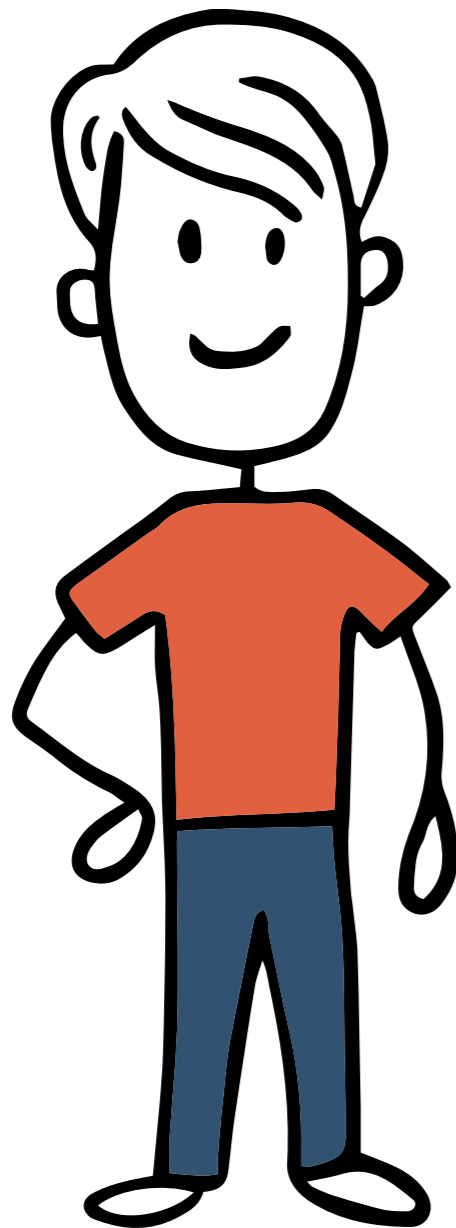


### JOHN IMPROVED

Risk Change By Credit Score

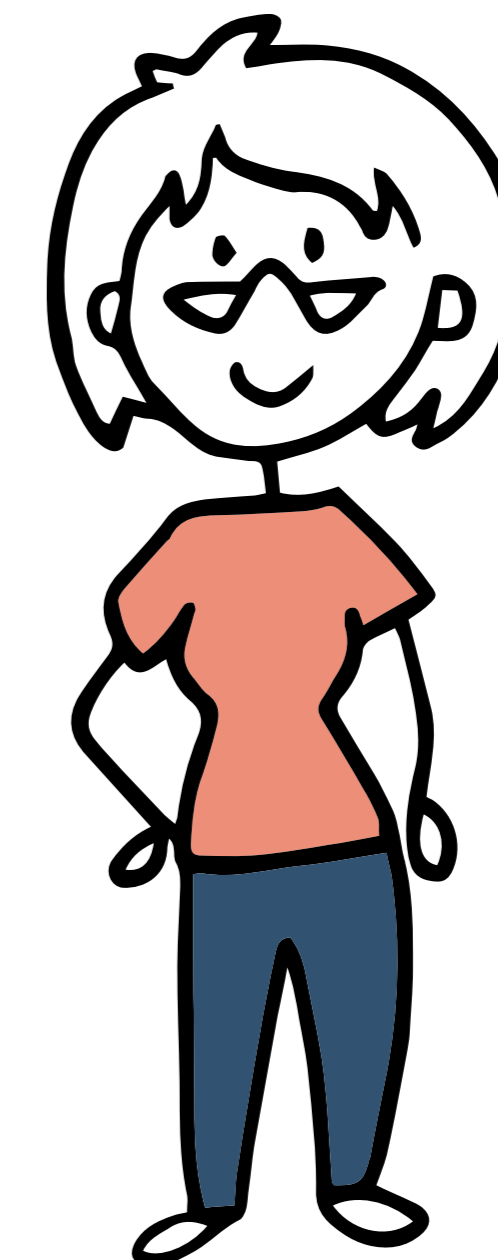
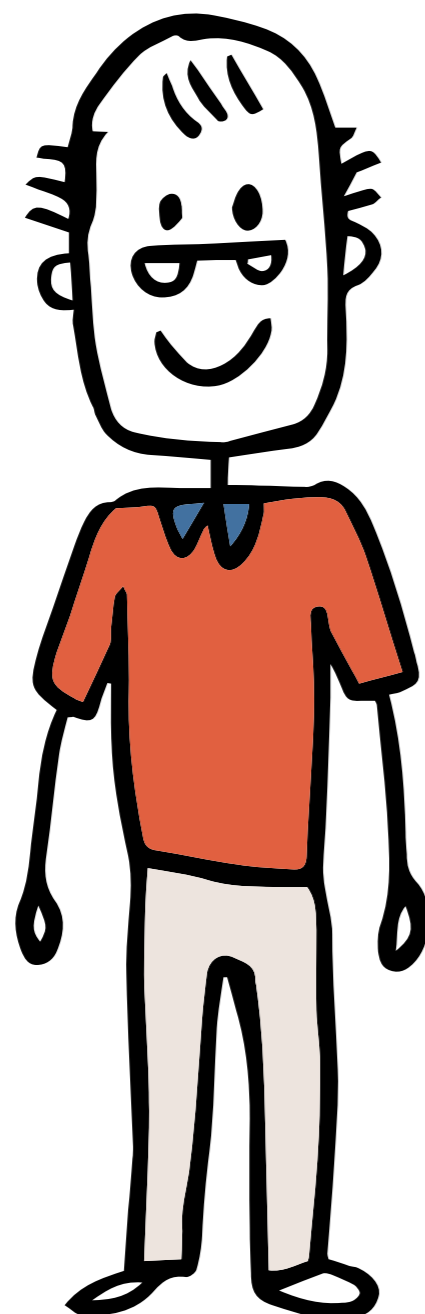
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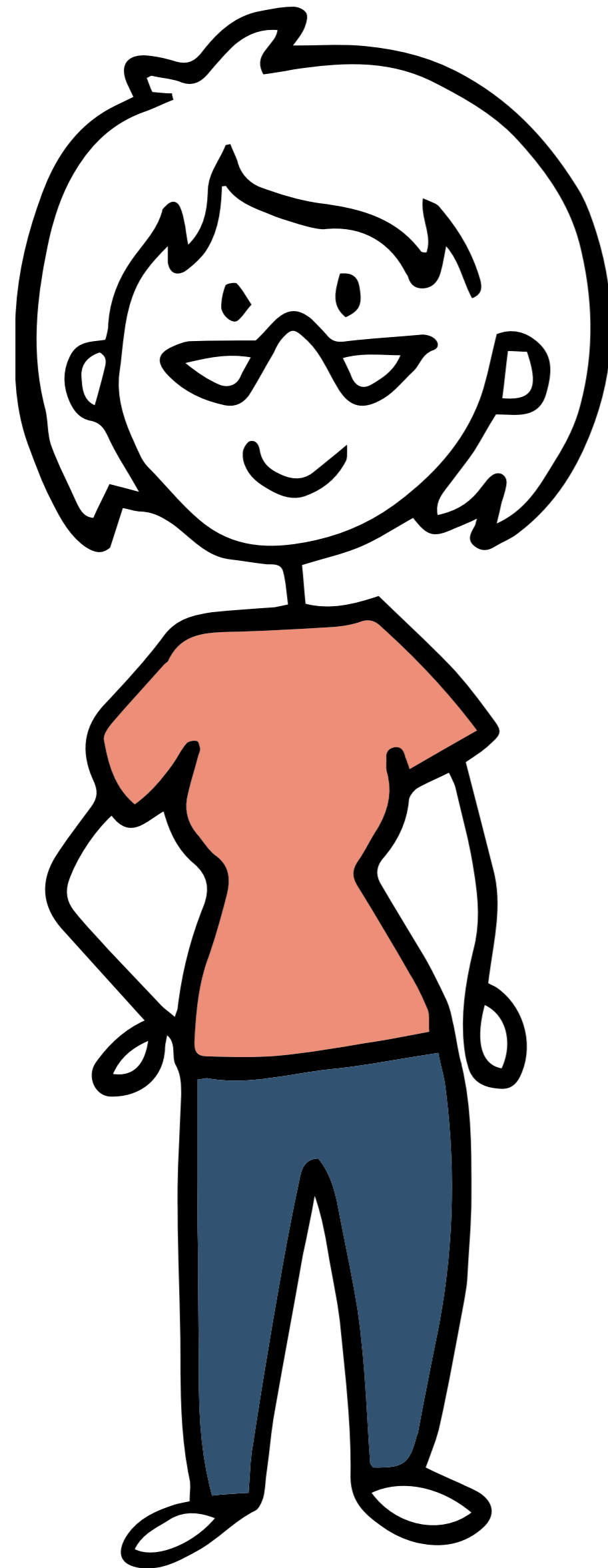
Credit unions create lending policies and underwriting procedures to direct the evaluation of risk for each member and guide the loan approval process.

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One thing we need to understand is that the member's financial condition may change after the loan has been either approved or denied.

# Ruth



## Unchanged Loans

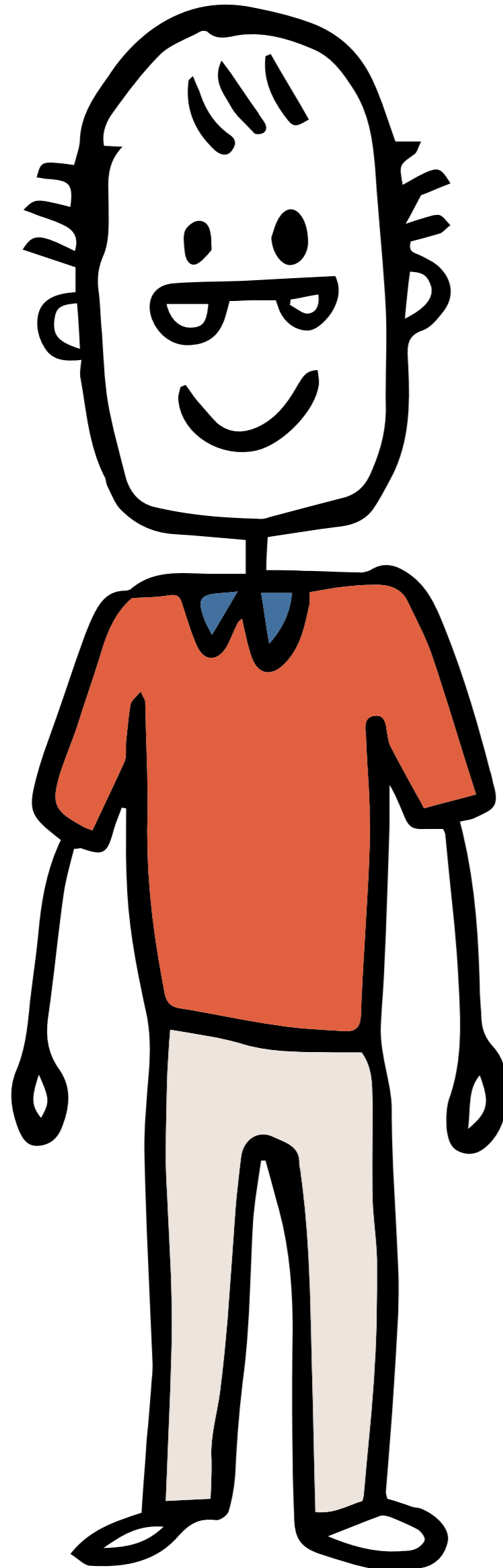
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What should we do?

Nothing 😊

# Henry

## Impaired 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
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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
<b>Total</b>		<b>\$ 53,487,165</b>	<b>\$ 24,296,820</b>	<b>\$ 15,078,483</b>	<b>\$ 8,886,357</b>	<b>\$ 4,113,264</b>	<b>\$ 981,462</b>	<b>\$ 19,804,831</b>



# Henry

## Impaired Loans

Loan Type	Balance	Original FICO	Original Grade	Current FICO	Current Grade	Open Date	Rate	Limit
Unsecured	\$ 500	759	A+	617	D	2/8/2013	14.99%	\$ 5K

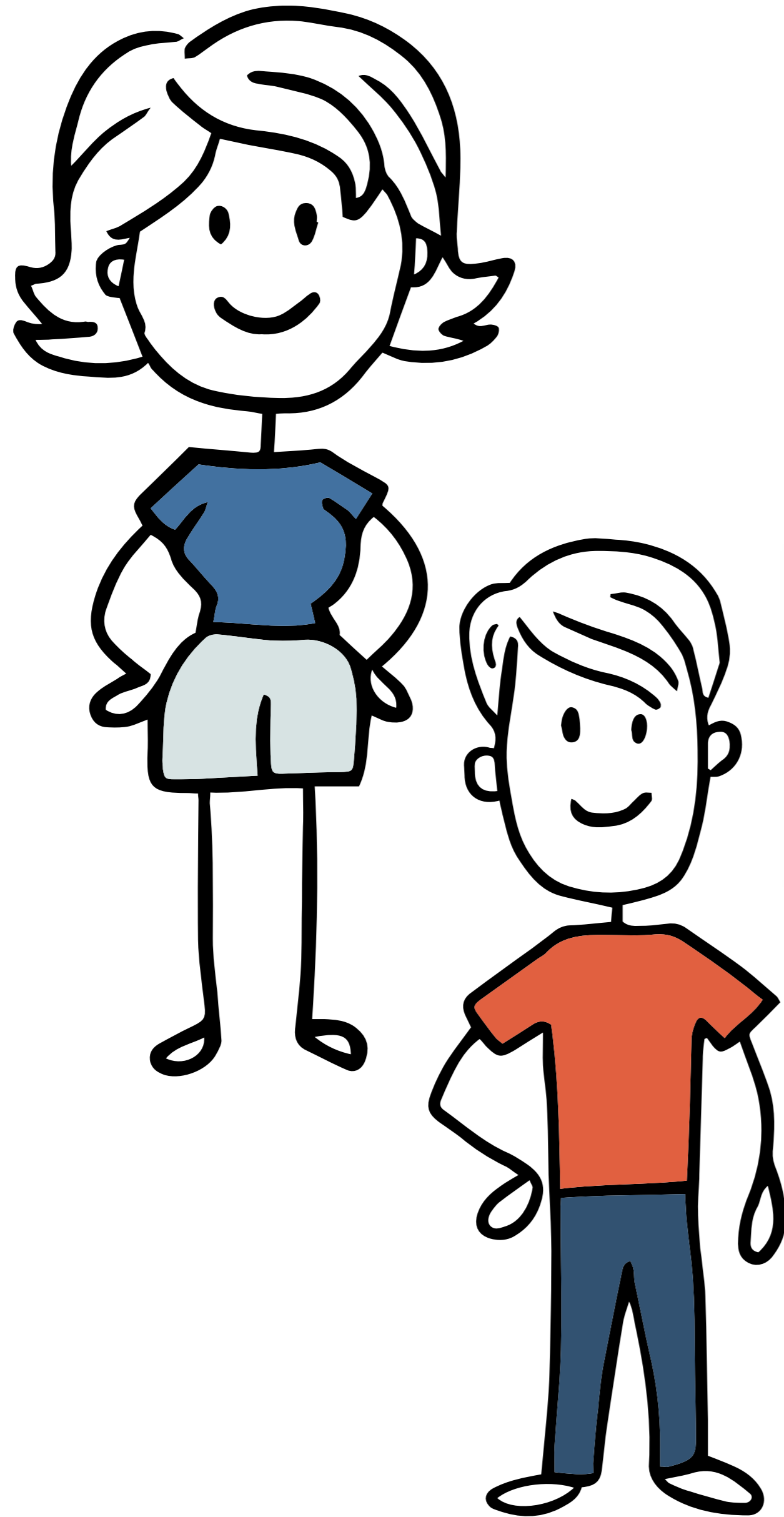
Act early and minimize risks

- Quality cashflow and lifestyle
- Trauma to cashflow
- Switch from cashflow to unsecured debt
- Declare bankruptcy





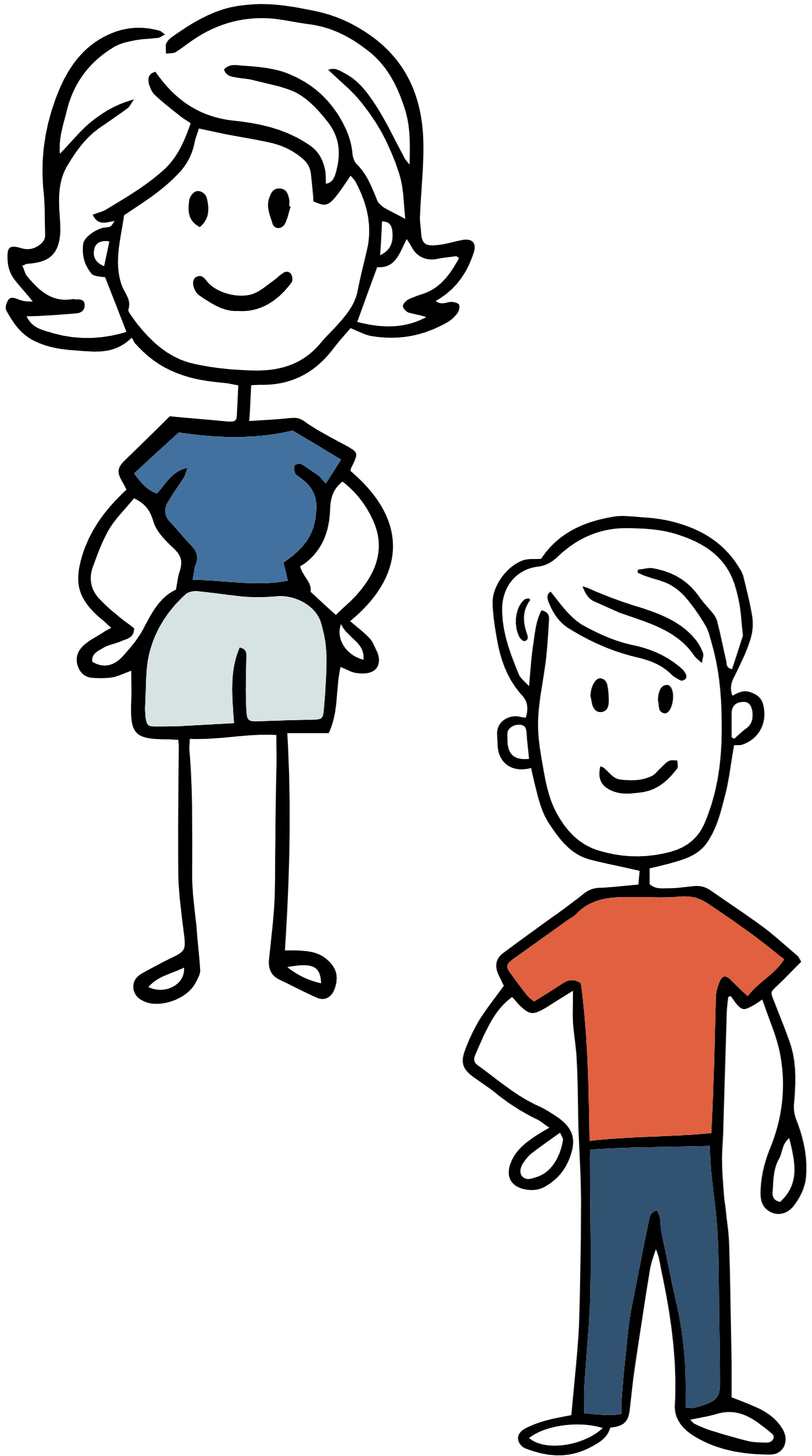
# John & Liz



## 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
<b>Total</b>		<b>\$ 53,487,165</b>	<b>\$ 24,296,820</b>	<b>\$ 15,078,483</b>	<b>\$ 8,886,357</b>	<b>\$ 4,113,264</b>	<b>\$ 981,462</b>	<b>\$ 19,804,831</b>

# John & Liz



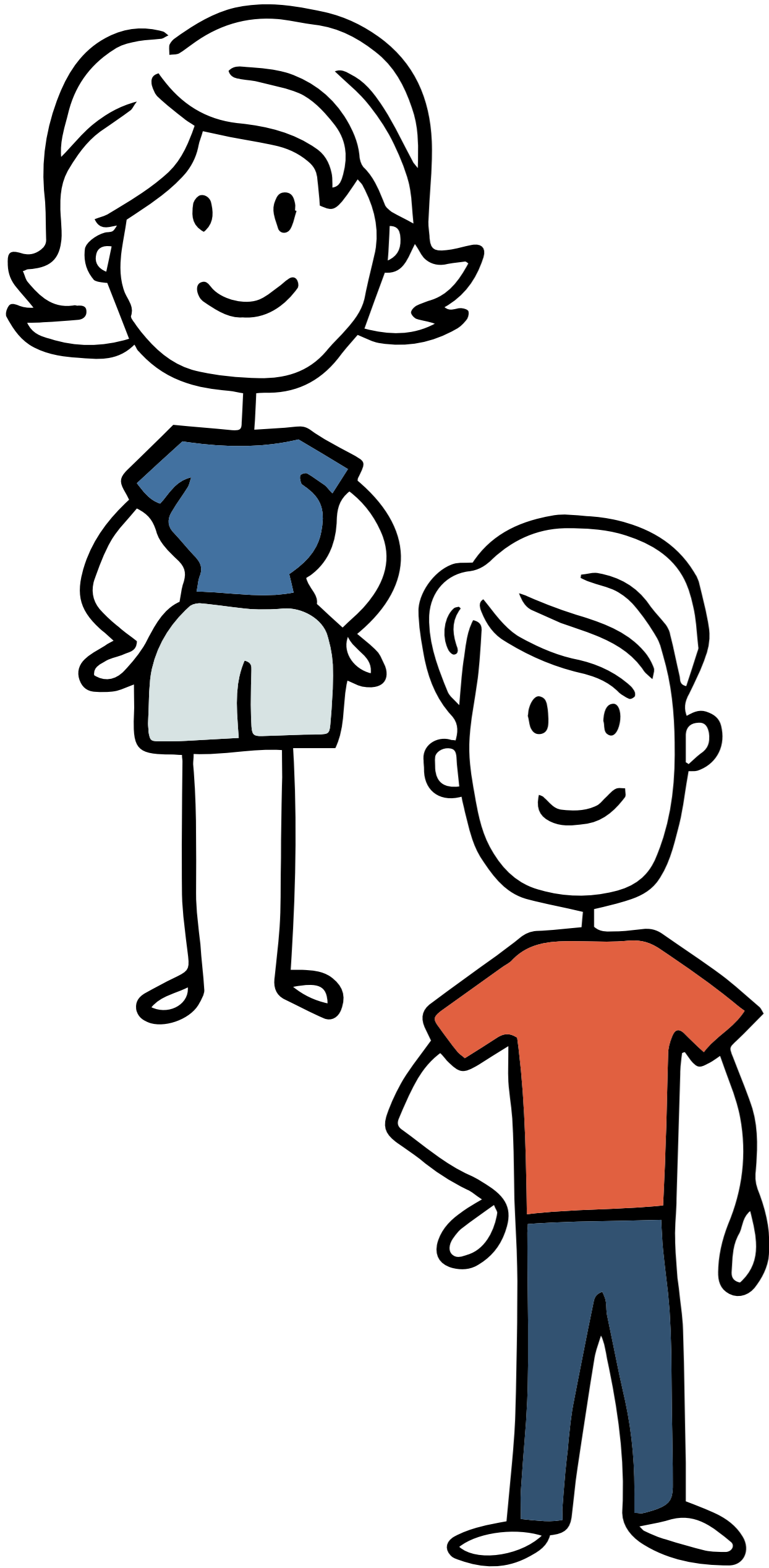
## Identifying Improved Loans

Loan Type	Balance	Original FICO	Original Grade	Current FICO	Current Grade	Open Date	Rate
New Auto	\$18,432	645	C	787	A+	4/18/12	6.50%

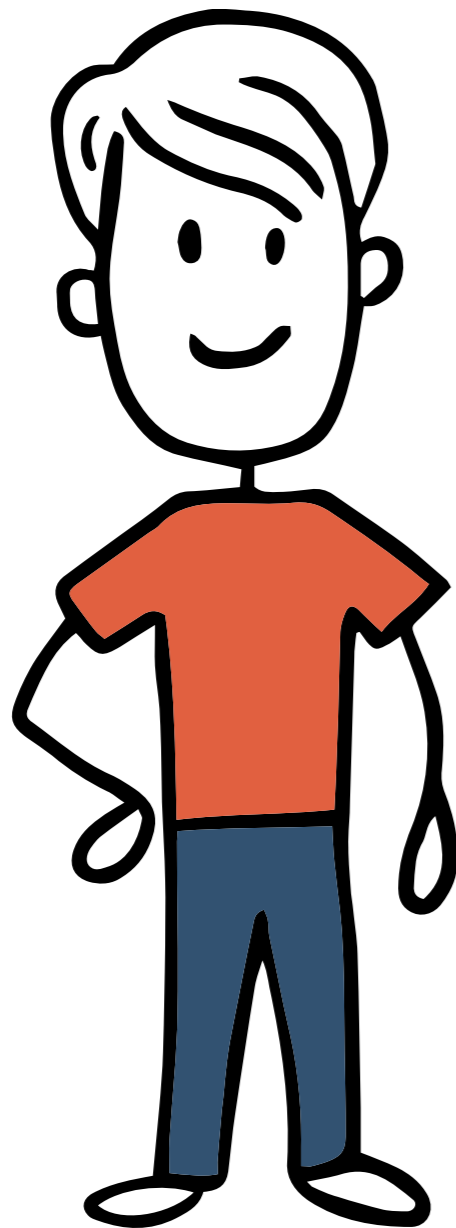
### What should we do?

Liz and John are the best target group for marketing your services and for referrals to their friends.

# Improved FICO Opportunities

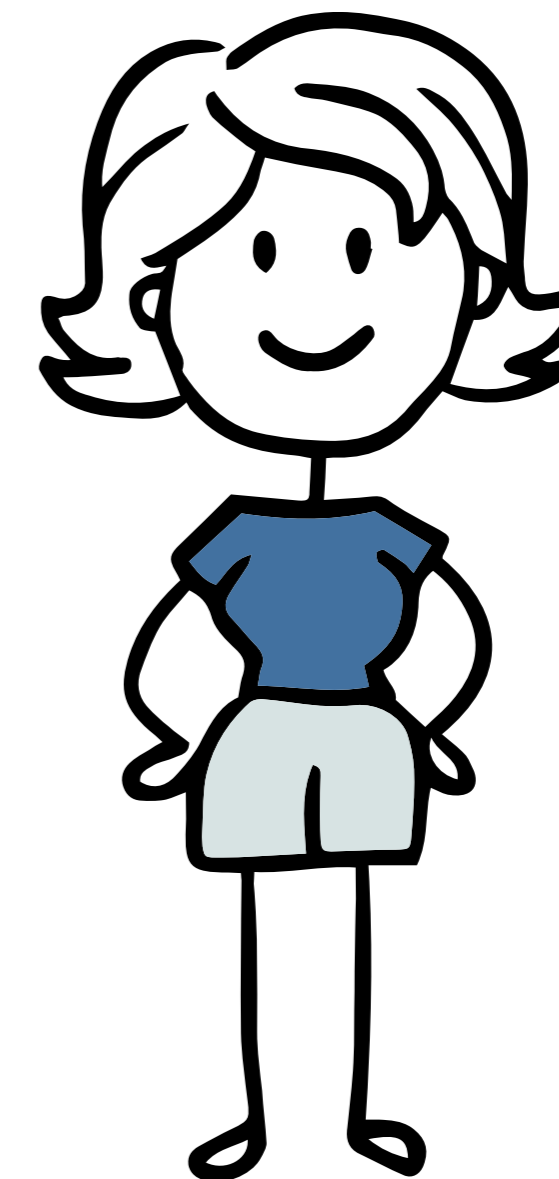


Additional Services Extended to Member	Impact for Credit Union	Impact for Member
VISA	\$37,500 in new loan balances	Reduced interest rate and interest cost on loans
HELOC		
DEBIT CARD	\$1,000 interchange income for debit transactions	
		Enhanced ability to access effective loans

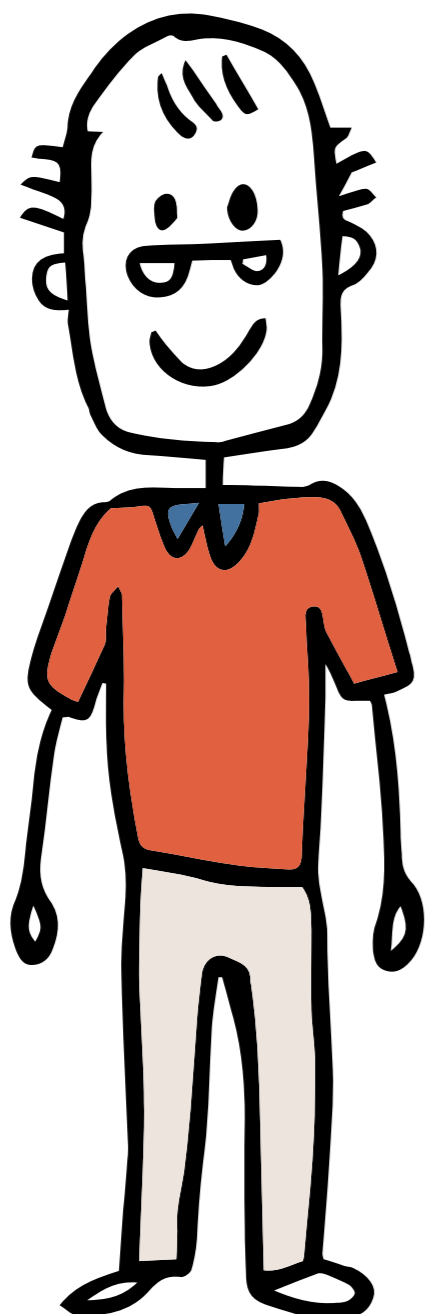


Credit migration is a win-win.

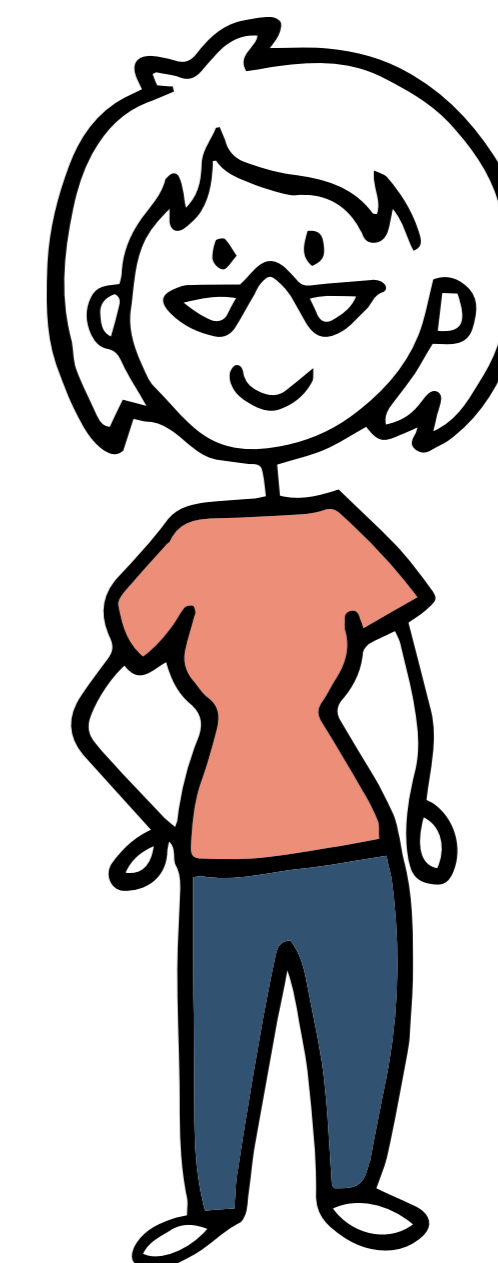
Members with financial problems are identified earlier so they can be helped.



Members with improved financials receive improve access of credit.



Credit Union reduces losses, increases income and helps more members.



# Bankruptcy Narrative

Act early and minimize exposure



- Quality cash flow and lifestyle
- Trauma to cash flow
- Switch from cash flow to unsecured debt
- Declare Bankruptcy

# Identifying Emerging Opportunities



# Identifying Emerging Opportunities

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

Improving Credit scores are also important

Central mission of helping members

Targeted marketing

Increased loyalty

Upsell opportunities

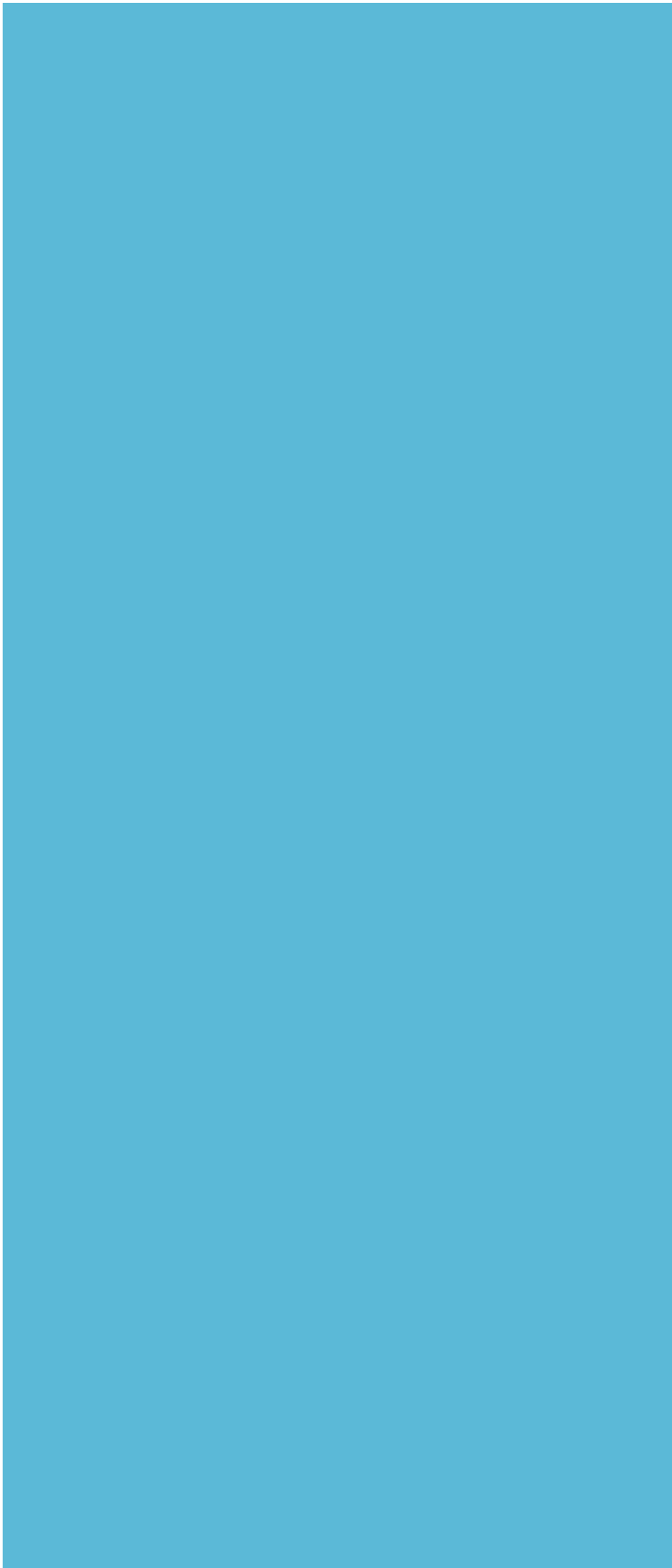
# Identifying Improved Loans

Credit Grade Improved 3/31/2013																			
Memb er #	Loan Suffix	Loan Type	Loan Pool	Current Balance	Original Credit Score	Original Credit Grade	Current Credit Score	Current Credit Grade	Open Date	Interest Rate	Days DQ	Original Loan Amount	Balance at Other Lender (2nd Mortgage and	Total Loans	Total Available Credit (Lines of Credit, Credit Cards and	Collateral Value (for unsecured loans, leave blank)	LTV	Years loan has been on books	\$ of Pricipal Pai
3	1746	10	2 Real Estate	\$ 31,769.96	692	B	789	A+	10/1/2005	4.25%	0	\$ 47,000.00	\$ 156,281.00	\$ 188,050.96	\$ 47,000.00	\$ 400,000.00	47%	7.50	\$ 15,230
4	1005	10	2 Real Estate	\$ 25,517.11	557	E	677	B	4/19/2006	4.25%	0	\$ 50,000.00	\$ 300,000.00	\$ 325,517.11	\$ 50,000.00	\$ 450,000.00	72%	6.95	\$ 24,482
5	1006	10	2 Real Estate	\$ 35,168.30	533	E	663	C	3/13/2009	4.78%	0	\$ 44,000.00	\$ 230,000.00	\$ 265,168.30	\$ 44,000.00	\$ 400,000.00	66%	4.05	\$ 8,831
6	1007	10	9 Real Estate	\$ 15,989.59	563	E	632	D	5/31/2007	8.05%	0	\$ 30,500.00		\$ 15,989.59	\$ -	\$ 150,000.00	11%	5.84	\$ 14,510
7	1019	10	6 Unsecured	\$ 1,865.61	563	E	675	B	2/16/2011	7.50%	0	\$ 5,000.00		\$ 1,865.61	\$ -	\$ 5,000.00	37%	2.12	\$ 3,134
8	1029	10	6 Unsecured	\$ 8,159.77	590	E	669	C	5/23/2012	9.00%	0	\$ 10,000.00		\$ 8,159.77	\$ -	\$ 10,000.00	82%	0.85	\$ 1,840
9	1030	10	6 Unsecured	\$ 14,862.62	571	E	650	C	5/3/2012	8.73%	0	\$ 18,021.94		\$ 14,862.62	\$ -	\$ 18,021.94	82%	0.91	\$ 3,159
10	1034	10	6 Unsecured	\$ 4,286.21	554	E	650	C	4/8/2011	7.50%	0	\$ 10,000.00		\$ 4,286.21	\$ -	\$ 10,000.00	43%	1.98	\$ 5,713
11	1950	10	1 Vehicle	\$ 16,772.08	697	B	707	A	10/13/2012	2.00%	0	\$ 17,684.20		\$ 16,772.08	\$ -	\$ 15,000.00	112%	0.46	\$ 912
12	2322	10	1 Vehicle	\$ 36,732.12	733	A	749	A+	2/18/2013	3.49%	0	\$ 37,178.40		\$ 36,732.12	\$ -	\$ 35,000.00	105%	0.11	\$ 446
13	2326	10	1 Vehicle	\$ 22,699.08	720	A	801	A+	12/10/2012	1.90%	0	\$ 24,240.37		\$ 22,699.08	\$ -	\$ 25,000.00	91%	0.30	\$ 1,541
14	2329	10	1 Vehicle	\$ 28,045.15	735	A	744	A+	11/8/2012	2.00%	0	\$ 29,584.82		\$ 28,045.15	\$ -	\$ 25,000.00	112%	0.39	\$ 1,539
15	2330	10	1 Vehicle	\$ 15,868.89	706	A	772	A+	11/2/2012	1.90%	0	\$ 18,150.00		\$ 15,868.89	\$ -	\$ 12,000.00	132%	0.41	\$ 2,281
16	2335	10	1 Vehicle	\$ 34,567.82	738	A	757	A+	10/9/2012	1.99%	0	\$ 36,907.00		\$ 34,567.82	\$ -	\$ 23,500.00	147%	0.47	\$ 2,339
17	1000	1000	5 Vehicle	\$ 4,475.05	597	E	750	A+	10/12/2010	11.15%	0	\$ 6,261.17		\$ 4,475.05	\$ -	\$ 2,175.00	206%	2.47	\$ 1,786
18	1001	1001	5 Vehicle	\$ 3,902.40	554	E	630	D	7/23/2010	8.29%	0	\$ 6,546.45		\$ 3,902.40	\$ -	\$ 10,750.00	36%	2.69	\$ 2,644
19	1002	1002	5 Vehicle	\$ 3,608.73	597	E	604	D	7/27/2007	13.31%	0	\$ 10,029.61		\$ 3,608.73	\$ -	\$ 2,475.00	146%	5.68	\$ 6,420
20	1003	1003	4 Pledge	\$ 81,915.45	577	E	770	A+	8/25/2006	3.75%	0	\$ 100,000.00		\$ 81,915.45	\$ -	\$ -	No Value	6.60	\$ 18,084
22	1008	1008	6 Unsecured	\$ 9,555.28	578	E	721	A	11/24/2010	16.00%	0	\$ 12,751.98		\$ 9,555.28	\$ 12,751.98	\$ -	No Value	2.35	\$ 3,196
23	1009	1009	6 Unsecured	\$ 1,629.90	591	E	705	A	6/9/2010	0.00%	0	\$ -		\$ 1,629.90	\$ -	\$ -	No Value	2.81	\$ -
24	1010	1010	6 Unsecured	\$ 423.48	569	E	720	A	3/28/2008	15.00%	0	\$ 500.00		\$ 423.48	\$ 500.00	\$ -	No Value	5.01	\$ 76
25	1011	1011	6 Unsecured	\$ -	573	E	707	A	5/19/2005	15.00%	0	\$ 1,000.00		\$ -	\$ 1,000.00	\$ -	No Value	7.87	\$ 1,000
26	1012	1012	6 Unsecured	\$ 2,689.15	577	E	709	A	4/27/2005	0.00%	0	\$ -		\$ 2,689.15	\$ -	\$ -	No Value	7.93	\$ -
27	1013	1013	6 Unsecured	\$ 80.94	599	E	784	A+	12/17/2008	0.00%	0	\$ -		\$ 80.94	\$ -	\$ -	No Value	4.29	\$ -
28	1014	1014	6 Unsecured	\$ (7.64)	597	E	753	A+	6/13/2008	0.00%	0	\$ -		\$ (7.64)	\$ -	\$ -	No Value	4.80	\$ 7
29	1015	1015	6 Unsecured	\$ 557.09	591	E	760	A+	10/23/2007	0.00%	0	\$ -		\$ 557.09	\$ -	\$ -	No Value	5.44	\$ -
30	1016	1016	6 Unsecured	\$ -	599	E	783	A+	11/17/2006	0.00%	0	\$ -		\$ -	\$ -	\$ -	No Value	6.37	\$ -
31	1017	1017	6 Unsecured	\$ -	578	E	755	A+	8/18/2005	15.00%	0	\$ 500.00		\$ -	\$ 500.00	\$ -	No Value	7.62	\$ 500
32	1018	1018	6 Unsecured	\$ 320.89	520	E	748	A+	4/18/2005	15.00%	0	\$ 500.00		\$ 320.89	\$ 500.00	\$ -	No Value	7.96	\$ 179
33	1020	1020	6 Unsecured	\$ 6.97	598	E	694	B	11/27/2009	0.00%	0	\$ -		\$ 6.97	\$ -	\$ -	No Value	3.34	\$ -
34	1021	1021	6 Unsecured	\$ 786.97	585	E	699	B	4/24/2009	15.00%	0	\$ 1,000.00		\$ 786.97	\$ 1,000.00	\$ -	No Value	3.94	\$ 213
35	1022	1022	6 Unsecured	\$ -	562	E	687	B	1/27/2009	15.00%	0	\$ 500.00		\$ -	\$ 500.00	\$ -	No Value	4.18	\$ 500
36	1023	1023	6 Unsecured	\$ 500.00	592	E	682	B	12/5/2008	15.00%	0	\$ 500.00		\$ 500.00	\$ 500.00	\$ -	No Value	4.32	\$ -
37	1024	1024	6 Unsecured	\$ -	592	E	693	B	7/26/2007	15.00%	0	\$ 200.00		\$ -	\$ 200.00	\$ -	No Value	5.68	\$ 200
38	1025	1025	6 Unsecured	\$ 444.72	526	E	675	B	4/16/2007	0.00%	0	\$ -		\$ 444.72	\$ -	\$ -	No Value	5.96	\$ -



# Identifying Improved Loans

Loan Type	Balance	Original FICO		Current FICO		Open Date	Rate
New Auto	\$ 18,432	645	C	787	A+	4/18/2012	6.50%



# Credit Migration

## Understanding your Loan Portfolio

Credit risk can Increase or Decrease

Which risk pools are improving impairing?

## Identifying Potential Problems

Isolate impaired loans and react to them early

Understand the risk in your pools and adjust lending practices

## Identifying Emerging Opportunities

Recognize Members that are making smart decisions

Proactively offer ways to help your members

Understand which pools of loans to take on more risk

## Applying Precision in Allowance Calculation

Statistically based calculation

Complying to regulations



# ALLL- Homogeneous Pools

Sample CU ALLL Amount Needed Calculation Period Ending 3/31/12							
<b>Visa</b>	Balance	Indiv. Ident. Lns. Bal.	Ln Loss Calc Balance	Loss Rate	ALLL Amount	ALLL Amount	
<b>Total</b>	\$ 785,164.07	\$ -	\$ 785,164.07	2.47%	\$	\$	19,367.74
<b>Unsecured</b>	Balance	Indiv. Ident. Lns. Bal.	Ln Loss Calc Balance	Loss Rate	ALLL Amount	ALLL Amount	
<b>Total</b>	\$ 806,320.57	\$ -	\$ 806,320.57	3.90%	\$	\$	31,470.10
<b>New Auto</b>	Balance	Indiv. Ident. Lns. Bal.	Ln Loss Calc Balance	Loss Rate	ALLL Amount	ALLL Amount	
<b>Total</b>	\$ 3,969,638.65	\$ 103,006.94	\$ 3,866,631.71	0.18%	\$	\$	6,977.06
<b>Used Auto</b>	Balance	Indiv. Ident. Lns. Bal.	Ln Loss Calc Balance	Loss Rate	ALLL Amount	ALLL Amount	
<b>Total</b>	\$ 1,679,782.66	\$ 66,592.23	\$ 1,613,190.43	1.74%	\$	\$	28,082.43
<b>Real Estate</b>	Balance	Indiv. Ident. Lns. Bal.	Ln Loss Calc Balance	Loss Rate	ALLL Amount	ALLL Amount	
<b>Total</b>	\$ 5,346,172.03	\$ 265,049.18	\$ 5,081,122.85	0.00%	\$	\$	-
<b>All Other</b>	Balance	Indiv. Ident. Lns. Bal.	Ln Loss Calc Balance	Loss Rate	ALLL Amount	ALLL Amount	
<b>Total</b>	\$ 1,519,992.75	\$ 34,193.30	\$ 1,485,799.45	0.91%	\$	\$	13,532.31
<b>MBL</b>	Balance	Indiv. Ident. Lns. Bal.	Ln Loss Calc Balance	Loss Rate	ALLL Amount	ALLL Amount	
<b>Total</b>	\$ 167,796.35	\$ -	\$ 167,796.35	0.00%	\$	\$	-
<b>Participation Loans</b>	Balance	Indiv. Ident. Lns. Bal.	Ln Loss Calc Balance	Loss Rate	ALLL Amount	ALLL Amount	
<b>Total</b>	\$ 339,851.87	\$ -	\$ 339,851.87	0.27%	\$	\$	925.22
<b>ALLL Amount Needed-FAS 5</b>	Balance	Indiv. Ident. Lns. Bal.	Ln Loss Calc Balance				<b>Total ALLL Amount</b>
	\$14,614,719	\$468,842	\$14,145,877		\$	\$	100,354.87

# Risk Based ALLL w/Credit Migration

Maintain existing pools

Divide pool balances into credit grade ranges

Create unique loss ratios for each grade within each pool

Monitor changing credit scores for movement in pools

Calculate ALLL requirement for each grade within each pool

# Expected Credit Losses

- Formula for describing Expected Risk of Loss
  - $R_T = (R_C + G_A) + (R_{IC} + R_{EC})$
- Where:
- $R_T$  = Total Risk
- $R_C$  = Core Risk
- $G_A$  = Grade Adjustment
- $R_{IC}$  = Individual Risk Change
- $R_{EC}$  = Economic Risk Change

# ALLL- Homogeneous Pools

Sample CU ALLL Amount Needed Calculation Period Ending 3/31/12						
	Ln Loss Calc Balance	Loss Rate	ALLL Amount	ALLL Amount	ALLL Amount	Comparison
<b>Visa</b>						
A+	\$ 259,369.55	0.00%	\$ -	Risk Based	Pooled Method	
A	\$ 168,938.10	0.00%	\$ -			
B	\$ 138,468.94	0.86%	\$ 1,197.27			
C	\$ 100,397.26	0.00%	\$ -			
D	\$ 17,814.59	11.38%	\$ 2,028.07			
E	\$ 100,175.61	13.64%	\$ 13,662.42			
Missing	\$ -	0.00%	\$ -			
<b>Total</b>	<b>\$ 785,164.07</b>	<b>2.47%</b>	<b>\$ -</b>	<b>\$ 16,887.76</b>	<b>\$ 19,367.74</b>	<b>\$ (2,479.98)</b>
<b>Unsecured</b>						
A+	\$ 282,089.23	0.00%	\$ -	Risk Based	Pooled Method	
A	\$ 242,048.59	0.00%	\$ -			
B	\$ 119,065.98	7.94%	\$ 9,456.25			
C	\$ 126,613.88	7.74%	\$ 9,803.43			
D	\$ 9,941.55	18.84%	\$ 1,872.55			
E	\$ 26,561.36	23.75%	\$ 6,308.24			
Missing	\$ -	0.00%	\$ -			
<b>Total</b>	<b>\$ 806,320.57</b>	<b>3.90%</b>	<b>\$ -</b>	<b>\$ 27,440.48</b>	<b>\$ 31,470.10</b>	<b>\$ (4,029.62)</b>
Sections Omitted for Presentation						
<b>All Other</b>						
A+	\$ 1,010,677.61	0.00%	\$ -	Risk Based	Pooled Method	
A	\$ 191,354.97	0.00%	\$ -			
B	\$ 198,588.23	0.00%	\$ -			
C	\$ 60,805.07	0.00%	\$ -			
D	\$ 17,620.90	0.00%	\$ -			
E	\$ 6,334.44	21.40%	\$ 1,355.76			
Missing	\$ 418.23	0.00%	\$ -			
<b>Total</b>	<b>\$ 1,485,799.45</b>	<b>0.91%</b>	<b>\$ -</b>	<b>\$ 1,355.76</b>	<b>\$ 13,532.31</b>	<b>\$ (12,176.56)</b>
<b>MBL</b>						
<b>Total</b>	<b>\$ 167,796.35</b>	<b>0.00%</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Participation Loans</b>						
<b>Total</b>	<b>\$ 339,851.87</b>	<b>0.27%</b>	<b>\$ -</b>	<b>\$ 925.22</b>	<b>\$ 925.22</b>	<b>\$ -</b>
<b>ALLL Amount Needed-FAS 5</b>	<b>\$14,145,877</b>			<b>\$ 83,416.44</b>	<b>\$ 100,354.87</b>	<b>\$ (16,938.43)</b>

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# Loss Factors



To produce valid output data must:

Be random

Include the population of input points

Linking output to only one credit union, or one region will skew the input and invalidate the outputs

# Applied Case Study

Effect of \$1 mil in decreasing FICO scores

Increases ALLL by \$39,090

Effect of \$1 mil in increasing FICO scores

Decreases ALLL by \$56,790

Net Effect of total score migration

Decrease ALLL by \$17,700\*

\*Note: This effect is post CECL adjustment





# Considerations

Early planning makes a huge difference

Understand the impacts on initial transfer

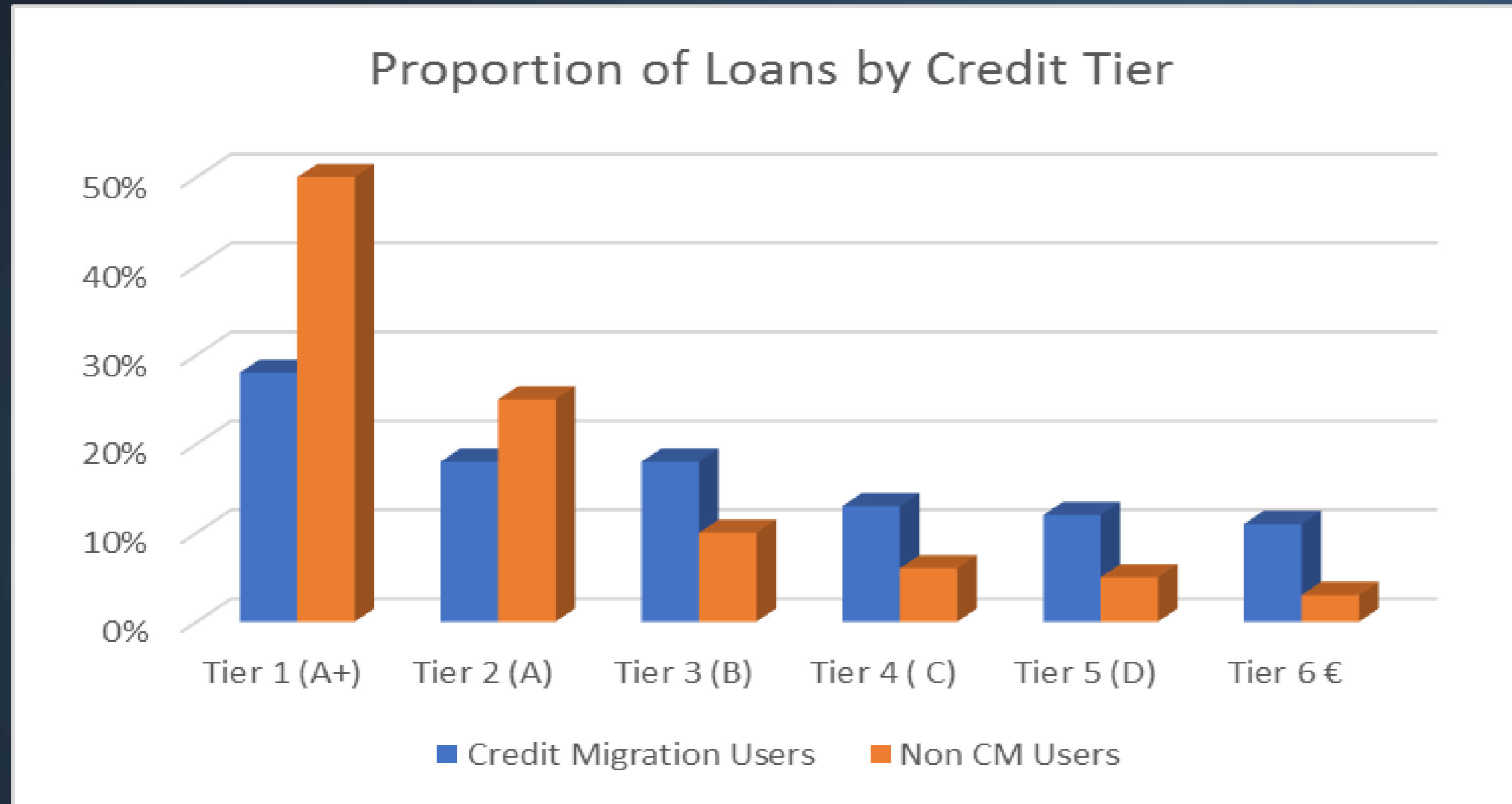
Understand the impacts from growth & operations

Plan for increases in ALLL requirements

Assure your pricing accurately measures CECL impact



# What are the **bottom line** impacts?



Credit Migration Users are able to lend deeper.



# What are the **bottom line** impacts?

Net Credit Scores are nearly **93%** higher!

- Credit Migration Users +7.3%
- Non-CM Users +4.1%

Credit Migration users are able to lend more effectively.



# What are the **bottom line** impacts?

Average Credit Union ROA increased nearly **95%**

- Credit Migration Users 0.70
- Non-CM Users 0.41

Credit Migration users are able to lend more profitably.

---



# What are the **bottom line** impacts?

- Loan yields increase by **34** basis points by enhancing C,D and E lending
- Delinquencies declined to **0.35%**
- Charge-off ratio declined to **0.16%**
- Loan to share increased to **83%**

These factors combine to enhance income and strengthen equity



# Final notes of **caution**

- Credit Migration system must be statistically valid to achieve maximum benefit
- Simply tracking scores will not provide maximum benefits
- A statistically valid model establishes accurate score ranges and risk analyses



FOR MORE INFORMATION OR TO SCHEDULE A DEMO

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