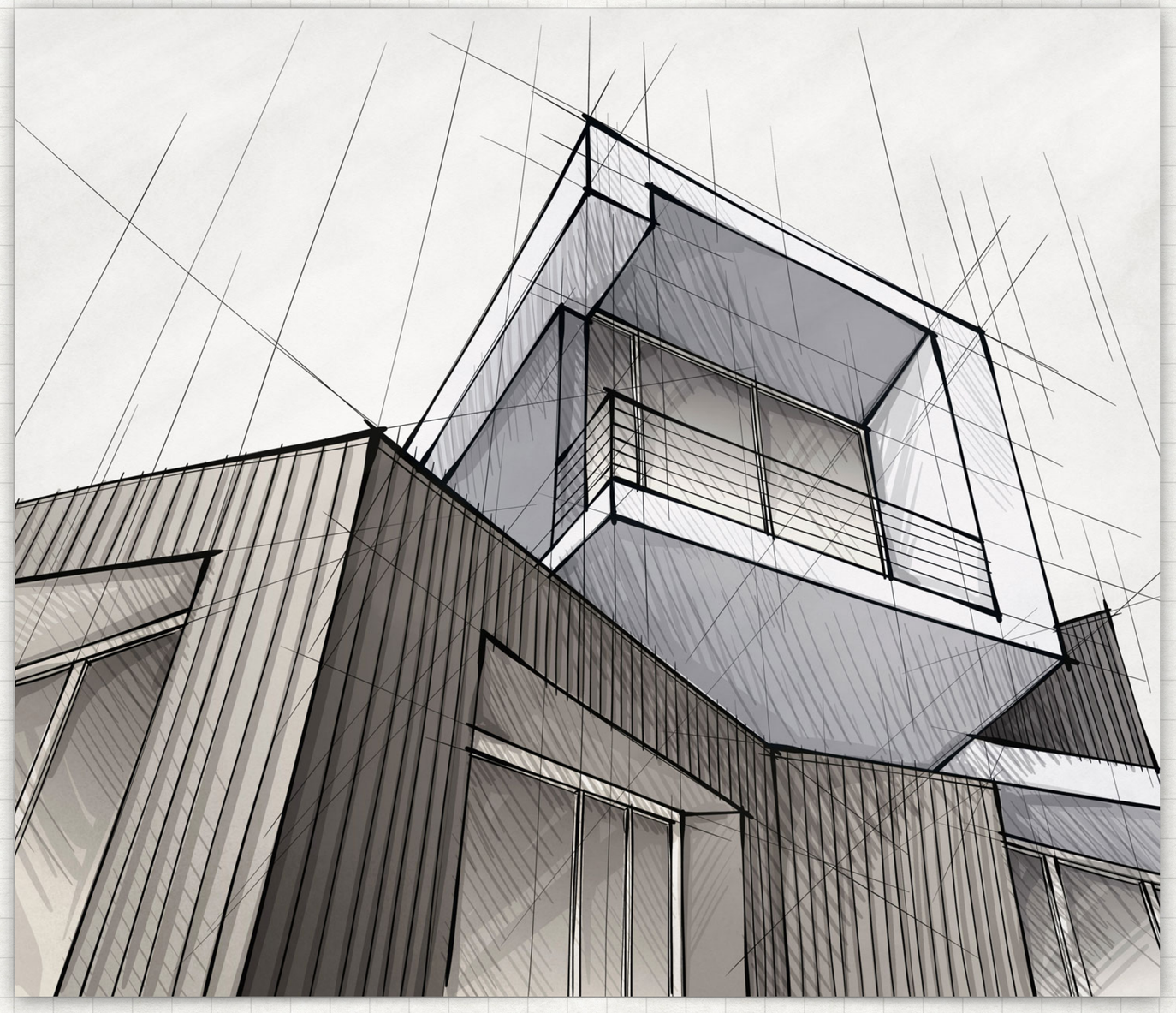
CS 007: SESSION 5

PERSONAL FINANCE FOR ENGINEERS



CS 007

ASSETS & NET WORTH



LIQUIDITY

access to money when you need it

WHAT IS LIQUIDITY?

- How quickly can you get access to cash when you need it?
- Market liquidity refers to the extent a marketplace allows assets to be bought & sold at stable prices.
- Accounting liquidity measures the ease an individual or company can meet their financial obligations with the liquid assets available to them.
- Don’t underestimate the value of liquidity. Liquidity matters.



WHY DOES LIQUIDITY MATTER?

- Liquidity is the only thing that matters when you need to pay for something.
- Liquidity is the power to take advantage of investment opportunities.



LIQUIDITY & RETURNS

- Liquidity is typically **inversely correlated** with returns
- **Examples**
  - Cash is very liquid
  - Private Equity is very illiquid
- **Safety ≠ Liquidity**
  - 5 Year CD is safe, but illiquid
  - Tesla stock is liquid, but volatile!



EMERGENCY FUNDS

a financial buffer to protect your goals

8: WHAT % OF AMERICANS HAVE $400 FOR EMERGENCIES?

- Commonly misquoted statistic.
- US Federal Reserve reported in 2026 that 37% of Americans do not have sufficient cash savings to cover a $400 emergency expense.
- Actual survey question reveals the number is 13% that self-reported that they couldn't cover the emergency through other means.
- Liquidity means having access to money when you need it.
- Don't underestimate the value of liquidity. Liquidity matters.



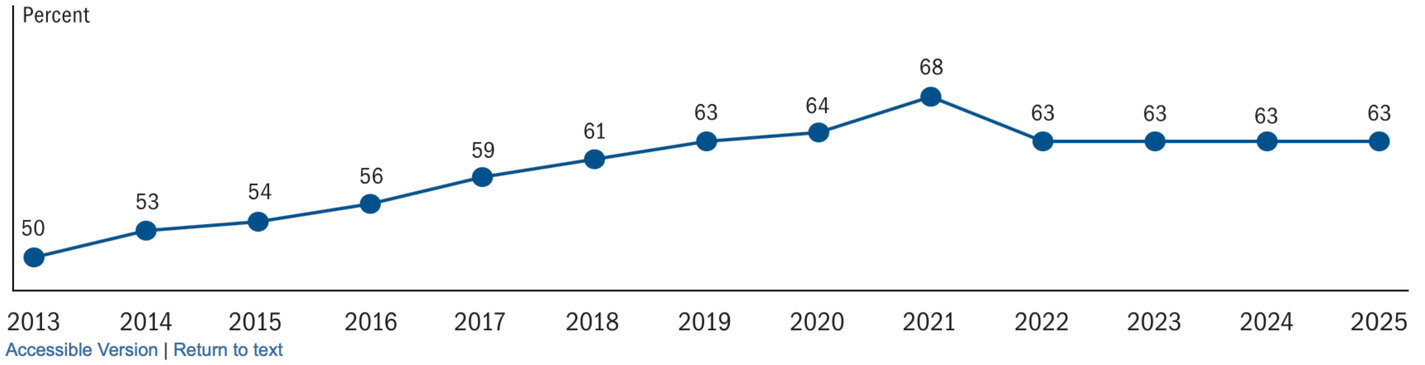
Table 25. Other ways individuals would cover a $400 emergency expense

Make Full Screen

Approach	Percent
Put it on a credit card and pay it off over time	15
Borrow from a friend or family member	10
Sell something	7
Use money from a bank loan or line of credit	3
Use a payday loan, deposit advance, or overdraft	2
Would not be able to pay for the expense right now	12

Note: Among all adults. Respondents could select multiple answers.

Figure 24. Would cover a $400 emergency expense completely using cash or its equivalent (by year)



Accessible Version | Return to text

* https://www.federalreserve.gov/publications/2026-economic-well-being-of-us-households-in-2025-executive-summary.htm

WHY EMERGENCY FUNDS?

- Practical outcome of need for liquidity
- Example of “mental accounting” used for financial health
- Goal is to protect your long term assets / plans from unexpected short term needs.



HOW LARGE SHOULD AN EMERGENCY FUND BE?

- Standard recommendation is at least **3 months of living expenses** in cash or cash-equivalents
- Calculated based on impact of losing employment
- National average is 3-6 months to find a job of equal pay.
- Time increases in recession & based on your seniority.



COMMON MISTAKES WITH EMERGENCY FUNDS

- Don’t focus on investment return or opportunity cost.
- Think of it as a **buffer**, or as **insurance**. Not as an asset.
- First on the list to fill, first to refill if tapped for emergency.
- Do not tap it for frivolous needs. It is for emergencies.



ASSETS & LIABILITIES

what you own & what you owe

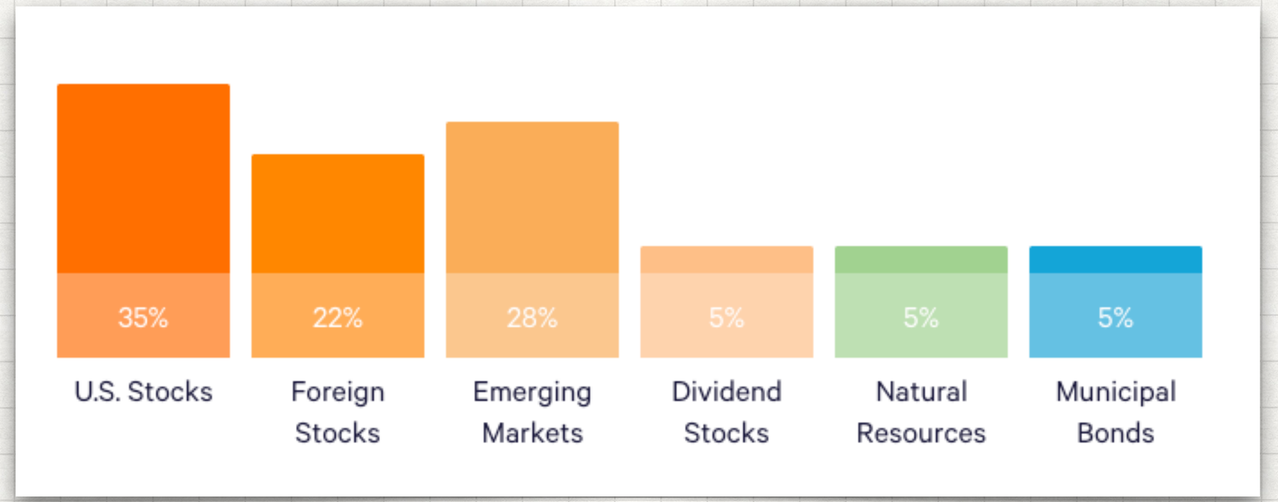
WHAT IS AN ASSET?

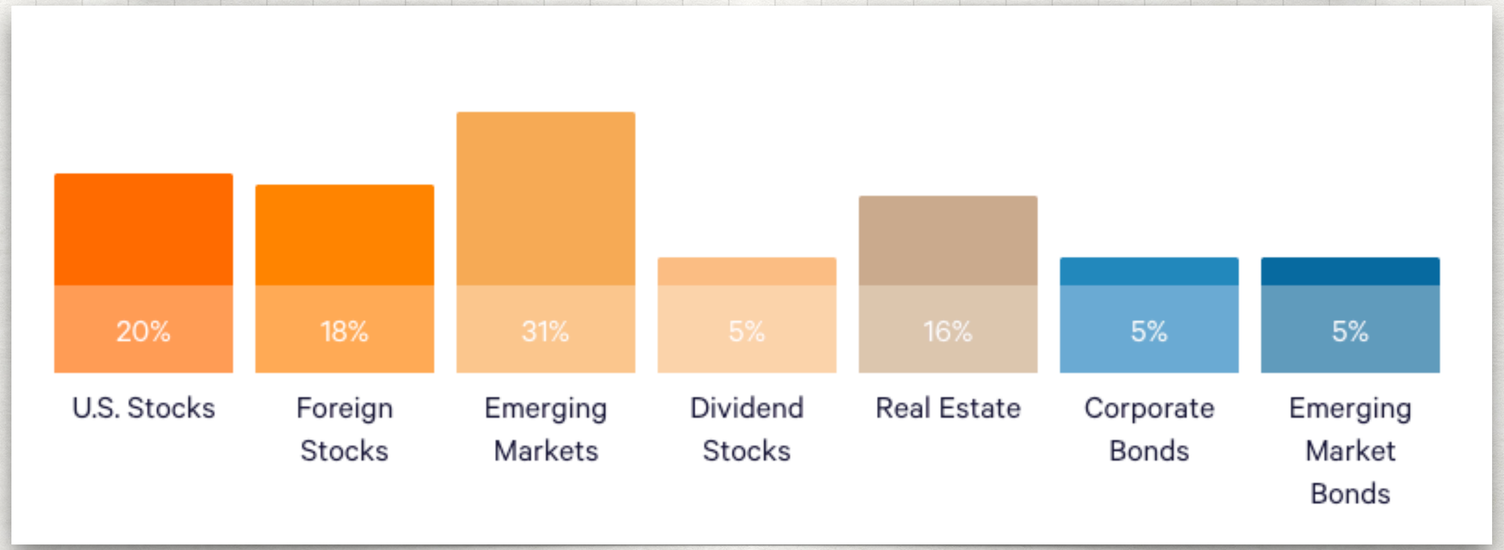
- Any resource with economic value
- **Financial assets** are investments in cash, bonds, stocks, etc.
- **Real assets** are investments in real estate, collectibles, commodities, etc.



DIFFERENT TYPES OF ASSETS

- Liquid vs. Illiquid
- Financial vs. Real
- Appreciating vs. Depreciating
- Tangible vs. Intangible
- Debt owed to you

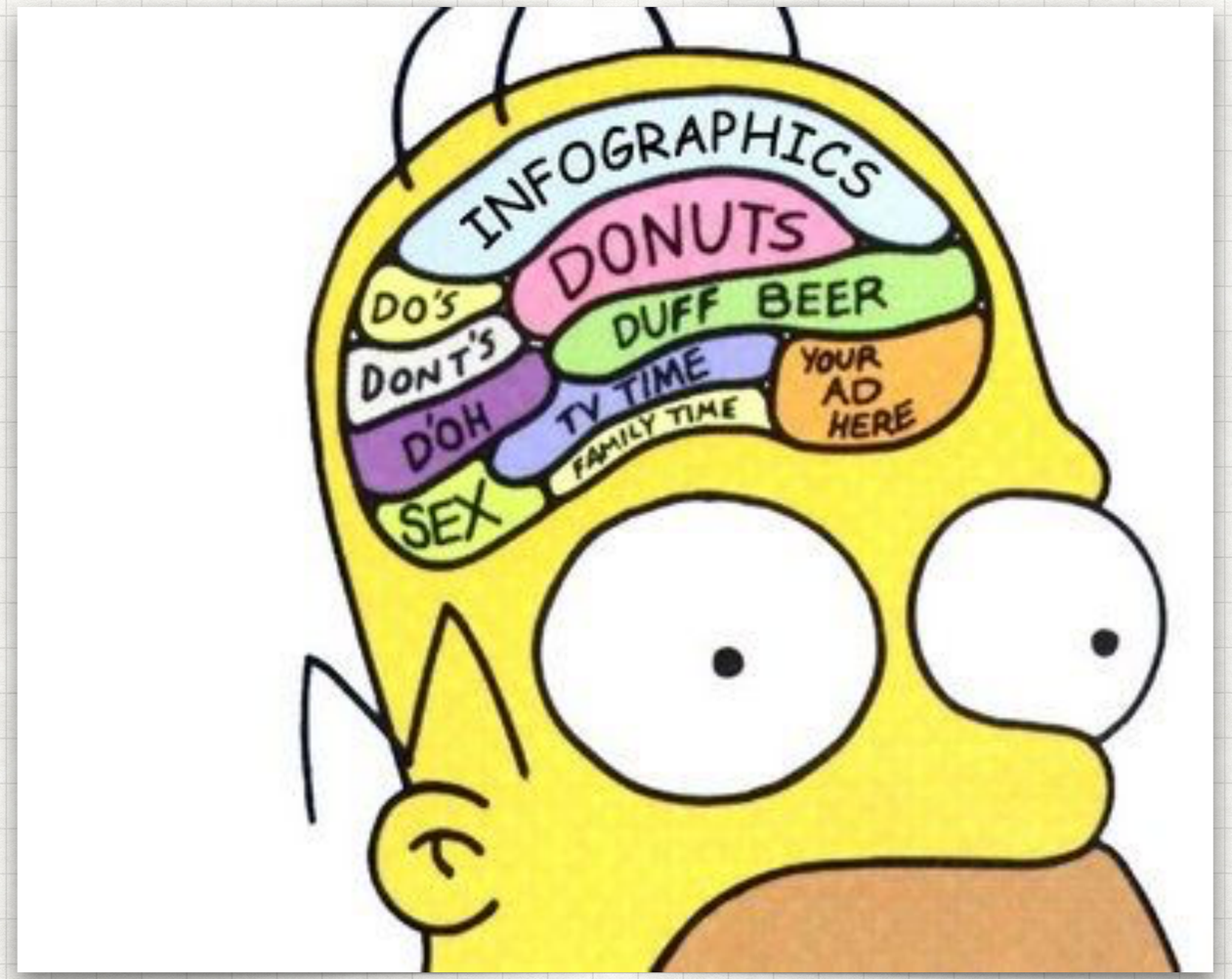




** https://www.wealthfront.com/plan*

WHAT ABOUT HUMAN CAPITAL?

- Easy to argue that your skills & capabilities are the largest asset you have.
- Don’t ignore “intangible assets” - sometimes they are the best investments.
- Do remember that human capital varies significantly in liquidity.



* https://www.wealthfront.com/plan

WHAT ARE LIABILITIES?

- A liability is a financial obligation, typically debt.
- Most common personal liability is a loan.
- **Common types**
  - Mortgage
  - Auto Loan
  - Student Loan
  - Credit Cards
  - Tax Liability



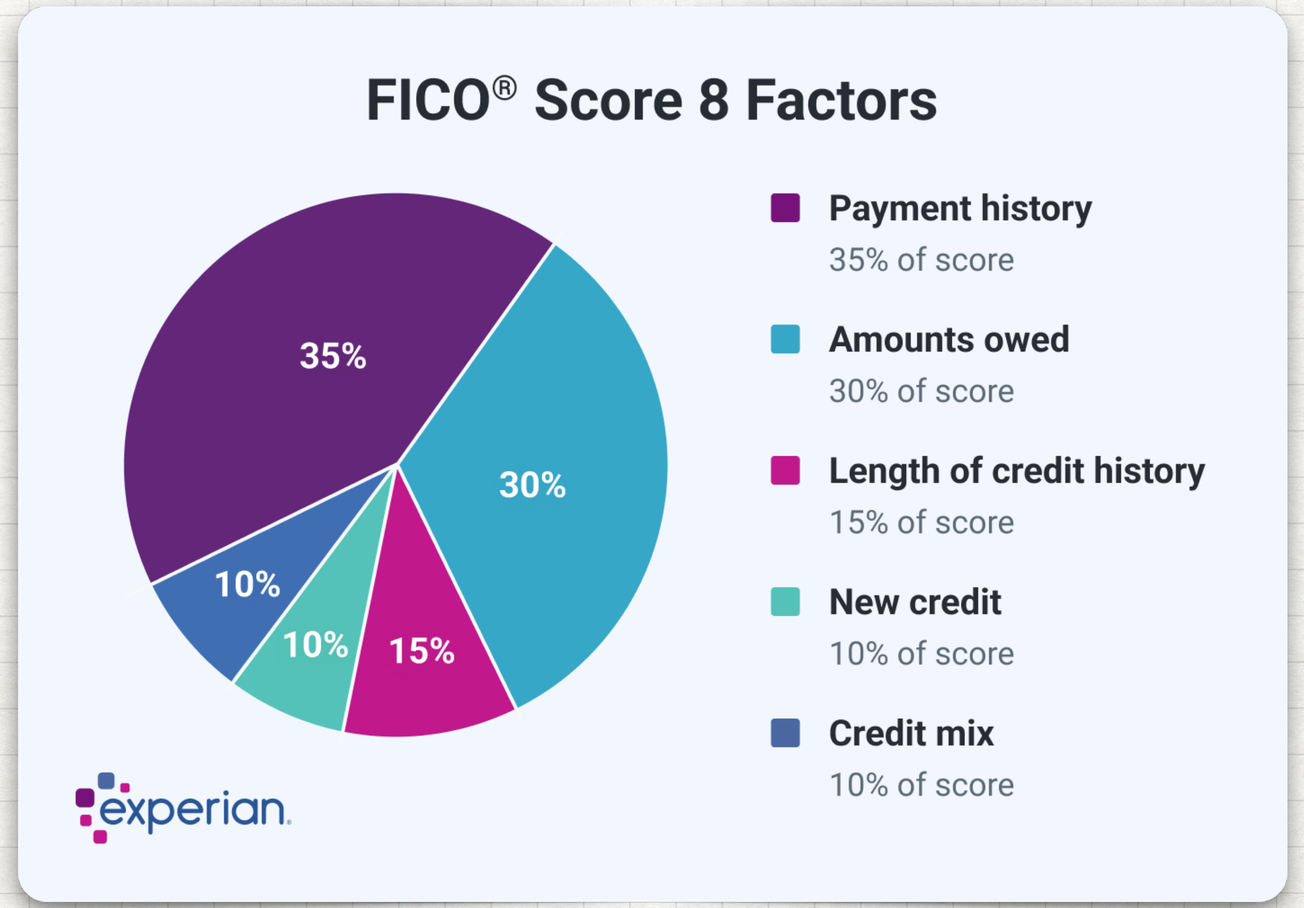
DIFFERENT TYPES OF LIABILITY

- Short term vs. Long term
- Secured vs. Unsecured
- Tax Liability



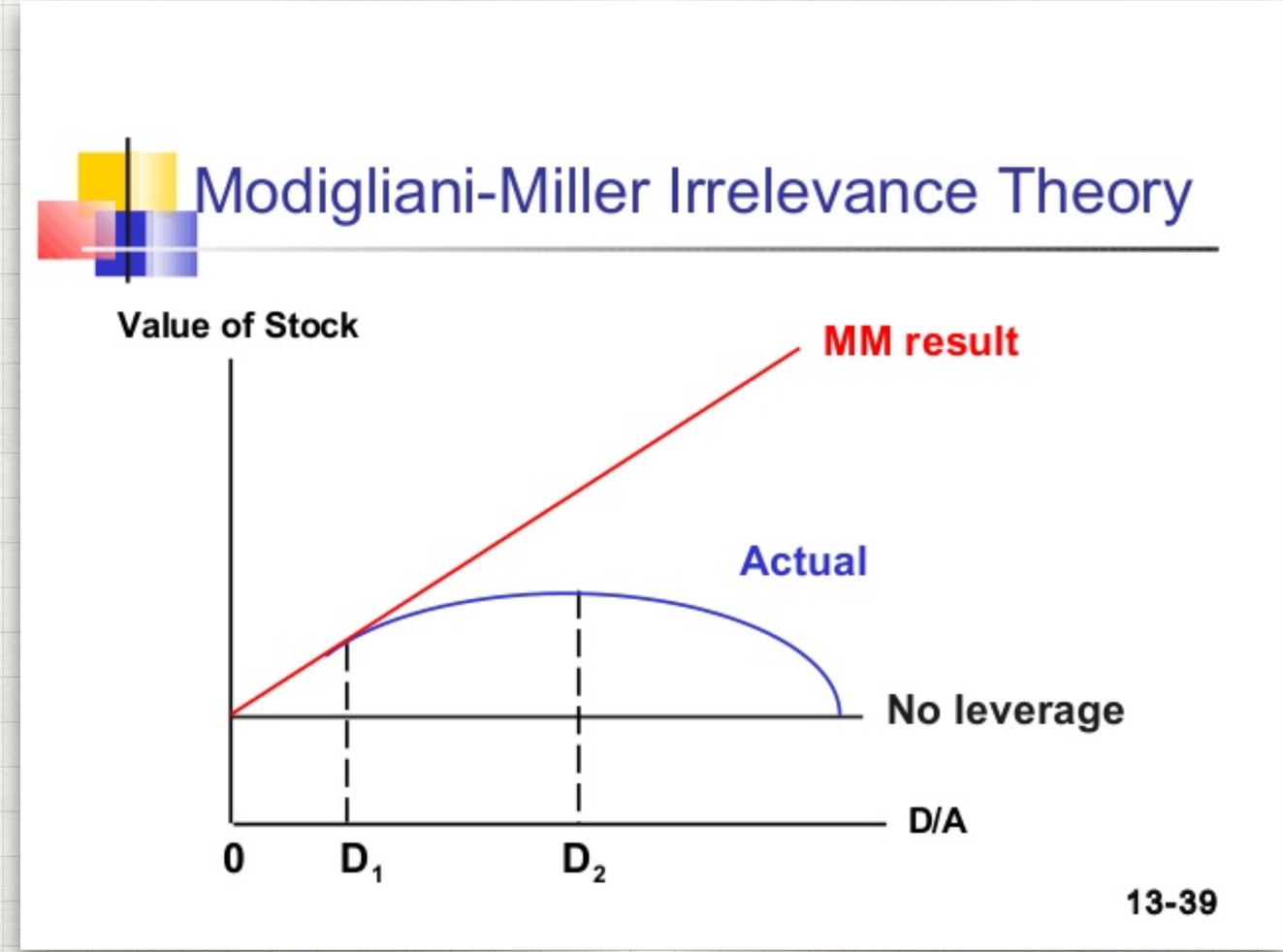
CREDIT SCORES

- Lenders report to 3 major centralized credit agencies when you apply for debt, receive debt, and when you pay off debt.
- Building a good credit score is essential for qualifying for most loans. It can affect other services too, as it is used for identity verification.
- Issues that affect credit score: length of history, on time payment, percent of capacity utilized, new applications for debt, bankruptcy.
- Credit Karma 💯 http://www.creditkarma.com



IS DEBT A BAD THING?

- Modigliani-Miller
  market value is determined by earning power & risk of underlying assets, not by the method of financing.
- Assumes no taxes, transaction costs, bankruptcy costs
- Tradeoff Theory of Leverage
  There is an optimal capital structure.



SHOULD I PAY OFF ALL OF MY DEBT?

- More debt = more risk
- Not all debt is the same
- Compounding is not your friend with debt, especially high interest debt.
- Some debt is subsidized (e.g. Mortgage, Student Loans)
- Paying off debt can be emotionally satisfying, but financially irrational.
- Paying off debt can improve savings rates over time.

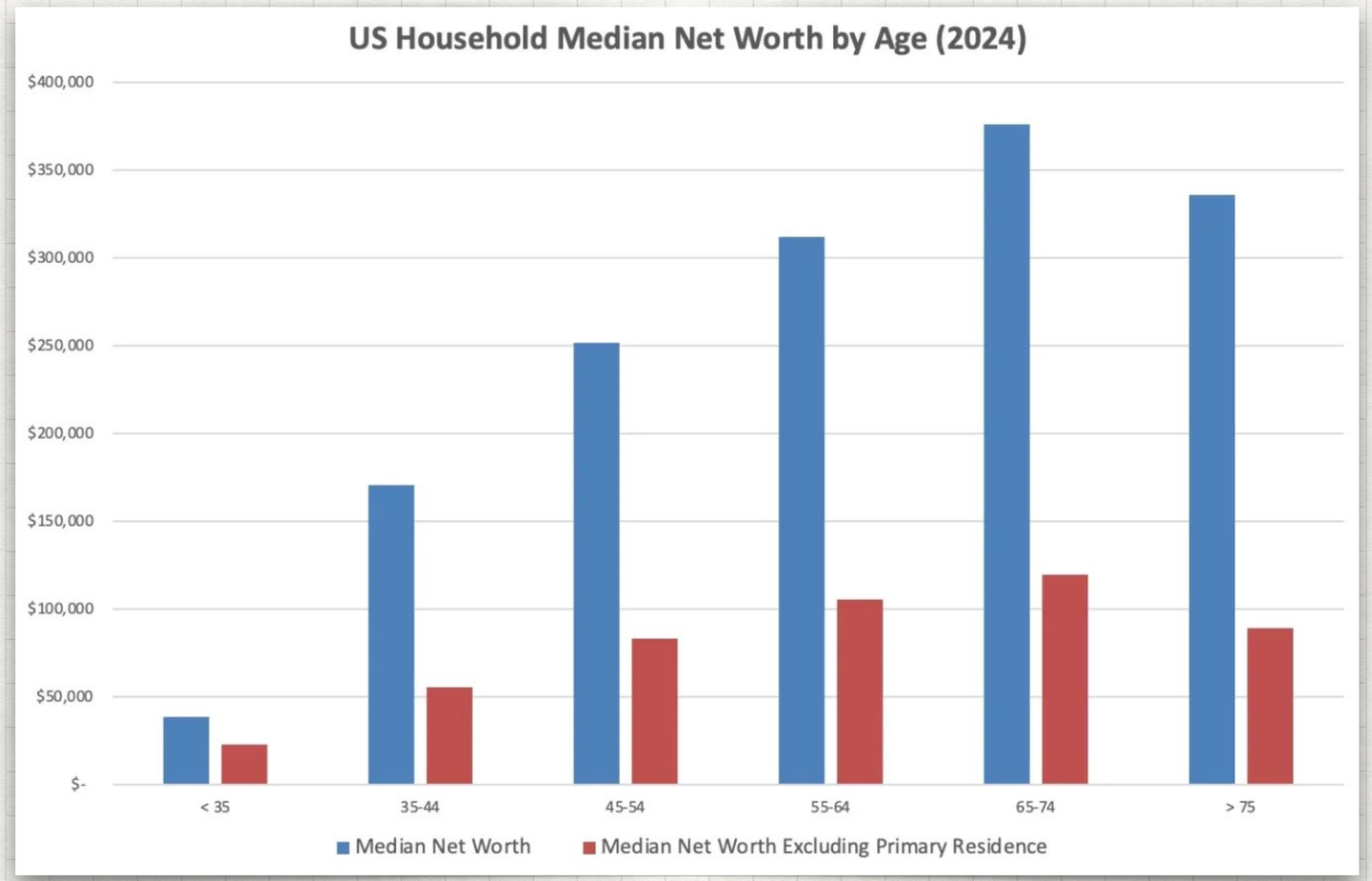


BALANCE SHEET

know your net worth

WHAT IS YOUR NET WORTH?

- **Assets - Liabilities**
- **Total net worth** includes all assets.
- **Liquid net worth** excludes illiquid assets & primary home (and related liabilities)
- Do not confuse with cash flow. Very different.



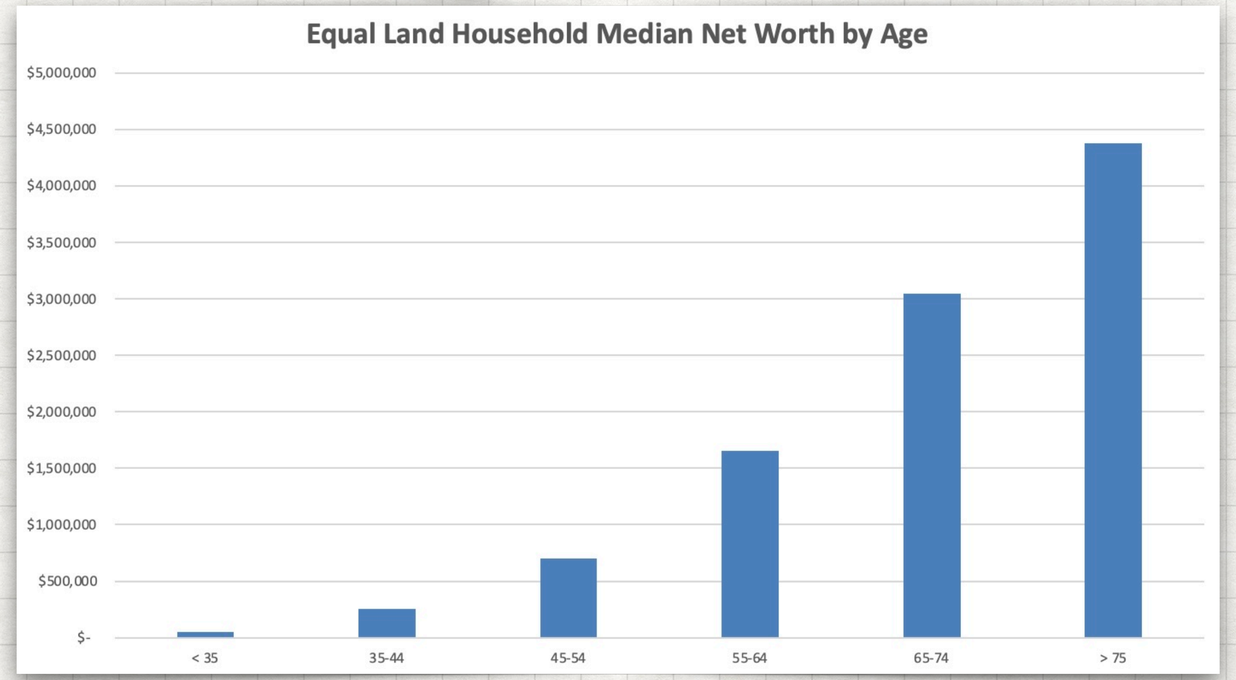
** https://www.census.gov/data/tables/2024/demo/wealth/wealth-asset-ownership.html*

WHY DO OLDER PEOPLE HAVE ALL THE MONEY?

- **Answer: Time**
- More **time** to **save** over the lifetime
- More **time** for their savings to **compound**
- **Equal Land:** if everyone made the same, saved the same, worked the same, lived the same length of time…

  … Households 65+ would have 74% of all the wealth. ~10% held by households under 55 (!)





** https://adamnash.blog/2026/10/25/why-do-older-people-have-most-of-the-money/*

WHAT IS A BALANCE SHEET?

- A balance sheet is a financial statement that summarizes a companies assets, liabilities & shareholders' equity.
- **Assets = Liabilities + Equity**
  (see, it has to balance)
- **Common ratios**
  - Cash Ratio
  - Quick Ratio
  - Debt to Equity
  - Asset Turnover
  - ROA (Return on Assets)

Example Company
Balance Sheet
December 31, 2016

ASSETS		LIABILITIES	
Current assets		Current liabilities	
Cash	$ 2,100	Notes payable	$ 5,000
Petty cash	100	Accounts payable	35,900
Temporary investments	10,000	Wages payable	8,500
Accounts receivable - net	40,500	Interest payable	2,900
Inventory	31,000	Taxes payable	6,100
Supplies	3,800	Warranty liability	1,100
Prepaid insurance	1,500	Unearned revenues	1,500
Total current assets	89,000	Total current liabilities	61,000
Investments	36,000	Long-term liabilities	
		Notes payable	20,000
Property, plant & equipment		Bonds payable	400,000
Land	5,500	Total long-term liabilities	420,000
Land improvements	6,500		
Buildings	180,000		
Equipment	201,000	Total liabilities	481,000
Less: accum depreciation	(56,000)		
Prop, plant & equip - net	337,000		
Intangible assets		STOCKHOLDERS' EQUITY	
Goodwill	105,000	Common stock	110,000
Trade names	200,000	Retained earnings	220,000
Total intangible assets	305,000	Accum other comprehensive income	9,000
		Less: Treasury stock	(50,000)
Other assets	3,000	Total stockholders' equity	289,000
Total assets	$ 770,000	Total liabilities & stockholders' equity	$ 770,000

The notes to the sample balance sheet have been omitted.

** http://www.investopedia.com/articles/04/031004.asp?ad=dirN&qo=investopediaSiteSearch&qsrc=0&o=40186*

CREATING YOUR PERSONAL BALANCE SHEET

- Very simple summary of a personal balance sheet
- Some recommend excluding primary residence (and related mortgage)
- Very different than income statement, but useful for evaluating progress

Assets		
Cash & Cash Equivalents		
Checking	$	2,000.00
Savings	$	25,000.00
Total Cash & Cash Equivalents	**$**	**27,000.00**
Home		
123 Future Home Ave	$	800,000.00
Total Home	**$**	**800,000.00**
College		
Wealthfront 529	$	5,000.00
Total College	**$**	**5,000.00**
Retirement		
Google 401(k)	$	100,000.00
Roth IRA	$	15,000.00
Total Retirement	**$**	**115,000.00**
Total Assets	**$**	**947,000.00**
Liabilities		
Short Term		
Credit Cards	$	5,000.00
End Short Term	**$**	**5,000.00**
Long Term		
Student Loans		$30,000.00
Mortgage	$	640,000.00
Total Long Term	**$**	**670,000.00**
Total Liabilities	**$**	**675,000.00**
Net Worth	**$**	**272,000.00**

Assets		
Cash & Cash Equivalents		
Checking	$	2,000.00
Savings	$	25,000.00
Total Cash & Cash Equivalents	**$**	**27,000.00**
College		
Wealthfront 529	$	5,000.00
Total College	**$**	**5,000.00**
Retirement		
Google 401(k)	$	100,000.00
Roth IRA	$	15,000.00
Total Retirement	**$**	**115,000.00**
Total Assets	**$**	**147,000.00**
Liabilities		
Short Term		
Credit Cards	$	5,000.00
End Short Term	**$**	**5,000.00**
Long Term		
Student Loans		$30,000.00
Total Long Term		**$30,000.00**
Total Liabilities	**$**	**35,000.00**
Net Worth	**$**	**112,000.00**

(excluding primary residence)

CS 007

QUESTIONS



WEEK 6: CREDIT & DEBT. DIGGING OUT.

- Different types of Debt:
  Student Loans, Auto, Credit Cards, Mortgage
- Secured vs. Unsecured Loans
- Loans & Rates
- Credit Scores
- Compounding in Reverse

