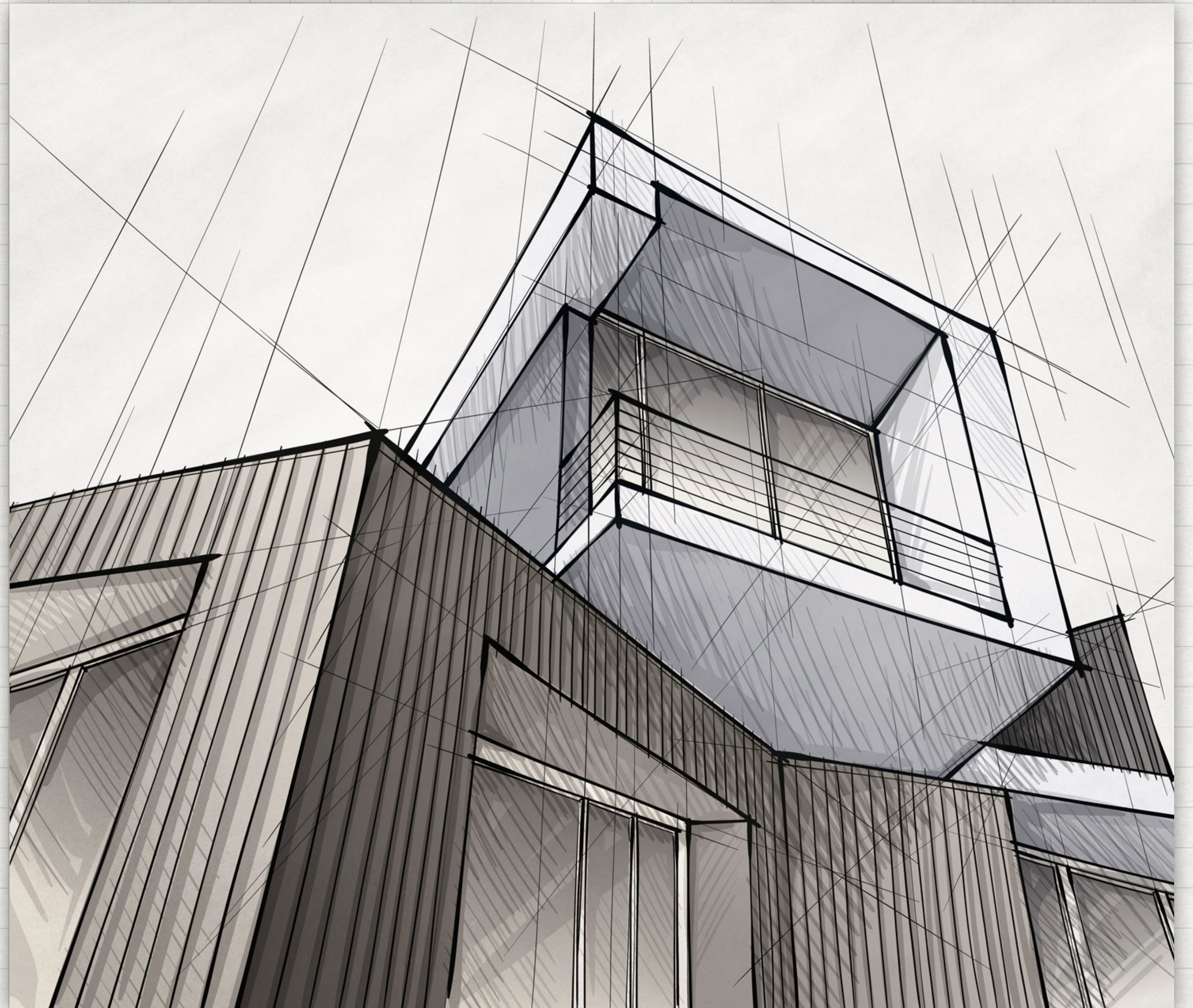


CS 007: SESSION 5
PERSONAL
FINANCE FOR
ENGINEERS



CS 007

ASSETS & NET WORTH

know
your
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 \neq Liquidity**
 - 5 Year CD is safe, but illiquid
 - Tesla stock is liquid, but volatile!

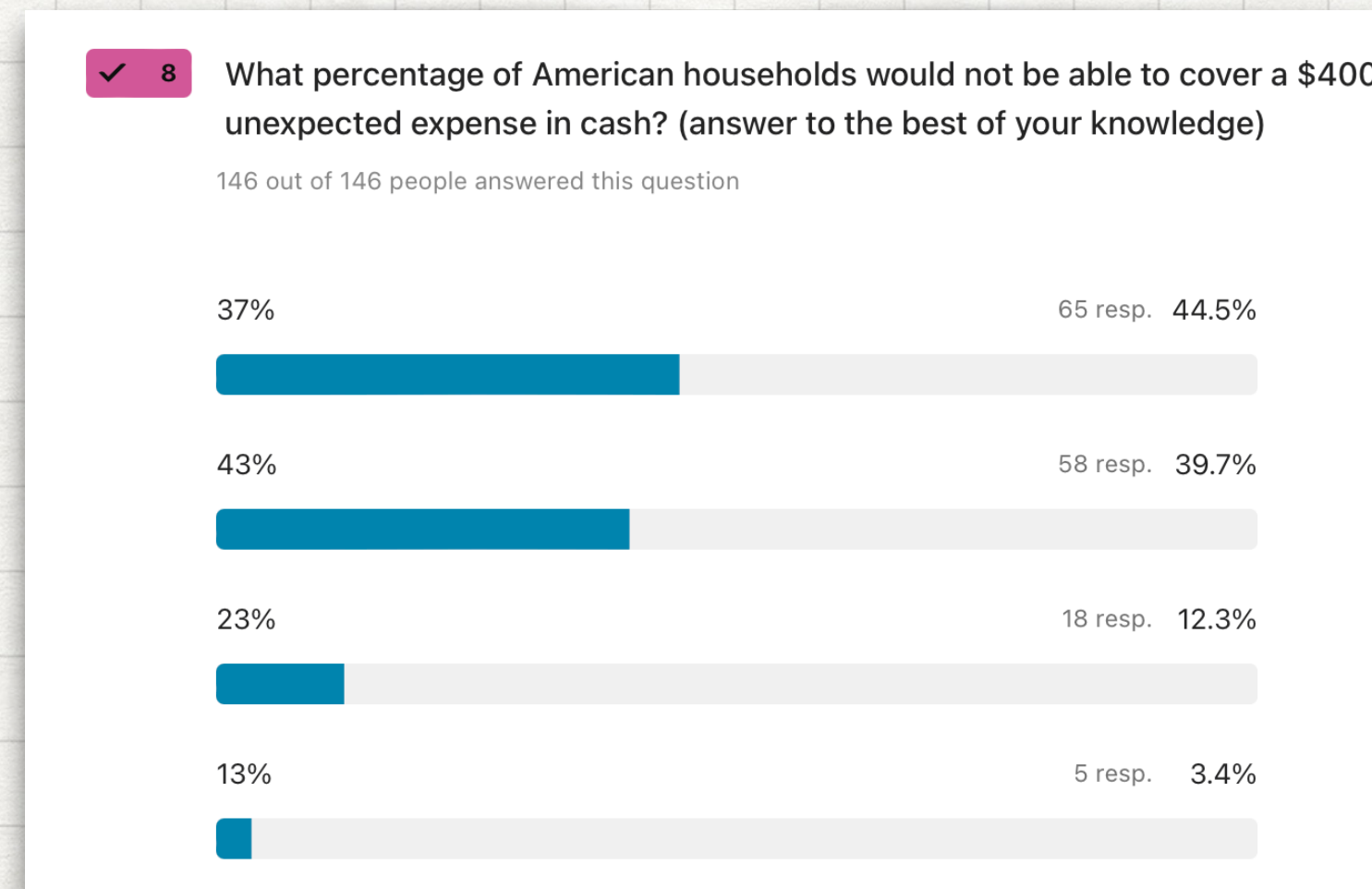


EMERGENCY FUNDS

a financial buffer to protect your goals

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

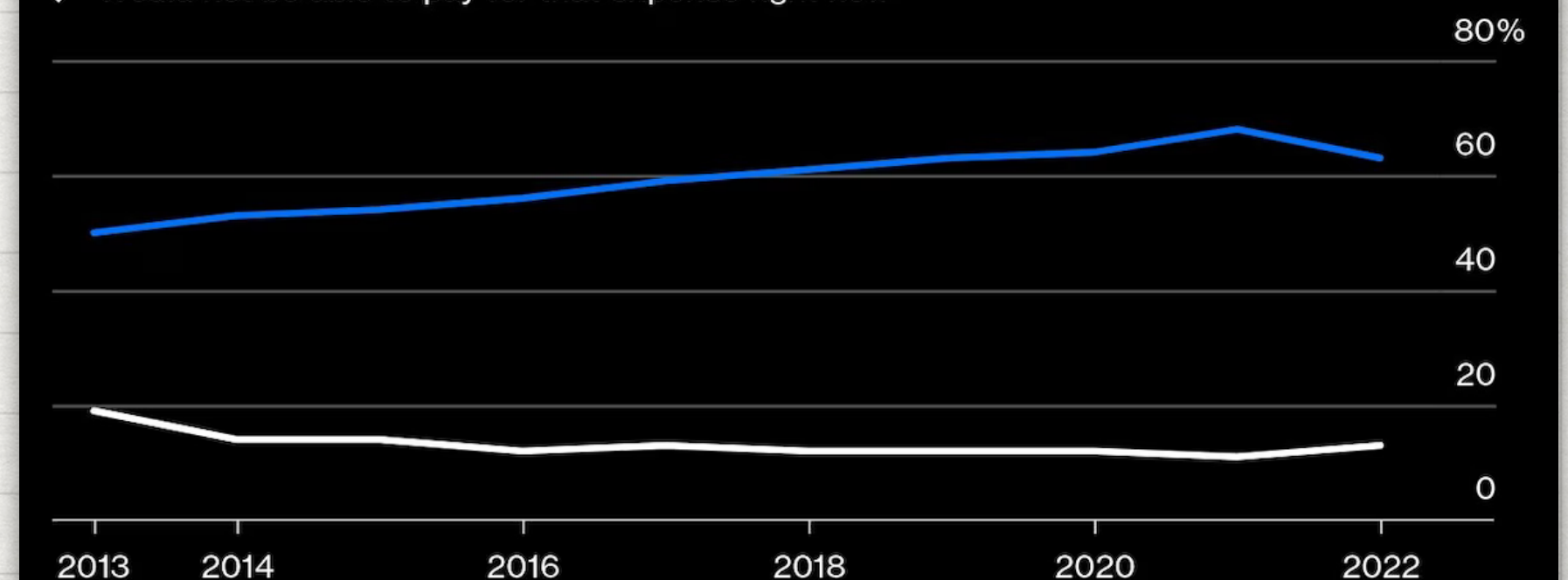
- Commonly misquoted statistic.
- US Federal Reserve reported in 2023 that 37% of Americans do not have sufficient cash savings to cover a \$400 emergency expense.
- Actual survey question reveals the number is 13% that self-reported that they couldn't cover the emergency through other means.
- Liquidity means having access to money when you need it.
- Don't underestimate the value of liquidity. Liquidity matters.



The \$400 Question

The majority of Americans say they would be able to come up with emergency funds if they had to

- ✓ Would cover a \$400 emergency expense completely using cash or its equivalent
- ✗ Would not be able to pay for that expense right now



Source: US Federal Reserve

Bloomberg Opinion

* <https://www.federalreserve.gov/publications/2023-economic-well-being-of-us-households-in-2022-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

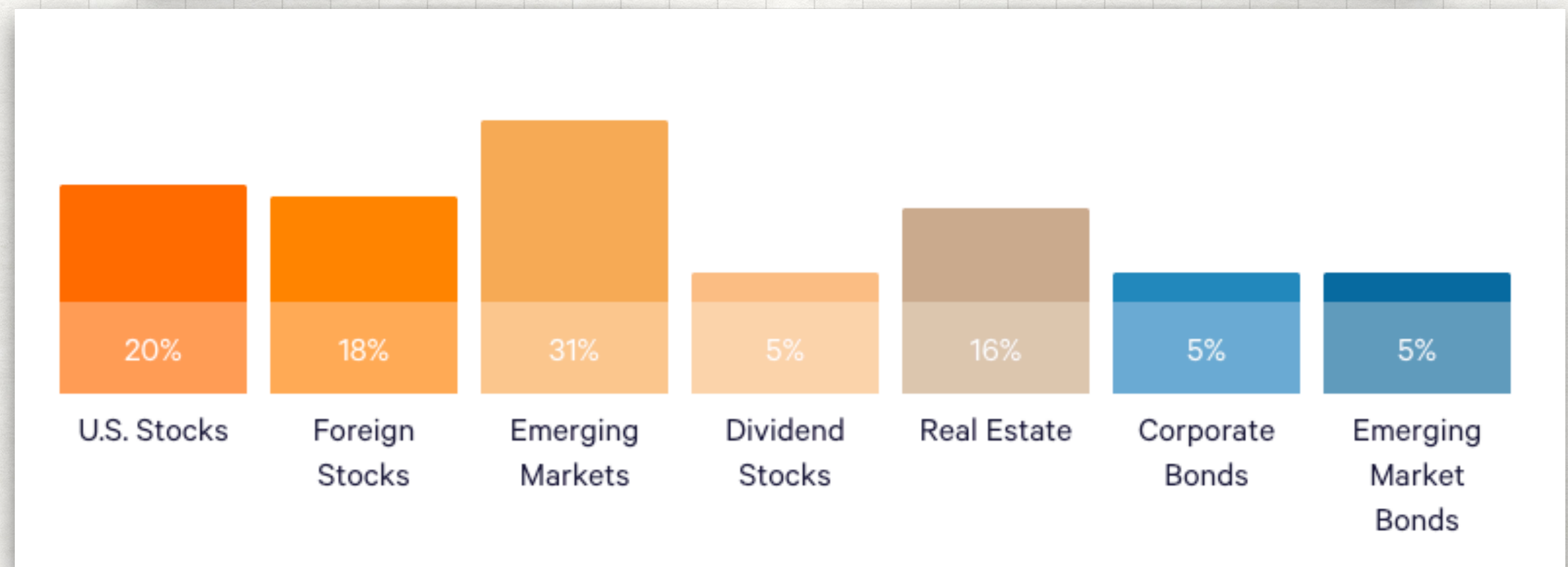
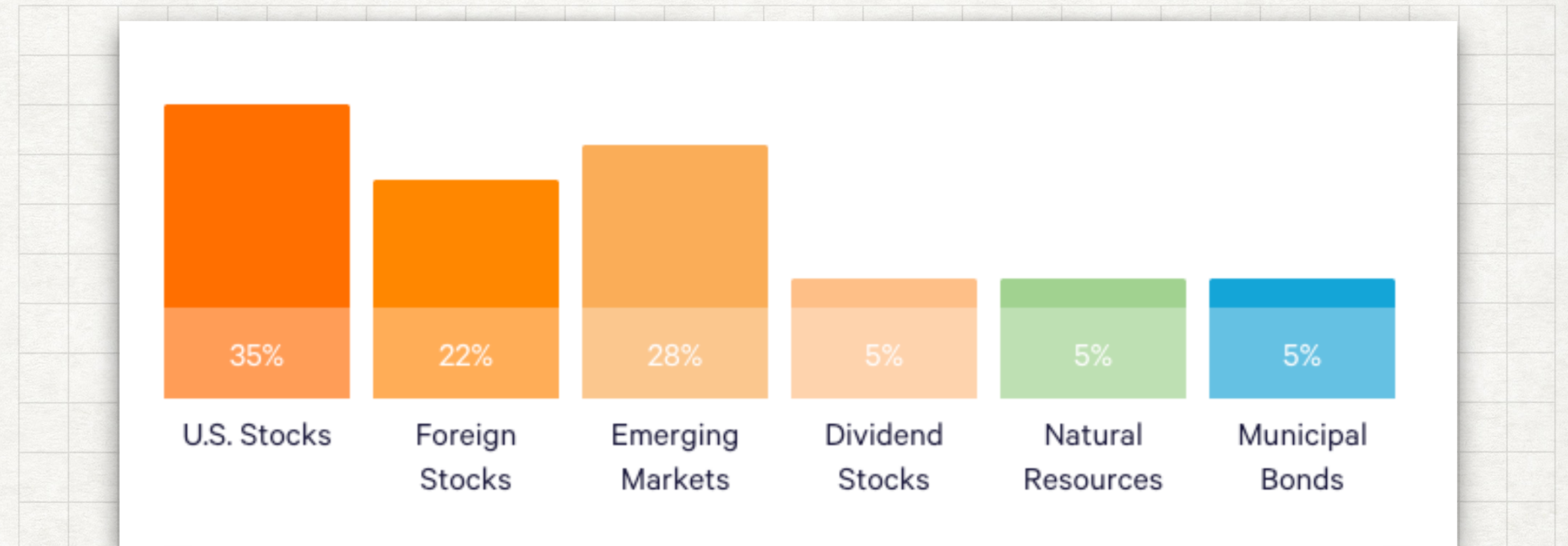
WHAT IS AN ASSET?

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



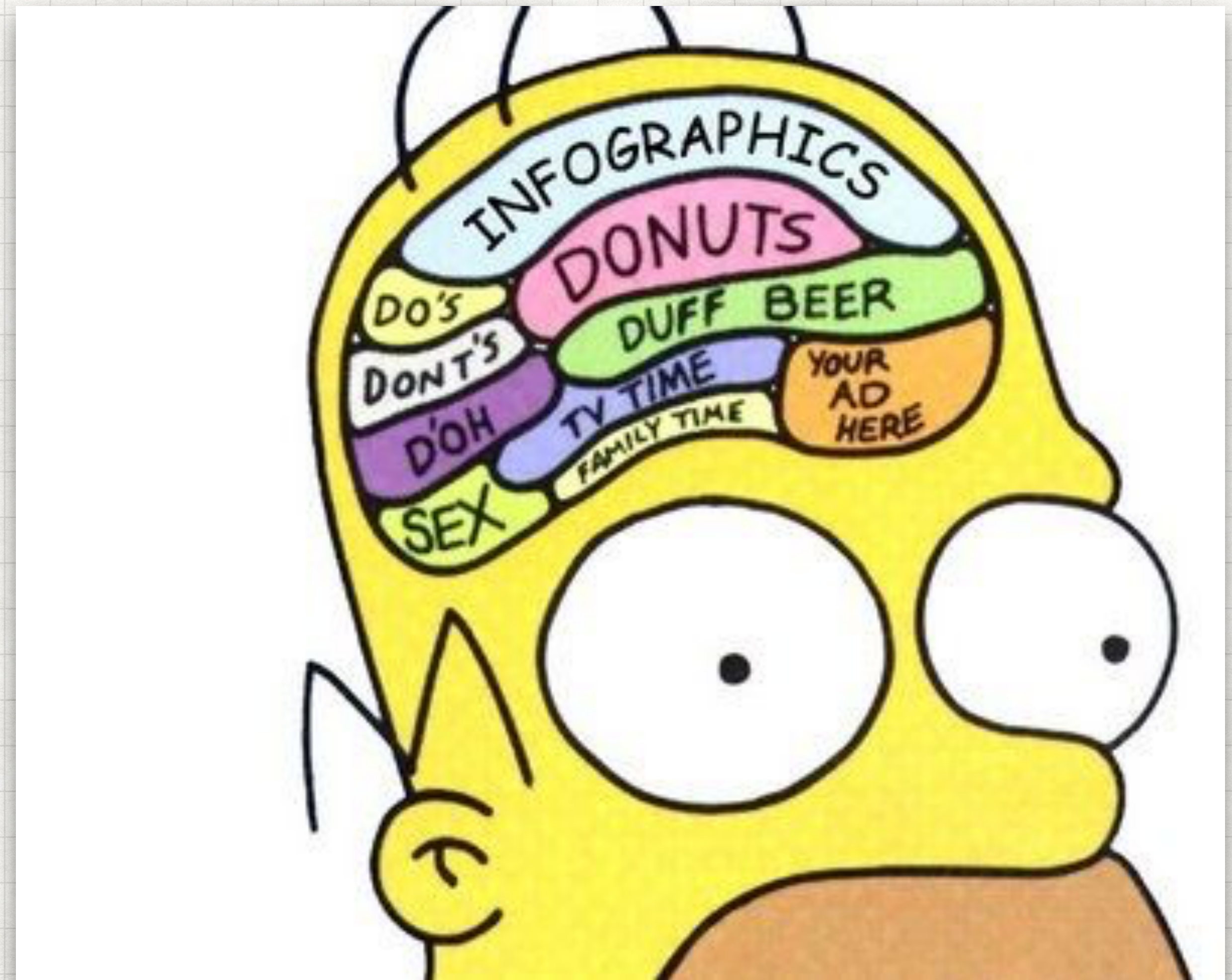
DIFFERENT TYPES OF ASSETS

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



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.



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

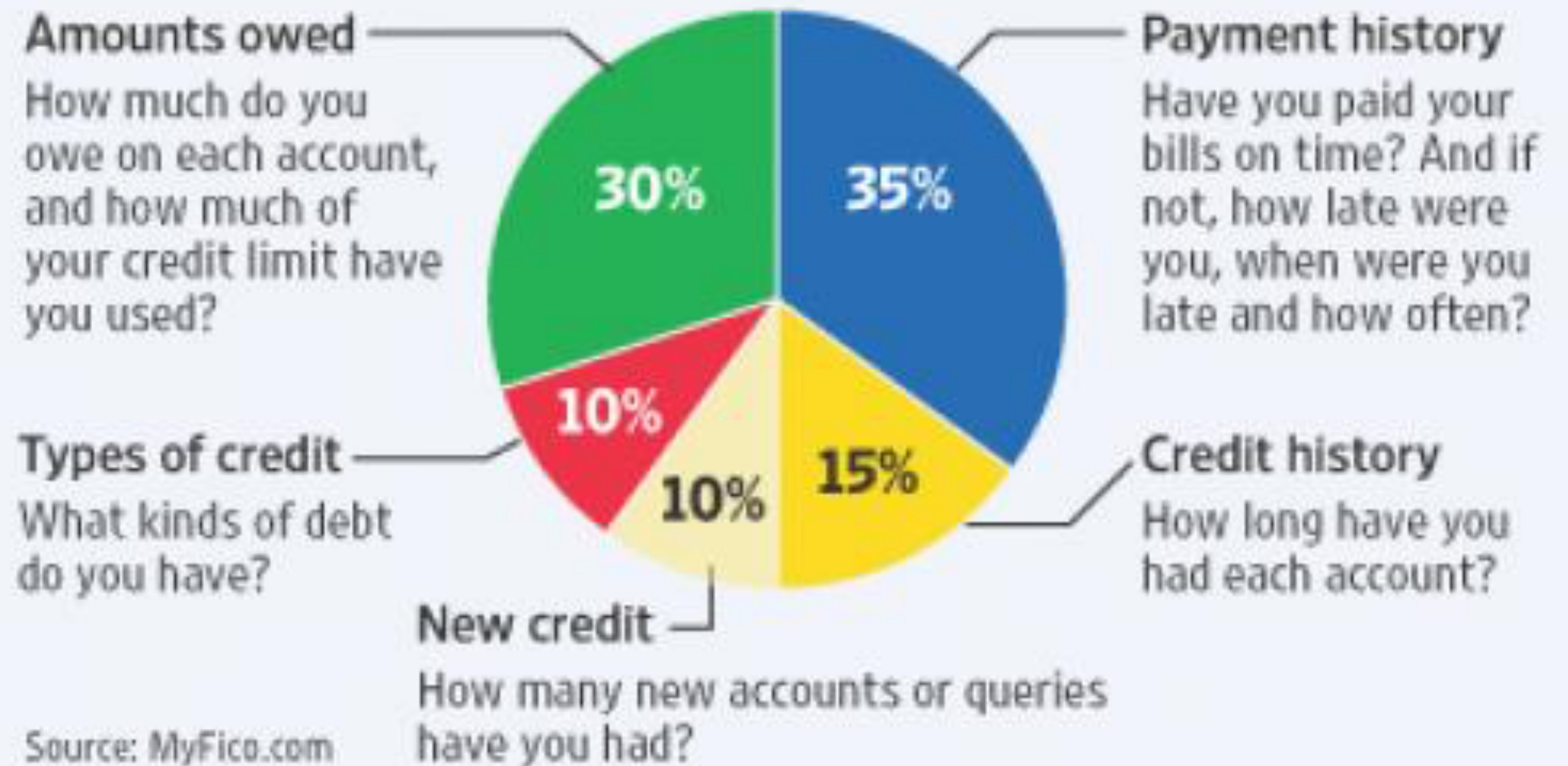
- Short term vs. Long term
- Secured vs. Unsecured
- Tax Liability



CREDIT SCORES

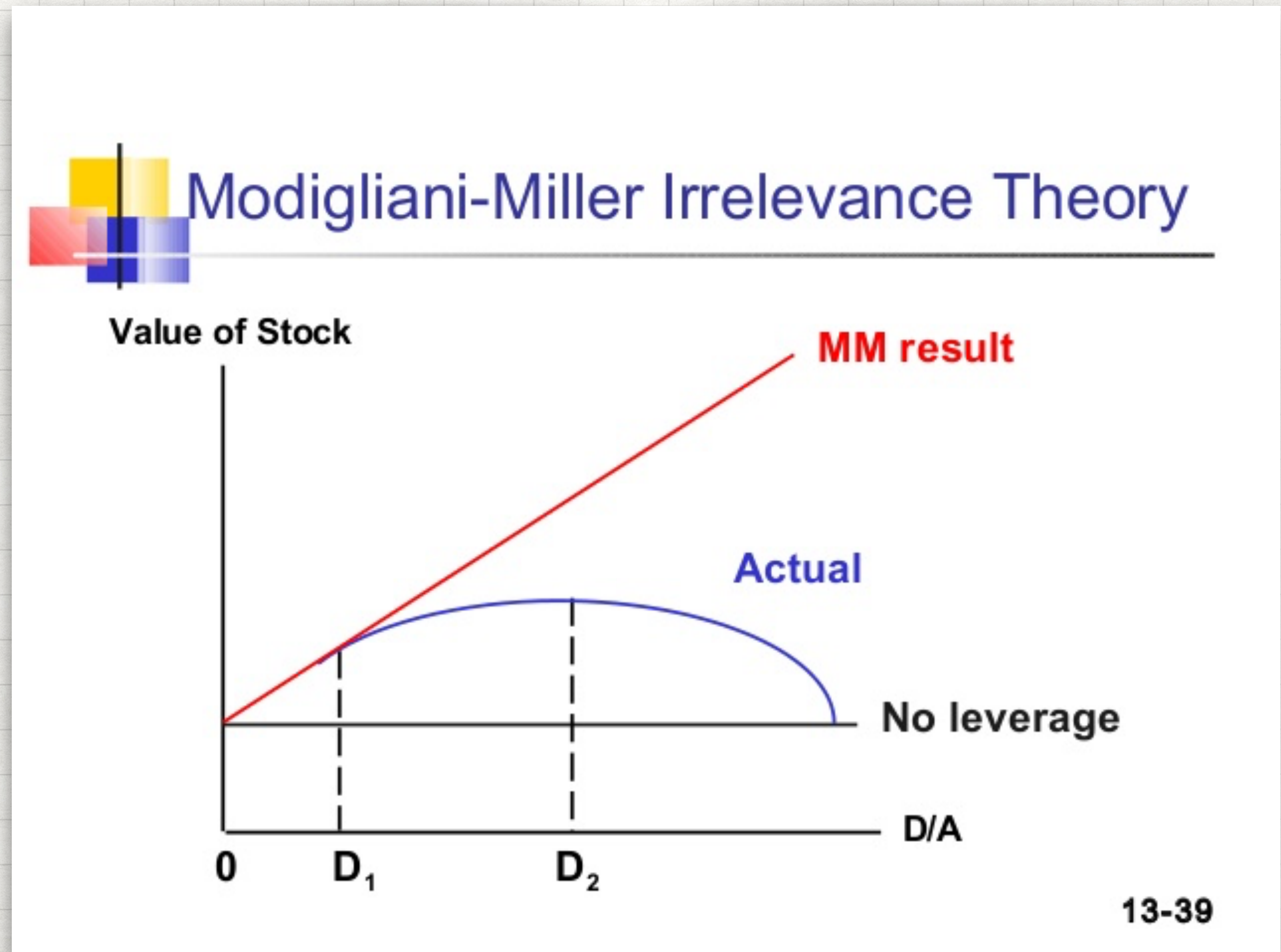
- Lenders report to 3 major centralized credit agencies when you apply for debt, receive debt, and when you pay off debt.
- Building a good credit score is essential for qualifying for most loans. It can affect other services too, as it is used for identity verification.
- Issues that affect credit score: length of history, on time payment, percent of capacity utilized, new applications for debt, bankruptcy.
- Credit Karma ¹⁰⁰
<http://www.creditkarma.com>

Factors included in your FICO credit score:



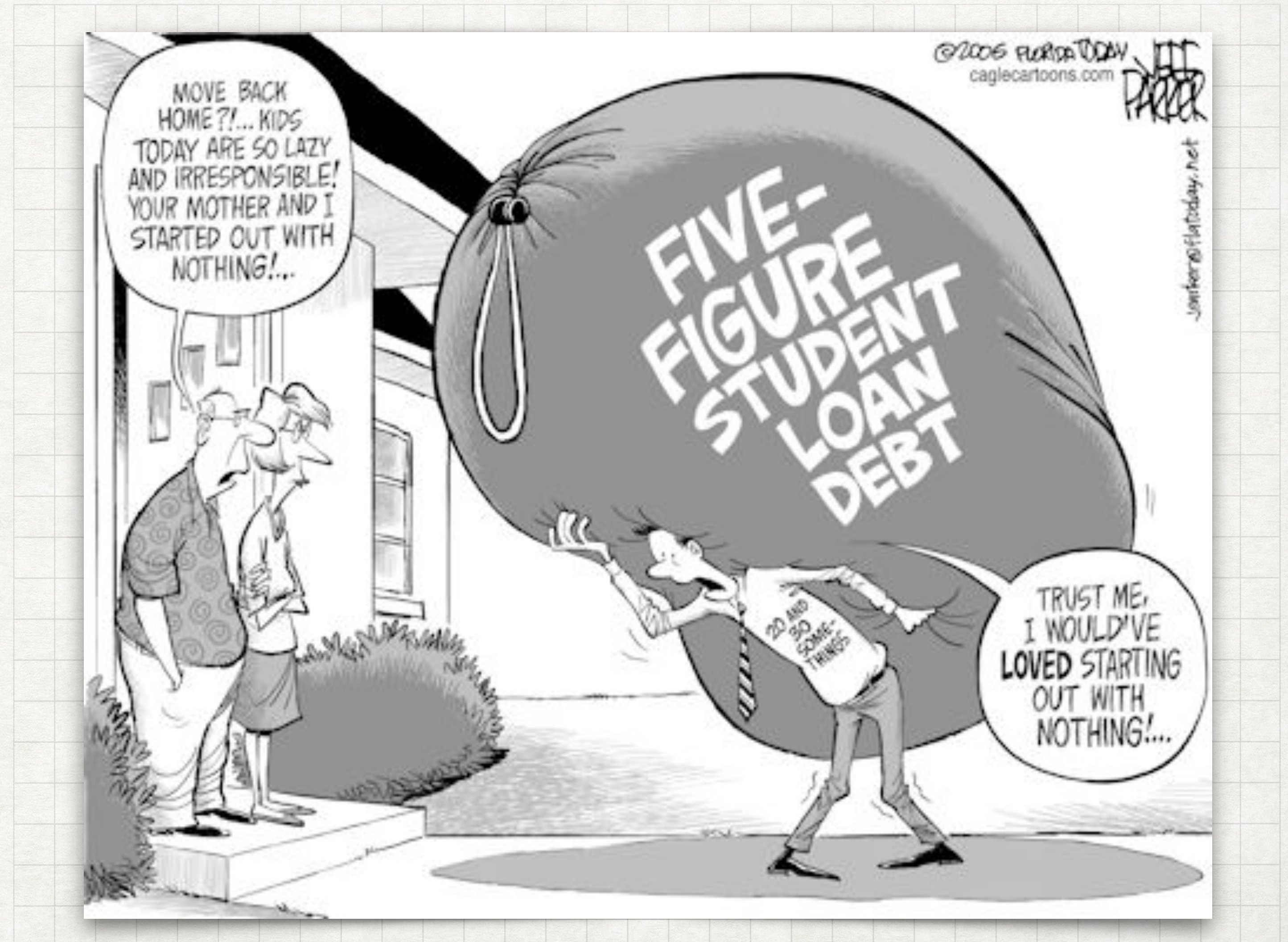
IS DEBT A BAD THING?

- 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.

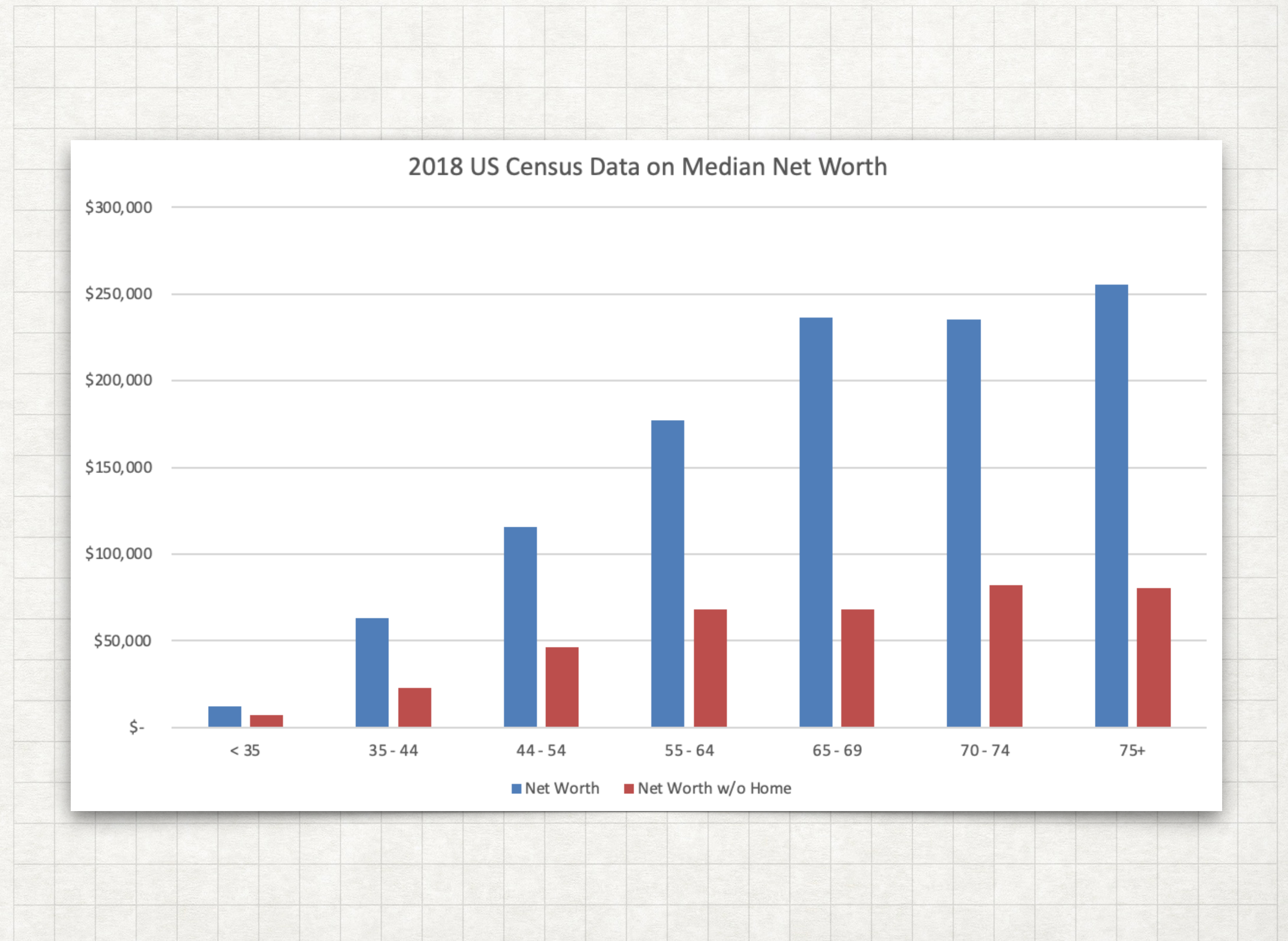


BALANCE SHEET

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.**



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

<u>ASSETS</u>		<u>LIABILITIES</u>	
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	<u>89,000</u>	Total current liabilities	<u>61,000</u>
Investments	<u>36,000</u>	Long-term liabilities	
Property, plant & equipment		Notes payable	20,000
Land	5,500	Bonds payable	400,000
Land improvements	6,500	Total long-term liabilities	<u>420,000</u>
Buildings	180,000		
Equipment	201,000	Total liabilities	<u>481,000</u>
Less: accum depreciation	(56,000)		
Prop, plant & equip - net	<u>337,000</u>		
Intangible assets		<u>STOCKHOLDERS' EQUITY</u>	
Goodwill	105,000	Common stock	110,000
Trade names	200,000	Retained earnings	220,000
Total intangible assets	<u>305,000</u>	Accum other comprehensive income	9,000
Other assets	<u>3,000</u>	Less: Treasury stock	(50,000)
Total assets	<u>\$ 770,000</u>	Total stockholders' equity	<u>289,000</u>
		Total liabilities & stockholders' equity	<u>\$ 770,000</u>

The notes to the sample balance sheet have been omitted.

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

