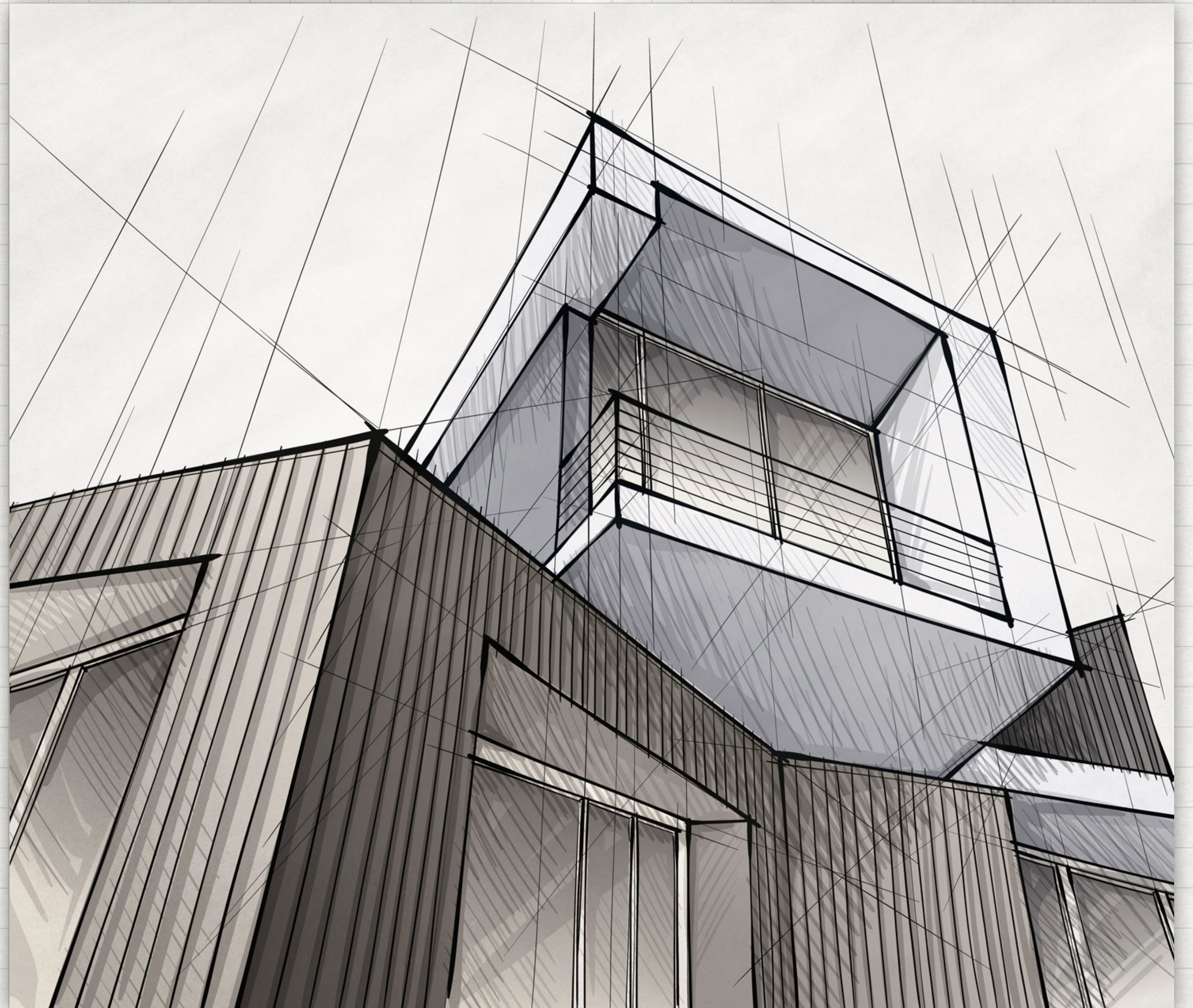


CS 007: SESSION 4
**PERSONAL
FINANCE FOR
ENGINEERS**



EVALUATING OFFERS

Final Thoughts

LAST WORD: NEGOTIATION

- The market is fairly efficient, but companies vary significantly in their approach.
- Some reward negotiation. Others explicitly work against it. Lack of negotiation is one of the contributing causes to pay disparity. Polite but firm is often the right approach.
- High quality companies do a lot of work on fair compensation, but startups can vary widely. Know the market data.
- Some terms are more flexible than others. Base comp is often more difficult to move than signing bonus or equity. If you are going to a private company, it's almost always a bet on equity anyway.
- Don't be afraid to approach the topic of fair compensation with your manager. Understand the difference in roles between a recruiter & a manager.
- Be emotionally honest with yourself on what is a deal breaker. Lines in the sand can be hard to erase.



CS 007

SAVING & BUDGETS



INCOME & EXPENSES

Spend less than you make

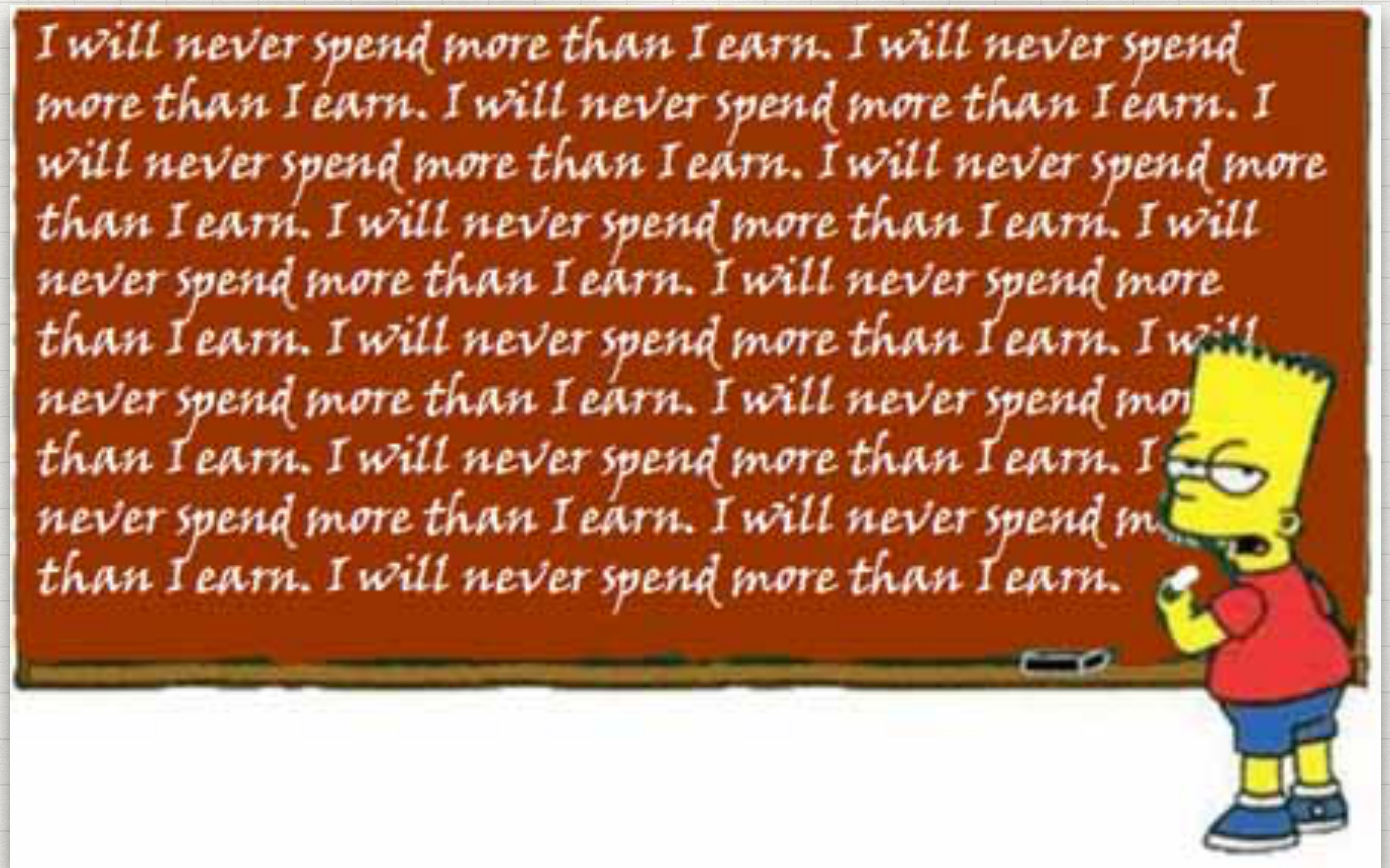
DON'T BUY STUFF YOU CANNOT AFFORD



<https://www.nbc.com/saturday-night-live/video/dont-buy-stuff/n12020>

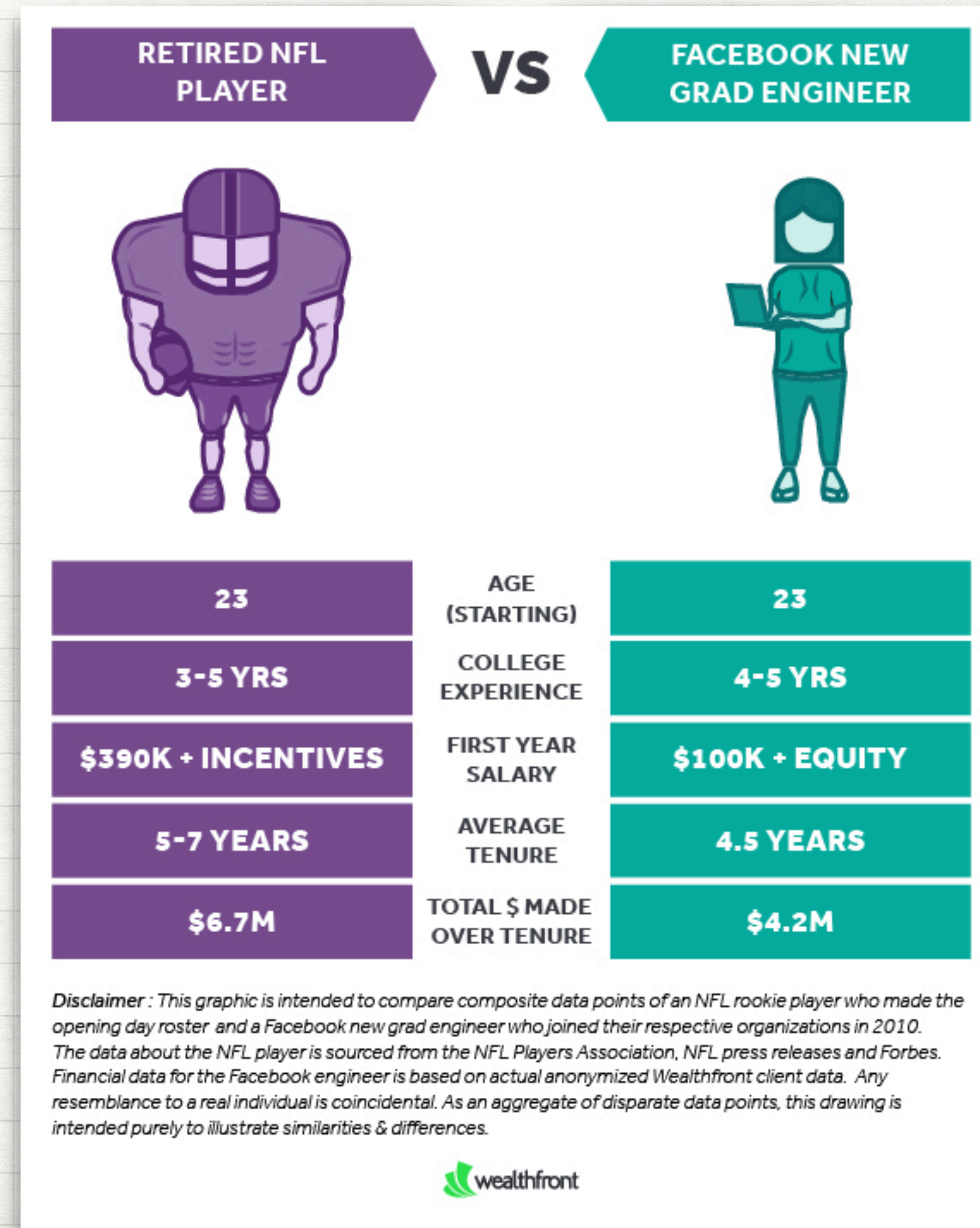
SPEND LESS THAN YOU MAKE

- This is the **ultimate secret** to personal financial success.
- Important at almost every level of income & wealth.
- Important for all levels of success & intelligence.
- There is no amount of money that you can't spend. There are reasons why multi-millionaires go broke.
- Very easy to measure, few people do.



WHY IS THIS DIFFICULT?

- Not all expenses happen in the same time frame as income. Paycheck every two weeks vs. monthly or annual bills.
- Not all expenses are predictable
- Endowment effect can be counter-productive. A budget of \$300 for clothing per month turns into a license to spend more than you need.
- Credit cards make it trivial to overspend
- Incomes fluctuate but lifestyle & expenses are sticky. Very difficult when you make a lot of money in a short amount of time (Hollywood, Pro Sports, Silicon Valley)
- Taxes are complicated.



STOP KEEPING UP WITH THE JONESES

- Why do we do it?
 - Desire to show off our success
 - Need to have what other people have. Even worse when it's an aggregation across a wide variety of lifestyles.
- They are broke.
- You have to set your own priorities.

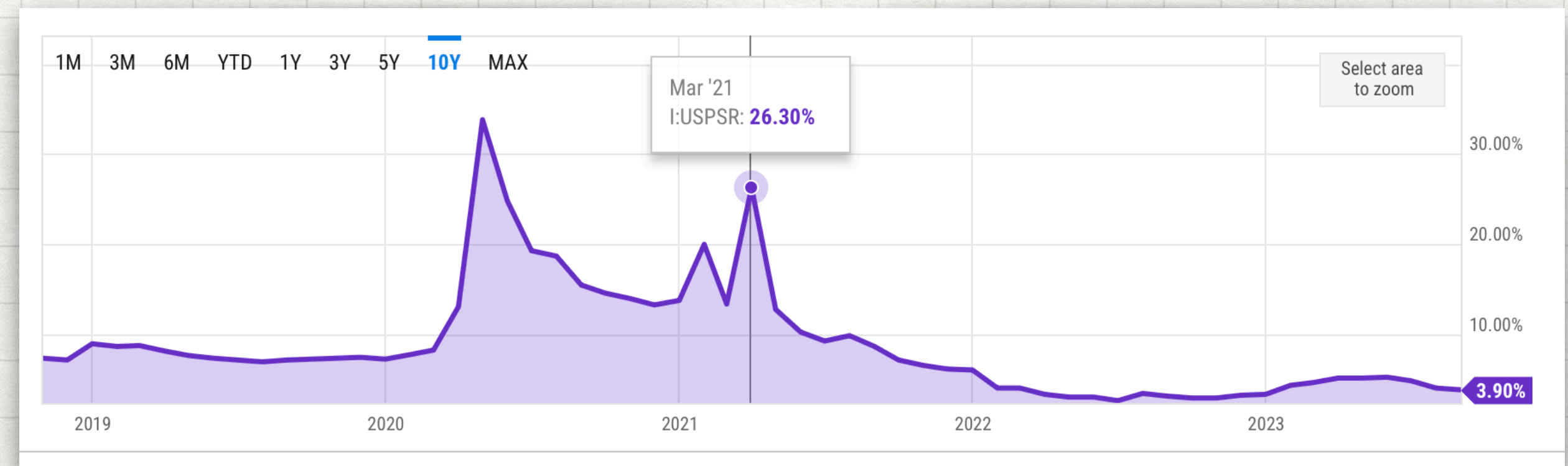
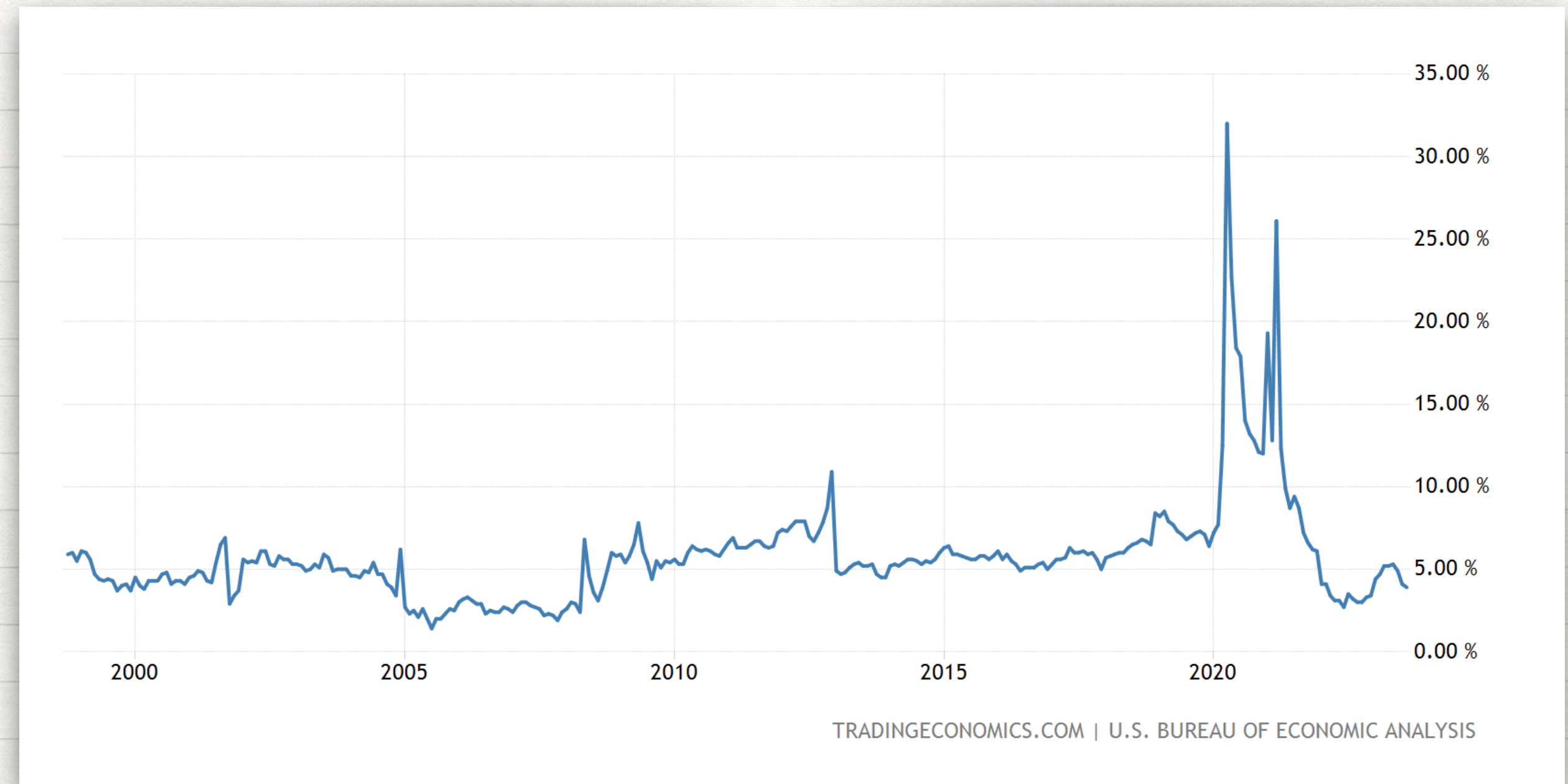


SAVINGS RATES

How Much Should You Save?

US SAVINGS RATE

- Actually a number that governments track as an important macroeconomic statistic.
- US Personal Savings Rate was 3.6% in August 2017, but 8.1% in August 2019. Now 14.1% due to 2020 crisis.
- Savings = Income - Spending
- Does not account for non-income value generation or for future liabilities



* <https://tradingeconomics.com/united-states/personal-savings>

* https://ycharts.com/indicators/personal_saving_rate

WHAT'S THE IDEAL TARGET?

- Most common recommendations: 10% & 15%
- No mathematical basis for 10%. Humans just like the number 10.
- 15% is based on historical assumptions of length of time working, rate of return, wage inflation, and 80% retirement income goal.
- Real answer: every % matters.
 - You lower the amount you need to live on / lifestyle.
 - You increase the pool of capital to hit that goal.



7

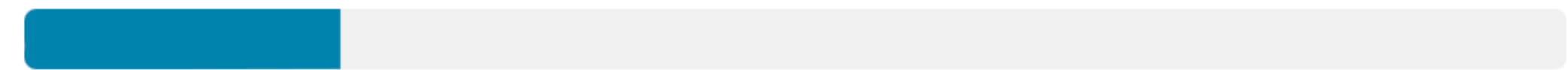
When you graduate, what percentage of your salary do you believe you should save every month?

146 out of 146 people answered this question

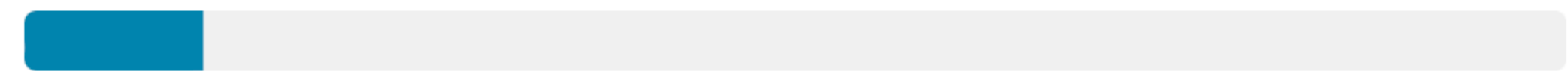
20%+ 98 resp. 67.1%



15% 30 resp. 20.5%



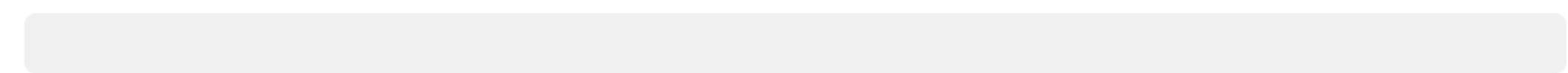
10% 17 resp. 11.6%



0% 1 resp. 0.7%



6% 0 resp. 0%



EMPLOYER BENEFITS TO SAVING

- Compensation structure can affect savings rates.
- If you receive a 10% bonus and don't spend it, that boosts your savings rate.
- Unfortunately, most people spend more than their expected bonus before they receive it.
- Three systemic ways to boost savings rates:
 - Forced savings (e.g. Australia) makes it a requirement to save a % of your pay.
 - Employer match (e.g. 401k) can contribute significantly to overall savings rates. (It's free money. Take it.)
 - Health savings accounts (HSA) may contribute to savings as well, although empirical evidence is limited.

401k Employer Matching Contribution Facts

\$1,336 The average amount of employer match employees missed out on in 2014.

\$42,855 The average amount of employer match an employee will miss out on over the span of 20 years.

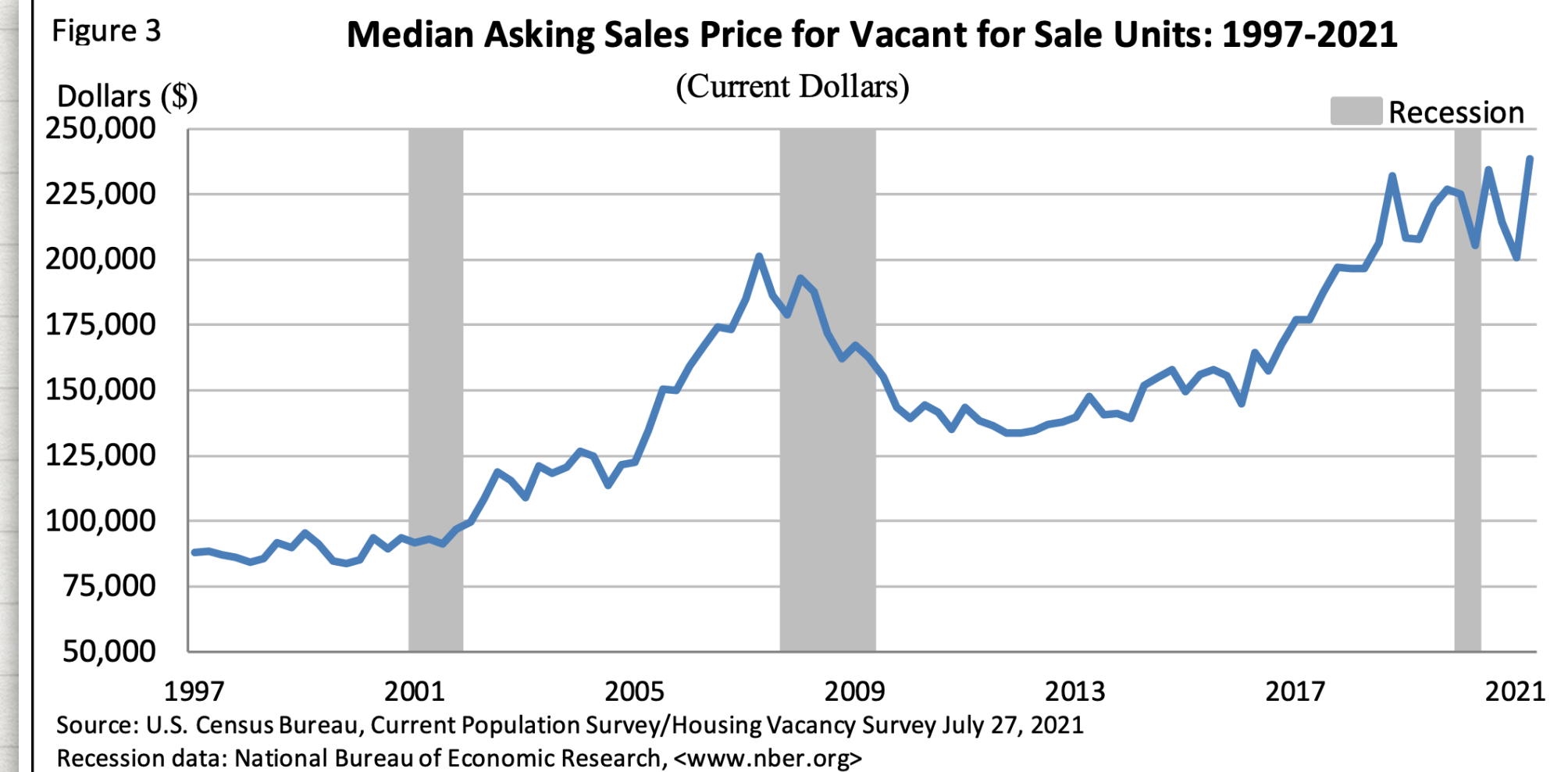
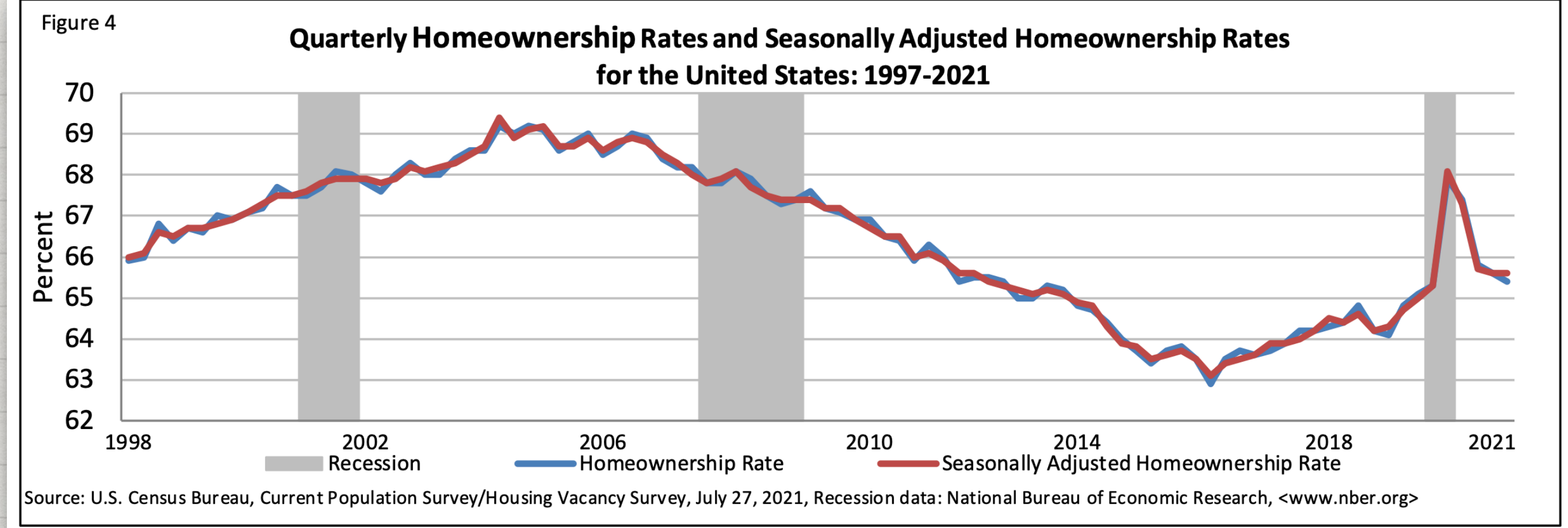
\$1.4B The total amount of unclaimed employer matching contributions, according to a survey of over 1 million employees.

\$24B The annual amount of lost employer matching contributions due to employees not saving enough.



MORTGAGE AS FORCED SAVING

- 65.6% of Americans are homeowners (as of Q1 2021)
- Mortgage payments are made of two components: interest & principal.
- Paying off debt wipes a liability off your books, leaving the asset. This boosts your net worth, just like savings does.
- For many Americans, the forcing function of monthly principal payments effectively leads them to build significant value in their homes over long time periods (decades).



THE BENEFITS OF AUTOMATION

- Pay Yourself First
- Build a budget, calculate your savings, automate the withdrawal, just like taxes.
- Opt-out enrollment in 401(k) plans is far more effective than Opt-in.
- Automatic increases in 401(k) contributions is far more effective than Opt-in.
- When your salary increases, try to save that percentage. You can boost your savings rate over time.
- Money not seen is less likely to be spent.



BUDGETING

Where Does Your Money Go

WHAT IS A BUDGET

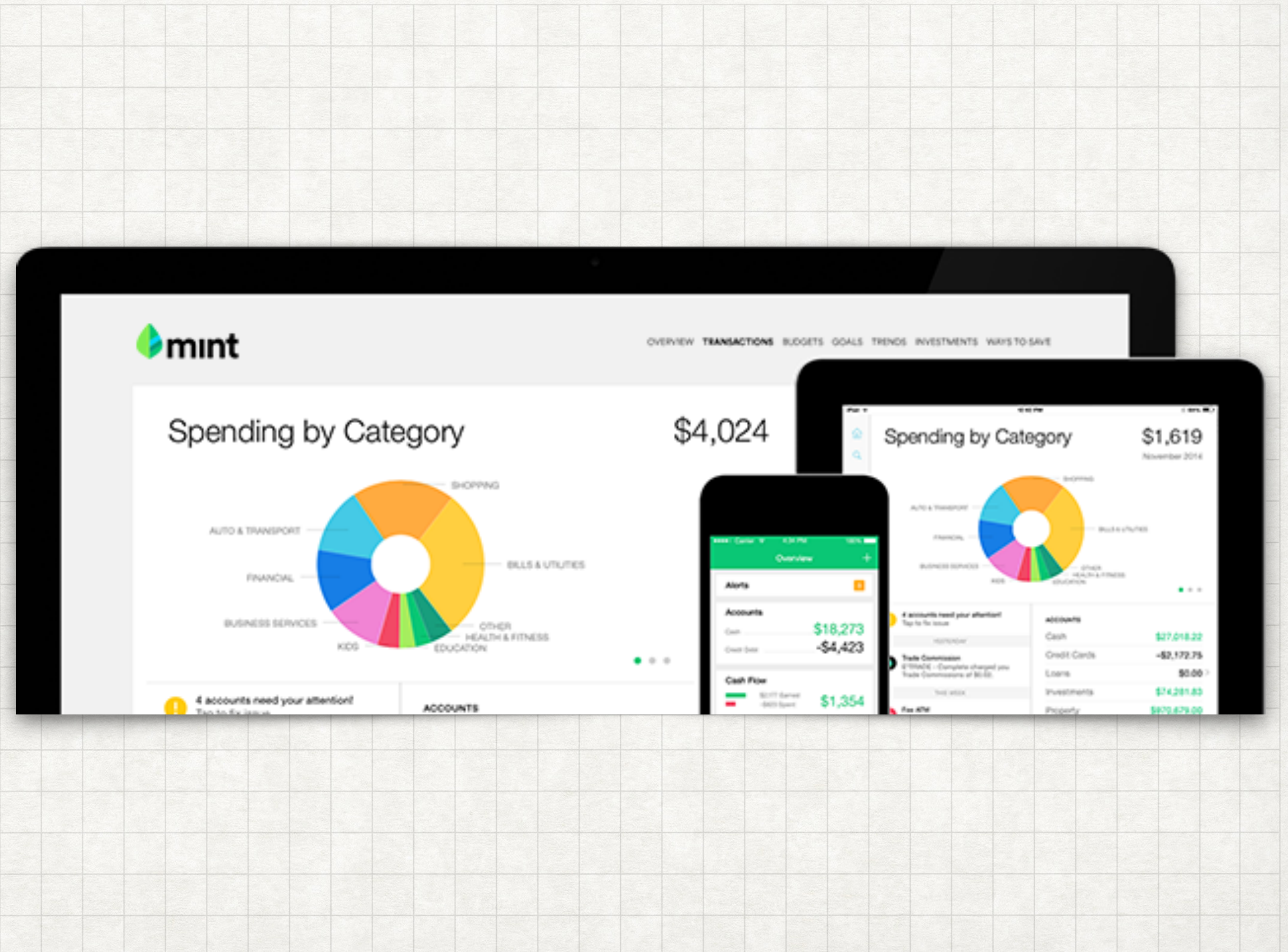
- Breakdown of spending, by category
- If you are settled, you can build a surprisingly accurate budget by looking at your spending for the last 3 months and averaging.
- Don't forget annual expenses
- Emergency fund is meant to handle truly unusual expenses, not overspending on holiday gifts.



* https://ycharts.com/indicators/personal_saving_rate

TRACKING EMPIRICAL VS. IDEAL RESULTS

- Big difference between what you are spending in a category & what you need to spend in a category
- Comparables from colleagues / friends are valuable, but need to be taken in context
- Track your ideal vs. empirical results on a regular basis.
- The key metric for a budget is whether or not it is realistic



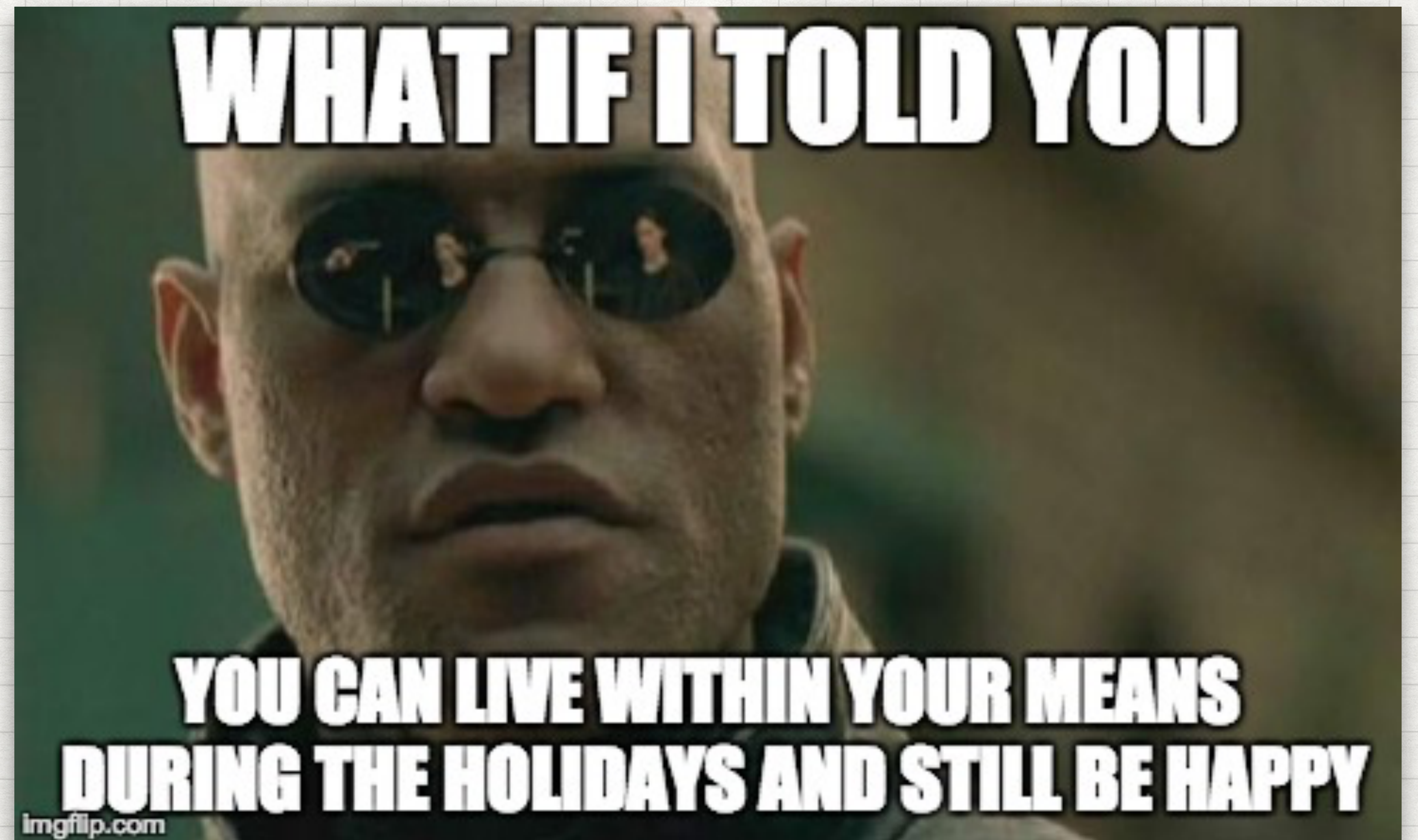
NEEDS / WANTS / SAVINGS & DEBT

- "All Your Worth" - Elizabeth Warren (D) co-authored with her daughter
- 50 / 30 / 20 in the book, but those are unlikely to be your #'s.
- **Needs:** Keep roof over your head, safe, healthy and able to work.
- **Wants:** Any other consumption
- **Savings / Debt:** Paying down debt, building emergency fund, saving for long term goals



YOU CAN MAKE IT WORK

- There are people who make less than you who manage to save 💰
- There are people who make more than you who go bankrupt.
- Beware of emotional justification: language like "I've earned this" or "I deserve this" or "why not me?"
- It has been demonstrated that just the act of making a budget reduces the amount that people spend.
- Do not be surprised if you go over your budget. Leave a buffer estimating income & allocating spending.



INCOME STATEMENT

Pulling It All Together

WHAT IS AN INCOME STATEMENT

- An **income statement** is a financial statement that reports a company's financial performance over a specific accounting period.
- A **personal income statement** reviews a time period including income, expenses, and savings.

Paul's Guitar Shop, Inc. Income Statement For the Year Ended December 31, 2015		
Revenues		
Merchandise Sales	\$ 24,800	
Music Lesson Income	<u>3,000</u>	
Total Revenues:		\$ 27,800
Expenses		
Cost of Goods Sold	10,200	
Depreciation expense	2,000	
Wage expense	750	
Rent expense	500	
Interest expense	500	
Supplies expense	500	
Utilities expense	<u>400</u>	
Total Expenses:		<u>14,850</u>
Net Income		<u>\$ 12,950</u>

EXAMPLE: INCOME STATEMENT

- Best source for income data:
Pay Stub
- Best source for expenses?
Last 3 months of spending
- Best source for comparables?
Colleagues / Friends / Family

Income			
Salary			
UnicornTech	\$ 12,000.00	100.0%	
- Taxes	(\$ 2,430.40)	20.3%	
- Insurance	(\$ 739.98)	6.2%	
Total Salary	\$ 8,829.62	73.6%	
Total Income	\$ 8,829.62	73.6%	
Savings			
Retirement			
Roth 401K	\$ 500.00	4.2%	
IRA	\$ 0.00	0.0%	
Total Retirement	\$ 500.00	4.2%	
College			
Pride & Joy 529	\$ 250.00	2.1%	
Total College	\$ 250.00	2.1%	
Total Savings	\$ 750.00	6.3%	
Debt Repayment			
Housing			
Mortgage	\$ 2,500.00	20.8%	
Total Housing	\$ 2,500.00	20.8%	
College			
Stanford Loans Consolidated	\$ 250.00	2.1%	
Total College	\$ 250.00	2.1%	
Total Debt Repayment	\$ 2,750.00	22.9%	

Annual Expenses		
Life Insurance	\$ 800.00	
Property Tax	\$ 7,800.00	
Total Annual Expenses	\$ 8,600.00	

Expenses		
Housing		
Utilities	\$ 300.00	2.5%
Water/Garbage	\$ 120.00	1.0%
AT&T Wireless	\$ 120.00	1.0%
TV / Netflix / Hulu	\$ 110.00	0.9%
Home Insurance	\$ 76.50	0.6%
Maintanence	\$ 200.00	1.7%
Total Housing	\$ 926.50	7.7%
Auto		
Toyota Prius	\$ 323.50	2.7%
Auto Insurance	\$ 132.29	1.1%
Gas	\$ 100.00	0.8%
Repairs/License	\$ 0.00	0.0%
End Auto	\$ 555.79	4.6%
Household Expenses		
Groceries/Costco	\$ 800.00	6.7%
Dining Out	\$ 400.00	3.3%
Entertainment	\$ 50.00	0.4%
Clothing	\$ 150.00	1.3%
Periodicals	\$ 38.00	0.3%
Personal Spending	\$ 100.00	0.8%
Pets	\$ 50.00	0.4%
Computers/Gadgets	\$ 200.00	1.7%
Gym	\$ 70.00	0.6%
Gifts	\$ 100.00	0.8%
Charity	\$ 300.00	2.5%
Medical	\$ 100.00	0.8%
Total Household Expenses	\$ 2,358.00	19.7%
Annualized Expenses	\$ 716.67	6.0%
End Expenses	\$ 4,556.96	38.0%
Cash Flow Buffer	\$ 772.66	6.4%

ONGOING MAINTENANCE

- **Quarterly**
 - Check your progress, real vs. expected
- **Annual**
 - Model in changes & learnings from real behavior.
- **Automate**
 - The more you automate your savings & spending, the less room for error.



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QUESTIONS



NEXT WEEK: YOUR FINANCIAL PROFILE

- Liquidity
- Emergency Funds
- Assets & Liabilities
- Net Worth
- Personal Balance Sheet

