



FINANCIAL LITERACY

How to manage your personal finances
(for data people)

AGENDA



1. Budgeting
2. Saving and Investing
3. Taxes and Retirement
4. Credit



Writing out a budget can help you manage your expenses and achieve your spending goals.

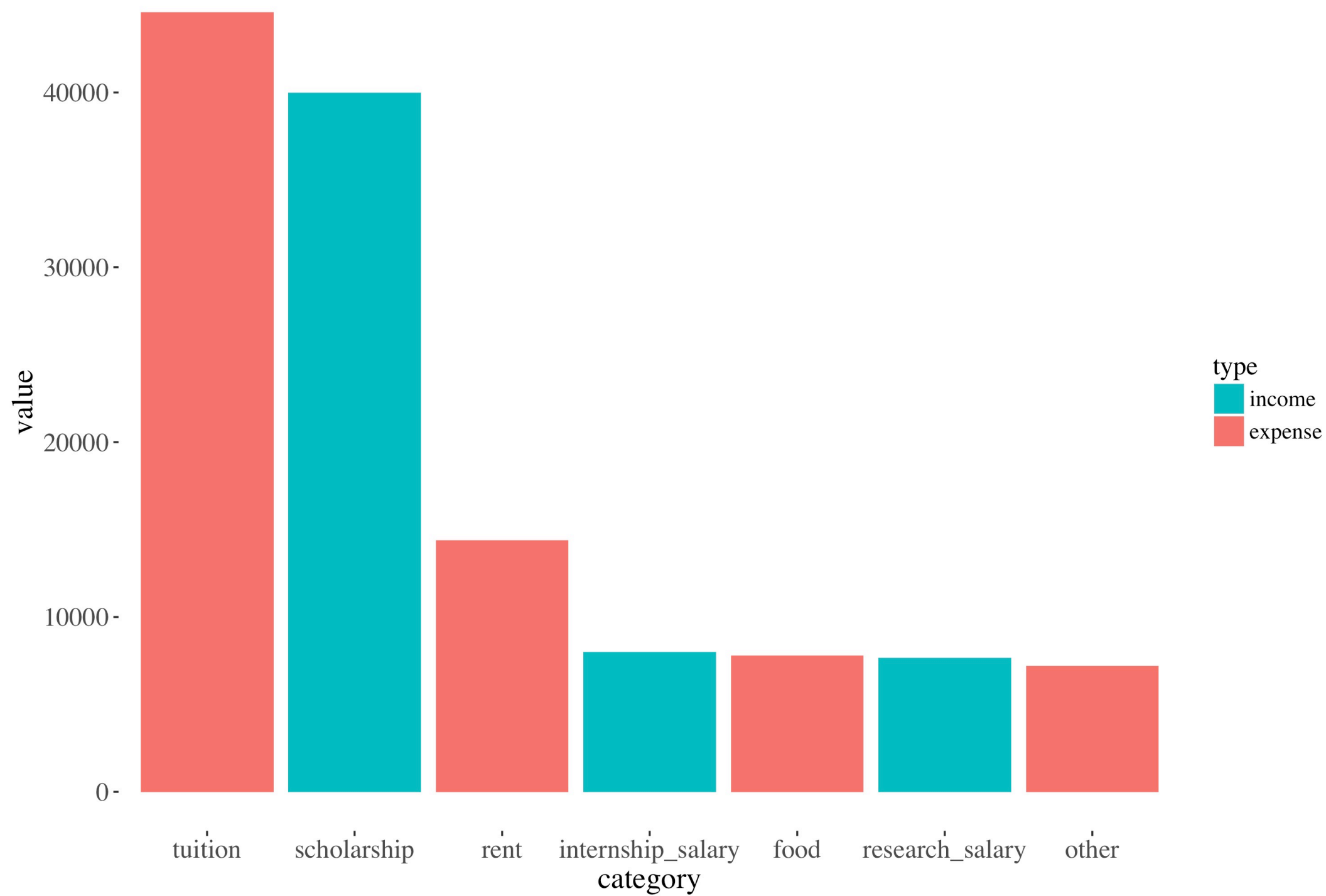
Debits (+)

- Research assistant income
- Internships
- Scholarships
- Cash from parents
- Spare change you find on the street
- Probably not much else

Credits (-)

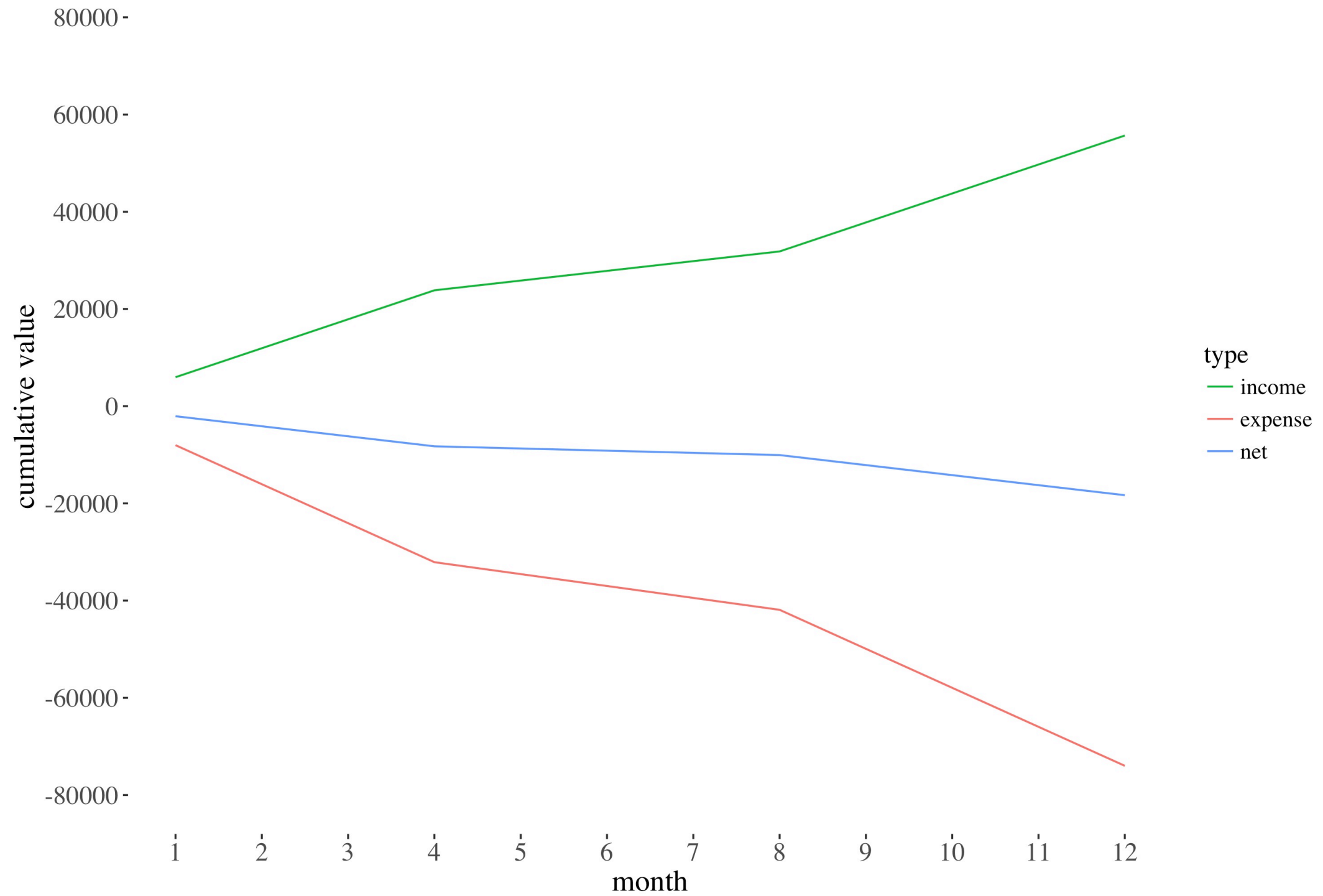
- Food and housing
- Tuition
- Books
- Clothing
- AWS
- Video games
- Weekend “restaurant” expenses
- Basically anything fun

ANNUAL BUDGET



Writing out a budget can help you manage your expenses and achieve your spending goals.

YEARLY BUDGET AS CUMULATIVE SUM



BUDGET TEMPLATE EXAMPLE



Student Budget Template						
	Projected Monthly	Actual Jan	Actual Feb	Actual Mar	Actual Apr	Actual May
Income						
Wages	\$0.00					
Gifts	\$0.00					
Allowance	\$0.00					
Financial aid	\$0.00					
Other	\$0.00					
TOTAL Income	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Expenses						
School expenses						
Tuition	\$0.00					
Fees	\$0.00					
Books	\$0.00					
Supplies	\$0.00					
TOTAL School expenses	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
TOTAL Expenses	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Savings						
Long term goals						
House	\$0.00					
Car	\$0.00					
Other	\$0.00					
TOTAL Long term goals	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Short term goals						
Vacation	\$0.00					
Other	\$0.00					
TOTAL Short term goals	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
TOTAL Savings	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
TOTAL BUDGET	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00



$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

A = amount at the end of t

P = principal (original amount)

r = interest rate in decimals

n = number of times compounded yearly (typically 1 or 12)

t = number of years (time)

LOAN REPAYMENTS



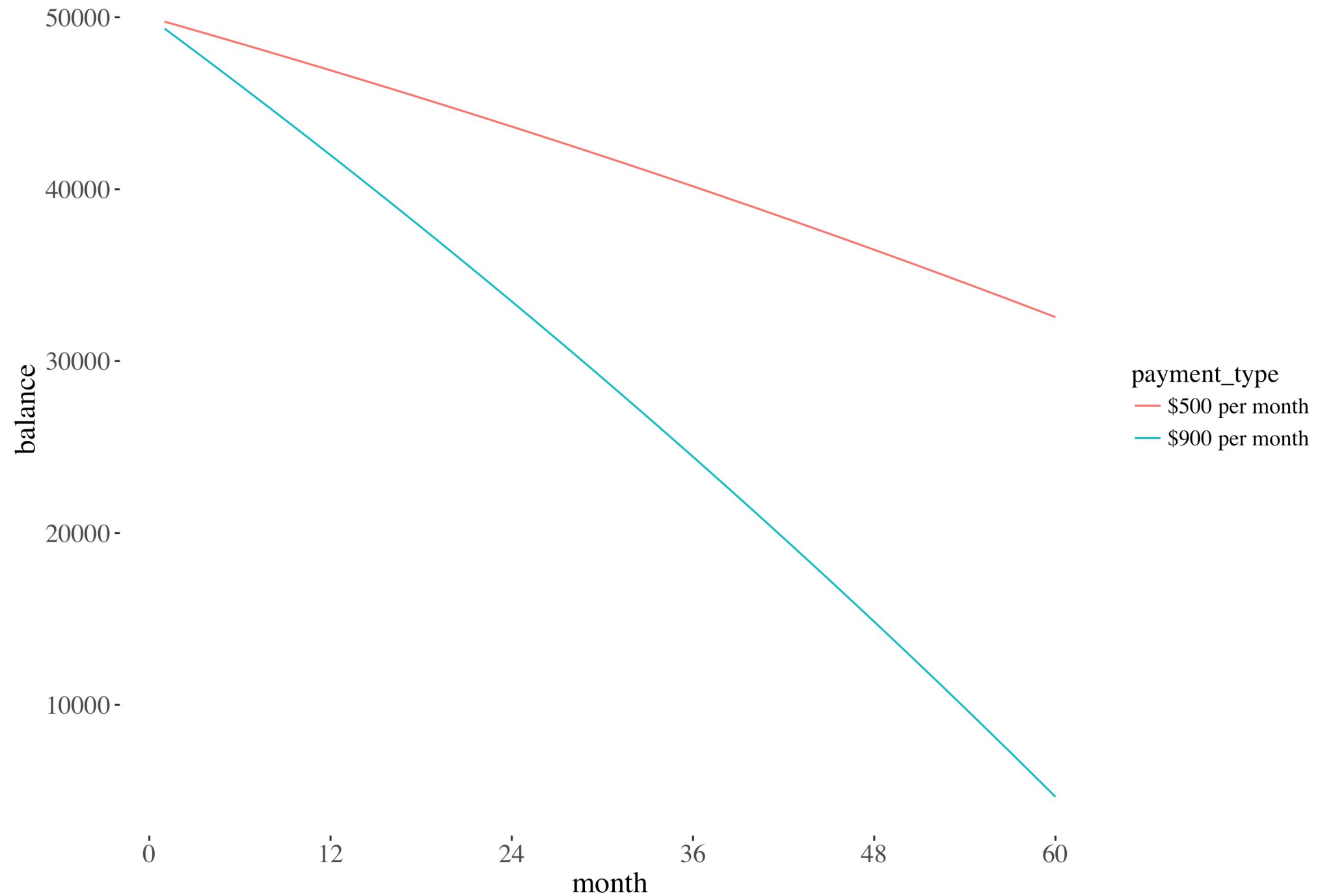
A = balance

P = \$50,000

r = 0.06

n = 12

t = 5



\$500/month remaining balance: \$32,557.49

\$900/month remaining balance: \$4,649.48

INTEREST ACCUMULATION



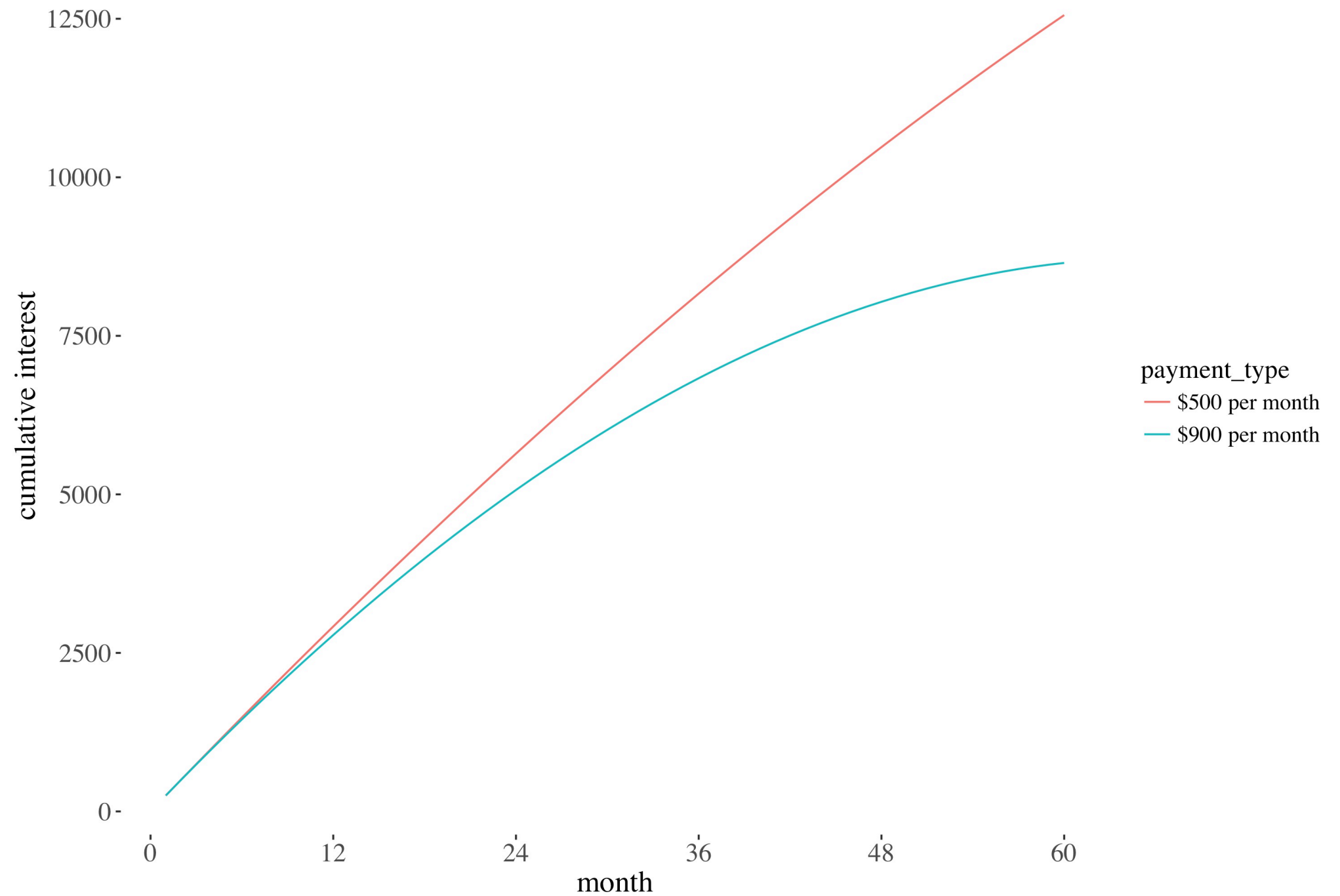
A = balance

P = \$50,000

r = 0.06

n = 12

t = 5



\$500/month cumulative interest: \$12,557.49

\$900/month cumulative interest: \$8,649.48

LOAN REPAYMENT STATS



Loan amount: \$50,000

Interest rate: 6%

\$500 per month

- Time to repay loan: 11.6 years
- Number of payments: 139
- Total interest: \$19,488

Interest accumulates much faster with this option, as there is a larger amount of principal each month.

\$900 per month

- Time to repay loan: 5.5 years
- Number of payments: 66
- Total interest: \$8,723

While this option has a lower total cost, it does require putting more money into repayment each month.

The question is: do you have a better way to spend your money?



$$PV = \frac{C_1}{(1 + r)^n}$$

PV = present value

n = number of time periods

C_1 = cash flow at period 1

r = discount rate

You don't actually need to understand this equation - in a nutshell, this shows that money in the present is worth more than the same amount of money in the future.



PRESENT VALUE EXAMPLE

Someone wants to give you money for some reason. They give you two options: \$1000 today, or \$1500 in five years. Which do you choose?

$$PV = \frac{\$1500}{(1 + r)^5}$$

Assume 10% discount rate:

$$PV = \frac{\$1500}{(1 + .10)^5} = \$931.38$$

So you take the \$1000, right? What if the discount rate is 8%?

$$PV = \frac{\$1500}{(1 + .08)^5} = \$1020.87$$



What you need

- Social security number
- W-2
 - If you were an *employee* in the calendar year
- 1099
 - If you were a *contractor* and earned more than \$600
- Forms for any other income earned
 - Investments, lottery, prizes, etc.
- Education costs and student loan interest

How to do it

When: typically April 15, however due to holidays it is April 17 in 2018.

How:

- Tax Software (free for simple taxes)
 - H&R Block, TurboTax, etc.
- Hire an Accountant
 - Expensive, but might get you more deductions
- IRS e-File (free, but tedious)
- Paper forms and mail them in
- *Federal and state taxes are filed separately*

You might not need to file taxes if you earned less than \$12,000, but *you should still check*. No matter the method, the IRS holds you responsible for your filing choices.



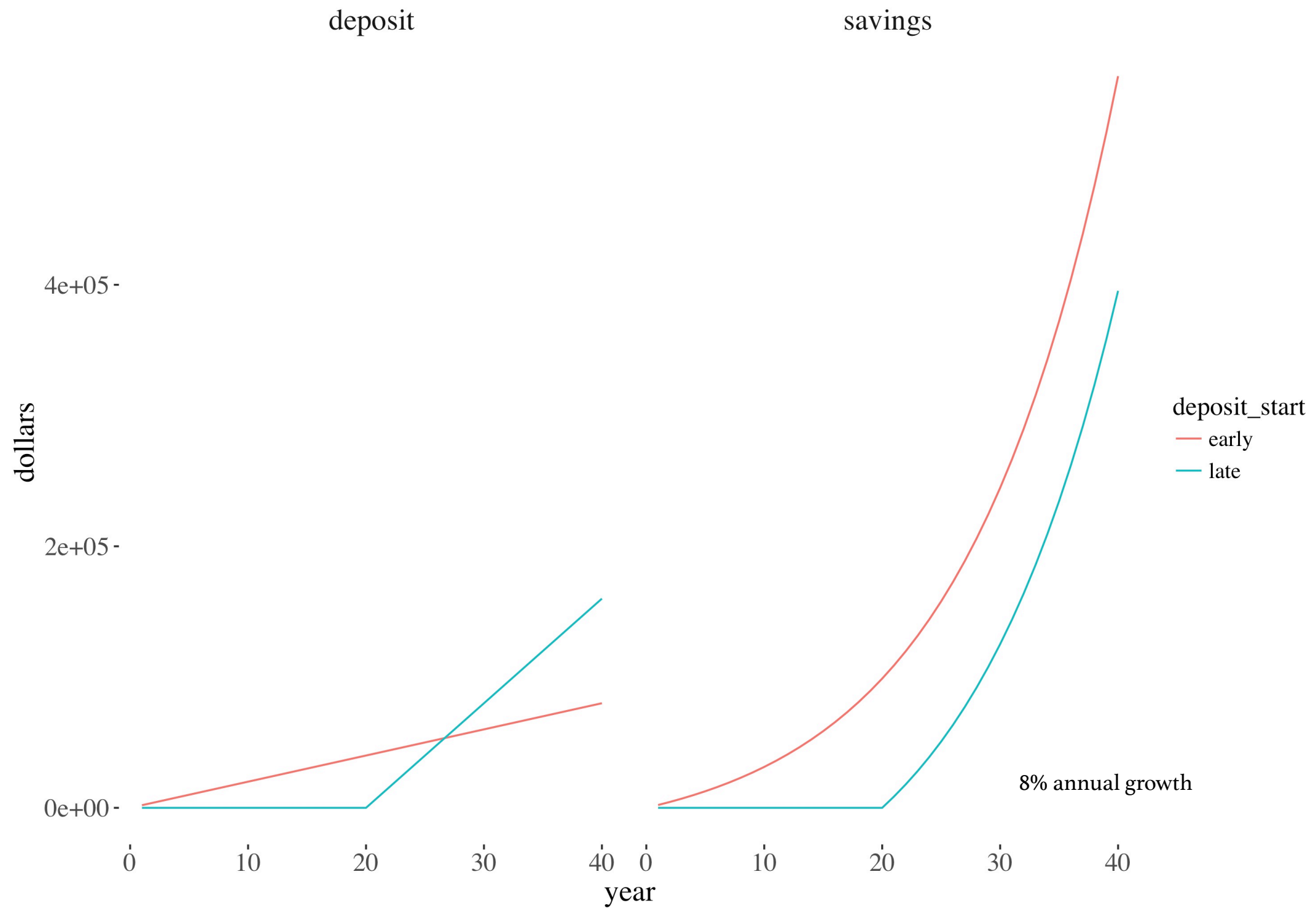
Individual Retirement Account (IRA)

- Traditional
 - Tax-deferred
- Roth
 - Tax-free withdrawals
- 401(k)
 - Employer sponsored retirement account
 - Likely has employer-specific options for investing

General Tips

- ALWAYS contribute enough to maximize employer-matching
- Start saving asap, even if it's only a little each month
- Avoid withdrawing from retirement accounts early
- Invest in growth funds now, convert to value funds as you get older
- Don't rely on government assistance

RETIREMENT SAVINGS GROWTH



Time, not deposit amount, is much more effective at earning higher returns.

CREDIT SCORE



Your credit score is an estimate of how likely you are to repay debt. It's an algorithm that predicts risk.

A higher credit score suggests you are a less risky consumer, which means you are more likely to be granted a loan and you will likely receive a lower interest rate.

Your credit score will be used in applications for loans, insurance, and renting an apartment, among other things.

Three main credit bureaus:

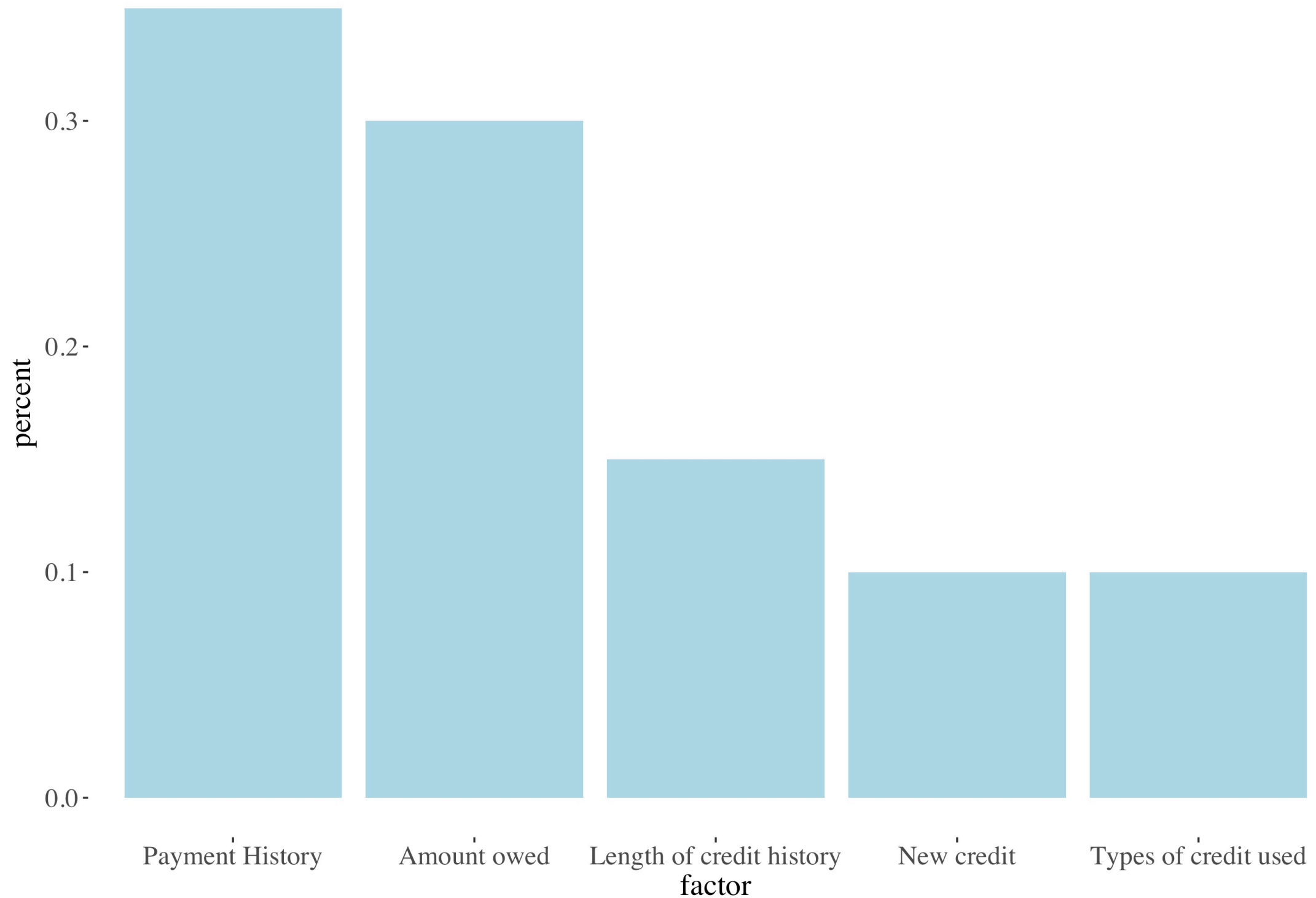
- Equifax
- Experian
- TransUnion

These bureaus collect a ton of data on you to evaluate your score. You should periodically ask for your credit report from **each** bureau to make sure there are no mistakes that can impact your financial health.



<https://www.usa.gov/credit-reports>

CREDIT SCORE (MAIN) FACTORS



While credit scores are black box algorithms, these broad categories give an idea of relative importance and how you can improve your credit.

CREDIT CARDS



These are just my personal recommendations. Please do your own research to find the card best suited to your own financial situation.

Beginner cards

Discover Card (Discover)

- Beginner card for those who do not have enough credit to qualify for a Visa or MasterCard credit card
- No annual fee, 1% points on all purchases, 5% quarterly rewards

Chase Freedom (Visa)

- Basic credit card for those who don't spend much or are too lazy to do research
- No annual fee, 1% points on all purchases, 5% quarterly rewards

Complex cards

Chase Sapphire Preferred (Visa)

- For people who like to travel and are comfortable with the credit card system
- \$95 annual fee after first year, 2% points on travel and restaurants, 1% on all other purchases, no foreign transaction fees

Fidelity Rewards (Visa)

- Linked to your Fidelity investment account, rewards are automatically deposited
- No annual fee, 2% cash back on all purchases

Many credit cards also come with a signup bonus (e.g. 50,000 points if you spend \$4,000 in the first three months). These can be great deals if you're good about your research!



The Points¹ Guy is a travel website that shares travel and credit card deals/tips

<https://thepointsguy.com/>

¹Credit card points

QUESTIONS?

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