

To Buy or Not to Buy: Analysis of a Major Purchase

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Seminar Series

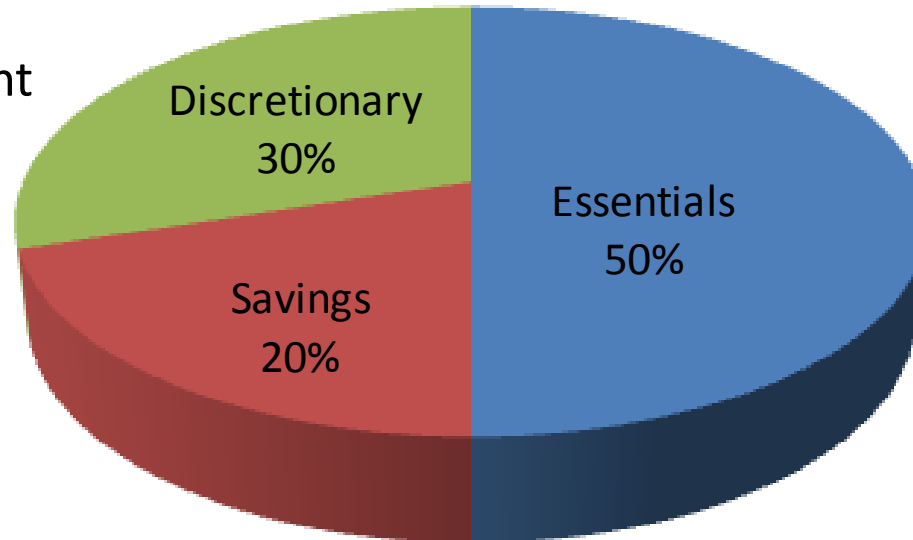
Overview

- Goal: Provide analytical perspective on the impact of debt on financing major purchase
 - True cost of home ownership
- Basic budget
- Housing costs
- How debt repayment works
- Buy vs. rent

Personal Budget: Where to Start?

The 50/20/30 Rule

- Eating out
- Entertainment
- Travel



- Housing
- Utilities
- Food
- Transportation
- Debt payments

- Savings
- Investing
- Debt repayment

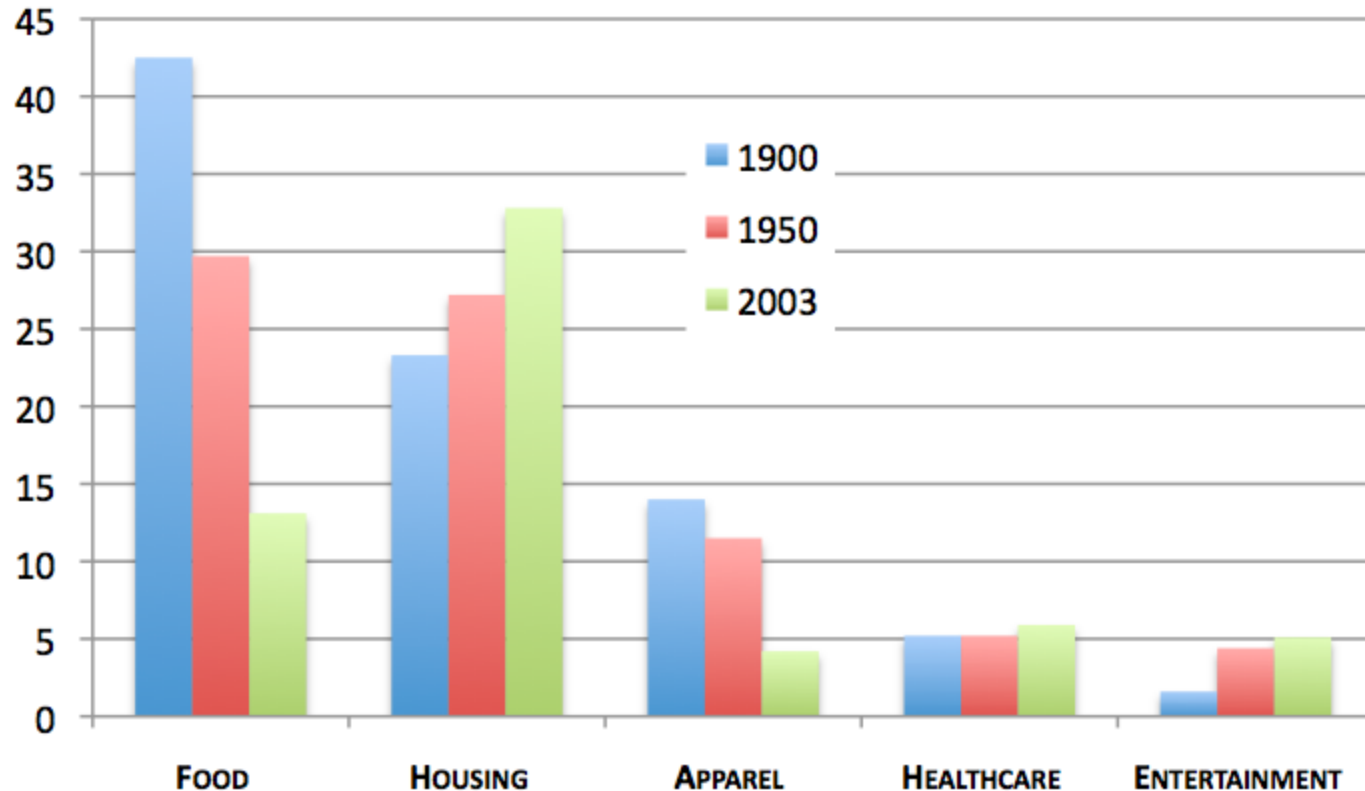
Why save and minimize debt?

Compound interest is the eighth wonder of the world. He who understands it.. earns it. He who doesn't it..pays it.

- Albert Einstein

- Given \$5000 today:
 - Spend it
 - Put it in money market
 - Earn 0.75% per year
 - Invest it in stocks/bonds
 - Earn 7% per year
 - Spend it and another \$5000 on credit card
 - Charged 19.99% per year
- In 10 years, you will have:
 - No cash but something nice
 - \$5388
 - Liquid and free to spend
 - \$9836
 - Assumes no taxes
 - **\$11,596**
 - \$5000 principal repayment
 - \$6596 in interest

100 Years of Consumer Spending Trends



Bureau of Labor Statistics, 2006

How much should I pay for housing?

“Thou shalt not commit more than 30 percent of income to housing”

-Many personal finance outlets

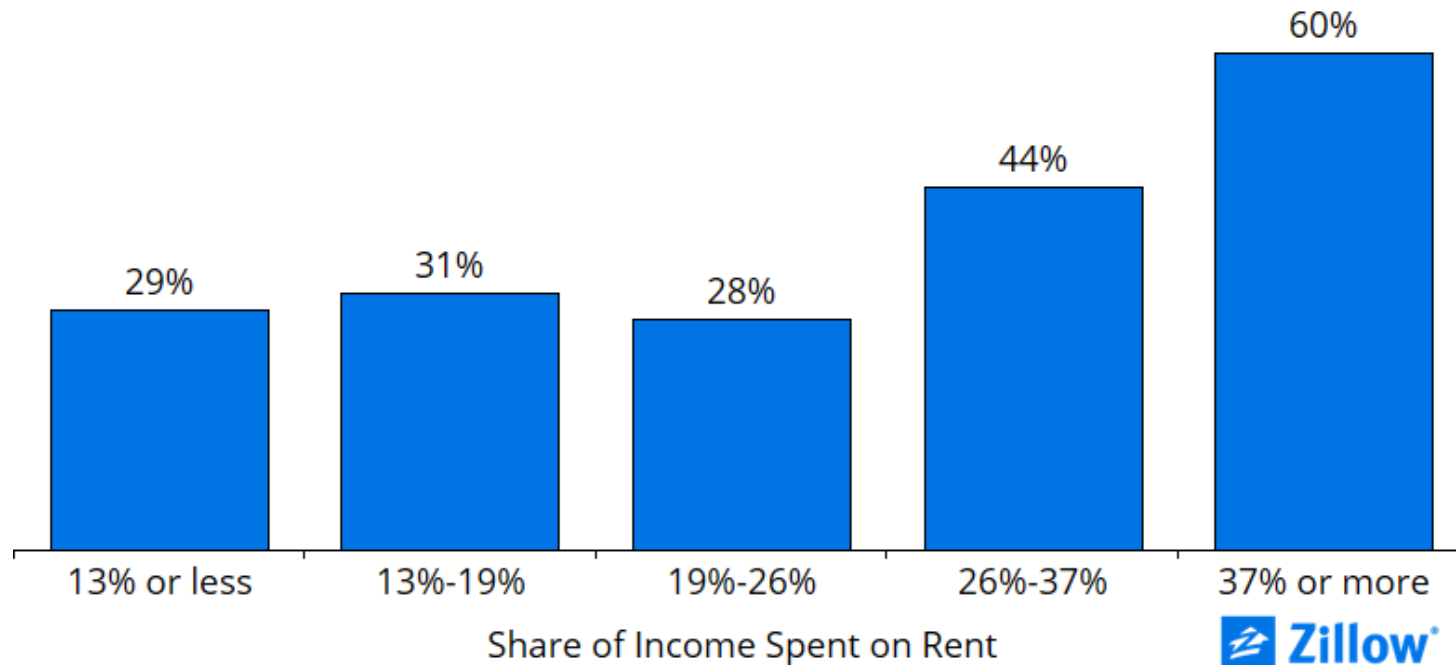


Bloomberg.com 7/17/14

- The facts:
 - 35% households $>$ 30%
 - 20% households $>$ 50%
 - trending up
- The reality :
 - It depends
 - Income
 - Debt/fixed costs

Does the 30 percent rule make sense?

Percentage of Renters with 0% Savings Rate



Zillow.com, 1/06/16

For purposes of example: Let's stick to the rule

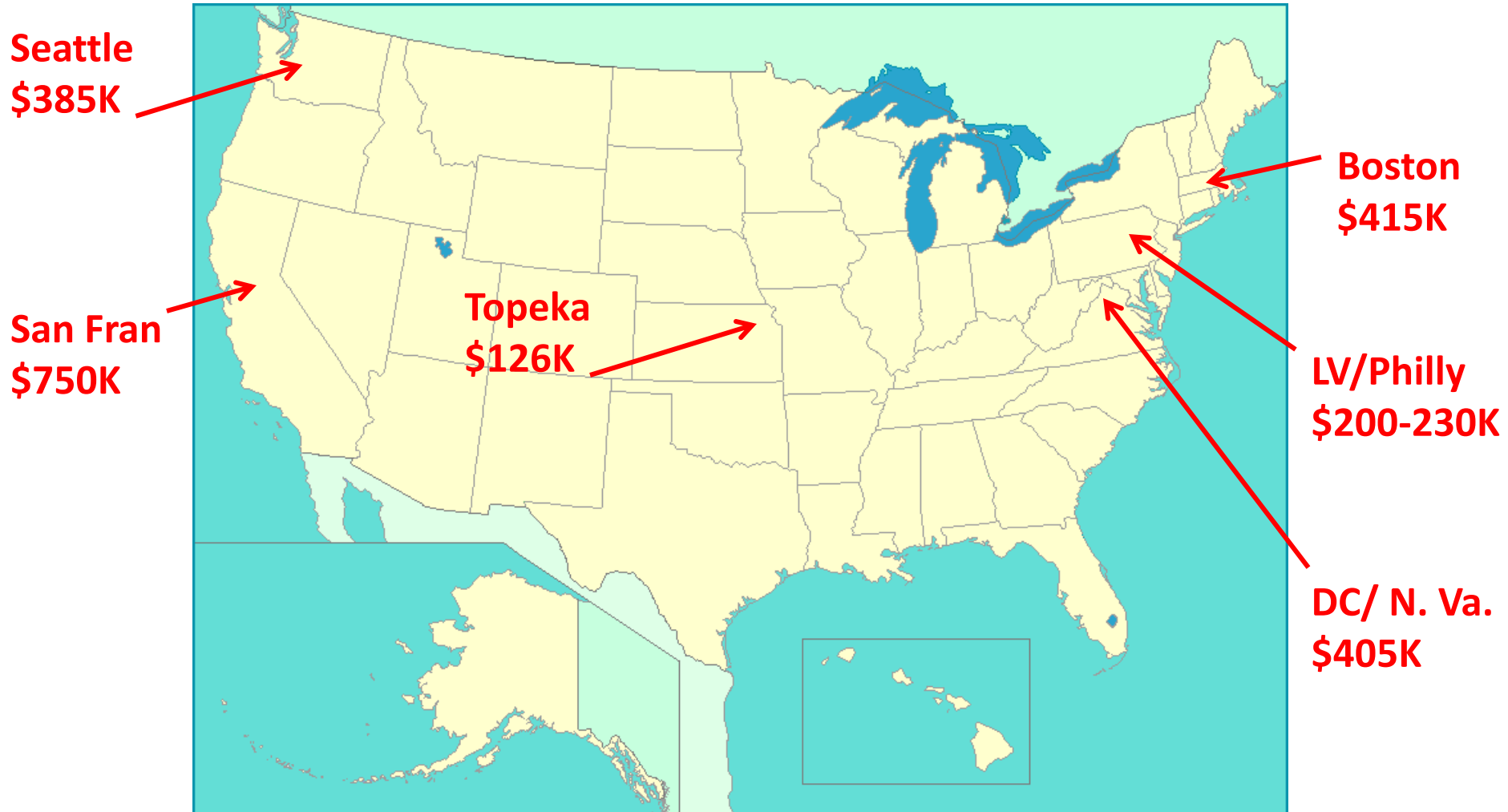
How much do I have to work with?

Lafayette College “Early Career” Salary \approx \$60,000

	Yearly	Monthly	%
Gross Pay	60,000	5,000	
Tax Deferred Retirement	3,000	250	5%
Other pre-tax	0	0	0%
Circumstance Exemptions	10,300	858	17%
Taxable Income	46,700	3,892	78%
Federal Income Tax	7,446	621	12%
Pennsylvania State Income Tax	1,842	154	3%
Social Security	3,720	310	6%
Medicare	870	73	1%
Take Home Pay	43,122	3,593	72%

$$\$3593 * 30\% \approx \$1080$$

How much does a house cost?



Let's buy a house

- Median home price
 - United States: \$185-200K
 - Northeast US: \$250K
- Funds needed
 - Downpayment (20%)
 - Escrow
 - Administrative fees
- Paying for the rest
 - 30 year fixed interest loan
 - 360 monthly payments
 - 5% interest rate



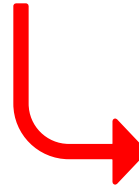
**Assume:
\$250K Price tag**



**Assume:
\$200K Loan (80%)
\$60K in cash**

Loan Amortization Schedule

Home Price	\$250,000
Loan	\$200,000
Interest	5%
Period	360
Payment	\$1,074

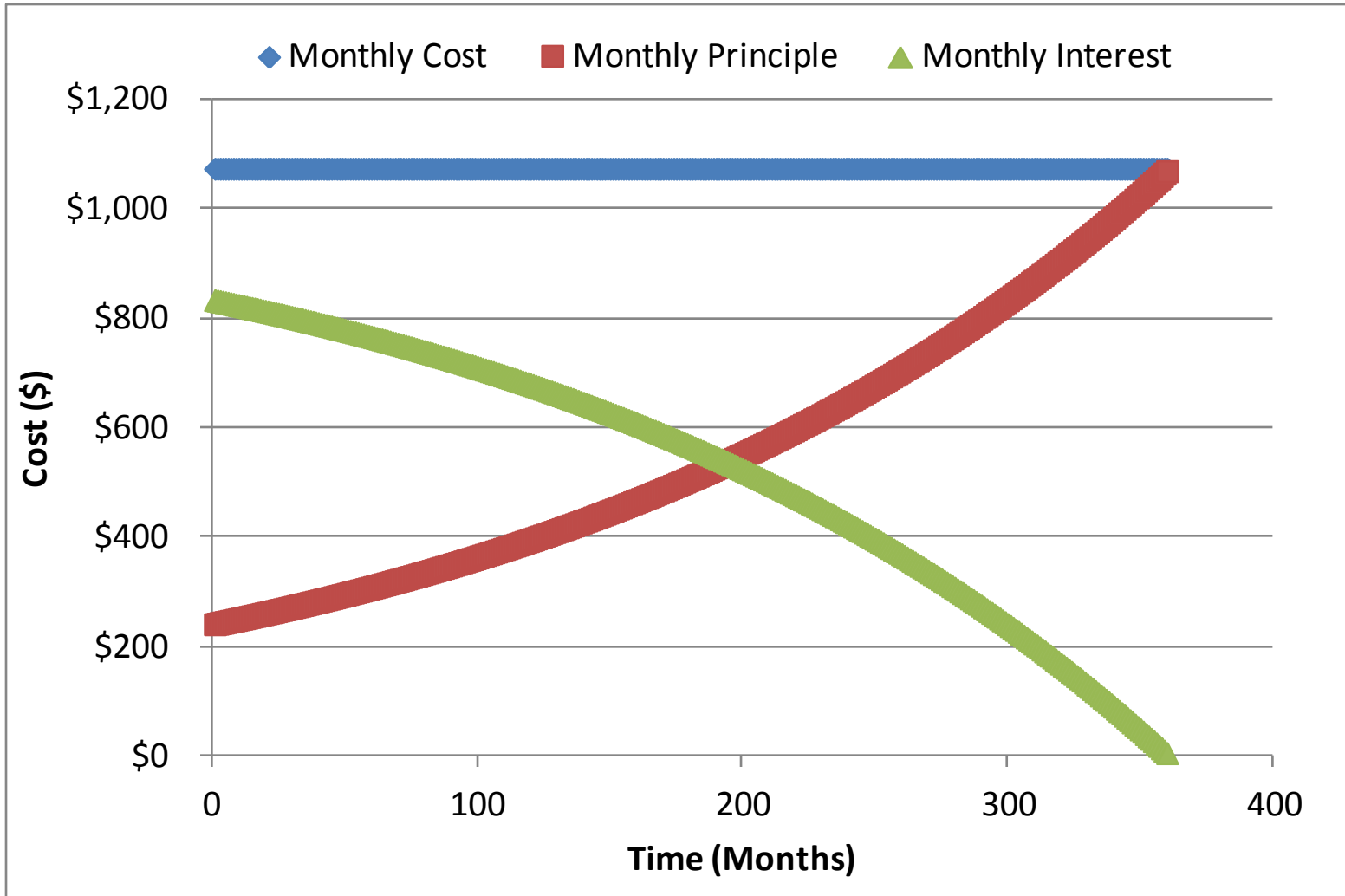


paying off debt with fixed repayment schedule

Payment	Beginning Balance	Payment	Principal	Interest	Cumulative Principle	Cumulative Interest	Ending Balance	Total Cost
1	\$200,000	\$1,074	\$240	833	\$240	833	\$199,760	\$1,074
2	\$199,760	\$1,074	\$241	832	\$482	1666	\$199,518	\$2,147
3	\$199,518	\$1,074	\$242	831	\$724	2497	\$199,276	\$3,221
4	\$199,276	\$1,074	\$243	830	\$967	3327	\$199,033	\$4,295
5	\$199,033	\$1,074	\$244	829	\$1,212	4157	\$198,788	\$5,368
6	\$198,788	\$1,074	\$245	828	\$1,457	4985	\$198,543	\$6,442
7	\$198,543	\$1,074	\$246	827	\$1,703	5812	\$198,297	\$7,516
8	\$198,297	\$1,074	\$247	826	\$1,951	6638	\$198,049	\$8,589
9	\$198,049	\$1,074	\$248	825	\$2,199	7464	\$197,801	\$9,663
10	\$197,801	\$1,074	\$249	824	\$2,449	8288	\$197,551	\$10,736
11	\$197,551	\$1,074	\$251	823	\$2,699	9111	\$197,301	\$11,810
12	\$197,301	\$1,074	\$252	822	\$2,951	9933	\$197,049	\$12,884
360	\$1,069	\$1,074	\$1,069	4	\$200,000	186512	\$0	\$386,512

\$186,512 in total interest!

Monthly Mortgage Bill Over Time



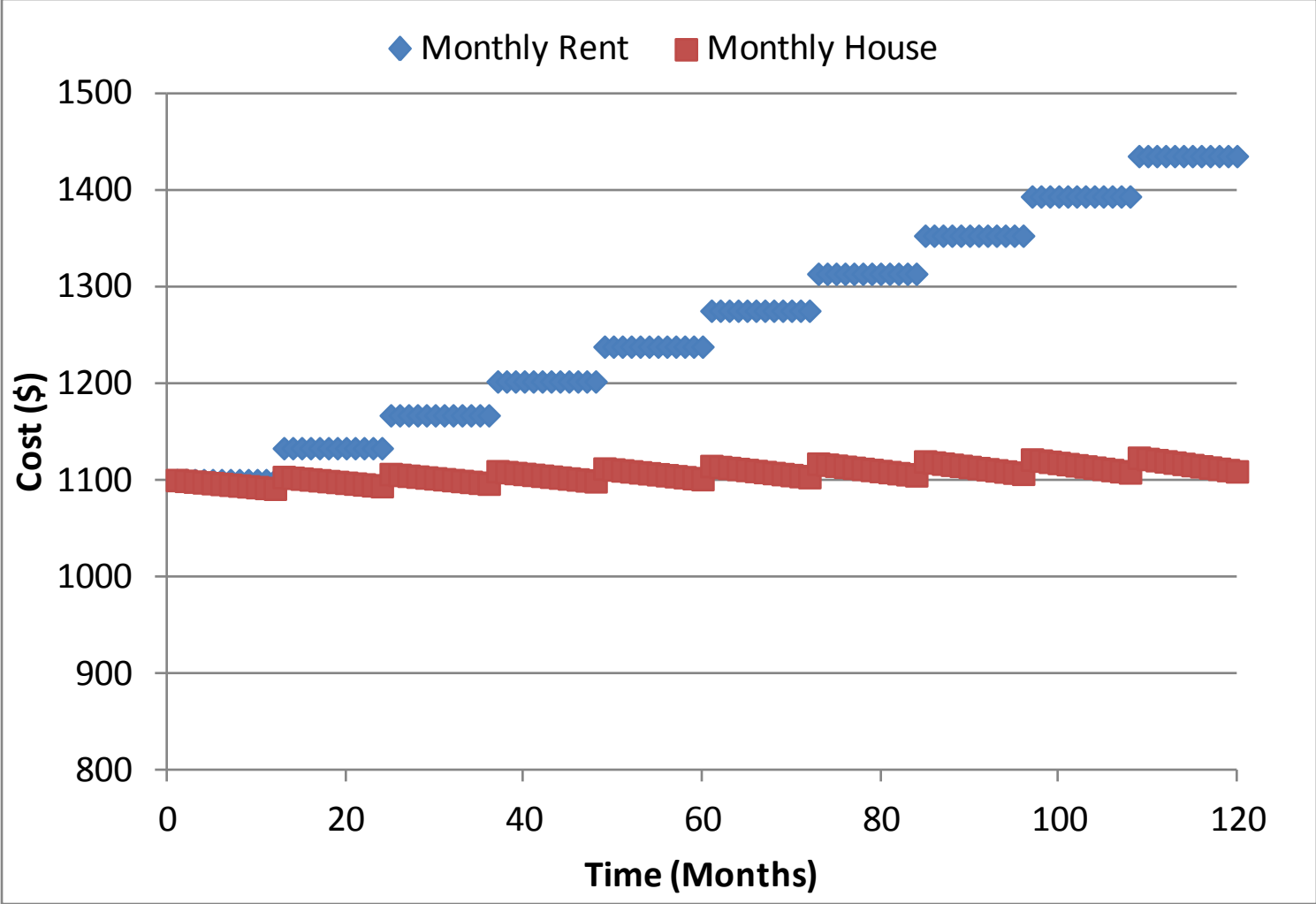
Monthly cost of home ownership

- Expenses:
 - Mortgage Interest
 - 1st month: \$833 / \$1074
 - Decreases with time
 - Taxes (\$5000/year)
 - \$417 Monthly
 - Insurance
 - \$100 Monthly
- Assets:
 - Saving
 - 1st month: \$240 / \$1074
 - Increases with time
 - Tax Deduction
 - Interest/real estate taxes are tax deductible
 - 20% recovered
 - \$250 per month

Adding it up: $\$833 + \$417 + \$100 - \$250 = \$1100/\text{month!}$

Inflation: Taxes/insurance rise $\approx 3\%$ per year

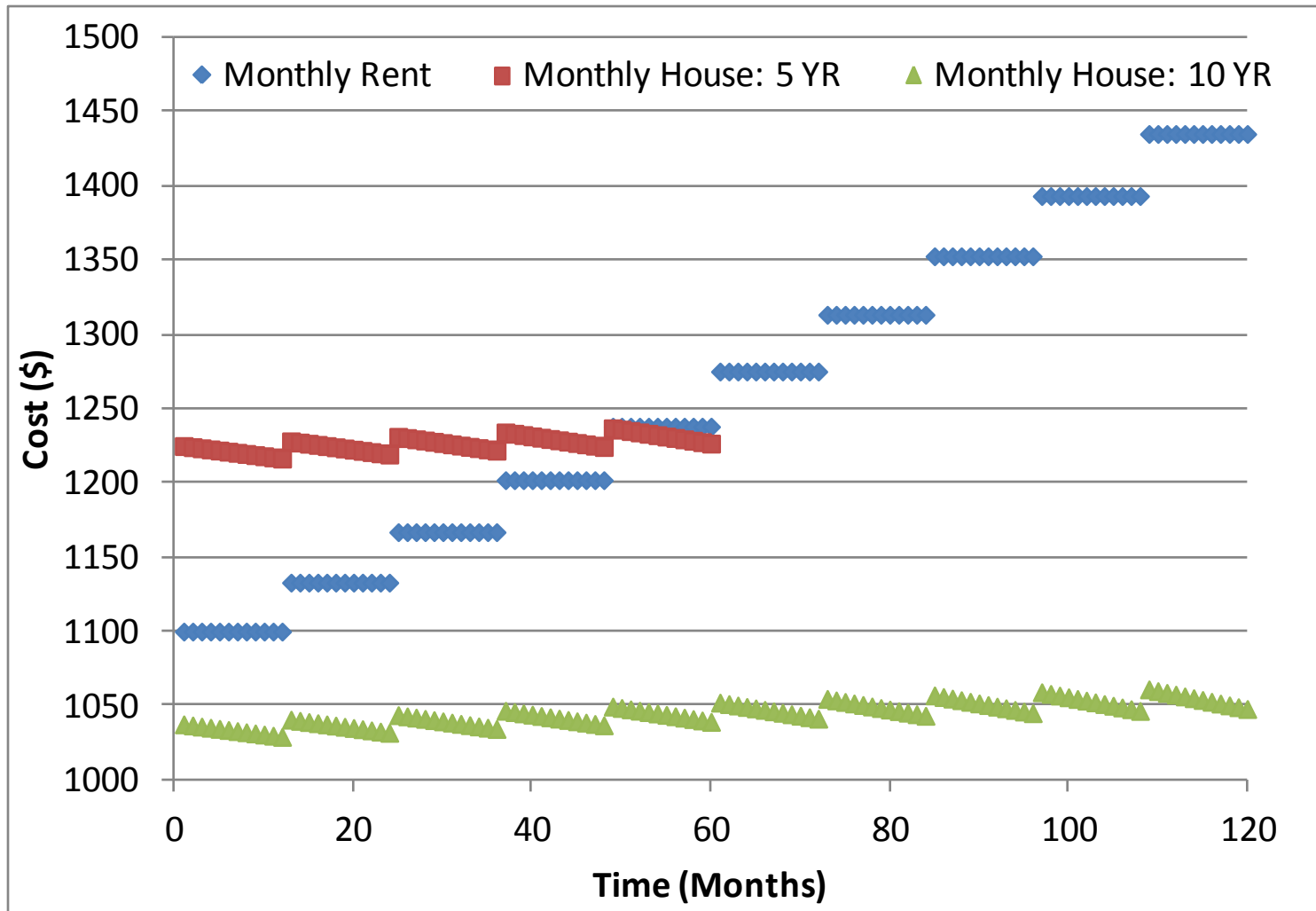
Buy vs. Rent?



True cost of home ownership

- Expenses:
 - Fixed Mortgage
 - \$1100/ month
 - Maintenance
 - 1-2% /year rule of thumb
 - \$2500/year
 - Sales commission
 - 5% of sale price
 - Administrative fees
 - \$10000 fixed closing cost
- Assets:
 - Automated savings
 - \$240 1st month
 - \$394 120th month
 - Home values can go up!
 - Trends with inflation
 - Appreciation:
 - \$275,000 after 5 years
 - \$300,000 after 10 years

OK, so should I buy or rent?



Comparison of Cumulative Expense



Buy vs. rent

- Home ownership:
 - Financial Benefits
 - Fixed rate
 - Automated savings
 - Price appreciates
 - Drawbacks
 - Maintenance expenses
 - Time expenses
- Rent:
 - Financial benefits
 - Maintenance free
 - Low switching cost
 - Allocation to other assets
 - Drawbacks:
 - Zero accumulation
 - Inflation

It pays to stay in your house over long periods of time!

(but there are plenty of personal/lifestyle considerations too!!)

Conclusions

- Budgeting is highly personal
 - Spending depends on your needs and wants
- There is an opportunity cost for money spent now
 - Important to invest in the future
- Home ownership is expensive but can pay off
 - Debt accumulated at high interest rarely does

