

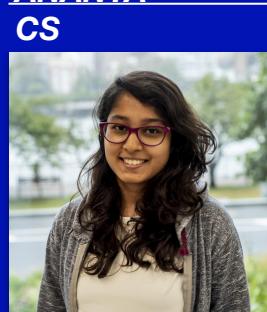


TEAM 62

How might we provide visually intuitive, personalized financial recommendations based on transaction history to users who are not data savvy?



MANU
MBA



ANANYA
CS



YIQI
DESIGN

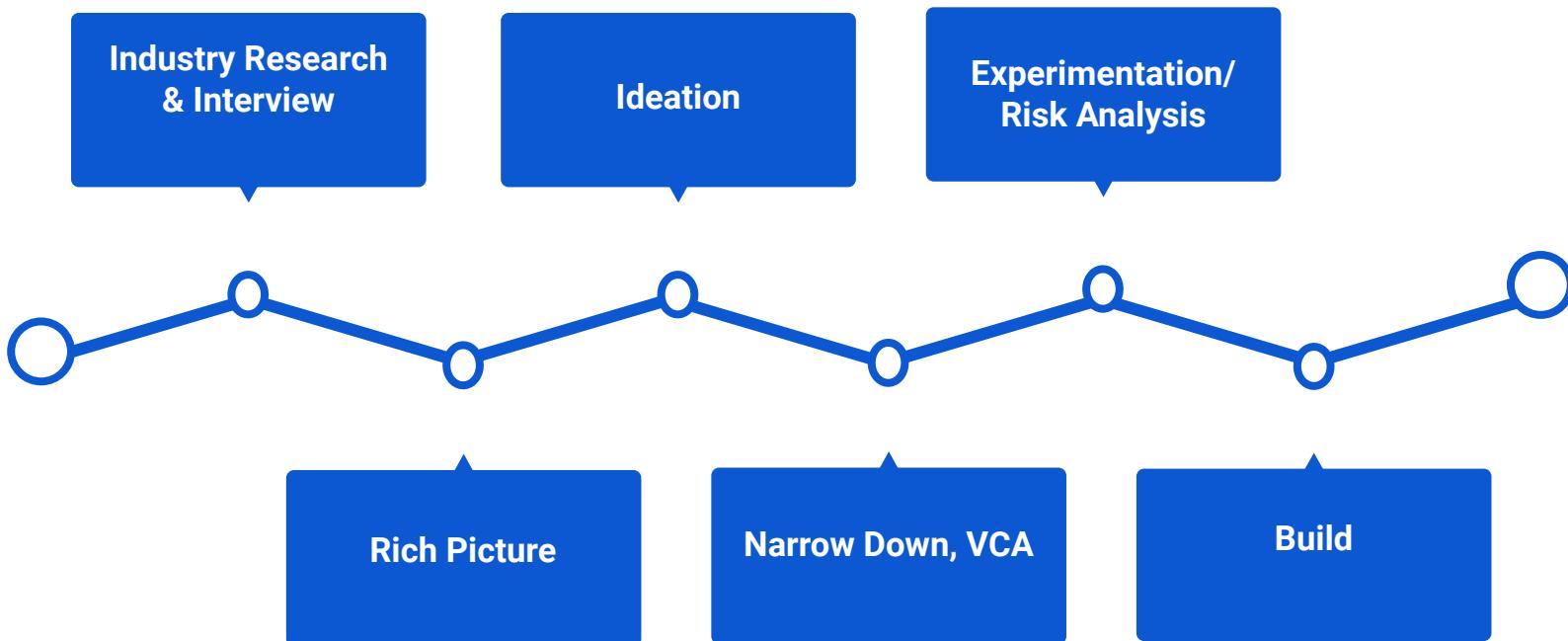


ATHALIA
LLM



ZHENGLUN
CS

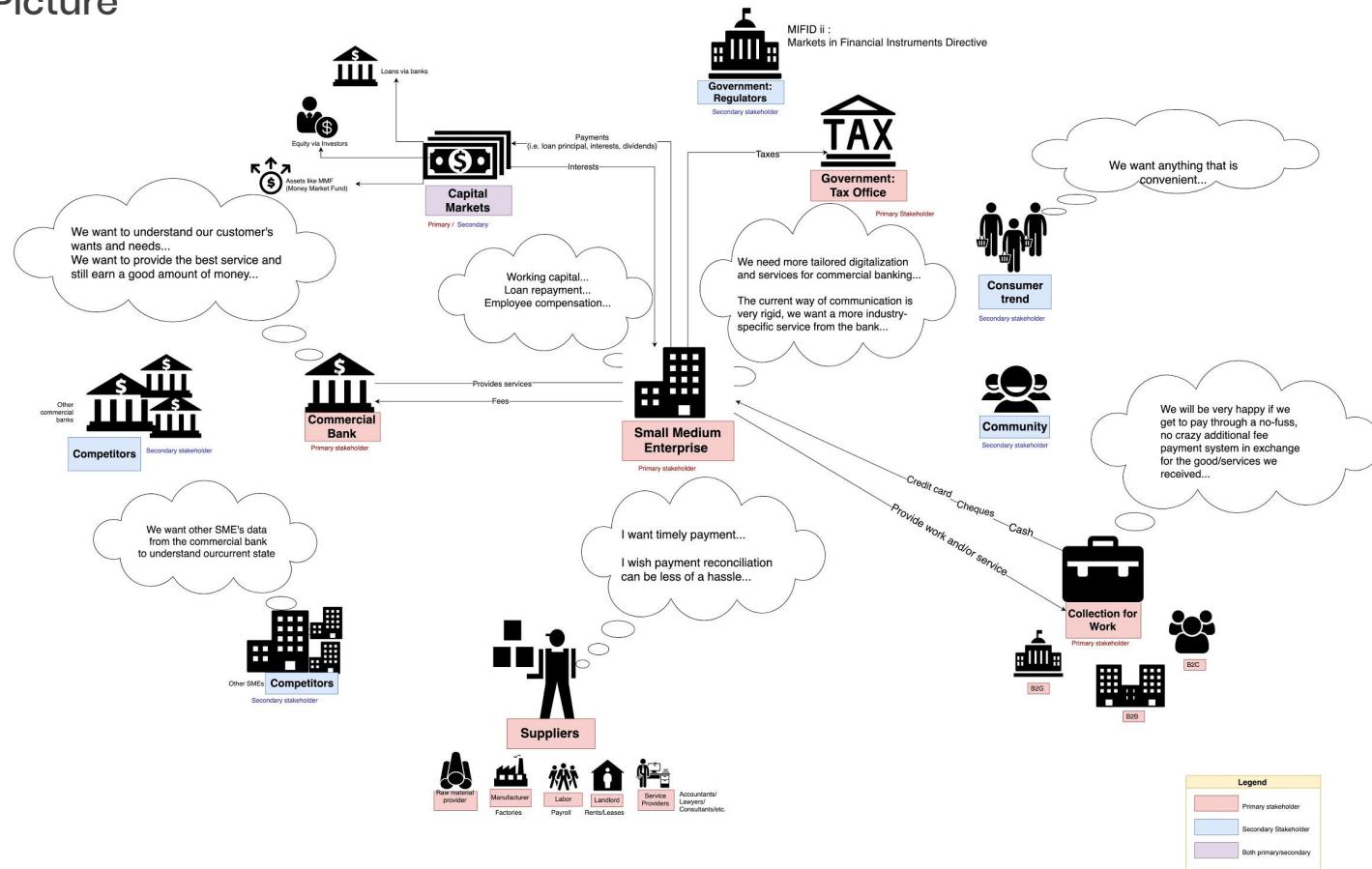
Timeline



Key Events

- Transition from B2B to B2C
- From tools for gig workers and planning tools for families to a goal setting app with group goals gamification
- Experiments showed stacked bar graphs were better for speed and accuracy

Rich Picture



Ideas: Journey

50 Ideas

Top 10 Ideas

Top 3 Ideas

Pivot

Individual idea generation process

Each member generates 10 ideas

Input to "Darwinator" to be ranked by the 9 people (the team + a partner team)

Ranked based on average ranking

Merge similar or complementary ideas

Top 10 ideas are further assessed with the 1-1-0 Rule: 1 minute pitch, 1 slide, 0 questions

Digital Piggy Bank

Gig

Credit Optimizer

Bridge: an application that (1) records your financial goals, (2) generates recommendations to improve finances, and (3) helps you stay on track to make your financial dream into reality.

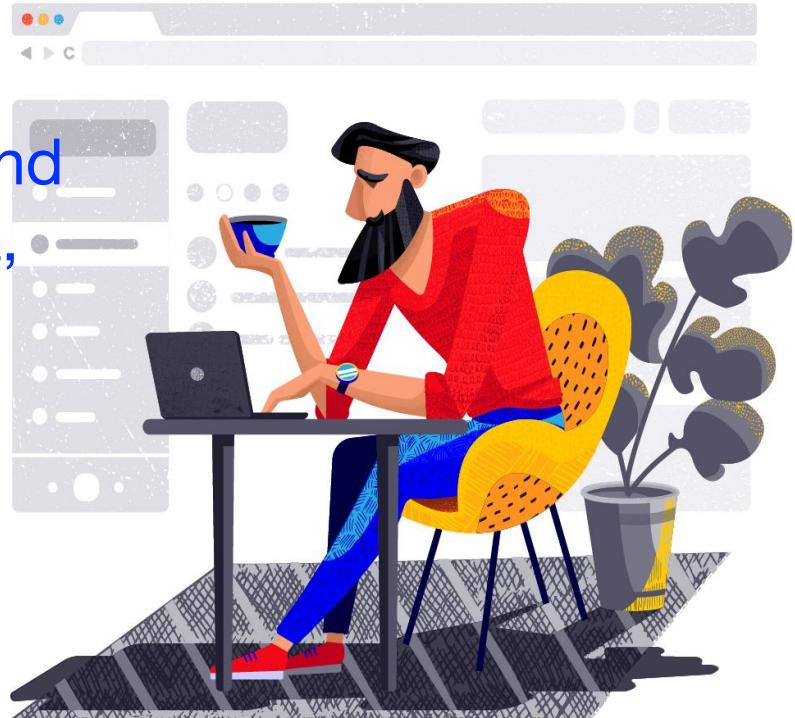


- Transaction data analysis
- Visualization on the transaction history
- Prediction for future family spendings
- Recommendations for optimizing savings and reduce spendings

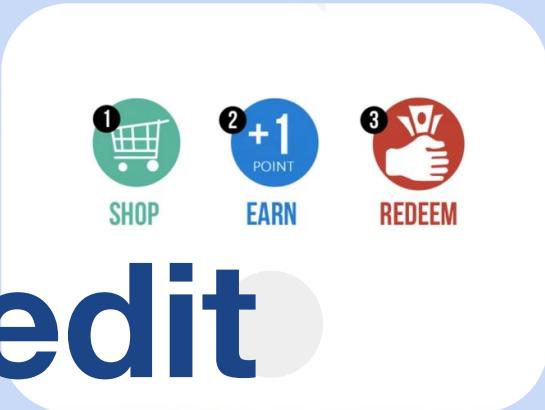
A family-friendly tool provided by the family's main financial service provider to be used by each family member to input his/her/their daily spendings that will generate a visual report along with suggestions for improvements for the individual and the family. Also, the tool will provide financial recommendations for the remaining money.

GIG

Help alleviate the burden on gig workers to manage their work and life finances by centralizing data, simplifying evaluations, recommending improvements, and automating the mundane.



Credit Optimizer



Who We Serve:

5.7 percent of consumers have at least one credit card - that's **189 million adults** in America.

What we do:

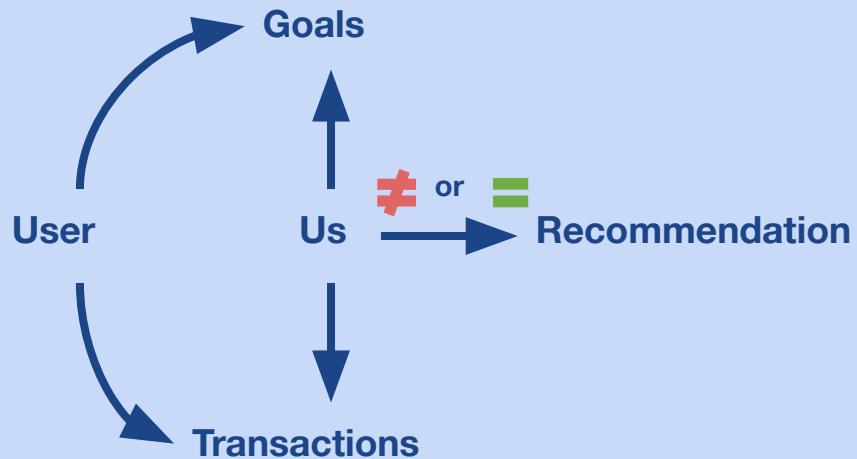
Real time offer updates, location specific.
Personalized with AI **recommendations** over time and users, for financial health growth.

Why Us?:

Save more -> Multiply points -> Unlock exclusive offers to members only.



An application that (1) records your financial goals, (2) generates recommendations to improve your finances, and (3) helps you stay on track to make your financial dream into reality.



Experiment Outcomes

- Test for Visual Intuition
- Ability to generate recommendations historic data set
- Individual likelihood to complete goal with various treatments
- Visual Intuition of designs through speed and accuracy of information retrieval

Visually Intuitive Experiment

Objective: To understand what is the most intuitive way to present past transaction history to non-data savvy users. Also find out the advantages/disadvantages of various graphs.



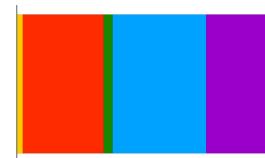
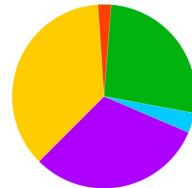
Method We chose 10 Participants claimed that they are “bad at math”. We presented 5 different visual graphs that present same piece of info, without showing any text or hint.



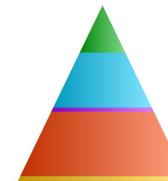
Timed sessions Instead of asking opinions, we asked participants to pick out particular pieces of information we requested. Then we record the time spent. In addition we also asked them to give a percentage of each category



Draw Correlation Less time spent = more visually intuitive. Most accurate percentage perception= most visually intuitive The goal is to find out which one is the best way to present data



Yellow: 680
Red: 43
Green: 498
Purple: 65
Blue: 580

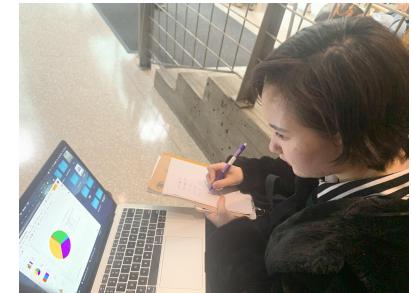
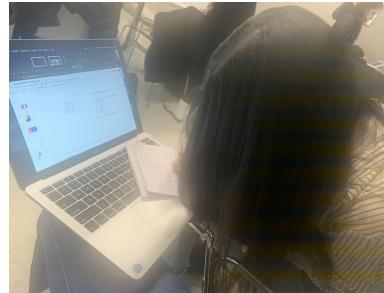
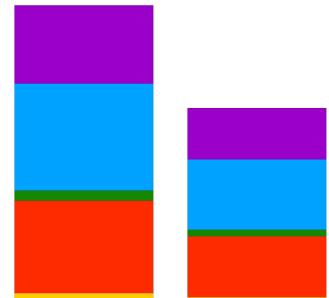


Visual Intuition Experiment



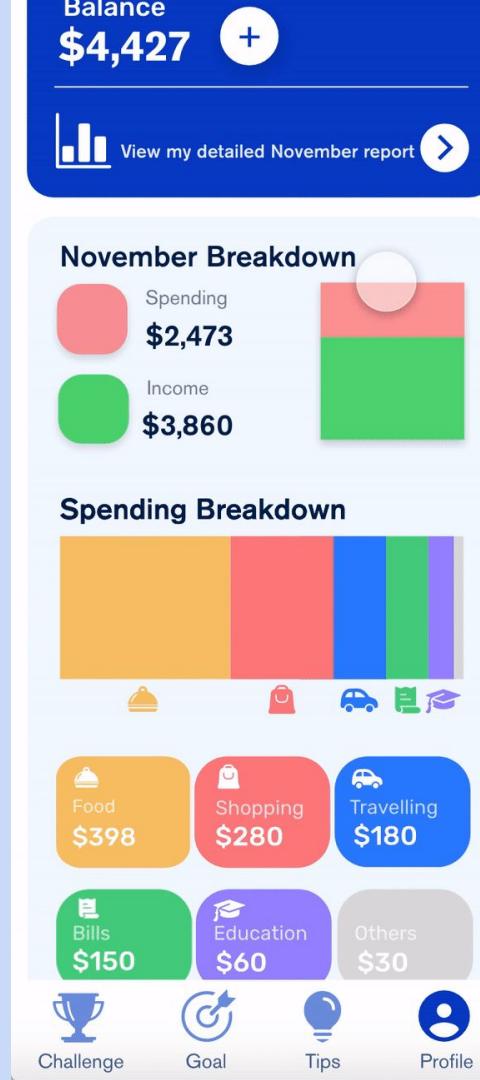
Visual Intuition

Stacked bar graphs
fastest for information
retrieval and most
accurate for estimation



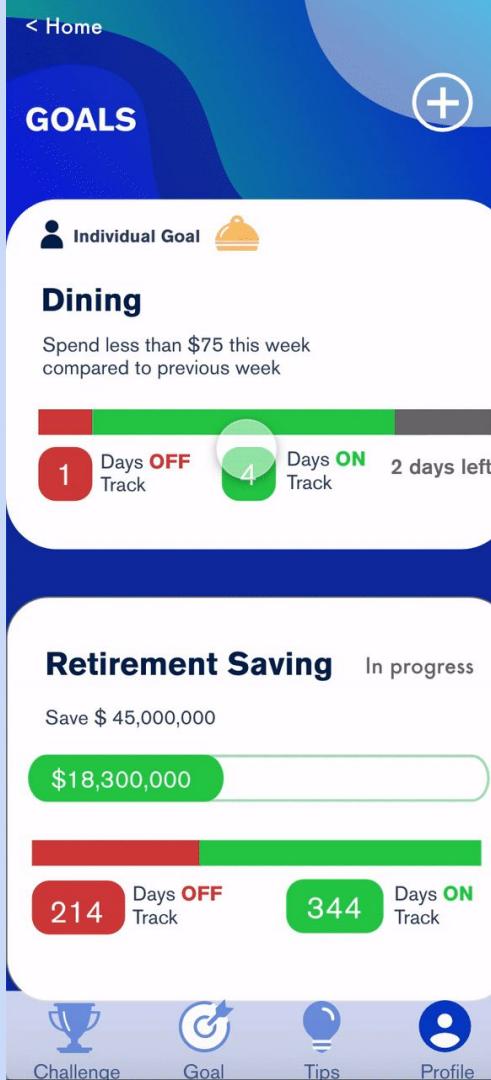
Front End Prototype

- **Dissecting Information**
 - Hide Unnecessary data
 - Grouping / Categorizing
- **Simple —→ Complex**
- **Use most basic chart rather than fancy yet complex ones**
 - (Pie Graph is confusing)
- **User input —→ Generalize personal recommendation**



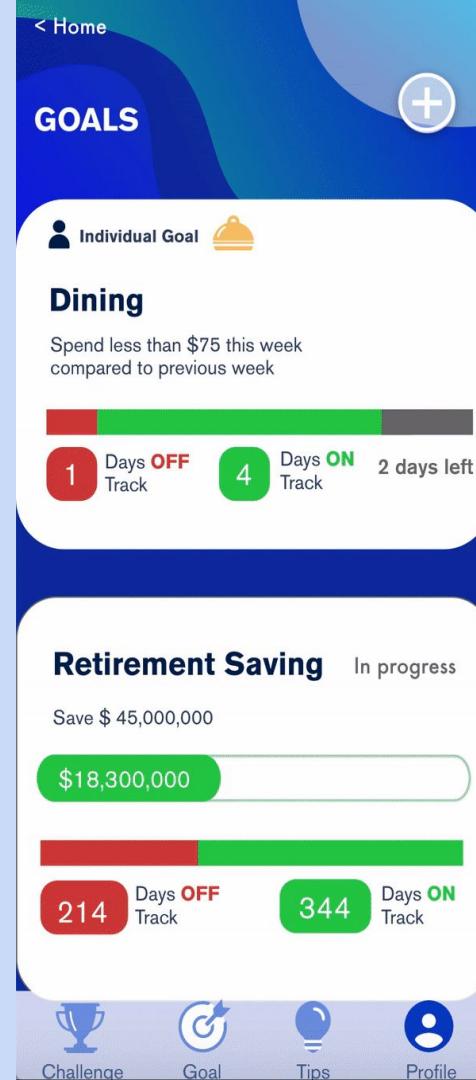
Front End Prototype

- Goals
 - Short-term spending
 - Long-term saving
- Simple ——> Complex
- Days on/off Track
- Long-term goals
 - Divided daily—>attainable
 - can see trend



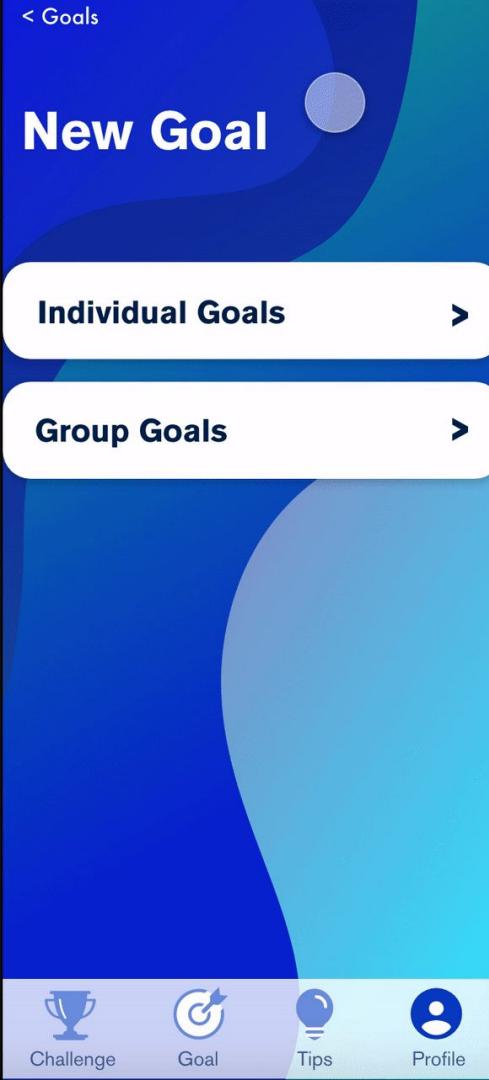
Front End Prototype

- **Group Gamification**
 - Incentivized
 - Competitive
 - Enhance performance
- **Social Impact**
 - Nudging friends to keep on track



Front End Prototype

- **Individual Goal Setting**
 - Custom vs. Suggested
 - Suggested - study transaction history



Backend for Visual Intuition

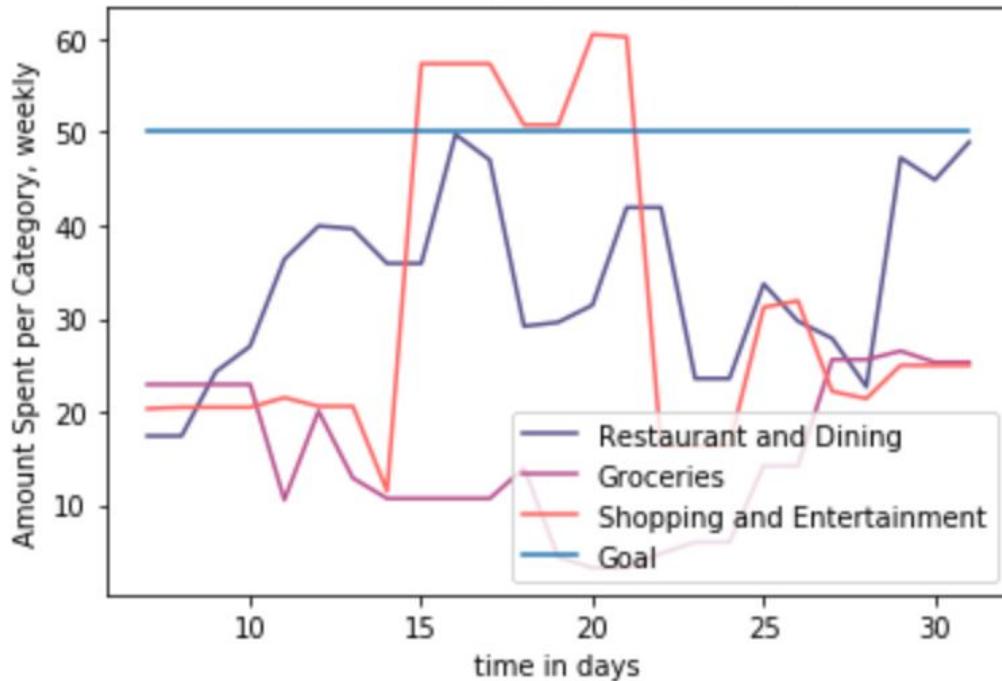
User's transaction history data generates:

- Stacked bar chart for category wise spending
- Easy to set goal

Gamification - Group Performance

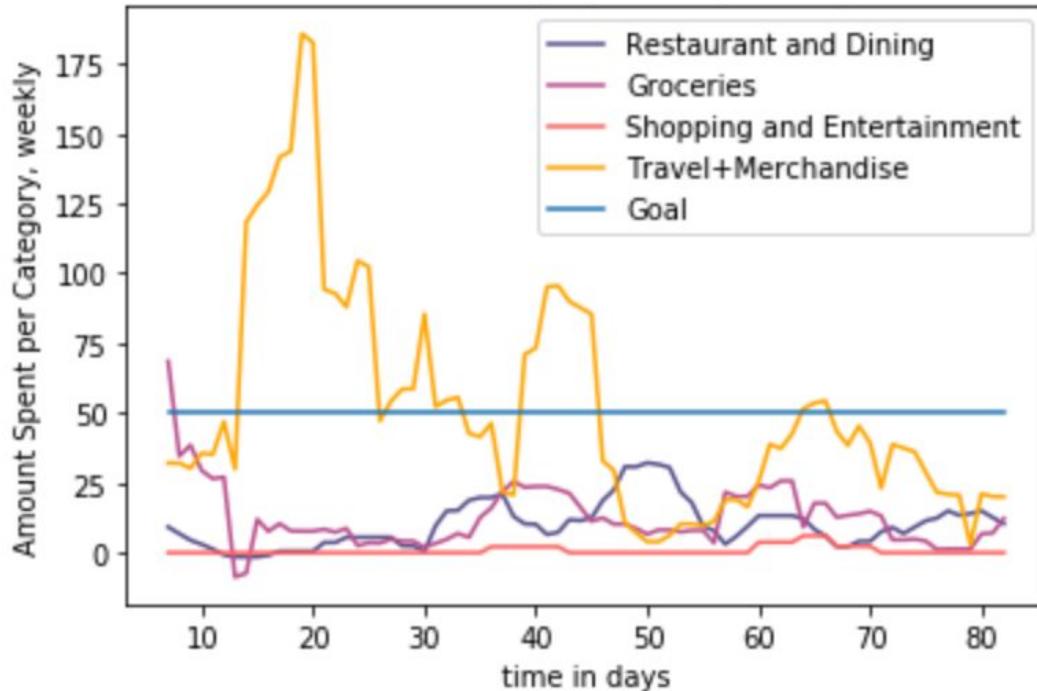
- Monitor Group Progress via straight line plot
- Compare with own spending and get influenced

Individual X's dataset



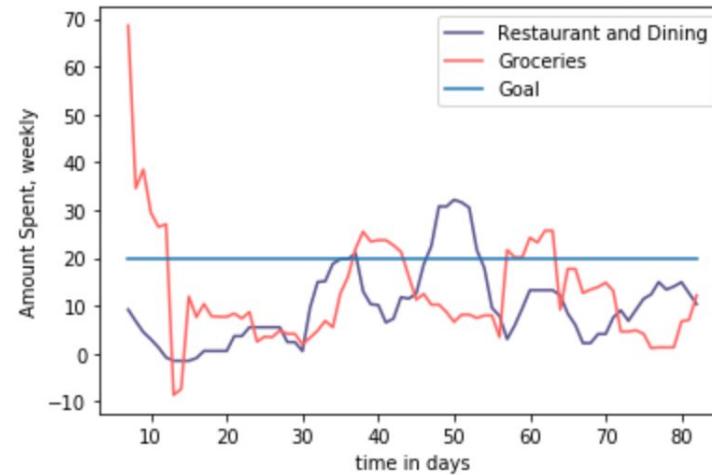
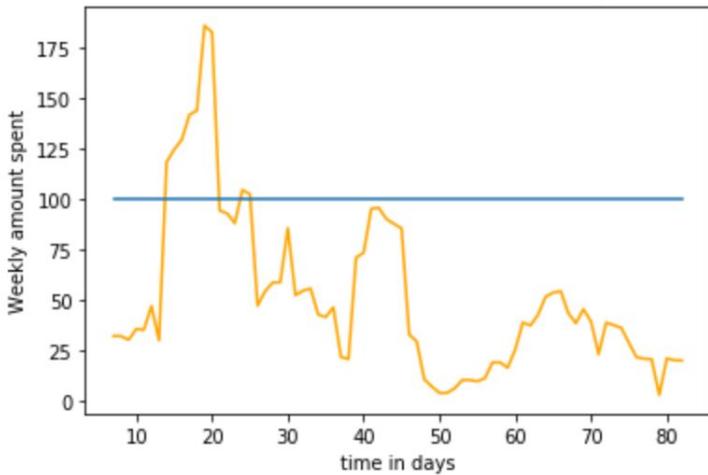
- Average spending over the past week, continuous for a month (Nov 2019).
- Well below goal set of \$100 per week
- More reasonable goal: \$45 - \$50 per week!
- Smoothness implies Uniformity in spending ::
 1. Gr >
 2. Din >
 3. Sh

Individual Y's dataset



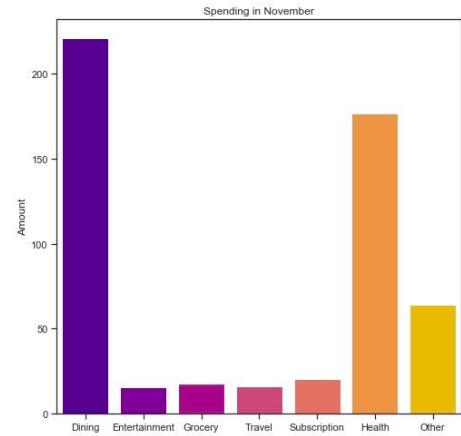
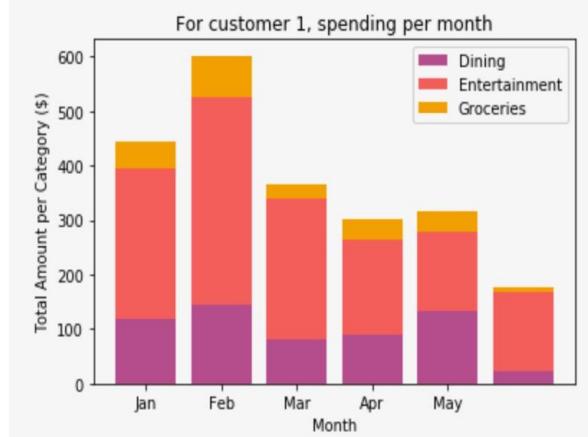
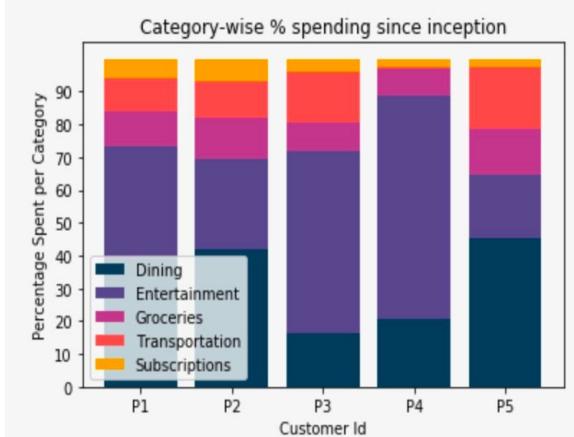
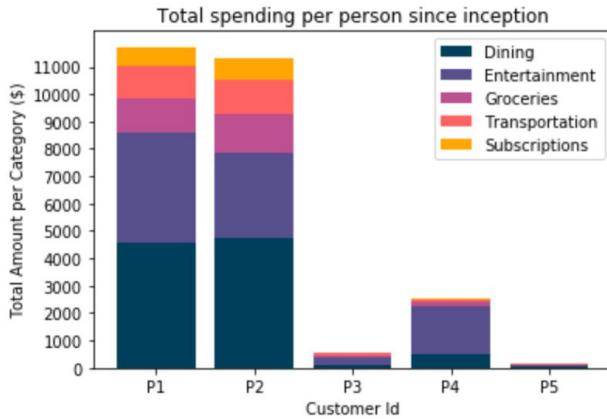
- 3 months data from Aug 2019.
- Heavily varied spending in different categories
- 1. Travel + Merch >others

Individual Y's dataset



Goals should reflect non uniform spending per category-->
Save X in Y time period, Y = duration of one crest, X = mean

Dataset : Transaction History Sample



kaggle.com/c/acquire-valued-shoppers-challenge/data

Shape of dataset

- **id** - A unique id representing a customer
- **category** - The product category (e.g. sparkling water)
- **date** - The date of purchase
- **purchaseAmount** - The dollar amount of the purchase

TEAM 62

Thank
you



9:41



9:41



Bridge

9:41



Bridge

< Goals

Custom Goals

Groceries



Length

4

Weeks



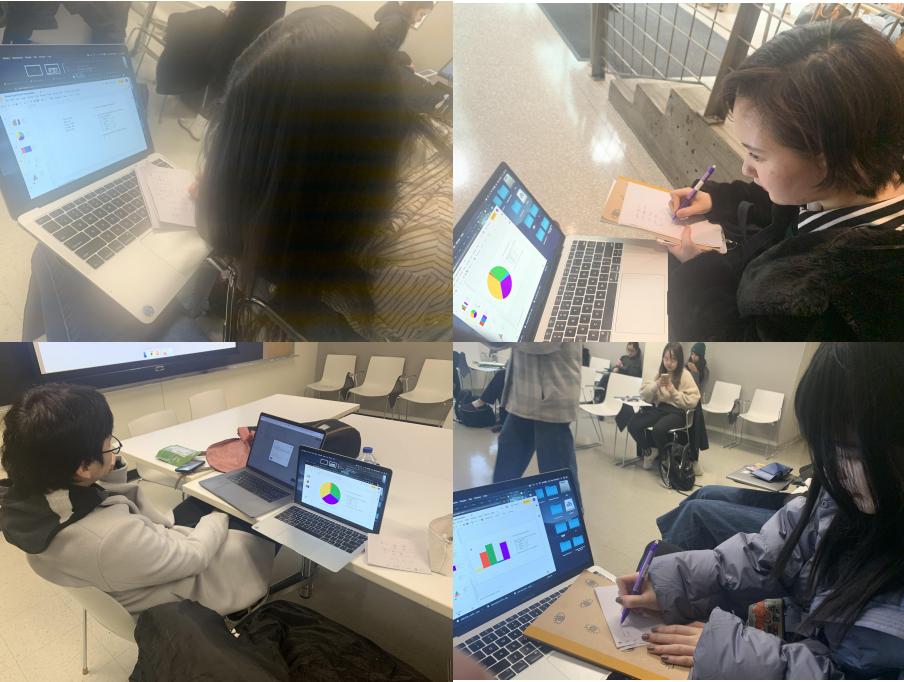
Amount

\$ 180.00

Add Goal

Appendix

Experiment pictures & Calculation



Bar	P1(46)F	P2(43)M	P3	P4	P5	P6	
Q1	2.4	1.69	1.92	1.54	5.48	3.09	2.6866666667
Q2	115	71	76.6	29.24	67	122	80.14
Q3	3.6	2	2.26	1.82	2.06	0.88	2.1033333333
Pie							
Q1	2.17	11.13	3.83	2.71	3.5	1.47	4.135
Q2	39	84	130.32	33.37	50.17	97	72.31
Q3	1.85	3.83	4.11	1.29	1.22	2.01	2.385
Stacked							
Q1	3.18	1.31	1.05	3.45	1.28	2.69	2.16
Q2	72	38	79.4	41.77	41.7	74	57.81666667
Q3	2.3	2.13	1.84	2.89	0.71	1.24	1.851666667
Text							
Q1	7.34	7	5.36	3.42	3.83	2.73	4.9466666667
Q2	67	65	120	29.61	69	70	70.10166667
Q3	6.92	11.62	0.78	2.33	1.51	2.73	4.315
Pyramid							
Q1	2.38	3.1	5.6				
Q2	39.2	108	74.23				
Q3	11.1	1.65	1.44				
Q2(Bar)	37.31,27,8.3	40,30,25,3.2	40,35,20,3.2	35,30,25,3.2	34,28,30,4.3	45,30,20,3.2	
Q2(Pie)	37,28,26,6.3	38,35,20,5.2	35,30,28,4.3	40,30,20,4.1	34,30,27,5.4	45,28,25,5.2	
Q2(Stacked)	40,28,23,5.4	38,35,20,5.2	40,30,25,3.2	45,30,25,3.2	36,30,28,4.2	40,30,25,10.5	
Q2(Text)	32,26,23,6.4	38,30,25,10.7	40,30,20,6.4	50,45,40,8.5	36,30,28,4.2	33,32,28,0.8.5	
Q2(Pyramid)	40,35,10,8.3	40,38,20,1.5,0.5			50,30,10,4.3	30,27,24,3.2	

P1	Correct	Inferred from ->						Errors ->			
		Bar	Pie	Stacked	Text	Pyramid	Bar	Pie	Stacked	Text	Pyramid
	35.2	37	27	40	32	40	3.8	3.4	4.2	3.8	
	31.4	31	28	28	26	35	0.4	3.6	3.4	5.4	3.6
	21.5	27	26	23	23	10	0.5	0.5	3.5	3.5	16.5
	3.4	8	6	5	6	8	4.6	2.6	1.6	2.6	4.6
	3.2	3	4	4	4	3	0.9	0.9	1.5	1.5	0.9
	36.2	40	38	38	38	40	3.8	1.6	1.6	1.6	3.8
	31.4	30	35	35	30	36	1.4	3.6	3.6	1.4	6.6
	28.5	20	20	20	20	15	0.5	0.5	0.5	0.5	0.5
	3.4	5	5	10	1.5	0.4	1.6	1.6	6.6	1.9	
	2.2	2	2	2	7	0.5	0.2	0.2	0.2	4.8	1.7
	39.2	40	35	40	None	3.8	1.2	3.8	3.8	3.8	
	31.4	30	30	30	45	30	1.4	1.4	1.4	1.4	
	21.4	30	30	30	None	1.5	1.4	1.4	1.4	1.4	
	28.5	20	25	25	20	None	6.5	1.5	1.5	6.5	
	3.4	3	4	3	6	None	0.4	0.6	0.4	0.4	
	2.2	2	3	2	4	None	0.2	0.2	0.2	1.8	
	39.2	36	40	45	50	50	1.2	3.6	8.8	13.8	
	31.4	30	30	30	45	30	1.4	1.4	1.4	13.6	1.4
	28.5	20	20	25	40	10	1.5	8.5	1.5	13.5	
	3.4	3	4	5	4	0.4	0.6	0.4	4.8	0.8	
	2.2	2	1	2	5	3	0.2	1.2	0.2	2.8	
	39.2	34	34	36	36	30	2.2	2.2	0.2	0.2	0.2
	31.4	30	30	30	30	27	2.4	1.4	1.4	1.4	
	28.5	30	27	28	28	24	3.5	0.5	1.5	2.5	
	3.4	4	5	4	4	3	0.6	1.6	0.6	0.6	0.4
	2.2	4	2	2	2	2	0.8	1.2	0.2	0.2	
	39.2	40	45	40	33.3 None	8.8	3.8	3.8	2.9	None	
	31.4	30	28	30	28 None	1.4	3.6	1.4	3.4	None	
	28.5	20	25	25	20 None	4.5	1.5	1.5	4.5	None	
	3.4	3	5	5	5 None	0.4	1.6	0.4	4.5	None	
	2.2	2	2	2	5 None	0.2	0.2	2.8	2.8 None		