TEAM 62

Experiment Insights

November 19, 2019

HMW

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

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Bridge

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

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MANU
MBA

ANANYA CS

YIQI
DESIGN

ATHALIA
LLM

ZHENGLUN
CS

TEAM
INTRO

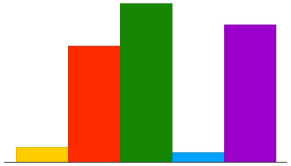
Visually Intuitive Experiment

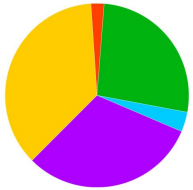
Objective: To understand what is the most intuitive way to present past transaction history to non-data savvy users. Also find out the advantages/disadvantages of various graphs.

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.

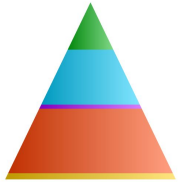
Timed sessions Instead of asking opinions, we asked participants to pick out particular pieces of information we requested. Then we record the time spent. In addition we also asked them to give a percentage of each category

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



Results

Average time of getting information

Bar: **2.39 second**
Pie: **3.26 second**
Stacked: **2.005 second**
Text(control): **4.625 second**

Average time of figuring out percentage:

Bar: **80.14 second**
Pie: **72.31 second**
Stacked: **57.81 second**
Text(control): **70.10 second**

Accuracy of figuring out percentage

Bar: **84.05%**
Pie: **78.59%**
Stacked: **75.44%**
Text(control): **47.87%**

Errors with each category

Biggest: **10.15%**
2nd: **8.78%**
3rd: **15.47%**
4th: **65%**
5th: **50%**

Qualitative Insights:

-The most intuitive graph is stacked bar graph
-Even though the data is same, people come up with different percentages for each graph
-Regardless of chart type, we noticed individuals ability to estimate % erodes greatly when they are looking at items that are small in magnitude.

Winner!

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Dataset Exploration

Dataset : 22GB

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

Shape of dataset

- **id** - A unique id representing a customer
- **chain** - An integer representing a store chain
- **market** - An id representing a geographical region
- **repeatTrips** - The number of times the customer made a repeat purchase
- **repeater** - A boolean, equal to repeatTrips > 0
- **dept** - An aggregate grouping of the Category (e.g. water)
- **category** - The product category (e.g. sparkling water)
- **company** - An id of the company that sells the item
- **brand** - An id of the brand to which the item belongs
- **date** - The date of purchase
- **productSize** - The amount of the product purchase (e.g. 16 oz of water)
- **productMeasure** - The units of the product purchase (e.g. ounces)
- **purchaseQuantity** - The number of units purchased
- **purchaseAmount** - The dollar amount of the purchase

Goal Setting Experiment

Data Collection

Individuals provide categorized previous month spending data.

Goals

A goal is distributed to the individual along with a set of simple instruction to record his/her spending per category.

Recommendations

Simple recommendations are sent through text.

Results

Average Monthly Spending Across Categories

Restaurant & Dining - $528.58
Shopping & Entertainment - $244.77
Groceries - $321.05

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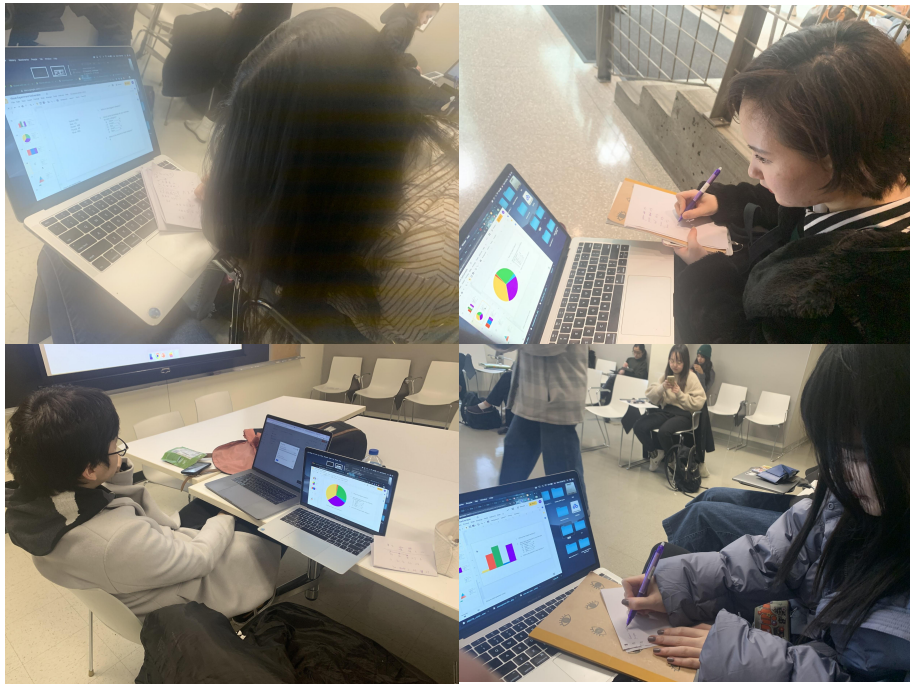
Appendix

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	2.686666667
Q2	115	71	76.6	29.24	67	122	80.14
Q3	3.6	2	2.26	1.82	2.06	0.88	2.103333333
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	57.81166667
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	4.946666667
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	33.3,28,20,8,5	
Q2(Pyramid)	40,35,10,8,3	40,38,20,1.5,0.5		50,30,10,4,3	30,27,24,3,2		

		Inferred from ->					Errors ->				
	Correct	Bar	Pie	Stacked	Text	Pyramid	Bar	Pie	Stacked	Text	Pyramid
P1	36.2	37	37	40	32	40	0.8	0.8	3.8	4.2	3.8
	31.4	31	28	28	26	35	0.4	3.4	3.4	5.4	3.6
	26.5	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
	2.2	3	3	4	4	3	0.8	0.8	1.8	1.8	0.8
P2	36.2	40	38	38	38	40	3.8	1.8	1.8	1.8	3.8
	31.4	30	35	35	30	38	1.4	3.6	3.6	1.4	6.6
	26.5	25	20	20	25	20	1.5	6.5	6.5	1.5	6.5
	3.4	3	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
P3	36.2	40	35	40	40	None	3.8	1.2	3.8	3.8	None
	31.4	35	30	30	30	None	3.6	1.4	1.4	1.4	None
	26.5	20	28	25	20	None	6.5	1.5	1.5	6.5	None
	3.4	3	4	3	6	None	0.4	0.6	0.4	2.6	None
	2.2	2	3	2	4	None	0.2	0.8	0.2	1.8	None
P4	36.2	35	40	45	50	50	1.2	3.8	8.8	13.8	13.8
	31.4	30	30	30	45	30	1.4	1.4	1.4	13.6	1.4
	26.5	25	20	25	40	10	1.5	6.5	1.5	13.5	16.5
	3.4	3	4	3	8	4	0.4	0.6	0.4	4.6	0.6
	2.2	2	1	2	5	3	0.2	1.2	0.2	2.8	0.8
P5	36.2	34	34	36	36	30	2.2	2.2	0.2	0.2	6.2
	31.4	28	30	30	30	27	3.4	1.4	1.4	1.4	4.4
	26.5	30	27	28	28	24	3.5	0.5	1.5	1.5	2.5
	3.4	4	5	4	4	3	0.6	1.6	0.6	0.6	0.4
	2.2	3	4	2	2	2	0.8	1.8	0.2	0.2	0.2
P6	36.2	45	45	40	33.3	None	8.8	8.8	3.8	2.9	None
	31.4	30	28	30	28	None	1.4	3.4	1.4	3.4	None
	26.5	20	25	25	20	None	6.5	1.5	1.5	6.5	None
	3.4	3	5	10	8	None	0.4	1.6	6.6	4.6	None
	2.2	2	2	5	5	None	0.2	0.2	2.8	2.6	None

THANK YOU

November 19 ,2019