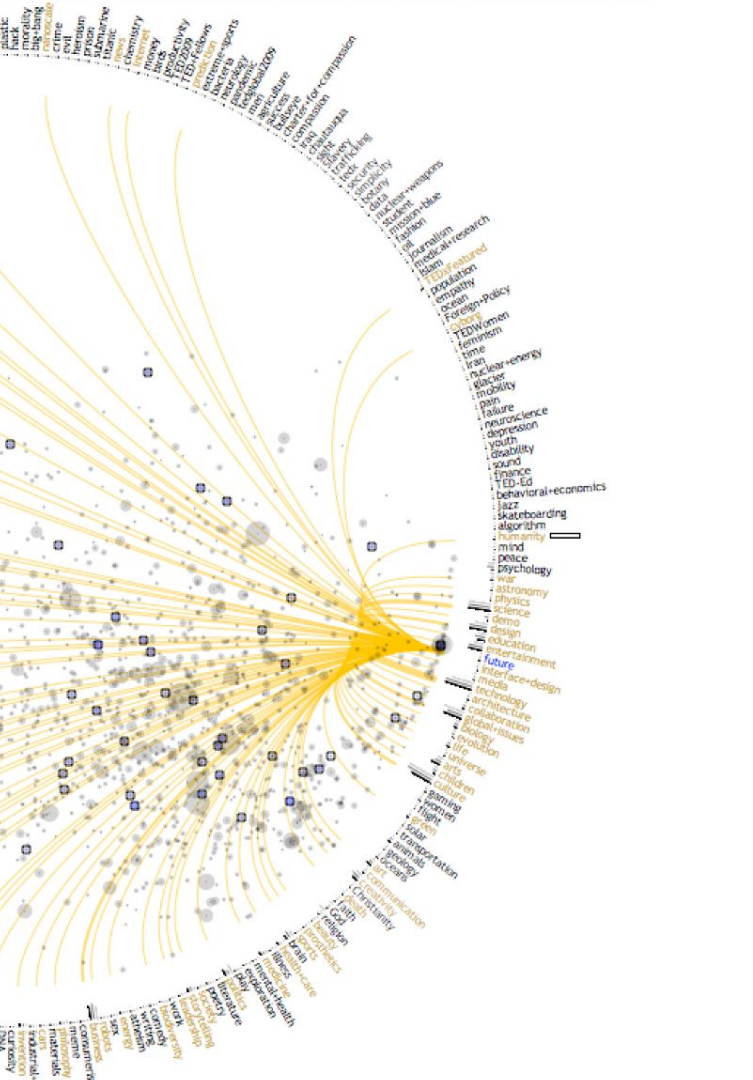
We will get started at 3:10

Have questions?

I’m here to help before class starts with anything lingering around from the Skills Labs or homeworks.



Formalizing Glyphs

A Samuel Pottinger
Stat 198: IDSV
Mar 3, 2025

End of the second section.

Cleveland and McGill + Others:
Today we are moving from meeting the ingredients to understanding when to use them.

Today

> Cleveland and McGill: ranking of encodings.

Group activity: which graphic is more likely to be read accurately?

Working in limitations: shared axes, dual axes, and direct labeling.

Revisiting chart junk: how to keep channels clear.

Cleveland and McGill

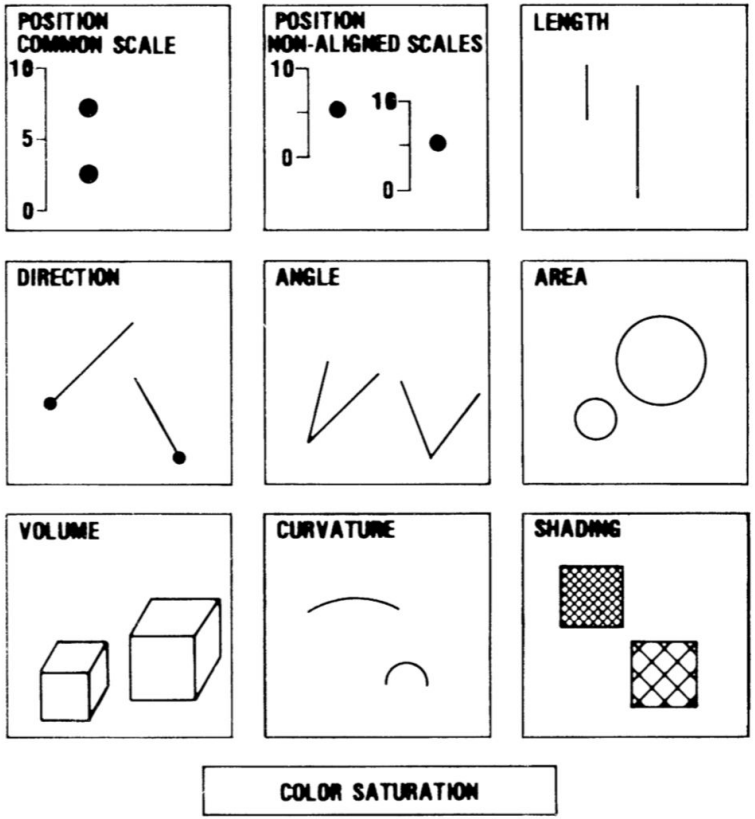


Figure 1. Elementary perceptual tasks.

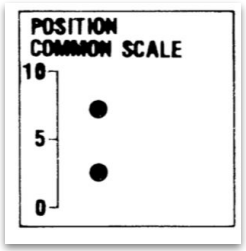
We've explored why pre-attentive features exist and how glyphs are processed.

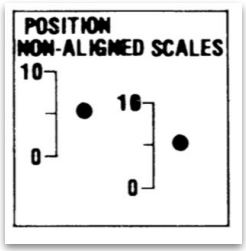
However, what is the right design of glyphs?

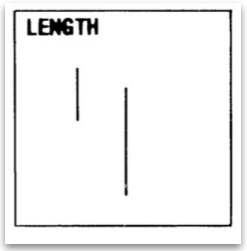
Presenting on Cleveland and McGill in addition to some work that came after as cited.

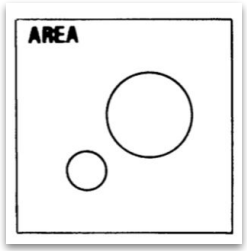
Fairly robust hierarchy

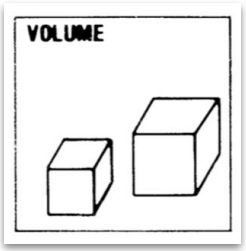
Higher Accuracy ——————————————— Lower or Inconsistent

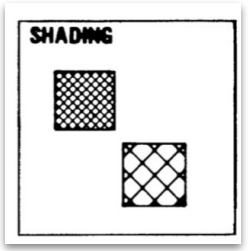


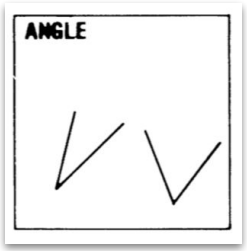




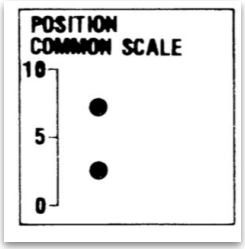






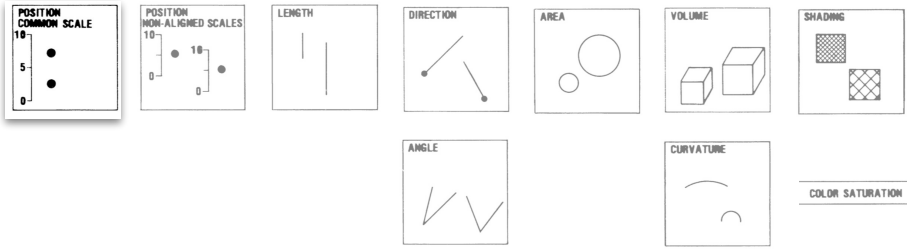


Fairly robust hierarchy

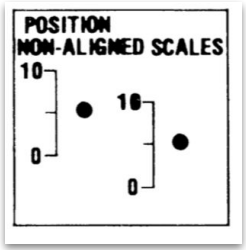


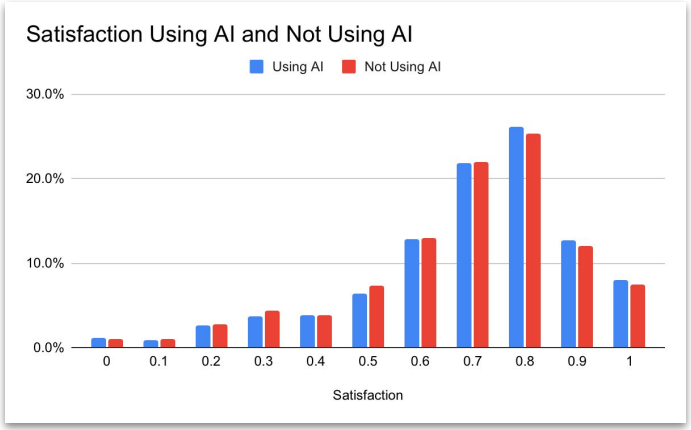
The highest accuracy encoding device is potentially not surprising as it underpins scatter plots.

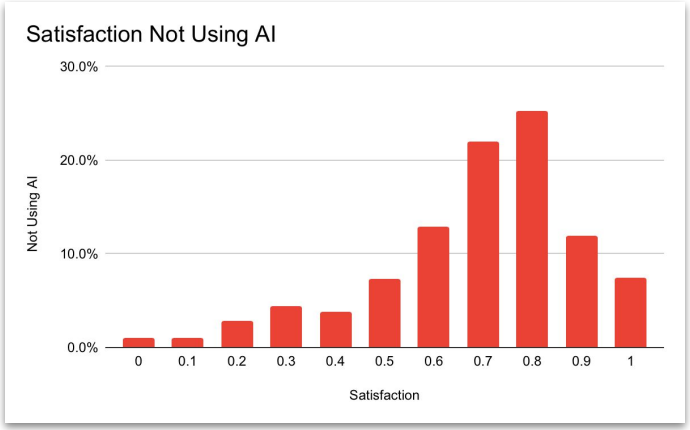
Going to back to preattentive features and the Gestalt Principles, position is really the first choice.

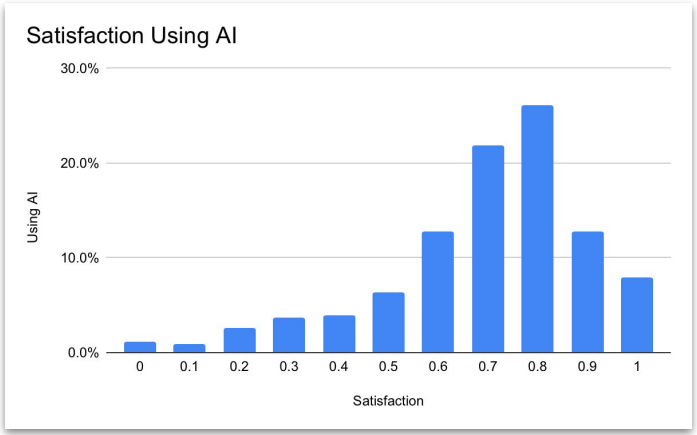


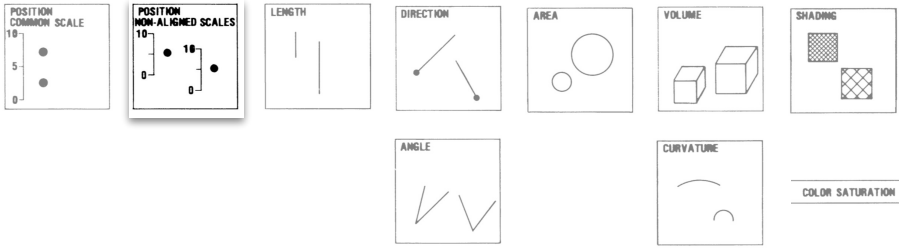
Fairly robust hierarchy











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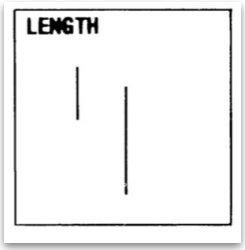
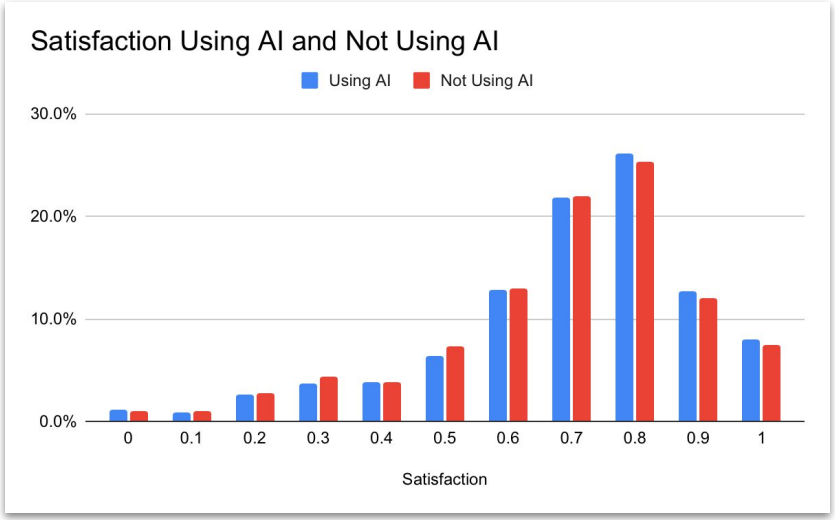
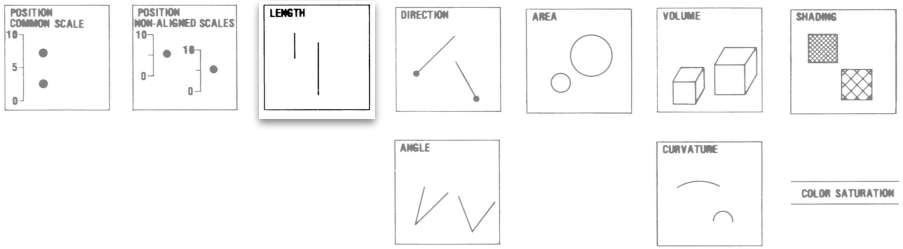


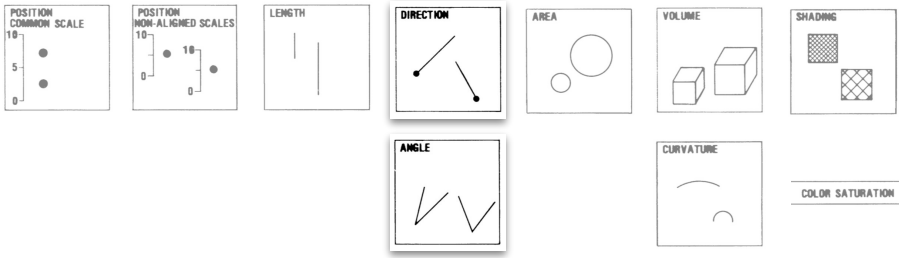




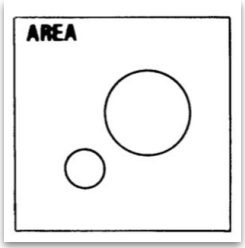
Fairly robust hierarchy

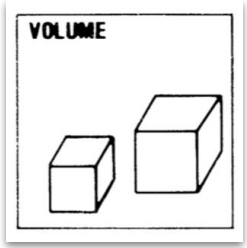
I am placing length higher than direction (slope) and angle because of consistency. There's evidence that we do better with angle closer to cardinal directions.

This is why pie charts may perform relatively poorly. Length typically has an easy fix: align against a common axis.



Fairly robust hierarchy

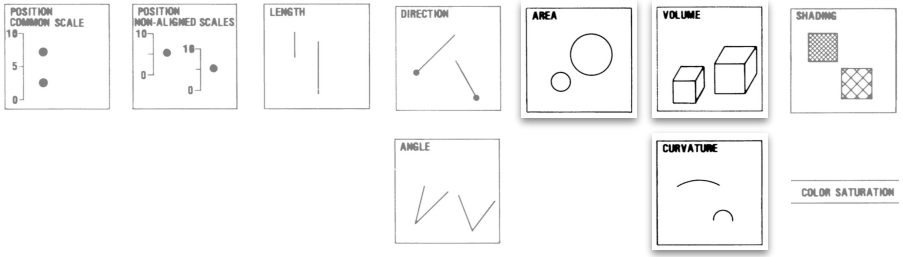




Volume generally never goes well. This may be partially due to 3D representation within 2D media.

In general, area is good for less important “contextualizing” metrics.

Area has an issue: area vs radius.



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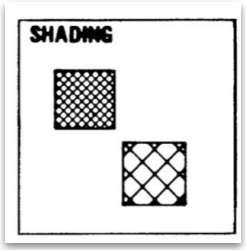
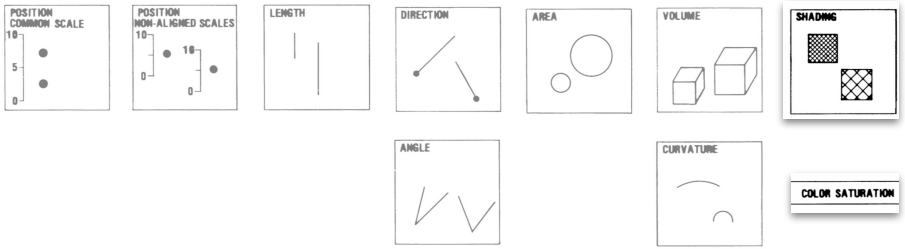


Returning to the lessons of our earlier lectures, color is fairly unreliable. It is often better for branding or complementing a message through emotion and aesthetic than it is for conveying quantitative information.

It may still serve a purpose for a limited number of qualitative groups.

Lightness generally better than hue.



Today

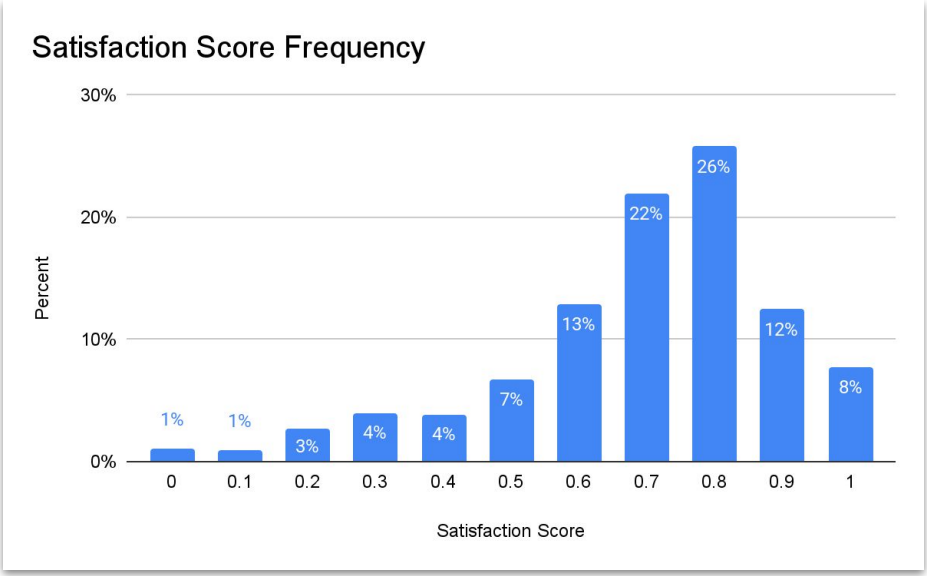
Cleveland and McGill: ranking of encodings.

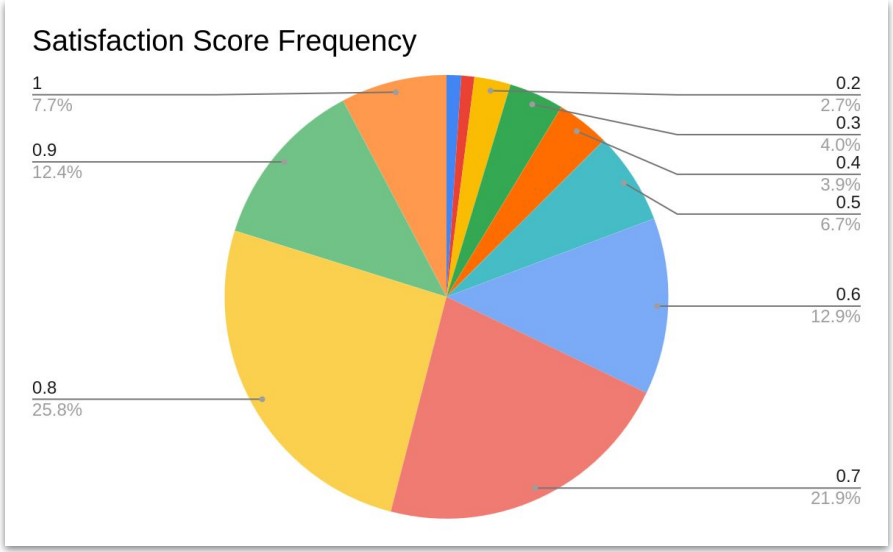
> Group activity: which graphic is more likely to be read accurately?

Working in limitations: shared axes, dual axes, and direct labeling.

Revisiting chart junk: how to keep channels clear.

Which one is more likely to be successful?





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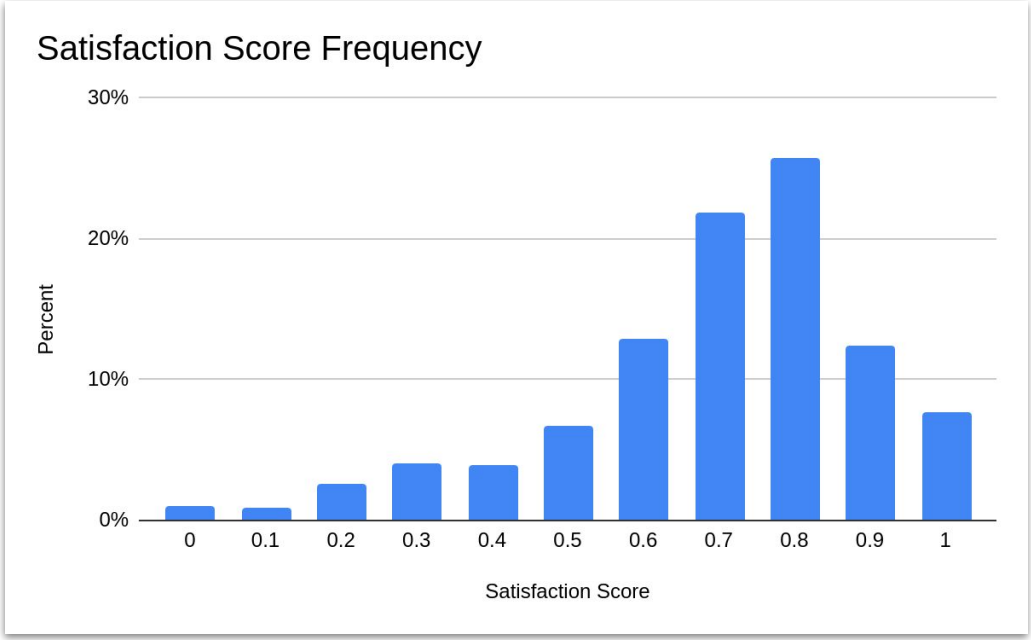
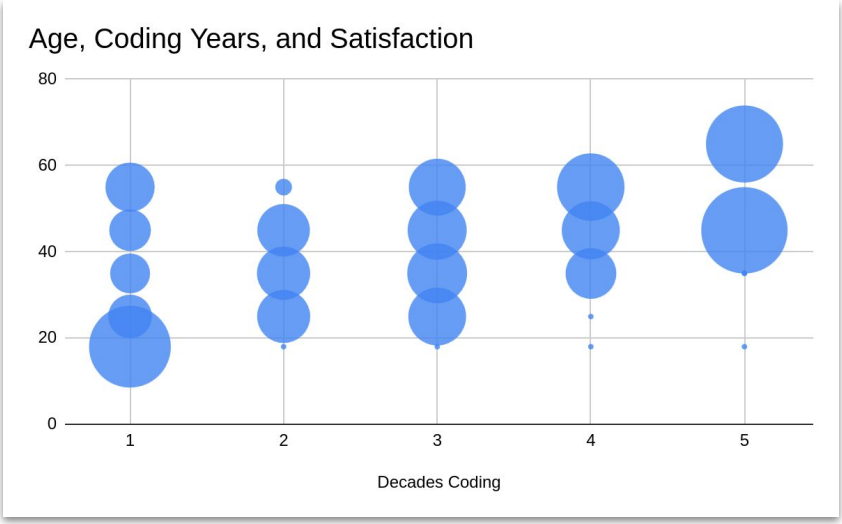


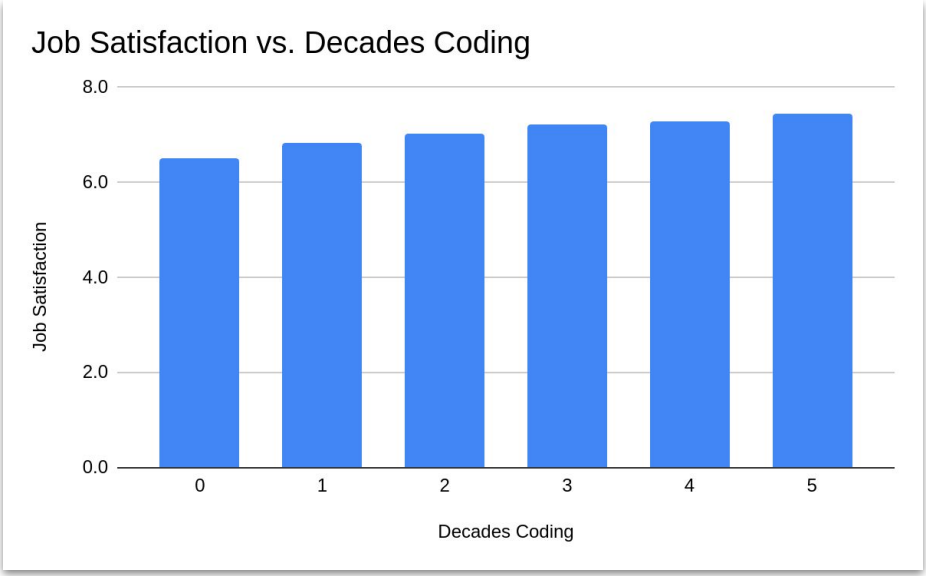
Satisfaction Score	Percent
0	
0.1	
0.2	
0.3	
0.4	
0.5	
0.6	
0.7	
0.8	
0.9	
1	

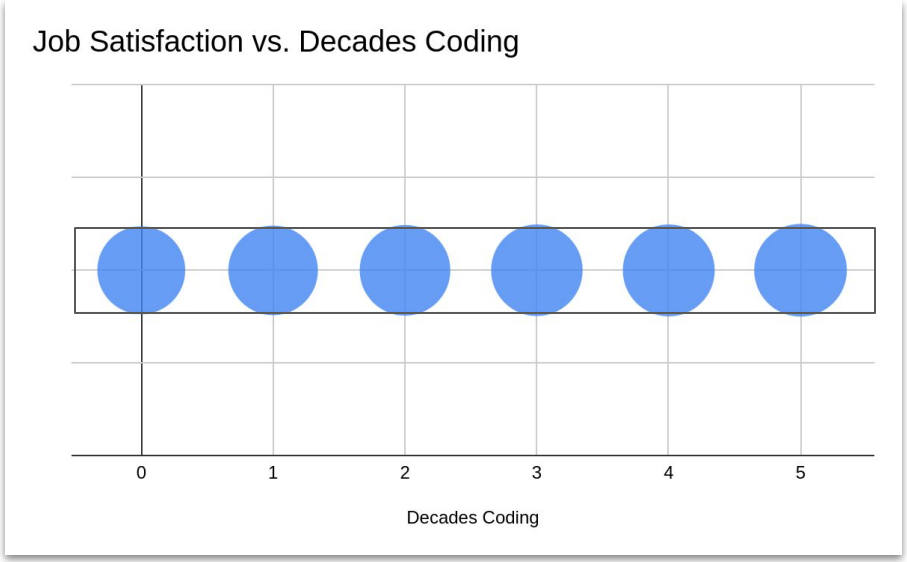
Which one is more likely to be successful?



Age Group	Decades Coding				
	1	2	3	4	5
65					1
55	1	1	1	1	
45	1	1	1	1	1
35	1	1	1	1	
25	1	1	1		
18	1				

Which one is more likely to be successful?





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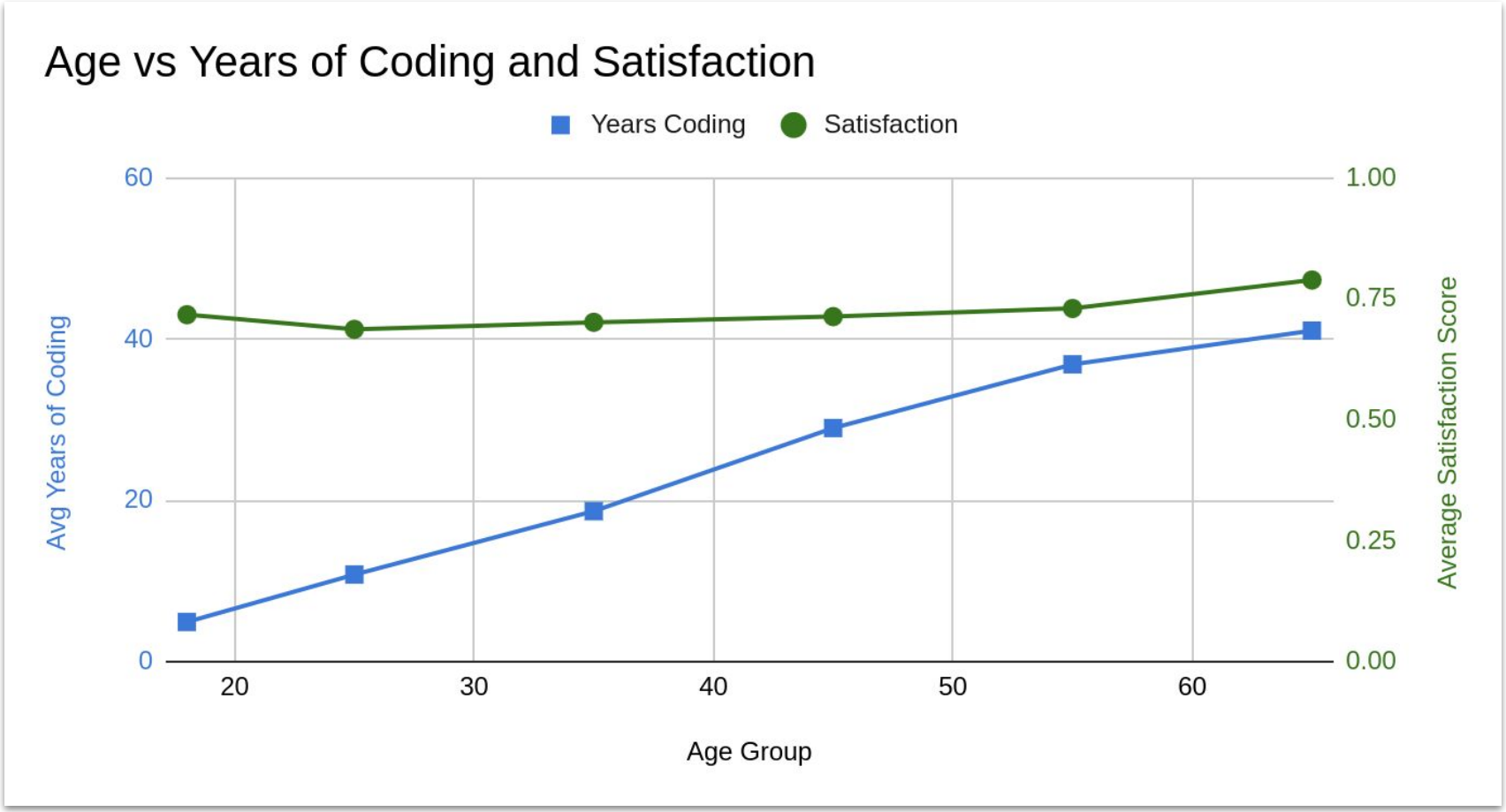
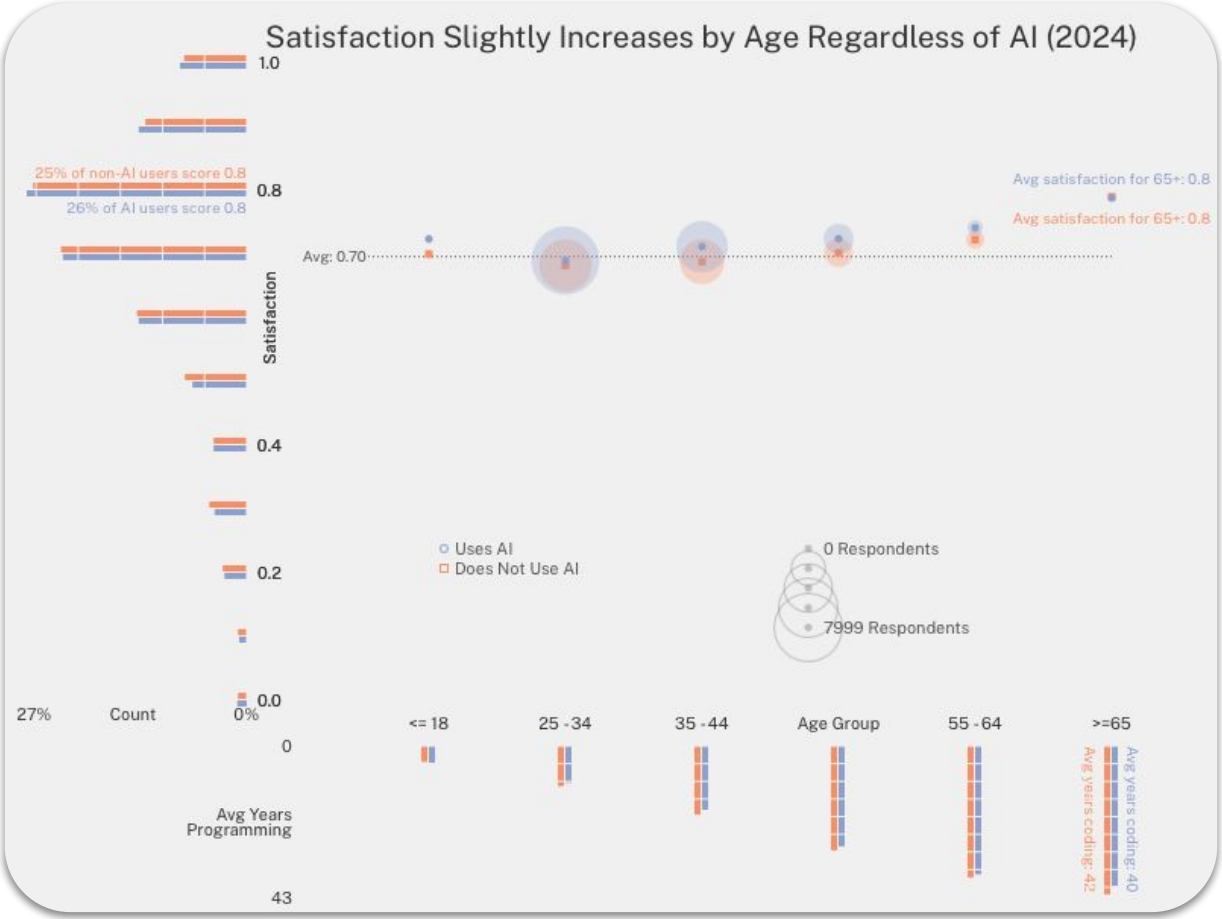
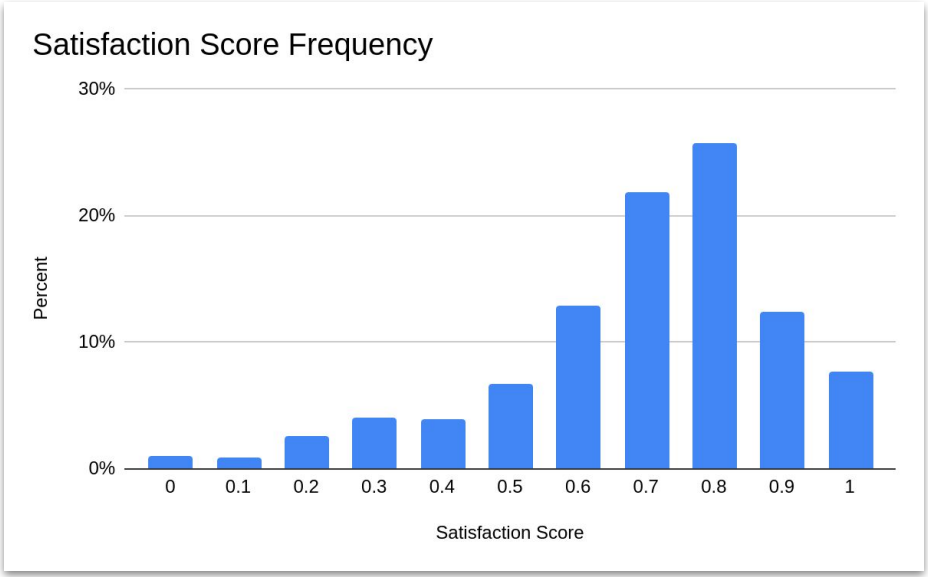
Dual Axes

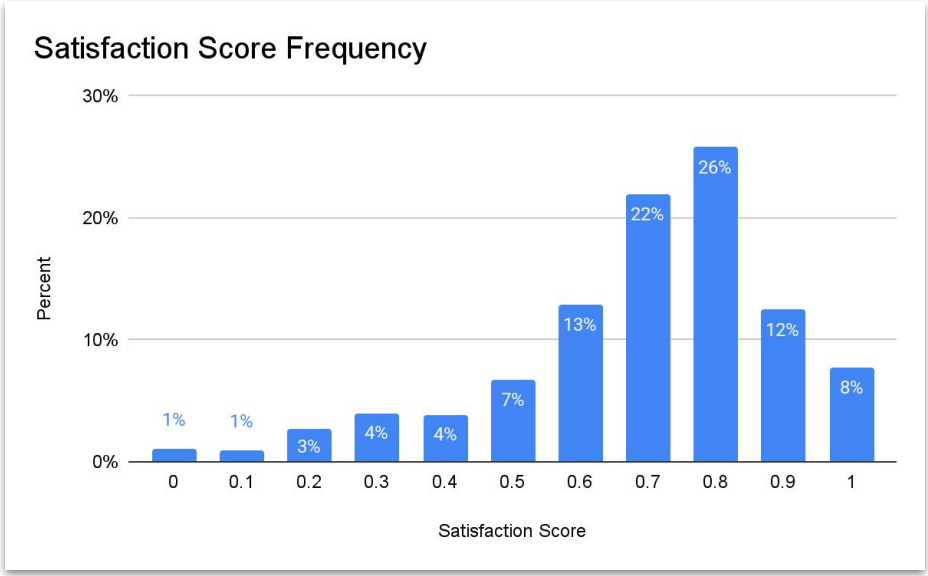

Age vs Years of Coding and Satisfaction
Years Coding
Satisfaction
60
40
20
0
1.00
0.75
0.50
0.25
0.00
Avg Years of Coding
Average Satisfaction Score
20
30
40
50
60
Age Group

Shared Axes


Satisfaction Slightly Increases by Age Regardless of AI (2024)
1.0
0.8
0.4
0.2
0.0
Satisfaction
25% of non-AI users score 0.8
26% of AI users score 0.8
Avg: 0.70
Avg satisfaction for 65+: 0.8
Avg satisfaction for 65+: 0.8
Uses AI
Does Not Use AI
0 Respondents
7999 Respondents
27%
Count
0%
<= 18
25 - 34
35 - 44
Age Group
55 - 64
>=65
0
Avg Years Programming
43
Avg years coding: 42
Avg years coding: 40

Direct Labeling





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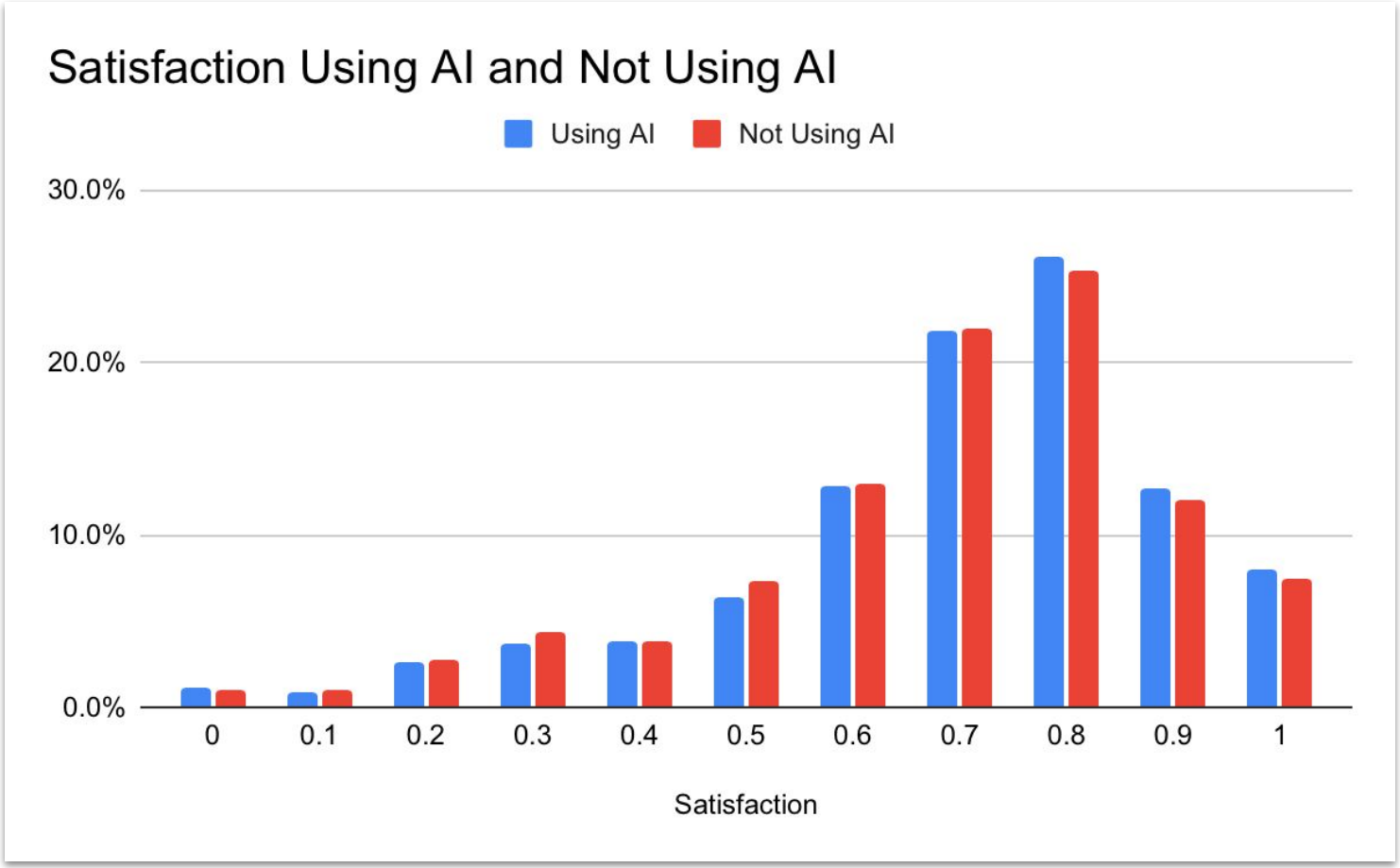
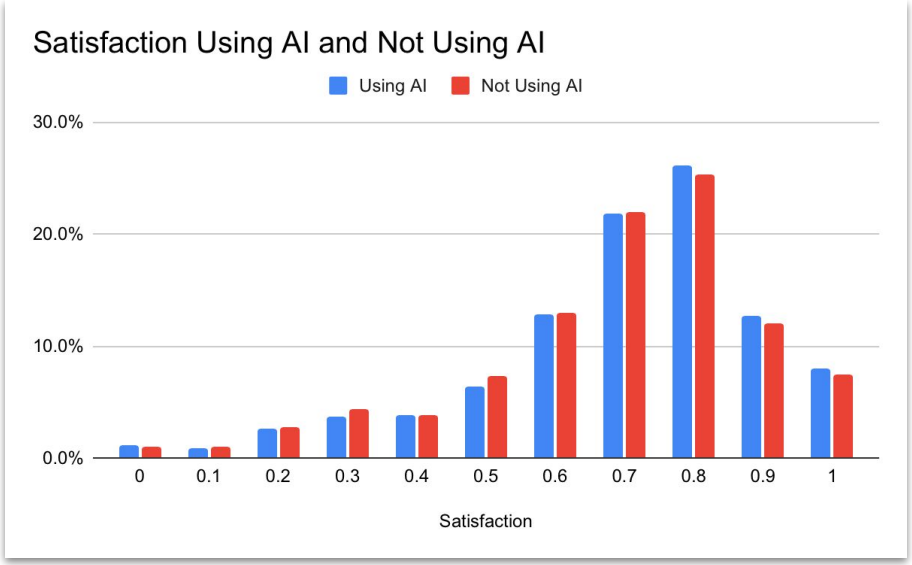
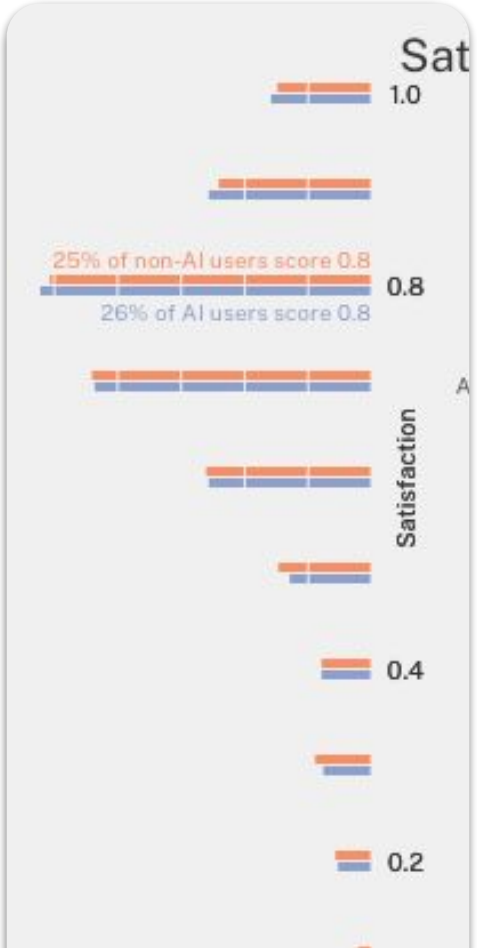
Keeping channels clear



Keeping channels clear





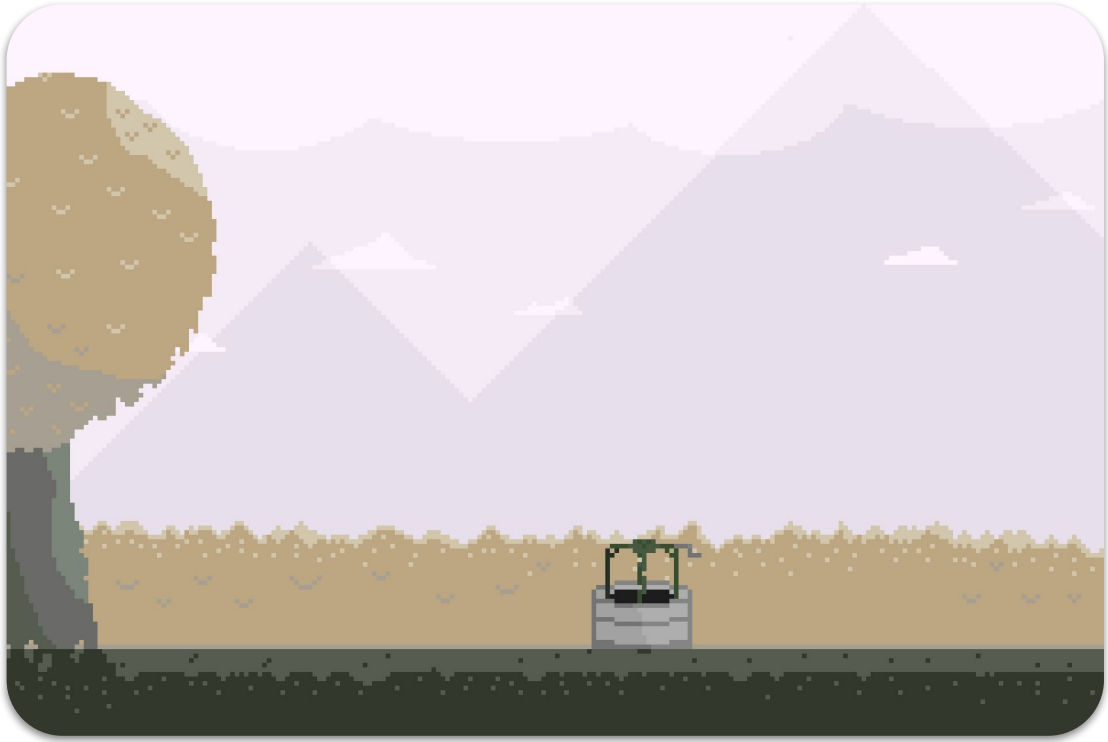
Quick Pause

Cleveland and McGill

Group activity

Working in limitations

Revisiting chart junk



Quick Pause 1

Upcoming Assignment

Intentional labeling.

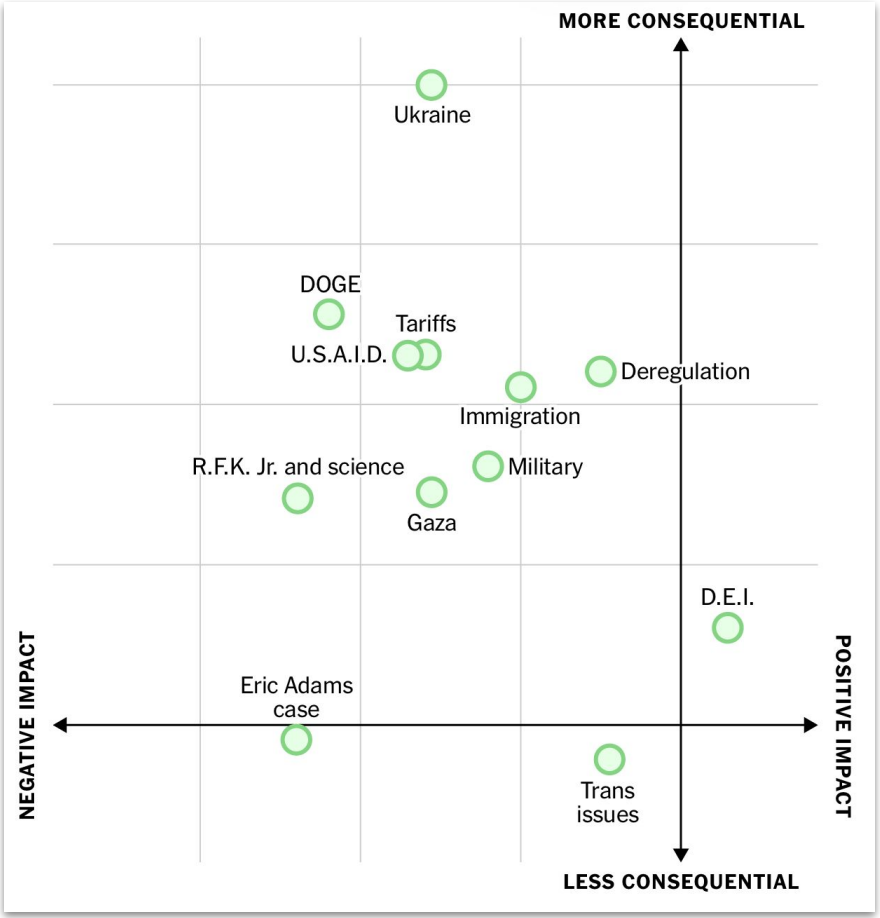
Removal of chartjunk.

Negative space grid.

Shared axes styling.

Future: interaction.

Quick Pause 2



10 Columnists and Writers Rate What Mattered in Trump's First Full Month

By New York Times Opinion

Feb. 28, 2025

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