

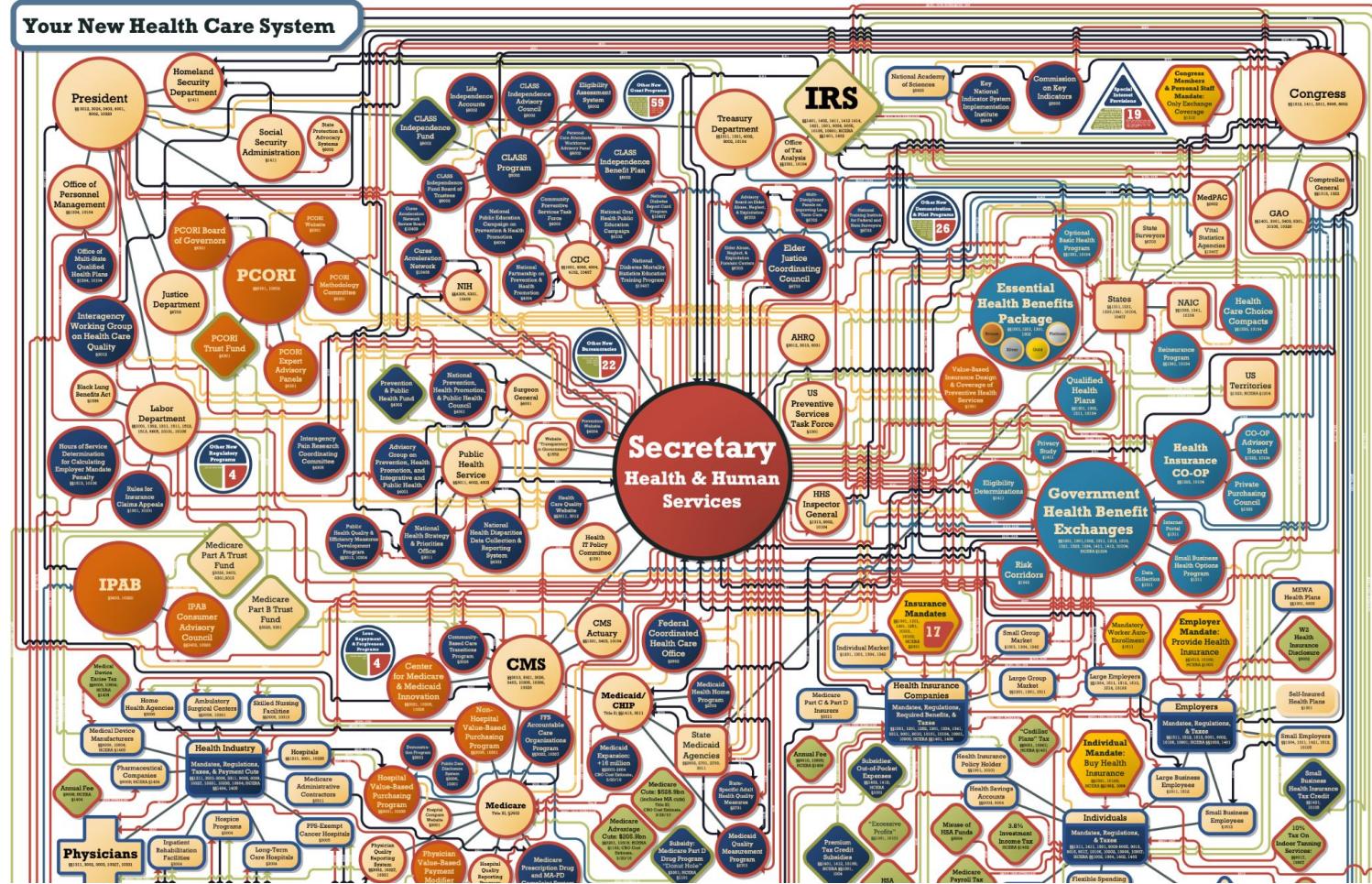
Week 3

Elements of Data Visualization (CS 329E)

Jan 26, 2026

Exploratory vs. Explanatory

Exploratory or Explanatory?



Source: Joint Economic Committee Republicans

Exploratory or Explanatory?

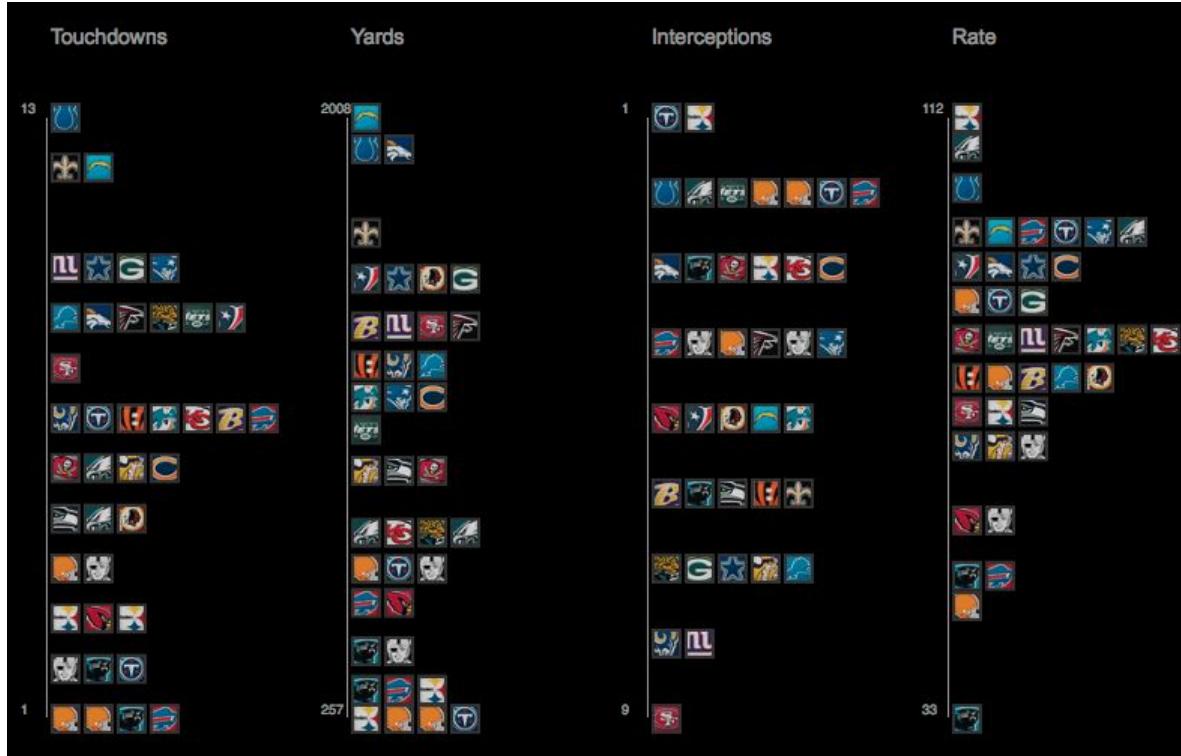
The Generative AI Market Map v3

A work in progress



Source: Sequoia Capital

Exploratory or Explanatory?



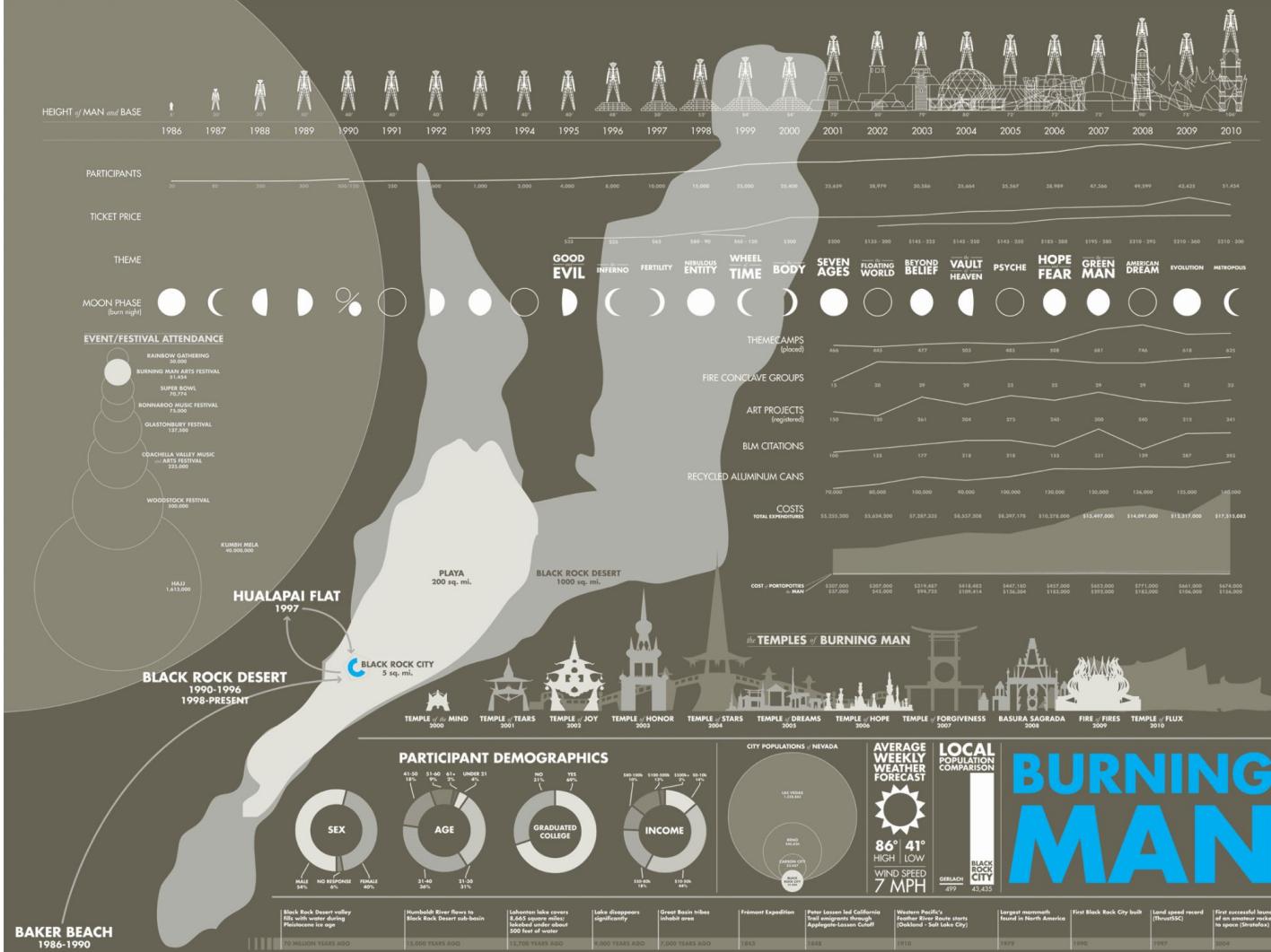
Source: Juice Analytics

“Our NFL stats spike chart is an easy way to see who’s leading the league in passing, rushing, receiving, tackles, team offense, and team defense. By showing key metrics side by side, you get the full picture of a player or team performance— not just the highlights.”

– Juice Analytics

Exploratory or Explanatory?

Source: Flint Hahn



Data Foundations:

Project 1 Milestone 1

First Data Exploration Study

Imagine that you're at your local coffee shop and you hear the barista say that they are looking to add a new rotation of chocolate bars to their offerings this year.

You're really excited to hear this, and volunteer to do a quick study of the landscape of chocolate bars, which you think could help in the selection of a new set of bars.

You start searching online for chocolate bar ratings and stumble upon [Flavors of Cacao's Chocolate Bar Ratings Database](#)



Over 2,800 plain dark chocolate bars rated!

- This is a **SORTABLE DATABASE**. Click any column header to re-sort the entries and organize by each of the column topics.
- To find the most recently added entries, sort by **REF** (reference number). The highest REF numbers were the last entries made.
- New! **Ingredients** column ("#" = represents the number of ingredients in the chocolate; B = Beans, S = Sugar, S* = Sweetener other than white cane or beet sugar, C = Cocoa Butter, V = Vanilla, L = Lecithin, Sa = Salt)
- New! **Most Memorable Characteristics** column is a summary review of the most memorable characteristics of that bar. Terms generally relate to anything from texture, flavor, overall opinion, etc.

Updated on: February 2, 2025

REF	Company (Manufacturer)	Company Location	Review Date	Country of Bean Origin	Specific Bean Origin or Bar Name	Cocoa Percent	Ingredients	Most Memorable Characteristics	Rating
2454 5150	U.S.A.	2019	Madagascar	Bejofo Estate, batch 1	76%	3- B,S,C	cocoa, blackberry, full body	3.75	
2458 5150	U.S.A.	2019	Dominican Republic	Zorzial, batch 1	76%	3- B,S,C	cocoa, vegetal, savory	3.5	
2454 5150	U.S.A.	2019	Tanzania	Kokoa Kamili, batch 1	76%	3- B,S,C	rich cocoa, fatty, bready	3.25	
2542 5150	U.S.A.	2021	India	Anamalai, batch 1	68%	3- B,S,C	milk brownie, macadamia, chewy	3.5	
2546 5150	U.S.A.	2021	Uganda	Semuliki Forest, batch 1	80%	3- B,S,C	mildly bitter, basic cocoa, fatty	3.25	
2542 5150	U.S.A.	2021	Fiji	Matasawalevu, batch 1	68%	3- B,S,C	chewy, off, rubbery	3	
2546 5150	U.S.A.	2021	Venezuela	Sur del Lago, batch 1	72%	3- B,S,C	fatty, earthy, moss, nutty, chalky	3	
2924 20/20	Venezuela	2024	Venezuela	Chuao, Hacienda Luna Clara, Aragua	70%	2- B,S	choco, fruity, chemical off	2.5	
2808 20N 20S	France	2022	Venezuela	Chuao, 2020 Harvest	78%	2- B,S	sl. dry, fruit, cocoa, ham	3	
2808 20N 20S	France	2022	Venezuela	Chuao, 2018 Harvest	78%	2- B,S	sandy, astringent, soil, grassy	2.75	
2860 2U	Japan	2023	Vietnam	Ben Tre	70%	3- B,S, L	tart, sour, rancid like	2.5	
2948 A. Craft	U.S.A.	2024	Tanzania	Kokoa Kamili, batch 4	65%	3- B,S,C	sweet, cocoa, cherry	3.25	
2948 A. Craft	U.S.A.	2024	India	Anamalai, batch 1	70%	3- B,S,C	mild, raisins, pear	3	
2952 A. Craft	U.S.A.	2024	Peru	Ucayali, batch 4	65%	3- B,S,C	pungent grape, apple, tart	3	
2952 A. Craft	U.S.A.	2024	Dominican Republic	Zorzial, batch 1	70%	3- B,S,C	sl. sandy, cocoa, earthy	3	
797 A. Morin	France	2012	Peru	Peru	63%	4- B,S,C,L	fruity, melon, roasty	3.75	
797 A. Morin	France	2012	Bolivia	Bolivia	70%	4- B,S,C,L	vegetal, nutty	3.5	

DECIPHERING COCOA PERCENTAGES

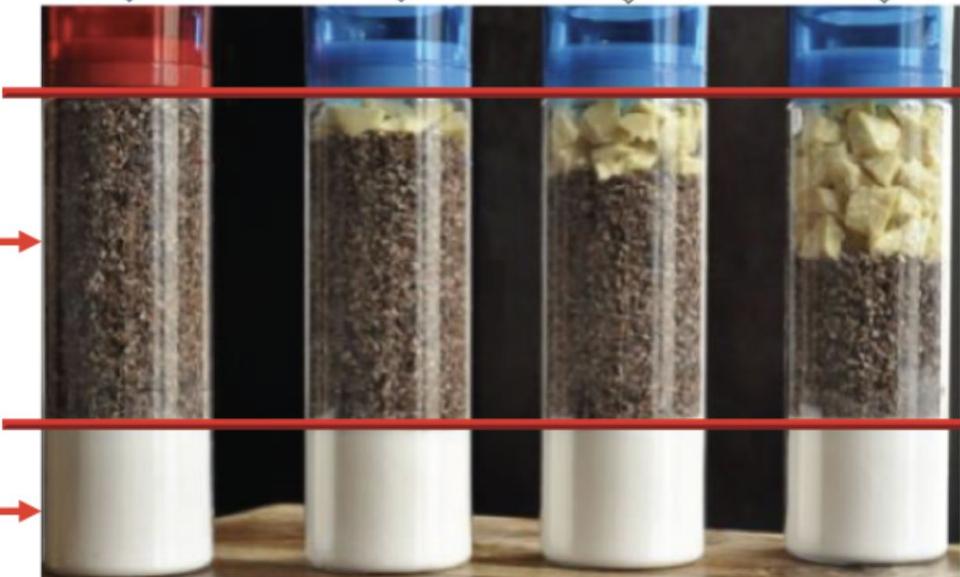
70% Cacao 30% Sugar	65% Cacao 5% Cocoa Butter 30% Sugar	55% Cacao 15% Cocoa Butter 30% Sugar	40% Cacao 30% Cocoa Butter 30% Sugar
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A

B

C

D



Cocoa percentage refers to sum of the cocoa bean and any added cocoa butter content. Each of these represent a 70% dark chocolate bar with different amounts of added cocoa butter.

Cocoa percent in plain dark chocolate informs you of the amount of sugar. For 70% bars there is always 30% sugar content.

Flavors of Cacao Chocolate Journal

<u>Rating Scale</u>	<u>Brand Name</u>	<u>Company Location</u>	<u>Bar Name</u>	<u>Percentage</u>
4.0 - 5.0 = Outstanding				
3.5 - 3.9 = Highly Recommended				
3.0 - 3.49 = Recommended				
2.0 - 2.9 = Disappointing				
1.0 - 1.9 = Unpleasant				
	<u>Ingredients</u>	<u>Other Specs (batch#, origin, bean type, process, harvest date, etc.)</u>		
neg neutral pos .5 1 1.5 2 2.5	AROMA	satisfaction: enjoyable - indifferent - unpleasant intensity: none - mild - moderate - strong		
neg neutral pos .5 1 1.5 2 2.5	APPEARANCE	color: light brown - brown - dark brown - black - reddish brown surface finish: dull - partial shiny - shiny details: many flaws - a few flaws - near perfect - blooming - air bubbles - scuff marks - crumbles - swirls - uneven thickness - uneven color - imprints from mold - other		
neg neutral pos 1 2 3 4 5	TEXTURE	negative: dry - sandy - some large grits - oily - fatty - chalky - powdery - waxy positive: creamy - smooth - unforced - dense - even negative or positive: forced melt - sticky - chunky - chewy - soft		
neg neutral pos 1 2 3 4 5	FLAVOR	intensity: mild - moderate - strong roast: mild - medium - heavy acidity: none - mild - moderate - strong dominant ingredient: cacao - sugar - butter - balanced - other profile: nutty - fruit - floral - spicy - cocoa - earthy - sweet - sour - roasty - dairy - grassy - herbal - pungent - mouldy - dirty - musty - smokey - rubbery - hammy - bland - petroleum - burnt - off bitterness: none - mild - moderate - strong		
neg neutral pos 1 2 3 4 5	AFTERMELT	stringency: none - mild - moderate - strong length: flavor disappears fast - medium length - flavor lingers aftertaste: enjoyable - indifferent - unpleasant lingering characteristics:		
neg neutral pos 1 2 3 4 5	OVERALL OPINION	most memorable or defining attribute: "PITCH"		

Guiding Questions

- What are the n top-rated chocolate bars?
- Are chocolate bars with certain percentages of cocoa more popular among reviewers?
- Where do the beans used for top-rated chocolate bars tend to come from?
- Where are the top-rated chocolate bars made?
- What are the characteristics most often used to describe these top-rated chocolate bars?

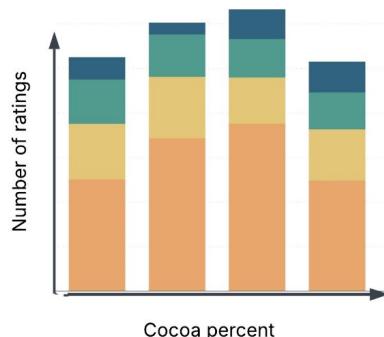
Quick Sketches

Question

Are chocolate bars with certain percentages of cocoa more popular among reviewers?

Chart

Stacked Bar

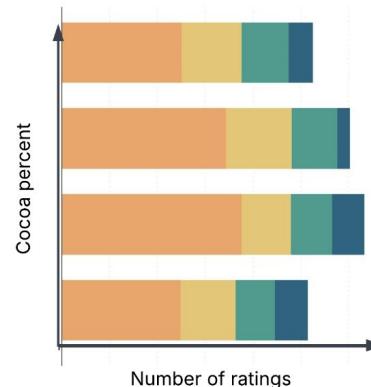


Each bar represents a different cocoa percent

Each segment of a bar (cocoa percent) represents a rating category: Outstanding, Highly Recommended, etc.

Legend

Outstanding
Highly Recommended
Recommended
...



Altair
Stacked Bar
Chart example:



Stacked Bar
Chart - Vega-Altair
6.0.0
documentation
Altair-viz

Let's get hands-on:

[Chocolate bar ratings lab](#)