The most important meal of the day

A fun way to see nutrients in our milk and cereals.

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Motivation

- Health and nutrition awareness: Increasing awareness among consumers regarding the nutritional content of the foods they consume various dietary choices to promote overall health and well-being.
- Diverse milk options: Wide range of milk options are available such as whole milk, skim milk, almond milk, soy milk, etc. but consumers often face difficulties in comparing their nutritions.
- Cereal variations: Variety of cereals available, but consumers are often overwhelmed when trying to compare their nutritions.
- Lack of comprehensive information: Nutritional information available on product packaging or websites is often fragmented or confusing to understand, making it challenging for everyday consumers to make informed choices.
- Need for visualization: A well-designed visualization can simplify complex information, facilitate comparison, and enable consumers to make more informed decisions about their purchases.
- Cost considerations: Visualization that includes cost, which allows consumers to consider both nutritional values and affordability when choosing milk and cereal options.

Intended Audience

- Budget-conscious individuals, such as college students or those on a tight budget, seeking affordable breakfast options.
- Health-conscious individuals interested in selecting nutritious breakfast choices.
- Dietitians and nutritionists who analyze and provide guidance on meal planning and nutrition.

Questions

- What are the different constituents in different kinds/types/brands of milk and cereal?
- What is the most affordable breakfast option per serving?
- What are the environmental impacts of a glass of milk?

Dataset and Tools

Datasets:

Manual Data Collection

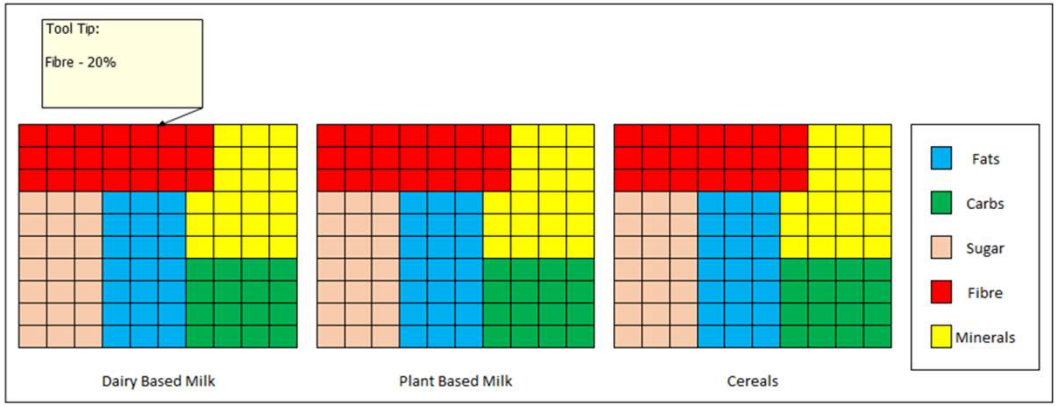
The below pictures are taken for various cereals from Costco store.

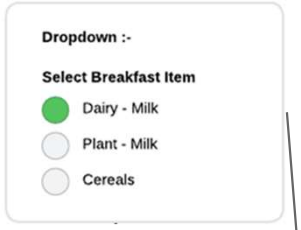
- *Credits: Aditya*

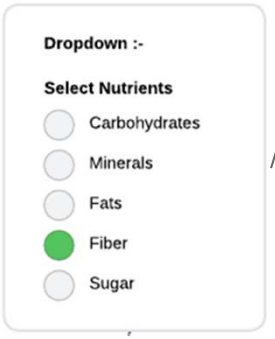
Tools :

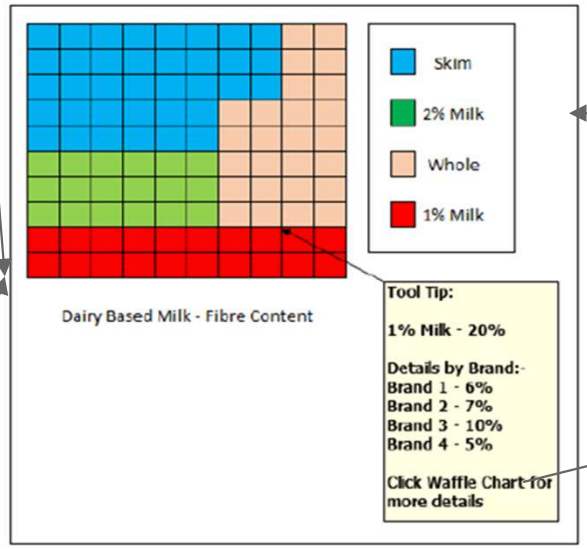
- Preprocessing
  - Excel
  - Python
- Visualization: D3.js

StoryBoard: Waffle and Radar Charts

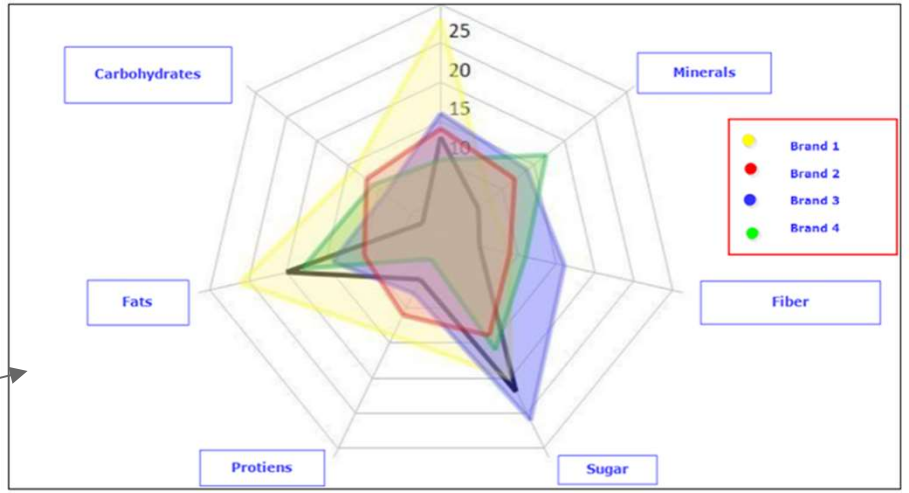








Waffle chart is shown according to the chosen criteria i.e breakfast item and the nutrient type.



StoryBoard: Waffle and Radar Charts

Intro Waffle Charts:

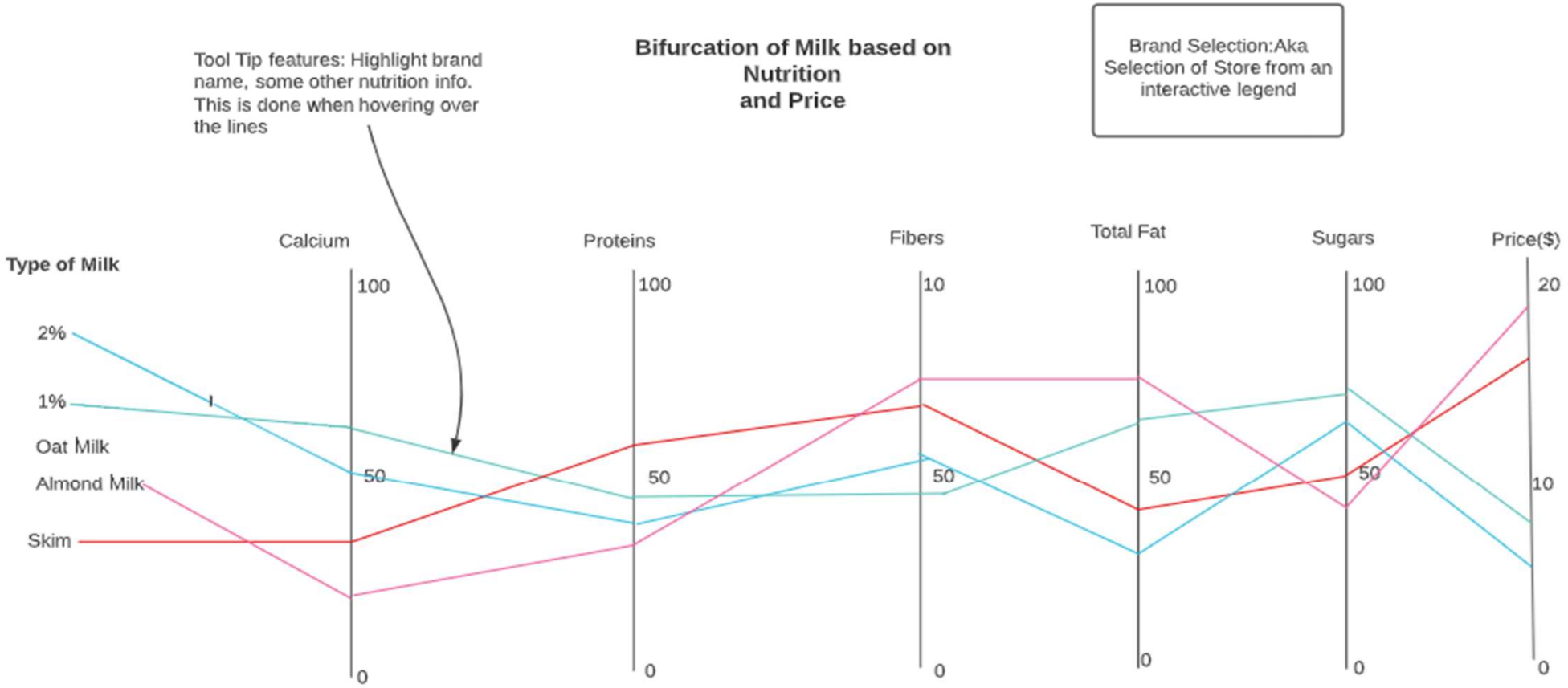
- The initial visualization begins with three waffle charts, displaying the proportion of various nutrients such as sugar, fiber, carbs etc in different breakfast items i.e, plant-based milk, dairy milk, and cereals.
- Users can have an overview of the relative distribution of nutrients in these breakfast items.

Dynamic Waffle Chart:

Based on the user's selections from the dropdown menus, a new waffle chart is generated.

- This chart illustrates the proportion of the selected nutrient in different types of the chosen breakfast item.
- For example, if the user selects "fibre" and "Dairy milk," the waffle chart will display the fibre proportion across various Dairy-milk options like Whole, 2% etc
- The tooltip displays the brand-wise proportion of that chosen nutrient across different brands like kroger, kirkland, etc.
- Within the tooltip, users can click on a link to access a radar chart.
- This radar chart showcases a comprehensive view of the nutritional values of all the brands of that particular chosen dairy- milk type like 2%

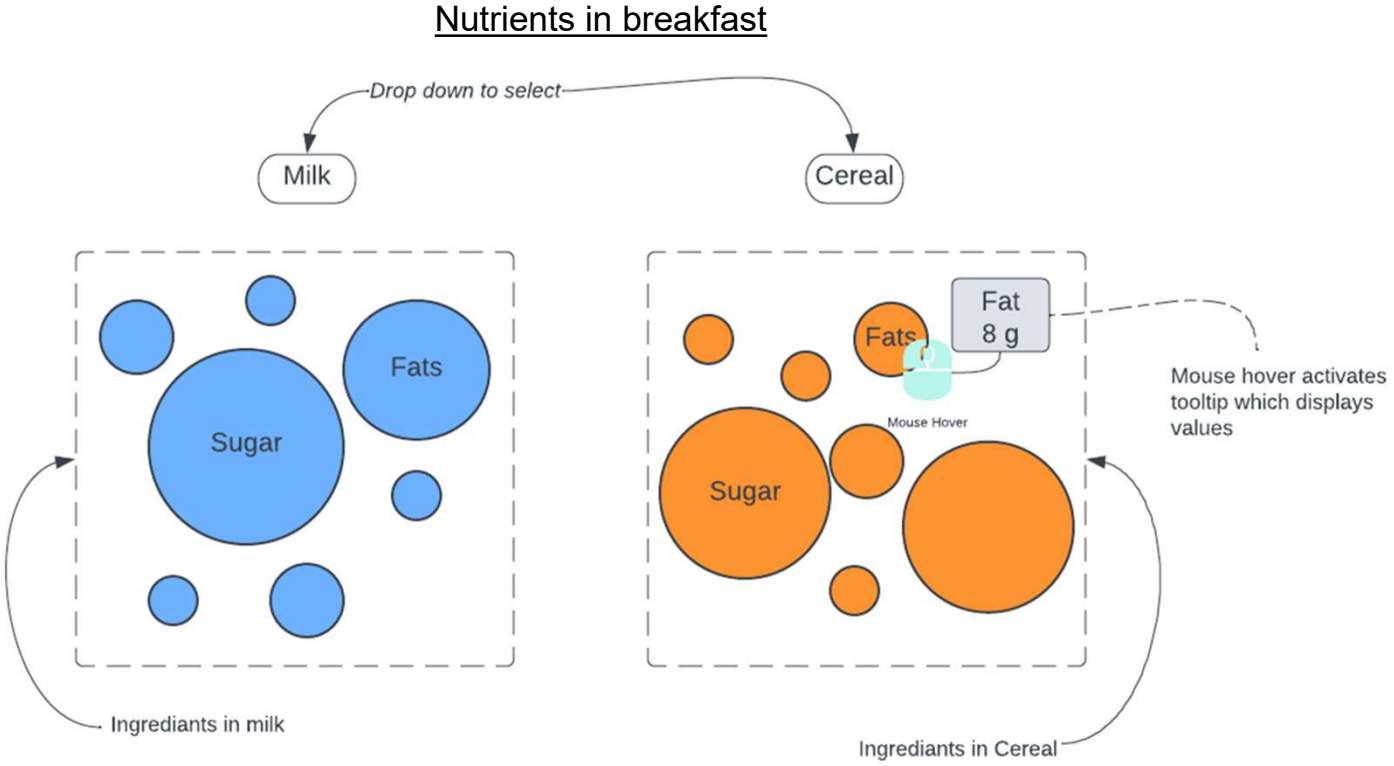
StoryBoard : Parallel Plot



StoryBoard : Parallel Coordinate Plot

- The aim here is to map brand specific products under the selected category to their respective nutrition value and price point.
- Each Vertical line represents the attributes associated with the product, here it is that of their nutrition value and price.
- The Y-axis represents the variants present in that selected product. (Ex: Product: Milk, Variants: Skim, 2%, 1% etc).
- Each colored line represents a store/brand name attached to it, it is shown when a user hovers over the line using a tool tip.
- Legend is interactive i.e Different brands could be selected Eg: Costco: Kirkland, WholeFoods: 365 etc

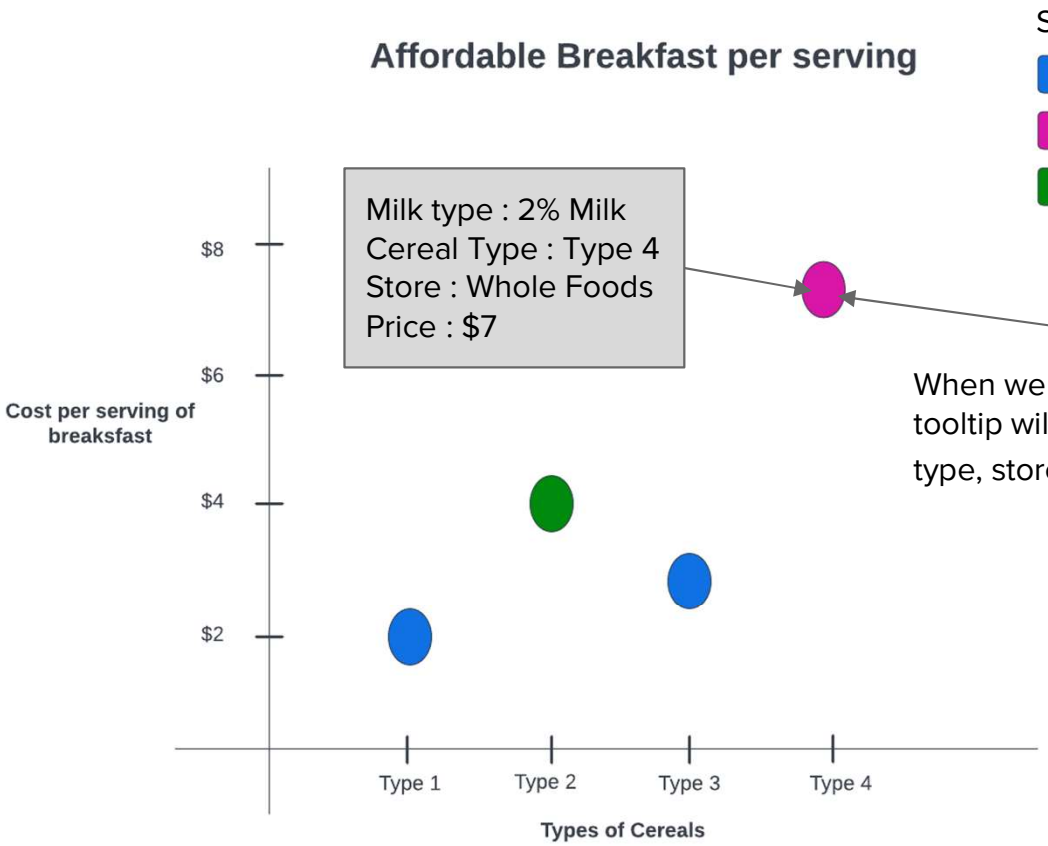
StoryBoard : Circular Packing



StoryBoard : Circular Packing

- This visualization would help us understand the proportion of different components in a type of milk and cereal.
- We would have the drop downs to select a specific milk type of a specific brand and also select a cereal.
- The bubble size would be proportional to the value of the component.
- A mouse hover interaction would help user highlight the bubble and see the value associated.

StoryBoard : Scatter Plot



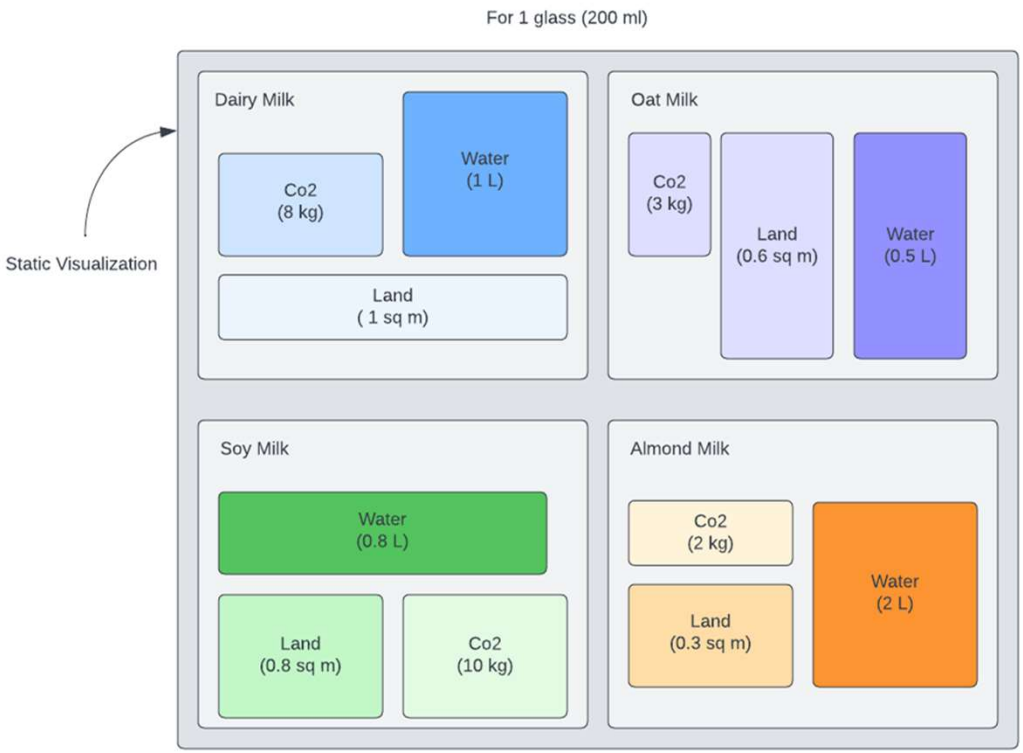
The Milk Drop Down will have the list of 5 cheapest milk we get from the parallel plot

When we hover over a specific dot a tooltip will show the Milk type, cereal type, store name and price

StoryBoard : Scatter Plot

- A dropdown menu is provided to select the milk type. This dropdown includes the five cheapest milk types, identified through parallel plot visualization.
- The y-axis represents the cost of breakfast per serving. The total cost is calculated by combining the cost of the milk type(selected from the drop-down) and the cost of the cereal type.
- The x-axis displays different cereal types (corn flakes, cheerios, Reese puffs, chocos), enabling cost comparisons
- A legend indicates store types (Costco, Whole Foods, QFC) with distinct colors.
- Hovering over a data point (dot) on the scatter plot triggers a tooltip. The tooltip provides detailed information, including the milk type, cereal type, store name, and price per serving for breakfast.
- This visualization performs a comparative analysis to determine the store with the best breakfast prices for individuals on a tight budget.

VA4 - Tree Map



This would be a static visualization and would depict various environmental impacts to deliver one glass of milk.

Feedback and Improvements

Adding a question regarding the affordable breakfasts and to have a visualization to show which grocery store offers affordable price for milk.

➔ *For this, we've created a scatter plot that displays the grocery store with the lowest prices for breakfast per serving (milk and cereal).*

Plot a density plot do show the variation of constituents.

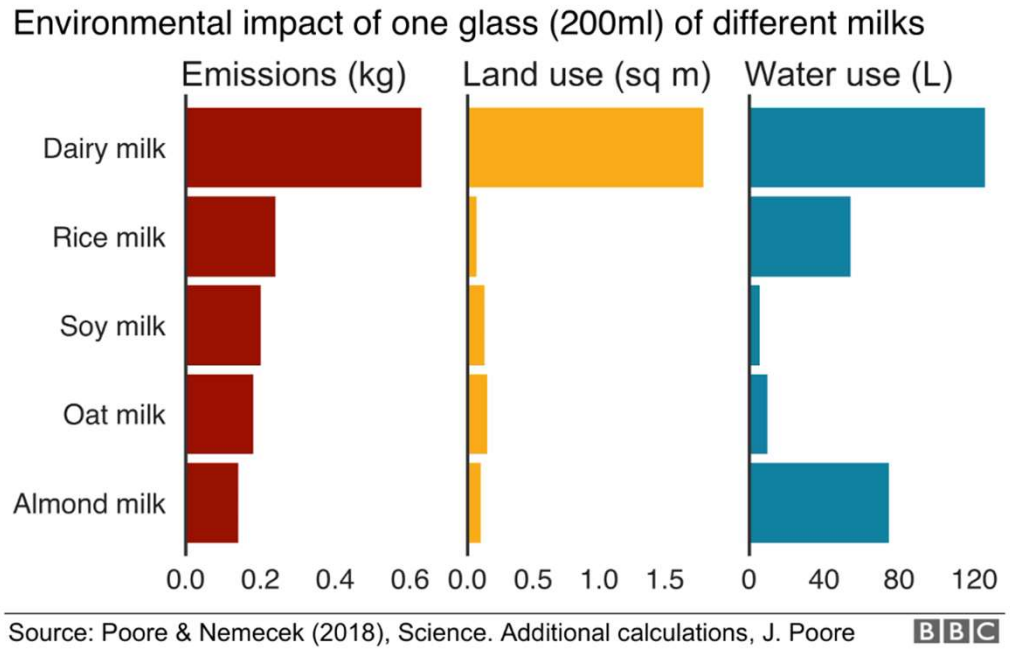
➔ *We decided to do a parallel chart for the above.*

Visualization to show the proportions, may be with venn diagram.

➔ *We decided to use waffle and radar charts.*

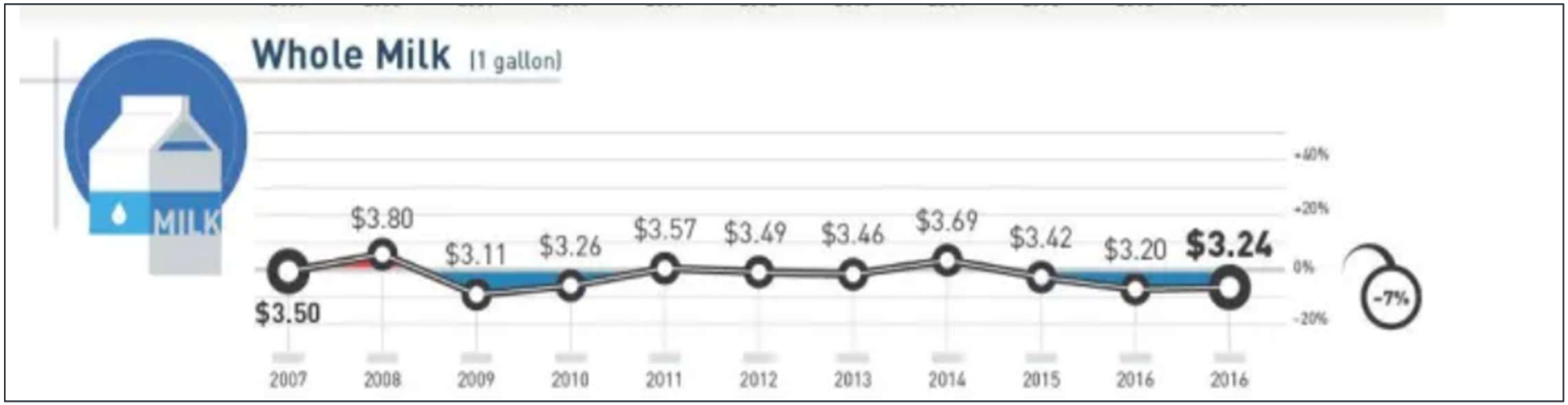
- *Thank you Dr. Kong, Owen and Titus*

Related work - 1



Source: Climate change: Which vegan milk is best?, BBC, 2019, https://www.bbc.com/news/science-environment-46654042

Related work - 2



https://www.titlemax.com/discovery-center/home-and-family/cost-of-common-groceries-10-years/

In our visualisation, we are making comparisons across nutrient contents for different milk types and cereal types and also showing the price aspect of breakfast meals (milk and cereal).

Related Work-3

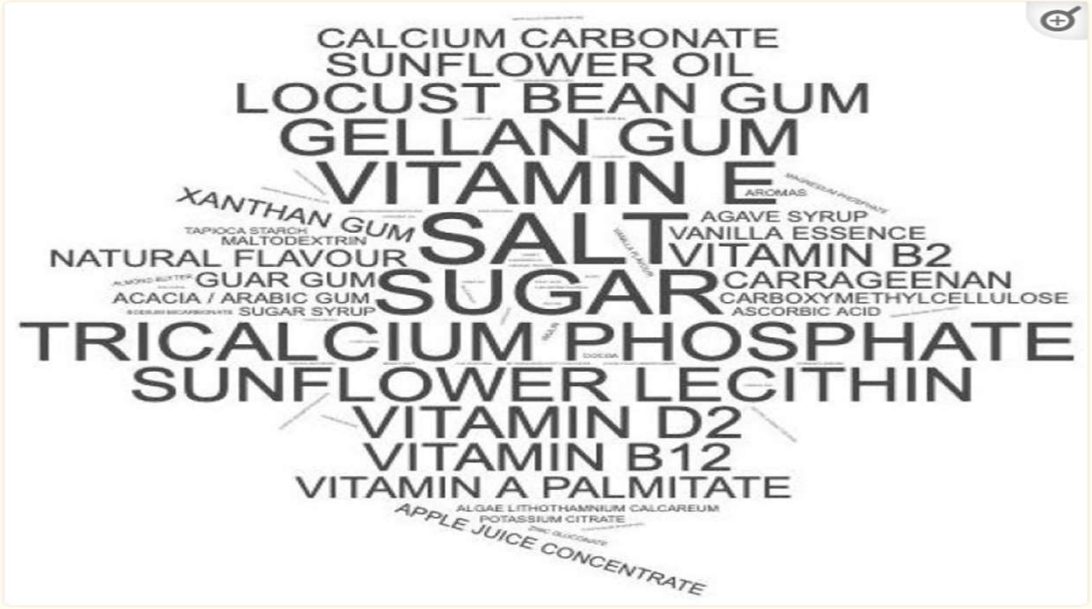


Figure 1

Word cloud of added ingredients from plant-based beverages from scientific studies selected according to the inclusion and exclusion criteria. Words are presented according to their proportional frequencies among all samples, given that greater sizes correspond to greater frequencies.

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8399839/

In our visualization, we are showing the proportions of the chosen nutrient for different milk types, cereal types, or brands using waffle chart and radar charts

References

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- https://birdmanlife.com/blogs/health-and-nutrition/non-dairy-milks-comparison-between-7-vegan-milks
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