TITLE: GLOBAL DEMAND FOR ORGANIC FOOD

1.INTRODUCTION

The demand for organic food has drastically increased over the last decade in terms of the number of organic farming areas, production and sales. Organic agriculture is encouraged in every other Country to promote and reduce climatic pollution. Consumers also adopt organic diets in their every meal.

MOTIVATION

- The demand for the organic produce and organic agriculture has increased dramatically in the last decade despite its premium prices.
- This visualisation aims to study about the intention customers and how does a country contribute to its organic sales

TARGET AUDIENCE:

Commercial sector is the target audience here as the application aids to know where the target customers are and the Organic food produce that is of greater demand and the organic farming site for that particular food produce.

2.DESIGN

The visualization design is constructed based on the five design sheet analysis.

Sheet 1: Brain Storm

Firstly since the topic os global demand for organic food, two countries are chosen in the study (USA and UK). Then based on the region the organic food consumers are filtered and the ways to represent and filter out this data is discused. To observe the region patterns of the organic farming areas, with the aid of markers and tooltips and type of map to be considered is discussed. To track the demand of organic food products and price variation for organic vs conventional produce, the filteration and type of information to be displayed is shown here.

Sheet 2: Initial Design

In sheet 2, the basic map to choose for visualizing the regional patterns of the organic farming areas is plotted with a drop down to change between the USA and UK maps. Clicking on a region will display the site name and the respective area allocated for farming .

Sheet 3: Initial Design

In sheet 3, the same concept of map is used but with additional attributes to filter and categorize the data to get an even more detailed view of the organic food and its respective farming areas for the respective countries.

Sheet 4: Initial Design

In sheet 4, along with the map and the options to categorize the data based on the type of the organic produce , details such as number of organic purchases in that area and also the food that Is of demand in that area, those information can be viewd and displayed here based on the category selected

Sheet 5: Realization Design

In the realization design, the final visualisation design is made here with few alternatives made based on the comments received at the presentation. Three tabs are defined here “organic purchases” which is the “organic food demand ” in the final application to visualize the food demand and the price for each category for Organic vs Conventional. “Organic Hotspots” tab to visualize the regional patterns of the organic farming areas basaed on its intensity level using a Choropleth Map. “Organic customers” tab to visualize the customers who prefer the organic food products.

Since USA ranks the top as the World’s Largest Market for organic farming, only USA farming areas, organic food products and Organic consumers are taken under study.

3.IMPLEMENTATION

D3 is used for implementing the narrative visualisation.

DATASET:

Libraries include:

D3 version3 library	A Javascript based is used for the project for manipulating the data which are document based
D3 Scale Chromatic library	Used for providing categorical color schemes for the data

Choice of visualisations used in the project:

Bar Chart [1]	To visualize the **Number of total share, total purchases and total sales of the organic produce** for the purpose to view the demand under each category “*Bar chart”* is used.

	As here comparison is involved between different groups and to easily interpret a "*Bar chart"* is used.
Line chart [4]	To visualize the **prices for Organic vs Conventional Produce** for each category *"Line chart"* is used. As here to track the changes in price for organic and conventional products over a period of time *"Line Chart"* is used. Even when a small change occur line charts are easier to interpret.
Choropleth Map [3]	To visualize the areas where **Certified Organic Farming** is employed in the USA, a "*Choropleth map"* is used. As here to see the regional patterns in the data which has areas of intense organic farming to areas which has comparatively less a "*Choropleth map"* is used.
Bubble chart [2]	To visualize the **number of organic consumers** in a region where x-axis is the total volume of organic products , y-axis is the total bags sold for consumers in a particular region and z-axis is the another dimention with the total volumn of organic produce sold As here the number of organic consumers in a region in conveyed using the size of the bubble correlated with two other variables in a single chart a "*Bubble chart"* is used.

4. USER GUIDE

INSTRUCTIONS TO OPEN THE APPLICATION:

- Using Google Chrome Browser: To open in Chrome, first start the python server with the command "***python -m http.server 8000"*** in either Anaconda Prompt or Command Prompt.

```
(base) C:\Users\CATHE>python -m http.server 8000
Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...
```

Navigate through the directories under ***"localhost:8000"*** in the Google Chrome browser. Navigate to the directory containing the folders. As the introductory page in named as *"index.html"* the page loads automatically else select the ***"index.html"*** page to launch the application.

- Using Mozilla Firefox Browser: Open the ***"index.html"*** page (the introductory page)

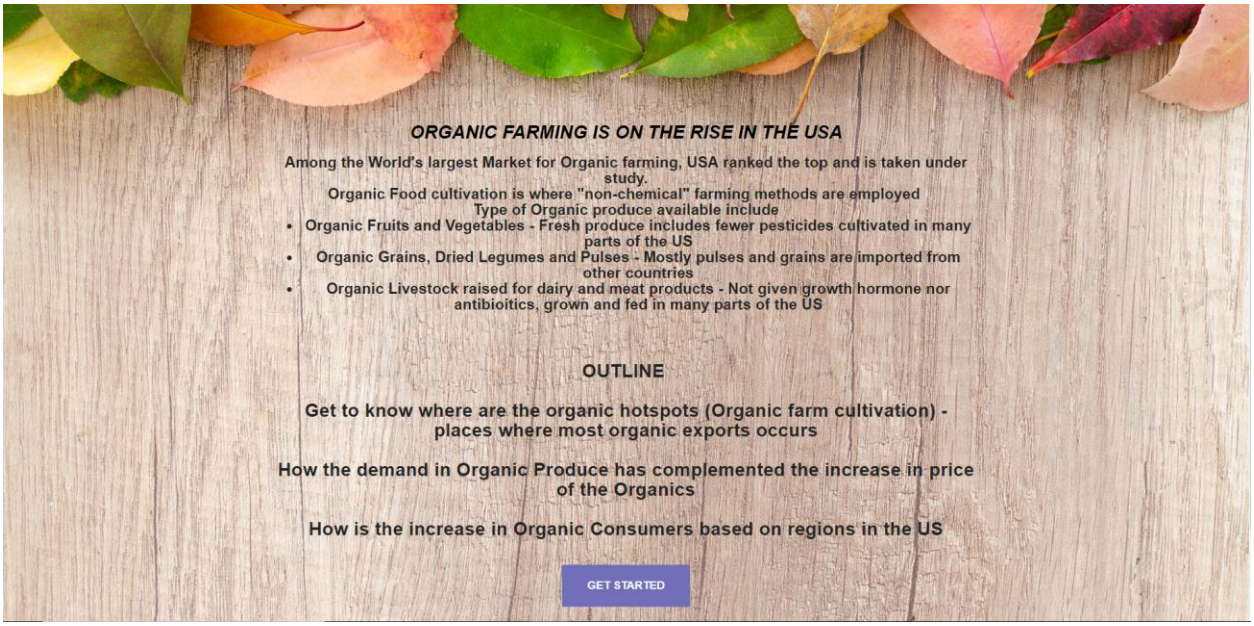
INSTRUCTIONS ON THE INTERACTIVITY PROVIDED IN THE APPLICATION:

PAGE	INTERACTIVITY	OVERVIEW
Introductory page (index.html)	A button *"Get Started"* to get started with the application and go to the next page	The title, brief description about the application and the outline is metioned here.
Page 1: Organic Food Demand	1. A drop down to select a category to visualize the Number total share, sales and purchases in a bar chart for the selected category and the corresponding category's price for organic and conventional food in a line chart below 2. Hovering over the bars in the bar chart will display the individual share for each product	The total Number of shares , sales and purchases can be visualized to know the demand for each food produce under each category and the corresponding category's organic and conventional price is also visualized here.

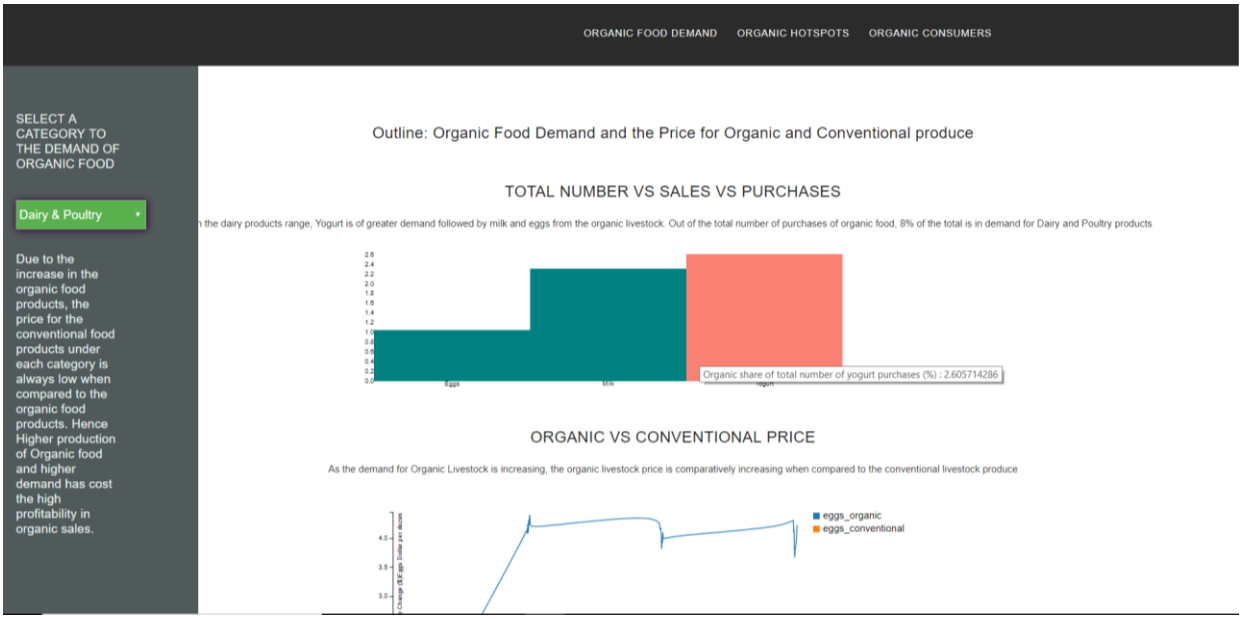
	3. Hovering the mouse on the line of the line chart will display the price for organic and conventional food produce price in that particular year	
Page 2: Organic Hotspots	1. A drop down to select a category to visualize the regional pattern where the organic farming is employed 2. Hovering over the hotspots will display the acres and the Site name	Areas where organic farming is employed in the US based on the level of intensity is visualized here with the five major organic hotspots in each category. These are the areas where most of the exports occur for each category in the US
Page 3: Organic Consumers	1. Hovering over the bubbles will display the region 2. Selecting a category in the leg	The organic consumers in a particular region is visualized here with the respective usa region for each city.

SCREENSHOTS:

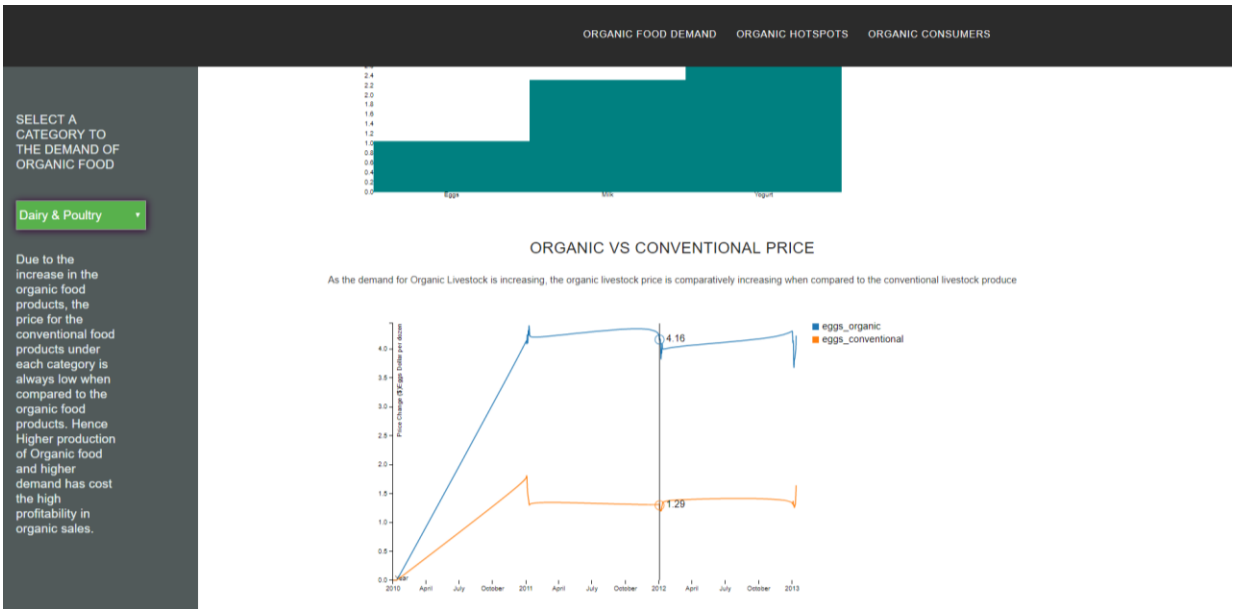
PAGE1: INTRODUCTORY PAGE:



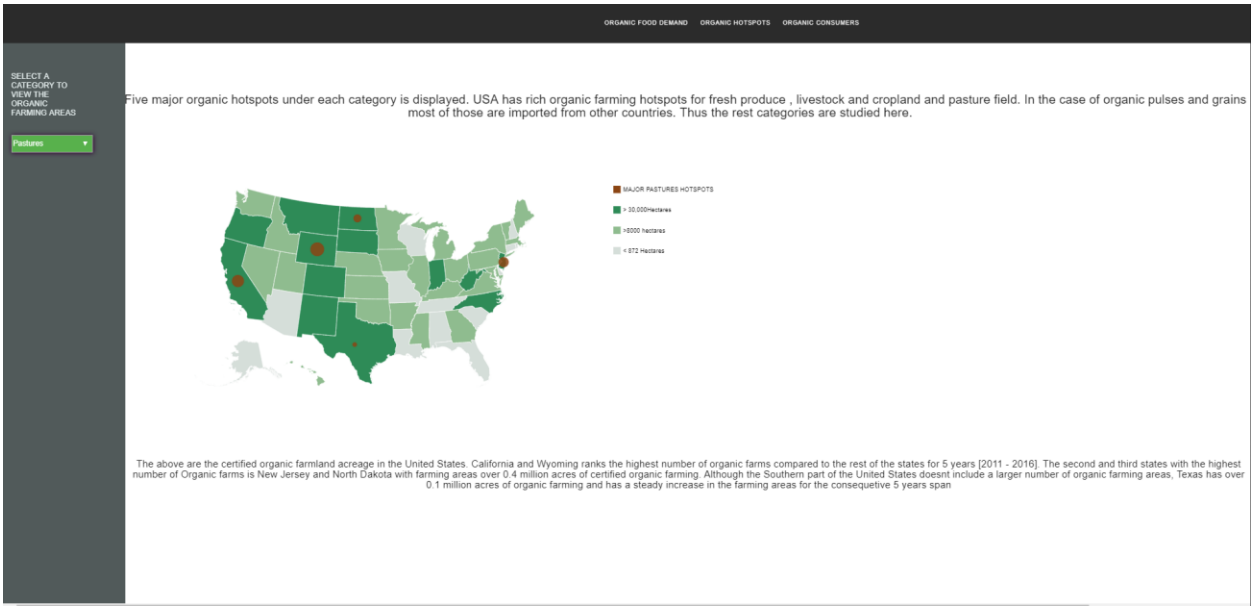
PAGE 2: ORGANIC FOOD DEMAND



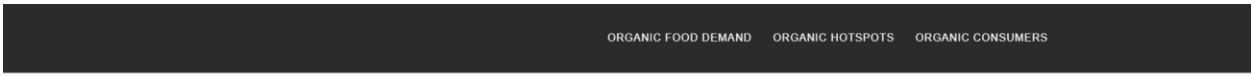
ORGANIC VS CONVENTIONAL PRICE

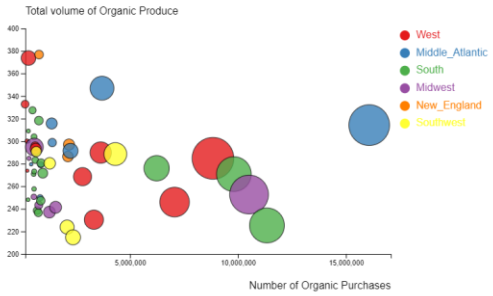


PAGE 3: ORGANIC HOTSPOTS



PAGE 4: ORGANIC CONSUMERS





5 CONCLUSION

- Thus from the above visualisations, we've learnt that,
- Organic Food Demand: Organic vegetables(Fresh Produce) are of greater demand when compared to the rest(Spinach Particularly)
- Out of total, the demand of organic fresh produce is 62% , for pulses and grains its 30% and for dairy and met products its 8%.
- As the demand for the organic food products are growing every year, the number of purchases are increasing which inturns cause the number of prices for organic foods to increasse as well.
- Organic Hotspots: The areas of organic farming areas based on the level of intensity is observed under here, where the places of major exports for a particular organic food category can be observed.
- Organic Consumers: Those areas where the intended consumers of organic produce is observed here.

REFLECTION:

- From this visulisation the number of purchases made by consumers under each category where the demand of the organic produce is found.

- The price change for Organic food produce Vs the Conventional food produce is also studied here.
- Which states in the USA has a greater region for organic farming and the organic hotspots for the exports for a each particular category if food produce is also visualized

6.REFERENCES:

[1] http://bl.ocks.org/Jverma/887877fc5c2c2d99be10

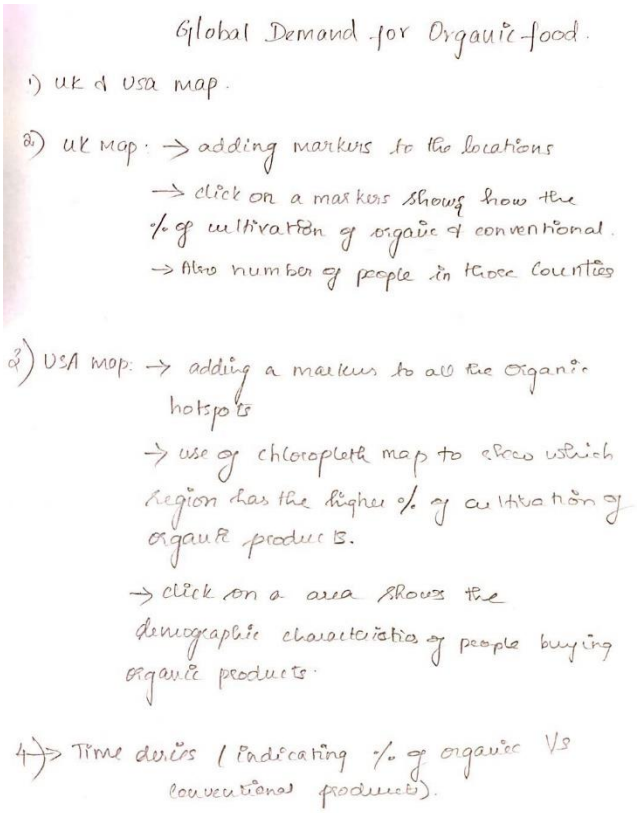
[2] https://www.d3-graph-gallery.com/graph/bubble_tooltip.html

[3] http://bl.ocks.org/michellechandra/0b2ce4923dc9b5809922

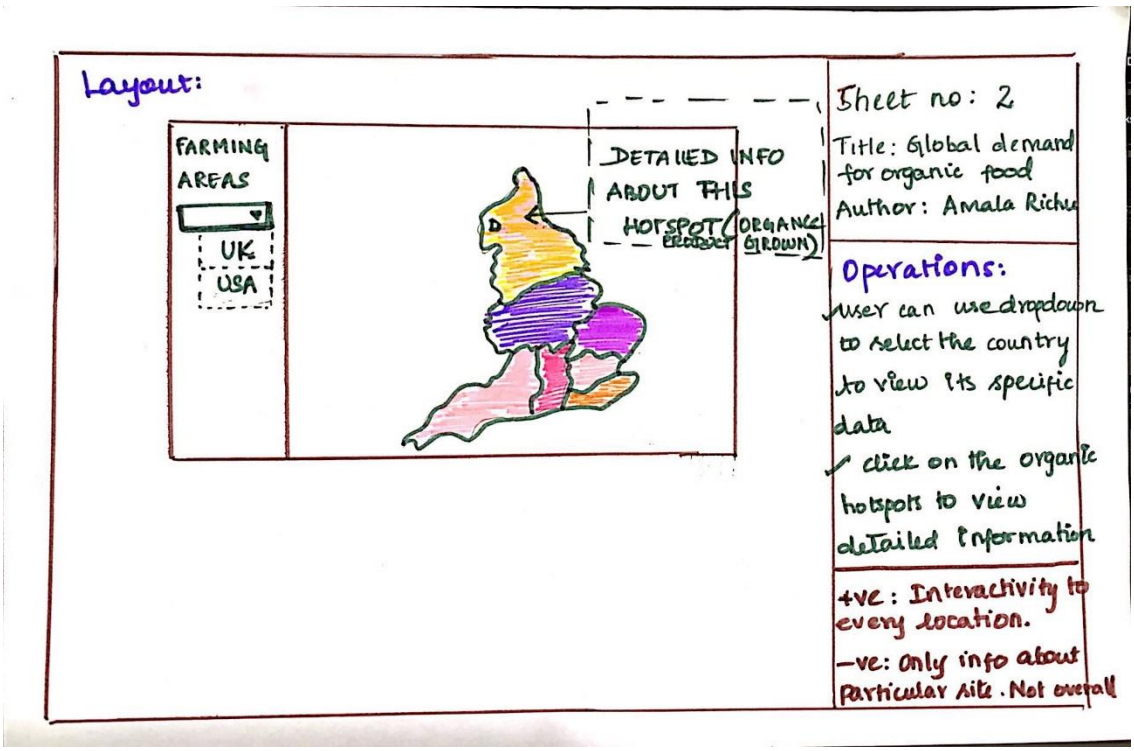
[4] https://bl.ocks.org/larsenmtl/e3b8b7c2ca4787f77d78f58d41c3da91

7.APPENDIX:

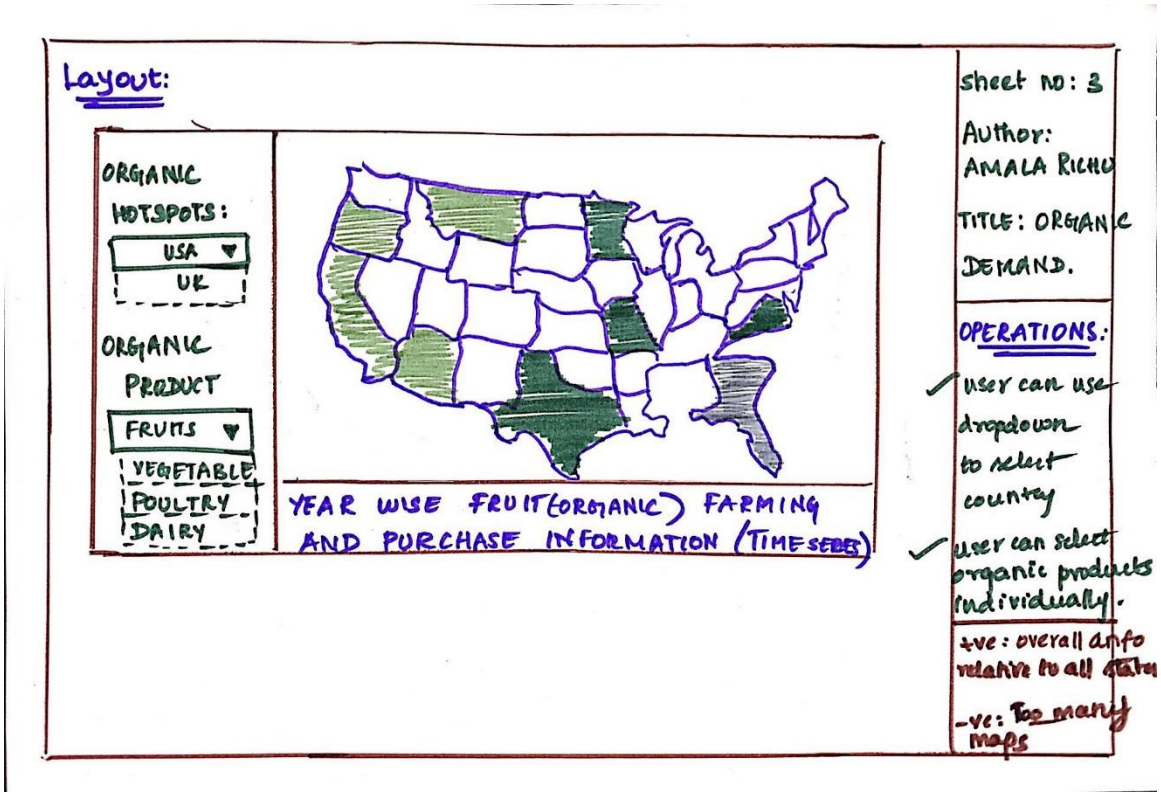
SHEET 1: BRAINSTORM



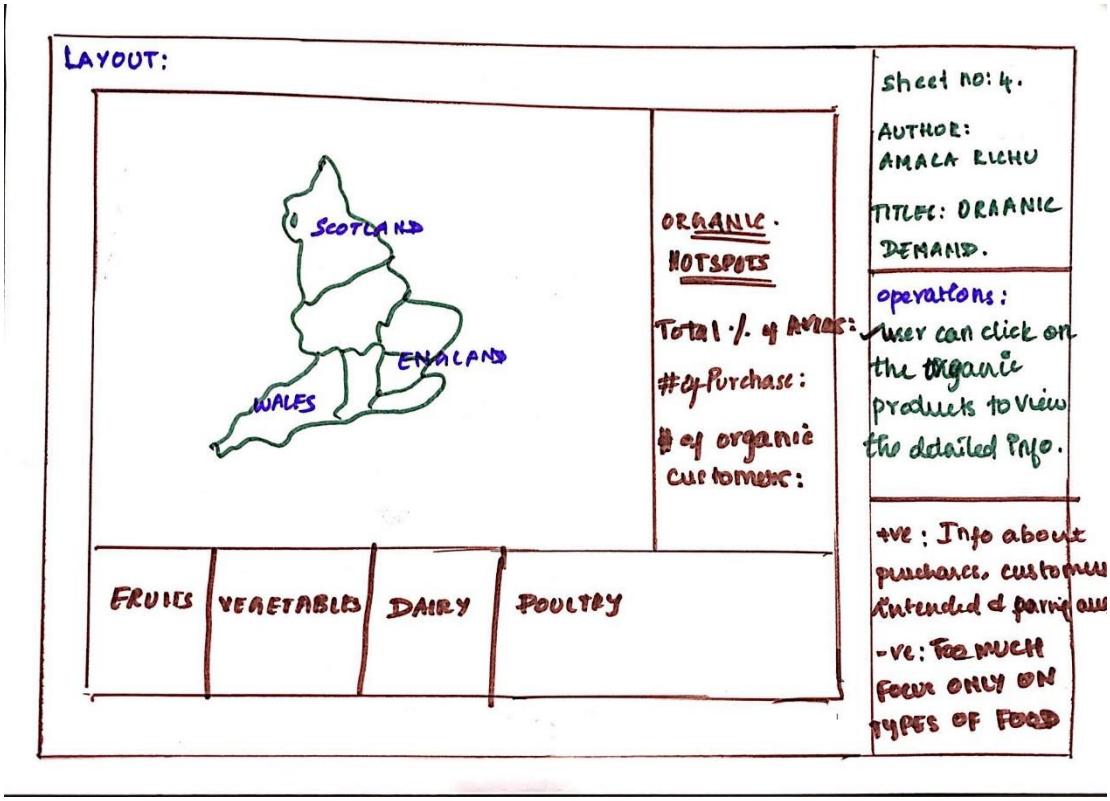
SHEET2: INITIAL DESIGN



SHEET 3: INITIAL DESIGN



SHEET 4: INITIAL DESIGN



SHEET 5: REALIZATION SHEET