Communication
Design Project-III

Decoding the Nutrition Label

Sugar and its visualization

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1.0 Introduction

Fizzy drinks such as Coca Cola, Sprite, Thums Up etc. are quite popular among the Indian consumers. These drinks are advertised and marketed to such an extent where they have now become commonplace in restaurants, theatres as well as households.

If one considers these to be unhealthy, there is a wide range of 'healthy' fruit juices available for the 'health conscious' consumer to avail. These fruit juice brands advocate about the immense health benefits through the external packaging. But on closer inspection, many experts and consumer groups found out that, both of them contain alarming amounts of added refined sugar (white sugar).

1.1 What does sugar do to our bodies?
The daily meal we consume must ideally be a combination of macro and micro nutrients. The macro nutrients include carbohydrates (50%), fats (30%) and protein (20%). Whereas micro nutrients include vitamins and minerals. When we consume carbohydrates (simple and complex), they break down into sugar (glucose) and enter the blood stream, hence blood sugar. Fiber that is found in fruits, vegetables, whole grains is also a carbohydrate, the healthy kind, but it does not get broken down entirely by the body and is mostly excreted out.

Now, when we consume processed or refined foods that have high amounts of added sugar, they get broken down quickly and are immediately released into the bloodstream. Hence, there is a sudden spike in blood sugar and insulin is unable to manage these high

levels of glucose in the bloodstream, which eventually leads to diabetes. The likelihood of serious diabetes complications like heart disease, blindness, neuropathy, and kidney failure may increase with continuous consumption of refined/processed foods.

1.2 How much sugar is too much sugar?

In non-alcoholic beverages, which include carbonated drinks, aerated drinks, fruit juices, energy drinks, sugar-sweetened beverages etc. the primary cause of concern is the amount of added sugar. The American Heart Association (AHA) has recommended the daily added sugar intake for men as no more than 9 teaspoons (36 g or 150 cal) and women as no more than 6 teaspoons (25g or 100 cal).5 Added sugars are extremely concerning because they are hidden everywhere, in ketchup, bread, namkeen, cereal and many more food items.

The AHA was criticized for having a higher limit for the per day added sugar intake, whereas the WHO states 5 to 6 teaspoons (20-25g) or 5% of your daily calorie intake is permissible.[6] However, a 330 ml can of Coca-Cola has 35g of sugar, which is approximately 9 teaspoons, which is more than the entire day's allotment.

Now, these 5 teaspoons per day must include all the added sugar from daily cooking, a cup of tea/coffee, consumption of other processed foods as well as packaged beverages/fruit juices. It is safe to say that one easily consumes higher amounts of added sugar if one is not cautious of the amounts written on the package.

1.3 What is currently written on packaged foods?

The Food Safety and Standards Authority of India (FSSAI) issued food

safety and standards (packaging and labelling) regulations in 2011 with recent amendments made in 2020, which have to be followed by all manufacturers of pre-packaged foods.

According to them, a food label must largely contain the details of best before, date of manufacture and date of packaging, lot number, prepacked, vegetarian and non-vegetarian food symbol, expiry date, ingredients and nutritional value.[3]

The nutritional label must display the nutrient profile per serving size or per 100g/ml of food: energy (kcal); carbohydrates (g); total sugars (g); added sugars (g); total fat (g) including saturated fat (g); trans-fat (g) and cholesterol (mg).[3] In addition, food manufacturers are required to list nutrients that they claim are a healthy source of on the package. To illustrate an example, if a brand claims that their fruit juice is rich in Vitamin C, then they must clearly mention Vitamin C levels at the back on the nutrition facts panel.

1.4 Hidden in plain sight

To add to that, the regulations by FSSAI do not compel manufacturers to have a standardized nutritional label layout, hence every brand uses a different font treatment and the least possible text height (typically 1mm Numeral and Uppercase height) to print this crucial nutritional information.

The nutritive values given are per 100 ml but if one were to typically buy a 330 ml can they would finish it in one sitting. Hence the values per 100 ml have added sugars as 10.6 g, which would deceive a consumer by making them feel as they have consumed lesser sugar and lesser calories, whereas they have consumed 35g of sugar. This dilemma exists in almost all brands and all sizes of drinks, where the consumer is forced to do mental math and peer into the label to decipher the amount of added sugar.

1.5 Does the label really impact purchasing behaviour?

A systematic review of 120 studies in the UK found that self-reported prevalence of nutrition label use was typically greater than 50% (Campos et al, 2011 as cited in Mhurchu et al, 2018, pp. 360-361). However, in-store research suggests that actual label use is typically much less, with just 27% of UK shoppers were found to have looked at the nutrition information on the label during observational research undertaken in supermarket aisles.

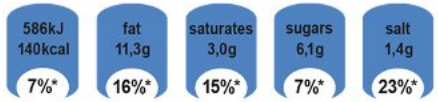
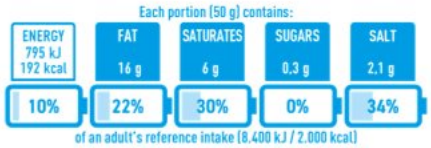
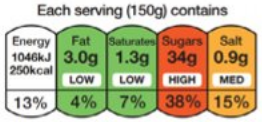
Eye-tracking studies were used to gain insight into how shoppers use labels in the real world but, due to the intrusive nature of the tracking devices, studies were typically laboratory-based and short-term (Graham & Jeffery, 2011; Graham et al, 2012 as cited in Mhurchu et al, 2018, pp. 361). Therefore, little information exists on the use of nutrition labels in real-life shopping situations over longer periods.[4]

Another study conducted in the urban village of South Delhi, India aimed at understanding the extent of usage of the information on pre-packaged foods by a large audience. Information such as date of manufacturing, Best Before, List of Ingredients, Nutritional Information, Veg or Non-Veg, Food Additives etc. Though 64% of the participants (236/368) admitted reading a nutritional label, of them only 38% (90/236) reported that they always checked it. Within them only 21% (51/236) looked for the nutritional values. Qualitative studies showed that participants were most likely to check the brand name, cost and rely on the taste factor while purchasing a product.

Hence, despite checking the label, the consumer could also make a decision based on other overpowering factors like brand, cost and taste.

The following table lists down the various examples of a FOP label, which have been implemented across the world.[8]

Table 1: Front-of-pack nutrition labels in use in Europe and other regions

Categories of FOP Schemes			Examples of FOP Schemes		Countries of Use
Nutrient Specific Labels	Reductive (Non-Interpretative)	Numerical	Reference Intakes Label (GDA)		Across Europe
			NutrInform Battery		Italy
	Evaluative (Interpretative)	Colour Coded	Traffic Lights		UK
			Traffic Lights		South Korea
		Textual	Warning Labels		Chile, Mexico
		Graphical	Warning Labels		Israel

Categories of FOP Schemes			Examples of FOP Schemes		Countries of Use
Summary Labels	Evaluative (Interpretative)	Endorsement Logos	Healthier Choice	Basic Foods: Vegetables, Fruits, Bread, Pasta, Seeds, Potatoes, Dairy, Meat, Fish, Egg, Fats, Oils and Water	Netherlands, Belgium, Poland, Czech Republic, Mexico
			Conscious Choice	Non-Basic Foods	
			Keyhole		Sweden, Norway, Denmark, Lithuania, Macedonia, Iceland
			Healthier Choices	Sugar Free; No Added Sodium; Higher in wholegrains	Singapore
			Healthier Choices		Thailand
			Healthier Choices		Slovenia
			Live Healthy		Croatia
			Better Choice		Finland

Categories of FOP Schemes			Examples of FOP Schemes		Countries of Use
Summary Labels	Evaluative (Interpretative)	Endorsement Logos	Healthier You		Philippines
			Healthier Options		Brunei
			Healthier Options		Malaysia
			Healthier / Smart Choice		China
		Graded Indicators	Health Star Ratings		Australia, New Zealand
			Nutri-Score		France, Belgium, Netherlands, Luxembourg, Germany, Spain

Endorsement Logos act as visual advocates of the term 'healthy' on one quick glance. But one of the drawbacks of this type of logo is the absence of detailed information of every nutrient.

Eg. The values of sugar for a diabetic individual cannot be understood from this logo. Graded Indicators, Traffic Light System as well as Warning Labels are known to have a relatively better impact on the consumer's understanding of the health perception of a particular food/ beverage.

1.6 Nutrition Labelling around the world

One of the most popular layouts of the nutrition panel has been the one designed by the Food and Drugs Administration (FDA) in the USA. The high-contrast black text on a white panel underwent a revision in 2016, where the serving size and number of calories were highlighted. This label is used on the back of foods as well as well beverages, maintaining a consistent layout through all products. But these nutritional facts at the back of the packet are not enough to aid the consumer in making sense of all the information.

Hence, a Front-of-Pack (FOP) labelling system was introduced. It was initially implemented in many countries of the West and a decent number of studies were conducted to test its effectiveness. The FOP labels are mainly of two broad

types: interpretive and non-interpretive. The interpretive ones decipher the values of the nutrients based on thresholds set for each of them, and resultantly display through text or colour is these are good or bad for consuming. The non-interpretive ones either simply display the numerical values of energy, trans/ total fat, sodium, and sugar.

The Front-of-Pack (FOP) label would come on the principal display panel (the part of a food label that is most likely to be displayed to the customer when for sale).[7] The FOP label would ideally come second in the visual hierarchy, with the first one being the name of the brand. It is supposed to be easily visible as consumers browse through shopping aisles. Different countries have used different formats of the FOP label.

In countries such as Mexico, where obesity and diabetes became a health emergency their government decided to implement black hexagonal warning labels on foods with excess sodium, sugar, fat or calories. The more the hexagonal symbols, unhealthier is the product. The second type of FOP label is the traffic light symbol, where red, amber and green symbolise high, medium and low respectively. It was implemented in UK (2006), Ecuador (2014), Iran (2017) and Sri Lanka (2016). This label is nutrient-specific and interpretive as it decodes the information for the consumer, by assigning a colour to each element. The Health Star Ratings (2014) in Australia & New Zealand, as well as the Nutri Score in France (2017), Belgium (2020) and Luxemburg (2021) both assign an overall score using an algorithm at the back-end to the product (scale of 1-5). One of the

major drawbacks of this type of label is that products that one cannot find out products which are high in added sugar or salt simply by looking at the label.[9]

1.7 Nutrition Labelling in India

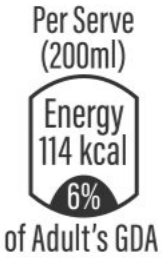
Apart from the implementation of the vegetarian and non-vegetarian symbols, the FSSAI planned to regulate the labelling systems in order to help communicate nutrition information much more clearly to the consumer. In March 2014, they proposed a labelling system which would make the existing 2011 regulations more stringent.

The intention was to look into foods that are HFSS (High Fat, Sugar and Salt) and provide regulatory limits on its labelling and display. In April 2018, the draft FSS (Labelling and Display) regulations were released, which included a mandatory declaration of salt (not sodium) and a FOP label to reflect calories, total fat, total sugar, trans fat and salt, with a 'red' colour coding for HFSS foods to caution the consumer.[10]

But in July 2019, these regulations were severely diluted and the thresholds for salt, fat, sugar were increased, so as to make an HFSS product appear not too unhealthy. In 2020 the FSS (Labelling and Display) regulations showed no sign of regulations for FOP labels as they were still under scrutiny.

As of June 2021, the industry giants pushed for weaker laws that do not show a red 'warning' label, as the consumers may be afraid to purchase the product. The less fearful 'summary indicators' were preferred over warning labels as they simply state a numerical value and put the onus on the consumer to decipher the number.

FOP labels on multiple brands of packaged beverages



Current Reference Intake FOP

Hence, after seven years of multiple consultations, extensive studies and draft regulations by the FSSAI the Front-of-Pack labelling still remains at an infancy stage.[10] The beverage industry has now adopted to a reference guide type of label, where it illustrates the total number of calories per serving size. Figure 3 mentions some of the examples collected in the period of February - March 2022. This type of a summary label can help only when all consumers are conscious and count their calorie intake every day. As it is not the case for most people, the effectiveness of this label towards guiding the consumers for making a healthy choice remains questionable. Also the symbol itself is not standardized, its design and layout changes with every brand.

2.0 Primary Research

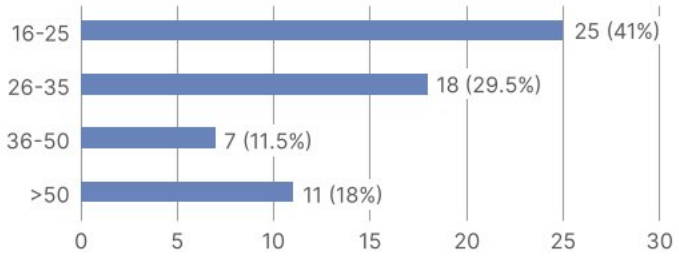
2.1 Methods

Under the course of DRS (Design Research Seminar), guided by Prof. Mandar Rane, I conducted the study from January 2022 - March 2022 by using an online survey tool. The 61 participants were mainly from an urban area, sighted and adept in the English language. Information was gathered using a pre-designed questionnaire after obtaining their informed consent. Additional qualitative interviews were conducted for 12 participants depending on their responses to the online survey, to get a deeper understanding of their nutritional knowledge, purchasing behaviour and the relation between these two aspects.

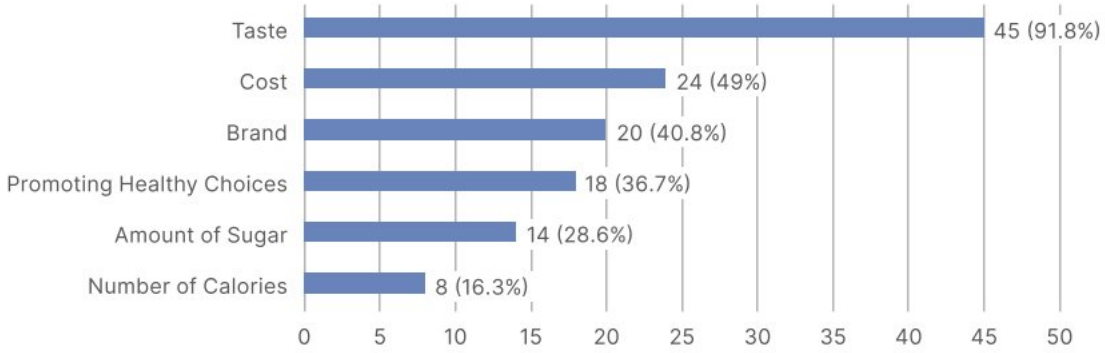
2.2 Findings

A total of 61 individuals were interviewed. The median age of the participants was 27 years. More than three-fourths (49/61; 80.3%) of all participants reported consuming packaged beverages. This was one major group who was asked a series of questions and the other being people who currently do not consumer such beverages. Within the group that did consume packaged beverages, 9/49; 16.4% of the population consumed it more frequently than the remaining. When asked about some of the major deciding factors while selecting a juice/ drink, a maximum number of participants (45/49; 91.8%) ranked taste as the primary factor. It was then followed by cost, brand and a healthier choice between brands. Hence, between a Coca-Cola and a pulpy orange juice, one would go with the orange juice as it offers fibre and vitamin C content, irrespective of how much sugar is there in both the beverages. Amount of sugar and calories in a beverage were chosen by a few.

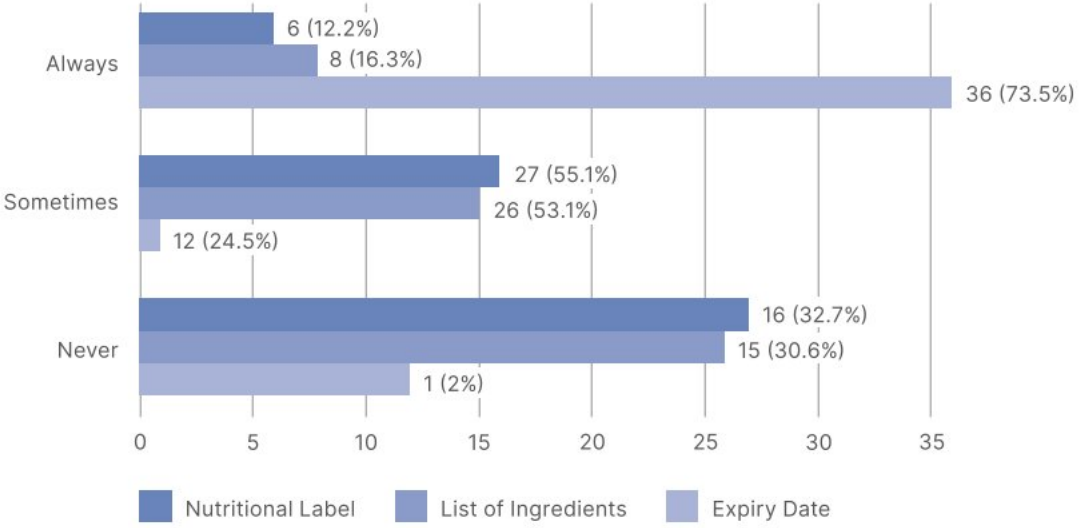
Age (in years)



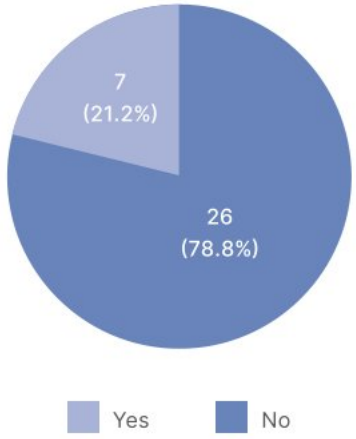
Most important factor while selecting a juice/drink (N=49)



How often do you check the expiry date, ingredients & nutritional label?



Are you conscious of the added sugars that you consume?

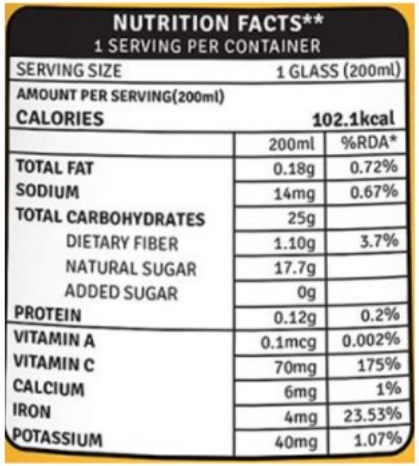


2.3 Do we really understand the label?
This group was also asked whether they checked the expiry date, list of ingredients and the nutritional label on a pack. The highest number of positive responses were for checking the expiry date (36/49; 73.5%). The people who self-reported that they check a nutrition label always (6/49; 12.2%) and sometimes (27/49; 55.1%) implied a good amount of health consciousness within the sample. 78.8% (26/34) self-reported to be conscious of their added sugar intake.

A few qualitative interviews were conducted with these participants to understand how they must have begun their journey to educate themselves of nutritional knowledge. Out of this group, 5 female respondents owed it to dieting, whereas 2 other respondents aged 50 and above-mentioned diabetes being the reason they were cautious of their sugar intake. Unsurprisingly, a majority of the respondents simply mentioned that they check the values and facts on a label, but when asked if they have a threshold limit set for themselves, they replied that they do not take these values too seriously. Hence, seeing a label or simply checking it with a glance cannot be considered synonymous with actually understanding it. Ideally it must be equipped to the point, where it deters one from purchasing something unhealthy.

Within the group who mentioned that they never checked a nutrition label (16/49; 32.7%) a decent majority mentioned that they were not really interested in knowing about nutrition facts. They understood that an orange juice is relatively healthier than a can of carbonated drink, so they were easily able to choose 'healthy'. Others mentioned that they trusted the brand that they consumed and hence did not need to check the nutritive facts. People also mentioned that there was too much text, and it was difficult to read when we would not have too much time to stand and read all the fine print in a crowded shopping aisle.

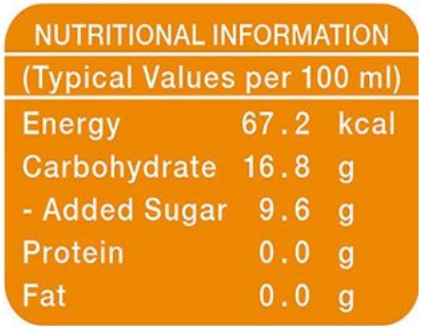
2.4 The Experiment
The participants of the survey were presented with two different nutritional labels and then asked to choose the one that is ideal for their needs. The respondents, who always, sometimes and never read the nutritional labels were presented with two labels of fruit juices. They were asked to select the juice which would be healthier for them. 77.5% of the respondents (31/42) correctly chose the Label 'A', 15% of the respondents (6/42) chose the incorrect Label 'B' and the remaining 5 respondents said they were unsure



NUTRITION FACTS**
1 SERVING PER CONTAINER

SERVING SIZE	1 GLASS (200ml)	
AMOUNT PER SERVING(200ml)		
CALORIES	102.1kcal	
	200ml	%RDA*
TOTAL FAT	0.18g	0.72%
SODIUM	14mg	0.67%
TOTAL CARBOHYDRATES	25g	
DIETARY FIBER	1.10g	3.7%
NATURAL SUGAR	17.7g	
ADDED SUGAR	0g	
PROTEIN	0.12g	0.2%
VITAMIN A	0.1mcg	0.002%
VITAMIN C	70mg	175%
CALCIUM	6mg	1%
IRON	4mg	23.53%
POTASSIUM	40mg	1.07%

Option A



NUTRITIONAL INFORMATION (Typical Values per 100 ml)		
Energy	67.2	kcal
Carbohydrate	16.8	g
- Added Sugar	9.6	g
Protein	0.0	g
Fat	0.0	g

Option B

and could not decide. Since the testing was done on a smart phone where the images of nutrition labels were enlarged, without consumers having to experience the visual chaos on the rest of the bottle, the results do not give a clear idea of the purchasing decisions made by them.

A large percentage of the respondents were able to clearly select the Label 'A' which had no added sugar, despite the values being for two different serving sizes (per 100 ml and per 200 ml). The Label 'B' was simple to read in its layout, with zero fat as compared to the other label, which also prompted respondents to select Label 'B'. But the reasons for people selecting Label 'A' varied. Some correctly identified added sugars as the concern whereas others looked for dietary fibre, protein, vitamins and minerals. The last group who self-reported that they currently do not consume any type of packaged beverages (12/61; 19.7%), majority of them agreed to consuming these beverages during their childhood (10/12; 83.3%). Their most prominent reason for discontinuing was that these beverages were considered 'not good for health'. This understanding was developed through their parents, peers, social media and documentaries.

2.5 Conclusions

The intention of conducting this study was to understand the overall nutritional knowledge of consumers and their consumption behaviour with respect to fizzy drinks and fruit juices. A few issues arose from the data.

Firstly, the beverage industry uses all possible tactics to hide crucial information in plain sight. The consumer has to calculate the nutritional values

depending on their consumption, and this requires quick mental math, in a time bound activity. Moreover, this nutritional information is text-intensive, small and visually crowded, which discourages people from reading it. This happens because there is little space on a can/ bottle and mandatory text requirements from the FSSAI. Hence, there exists an opportunity to explore solutions for an inclusive and prompt communication.

In one of the fruit juice brands, the amount of added sugar gets combined with natural sugar. Now, naturally occurring sugars are good for health, whereas added sugars are not. If their values get combined, and displayed as total sugars, we cannot ascertain the exact amount of added sugars. Hence, declaring added sugars separately would be helpful. Another policy change would be to implement a standardized layout for all beverages, in all sizes of containers. This would help consumers to instinctively find the label, in the same format and location across all brands. There is a tremendous scope in re-designing the packaging strip/ label to ensure clear and effective communication. For the nutritional label, one may either choose to adopt the layout of an existing label (e.g., The FDA label of USA) or a diverse country like India, where people of various ages, languages and learning levels reside, would require a different solution.

The Front-of-Pack (FOP) labelling system surely seems like a step in the right direction, but it must be for the benefit of the consumers. The current FOP label (reference guide intake) specifies calories for a specific serving size and the daily energy quota that it meets through, but these values can make sense only if everyone were to count their calories and eat. Although there have been recent amendments made by FSSAI in the 2020 Gazette Notification, the food labelling in India still has a long way to go. It is extremely important that these changes happen directly on the label instead of being accessed externally through an app/document/ poster, because they would directly engage and reach every single consumer in every corner of the country.

Lastly, there need to be efforts to educate the consumer and warn them of the ill effects of HFSS foods. Irrespective of the level of education, people displayed poor nutritional knowledge. Designers could very well take on the task of decoding the label to secure the health of a nation.

3.0 In the News

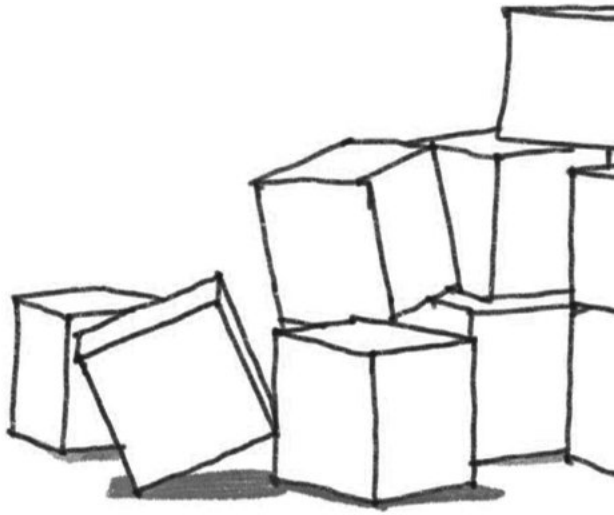
There have been multiple news articles in the past few years as the FSSAI (Food Safety and Standards Authority of India) has finally geared up towards creating a Front-of-Pack label.

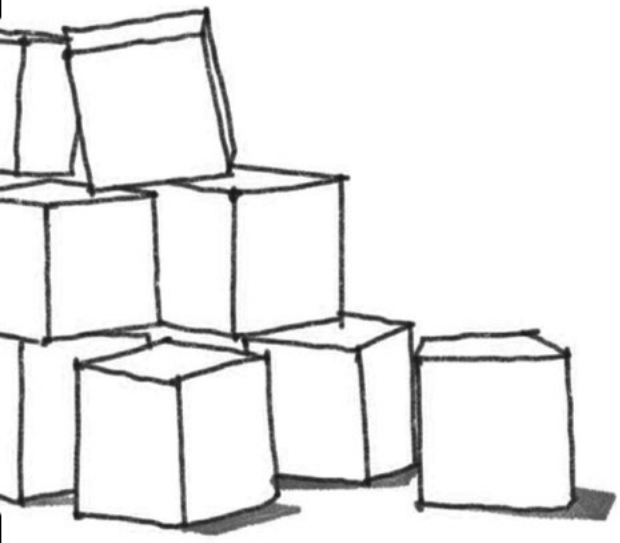
Maitri Porecha from The KEN pens an insightful read which serves as a critique to the decision on adopting the Health Star Ratings (HSR), similar to Australia and New Zealand, for India. Despite the best intentions, the HSR created a health halo effect, as about 73% of ultra-processed foods on the supermarket shelves showed a rating of 2.5 stars and higher, and the ratings failed to convey anything of value (nutrition-wise) to the consumer.

As FSSAI pushes toward implementing the HSR, the experts seem to reassure us that the Australian debacle would not be repeated, and Indian foods would be evaluated justly. Another study carried out by IIM-A checked the effectiveness between HSR and warning labels. While ultimately the team of IIM-A supported the HSR, respondents were actually more strongly deterred from consuming unhealthy products with a warning label.

One of the main parameters due to which HSR seems to win out, is that the star rating system is commonly used across industries. But Ashim Sanyal, COO of Voluntary Organisation in Interest of Consumer Education (VOICE) strongly iterates electronic appliances and ultra-processed foods are incomparable. Nutrition science is way more complex to be reduced to a star rating.

Another issue with the HSR is the way the expert panel would decide the thresholds for the nutrients. One such expert group was scrapped for their





unscientific approach as the thresholds designed by them allowed for about 22% of ultra-processed foods to come under the ‘healthy’ category. Since then another expert group has been set up for the job and there seems to be a constant tug-of-war between the industry and the FSSAI on upping these thresholds, to make them more beneficial for the industry.

Fundamentally HSR is an interpretative summary label, that does not give any detailed information about the nutrients. So how would a diabetic person decode 1.5 stars on a ‘healthy’ digestive biscuit, when there is no information on the added sugars in it.

But if not HSR, then what should the front-of-pack label look like? Pradeep Krishnatray from The Wire writes about some of the important factors that are necessary in a good Front-of-Pack label.

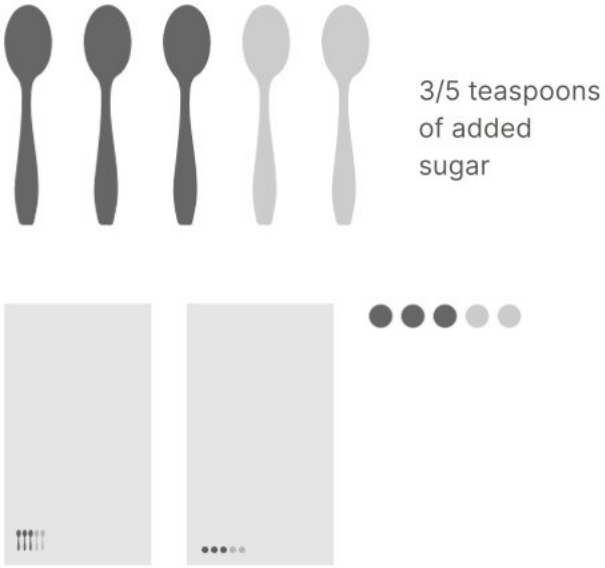
Firstly, notice-ability whether the label is able to grab the attention of a consumer. Secondly, comprehension, so choosing a colour coding system that people of all ages and backgrounds can understand. Also, the colours that are chosen ought to convey the appropriate meaning. Legibility is another important factor which would decide the size of the label on the pack.

4.0 Design Process

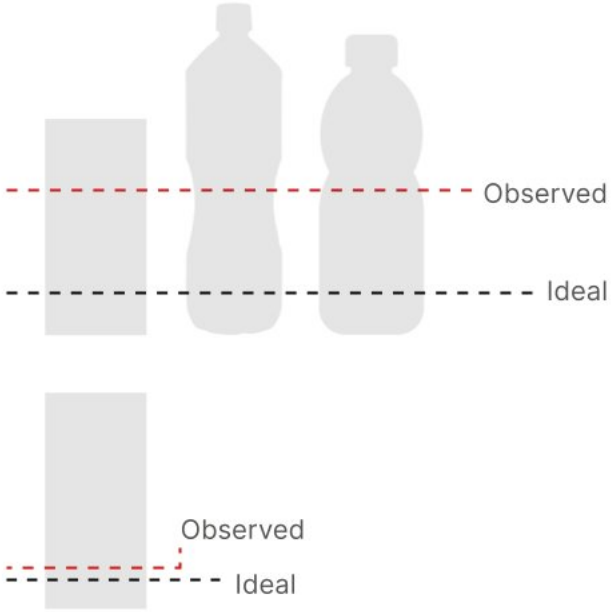
While beginning the design process, it was essential to firstly decide on the threshold limits for added sugars. Different associations have set different parameters.

The American Heart Association (AHA) has recommended the daily added sugar intake for men as no more than 9 teaspoons (36 g or 150 cal) and women as no more than 6 teaspoons (25g or 100 cal).[5] And the WHO states 5 to 6 teaspoons (20-25g) or 5% of your daily calorie intake is permissible.[6]

The ICMR is yet to set a threshold or even define an ideal range for daily consumption of added sugars. Hence to begin my design process, I decided to set the limit as per WHO, i.e. 20g of added sugar per day. This would help in then converting 20g to sugar cubes, teaspoons, etc.

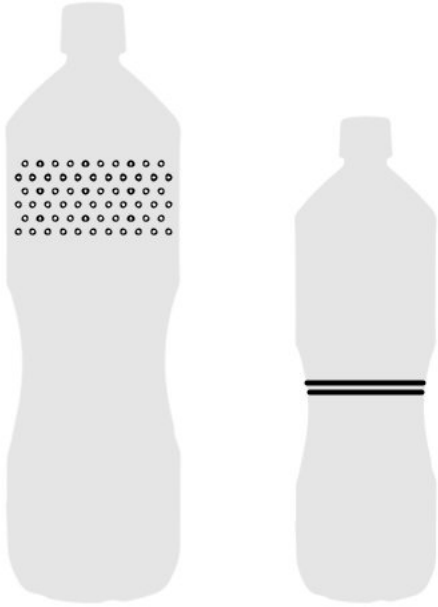


One of the first iterations began with 'teaspoons', a common unit of measurement in cooking. The idea was to show number of teaspoons of sugar in a beverage, but most of the beverages have more than 20g in 1 serving.

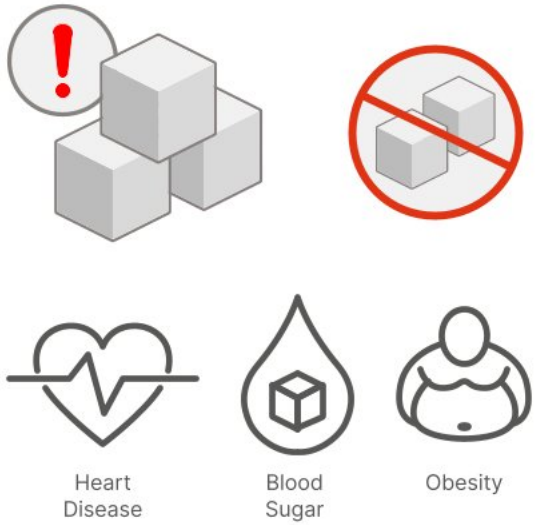


Another idea was to show the quantity of sugar on the pack itself, as ideal and observed values. But on using values from an existing pack of juice, it was observed that there is a very minimal difference between the two values.

A QR code could also be added onto the principal display panel, which could tell the amount of sugar in that beverage and then redirect the consumer to a website/ portal. But the fact remains that it would still be an external solution, limited to smart phone users.



Tactile dots or a continuous groove over the curved surface could imply the volume of sugar in that particular beverage. These would immediately interact with the user as they grip the bottle. But to be implemented within the industry evenly without increasing the cost, this is a difficult solution.



Addings symbols on the package that would represent ‘excess sugar’ and its ‘effects’. The approach is similar to a warning label, as it tries to warn and caution the consumers. But this solution again does not clearly mention how much sugar is there within the beverage.

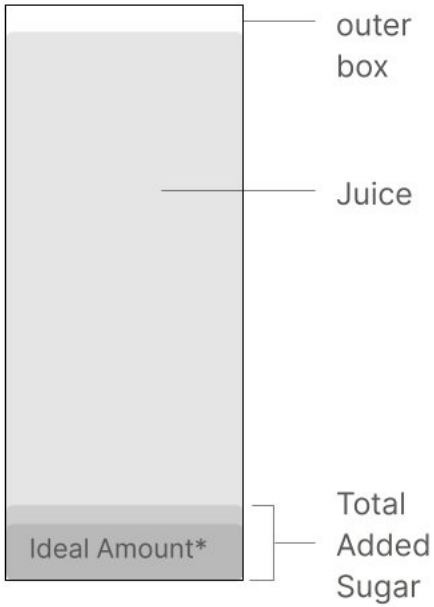
4.1 Representing Sugar

Studies were carried out using a reference of a 200 ml juice pack, to try and understand representing sugar volumetrically on the pack itself (externally). Upon measuring the volume accurately in a 3D modelling software it was understood that the volume would only be slightly raised on the pack and to the consumer it may appear to be close to the ideal range.

NUTRITIONAL INFORMATION	PER 100ml**
Energy	57 kcal
Total Carbohydrate	14.4 g
of which Sugars#	13.5 g
Protein	0 g
Total Fat	0 g
Saturated Fat	0 g
Trans Fat	0 g
Sodium	9 mg
Potassium	58 mg
#including natural fruit sugars	

**Approximate Values*

Tropicana Guava Delight
Box Size = 4.9 cm X 3.6 cm x 11.9 cm
Volume of the Box = 210 cm3 = 210ml
Volume of Liquid = 200ml
Total Sugar = 27g = 27ml



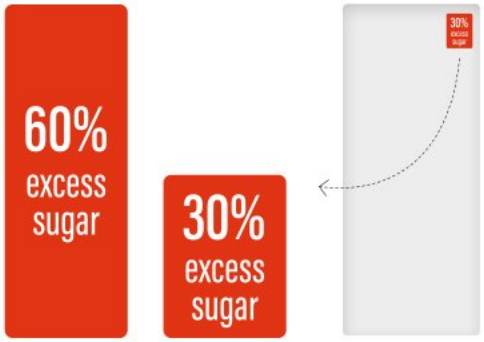
* The Ideal Amount of Sugar consists of all the added sugar a person can consume in 1 day.

4.1 Representing Sugar

Another way to represent the amount of sugar, is through sugar cubes. A stack of 5 sugar cubes in a light grey colour show the daily permissible amount and the excess sugar is stacked on top in red colour.

As the grey squares remain constant across all the different juices one would simply have to check the length of the red squares to compare and decide what they wish to purchase.

1 cube = 4 g



One of the strategies used by companies to positively highlight and somewhat exaggerate the benefits of consuming their respective drinks/juices lead them to phrases such as ‘100% pure fruit juice’, ‘20% more fiber’ or ‘World’s No. 1 Juice Brand’.

Hence, a similar strategy could be applied as we try to communicate the percentage increase in a person’s daily sugar needs as they consume a particular beverage.

4.2 Sugar Cubes

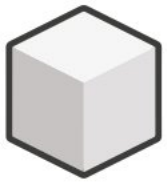
Problem Statement:
People are unable to visualize sugar in a beverage as they are mentally/physically unable to feel the quantity. People cannot make sense of the numbers as they cannot relate it to something.

Solution:
If we were to use the measurements that are closely related to the human body. E.g. Foot, inch. Hence, the ultimate object for measurement should be something that consumers could relate to.

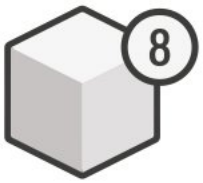
1 Foot, 1 Inch

Weight

Volume



1 sugar cube = 4g of sugar



Advantages:
The quantity of sugar now appears to be less daunting, as it is reduced to a single digit number, which makes it relatively easier to comprehend.

Disadvantages:
The symbol is still a numeric value instead of being a visual/graphic representation of the information. It only mentions the observed values & not the ideal one, hence one won't be able to compare & decide for themselves. The symbol currently only mentions sugar and may not be very scalable across the spectrum of processed foods & beverages.

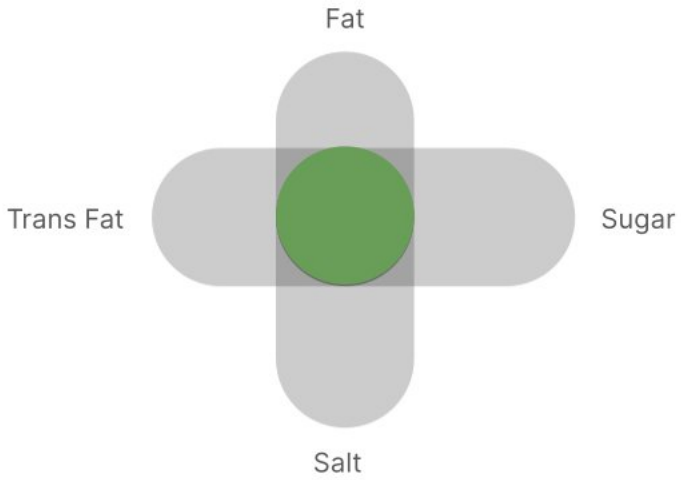
4.3 HFSS-1

Problem Statement:
Instead of only representing sugar in non-alcoholic beverages the symbol could work in harmony across all foods & beverages that are high in Fat, Trans Fat, Salt and Sugar (HFSS). Thereby resulting in a complete design system.

Solution:
The symbol could have the ideal amount as one constant entity or a shape (a green dot in the centre). And the excess amounts, could visually exceed the boundaries or limits of the 'ideal amount'. But this symbol would have to be taught and almost implanted in the memory of consumers for it to be effective. The green dot would symbolize different volumes and different numbers, hence it is not accurate in that sense.

The Ideal Amount (per day)*
Salt = Less than 5g
Sugar = Less than 20g
Fats = 44g to 77g (20-35%)
Trans Fats = 2g (Less than 1% of daily calorie intake)

The Ideal Amount



*These amounts are loosely based on industry practices around the world and would be subject to change in the Indian context, as per Indian experts.

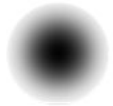
Iterations	Advantages	Disadvantages
	Gives the impression of multiple concerning factors present. Hence, more the symbols, more concerning is the product.	Takes up more space on the pack.
	Takes up less space on the pack. Relating quantity visually and not accurately as per numeric values, less cognitive load.	Need for mentioning the Fats, Trans Fats, Sugar and Salt in text. The excess doesnt appear to be intimidating.
	When all 4 concerning factors are present, it appears to be a cross, rest similar to the above iteration.	Need for mentioning the Fats, Trans Fats, Sugar and Salt in text. The excess doesnt appear to be intimidating.
	Introducing the Traffic Light System (red, amber and green) to make it further more interpretative.	Need for mentioning the Fats, Trans Fats, Sugar and Salt in text. The excess doesnt appear to be intimidating.
	Combining the interpretive Traffic light system with HSR (Health Star Ratings)	Need for mentioning the Fats, Trans Fats, Sugar and Salt in text. The excess doesnt appear to be intimidating.

4.4 HFSS-2

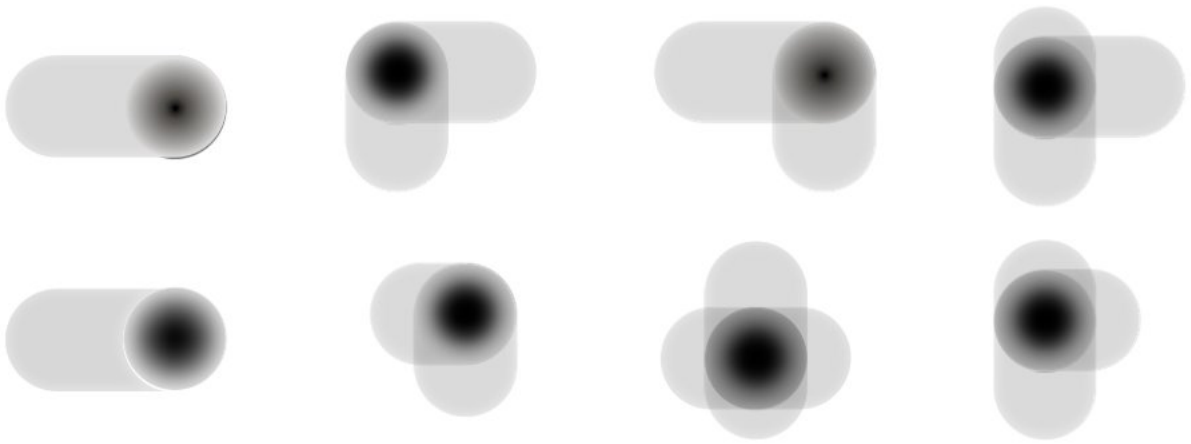
Problem Statement:
Even if one is able to understand the volume of sugar, the excess is not enough to intimidate oneself. Hence, there is a need to make the excess feel more than it actually is.

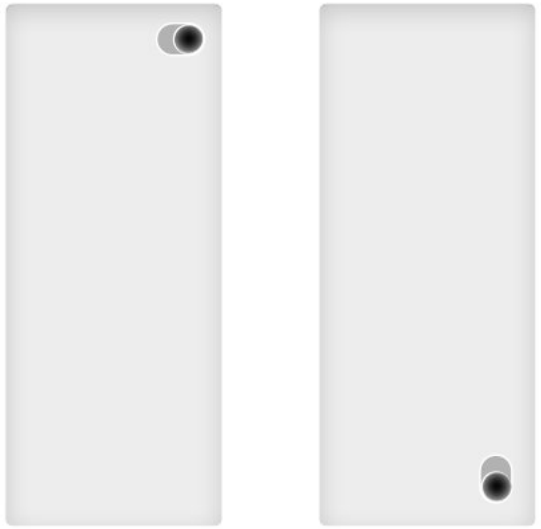
Solution:
The green circle in the previous iteration could be converted to a circle with a gradient. Initially, the concentrated black dot in the centre would be perceived as the acceptable amount, but in reality it is the entire circle.

RDV / 20g
Healthy Amount



RDV / 20g
'Perceived' Healthy Amount = Much lesser

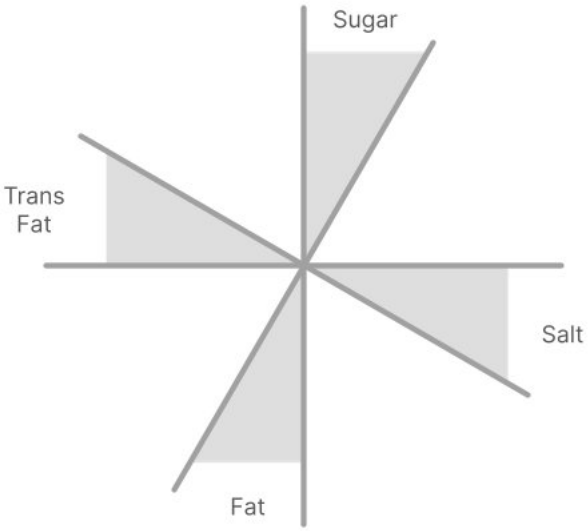


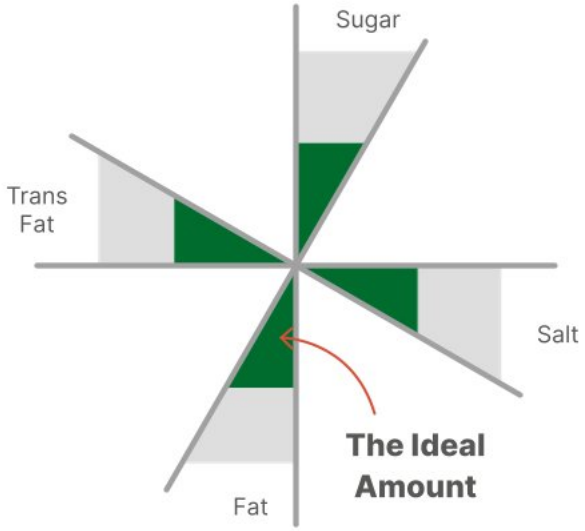


4.5 HFSS-3

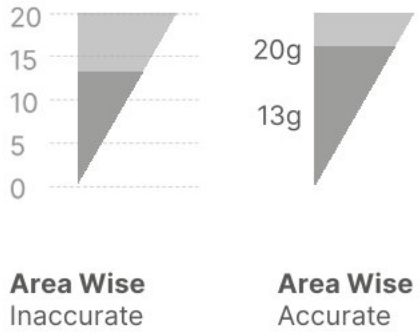
Problem Statement:
The previous iterations fall short to accommodate a beverage that has lesser than 20g of sugar inside it, as the overlaps in the circles would owe to confusion.

Solution:
Adopting a form that allows for viewing all observed and ideal values for Fat, Trans Fat, Salt and Sugar. Every quadrant (triangle) has its own limit for the ideal value and the grey form exceeds/recedes to show the observed values. The process of measuring and representing the values leads us to 2 ways, one accurate and the other inaccurate. Both ways have their own positives and negatives.





Real Fruit Juice | 200ml - 13g

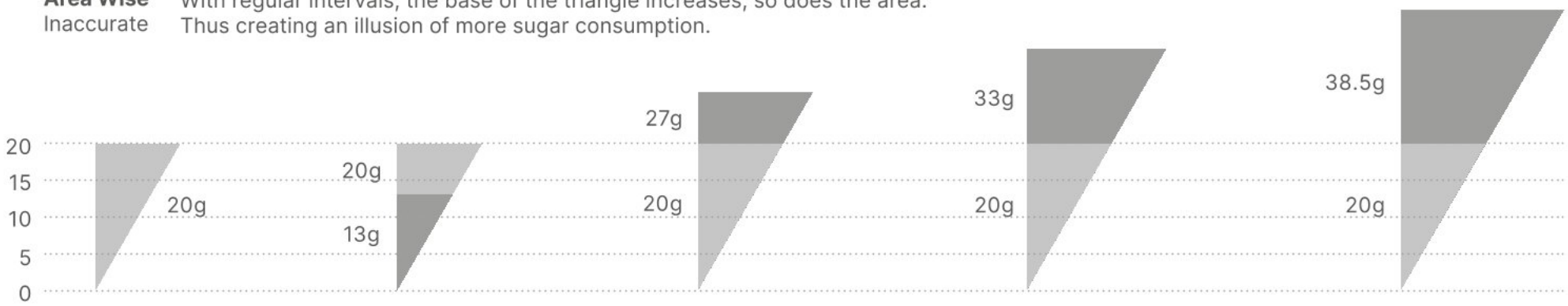


Area Wise
Inaccurate

Area Wise
Accurate

Area Wise
Inaccurate

With regular intervals, the base of the triangle increases, so does the area.
Thus creating an illusion of more sugar consumption.



RDV
20g

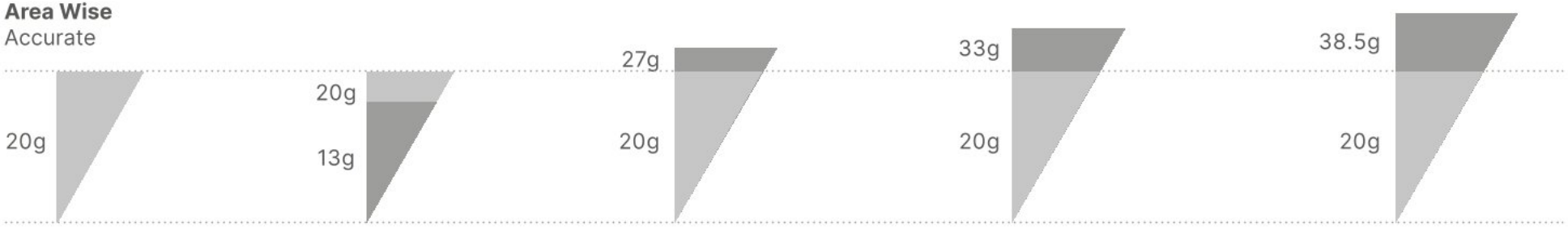
Real Fruit Juice
200ml - 13g

Tropicana
200ml - 27g

Coca Cola
300ml - 33g

Monster Energy
350ml - 38.5g

Area Wise
Accurate



Designing the HFSS Symbol for Kaju Katli, which has all 4 concerning factors present.

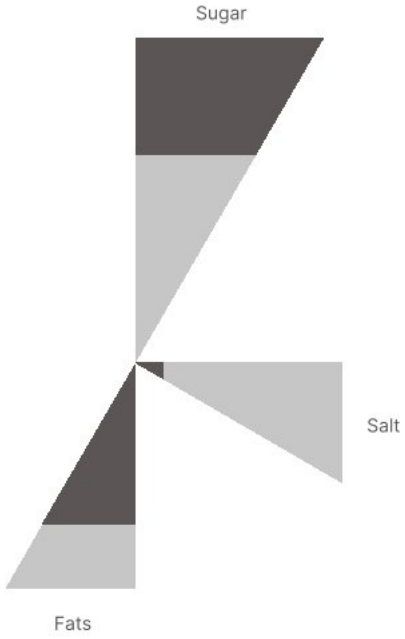
NUTRITIONAL INFORMATION *(Per 100 g)	
Energy	482.19 kcal
Protein	10.58 g
Carbohydrates	58.6 g
Out of which Sugar	48.42 g
Fat	22.83 g
Saturated Fat	6.23 g
Monounsaturated Fat	12.76 g
Polyunsaturated Fat	3.84 g
Trans Fat	< 0.1 g
Cholesterol	8.42 mg
Calcium	112.09 mg
Sodium	30.93 mg
Iron	3.33 mg
Salt	< 0.1 g
*Approximate value	
Trans Fat Free	

Obs. Values in 100g

Fats	Trans Fats	Salt	Sugar
22.83g	<0.1g	<0.1g	48.42g

Ideal Ranges Per Day

Fats	Trans Fats	Salt	Sugar
44-77g	<2g	<5g	<20g



The resulting symbol seemed to be more confusing, also due to the choice of colours. It was unclear as to which were the ideal and observed values, and it also gave the impression of a pie chart. Hence comparisons could be drawn between amount of salt and sugar, but in reality these are independent entities.

Discussions with peers led me to see the drawbacks of the symbol. The consumer would first have to learn how to read the symbol and then use it, which would reflect poorly in terms of designing for human behaviour.

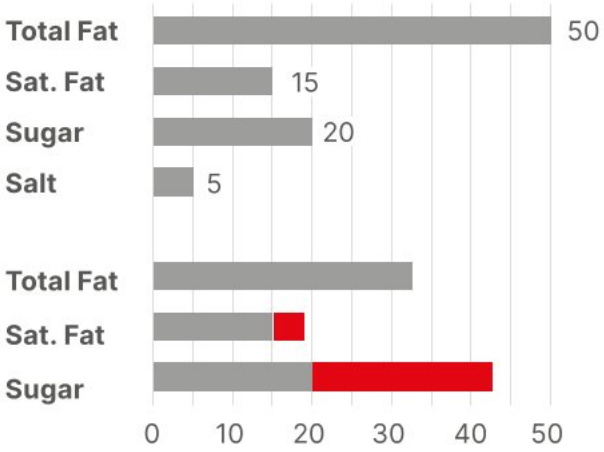
4.6 HFSS-4

Problem Statement:
The previous iterations were unique in terms of visualization, but the solution requires the simplest and easiest form of visual communication. Something that could be understood by users of all ages and backgrounds.

Solution:
The simplest form of visualization, the bar graph has been adopted. But there are two different ways that the same amount can be represented. One, through regular intervals that we commonly know. And secondly, by keeping the length of the bar constant (for the acceptable daily intake) and using red for both the systems as the amount exceeds than the daily limit.

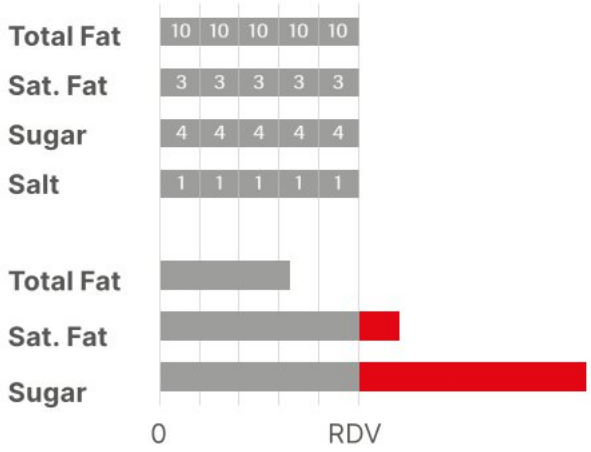
RDV - Recommended Daily Value

System 1 (Acceptable daily intake / RDV)



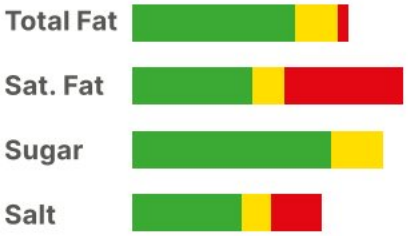
AMUL Dark Chocolate (Values per 100g)

System 2 (Acceptable daily intake / RDV)



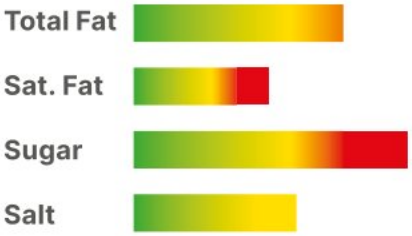
AMUL Dark Chocolate (Values per 100g)

The two systems accurately display the values, but the colours in themselves are not enough to communicate what they mean. The red patch does communicate that it is something dangerous but the symbol still remains ambiguous in nature.



Taking the previous symbol forward, the acceptable daily values were split in green and yellow patches. The green symbolizes the acceptable amount where one need not worry much, but as soon as yellow is seen, one needs to be cautious about their consumption. And the colour red means one has gone overboard on their daily sugar consumption.

As the acceptable values for each element are different, they all end at different lengths. Hence the resulting graphic appears to be a bit more chaotic as one has to take note of

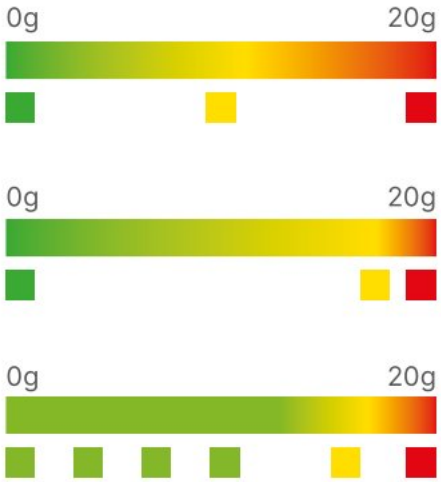


all the different shapes and their corresponding values. A further iteration of this symbol resulted into a gradient where the information blurred itself into a continuous spectrum, where the red continued to proceed in a solid (alarming) manner.

But there was an issue with respect to the gradient. The green (acceptable range) appeared to be very less as it mixed with yellow, hence a better gradient had to be designed to achieved better communication.

Designing the Gradient

Keeping the yellow in the centre lead to an ambiguous spectrum, hence a decision was made to shift it more towards red. But that too increased the amount of yellowish green colour. I finally deicded to add more green on the left end of the spectrum which would aid the consumer in unerstanding the message.



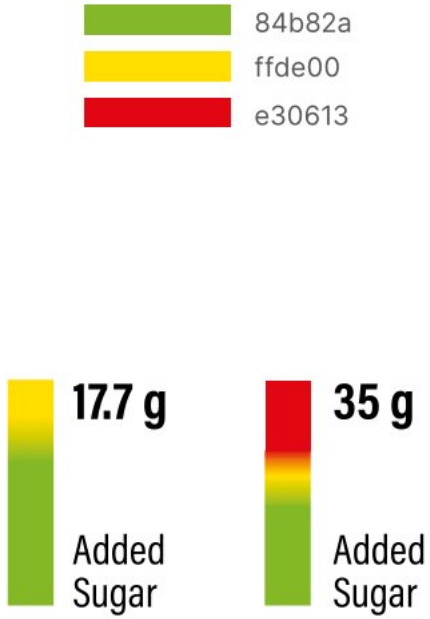
5.0 The Final Symbol

After designing the appropriate gradient, there was a choice to be made between two types of representation. The first one would be based on regular intervals that would change from beverage to beverage depending on the amount of sugar inside it. And the second one would have a fixed limit, but the gradient inside would keep changing to represent the amount of sugar inside.

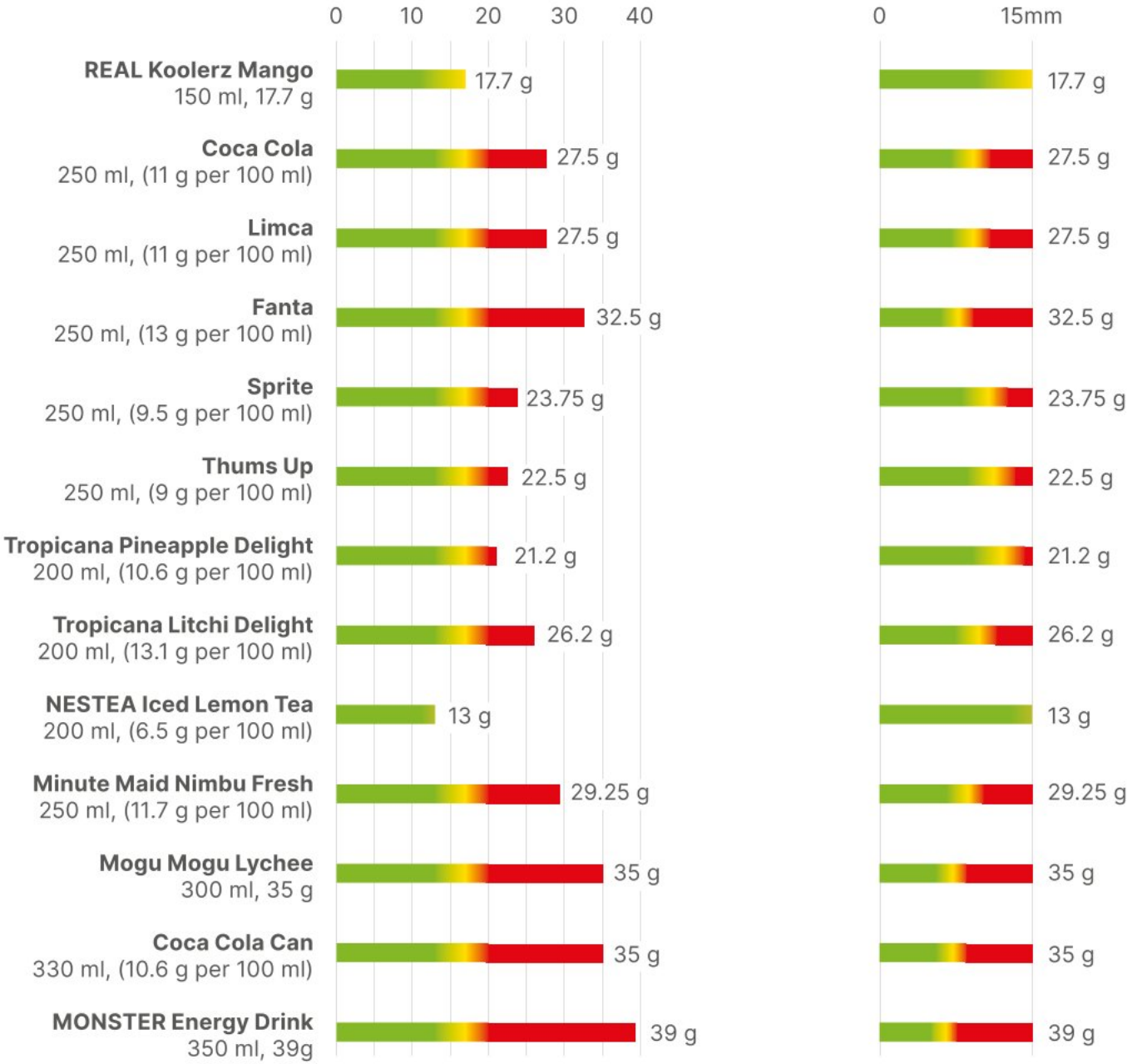
If two bars are not used simultaneously next to each other there is no need to accurateky show the length of the bar. The visual gradient seems to be enough to convey the presence or absence of excess sugar.

The final symbol takes up roughly 15mm X 8mm of space on the pack and should ideally be placed at the top right corner of the pack or can.

System 1



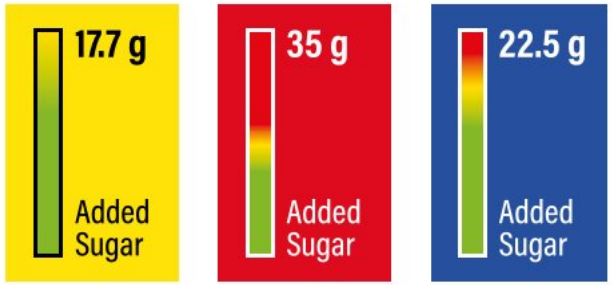
System 2 (Preferred)



The entire graphic is scaled down or up to fit the length of 15mm in real scale. One can understand the graphic depending on the amount of red inside it.

Test prints were carried out to ascertain the ideal font depending on the legibility, and finally teh typeface ‘Acumin’ was finalized as it offers a great range from extra condesed to wide black.

Dimensions of the Gradient
1.6 mm X 15 mm



Adapting the symbol as per the different background graphics of every brand.

5.1 Applications

The Front-of-pack symbol was created for 10-12 bottles/cans of different brands and then stuck onto the bottles to check the experience of interacting with the label on the bottles.

One of the iterations for a 40g bar of Dark Chocolate, that shows values for Total Fat, Saturated Fat and Sugar.

As this system was intended for all processed foods and beverages, I tried out a sample for when the label has all 4 values present in it.

The first system has lengths that are decided by regular intervals, whereas the second system tries to fit in all values within a specific length. The first system appears to be better in comprehension as the bars follow a logical system of equal intervals which would connect with the users. On the other hand though the second system has a constant and uniform footprint, all the bars display the same length yet different values, which the users would find confusing.

System 1 (Preferred)

System 2

6.0 Reflections

I started this project on a very exciting note. The idea of being able to work on something that would quite literally affect the lives of people, was simply thrilling. As I began the project with collecting data and experiences from users, it provided a great insight into their lives and consumption habits.

But as I took that data and moved on to the designing part, I faced some obstacles. The process of ideating for such a topic was difficult. A design that had to resonate with the masses, be simple and easy to understand and also fit into a tiny corner on the tiny package. I was faced with many constraints, but they also helped me narrow down the design. I realized that for me, the process of design was about mainly being comfortable with being uncomfortable.

Half way through the process I was unable to go any further, and I conveyed the same to my friends and guide. But they were extremely supportive and reassuring. I was thankfully able to start ideating again and thereafter I came up with some unique solutions (HFSS-1,2,3,4) out of which the last one became my final symbol. The valuable inputs from my classmates also influenced the design. Every new perspective of a friend, peer and a potential user was extremely insightful as to how one perceives and reads the symbol.

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100%