URL:
https://public.tableau.com/views/FIT3179Assignment1Final_16311664944080/Theroadtobetterhealthandfitness?:language=en-GB&publish=yes&:display_count=n&:origin=viz_share_linkURL: V

1. Domain

A healthy diet and physical exercise are important aspects that affect the health of an individual by improving body composition, physical and cognitive performance and preventing metabolic disorders such as obesity, diabetes, and cardiovascular disease. (Koehler & Drenowatz, 2019). The focus of my dashboard is on exercise, food and sleep which will guide an individual to an improved lifestyle and achievable fitness goals.

Why

The purpose of these visualizations is to highlight the importance of different factors to improve the quality of health and fitness of an individual. The focus of the visualizations on the dashboard is to provide a user with a goal to improve his/her health or fitness and does not know exercises, nutrition or minimum hours of sleep required to achieve the goal.

Who

The dashboard is for people who are health-conscious and people who want to or are moving towards a healthier lifestyle. First, by figuring out your weight class and having a goal in mind. The goal, in general, is to bring health and fitness, which may vary from individual to individual. Therefore, a variety of users can use the dashboard, individuals who want to lose weight and get fit and individuals who want to put on healthy weight and stay fit.

2. What

2.1.Data

Sources

The visualizations in the dashboard have been created using three data sets. All the data sets were retrieved from Kaggle. I found the original authors and have referenced them in the Bibliography. The first data set was based on calories burned for different body weights in different activities and exercises. The second data set involved categories of food, foods, and nutrient components. Lastly, the third data set consisted of different sleeping hours of people belonging to different age groups over time.

Authors

Data set 1: Harvard Health

Data set 2: Wikipedia

Data set 3: Andy Kriebel

Relevance

These data sets were very relevant to my domain and were dependent on each other. The visualizations generated from it followed a visually appealing flow in the dashboard.

Creation process

In the first data set, it was first cleaned in Rstudio by removing the calories per kg column and converting lbs to kgs. Another column for the intensity of activities in Rstudio was created and later, it was further cleaned in excel. Irrelevant activities were removed from the sheet to make the visualization short and easy to understand. In the second data set, Rstudio was used to remove the measure column and change the t variable to 0. Excel was used to retain only the top seven foods in different categories with highest amount of protein. In the third data set, there was no cleaning required as only specific columns from the data set were used to make the visualisations.

3. WHY and HOW:

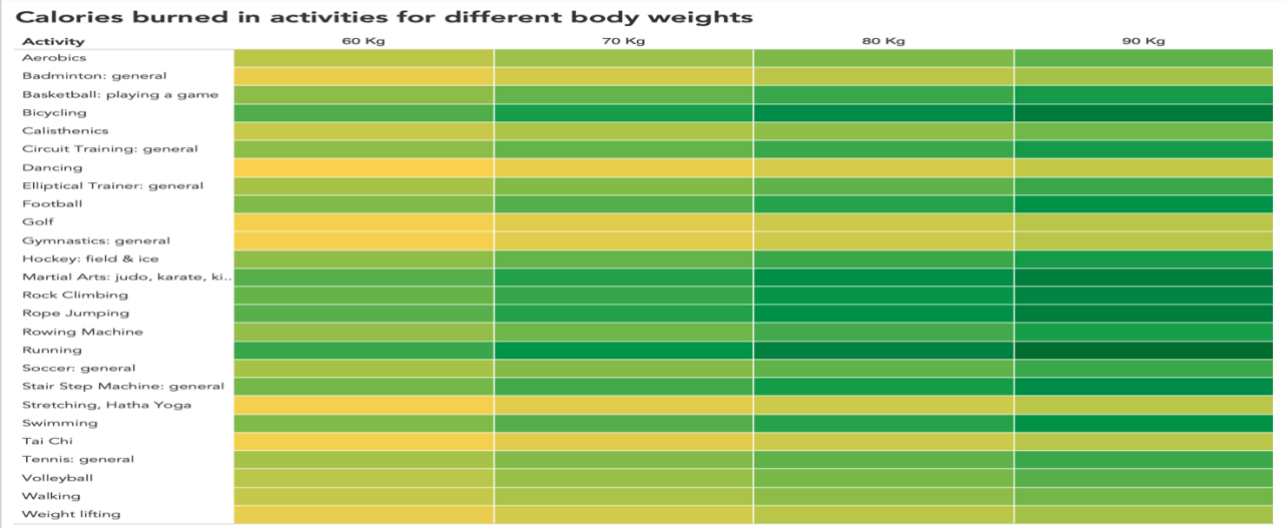


Figure 1: Sports and Activities

The heatmap represents the overview of calories burned in different activities for different body weights. The marks of the heatmap are spatial regions (boxes) and the channels are colour saturation and position.

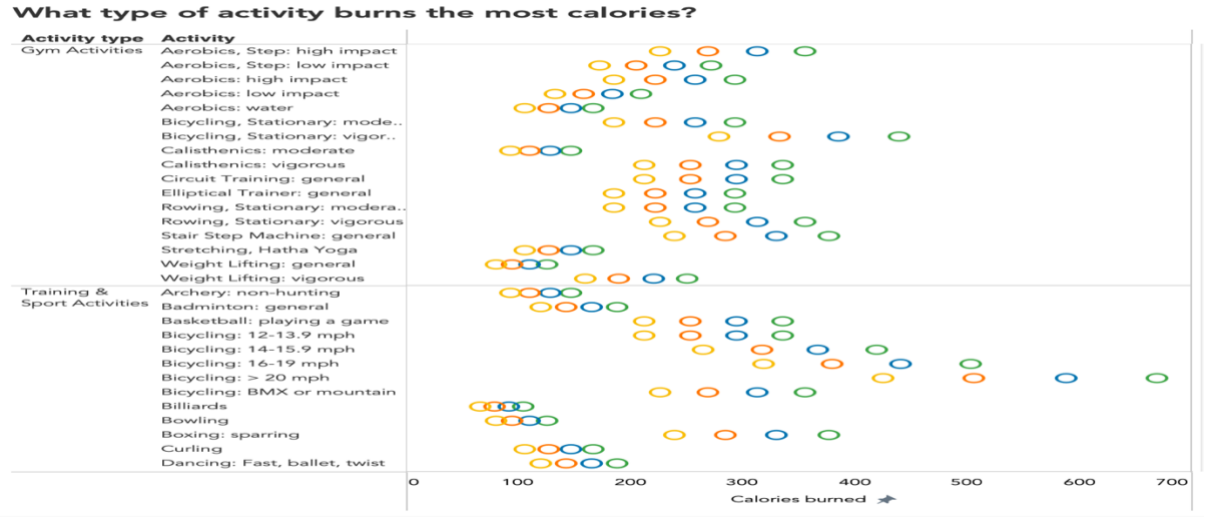


Figure 2: Types of activities

This chart shows a detailed caloric burnout of people with different body weights in different activities and exercises. The marks of this visualisation are points and the channels are colour hue and position.

Figure 3: Sleep hours on weekend and holidays

Figure 4: Sleep hours on week days

These bar charts show the recommended hours of sleep on weekdays, weekends and holidays for a healthy lifestyle. The marks of these visualisations are lines (bars). The channels are colour saturation and length of the bars.

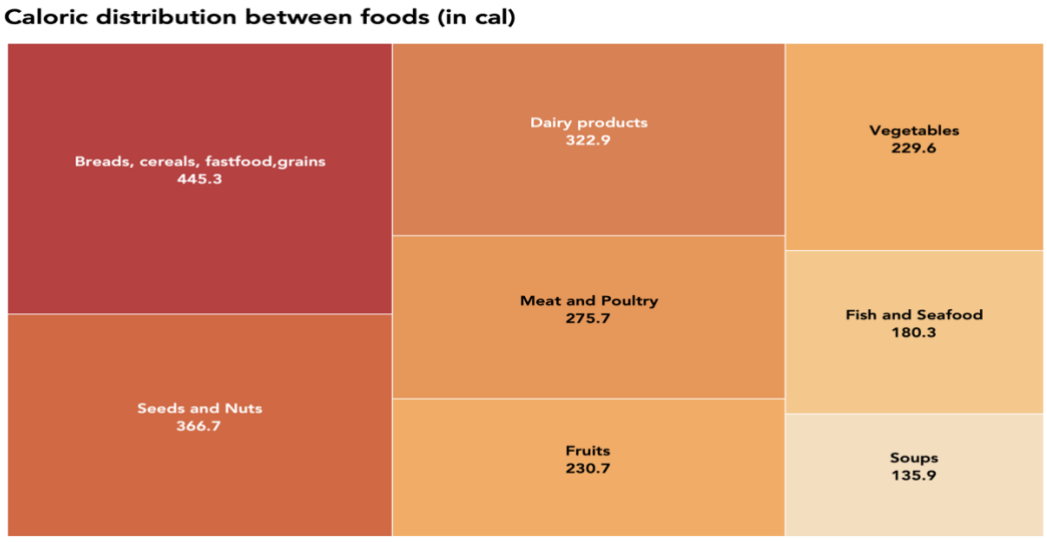


Figure 5: Caloric density of different foods

The tree map shows the overview of caloric density distribution among categories of food. The marks of this visualisation are **area** and **channels** are **colour luminance**, and the **2D size** of the squares present categories of foods.

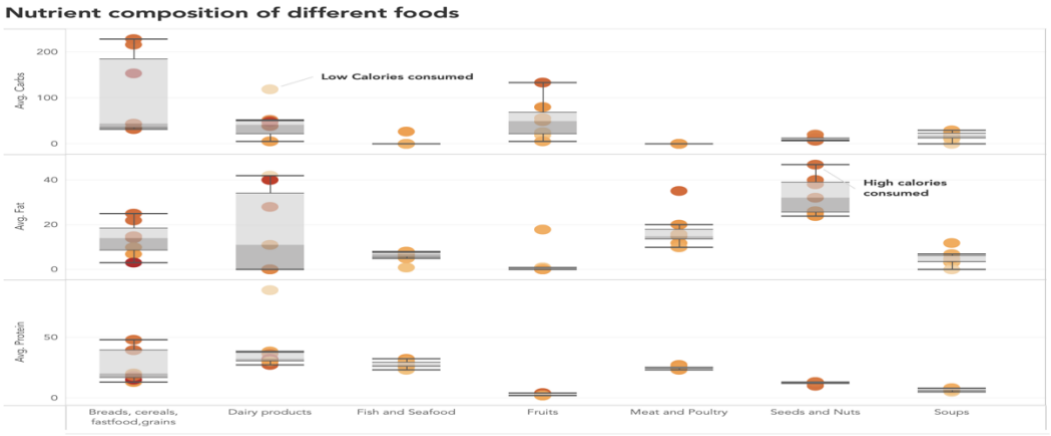


Figure 6: Nutrient composition of different foods

The boxplot depicts the nutrient composition of different foods. The marks are points and channels of this visualisation are colour luminance and common scale on horizontal axis.

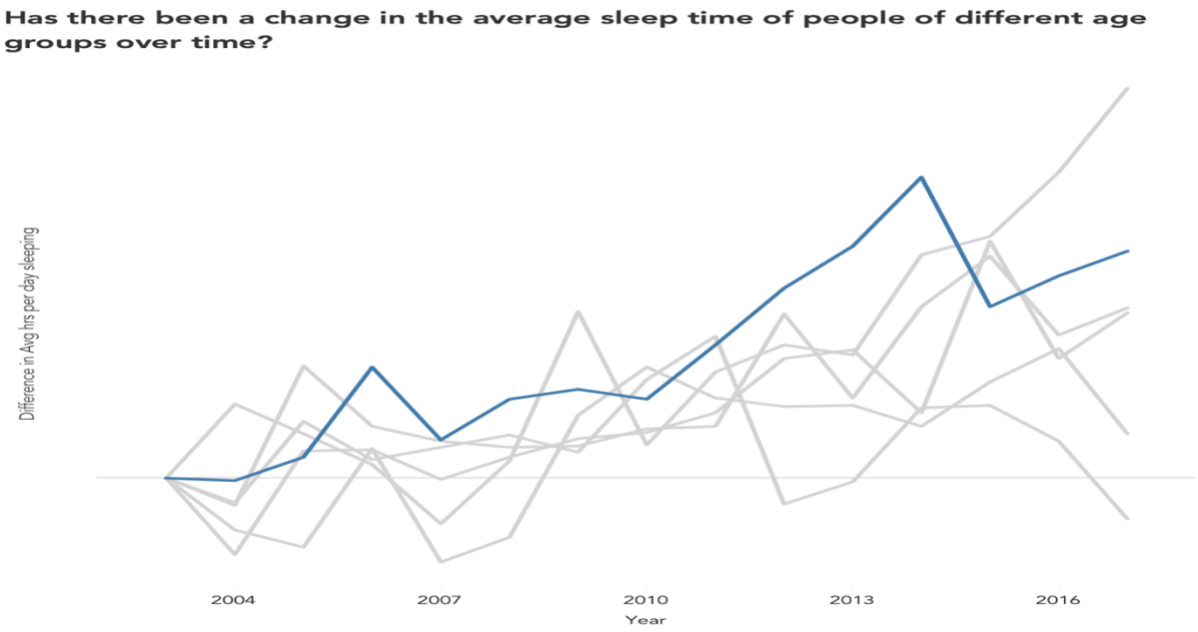


Figure 7: Analysis of sleep pattern

The line chart analyses the change in sleeping pattern of people belonging to different genders and age groups. The marks of this visualisation are points and connect lines. The channels are position and colour hue.

4. **Design**:

Layout:

The layout has defined rows with one column layout. However, from the middle section of the dashboard, the layout changes to only rows and no columns. The dashboard has symmetry and balance as all the information is around the central axis and in place (Muzner, 2014).

Colours:

The colors are consistent in visualizations using the same dataset (steps in the visualization). I have attempted to show consistency in the visualizations in each section according to the Gestalt Principle of similarity (Hensley, 2016). In step 1, the figure representing type of activity and the calories burned, have a colour palette in favour of the colour-blind people (Cravit, 2019). Figures in step 2 and 3 in the dashboard have consistent colour palettes (Cartwright, 2021).

Figure-ground:

Using bigger fonts for titles and important information satisfied "figure". Both figure and ground was achieved in the line chart in step 3. The less important information like axis titles and text were presented in smaller fonts and helped achieve "ground".

Typography:

The typeface used in the dashboard is sans serif and the font is "Avenir". Different size, weight and italics have been assigned to the titles and important text in the dashboard. It is also used to represent hierarchy in the dashboard (for step 1, 2 and 3) (Chapman, 2021).

Storytelling:

The visualization is a mixture of magazine and annotated chart genre. The visualization is a mixture of annotated charts and images making it a combination of both the genre. The gestalt principles will help the viewer understand the hierarchy and visualizations with similar colour consistencies beginning from the center top to bottom (Muzner, 2014).

THE ROAD TO BETTER HEALTH AND FITNESS

"Take care of your body. It's the only place you have to live." - Jim Rohn

Two questions that you need to ask yourself before you begin your journey.

1. What is a healthy lifestyle?

Good health is not just the absence of disease or illness, it is a state of complete physical, mental, and social well-being. This means a balanced diet, getting regular exercise and plenty of rest. Our bodies are like machines that require a balance of protein, carbohydrates, fat, vitamins, minerals, and water to stay in good health.

2. How to set fitness goals?

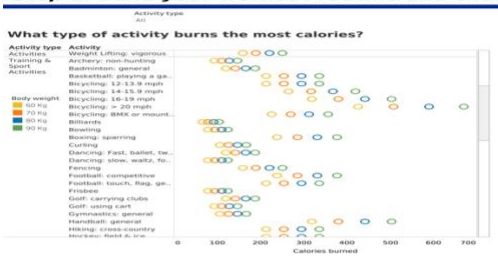
- **Be realistic** - It's important to write down realistic goals, that would be achievable for you. Your ultimate fitness goal could be, to be fit enough to participate in a competition or to run 10 laps of the ground. It is necessary to keep it in mind that it is not important have a physique like world-famous athletes or supermodels but being fit and healthy.

- **Be specific with your goals** - Don't make your goal a general statement like: 'I want to lose weight' or 'I want to be bulky'. Make it measurable. Exactly how much weight do you want to lose? How long of a marathon do you want to run? What kind of sports or activity you want to be able to play competitively?

- **Choose a goal** that is **meaningful, important** and **achievable** to you.

Step 1. Build your workout routine and choose the right exercise for y..

What type of activity burns the most calories?

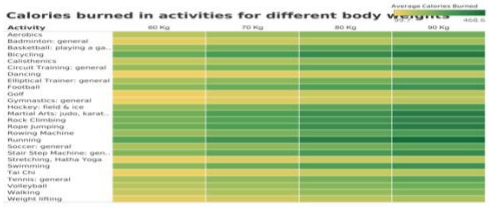


How important is exercise for burning calories?

The two most common goals of people for better health and fitness are fat loss and muscle gain. These goals can be met by building a **workout** plan and choosing the right **exercise** for the right **goals**. This chart gives an overview of the exercises and their calories burnout for different body weights. For people looking to lose fat can search for exercises with highest calorie burnout for your bodyweight. Similarly, in order to avoid gaining fat whilst gaining muscle, it's important to exercise and burn calories.

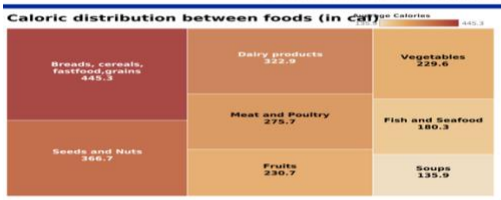
You can build your routine by selecting different activities which in the long run will help you get fit and healthy. You can look for activities in accordance to your body weight and the amount of time available for exercise. In general, the more you weigh, the more calories you will burn during exercise.

Calories burned in activities for different body weights



Step 2. Eat the right foods

Caloric distribution between foods (in cal)



How crucial is a well-balanced diet?

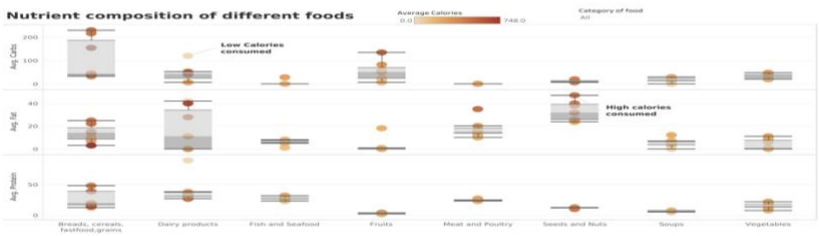
The following are some of the advantages of a well-balanced diet:

a. Ideal weight
b. Greater energy
c. Essential nutrients to support tissue growth
d. A strong immune system
e. A lower chance of coronary heart disease

In order to preserve physical and mental health and well-being, you must eat a healthy balanced diet and exercise on a regular basis. A well-balanced diet can help you acquire the calories and nutrients you need to power your everyday activities, such as exercise.

This chart shows the average calorie consumption of different types of foods. This chart will guide you in creating a healthy meal plan.

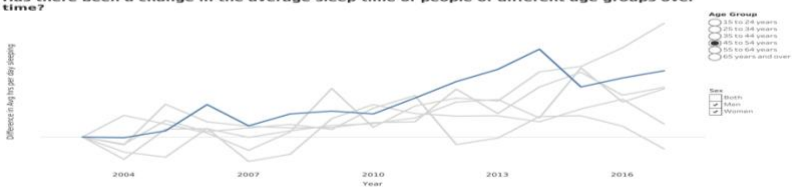
Nutrient composition of different foods



A few essential factors for a balanced diet are carbs, protein and fat. Protein is an important part of a healthy diet and holds the utmost importance for weight loss or muscle gain. Protein rich foods can help you lose weight and belly fat while increasing your muscle mass and strength. The road to a better health and fitness requires a healthy and balanced diet, rich in protein. Top seven protein rich foods falling in different categories are presented above for you to choose and add them to your diet accordingly.

Step 3. Rest to recover

Has there been a change in the average sleep time of people of different age groups over time?



Why sleep is important?

Sleep allows the body and brain to repair and energize for you to be fully charged for the next day. Between workouts, sleep permits muscular tissue to recuperate. In order to have the energy to exercise, you must get enough sleep. Sleep deprivation might result in less physical activity during the day and decreased muscle strength during workouts. Sleep deprivation has been linked to an increase in sports injuries in people who are chronically sleep deprived. Therefore, getting adequate sleep is critical for a person's health and well-being to remain optimal. Getting enough sleep also improves your mood and mental health. This shows that sleep is just as important to their health as regular exercise and a well-balanced diet.

On average, it's important for an adult to get **7-9 hours** of sleep every night for a healthy lifestyle, and also if you want to improve your body composition, gain muscle mass, and/or be ready for your personal training session the next day. Sleep promotes muscle repair by increasing protein synthesis and releasing human growth hormone.

Recommended hours of sleep weekend and holidays

Recommended hours of sleep on week days

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Images:

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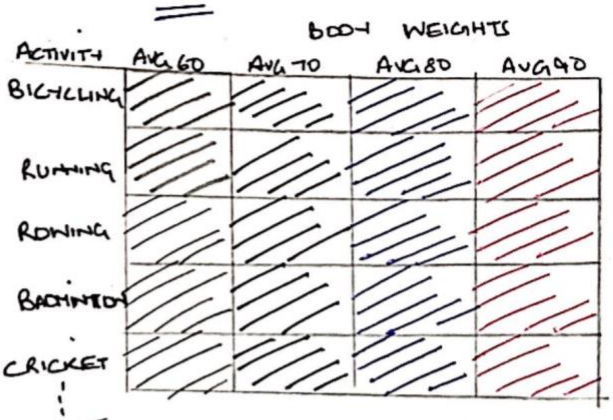
Eating vs Exercise: Why Your Food Choices Always Win. (2021). Retrieved 9 September 2021, from https://makeyourbodywork.com/eating-vs-exercise/

Appendix


SHEET 1
1. IDEAS
HEALTH & FITNESS
ACTIVITIES & EXERCISE
DIET & NUTRITION
ANALYSIS OF SLEEP PATTERN
GYM, CARDIO SPORTS, HOME ACTIVITIES
CATEGORIES OF FOOD, CAL, CARBS, FAT, PROTEIN, FIBER
DIFFERENT AGE GROUPS, 7 DAYS
WEEK DAYS
PUBLIC HOLIDAY
WEEKEND
2. FILTER [3 DATA SETS]
→ EXERCISE
→ NUTRITION
→ SLEEP
INDIVIDUAL VIS FOR ALL OF THEM
1) EXERCISE → HAVE I CONSIDERED ALL THE PARAMETERS?
- WHAT ABOUT CALORIES PER KG?
- DATA IS IN POUDS - CONVERT TO KG.
- NUMEROUS EXERCISES WITH DIFFERENT INTENSITIES
2) NUTRITION → SIMILAR TO EXERCISE
- HIGH NO. OF ROWS & COLUMNS
- SHOULD I CONSIDER ALL OF THEM
3) SLEEP → DIFFERENT AGE GROUPS WITH MANY YEARS, DATA IS EASY TO READ.
3. CATEGORISE → IN TERMS OF DATASETS,
VIS I → NUTRITION VIS II → EXERCISE
VIS III → SLEEP.
VIS I → CATEGORISE DIFFERENT TYPES OF FOOD, KEEP THEM ON X AXIS & CAL ON Y AXIS (MEASUREMENT)
VIS II → ALL THE ACTIVITIES ON X AXIS & EACH ACTIVITY FURTHER CATEGORISED INTO 4 BODY WEIGHTS WITH AVG CAL BURNED ON Y AXIS
VIS III → CATEGORISE DAYS INTO 3 charts WEEKDAYS, PUBLIC HOLIDAYS, WEEKEND
1) ACTIVITIES & EXERCISE
BODY WEIGHTS?
EXERCISES?
NO. OF ACTIVITIES?
AVG. CALORIES
2) DIET & NUTRITION
CAL
PROTEIN
FAT
SAT. FAT
FOODS.
3) SLEEP
AVG HOURS
YEARS
WEEK DAYS
WEEK ENDS
4. COMBINE & REFINE
VIS I
AVG CAL
AVG SAT. FAT
AVG FAT
AVG PROTEIN
DAIRY
BREAD
MEAT
FRUITS
VIS II
RUNNING
CYCLING
ROWING
AVG CAL BURNED
250
200
150
100
50
0
50 KG
70 KG
90 KG
60 KG
70 KG
80 KG
70 KG
80 KG
90 KG
VIS III
AGE GROUPS
AVG HOURS OF SLEEP
AGE GROUPS
AVG HOURS OF SLEEP
AVG HRS
YEAR
Scanned with CamScanner

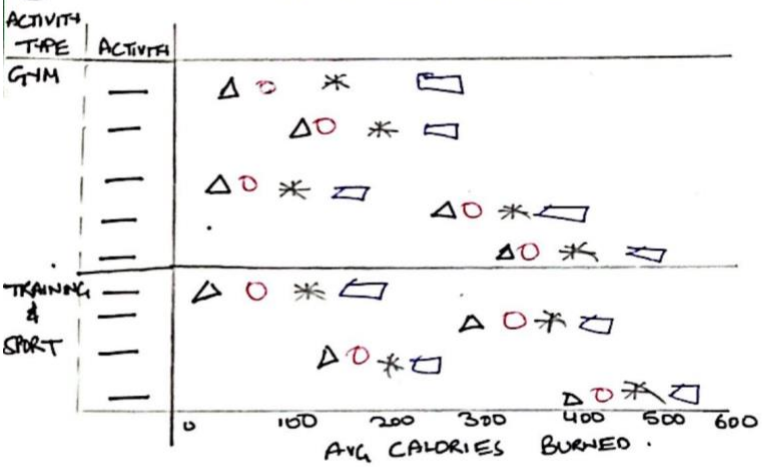
LAYOUT ⇒ CALORIES BURNED IN ACTIVITIES

OVERVIEW OF CALORIC BURNOUT



⇒ HEATMAP GIVES AN OVERVIEW OF CAL BURNED IN DIFFERENT ACTIVITIES FOR DIFFERENT BODY WEIGHT

CALORIC BURNOUT OF DIFFERENT ACTIVITIES



FOCUS

⇒ Focus is on activities, average calories burned in different body weights and intensity of activities

⇒ In the heatmap, focus is on body weights with boxes of same size & different colour to differentiate them from each other. Colours like ///, ///, ///, /// . Also, activities comprises of Gym & sports activities. Use of tables will highlight the type of activities in both visualisations. Use of table here means in legend.

⇒ In the second vis, use of shapes – Δ ○ ✱ ▭, to show different body weights is the main focus here. Makes it easier to interpret and makes the chart appealing. Activity type can be changed via legend & value can be selected to remove unnecessary activities.

TITLE: 5 DESIGN SHEET

AUTHOR: UTKARSH AHUJA

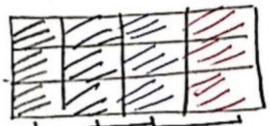
DATE: 02/09/2021

SHEET: 2

TASK: HEALTH & FITNESS VISUALISATIONS

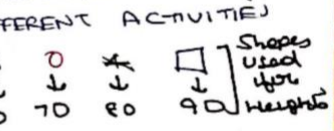
OPERATION

⇒ OVERVIEW OF CAL



Differentiates body weight & shows the avg. calories burned. Less abstract & more

⇒ CALORIES BURNED IN DIFFERENT ACTIVITIES



⇒ The types of activities with sub categories depicting the avg. calories burned for different weights

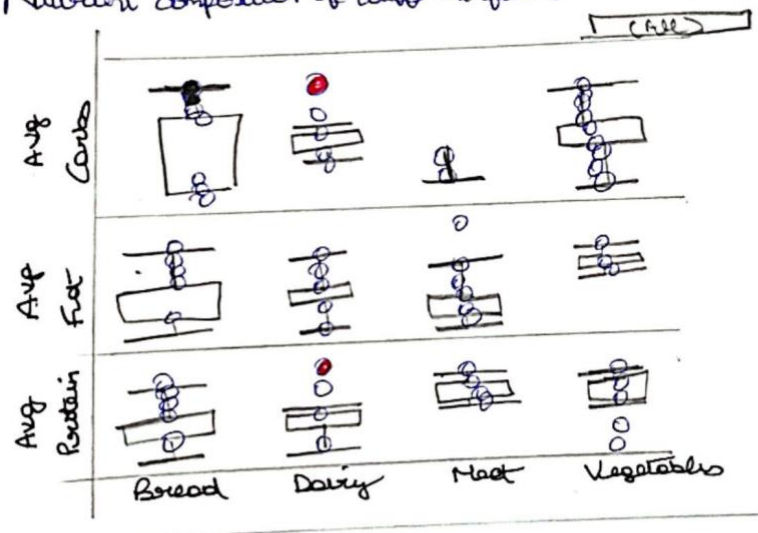
DISCUSSION

1) Heatmap gives an overview to the people new to calories & exercises.
2) Different colours used to differentiate body weights.
3) High number of activities will make the ~~graph~~ very long, needs chart clearing
4) Use of shapes is visually appealing. However, less many activities.
5) Instead of different shapes, use one shape with colour hue.

LAYOUT

Distribution of calories between foods.

Nutrient composition of different foods



TITLE: 5 DESIGN SHEET

AUTHOR: UTKARSH AHUJA

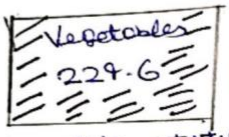
DATE: 02/09/2021

SHEET: 3

TASK: HEALTH & FITNESS VISUALISATIONS

OPERATION

⇒ Viewer looks at distribution of calories consumption (averaged) for categories of food. Label shows category & average cal consumption. Example)



⇒ In box plot, nutrition components can be extended & dates into account. Different categories of food are shown on x-axis of. Colour is used to differentiate between foods of low & high average calories

FOCUS

⇒ The treemap focuses on categories of food & the averages caloric distribution between them. Different size & colour of categories represent difference in consumption of calories

⇒ The box plot focuses on the nutrient composition of foods belonging to different categories. Components such as protein, fat and carbs are shown on the y-axis with categories on the x-axis. Colour palette is used to differentiate between lowest & highest calories intake of food. (•,•)

DISCUSSION

1) Treemap will help the viewer identify foods with high & low caloric consumption. Color used will also help the user differentiate between categories

2) Box plot will allow the user to choose foods with different nutrient components as well as colour palette.

3) The main disadvantage is that not all the foods can be included in the viz. It'll make it very clap & messy

TITLE: 5 Design Sheet

AUTHOR: UTKARSH AHUJA

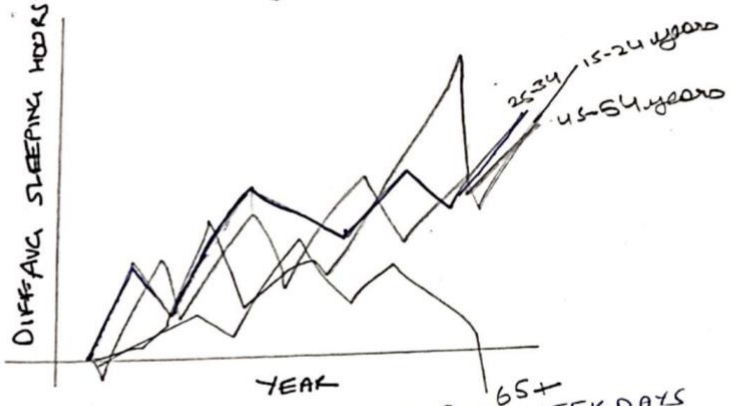
SHEET : 4

DATE : 02/09/2021

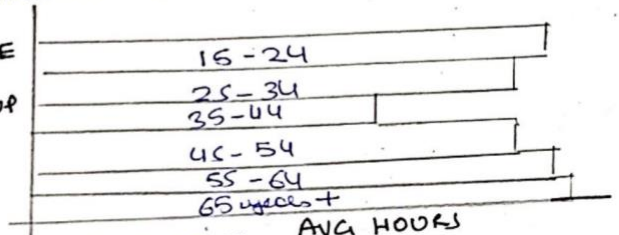
TASK: HEALTH & FITNESS VISUALISATION

LAYOUT

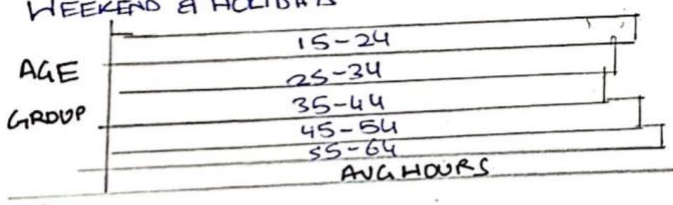
CHANGE IN SLEEP PATTERN IN DIFFERENT AGE GROUPS OVER TIME



RECOMMENDED AVG HOURS OF SLEEP ON WEEKDAYS

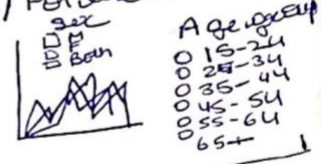


WEEKEND & HOLIDAYS



OPERATION

⇉ For line chart,



1) By clicking at any age group, line will change to colour blue & the rest will be grey. You can also filter the chart using gender legend.

⇉ For bar charts, they are more of an informative than interactive chart. They tell the viewer about avg hours of sleep from the labels in the bars.

FOCUS

⇉ The line chart focuses on the change in the sleeping pattern over people over time. The use of blue colour to highlight the selected age group makes it easier for an individual to understand the visualisation and also makes it visually appealing.

⇉ The use of table calculation to calculate the difference in sleep hours gives a better approximate about the change in sleeping hours over time.

⇉ The bar charts delivers insights into the sleeping pattern of people on different days like week days, weekends and holidays.

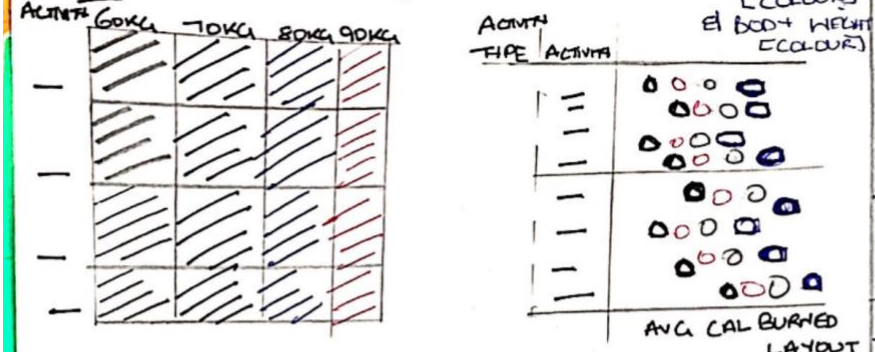
DISCUSSION

1) The line chart will help the viewer realise the importance of sleep by discussing the change in it over the years.

2) By clicking on the age group legend, line in the chart will automatically shift to the selected age group & highlight it with colour blue.

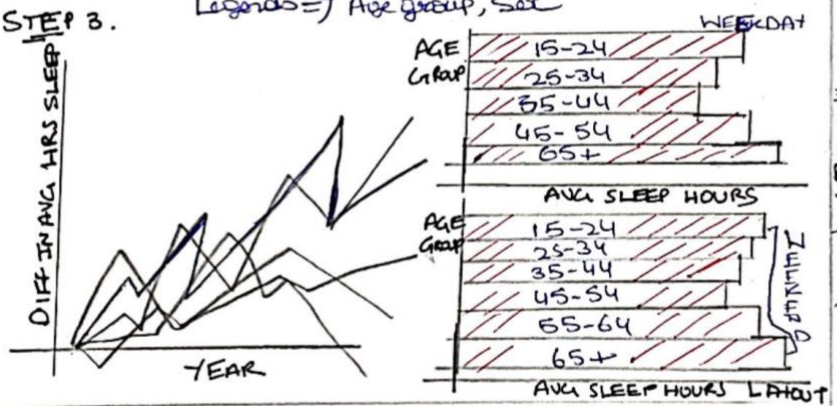
3) For the bar charts the labels tells the viewer the recommended average sleep hours on different days. Colour hue can be used to make it visually appealing.

STEP 1. LEGENDS ⇒ ACTIVITY TYPE, AVG CAL BURNED [COLOUR] & BODY WEIGHT [COLOUR]



STEP 2. Legends ⇒ Category of Food, Avg Cal [Colour]

STEP 3. Legends ⇒ Age group, Sex



FOCUS

⇒ The focus of all these steps is to help an individual achieve his/her fitness goals and be healthy. The use of treemap, heatmap, bar plot, bar chart and pie chart makes the dashboard visually appealing and easy to understand.

⇒ By just clicking at the legends & selecting his/her preferences, the charts will be filtered with more whitespace and higher data-ink ratio.

TITLE: 5 DESIGN SHEET

AUTHOR: UTKARSH AHUJA

DATE: 02/09/2021

SHEET: 5

TASK: HEALTH & FITNESS VISUALISATIONS

OPERATION

⇒ Since, I have used 3 datasets the dashboard is divided into 3 steps starting from selecting your workout routine to analysing your sleep pattern in step 3.

⇒ In step1, select activity type, then activity and look for the calories burned in accordance to your body weight.

⇒ In step2, similarly like step1, select the category of food & look for food with high protein.

⇒ In step3, select your age group & analyse your sleep pattern.

DETAIL

1) All the cleaned excel files (datasets) will be implemented.
2) The implementation time will approximately be one week.
3) The datasets will be first cleaned in R studio & then minor changes can be made in excel.
4) Average/Difference/Sum, etc. will be calculated
5) Software used to make these visualisations is Tableau