

Obesity and Overweight Issues Solution using Data Visualization

Ankit Pandita¹, Prof. Chandrashekhar Kumbhar²
B. Tech 2nd, Ajeenkya DY Patil University, Pune ¹
Assistant Prof., Ajeenkya D Y Patil University, Pune.²

Abstract

Obesity has slowly become a cause of concern for most of the countries in the world. As per a latest statistic given by World Health Organization (WHO), the rate at which individual is becoming obese has tripled since 1975. This is a matter which needs a proper in-depth analysis. Obesity is basically excessive accumulation of fat which can impair our health in many ways. Youths are an important asset for a country. It is the youth population who plays a huge role in ensuring that country's productivity and economy remains stable. But it's the teenage population which is majorly affected by obesity and overweight problems. As of data given by WHO in FEB 2018, 39% of adults above 18 years are overweight. The major concern lies within the fact that we still haven't able to find a proper solution to this. Coming back to India, we are currently home to 14.4 million obese people and according to stats India will soon rank second all over the world where obesity among teenage is concerned. The question about what causes obesity is natural. Today's youth is more attracted towards glitter and fancy stuff. With the liberalization policy adopted by India and coming of outside MNC's like McDonalds, Dominos etc. haven't helped the cause either. The excess consumption of such junk food, with neglect of nutritious food and lack of physical activity, plus self-awareness, has led to rise in obese population. The research paper therefore intends to give out a solution to curb this problem deploying various techniques.

Keywords: Obesity, World Health Organization, Analysis.

INTRODUCTION

"Except for smoking, obesity is now the number one preventable cause of death in this country. Three hundred thousand people die of obesity every year"

- Dr. C. Everett Koop

The above quote best describes the sorrow state of today's world. Although consumption of toxic substances like alcohol, cigars is one of the main issues among young generation, what is most disturbing above all is the fact that it's the younger lot of people who have become so lazy and careless that it's a disease like obesity, which clearly can be avoided, has become number one of all diseases which is erasing the population of the world. According to an India Today article (published 11 Oct, 2017), by 2025, India will be native to nearly about 17 million young children who would be suffering from obesity and overweight issues. Going by numbers, it is a very serious issue to which some tough decisions need to be made. As discussed earlier in abstract, the rate at which obesity has increased worldwide in last 30 years is nearly 3 times of what was previously. The problem lies within the individuals themselves. In this fast lifestyle of 21st century, people are so much so stressed out due to their work that they somewhere forgotten the need to take care of themselves. The busy schedule of people rarely gives them the time to sit back and introspect to themselves. Due to these reasons people nowadays aren't aware about basic nutritious requirements needed by their body. This is one of the causes for risk in obesity among adults and young population. Another reason adding to this is rise in technology. Due to advent of internet and other electronic devices, work and time consumption of people has largely reduced. Activities which would earlier take days to complete are now done within fraction of seconds on internet. This has made people complacent and is one of the reasons for obesity.

In our research paper we try to sneak into this issue a bit more deeply and look to provide solutions which can be helpful in bringing down the rate of obesity.

Data Collection

There are thousands of websites which provide access to such datasets. But, in order to bring a change within society by proposing an adequate solution, we needed a real-time dataset. They are usually most accurate form of data collected from numerous numbers of people giving their views on the related topics with chances of getting a diverse form of data which helps us in predicting the outcome on a larger scale. The data collection was done through a survey, which was made on google forms. There are total 19 attributes in the survey from with 117 instances. The data was collected in such a manner that people need not to reveal their identity since many people are not comfortable sharing their personal information. The important trait about the survey done was, it ensures that the maximum number of entries made by respondents are done in numerical form. The data collected in numerical format will give us exact information about problems faced by numbers of people rather than collecting data in descriptive format.

B	C	D	E	F	G	H	I	J
Age	Weight (Kg)	Height	Gender	Are you consumer of alco	Frequency of fast food co	When you buy food, how	What you eat can make a	Are you into exercise ?
22	50-59	5' 7 "	Male	Yes	Once	Very important	Yes	Yes
19	40-49	5' 1 "	Female	No	Daily	Somewhat important	Yes	Yes
19	50-59	5' 9 "	Male	No	Twice	Somewhat important	Yes	Yes
19	60-69	6 and above	Male	Yes	Once	Very important	Yes	No
18	60-69	5' 3 "	Female	No	Twice	Somewhat important	Somewhat agree	No
18	80-89	5' 3 "	Female	Yes	Daily	Somewhat important	No	Yes
19	50-59	5' 1 "	Female	No	Twice	Somewhat important	Somewhat agree	No
19	50-59	5' 4 "	Female	No	Rarely	Very important	Strongly disagree	No
19	50-59	5' 7 "	Male	Yes	Rarely	Not too important	Somewhat agree	No
19	80-89	5' 4 "	Female	No	Daily	Somewhat important	Yes	No
18	80-89	6 and above	Male	Yes	Twice	Not too important	Somewhat agree	Yes
21	70-79	6 and above	Male	No	Twice	Very important	Yes	Yes
19	70-79	5' 12 "	Male	No	Twice	Somewhat important	Yes	Yes
21	70-79	5' 12 "	Male	No	Rarely	Somewhat important	Somewhat agree	Yes
19	30-39	5' 1 "	Female	Yes	Daily	Not too important	Yes	No
19	60-69	5' 1 "	Female	No	Daily	Very important	No	No
21	60-69	5' 2 "	Female	No	Twice	Somewhat important	Yes	No
20	70-79	5' 12 "	Male	Yes	Twice	Somewhat important	Yes	No
20	60-69	5' 10 "	Male	No	Rarely	Very important	Yes	Yes
19	60-69	5' 6 "	Male	No	Twice	Somewhat important	No	Yes
19	60-69	5' 2 "	Male	No	Twice	Very important	Yes	Yes
19	30-39	5' 0 "	Female	No	Once	Very important	Yes	No
22	70-79	5' 9 "	Male	No	Rarely	Very important	Yes	Yes
19	60-69	5' 12 "	Male	Yes	Twice	Somewhat important	No	Yes
48	40-49	5' 4 "	Female	No	Twice	Somewhat important	Somewhat agree	Yes

Fig : 1 Dataset collected through real-time survey.

Data Visualization

To study and visualize data for our research purpose, we deploy various visualization techniques on the dataset. Some of them discussed are as:-

1. #bar plot

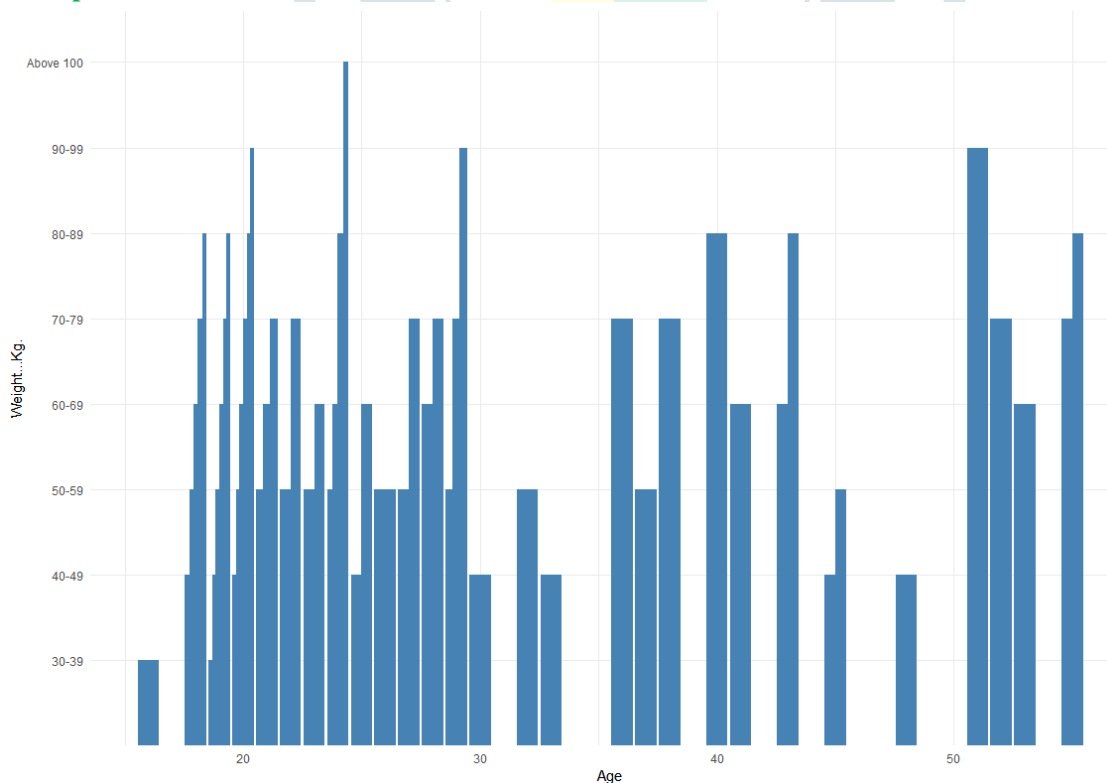


Fig: 2 The above graph compares age of individuals with their weight.

2. #scatterplot

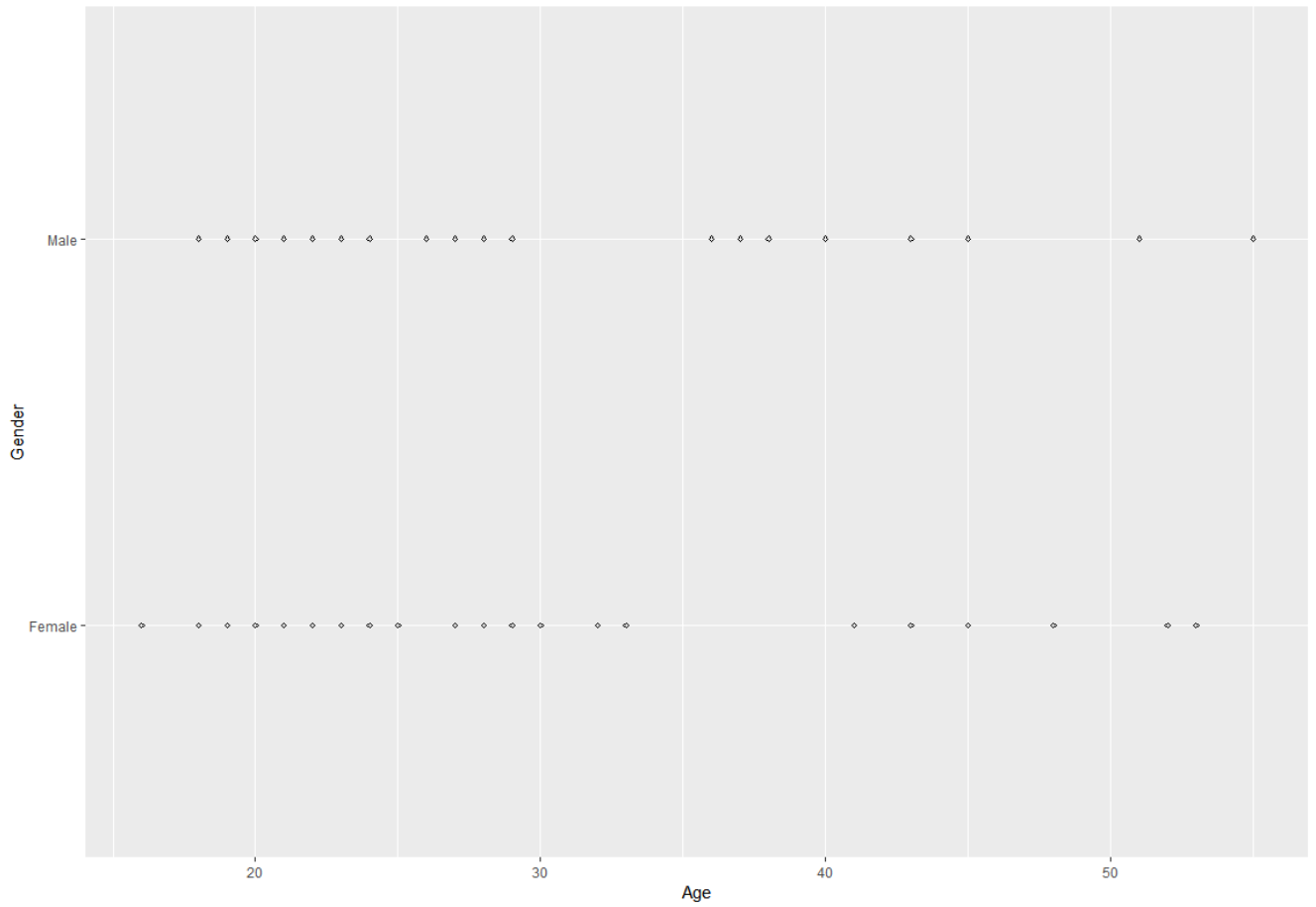


Fig : 3 To count exact number of male and female person according to their age, we have used scatter plot to show the same.

3. . #line plot

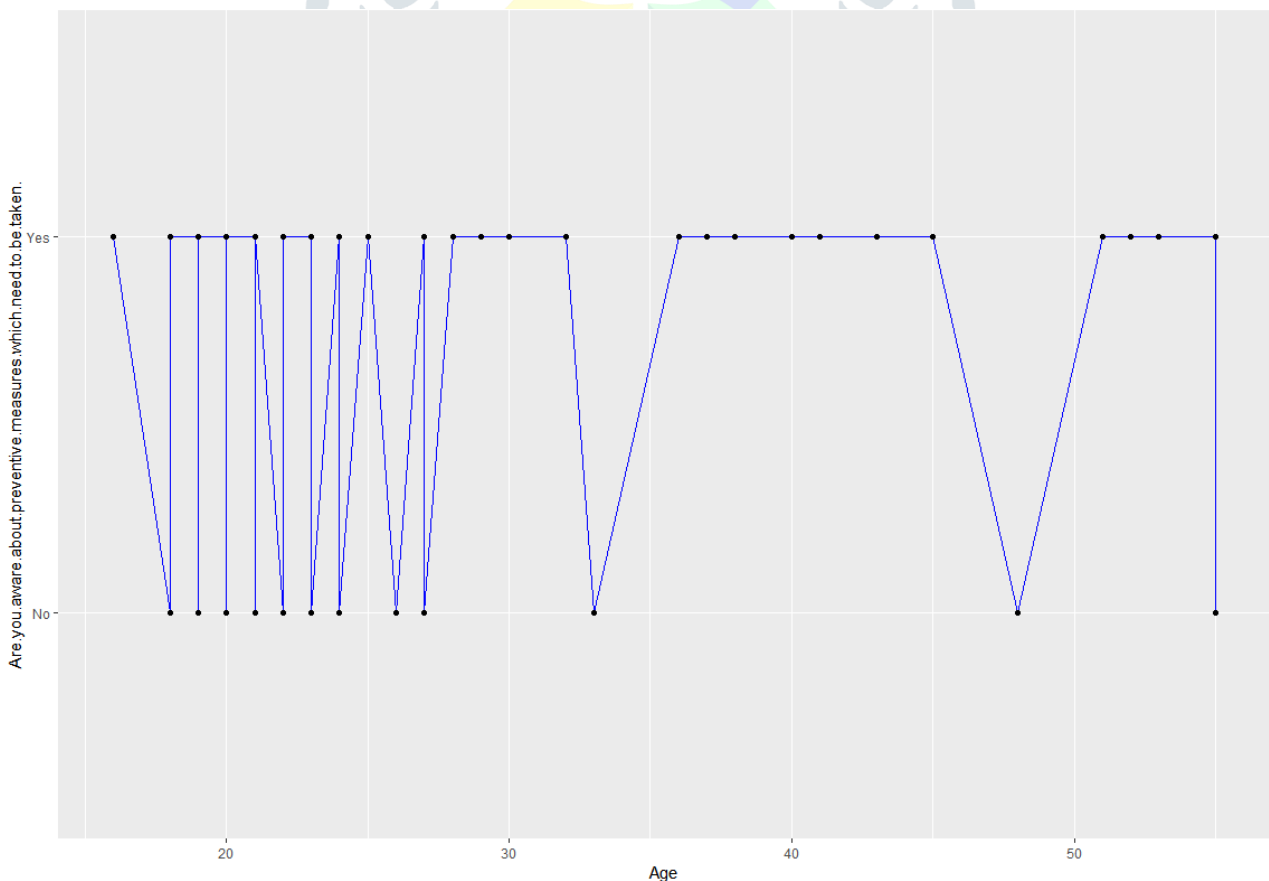


Fig : 4 Main cause of obesity is excess consumption of junk/fast food. But there are people who still are not familiar with what needs to be done in case they are diagnosed with it. The chart gives us idea of people who are actually aware of necessary steps to be taken using line plot.

4. #histogram

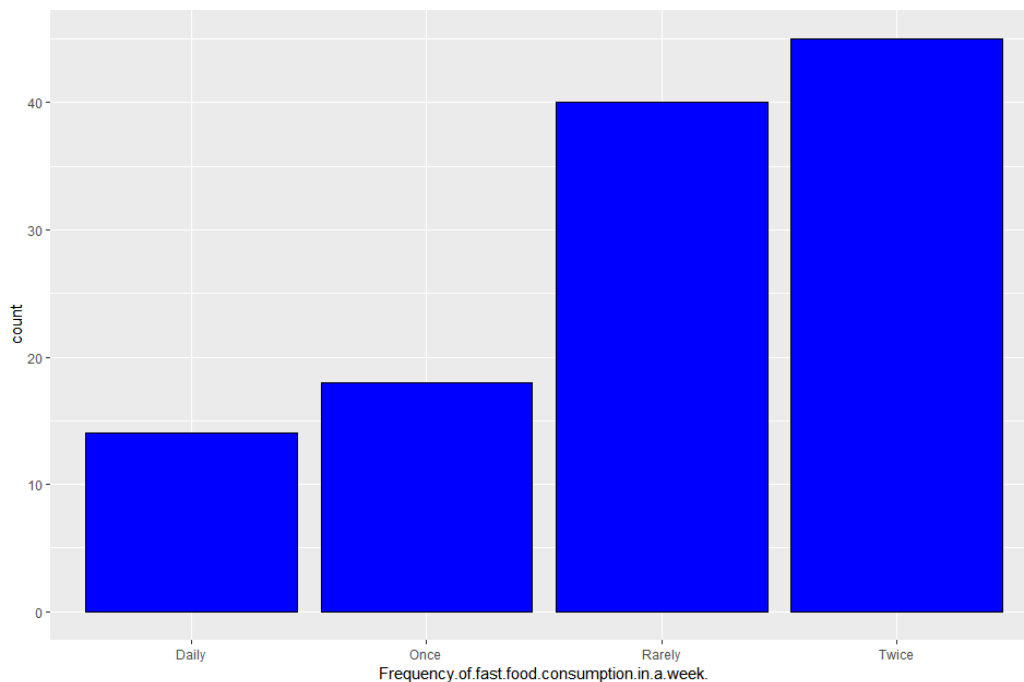


Fig : 5 From the dataset, it has become clear that there are different types of people and each and everyone has different preferences regarding consumption of fast food. So we count exact number of people on the basis of their fast food consumption using histogram.

5. #piechart

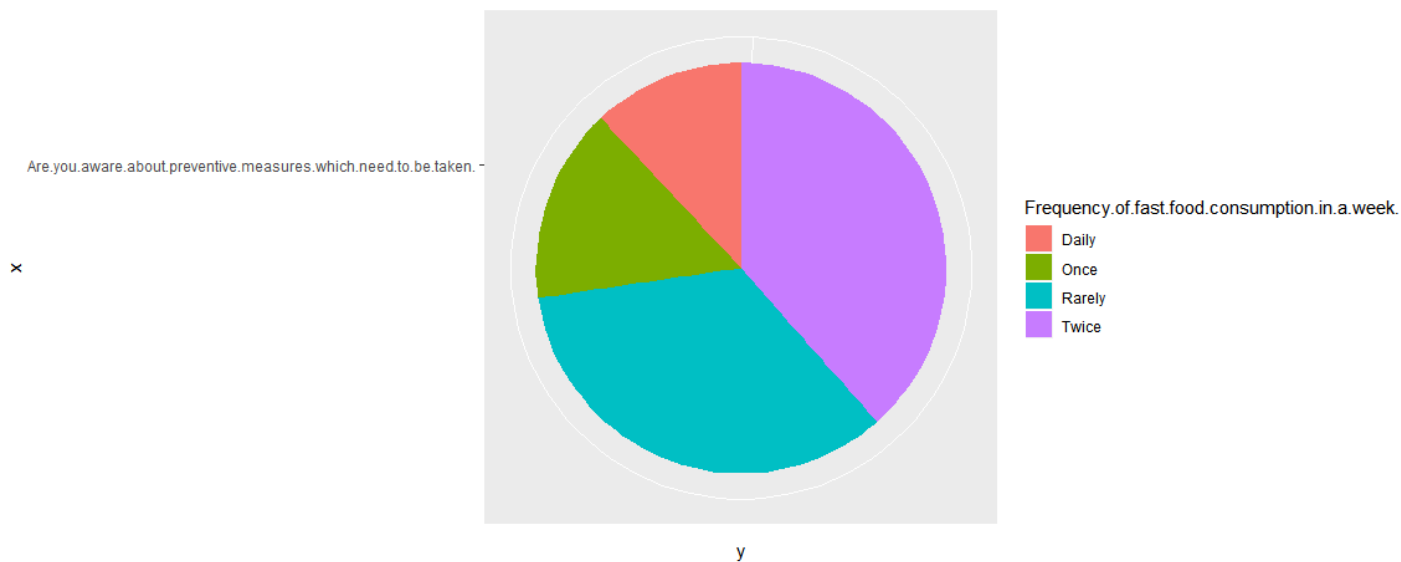


Fig: 6 Sometimes we need to depict data in such a manner which helps even a layman get to gist of their data. This is usually done showing pie diagram, which shows approx. values of the data and it is easy to visualize.

6. #network graph

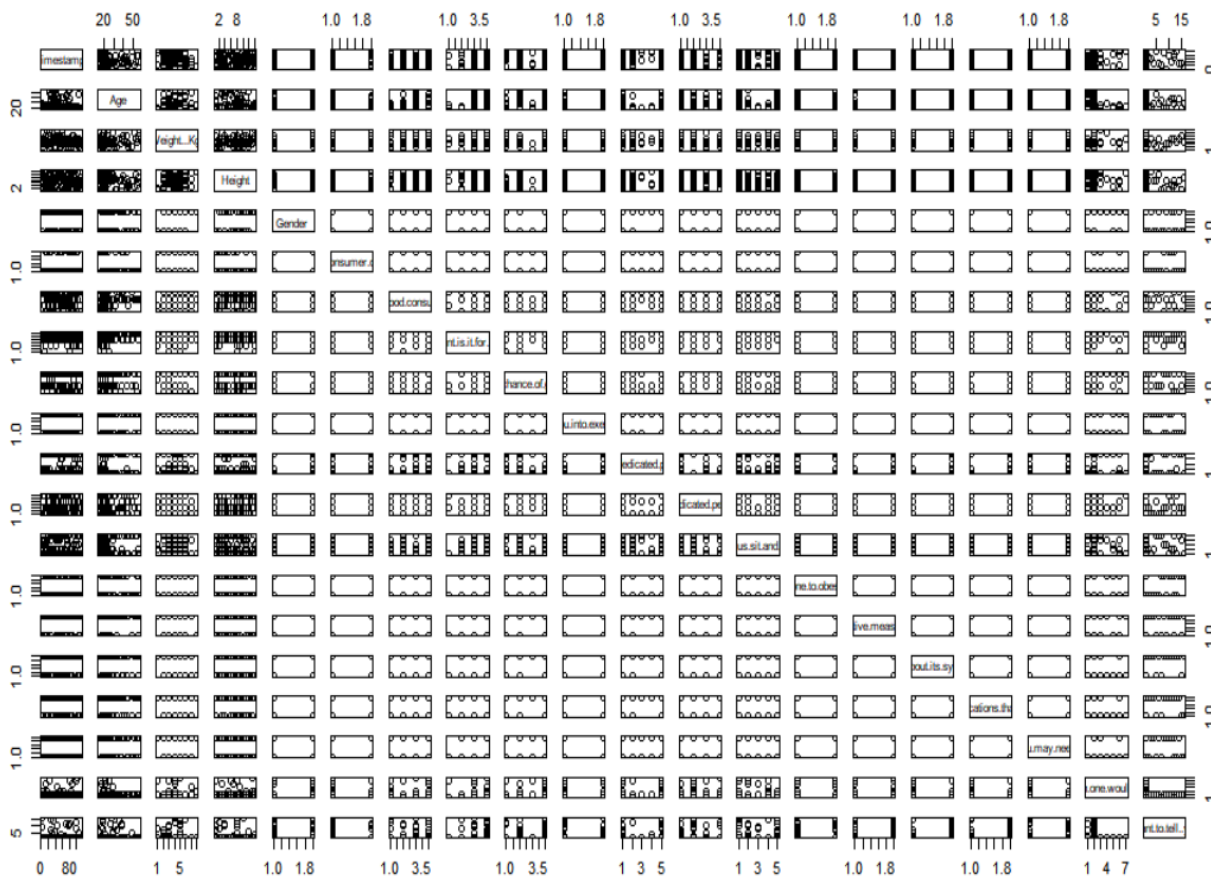
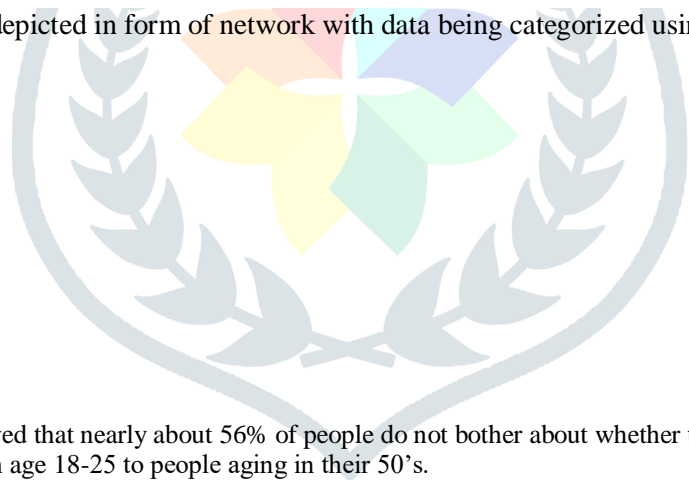


Fig : 7 The above fig shows data depicted in form of network with data being categorized using different types of attributes in a single graph.



Observations

From the data collected, it was observed that nearly about 56% of people do not bother about whether the food they consume is nutritious or not. This include people ranging from age 18-25 to people aging in their 50’s.

It was also seen that in spite of not being concerned about the quality of food they consume, majority of people know that the type of food which they have can cause them fatal diseases.

According to dataset, 59.8% of people say that they are into exercise, but nearly 62% also have thinking that their current way of living can be them vulnerable to obesity in future.

When asked about their preference regarding the type of treatment they would prefer, we see that 96.1% people believe they need to make some changes in their lifestyle in order to prevent themselves from becoming obese.

The visualization techniques applied help us in getting idea about our dataset in simple and easy to understand manner. By applying the above methods on different sets of attributes, we get to analyze on various aspects of our data, which would help us in providing solution accordingly.

Propose System

As seen in observation, majority of people do not find it necessary whether the food they eat is healthy or not. Knowing that excess consumption of junk food is one of the reasons for obesity, people simply ignore this fact and continue doing so till the time it's too late. This mainly happens when people aren't well educated or lack basic knowledge about what their body needs to stay healthy. The 21st generation people do not spend much time readings newspapers, books and other literature stuffs. Rather, they prefer reading articles on cloud and their smartphones. Teenagers nowadays, are nowhere to be found except their rooms with smartphones. We look forward to developing an app or a webpage which provides guidelines regarding preventive measures and steps which are needed to be taken to overcome with obesity and other weight related problems. A team of best physicians from all over the world or from India can be made where they educate people understanding the seriousness of this issue and how it can change their lives. People tend to get bore while reading about such stuffs, therefore, some new innovative methods can be adapted by the team in order to make the session more interactive and keeping people engage into what they are saying. Since majority of population in India resides in backwoods, not all will be able to access the electronic accessories. If taken seriously and on larger level understanding the sensitivity of the matter, government can assist and start a drive within such areas spreading the awareness among people and calling them to fight against this rising issue.

Literature Survey

The New England Journal of Medicine [1] published a paper in 2017 (1), focusing on highlighting the problems faced by people all over the world due to obesity and overweight. Data from 68.5 million people was analyzed to get information about the number of children and adults who came under the obese and overweight category between 1980 and 2015. Data showed the growth of obesity to be rising at double the rate since 1980, signaling towards its danger. The research paper voices for the need to focus on detection, implementation and prevention of such disease, since 4 million deaths were accounted globally, of which 40% were not obese.

Sarah E. Jackson [2], discuss whether the loss of weight among obese and overweight cancer patients increases their mortality. After been done with the analysis of data collected, which included both cancer-specific or all-cause data, it was found that out of 5 articles on breast cancer survivors, 4 studies showed link between mortality and loss of weight among obese cancer patients. The result was same for the non-overweight studies too. The paper also focuses that there is still room for improvement on the fact that weight loss leads to survival of obese and overweight patients and calls for better methods to identify the problem

Jia, P [3], has used Geographic Information Systems (GIS) for answering the health-related problems, mainly obesity related problems, for their research. GIS is a technique to present and analyze the geographical data. The study was successful in identifying loopholes in the current obesity research techniques. The study also showed the limitations of GIS method and called for user friendly methods in GIS applications to improve its research capabilities in problems related to obesity.

Conclusion

The majority of people are still unaware about the effects and consequences obesity brings with itself. People need to start taking care of and prevent themselves from becoming a liability.

References

1. GBD 2015 Obesity Collaborators, 2017. Health effects of overweight and obesity in 195 countries over 25 years. *New England Journal of Medicine*, 377(1), pp.13-27.
2. Jackson, S.E., Heinrich, M., Beeken, R.J. and Wardle, J., 2017. Weight loss and mortality in overweight and obese cancer survivors: a systematic review. *PloS one*, 12(1), p.e0169173.
3. Jia, P., Cheng, X., Xue, H. and Wang, Y., 2017. Applications of geographic information systems (GIS) data and methods in obesity-related research. *Obesity reviews*, 18(4), pp.400-411.
4. Guo SS, Chumlea WC. Tracking of body mass index in children in relation to overweight in adulthood. *Am J Clin Nutr*. 1999;70(1 pt 2): 145S–148S
5. Braddon FEM, Rodgers B, Wadworth MEJ. Onset of obesity in a 36-year birth cohort study. *Br Med J (Clin Res Ed)*. 1986;293:299–303
6. Power C, Lake JK, Cole TJ. Body mass index and height from childhood to adulthood in the 1959 British born cohort. *Am J Clin Nutr*. 1997;66: 1094–1101
7. Garn SM. Continuities and changes in fatness from infancy through adulthood. *Curr Probl Pediatr*. 1985;15:1–47.

<https://www.indiatoday.in/education-today/gk-current-affairs/story/world-obesity-day-2017-facts-and-causes-1062374-2017-10-11>
Accessed on 23/2/19

<https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight> Accessed on 23/2/19

