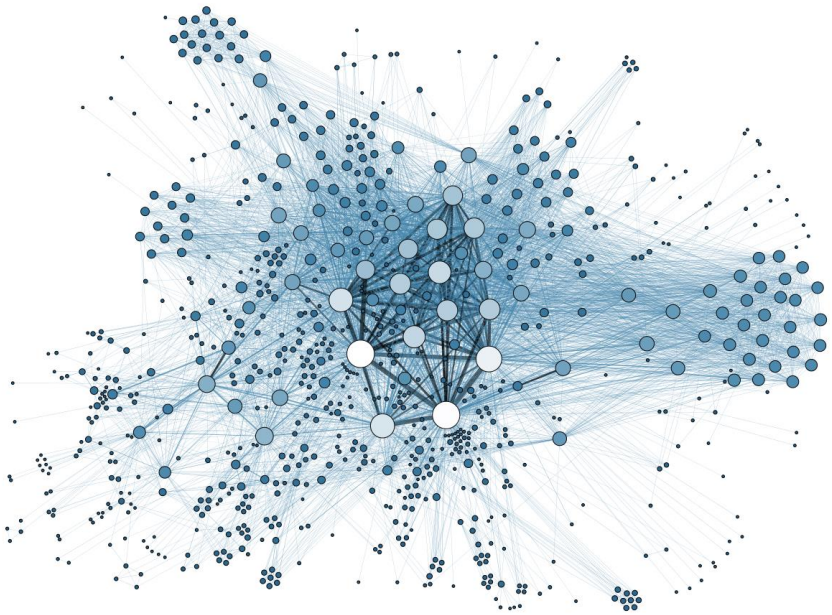

Graph representing the metadata of thousands of archive documents, documenting the social network of hundreds of League of Nations personals. by Martin Grandjean / CC BY-SA 3.0

Milk Production Data Analysis

SCHOOL OF SYSTEM & ENTERPRISE
ENGINEERING MANAGEMENT

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OUTLINE

- Overview of Research Questions
- Data Description
- Data Preparation
- Methodology
- Results
- Conclusions

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Overview Of Research questions

Milk Collection is conducted in all the states of India. Data is being extracted from Milk collecting units and analysis on different data is being carried. Some question still remains to be dealt with such as, What is the data about? Is Quality and Quantity satisfied by farmer ? How much amount received by farmer ? How much Fat does cow/buffalo milk produce? How many Female and Male farmer produce Cow or Buffalo Milk ? The answers to all those questions are quite easy if one uses proper techniques and set target to parameters affecting customers.

In the following project I am trying to analyze data on milk collecting unit presented in India. Data Set available here is from one of the milk collecting units of India. Each Farmer gets paid based on their quantity and quality of milk in this milk collecting unit. The more fat you have in your milk, the more you get paid. Each morning Big Dairy industries pay farmers handful amount of money in return of their quality of milk. Analysis on data can help big dairy units and milk collecting units to pay different amount to different people and can estimate the amount and quality of milk they received against the money paid. By examining the Data set available, the project would do analysis on certain parameters mentioned below

- To analyze total amount paid to farmer in that specific region. This gives us the average rate to be paid to the farmers.
- To analyze which farmers, produce more quantity and quality of milk. This give us idea about the quality and quantity produce by a farmer of that specific region.
- To analyze number of Male/ Female farmers producing the milk.
- To analyze Quantity and type of Milk(Cow/Buffalo) reproduce in that specific area.
- To analyze which farmer(Male/Female) produce Cow/Buffalo Milk.
- To analyze which farmer(Male/Female) produce Cow/Buffalo Milk with SNF greater than 8.5. This helps us to assure the quality of milk.
- To analyze which farmer(Male/Female) produce Cow/Buffalo Milk with Fat for Cow milk greater then 3 and fat for buffalo milk greater than 5.
- To analyze Quantity of milk, produce and the amount of Fat in the milk. This will help to get information about how quantity and quality are related.
- Minimum and Maximum amount received by a Farmer with their name.
- Minimum and Maximum Quantity produced by a Farmer with their name.

DATA DESCRIPTION

URL:- This data is not found on site.

SOURCE OF DATA: Prompt Softech India.

DATASET

The Data is collection of 14 variables and there are total 5000 records means the Data base contains records of 5000 farmers which is framed by the time when they sold milk to milk collecting unit, Category of the product being ordered and other parameters.

- Unique code known as member Code of each farmer.
- Name of each farmer selling their milk.
- Type of the milk such as Cow/Buffalo.
- Sex of each Farmer(Male/Female)
- Qty is Quantity of milk produce by each farmer in liters.
- Kilo Qty is Quantity of milk converted to kg.
- Fat is referred as Fat percentage in milk.
- Solids-Not-Fat(SNF) the substances in milk other than butterfat and water; abbreviated SNF. They include casein, lactose, vitamins and minerals which contribute significantly to the nutritive value of milk.
- Fat are converted to Kg in Kilo Fat Column.
- Amount Paid to each farmer in return to their fat percentage and quantity of milk.
- Average rate is referred as Average amount paid to farmer. Amount paid by quantity of milk given.
- Time is referred as time when farmer sold the milk.
- CLR is not used in the data.

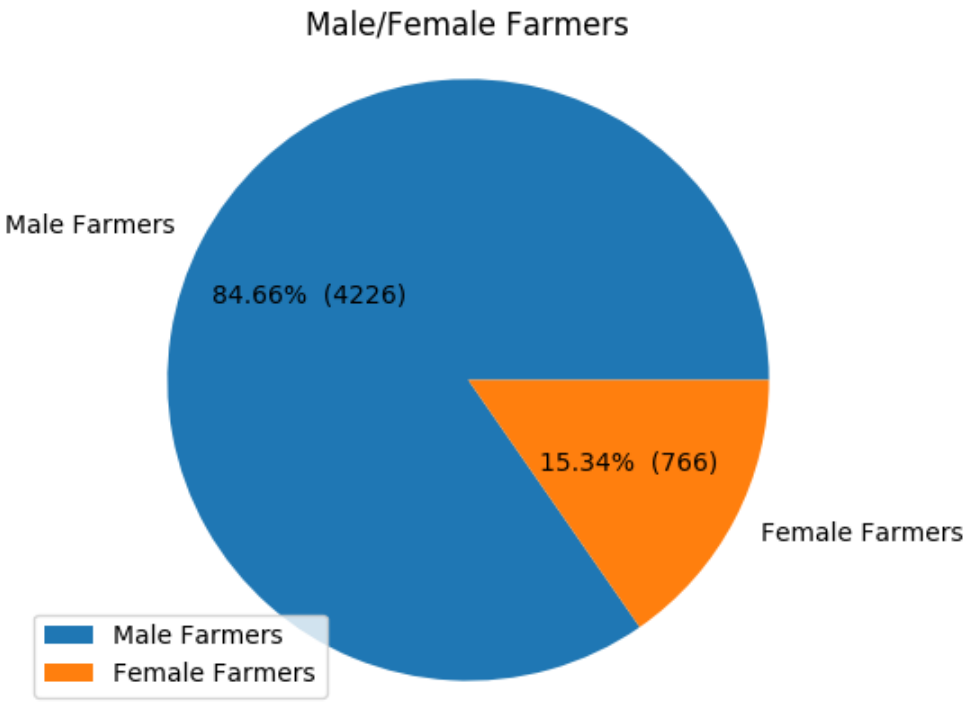
Data Preparation

1. The data was read from the file and was transformed as Data Frame.
2. The following variables were ignored as they were not use for analysis
    - CLR
    - Kilo Qty
    - Kilo Fat
    - Member Code
3. There was not that much of cleaning the data as it was simple and easy to handle

Methodology

1. First using pandas, I read the .csv file and named the variable as df
2. I found out the total amount paid to farmers as well as minimum and maximum values using pandas function.
3. Total milk produce by the farmers using the Qty column and pandas function.
4. Minimum and maximum milk produces by a farmer.
5. Then used count function to find total number of Male and Female Farmer. This function was also used to find total number of Cow/Buffalo milk.
6. Found out Total Top 5 farmers paid and also found out the quality of milk with different conditions.
7. Then at last I plotted the graph for all the list mentioned and analyzed what it meant as well as it gave me options what can be done to increase sales and make customers satisfied.
8. I faced a lot of problem during plotting because the list was large and every time the error I faced was with respect to undefined label. Due to which it always went out of range.

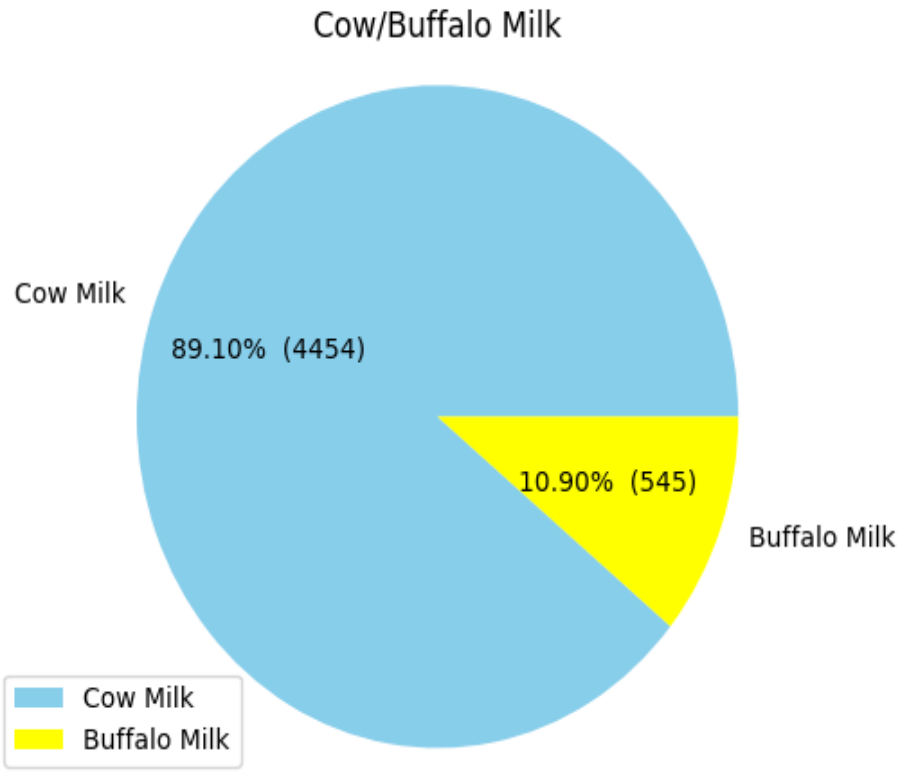
Results



[Figure 1 – Total number of Male and female farmers]

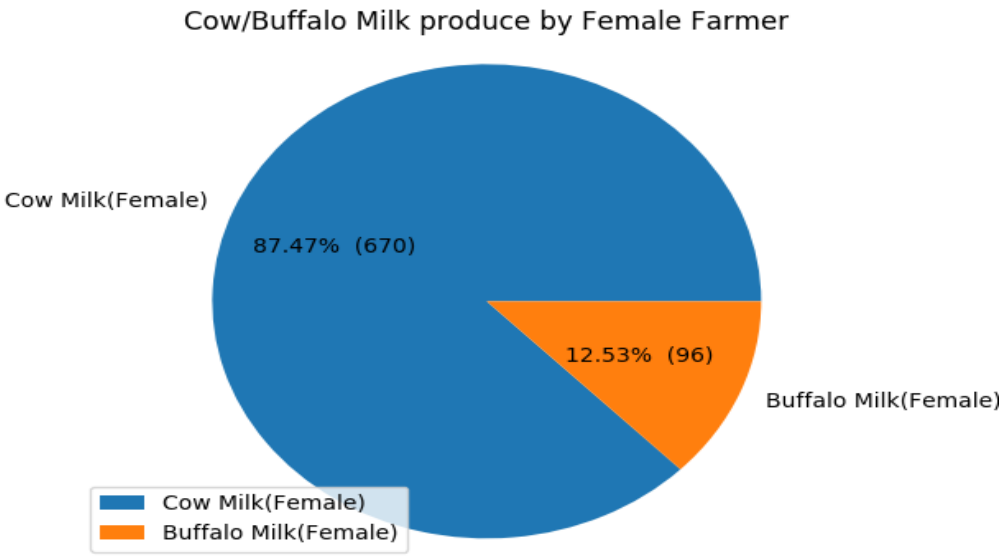
The above graph represents Pie chart of the total number of farmers selling their milk. Graph represents number of male and female farmers selling their milk.

So, I wanted to know number of cow/buffalo milk sold at the Milk Chilling Unit.

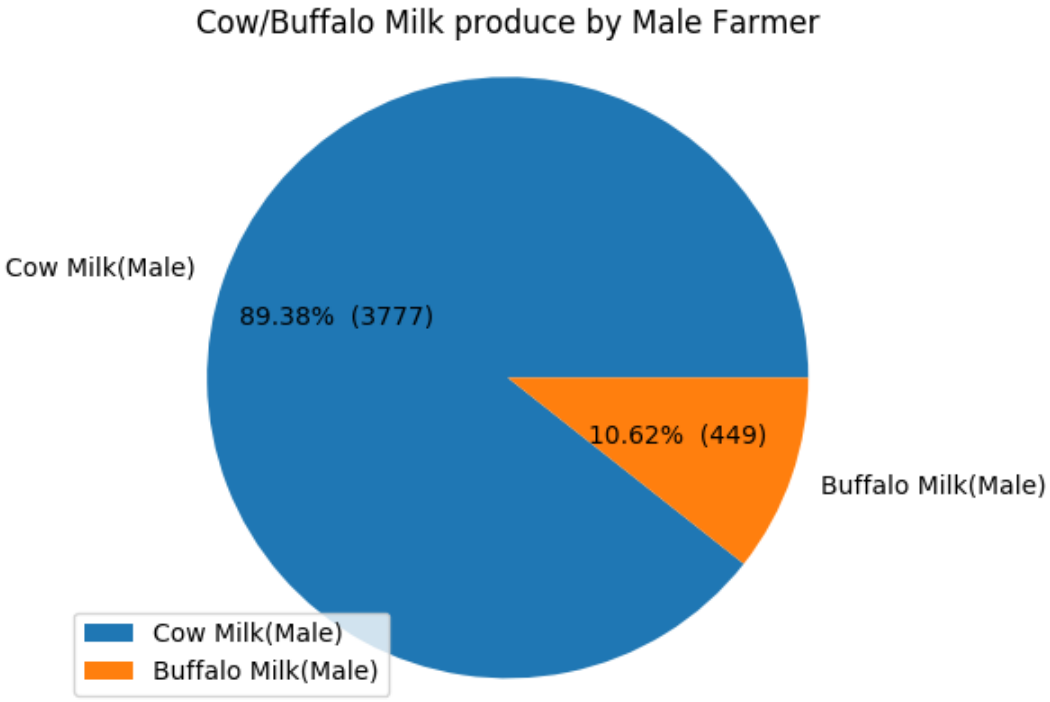


[Figure 2 – Cow/Buffalo Milk produce]

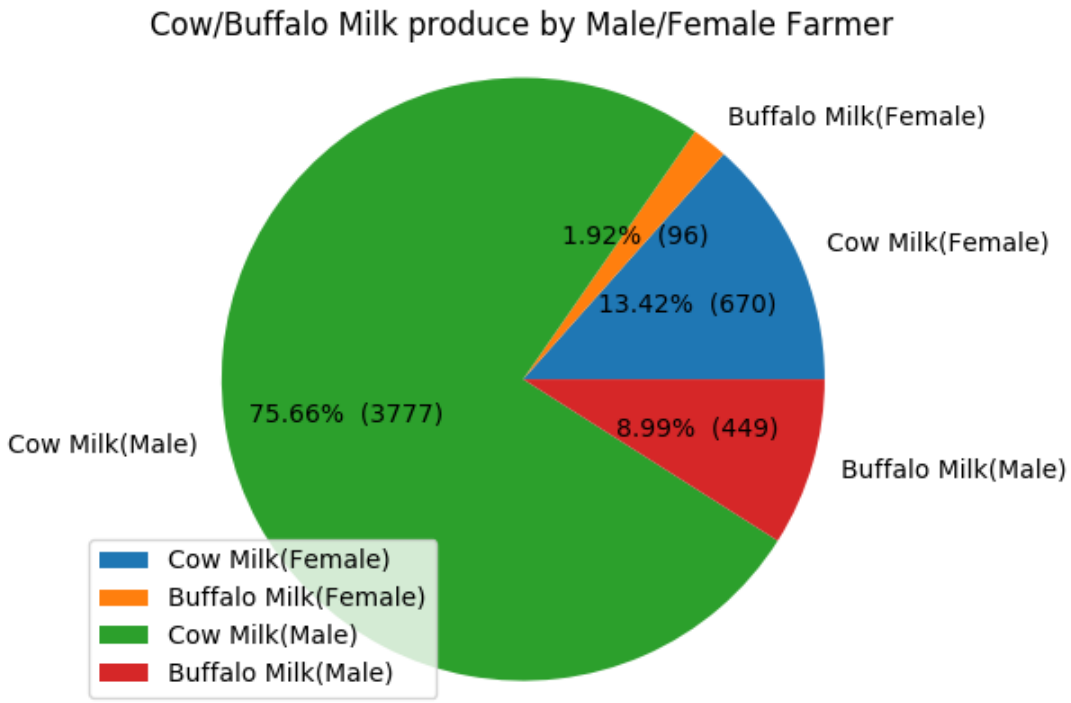
Pie chart presented above represents number of people selling cow and buffalo milk. Further I wanted to iterate Number of Male/female farmer selling Cow/Buffalo Milk.



[Figure 3 – Cow/Buffalo Milk Sold by Female Farmer]



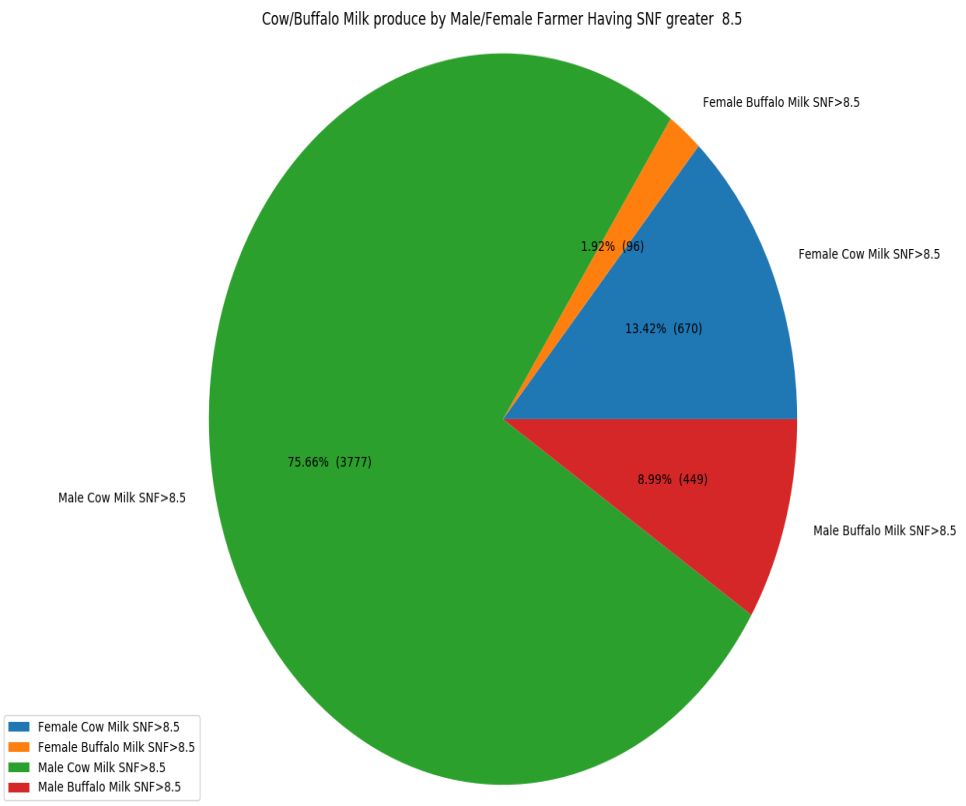
[Figure 4 – Cow/Buffalo Milk Sold by Male Farmer]



[Figure 5 – Cow/Buffalo Milk sold by Male/Female Farmers]

Above Three pie charts represents number of farmers selling cow/buffalo milk. Further, it is represent that is it sold by Male/Female farmer. It seems that majority of milk sold is Cow milk and mainly it is sold y Male Farmer.

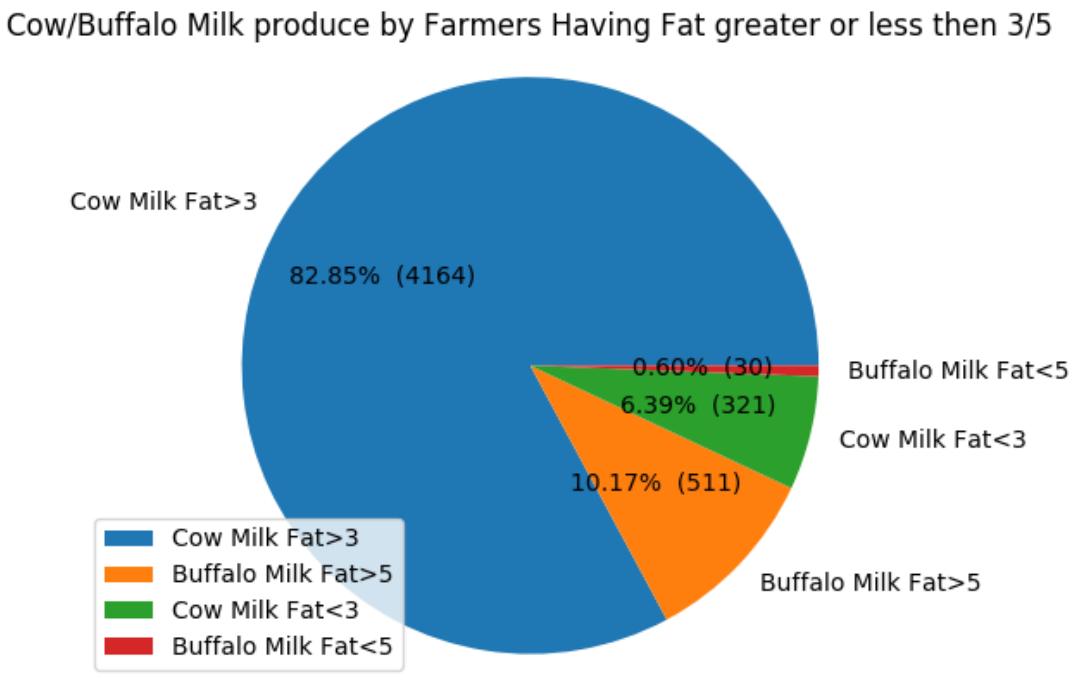
Further Let us take Solid Non Fat(SNF) into consideration.



[Figure 6 – Cow/Buffalo Milk sold by Male/Female Farmers having SNF greater than 8.5]

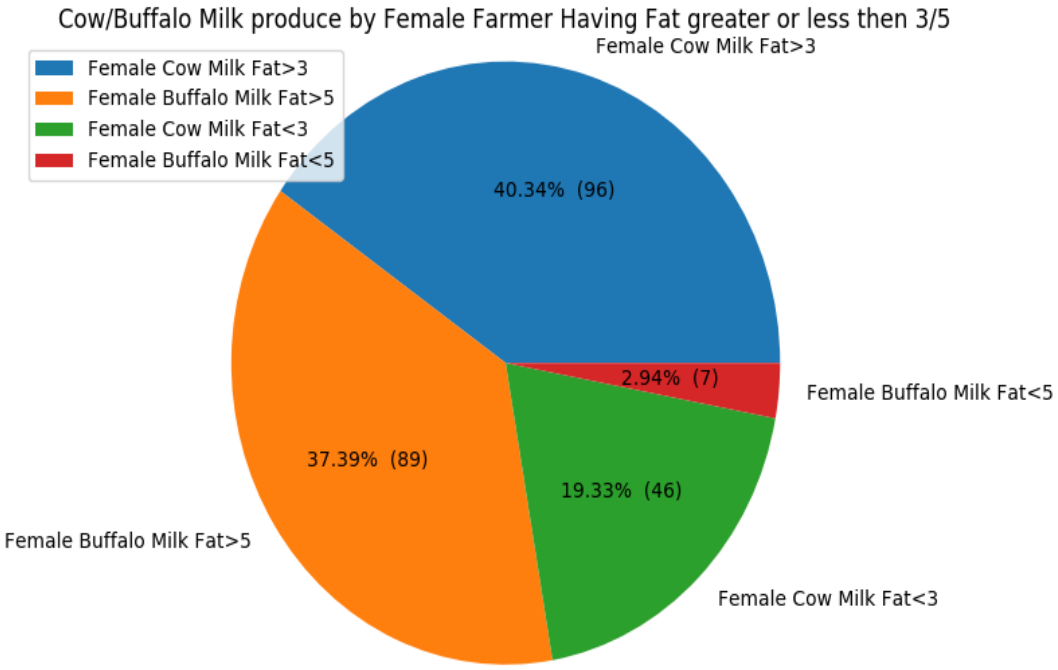
Usually Cow/Buffalo Milk should have SNF greater then 8.5 and so I iterated cow/buffalo milk sold by Male/Female farmer Having SNF high then 8.5. The result were so satisfying that milk sold to milking unit has SNF high then 8.5.

Then to check quality of milk, I created a plot of milk sold by Female and Male Having higher Fat(%).



[Figure 7 – Fat% in Cow/Buffalo Milk sold by Farmers]

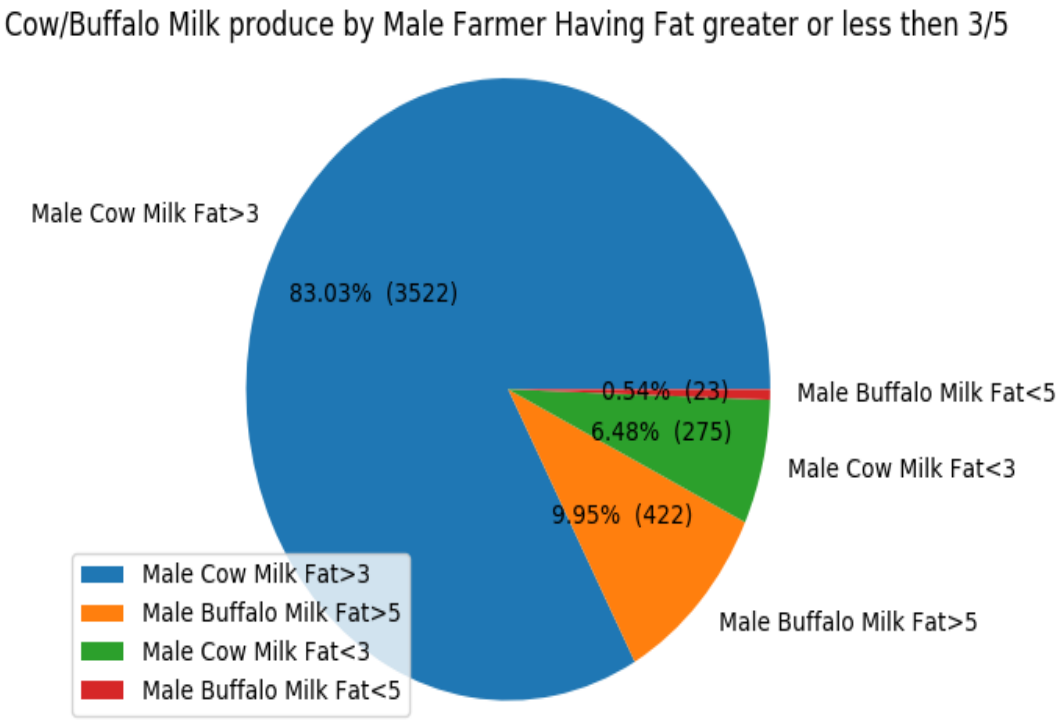
To check the quality of milk, cow milk should have minimum 3% of fat while buffalo milk should have minimum 5% of fat. So Rectifying the data, we found that almost 0.6% people have bad quality of Buffalo milk while 6.39% have bad quality of Cow Milk. We need to know that how many Male and female farmer produce bad/good quality of milk .



[Figure 8 – Fat% in Cow/Buffalo Milk sold by Female Farmers]

This chart represent that Female farmer produce 2.9% of buffalo milk which has fat % less than 5 while they sell 19.33% of cow milk having Fat % less then 3.

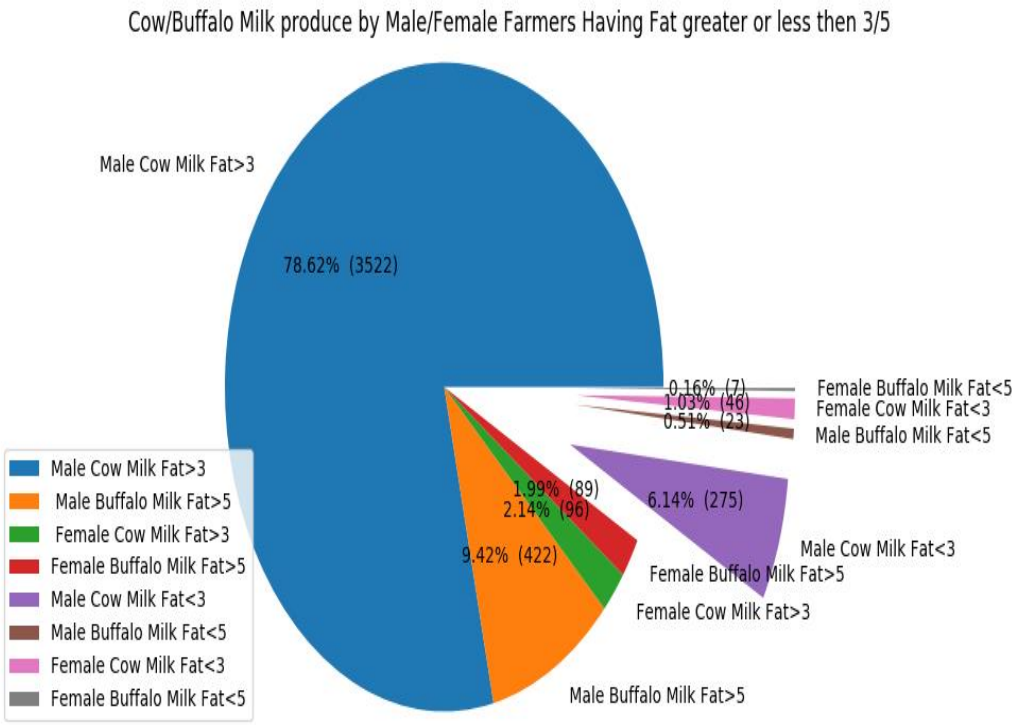
Lets take a look at quality of Milk sold by Male farmers.



[Figure 9 – Fat% in Cow/Buffalo Milk sold by Male Farmers]

In compare to Female farmers, Quality of Milk for Male Farmers is better. Male farmer Mostly sell Cow milk from which 6.48% of cow milk is of bad quality having fat % less then 3 while buffalo milk with fat % less than 5 is only 0.54% .

If we take the a plot for both type of Farmers, then Let's see how it represents.



[Figure 10 – Fat% in Cow/Buffalo Milk sold by Male/Female Farmers]

Overall for both Male and Female, 275 Males sell cow Milk and 46 Females sell cow Milk with fat% less then 3. As people sell less buffalo milk, the count for bad quality of buffalo milk is also less. Only 23 male and 7 Female produce buffalo milk having fat % less then 5.

Some Other data I obtained are

Total Amount Paid to Farmers are Rs 765352.46

Total Quantity milk Sold by farmer is 26153.4 ltrs

Minimum and Maximum MILK produce by a farmers are : ---

Minimum : BACHUBHAI.RUMASHIBHAI 0.5ltrs

Maximum : JESINGBHAI.BHANGUBHAI.GANVIT 71.4ltrs

Conclusion

From the above graphs it can be inferred that quality of milk matters. Also, we got which milk is sold more. Moreover, we have the graphs for segment and Categories, so if the milking unit focus more on buffalo milk then they can foresaw the quantity of milk obtain from that area. They can also know the quality of milk produce in that area as well as quantity of Cow/Buffalo milk produced at that specific area.