

2011

Consumption of Meat in Agra

Estimation of Meat Consumption in Agra city
and projection of meat consumption in
future

This document consists of detailed survey report and statistical data analysis.

Dinkar Rasayanic Services

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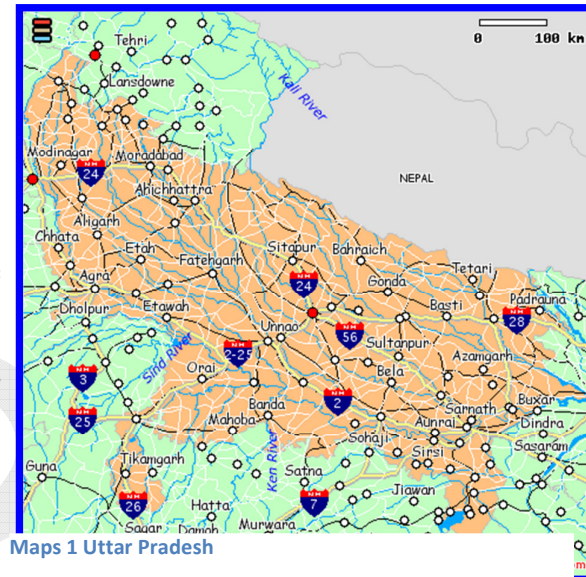
INTRODUCTION

1.1 BACKGROUND INFORMATION:

As per directives of Nagar Ayuct, Agra Nagar Nigam Agra, Consumption of meat in Agra Municipal Limit is assessed, wide work order No. 07/ D/VO/11, Dated 25-04-11.

1.2 ORIGIN AND DEVELOPMENT of Agra

Agra is the city of the inimitable Taj Mahal. The story of Agra begins much earlier than the Taj, However it finds mention in the epic Mahabharata when it was called Agrabana . Ptolemy, the famous second century A.D. Geographer, marked it on his map of the world as Agra. Tradition and legend ascribe the present city of Raja Badal Singh (around 1475 A.D.) whose Fort, Badalgarh, Stood on or near the site of the present Fort. However, the 12th century A.D. Persian poet Salman, too, speaks of a desperate assault on the fortress of Agra, then held by one King Jaipal, by sultan Mahmud of Ghazni. It was Mughals who finally nurtured Agra with the finest monuments architects could design: The Taj Mahal of Shah Jahan, Agra Fort of Akbar, Atmad-Ud-Daulah and neighboring Sikandra are but few of the many that spangle the city, each of which stands in mute testimony to the city's grandeur over the ages.



Maps 1 Uttar Pradesh

1.3 GENERAL TOPOGRAPHY:

Location, Boundaries and Weather:-The Agra district is situated in western U.P., between 27.11' degree Latitude North and 78°0' degree to 78°2' degree Longitude East. Its Altitude is 169 meters above sea level. On the North, it is bounded by Mathura District, On the South, it is bounded by Dhaulpur District,



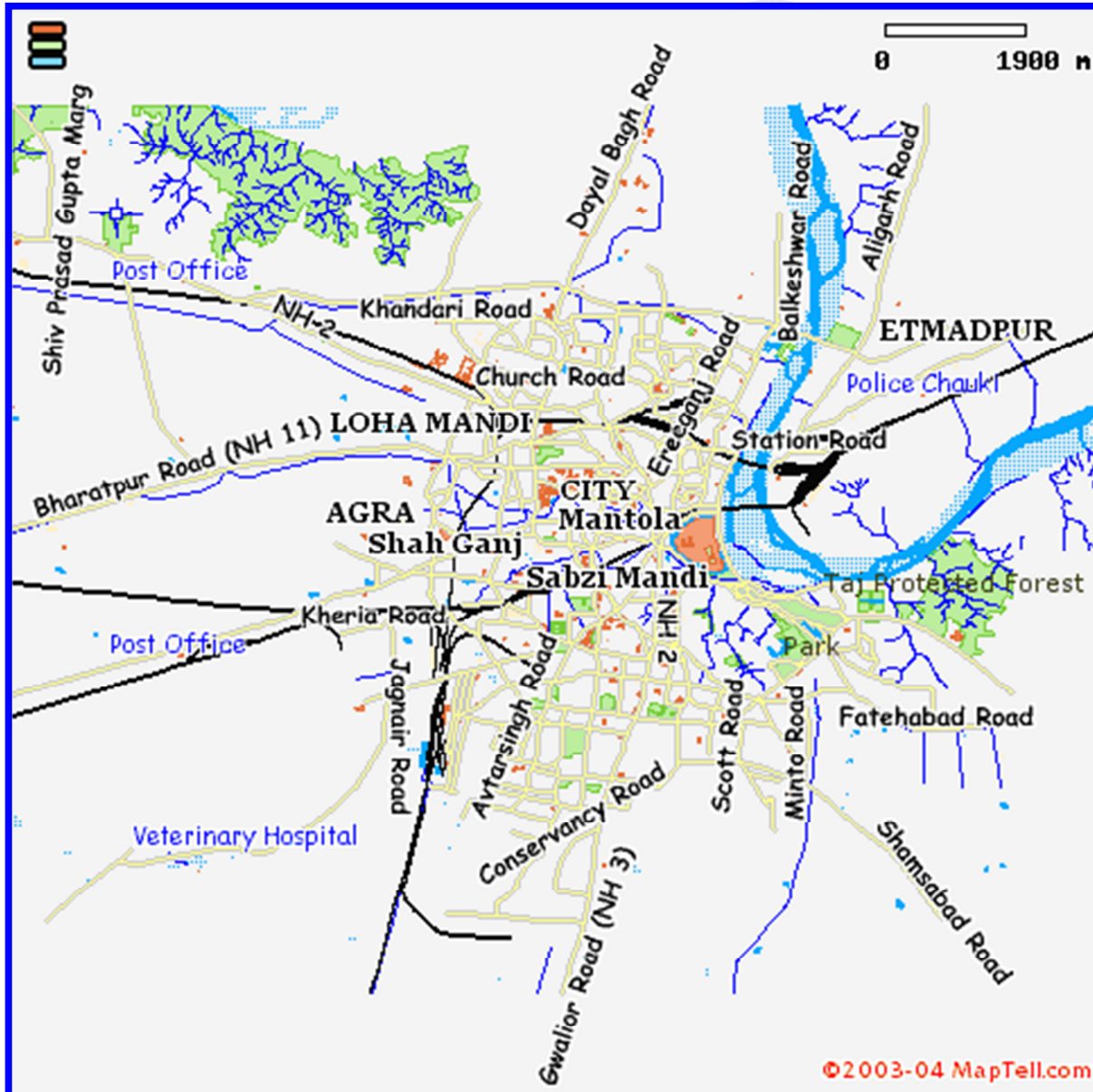
Maps 2 Agra District

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On the East, it is bounded by Firozabad District and On the West, it is bounded by Bharatpur. Agra is situated on the bank of Yamuna River.

Normal slope land is towards river Yamuna, Contour Survey is attached indicate that south & western part is higher than to the remaining part. Most of watershed area has natural drains (known as Nallah) carries the rain runoff and wastewater towards river Yamuna towards North East and East.

OVERVIEW OF AGRA CITY :



Maps 3 Area Surveyed

The city of Agra is divided into 25 Zones with a population of 9.48 Lac as per the 1991 census and spread over 141 Sq. Km. resulting in a population density of 6,724 persons per Sq. Km. The maximum temperature of Agra rises to 47 °C and drops down to 3 °C during winter seasons. The average annual rainfall at Agra is about 685 mm. The ground level of Agra varies from 170M to 150 M from Sikandra to Trans Yamuna. The underground stratum consists of mainly of loam, sandy soil and subsoil. water table is generally 20 to 30 meter below ground.

1.4 AREA AND POPULATION (Agra District):

According to Census 1991, the area of Agra district is 4027.00 sq. km., Where Rural area is 3838.60 sq. km. and Urban area is 188.40 sq. km.. Its Total Population is 27,51,021 out of which Males are 15,01,927 and Females are 12,49,094. Of the Total Population, 16,39,935 constitute the Rural Population and 11,11,086 are makes the Urban Population.

1.5 INFRASTRUCTURE :

The Agra district is divided into Six Tehsils and 15 Blocks. Total number of Nayay Panchayats in the district are 114 while Gram Sabhas stands at 636. The total populated villages are 904.

The total number of police stations in the district are 41 out of which 16 are in Urban area and 25 are in



Maps 4 Tehsil of Agra

Rural area. The total number of Railway Stations

(including Halts) are 29 and Bus Stands/Bus Stops are 144. Total length of Broad Gauge lines is 196 K.M. and Meter Gauge is 35 K.M.

1.6 TRANSPORT SYSTEMS: Agra is well connected by Road, Rail and Air as per following

Rail: has divisional office of NC Railways, having three major railway Stations i.e. Agra cantt., Raja Ki Mandi and Agra Fort, and two minor railway stations i.e. Idgah and Agra City.

1.7 ROAD: well connected, as it is situated on NH 2 and starting point of Agra Bombay Road.

Air: Agra civil air Port at Kheria.

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2 Back ground...

As per 1989 survey, India has the world's largest population of livestock, with nearly 191 million cattle, 70 million Buffaloes, 139 million Sheep and Goat, 10 million Pigs and over 200 million poultry. About 36.5% of Goat, 32.5% of Sheep, 28% of Pigs, 1.9% of Buffaloes and 0.9% cattle are slaughtered every year. The reported per capita availability of meat in India is about 1.4 kg per annum, which is rather low compared to 60-90 kg in European countries. As reported by the Ministry of Food Processing, as of 1989, a total of 3616 recognized slaughter houses slaughter over 2 million cattle and buffaloes, 50million sheep and goat, 1.5 million pigs and 150 million poultry annually, for domestic consumption as well as for export purposes. While the slaughter houses come under the purview of the animal husbandry division of Ministry of Agriculture mainly for the purpose of funding towards expansion and modernization activities, the respective local bodies are mainly responsible for day-to-day operation/maintenance of the slaughter houses. Most of the slaughter houses in the country are service-oriented and, as such, perform only the killing and dressing of animals without an onsite rendering operations. Most of the slaughter houses are more than 50 years old without adequate basic amenities viz. proper flooring, ventilation, water supply, lairage ,transport etc. In addition to these deficiencies, slaughter houses suffer from very low hygiene standard posing a major public health and environmental hazards due to discrete disposal of waste and highly polluted effluent discharge. Unauthorised and illicit slaughtering has also increased manifold and thus the related problems

2.1 CLASSIFICATION

At present there are no official norms for classification of slaughter houses. However, depending upon the type of animals slaughtered, the slaughter houses are classified into:-

- Large animal slaughter house (i.e. cattle, buffalo etc.)
- Goat and sheep slaughter house
- Pig slaughter house
- Poultry slaughter house

In order to assess the variations in pollution load with respect to number of animals slaughtered, Goat & Sheep slaughter houses are further classified into following categories:

1.	Large Scale	More than 200 large animals i.e. Bovines per day or more than 1000 goat and sheep per day.
2.	Medium Scale	More than 50 and upto 200 large animals or more than 300 upto 1000 goat and sheep/day.
3.	Small Scale	Less than 50 Bovines and 300 goat and sheep per day

Table 1 Classification

Large scale slaughter houses are located mainly in big cities, medium slaughter houses in district/towns while the small scale slaughter houses are scattered all over the country.

2.2 MAGNITUDE OF THE PROBLEM

With growing annual per capita meat consumption, high meat export potential, large non-utilisation of potential meat animals, the development of meat industry in India is controlled not by the Government but the existing market forces. The unorganised nature of this trade is the main feature in this industry that has not been able to use state of the art of technology available in global meat market. This sector is facing many problems and constraints while going for modernisation as under-mentioned: Subjects of slaughtering of animals and related activities are governed as State subjects under the provisions of Article 48 of the Constitution of India. There are religious and political controversies over the large animal slaughter particularly bullocks.

- A vociferous pressure group emerging out of religious feelings does hinder the modernisation of slaughter houses.

- The Government's policies do not permit slaughtering of younger animals.

Therefore, illegal slaughtering of calves is done in every city.

- Moreover the introduction of human slaughter methods have proved unsuccessful due to certain religion constraints, whereas existence of Powerful religious concern over cruelty to animals cannot be ignored.

- Due to Government control, religious beliefs and some of the constraints as explained above the ante-mortem and post-mortem inspections cannot be done at inadequately equipped slaughter houses and also it leads to illegal slaughtering of animals at a very high level.

- Animals are often available for slaughter only when they are useless for any other purpose.
 - Lack of care during the transportation results into cruelty to animals, weight loss and high mortality.
 - Many of the animals are of poor breeds for meat production and suffer from malnutrition, epidemic diseases and widespread parasitic infestation.
 - The meat industry is considered as unclean, unsocial and low caste occupation.
 - Comparatively small number of rich butchers who exploit the local labour force presently dominates the entire meat industry.
 - The long chain of middleman results in high mark of prices between the Farmer's gate and the terminal market. Because of the reasons stated above and the fact that most of the slaughter houses in the country are more than 75 years old and also there is a noticeable increase in illegal activities of slaughtering animals, the meat industry does not meet the standards for discharge of effluents as laid down and notified under the Environment (Protection) Act, 1986. Eating habit of non-vegetarian population is generally controlled by the prevailing market price of meat. It has been observed that meat from large animals is sold at one third of the price of mutton from sheep/goat or chicken and fish. The availability of large animals, i.e. bullocks and buffaloes has also increased over the years due to better breeding practices adopted in animal husbandry programmes, better veterinary care of animals and ever growing mechanisation of agriculture. Since the requirement of bullocks for farming purposes has decreased over the years, the dairy farmers sell the male calves at a younger age. The calf leather also fetches a good price for the butcher. The facilities available at meat markets are not good enough to keep the meat fresh for longer time. The butchers are not ready to bear the transportation costs for transporting meat from the slaughter houses to the shops. Hence, most of the butchers prefer to slaughter animals next to their shops. This particular scenario of illegal slaughtering at the door-step of the shops poses a great hazard to the local Governments not only from public health point of view but also for the disposal of wastes in a scientific manner. The wastes from slaughter houses and packaging houses are similar chemically to domestic sewage, but are considerably more concentrated. They are almost wholly organic, chiefly having dissolved and

Detailed survey report- Meat Consumption in Agra
suspended material. The principal deleterious effect of these wastes on streams and water courses is their DE oxygenation.

The types of waste produced by the separate operations are shown as under:-

s.no.	Source	Waste
1	Stockyard	Manure
2	Killing floor	Blood
3	Dehairing	hair and dirt
4	Insides removal	paunch manure and liquor
5	Rendering	stick liquor or press liquor
6	Carcass dressing	flesh, grease, blood, manure
7	By-products	grease, offal

Table 2 waste from animal slaughtering

2.3 OPERATIONS DURING SLAUGHTERING OF ANIMALS

Present Scenario *Slaughtering* In India mostly slaughtering of animals is done either by way of *halal or jhatka* method. Halal is the method preferred by Muslims and jhatka by the Hindus/Christians/Sikhs, etc. To slaughter the animals in a humane way stunning of the animals is prescribed, but in most of the cases stunning before slaughtering has yet not been adopted due to certain religious feelings.

2.3.1 BLEEDING

In both the above methods of slaughtering, blood collection is not done immediately on slaughtering and most of the blood goes down into municipal drains causing pollution. Blood of the animals, which can be collected for making use in pharmaceutical industry, is thus by and large lost. Due to inadequate facilities at the slaughter houses and scattered illegal slaughtering of animals, a very few slaughter housed collect blood.

2.3.2 DRESSING

Due to lack of means and tools, dehiding of the carcasses is done on the floor itself, which causes contamination of the meat. The hides and skins are spread on the floor

Detailed survey report- Meat Consumption in Agra of the slaughtering area. Similarly legs, bones, hooves etc. are not removed immediately from the slaughtering area.

2.33 EVISCERATION

This particular process during slaughtering generates maximum amount of waste. The butchers who carry out illegal slaughtering of animals generally throw visceral material at the community bins and wash the small intestines at their shops itself and thus create pollution problem.

The Supreme Court of India, High Courts in States and Lower Courts have taken serious view on environmental pollution and have in several cases ordered closing down of existing slaughter houses and flaying units and other such highly polluting industries. Therefore, it is the right time for the State Governments and Urban Local Bodies to chalk out plans for modernisation of slaughter houses. Central Pollution Control Board (CPCB) has brought out "*Draft Guidelines for Sanitation in Slaughter Houses*" during August, 1998 The Bureau of Indian Standards has also brought out the Indian Standard, IS : 4393 : 1979, as basic requirement for Abattoir (First Revision).

3. DEVELOPMENT OF QUESTIONNAIRE

3.1 CLOSE ENDED QUESTIONS

A close-ended question is a form of question which can normally be answered using a simple "yes" or "no", a specific simple piece of information, or a selection from multiple choices.

Examples include:

Question: Do you know your weight?

Answer: Yes.

Question: What is your weight?

Answer: 167 lbs.

Close-ended questions can be used for clarifying facts, verifying information already given or controlling a conversation, among other things.

Closed questions have the following characteristics:

- They give you facts.
- They are easy to answer.
- They are quick to answer.
- They keep control of the conversation with the questionnaire.

3.2 OPEN ENDED QUESTION

A close-ended question contrasts with an open-ended question, which cannot be answered with a simple "yes" or "no", or with a specific piece of information, and which give the person answering the question scope to give the information that seems to them to be appropriate. Open-ended questions are sometimes phrased as a statement which requires a response. Examples of open-ended questions: Tell me about your relationship with your supervisor.

Characteristics

- They ask the respondent to think and reflect.
- They will give you opinions and feelings.
- They hand control of the conversation to the respondent.
- see your future?

4 QUESTIONNAIRE

Table 3 questionnaire Door to Door

Survey for meat consumption in Agra at present and projection for yr.2031							
General information by (Observation)							
Name of area							
Ward No.							
House							
Flat							
Door No.							
Does family owns	car	two wheeler		Cycle		nothing	
General information about family	Gen	SC	ST	OBC			
Education level(which ever higher in family)	8Th	10th	inter	graduate	P.Graduate	More	
religion	Hindu	Muslim	Christian	Sikh	Jain	Parsi	other
Family Habit							
Food habits	vegetarian	non veg.	Only Egg				
No. of family member							
How many are no veg							
From how many years start non veg.							
Do you Cook at home	yes	no					
buy cooked food	yes						
How often	Daily	weekly	monthly	Occasionally			
Main consumption		KG					
	Goat						
	Chicken						
	Buffalo						
	Pig						
	Fish						
	Only eggs		Pcs				
Normal consumption							
Quantity	Kg/day/week/monthly						
Source of Meat	Shop						
	Self						
	Frozen						
	other						
name of surveyor							
date							

4.2 SOURCE & SUPPLY

Table 4 Source & Supply

**Survey for meat consumption in Agar Municipal limit by order of Nagar Ayukt
Nagar Nigam, Agra (order Dated**)

SOURCE/ SUPPLY

Name of area

Ward No.

Shopkeeper/source name

Product sale

	Kg/Day
Goat	
Chicken	
Buffalo	
Pig	
Fish	
sea foods	
Only eggs	Pcs/Dozen

Supply to

home	<input style="width: 300px;" type="text"/>
hotel& restaurant	<input style="width: 300px;" type="text"/>
retail seller	<input style="width: 300px;" type="text"/>
Small shops	<input style="width: 300px;" type="text"/>

Slaughtering

Own	<input style="width: 300px;" type="text"/>
Purchase	<input style="width: 300px;" type="text"/>
outsourcing	<input style="width: 300px;" type="text"/>

last three years detail

	Kg/Day	2011	2010	2009
Goat				
Chicken				
Buffalo				
Pig				
Fish				
sea foods				
Only eggs	Pcs/Dozen			

5 SELECTION OF QUESTIONS

Selections of questions is based on thought that subject may deny the actual Information, thus all inter related questions are asked to make sure that most reliable information is obtained by surrogated & direct questioned

Most of the questioned are close ended as is gives little room for the deviation in information, but supplemented by few open ended questions.

Most of questioned were aimed to ascertain living standards of people, their income, religion, region, family food habits, number of family members, how often they consume meat, their main consumption and source of meat.

6. SAMPLING

Sampling is a technique to determine the characteristics of the whole portion utilizing only a small segment. We use sampling when it is not possible to account or measure every item or thing in the population. Statisticians use the word population to refer not only to population but to all items that have been chosen for study. Statisticians use the word sample to describe a portion chosen from the population. Mathematically we can describe the samples and population by using measures such as the mean, median, mode and standard deviations.

- When this term describes the characteristics of the samples they are called statistics.
- When they describe the characteristics of the population they are called parameters.

Thus statistics is a characteristic of sample; a parameter is characteristics of population.

6.1 TYPES OF SAMPLING

There are two methods of selecting the samples of population

- Non-random or judgment sample
- Random or probability sample

In probability sampling all the items in the population have a chance of being chosen in the sample. In judgment sampling personal knowledge and opinion are used to identify the items from the population that are to be included in the sample. A sample selected by judgment sampling is based on someone's expertise about the population. The rigorous statistical analysis that can be done with probability samples cannot be done with judgment samples; they are more convenient and can be used successfully even if we are unable to measure their validity. But if a study uses judgment sampling and loses a significant degree of representativeness, it will have purchased convenience at too high price. That's why we adopt random or probability sampling.

7 RANDOM SAMPLING

Significantly in random sampling we can assess objectively the estimates of the population characteristics that result from our sample that is ,we can describe mathematically how objective our estimates are.

7.1 TYPES OF RANDOM SAMPLING

- Simple random sampling
- Systematic sampling
- Stratified sampling
- Cluster sampling

We have adopted the stratified sampling for the survey ..

7.2 STRATIFIED SAMPLING:

To use stratified sampling , we divide the population into relatively homogeneous groups , called strata . Then we use one of two approaches . Either we select at random from each stratum a specified number of elements corresponding to the proportion of that stratum in the population as a whole or we draw an equal number of elements from each stratum and give weight to the results according to the stratum's proportion of total population . with either approach , stratified sampling guarantees that every element in the population has a chance of being selected.

8 RELATIONSHIP BETWEEN SAMPLE SIZE AND STANDARD ERROR

The standard error is a measure of dispersion of the sample means around the population mean. If the dispersion decreases (if σ becomes smaller), then the values taken by the sample mean tend to cluster more closely around μ . Conversely, if the dispersion increases (if σ becomes larger), the values taken by the sample mean tend to cluster less closely around μ . We can think of this relationship this way: as the standard error decreases, the values of any sample mean will probably be closer to the value of the population mean. Statisticians describe this phenomenon in another way: As the standard error decreases, the precision with which the sample mean can be used to estimate the population mean increases.

Following examples will show this relationship both assume the same population standard deviation of 100.

When $n=10$

$$\begin{aligned} &= 100 / \sqrt{10} \\ &= 100 / 3.162 \\ &= 31.63 \dots\dots\dots \text{standard error of the mean} \end{aligned}$$

And when $n= 100$

$$\begin{aligned} &= 100 / \sqrt{100} \\ &= 100 / 10 \\ &= 10 \dots\dots\dots \text{standard error of the mean} \end{aligned}$$

What have we shown? As we increased our sample size from 10 to 100 (a tenfold increase), the standard error dropped from 31.63 to 10, which is only about one-third of its former value. This is true that sampling more items will decrease the standard error, but this benefit may not be worth the cost. A statistician would say, “the increased precision is not worth the additional sampling cost.” In a statistical sense, it seldom pays to take excessively large samples. Managers should always assess both the worth and the cost of the additional precision.

9 APPROACH TO FORECASTING

1. Carefully consider the objectives of forecasting short period or long period market share or industry as a whole.
2. Select appropriate method of forecasting.
3. Identify the variable which affects the demand of the product.
4. Collect relevant data to represent the variables.
5. Use statistical techniques and decide the most probable relationship between the dependent and independent variables.
6. Prepare the forecast and interpret the results.
7. Forecasts must be revised in case any improved information is available.
8. Forecasts may be made either in unit or in amount of sales. Further it may be made in terms of product groups and then divided into individual products on the basis of past percentages.
9. Forecasts may firstly be made on annual basis and then divided month-wise or week-wise on the basis of available past data.
10. To divide month-wise demand of new product, if the data of other firms are available then these data should be used otherwise a survey relating to problem should be conducted. This method can be used to forecast product-wise sales.

It is course difficult to state which of the methods is best. The suitability of the method depends on nature of manufactured product, available time, wealth and energy, necessary amount of accuracy etc. of an enterprise. However, in general, a good forecasting method possesses the qualifications as below:

(1) Accuracy: Various important plants are prepared on the basis of forecasts. In case of wrong forecasting, the business may be in trouble and suffer heavy losses. Hence it is necessary to have such forecasting system which amounts to maximum accuracy.

(2) Simplicity: Forecasting method should be as simple as possible. If it is difficult or technical then the person, who is engaged in forecasting job, will not do his job properly and there will be chances always for mistake. Some information's may also require to be collected from outsiders. If the method is complex or difficult then they may not be able to reply reasonably and

accurately.

(3) Availability: The objects and scope of forecasting should be as such as the relevant information's are collected immediately with reasonable accuracy.

(4) Stability: The data of forecasting must be such wherein the future changes are expected to be minimum and are reliable for planning.

(5) Economy: Costs must be weighed against the importance of the forecast to the operations of the business.

(6) Utility: The forecasting techniques must be easily understandable and reliable to the management

10 POPULATION FORECASTING METHOD

10.1 GENERAL CONSIDERATIONS

The design population will have to be estimated with due regard to all the factors governing the future growth and development of the project area in the industrial, commercial, educational, social and administration spheres. Special factors causing sudden immigration or influx of population should also be foreseen to the extent possible. A judgment based on these factors would help in selecting the most suitable method of deriving the probable trend of the population growth in the areas of the project from out of the following mathematical methods. Graphically interpreted where necessary.

Demographic Method of Population Projection

Population change can occur only in three ways.

- By births (population gain)
- ii. By death (population loss)
- iii. Migration (population loss or gain depending on whether movement out or movement in occurs in excess)

Annexation of an area may be considered as a special form of migration. A population forecast are frequently obtained by preparing and summing up of separate but related projections of natural increases and or net migration and is expressed as below. The net effect of births and deaths on population is termed natural increase (natural decrease, if death exceeds births). Migration also affects the number of births and deaths in an area and so, projections of net migration are prepared before projections for natural increase.

10.2 ARITHMETICAL INCREASE METHOD

This method is generally applicable to large and old cities. In this method the average increase of population per decade is calculated from the past records and added to the present population to find out population in the next decade. This method gives a low value and is suitable for well settled and established communities.

Incremental Increase Method

In this method the increment in arithmetical increase is determined from the past decades and the average of that increment is added to the average increase. This method increases the following:

10.3 GEOMETRICAL INCREASE METHOD

In this method percentage increase is assumed to be the rate of growth and the average of the percentage increase is used to find out future increment in population. This method gives much higher value and is mostly applicable for growing towns and cities having vast scope for expansion.

10.4 DECREASING RATE OF GROWTH

In this method it is assumed that rate of percentage increase decreases and the average decrease in the rate of growth is calculated. Then the percentage increase is modified by deducting the decrease in rate of growth. This method is applicable only in such cases where the rate of growth of population shows a downward trend.

10.5 GRAPHICAL METHOD

In this approach there are two methods. In one, only the city in question is considered and in the second, other similar cities are also taken into account.

Graphical method based on single city In this method the population curve of the city (i.e. the population Vs past decades) is smoothly extended for getting future value. This extension has to be done carefully and it requires vast experience and good judgement. The line of best fit may be obtained by the method of least squares. ii Graphical method based on cities with similar growth pattern In this method the city in question is compared with other cities which have already undergone the same phases of development which the city in question is likely to undergo and based on this comparison, a graph between population and decades is plotted and extrapolated.

10.6 LOGISTIC METHOD

The S shaped logistic curve for any city gives complete trend of growth of the city right from beginning to saturation limit of population of the city. This method is applicable for very large cities with sufficient demographic data.

Method of Density

In this approach the trend in rate of density increase of population for each sector of a city, is found out and population forecast is done for each sector based on the above approach. Addition of sector wise population gives the population of the city.

DRS

11. PROJECTIONS FOR POPULATION OF AGRA FOR YEAR 2031

YEAR	POPULATION	POPULATION DIFFERENCE	GROWTH RATE %
1961	462000	129000	27
1971	591000	190000	32.15
1981	781000	197000	25.22
1991	978000	297000	30.37
2001	1275000	238000	18
2011	1513000		

Table 5 Projected Population growth

Average growth rate(r) =26.548

Projection for year 2031 by geometrical mean method

$P_n = p_0 (1 + \text{average growth rate}/100)$

$p_n (2031) = 1513000(1 + 26.548/100)$

$= 1513000(1 + 0.26548)^2$

$= 2422978.16$

12. PROJECTIONS FOR PER CAPITA MEAT CONSUMPTION PER MONTH:

Meat type	Consumption according to survey (Kg/Month)	Per capita consumption
Goat	748.2	0.0854
Chicken	2051.55	0.234
Buffalo	1702	0.194
Pig	708.8	0.0808
Fish	509.85	0.0581

Table 6 Per Capita Meat Consumption per month of sample population

MONTHLY CONSUMPTION OF MEAT FOR THE POPULATION OF 8764 = 5720.4 Kg/month

PER CAPITA CONSUMPTION OF MEAT FOR THE POPULATION OF 8764 = 0.6214 Kg/month

13. MEAT CONSUMPTION FOR TOTAL POPULATION OF AGRA i.e. 1470000

Meat type	Ratio of total population to the population we have surveyed	Total consumption of meat (Kg/month) = ratio X consumption of sample population	Per capita consumption = Consumption of meat/ total population
Goat	167.7	125473.14	0.0854
Chicken	167.7	344044.93	0.2340
Buffalo	167.7	285425.40	0.1941
Pig	167.7	118865.76	0.0808
fish	167.7	85501.845	0.0581

Table 7 Estimated Per Capita Meat Consumption per month for entire population of Agra Town

14 Total number of vendors in Agra

Total number of vendors in Agra (Licensed).

Ans: 190 (2010)

Total number of slaughter house in Agra.

Ans: 4

Total number of unauthorized vendors in Agra (estimated).

Ans: 250

Disposal of waste.

Ans: for large animals only one rendering house is available and that too having capacity of 20-25 heads whereas the original number is about 150 -200 heads.

And for small animals there is no method of disposal till now.

15. DATA ANALYSIS

General information by (Observation)

Row Labels	Sum of Goat2	Sum of Chicken2	Sum of Baffalo	Sum of Pig2	Sum of Fish2
albatiya road	6	12	0	0	0
anand nagar	9.75	9.75	11.75	0	9
ashok nagar	27.5	33	3.5	0	4.5
awas vikas	0	0	0	0	0
awas vikas colony	18	28.5	0	0	0
azad nagar, khandari	0	0	0	0	0
bajrang nagar	6	53	2	0	10.5
balaji puram	0	9.75	0	0	6
balkeshwar	0	2	0	0	0
behind gurudwara	0	5.3	0	0	0.5
bhagwan nagar,balkeshwar	9.5	11	0	0	9
bindu katra	12.5	28.5	65.25	200.5	18
bodla	0	0	0	0	0
dayal bag	0	0	0	0	0
dayal nagar	0.5	5.5	0	0	2
dera saras ki mandi	88	94	388	0	24
gandhi nagar	7	47.5	0	0	21
gokul pura	0	0	0	12	0
hareesh nagar,sikandara	0	0.2	0	0	0
hathi pada	0	0	0	0	0
indra colony	0	22.5	6	0	5
jagdish pura	1.25	1.25	0	0	1.25
jaipur house,shahganj	0.25	0.25	0	0	0.25
jait pura	0	0	12	7.5	2
janta colony,shahganj	5	22.5	0	0	8
jat bazar	24	41	220	0	4
k k nagar	4	47.5	2	0	5.5
kailash puri	14	25.5	1	0	3
kailash vihar	3	5.5	0	0	1
kakoo gali	26	18	53.5	0	7.5
kalakunj(shahganj bodla road)	1.5	18.5	0	0	2.5
kalyan pura tahseel road	0	5	7	16	16
kalyanpura	4	19.5	12.5	15	39
kamla nagar	0	19	0	0	3
kargil petrol pump	0	0	0	0	0
karkunj	9	30.25	0	0	15.5
karwan	0	0	0	0	0
karwan gali	4	3	11	0	1
katra hati shah	1	0.5	0	0	0

Detailed survey report- Meat Consumption in Agra

khandari,pushppunj,phase-1	2	20.5	0	0	2.5
khandari,pushppunj,phase-2	6	17.5	8	0	13
khandari,pushpunj,phase-1	0	2	0	0	0
khandari,pusppunj,phase-1	0	0	0	0	0
khandari,suryalok	2	2	0	0	0
khataina	9.5	67.55	137.75	39.3	11.2
khatik para	11.5	134	7	0	11.5
lawyers colony	0	64.85	0	0	4
lohamandi	0	0	0	0	0
lohamandi road	10.5	51.25	0	2	3.5
lohamandi thana	0.25	0.25	0	0	0.25
madhav kunj	1	0	0	0	0
madhu nagar	14	36.75	0	0	20.5
madiya katra	6	20	0	0	3
maharishipuram	0	0	0	0	0
mangalam vihar,sikandara	2.1	2.6	0	0	2
matiya katra	4	7	0	0	0
mau road	2.5	42.5	0	0	5.5
mau road	1	3	0	0	0.5
nagla kazi pada sadan bhutti	81.5	75.25	50	1	25.5
nagla padi	4.5	11.75	0	0	1.5
nainani brahman	0	0	0	0	0
narotan kunj	3.5	4.5	0	0	1
neeraj nagar	5	9.5	0	0	0
nehra gali	12	22	91	0	0
new abaadi ,ram nagar	5.25	28	22.5	0	3.75
new agra	10.5	86	1	0	13
new lajpat kunj	0	0	0	0	0
new madhu nagar	0.5	12.75	0	0	5.55
north vijay nagar	0	2	2	0	0
old vijay nagar	0	0	0	0	0
panchvati	0	1.5	0	0	0
pandav nagar	0	17	0	0	5
police chauki,alam ganj	8	4	4	0	0
prem talkies(lohamandi road)	0.5	0.9	1	0	7.85
pushpanjali vihar,sikandara	2	2.5	0	0	1.5
ram mohan nagar	0.5	25.5	1	0	2.25
ram nagar puliya	0.5	0.5	0	0	0.5
rishipuram,sikandara	0	0	0	0	0
roman catholic mission compound	113.65	270.9	0	0	48.25
rui ki mandi,shahganj	0.25	0.25	0	0	0.5
sector10,awas-vikas	0	0	0	0	0
sector-16,sikandara	5.5	16.5	0.5	0	1
sector-4,bodla	0	0	0	0	0
sector-5,bodla	0	0	0	0	0

Detailed survey report- Meat Consumption in Agra

sector-6,awas vikas	0	0	0	0	0
sector-6,bodla	0	0	0	0	0
sector-6c,awas-vikas	0.5	2.5	0	0	0
sector-6E,awas-vikas	0.5	0.5	0	0	0
sector-7	0	6	0	0	1.5
sevla jah	34.5	10	8	142.5	28.5
shahganj	3.75	5.25	0.5	0	5.75
shyam nagar,shahganj bodla	0	3	0	0	2
surlok colony	0	1	0	0	0
surya lok colony,khandari	0	0	0	0	0
taj ganj	62.7	277.75	527.75	0	13.25
tila gokul pura	0.5	5.5	25.5	273	36.75
tota ka tal ,matiya katra	10	9.75	10	0	0
vajeer pura	24	25	9	0	7
vijay nagar	0	12.5	0	0	0.5
vishnu colony,bhojipura	4	10	0	0	1
Grand Total	748.2	2051.55	1702	708.8	509.85

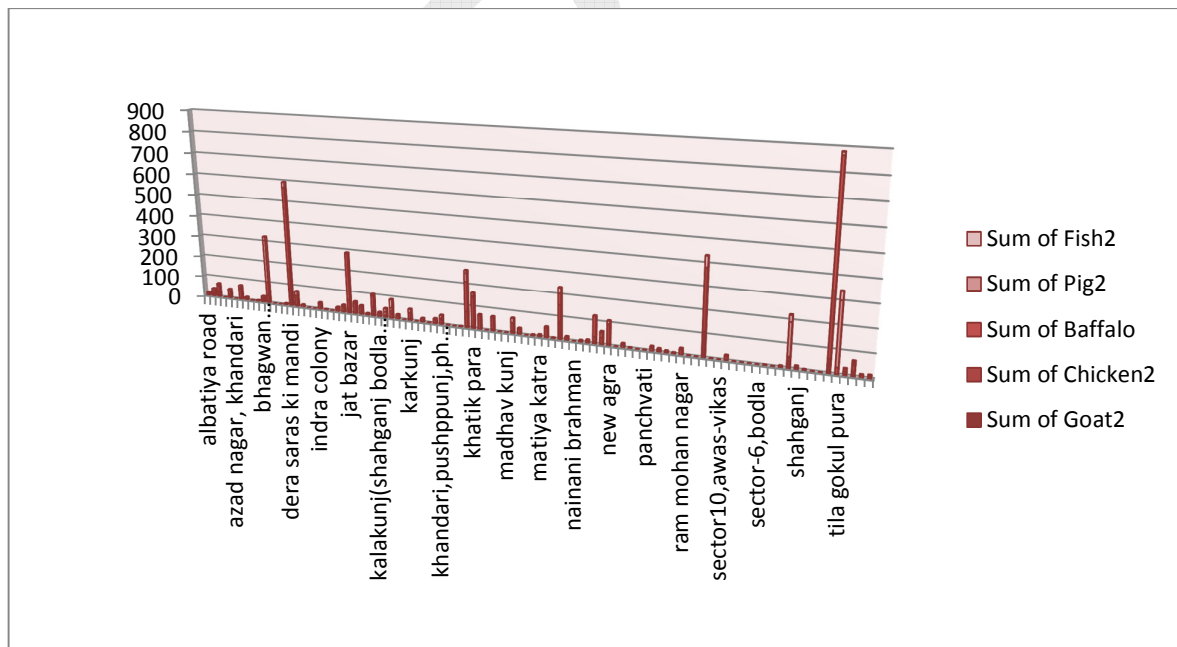


Figure 1 Area

Row Labels	Sum of No. of family member	Sum of No. of family member2
Christan	553	6.31%
Hindu	5705	65.10%
Jain	102	1.16%
Muslim	1797	20.50%
Others	281	3.21%
Sikh	326	3.72%
Grand Total	8764	100.00%

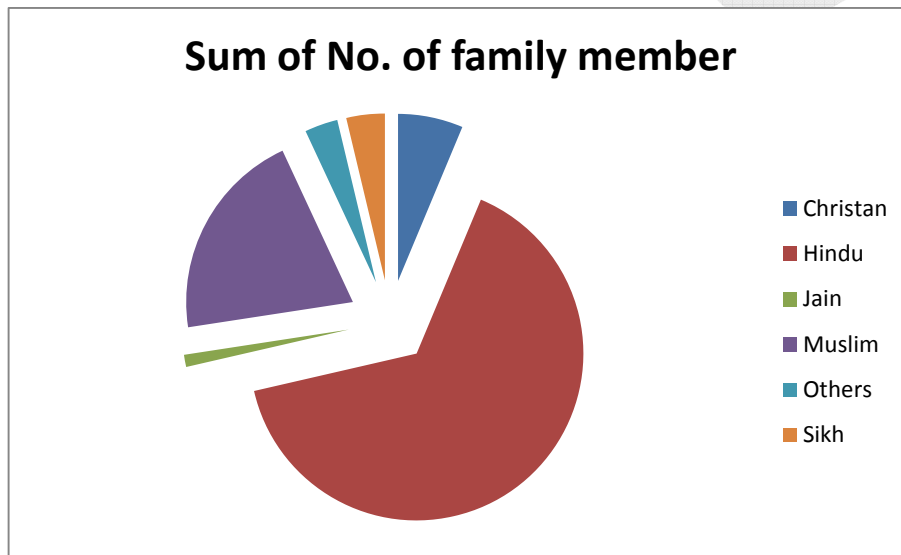


Figure 2 Sum of No. of Family member

Row Labels	Count of Religion	Count of Religion2
Christan	113	8.00%
Hindu	956	67.71%
Jain	21	1.49%
Muslim	225	15.93%
Others	43	3.05%
Sikh	54	3.82%
Grand Total	1412	100.00%

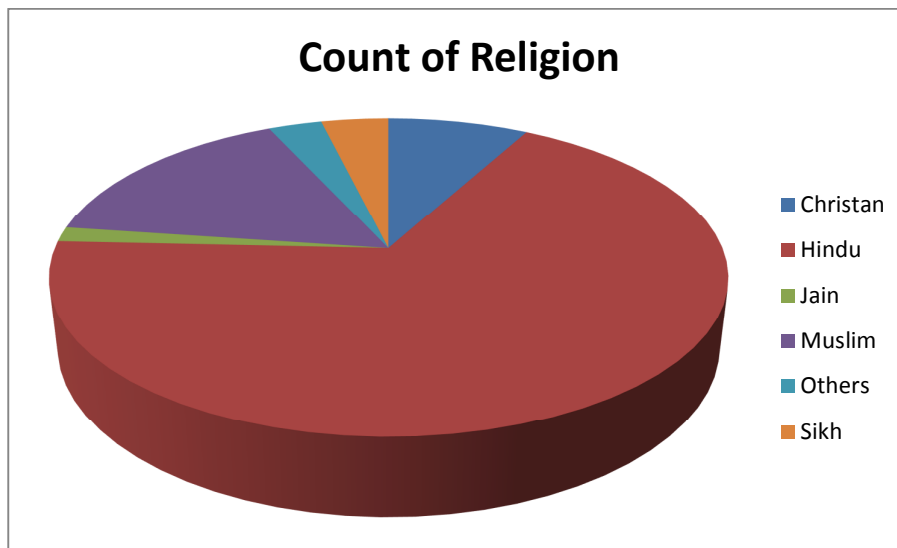


Figure 3 Count of Religion

Row Labels	Sum of total qty. of meat in kg /monthly	Sum of total qty. of meat in kg /monthly2
Christan	418.1	7.32%
Hindu	2155.9	37.75%
Jain	0	0.00%
Muslim	2565.9	44.93%
Others	309.5	5.42%
Sikh	261	4.57%
Grand Total	5710.4	100.00%

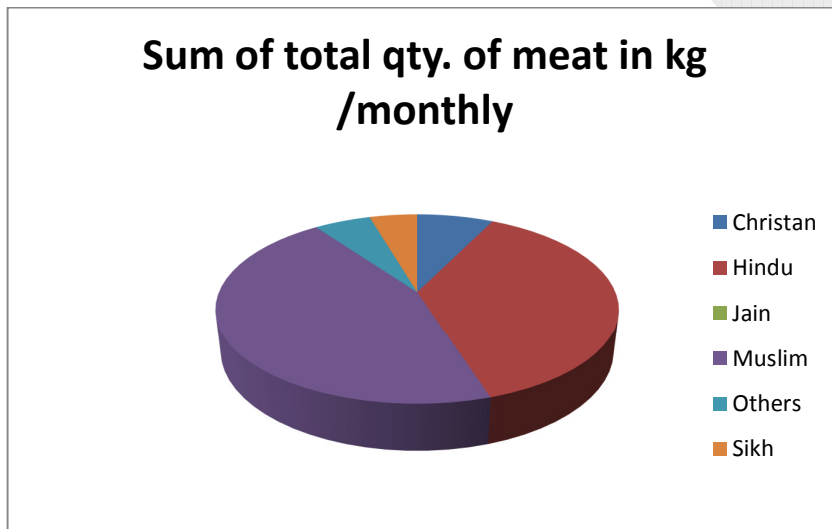


Figure 4 Sum of total qty. of meat in kg/monthly

Row Labels	Sum of No. of family member
NO	8416
YES	348
Grand Total	8764

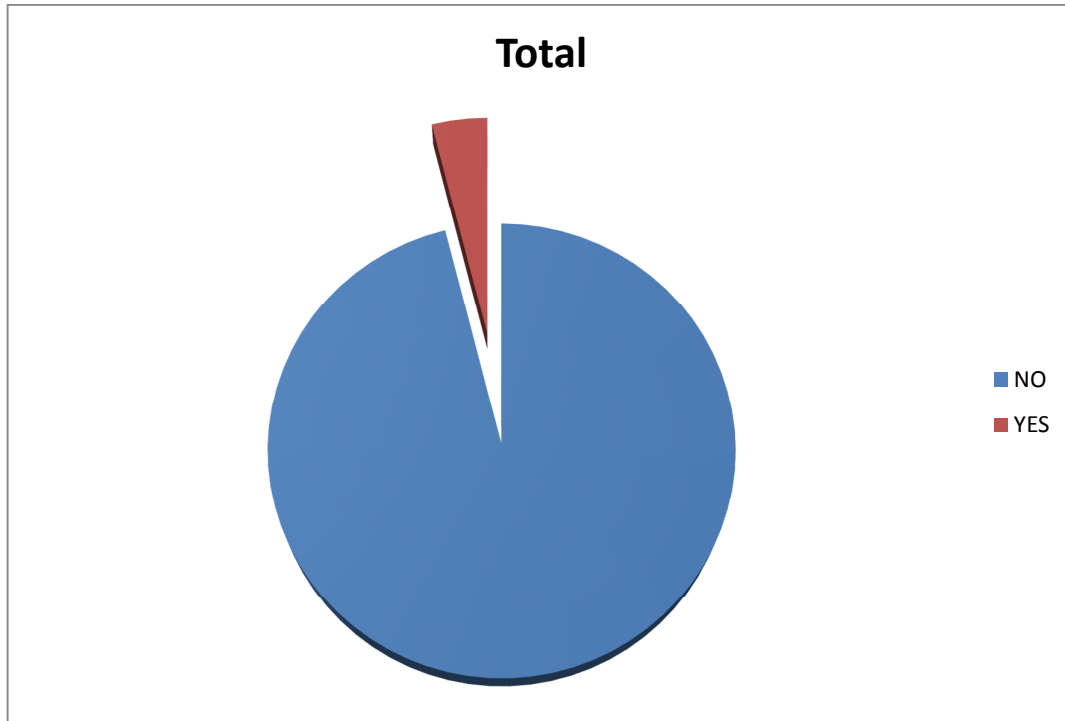


Figure 5 Family member

Does family owns

Row Labels	Sum of Fish2	Sum of Pig2	Sum of Chicken2	Sum of Goat2	Sum of Baffalo
Car	102	0	568.65	140.3	12
Cycle	164.35	312.3	329.1	152	656.25
Nothing	49.7	332.5	180.95	76.3	288.25
Two					
Wheeler	193.8	64	972.85	379.6	745.5
Grand Total	509.85	708.8	2051.55	748.2	1702

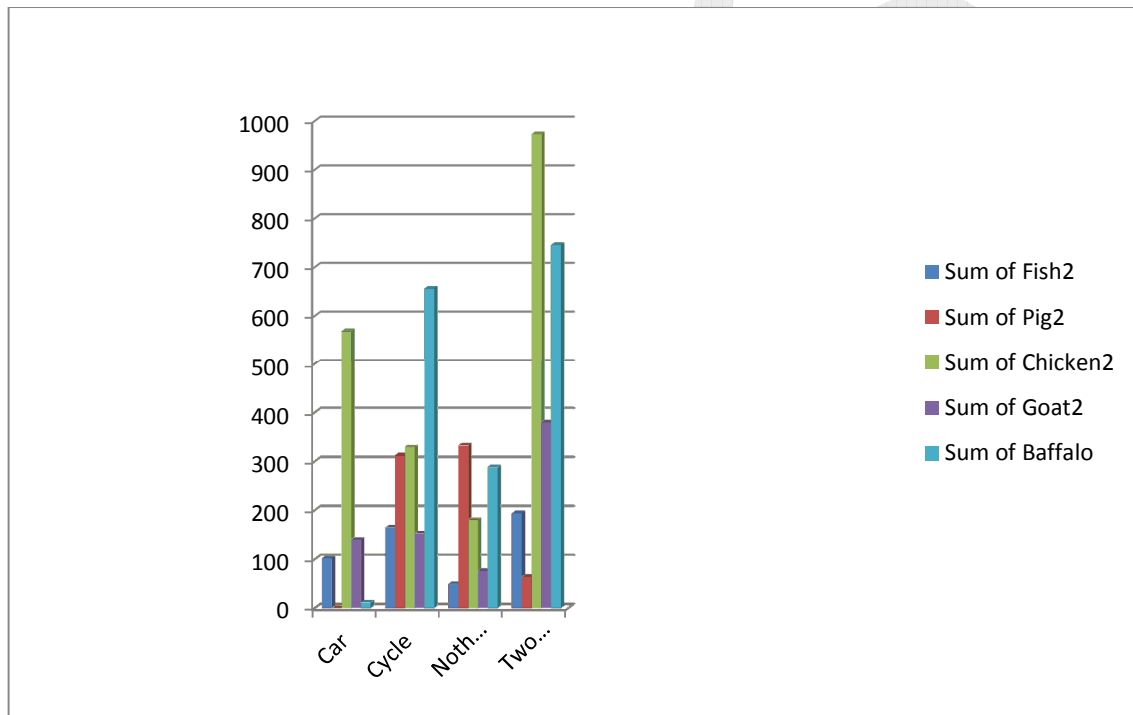


Figure 6 family Owns

General information about family

Row Labels	Sum of Goat2	Sum of Chicken2	Sum of Baffalo	Sum of Pig2	Sum of Fish2
GEN	200.25	807.1	17.75	0	168.75
OBC	238.5	618	1163	0	100.05
Other	115.45	274	343.5	123	43
SC	185	341.45	167.75	585.8	198.05
ST	9	11	10	0	0
Grand Total	748.2	2051.55	1702	708.8	509.85

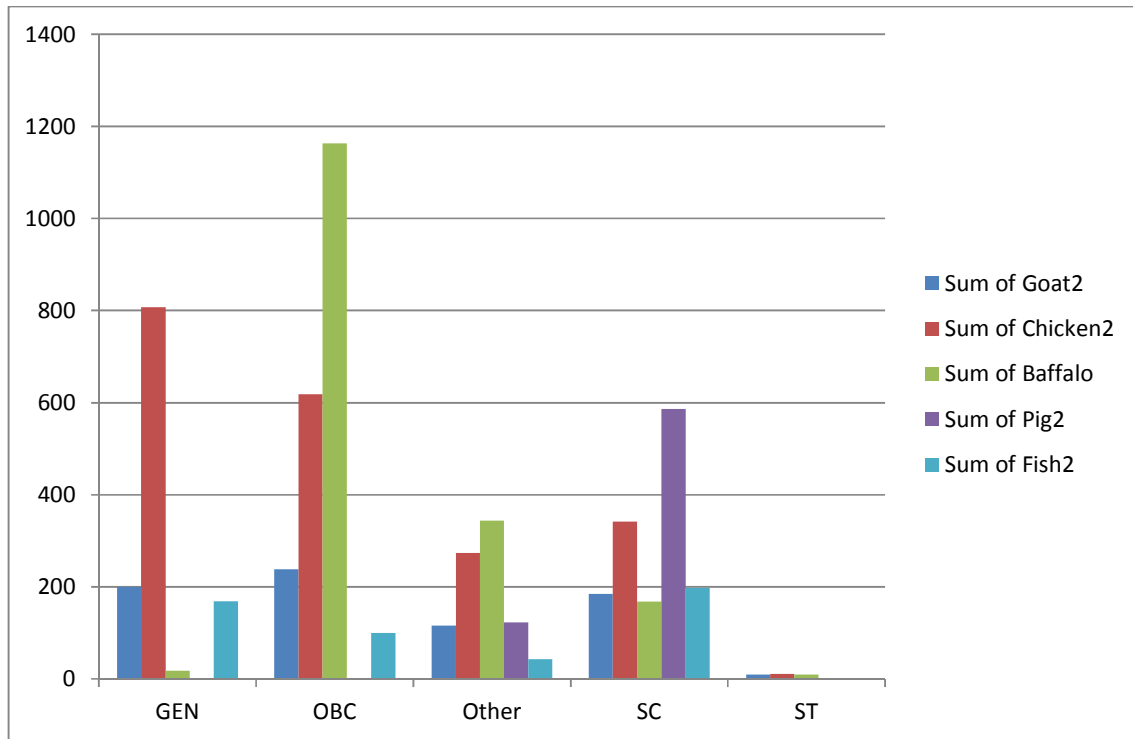


Figure 7 Gen Information about family

Education level (which ever higher in family)

Row Labels	Sum of Goat2	Sum of Chicken2	Sum of Baffalo	Sum of Pig2	Sum of Fish2
10th	139.15	305.35	412.25	60	91.25
8th	116.6	230.1	692	393.8	100.5
Graduate	235.85	814.45	129.25	4	128.8
Intermediate	127.55	336.95	222	38.5	76.45
More	2.5	1.5	0	0	2
None	60.25	98.9	239.5	212.5	44.1
Post graduate	66.3	264.3	7	0	66.75
Grand Total	748.2	2051.55	1702	708.8	509.85

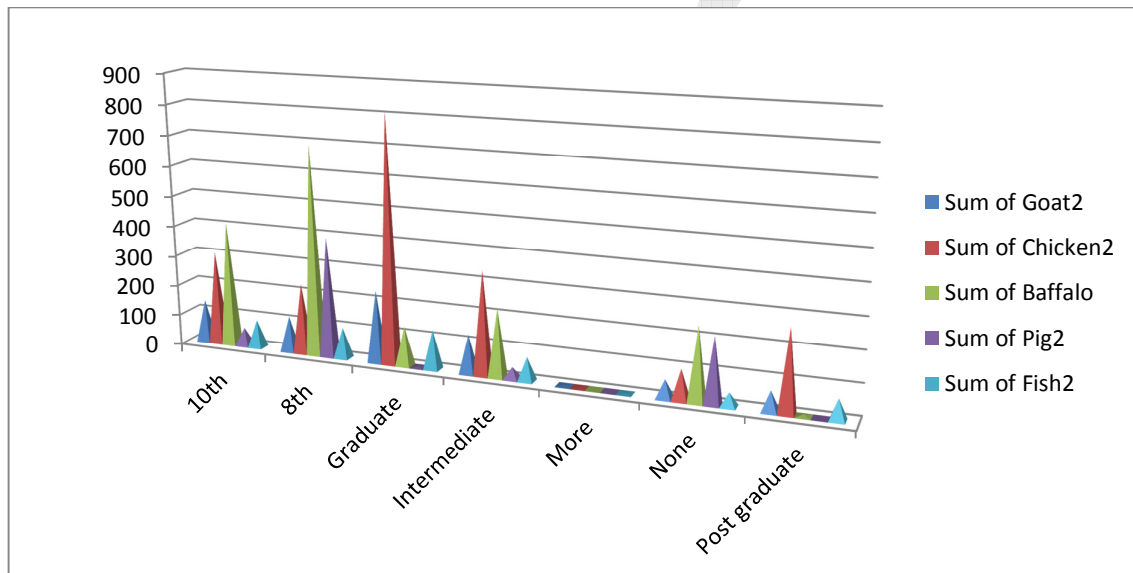


Figure 8 Education

Religion

Row Labels	Sum of No. of family member	Sum of No. of family member2
Christan	553	6.31%
Hindu	5705	65.10%
Jain	102	1.16%
Muslim	1797	20.50%
Others	281	3.21%
Sikh	326	3.72%
Grand Total	8764	100.00%

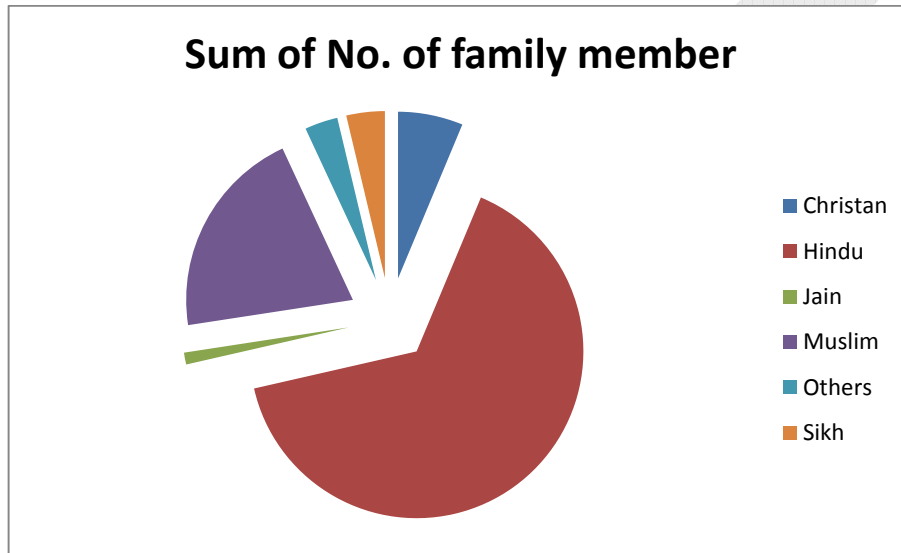


Figure 9 Religion

Family Habit

Food habits

Row Labels	Sum of No. of family member	Sum of No. of family member2
Non-Veg	5895	67.26%
Only eggs	298	3.40%
Vegetarian	2571	29.34%
Grand Total	8764	100.00%

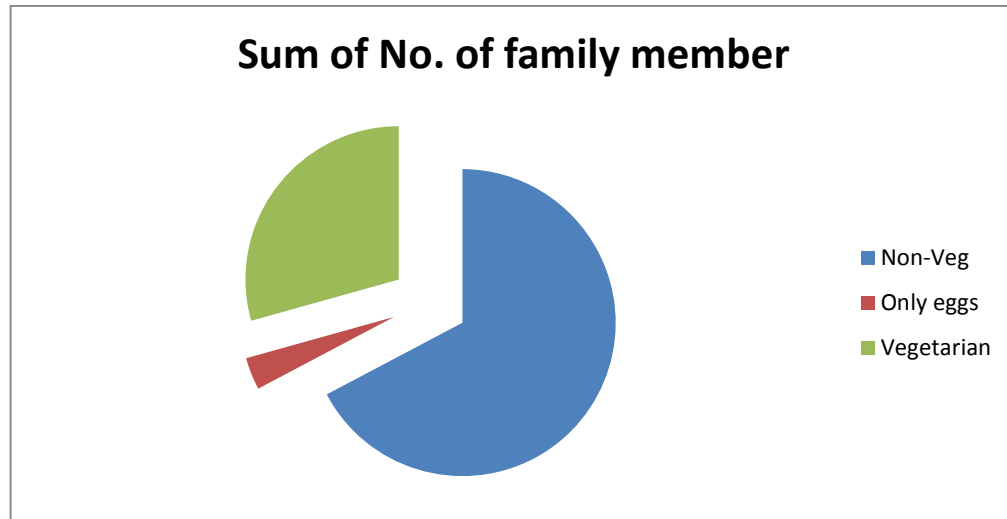


Figure 10 Food Habits

About Cook

Row Labels	Sum of No. of family member
Buy cooked food	1146
Cook at home	4800
No	2799
Grand Total	8745

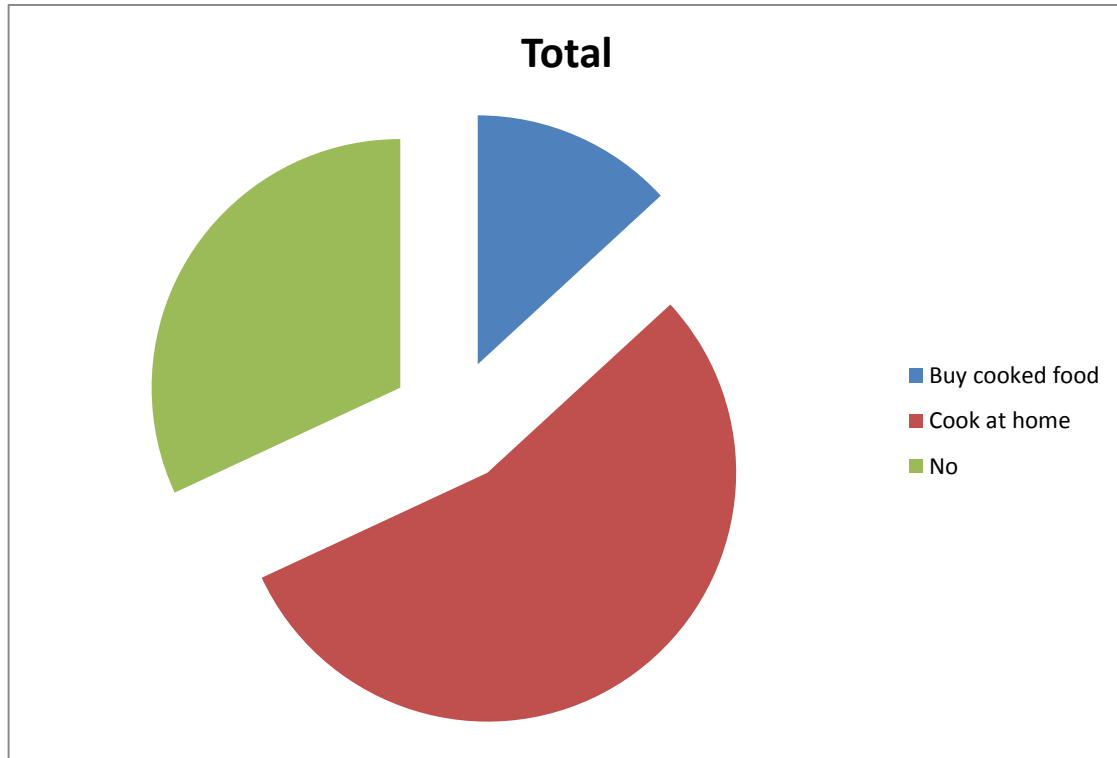


Figure 11 About Cook

How often

Religion	Sum of Goat2	Sum of Chicken2	Sum of Buffalo	Sum of Pig2	Sum of Fish2
Christian	113.65	273.9	0	0	48.25
Hindu	280.35	956.15	170	525.8	324.1
Jain	0	0	0	0	0
Muslim	309.2	563.75	1483	0	78.25
Others	15.5	71.75	36	183	22.25
Sikh	29.5	186	13	0	37
Grand Total	748.2	2051.55	1702	708.8	509.85

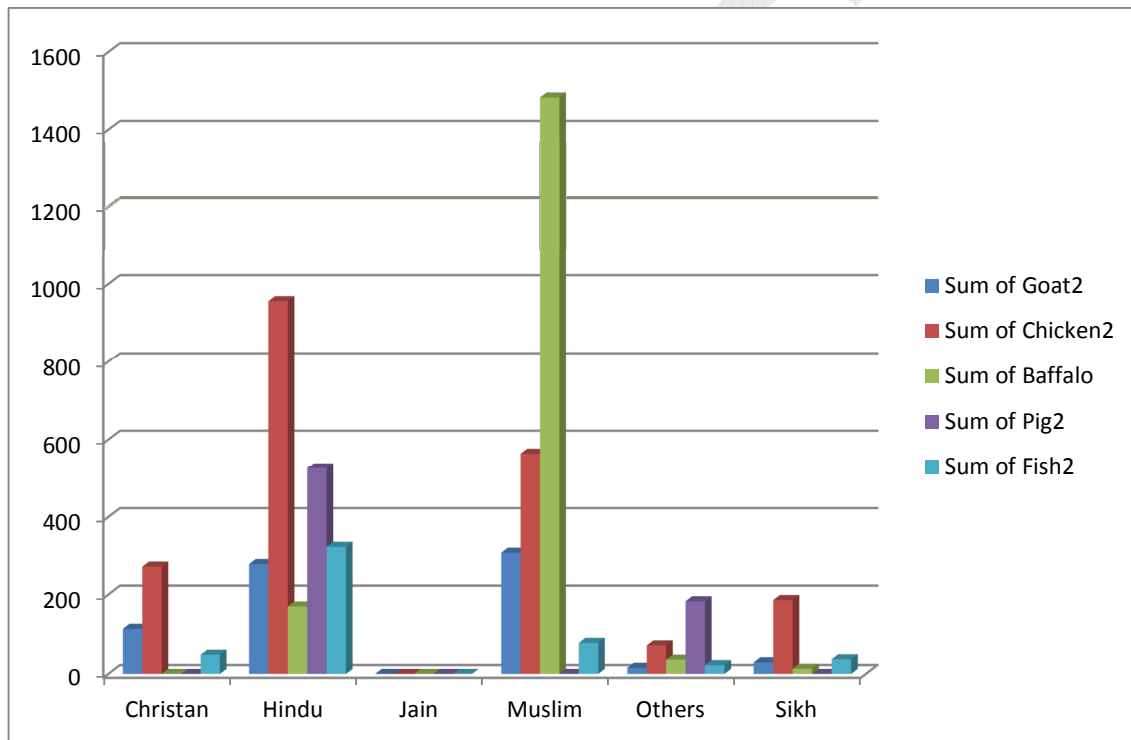


Figure 12 How Often

Main consumption

Religion	Sum of Goat2	Sum of Chicken2	Sum of Baffalo	Sum of Pig2	Sum of Fish2
Christan	113.65	273.9	0	0	48.25
Hindu	280.35	956.15	170	525.8	324.1
Jain	0	0	0	0	0
Muslim	309.2	563.75	1483	0	78.25
Others	15.5	71.75	36	183	22.25
Sikh	29.5	186	13	0	37
Grand Total	748.2	2051.55	1702	708.8	509.85

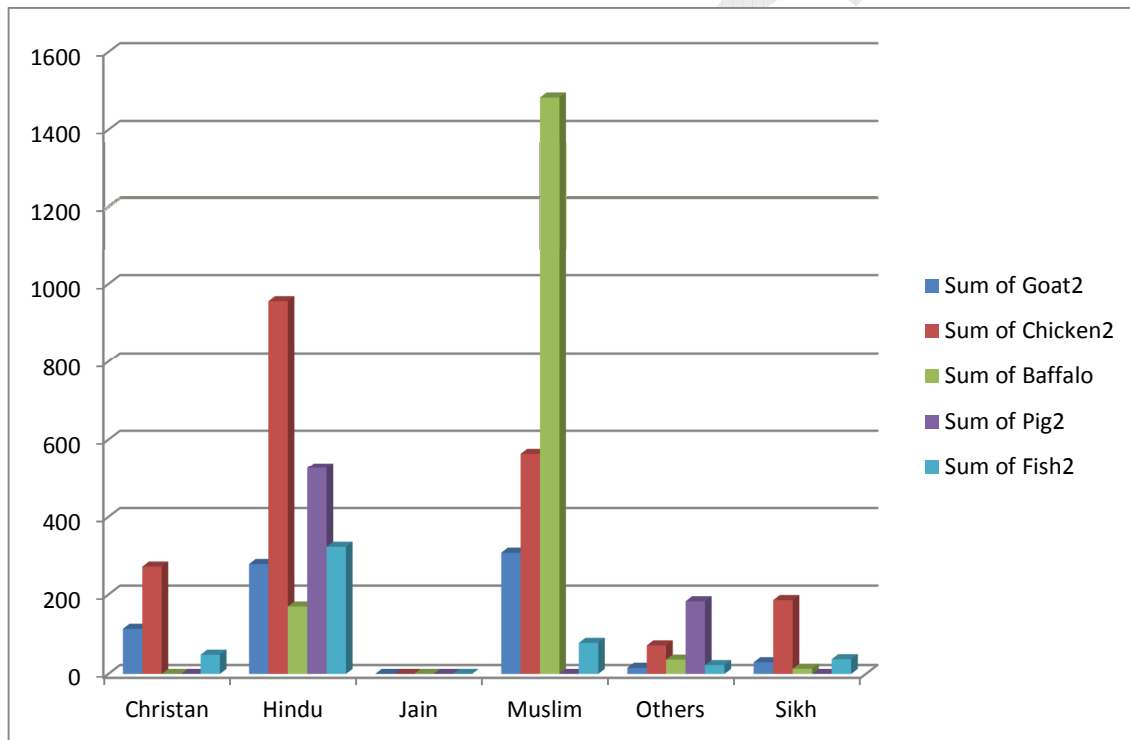


Figure 13 Main Consumption

Source of Meat

Row Labels	Sum of No. of family member
frozen	16
No	2799
Other	15
Self	297
Shop	5637
Grand Total	8764

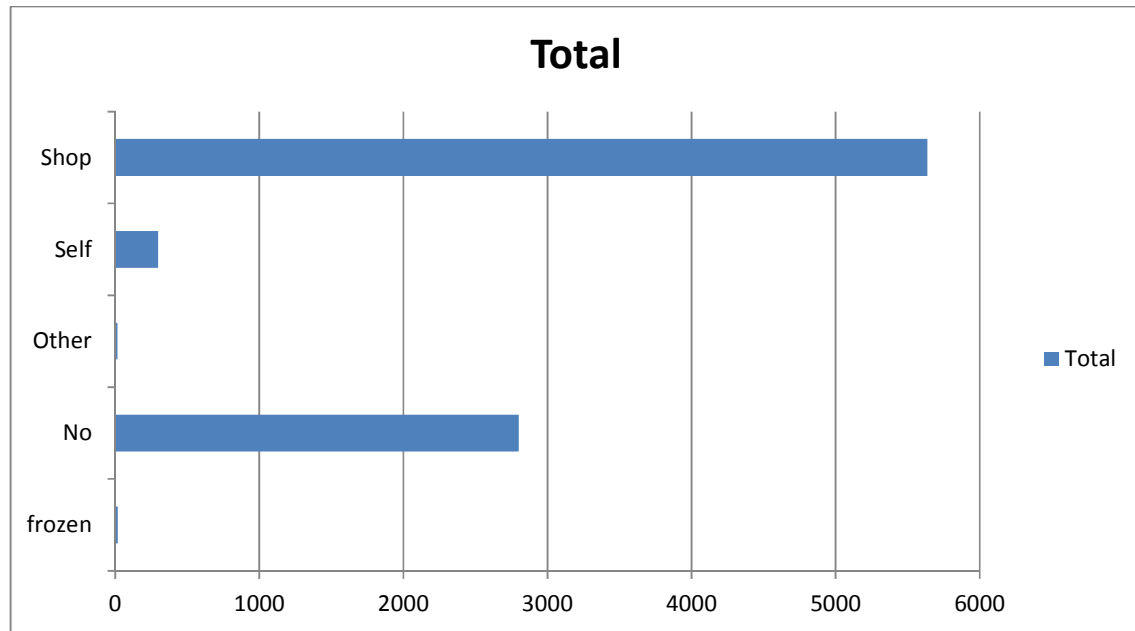


Figure 14 source of meat

CONCLUSION

A door to door survey was conducted with a sample size of nearly 0.7 % of population of targeted area, thus accuracy of projected results is within 30 %.

1. Per capita Meat consumption is as follows

Goat	125.5 Mt/month
Chicken	344.0 Mt/month
Buffalo	285.5 Mt/month
Pig	118.9 Mt/ month
Fish	85.5 Mt/month
2. From figure 4 it is interpreted that there is two major meat consuming groups out of which despite smaller number of population nearly 45% meat is consumed by Muslims., Hindu though largest group 65% of total population, consume only 37.75 % of total production. Jain is the only community which does not consume Meat or its products
3. There is clear correlation between family income to the type of meat consumption. As the family income grows it tends to change is meat consumption from low cost meat products to costlier products.
4. There is also clear relationship between standard of education to the higher educated family consumes costlier meat products, this could be due to higher income.
5. Only 29.34 % population is strictly vegetarian.
6. Nearly 13% of population consume pre-cooked meat products only.
7. Muslim population consume meat products with maximum frequency

As Assessed by

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