Project Report

future group

Udna hai. Aaj. Abhi.
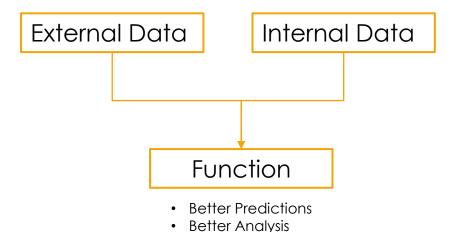
Aim

Help **Future Group** identify

- Target Market of each store and product

- Existing Consumer Segment of each product

- Demand of Food Products in every store-location

- New store-locations

- Better pricing strategy for existing and new stores

How ?

➢ Analyse the demographic distribution of the residents in the neighbourhood of a store

➢ Estimate the expenditure pattern and wealth index of the region

➢ Identify the food product requirements of the region

External Data	Internal Data

Function

- Better Predictions
- Better Analysis

❑ Identify the locations of 6 Easy Day Stores.

City	Store ID	Address	Place
New Delhi	110018	L29, LOK NATH MARG	Kirti Nagar
New Delhi	110018	Block F/ 123 Vikaspuri	Vikaspuri
New Delhi	11085	C2/8	Prashant Vihar
New Delhi	11075	Plot #11,12,16,17 Palam Extn.	Dwarka Sector-7
New Delhi	11058	B3/178 Janakpuri	Janakpuri
New Delhi	11092	MB 158 159 Master Block	Madhuban

Finding the customer

Location : Kirti Nagar

- Get a list of people living in the catchment area as defined for the store location.

- Obtain the names ,age ,sex

	Assembly Constituency	Polling Station Number	age	names	rel	relative	sex	Polling Station Number
0	kirtinagar	kirti nagar-43	24	Babul Shekh	Father	Rakib Shekh	M	BLOCK -C MANSAROVER GARDEN
1	kirtinagar	kirti nagar-43	33	Mahender Sihgh	Father	Prakash	M	BLOCK -C MANSAROVER GARDEN
2	kirtinagar	kirti nagar-43	50	Sonu Chauhan	Father	Jheelar Chauhan	M	BLOCK -C MANSAROVER GARDEN
3	kirtinagar	kirti nagar-43	54	Ramesh Giri	Father	Algu Giri	M	BLOCK -C MANSAROVER GARDEN
4	kirtinagar	kirti nagar-43	39	Moti Lal	Father	Kailash Prasad	M	BLOCK -C MANSAROVER GARDEN
5	kirtinagar	kirti nagar-43	39	Amlavati Moti	husband	Lal	F	BLOCK -C MANSAROVER GARDEN
6	kirtinagar	kirti nagar-43	36	Mantoo Ram	Father	Karu Ram	M	BLOCK -C MANSAROVER GARDEN
7	kirtinagar	kirti nagar-43	34	Naresh Giri	Father	Algoo Giri	M	BLOCK -C MANSAROVER GARDEN

Data Source – Electoral Rolls

Demography Analysis

- ## What we can understand ?

Electoral Rolls of the Catchment Areas

	Assembly Constituency	Polling Station Number	age	names	rel	relative	sex	Polling Station Number
0	kirtinagar	kirti nagar-43	24	Babul Shekh	Father	Rakib Shekh	M	BLOCK -C MANSAROVER GARDEN
1	kirtinagar	kirti nagar-43	33	Mahender Singh	Father	Prakash	M	BLOCK -C MANSAROVER GARDEN
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➢ Gender Ratio

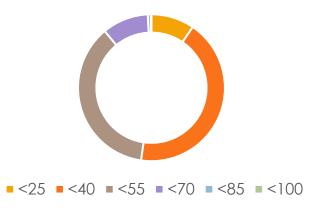➢ Age Groups

➢ Community Distribution

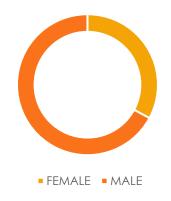➢ Religion Distribution

- Store ID - 110018

Catchment Area

Kirti Nagar

Age Distribution

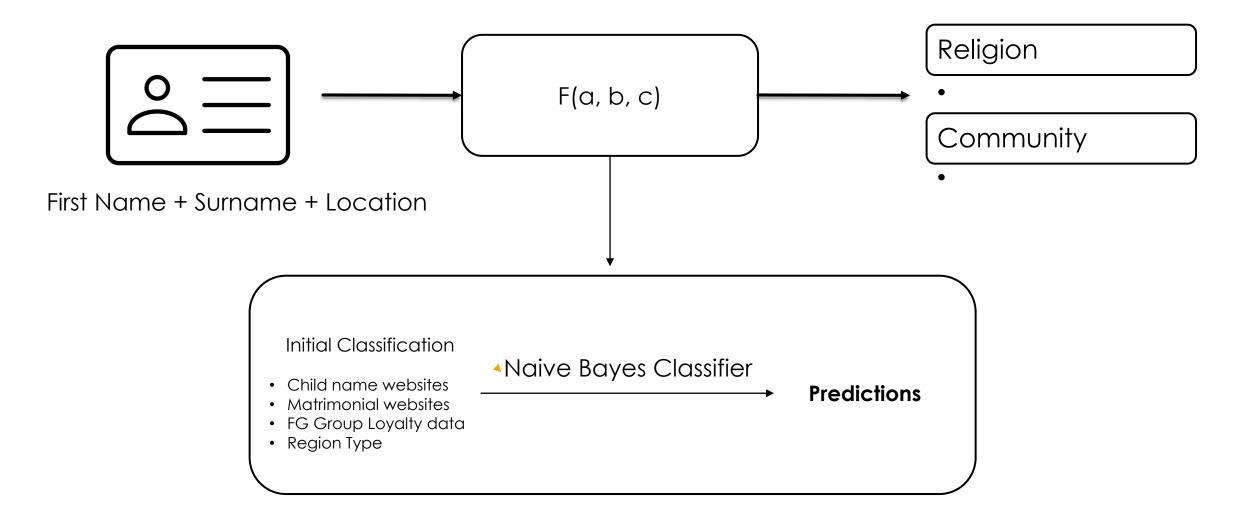■ <25 ■ <40 ■ <55 ■ <70 ■ <85 ■ <100

Gender Distribution

■ FEMALE ■ MALE

Time Series

Product
Sub-Category

✖

Age Distribution
Gender Distribution

❑ Prediction Model

First Name + Surname + Location → F(a, b, c) → Religion • Community •

Initial Classification

- Child name websites
- Matrimonial websites
- FG Group Loyalty data
- Region Type

Naive Bayes Classifier → **Predictions**
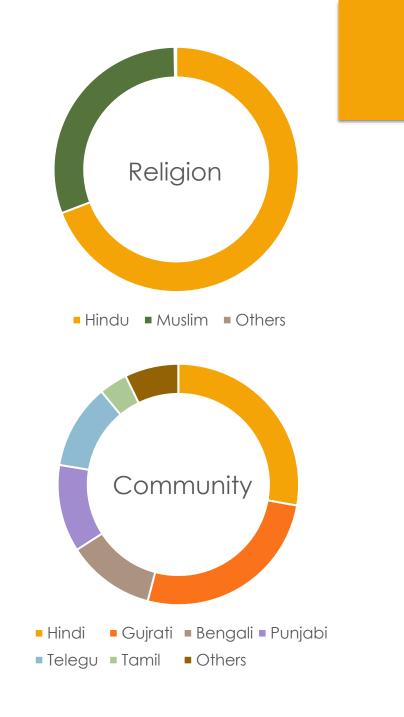
❑ Examples of Classification

```
In [31]: classifier.classify({'name':'rajit','surname':'bhattacharya'})
Out[31]: 'bengali'

In [32]: classifier.classify({'name':'rajit'})
Out[32]: 'hindi'

In [33]: classifier.classify({'name':'arnab','surname':'nandi'})
Out[33]: 'bengali'

In [34]: classifier.classify({'name':'subhankar','surname':'pandey'})
Out[34]: 'hindi'
```

```
In [38]: classifier.classify({'name':'aisik','surname':'das'})
Out[38]: 'oriya'

In [39]: classifier.classify({'name':'aisik','surname':'paul'})
Out[39]: 'bengali'

In [40]: classifier.classify({'name':'aisik','surname':'pyne'})
Out[40]: 'bengali'
```

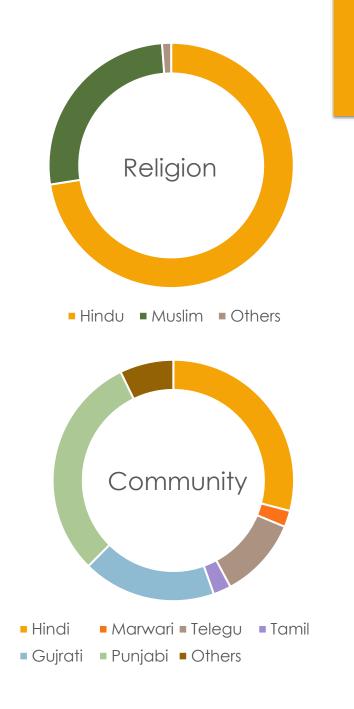- 82% accuracy achieved using existing model

Store ID - 110018

Catchment Area

Kirti Nagar

Religion

- Hindu
- Muslim
- Others

Community

- Hindi
- Gujrati
- Bengali
- Punjabi
- Telegu
- Tamil
- Others

- Store ID - 11058

Catchment Area

Janakpuri

Religion

- Hindu ■ Muslim ■ Others

Community

- Hindi ■ Marwari ■ Telegu ■ Tamil
- Gujrati ■ Punjabi ■ Others

- Store ID - 11085

Catchment Area

Prashant Vihar

Religion

HINDU   MUSLIM   OTHERS

Community

HINDI   MARWARI   TELEGU   TAMIL   GUJRATI   PUNJABI   OTHERS

- Store ID - 110018

Catchment Area

Vikaspuri

Religion

■ Hindu ■ Muslim ■ Others

Community

■ Hindi ■ Gujrati ■ Bengali ■ Punjabi
■ Telegu ■ Tamil ■ Others

- Store ID - 11075

Catchment Area

Dwarka Sector-7

Religion

- Hindu
- Muslim
- Others

Community

- Hindi
- Gujrati
- Bengali
- Punjabi
- Telegu
- Tamil
- Others

- Store ID - 11092

Catchment Area

Madhuban

Religion

- Hindu
- Muslim
- Others

Community

- Hindi
- Gujrati
- Bengali
- Punjabi
- Telegu
- Tamil
- Others

❑ Validation

- Census 2011 Tables

Community
Hindi Urdu Punjabi Maithili Bengali

Religion
Hindu Muslim Others

However, classification prediction would give a far more accurate picture because of migration trends over time.

❑ How will this help ?

Identify your target market

Which product caters more to which Age Group
Which product caters more to which Gender?
Which product caters more to which Religion Group?
Which product caters more to which Community Group?

Demography Analysis

Internal Sales Data

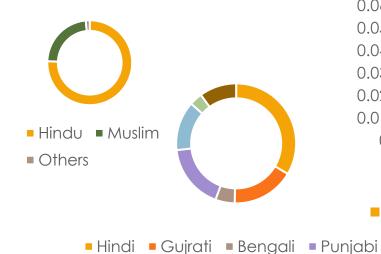Form Customer Clusters and map to products

Ingredient Distribution

- Predicting food ingredient demand location-wise

  ➢ Select Location

  ➢ Get Religion & Community Mix

  ➢ Obtain Ingredient Map of Place

Food Map of India

- Community vs Cuisine vs Ingredient

```
Recipe websites
Cookbooks
```
→ Bag of Words →

Ingredient	Bengali	Gujarati	Marwari	Punjabi	South Indian
Black Pepper	0.003077	0.004597	0.003989	0.000704	0.007808
Chana Dal	0.002051	0.002758	0.005186	0.002499	0.020095
Milk	0.047692	0.012085	0.016422	0.016695	0.010239
Curd	0.014872	0.025483	0.022904	0.023282	0.013828
Cheese	0.015385	0.003153	0.005618	0.02385	0.003328

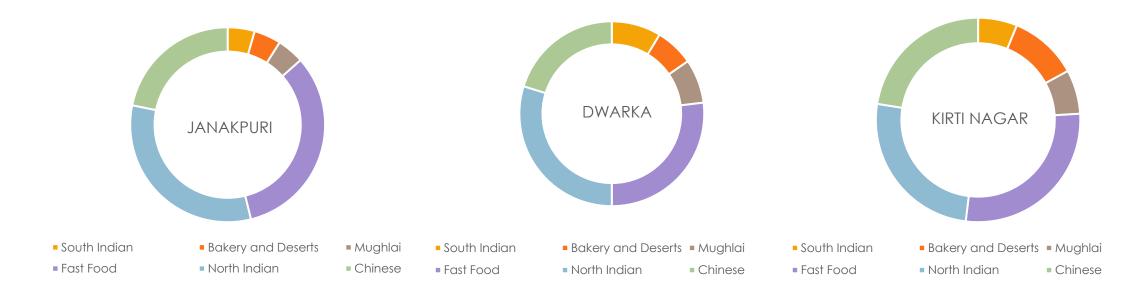- Observing consumption patterns will help us market products to locations based on community distribution.

Eating-out Habits

- Identify cuisines of restaurants, food joints in catchment area. } Zomato-like sites
- Find popularity of these restaurants, food joints.
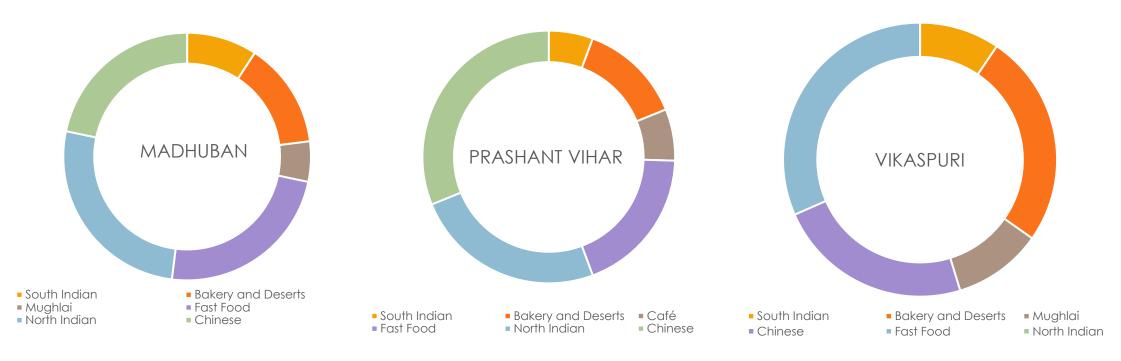
Formulate Cuisine Distribution of Catchment Areas

Eating-out Habits

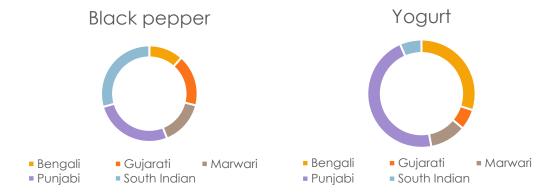- Finding existing preferred cuisines in locations of the stores

JANAKPURI

- South Indian
- Bakery and Deserts
- Mughlai
- Fast Food
- North Indian
- Chinese

DWARKA

- South Indian
- Bakery and Deserts
- Mughlai
- Fast Food
- North Indian
- Chinese

KIRTI NAGAR

- South Indian
- Bakery and Deserts
- Mughlai
- Fast Food
- North Indian
- Chinese

Eating-out Habits

- Finding existing preferred cuisines in locations of the stores

MADHUBAN

South Indian
Mughlai
North Indian
Bakery and Deserts
Fast Food
Chinese

PRASHANT VIHAR

South Indian
Fast Food
Bakery and Deserts
North Indian
Café
Chinese

VIKASPURI

South Indian
Chinese
Bakery and Deserts
Fast Food
Mughlai
North Indian

❑ How will this help ?

➢ Ingredient-community distribution

Black pepper

Yogurt

- Bengali
- Gujarati
- Marwari
- Punjabi
- South Indian

- Bengali
- Gujarati
- Marwari
- Punjabi
- South Indian

Predict demand of Food Items sold in Easy Day stores.

➢ Community & religion distributions

➢ Existing product-wise sales data of stores
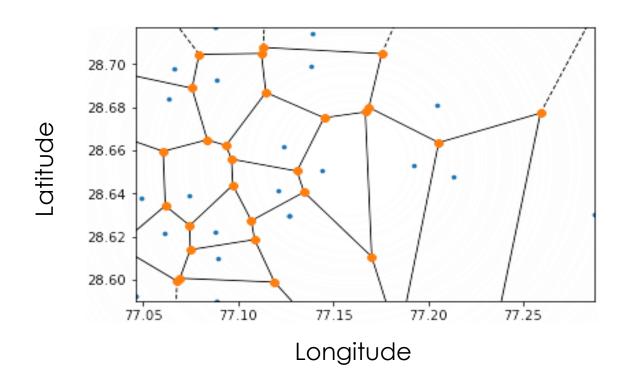
➢ Eating-out habits in around store locations

❏ Voronoi Diagram

Identify points in West & North-west Delhi surrounding the 6 store-locations with distinct land rates
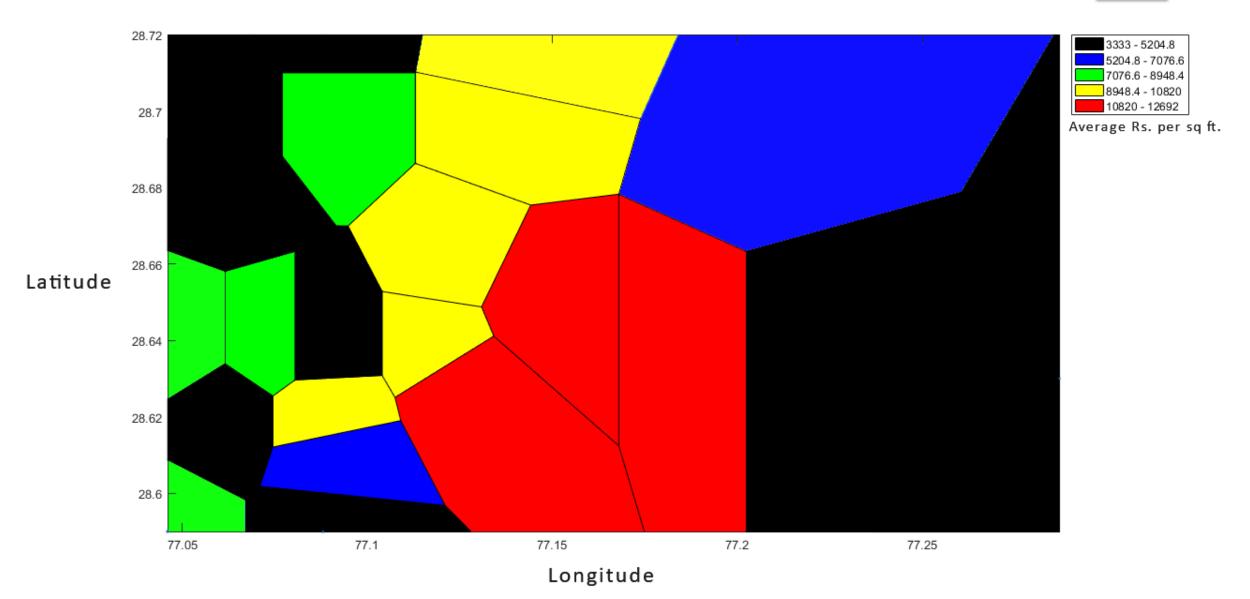
↓

Form the Voronoi Diagram based on the points

↓

Smoothen the area using Gaussian Filter.

↓

Incorporate residential factor & wealth index from Asset Data in Census 2011.

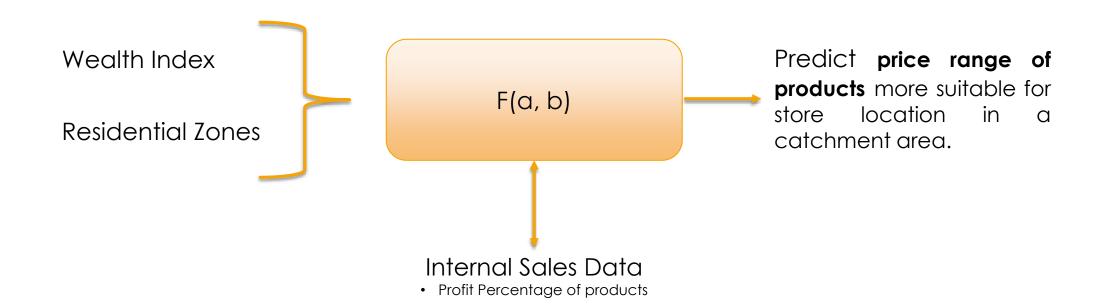Breaking the region surrounding the 6 stores into 5 economic zones

$F_{(Asset\ Value,\ Percentage\ of\ Households,\ Land\ Rate)}$ ⟶ Wealth Index

Property Sites
{
Property Rates

Rental Rates
}

Census 2011
{
Asset Data
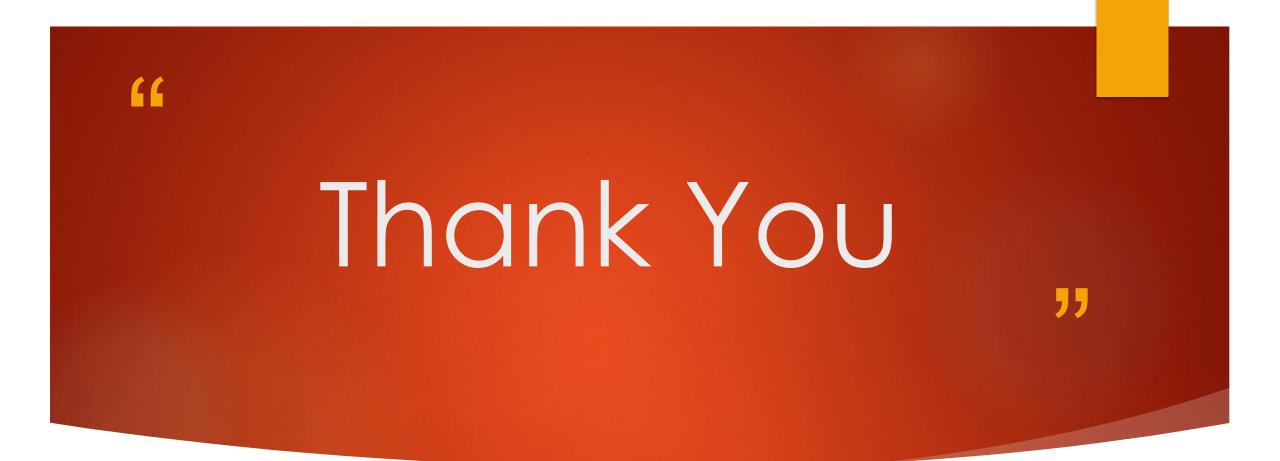
Residential Zones
}

❖ Formulate Wealth Index of a place

❖ Identify Residential Zones

Area Type

■ Residential ■ Commercial

❑ How will this help ?

Wealth Index

Residential Zones

F(a, b)

Predict **price range of products** more suitable for store location in a catchment area.

Internal Sales Data
- Profit Percentage of products

" Thank You "

- ➢ Rajit Bhattacharya
- ➢ Aisik Paul
- ➢ Ankit Das
- ➢ Aditya Chowdhury