

# **The Battle of Neighborhoods: Pune City**

Author: - Priyesh Peswani

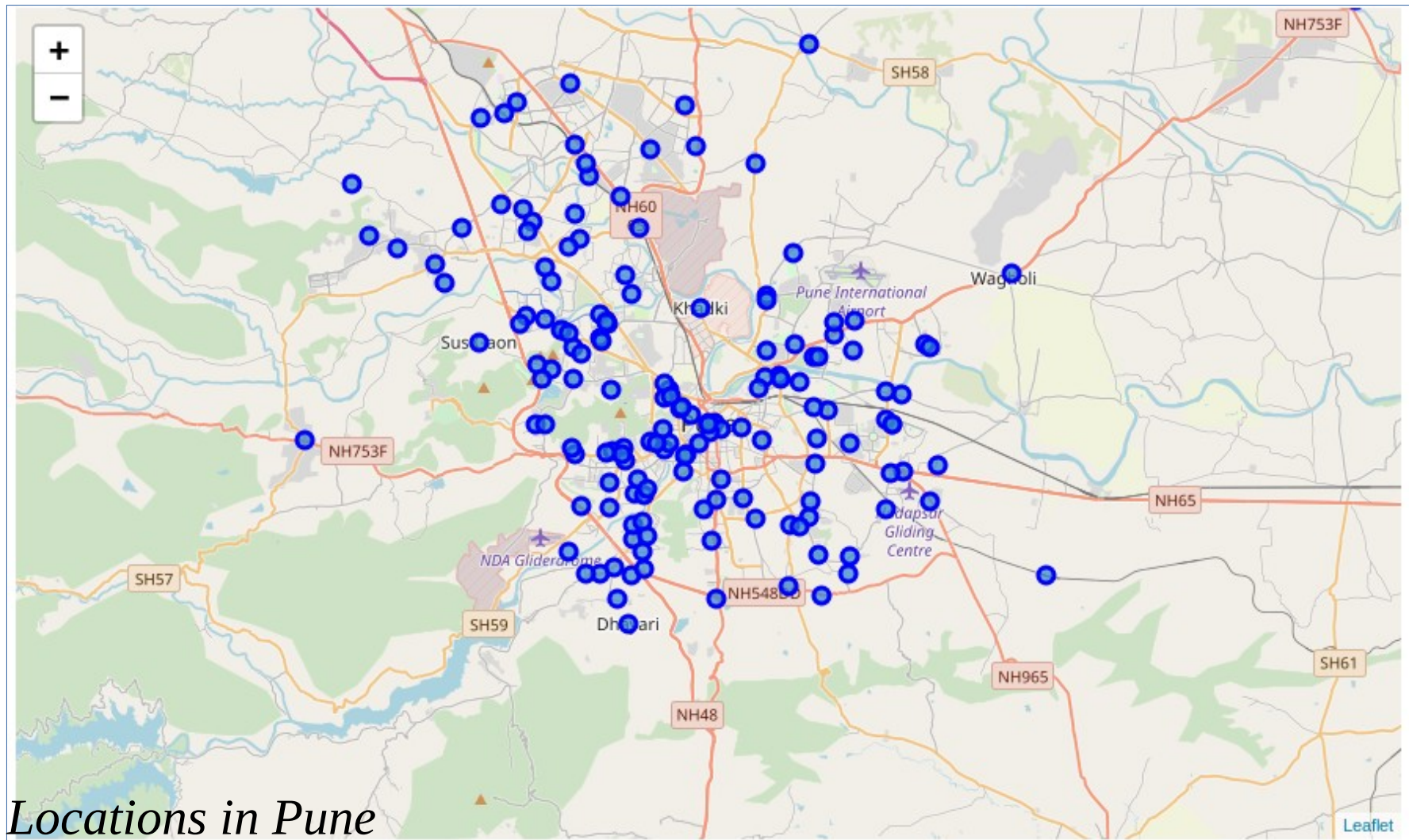
# Objective

- **Classify locations on the basis of**
  - Frequency of venues in particular location
  - Distance of locations from industrial areas
- **Data Used**
  - 197 locations, latitude and longitude from PMC Open Data Store and Kaggle Dataset
  - 10 Industrial areas from PMC Open Data Store

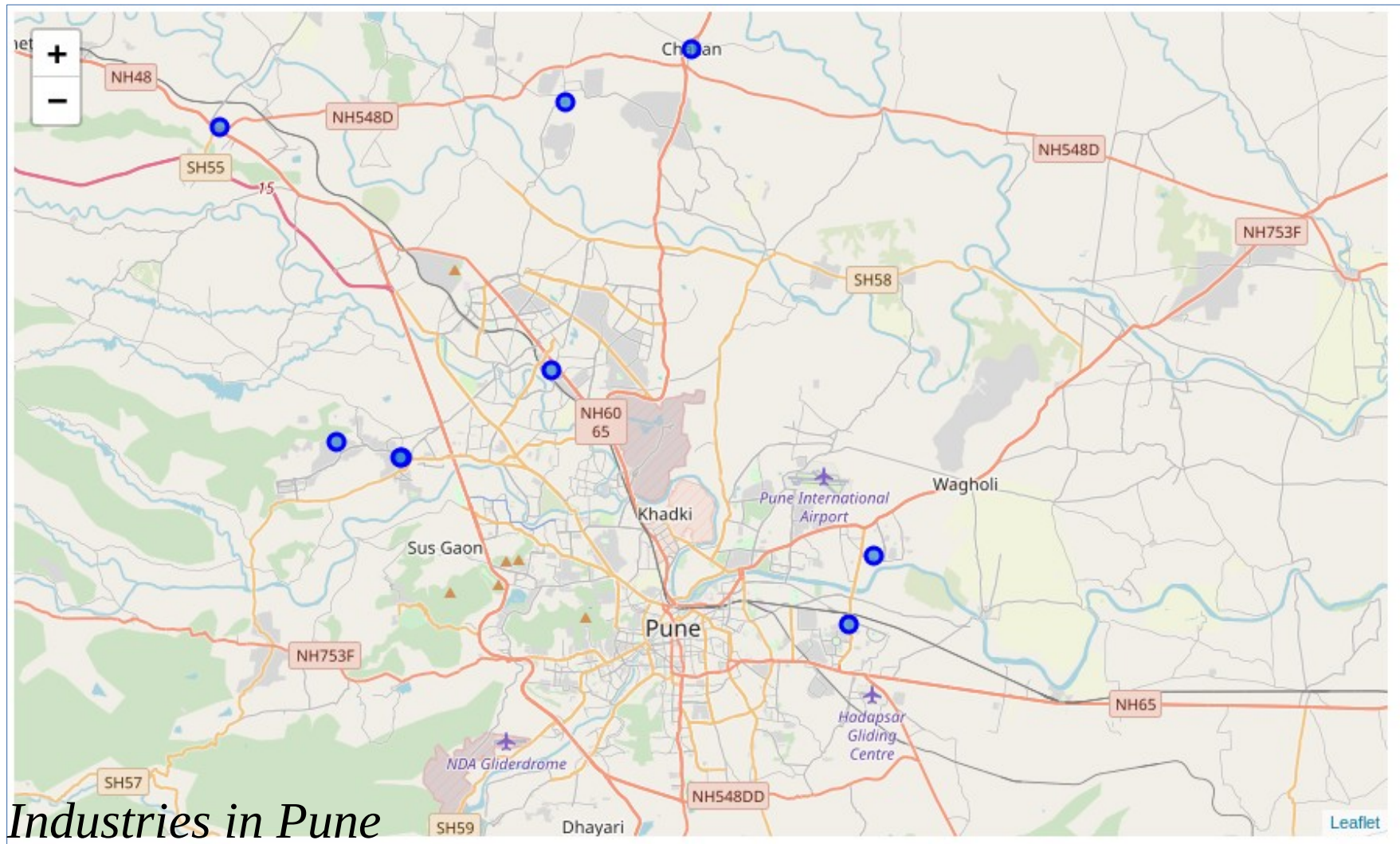
# API's used for Analysis

- **FourSquare API**
  - To generate nearby venues for each location.
- **Geopy API**
  - To identify latitude, longitude and distance between two locations.
- **Pandas**
  - To store, analyse and clean dataset.
- **Scikit Learn**
  - For using machine learning APIs and perform K-Means clustering algorithm.

# Data Analysis: Locations in Pune



# Data Analysis: Industries in Pune



# Methodology:

- **Algorithm Used:**

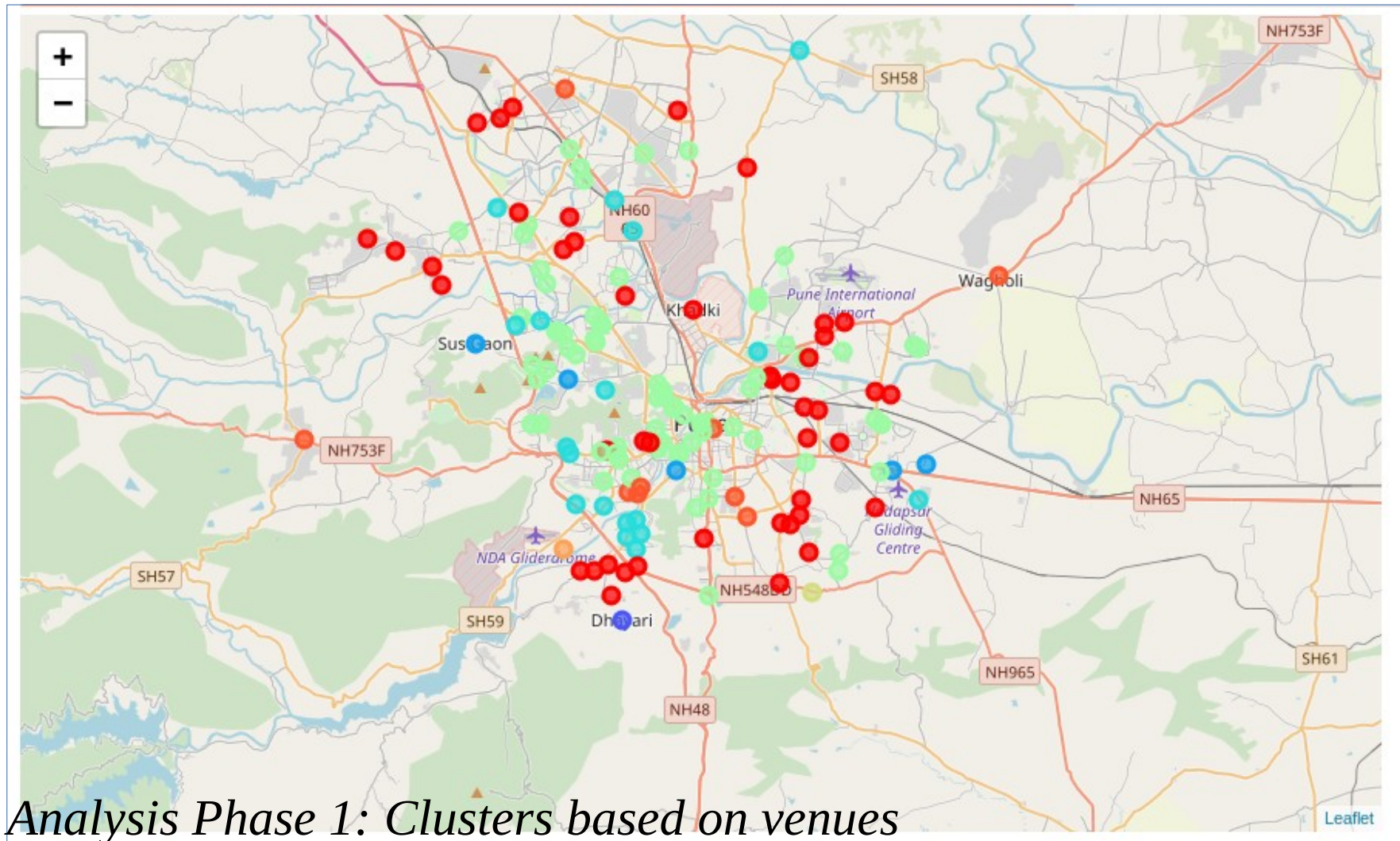
- K-Means Clustering Algorithm
- Clusters created: 10

- **Analysis Phases: 2**

- 1. Based on venues in a particular location
- 2. Based on venues and distance from industrial areas in a particular location



# Results: Analysis Phase 1



# Results: - Cluster 1 locations

Location	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Sinhagad Road	Indian Restaurant	Diner	Ice Cream Shop	Café	Bakery	Fast Food Restaurant	Gym / Fitness Center	Pizza Place	Cupcake Shop	Dosa Place
Warje	Coffee Shop	Indian Restaurant	Pizza Place	Fast Food Restaurant	Grocery Store	Diner	Eastern European Restaurant	Donut Shop	Dosa Place	Dumpling Restaurant
Paud Road	Indian Restaurant	Café	Sporting Goods Shop	Motorcycle Shop	Breakfast Spot	Bus Station	Diner	Sandwich Place	Cafeteria	Liquor Store
Fursungi	Fast Food Restaurant	Hotel	Indian Restaurant	Rock Club	Distillery	Farmers Market	Farm	Falafel Restaurant	Factory	Event Space
Prabhadevi Tech Park	Indian Restaurant	Fast Food Restaurant	Snack Place	Asian Restaurant	Shopping Mall	Lounge	South Indian Restaurant	Bistro	Café	Bar
Alandi	Fast Food Restaurant	Bus Station	Indian Restaurant	River	Distillery	Farmers Market	Farm	Falafel Restaurant	Factory	Event Space
Anand Nagar	Fast Food Restaurant	Bakery	Indian Restaurant	Coffee Shop	Snack Place	Ice Cream Shop	Pizza Place	Gym / Fitness Center	Diner	Falafel Restaurant
Balewadi Phata	Indian Restaurant	Fast Food Restaurant	Breakfast Spot	Café	Lounge	Vegetarian / Vegan Restaurant	Ice Cream Shop	Market	Malay Restaurant	Shopping Mall

*Locations in Cluster 1*

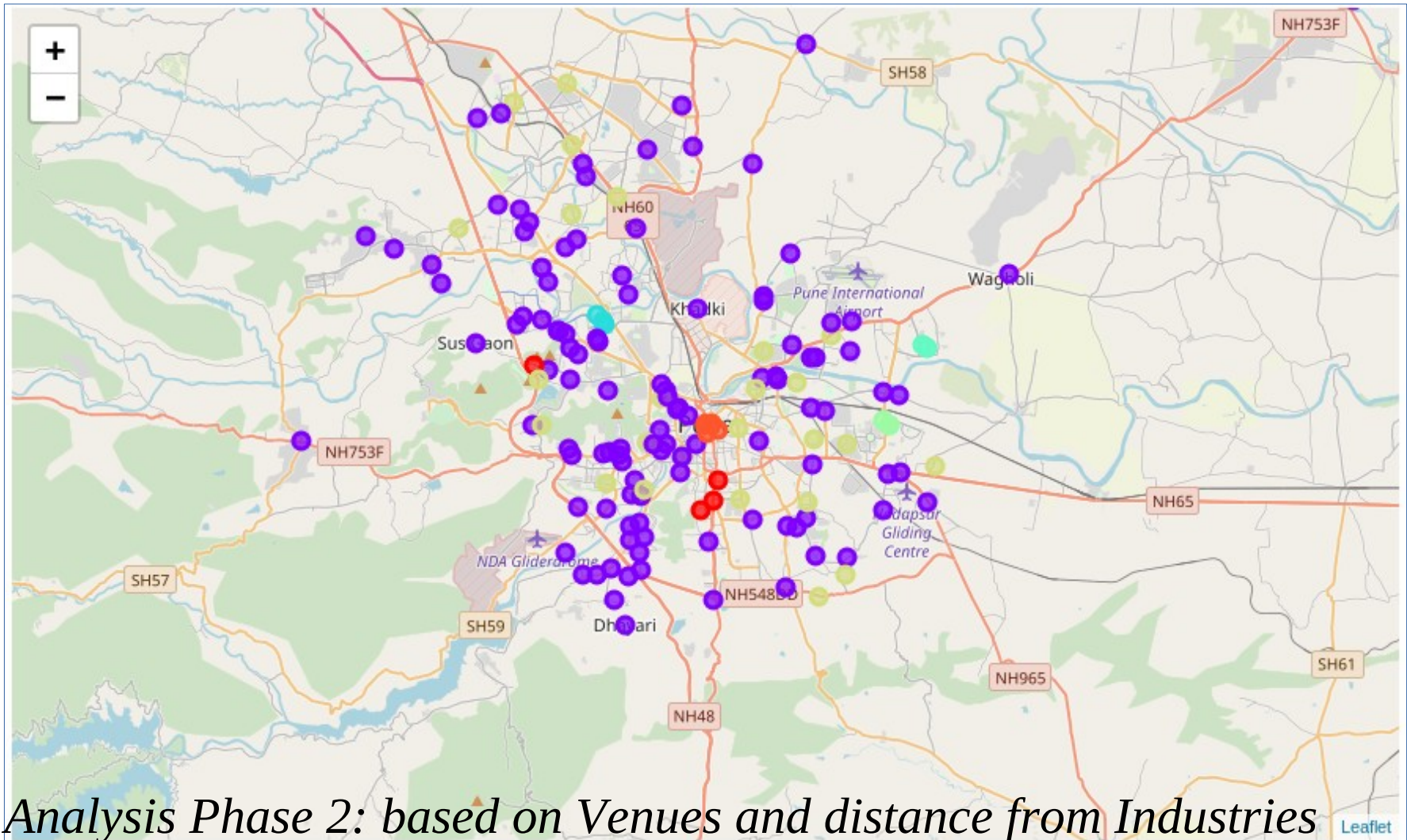


# Results: Cluster 2 locations

Location	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Karanjepul	Mobile Phone Shop	Zoo	Donut Shop	Fast Food Restaurant	Farmers Market	Farm	Falafel Restaurant	Factory	Event Space	English Restaurant
Pimpalgaon - Daund	Mobile Phone Shop	Zoo	Donut Shop	Fast Food Restaurant	Farmers Market	Farm	Falafel Restaurant	Factory	Event Space	English Restaurant
Pargaon	Mobile Phone Shop	Zoo	Donut Shop	Fast Food Restaurant	Farmers Market	Farm	Falafel Restaurant	Factory	Event Space	English Restaurant

*Locations in Cluster 2*

# Results: Analysis Phase 2



# Results: - Cluster 1 locations

Location	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	1st Most Common Industry	2nd Most Common Industry	3rd Most Common Industry
Satara Road	Indian Restaurant	Bakery	Ice Cream Shop	Vegetarian / Vegan Restaurant	Southern / Soul Food Restaurant	Coffee Shop	Breakfast Spot	Shopping Mall	Fast Food Restaurant	Bistro	Kharadi Knowledge Park	Magarpatta City	Rajiv Gandhi InfoTech Park Hinjewadi Phase III...
Sahakar Nagar	Indian Restaurant	Southern / Soul Food Restaurant	Coffee Shop	Gym / Fitness Center	Ice Cream Shop	Shopping Mall	Breakfast Spot	Electronics Store	Bus Station	Bistro	Rajiv Gandhi InfoTech Park Hinjewadi Phase II	Rajiv Gandhi InfoTech Park Hinjewadi Phase I	Magarpatta City
Bhosle Nagar	Indian Restaurant	Coffee Shop	Southern / Soul Food Restaurant	Fast Food Restaurant	Asian Restaurant	Garden	Shoe Store	Tennis Court	Multiplex	Ice Cream Shop	Kharadi Knowledge Park	Magarpatta City	Rajiv Gandhi InfoTech Park Hinjewadi Phase III...
Pashan-Sus Road	Breakfast Spot	Vegetarian / Vegan Restaurant	Indian Restaurant	Coffee Shop	Mountain	Italian Restaurant	Diner	Beer Garden	Ice Cream Shop	Food Court	Kharadi Knowledge Park	Rajiv Gandhi InfoTech Park Hinjewadi Phase III...	Magarpatta City

*Locations in Cluster 1*

# Results: Cluster 2 locations

Location	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	1st Most Common Industry	2nd Most Common Industry	3rd Most Common Industry
WTC-Kharadi	Coffee Shop	Pizza Place	Indian Restaurant	Irani Cafe	Café	Cafeteria	Pub	Go Kart Track	North Indian Restaurant	Diner	Magarpatta City	Rajiv Gandhi InfoTech Park Hinjewadi Phase I	Rajiv Gandhi InfoTech Park Hinjewadi Phase II
Eon Free Zone	Indian Restaurant	North Indian Restaurant	Coffee Shop	Fast Food Restaurant	Cafeteria	Café	Pub	Go Kart Track	Irani Cafe	Pizza Place	Kharadi Knowledge Park	Magarpatta City	Rajiv Gandhi InfoTech Park Hinjewadi Phase III...

*Locations in Cluster 2*

# Discussion

- **Classification of Locations**
  - Different in both phases of Analysis
- **Impact of Inclusion of Distance as a feature**
  - The cluster organization differs largely
- **Similarity of locations**
  - Similar locations are identified which are distant from one another.



# Conclusion

- **Two approaches are used to classify locations.**
- **Final decision of selecting a particular location will be made by stakeholder on the basis of :**
  - Specific characteristics of each recommended zone
  - Additional factors like attractiveness of each location.
  - Distance from Work location.
  - Traffic on Roads etc.