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# Market Saturation Report on Restaurants in

## Bengaluru (aka Bangalore), India

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# *Market Saturation: Restaurants in Bengaluru, India*

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# *Market Saturation: Restaurants in Bengaluru, India*

## Background –

Bengaluru is the capital of the Indian state of Karnataka which has stretched resources to feed its over 14 million people. The Hospitality industry in Bengaluru is a thriving, growing market that has seen a huge interest in the Food and Beverage (F&B) sector, particularly when it comes to technology. The reason technology is a focus is because they have the equivalent of the Silicon Valley of India, where the latest stronghold of technology is being developed in the suburbs of Bengaluru in the Internet Cloud Systems (ICT) Park[1]. The F&B sector must fill the needs of a very technical and educated population which is reflected in its restaurant diversity. With the COVID pandemic of 2000, Bengaluru saw customers wanting more take-out and delivery options as well as an increase in demand for outdoor dining, just like the rest of the world.

One new area of growth is with technology in the food delivery area, specifically through aggregate delivery services such as through Zomato. Zomato prides itself on bringing a large collection of delivery services from restaurants of many different cuisines through its mobile app. After many acquisitions with growth, Zomato refocused on its home base in India in 2022[2] and the data set examined in this report also focuses only in the specific area of Bengaluru.

Along with the modernization of delivery services, other trends in the F&B sector include the type of dining space, the quality of the cuisine being served, whether the dining space has online reservations and can accommodate delivery needs, as well as the location of the business. Following the advice of a head chef with experience in running Michelin start restaurants, Chef Sameer Sharma, to enter the F&B sector as a restaurant owner, one must start by exploring the local market to analyze "the local market to identify untapped niches and opportunities, and to create a unique and compelling concept that sets their restaurant apart from the competition" [3]. This report will do just that as we research current trends of restaurants in Bengaluru (changed from Bangalore in 2006), investigate customer preferences, as well as identify the types of restaurants already in specific areas.

[1] https://www.britannica.com/place/Bangalore-India
[2] https://en.wikipedia.org/wiki/Zomato
[3] https://www.linkedin.com/posts/sameer-s-3201bab_navigating-market-saturation-for-new-restaurant-activity-7027500469149184000-jEIe/

# *Market Saturation: Restaurants in Bengaluru, India*

## Scope Statement –

This report explores the levels of saturation of restaurants within Bengaluru, India through examination of current trends, customer preferences, and established restaurants in order to determine a new restaurant location.

Market Saturation occurs where the market growth trajectory of a given product stagnates, in this case, in the F&B sector. When the good or service that is being made available to consumers to such a large extent that no new product idea or improved service would be accepted in that market sector, it is a consequence of market saturation. Therefore, obtaining new customers does not occur and the result is sliding revenues.

### Goals –

- Explore Current Trends in cuisine by city.
- Look at Customer Preferences of restaurant attributes by city.
- Identify the type of restaurants already in the area.

### Objectives –

- Analyze Current Trends in Cuisine by city using Tableau or JMP.
    - What is the cuisine that appears most within a given city?
    - What are the reviews about the restaurants in each city?
- Explore Customer Preferences of attributes by city using Tableau or JMP.
    - Do most restaurants have delivery in each city?
    - Do most restaurants have online reservations in each city?
    - What are the most common things Customer reviews talk about in each city?
- Examine Types of restaurants in the area by city using JMP's Text Explorer.
    - By Restaurant Types:
        - What is the most common Cuisine in each city location?
        - What are the most liked dishes in each city location?
- Examine employee schedules in the Residency Road area using Excel's Solver Tool.
    - Possible Employee Scheduling:
        - How many employees should work in a non-training schedule?
        - How many employees should work in the training schedule?

### Stakeholders –

- Real Estate Investors in the Hospitality area
- Restaurant Entrepreneurs
- Local Governments in their planning and budget departments
- Potential Customers (Employees in the IT and Business Support fields)

### Requirements –

Data from each city must be taken regarding type of cuisine, types of restaurant format, delivery options, reservation options, and customer text reviews.

### Deliverables –

- Background Report on the current Food and Beverage Industry in Bengaluru.
- Descriptive Report Exploring Types of Restaurants, Approximate Costs, Cuisine Segmentation, and Customer Preferences on Online Ordering and Online Reservations.
- Predictive Report on Current Restaurant Trends in Cuisine in Bengaluru cities.
- Prescriptive Report on Location, Time, and Work Schedules
- Overall Decision Analysis Report on Recommendations

### Project Exclusions –

This project will not address the cost factors in opening or operating a restaurant in Bangaluru. It will also not determine if the data such as website addresses in the data set are up to date.

### Constraints –

This report will be limited by the accuracy of the data given by Zomato to Kaggle because it did not include any dates. It can be estimated to be at least 2 years old, which makes the worldwide COVID pandemic a factor which affected the Hospitality tremendously.

### Assumptions –

The data will be assumed to be current (taken within the last 5 years) and not include the impact of the COVID pandemic. It will also be assumed that the data limitations here only represent a portion of the actual number of restaurants in each City Location and their data.

# Analytical Methods –

## Descriptive Analysis

### Preprocessing Data Analysis

- Translation Corrections – Using R Studio, corrections to the data set will be made due to errors in data mined data.
- Missing Values – Using the R Programming language in R Studio, missing values will be replaced by median values which is a simple, unbiased approach.
- Create Factors – Using R Studio for comparison analysis.
- Explore Outlier Data in JMP Analysis
- Save any "newly cleaned" file into a new *.csv file to be used in Tableau or JMP.

### Exploratory Data Analysis

- Using R Studio, look at the relationships between Types of Restaurants
- Using Tableau dashboards, explore Costs within the dataset.
- Using JMP Analysis to create graphs about the cuisines and their City Location. Determine which cuisine is most popular by City Location.
- Cuisine Segment Analysis - Using JMP Analysis, look at the different Types of Cuisine by City Location.
- Customer Preferences Analysis - Using JMP Analysis, look at the restaurants having Online Ordering and Online Reservations by City Location.

## Predictive Analysis

- Using JMP Text Explorer, analysis the Text reviews for:
  - What is most said about Bengaluru restaurants in general through WordCloud.
  - Cuisines - What words each city speaks about the most with WordCloud as well as Term and Phrase lists by City Location. Use word phrases with at least 4 characters and create a custom stop-word list.
  - Favorite Dishes - What words each city speaks about the most with WordCloud as well as Term and Phrase lists by City Location. Use word phrases with at least 4 characters and create a custom stop-word list.

## Prescriptive Analysis

- Using Photo Analysis, look at Before and After construction of City-Location
- Using Google Search information, compare competitors through time comparisons.
- Non-Training Schedule – using Excel's Solver, optimize worker schedules to minimize daily cost.
- Training Schedule – using Excel's Solver, optimize worker schedules while providing worker overlap for training to minimize daily cost.

# Descriptive Analytics – What does the data tell us?

## Data Cleaning and Understanding

### Preprocessing Data Analysis

**Initial status of data** – The data set was initially given in the comma-separated values (CSV) format which is a text file that uses a delimiter to separate values. The format did not translate well in Excel with its almost half a gigabyte size, primarily due to the Restaurant Reviews. So, the CSV file was opened in RStudio using the R Language to be cleaned with the name, approximate cost for 2 people, online order, book_table, type of restaurant, liked dishes, cuisines, type of listing and city listed variables.

**Translation Corrections** – When the data was mined from the original websites and databases, there was a reoccurring error in the titles of certain names with foreign accent marks. The translation errors did present themselves in a reoccurring manner so that a "quick fix" could be implemented using an expected formula. In R Studio, a manual inspection of the titles in ABC order revealed many types of additional characters in the titles which were systematically removed using manual code (see *Figure 1*) so that all that remained was the name of the Restaurant.

```
# Replace String with Another String to correct data import due to accents in names
```{r message=FALSE, error=FALSE}
zomato_r_working$name[zomato_r_working$name == "100Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â°C"] <-
"100°C"

zomato_r_working$name[zomato_r_working$name == "Andy's
CafÃ.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â©"] <- "Andy's Cafe"

zomato_r_working$name[zomato_r_working$name == "Brother?s Bar & Kitchen"] <- "Brother's Bar &
Kitchen"

zomato_r_working$name[zomato_r_working$name ==
"BrotherÃ.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.s Bar & Kitchen"] <-
"Brother's Bar & Kitchen"

zomato_r_working$name[zomato_r_working$name ==
"BrotherÃ.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.s Bar & Kitchen"] <-
"Brother's Bar & Kitchen"

zomato_r_working$name[zomato_r_working$name == 'Bohra Bohra
CafÃ.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â.Â©'] <- 'Bohra Bohra'
```

*Figure 1* Correcting Translation Errors
```

**Missing Values** – Using the R Studio, missing values were analyzed for replacement by median values, averages, or simply deleting the values. The Summary function quickly noted that there were 346 out of the 51,717 Approx. Cost (for 2 people) values were NA's or missing values. Yet, when the function was applied to create a new median value for each of these missing values, it replaced 28,282 values which was more than half the observations. It was determined that the average would do the same and decided that it would be a more valid result to simply look at this data set without the missing information being imputed. After the simple function to exclude the NA's, there were still valid. 23,435 observations to be analyzed.

```
# Remove missing data, create binary balues, and create factors
```{r message=FALSE, error=FALSE}
# Excludes every row containing NA
zomato_clean = zomato_r_working %>% na.exclude(zomato_clean)
# 23,435 observations or rows of data

# Change no to 0 and yes to 1 for online_ordering and book_table
zomato_clean = zomato_clean %>%
  mutate (online_order= case_match(online_order,
    c("No", "no", "NO") ~ 0,
    .default = 1)) # otherwise have yes equal 1

zomato_clean = zomato_clean %>%
  mutate (book_table= case_match(book_table,
    c("No", "no", "NO") ~ 0,
    .default = 1)) # otherwise have yes equal 1

# Convert character variable to the type factor
zomato_clean = zomato_clean %>% mutate_if(is.character, as_factor) # mutate if it is a character

str(zomato_clean) #compactly displaying the internal structure of a R object
```
```

*Figure 2 Missing values, Binary variables & Factors.*

**Creating Factors** – Since most of the original variables were of the character type, a simple reclass was made to turn the Yes's and No's into binary values for the purpose of exploring the data (see *Figure 2*). Additionally, on the Rates that customers scored 1 to 5 on, there needed to be a combination of "4.8/5" and "4.8 /5" with an extra space plus the rates were rounded to whole numbers.

## Exploratory Analysis

**Explore Outlier Data** - in JMP Analysis, which can only look at Outliers in numerical values, the Distribution and the Explore Outliers features were used to look at values far away from the Approx. Cost (for 2 people) median of 600. Considering that Fine Dining restaurants would have a cost far different than Quick Bites, it was determined that 3 data points would be treated as outliers

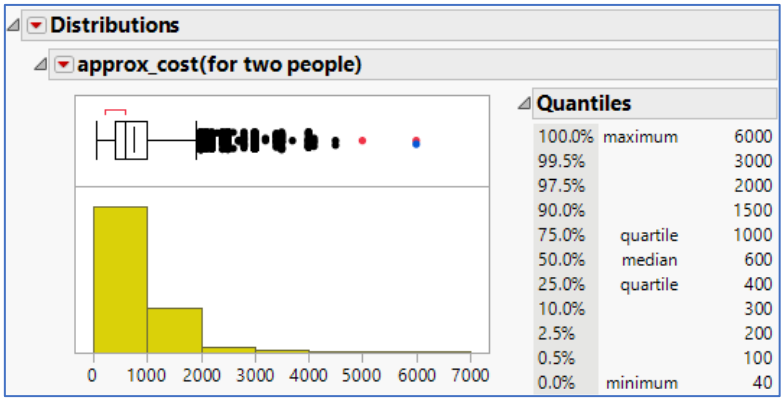
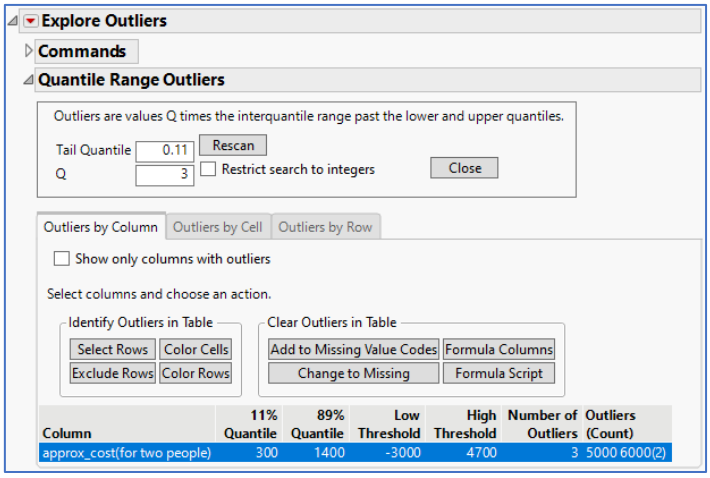
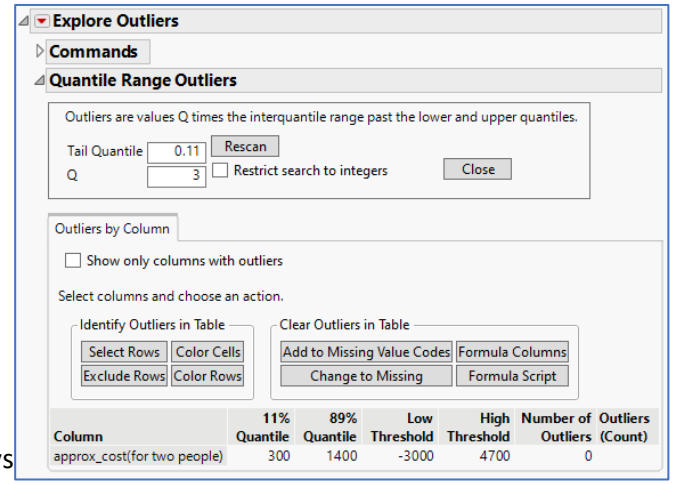



*Figure 1* The Distribution shows the Outliers in red/blue on the left which are specified in the chart below.




and not calculated in the analys

**Save new File for other Software Programs** – This cleaned file will be used in other Software applications, so it was necessary to save it in a usable format, so it was saved as ***zomato_clean.csv***.

# *Market Saturation: Restaurants in Bengaluru, India*

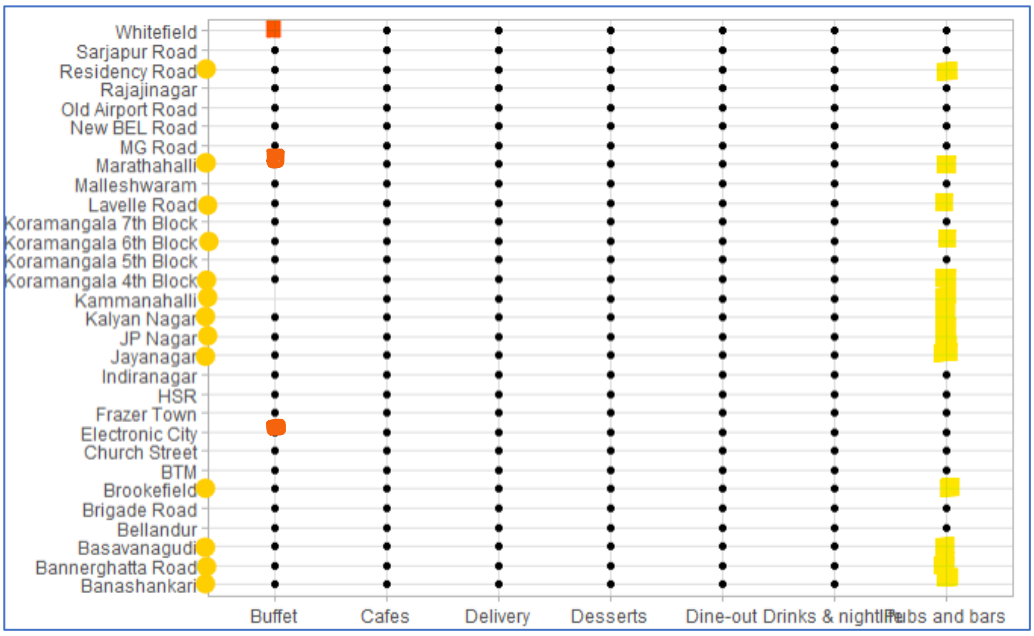



*Figure 6* The Types of Restaurants shown by City Location.

**Explore Types of Restaurants** – Using R Studio, The Types of Restaurants in each location needed to be examined to determine which Types were missing in the city locations. It was determined that Pubs and Nightlife were only in 17 City locations which means it was NOT in 13 locations as shown above in Figure 6. Additionally, Buffets were not located in Whitefield or Kammanahalli. Only Kammanahalli was missing both. The most common type of Restaurant was by far the Delivery type and the second most common type was the Dine-out type, both reflecting what was seen as a result of the COVID-19 pandemic.

**Explore Approximate Costs** - Using Tableau, a dashboard was created to look at what the Median Costs were for two people dining in a subset of restaurants. Considering that one US $1 is approximately equivalent to ₹82.23 Indian Rupees, you can tell that the US dollar is far more valuable.

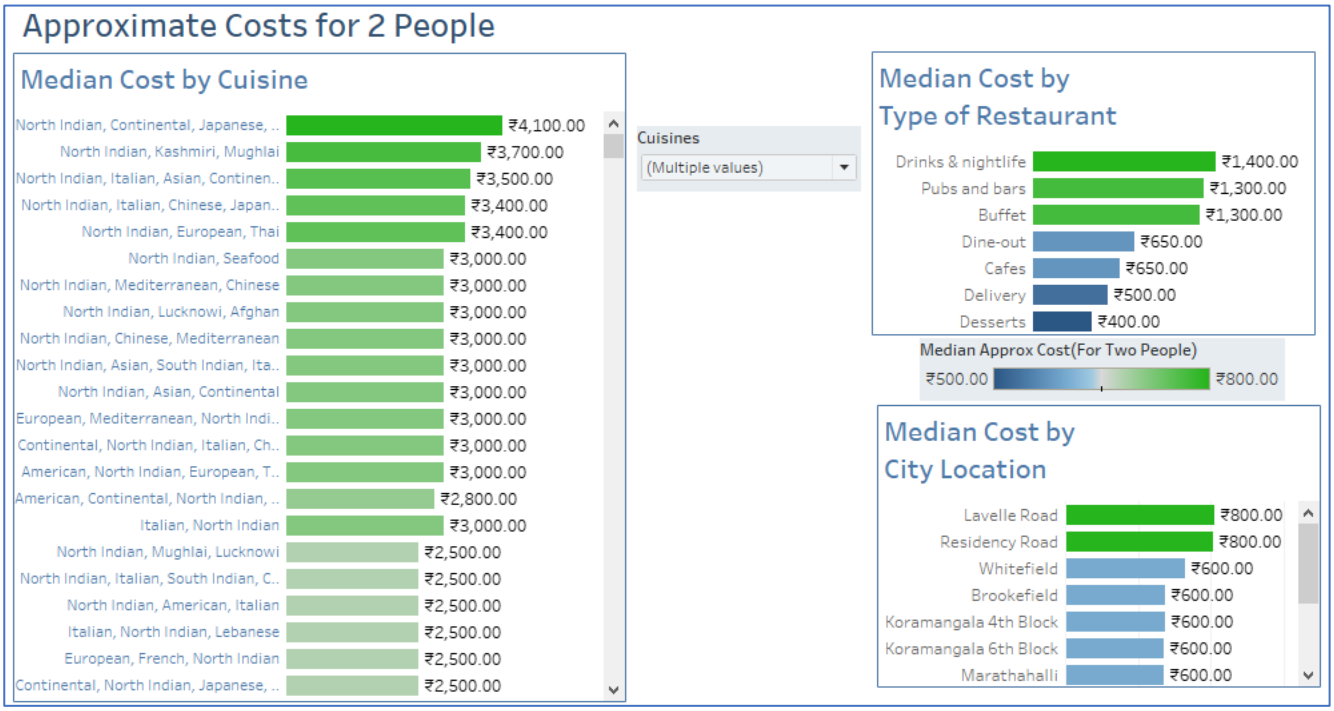



*Figure 7* Dashboard looking at all cuisines with North Indian Cuisine as well as overall Median Costs.

Approximate Cost per Type of Restaurant on the top right side of the dashboard (see Figure 7) clearly showing that the highest costs are associated Drinks & Nightlife as well as Pubs and Bars. This is most likely due to the high expenses related to purchasing alcohol. Cuban Mojitos are one example of a popular drink according to the dataset's favorite dishes. In Bengaluru, there is an annual increase in the alcohol excise tax, so expenses will keep growing. For August 2023, Indian-made liquor (IML) will surge by 20% on all slabs, while beer will experience a hike from 175% to 185%[4].

Approximate Median Cost by City Location, shown in the bottom left of Figure 7, specifically highlights that the Lavelle and Residency Road locations cost the most at ₹800 for 2 people. Figure 8 shows the Residency Road has one of the highest number of Drinks & Nightlife restaurants out of the Types of Restaurants that do NOT have Pubs & Bars. Apparently, without the competition from the Pubs and Bars, they can increase the cost of drinks.

[4] https://www.thehindu.com/life-and-style/food/bengaluru-pub-owners-brace-for-impact-as-alcohol-prices-to-reach-new-heights/article67093245.ece

# *Market Saturation: Restaurants in Bengaluru, India*

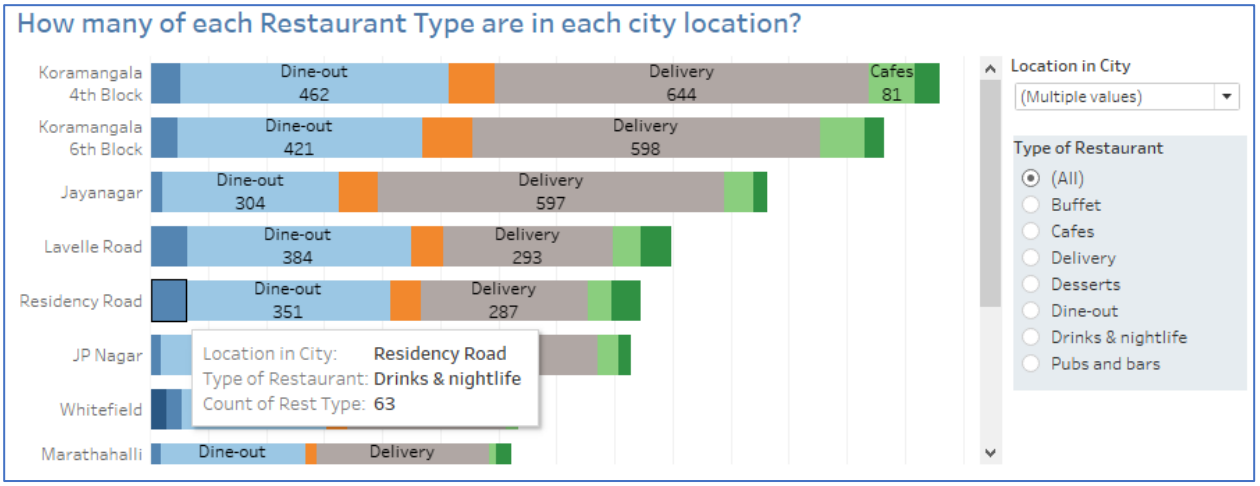



*Figure 8* Dashboard showing the comparison of Types of Restaurants, highlighting Residency Road

The approximate cost per cuisine was much more complicated because the data collected had 1,692 different descriptions for a restaurant's cuisine. The details will be looked at next with JMP's Data Mining features. What is shown on the previous page in Figure 7 relates to costs, specifically, and it shows that North Indian + Continental + Japanese costs approximately ₹4,100 which is the most for a North Indian Cuisine. Other cuisines like Kashmiri, Mughlai, Italian as well as Asian cuisines like Chinese or Thai are also up at the top of the expensive list. This likely has to do with seafood, which is hard to keep fresh for customers, yet very popular.

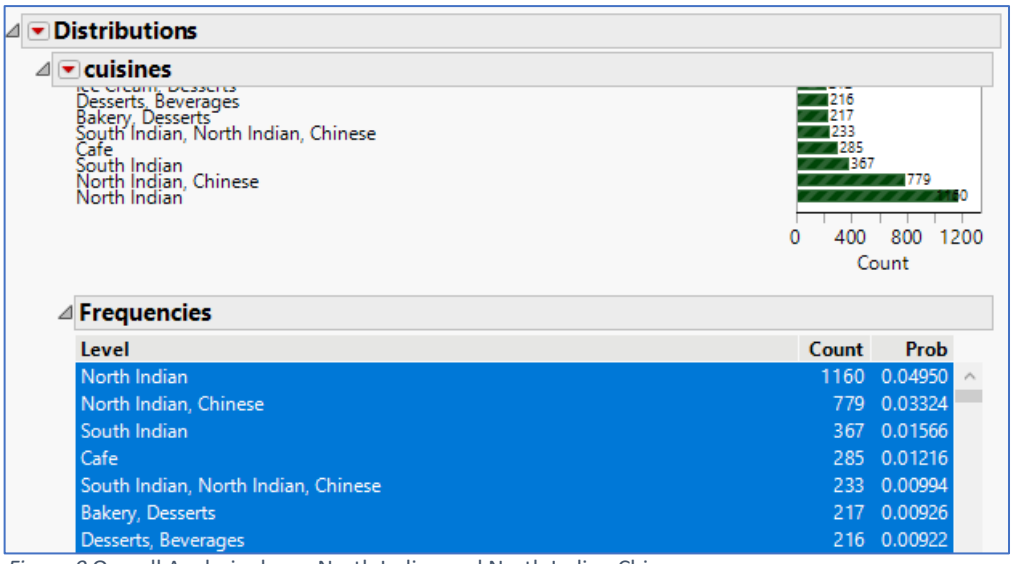



*Figure 9* Overall Analysis shows North Indian and North Indian Chinese Restaurants far outnumber the others.

# *Market Saturation: Restaurants in Bengaluru, India*

## Cuisine Segmentation Analysis

cuisines = North Indian

| listed_in(city) | N |
|---|---|
| BTM | |
| Koramangala 7th Block | |
| Koramangala 5th Block | |
| Koramangala 4th Block | |
| Koramangala 6th Block | |
| Brookefield | |
| Indiranagar | |
| Jayanagar | |
| Whitefield | |
| HSR | |
| JP Nagar | |
| Marathahalli | |
| Bellandur | |

*Figure 10* Cities where North Indian, Chinese Food is most popular.

cuisines = North Indian, Chinese

| listed_in(city) | N |
|---|---|
| BTM | |
| Marathahalli | |
| Jayanagar | |
| Koramangala 7th Block | |
| Koramangala 5th Block | |
| JP Nagar | |
| Bannerghatta Road | |
| Bellandur | |
| Koramangala 4th Block | |
| Koramangala 6th Block | |
| Brookefield | |

*Figure 11* Cities where North Indian Food is most popular.

cuisines = South Indian

| listed_in(city) | N |
|---|---|
| Basavanagudi | |
| Banashankari | |
| Malleshwaram | |
| Jayanagar | |
| Lavelle Road | |
| Rajajinagar | |
| Residency Road | |
| BTM | |
| Indiranagar | |
| Koramangala 7th Block | |
| Church Street | |

*Figure 12* Cities where South Indian Food is most popular.

Viewing the general distribution of the types of Cuisines (see Figure 9 from previous page), both the vertical bar chart and the Frequency table show that North Indian cuisine is the most popular by almost double that of North Indian combined with Chinese Cuisine (4.95% of the total restaurants reported). Chinese food is widely popular because commodity trading is prevalent due to being in the southern peninsula where a large portion of the population lives (3.32% of the total restaurants reported). This is followed in third place by South Indian cuisine. Considering where Bengaluru is in the densely populated southern area of the Indian Continent, this makes sense (1.57% of the total restaurants reported). (Note: the separation of North Indian and Nort Indian, Chinese cuisine is probably due to a customer survey where multiple cuisine options were allowed to be chosen creating dozens of instances of overlap in the cuisine categorical variable).

In JMP's Tabulate feature, with the appropriate Data Filter, it is easy to see in Figure 10 that North Indian Cuisine is most popular in the cities of BTM, Koramangala (4th, 5th, 6th, & 7$^{th}$ blocks), Brookefield, Indiranagar and Jayanagar (see Figure 7) with a total of 1160 restaurants in Bengaluru. North Indian, Chinese cuisine was second most popular with 779 restaurants (see Figure 11). Additionally, South Indian cuisine was third most popular in Bengaluru with 367 restaurants (see Figure 12).

# *Market Saturation: Restaurants in Bengaluru, India*

## Customer Preferences Analysis

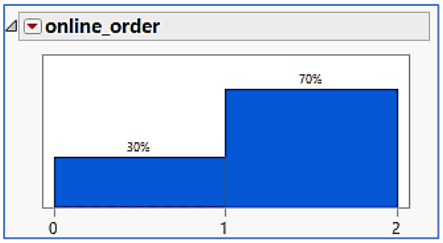



*Figure 13* Online ordering where "no" = 0-1 and "yes" = 1-2

**Online Ordering** – when the online ordering data was cleaned in the preprocessing step, values were transformed into binary values to easily visualize the results (see figure 13). It can be easily seen that 70% of the restaurants reported have online ordering. As the COVID-19 pandemic hit, citizens were ordered to stay at home and thus, more online ordering was demanded by customers. As shown on the right in Figure 14, the city HSR took this to heart and leads the other cities reported by a large margin with an 81% online ordering. However, cities such as MG Road, Church Street, Brigade Road, Lavelle Road, and Residency Road are falling behind with only 54% to 58% online ordering.

| listed_in(city) | | N | Mean | % of Total |
|---|---|---|---|---|
| BTM | online_order | 1439 | 0.76 | 6.66% |
| Koramangala 7th Block | online_order | 1391 | 0.71 | 6.04% |
| Koramangala 4th Block | online_order | 1359 | 0.74 | 6.12% |
| Koramangala 5th Block | online_order | 1324 | 0.73 | 5.85% |
| Koramangala 6th Block | online_order | 1265 | 0.73 | 5.64% |
| Jayanagar | online_order | 1090 | 0.77 | 5.12% |
| Indiranagar | online_order | 1025 | 0.64 | 4.01% |
| MG Road | online_order | 1017 | 0.57 | 3.51% |
| Church Street | online_order | 983 | 0.56 | 3.36% |
| Brigade Road | online_order | 970 | 0.58 | 3.41% |
| Lavelle Road | online_order | 898 | 0.55 | 2.99% |
| Residency Road | online_order | 846 | 0.54 | 2.76% |
| JP Nagar | online_order | 829 | 0.76 | 3.83% |
| Old Airport Road | online_order | 760 | 0.67 | 3.09% |
| HSR | online_order | 750 | 0.81 | 3.69% |
| Whitefield | online_order | 635 | 0.70 | 2.70% |
| Marathahalli | online_order | 622 | 0.74 | 2.81% |
| Basavanagudi | online_order | 606 | 0.75 | 2.76% |
| Brookefield | online_order | 600 | 0.77 | 2.82% |
| Bannerghatta Road | online_order | 550 | 0.76 | 2.54% |
| Frazer Town | online_order | 546 | 0.77 | 2.56% |
| Kammanahalli | online_order | 534 | 0.77 | 2.49% |
| Kalyan Nagar | online_order | 521 | 0.78 | 2.47% |
| Bellandur | online_order | 508 | 0.78 | 2.40% |
| Sarjapur Road | online_order | 508 | 0.75 | 2.32% |
| Malleshwaram | online_order | 498 | 0.69 | 2.08% |
| Rajajinagar | online_order | 378 | 0.66 | 1.51% |
| Banashankari | online_order | 373 | 0.78 | 1.77% |
| Electronic City | online_order | 326 | 0.70 | 1.38% |
| New BEL Road | online_order | 284 | 0.76 | 1.32% |
| All | online_order | 23435 | 0.70 | 100.00% |

*Figure 14* Online ordering where the larger the mean, the more online ordering is used by city.

As shown in Figure 15, Lavelle Road outnumbers Residency Road in Online Reservations (309 to 293). There is room for either location to grow these services.

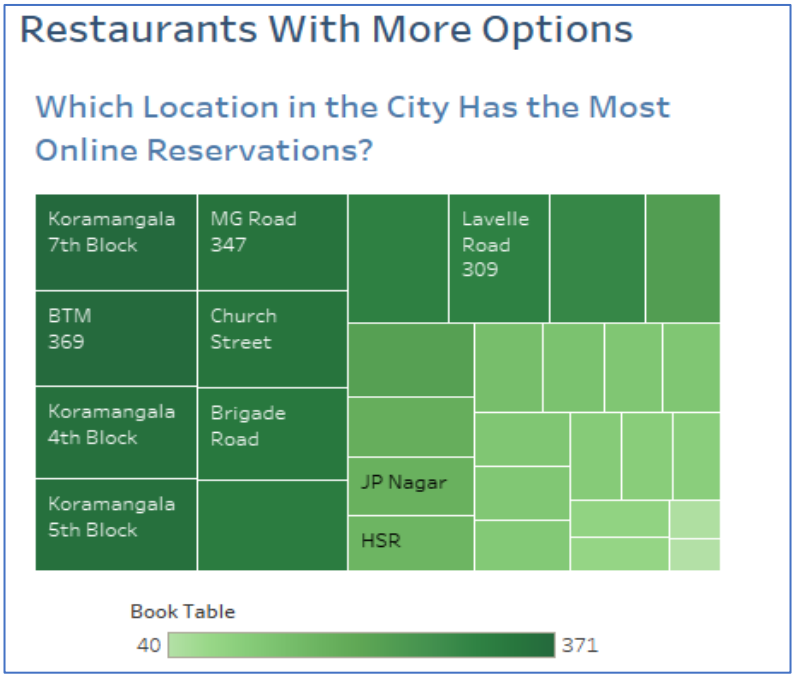



*Figure 15* Online ordering, in green, shows that Lavelle is 10th in the most online reservations.

# *Market Saturation: Restaurants in Bengaluru, India*

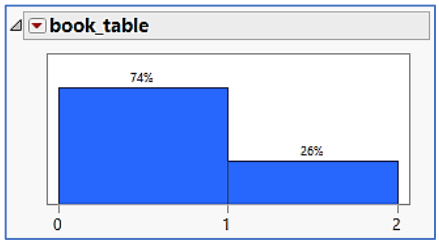



*Figure 16* Online ordering where "no" = 0-1 and "yes" = 1-2

**Online Reservations** – The book_table or Online Reservations data was also turned into binary values for data visualizations. On the left in Figure 16, you can see that only 26% of the restaurants reported have online reservations. Customers were reluctant to eat in a public establishment during the pandemic as they were afraid their wait staff, customers or the cleanliness of the restaurant would cause them to get sick. Looking at Figure 17, we can see that only 5 cities reported having online reservations of 30% or higher. More importantly, the 5 cities of Basavanagudi, Bannerghatta Road, Kammanahalli, Benashankari, and New BEL Road have this as an almost forgotten amenity and should seriously look at changing this attribute.

| listed_in(city) | | N | Mean | % of Total |
|---|---|---|---|---|
| BTM | book_table | 1439 | 0.26 | 5.99% |
| Koramangala 7th Block | book_table | 1391 | 0.27 | 6.03% |
| Koramangala 4th Block | book_table | 1359 | 0.26 | 5.77% |
| Koramangala 5th Block | book_table | 1324 | 0.27 | 5.75% |
| Koramangala 6th Block | book_table | 1265 | 0.25 | 5.23% |
| Jayanagar | book_table | 1090 | 0.23 | 4.00% |
| Indiranagar | book_table | 1025 | 0.30 | 5.05% |
| MG Road | book_table | 1017 | 0.34 | 5.64% |
| Church Street | book_table | 983 | 0.35 | 5.60% |
| Brigade Road | book_table | 970 | 0.34 | 5.43% |
| Lavelle Road | book_table | 898 | 0.34 | 5.02% |
| Residency Road | book_table | 846 | 0.35 | 4.76% |
| JP Nagar | book_table | 829 | 0.21 | 2.86% |
| Old Airport Road | book_table | 760 | 0.29 | 3.62% |
| HSR | book_table | 750 | 0.22 | 2.70% |
| Whitefield | book_table | 635 | 0.29 | 2.99% |
| Marathahalli | book_table | 622 | 0.23 | 2.34% |
| Basavanagudi | book_table | 606 | 0.19 | 1.88% |
| Brookefield | book_table | 600 | 0.20 | 1.98% |
| Bannerghatta Road | book_table | 550 | 0.19 | 1.69% |
| Frazer Town | book_table | 546 | 0.22 | 1.95% |
| Kammanahalli | book_table | 534 | 0.19 | 1.64% |
| Kalyan Nagar | book_table | 521 | 0.21 | 1.79% |
| Bellandur | book_table | 508 | 0.26 | 2.16% |
| Sarjapur Road | book_table | 508 | 0.24 | 2.00% |
| Malleshwaram | book_table | 498 | 0.25 | 2.00% |
| Rajajinagar | book_table | 378 | 0.23 | 1.43% |
| Banashankari | book_table | 373 | 0.11 | 0.65% |
| Electronic City | book_table | 326 | 0.25 | 1.32% |
| New BEL Road | book_table | 284 | 0.16 | 0.75% |
| All | book_table | 23435 | 0.26 | 100.00% |

*Figure 17* Reservations where the larger the mean, the more reservations are used by city.

When looking at the other options that have been seen as attractive toward potential customers, Online Reservations, or the ability to Book a Table in Advance is stronger in the City Locations that simply have more restaurants, such as in BTM or the Koramangala blocks. As shown below in Figure 18, Lavelle

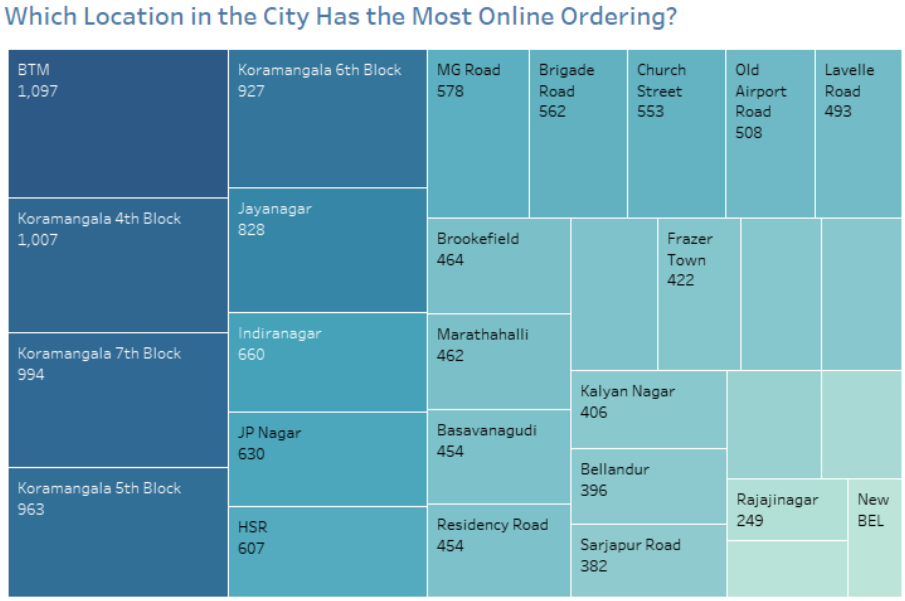



*Figure 18* Online Ordering where the larger the number, the darker the color.

Road (493) again outnumbers Residency Road (454) in Online Ordering but they both fall lower in the ranks amongst the 30 City Locations. With only 34%-35% of the restaurants within these two locations reporting that that utilize online ordering, this is shown as a definite weakness in increasing the customer base after the COVID-19 pandemic.

## Descriptive Analytics Summary – What does the data tell us?

After the data processing and cleaning steps, the exploration of data included looking at Types of Restaurants, their costs, types of cuisines and customer preferences. What was found was that most City Locations had all 7 types of restaurants (Buffets, Cafés, Delivery, Desserts, Dine-out, Nightlife & Dining, and Pubs &Bars). However, Pubs & Nightlife were only in 17 of the 30 City locations and Buffets were missing in Whitefield and Kammanahalli. Desserts were a less common type of restaurant and the least expensive. As far as Cuisines, North Indian + Chinese was most popular but adding in the Continental + Japanese cost more. Additionally, most restaurants had Online Ordering offered (70%) but not Online Reservations (26%). In these areas, attention was paid to the Lavelle Rd and Residency Road City-Locations as they showed room to grow with regard to Online Ordering and Online Reservations.

## Predictive Analytics – What should new restaurants offer?

### Reviews about Bengaluru, Overall

*Figure 19* WordCloud created by JMP's Text Explorer

Using JMP's Text Explorer tool, we can comprehensively look at the Customer's Reviews through a data mining viewpoint. Looking at the WordCloud above, it is easy to see that customers like to have **great service** from **staff** at their **restaurants**, **friendly ambience** and they really love their **chicken biryani**! However, you can also see the other cuisines creep in such as **pizza**, **fish**, **burgers**, and **cakes**. Looking closer at the Term and Phrase lists detailed in Figure 20 on the next page, you can see how many more times chicken is mentioned (406,157 times) compared to pizza (132,926 times), which denotes its popularity in Bengaluru. Continuing to look ahead on the right of Figure 20, you can see a couple of the Chinese cuisine's favorite dishes, Fried Rice, and Chicken Wings, as well as a few other popular dishes: Chicken Biryani, Butter Chicken, Peri Peri Chicken and even French Fries.

# *Market Saturation: Restaurants in Bengaluru, India*

**Term and Phrase Lists**

| Term | Count |
|---|---|
| service | 406157 |
| chicken | 402336 |
| ambience | 326555 |
| taste | 279340 |
| great | 278208 |
| nice | 216795 |
| best | 187395 |
| staff | 162608 |
| amazing | 159263 |
| restaurant | 156255 |
| pizza | 132926 |
| experience | 132491 |
| biryani | 125992 |
| quality | 114814 |
| loved | 111423 |
| friends | 105742 |
| tasty | 104786 |
| delicious | 101724 |
| love | 99625 |

| Phrase | Count | N |
|---|---|---|
| fried rice | 22411 | 2 |
| chicken biryani | 19858 | 2 |
| chicken wings | 14094 | 2 |
| butter chicken | 13792 | 2 |
| peri peri | 13673 | 2 |
| home delivery | 13142 | 2 |
| garlic bread | 12654 | 2 |
| friendly staff | 12070 | 2 |
| chicken tikka | 11922 | 2 |
| nice ambience | 11756 | 2 |
| french fries | 11375 | 2 |
| great ambience | 11344 | 2 |
| paneer tikka | 10558 | 2 |
| chicken burger | 10031 | 2 |
| mouth watering | 9935 | 2 |
| hangout with friends | 9866 | 3 |
| great experience | 9569 | 2 |
| taste buds | 9535 | 2 |
| chilli chicken | 8941 | 2 |

*Figure 20* Term and Phrase Lists detailed by JMP's Text Explorer

## Reviews about Cuisines by City Location –

**Buffet** cuisines popularity can be summarized by 4 cuisines: Indian, Continental, Chinese, and Italian. Indian dishes would be those native to Bengaluru such as Chicken Biryani, Butter Chicken, or Peri Peri Chicken. Continental Foods would be European dishes such as French Toast, Chicken Sandwiches, Pancakes, Caesar Salads, and Burgers[5]. Chinese cuisines are always blending with other cultures which inspire dishes such as Bangalore Mandarin, sweet corn soup, the Chinese Rice Pot, Chili Chicken, and Cantonese Noodles[6]. Italian dishes can also be very savory with pumpkin and ricotta filled tortellini called Tortelli di Zucca, cooked lamb ragu called Pappardelle al Ragu di Agnello, or a flavorful chicken dish known as Pollo Piccata[7]. What ties these cuisines together is the freshness of their local ingredients. In Figure 21, you can see the Lavelle and Residency Road locations both prefer Indian Chinese cuisines.

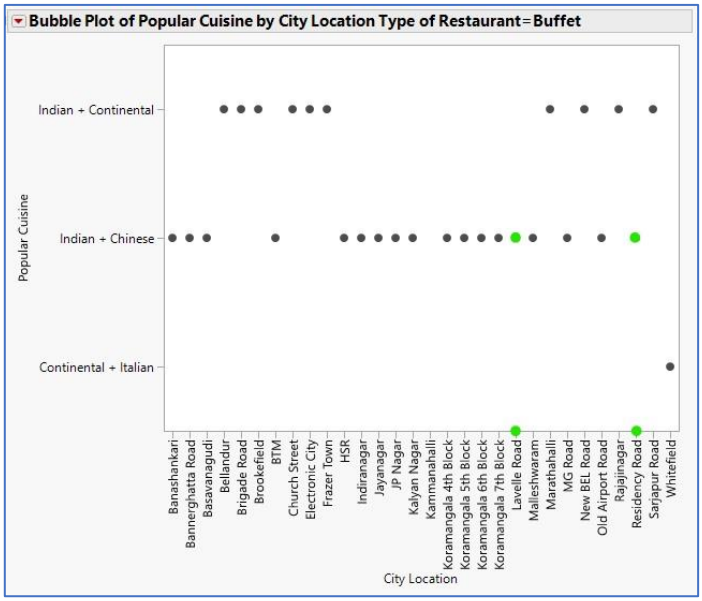



*Figure 21* Buffet Cuisines by City Location

[5] https://timesofindia.indiatimes.com/life-style/food-news/what-is-continental-food-7-continental-dishes-we-are-in-love-with/photostory/84287887.cms?picid=84287895

[6] https://bangaloremirror.indiatimes.com/bangalore/others/veeragallus-is-home-but-not-yet/articleshow/69995680.cms

[7] https://www.slurrp.com/article/love-italian-check-out-the-top-10-restaurants-in-bengaluru-1681452881616

# *Market Saturation: Restaurants in Bengaluru, India*

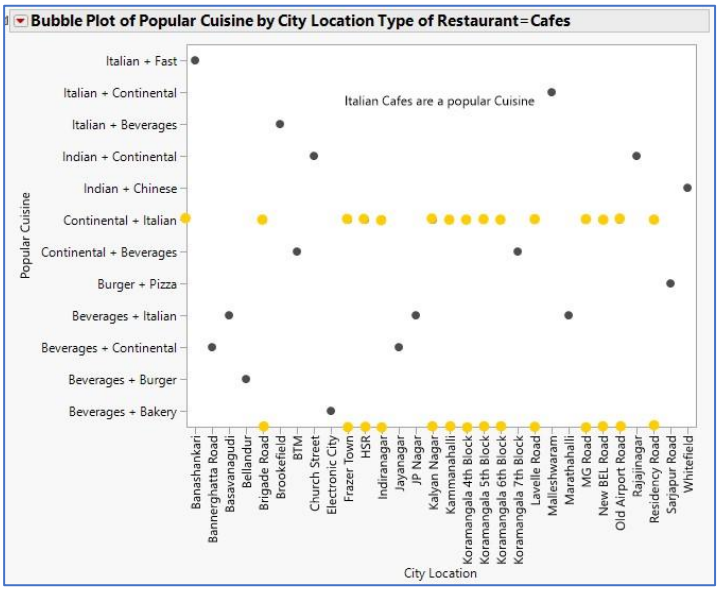



*Figure 22* Cafes Cuisines by City Location

**Cafés** serve a variety of light dishes such as soups, salads, and often cater to a certain group of customers like vegetarians[8]. In figure 22 to the left, it can be clear that Bengaluru likes a variety of cafes. The most popular cuisine is still the Continental foods, but it also prefers an Italian flare to its cafes such as the Onesta franchises with about 85 locations. From looking at the overall Reviews above, this is probably where the love of pizza shows through. It is very easy to appeal to travelers with pizza as it can be topped with vegetarian toppings or even cut-up Butter Chicken. In Figure 22, Lavelle and Residency Road are shown as agreeing with most City locations in their love for Continental Italian Café cuisines and probably pizza.

**Delivery** cuisine is a new and growing category in Bengaluru and around the world thanks to the Covid-19 pandemic. Third party businesses are providing chefs with smart kitchens and order processing software which allow these chefs to utilize their talents in the kitchen without being overwhelmed by the business aspects[9]. One example is the American Food Hall concept where businesses can go from Food trucks to serving dishes where all they need are a few people to cook their wide variety of cuisines and someone to run the cash register and everything else is handled by the Food Hall employees. From there, the Food Hall or delivery service like Door Dash can take the prepared foods

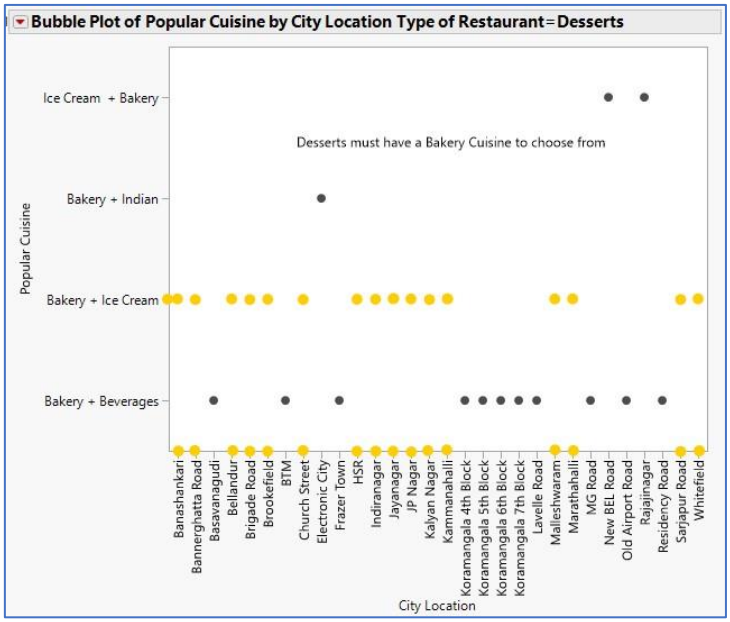
*Figure 23* Delivery Cuisines by City Location

[8] https://lbb.in/bangalore/this-italian-cafe-in-race-6c1013/

[9] https://ikcon.josequal.net/

to the customer themselves, all while making it so the customer does not have to be in public yet receives fresh, high-quality meals at home or work. This concept allows multiple chefs with different cuisines to be in the same building and gives the customers more choices in one location. This type of third-party service is most often seen in urban areas with enough customers for the third-party businesses to thrive and it is almost non-existent in rural settings for lack of customers to drive its profit margins up. In Bengaluru, almost every City Location loves the Indian Chinese cuisine, including Lavelle and Residency Road as shown in the WordCloud of Figure 23 on the previous page.

**Dine Out** is somewhat the opposite of delivery in that it means the customer goes to the restaurant and is served by employees who help create the friendly ambience in the overall reviews. It is not a cuisine in and of itself but a category of Type of Restaurant. It shares the same love of Chinese and Indian food that the Delivery Type exhibits. Only the Whitefield City Location included Continental in addition to Indian as its most popular cuisine.




**Dessert's** cuisines were most popular as having a Bakery, Ice Cream, with Indian foods and Beverages. In the Bakery cuisines, Bengaluru has its share of restaurant chains such as Dunkin-Donuts, Krispy Kreme, Baskin-Robbins, and Corner House Ice Cream, but it also has world cuisines such as French pastries from Lamara Patisserie, Smoor Chocolates, and Glen's Bakehouse's famous cupcakes. The overall look at the Dessert cuisine in Figure 24 on the left shows that in addition to Baked goods and Ice Cream, having yummy beverages is a winner, too!

*Figure 24* Dessert Cuisines by City Location

# *Market Saturation: Restaurants in Bengaluru, India*

*Figure 25* Dessert Cuisines having Bakery or Ice Cream in Lavelle and Residency Road locations.

Earlier on when looking at the Top 15 Dessert restaurants in Bengaluru, it was noticed that Lavelle and Residency Roads were number 12 and 13, respectively, out of 30 City Locations. So, they did not have the most nor the least of this type of Restaurant. When filtering Bakery and Ice Cream in the Dessert cuisine with the locations of Lavelle and Residency Road (see Figure 25), there are minimal restaurants that show up. This means that this is an underserved cuisine type despite the overall popularity in these locations.

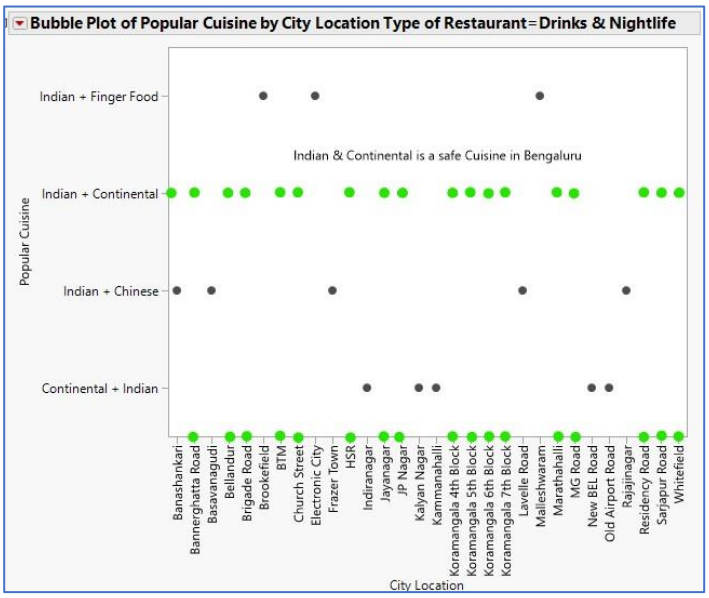



*Figure 26* Drinks & Nightlife Cuisines by City Location

**Drinks & Nightlife** plus **Pubs & Bars** have been combined as the Pubs and Bars chart (see Figure 26) has very similar information, however, it only shows the 17 city locations that are listed with the Pubs and Bars cuisines. The most popular cuisine is Indian + Continental much like the Delivery and Dine Out Types of Restaurants above. Yet, these Types of Restaurants bring in an additional category, Finger Foods. Some examples of this include Nachos or French Fries covered in cheese or spicy toppings as well as Chicken Wings or Chips with Salsa. Additionally, there were some drinks offered at these locations which include cocktails and mocktails as well as beer or wine.

## Summary of Reviews about Cuisines by City Location –

Buffets, Delivery, and Dine Out cuisines all have Indian + Chinese cuisines listed as the most popular in most of their city Locations. These foods include Chicken dishes such as Chicken Biryani, Butter Chicken, and Fried Rice. Cafés add in Italian + Continental as a preference which includes Salads, Soups and Pizza. Desserts have a large variety of sweet goods but shows that

the people of Bengaluru love their Bakeries with Ice Cream! The Drinks, Nightlife, Pubs and Bars sector enjoy the Continental foods plus finger foods so be sure to have their Sandwiches and other finger foods like chicken wings ready to snack on with their Chili Chicken French Fries!

When focusing on Lavelle and Residency Road locations specifically, their popular cuisines agree with the overall Bengaluru taste preferences with Buffets, Cafes, Delivery, Dine Out and Desserts. However, they have very little Dessert restaurants with Bakeries and/or Ice Cream cuisines. They also have fewer Drinks and Nightlife Locations while having no Pubs or Bars listed in this Dataset. Since Alcohol is getting more expensive, a focus should be put on Dessert restaurants.

## Reviews about Customer's Favorite Dishes by City Location –

There were so many favorite dishes that R Studio was challenged to create factors to analyze so Data Mining was the best way to organize and view summaries on favorite dishes.

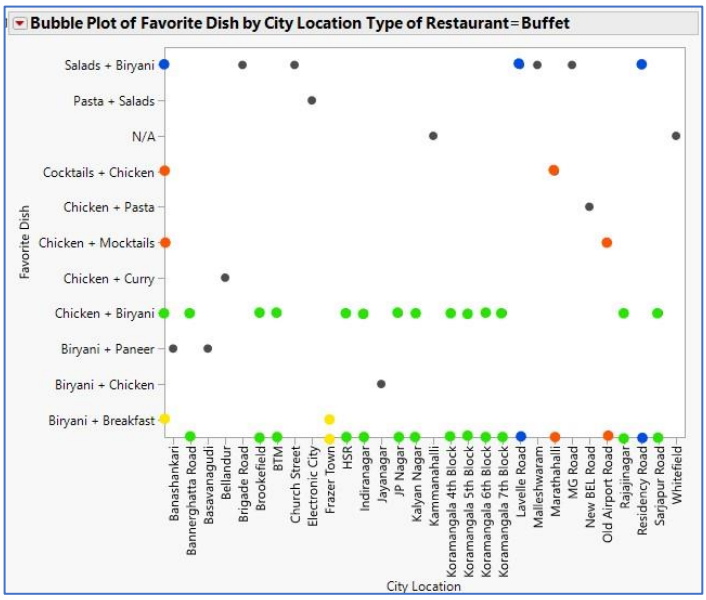



*Figure 27* Favorite Dishes in Buffets by City Location

**Buffets** have many favorite dishes as they hold many different types of foods in one location. When asked about their favorite dishes, customers listed Chicken and Biryani in multiple places. It is important to note that Biryani is not always a chicken dish as it can be made with chicken, mutton (sheep), fish, or even kept as a vegetarian dish. However, chicken dishes kept coming up as favorite dishes which includes chicken pizzas, chicken fried rice, or even chicken sandwiches. Buffets also showed their popularity as a breakfast choice in Figure 27 which includes the continental cuisine such as French Toast or Pancakes. In Lavelle and Residency Road locations, a salad buffet was popular as whereas biryani dishes.

# *Market Saturation: Restaurants in Bengaluru, India*

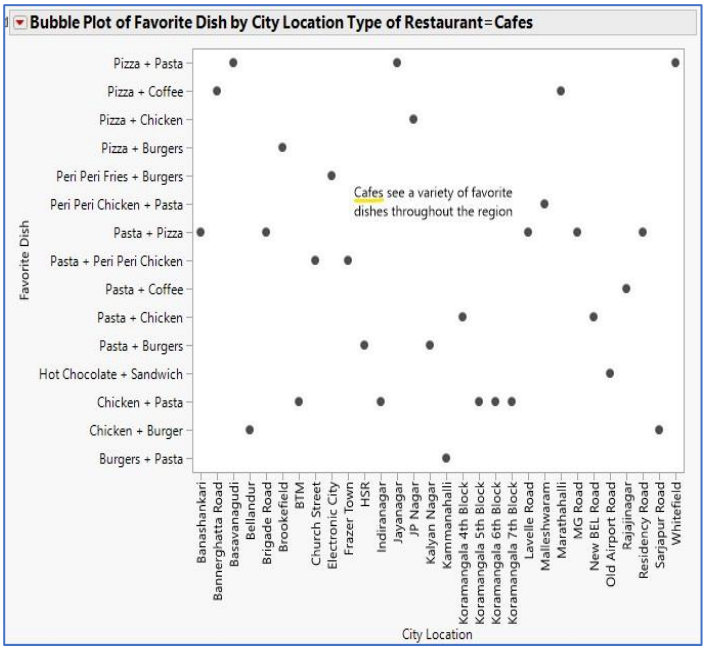



*Figure 28* Favorite Dishes in Cafés by City Location

**Cafés** have a large variety of liked dishes as well. The Italian side shows up in the love for pizza and pasta throughout the chart in Figure 28 on the left. Yet, the data points in that chart show the wide range of tastes that customers have in cafes. Burgers, Chicken, Coffee, and even Hot Chocolate show up to go with the Italian Fare. Even though there are generally less Cafes than there are Dessert locations in Bengaluru, it may be because it is hard to specialize in cafes with so many favorite dishes in cafes. Without a specialty, it would be hard to attract new customers to your restaurant.

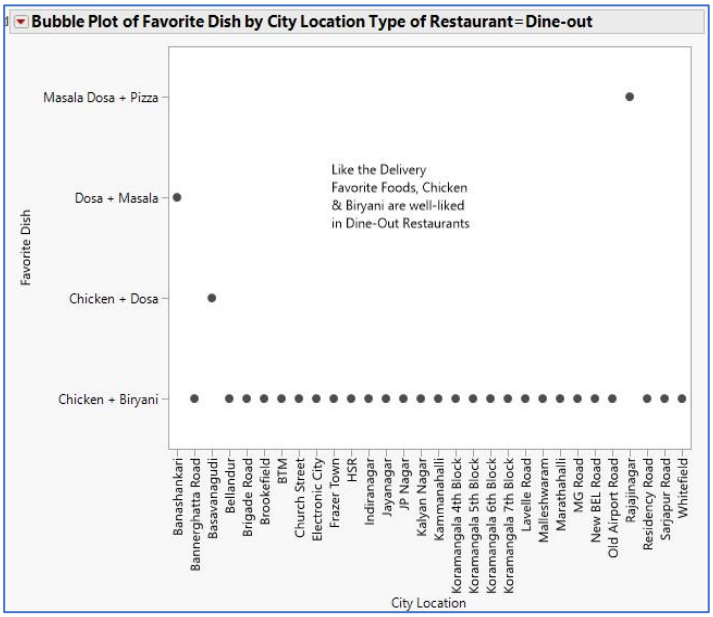



*Figure 29* Favorite Dishes in Dine Out by City Location

**Delivery** plus **Dine Out** favorite Dishes both showed that Indian cuisine held their favorite Dishes in Figure 29 on the left. Chicken Biryani is the most popular of 27 of the 30 city locations. Rajajinagar enjoys its Masala Dosa as Banashankari and Basavanagudi enjoy their Dosa dishes. The Chinese cuisine did not show up under favorite dishes even though it was the second most favorite cuisine. Bengaluru residents clearly like the dishes of their own country more than the quick Chinese dishes. Lavelle and Residency Road again agree with the most popular dishes being Chicken and Biryani.

# *Market Saturation: Restaurants in Bengaluru, India*

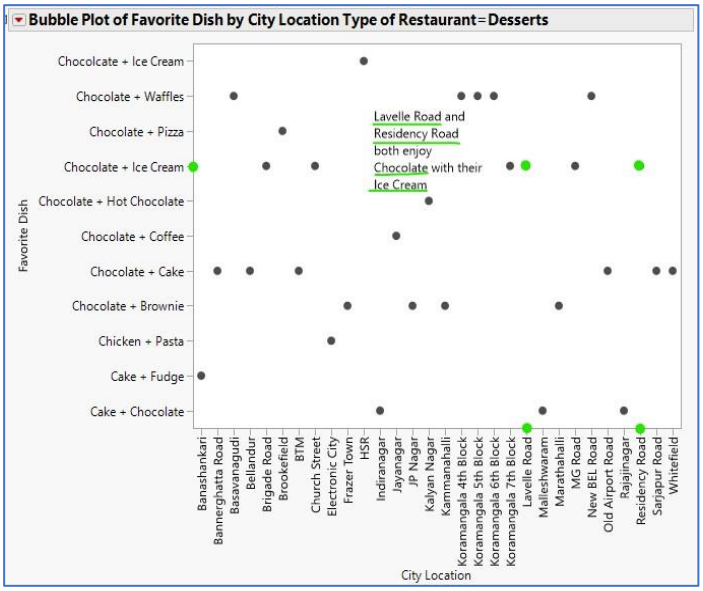



*Figure 30* Favorite Dishes in Desserts by City Location

Favorite dishes in **Desserts** have almost as many different favorites as Cafés. Chocolate, Ice Cream and Cake seem to be the favorites in Bengaluru. Chocolates can include brownies, fudge, artisan chocolate, and chocolate ice cream. Ice Cream can be Italian gelato, frozen custard, or milk-based ice cream. Cows are very political in Bengaluru as "the state's overall milk production has increased 20-30 percent in the past two decades"[10], but the Karnataka Prevention of Slaughter and Preservation of Cattle Act of 2020 creates difficulties for dairy farmers who only utilize milking cows for a certain number of years before turning them over. Ice Cream can utilize other milks such as coconut milks and can be made without milk in sorbets and other frozen delights. As Figure 30 shows, Lavelle and Residency Roads locations follow the trend of enjoying their ice cream and Chocolate goods. Perhaps a focus more on baked goods with chocolate would be a starting point for a new business with Ice Cream added later, after the politics with slaughtering cows has calmed down.

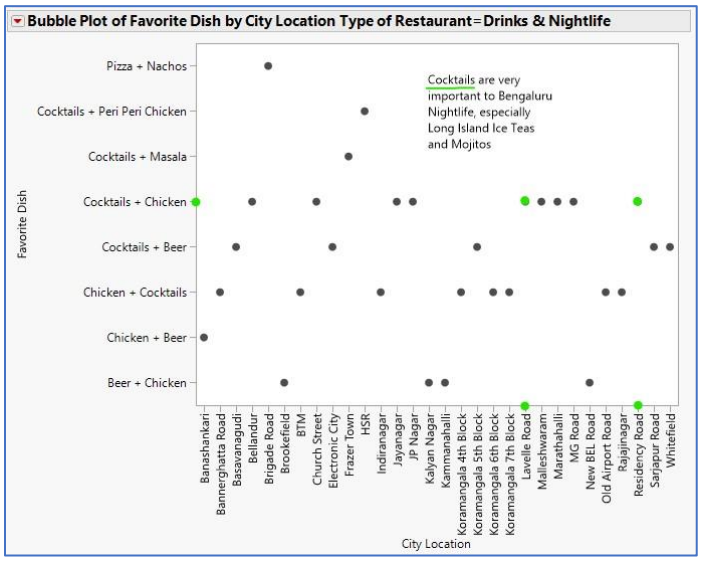



*Figure 31* Favorite Dishes in Drinks & Nightlife by City Location

**Drinks & Nightlife** plus **Pubs & Bars** are yet again combined as only 16 City locations gave feedback on favorite dishes in Pubs & Bars and the results were similar to Drinks and Nightlife. As shown previously, these favorite dishes had wide variety to them, but they often included Cocktails and Beer. Also, not shown in Figure 31, are the popular Mocktails which contain no alcohol but are like well-known cocktails such as a Virgin Strawberry Daiquiri or a Shirley Temple. If you do go out at Night and enjoy some drinks,

[10] https://timesofindia.indiatimes.com/city/bengaluru/dairy-farmers-may-prefer-to-rear-buffaloes-say-experts/articleshow/80868163.cms

there is likely a good Long Island Iced Tea or Mint-based Mojito being offered. Again, some form of chicken dish would be a good pairing for your cocktail, or you might like some pizza or nachos. If Cocktails are too fancy for you, there is a growing popularity of craft beers, locally sourced at local microbreweries. In Lavelle and Residency Road locations, they too enjoy cocktails and chicken menu items at their Nightlife locations.

## Summary of Favorite Dishes by City Location –

Buffets, Cafés, and Desserts all have a wide variety of favorite dishes amongst their city Locations. This amounts to city locations not having a specialty that they're known for as far as favorite dishes. Buffets had a common theme of Chicken and/or Biryani, Cafés should have pizza and pasta while Dessert's restaurants should have chocolate, and cake with their Bakery and Ice Cream selections. Delivery and Dine Out restaurants should emphasize their home-cooked Indian cuisine over their quick and inexpensive Chinese food choice. Restaurants with Drinks, Nightlife, Pubs or Bars should offer a variety of alcoholic and non-alcoholic cocktails or craft beer with their chicken and finger food options.

## Predictive Analytics Summary – What should new restaurants offer?

As Lavelle and Residency Road locations have very few Café and Dessert focused restaurants, it is recommended that the focus be given to the Dessert Type of Restaurant at one or both locations as they appear of equal value. A café presents difficulty in finding a specialty cuisine and there are too many different styles to choose from. This would result in difficulty branding a new restaurant. When focusing on the Dessert menu, a primary focus on Italian Bakery foods would be best. Ice Cream should be offered as an addition after the Cow Slaughtering Act of 2020 has calmed down, politically. Instead, an offering of chocolate brownies, cakes, and/or artisan chocolates should be offered.

## Prescriptive Analytics – How many employees should work each shift?

### Choosing a Location

Lavelle Road and Residency Road have both been shown as locations that need growth in earlier parts of this report, however, Residency Road has made some sincere investment in making this part of the Central Business District (CBD). Tender S.U.R.E. has made it safe for automobiles and more pedestrian friendly by widening and protecting sidewalks[11], which makes it a perfect location for commercial investment. Residency Road was named for the actual residence of the British representative who governed the region and has become a great location surrounded by prestigious schools[12] while staying connected to other sections of the CBD. The customer base here will be strong as there are many families commuting to the Bishop Cotton Boys School, St. Joseph's Boys High School, Sacred Heart Girls High School, as well as St. Patrick's High School.

*Figure 32* On the left, the old sidewalks of Residency Road compared with new sidewalks on the right.

*Figure 33* On the left, the old roads of Residency Road compared with new roads with curbing on the right.

### Comparing Competitors

As previously shown in this report, there are not many Dessert Restaurants from the Zomato surveys in the Residency Road area and an ideal Dessert Restaurant would have an offering of chocolate brownies, cakes, and/or artisan chocolates. There are a few ice cream stores like the Corner House Ice Cream Franchises which are open 11am – 11pm

[11] https://www.janausp.org/portfolio/residency-road/
[12] https://roofandfloor.thehindu.com/raf/real-estate-blog/neighbourhood-focus-residency-road-bangalore/

Monday through Sunday, according to Google. There is also a Chocolatier like Fabelle Exotic Chocolates which is temporarily closed. In alignment with the local school hours, a suggested business schedule to begin for your proposed Dessert restaurant is **9am to 9pm**. This allows the customer base to be the parents who just dropped off their students to have a morning meeting, cater to the after-lunch dessert crowd as well as the patrons who like desserts before and after dinner. In order to have fresh baked goods to sell, it is required that a 2-hr PREP time be implemented for a minimum of 3 people to start off the day. At the end of the day, it would also take 3 people an extra hour past closing to finish cleaning up (they could start cleaning at 8pm, depending on the rate of customers).

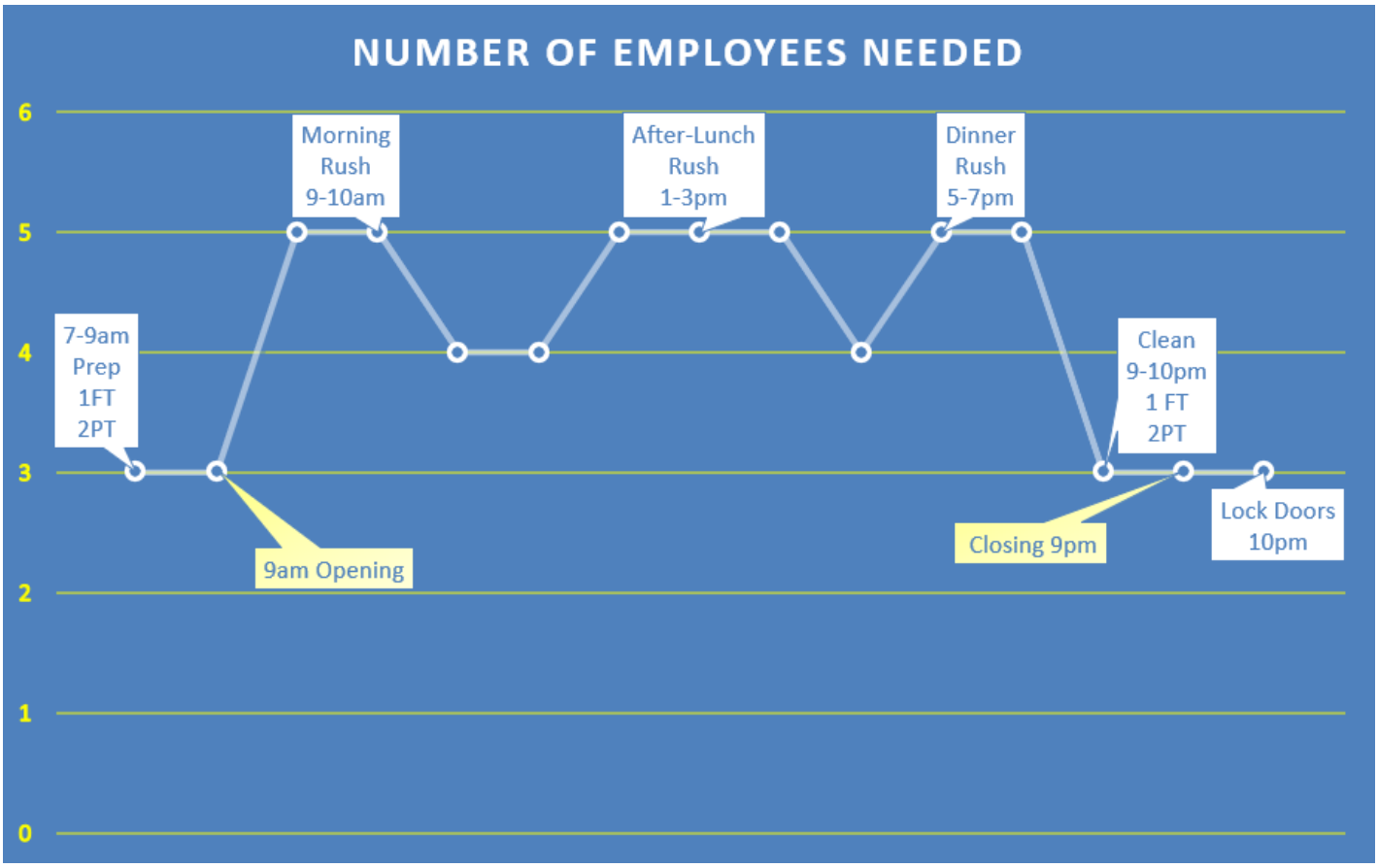



*Figure 34* This line graph shows the expected level of employees needed throughout a typical workday schedule. FT means Full-time employee and PT means Part-Time employee.

# *Market Saturation: Restaurants in Bengaluru, India*

## Non-Training Hours Schedule

The hourly rates in the top right corner of Figure 35 below and Figure 36 on the next page show a general Part-Time wage of ₹88 which is based upon the current wage of ₹87.02 for Restaurant staff salary in Bengaluru listed by Indeed.com[13]. Those who work the shifts involving Prep or cleaning get an increased pay at ₹88 as an incentive to work those needed shifts. Additionally, the full-time managerial shifts are paid ₹100 per hour but this may later be changed to a salary.

The chart in Figure 4 shows an optimized work schedule which utilizes a maximum of 2 Full-time managerial employees and up to 15 Part-time employees. On the left of the chart is each hour of the workday and at the top of the chart in orange are the rows detailing how many employees for each shift should optimally be scheduled. Generally, there are 2 part-time employees for each shift, unless it says 0.5 which means there is only 1 employee for that slot. The optimized number of employees required is the full-time Manager and Assistant Manager who work 8-hour shifts plus 10 Part-time workers who work 4 or 5 hours a day. This minimizes the labor cost of the restaurant which is shown at the bottom left of the chart.

**Calculating Minimum Number of Full and Part Time Employees Needed for business hours 9am - 9pm**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Managerial Full-time Pay | ₹ | 100.00 |
| Number of employees | 1 | 1 | 2 | 2 | 2 | 2 | 2 | Part-Time Open/Close Pay | ₹ | 90.00 |
| Wages | ₹ 800.00 | ₹ 800.00 | ₹ 405.00 | ₹ 440.00 | ₹ 352.00 | ₹ 396.00 | ₹ 450.00 | General Part-Time Pay | ₹ | 88.00 |
| | FT 7am - 3pm | FT 2pm - 10pm | PT 7am-Noon | PT 9am-2pm | PT 1pm-5pm | PT 3pm-7pm | PT 5pm-10pm | Optimized Staff | | Staff Needs |
| 7am - 8am PREP | 1 | | 1 | | | | | 3 | >= | 3 |
| 8am - 9am PREP | 1 | | 1 | | | | | 3 | >= | 3 |
| 9am - 10am | 1 | | 1 | 1 | | | | 5 | >= | 5 |
| 10am - 11am | 1 | | 1 | 1 | | | | 5 | >= | 5 |
| 11am - Noon | 1 | | 0.5 | 1 | | | | 4 | >= | 4 |
| Noon - 1pm | 1 | | | 1 | 0.5 | | | 4 | >= | 4 |
| 1pm - 2pm | 1 | | | 1 | 1 | | | 5 | >= | 5 |
| 2pm - 3pm | 1 | 1 | | | 1 | 0.5 | | 5 | >= | 5 |
| 3pm - 4pm | | 1 | | | 1 | 1 | | 5 | >= | 4 |
| 4pm - 5pm | | 1 | | | 0.5 | 1 | | 4 | >= | 4 |
| 5pm - 6pm | | 1 | | | | 1 | 1 | 5 | >= | 5 |
| 6pm - 7pm | | 1 | | | | 1 | 1 | 5 | >= | 5 |
| 7pm - 8pm | | 1 | | | | | 1 | 3 | >= | 3 |
| 8pm - 9pm | | 1 | | | | | 1 | 3 | >= | 3 |
| 9pm - 10pm CLOSE | | 1 | | | | | 1 | 3 | >= | 3 |
| Max Full-time employees | 1 | 1 | | | | | | 2 | | |
| Max Part-Time employees | | | 3 | 3 | 3 | 3 | 3 | 15 | | |

| | |
|---|---|
| Total Daily Cost (Objective) | ₹ 5,686.00 |

*Figure 35* This table shows the OPTIMAL number of employees and their shifts. FT means Full-time employee and PT means Part-Time employee.

[13] https://in.indeed.com/career/restaurant-staff/salaries/Bengaluru--Karnataka

# *Market Saturation: Restaurants in Bengaluru, India*

## Training Hours Schedule

The hourly rates in Figure 36 add a full-time non-managerial employee who gets paid ₹92 per hour. This could be a kitchen manager or an assistant manager in training and they are aligned with the closing time of the workday.

The chart in below in Figure 36 shows an optimized work schedule which utilizes a maximum of 2 Full-time managerial employees, 1 non-managerial employees and up to 15 Part-time employees. On the left of the chart is each hour of the workday and at the top of the chart in orange are the rows detailing how many employees for each shift should optimally be scheduled. Generally, there are either 1 or 2 part-time employees for each shift, and where it says 0.5, there is only 1 employee for that slot. The optimized number of employees required is the full-time Manager, the Assistant Manager and 1 more employee who work 8-hour shifts plus 9 Part-time workers who work 4 or 5 hours a day. This minimizes the labor cost of the restaurant which is shown at the bottom left of the chart. Note the 6 under the "Optimized Staff" column for the employee coverage between 3-4pm; this allows workers to have training time during a slower point of the workday. This opportunity provides the availability to hire some of the nearby students to work afternoon shifts after their full school day.

**Calculating Minimum Number of Full and Part Time Employees Needed for business hours 9am - 9pm**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Managerial Full-time Pay | ₹ | 100.00 |
| Number of employees | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | Part-Time Open/Close Pay | ₹ | 90.00 |
| Wages | ₹ 800.00 | ₹ 800.00 | ₹ 736.00 | ₹ 405.00 | ₹ 440.00 | ₹ 308.00 | ₹ 352.00 | ₹ 450.00 | General Part-Time Pay | ₹ | 88.00 |
| | FT 7am - 3pm | FT 2pm - 10pm | | PT 7am-Noon | PT 9am-2pm | PT 1pm-5pm | PT 3pm-7pm | PT 5pm-10pm | Optimized Staff | | Staff Needs |
| 7am - 8am PREP | 1 | | | 1 | | | | | 3 | >= | 3 |
| 8am - 9am PREP | 1 | | | 1 | | | | | 3 | >= | 3 |
| 9am - 10am | 1 | | | 1 | 1 | | | | 5 | >= | 5 |
| 10am - 11am | 1 | | | 1 | 1 | | | | 5 | >= | 5 |
| 11am - Noon | 1 | | | 0.5 | 1 | | | | 4 | >= | 4 |
| Noon - 1pm | 1 | | | | 1 | 0.5 | | | 4 | >= | 4 |
| 1pm - 2pm | 1 | | | | 1 | 1 | | | 5 | >= | 5 |
| 2pm - 3pm | 1 | 1 | 1 | | | 1 | 0 | | 5 | >= | 5 |
| 3pm - 4pm | | 1 | 1 | | | 1 | 1 | | 6 | >= | 4 |
| 4pm - 5pm | | 1 | 1 | | | 0 | 1 | | 4 | >= | 4 |
| 5pm - 6pm | | 1 | 1 | | | | 1 | 1 | 5 | >= | 5 |
| 6pm - 7pm | | 1 | 1 | | | | 1 | 1 | 5 | >= | 5 |
| 7pm - 8pm | | 1 | 1 | | | | | 1 | 3 | >= | 3 |
| 8pm - 9pm | | 1 | 1 | | | | | 1 | 3 | >= | 3 |
| 9pm - 10pm CLOSE | | 1 | 1 | | | | | 1 | 3 | >= | 3 |
| Max Full-time employees | 1 | 1 | 1 | | | | | | 3 | | |
| Max Part-Time employees | | | | 3 | 3 | 3 | 3 | 3 | 15 | | |

Tabitha Hagen: NONMANAGERIAL Full-time PAY 92 per hour

| | | | |
|---|---|---|---|
| Total Daily Cost (Objective) | ₹ 5,796.00 | ₹ 110.00 | more expense while training 3-4pm |

*Figure 36* This table shows the OPTIMAL number of employees and their shifts during a sample training schedule. FT means Full-time employee and PT means Part-Time employee.

# *Market Saturation: Restaurants in Bengaluru, India*

## Prescriptive Analytics Summary– How many employees should work each shift?

Residency Road has a prestigious history, increased pedestrian access, and a vibrant community with plenty of potential customers nearby making it a prime location to open a Dessert focused restaurants with an offering of chocolate brownies, cakes, and/or artisan chocolates. Proposed are two different shifts, one for training and one standard employee schedule. Both schedules require a Full-time Manager and Assistant Manager, which allows one to open the business with the required Prep and the other to close with the required Cleaning. There is one hour each workday in which both managers are present so that business operations such as making bank deposits could occur. One schedule allows employee overlap for training purposes. Choosing a location within the prestigious school community allows opportunities to fill the part-time shifts with parents who need shorter hours yet stay near to their children or teens who need after-school work. Incorporating members of those communities will also quickly encourage their peers and other family members to visit your establishment.

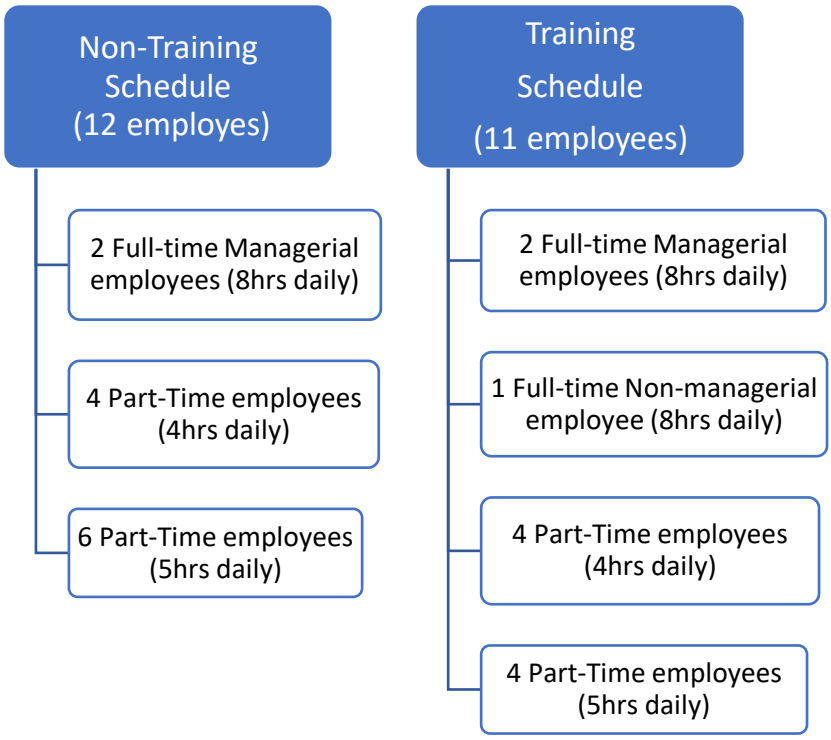



*Figure 37* This chart summarizes the previous two tables.

## Decision Analysis Overall Summary –

Bengaluru has the need for more Dessert Restaurants in the City Location of Residence Road. This type of restaurant can be low cost for consumers as opposed to the high cost of establishments that sell highly taxed alcoholic drinks, which this area is currently known for. The customer base can be filled with tech-savvy consumers as well as families of the many different schools on Residence Road.

Dessert cuisine that does best includes Italian baked goods with chocolate brownies, cakes, and/or artisan chocolates. Consumers are demanding that online ordering is a must for a restaurant but are ambivalent towards online reservations to book a table ahead of time. Ice Cream made with cow milk is already in this City-location so if it is added as a later expansion, it should be done so after politics about cow slaughtering have calmed down.

When creating work schedules to begin your restaurant with, it was noted that fresh Baked Goods need a set aside Prep Time to ensure quality products. With the requirement that a manager or assistant manager always be present, the recommended schedule is to be open from 9am to 9pm. Initially, it would be best to only be open 5 days a week to not overwhelm your managerial staff by having them work more than 40 hours a week. Either the schedule could reflect a Monday-Friday workweek, or it could choose to be closed any other two days a week.