# Online Car Hailing System Performance Analysis Using ggplot2

A Project Report

Submitted in the partial fulfillment of the requirements for

the award of the degree of

Bachelor of Technology

in

Department of Computer Science and Engineering

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**KONERU LAKSHMAIAH EDUCATION FOUNDATION**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**


# Declaration

The Project Report entitled "**Online car hailing system performance analysis using ggplot2** "is a record of bonafide work of P.Sai Harshitha(180030058) P.Sneha (18030293 )Shaik Afreen Anjum(180030713) K.Udanya(180030768) submitted in partial fulfillment for the award of **Bachelor of Technology in Computer Science and Engineering** to the **K L University** during the academic year 2021-2022. The results embodied in this report have notbeen copied from any other departments/University/Institute.

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**


# Certificate

This is to certify that the Project Report entitled **"Online car hailing system performance analysis using ggplot2"** is being submitted by P.Sai Harshitha(180030058) P.Sneha (18030293 )Shaik Afreen Anjum(180030713) K.Udanya(180030768) submitted in partial fulfillment for the award of **Bachelor of Technology in Computer Science and Engineering** to the **K L University** is a record of Bonafide work carried out under our guidance and supervision during the academic year 2021-2022.

The results embodied in this report have not been copied from any other departments/ University/Institute..

**Signature of the Supervisor**

**Dr.G.Siva Nageswara Rao**

**HEAD OF THE DEPARTMENT**

**Mr.HARI KIRAN VEGE**

# Acknowledgement

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# ABSTRACT

Applications like uber, ola or any car hailing application to say, made life a lot easier for you, me, everyone in this smartphone era. We are just one tap away from accessing a vehicle that takes us to our required destination. One tap away from a place we want to be. One tap away from having a safe and secured ride back home after a long day at work. One tap away from meeting our friends at a restaurant. One tap away.

Ever wondered what really happens with that one tap? What are the metrics that were used to charge us, the customers? Well, Me and my team did. We were so fascinated about the idea of modern technology and how it makes one's life so simple with just a click. So, we put on our research hats on and kept digging until we found our answers.

The concept of car pooling sharing a ride really did substitute the traditional personal car service. It is better for the economy too. This is beneficial for the driver, the company and the passenger too. The driver gets to pick up few customers at a time, the customer pays a lot less than they would at the normal price.

We take in the factors that influence and their relations too. This project helps us understand the online car hailing in an in depth way.

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# Chapter 1. INTRODUCTION

Since this is a Data analysis project, we have chosen to take the help of Kaggle to provide us with the required data set, tableau and google colabs to perform the analysis on. The most interesting part through out this project is that we could see the insights and analyze why are we being charged buy the car hailing application only this much for certain extend and how charging that little amount of money, giving away coupon codes, offering sale on the amount for premium customers is actually beneficial for the company's growth.

We use ggplot, and why ggplot? Let me tell you it the most useful and effective for story telling and data visualization. Data visualization plays a crucial factor in a business. With the help of it we could foresee the effects that our business might face in the near future.

With this analysis we could see the economic variation during different seasons. We could for see the business stats long before they come into picture and make sure the business is shape shifting to fit into the criteria for a better tomorrow. Storytelling , the most important part of our data analysis project would help companies to craft their future option, opinion, decisions . We could avail benefits even during complex time.

# SYSTEM REQUIRMENTS:

## SOFTWARE REQUIRMENTS:

The major software requirements of the project are as follows :

**Language:** R Programming

**Operating System :** Windows 10

**Compiler :** Kaggle, R Studio

## HARDWARE REQUIRMENTS:

The major hardware requirements of the project are as follows:

**RAM :** 8GB

**Processor :** i5

**Operating System :** 64-bit

# Chapter 2. LITERATURE SURVEY:

## A) Online Car Hailing:

In this project "Online Car-Hailing System", the platform which is sharable includes several primary subdivisions. It includes bicycle sharing, car sharing, and house sharing. Online car-sharing gives output of "Internet" with "sharing economy". It also changes the urban life at the same time it also gives a great impact on taxi market. For example, the perspective of building a city, vehicles used for car-sharing are often have efficient fuel and reduce urban emissions and urban congestion. They dived the online taxi-hailing system into two services, they are tailored taxi services and car-pooling services. The car pooling system characteristics are similar to ride sharing.

By the user-experience, the online car-hailing experience is of three phases. They are the performed, experiences everything, and reflective at some stages. Plans are invented in the anticipatory phase, and users recollect their previous travelling experience and think about their future travel. The gathering of travel information also begins in this phase. From different aspects in the online car-hailing systems, the scholars have carried many studies from different phases and aspects. They also think the online car-hailing has an effect on public transportation and private cars. It has both positive and negative influences on traffic, and it is difficult to find their choices based on the data we have.

While we analyse the effects of the pricing strategy on the traditional taxi market based on bilateral market theory and the equilibrium model. They introduced a mutually stable pricing platform style in the traditional taxi market and online car-hailing market. The impact of double-apping on the online car-hailing system. The action taken by one side, it allows the driver to apply for dual application.

The increase of car-hailing program in the previous years has been followed by the publishing of high increase in number of research tries in the form of papers, public agency reports, recommendatory reports and white papers that have focused in understanding the multitude set of effects of this new phase of mobility in terms of behavior while travel, changes by the user in activity appointment and life which has quality, traffic outwardness such as crowded, pollution and strike, ownership of car, effects of being social and equality, drivers and the labor market, and regulator substructure.

Reliable and robust answers to questions which are basic such as the total impact of car-hailing on vehicle which are travelled kilometers are still finite due to the less amount of trip-based car-hailing data which is in the database are made available for the sake of research, even if in some cities such as New York and Austin and more, portions of car hailing data stored have recently been openly released. Many number of research techniques has been taken and observed to study the impacts of car hailing on the travel of the behavior changes, modal exchange and the level of traffic outwardness. By research we found ten types data types and collection approach that have been used in the literature survey, as summarized in Table.

Sincere and redundancy allotment are commonly watched problems when we are in process of designing a system. In the Bayesian network it can only analyze the only the main important factors which are affected and affecting the system firmness and stability. It is necessary to depend on the truthful and fair distribution model. This method is commonly used method which aims to share the reliability of every subsystem equally and stabilize the system.

Anyway, different elements that shows the affect and the distribution reliability should not be given the same importance, nor it should have the same level of reliability which is been assigned to the assignment. To cure this problem, Chang et al introduced a maximum randomness in order which is weighted average in the method which we did and which adequately overcomes the defects and the shortcomings of the weight which is average distribution method. Elegbede et al introduced the concept of cost minimization and apply the

algorithm that is ECAY to learn the allocation by reliability of parallel systems.

Two people who are Attiya and Hamam show the reliability allocation model of a heterogeneous distribution system which is different and heterogeneous in nature, based on a cost function, and then present a heuristic algorithm based on the algorithm of simulated annealing technology. The scientist Yalaoui et al introduced a non-polynomial dynamic programming which acts differently, algorithm for the reliability allocation of serial parallel systems, and by an example we will get to know that its intersection and converge effect is unique. In the last, most sincere allocation models take cost as the factual functions to get the accurate and optimal reliability allocation scheme .

## B. INFLUENCING FACTORS FOR THE ONLINE CAR-HAILING SYSTEM:

There are references that consider the circumstances that impact on consumers to choose sharing economy services and products. It makes the analysis stronger of usefulness of publicly perceived. Study the influence of the travelers and family features on their traveling ideas. We discuss the behavioral intentions towards room sharing platform in the sharing economy, and the results indicate that although the intensity varies, utilitarian motivation. By the study of the impacts affecting online and offline service quality concerning the car-hailing drive by the sharing economy, further checking the relationship in the quality of service, satisfaction and loyalty in the sharing business context. As the result the continuous improvement of the quality of the service is the main factor for the continuous growth of online car-hailing and the sharing economy.

## C. BAYESIAN NETWORK AND RELIABILITY DISTRIBUTION:

The Bayesian network, this is also known as belief network, is applied to decrease the unpredictability and also shows the incompleteness.

The Bayesian network is that based on Bayes' theorem. This network model is used to create a more complex processes, and it needs experts participation to determine the network nodes to solve problems related to field knowledge accurately by using repeated research. And the Bayesian network analysis also appears in supply chain management, risk management, project decision-making and environmental simulation.

# Chapter 3. PROPOSED SYSTEM:

Cabs are the supply services. So, the cab location needs to be traced by the customers and, This location of each cab is identified through a web application firewall and load balancer by sending the geolocation of the cab to the server once every 4 seconds. To know the accurate GPS location we use Apache Kafka as the data hub.

Now we add a few more things to our cabs that make the customers comfortable with the clear cut details of the cab without facing issues after booking the cab

1. Tracking how many seats a cab consists of?

- Generally, we will be having 4 doors and seating will be 4-7

Passengers plus 1 driver.

- The carrying capacity for luggage is also very high.

2. Is there any separate seat for children?

- In generally child fare rule, adult fare have to pay for their children between 5 years to 12 years
- In case if the child was asked to have a separate seat only

3. Type of vehicle?

- It can be any type like Tavera or any other.

4. Can a wheelchair be fit into the cab? so that old persons can also travel comfortably

- Yes wheelchairs can easily go straight into the

Vehicles, with the help of manual.

- Users can travel safely, comfortably, and independently.

5. Allocation of the seats presents.

- To track vehicles there are many attributes to model:
- A number of seats, type of vehicle, the presence of a car seat for children, can a wheelchair be fit, and so on.

Assume A1, A2, . . . , An is a partition of the sample space, B is the random time in •, and P (B) > 0, then P(Ai |B) = Xn i=1 P(Bi) P(Ai)P(B|Ai) Pn i=1 P(Ai)P(B|Ai) constantly exists, i = 1, 2, . . . , n. In the Bayesian formula, P(Ai ) and P(Ai |B) are known as the prior probability and posterior probability of the cause. P(Ai )(i = 1, 2, · · · n) is a person's perception of the incident's occurrence probability when there is no further information.

With new information obtained and when B happened, a new estimate of the incident's occurrence probability would be made. The Bayesian formula is a deduction from rea sons to the results. In contrast, the total probability formula is from the results to the reasons.

The Bayesian formula's significance lies in that if event A has occurred, the reason behind needs to be determined, if there are n probable causes of A, B1, B2, . . . , Bn, and any two causes are mutually incompatible, the probability of any Bi needs to be known, that is the conditional probability P(Bi |A), then Bi is the most likely cause for event A's occurrence.

P(Bi ) is called the prior probability, which is the summary of past experience and a conclusion of the possibility of occurrence for various reasons.

Before the occurrence of event A, it is known, P (A|Bi) is the probability of occurrence of A under various reasons, which can be obtained from technical means, P(Bi |A) is posterior probability, which is the new knowledge on the occurrence possibility of various causes when A occurred.

# Chapter 4. EXISTING SYSTEM:

Cabs on online can be booked by just clicking a button on our mobile phone and getting the available cabs in front of you within a few minutes whenever and at any time and wherever at any place we need.

This process becomes easy to operate with a small sum up of number of people i.e. within a specific district/state but, when it lands to a large number i.e., the entire country, it becomes very tough and complex to control the n number of orders at the same time and also to track the locations of the cab drivers.

The systems like these require blended architecture and there are a more number of components added together internally to share riding services to all over the world/country. By this we can see that, in the current system, we are been using the following techniques as given below.

As we are all are known with Uber cab services. Here when a user requests for ride through the app we created, the cab reaches the passenger's place within a few minutes, a driver arrives at the passenger's location to take them to their desired destination. In the past techniques that we used for Uber cab services, it was created by the “monolithic” architecture model which is software.

This process contains the backend services to improve the work of the work, and a frontend service too, and a single database. At the backend work in our process, Python is used and its as the frameworks and SQL Alchemy as the layer to the database we have.

The booking of Online cabs by using the services, they can be booked by just clicking a button on our mobile phone and getting the cab services available in front of the passenger within a few minutes whenever at any time and in any place wherever at any place we want.

In this process there are three main components involved in the online car hailing: the passenger, the driver, and platform. And once the passenger decided to travel, itself selects the passenger and the type of vehicle and sends the desired destination of the trip booked by the passenger.

The one we are working on which is online car hailing platform will give the passenger an Estimated price, for the driver better service passengers can also give a tip. After the passenger confirms the ride, the platform will send the passenger's travel information to the driver who is near the passenger.

Then, the cab driver gets the ride information. If the driver thinks that the income of this service is worth his expectations, he will accept and consider the order and then contact the passenger to give him a ride else he will cancel the ride.

After the completion of the trip, the passenger pays the fee got for the drive to the online car-hailing platform, and the platform will transfer the fee to the driver after extracting a certain percentage for the commission. According to the characteristics of the online car hailing service, this project contains mainly two key factors that are affecting the online car-hailing system.

(a) **Traveling time**: Passengers use mobile phones to book the cab and they obtain information about the car and drivers. The information shared by the online platform will saves the waiting time.

(b) **Price of an online taxi**: The intervention of the online payment platforms such as Google pay, Phone pay and Paytm makes credit card payment possible, which allows people to pay after consumption. The cost of online car-hailing is relatively low when we compared to the physical hailing process . Now by using the online car-hailing process it helps us to get various allowances and subsidies, such as coupons, and discounts which help the people to use the online car-hailing process rather than the physical hailing process.

# Chapter 5. Implementation/Flow of the project:

In these we are performing Data story telling. Data storytelling is an important component of Machine Learning through which will be able to understand the background of various operations. With the help of visualization, companies can avail the benefit of understanding the complex data and gain insights that would help them to make decisions. The ggplot2 library is used for understanding the data and for developing and understanding the customers who avail the trips.

## Step 1: Importing Necessary Libraries.

Used Libraries that are helpful to visualize the data:

1. **gplot2**: ggplot2 is the most popular data visualization library that is most widely used for creating aesthetic visualization plots.
2. **lubridate**: Use time-frames in the dataset
3. **dplyr**: Data Manipulation
4. **tidyr**: Tidy the data
5. **DT**: Datatables in JS
6. **scales**: With the help of graphical scales, we can automatically map the data to the correct scales with well-placed axes and legends.

Data storytelling is the process of taking raw data, analyzing it, and narrating the insights to the customers.

We have three main components:

**Data**: The first element of storytelling requires we have accurate data. One of the main benefits of an all-in-one reporting platform is that data is automatically pulled from various marketing platforms, which both saves our time and avoids the possibility of human-error in the data collection process. Once the data has been collected and cleaned, it is then analyzed with the use of statistics and algorithms in order to extract key insights.
In these performed various data cleaning method which help the data to understand

**Visualization:** Data visualization is a graphical representation of data that uses graphs, charts, and other visualization methods to understand more about the data. Data visualization is ,main process in which we both discover and communicate and underlyines trends, patterns, and outliers in a given dataset. Ultimate, goal of visualization is to represent the uncover trends that may have otherwise been missed with a standard spreadsheet and convey that information in a comprehensible way.

## Step 2: Importing the data and performing data cleaning process

We got 6 months of the uber data to perform visualization process

In order to combine all the data we used rbind function which helps us to combine all the Data together .

As the dataset contains date, time which is a factor and latitude and longitudes which is the main factor. To convert the data time into a readable format we will be using Date Time conversion function .

```
apr_data <- read.csv("uber-raw-data-apr14.csv")
may_data <- read.csv("uber-raw-data-may14.csv")
jun_data <- read.csv("uber-raw-data-jun14.csv")
jul_data <- read.csv("uber-raw-data-jul14.csv")
aug_data <- read.csv("uber-raw-data-aug14.csv")
sep_data <- read.csv("uber-raw-data-sep14.csv")


data_2014 <- rbind(apr_data,may_data, jun_data, jul_data, aug_data, sep_data)


data_2014$Date.Time <- as.POSIXct(data_2014$Date.Time, format = "%m/%d/%Y %
H:%M:%S")

data_2014$Time <- format(as.POSIXct(data_2014$Date.Time, format = "%m/%d/%Y %
H:%M:%S"), format="%H:%M:%S")

data_2014$Date.Time <- ymd_hms(data_2014$Date.Time)

data_2014$day <- factor(day(data_2014$Date.Time))
data_2014$month <- factor(month(data_2014$Date.Time, label = TRUE))
data_2014$year <- factor(year(data_2014$Date.Time))
data_2014$dayofweek <- factor(wday(data_2014$Date.Time, label = TRUE))
```

## Step 3: Visualization of Data using ggplot2

**1**.In these Visualization step we have visualized by plotting the trips by the hours in a Day.

```
hour_data <- data_2014 %>%
                  group_by(hour) %>%
                        dplyr::summarize(Total = n())
datatable(hour_data)
```

Show 10 entries Search:

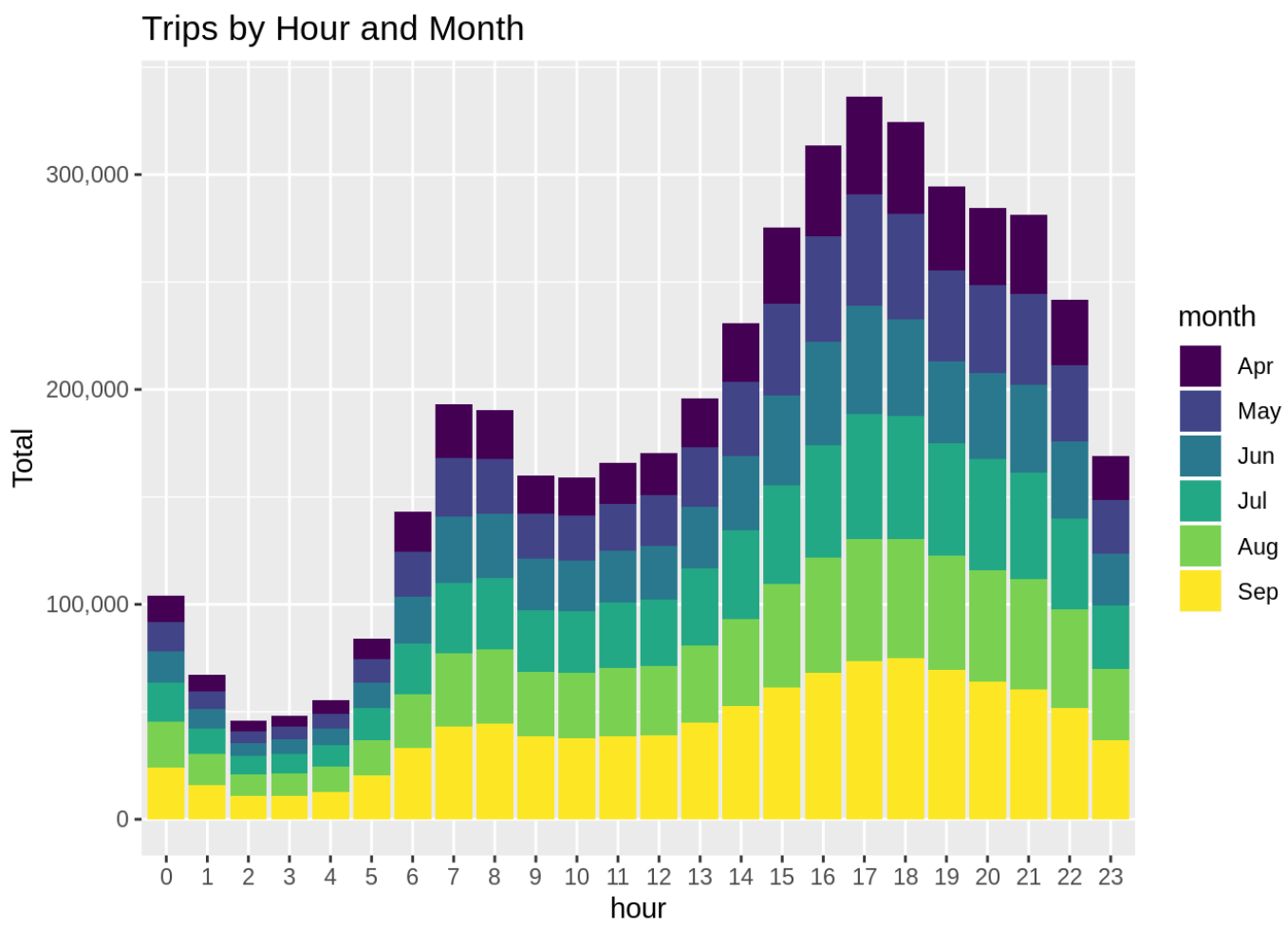
| | hour | Total |
|---|---|---|
| 1 | 0 | 103836 |
| 2 | 1 | 67227 |
| 3 | 2 | 45865 |
| 4 | 3 | 48287 |
| 5 | 4 | 55230 |
| 6 | 5 | 83939 |
| 7 | 6 | 143213 |
| 8 | 7 | 193094 |
| 9 | 8 | 190504 |
| 10 | 9 | 159967 |

**2.** In these we visualize the Trips by Hour and Month

```
month_hour <- data_2014 %>%
                  group_by(month, hour) %>%
                        dplyr::summarize(Total = n())

ggplot(month_hour, aes(hour, Total, fill = month)) +
            geom_bar( stat = "identity") +
                  ggtitle("Trips by Hour and Month") +
                    scale_y_continuous(labels = comma)
```

## Output :



**3**. In these we visualize Trips by Days and Month:

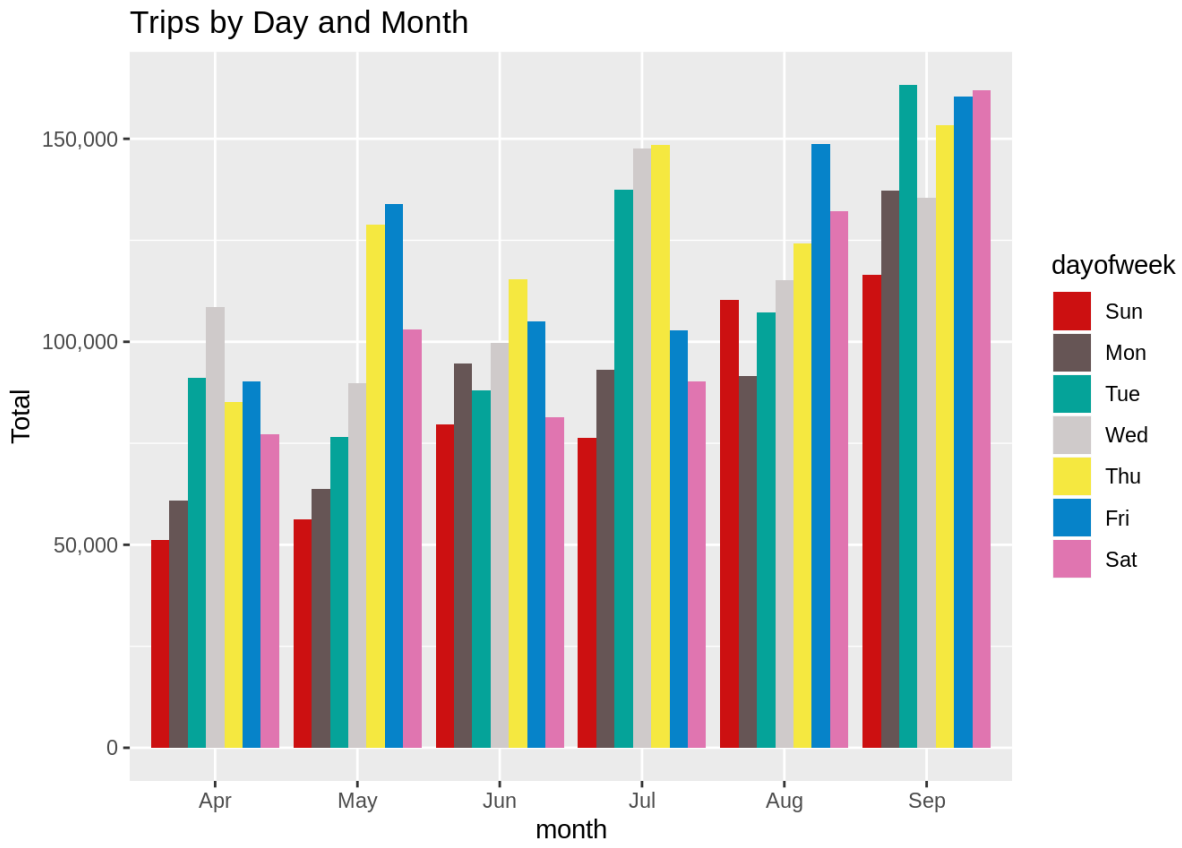
```
day_month_group <- data_2014 %>%
                  group_by(month, day) %>%
                        dplyr::summarize(Total = n())

ggplot(day_month_group, aes(day, Total, fill = month)) +
            geom_bar( stat = "identity") +
                  ggtitle("Trips by Day and Month") +
                    scale_y_continuous(labels = comma) +
                    scale_fill_manual(values = colors)
```

```
day_group <- data_2014 %>%
                   group_by(day) %>%
                         dplyr::summarize(Total = n())
datatable(day_group)
```

Show 10 entries Search:

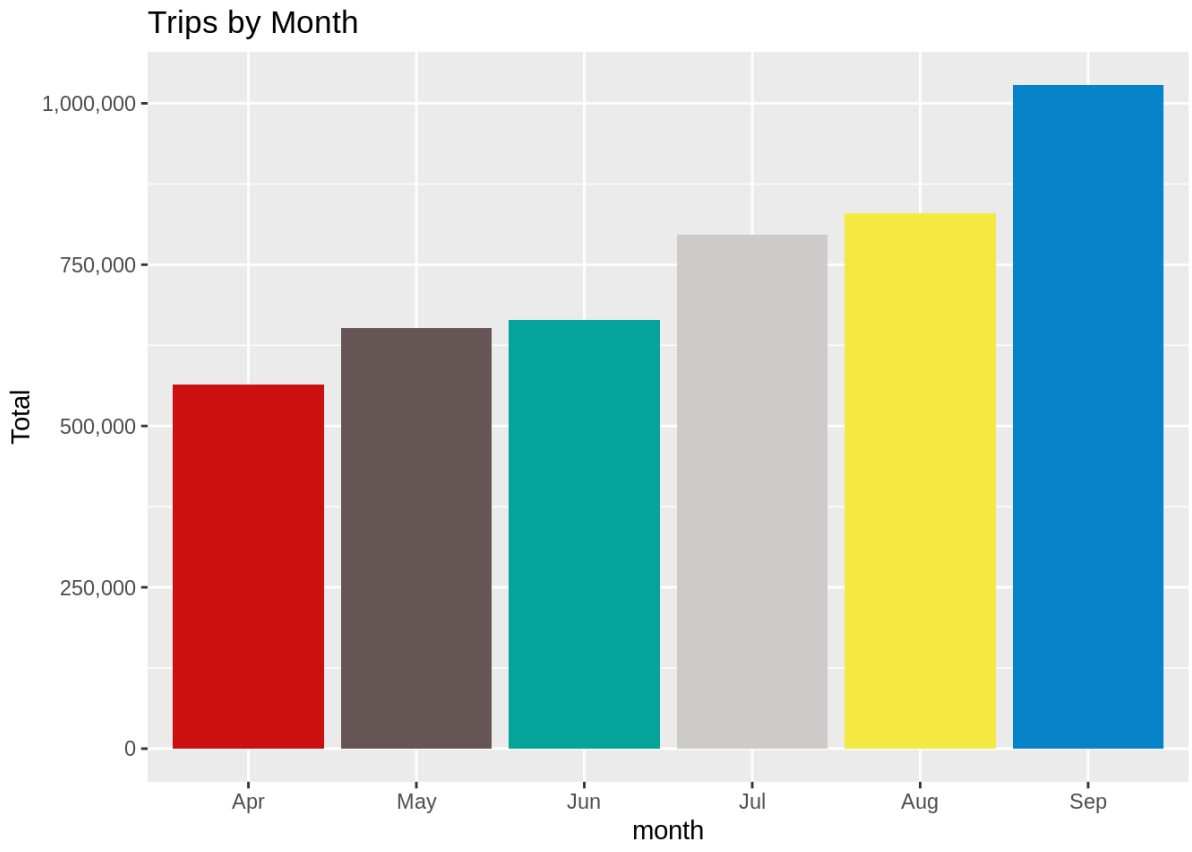
| | day | Total |
|---|---|---|
| 1 | 1 | 127430 |
| 2 | 2 | 143201 |
| 3 | 3 | 142983 |
| 4 | 4 | 140923 |
| 5 | 5 | 147054 |
| 6 | 6 | 139886 |
| 7 | 7 | 143503 |
| 8 | 8 | 145984 |


Trips by Day and Month
150,000
100,000
50,000
0
Total
Apr
May
Jun
Jul
Aug
Sep
month
dayofweek
Sun
Mon
Tue
Wed
Thu
Fri
Sat

## **4.** Number of Trips taking place during months in a year**:**

In these we visualize the number of Trips taking place during each moth in a year. By visualizing the data we observed that the most trips have been in the month of September.

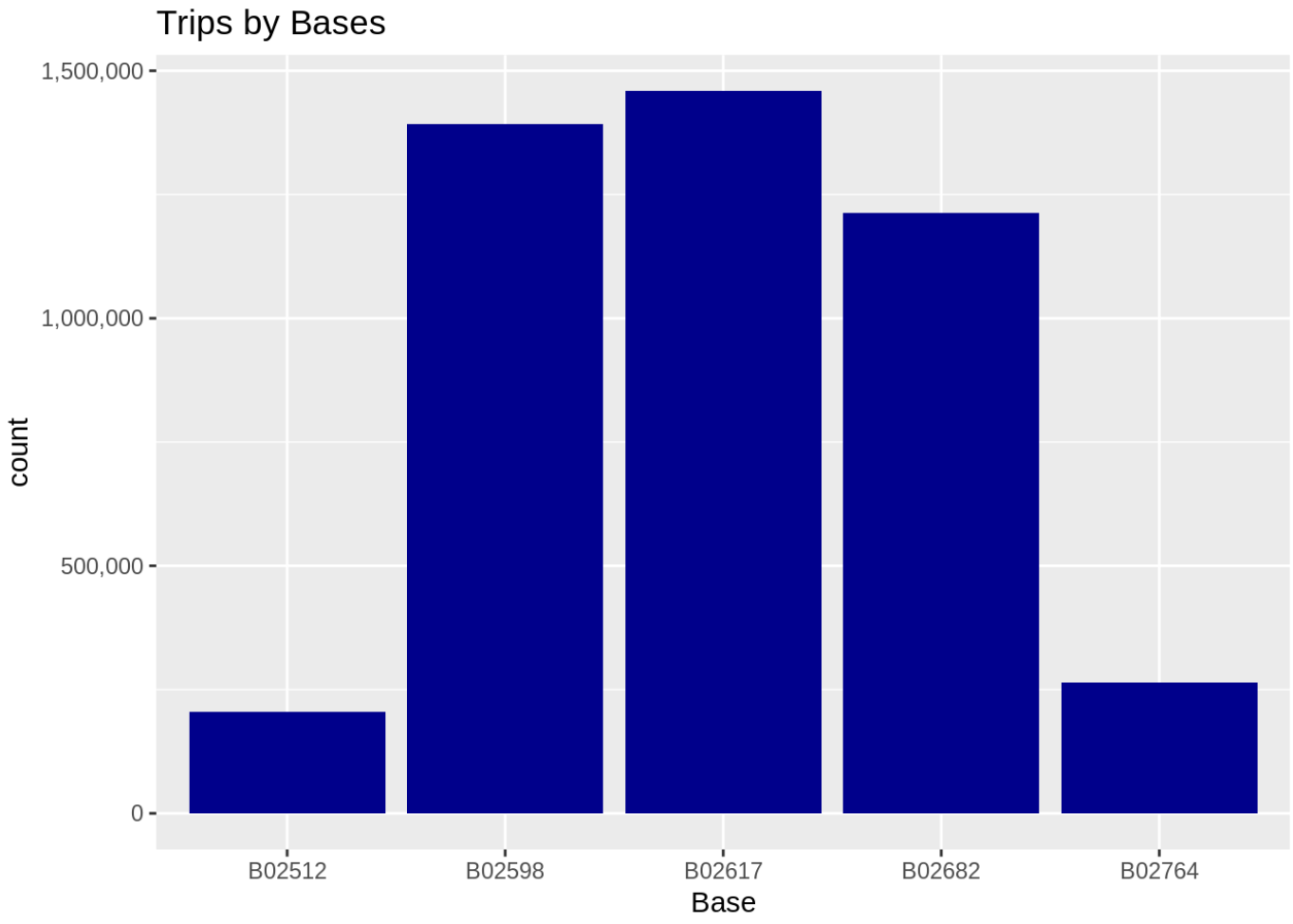
Input:



**5.** Number of Trips taken place with respect to Bases:

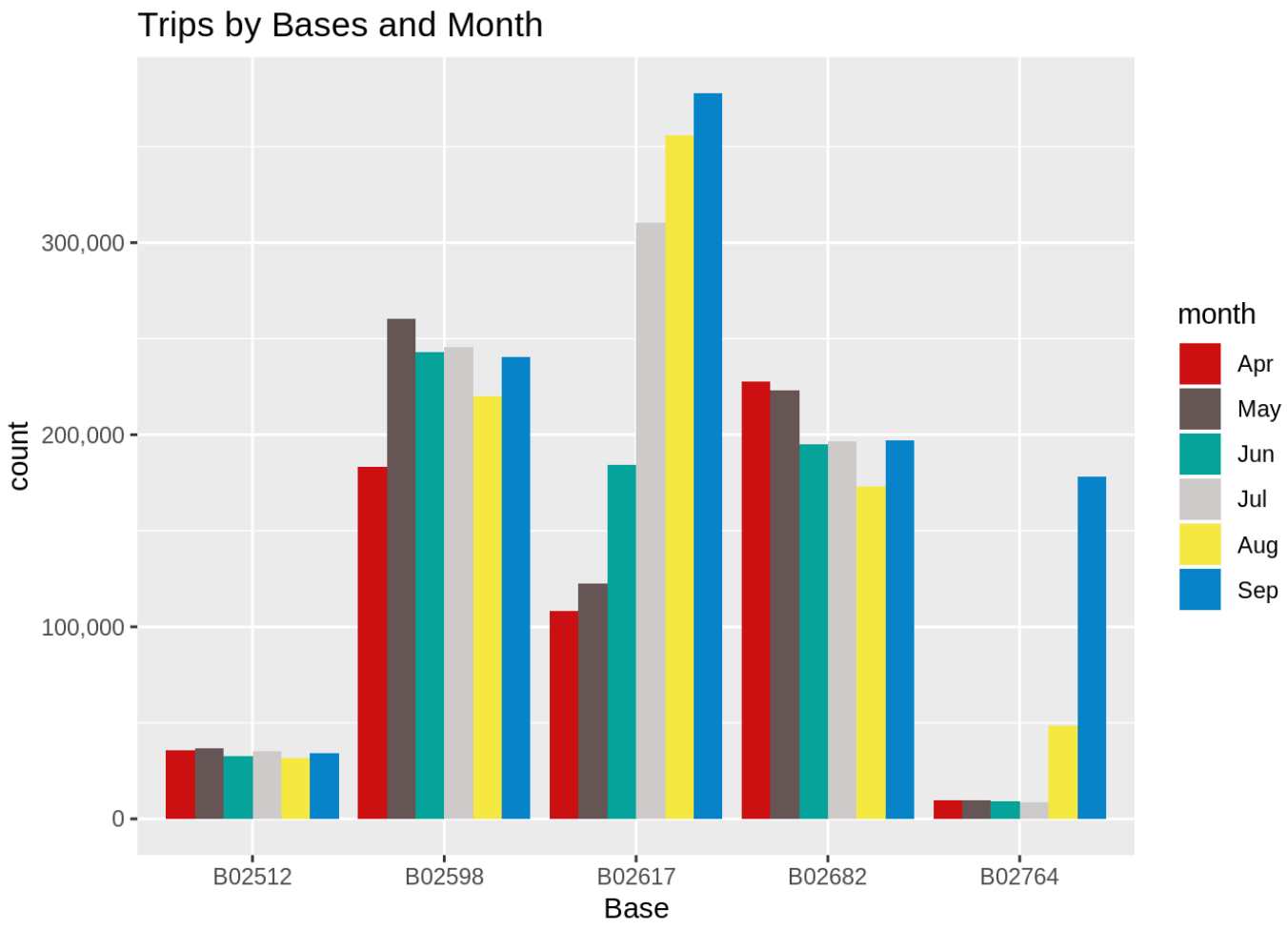
In the visualization we found out that the number of trips that have been taken by the passengers from each of base. In the data we contain five bases in which, we observed that B02617 had the highest number of trips. And the highest number of trips in the month B02617. Thursday observed highest trips .

```
ggplot(data_2014, aes(Base)) +
  geom_bar(fill = "darkblue") +
  scale_y_continuous(labels = comma) +
  ggtitle("Trips by Bases")
```



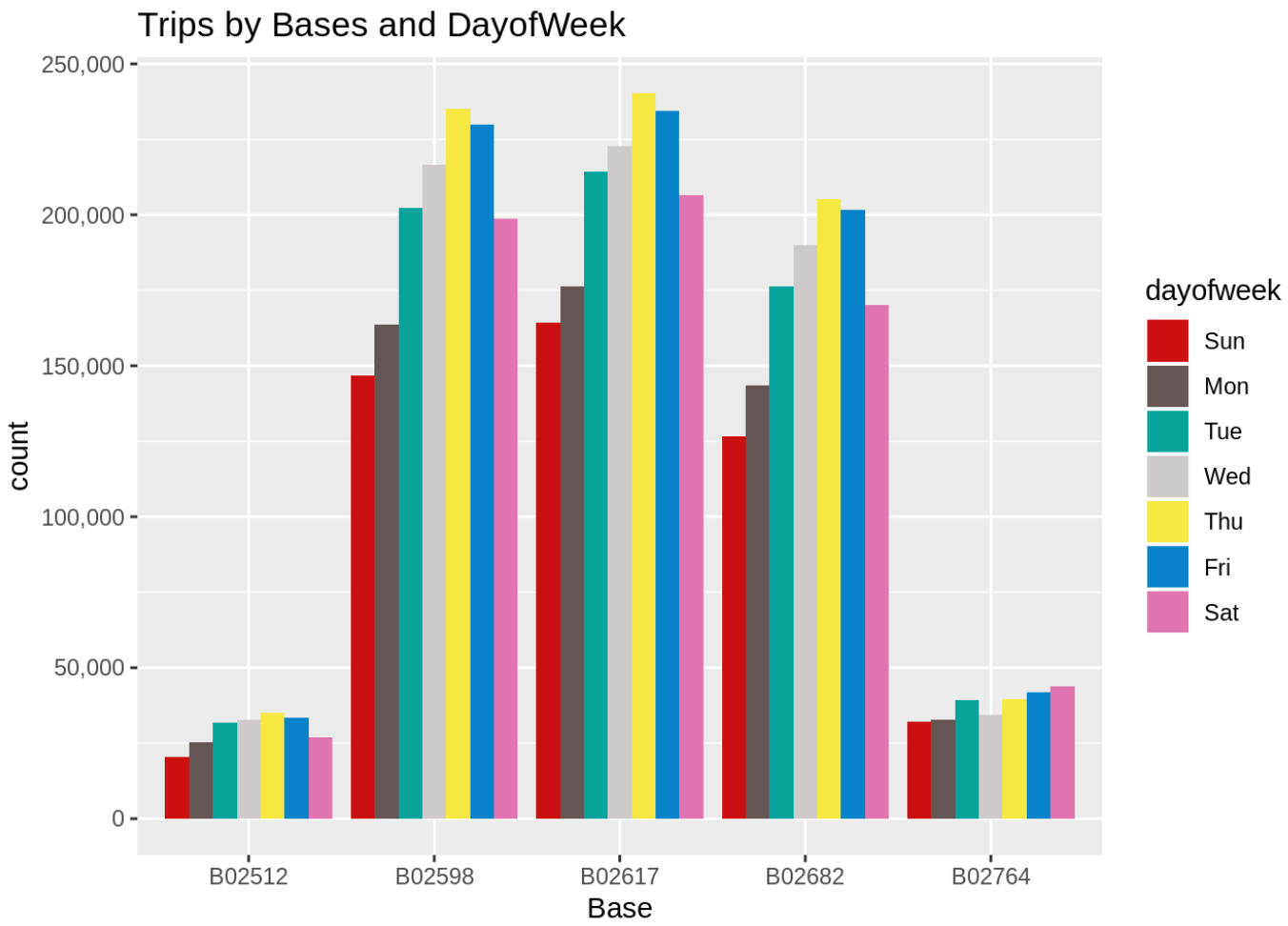
**7.** Trips taken place with respect to Bases with Month :

```
ggplot(data_2014, aes(Base, fill = month)) +
  geom_bar(position = "dodge") +
  scale_y_continuous(labels = comma) +
  ggtitle("Trips by Bases and Month") +
  scale_fill_manual(values = colors)
```



**8.** Trips taken place with respect to Bases with the DaysofWeek:

```
ggplot(data_2014, aes(Base, fill = dayofweek)) +
 geom_bar(position = "dodge") +
 scale_y_continuous(labels = comma) +
 ggtitle("Trips by Bases and DayofWeek") +
 scale_fill_manual(values = colors)
```



## Narrative:

Finally, we will be able to  narrates alongside insights and visualization allows analysts and marketers to highlight the significance of certain metrics, KPIs, or changes that may have occurred during the reporting period.

## Chapter 6. RESULT:

According to the probability of node A in the Bayesian network, the higher the probability is, the stronger the coordination is.

By analyzing and sorting the questionnaire data,and inputting the data into GeNIe Bayesian simulation software, the probability value of each node is obtained where ‘‘State 0’’ indicate that the online vehicle-hailing system does not exist, ‘‘State 1’’ means this exists. The above four factors determine the probability of occurance of car-hailing. According to the GeNIe software’s simulation and inference of the Bayesian network, when the passengers select online car-hailing, the corresponding probability values of the four factors, namely, service,

price, safety and traveling time are 63% 80%, 71%, indicates the price of online car and safety level. A higher posterior probability of the nodes indicates greater impact of the node on the target node. They are: {personal safety—ride safety— safety—online car-hailing} and {subsidies—price—online car-hailing}. This result is in line with previous expectations. Undoubtedly, passengers will say that the safety of travel is within their own consideration.

It needs the entire suppliment of chain to put the passengers’ safety first. From the drivers ’ point of view, they should pay attention to safe driving and conscientiously abide by the corresponding rules and regulations.

# Chapter 7. CONCLUSION:

This study focused on the internal logical analysis of online car-hailing, and systematically identified the influencing factors from four aspects: service, price, safety and traveling time. By constructing the Bayesian network model, the study determined the significance of each of the influencing factors. It is a reliability allocation model of a sustainable online car-hailing system with a broad cost function, considering complexity and significance of each factor. As we need saftey it includes the payment security, ride safety, user travel data confidentiality, speed, regular vehicle maintenance and checking the security. The traveling time includes the rush hour, late night trips, holidays and weather conditions. At the same time,this paper identifies the two influence paths that drive online car-hailing through a causal chain analysis: {personal safety–ride safety—online car-hailing} and
{subsidies–price–online car-hailing}. The credit accumulation is obtaining through the supply of chain finance has an important influence on the consumers' choice of online car-hailing due to the sharing of information resources in the supply chain. This study constructed a reliability allocation model of a sustainable online car-hailing system with a broad cost function, considering the complexity and significance of each factor. A sample analysis is also applied to examine the influence of the service, prices, traveling time and safety have on the stability of online car-hailing system.

By the results we can say that with the consideration of the time of executing the process, influencing degree and cost should be given to the price, followed by the traveling time, safety and service.

In the introduction and the summary, the study which is currently examined the safety monitoring to make tha passengers safe of ''online car-hailing'' from the prospect of the geographic space and time, and intoduced a multi-factor(which is having more factors

which we can consider safely) safety state observing keenly the model which is based on ‘‘potentially dangerous zone’’.

By examin various factors and their effects which is combined to get efficient results, dangerous zones potentially in the areas and cities were gathered. The Model factors sre shortlisted based on the big data analysis, and then obtain better parameters which were selected based on many groups experimental analysis. The real time trajectory functions of vehicle rules was observed analyzed by using space-time behavior. The experimental conclusions shows that the model which we have done has a better dettecting effect than existing APP which we are currently using. Neverthless, in the practical application which we do, due to the precision of the location of vehicle's GPS trajectory points and the computation accuracy of the Map API, there is still more some incorrectness in this proposed monitoring model. In the further days of the work, we will concentrate more on solving and implementing the impact of data we have and will take into consideration the complex traffic rules to reduce the scoring error. In the late times, many scholars and writers have gathered the urban built areas by the method of night-light easy to control the sensing data and the studies performed on the expansion of the urban data and the GDP development level. Basing on the sense of theory that bigger light intensity conclude in bigger possibility of urban built up of the area.

In the paper we are currently working on uses a bisection method to setup the threshold. It can be repeatedly and continuously been adjusted by comparison with the demographic and statistical data and to gather the area which is not built and it is set as a

remote zone which can be easily accessible in the city. Through the digitization (in which the work is done digitally) of image that is Landsat-8 OLI gathers and extracts mountain forests and building the area and were also taken the information as the open areas in the city. The areas which are extracted by the above are given all the risk index and mixed and merged. Then, by more importing of the risk index is importing the current index area. And the potential in the danger zone in areas of T1,T2 and T3 periods were extracted

as in the figure. As considering the to the parameter the total selection of OD distance from the figure, speed oddity and the time taken for the drive, we are selected the orders that may or may not have the abnormal which is not normal behavior (driver detour and stop time is much longer) as the data which is experimental, and compare the impact of various parameters in the method on selected factors among the various groups. The following orders from them are involving the passengers to complaint were extracted from the the taxi charged system. By the Figure it illustrates that order with possible deflection aberrational to stop the behavior were been displayed in the areas.

These rules may correlate with the possible deflected and abnormal stop behaviors. And next, we can easily search and fine the abnormal graph after its trajectory data has been displayed on the same map in which we are working on. Finally considering these data, trouble scores of each factor were calculated and analysed for different parameters, and the final results are shown in Figure. For the rules with strange behavior, the analysed calculated result of the risk score of each parameter in the model is best reflected in the real time vehicles' state. To more similar and acurate assess the real-time state of passengers who are safe, on the surroundings that the danger integral value is less and the abnormal fluctuations in behavior can be captured more easily.

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