Case Study in Urban Development and Design: Proposed Parking Standard for

Recreational Areas at Putrajaya

By

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FINAL REPORT

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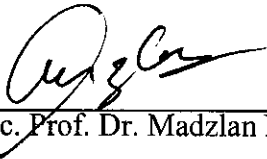
# CERTIFICATION OF APPROVAL

## Case Study in Urban Development and Design: Proposed Parking Standard for Recreational Areas at Putrajaya

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A project dissertation submitted to the

Civil Engineering Programme

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BACHELOR OF ENGINEERING (Hons)

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Approved by,

_____

(Assoc. Prof. Dr. Madzlan Napiah)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

MAY 2006

# CERTIFICATION OF ORIGINALITY

This is certify that I am responsible for the works submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

MAZLINDA BINTI ABU BAKAR

# ABSTRACT

Parking standard should be established for recreational area at Putrajaya in order to enhance the existing parking spaces provided and design of the parking lot.

The establishment of the parking standard could help the Putrajaya to redesign parking so that the remaining area can be allocates with other facilities. Types of facilities are such as provided public phone, upgrading transportation system and so on. This standard is proposed to easy Putrajaya Holdings (PjH) to make a comparison for future parking design. In other hand, this standard could be used as a reference for other recreational area since merely three places are focused in this project which is Botanical Garden, Wetland Park and Dataran Putra. In addition, it also reduces traffic congestion and illegally parked vehicles at the entrance and curb parking space.

A few of literature review was done on various aspect such as parking study, process on how parking standard establish and some history about Garden City concept that applied at Putrajaya. Beside that, some information was obtained by interviewing an expertise and engineers that contributed their ideas in designing of Putrajaya.

The results of the project are clearly discussed in chapter four of the report. In this chapter, some analysis from the survey conducted was explained which will shows the pattern of parking lot occupied and it's contribute an information for propose parking standard. The data from the parking survey has been analyzed and included in this part.

The final chapter of this report will conclude the findings of the project and some recommendation that could be taken for the project improvement.

# ACKNOWLEDGMENT

First and foremost, I would like to praise God Almighty and thank Him for this countless blessing and guidance throughout the hard times I have endured through and through. Without Him, I am sure I would not have made it this far.

Personally, I would like to thank to my supervisor, Assoc. Prof. Dr. Madzlan Napiah for his guidance, the knowledge offered and the time spent in improving this project. Not to forget Miss Zahiraniza Mustapha for her kindness and useful advice.

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Thanking only the people above does not mean I totally neglect the rest of the my family members and friends. Although I have unintentionally forgotten their names, but their memories of their good deeds and their friendship will linger on in my mind for all times. To all of those whom I cannot remember, I am deeply in their debt and I thank all of them from the bottom of my heart for all that they have done to make my project successful. Words cannot define my sincere thanks for all of them, individually.

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# CHAPTER 1: INTRODUCTION

## 1.1 Project Background

Urban development refer to the changes in the proportion of a nation living in urban areas but also the process of people moving to cities or other densely settled areas. Putrajaya one of the immense and beauty areas which sit on a 4,931 hectares spread of undulating terrains and is developed to be the Administrative Centre of the Federal Government of Malaysia. It is situated within the Multimedia Super Corridor (MSC). It is divided into two major areas which are Core Area and Peripheral Area. Putrajaya was planned to embrace two major themes i.e. 'Garden City' and 'Intelligent City' [1]. The Garden city concept introduced by Sir Ebenezer Howard is applied at Putrajaya as well as reflected the provision of car parking by preserve the natural lush greenery among the parking area. He described his concept in great detail using diagrams and economic argument but made it clear that the plan should be adjusted to suit the site of the city. Figure 1.1 shows one of Howard's key ideas.
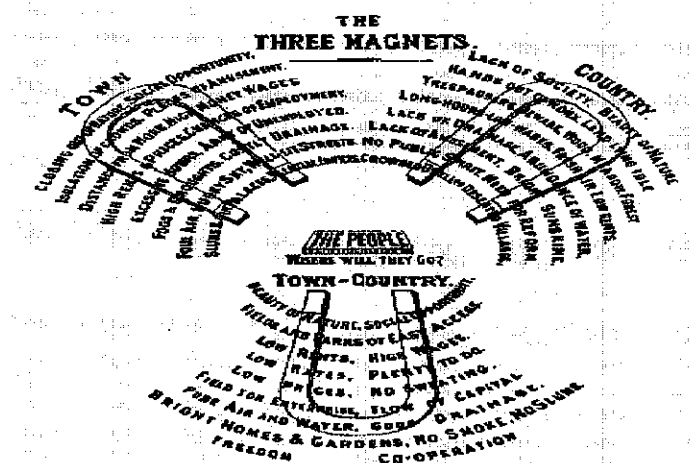


Figure 1.1: Howard's key idea

The attempt to create a community blending the advantages of both the town and the country, with pleasant environment, plentiful local employment in Howard's own words "by a happy people", began. The original concept was to make a pleasant working city where the garden city concept is applied at the center of city as illustrate is Figure 1.2. For it to stay that way it has to change to meet the needs of the day, without giving up its aesthetic and moral principles to provide a good living and working environment for all its inhabitants.



**Figure 1.2:** Garden City concept at the center of city

## 1.2    Background of Study Area

The idea of establishing Malaysia's first Federal Administrative Centre away from Kuala Lumpur was proposed in mid-80 and various sites were identified and five were short-listed namely *Sepang coastal strip, Pulau Lumut costal area, Northwest Rawang, North Port Dickson coast and the Kenaboi Plains*. In June 1993, the Sepang District came up tops and known as Prang Besar was finally selected over the rest, in view of its strategic location between Kuala Lumpur and KL International Airport. In 1996, it was formally decided that the place be called the Federal Government Administrative Centre of Putrajaya, named after and in memory of the nation's first Prime Minister, Allahyarham Tunku Abdul Rahman Putra Al-Haj.

Putrajaya situated within the Multimedia Super Corridor (MSC) and marks a new chapter in the history of modern city planning in Malaysia. About 40% of Putrajaya is natural with the lush greenery and botanical gardens. Other than that, the residential areas are supported by commercial hubs and public amenities that are planned and integrated for an ideal "live-work" environment and be an ideal place to live, work, conduct business and engage in sports and recreational activities. Putrajaya was planned to embrace two major themes i.e. *'Garden City'* and *'Intelligent City'*. [10]

## 1.3    Problem Statement

Currently, Putrajaya don't have a parking standard for every recreational area. Each of the consultant's hired would propose their own parking standard based on the total areas provided for each places at Putrajaya. The provision of adequate car parking may be an important factor in securing the increasing of economic at recreational areas. In order to come out with the parking design area, parking standard should be determined first. Since they don't have the actual standard, parking inventory survey is required, and based on the parking survey, the prediction and judgment for the establishment of parking standard

can be developed. Moreover the parking standard proposes should be applicable and reliable for every recreational area at Putrajaya and the establishment of parking standard should parallel to the parking design area. The focus of study area will be at Open Space of Core Area namely Dataran Putra, Botanical Garden and Wetland Park. These three highlighted areas are chosen since they gave a huge impact and create a lot of issues during schools holiday and when there is an event. During these particular periods, parking demand will exceed parking supply.

## 1.4 Objectives of Study

The objectives of the project are:

1. To review of the parking provided at study areas in terms of sufficiency, efficiency, accessibility and proximity to activity centers

2. To ensure and verify the permit of Minimum Allowable Provision (MAP) requirement for Recreational Area

3. To propose parking standard for Recreational Area at Putrajaya

## 1.5 Scope of Study

This study consists of surveying work and analyzing of parking area in terms of sufficiency and efficiency in order to achieve objective. More research and readings need to be done since all material would be used to complete the project. Prior to this, the specific study area parking is needed to study to facilitate a survey work without wasting the time. After that, using the knowledge and information acquired, the project will start and finished within the time frame.

# CHAPTER 2: LITERATURE REVIEW AND THEORY

## 2.1    General Parking Issues

Drivers always assume that they will be able to park their vehicles within a reasonable distance of their final destination, accepting that sometimes in urban/busy areas, this might involves a long time in searching for a car park spaces. Driver's personal judgements regarding of what constitutes an acceptable place to park vary considerably in terms of location, size of space and whether parking fees are charged or not. Parking availability and characteristics can strongly influence a driver's choice of destination. [15]

## 2.2    Location Details

### 2.2.1    Dataran Putra

The 300m circular Dataran Putra (Putra Square) adorned with light and water features provides the centerpiece for Precinct 1. It is designed to be the nation's leading centre for staging national events and formal parades bounded by Perdana Putra, Masjid Putra, Putra Bridge and the Promenade. Together they constitute a most impressive showcase of Putrajaya's unique architectural form. This enhances the essence of this formal area as a focal point and one of the most attractive landmarks in Putrajaya. As the venue for major events, the Dataran is designed by incorporating local motifs and cultural values. The round shape of the Dataran does not only determine the termination of the Boulevard but also acts as a hinge linking the Boulevard axis towards the Mercu Tanda. [9]

### 2.2.2 Botanical Garden

Parks and gardens play essential roles in Putrajaya. A large part of the city has been reserved as green areas. The 63-hectare Botanical Garden situated at the northern entrance to the Government Precinct introduces and presents thousands of local plants species and an ornamental garden. It provides 256 car parking spaces together with 51 and 18 motorcycle and bus spaces respectively. The sustainable recreational forest parks will have nature trails, cycling paths and camping sites.

### 2.2.3 Wetland Park

Wetland Park only provides 31 car parking and 19 motorcycles parking spaces without any parking bay for buses. Putrajaya wetlands are important elements for the city's aim to be an intelligent Garden City. It is designed to be sustainable and provide a balanced ecosystem. Visitors can enjoy bird watching and there are also walkways to explore the natural surroundings. Wetland park also known as Jewel in the Crown. [8]

## 2.3    Parking Demand (usage) Surveys

After the inventory parking surveys is conducted, the projected future demand can approximately be estimated. Future parking demand should be quantified in the light of planning policies and anticipated development. Every available legal public and privates parking space should be identified. The usual information needed is:

- Number of parking spaces
- Time limits and hours operation
- Rates and method of fee collection
- Type of regulation at curb spaces such as loading zone, passenger zone, handicapped zone, taxi zone or bus zone
- Type of facility

A few of consideration is taken for parking standard flexibility. The car parking standards stated are maximum which each development proposal assessed downward according to site conditions, using the maximum standard as a starting point. This will allow for variations, depending on the individual characteristics of each site. The criteria for assessment included are:

- the built environment
- on street parking capacity
- access and amenity implications for other residents
- road width
- traffic levels
- type of development proposed
- accessibility
- level of public transport provision

The parking inventory is highly useful to the traffic engineer in day to day activities. The inventory is an essential pre-requisite to any parking study and should be updated periodically, such as every three years.

## 2.4    Types of Parking

These highlighted study areas are on-street kerb parking space. It is usually regarded as the most convenient place to park, particularly for physically disabled people who are unable to walk along distances. Where there is no provision for servicing off-street, space for loading and unloading on-street is also required for delivery and service vehicles. This type of parking, space may be provided for pre-defined classes of vehicles, including or other classes of users such as the car parking space will not mix with the motorcyclist parking space

# CHAPTER 3: METHODOLOGY / PROJECT WORK

In order to for the project to be completed successfully and according to the objectives, certain approaches and methodologies are taken. Basically, the methodology divided into 8 main stages:

| | |
|---|---|
| **Literature Review** | • Information is gather from journal, internet and library and through discussion with supervisor and colleagues. |
| **Interviews with external peoples** | • Interview expertise of Putrajaya Holdings. |
| **Inventory Surveys** | • Identify activities during weekends and weekdays<br>• Number and type of vehicles.<br>• Identify the allocated parking provision. |
| **Data Analysis** | • Comparison between supply and demand which is presenting in graph mode from survey form. |
| **Result & Findings** | • From parking survey conducted. |
| **Conclusion & Recommendation** | • Establish parking standard for recreational area at Putrajaya. |
| **Report Writing** | • Preparation of final report. |

## 3.1 Data Collection

The detailed urban design for recreational areas has acquired from the expertise and engineer of Putrajaya Holding who worked as a consultant in the making of Putrajaya. The following are the reports the author has acquired:

- Report, August 2002 on Overall Parking Strategy and Provision for Open Space Parking for the Core Area of Putrajaya, Putrajaya Review of the MasterPlan and Design Guidelines and Standard.
- Putrajaya Masterplan

## 3.2 Inventory Survey

Inventory survey form was prepared to distributed to other surveyor for them to record the numbers of vehicles arrive and depart at every bays for 30 minutes time interval for estimating the future demand of parking. Before survey done, the specific study area was studied for decided the suitable time range. A few time ranges was chosen such as 5 minute 30 minute and one hour as well for make a comparison between these. And it shows the highest number of parked vehicles at 30 minutes time interval.

### 3.2.1 System Used

The numbering system for each of parking bays has used so that it can easily record the quantity of vehicles parks at period of time. Table 3.1 is an example of survey form used for bus which start numbering from B1 to B10 depends on the amount of parking bays have. Refer to Appendix B, C and D for the survey form used for each of the area. Each of the survey is done for two days start from 9 a.m to 1 p.m in the evening and carried on the survey again at 4 p.m to 6 p.m. First place of survey is done at Botanical Garden followed with Wetland Parks and Dataran Putra. Instead of checking the adequacy of parking supply, also take into account the frequently used of parking since it was projected to the parking standard proposal.

**Table 3.1:** Survey form used for every type of vehicle

| parking numbering | B1 | | B2 | | B3 | | B4 | | B5 | | B6 | | B7 | | B8 | | B9 | | B10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| time/signage | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 0900-0930 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 0930-1000 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 1000-1030 | √ | o | √ | o | √ | o | o | √ | o | √ | o | √ | o | √ | o | √ | o | √ | o | o |
| 1030-1100 | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | √ |
| 1100-1130 | o | √ | o | o | √ | o | √ | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 1130-1200 | √ | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o |
| 1200-1230 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 1230-1300 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 1300-1300 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 1600-1630 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 1630-1700 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 1700-1730 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 1730-1800 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |

### 3.2.2 Method Applied

In this project, accumulation or concentration surveys are done with roving enumerator method since this is the cheapest method and can simply record number of parkers at point in time. The roving enumerator is done on foot and record via tally counter then enters on form such as shows in Table 3.1. This method may classify by type of vehicle, space and parking supply. It takes almost six hours to do the inventory parking surveys so that the accurate and precise results are obtained. Beside that, the duration survey also done with parking beat survey approach whereby this duration survey provided more detail on patterns of demand by recording and estimating individuals vehicles arrival and departure times. While this approach will record result on form where the enumerators repeat the set beat divided into section and record presence of individual vehicles on each visit. The beat interval are not too long or else short stayers will be missed and the desirable interval is 1/3 average length of stay.

### 3.2.3 Data Analysis

Data is analyzed from survey conducted to make a comparison between supply and demand of parking spaces for each type of vehicles which is presenting in graph mode. The end of the product, parking standard for recreational area at Putrajaya is established whereby the spaces of each area is taking into account.

# CHAPTER 4:    RESULTS AND DISCUSSIONS

The following are the result obtained from the parking surveys conducted. Analysis of these data is also expressed in the form of tables, graphs and other relevant figures.

## 4.1    Parking inventory

Parking data was obtained from the parking surveys done on Monday, Friday, Saturday and Sunday for advance comparison of parking flow at chosen recreational areas. From the survey done, it showed that not all the study area is given the same parking ratio whereby each of recreational area have different numbers of parking clearly shown in Table 4.1 depending on the total hectares of areas.

**Table 4.1:** Amount of Legal Parking Bays

| LOCATION | CAR | MOTORCYCLE | BUS |
|----------|-----|------------|-----|
| Botanical Garden | 256 | 51 | 18 |
| Wetland Parks | 31 | 19 | - |
| Dataran Putra | 120 | - | 10 |

Note that, both Wetland Park and Dataran Putra bus and motorcycle spaces are not provided. Because of that, it creates illegal parking situation such as on the road side curb. At Dataran Putra, motorcycle bays are only provided for workers at restaurant, security guard, cleaner and mosque.  In addition, during Friday prayer inadequacies of parking bays is occurred and created illegal of parking along the circle of Dataran Putra. This phenomenon generates heavy traffic at Dataran Putra's entrance that connected to boulevard.

## 4.2 Surveys Form

From the survey done, the data would be analyzed two important things. The first one is the Minimum Allowable Provision (MAP) for each study area. This would be explained further under Minimum Allowable Provision topics. And the second one is, prediction can be made to propose parking standard when supply and demand data has acquired.

## 4.3 Parking Analysis

The following are the results acquired from the parking studies handle. Analysis of these data is also express in the form of tables, graph and other figures. The parking survey conducted is contributed to the parking analysis.

The parking study consideration goes to a certain behavior such as duration, accumulation, arrival and departures and supply and demand profile as well. Due to time constraint, limitation of surveyors and working with large parking area, turnover is not taking into account in parking study but it can greatly estimate.

This range of time is considered since most of the local residents, visitors and tourist are preferred to visit the study areas in the morning and evening because of the weather effect and activities provided at the highlighted area.

### 4.3.1 Botanical Garden

*Arrivals, Departures and Accumulation*

These are conducted to obtain data on the number of vehicles parked in a study area during specific period of time. Surveys were conducted on Sunday and Monday. The data has been taken from the survey itself for each of vehicles type. Then, the numbers of

vehicles entering and existing during the time interval are being noted. Accumulation data are normally summarized by time period for the entire study area.

The arrival and departure profile for car is shown in Figure 4.1. There are an average number of cars arrived on Sunday and Monday in the morning, since majority of the parkers are workers and local resident were came for jogging and strolling in the park. Fewer cars arrived and leaved the parking lot in the range of 9 a.m 12 p.m since it is the office hours time. Indeed, it is not a suitable time to visit since the weather is hot and parking lot is open space. The scenario is changed in the evening especially on Sunday. This may due to visitor coming for activities offered such as cycling, camping, canoeing and etc. In figure 4.2, it shows fewer motorcycles arrived and leaved the parking lot. Most of the parkers are workers at restaurant and supplier. From the arrival and departure plot in Figure 4.3, wee can see number of bus in the morning is higher. Usually visitors were come from far away and morning is the best time to visit.

*Supply and Demand Profile*

Parking spaces provided for car, motorcycle and buses won't be a problem for Botanical Garden since the supply can accommodate the demand. Car parking lot is nearly 10% utilized, clearly shown in Figure 4.4 whereby the parking bay is more than enough to support the future demand. Same goes to parking spaces provided for motorcycles where the utilization of parking is almost 10% as shown in Figure 4.5. While in Figure 4.6 shows almost 10% of parking bay is used for bus.

**Arrival and Departure for Car**

Legend:
- arrival(Sunday)
- departure(Sunday)
- arrival(Monday)
- departure(Monday)

No.of vehicle

Time (hr)

Time axis labels: 0900-0930, 0930-1000, 1000-1030, 1030-1100, 1100-1130, 1130-1200, 1200-1230, 1230-1300, 1600-1630, 1630-1700, 1700-1730, 1730-1800
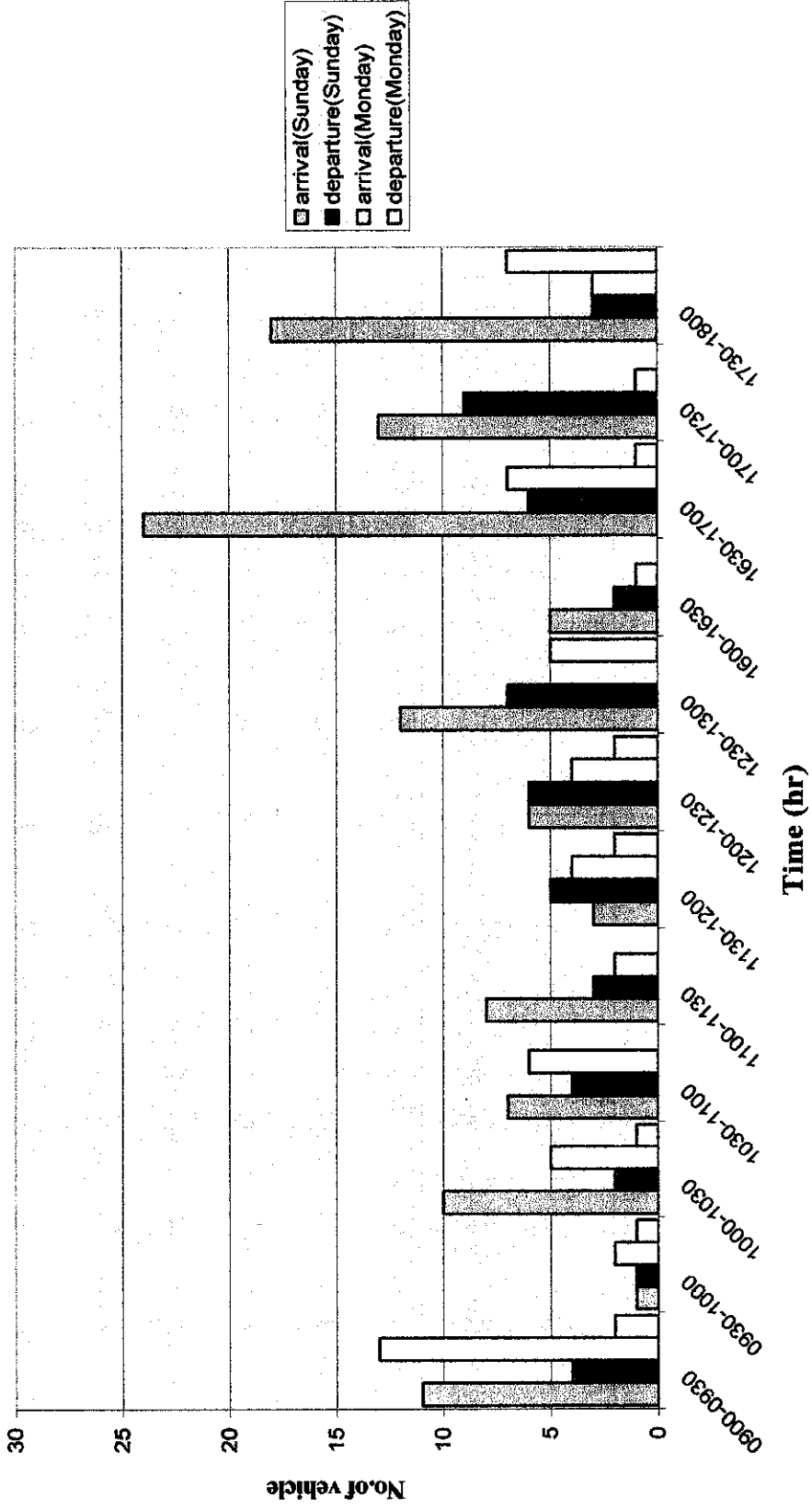
**Figure 4.1:** Arrival and departure at Botanical Garden for Car

# Arival and Departure for Motorcycle
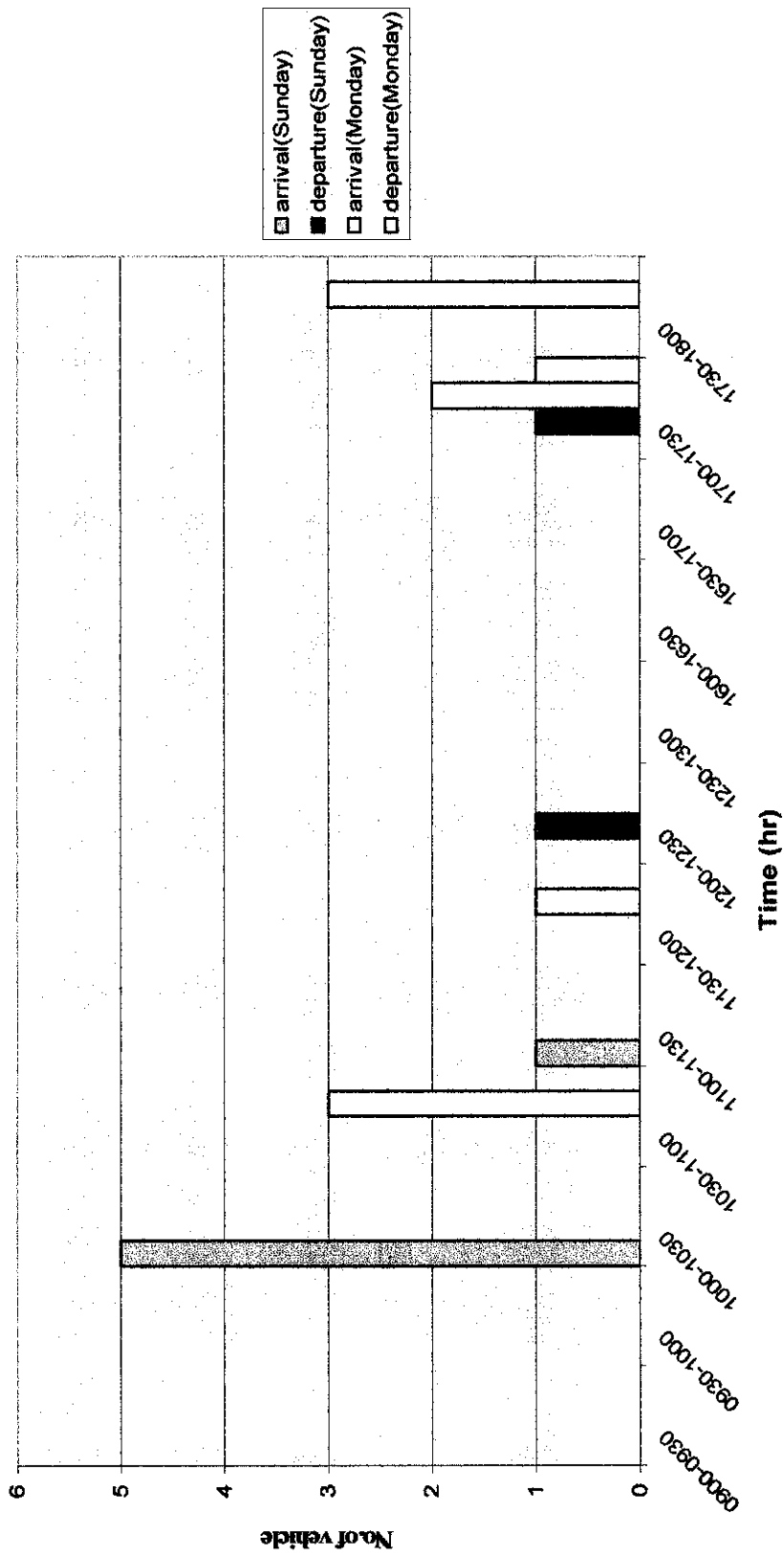


**Figure 4.2:** Arrival and Departure at Botanical Garden for Motorcycle

# Arrival and Departure for Bus
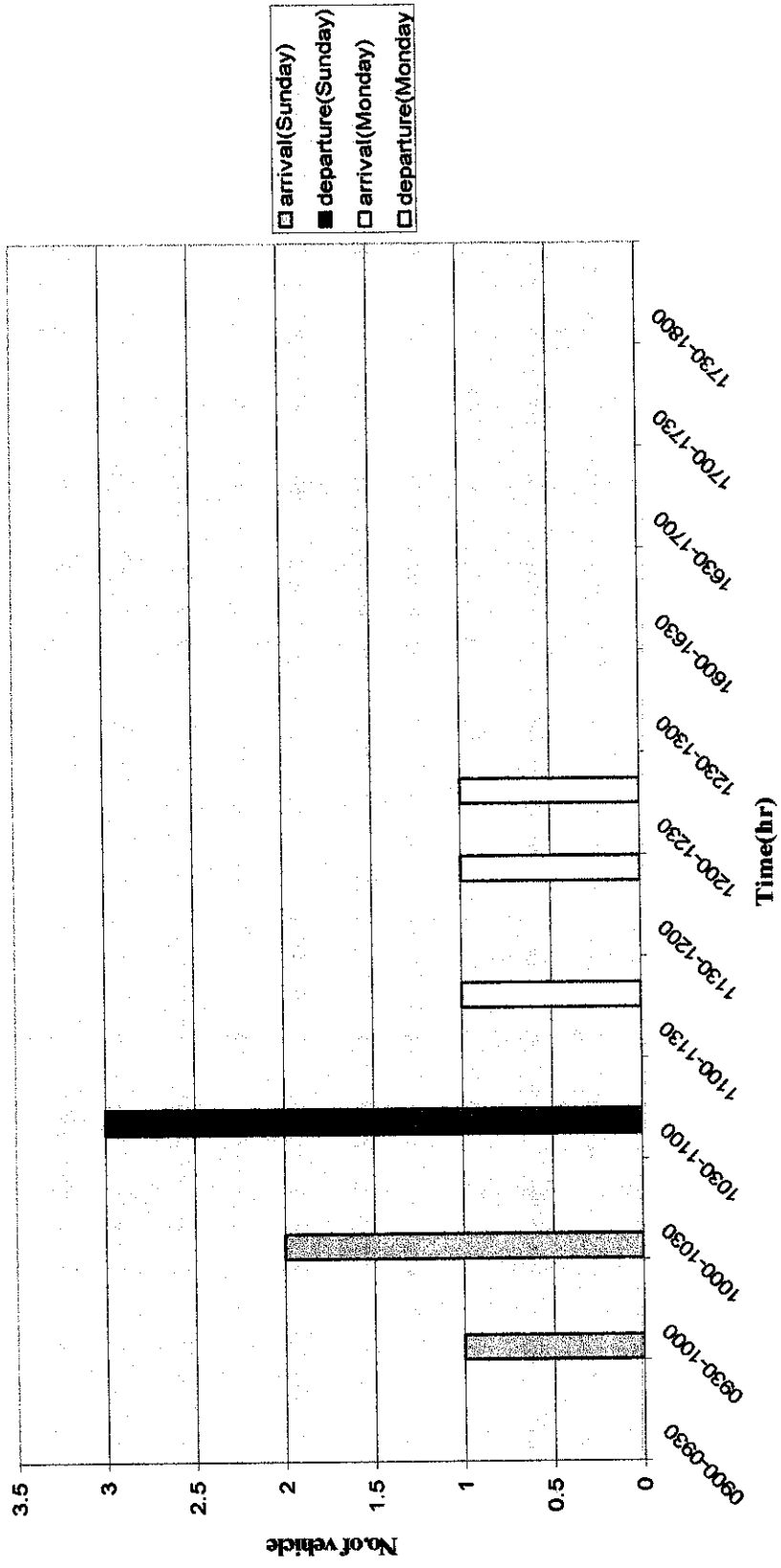


**Figure 4.3:** Arrival and Departure at Botanical Garden for Bus

# Car Parking Supply and Demand
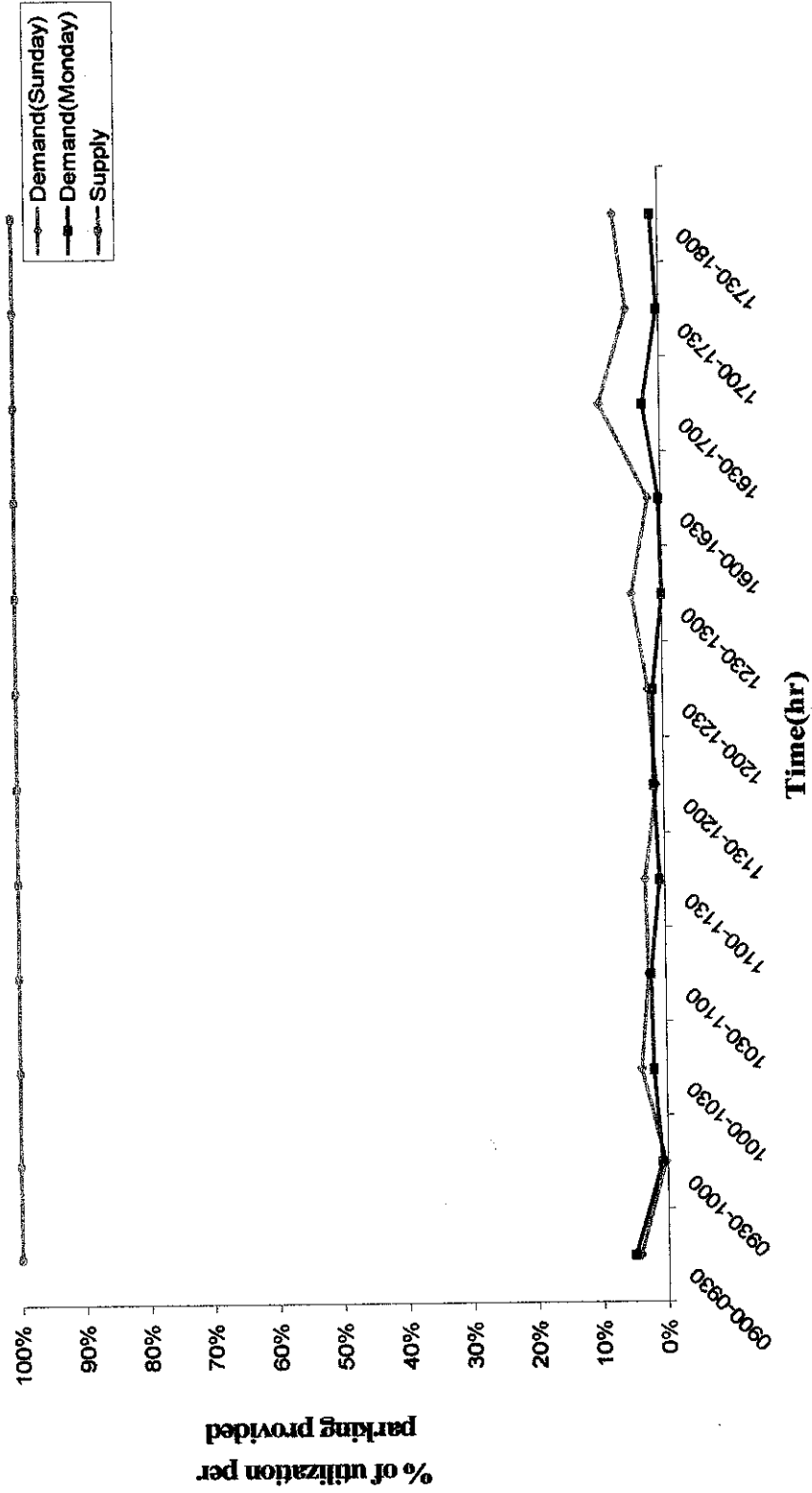


**Figure 4.4:** Supply and Demand Profile for Car that Parked at Botanical Garden

## Motorcycle Parking Supply and Demand
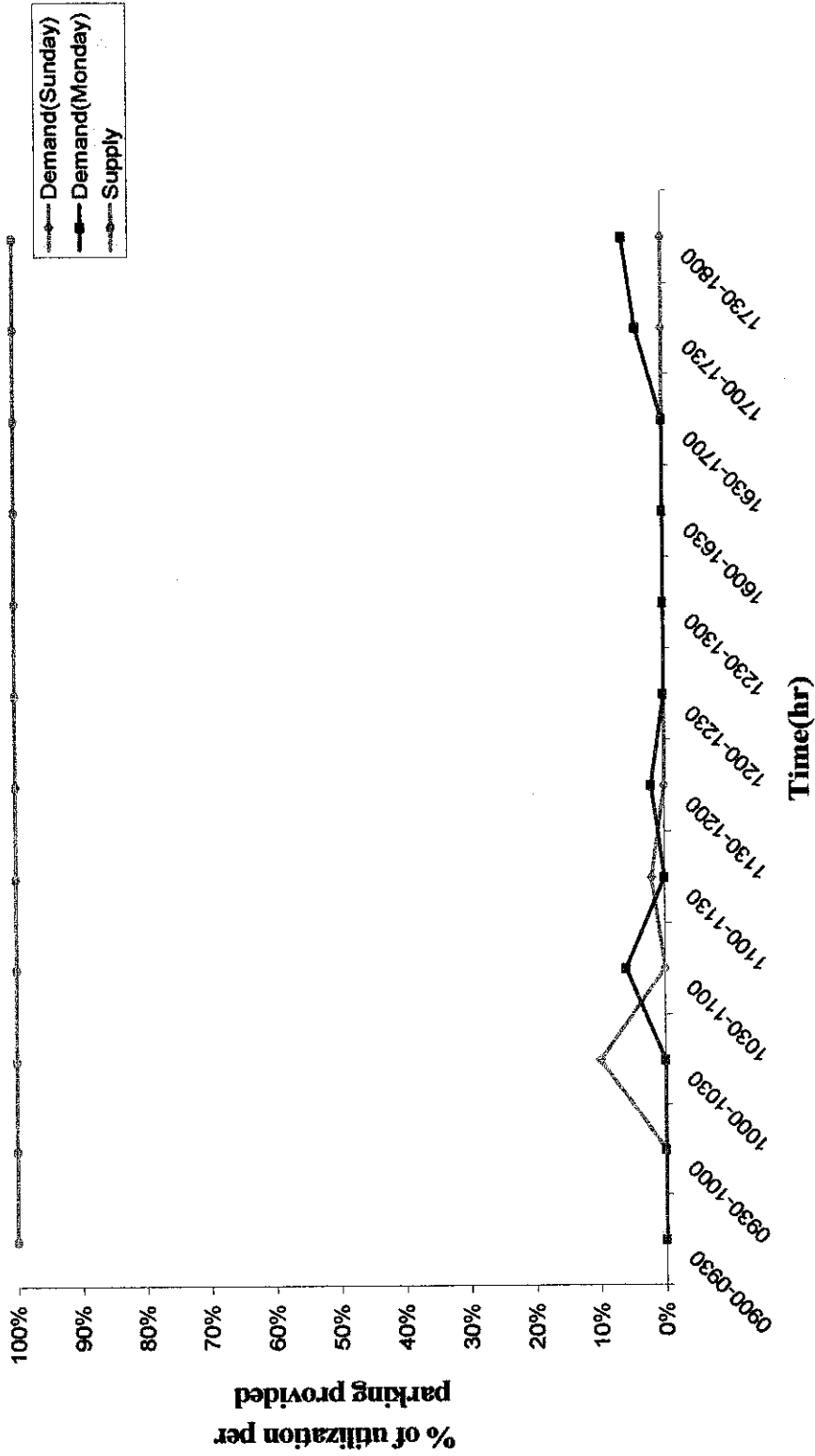


Figure 4.5: Supply and Demand Profile for Motorcycle that Parked at Botanical Garden
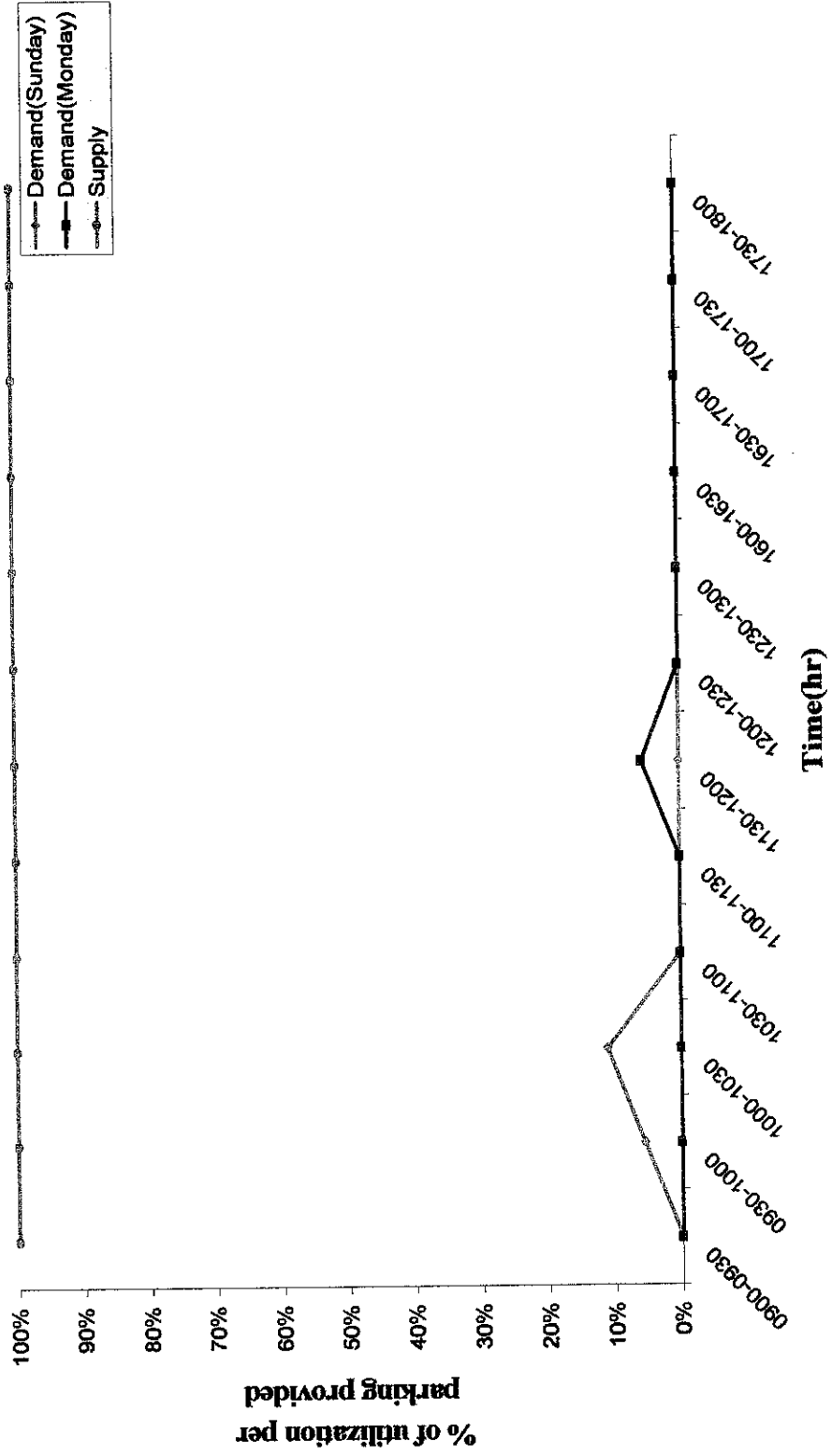
**Figure 4.6:** Supply and Demand Profile for Bus that Parked at Botanical Garden

### 4.3.2 Wetland Parks

*Arrivals, Departures and Accumulation*

The profile of arrival and departure in Figure 4.7 shows the increasing of cars arrived on Sunday in the morning because visitors are come to do interesting activities such as jogging, canoeing, kayaking, fishing and paddle boats. Number of car parked on the next hours start from 1100 to 1300 is on average amount due to the laziness to come because of hot weather. From interview session, most of the parkers on Sunday are from outsiders and tourisms. But it's different on weekday because most of visitors are from people live in Putrajaya. In Figure 4.8, we can see the highest number of motorcycle arrived in the morning. From the observation and data recorded, the licensed plate of motorcyclist at specific hours was the same. This scenario happened because most of the parkers are working at Wetland Park and using motorcycle as a primary transportation would help them from heavy traffic at Kuala Lumpur and fuel consuming since they are living outside the Putrajaya.

From departure profile, a peak hour is at 1730 to 1830 due to higher number of cars depart from parking bay. They are leaving the parking when all the activities held were finished at 1830 as well as for motorcycle.

*Supply and Demand Profile*

The graph of supply and demand profile for car shows in Figure 4.9 explains the usage of car bay is not even more that 50% for Sunday and Monday. Beside that, the spaces of motorcycle utilization is also not more that 40% as shown in Figure 4.10. From the results, it proves that there are still many parking spaces available since the parking lot provided is sufficient to accommodate the demand. The parking design is greatly

estimated the adequacies of parking spaces in recreational areas. Otherwise, without any bus spaces provided at Wetland Park, it's might invite an illegal parking at curb parking spaces and increase the usage of other areas and created an uncontrolled parking along the entrance.

# Arrival and Departure for Car
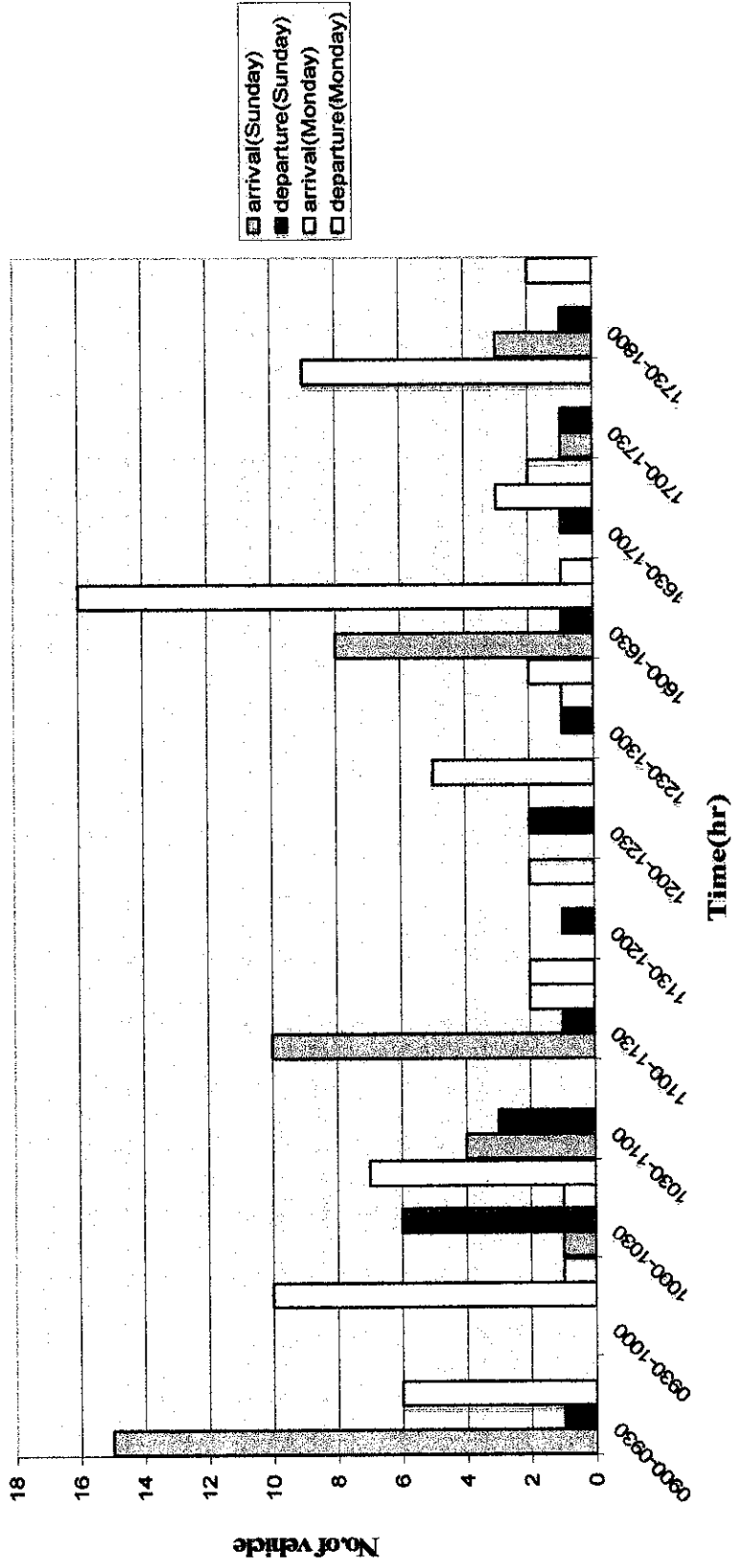


**Figure 4.7:** Arrival and departure at Wetland Parks for Car

# Arrival and Departure for Motorcycle
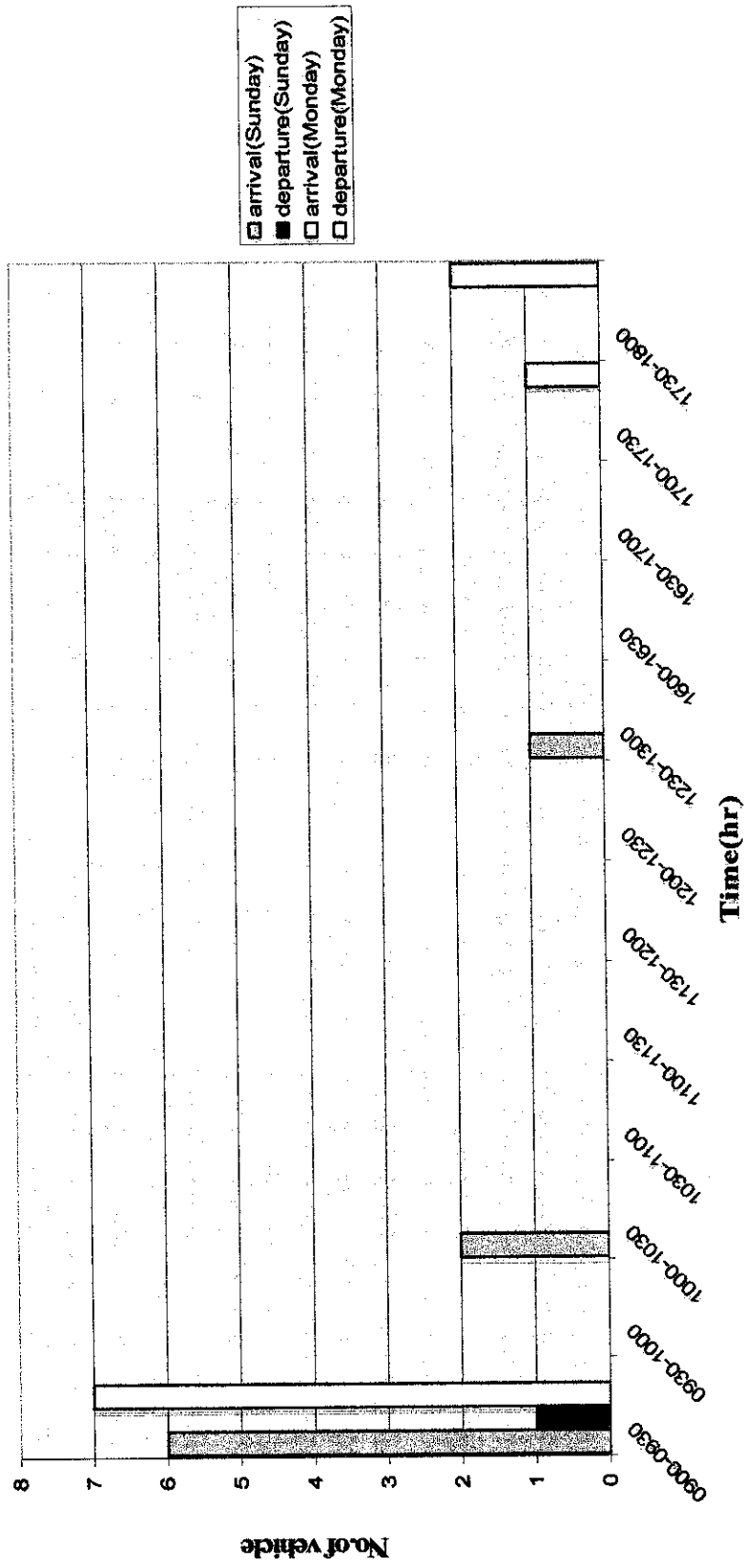


**Figure 4.8:** Arrival and departure at Wetland Parks for Bus

**Car Parking Supply and Demand**

Legend:
- Demand(Sunday)
- Demand(Monday)
- Supply

% of utilization per parking provided

Time(hr)

Time axis labels: 0900-0930, 0930-1000, 1000-1030, 1030-1100, 1100-1130, 1130-1200, 1200-1230, 1230-1300, 1600-1630, 1630-1700, 1700-1730, 1730-1800
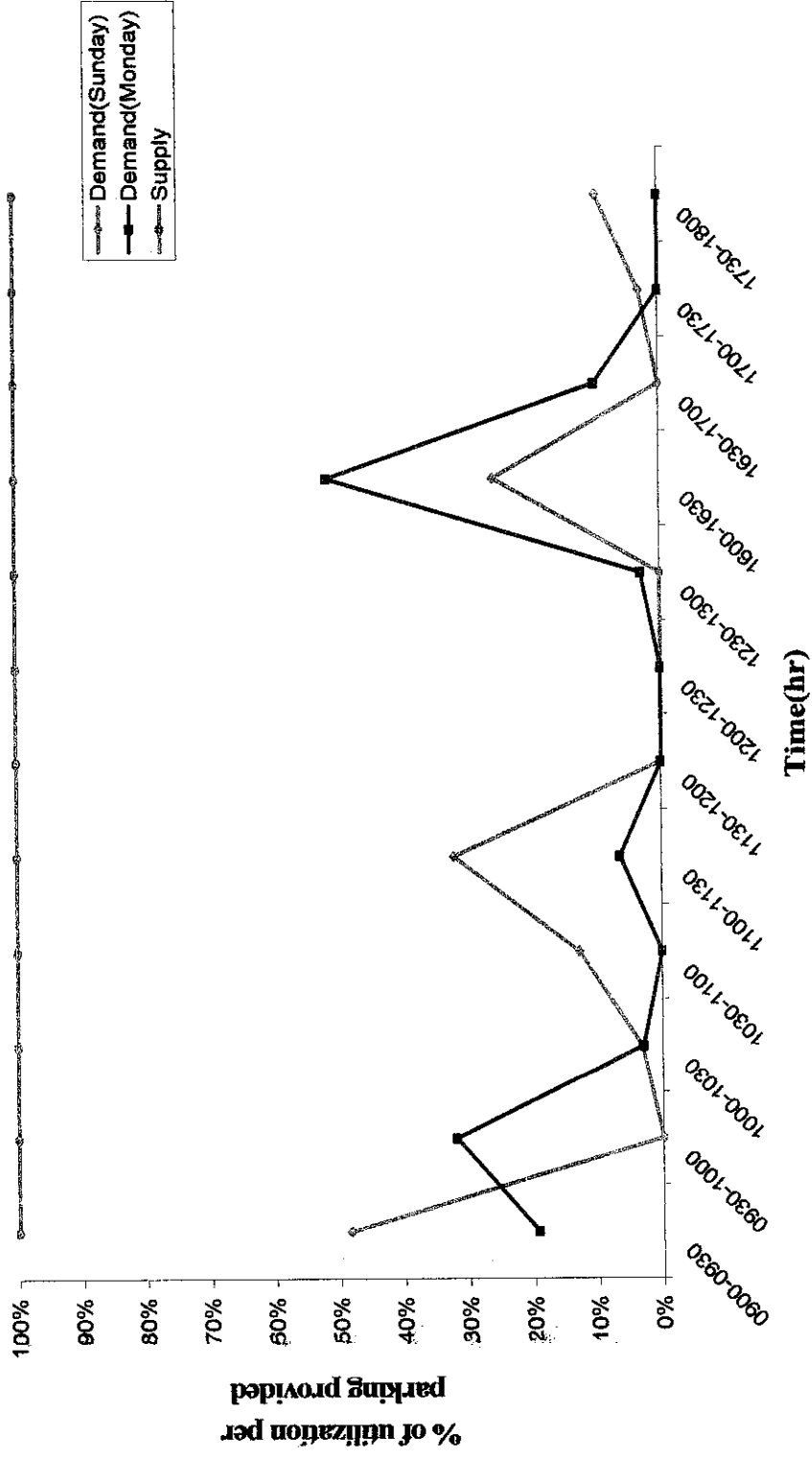
**Figure 4.9:** Supply and Demand Profile for Car that Parked at Wetland Parks

**Motorcycle Parking Supply and Demand**
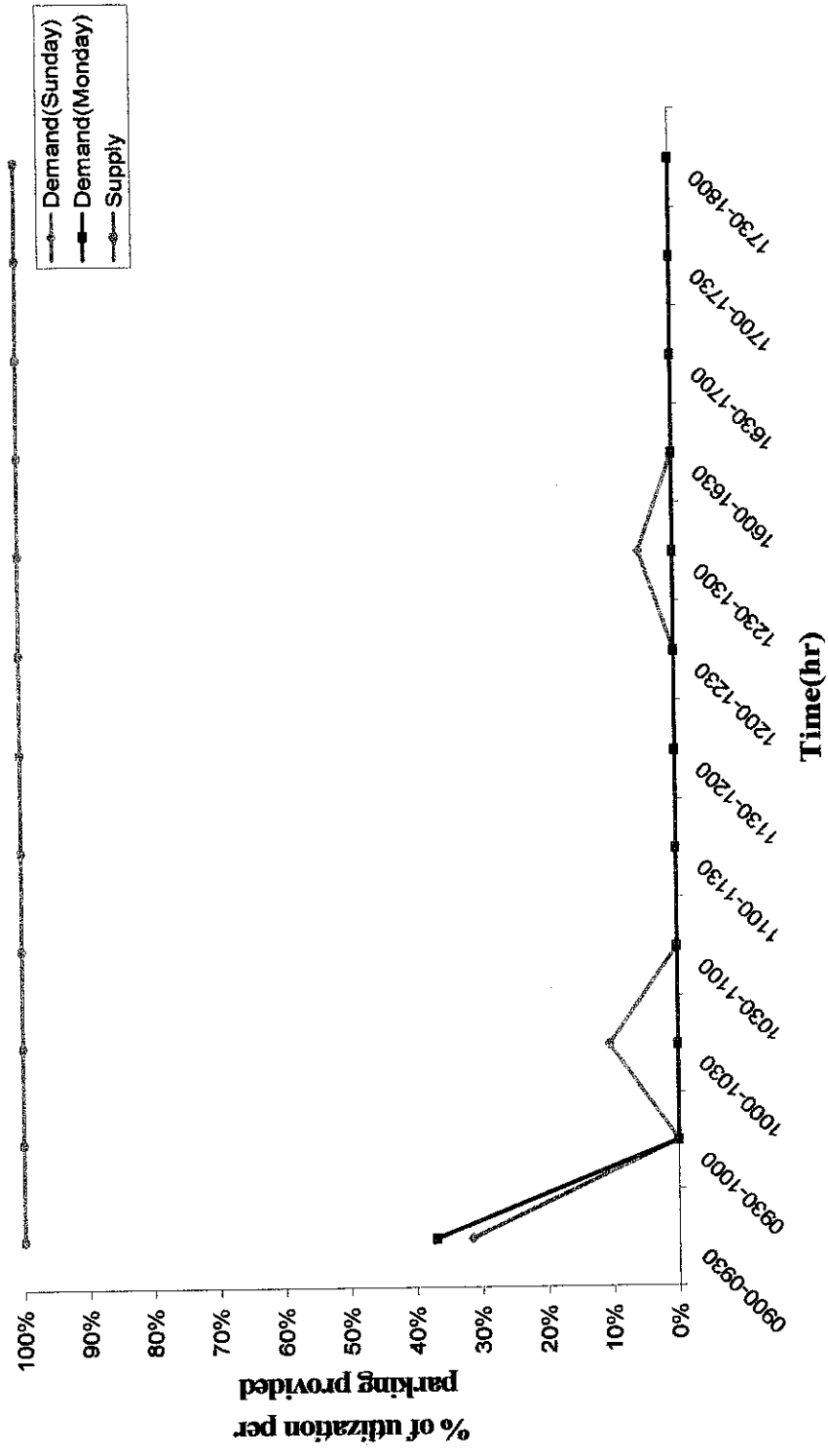


**Figure 4.10:** Supply and Demand Profile for Bus that Parked at Wetland Parks

### 4.3.3  Dataran Putra

*Arrivals, Departures and Accumulation*

Dataran Putra have 120 car parking bays with practically parallel parking car park at inner side and right angle parking at outer side. Basically, four cars can be parked within one bay whereby two cars at inner side and another two at outer side. Problem of insufficient car parking spaces is not arising since the supply can cater the demand need at Dataran Putra, but it such a big problem during Friday prayer. A phenomenon of overflow car parking especially along the Prime Minister Office path is occurred due to uncontrolled position of car parked, as shown in Figure 4.11.
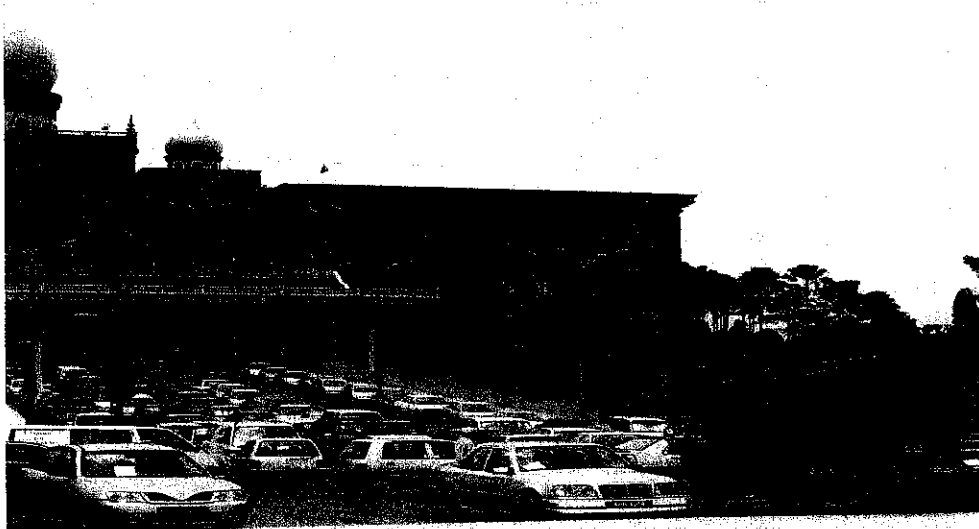


**Figure 4.11:** Uncontrolled car that have been parked along
the Prime Minister Office

In addition, after Friday prayer, heavy traffic flow occurred because road was blocked by late parkers. In other hand, closing of certain parking bays is also a cause of inadequate of parking spaces, as shown in Figure 4.12. Moreover, behavior of parkers parked their cars

also contributed towards insufficient of spaces as shown in Figure 4.13. It means parkers are not parked their car properly within bay.
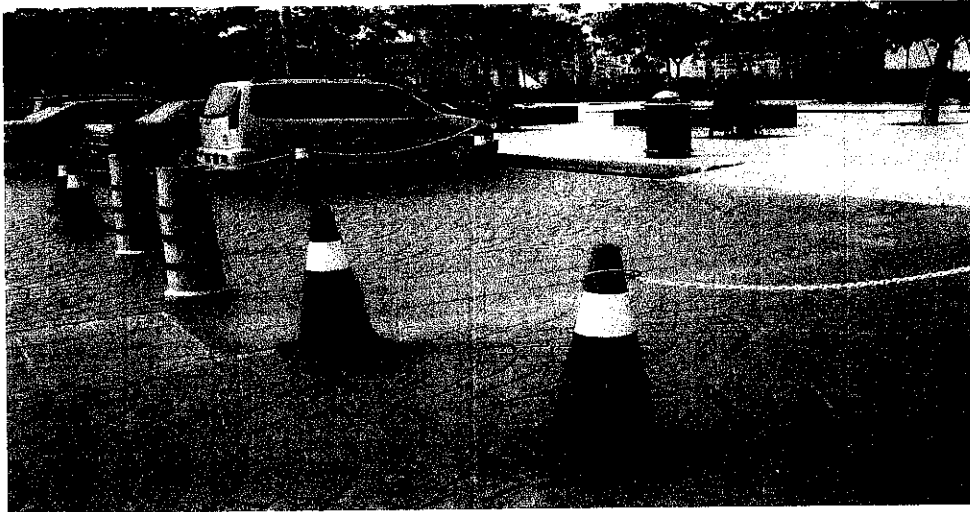


**Figure 4.12**: Parking bay closed because it gives a way to visitors
to go to restaurant



**Figure 4.13**: This taxi taking other car spaces by parked it
in the middle of bay

Figure 4.16 shows higher amount of car parked at outer and inner side at time 1230 to 1300 since it is the time for people goes to the mosque. Most of cars that have been parked in morning are they worked around Dataran Putra as waiter, cookers at restaurant, cleaner of mosque and so on. In evening, number of cars parked is still not exceeded the amount of parking provided. The demand pattern on Saturday shown in Figure 4.17, prove that parking spaces allocated in Dataran Putra adequate to hold the amount of demand even most visitors of Putrajaya attracted and interested to go to Dataran Putra to visit the unique creation of mosque. Because higher numbers of visitors/tourist come with bus in Saturday, parking spaces is not sufficient hence created illegal parking scenario at curb parking spaces. Good indication of adequate bus parking supply on Friday is exposed in Figure 4.18.

*Supply and Demand Profile*

From supply and demand profile, it shows that merely 70% of inner side parking bay was utilized and almost 130% usage at outer side of parking bay on Friday, as shown in Figure 4.19. But the problem of over parked is occurred only on Friday prayer. From observation done, the author found that the parking spaces are normally occupied at west of circle from boulevard. The reason of that happened because it reduces time consumption for walking to the intended destination such as to the mosque, restaurant and cruise. On Saturday, problem of insufficient parking spaces is not arising since the utilization is not more than 20%.

Basically, bus parking spaces provided at Dataran Putra is sufficient to cater demand. It clearly shown in Figure 4.20 when the highest number of bus parked is not more than 10 and only 20% is used. But due to the departure time which is more than 2 hours on Saturday, it creates illegal parked at curb parking spaces as illustrate in Figure 4.14. This situation is a sign to provide more parking spaces, so that traffic jam can be prevented.

**Figure 4.14:** Bus that have been parked illegally

The crucial problem encountered at Dataran Putra is no motorcycle spaces is supplies and it created such a big problem for motorcyclist. At least ten bays of motorcycle should be provided after considering the observation done during survey work which was indicated the number of motorcycle parkers is not more than ten. Nevertheless, when it comes to Friday, overflow of motorcycle that has been parked occurred since most of motorcyclist were working around Putrajaya and came for Friday prayer. Figure 4.15, shows uncontrolled of motorcycles parked at Dataran Putra garden.
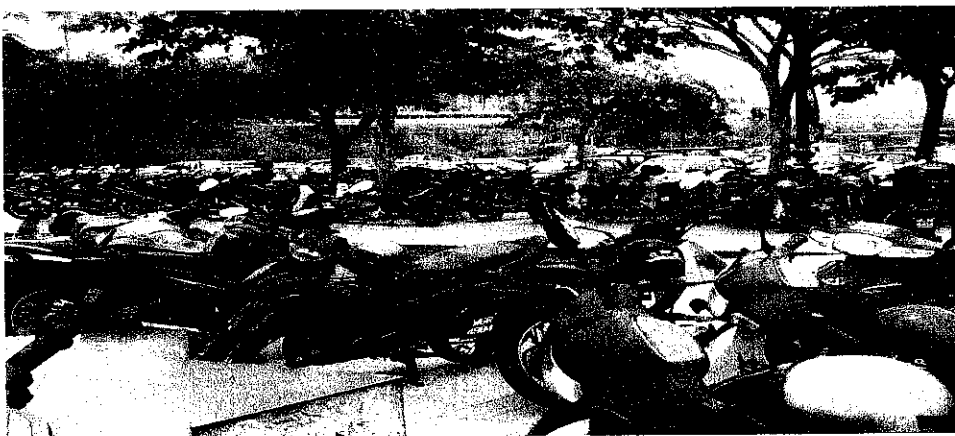


**Figure 4.15:** Overflow of motorcycle that have been parked at Dataran Putra garden
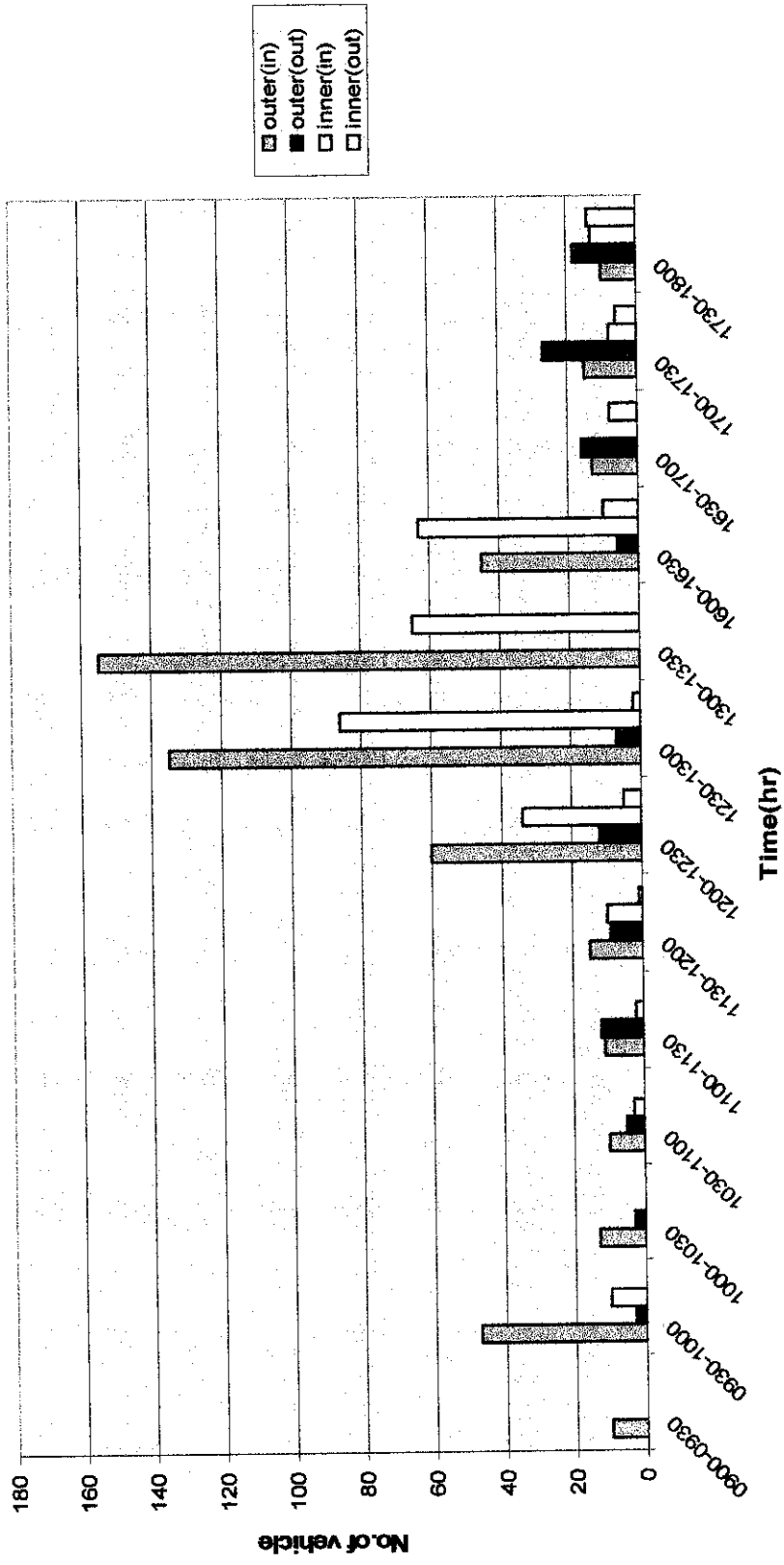
**Figure 4.16:** Arrival and departure at Dataran Putra for outer and inner area

**Figure 4.17:** Arrival and departure at Dataran Putra for outer and inner area

## Arrival and Departure for Bus
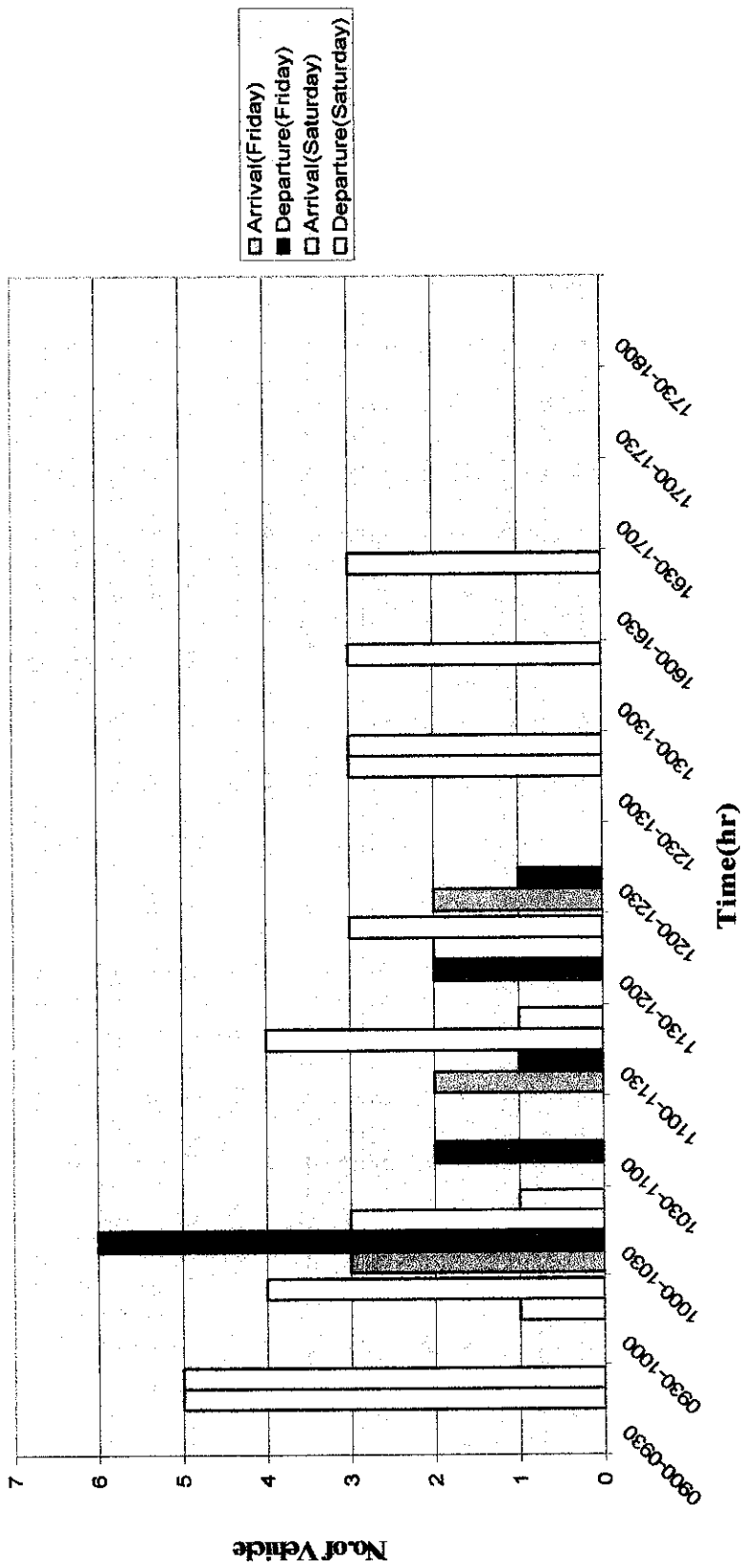


Figure 4.18: Arrival and Departure at Dataran Putra on Friday & Saturday

# Car Parking Supply and Demand
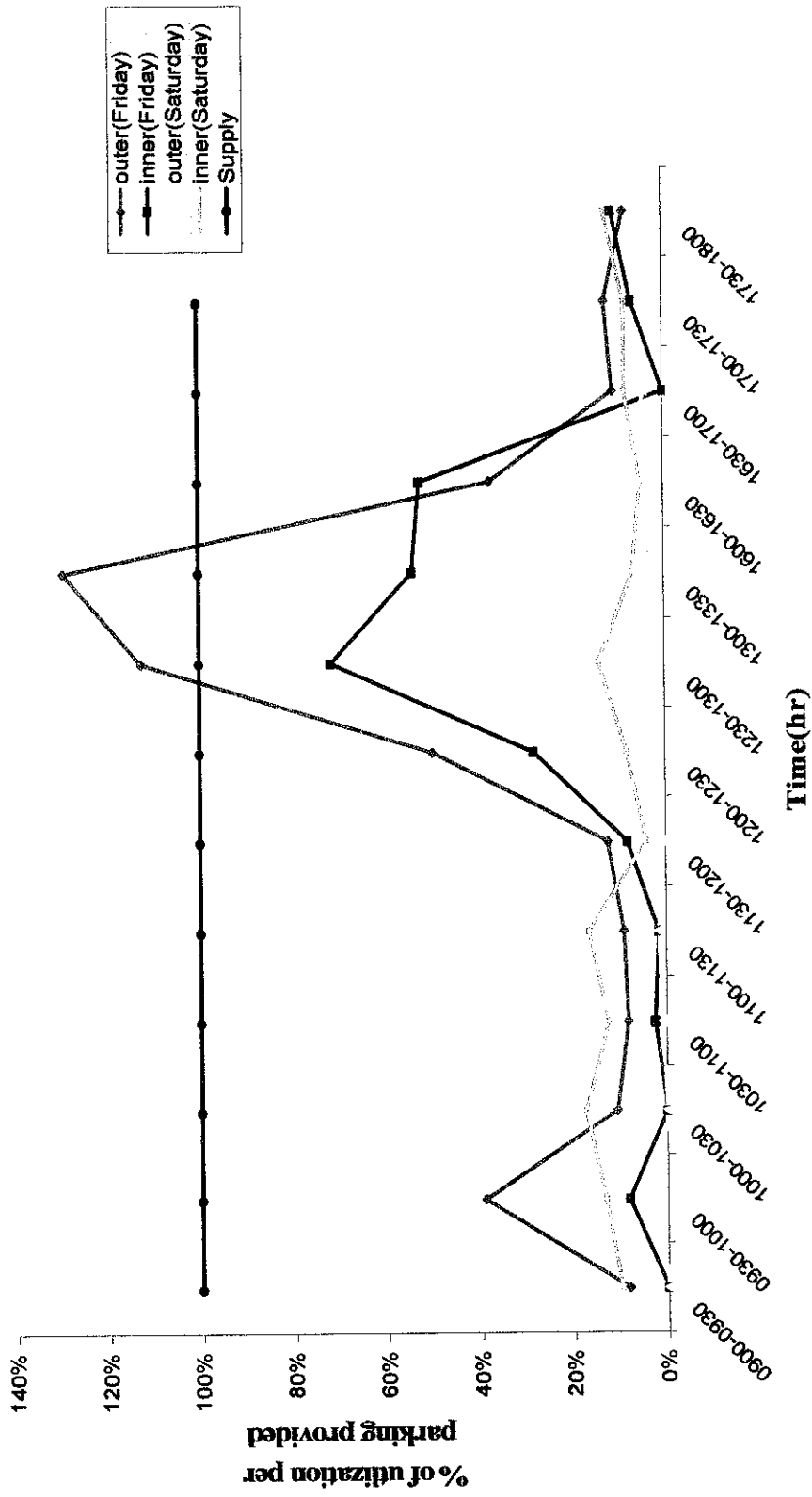


**Figure 4.19**: Supply and Demand Profile for Car that parked at outside and inside of Dataran Putra

36
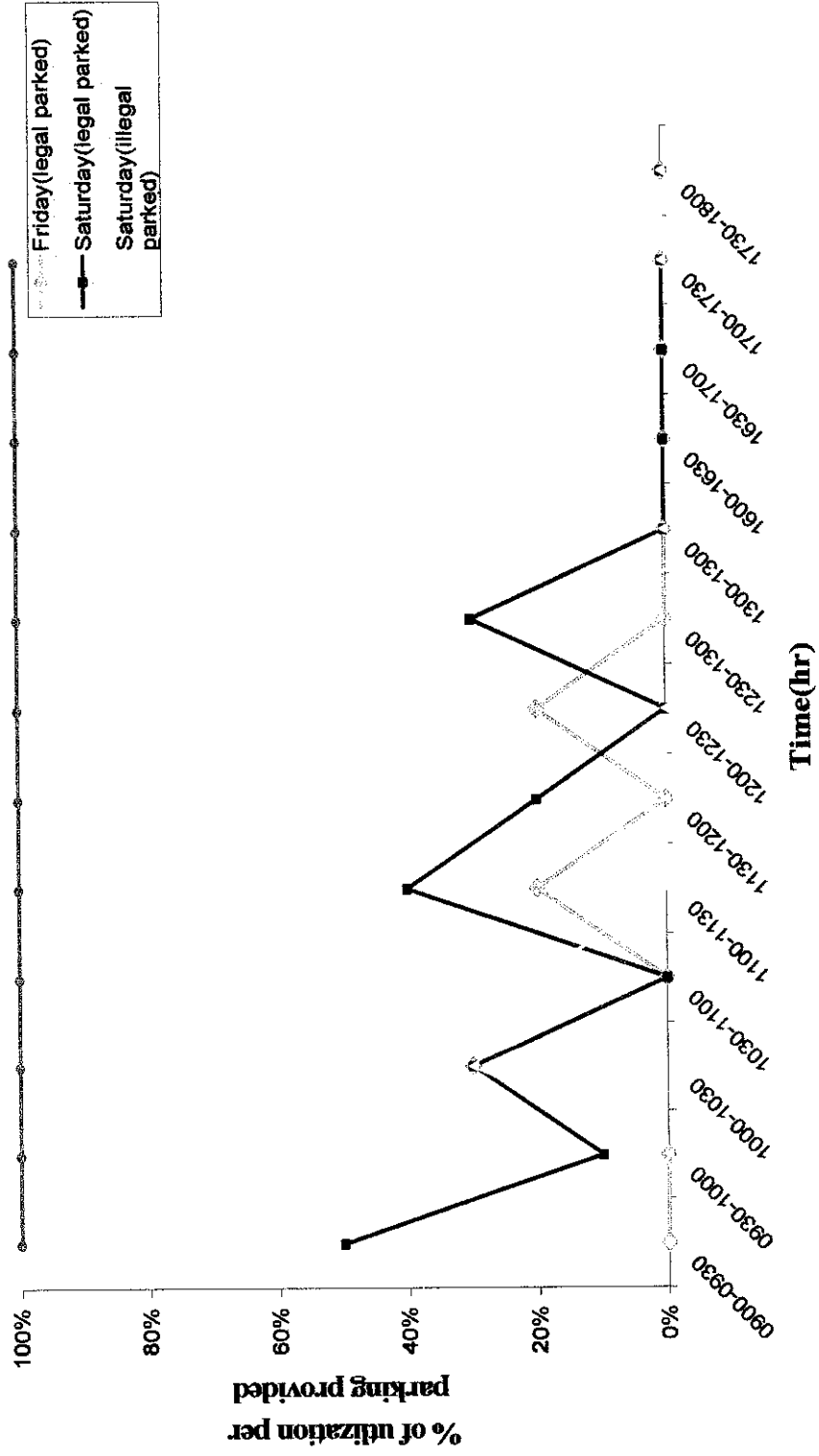
**Figure 4.20:** Supply and Demand Profile for Bus that have been parked legally and illegally at Dataran Putra

## 4.4 Minimum Allowable Provision (MAP)

Putrajaya don't have their own parking standard for land use of recreational areas but the consultant hired who was responsible on it, will come out with their own standard before parking spaces/bay are design. Hence, developers are required to provide car parking spaces based on the types of use and the prevailing car parking provision requirements design by consultant. The Minimum Allowable Provision (MAP), which is the minimum number of car park spaces that must be provided by developers, is therefore set not more than the range of the Car Parking Standard (CPS). The MAP of study areas will be illustrated depending on the utilization of park spaces.

### 4.4.1 Botanical Garden

From supply and demand profile as illustrated in figure 4.5, it can be estimated that the usage of car park spaces is only 10%. It's indicated only 26 out of 256 of parking bay are used. Figure 4.21 shows the Minimum Allowable Parking for this area is 90% lower than the CPS. Since it gave higher amount of MAP, the existing cars parks need to be reduced and redesigned so that the remaining of the area will be used for other purposes. It means, provide any facilities such as public phone, and add some more resting place, upgrading the public transportation system and more. It's also possible to allocate a few percent of the area to have open spaces of parking lots which is ground covered with grass. Instead of maintaining the Putrajaya major theme of 'Garden city' it also encourages to reduce cost.

| Minimum CPS | 256 lots | Minimum CPS | 256 lots |
|---|---|---|---|
| | | | 90% |
| | | MAP | 26 |
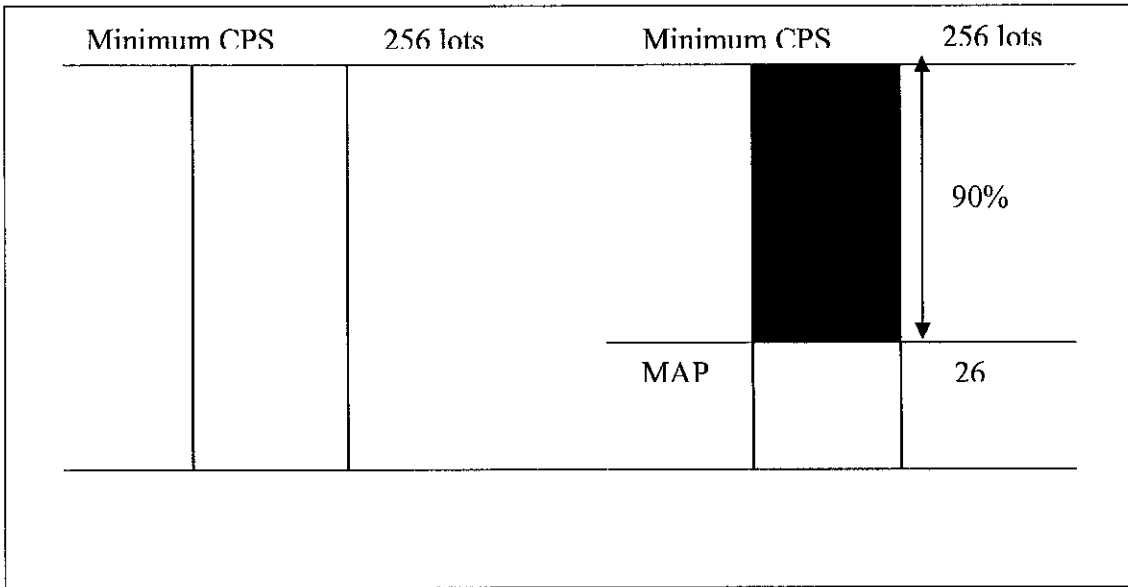
**Figure 4.21:** Minimum Allowable Parking for Botanical garden

## 4.4.2 Wetland Park

In Wetland Park, the utilization of car parking spaces is approximately 50% either on Sunday or Monday. Eventhough the availability of car parking spaces in 31 bays, but the consumption of parking spaces is less than half from the original lots. The Minimum Control Parking Standard as demonstrate in Figure 4.22 is applied when the MAP is 50% lower than CPS. A Wetland Park is a large constructed area which covers an area of 138 hectare. Much of the area is allocated for wildlife sanctuary which attracts a huge variety of animals to the combined terrestrial-aquatic wetland environment. It also provided a space for visitor to enjoy a leisurely walk, jog or cycle along its bicycle track. Since experiencing inadequate parking supply during special event, an unused of car parking is better to maintain to accommodate future demand. In addition, bas spaces are need to provide in order to prevent an uncontrolled of parking along the entrance and getting used of other areas.

| Minimum CPS | 31 lots | Minimum CPS | 31 lots |
| | | | 50% |
| | | MAP | 16 lots |
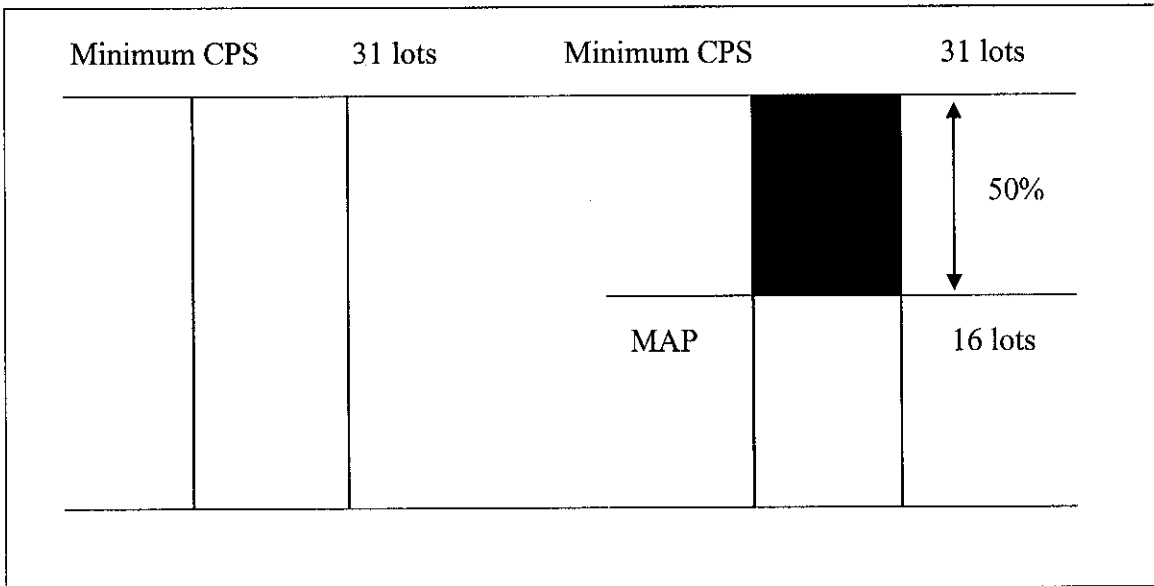
**Figure 4.22:** Minimum Allowable Parking for Wetland Park is 50% lower than CPS

## 4.4.3    Dataran Putra

Essentially, the supply of car parking lots at Dataran Putra is very sufficient to accommodate demand except on Friday during Friday payer because strategic location of Putra Mosque as a main mosque at Putrajaya. Beside that, from information obtained via visitors and consultants of Putrajaya Holdings (PjH), they claimed that overflow of car parked phenomenon also happened when Dataran Putra is acts as a venue for major events such as National Day. Neglecting the over limit (130%) of MAP on Friday because logically every place which has a mosque will be more attractive places for worship. Basically, the 120 car parking bay provided is adequate to cater a trip of tourist and outsider. Figure 4.23 giving higher MAP which is 80% from total parking spaces provided.   To prevent uncontrolled situation, parking control regulation should be established for this study area such as charged are required when drivers may not park properly. Beside that, drivers are should be prohibited from waiting. These measures can influence directly the volume and nature of traffic by giving more road space to moving vehicles or by providing sufficient parking spaces to avoid cruising and reversing maneuvers by drivers searching for parking spaces.

40
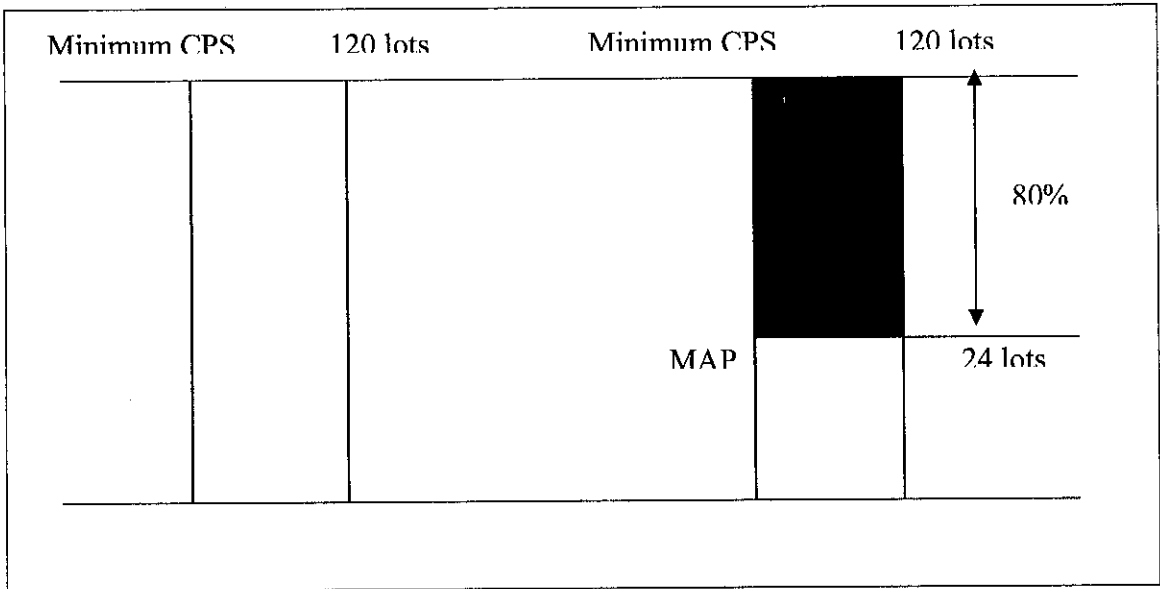
**Figure 4.23:** Minimum Allowable Parking for Dataran Putra is 80%

## 4.5    The Establishment of Parking Standard

In order to have a good parking design, parking standard should be established. These standards were established for contributing towards a balanced transport policy for Putrajaya with different levels of provision in different areas. The range of acceptable parking requirements applied at Putrajaya defining not only the operational minimum but importantly, the maximum provision that remains consistent with Putrajaya Masterplan. The Parking Standard for Recreational Areas is summarized in Table 4.2.

**Table 4.2:** Parking Standard for Recreational Areas

| RECOMMENDED PARKING PROVISION | | | |
|---|---|---|---|
| **Land use** | **Car** | **Motorcycle** | **Bus** |
| Botanical Garden | 1: 24230m$^2$ (GFA) | 1: 105000m$^2$ (GFA) | 1: 90000m$^2$ (GFA) |
| Wetland Park | 1: 86250m$^2$ (GFA) | 1: 172500m$^2$ (GFA) | N/A |
| Dataran Putra | 1:298m$^2$ (GFA)+20% for mosque | N/A | 1: 3581m$^2$ (GFA) |

Basically, Parking Standard of recreational area is depending on the total areas provided and visitors parking demand. For Wetland Park, since no bus was found parked illegally at this area, parking standard for bus cannot be estimated. But from the information obtained via Putrajaya Holdings, bus parking spaces must be allocated at Wetland area since it gave highest amount of bus that have been parked illegally during special event such as during family day. The purpose also wants to cater for future demand. Meanwhile, for Dataran Putra, higher amount of demand happened during Friday prayer and it is recommended to provide 20% of motorcycle parking spaces.

# CHAPTER 5: CONCLUSION

In conclusion, the objectives of this project are achieved when the parking standard for recreational areas are successful established after gone too many difficulties during survey worked. But the parking standard proposed was not comparing from the approval standard allowed by Putrajaya Cooperation since the process to get the information is taken almost three month. Because of time constraint, the parking standard was established by itself depending on the number of parking lot that has been occupied.

The author was decided to choose this topic after it was suggested by urban town planner of Putrajaya. It was recommended because Putrajaya do not have a specific parking standard for recreational area. The author managed to do some research and literature reviews of the Parking Study during the project period and sought a help from an urban expertise.

To obtain an accurate result and come out with the reasonable prediction, the survey worked done very carefully and organized precisely. From the survey work the author accomplish to get important information and used that for ensuring the permit of Minimum Allowable Parking requirement for specific study area. Beside that, the overall parking spaces provided at study area can be categorized as sufficient, and less efficient and low accessibility because lack of transportation facilities.

In order to sustain the good work, whereby the task given is completed within the allocated time frame, the project requires the author to work independently with a minimal supervision. Indeed, the author is very satisfied with her work when the end of project, Parking Standard for Recreational area at Putrajaya is greatly produced

# CHAPTER 6:    RECOMMENDATION

Visitor's parking should be accommodating in a manner consistent with any local parking policy. Visitor's parking should include provision for emergency access and additional parking should be provided to cater for tourism, mosque related activities, park and ride facilities and other emergency parking uses. Facilities such as add some more resting places, public phone and upgrading the transportation system should be provided near places to attract many tourists or visitors. This is necessary to accommodate those wishing to visit a particular recreational area.

Eventhough parking spaces should be upgrade to cater demand but a balance in the provision of car park and open space areas need to be considered so that the Garden City concept can be maintained. Beside that, the position and allocation of spaces (car, motorcycle and coach) at study area need be review to prevent the lack of insufficient parking provision. For instant, Dataran Putra is recommended to allocate about 25% of motorcycle parking spaces. While for Wetland Parks, it is suggested to provide about 20% of bus parking spaces. These are the standard allocation used for an area which has more than $7000m^2$ from total area. Parking spaces for disabled people also need to be considered. The 70/30 modal split (70% for public transport and 30% for private car) also needs to be revised because it prove the difficulties to maintain particularly in persuading those visitors from outside the city to make use of a public transport system which is unfamiliar to them.

Putrajaya Corporation (PJC) may therefore require to adjust certain parking management strategies based on parking demand whereby parking supply is exceeded. To maintain the effectiveness of parking spaces and arrive at an appropriate provision at recreational area, each of the subjected areas need to be examined on a case by case depending on development and tourist activities. Hence, survey work is important to updated periodically such for every three years. For acquiring an accurate result, survey work need to be improve by using a suitable survey equipment rather than manual recorded,

time constraint and limited number of surveyors. This project is suggested and encourages to be improved by another final year student to do details research on it. It is important to compare with a different time interval and days in order to obtained more accurate results. Beside that, the data acquired and graph presentation need to be improved by taking into consideration the future parking lot.

# REFERENCES

1.  www.mtcharlestontransportationstudy.com/pdfs/pm_handout_032005.pdf

2.  http://www.ci.hillsboro.or.us/Planning_Department/HTMLzoneVOL1/Vol1Se ctions77A-77E.aspx

3.  http://www.ura.gov.sg/circulars/text/car_parking_standard.htm

4.  http://www.ci.hillsboro.or.us/Planning_Department/HTMLzoneVOL2/ZOR 2Section137.XI.aspx

5.  http://www.skamaniacounty.org/bpc/html/_DATA/TITLE22/Chapter_22_12

6.  RECREATIONAL_DEVELO/22_12_030_General_management_a.html

7.  http://www.reference.com/browse/wiki/Putrajaya_Wetlands_Park

8.  http://kiat.net/putra/core1.html

9.  http://www.queensu.ca/pps/parking/study/study.html

10. Nicholas J. Garber, and Lester A. Hoel, 1995, *Traffic Highway, University of Virgina* Weant, R.A and H.S.Levinson, 1990, *Parking, The Eno Foundation for Transportation,Inc Wetsport,CT.*

11. Simon Eisner, Arthur Gallion, and Stanley Eisner, 1992, *The Urban Pattern,* New York, John Wiley & Sons

12. *The Making of Putrajaya – Developer Perspective.*

13. Final Report, August 2002 on Overall Parking Strategy and Provision for Open Space Parking for the Core Area of Putrajaya,

14. Putrajaya Review of the MasterPlan and Design Guidelines and Standard

# LIST OF APPENDICES

# Appendix A: WETLAND PARK
## (Survey data)

Venue    : Wetland Park
Day      : Sunday
vehicle type: Cars

| parking numbering | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| time/signage | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 0900-0930 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0930-1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000-1030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1030-1100 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1100-1130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1130-1200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1200-1230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1230-1300 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| total | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1600-1630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1630-1700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1700-1730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1730-1800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| total | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| parking numbering | 17 | | 18 | | 19 | | 20 | | 21 | | 22 | | 23 | | 24 | | 25 | | 26 | | 27 | | 28 | | 29 | | 30 | | 31 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| time/signage | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 0900-0930 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 0930-1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1000-1030 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| 1030-1100 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| 1100-1130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 1130-1200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1200-1230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1230-1300 | 0 | 0 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 0 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 2 | 2 | 1 | 0 |
| total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1600-1630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1630-1700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1700-1730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1730-1800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 1 | 0 |

| parking numbering | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| time/signage | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 0900-0930 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0930-1000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1000-1030 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1030-1100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1100-1130 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1130-1200 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1200-1230 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1230-1300 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1600-1630 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1630-1700 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1700-1730 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1730-1800 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| parking numbering | 17 | | 18 | | 19 | | 20 | | 21 | | 22 | | 23 | | 24 | | 25 | | 26 | | 27 | | 28 | | 29 | | 30 | | 31 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| time/signage | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 0900-0930 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0930-1000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1000-1030 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1030-1100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1100-1130 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1130-1200 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1200-1230 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1230-1300 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1600-1630 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1630-1700 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1700-1730 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1730-1800 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Type of vehicle: Motorcycle

| parking numbering | m1 | | m2 | | m3 | | m4 | | m5 | | m6 | | m7 | | m8 | | m9 | | m10 | | m11 | | m12 | | m13 | | m14 | | m15 | | m16 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| time/signage | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 0900-0930 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0930-1000 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000-1030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1030-1100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1100-1130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1130-1200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1200-1230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1230-1300 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1600-1630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1630-1700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1700-1730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1730-1800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| parking numbering | m17 | | m18 | | m19 | |
|---|---|---|---|---|---|---|
| time/signage | in | out | in | out | in | out |
| 0900-0930 | 0 | 0 | 0 | 0 | 1 | 0 |
| 0930-1000 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000-1030 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1030-1100 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1100-1130 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1130-1200 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1200-1230 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1230-1300 | 0 | 0 | 0 | 0 | 0 | 0 |
| total | 0 | 0 | 0 | 0 | 0 | 0 |
| 1600-1630 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1630-1700 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1700-1730 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1730-1800 | 0 | 0 | 0 | 0 | 0 | 0 |
| total | 0 | 0 | 0 | 0 | 0 | 0 |

Type of vehicle: Bus

| parking numbering | B1 | | B2 | | B3 | | B4 | | B5 | | B6 | | B7 | | B8 | | B9 | | B10 | | B11 | | B12 | | B13 | | B14 | | B15 | | B16 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| time/signage | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 0900-0930 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 0930-1000 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 1000-1030 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 1030-1100 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 1100-1130 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 1130-1200 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 1200-1230 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 1230-1300 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 1 | | 0 | | 0 | 1 | 0 | | 0 | 1 | 0 | | 0 | | 0 | 1 | 0 |
| total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 |
| 1600-1630 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 1630-1700 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 1 | | 0 | | 0 | | 0 | | 0 | | 1 |
| 1700-1730 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 1730-1800 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

| parking numbering | B17 | | B18 | | B19 | |
|---|---|---|---|---|---|---|
| time/signage | in | out | in | out | in | out |
| 0900-0930 | | 0 | | 0 | | 0 |
| 0930-1000 | | 0 | | 0 | | 0 |
| 1000-1030 | | 0 | | 0 | | 0 |
| 1030-1100 | | 0 | | 0 | | 0 |
| 1100-1130 | | 0 | | 0 | | 0 |
| 1130-1200 | | 0 | | 0 | | 0 |
| 1200-1230 | | 0 | | 0 | | 0 |
| 1230-1300 | 1 | 0 | 1 | 0 | 1 | 0 |
| total | | 0 | | 0 | | 0 |
| 1600-1630 | | 0 | | 0 | | 0 |
| 1630-1700 | | 1 | | 0 | | 0 |
| 1700-1730 | | 0 | | 0 | | 1 |
| 1730-1800 | | 0 | | 0 | | 0 |
| total | 0 | 0 | 0 | 0 | 0 | 1 |

# Appendix B: BOTANICAL GARDEN
## (Survey Data)

| ɔ, | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ige | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 10 | √ | √ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 00 | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 00 | √ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 00 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 00 | ɒ | ɒ | √ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ |
| | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 00 | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 00 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

| ɔ, | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | | 21 | | 22 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| age | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | √ | ɒ | ɒ | ɒ | √ | ɒ |
| 00 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 00 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | √ | ɒ | ɒ |
| 00 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | √ | ɒ | ɒ |
| 00 | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 0 | 2 | 2 | 1 | 0 |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| 00 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | √ | ɒ | ɒ |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ |
| 00 | ɒ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ |
| | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 |

| ɔ, | 23 | | 24 | | 25 | | 26 | | 27 | | 28 | | 29 | | 30 | | 31 | | 32 | | 33 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| age | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 30 | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | √ | √ | ɒ | ɒ | o | o |
| 00 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | o | o |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | o | o |
| 00 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | o | o |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | o | o |
| 00 | √ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | o | o |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | o | o |
| 00 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | o | o |
| | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | o | o |
| 00 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | √ | ɒ | ɒ | ɒ | ɒ | ɒ | o | o |
| 30 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | o | o |
| 00 | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | ɒ | √ | ɒ | ɒ | ɒ | ɒ | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

| no, | 34 | | 35 | | 36 | | 37 | | 38 | | 39 | | 40 | | 41 | | 42 | | 43 | | 44 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| age | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | √ | √ | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | √ | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | √ | o | o | o | √ | o | √ | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | √ | o | √ | o | √ | o | √ | o | √ | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| no. age | 45 in | 45 out | 46 in | 46 out | 47 in | 47 out | 48 in | 48 out | 49 in | 49 out | 50 in | 50 out | 51 in | 51 out | 52 in | 52 out | 53 in | 53 out | 54 in | 54 out | 55 in | 55 out |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | √ | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| no. age | 56 in | 56 out | 57 in | 57 out | 58 in | 58 out | 59 in | 59 out | 60 in | 60 out | 61 in | 61 out | 62 in | 62 out | 63 in | 63 out | 64 in | 64 out | 65 in | 65 out | 66 in | 66 out |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o |
|  | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| bering age | 67 in | 67 out | 68 in | 68 out | 69 in | 69 out | 70 in | 70 out | 71 in | 71 out | 72 in | 72 out | 73 in | 73 out | 74 in | 74 out | 75 in | 75 out | 76 in | 76 out | 77 in | 77 out |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| no. age | 78 in | 78 out | 79 in | 79 out | 80 in | 80 out | 81 in | 81 out | 82 in | 82 out | 83 in | 83 out | 84 in | 84 out | 85 in | 85 out | 86 in | 86 out | 87 in | 87 out | 88 in | 88 out |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 330 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 000 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o |
| 030 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | √ |
| 100 | o | o | o | o | o | o | o | o | o | o | √ | o | √ | o | o | o | √ | √ | o | o | √ | o |
| 130 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o |
| 200 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 230 | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | √ | o | o |
| 300 | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | √ |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 1 | 1 | 1 | 1 | 2 |
| 630 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 700 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 730 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o |
| 800 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |

| ge | 89 in | out | 90 in | out | 91 in | out | 92 in | out | 93 in | out | 94 in | out | 95 in | out | 96 in | out | 97 in | out | 98 in | out | 99 in | out |
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| :0 | o | o | √ | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| :0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| :0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o |
| :0 | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o |
| :0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| :0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o |
| :0 | o | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
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| | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| :0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
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| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |

| ge | 100 in | out | 101 in | out | 102 in | out | 103 in | out | 104 in | out | 105 in | out | 106 in | out | 107 in | out | 108 in | out | 109 in | out | 110 in | out |
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| :0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| :0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
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| :0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| :0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| :0 | √ | o | o | o | o | o | o | o | o | o | √ | √ | o | o | o | o | √ | o | √ | o | √ | o |
| :0 | o | √ | √ | o | √ | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o |
| :0 | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |

| ge | 111 in | out | 112 in | out | 113 in | out | 114 in | out | 115 in | out | 116 in | out | 117 in | out | 118 in | out | 119 in | out | 120 in | out | 121 in | out |
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| :0 | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o |
| :0 | o | o | o | o | o | o | o | o | o | o | √ | o | √ | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| :0 | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| :0 | √ | o | o | o | √ | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o |
| :0 | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o |
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| | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |

| ge | 122 in | out | 123 in | out | 124 in | out | 125 in | out | 126 in | out | 127 in | out |
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| | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
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| :0 | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| ο, | 128 | | 129 | | 130 | | 131 | | 132 | | 133 | | 134 | | 135 | | 136 | | 137 | | 138 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ge | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 0 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ |
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| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
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| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| ο, | 139 | | 140 | | 141 | | 142 | | 143 | | 144 | | 145 | | 146 | | 147 | | 148 | | 149 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ige | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
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| )0 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
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| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| ο, | 150 | | 151 | | 152 | | 153 | | 154 | | 155 | | 156 | | 157 | | 158 | | 159 | | 160 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| age | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 30 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | o | o |
| )0 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | o | o |
| 30 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | o | o |
| )0 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | o | o |
| 30 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | o | o |
| )0 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | o | o |
| 30 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | o | o |
| )0 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | √ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | o | o |
| )0 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | o | o |
| 30 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | o | o |
| )0 | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | ϋ | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| ιο, | 161 | | 162 | | 163 | | 164 | | 165 | | 166 | | 167 | | 168 | | 169 | | 170 | | 171 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| age | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | √ | o | √ | o | o | o |
| 30 | o | o | o | o | o | o | √ | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |

| o, | 172 | | 173 | | 174 | | 175 | | 176 | | 177 | | 178 | | 179 | | 180 | | 181 | | 182 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ge | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| :0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | √ | o | o | o | √ | o | √ | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| i0 | o | o | o | o | o | o | o | o | √ | o | o | o | √ | o | o | o | o | o | o | o | √ | o |
| )0 | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | √ | o | √ | o | o | o | o | o |
| i0 | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o |
| | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |

| o, | 183 | | 184 | | 185 | | 186 | | 187 | | 188 | | 189 | | 190 | | 191 | | 192 | | 193 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ge | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | √ | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | √ | √ | √ | √ | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 |
| i0 | o | o | o | o | o | o | √ | o | o | √ | o | √ | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | √ | o | o | √ | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | √ | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

| o, | 194 | | 195 | | 196 | | 197 | | 198 | | 199 | | 200 | | 201 | | 202 | | 203 | | 204 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ge | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| o, | 205 | | 206 | | 207 | | 208 | | 209 | | 210 | | 211 | | 212 | | 213 | | 214 | | 215 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ge | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | √ | o |
| i0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| )0 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |

## Table (no. 216–226)

| age | 216 in | 216 out | 217 in | 217 out | 218 in | 218 out | 219 in | 219 out | 220 in | 220 out | 221 in | 221 out | 222 in | 222 out | 223 in | 223 out | 224 in | 224 out | 225 in | 225 out | 226 in | 226 out |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 50 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o | √ |
| 30 | o | o | o | o | o | o | o | o | √ | o | √ | o | o | o | o | o | o | o | o | o | √ | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |

## Table (no. 227–237)

| age | 227 in | 227 out | 228 in | 228 out | 229 in | 229 out | 230 in | 230 out | 231 in | 231 out | 232 in | 232 out | 233 in | 233 out | 234 in | 234 out | 235 in | 235 out | 236 in | 236 out | 237 in | 237 out |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | √ | o | √ | o | o | o | √ | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Table (no. 238–248)

| age | 238 in | 238 out | 239 in | 239 out | 240 in | 240 out | 241 in | 241 out | 242 in | 242 out | 243 in | 243 out | 244 in | 244 out | 245 in | 245 out | 246 in | 246 out | 247 in | 247 out | 248 in | 248 out |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Table (no. 249–256)

| age | 249 in | 249 out | 250 in | 250 out | 251 in | 251 out | 252 in | 252 out | 253 in | 253 out | 254 in | 254 out | 255 in | 255 out | 256 in | 256 out |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | ɔ | ɔ | ɔ | ɔ |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | ɔ | ɔ | ɔ | ɔ |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | √ | ɔ | √ | ɔ |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | ɔ | ɔ | ɔ | ɔ |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | ɔ | √ | ɔ | ɔ |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | ɔ | ɔ | ɔ | ɔ |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | ɔ | ɔ | ɔ | ɔ |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | ɔ | ɔ | ɔ | ɔ |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | ɔ | ɔ | ɔ | ɔ |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | ɔ | ɔ | ɔ | ɔ |
| 30 | o | o | o | o | o | o | o | o | o | o | o | o | ɔ | ɔ | ɔ | ɔ |
| 00 | o | o | o | o | o | o | o | o | o | o | o | o | ɔ | ɔ | ɔ | ɔ |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

: Motorcycle

| o, | m1 | | m2 | | m3 | | m4 | | m5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| ge | in | out | in | out | in | out | in | out | in | out |
| :0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| )0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| :0 | 2 | ʊ | ʊ | ʊ | ʊ | ʊ | 3 | ʊ | ʊ | ʊ |
| )0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| :0 | 1 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| )0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| :0 | ʊ | 1 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| )0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| | 3 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| )0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| 0 | ʊ | 1 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| )0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Bus

| ), | B1 | | B2 | | B3 | | B4 | | B5 | | B6 | | B7 | | B8 | | B9 | | B10 | | B11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ge | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| 0 | √ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| 0 | ʊ | ʊ | ʊ | ʊ | √ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| 0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| 0 | ʊ | √ | ʊ | √ | ʊ | √ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| 0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| 0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| 0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| 0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| 0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| 0 | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| ), | B12 | | B13 | | B14 | | B15 | | B16 | | B17 | | B18 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ge | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| ) | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| ) | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| ) | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| ) | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| ) | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| ) | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| ) | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| ) | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ) | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| ) | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| ) | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ | ʊ |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Appendix C: DATRAN PUTRA
## (Survey data)

Dataran Putra
: Friday
: Cars

| name | outside | | inside | |
|---|---|---|---|---|
| nage | in | out | in | out |
| 0930 | 10 | 0 | 0 | 0 |
| 1000 | 47 | 3 | 10 | 0 |
| 1030 | 13 | 3 | 0 | 0 |
| 1100 | 10 | 5 | 3 | 0 |
| 1130 | 11 | 12 | 2 | 0 |
| 1200 | 15 | 9 | 10 | 1 |
| 1230 | 60 | 12 | 34 | 5 |
| 1300 | 135 | 7 | 86 | 2 |
| 1330 | 155 | 0 | 65 | 0 |
| l | 311 | 51 | 210 | 8 |
| 1630 | 45 | 6 | 63 | 10 |
| 1700 | 13 | 16 | 0 | 8 |
| 1730 | 15 | 27 | 8 | 6 |
| 1800 | 10 | 18 | 13 | 14 |
| l | 83 | 67 | 84 | 38 |

: Bus

| imbering | B1 | | B2 | | B3 | | B4 | | B5 | | B6 | | B7 | | B8 | | B9 | | B10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| gnage | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 0930 | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o |
| 1000 | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o |
| 1030 | 0 | o | 0 | o | √ | o | 0 | √ | 0 | √ | 0 | √ | 0 | √ | 0 | √ | 0 | √ | 0 | o |
| 1100 | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | √ |
| 1130 | 0 | √ | 0 | o | √ | o | √ | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o |
| 1200 | √ | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o |
| 1230 | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o |
| 1300 | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o |
| 1300 | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o |
| al | 2 | 1 | 1 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 1630 | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o |
| 1700 | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o |
| 1730 | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o |
| 1800 | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o | 0 | o |
| al | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Cars

| name | outside | | inside | |
|---|---|---|---|---|
| aage | in | out | in | out |
| 930 | 0 | 0 | 12 | 0 |
| 000 | 2 | 1 | 16 | 6 |
| 030 | 0 | 4 | 21 | 9 |
| 100 | 1 | 0 | 15 | 7 |
| 130 | 2 | 0 | 20 | 5 |
| 200 | 1 | 1 | 5 | 13 |
| 230 | 3 | 2 | 10 | 8 |
| 300 | 4 | 0 | 17 | 4 |
| 330 | 3 | 2 | 8 | 5 |
| l | 16 | 10 | 124 | 57 |
| 630 | 9 | 5 | 6 | 5 |
| 700 | 5 | 17 | 10 | 6 |
| 730 | 11 | 8 | 10 | 4 |
| 800 | 6 | 9 | 15 | 13 |
| l | 31 | 39 | 41 | 28 |

: Bus

| mbering | B1 | | B2 | | B3 | | B4 | | B5 | | B6 | | B7 | | B8 | | B9 | | B10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| nage | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out | in | out |
| 930 | √ | ᴅ | √ | ᴅ | √ | ᴅ | ᴅ | √ | ᴅ | √ | √ | ᴅ | ᴅ | √ | √ | ᴅ | ᴅ | √ | ᴅ | √ |
| 000 | ᴅ | √ | ᴅ | √ | ᴅ | √ | √ | ᴅ | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ |
| 030 | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | √ | √ | ᴅ | ᴅ | ᴅ |
| 100 | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | √ | ᴅ |
| 130 | √ | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | √ | ᴅ |
| 200 | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ |
| 230 | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ |
| 300 | ᴅ | √ | ᴅ | ᴅ | ᴅ | √ | √ | ᴅ | √ | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | ᴅ |
| 330 | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | √ |
| l | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 |
| 630 | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | √ | ᴅ | ᴅ | ᴅ | ᴅ |
| 700 | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ |
| 730 | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ |
| 800 | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ | ᴅ |
| l | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |

arking    bus

| mage | in | out |
|---|---|---|
| 0930 | 2 | 3 |
| 1000 | 0 | 2 |
| 1030 | 3 | 3 |
| 1100 | 2 | 0 |
| 1130 | 0 | 0 |
| 1200 | 0 | 0 |
| 1230 | 0 | 0 |
| 1300 | 1 | 0 |
| 1330 | 0 | 0 |
| d | 5 | 8 |
| 1630 | 2 | 1 |
| 1700 | 1 | 0 |
| 1730 | 0 | 0 |
| 1800 | 0 | 0 |
| d | 2 | 1 |