

COVID-19 Effects on Postgraduate Students' Activity-Travel Patterns in UTHM

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Abstract: COVID-19 pandemic is the most impactful issue that all people in the world struggling with. The first case was detected in Wuhan, China in December 2019 and the virus spread rapidly around the world. Thus, the Malaysian government have applied some measures to control the spread of COVID-19 which is called Movement Control Order (MCO), Conditional Movement Control Order (CMCO) and Recovery Movement Control Order (RMCO). In each of the order, there are a few new regulations that all Malaysians need to obey. Due to that, the activity-travel patterns of Malaysians including university students may be impacted. This study aims to analysed students' activity-travel patterns during COVID-19 pandemic situations. A total of 327 respondents were selected among postgraduate students in Universiti Tun Hussein Onn Malaysia (UTHM). Survey method via questionnaire instrument was applied in a form of Google Form. The questionnaire was distributed using various online platform such as WhatsApp, Facebook and Instagram. Quantitative method was applied in which that the students' activity travel patterns during COVID-19 is analysed and performed in percentage form using Statistical Packages for Social Science (SPSS) Version 23. Results show that the respondents prefer to use car over other modes for participating in all activities. For trip frequency, the highest percentage (58.4%) is 1-2 trips made per day in weekend to do leisure activities. For activity duration, most of the respondents spend their time between 1-4 hours per day (56.6%) to do maintenance activities in weekend. As for travel distance, respondent tend to travel between 6 to 20 km per day to participate in mandatory and maintenance activities in weekdays.

Keywords: Activity-Travel Patterns, COVID-19, Postgraduate Students

1. Introduction

An outbreak of pneumonia was detected in Wuhan City, Hubei Province, China, in December 2019. It has since been described as a novel and infectious coronavirus, now known as COVID-19. It is also known as acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. The report was first submitted

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to World Health Organization (WHO) on 31st December 2019. WHO announced a global health emergency on 30 January 2020 with the COVID-19 outbreak. After spreading to the world at an unprecedented pace, WHO declared COVID-19 a pandemic on 11th March 2020. The diseases spreading too fast and uncontrolled [2]. As such, COVID-19 has had a huge effect on people's lives around the world. It changes the daily life of people. It has affected the entire societies including the educational system [3]. Due to that, there is exist new norm that the people need to adapt to during the pandemic occurs. The new norm affects the workers to do work from home (WFH) [4], do the grocery shopping with regulations to obey and the students that need to pursue their studies with the online learning methods [5]. Social distancing, temperature check, and scan the barcode before entering a shop, activity restrictions, and personal hygiene such as wearing masks and sanitize hands were the regulations that Malaysian need to follow [6]. It is a new normal that societies need to adapt to avoid transmission of COVID-19 from spread. All the regulations restrict the movement of students in daily routines. For example, travel for shopping, buying stationeries, or even go to laundry. The restrictions put difficulties to the students. Therefore, this study aims to investigate COVID-19 pandemic effects on university students' activity-travel patterns in conducting mandatory (work and/or study), maintenance (e.g. buying groceries, during laundry, Friday prayer, etc.) and leisure activities (e.g. watching movies, dining out, sports, etc.).

1.1 Problem statement

When the COVID-19 occurs for the first time, there are restrictions on travel in local and even most of the countries [7]. According to Fan [6], all the people of the community were banned to long-distance travelling during Movement Control Order (MCO) as to prevent and control the infectious diseases that was issued by Malaysian Prime Minister, Tan Sri Muhyiddin Yassin on 16th March 2020 under the Prevention and Control of Infectious Diseases Act 1988. Even the borders of every state were ordered to closed. The authorities such as the Royal Malaysia Police (RMP) and Malaysian Armed Forces (MAFHQ) were conducted to supervise every border. These restrictions were strict during the number of coronavirus active cases were increasing continuously [8]. When the number of coronavirus active cases was controllable, the government loosen the restrictions. The Malaysian Prime Minister decided to loosen the restrictions after being satisfied that the COVID-19 cases are reduced and under control. Even when the coronavirus active in a controllable situation, the gatherings or any gatherings were not allowed whether for religious, sports activities, meetings, attending class, or cultural purposes [9]. Due to this, some of the students could not go back to their hometown and stuck at their hostel during the COVID-19 occurs except with prior written permission of the police officer in charge to travel from one place to another. This is because transportation such as buses, taxis, hailing services, commuters, and flights was stopped to operate as a government order [10]. The communities facing a lot of difficulties due to travel restrictions especially for the students.

1.2 Objective

The objective of this research is to analyse the students' activity-travel patterns (in terms of mode choice, travel distance, frequency trips and activity duration) during the COVID-19 pandemic.

2. Literature review

During the COVID-19 period, many new rules and regulations have been prepared and implemented that governed by the Malaysian government with the aim to reduce and minimise the COVID-19 spreading rate. People must follow the new rules and regulations. For those who disobey the rules and regulations will be compounded or sentenced, depending on their level of disobey. Even the people that go outside of their house need to make sure of social distancing at least one meter from each other and wear masks properly [11]. In general, there are three orders authorised by the Malaysian government that were implemented during the COVID-19 pandemic in Malaysia. They are Movement Control Order (MCO), Conditional Movement Control Order (CMCO) and Recovery Movement Control Order (RMCO).

2.1 Mandatory Activities

As mandatory activities are defined as some activities that related to the everyday routine such as out-of-home job, school, and study activities [12]. There are a few mandatory activities by students such as study and work. Study is a part of necessary for a student. In the pandemic time, the type of study of students were changed. The digital learning was applied during the pandemic. Zoom, Google Meet and Microsoft Team were used as a medium for the students and lecturers to connect to each other [13]. Same goes to the practical students that work has changed their type of work by work from home. They do the work by task at home to avoid the spread of the virus [14].

2.2 Maintenance Activities

Maintenance activities is non-mandatory activities that consist of routine activities such as shopping groceries, health care, visiting near family members such as parents and siblings, going to the Friday prayer for Muslim's male and doing laundry [12]. When being outside, the students need wear to masks properly. The students that do not wear masks can be compounded and sentenced by authorities. There are also some regulations that need to be followed regarding what is movement order that implemented during each period. The detail of the regulations was applied to each order. Same goes to the regulations of Friday prayer for Muslim's male that they need to bring along the prayer mat and follow the regulations that were implemented by the government. The limit of persons that can go out also were applied in each order. Even the limit of each private car was defined for each order. The using of laundrettes also has the limits of person that can be in a period. The students that go out for buying groceries also need to make sure to follow the regulations that were applied by the government.

2.3 Leisure Activities

Leisure activities can be referring as discretionary activities such as eating and sleeping. Other than that, there are some activities that students do during their free time such as go for eating out, going to cinema, do the sports activities and window-shopping [12]. The leisure activities such as eating out, going to cinema, outdoor activities, and sports are not allowed in this period because the number positive cases of COVID-19 are uncertain in MCO, CMCO and RMCO.

3. Methodology

The aspects discussed include research design and data collection method and analysis method.

3.1 Research Design

Research problem determined the type of design that should be use in a research [15]. For this research, the method applied is a quantitative method. It is to determine the activity-travel patterns of during the COVID-19 pandemic occurs. Therefore, the activity-travel patterns of students during COVID-19 are obtained. The respondents for this research were postgraduate students from Universiti Tun Hussein Onn Malaysia (UTHM) because postgraduate students are mostly lived nearby university and needed to use the laboratory or source in library for their research although during MCO period. A pilot study was conducted to test the reliability of the questions that have been constructed. A sample of 10% of the sample population were tested to show the reliability of the questions. Therefore, 33 respondents have been selected to be a sample for the pilot study from total population 2263 postgraduate students from UTHM website [16] and actual number of total respondents were 327. The data was collected using a survey method by distributing the questionnaire via Google Form through the social media platform such as Facebook, Instagram, and WhatsApp. After collecting the data, the results were gathered and a Statistical Packages for Social Sciences (SPSS) Version 23 software was used to analyse the data.

3.2 Analysis of Activity-Travel Patterns' Postgraduate Students During COVID-19 Pandemic Occur

The analysis of activity-travel patterns of students during COVID-19 pandemic occur was obtained and descriptive analysis was done. The data shows in percentage form because the questionnaires are

multiple choice questions thus, produce nominal data type. The analysis was focused on mode choice, trip frequency, activity duration and travel distance of postgraduate students in mandatory, maintenance, and leisure activities.

4. Results and Discussion

A pilot study was conducted to test the reliability of the questions that have been constructed. A sample of 10% of the sample population were tested and 33 respondents have been selected. The result of the Alpha Cronbach's is 0.927 which is considered as excellent value [17], thus the data was collected using the designed questionnaire.

4.1 Result

The results of travel mode, trip frequency, activity duration and travel distance were discussed in this part.

4.1.1 Mode Choice

The following is the table result of mode choice by respondents to participate in mandatory, maintenance, and leisure activities during COVID-19 pandemic.

Table 4.1: Percentage of Travel Mode Choice to do Mandatory, Maintenance and Leisure Activities (N=327)

Mode choice/activity	Mandatory (%)	Maintenance (%)	Leisure (%)
Bicycle	1.2	1.5	1.2
Motorcycle	16.5	14.7	8.0
Private Car	74.3	76.5	83.2
Public Transport (Bus, Monorail etc.)	4.9	2.8	3.4
E-hailing (Grab)	3.1	4.6	4.3
Total	100.0	100.0	100.0

Based on Table 4.1, travel mode choice to do mandatory activities during COVID-19 by respondents are majority chose private car than others which is 74.3% and minor respondents chose is bicycle which is 1.2%. For maintenance activities, most of respondents' mode choice chose private car than others which is 76.5% and minor respondents chose bicycle, 1.5%. The last one is for leisure activities, 1.2% of respondents chose bicycle and most of respondents chose private car, 83.2%. Most of the respondents choose car over others due to the reasons that most of the respondents are already have an income and married, therefore, private car is becoming a necessity as their main transportation every day.

4.1.2 Trip Frequency

The following is the table result of trip frequency by respondents to do mandatory, maintenance and leisure activities per day in weekdays and weekend during COVID-19 pandemic.

Table 4.2: Trip Frequency for Participating in Mandatory, Maintenance and Leisure Activities during per day in Weekdays and Weekend (N=327)

Activity Frequency/day	Mandatory (%)		Maintenance (%)		Leisure (%)	
	Weekdays	Weekend	Weekdays	Weekend	Weekdays	Weekend
None	10.1	19.3	7.3	19.3	14.4	5.5
1-2 times	49.2	47.4	56.0	47.4	49.2	58.4
3-4 times	33.3	27.8	32.4	27.8	31.5	31.5

4-5 times	6.4	4.9	3.4	4.9	4.6	4.3
More than 5 times	.9	.6	.9	.6	.3	.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Based on Table 4.2, the highest trip frequency is 49.2% of respondents which is 1-2 times trips per day to do mandatory activity and the lowest number of respondents is 0.9% that made more than 5 trips per day in weekdays. Most of the students participate in mandatory activity in weekdays since it is a usual working days. While for maintenance activities, the highest number of respondents, 56% that made 1-2 trips per day in weekdays and the lowest number of respondents is 0.9% that made more than 5 trips per days in weekdays. Not half of respondents, 49.2% are the respondents that do 1-2 trips during weekdays and the lowest percent are 0.3% of respondent that do more than 5 trips for leisure activities in weekdays. From all three activities, the result shows that there is a drop of number of trips per day during weekend which is in mandatory activities from 49.2% to 47.4% of respondents and in maintenance activities from 56% to 47.4% of respondents. This is because students might prefer to have a rest day during weekend. Different with mandatory and maintenance activities, leisure activities show an increased number from 49.2% to 58.4% of respondents. Students like to do outdoor activities during weekend as it is allowed during MCO with social distancing to follow.

4.1.3 Activity Duration

The following is the table result of activity duration by respondents to do mandatory, maintenance, and leisure activities per day in weekdays and weekend during COVID-19 pandemic.

Table 4.3: Percentage of Duration time to Participate in Mandatory, Maintenance and Leisure Activities per day during Weekdays and Weekend (N=327)

Activity Duration/day	Mandatory (%)		Maintenance (%)		Leisure (%)	
	Weekdays	Weekend	Weekdays	Weekend	Weekdays	Weekend
0-1 hour	9.5	15.6	11.9	7.6	13.5	13.5
>1 hour-4 hours	43.1	45.0	53.8	56.6	48.0	45.6
>4 hours-6 hours	35.2	30.6	27.8	29.4	31.8	32.4
>6 hours-8 hours	9.8	7.6	4.9	5.5	5.2	7.6
>8 hours	2.4	1.2	1.5	.9	1.5	.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 4.3 shows the common activity duration by respondents to participate in mandatory activities during weekdays is 1-4 hours per day which is 43.1% in weekdays and 45% in weekend. The percentage shows numbers of respondent spent 1-4 hours for mandatory activities during weekdays is lesser than in weekend. It is because weekdays have more days in a week compared to weekend so students can do their works on the next day than doing all the works in weekend. For maintenance activities, the respondents also have the common activity duration in participating in maintenance activities is 1-4 hours per day which is 53.8% in weekdays and 56.6% in weekend. A higher number in weekend is due to the activities such as shopping groceries and doing laundry can only be done during weekend since the students are busy with their study/work schedule during weekdays. The decreased number of respondents that spend time for leisure activities which is 48% in weekdays and 45.6% in weekend. For weekdays most of the students are busy with their tight schedule as students and workers, thus limiting their activity duration for leisure activities in weekdays than weekend.

4.1.4 Travel Distance

The following is the table result of travel distance by respondents to do mandatory, maintenance, and leisure activities per day in weekdays and weekend during COVID-19 pandemic.

Table 4.4: Percentage of Travel Distance to go for Mandatory, Maintenance and Leisure Activities per day during Weekdays and Weekend (N=327)

Activity Distance/Day	Mandatory (%)		Maintenance (%)		Leisure (%)	
	Weekdays	Weekend	Weekdays	Weekend	Weekdays	Weekend
0-5 km	25.7	27.8	27.8	25.1	21.7	22.6
6-20 km	45.6	42.8	45.6	44.0	41.3	44.0
21-30 km	22.6	22.0	21.7	22.6	26.3	22.0
31-50 km	3.7	4.9	4.0	5.2	7.3	5.5
More than 50 km	2.4	2.4	.9	3.1	3.4	5.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Based on Table 4.4, respondents are mostly travel for about 6 to 20 km per day to go for mandatory activities during weekdays which is 45.6% and 42.8% in weekend. As stated, mandatory activities include study and work, thus, the students go out for other activities only in the weekend because of works and necessary things to be done according to their workplace located. The lowest number of respondents that do the trip more than 50 km is 0.9% in weekdays and 3.1% in weekend for maintenance activities. A higher number of respondents participating in maintenance activities during weekend than weekdays is because of movement control order. Due to that, students cannot travel for a far travel distance except for certain essential trip purposes such as for healthcare purpose or appointment at hospital. A higher number of respondents travel more than 50 km in weekend is 5.8% than only 3.4% in the weekdays to participate in leisure activities. Most of respondents have a lot of time during weekend than weekdays to conduct leisure activities, therefore, students tend to do longer travel distance in weekend than in weekdays.

5. Conclusion

The main highlight of this study is activity-travel patterns of postgraduates UTHM during COVID-19 pandemic. A survey form has been distributed among the postgraduate students and data has been analyzed. Based on the results of the analysis of the activity-travel pattern of university students during COVID-19 pandemic occurs, it shows that the respondents' mode choice mostly to use car which is 73.4% than others to do mandatory activities, 76.5% respondents chose private cars than others to do maintenance activities and 82.3% respondents chose private car than others to do leisure activities. For trip frequency, 58.4% of respondents' common trip is one to two trips per day in weekend to do leisure activities. For activity duration, most of the respondents spend their time up to one to four hours per day which is 56.6% to do maintenance activities in weekend. As for travel distance, the most dominant travel distance by respondents is 6 to 20 km per day which is 45.6% respondents to do mandatory and maintenance activities in weekdays. As to wrap up, objective of this study was achieved and discussed well. Other than that, some recommendations have been constructed. The results of this study can give a better guideline especially to the governments so that the regulations can be revise more in the future references suitable with current issues. Due to that, the regulations would be suitable for the university students to avoid unpleasant incident from happen and can create awareness to the community about the COVID-19. Finally, it can give an extra additional knowledge to the Malaysian in future.

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