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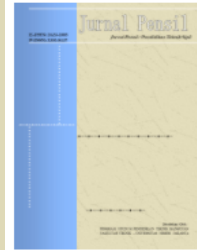
THE RELATIONSHIP BETWEEN THE CHARACTERISTICS OF THE CHOICE OF TRANSPORTATION MODES IN THE CITY OF WEST JAKARTA DURING THE COVID-19 PANDEMIC

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Abstract

The Covid-19 pandemic that has hit the world in recent years has changed the habit of life of many people, with no exception to the West Jakarta City Administration citizen.. Various citizen activities started to adjust to the current living circumstances. This study was conducted to determine the relationship between the characteristics of mode selection and the usage of types of transportation modes in the Administrative City of West Jakarta during the Covid-19 Pandemic. This research data was obtained through an online-based survey regarding the characteristics of the mode selection of citizens of the West Jakarta Administrative City during the Covid-19 Pandemic. The resulting data is processed using statistical correlation analysis based on the chi-square test. The results of the analysis show that the highest proportion of the use of this type of transportation mode is in the Administrative City of West Jakarta during the Covid-19 pandemic, namely 68.5% are private vehicle users and 31.5% are public transport users. which are gender factors, vehicle ownership, SIM ownership, frequency of daily activities, distance travelled, the distance of public transportation facilities from home, distance of public transportation facilities from the activities place, travel time during a pandemic, waiting time for transportation modes, and travel costs have a relationship with the usage of this type of transportation in West Jakarta Administrative City During the Covid-19 Pandemic.

Keywords: Characteristic Relationship, Pandemic, Mode Selection, Transportation

Introduction

The pandemic caused by the coronavirus has, like an earthquake, shaking the entire world and is still affecting the population globally (Tarasi et al., 2021). The COVID-19 global pandemic, which swept through the world during the first six months of 2020, has left scarcely any economy unaffected (Cohen, 2020)(Dryhust et al., 2020)(He et al., 2020)(Zwanka and Buff, 2020). On the other hand, the Covid-19 pandemic has had a significant impact on every industry globally, especially the transportation industry being severely disrupted. With people's travel demand at an all-time low, maintaining the country's transportation infrastructure is crucial to ensure the movement of essential goods (Sang et al., 2021)(Tungkup, 2021). This is reinforced by the statement from (Kazunobu & Hiroshi, 2020) which states that Covid-19 has caused great damage globally both in terms of economy and socially. Although transportation plays an essential role in cities' socio-economic development (Eddington, 2006), it generates a series of non-negligible health adversities. Numerous studies highlight the positive corre- lation between transport-related exposures and increased risk of disease, morbidity, and premature mortality (Cohen et al., 2014) (Mueller et al., 2016) (Khreis et al., 2016). Transportation is the movement of people or goods from one place to another by using a vehicle driven by humans or machines (Wahab & Andika, 2019).

Various control policies have been issued by the Government related to the COVID-19 pandemic as an effort to prevent transmission in the community (covid19.go.id, 2021). The number of cases of death due to the relatively fast and dangerous spread of the Covid-19 virus in Indonesia has caused the Indonesian government to lock down (Widyarini et al., 2022). According to Dineros & Dipasupil in Kennedy et al., (2020), The definition of lockdown is an urgent protocol that is usually used to restrain people from leaving a place or area. Lockdown is meant to prevent the spread of the Covid-19 virus (Yunus & Rezki, 2020). The result of this policy is starting to show its influence on how people respond to their daily travel patterns.

Previous research by Nasruddin & Ratnasari (2014), stated that people prefer to use private transportation over public transportation due to the higher cost difference. This is reinforced by the statement (Tarasi et al., 2021) which stated that during the COVID-19 pandemic, people preferred to use private transportation rather than public transportation because it was considered to minimize the spread of the virus. Study (Basu & Ferreira, 2021) stated that COVID-19 fueled the stigma surrounding mass transit as unsafe and crowded, which strengthened negative perceptions about public transport, then influenced people's desire to use public transportation due to fears of being infected by the disease. However, based on the research results (Steinwender et al., 2022) 60% of health workers use public transportation. In a multivariate analysis, health workers who use public transportation do not have a greater incidence of COVID-19 than workers who continue to use private transportation. On the other hand, according to (Purwanti et al., 2018), shows that travelers to campus prefer to use motorbikes. Almost the same as (Ali, 2020), which compares between public transportation and online transportation cars, shows that the results of using online transportation cars are greater than public transportation. The most influencing criterion in choosing the mode of transportation is the safety factor (Sipangkar & Sitindaon, 2018).

West Jakarta Administrative City is one of the cities in DKI Jakarta Province with a population of around 2.44 million people. West Jakarta Administrative City consists of 8 sub-districts with the main administration located in Kembangan District, where the largest percentage of the population is in Cengkareng District at 22.66%, while the lowest population percentage is in Taman Sari District at 4.91%. The highest population density in West Jakarta Administrative City is in Taman Sari District, while the lowest population density is in Grogol Petamburan District (BPS Kota Administrasi Jakarta Barat, 2021). Its location which is passed by the Java Island Pantura Line connecting the Banten

Province with the DKI Jakarta Provincial Center or vice versa, coupled with the availability of a nicely urban public transportation network, such as Transjakarta, Jaklingko, and the Jabodetabek KRL Commuter Line, contribute to the potential for
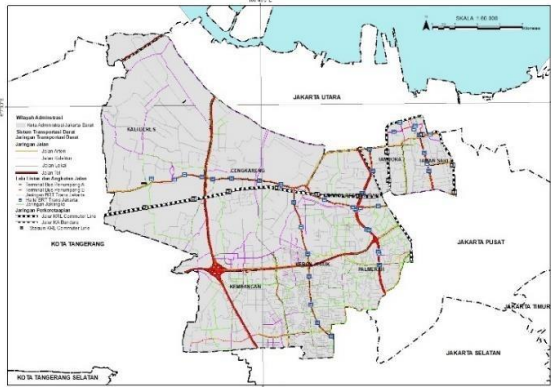
mobility fairly high inter-regional.

Figure 1. Map of the Urban Public Transportation Network in the City of West Jakarta Administration in 2021.

The 2019 Jabodetabek Commuter Survey shows that of the 29.31 million Jabodetabek citizens aged 5 years and over, around 3.26 million (11%) are commuters (BPS Provinsi DKI Jakarta, 2019). Of the total commuters, 283,069 commuters (8.68%) of them came from the City of Administration of West Jakarta or the 5th largest of the total commuters in Jabodetabek. Where the majority are private vehicle users (77.31%) (BPS Provinsi DKI Jakarta, 2019). Besides that, according to (Kospandani & Wahyudi, 2021) Commuter public transport becomes more popular recently as it is viewed as an affordable solution to traffic congestion that provides good service quality.

The usage of private vehicles, which continues to grow rapidly, will gradually worsen traffic conditions in the West Jakarta Administrative City. DKI Jakarta Bina Marga data also shows that during the 2017- 2020 period, there was no growth in length and road segments (BPS Provinsi DKI Jakarta, 2021). This is clarified in the data released by the DKI Jakarta Transportation Agency, which from 2019 to 2020, the daily speed growth on several main roads of the West Jakarta Administration dropped - 7.71% in the morning and -0.65 % in the afternoon

(Jakarta Open Data, 2021). The central and local governments issue various travel regulations during the Covid-19 pandemic, such as social distancing, wearing masks, maintaining cleanliness (sterilization), limiting people activities at various regional levels (PSBB, PKKM, and so on) (Saputra & Salma, 2020). This will undoubtedly affect how people respond to their mobilities, one of which is the use of public transportation modes during the Covid-19 pandemic (Yetmi & Yetmi, 2021). Research shows that the Covid-19 pandemic has affected the transportation activity in Greater Jakarta, where there has been a decline in travel for recreation, education, work, and social activities (Azwara & Abdurrohman, 2021). While the community needs public transport service, it is crucial to avoid unhealthy stereotypes of using public transport, such as the risk of Covid-19 transmission activities (Tirachini & Cats, 2020). Policies related to health protocols and citizen activities during the pandemic also influenced the travel patterns of the Bogor-Jakarta Commuterline KRL passengers during the Covid-19 pandemic (Lois et al., 2021). The identical is also felt in the effect of the presence of health protocol supporting facilities that contribute to the frequency of the number of departures, in addition to the factors of comfort, travel costs, safety, and a sense of security that also contribute to influencing the frequency of departures for the Bekasi-Jakarta KRL Commuterline passengers (Monica et al., 2021).

Nevertheless, the changes in transport activities stemmed from COVID-19 exert a substantial impact on environmental quality. Since road transport in cities with lockdowns in place declined between 50% and 75% (International Energy Agency, 2020), air quality improved significantly. More precisely (Le Quere et al., 2020), estimated that the decrease in daily fossil CO_2 emissions from the quarantine policies was 17%, and surface transport accounts for roughly half of it. Similarly, numerous studies demonstrated the dramatically positive impact of the restrictive measures on air quality and the significant reduction in atmospheric pollution in India (Dasgupta, 2020), China (Chen et al., 2020) or

other cities globally (Kumari & Tohsniwal, 2020).

Several prior research has also shown what characteristics influence the choice of public transportation modes. In Indonesia, as people grow old, people are more likely to use public transportation, buses, and trains. Another study found that women were more likely to use buses than motorbikes or cars, while men were more likely to use cars. Next, it was also found that marital status has a positive relationship with the use of cars and motorbikes (Irjayanti et al., 2021).

Higher grades of education, stimulate a tendency to use cars. Another study in Jakarta found that higher travel costs made commuters more likely to choose commuter trains, integrated buses, than motorbikes. Numerous studies have also found that public transportation such as buses, subways, or commuter trains are preferred for long-distance travel. For commuters with longer travel distances, the quickest mode of travel is preferred (Irjayanti et al., 2021).

Different factors such as travel time, waiting time for transportation modes, frequency of transportation mode services, network connectivity, availability, frequency of services according to schedule, time to change modes also contribute to the use of transportation modes. Parameters such as accessibility, connectivity and service quality have a positive and significant effect on user dissatisfaction; User dissatisfaction has a positive and significant effect on the behaviour of not using public transportation (Winarno & Manullang, 2018)(Wahab & Andika, 2019).

Other variables such as travel time to the stop, access to transportation services, the proximity of the transportation system to the origin and destination locations, time to reach the transportation network, and the availability of private vehicle parking facilities also affect the use of transportation modes (Winarno & Manullang, 2018). Another study states that the longer the travel time, the more people tend to choose to use cars and motorbikes instead of public transportation. While other findings found that the longer the travel time, the commuters will prefer to use public transportation such as buses or trains/subways (Irjayanti et al., 2021).

Another characteristic that determines the choice of transportation mode is the number of transportation modes, where commuters are more likely to use motorbikes or cars (Irjayanti et al., 2021) (Alfadin et al., 2018). The tendency to use private vehicles is also influenced by the availability or ownership of private vehicles, ownership of a driving license (SIM), household structure, income, the need to use a car to work, the need to take children to school, and considerations of environmental aspects (Winarno & Manullang, 2018).

Another analysis shows that areas with higher density are usually facilitated by public transport better than in areas with lower density (rural areas). Cars are less attractive in areas with high population density due to more congestion in congested areas, less parking space, and higher parking costs. In the US, individuals living in congested areas (1,000 more people per km) are more likely to choose public transportation over cars. Contrary to the findings above, a study in South Korea showed that the more development, the denser an area actually encourages the use of cars. (Irjayanti et al., 2021).

This study was conducted to obtain the relationship between the characteristics of mode selection and the use of types of transportation modes in the West Jakarta Administrative City during the Covid-19 pandemic. The results of the research are expected to be used as a literature review, and input for the government or other stakeholders in implementing the suited rules and policies in fulfilling the needs of transportation services, especially in special conditions such as during the Covid-19 pandemic.

Methods

This study uses a quantitative approach through a survey method via a questionnaire media. The questionnaire was created using google forms as a medium in Indonesian format and distributed through several social media platforms such as

Facebook, Twitter, Instagram, WhatsApp, and emails to around 200 predetermined samplings, during the period from September 10, 2021, to September 31, 2021. The questionnaire was formed by four groups of characteristic identification indicators, namely socio-demographic; travel expense; movement characteristics; transportation facilities and services during the Covid-19 pandemic. The resulting data were then analyzed using the statistical correlation method based on the chi-square test. The correlation analysis technique is a statistical technique used to test the presence or absence of an association of two or more variables transportation facilities and services during the Covid-19 pandemic. The resulting data were then analyzed using the statistical correlation method based on the chi-square test. The correlation analysis technique is a statistical technique used to test the presence or absence of an association of two or more variables.

Results

Table 1. Characteristics of Mode Selection Based on Socio-Demographic Indicators

Variable	Parameter	Private Vehicles (%)	Public Transport (%)	Total (%)
Gender (X1)	Male	37,23%	62%	45,00%
	Female	62,77%	38%	55,00%
Age (X2)	School	31,39%	32%	31,50%
	Work	68,61%	68%	68,50%
Marital Status (X3)	Single	44,53%	54%	47,50%
	Married	55,47%	46%	52,50%
Education (X4)	SD/Equivalent	0,00%	0%	0,00%
	SMP/Equivalent	5,84%	8%	6,50%
	SMA/Equivalent	22,63%	17%	21,00%
	Perguruan Tinggi/Equivalent	71,53%	75%	72,50%
	None	0,00%	0%	0,00%
Job (X5)	Student	19,71%	25%	21,50%
	Worker	45,99%	46%	46,00%
	Community Service	12,41%	13%	12,50%
	Self-Employed/Merchant	12,41%	13%	12,50%
	Other	21,90%	16%	20,00%
Income (X6)	Under UMR	30,66%	38%	33,00%

About UMR	19,71%	19%	19,50%

Variable	Parameter	Private Vehicles (%)	Public Transport (%)	Total (%)
	Above UMR	49,64%	43%	47,50%
Vehicle Ownership (X7)	Have	86,86%	65%	80,00%
	None	13,14%	35%	20,00%
SIM ownership (X8)	Have	53,28%	35%	47,50%
	None	46,72%	65%	52,50%

Table 1 shows a summary of the characteristics of population mode selection based on socio-demographic indicators in the West Jakarta Administrative City during the Covid-19 pandemic. Users of private vehicles are dominated by the female gender with the remaining 62.77% being male at 37.23%. Meanwhile, public transport users are dominated by male sex with 61.9% and the remaining 38.1% female.

The data also found that the use of private vehicles was dominated by the working-age group by 68.61%, the rest by the school-age group by 31.39%. Meanwhile, users of this type of public transportation are dominated by the working-age group by 68.25%, the rest by the school-age group by 31.75%. Furthermore, users of private vehicles are dominated by married citizens of 68.61% and the remaining 31.39% are single. Meanwhile, users of this type of public transportation are dominated by single citizens with 53.97% and the remaining 46.03% are married.

The survey results also show that private vehicle users are dominated by citizens with the last education of tertiary education at 71.53%, high school at 22.63%, and the remaining junior high school at 5.84%. While users of public transportation are dominated by citizens with the last education of tertiary education at 74.60%, high school at 17.46%, and the remaining junior high school at 7.94%. Then users of private vehicles are dominated by citizens with worker jobs of 45.99%, while the lowest is residents with community service jobs of 12.41% and others 12.4%. While users of public transportation are dominated by citizens with worker jobs of 46.03%, the lowest is residents with community service jobs of 12.7% and others 12.7%.

Data acquisition for private vehicle users is dominated by citizens with income above the minimum wage by 49.64%, below the minimum wage by 30.66%, and the rest equivalent to the minimum wage by 19.71%. Meanwhile, users of public transportation are dominated by citizens with income above the minimum wage of 42.86%, below the minimum wage of 38.1%, and the rest equivalent to the minimum wage of 19.05%. Other data shows that users of private vehicles are dominated by citizens who have private vehicles by 86.86%, the rest do not have private vehicles by 13.14%. While users of public transportation are dominated by citizens who have private vehicles by 65.08%, the remaining 34.92% do not have private vehicles.

Lastly, the survey found that users of private vehicles are dominated by citizens who have a SIM at 53.28% and the rest do not have a SIM at 46.72%. Meanwhile, users of public transportation are dominated by citizens who do not have a SIM, 65.08%, and the remaining 34.92% have a SIM.

Table 2. Characteristics of Mode Selection Based on Travel Cost Indicator

Variable	Parameter	Private Vehicles (%)	Public Transport (%)	Total (%)
Travel Expenses (X9)	< Rp 500.000 per month	57,66%	24,00%	63,50%
	Rp 500.000-Rp 1.000.000	18,25%	3,00%	15,50%
	> Rp 1.000.000 per month	24,09%	4,50%	21,00%

Table 2 shows a summary of the characteristics of population mode selection based on indicators of travel costs in the West Jakarta Administrative City during the Covid-19 pandemic. The data found that 57.66% of private vehicle users were dominated by an average travel cost of less than IDR 500,000 per month, 24.09% more than IDR 1,000,000 per month, and the remaining 18.25% ranged from IDR 500,000 - IDR. 1,000,000 per month. Meanwhile, 24% of public transportation users are dominated by travel costs of less than IDR 500,000 per month, 4.5% more than IDR 1,000,000 per month, and the remaining 3% are in the range of IDR 500,000 - IDR 1,000,000 per month.

Table 3. Mode Selection Characteristics Based on Movement Characteristics Indicators

Variable	Parameter	Private Vehicles (%)	Public Transport (%)	Total (%)
Travel Destinations (X10)	School/College	9,49%	3,00%	9,50%
	Work/Business	73,72%	21,50%	72,00%
	Recreation/Tourism	5,11%	1,50%	5,00%
	Other	11,68%	5,50%	13,50%
Location of Residence (X11)	Kembangan	13,14%	3,00%	12,00%
	Kebon Jeruk	16,06%	3,00%	14,00%
	Palmerah	8,76%	3,00%	9,00%
	Grogol Petamburan	11,68%	2,00%	10,00%
	Tambora	9,49%	4,00%	10,50%
	Taman Sari	7,30%	0,00%	5,00%
	Cengkareng	17,52%	10,00%	22,00%
	Kalideres	16,06%	6,50%	17,50%
Density Level of Residential Area (X12)	Low	20,44%	5,00%	19,00%
	Medium	62,77%	22,50%	65,50%

Variable	Parameter	Private Vehicles (%)	Public Transport (%)	Total (%)
	Very High	16,79%	4,00%	15,50%
Activity/Work Location (X13)	Kembangan	8,76%	2,50%	8,50%
	Kebon Jeruk	18,98%	4,00%	17,00%
	Palmerah	3,65%	2,00%	4,50%
	Grogol Petamburan	23,36%	4,50%	20,50%
	Tambora	1,46%	0,00%	1,00%
	Taman Sari	0,00%	0,50%	0,50%
	Cengkareng	5,84%	0,50%	4,50%
	Kalideres	2,19%	1,00%	2,50%
	Jakarta Pusat	8,76%	8,50%	14,50%
	Jakarta Selatan	12,41%	2,50%	11,00%
	Jakarta Timur	5,11%	1,00%	4,50%
	Kota Tangerang	4,38%	1,50%	4,50%
	Kota Tangerang Selatan	1,46%	0,00%	1,00%
	Other	0,73%	1,00%	1,50%
Mileage (X14)	< 5 km	19,71%	2,50%	16,00%
	5-10 km	29,20%	7,00%	27,00%
	10-15 km	23,36%	6,50%	22,50%
	15-20 km	8,76%	4,50%	10,50%
	> 20 km	18,98%	11,00%	24,00%
Frequency of Activity During the Pandemic (X15)	1 day	7,30%	3,50%	8,50%
	2 day	6,57%	6,00%	10,50%
	3 day	39,42%	13,00%	40,00%
	4 day	6,57%	2,00%	6,50%
	5 day	20,44%	5,00%	19,00%
	6 day	8,76%	1,50%	7,50%

Variable	Parameter	Private Vehicles (%)	Public Transport (%)	Total (%)
	7 day	10,95%	0,50%	8,00%
Frequency of Activity Before The Pandemic (X16)	1 day	0,00%	0,00%	0,00%
	2 day	2,19%	2,00%	3,50%
	3 day	3,65%	2,00%	4,50%
	4 day	2,92%	0,50%	2,50%
	5 day	52,55%	26,00%	62,00%
	6 day	17,52%	3,50%	15,50%
	7 day	21,17%	2,50%	17,00%

Table 3 shows a summary of the characteristics of population mode selection based on indicators of movement characteristics in the West Jakarta Administrative City during the Covid-19 pandemic. Users of private vehicles are dominated by work travel purposes at 73.72%, followed by others at 11.68%, and schools at 9.49%. and the lowest is a recreational destination of 5.11%. Meanwhile, users of public transportation types are dominated by work travel purposes at 21.5%, followed by others at 5.5%, and schools at 3%. and the lowest is a recreational destination at 1.5%.

The data also found that users of private vehicles were dominated by citizens who lived in Cengkareng District by 17.52% and the lowest was citizens who lived in Taman Sari District. Meanwhile, users of this type of public transportation are dominated by citizens who live in Cengkareng District by 10% and the lowest are citizens who live in Grogol Petamburan District (2%) and Taman Sari District (0%). Furthermore, users of private vehicles are dominated by citizens with a medium residential population density of 62.77%, a low 20.44%, the remaining 16.79% a very high density.

The survey results also show that private vehicle users are dominated by citizens who are active/work in Grogol Petamburan District by 23.36% and the lowest are citizens who are active/worked in Tambora District (1.46%) and Taman Sari District (0%). While users of this type of public transportation are dominated by citizens who are active/work outside the West Jakarta Administrative City, precisely in Central Jakarta Administration City at 8.5% and the lowest is citizens who are active/work in Cengkareng District (0.5%), Taman Sari District. (0.5%), and Tambora District (0%). Then users of private vehicle types are dominated by movement with a distance of 5-10 km by 29.2% and the lowest with a distance of 15-20 km by 8.76%. Meanwhile, users of public transportation are dominated by movement with a distance of more than 20 km by 11% and the lowest with a distance of less than 5 km by 2.5%.

One of the special variables in this study is the frequency of daily activities in the West Jakarta Administrative City before and during the Covid-19 pandemic. As a result, data acquisition found that private vehicle users were dominated by citizens with a daily activity frequency during the Covid-19 pandemic as many as 3 days a week, which was 39.42%, and the lowest was 4 days a week (6.57%) and 2 days a week (6. 57%). While users of public transportation types are dominated by citizens with a daily activity frequency during the Covid-19 pandemic as

much as 3 days a week, which is 13% and the lowest is 7 days a week at 0.5%. Other data shows that private vehicle users are dominated by citizens with a daily activity frequency during the Covid-19 pandemic as much as 3 days a week, which is 39.42%, and the lowest is 4 days a week (6.57%) and 2 days a week (6.57). %). While users of public transportation types are dominated by citizens with a daily activity frequency during the Covid-19 pandemic as much as 3 days a week, which is 13% and the lowest is 7 days a week at 0.5%.

Table 4. Characteristics of Mode Selection Based on Facilities and Service Indicators of Transportation Mode

Variable	Parameter	Private Vehicles (%)	Public Transport (%)	Total (%)
Distance Reach Transportation Mode Stop Facility from Residence (X17)	< 400 meter	82,48%	12,00%	68,50%
	> 400 meter	17,52%	19,50%	31,50%
Distance Reach Of Transportation Mode Facility Stop To Activity /Work Location (X18)	< 400 meter	82,48%	12,50%	69,00%
	> 400 meter	17,52%	19,00%	31,00%
Travel Travel Time During the Pandemic (X19)	< 30 minute	61,31%	10,50%	52,50%
	30-60 minute	21,17%	8,00%	22,50%
	> 60 minute	17,52%	13,00%	25,00%
Travel Time Before the Pandemic (X20)	< 30 minute	43,80%	6,50%	36,50%
	30-60 minute	17,52%	5,50%	17,50%
	> 60 minute	38,69%	19,50%	46,00%
Waiting Time/*Headway* Mode of Transportation (X21)	< 10 minute	75,91%	10,50%	62,50%
	10-30 minute	18,98%	19,00%	32,00%
	> 30 minute	5,11%	2,00%	5,50%
Availability of Modes of Transportation (X22)	Available	95,62%	30,50%	96,00%
	Not Available	4,38%	1,00%	4,00%
Availability of Private Vehicle Parking Facilities (X23)	Tersedia	94,89%	29,50%	94,50%
	Not Available	5,11%	2,00%	5,50%
Comfort (X24)	Comfortable	86,86%	30,00%	89,50%
	Uncomfortable	13,14%	1,50%	10,50%
Security (X25)	Safe	91,97%	31,00%	94,00%
	Not Safe	8,03%	0,50%	6,00%

Variable	Parameter	Private Vehicles (%)	Public Transport (%)	Total (%)
Health Protocols (X26)	Optimal	86,13%	28,00%	87,00%
	Not Optimal	13,87%	3,50%	13,00%
Connectivity (X27)	Connected	94,89%	31,50%	96,50%
	Not Connected	5,11%	0,00%	3,50%
Congestion (X28)	Prone	72,99%	22,50%	72,50%
	Not Prone	27,01%	9,00%	27,50%

Table 4 shows a summary of the characteristics of population mode selection based on indicators of transportation mode facilities and services in the West Jakarta Administrative City during the Covid-19 pandemic. Users of private vehicles are dominated by the distance of stopping transportation mode facilities from their homes of less than 400 meters by 82.48%, the rest is more than 400 meters by 17.52%. Meanwhile, users of public transportation types are dominated by the distance of stopping transportation mode facilities from their homes of more than 400 meters by 19.50%, the rest is less than 400 meters by 12%. Furthermore, users of private vehicles are dominated by the distance of stopping transportation mode facilities to the place of activity/work of fewer than 400 meters by 82.48%, the rest is more than 400 meters by 17.52%. Meanwhile, users of public transportation are dominated by the distance of stopping transportation mode facilities to the place of activity/work of more than 400 meters by 19.50%, the rest is less than 400 meters by 12%.

One of the other special variables in this study is the travel time in the West Jakarta Administrative City before and during the Covid-19 pandemic. This was done because during the Covid-19 pandemic there was a decrease in the average daily speed in the morning and evening in several main road corridors of the West Jakarta Administration (opendata.jakarta.go.id, 2021). The result of data acquisition found that users of private vehicle types were dominated by travel time during the pandemic of fewer than 30 minutes by 61.31%, 30-60 minutes by 21.17%, and the remaining more than 60 minutes by 17.52%. While users of public transportation types are dominated by travel time during the pandemic of more than 60 minutes by 13%, less than 30 minutes by 19%, and the remaining 30-60 minutes by 10.5%. Other data shows that private vehicle users are dominated by travel time before the pandemic of fewer than 30 minutes by 43.8%, more than 60 minutes by 38.69%, and the remaining 30-60 minutes by 17.52%. Meanwhile, users of public transportation types are dominated by travel time before the pandemic of more than 60 minutes by 19.5%, less than 30 minutes by 6.5%, and the remaining 30-60 minutes by 5.5%.

The data also finds that users of private vehicles are dominated by waiting time/headway for transportation modes of less than 10 minutes by 75.91%, 10-30 minutes by 18.98%, and the remaining more than 30 minutes by 5.11%. Meanwhile, users of public transportation are dominated by waiting time/headway for transportation modes of 10-30 minutes by 19%, less than 10 minutes by 10.5%, and the remaining more than 30 minutes by 2%. Furthermore, users of private vehicles are dominated by the availability of transportation modes by 95.62% and the lowest is not available at 4.38%. Meanwhile, users of public transportation are dominated by the availability of transportation modes by 30.5% and the lowest is not available at 1%. The survey results also show that private vehicle

users are dominated by the availability of parking facilities at 94.89% and the lowest is not available at 5.11%. Meanwhile, users of public transportation are dominated by the availability of parking space by 29.5% and the lowest is not available 2%. Then users of private vehicles are dominated by the presence of a sense of comfort in the mode of transportation by 86.86% and the rest 13.14% uncomfortable. Meanwhile, users of public transportation types are dominated by the presence of a sense of   comfort

in the mode   of transportation by 30% and the remaining 1.5% are not comfortable. Furthermore, the existence of a sense of security in the mode of transportation is 91.97% and the remaining 8.03% is not safe. Meanwhile, users of public transportation are dominated by the presence of a sense of security in the mode of transportation by 31% and the rest is not comfortable at 0.5%.

Another specific variable that is included is the application of health protocols in the mode of transportation. the existence of a sense of comfort in the mode of transportation that contributes to the use of public transportation modes (Loius et al., 2021; Monica et al., 2021). The survey results found that users of private vehicles were dominated by the application of optimal health protocols at 86.13% and the remaining

13.87% were not optimal. Meanwhile, users of public transportation are dominated by the application of optimal health protocols by 28% and the remaining 3.5% is not optimal.

The survey shows that users of private vehicles are dominated by connected modes of transportation with the route to be addressed by 94.89% and the rest is not connected by 5.11%. Meanwhile, users of public transportation types are dominated by connected modes of transportation with the route to be addressed by 94.89% and the rest are not connected by 5.11%. Then the users of private vehicles are dominated by traffic jams at the place of activity/work by 72.99% and the rest are not prone to 27.01%. Meanwhile, users of public transportation are dominated by traffic jams at the place of activity/work by 22.5% and the rest are not prone to 9%.

After identifying the data acquisition for each test variable (mode selection characteristics), then the sample will be subjected to correlation analysis to determine the relationship between each test variable using the SPSS (Statical Package for the Social Science) program. The correlation analysis technique is a statistical technique used to test the presence or absence of a relationship and direction of two or more variables.

Table 5. Characteristics of Mode Selection Based on Indicators of Facilities and Services of Transportation

Modes

Purpose	Test Variables	Uji Chi-Square	df	Asym p.Sig	α	Conclusion	Chi-Square Statistical Test	The Existence of Correlation	Phi Correlation Coefficient	Cramers V Correlation Coefficient	Correlation Relationship
Socio-Demographic	Jenis Kelamin (X1)	10,619	1	0,001	0,05	H1 Accepted	10,619	There is a Correlation	0,230	0,230	Weak

Identification	Usia (X2)	0,003	1	0,959	0,05	H0 Accepted	-	None Korelasi	0,004	0,004	-
	Marital Status (X3)	1,543	1	0,214	0,05	H0 Accepted	-	No Correlation	-0,088	0,088	-
	Education (X4)	0,897	2	0,639	0,05	H0 Accepted	-	No Correlation	0,067	0,067	-
	Job (X5)	9,500	8	0,302	0,05	H0 Accepted	-	No Correlation	0,218	0,218	-
	Income (X6)	1,151	2	0,563	0,05	H0 Accepted	-	No Correlation	0,076	0,076	-
	Vehicle Ownership (X7)	12,797	1	0,000	0,05	H1 Accepted	12,797	There is a Correlation	0,253	0,253	Weak
	SIM Ownership (X8)	5,836	1	0,016	0,05	H1 Accepted	5,836	There is a Correlation	0,171	0,171	Very Weak
Identifikasi Biaya Perjalanan	Travel Expenses (X9)	6,426	2	0,040	0,05	H1 Accepted	6,426	There is a Correlation	0,179	0,179	Very Weak
Indentifikasi Karakteristik Pergerakan / Perjalanan	Travel Destination (X10)	1,521	6	0,958	0,05	H0 Accepted	-	No Correlation	0,087	0,087	-
	Location of Residence (X11)	12,549	7	0,084	0,05	H0 Accepted	-	No Correlation	0,250	0,250	-

	Density Level of Residentia l Area (X12)	1,433	2	0,489	0,05	H0 Accepted	-	No Correlatio	0,085	0,085	-
	Activity/W ork Location (X13)	23,414	14	0,054	0,05	H0 Accepted	-	No Correlatio	0,342	0,342	-
	Mileage (X14)	10,483	4	0,033	0,05	H0 rejected	10,483	There is a Correlation	0,229	0,229	Weak
	Frequency of Activity During the Pandemic (X15)	13,298	6	0,039	0,05	H0 rejected	13,298	There is a Correlation	0,258	0,258	Weak
	Frequency of Activity Before The Pandemic (X16)	10,233	5	0,069	0,05	H0 Accepted	-	No Correlatio	0,226	0,226	-
Identifikasi Fasilitas dan Layanan Moda Transportasi	Distance Reach Transportati on Mode Stop Facility from Residence (X17)	39,403	1	0,000	0,05	H0 rejected	39,403	There is a Correlation	0,444	0,444	Strong Enough
	Distance reach of Transporta tion Mode Facility Stop To Activity /Work Location (X18)	36,957	1	0,000	0,05	H0 rejected	36,983	There is a Correlation	0,430	0,430	Strong Enough
	Travel Travel Time During the Pandemic (X19)	16,517	2	0,000	0,05	H0 rejected	16,517	There is a Correlation	0,287	0,287	Weak

Travel Time Before The Pandemic (X20)	0,416	2	0,812	0,05	H0 Accepted	-	No Correlation	0,046	0,046	-
Waiting Time/Headway Mode of Transportation (X21)	35,686	2	0,000	0,05	H0 rejected	35,686	There is a Correlation	0,422	0,422	Strong Enough
Availablity of Mode of Transportation (X22)	0,163	1	0,686	0,05	H0 Accepted	-	No Correlation	0,029	0,029	-
Availablity of Private Vehicle	0,128	1	0,721	0,05	H0 Accepted	-	No Correlation	0,025	0,025	-
Parking Facilities (X23)										
Comfort (X24)	3,222	1	0,073	0,05	H0 Accepted	-	No Correlation	-0,127	0,127	
Security (X25)	3,175	1	0,075	0,05	H0 Accepted	-	No Correlation	-0,126	0,126	
Health Protocols (X26)	0,290	1	0,590	0,05	H0 Accepted	-	No Correlation	-0,038	0,038	
Connectivity (X27)	3,336	1	0,068	0,05	H0 Accepted	-	No Correlation	-0,129	0,129	
Congestion (X28)	0,053	1	0,818	0,05	H0 Accepted	-	No Correlation	0,016	0,016	

Table 5 shows the results of the correlation test of each test variable on the use of the type of transportation mode. Based on the results of the analysis, it was found that 10 of the characteristics of mode selection (X) have a relationship with the use of the type of transportation mode (Y) in the West Jakarta Administrative City during the Covid-19 pandemic (H1 Accept).

It can be seen that 3 of the 8 test variables for the characteristics of mode selection based on socio-demographic indicators have a relationship with the use of transportation modes. Where the test variable gender (X1) has a correlation/relationship but is weak with the use of this type of transportation mode, with a tendency for the female population to prefer to use private vehicles while the male gender prefers public transportation.

The vehicle ownership test variable (X7) has a weak but weak relationship with the use of this type of transportation mode, but there is no difference in the trend of using this type of mode because of this. Furthermore, in the test variable for SIM ownership (X8), it was found that there was a relationship with the use of this type of transportation mode, but it was very weak with the use of this type of transportation mode, where there was a tendency for residents who had a SIM to use private vehicles while those who did not prefer to use public transportation.

Furthermore, it was found that the travel cost variable has a relationship with the use of transportation modes. Where the travel cost test variable (X9) has a correlation/relationship with the use of this type of transportation mode but is very weak. Based on the tabulation results, there is no difference in the trend of using this type of mode because of this.

Then 2 of the 7 test variables of the characteristics of the mode selection based on the characteristics of the movement have a correlation/relationship with the use of transportation modes. Where the mileage test variable (X14) has a correlation/relationship but is weak with the use of this type of transportation mode, with a tendency for citizens to prefer to use private vehicles for short distance trips while public transportation for long distance trips. Furthermore, the special test variable, the frequency of activity during the pandemic (X15) has a weak but weak relationship with the use of this type of transportation mode, but there is no visible difference in the trend of using this type of mode because of this.

Furthermore, 4 of the 12 test variables of the characteristics of the mode selection based on the indicators of transportation mode facilities and services have a correlation/relationship with the use of transportation modes. Where the test variable distance of the transportation mode stop facility from the place of residence (X17) has a fairly strong relationship with the use of this type of transportation mode, where there is a tendency for residents to prefer to use private vehicles due to the distance of the transportation mode stop facility from their close residence, while fewer use public transportation due to the distance to stop the transportation mode stop facility from a place of residence that is far away.

In the test variable the distance of the transportation mode stop facility to the place of activity/work (X18) it is found that there is a fairly strong relationship with the use of this type of transportation mode, although there is no visible difference in the trend of using this type of mode because of this. Then the test variable waiting time/headway mode of transportation (X21) also has a fairly strong relationship with the use of this type of transportation mode, where it is seen that the population tends to prefer to use private vehicles due to shorter waiting times/headway modes of transportation, while fewer choose to use private vehicles. using public transportation due to the longer waiting time/headway mode of transportation.

Conclusion

Based on the results of the analysis, it shows that the highest proportion of the use of this type of transportation mode in the West Jakarta Administrative City during the Covid-19 pandemic, namely 68.5% are users of private vehicles and 31.5%. So it is necessary to improve performance and adjust regulations to increase the willingness of the population to use public transportation modes. In this context, the results of the study found a number of factors that have a relationship with the use of transportation modes.

Gender has a relationship with the type of transportation mode used, so it is necessary to improve the quality of services that are safe and comfortable for female passengers in order to increase the willingness to use public transportation. For vehicle ownership and SIM ownership, the efforts that can be done are to limit the use of private vehicles and enforce stricter and stricter traffic rules.

In the variable of travel costs, there needs to be an effort to understand the tariffs related to urban public transportation that is more affordable and standard. Regarding mileage, it is necessary to have a choice of types of public transportation, efforts can be made in the form of providing alternative types of public transportation that are more diverse with a large enough number of fleets. For the frequency of activity during the pandemic, clear activity restriction rules need to be facilitated by appropriate travel rules.

Regarding the characteristics of the distance between the facilities for stopping transportation modes from the place of residence or place of activity/work, it is necessary to expand the transportation network at an environmental level suitable for jaklingko so that it can be an alternative choice compared to having to use conventional or online public transportation. Finally, the characteristics of the waiting time/headway for transportation modes, a policy is needed by urban public transport service operators to be able to shorten the waiting time between modes of transportation and avoid accumulation at one stop point.

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