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Policy Discourse on Restructuring Work Entry and Return Hours Based on Indicative Inquiry of the Jakarta Transportation Council

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Abstract – Recent data, observations and research show that the level of congestion at peak hours in Jakarta from mid-2022 to throughout 2023 has matched or even exceeded the level of congestion in 2019, or the time before the COVID-19 pandemic. One discourse to reduce the high level of congestion in DKI is the implementation of a policy to rearrange office hours in DKI and between May 22, 2023 and June 2, 2023 DTKJ conducted an indicative online questionnaire entitled "Survey on Rearrangement of Working Hours in DKI Jakarta" which covered 881 respondents. Based on the results of the indicative questionnaire, DTKJ recommended improvements to the public transport sector to be made by the DKI Jakarta Provincial Government, primarily by (i) increasing the public transport fleet, especially to operate during peak hours to reduce waiting time for users at public transport stops, terminals and stations, (ii) increasing the level of safety and comfort in the use of public transport, (iii) expanding service coverage areas to increasingly reach residential areas and suburban areas of DKI Jakarta, and (iv) increasing public transport service routes. The questionnaire results show that the majority, or more than 80 percent, of Jakarta transportation users approve of the implementation of rearranging work entry and return hours as a policy to reduce congestion levels, especially at peak hours. However, based on the results of the same online survey, DTJK concluded that the policy of rearranging work hours is not the main or only policy that can be carried out by the DKI Jakarta Provincial Government because improvements to the public transportation sector are the main steps that must be taken. In addition, the Jakarta Provincial Government is expected to ensure that the various policies that have been implemented can be enforced in the field and even expanded by continuing to review various policies that have the potential to reduce travel demand.

Keywords: Public Transportation, Work Entry and Return, Policy Discourse, Traffic

Introduction

Purwanto (2022) shows that at least since June 2022, Jakarta's average traffic congestion level in the morning and evening (going to and from work) has been almost equivalent to the same period in 2019, before the implementation of movement restriction policies due to the COVID-19 pandemic. Tomtom Traffic Index (2023) ranked Jakarta as the 29th city with the highest average travel time in 2022 among 390 cities in 56 countries on 6 continents. The average travel time for Jakarta in 2022 according to Tomtom Traffic Index (2023) is 22 minutes 40 seconds for every 10 kilometers, which is 2 minutes 50 seconds longer than the average travel time in the previous year, 2021, where Jakarta ranked 46th (Jakarta MRT, 2022), or 17 ranks better than 2022. (Ato, Nababan, & Dany, 2023) estimates that congestion levels in Jakarta in 2022 and 2023 have equaled or approached 2019 levels. Quoted from the same article, the Traffic Directorate of Polda Metro Jaya even predicts that the level (index) of congestion in the capital city today is more than 50 percent, higher than the index in 2019 or the pre-COVID-19 era.

Furthermore, a sample of hourly vehicle volume data on 49 roads in Jakarta from the DKI Jakarta Transportation Agency during January 2023 as shown in below (Figure 1 and Figure 2) reveals several findings:

1. First, most of the highest traffic volumes on road sections with inbound traffic flows (Figure 1) occur in the morning between 07:00 am and 08:00 am.

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2. Secondly, on these inbound road sections, the fastest volume increase occurs between 04:00 am and 07:00 am. On average, after 8:00 a.m., the traffic volume on these sections decreased quite rapidly until around 11:00 a.m. before stagnating and then increasing again starting at around 3:00 p.m. with a peak between 5:00 p.m. and 6:00 p.m., before decreasing again.
3. Third, on these inbound sections, the morning peak volume is much higher than the afternoon peak volume.
4. Fourth, on the road sections with outbound traffic flows as shown in Figure 2, there are two clear peaks in traffic volumes with the afternoon volume level being higher than the morning volume peak.

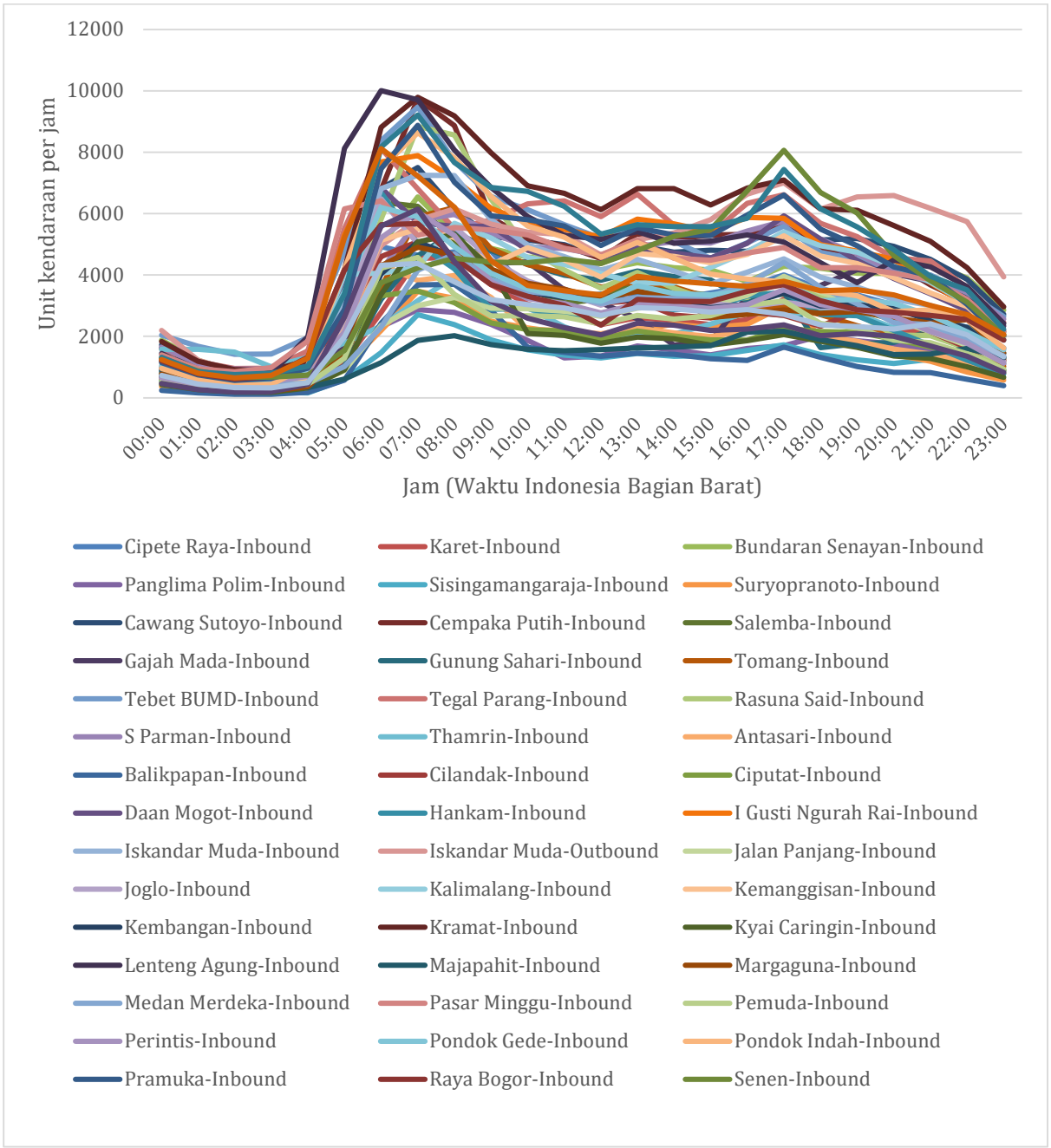

Figure 1. Average Weekday Traffic Volume (Monday to Friday) on 49 Roads in Jakarta inbound direction January 2023, *Source: Pengolahan DTKJ atas Data Dinas Perhubungan DKI*

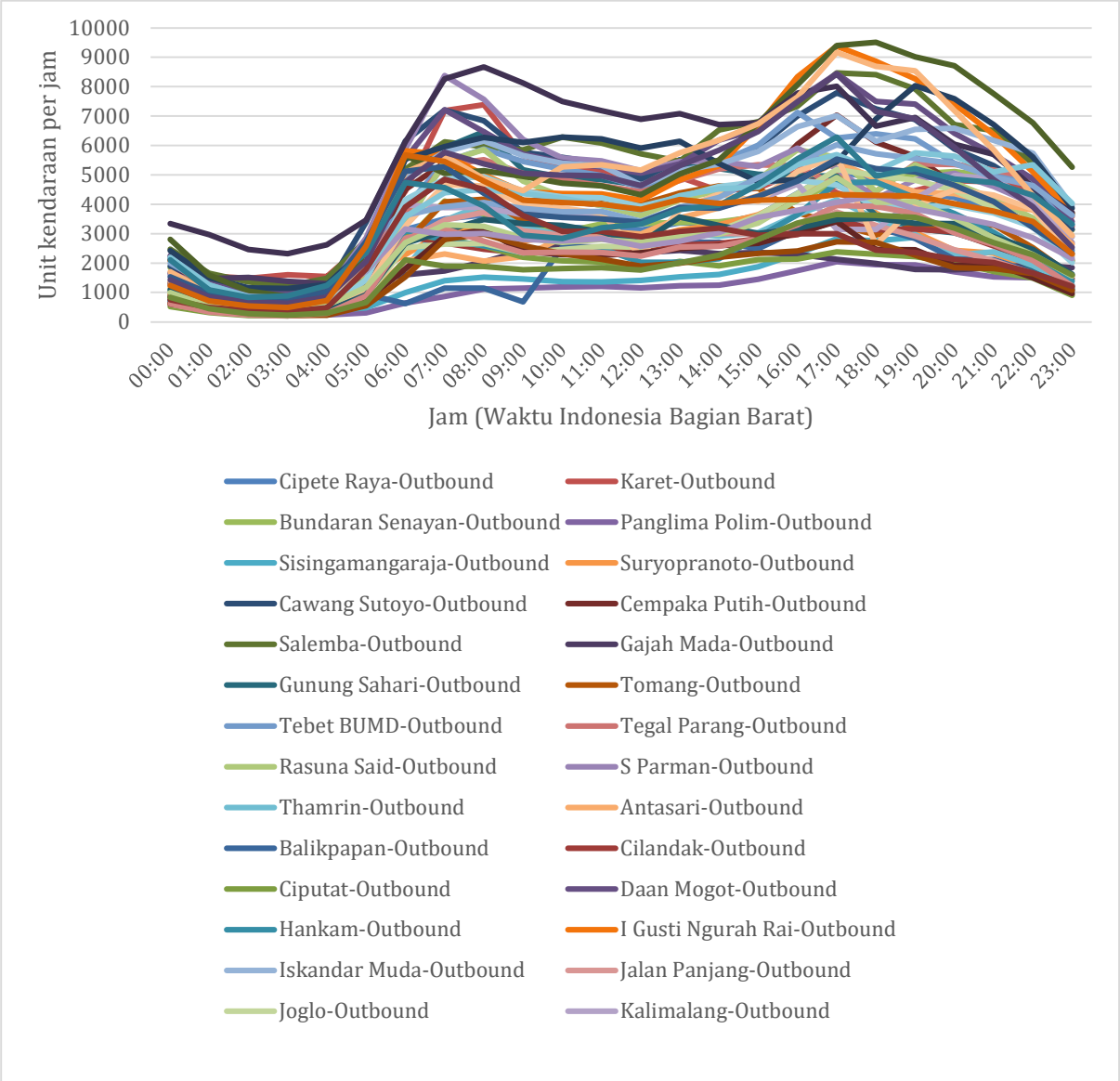

Figure 2. Average Weekday Traffic Volume (Monday to Friday) on 49 Roads in Jakarta outbound direction January 2023, *Source: Pengolahan DTKJ atas Data Dinas Perhubungan DKI*

It should be noted that traffic volume data does not actually show the level of congestion on these roads, which would ideally be shown by variables such as travel time or v/c ratio. However, traffic volume data shows fluctuations in travel demand and can be used as a proxy for congestion by assuming that increases in traffic volume are followed by increases in v/c ratio and travel time.

Furthermore, two separate studies conducted by Balitbang Kemenhub (Kusumaputra, 2018) and Institut Teknologi Bandung (ITB) (Sunitiyoso, et al., 2020) in 2018, show that the use of private vehicles including cars and motorcycles can be considered as one of the main causes of congestion in Jakarta. More specifically, research with 2018 data from a team from

Universitas Gadjah Mada (UGM) (Nastiti and Wibowo, 2020) found that the use of private vehicles by Jakarta residents plays an important role in causing high levels of congestion in the morning and evening peak hours.

At the same time, it is theoretically possible to reduce peak-hour congestion by rearranging the arrival and return times of workers to/from work. Lindsey and Verhoef (2000) for example concluded that different arrival times (to work) can reduce congestion as this reduces competition for limited road space. Taking into account several other aspects, arrival and departure times are variables that can be influenced through policy.

In response to the phenomenon of rising congestion levels in Jakarta, DTKJ has launched an online questionnaire titled "Survey on Rearrangement of Working Hours in DKI Jakarta" during the period of May 22 to June 2, 2023 covering 881 respondents with the aim of capturing the aspirations of the transportation user community regarding the discourse on rearranging the hours of entry and return to work and the things that are expected to be done by the DKI Provincial Government to deal with the level of congestion in DKI which shows an upward trend.

Method

Quantitative study was choses in this study, especially descriptive study in order to describing phenomenon. The questionnaire was conducted online starting on Monday night, May 22, 2023 and closed on Friday night, June 2, 2023 at 23:59 WIB. A total of 881 respondents have filled out the questionnaire which was held for approximately 11 days.

There are two groups of questions asked, namely questions about the respondent's profile and questions about the respondent's opinion. Questions about respondents' opinions were further divided into two groups of questions based on the respondents' professional categories, namely general or all respondents and entrepreneurs.

Results and Discussions

This section describes the profile of the respondents in three sub-sections. The first sub-section contains an explanation of the general profile of respondents in three variables namely age, residence (domicile) and profession. The second sub-section contains an explanation of the profile of respondents who work as entrepreneurs, and the third sub-section contains an explanation of the travel profile of all respondents which includes the habit of departure time, habit of return time, and the mode of travel used daily. As shown in Figure 3, the majority of respondents (31 percent) are those in the 28 -38 years age group. The second largest age group of respondents are those in the 17-27 years age group (28.5 percent) and the third largest group is the 39-49 years age group (21.6 percent). In other words, 81.1 percent of the respondents were in the 17 - 49 age group. The 50-60 age group did not reach 17 percent of the total

respondents, while respondents aged 61 and above made up less than 2 percent.

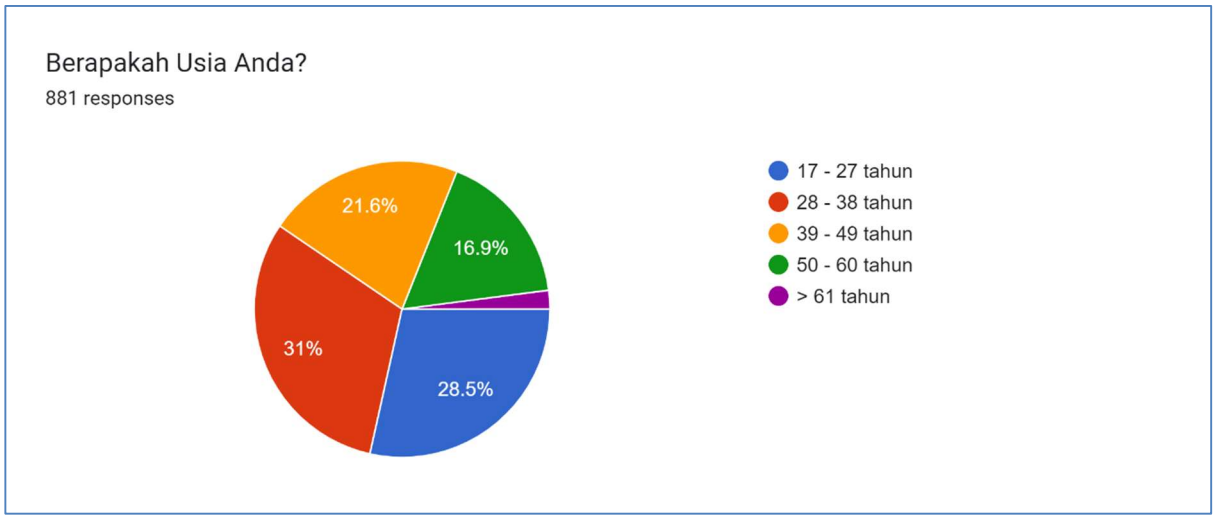

Figure 3. Age Profile of the Respondent.
Source: DTKJ online questionnaire results May 22 - June 2, 2023

More than half (54.5 percent) of the respondents live in Jakarta (Figure 4). The second largest group of respondents (16.1 percent) live in Tangerang, followed by those living in Bekasi (12.5 percent) and Depok (9.6 percent). About 7.3 percent of the respondents live in Bogor and outside Jabodetabek.

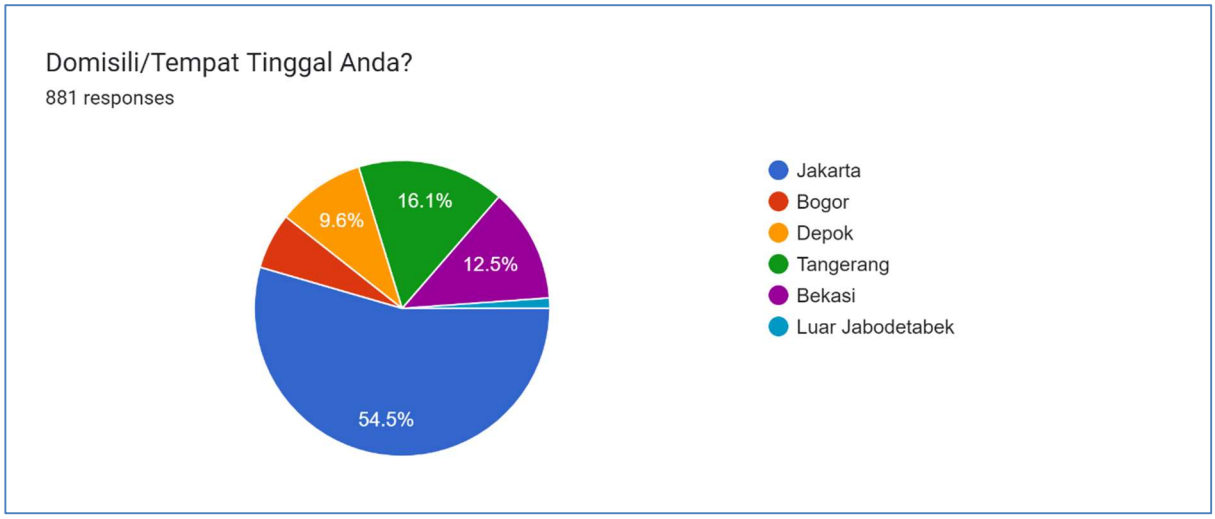

Figure 4. Respondent's Domicile/Residence.
Source: DTKJ online questionnaire results May 22 - June 2, 2023

36.4 percent of the respondents departed from their domicile on average between 06:00 and 07:00 AM (Figure 5). The next largest group was those respondents who departed between 7:00 and 8:00 am (25.9 percent) followed by those who departed between 5:00 and 6:00 am (16.2 percent). 18.9 percent of the respondents leave on average between 08:00 and 10:00 am. Only about 2.6 percent of the respondents left for work very early in the morning; between

04:00 and 05:00 am.

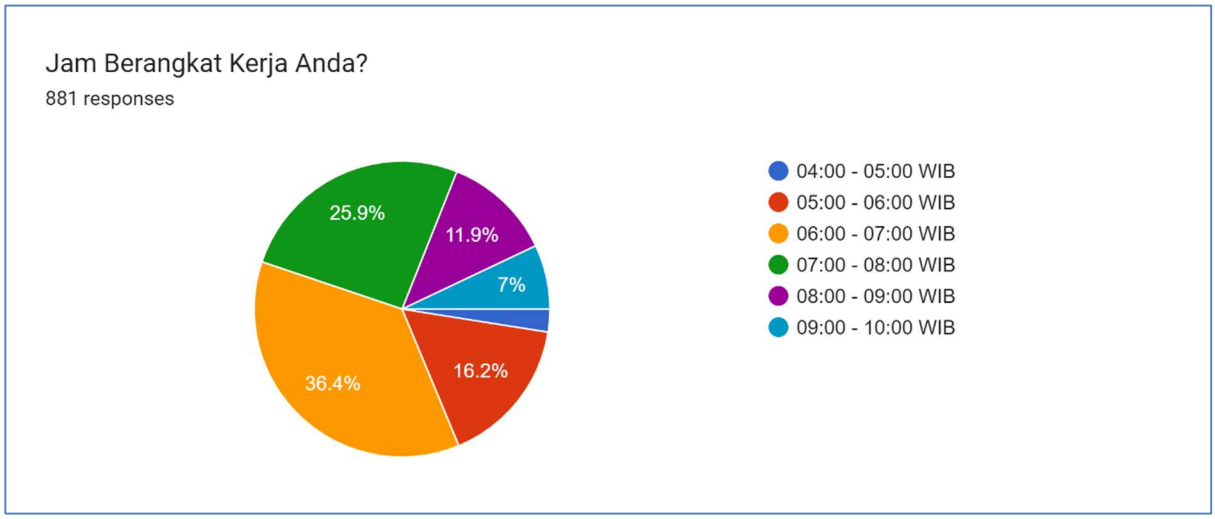

Figure 5. Respondents' Work Departure Hours.
Source: DTKJ online questionnaire results May 22 - June 2, 2023

40 percent of the respondents left their workplace between 17:00 and 18:00 hours, while 22.9 percent left their workplace between 16:00 and 17:00 hours (Figure 6). 19.2 percent of respondents left their workplace between 18:00 and 19:00 pm and almost 18 percent (17.9 percent) of respondents left their workplace above 19:00 pm.

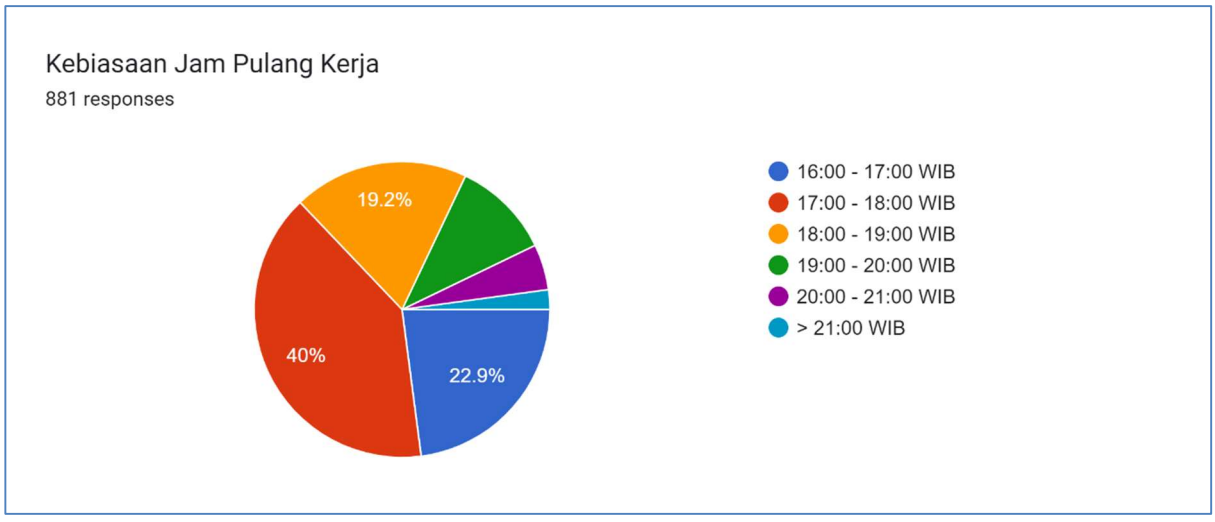

Figure 6. Respondents' Return Hours.
Source: DTKJ online questionnaire results May 22 - June 2, 2023

About 41 percent of the respondents use private vehicles, namely cars, motorcycles or bicycles (Figure 7). The large percentage of respondents who use private vehicles is far above the second majority group, namely Transjakarta (bus) users who are only 5 percent of the total respondents, followed by Commuter Line (KRL) users at 4 percent, combined Commuter Line (KRL) and Transjakarta (bus) users at 3 percent and online transportation which is also 3

percent.

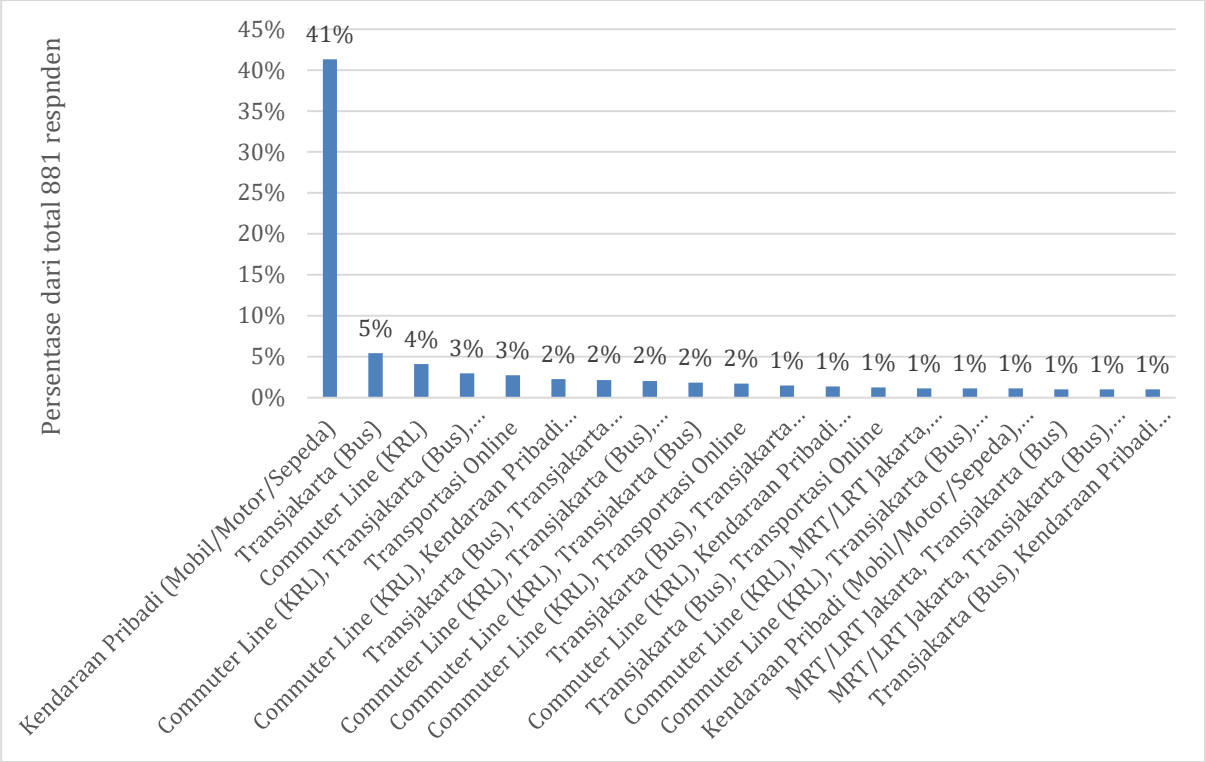

Figure 7. Percentage of Respondents' Preferred Mode Combinations.
Source: DTKJ online questionnaire results May 22 - June 2, 2023

Users of the following mode combinations each accounted for about 2 percent of the total respondents:

- Commuter Line (KRL), Private Vehicle (Car/Motorcycle/Bicycle)
- Transjakarta (Bus), Transjakarta (Regular Microtrans/Angkot)
- Commuter Line (KRL), Transjakarta (Bus), Private Vehicle (Car/Motorcycle/Bicycle)
- Commuter Line (KRL), Transjakarta (Bus)
- Commuter Line (KRL), Online Transportation

Users of the following mode combinations each contribute about 1 percent of the total respondents:

- Transjakarta (Bus), Transjakarta (Microtrans/Regular Angkot), Online Transportation
- Commuter Line (KRL), Private Vehicle (Car/Motorcycle/Bicycle), Online Transportation
- Transjakarta (Bus), Online Transportation
- Commuter Line (KRL), Jakarta MRT/LRT, Transjakarta (Bus)
- Commuter Line (KRL), Transjakarta (Bus), Transjakarta (Regular Microtrans/Angkot)
- Private Vehicle (Car/Motorcycle/Bicycle), Online Transportation
- Jakarta MRT/LRT, Transjakarta (Bus)
- Jakarta MRT/LRT, Transjakarta (Bus), Private Vehicle (Car/Motorcycle/Bicycle),

Online Transportation
- Transjakarta (Bus), Private Vehicle (Car/Motorcycle/Bicycle)

The overall combination of respondents' preferred modes above accounted for 77 percent of the total 881 respondents. The rest are combinations of modes that each contribute no more than 1 percent. In the various combinations of respondents' preferred modes above, it can be seen that the use of private vehicles is combined with other mode choices. If the total number of respondents who choose "private vehicle" either as a single mode choice, which is 41 percent as shown in Figure 15, or as part of a mode combination choice, the percentage of private vehicle users reaches 62 percent (Figure 8). Furthermore, in addition to the 3 percent of respondents who use ride-hailing as the main and sole mode of their daily mobility, it can also be seen that ride-hailing options with various other modes in the above combinations. The percentage of online vehicle users reached 26.1 percent (Figure 8). If in terms of maneuverability, road use, and occupancy, ride-hailing can be equated with private vehicles, then the share of respondents who use "private vehicles" (including ride-hailing) is greater than 62 percent.

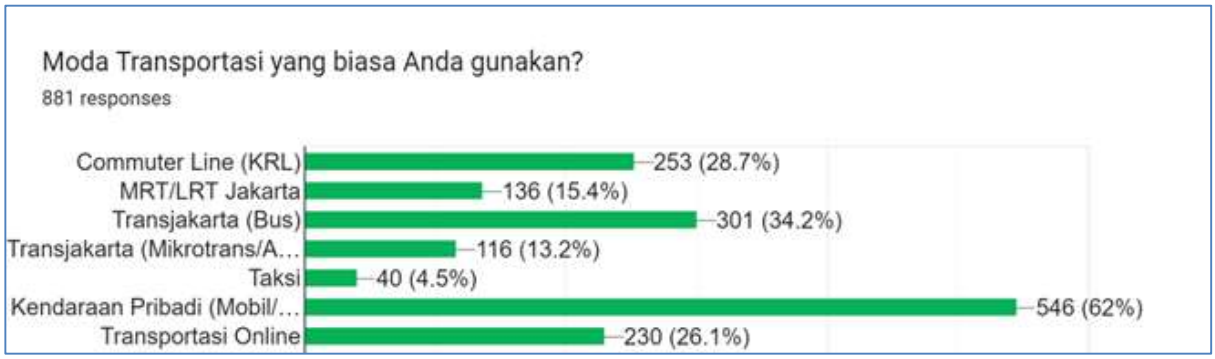

Figure 8. Percentage of Respondents' Mode Choice.
Source: DTKJ online questionnaire results May 22 - June 2, 2023

Regarding opinions about public transportation in Jakarta, which are divided into 3 aspects, respondents gave the most positive assessment to the aspect of "route/area coverage", followed by the aspect of "comfort and safety". "Waiting time at bus stops/stations" is the aspect

that has the most neutral assessment. (Figure 9).

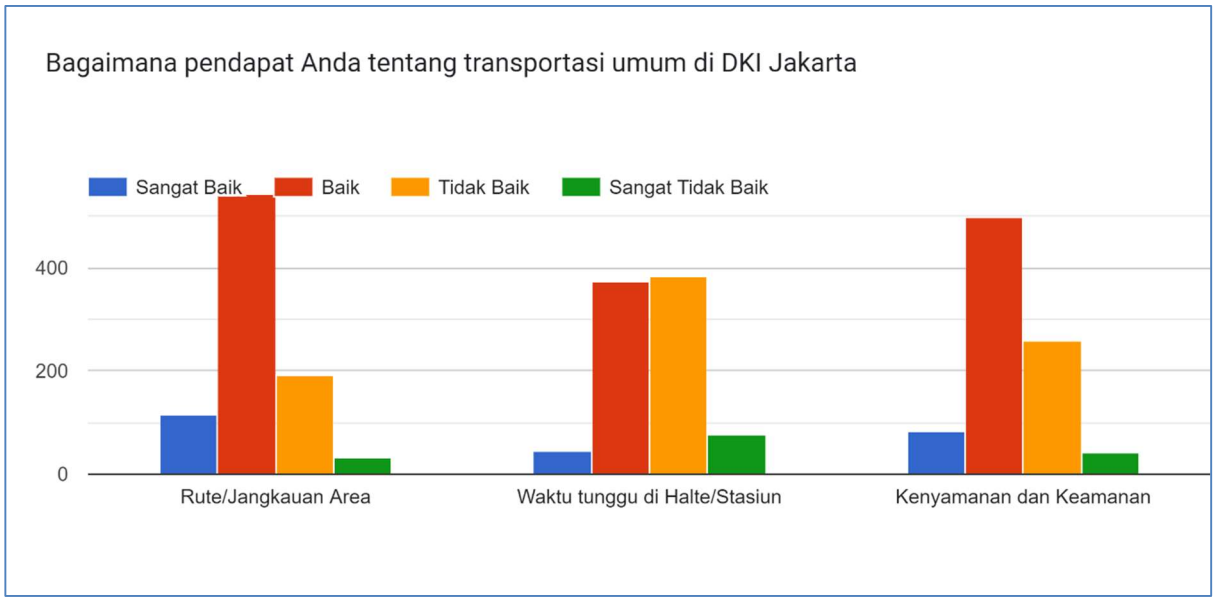

Figure 9. Opinions on Public Transportation in Jakarta.
Source: DTKJ online questionnaire results May 22 - June 2, 2023

Similar to the results of the opinion poll on public transport in Jakarta, the majority of respondents expect public transport improvements to be centered on the aspect of "waiting time at bus stops/stations". The difference occurs in the second and third aspects of improvement suggested by respondents where there is a change in ranking. "Route/Reach Area" is the second aspect that respondents expect to be improved while "Comfort and safety" is the third (Figure 10).

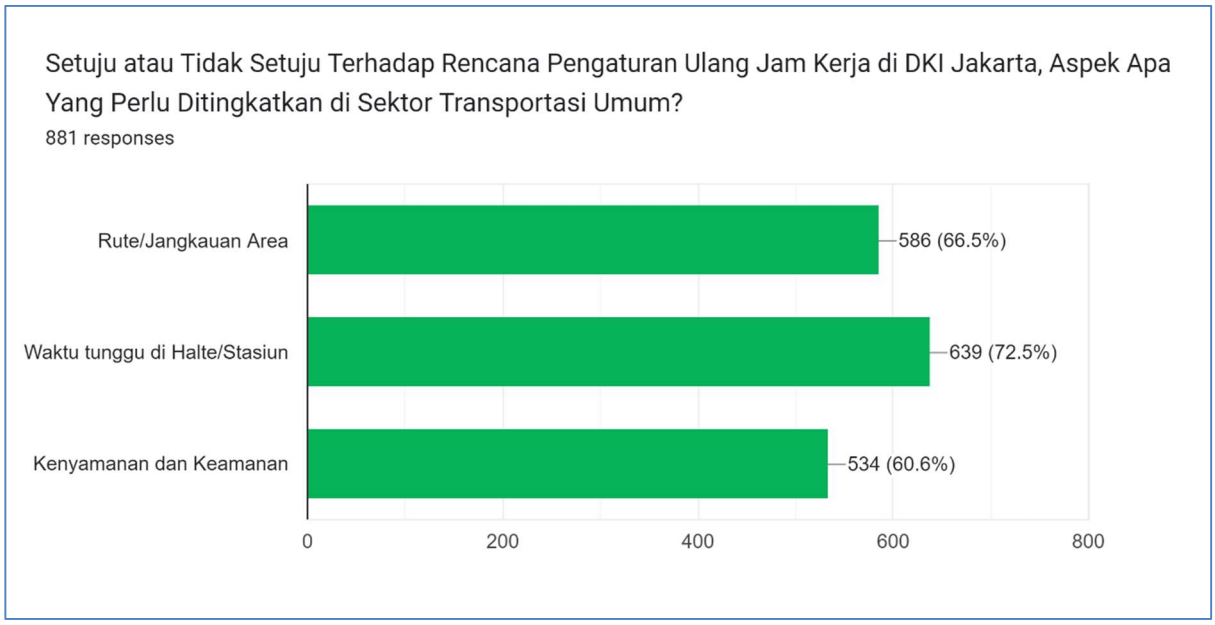

Figure 10. Aspects to Improve in the Public Transportation Sector.
Source: DTKJ online questionnaire results May 22 - June 2, 2023

Regarding the statement "Have you heard of the plan to rearrange working hours in DKI Jakarta?" From Figure 11 below, it showed that 68.3 percent of respondents answered yes, while 31.7 percent of respondents answered no or not yet.

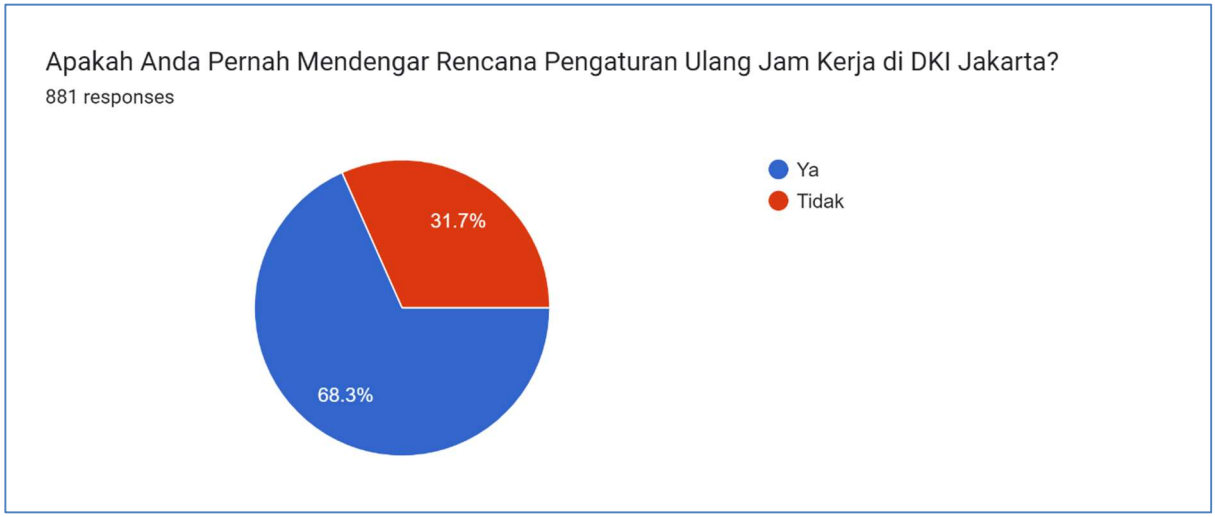

Figure 11. Popularity of Plan to Restructure Working Hours in Jakarta among Respondents.
Source: DTKJ online questionnaire results May 22 - June 2, 2023

From Figure 12 below, it showed that 81.8 percent of respondents agree that rearranging work hours can reduce congestion in Jakarta, while the rest (18.2 percent) disagree (Figure 12).

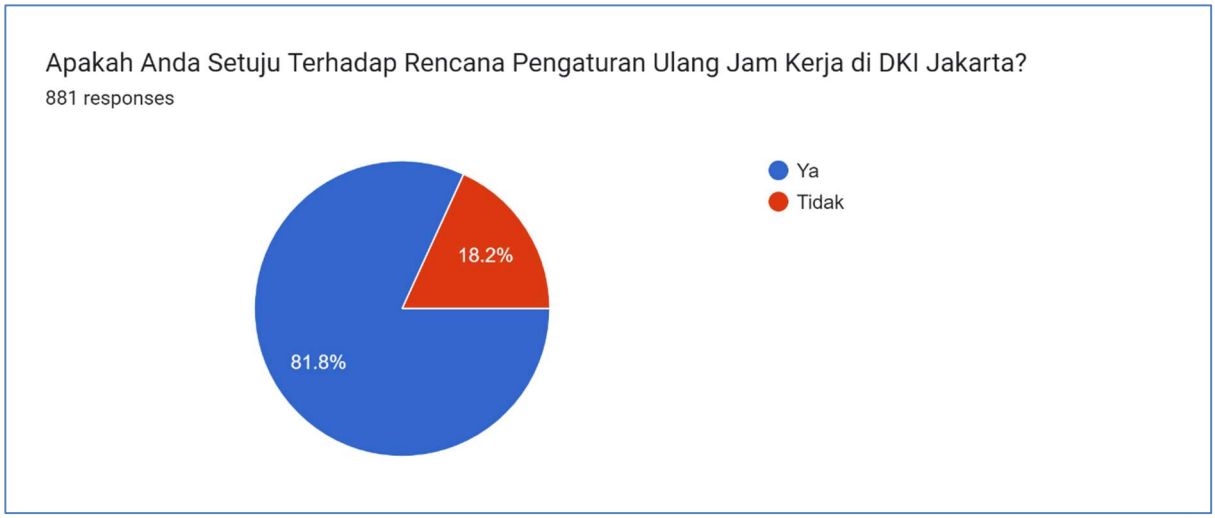

Figure 12. Respondents' Agreement on the Plan to Reorganize Work Commuting Hours.
Source: DTKJ online questionnaire results May 22 - June 2, 2023

Based on the result, 841 out of 881 respondents provided free suggestions, the results of which are shown in Figure 13. 301 respondents, or nearly 36 percent of the total 841 respondents who provided suggestions, would like to see an increase in the public transport fleet during peak hours. Many of the respondents who made this suggestion also linked the additional fleet to a reduction in the headway of two consecutive public transport units. Furthermore, 124 respondents (14.7 percent) suggested measures to improve comfort and

safety. The next most common suggestions were:

- Expand the network coverage area (9.2 percent)
- Expand public transit routes (6.8 percent)
- Ensure sterilization of TJ lanes (4.2 percent)
- Improve network integration (3.9 percent)

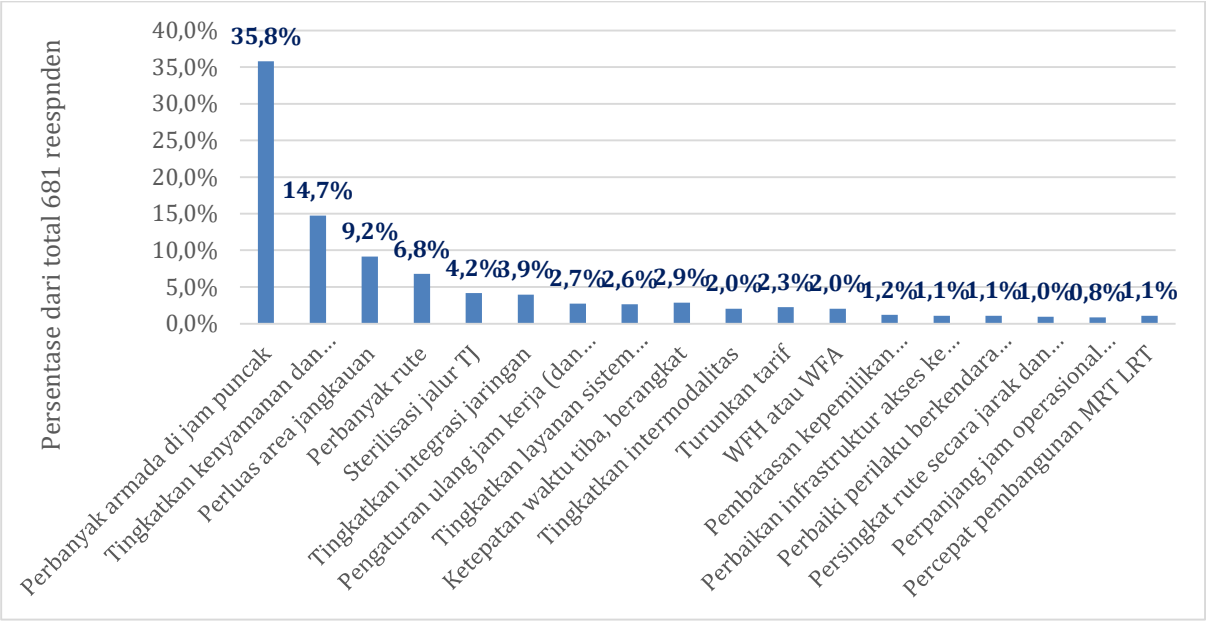

Figure 13. Free Advice from Respondents on Improving Public Transportation in Jakarta.
Source: DTKJ online questionnaire results May 22 - June 2, 2023

Conclusions and Recommendations

There are several main conclusions that can be drawn from the online questionnaire that has been conducted. First: the majority of transportation users in DKI Jakarta approve of the implementation of the policy of rearranging work entry and return hours in DKI as a way to overcome congestion. Second: The majority (more than 40 percent) of transportation users in DKI Jakarta use private vehicles as their primary mode of daily travel, while more than 60 percent use private vehicles for all or part of their daily trips. Third, the length of waiting time at bus stops or public transport stations is something that transportation users expect to be addressed. Fourth, suggestions submitted by the user community to improve the quality of public transport services emphasize the expectation of additional fleets at peak hours.

Recommendation

Based on the findings and conclusions above, DTKJ recommends the following to be followed up by the Jakarta Provincial Government to reduce congestion in Jakarta, especially during peak hours:

First, increase the intensity of public transportation improvements. There are 4 (four) main aspects of public transportation that must be improved in order of priority:

1. Increase the public transport fleet, especially to operate during peak hours to reduce

the waiting time of users at stops, terminals, and public transport stations.

This can be carefully planned by conducting several preliminary activities such as:

- A survey to identify the busiest stops on the various urban transit networks in Jakarta, especially TransJakarta's networks. Indicators of busiest stops can include passenger queues at bus or transit station platforms, as well as passenger density or passenger occupancy per vehicle unit.
- Inventory of the fleet and drivers and analyze the level of use of the fleet and drivers, especially during peak hours.
- Conduct an optimization study of the use of existing fleets and drivers by not closing the possibility of moving fleets or drivers between different routes (interlining).

2. Increase the level of safety and comfort in the use of public transport.
   - This increase in safety and comfort is inseparable from the first aspect (point 1), namely the addition of a fleet to reduce waiting time at stops or stations and also headways between public transport units which will reduce overcrowding or excessive vehicle occupancy levels.
   - Beyond this, improvements in safety and comfort expected by respondents could take the form of increased maintenance of vehicles and stations or bus stops, improved infrastructure for access to public transport at stopping points, improved driver behavior, additional officers in the field who assist users, and the provision of travel information, such as real-time information on bus or fleet arrival times.
   - Finally, increased convenience can also be realized by improving network integration including fare integration, physical integration with Jakarta's suburban transport, and integration between various modes of public transport in Jakarta.
3. Expanding the service coverage area, especially so that public transport services increasingly reach (i) residential areas and (ii) suburban areas of DKI Jakarta. The expansion or extension of public transport routes to residential areas, as well as to the outskirts of DKI should complete the chain (sequence) of citizen trips at the first and last mileage (first and last mileage) which based on the survey seems to be filled with private vehicles and online transportation modes. The extension or expansion of public transport routes to peripheral areas can also be fulfilled by improving integration between inter-regional public transport networks as mentioned in the previous aspect of point 2.
4. Expand public transport service routes, especially by reactivating routes that have been frozen during the restriction period due to the pandemic.

Second, the DKI Jakarta Provincial Government can implement the policy of rearranging working hours, if and only if, the DKI Jakarta Provincial Government makes careful preparations based on the results of a more detailed study. More than 80 percent of respondents agreed to the implementation of the rearrangement of working hours. However, the implementation of this policy must be based on the results of a more detailed study or questionnaire. The study or questionnaire that must be conducted must cover three things:

First, the demand side, namely user profiles and travel profiles. The questionnaire

should include a representative sample of users. The results of the questionnaire should provide user profiles at three levels: household level, individual traveler level, and trip level. Questionnaires at the first two levels will provide information on the social, economic and demographic situation of households and travelers, while the results of the questionnaire at the third level will provide a movement profile of transportation users in Jakarta, which is a combination of travel motives, origins and destinations, and mode choice for each chain of trips they make.

Second, the supply side, which is the spatial and temporal character of congestion during peak periods in Jakarta, can be obtained by collecting data such as travel time or its proxies such as v/c ratio from the most important sections in Jakarta. Cooperation with various agencies can be carried out to obtain this data, such as the Department of Transportation, or with private parties such as Tomtom Traffic Index.

Third, the readiness or acceptance of users of the policy. The readiness and acceptance side must be seen from two sides, namely the worker side and the employer side. Questionnaires based on stated preference, for example, can be conducted to see how ready users, both workers and employers, are to implement the policy and how the policy should be carried out.

The traffic volume data used as a proxy for congestion shows that there are two peak hours in DKI, namely in the morning around 07.00 WIB to 08.00 WIB and in the afternoon around 17.00 WIB to 19.00 WIB. It is interesting that the morning peak traffic volume does not only occur on sections with inbound flow direction, but also outbound flow direction. In addition, the peak traffic flow in various sections in DKI also does not occur at the same time, indicating the spatial and temporal dynamics of congestion.

Based on the temporal and spatial character of the congestion that occurs in DKI, in the ideal condition (first best), the policy of rearranging the working hours should be differentiated based on place and time. From a practical point of view, of course the implementation of policies with differentiation of place and time like this will be very complicated. On the other hand, over-simplification of the policy taken, such as imposing the option of entering or leaving work in 2 or several time windows throughout the DKI area will certainly not produce the expected results. The policy of rearranging working hours must be taken and formulated by taking into account the costs and benefits obtained from these extreme conditions, namely ideal conditions and simplification conditions.

In addition to being study-based, the implementation of this policy should also be carried out after the implementation of a series of pilot tests accompanied by evaluations involving several government and private agencies in several representative work locations and also various professional categories originating from representative residence or domicile locations.

Third, the DKI Provincial Government must ensure that the various policies that have been implemented can be enforced in the field and even expanded and continue to review various policies that have the potential to reduce travel demand. Enforcement of the implementation of various existing policies is a quick-pick or low-hanging fruit action, in the sense that it can be done immediately without having to spend a lot of money or effort. These policies include, for example, sterilization of trans-Jakarta lanes and curbing the behavior of drivers of online transportation modes. The DKI Jakarta Provincial Government is also

obliged to conduct studies on various push policies to reduce travel demand, especially those using private vehicles, such as the possibility of increasing parking fees, as well as those aimed at reducing demand for home-work travel, for example by policies that provide the possibility for employers to implement work from home (WFH) or work from anywhere.

Based on the findings of this study, we realize this study has some important limitations. Thus, it is necessary for further study to do the empirical testing that includes several relevant variables. Some organizational and behavioral science theories might give some new perspectives to this study in the future. It is possible for the typical study to construct a new model of the transportation policy formulation with several suitable methodologies in advance. Hope the further study will give more theoretical contribution into the knowledge of transportation policy.

Acknowledgment

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