Investigating The Role of Emotional Well-Being During The Mobility Restriction Policy Into People's Intention to Travel After The Policy is Lifted: Learning From The COVID-19 Outbreak In Indonesia

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Abstract. The policy of mobility restriction, as a response to the outbreak of Coronavirus disease 2019 (COVID-19), had substantial implications for our daily lives and consequently affected our emotional well-being (EWB). While some Indonesian cities, especially Greater Jakarta as the epicenter of COVID-19 in Indonesia, planned to relax their mobility restriction policy in the last quarter of 2020, there is a question of how the EWB changes during the mobility restriction will influence activity participation after the lifting of the policy. Therefore, this study aims to investigate how EWB affected the intention to travel after the mobility restrictions were lifted. An online questionnaire survey was conducted in Indonesia in May of 2020 to collect respondents' personal and spatial characteristics, travel characteristics during and after the mobility restriction policy, their attitude towards the pandemic, and EWB. In investigating their relationship, a structural equation modeling was performed. The result showed that the number of days of isolation/quarantine had the effects of reducing EWB, reducing out-of-home activities, and increasing the intention to participate in out-of-home activities after lifting of the mobility restrictions. The decrease of out-of-home activities most likely reduces EWB and consequently the decrease of EWB is found to tend to influence people to travel more after the ending of the mobility restriction policy. In addition, the behavior required to prevent COVID-19 disease was also found to explain the attitude towards COVID-19. This study proposes several policies to mitigate the increase of travel demand following the mobility restriction period, which might reduce the possibility of more spreading of the COVID-19 disease.

I. INTRODUCTION

With its rapid spread, the limitations of healthcare capacity, and lack of effective treatment, the Coronavirus disease 2019 (COVID-19) has forced governments worldwide to control their people's out-of-home activities and promote the practice of in-home quarantine [1], [2]. Following this policy implementation, cities worldwide have experienced a substantial decline in out-of-home activities and travel, leading to less car traffic and public transport ridership [3]–[5]. As some of activities are associated with maintaining or enhancing people's well-being, the decrease of out-of-home activities has influenced people's emotional well-being (EWB) [6], [7]. Various sources of stress during the quarantine period, such as new routines with continuous repetitive use of places, the spread of the virus, worries about government intervention, and welfare decrease, are known to have substantially influenced personal mental health and EWB [8], [9]. However, the findings of the investigation of EWB changes during the COVID-19 pandemic are varied. While studies in China found a fall in EWB [6], [10], a study in Ireland found an increase of positive affect [2]. Studies by Fingerman et al. [11] and Ebert et al. [9] found that the stress of COVID-19 does not lead to an immediate decrease in well-being for a particular group of society. Therefore, these findings indicate that investigation of EWB changes during a pandemic is more complex and diverse in different geographical areas and social groups.

Moreover, after approximately four months of implementation in the first half of the pandemic, most governments worldwide have planned to relax their mobility restriction after reviewing their healthcare capacity, disease spread index, and the economic impact. As a response to this plan, the World Health Organization (WHO) has released technical guidance for countries worldwide, to manage how people work and study, shop, exercise, or socialize [12]. In Indonesia, approximately 50 days after the central government on 31 March 2020 and provincial, and local governments decreed their first mobility restriction measure, called Large-scale Social Distancing (LSSD), some cities started to lift the policy [13], and this period was called the new normal. Business offices and public spaces reopened with half of their normal capacity and stringent health protocols. On the other hand, schools and universities remained shut down in response to other countries' re-closure of schools and universities as a second-wave outbreak was reported in the last half of 2020 [14]. Moreover, there is a question of how people will perform daily travel after the mobility policy is lifted, considering that the changes of daily travel-activity during the pandemic covered a substantial period. With an increase in the time that has elapsed since the pandemic occurred, the adaptation to co-living with COVID-19, the transformation of economic and social settings, and EWB changes, it is predicted that some of the new habits acquired during the pandemic will remain into the future [15].

Investigation of the travel behavior changes after the mobility restriction is lifted and the influence on EWB is essential. Firstly, in the midst of the uncertainty about effective treatment, increasing travel during the new normal could be a major facilitator of further spread of the disease. While the WHO advocates minimizing out-of-home activities and physical interactions in their technical guidance and COVID-19 out-of-home activity protocol [16], it appears that many people tend to find that the COVID-19 protocol is hard to obey and ensure [17]. Secondly, the impact of quarantine during the pandemic on EWB will most likely influence the post-quarantine period. A study by Brooks et al. [7] found that quarantine creates post-traumatic stress symptoms that influence post-pandemic behavior, including activity participation. Therefore, after the current mobility restrictions are lifted, it is hypothesized that some out-of-home leisure activities will be performed more often in order to improve and fulfill personal well-being and mental health. Investigating travel activity changes following the mobility restriction period will help policymakers to anticipate and manage travel demand and, consequently, to mitigate the spread of the disease.

Moreover, understanding the travel changes after the lifting of mobility restrictions in developing countries is important due to the differences in their society, economy, and infrastructure that influence travel behavior [5]. In Indonesia's

case, substantial urbanization, inefficient urban forms, and low quality public infrastructure are characteristic of its urban areas [18]. From the pandemic perspective, Indonesia reported its first case in early March 2020. By 5 June 2020, the number of cases had reached more than 29,000. The LSSD implemented by the Indonesian government from the second week of March [19] had different characteristics from the lockdown in Wuhan, China. The policy still allowed intercity travel, and public and private transport were pushed to limiting their capacity to 50% [20]. After evaluating the growth of cases in every province, in May–June 2020, most cities' policies were to be relaxed. Unfortunately, the number of cases had increased to 700,0001 by the end of December 2020, while other countries such as Singapore, Vietnam, Thailand, and Malaysia tended to have stable case numbers during the last half of 2020. Therefore, the second social distancing measure was issued in early 2021, called Restriction on Community Activities (RCA) [21]. However, this policy only ran for four weeks and was then lifted. With the different characteristics and pandemic situations, this study will give new insights into understanding travel-activity behavior changes and the implications of the outbreak in Indonesia and other developing countries.

This paper aims to contribute to an understanding of the travel changes since the lifting of the mobility restriction policy. Specifically, this study's contributions are to answer these two questions: i.) Do EWB and travel changes during the mobility restriction policy have a positive or negative influence on travel post mobility restriction?; ii.) What factors affect the changes, and who changes the most? To better investigate the role of travel-activity changes during the outbreak, socio-demographics, residential locations, and the attitude towards COVID-19, this study also integrates the effect of individuals' EWB during the pandemic, which was hit hard during the outbreak [3], [8]. EWB parameters as suggested by Kahneman [22] are used in the questionnaire. For those purposes, we used data collected from an online questionnaire survey during the outbreak in Indonesia (May 2020) and performed structural equation modeling (SEM).

The paper is organized as follows. The next section describes the research design, data collection, and descriptive analysis for the key variables. The SEM results and discussion are presented in the third section, followed by conclusions and recommendations of the research.

II. METHODOLOGY

2.1. Research Design

To investigate the role of EWB on the intention of travel changes after the mobility restriction, this study develops two step analysis. The first step is to develop a structural model that explain about the relation between the EWB and the intention of travel changes after mobility restriction is lifted. To explore the behavior, the travel changes during the mobility restriction period are also integrated into the structural model. Structural equation modeling (SEM) is used for investigating the relationship since is has a unique capability compared with other multivariate analyses due to the fact that it can handle multiple and simultaneous regression equations by accommodating a large number of endogenous and exogenous variables [23], [24]. The structural model in this study is illustrated in Figure 1. Therefore, the two phases of activity changes (i.e., during and post mobility restriction) in the structural model are in line with the four-phase (i.e., before, during, after lock-down, and post-pandemic) pandemic period that was developed by Currie [25]. Furthermore, the confirmatory analysis using the structural model is developed based on the previous section's literature. Specifically, the hypotheses are as follows.

[1] The-real time COVID-19 cases in Indonesia can be seen at https://www.worldometers.info/coronavirus/

The first hypothesis (H1): The travel changes during mobility restriction are assumed to influence EWB. Previous studies indicated that EWB could be maintained and enhanced by participating in out-of-home activities [3], [26]. Since the mobility restriction policy was implemented during the first half of the pandemic, most out-of-home activities were limited, and individuals tended to maximize their in-home activities via ICT. However, some out-of-home activities cannot be replaced with such in-home ICT facilitated activities [27]. Therefore, this might result in changes in EWB.

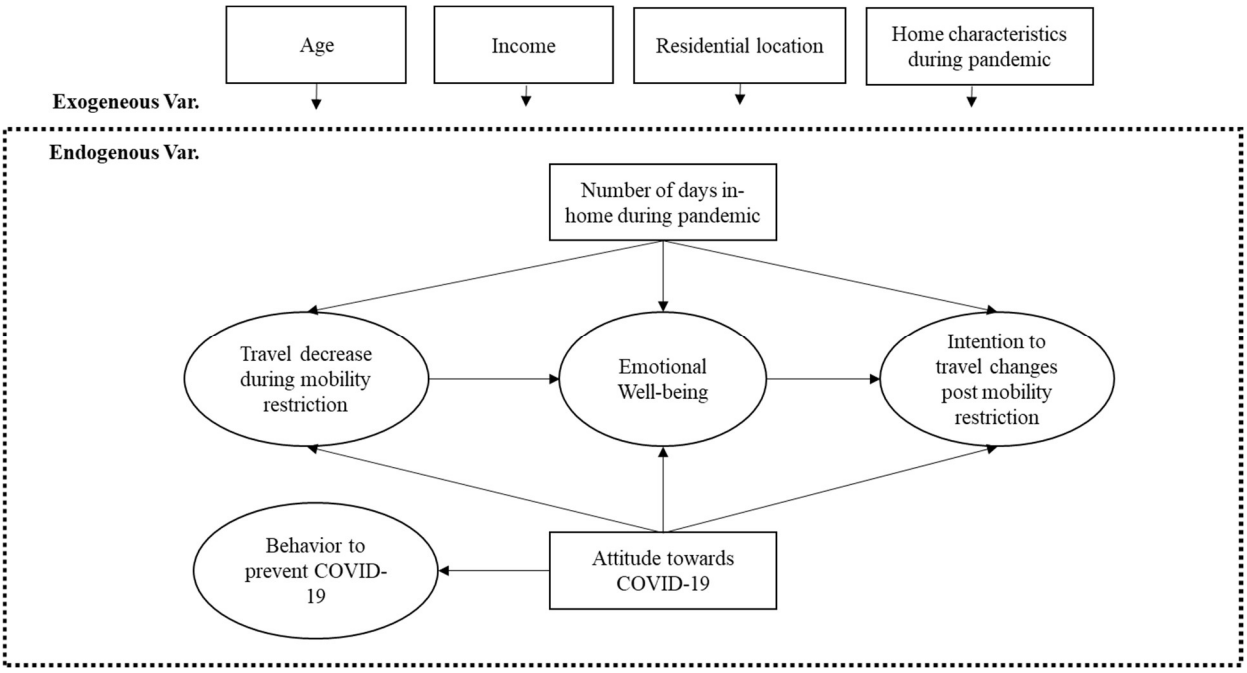

FIGURE 1. Proposed model construct

The second hypothesis (H2): The EWB conditions will influence activity participation after the mobility restriction period. Previous studies indicate that isolation could lead to post-traumatic stress syndrome and influence how people participate in activities after the isolation ends [7], [28]. Moreover, the period after mobility restriction could also be a period to make up for the absence of EWB-enhancing out-of-home activities during mobility restriction. This might be related to improving EWB. Therefore, the EWB changes during the partial isolation of the first half of the pandemic might change people's activity participation after the lifting of the mobility restriction policy.

The third hypothesis (H3): The number of days in isolation and the attitude towards COVID-19 will influence the travel and consequently EW since more days in isolation will increase the limitations on the out-of-home activities performed. Online or in-home activities cannot replace some physical activities that enhance and maintain EWB. Therefore, the burden on EWB might increase with the number of days during isolation. Moreover, as various studies have found a link between attitude and travel behavior [29], [30], a stronger (more fearful) attitude to COVID-19 might influence people to limit their out-of-home activity and focus on maintaining their immunity through the COVID-19 prevention guidelines from the WHO [16].

Furthermore, we assumed that exogenous variables of personal characteristics (i.e., age, income) and residential location (i.e., Greater Bandung, Greater Jakarta, etc.), and home characteristics during the pandemic (i.e., the number of persons living together) influence all the endogenous variables. Most of the exogenous characteristics were

determined as a dummy variable to explain the behavior more clearly in a specific group within every exogenous variable.

2.2. Data Collection

This study prepared a survey to capture individuals' intention to change their travel-activity after mobility restriction and the factors that affect them, consisting of the individuals' socio-demographic and travel characteristics, attitude towards COVID-19, the behavior adopted to prevent infection with the disease, and EWB. The questionnaire was divided into six sections seeking information on their travel-activity participation before the outbreak, during the period of mobility restriction, and after the mobility restriction policy was relaxed. In addition, the travel participation after mobility restriction is in the form of their intention to travel.

In the first section, respondents were asked about the frequency of weekly travel during the outbreak and before the outbreak for six different types of out-of-home activities, namely working or studying, grocery shopping, electronics/fashion shopping, dining out, leisure, and social activities such as visiting relatives or families. The questions related to the individuals' general attitude towards COVID-19, starting with the question: 'What do you think of the COVID-19 disease?', were asked in the second section. The respondents' response was captured in the form of a five-point Likert scale, ranging from 1 for "not dangerous at all" to 5 for "extremely dangerous".

Questions on EWB during the outbreak were then asked in the third section. The EWB questions consisted of seven cognitive feelings (bored, annoyed, tired, worried, depressed, not productive, and impatient for it to end) and one overall evaluation ("the worst experience in my life"). The response was captured in the form of a five-point Likert scale, ranging from 1 for "completely disagree" to 5 for "completely agree". In this section, respondents were also asked about the number of days they had stayed at home. In the fourth section, respondents were asked about their behavior to prevent COVID-19 disease, consisting of the health protocol suggested by the WHO [16] (i.e., wearing a mask, hand-washing, etc.). The response was captured in the form of a five-point Likert scale, ranging from 1 for "never" to 5 for "always". In the fifth section, the questionnaire asked about the intention to perform travel after lifting of the mobility restriction. The questions cover six types of out-of-home activities (i.e., working or studying, grocery shopping, electronics/fashion shopping, dining out, leisure, and social activities). The five-point Likert scale was used to respond from 1 for "significantly decrease" to 5 for "significantly increase". The questionnaire closed with the respondents' socio-demographic and spatial characteristics, such as gender, age, income, education, occupation, and residential location.

Like other surveys during COVID-19, to avoid face-to-face interactions, the data collection was conducted on an online-platform, with the web-based questionnaire distributed through various online forums (i.e., WhatsApp, Facebook, Instagram, Twitter, and Line). An online questionnaire has a natural issue regarding accessibility for the respondents. People with a smartphone or access to the Internet and familiar with social media can more easily participate in the survey. Therefore, this survey retains a bias from the possibility that some social groups cannot access the questionnaire. However, considering that the majority of Indonesians had access to a smartphone and the Internet in 2020 [31], this limitation was not regarded as serious. The respondents were recruited using convenience sampling, and a web-based questionnaire was distributed by the authors to various connections and helped by students and other colleagues. Moreover, some surveyors, randomly recruited through social media, helped with the questionnaire distribution through their social media. The survey was conducted in the second quarter of 2020, from 1 to 28 May 2020. This period was the third month of the outbreak in Indonesia, considering that the first case of COVID-19 in Indonesia was in early March 2020. The final survey collected 834 respondents living in several provinces in Indonesia and who completed the questionnaire form.

2.3. Respondents Characteristics

The majority of respondents were male (51.9%) and in their productive age (26–60 years old; 64.3%). The respondents mostly worked in private companies (38.4%), and most of them (45.4%) had income within a range of 2.5 to 10 million IDR (equal to 172–689 USD). Looking at the number of persons who lived together, most of the respondents were living with more than two people (70.2%). In terms of residential location, most of them lived in Greater Bandung (38.4%) and Greater Jakarta (31.1%). From the perspective of the outbreak, Greater Jakarta, which consists of Jakarta Province and five surrounding cities/regencies, was the COVID-19 outbreak epicenter in Indonesia. On the other hand, Greater Bandung is one of Indonesia's largest agglomerations and also saw significant growth of cases during the outbreak. Both these areas are among the top 10 areas with the highest numbers of COVID-19 cases in Indonesia.

The characteristics and attitude towards COVID-19 as well as the EWB of respondents are described below. The majority of the respondents realized the dangers of COVID-19, with more than 90% of them perceiving it as dangerous and extremely dangerous. In response to the social distancing policy implementation, most of the respondents had stayed at home for more than 50 days (57.9%) in the period of 3 March 2020 (social distancing policy implementation date) to May 2020 (survey period). On average, respondents were also maintaining the behavior required to prevent COVID-19 disease, such as social distancing and regularly using a mask. Meanwhile, Table 2 presents the EWB parameters during the outbreak, consisting of negative feelings. The scale of the response used a five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5), and it shows that most of the mean numbers for the respondents' feelings were higher than the mid-value of 3 that represents neutral. Respondents were most likely to feel bored during the outbreak and impatient for it to be over. The feeling of depression was the lowest negative EWB that respondents felt during the outbreak. Interestingly, the result for the overall EWB evaluation of the outbreak as 'the worst experience' was a relatively neutral value (3.06).

The travel-activity changes during the mobility restriction period is also measured. Reviewing the t-statistics parameters, there was a statistically sharp decrease in the number of out-of-home activities from before to during the COVID-19 outbreak. The average trip frequency to work or school declined from initially 6.69 before the outbreak to 2.77 during the outbreak. Trips to work or school experienced the greatest decline, while the electronics/fashion shopping trips declined less than other trips. During the mobility restriction period, the lowest frequency was for leisure trips, with only 1.36 trips/week.

The respondents' intention to increase/decrease their travel-activity after mobility restriction compared to before the outbreak is also described. While 44.2% of respondents intended to have a similar work/school trip, 26.9% of them intended to decrease their work/school trips. The most increased travel intention was found to be for social and leisure trips, with 33.7% and 30.9% respectively. Interestingly, the leisure trip frequency was at the same time also intended to be decreased by more than 41.4% of respondents. 43.3% of respondents also intended to decrease their dining out trips. Moreover, more than half of the respondents intended not to change their physical shopping activities.

III. MODEL OF EWB AND TRAVEL CHANGES INTENTIONS AFTER MOBILITY RESTRICTION

Before interpreting the results of the SEM model, the model fitting indicators are evaluated2. With the threshold of the Root Mean Square Error of Approximation (RMSEA) at 0.08 for a good fit [24], the model shows the values of 0.068,

[2] Previous research pointed to a cutoff value of .05 or .08 of RMSEA [32]; a GFI threshold much larger than 0.8 [33]; the criterion of χ^2/DF for acceptance less than 5 [34].

which indicates that the model is a good fit. The goodness-of-fit (GFI) value of the model is 0.861, and such a value close to one indicates a well-fitted model [33]. The $\chi 2/DF$ value is 4.858 and therefore a fall in the criterion of acceptance, which is less than 5. The RMSEA, GFI, and $\chi 2/DF$ statistics satisfy the rule of thumb that a goodness-of-fit index is evaluated and the values imply the conclusion of a statistically acceptable model. The SEM model results are described in Table 6, which supports the proposed conceptual model (Figure 1).

3.1. H1: The travel changes during mobility restriction are assumed to influence EWB

The model showed that the decreasing of out-of-home activities mostly likely decreases EWB. It appears that out-of-home activities have a vital role in enhancing EWB. Therefore, the absence of out-of-home activities during the mobility restriction period has significantly decreased the EWB. This finding is in line with previous EWB and out-of-home activities research [3], [26], [35], [36]. It may be explained by the accumulated limitation of activities that enhance well-being, such as physical socialization that needs co-presence in specific locations, especially for family/friends. The need to be co-present with people and fill certain cultural, social, and environmental obligations [37] with others is why out-of-home activities are still substantial for individuals. Arguing with the ICT facilitated activities, while some activities can be replaced with online activities, some activities that involve physical connection, sensory information, and a location-specific ambience still cannot be replaced [27].

The activity participation during mobility restriction is also explained by individuals' socio-demographic characteristics. Respondents with a higher income tended to have a lower number of out-of-home activities during the outbreak than those with a lower income. This finding might be related to their type of job. While higher income work has been characterized as more technological/online friendly, a low income job most likely relies on physical activities [38], [39]. A previous study indicates that COVID-19 has the greatest impact on those on lower incomes, who have no alternative to participating in offline activities [38]. Males were found to be associated with higher out-of-home activity participation during the outbreak, given Indonesia's characteristically high numbers of male workers who are most likely performing physical working activity [40].

3.2. H2: The EWB conditions will influence activity participation after the mobility restriction period.

The model also showed that the decrease of EWB influenced people to travel more after the mobility restriction policy period. Previous studies have found the negative effect of quarantine/isolation during a pandemic (i.e., SARS, COVID-19, etc.) on EWB, including post-traumatic stress syndrome, boredom, etc. [7], [41]. Participating in out-of-home activities following the mobility restriction might be a platform for improving their EWB [26]. Some studies have indicated some out-of-home activities that might improve EWB, including nature-based activities [42], sports participation [43], and out-of-home family leisure activities [44].

The decrease of EWB and increase of travel after the mobility restriction are not only subject to the travel changes during the restriction period, but individuals' socio-demographic characteristics also explain them. A high-income society was found to be associated with higher EWB than a lower-income society. These findings are contrary to previous research on EWB and income in China [45] or the United States [46], given the previous studies investigating normal conditions. Unlike normal conditions, most middle-class and lower-income Indonesian citizens are characterized as informal workers[47], who are very vulnerable to job-cuts and unstable payment during the pandemic [48]. On the other hand, a high-income society might have a more stable financial capacity and jobs. With these conditions, it is reasonable that their EWB will decrease. In the same vein, the increase of travel after lifting of the mobility restriction is associated with high-income societies. With the financial conditions during COVID-19, higher-income groups might have more flexibility in making up for their lack of activities during the mobility restriction period. Moreover, younger people (17–23 years old) also tend to increase their travel following the mobility restriction period.

3.3. H3: The number of days in isolation and the attitude towards COVID-19 will influence the travel and consequently EWB.

The increase of days in isolation was found to be associated with the decrease of EWB. This may be explained by the accumulation of unpleasant experiences during the quarantine, such as the limitation of activities with family/friends, the loss of freedom, and boredom [7]. Therefore, greater numbers of days during quarantine will signify a negative experience. During the quarantine, some people are unable to work, and such interruption does not allow advance planning. The impact on personal financial conditions is inevitable, and earlier studies [49] found that this influenced mental health symptoms. Increasing the number of days in quarantine also increases tension about the trustworthiness of the public health system [7] and questioning of the government's role in resolving the pandemic, consequently decreasing the EWB. Moreover, the number of days in isolation also affected the decrease of out-of-home activities as people had to maximize their in-home activities in various domains. Furthermore, this study found an association between the attitude towards COVID-19 and EWB. A higher perception of the COVID-19 risk leads to lower EWB. In addition, the attitude towards COVID-19 has a positive influence on the behavior to prevent COVID-19.

The number of days in isolation, as one of the indicators of peoples' obedience to governments' mobility restriction policy, is influenced by individuals' socio-demographic characteristics and residential locations. Younger people (17–23 years old) tended to have a higher number of isolation days than older ones, which was supported by the school/university online education policy. Males were found to be associated with fewer days in isolation, given Indonesia's characteristically high number of male workers most likely performing physical working activity that cannot be replaced by an ICT platform. Interestingly, Greater Bandung's residents marginally tended to have a lower number of isolation days and attitude towards COVID-19 than those in Greater Jakarta. This might be related to the fact that the government intervention for ensuring LSSD implementation was higher in Greater Jakarta than Greater Bandung, given that Greater Jakarta also serves as the nation's capital city and center of the economy. During the first half of the outbreak, the amount of information and the number of cases in Greater Bandung were not as high as in Greater Jakarta, which might be why Greater Bandung residents have a lower attitude towards COVID-19 than those in Greater Jakarta. In addition, people living alone also tend to have a lower attitude towards COVID-19.

TABLE 1. Estimation of EWB and travel changes intentions post mobility restriction model (unstandardized coefficient)

Variables	Behavior to prevent COVID-19	Attitude towards COVID-19	Number of days in-home during pandemic	Travel decrease during mobility restriction	Negative EWB	Travel changes intentions post mobility restriction
Endogenous variables						
Behavior to prevent COVID-19						
Attitude towards COVID-19	0.071 [b]				0.071 [b]	
Number of days in-home during pandemic				0.061 [b]	0.025 [a]	0.025 [a]
Travel decrease during mobility restriction					0.061 [c]	
Negative EWB						0.135 [b]
Exogenous variables						
Socio-demographic characteristics						
Income				0.125 [c]	-0.082 [c]	0.040 [b]
Male [D]	-0.077 [b]	-0.170 [c]	-0.277 [b]	-0.293 [b]		
17-23 years old [D]	-0.074 [b]	-0.176 [c]	0.572 [c]	0.889 [c]	0.122 [a]	0.360 [c]
Residential characteristics						
Greater Bandung [D]		-0.105 [b]	-0.527 [c]			
Surabaya, Semarang, and Yogyakarta [D]	-0.115[a]					
Live alone [D]		-0.148 [b]				
RMSEA = 0.068; GFI = 0.861; RMR = 0.139; χ^2 = 2200.476; df= 453; χ^2 /DF = 4.858						

[D] = dummy variable, 1 = yes; 0 = otherwise; [a]= significant at 10%; [b] = significant at 5%; [c] significant at 1%; only significant variables are stated in the table; Greater Jakarta as reference variables for residential location dummy variables.

IV. CONCLUSSION

The mobility restriction policy, as a response to the COVID-19 pandemic, has unprecedented implications for nations' economies and people's well-being. In the midst of uncertainty about effective treatment, the limited healthcare capacity, and economic recession, the Indonesian government (national, provincial, and cities) planned to relax this policy in the third quarter of 2020. Therefore, this study aims to investigate how people intended to participate in out-of-home activities during the new normal period and how the changes in EWB during the outbreak influenced this. The Indonesian government has implemented a social distancing/mobility restriction policy since early March 2020. However, with fewer limitations than the lockdown policies in other countries (e.g., China, New Zealand, Vietnam, etc.), most of the people tended still to perform out-of-home activities during the outbreak rather than staying at home in self/family quarantine/isolation. With differences also in terms of Indonesia's mobility restriction characteristics, this study also aims to provide additional knowledge regarding travel behavior during COVID-19.

This research found that the number of days in isolation/quarantine had the effect of decreasing EWB, reducing out-of-home activities, and increasing the intention to participate in out-of-home activities after lifting of the mobility restriction. The decrease of out-of-home activities most likely decreases EWB and as a consequence the decrease of EWB is found to tend to influence people to travel more following the mobility restriction policy period. In addition, the behavior to prevent COVID-19 disease was also found to positively influence the attitude towards COVID-19. Higher net-worth social groups were found to tend to decrease their travel during COVID-19 and planned to increase it after lifting of the mobility restriction, more so than lower social groups. Surprisingly, they also tended to have higher EWB during the outbreak than lower-income groups. Young people aged 17–23 years old, who tended to decrease their activities during mobility restriction and have lower EWB, intended to increase their travel after relaxation of the mobility restriction. Males tended not to significantly decrease their travel during the outbreak. Greater Bandung residents were most likely to have had fewer days at home during the outbreak, implying that some people were still performing out-of-home activities.

Our study presents several important findings that could suggest policy recommendations to mitigate and manage travel during the new normal so that further spread of the disease can be avoided. Firstly, active exercise outdoors with a lower risk of COVID-19 during the outbreak is promoted to lower the in-home quarantine time and improve people's EWB, and this will consequently reduce the travel demand during the new normal. Providing more outdoor activities in residential areas, such as recreational walking and cycling, is proposed, and these have been found to be important also for both maintaining EWB and physical activity levels to avoid the risk of long-term disease (i.e., stroke, cancer, obesity) [1], [3], [50]. Therefore, to promote these activities, governments need to improve and develop the infrastructure for outdoor exercise activities near residential areas (i.e., parks, bike lanes, etc.) as a potentially priority agenda. However, such development also needs to be in line with health protocols for ensuring social distancing. Secondly, as a part of society-wide plan for participation in more activities after the lifting of mobility restriction, a policy to strengthen and ensure health protocols in activity locations is important. However, due to the risk of people disobeying health protocols when they are active in large numbers, promotion of a social distancing policy must still be implemented, at least for certain kinds of activities where there is a greater possibility of online interactions. For instance, educational institutions should be required to continue implementing online-teaching, as the risk of infections in teaching settings is found to be high [51]. Furthermore, stricter implementation may be needed for areas where there is a lower level of obedience to the requirement for in-home quarantine/isolation, such as in Greater Bandung, but also with consideration of people's economic situation and well-being.

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