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The Emergence Of Economic Recovery Among Urban Slum Communities: New Pattern Of Socio-Economic Vulnerability Adaptation During The COVID-19 Pandemic In DKI Jakarta, Indonesia

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Abstract

Although many studies have been conducted on the socio-economic conditions of vulnerable people living in urban areas, there has been limited research focusing on socio-economic vulnerability and adaptation strategies of densely populated urban communities during COVID-19 in Indonesia. This study employed a phenomenological approach and aimed to examine the pattern of the socio-economic vulnerability and adaptation strategies used by urban slum communities in DKI Jakarta. This study focused on the five most populated subdistricts involving ten participants. Data was obtained through observation, in-depth interviews, and document study. Using social network analysis (SNA), the findings indicated that economic difficulties in the form of money and job, as well as family concerns such as caring for family members and perceptions of gender-based violence, had a high number of connections. These three problems have indeed become the government's focus and are the best way to balance the fulfillment of the economy and suppress the COVID-19 pandemic in DKI Jakarta. Participants also believe that the government does not actively promote in ensuring economic resilience. As a result, they work creatively to fulfill the economy by building new businesses and utilizing digital technology.

Keywords: socio-economic, vulnerable communities, social network analysis, adaptation strategies.

1. Introduction

The emergence of urban communities is inseparable from an area's economic growth wave (Scott, 2008). Moreover, the economic development of a region also depends on social changes, albeit research in this area is still limited (Rougier et al., 2018). In the end, such a conception cannot separate the connectedness between social and economic systems in a coherent and holistic dynamic approach. In its early stages of development, society's socio-economic system is very vulnerable. It changes when there are transformations both from within and outside the system, such as the political system and government policies (Vanhuyse et al., 2021), global crisis (Ruel et al., 2010), technology developments (Jardim et al., 2022), or at this

time on health problems (Pinchoff, Austrian, et al., 2021). Such changes present unique dynamics that often cannot be described comprehensively with limited data information (Cattaneo et al., 2022). The dynamics of the socio-economic system of the urban community raise a concept of vulnerability and present various components that influence it. So that it will be illustrated how the pattern of community adaptation and the determination of the right policies (Aroca-Jiménez et al., 2020; Sun et al., 2022; Tanir et al., 2021).

Urban community is the most dynamic and vulnerable to system changes (Lund et al., 2010). Conditions have become increasingly dynamic and vulnerable since the outbreak of COVID-19, especially for the socioeconomic needs of urban communities (Ouoba &

Sawadogo, 2022; Santana et al., 2021). Urban communities in densely populated areas face the most severe impacts on health problems, poverty, and crime (Akter et al., 2021; Pongutta et al., 2021). In many developing countries, like Indonesia in general and Jakarta in particular, the government has long prioritized development in urban community groups in residential neighborhoods (Kaushal & Mahajan, 2021). The COVID-19 pandemic has accelerated transforming the community's socioeconomic vulnerability (Rasul* et al., 2021). This is inseparable from the health and environmental hygiene problem, which is often neglected in development policies in big cities as targets for urbanites (von Seidlein et al., 2021). The psychological and mental conditions of urban communities in densely populated settlements are also often overlooked by observers of social problems (Daniel et al., 2022). Whereas the mental health problems of the community have a significant impact on the pattern of changes in the vulnerability of the socio-economic system in urban communities in densely populated settlements (Auerbach & Thachil, 2021). This problem is also related to population mobility and affordable accessibility, particularly healthcare facilities (Sheng et al., 2022; Shermin & Rahaman, 2021). Because of the complexities of such social concerns, a far more extensive study on the theme of socio-economic vulnerability or socio-economic dynamics is required.

Jakarta, one of the most populous cities in Indonesia and Southeast Asia, has long been recognized as the epicenter of almost all of Indonesia's civilization sectors. DKI Jakarta is predicted to replace Tokyo as the most densely civilized region in the world by 2030 (Razvadauskas, 2019). Jakarta is experiencing rapid population growth through the development of the manufacturing industry (Firman et al., 2011), resulting in a unique complexity. Jakarta is also a city with high pollution levels, making it an unsuitable place to live (Dsikowitzky et al., 2020). In addition, Jakarta continues to face significant issues related to poverty and scarcity of natural resources. Poor households in Jakarta spend 13–25% of their income on water costs, even though about 90% of shallow groundwater is contaminated with domestic waste (Angelia, 2015). Jakarta is a city that struggles with various issues of balancing economic development and social issues and has implications for nature conservation (Takagi et al., 2021). Jakarta's economic development, urban society, health issues, and the COVID-19 pandemic (Tuti et al., 2022) are all candidates to describe the pattern of adaptation to the issue of socio-economic vulnerability, which we hope can clarify the various new characteristics that arise and how to adapt them.

The COVID-19 pandemic in DKI Jakarta was responded to with a different approach. The DKI Jakarta Provincial Government does not immediately impose a 'lockdown' policy, closing all community commercial and social activity (Djalante et al., 2020a). This has a more significant impact than just a health problem (Pribadi et al., 2021). Jakarta limits activities to the necessity of community activity so that economic and social life continues. This policy is known as large-scale social restriction (PSBB) (Anugerah et al., 2021). The PSBB policy has advantages in the resilience of Indonesia's economic development (Guven et al., 2022). However, the actual negative impact occurred significantly on the socio-psychological conditions of the community, especially people in the informal sector (Elvira et al., 2021). Economic pressures and incomes decreased significantly, or even losses affect the socioeconomic situation of people with middle to lower revenues (Khoirunnurrofik et al., 2022). As a result, the COVID-19 pandemic has the possibility to become a barrier to distinguishing the point of socio-economic vulnerability in a densely populated area from other concerns or social observation clusters.

The focus of this research is to analyze the adaptation patterns of Jakarta residents who

live in densely populated areas with relatively high levels of socio-economic vulnerability. The urgency of this research is to develop a model to prevent negative socio-economic impacts for vulnerable communities affected by the COVID-19 pandemic in densely populated residential areas in Jakarta, as well as to analyze the possibility of emerging new social anomalies. This research was also developed to explore the effectiveness of local government policies in preventing, handling, and empowering vulnerable communities affected by COVID-19 to avoid causing new social problems in densely populated residential areas. The achievement of this research is carried out maximally through three primary research objectives, namely; the first is mapping the socio-economic vulnerabilities of densely populated communities in Jakarta; the second is obtaining quantitative data through network analysis between components of the socio-economic vulnerability of densely populated neighborhoods in Jakarta, and the third is to provide an overview of the government's policy approach in adapting the ideal changes to address socio-economic vulnerabilities in densely populated communities in Jakarta.

2. Article Review

We attempt to gather various dimensions in expressing how socio-economic vulnerability can be formed as one of the essential references in describing the socio-economic extent when faced with a health emergency. This is in light of research by Flor et al. (2022) that aims to quantify the impact of the COVID-19 pandemic, especially on society based on gender (Flor et al., 2022). Furthermore, numerous indicators in the Government Response Stringency Index (GRSI) were used to develop the political aspects and government policies (Kaçak & Yildiz, 2020; Yang et al., 2021; Yilmazkuday, 2020). Oxford Coronavirus Government Response Tracker (OXCGRT) (Guven et al., 2022) also took various indicators related to critical in the context of the vulnerability of

densely populated communities in Jakarta. During the COVID-19 pandemic, different dimensions of socio-economic vulnerability include the economic problem of fulfilling necessities in densely populated residential neighborhoods, education, health care, government response, family resilience, and health protocols, with the following explanation below.

1. **Economic and work-related concerns**. Economic problems as a vulnerability cannot be separated from various essential issues during the COVID-19 pandemic, which became a single domino effect for other social problems. When the pandemic occurred, economic difficulties could be observed in the emergence of employment losses (Coibion et al., 2020; Ghosh et al., 2020). Many layoffs cannot be separated from the government's policy of limiting the movement and activities of the community to suppress the spread of COVID-19. In addition to income loss and family issues, economic pressure is linked to psychological disorders (Hertz-Palmor et al., 2021; Pinchoff, Friesen et al., 2021). However, the community also tried to adapt when the pandemic affected everyone. Some people are starting to switch professions (Martin et al., 2020), such as selling stuff online, utilizing the creative economy via digital platforms (Chang & Meyerhoefer, 2021), and taking advantage of government assistance (Ali et al., 2021).

2. **Education** is essential to resolving poverty and socio-economic vulnerability issues, particularly for urban communities. During the COVID-19 pandemic, schools implemented various strategies to ensure children remained involved in learning, one of which was by providing online education (Alsubaie, 2022). However, online education is still considered ineffective, especially concerning emotional development and character building for children who require face-to-face activities (Dong et al., 2020). Education problems during the pandemic also refer to the

potential for dropout students (Yuki et al., 2022). This is related to educational process services that are not optimal, the difficulty of obtaining and accessing online class equipment, and the problem of reduced income by parents to support the cost.

3. Fulfilling **health** care is an absolute thing for a specific person and community. The problem of health care is suspected of having been disrupted since the government's focus on resolving the COVID-19 Pandemic (Gertz et al., 2022). Ultimately the health care needed by the community is general health, affordable health products, easy access to treatment, prevention efforts, and reproductive health care (Flor et al., 2022).

4. **Government Response**. Governments from various parts of the world have implemented policies dealing with the COVID-19 pandemic. The government often takes multiple steps: restrictions on the mass movement, lockdowns, and massive investment in the health sector, including efforts to limit the entry of people from outside the country (Andreoni, 2022; Kaçak & Yildiz, 2020; Yang et al., 2021). The DKI Jakarta Government has responded to the COVID-19 pandemic through the Governor's Regulation on Implementing Regulations of Regional Regulation Number 2 of 2020 concerning the Prevention of Corona Virus Disease 2019. The scope of this Governor's Regulation includes: a) individual health protection; b) protection of public health; c) PSBB; d) PSBB during the Transition Period; e) epidemiological investigations; f) informatics epidemiological surveillance; g) information dissemination; h) partnership and collaboration; i) economic recovery efforts, and j) social protection measures.

5. **Safety at home and in the community.** Efforts to ensure family resilience are inseparable from adapting to the COVID-19 pandemic. Five signs of family strength are functioning, healthy family (Pantan & Benyamin, 2020), namely: (1) the attitude of serving as a sign of blessing, (2) the intimacy between husband and wife leads to a good quality of marriage, (3) parents who teach and train their children with creative challenges, consistent training, and skill development, (4) husband and wife who becomes a leader with love, and (5) children who obey and respect their parents. Some actions to protect family safety include caring for others, feeling safe at home, doing chores, and perceiving the increment of gender-based violence (Flor et al., 2022).

6. **Health Protocol and Vaccine Hesitancy and Uptake**. Vaccination is considered one of the most effective ways to solve the problem of the COVID-19 outbreak. Vaccination has substantial benefits in terms of developing the body's immune system and breaking the chain of transmission of the COVID-19 virus (Vasudevan et al., 2022). Despite its numerous health benefits, the vaccination process is still experiencing rejection from various parties (Lee et al., 2021). This vaccination refusal problem often occurs due to doubts about vaccines that are not yet ideal, problems with congenital diseases, and assumptions that vaccines do not guarantee safety (Biswas et al., 2021) In addition, the issues of accessibility to inadequate government policies are considered barriers to optimize the fulfillment of vaccinations in the community. The table below contains complete information, including definitions and characteristics of the dimensions discussed in this study.

Tabel. 1 Dimensions of Social-Economic Vulnerability in the Context of COVID-19 Pandemic

Dimensions	Definition	Potential Node
Economic and work-related concerns	Efforts to ensure the needs of daily life based on doing specific jobs or businesses	**Employment Loss, Income Loss, Alternative job**
Education	The process of fulfilling the need for additional capacity and self-ability, especially related to the provision of provisions for children and adolescents	**Quality of Education, Online Learning, drop-out potential**
Health care	Efforts to fulfill general and specific health needs other than COVID-19 treatment	**General health care, health products accessibility, medication accessibility, preventative care, reproductive health care**
Government Response	The government takes actions to regulate the social and economic system to deal with the COVID-19 pandemic	protection of individual health, security of public health; PSBB, epidemiological investigations, informatics epidemiological surveillance, information dissemination, partnerships and collaborations, economic recovery efforts; and social protection efforts
Safety at home and in the community	Efforts to ensure families and the environment are safe from various threats, including gender-based violence.	Serving attitude, creative challenges, consistent training and developing skills, husband and wife who become leaders with love, children who obey and respect their parents, care for others, feeling safe at home, doing chores, and perception of gender-based violence increase
Vaccine hesitancy and uptake, also Health Protocol Obligation	Actions in accepting or refusing injection of health products to prevent virus transmission in the body	Vaccine hesitancy, vaccine accessibility, fully vaccinated, the obligation to carry out health protocols

Source: Flor et al. (2022)

3. Method

3.1. Study Approach

This study utilized a phenomenological approach, which included qualitative analysis (in-depth interviews, observation, and document study). By utilizing a phenomenological approach, this study expects to gain an understanding of the lived experiences of participants about their socio-economic condition and survival strategies during the COVID-19 pandemic.

3.2. Study Context & Participants

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The data was collected between 2020 to 2021. Our research was conducted in five densely populated urban subdistricts in DKI Jakarta Province. Densely populated regions of demographic studies are identified with slum areas because of the following: 1) they have poor environmental quality, 2) they have limitations on essential public services such as education, health, transportation, and social gathering places, 3) they have limited access to essential city facilities including clean water, sanitation, garbage disposal, drainage channels, street lights, footpaths, and 4) they have limited road access in case of an emergency (Brotherhood et al., 2022; Wasdani & Prasad, 2020). In general, the Indonesian government has described the situation of a densely populated residential environment as having (1) an unstable environment due to irregular buildings, (2) insufficient infrastructure and facilities, particularly for public facilities and recreational activities, and (3) small buildings and materials low-quality buildings, and (4) poor structural quality and illegal construction without a plan (RP2KPKP, 2022). Some of the criteria of this identification are shared by the five densely populated areas targeted for this research.

The five kelurahan (subdistricts) in question can be seen in the image below.

Figure 1. Map Illustration of the research location

According to the Population and Civil Registry Office of DKI Jakarta, several areas have the highest population density, starting from the subdistrict of Jelambar Baru, Grogol Selatan, Kalianyar, and several other regions of DKI Jakarta (Figure 2). This study tries to take samples from five kelurahan (subdistrict) representing each urban administration area of DKI Jakarta, namely Kelurahan Jelambar Baru (representing West Jakarta with a density of 307,642.56 people/Km2), Kelurahan Gerogol Selatan (representing South Jakarta with a density of 174,115.18 people/Km^2), Kelurahan Kampung Rawa (representing Central Jakarta with a density of 81,795.08 people/Km^2), Kelurahan Pisangan Baru (representing East Jakarta with a density of 39,203 people/Km^2), and Kelurahan Sukapura (representing North Jakarta with a density of 69,782 people/Km^2).
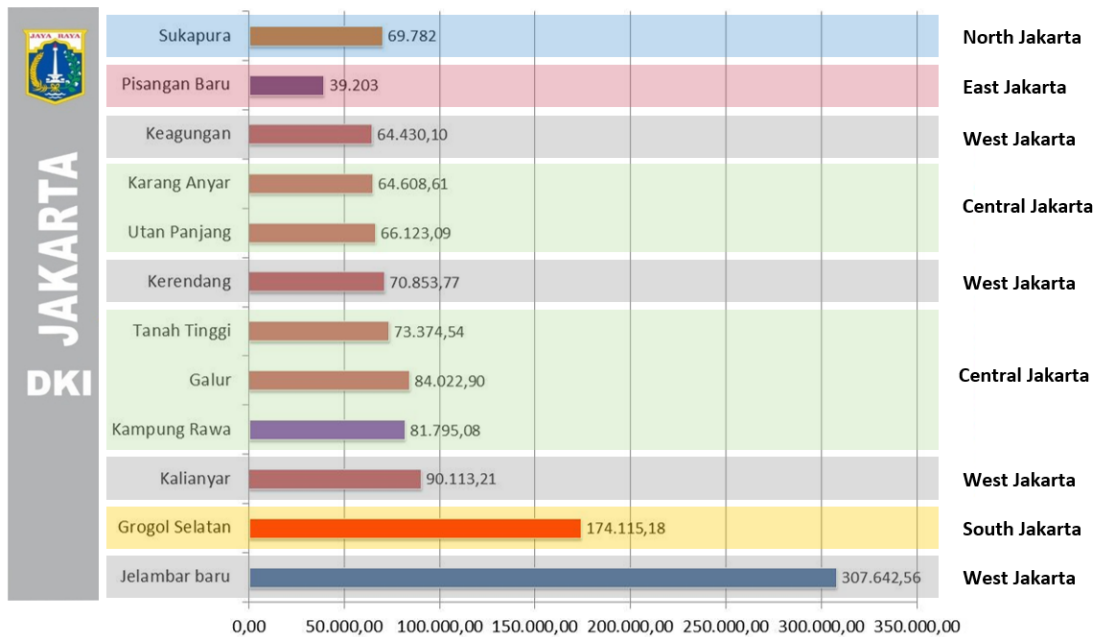
Figure 2. Twelve Areas with Highest Level of Population Density in Jakarta (people/km^2) (Source: DKI Jakarta Population and Civil, Registry Service, 2022)

3.3 Raw Material and Data Analysis

This study combines primary and secondary data to maximize the description of socio-economic vulnerability in DKI Jakarta in densely populated residential communities during the COVID-19 pandemic. The theoretical framework is based on various previous literature studies and developed to obtain various interrelationships between dimensions in the dynamics of socio-economic systems in densely populated areas. The population in this study is people in densely populated Jakarta who earn less than the minimum wage (Rp. 4,453,935/month). Furthermore, ten informants from each kelurahan (a total of 50 informants) were determined through a purposive sampling method (Creswell & Poth, 2016). The secondary data is a study of various policies, regulations, and archive documents of the DKI Jakarta administration to solve the problem of poverty in communities in densely populated settlements of DKI Jakarta, including efforts to deal with the COVID-19 pandemic. These various data are arranged in the framework of connectivity between components that are ready to be analyzed through a social network analysis framework.

Social Network Analysis has been widely used to describe social conditions related to community participation, social contact, and social support in order to objectively explain the relationship between various dimensions in a community and specific community groups (Amieva et al., 2010; Bincy et al., 2022). Network-based research also enables the production of association patterns of natural relationships that are formed between particular individuals, groups, and organizations (Therrien et al., 2019). In the context of a network, complexity can be precisely identified by various degrees of strength, symmetry, transitivity, reciprocity, and diversity (Betancourt et al., 2018; Sasajima, 2022). The outcome of this analysis is based on the value that emerges from each dimension. In this case, the relationship graph compiled is a directed graph (has a direction) with a scale value measurement. Each relationship scale value is a number between 0 and 1, with 0 representing no relationship and 1 representing a positive relationship. Furthermore, Dijkstra Algorithm is utilized to construct a path from the starting point to the destination point and look for the shortest path from all possible ways (Misa, 2010; Susanto et

al., 2012). The SNA analysis is used to measure three individual levels to gain understanding, including the degree, interdependence, and detection of clusters or communities between components or units through the R SNA Package, with R Tools (Butts, 2022). Advanced visualization and analysis are also done through the Cytoscape 3.9.1 application.

Degree analysis describes the popularity of components (nodes) in a network as explained by various links to and from other nodes. This analysis is also used to calculate the number of interactions a node has, and the degree value is obtained by using the formula:

$$C_D(n_i) = d(n_i)$$

Where: C_D is the degree centrality; $d(ni)$ is the number of interactions in this node with other nodes in the network.

Betweenness centrality is a method to measure centrality in a social network. The following is the formula for calculating the betweenness centrality value of each node in the network.

$$C_B(n_i) = \sum g_{jk} \frac{(n_i)}{g_{jk}}$$

Where: CB is betweenness centrality; $g_{jk}(n_i)$ is the number of shortest paths from node j to node k that pass-through node I; g_{jk} is the number of shortest paths between 2 nodes.

Community detection is applied in a graphical technique to find cluster nodes, it is understood as the magnitude or strength of the bonds in the community. Cluster analysis is a tool to measure nodes that are closely connected to nodes in other networks (Alamsyah et al., 2014). The following formula is used to calculate the value of the network (Hansen et al., 2011).

$$CC = \sum_{i=1}^{n} \frac{2e_i}{k_i(k_i - 1)}$$

Note: CC as closeness centrality; k_i is the number of nodes in a group; e_i -is the number of relationships between nodes in a group.

The last analysis is Community Detection Analysis in node-centric, applied with nodal degree grouping. The proximity of actors in a group to a large number of other members is

evaluated with a k-plex containing a maximum of ns subgraphs, each of which lies adjacent to ns-k subgraphs. Also, each one is untied before reaching a member of group k. Therefore, k-plex is bound to instances where k=1 and k-core are substructures of each node (vi), connecting at least k members in the group (Wang et al., 2020).

$$N_s(i) \geq k \forall V_i \in V_s$$

Where: N_s–node centric; V_s -knot to s; V_i – every knot; ns -number of the node to s; vs - The number of each node is up to s; a k-plex group size to ns, and (ns-k) cores.

4. Results and discussion

4.1 Social Network Analysis

Community network mapping is carried out to understand how the components in various dimensions can be connected appropriately. Social and economic shocks due to the COVID-19 pandemic greatly impact Indonesian society, including in the five urban subdistricts in the study area. All components of society are children, teens, adults, parents, and people with disabilities, both male and female. This is due to various forms of social restrictions the central and regional governments carry to localize and inhibit the spread of the COVID-19 virus. Loss of employment, income, and social activities results in a decrease in household ability to improve their financial status. One of the informants, DB (37 years old), a non-permanent worker at a school, stated the following:

"Income is facing a severe decline. A salary below the minimum wage plus extra income from other jobs can be sufficient for city living. But now the activity at my workplace stops completely, so I am not receiving any extra income. Now the potential to live an everyday life is very disturbed, primarily related to fulfilling the school needs for children."

Access to health care and additional house chores are other major concerns. People who live in densely populated settlements in Pisangan Baru Village, East Jakarta, also face serious health access issues, as stated by informant AT (37 years), who works in the informal sector (MSMEs), most of their income is used for children's educational needs:

"...Before COVID, the income from selling lontong (breakfast foods) could be 1,000,000 Rupiahs per day. It wasn't bad for helping my husband, who was working as a laborer in Tangerang. My husband's income is 2,000,000 Rupiahs per month. That amount is not enough, and it gets worse with the COVID-19 pandemic. People can't go anywhere—no one buys my food. At most my food is only sold ten servings a day, people don't buy snacks and they don't leave their houses. My husband is also at home, so the chores at home is increasing. Our family can't afford to get sick because being sick means losing the majority of our income..."

The graph below depicts the interaction of various components in the dimensions of this study (figure 3). In the picture below, 23 nodes emerged from the explanations of various research respondents. The relationship between the components is obtained as a whole to produce a complex network. The six dimensions in this study create multiple nodes that are unique and inseparable from each other.
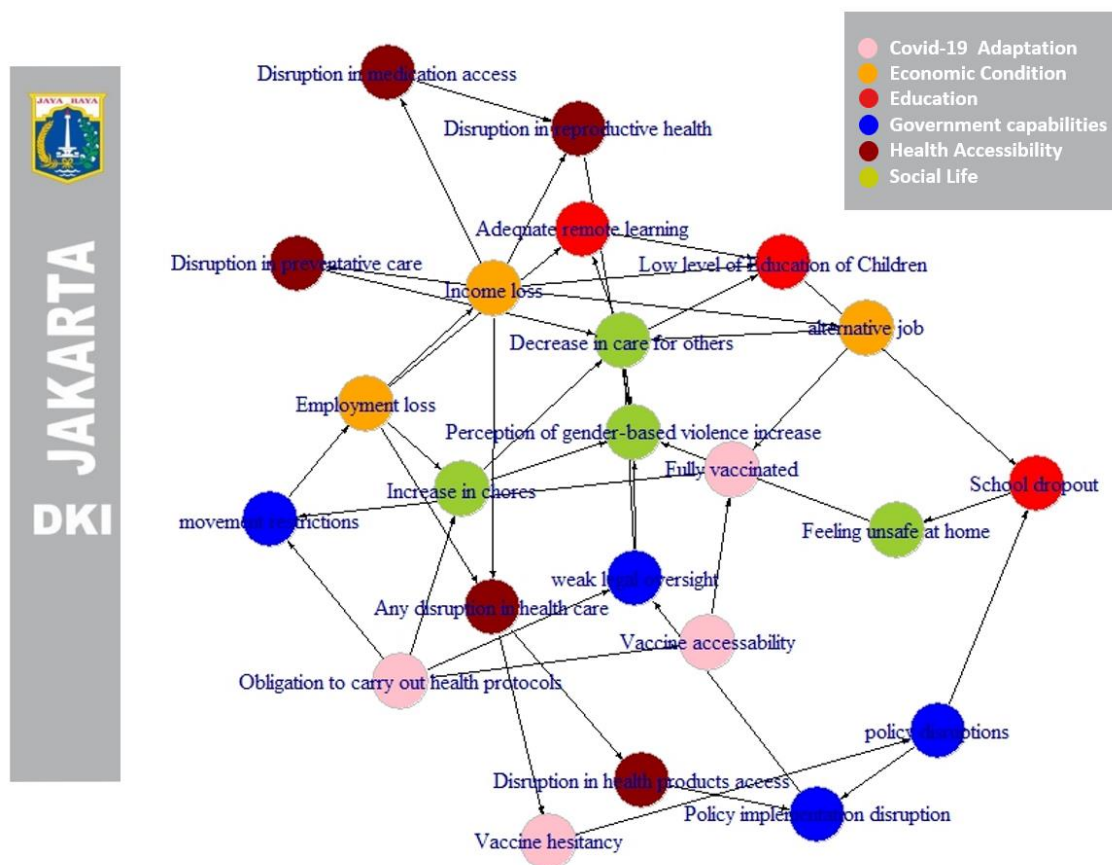

Figure 3. The basic model of network analysis of Jakarta's Socio-Economic Vulnerability

4.2 Degree Analysis

This analysis allows describing how the relationship between nodes in the network. This study finds that "income loss" and "decrease in care of others" have a high degree value of 7. This illustrates that the two nodes have a stronger connection with other nodes. Furthermore, the perception of increased

gender-based violence and employment loss has five relationships with other nodes. This explains that the economic dimension and resilience in the family (social) have a basic pattern in the socio-economic network of the densely populated community of DKI Jakarta. Furthermore, the problem of access to health and the role of the government is not too much of a concern with the relatively small degree value.

Figure 4 illustrates how the degree value determines the size of the note. The larger the number, the higher the node, and vice versa.
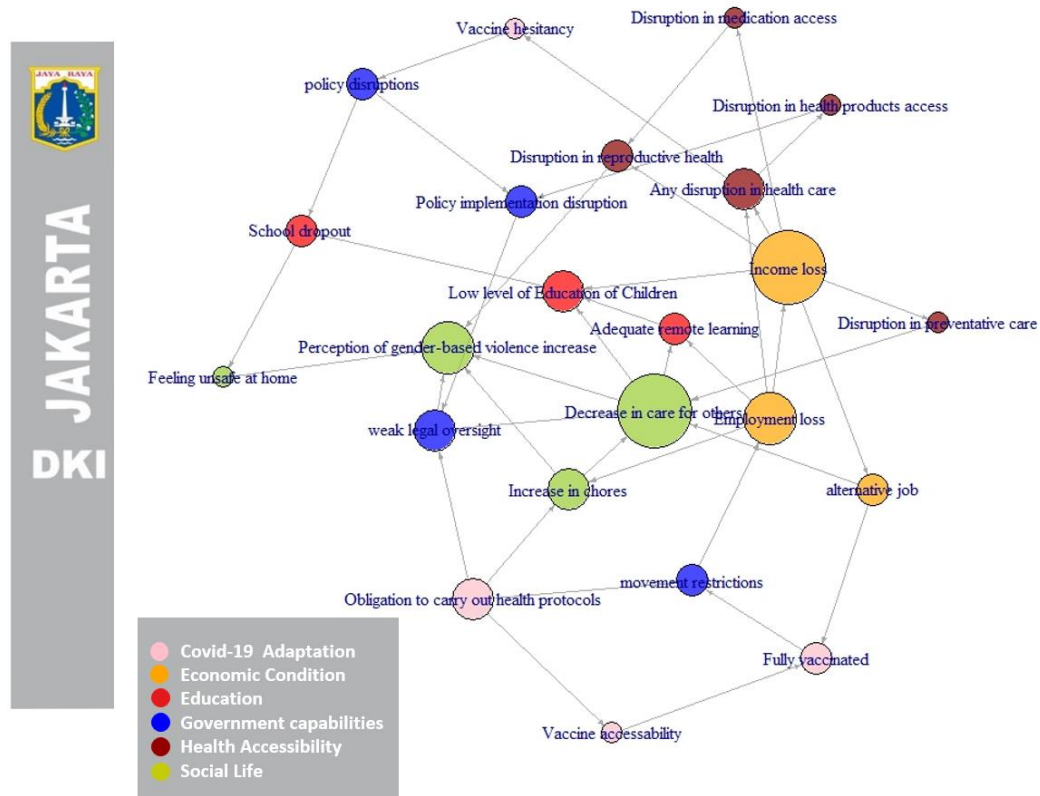

Figure 4. Degree analysis, with node size based on the degree value.

The issue of the COVID-19 pandemic is closely related to family resiliency and gender equality. The Komnas Perempuan survey conducted online in 34 provinces during the pandemic revealed that the stress level experienced by wives was increasing due to the increased load of domestic duties and double burden conditions. Women who do housework for more than three hours are almost four times more than men. This is expressed by a TN informant (26 years old):

"...Because of COVID-19, there are more chores at home. Yes, children study at home, but the house is never tidy because the children and my husband are all at home. I have to cook again and again. The children want to buy snacks online but we have no money. Then I have to do the laundry again, mop again and make snacks for them. The children fight for their cell phones to study, they get so much homework that they don't know the material, and sometimes we need to buy stuff to do the homework, which adds to the burden. I'm just tired, my husband gets angry quickly, and he keeps on playing games. He doesn't help me at all. Oh, I have to be patient…"

According to the results of research conducted by the Indonesian Child Protection Commission (KPAI), a vulnerable woman is risky in child rearing due to the double burden. As many as 21% and 16.6% of fathers stated that they had never and rarely accompanied their children during the COVID-19 pandemic.

In addition, 17.5% and 16.1% of fathers said that they never and rarely attended their children in activities other than studying during the pandemic. The mother's role was generally dominant in parenting, while the fathers were only limited. During the COVID-19 pandemic, the domestic burden and the double responsibility of the mother cause a domino effect on her psychological health. The child is vulnerable to violence by the closest people. The domino effect states that the perpetrators of violence against children are 60% mothers, 36% brothers/sisters, and 27.4% fathers, despite the children generally having positive emotions toward their families. Furthermore, according to Komnas Perempuan data, 10.3% of respondents reported that their relationship with their partner grew increasingly strained during the pandemic. Couples with married status were more vulnerable (12%) than those who were not married (2.5%). Based on the age of the respondents, those between the ages 31-40 years were the group that answered the most that the relationship with their partner had become more strained since the pandemic. This tension is particularly prevalent in families from the lower middle socio-economic class (income below 5 million Rupiah). This is as recorded in the Subdistrict of Kampung Rawa, where the divorce rate has risen as a result of Covid 19 Pandemic.

4.3 Analysis Betweenness

Betweenness analysis has produced a description of the relationship between nodes in the dimensions compiled based on the issue of socio-economic vulnerability in DKI Jakarta. Based on the network analysis, the connection between 'movement restriction' and 'employment loss' has the highest edge betweenness value (edge betweenness = 83.3, indicating that government policies have a significant role in influencing the economy of densely populated communities. Furthermore, restriction of movement also affects the desire to fulfill the needs of the vaccine (edge betweenness = 57). Indirectly, it can be illustrated that the community will follow to get a full dose of vaccine if it is closely related to their income. The three highest Betweenness node values are in the 'employment loss' (77), 'movement restrictions' (63), and 'Fully vaccinated' nodes (37), indicating that this node plays an essential role in the adaptation of densely populated communities during the COVID-19 pandemic. The graph and table below provide complete picture of the betweenness.
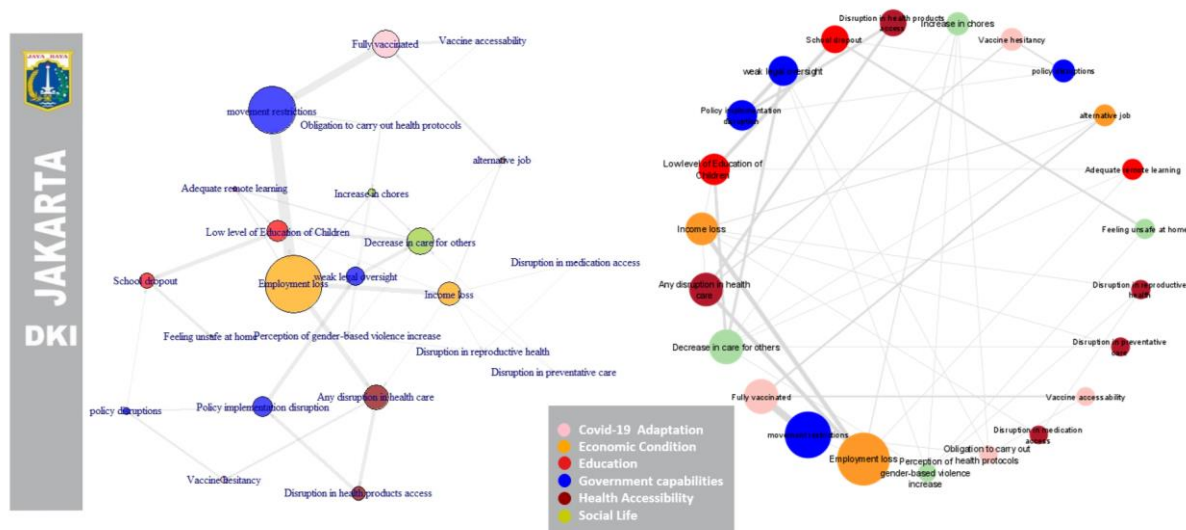

Figure 5. Betweenness analysis, where the nodes and edges are based on the betweenness value.

Table 2. Results of the Analysis of Betweenness Edge

Name	Betweenness edge
Movement restrictions (interacts with) Employment loss	83.3
Fully vaccinated (interacts with) movement restrictions	57.0
Employment loss (interacts with) Income loss	38.0
Employment loss (interacts with) Any disruption in health care	35.0
Policy implementation disruption (interacts with) Weak legal oversight	34.0
Low level of Education of Children (interacts with) School dropout	32.0
Disruption in health products access (interacts with) Policy implementation disruption	27.0
Decrease in care for others (interacts with) Low level of Education of Children	27.0
Any disruption in health care (interacts with) Disruption in health products access	27.0
weak legal oversight (interacts with) Decrease in care for others	26.3

Table 3. Results of Betweenness Node Analysis

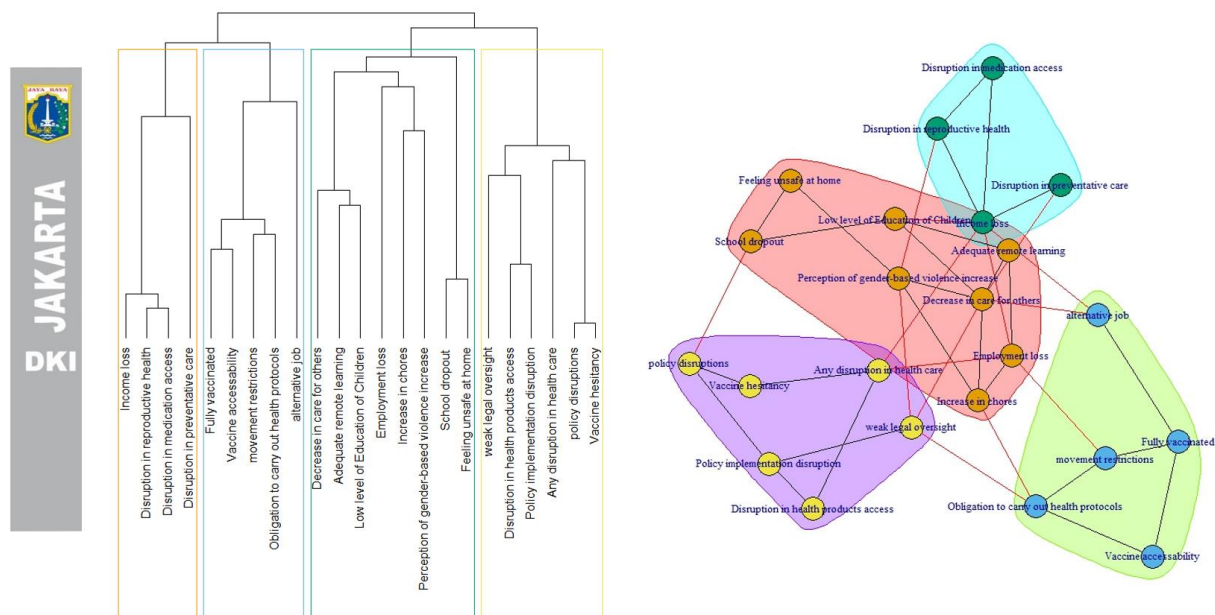| Node	Betweenness Node	Degree
Employment loss	77.3	5
Movement restrictions	63.3	3
Fully vaccinated	37.0	3
Decrease in care for others	36.7	7
Any disruption in health care	34.0	4
Income loss	32.0	7
Low level of Education of Children	29.0	4
Policy implementation disruption	27.0	3
Weak legal oversight	25.8	4
School dropout	21.0	3

Assuming economic activities do not stop completely, Jakarta is one of the regions implementing Large-Scale Social Restrictions (PSBB). In the worst-case scenario, around 75% of the population movement is controlled for 14 days, resulting in a -2.78% loss in the gross regional domestic product (GRDP) and a decrease in household income by -2.77% (Susilawati et al., 2020). To deal with the community's economic problems, several regulations were issued by the government. For instance, the Governor's Regulation concerning the Implementing Regulations of Regional Regulation Number 2 of 2020 concerning the Management of Corona Virus Disease 2019. This regulation stipulates that

COVID-19 is a national non-natural disaster based on Presidential Decree Number 12 of 2020 concerning the Determination of Non-Natural Disasters. The law specifies that Corona Virus Disease 2019 (COVID-19) spread is a National Disaster. To cope with the increasingly widespread, Large-Scale Social Restrictions, abbreviated as PSBB, are restrictions on specific activities of residents in an area suspected of being infected with a disease and contaminated.

Regarding the provision of vaccines, the refusal to be vaccinated or other programs in the prevention of COVID-19 is regulated in the DKI Jakarta Regional Regulation No. 2 of 2020 Article 29 in conjunction with Article 30

concerning the Prevention of COVID-19. It is stated that the intentional refusal of molecular rapid tests and vaccinations can be subject to sanctions, namely a fine of Rp. 5,000,000 (five million rupiah). The imposition of these sanctions then became the community's main focus, but people often think that health protocols are important to continue meeting economic needs. This ultimately has implications for the high vaccination rate in DKI Jakarta, especially in densely populated areas.

4.4 Cluster and community detection analysis

Cluster and community detection analysis allow us to provide information about the natural interactions of various notes in a network. The results of this analysis on respondents as an adaptation effort in dealing with socio-economic vulnerabilities are defined as unique. Naturally, four clusters can be formed and arranged through a 'fast greedy' approach, with the majority of the groups

being included on eight notes. Most of the clauses are a combination of various notes related to the problems during the COVID-19 pandemic, ranging from the loss of jobs, and education problems, to the potential problem of domestic violence. The following clause is related to the role of government in the view of a densely populated society. The problem with 'income loss' is closely related to access to health care, especially access to reproductive health care, and the potential for interference in preventing the emergence of health problems. The unique cluster formed is the effort to adapt to COVID-19, especially when the government creates disruptions to economic difficulties and uncertainty, namely through optimizing search for alternative searches, implementing health protocols, and optimal efforts in dealing with movement restrictions. A complete picture of the Cluster and Community analysis can be seen in Figure 6 below.

The complete data analysis in this study can be observed in table 2.

Figure 6. Cluster and Community Detection of Social-Economy Vulnerability among Urban Slum Communities during COVID-19 Pandemic in DKI Jakarta.

The community's economic decline during the COVID-19 pandemic has become a concern for the Indonesian government, especially in DKI Jakarta. However, efforts to deal with

these economic problems are often considered unfair to the lower middle class. The DKI Jakarta Government have attempted to regulate everything related to the

implementation of the PSBB, starting with how companies or offices, malls, places of worship, etc. operate, including sanctions if they do not comply. In this regulation, economic recovery efforts are carried out by; a) saving and developing micro, small and medium enterprises, creative economy, and cooperatives; b) developing the digital economy; c) developing an innovative urban economy; d) accelerating license related to investment and investment; e) providing fiscal and non-fiscal incentives; f) synergizing the national economic recovery program with related ministries/institutions and other parties; and or g) developing creative economy.

The government carries all facilities related to economic development, including business licensing and bank lending. Through this policy, it is anticipated that the community, especially the densely populated community, attempts to innovate by utilizing various available economic platforms, including efforts to use digital technology. Informants, such as SS (37 years old), recently decided to stop working for a multinational company in West Jakarta because she wanted to focus on taking care of the household and because her husband has an established business. Three months of experiencing her role as a housewife during the pandemic, including the increased chores, ultimately led SS to open a new business in the form of MSMEs. The same thing was also done by several informants in five densely populated urban subdistricts that were the targets of this research, such as Jelambar Baru (West Jakarta), Kampung Rawa (Central Jakarta), Pisangan Baru (East Jakarta), South Grogol (South Jakarta) and Sukapura (North Jakarta). In various observations, modifications and adaptations in the form of opening a business through digital platforms through online marketplaces and building creative industries through social media were also discovered.

4.5 Government's potential approach

During the COVID-19 pandemic, the new adaptation strategy toward the New Normal strengthens the previously mentioned adaptation strategy. WHO's New Normal Policy is intended to implement new standard-based health protocols required during the transition period before economic and social activities restart (Djalante et al., 2020b). The application of health protocols in a new lifestyle is a requirement for every individual and is adapted in everyday life. On one occasion, "Coexistence with Covid" (Kompas, 15 May 2020), as stated by President Joko Widodo, implies a new requirement to view COVID-19 cases as something that must happen and requires all of us to be able to adapt and adjust to healthy living procedures so that we can always be beneficial, even though the existence the virus is unavoidable. On May 28, 2020, the Indonesian Government, through the Minister of National Development Planning/Head of Bappenas on May 28, 2020, in a press conference with the Minister of Foreign Affairs Retno Marsudi, and the Expert Team for the Task Force for Handling COVID-19, conveyed the Protocol for a Productive and Safe Society for COVID-19 towards the New Normal (new standard) coexist with COVID-19 (Muhyiddin, 2020). In a social context, New Normal is an adaptation strategy to a new system to prevent further victims from facing the current health crisis with its impacts.

The government must comprehend and support the actors (key stakeholders) and local communities that are struggling against the pandemic. The government needs to recognize the barriers to social isolation and effective COVID-19 infection control and understand the balance between keeping people, especially vulnerable people living in densely populated residential areas, safe and ensuring they can survive economically. Therefore, community empowerment is essential. Community empowerment is defined broadly as gaining influence over the conditions necessary for people to share their environment, workplace, experiences, or concerns (Fawcett et al., 1995). These processes can occur at various levels and are

interconnected, including individuals, groups, organizations, and communities. Models of prevention, treatment, and empowerment need to consider the principles of community empowerment, which are as follows:

a) Build local community capacity

Building collaboration between government and society to recover from the pandemic and prepare for the challenges of the new normal in the future is essential, because the new normal will require adaptive and innovative approaches. The accurate picture during the pandemic demonstrates that people are carrying out a unique pattern of economic adaptation in avoiding socio-economic difficulties, new job alternatives to the rise of MSMEs, and the maximum use of digital media must immediately become a particular concern of the government. One way to build the capacity of the local community is to empower the community as volunteers. Local, national, and regional volunteers working with partners and local communities create strong collaboration because the local volunteer community understands the conditions of the local community better. They also understand economic, environmental, social, and cultural issues and have an in-depth knowledge of what works and doesn't in their community. The critical role in preventing and handling COVID-19 included disseminating vital information to avoid the spread of COVID-19 and strengthening systems such as the education, health, and economic (financial) systems at the community level.

b) Priority on family resilience and inclusiveness

The COVID-19 pandemic has caused vulnerability, especially for marginalized communities. Thus, empowerment efforts must focus on overcoming vulnerabilities so people can rise and survive socially and economically. Vulnerable communities in urban areas in DKI Jakarta are very diverse, so the empowerment approach must be socially inclusive by paying attention to gender justice and family resilience. Furthermore, the government formulates policies that accommodate the needs of vulnerable communities based on these principles. Family problems such as the potential for domestic violence to the high school dropout rate can occur if the government does not pay attention to the issues. During the COVID-19 pandemic, both of these things surfaced to get special attention from many people and stakeholders. The potential to solve this can align with economic recovery after the COVID-19 pandemic. It is vital for different stakeholders, including the government, to work together to establish a densely populated society free of poverty.

5. Conclusions

The various SNA analyses provide an overview of the unique pattern of adaptability that existed in densely populated communities in DKI Jakarta during the COVID-19 pandemic. Degree analysis shows how these financial challenges relate to family problems, from issues with income and employment. Financial problems become such as efforts to take care of family members and perceptions of gender-based violence in high numbers, which is in line with the perception that the COVID-19 pandemic has a severe impact on economic problems and the potential for domestic violence. According to the results of the betweenness analysis, the nodes 'employment loss' (77), 'movement restrictions' (63), and 'Fully vaccinated' (37) are the nodes with the highest level of role in forming the network. The betweenness analysis illustrates that the source of the problem in adaptito ng socio-economic vulnerability is the problem of economic fulfillment, which is limited to the movement of activities and the obligation to comply with health protocols, especially vaccinations. These three problems have indeed become the government's focus and are the best method to balance economic fulfillment and combat the COVID-19

pandemic. As a result, DKI Jakarta is an area in Indonesia where the COVID-19 epidemic is concentrated, although alterations to Jakarta's economy have not affected the system as a whole and are even thought to be capable of expanding during the pandemic.

The existence of community adaptation clusters through an alternative job search is the most notable analysis finding. Cluster and community analysis revealed that there were four naturally occurring groups. We attempted to name these groups as the problem cluster (eight nodes), the government role response cluster (six nodes), the adaptation pattern cluster (five nodes), and the future potential problems cluster (four nodes). Uniquely, densely populated communities encounter problems and avoid potential problems in the future, despite their perception of the government as not playing an active role in ensuring economic resilience through adaptation to finding alternative jobs during the COVID-19 pandemic. The findings in the field revealed that densely populated communities act creatively to fulfill the economy by building new businesses and utilizing digital technology. This is also in line with economic stability in Indonesia during the COVID-19 pandemic, as Indonesia's economic restoration always begins from the strength of the micro, small and medium business sector.

The government can implement various ideal policies to ensure densely populated communities can adapt to changes in the socio-economic system, and even the government has the potential to change densely populated neighborhoods to run better economic and social conditions. At the very least, the government can do two things: improve the local communities' ability and prioritize family resilience and inclusivity. The ability of local communities can be carried out to strengthen the economy, significantly supporting MSMEs and the digital economy, as this opportunity has begun to be noticed by the densely populated community of DKI Jakarta. Furthermore, the government's focus in developing a densely populated community

must be on family resilience and inclusivity, particularly ensuring that there is no gender-based violence and providing that education for children. The people in the community must, however, play a part as subjects, not just objects of development.

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