

## Migration During COVID-19 Pandemic in Industrial City: Case in Batam City, Indonesia

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### Abstract

COVID-19 is a disease which has spread throughout the entire world and was announced as a pandemic as it infects individuals through air. As a result, policies regarding mobility and health protocols were implemented. Cities and regencies in Riau Islands act as the entrance gate to Indonesia from other countries due to its strategic locations thus migration became a very concerning thing, especially in Batam, a successful city in industry, commerce, and tourism. This study aims to identify the migration flow to and from Batam City to other regions in Riau Islands Province. This research used quantitative methods and data of people who switched domiciles from and to Batam in the scope of Riau Islands Province provided by the Population and Civil Registration Service of Batam City. After being analyzed descriptively, this study shows the number of migrants in and out of Batam fluctuated throughout 2019-2021. The destinations and origins of migrants varied and show that distant regions were less demanded. This is due to the limited access and implementation of the mobility policies implemented during COVID-19. Reasons to migrate mostly are for work with a percentage around 16.5 to 22.7 percent and family with a percentage around 12 to 17.6 percent. However, around half of the migrants from 2019 to 2021 chose "Others" with no further specifications from the data provided.

**Keywords:** migration; COVID-19; population

### Introduction

The coronavirus disease (COVID-19) which was announced as a new pandemic in Wuhan, China by the World Health Organization (WHO) in 2019 has spread across the world (WHO, 2020). The global confirmed cases rise up to 632 million cases on November 2022 and about 6 million deaths are recorded (WHO, 2022). A person who is infected by COVID-19 could show symptoms similar to respiratory diseases as this virus spread through the air (CDC, 2021).

It is difficult to detect this virus in the first place due to symptoms showing up within 2 to 14 days since exposure to the SARS-CoV-2 virus. The virus could be contagious from the person infected to other people for 10 to 12 days (Johns Hopkins Medicine, 2022).

Due to the difficulty to detect this virus, the only way to diagnose it can only be done by observing the symptoms as there are cases where people do not get the symptoms while still being infected. Two COVID-19 tests are available for now, to be specific viral test and antibody test. The viral test is also

known as a rapid test which gives immediate results, while antibody test could be used for people who were previously diagnosed with this disease (Maragakis, 2022).

People with COVID-19 would be treated in a hospital or implementing independent isolation at home if the symptoms do not greatly affect the patient's daily life. Treatments in hospital could include supplemental oxygen, intravenous medicines, and other treatments (Johns Hopkins Medicine, 2022). People who have other illness, such as heart diseases, diabetes as well as hypertension are more vulnerable than those who do not have them so it would require further medical attention.

Indonesia as one of the countries with the highest population has cumulative cases up to 6 million and it was reported about 158.909 deaths caused by COVID-19 (WHO, 2022). This outbreak successfully raised the awareness of COVID-19 infection. The government of Indonesia took steps in preventing the spread of this disease as it was deadly for the unvaccinated population. Therefore, one of the steps taken was to vaccinate the population, particularly those who are categorized as vulnerable. Other steps taken by the government were to limit the mobility of the population, implementing health protocols in public, transforming school's learning session to online sessions, and also implementing lockdowns (Chakraborty & Maity, 2020). This proves that COVID-19 has brought numerous impacts to every aspect of life.

One of the highlighted aspects affected by this pandemic is mobility. Mobility patterns in Indonesia during pandemic changed and experienced by nearly all provinces (Pramana, et. al., 2021). Non-permanent mobility has been reduced as the new regulations applied in Indonesia. As for the migration, some native residents have been recorded to come back to Indonesia and were categorized in return migrants. It was recorded that there was an increase in

migrants number returning to their hometown in Special Region of Yogyakarta even after migration ban (Pitoyo, et.al., 2021). Migration was banned as it could cause epidemiological outbreaks as for in this case, a pandemic (Soto, 2009).

Batam is one of the cities in Indonesia known for its high number of migrants due to its success in industry, commerce, and tourism (Hidayati, 2019). The strategic geographic location of this city is considered beneficial which is very close to Singapore so Batam could attracting investors which leads to Batam's rapid development providing job vacancies. It is also the very thing which attracts potential migrants in deciding to migrate to Batam. This research aims to find migration flow from and to Batam during the COVID-19 pandemic.

## **Materials and Methods**

This research used the data of people who switched domiciles from and to Batam in the scope of Riau Islands Province. The data was obtained by the Population and Civil Registration Service (Dinas Kependudukan dan Pencatatan Sipil) of Batam City. The data is a time series from 2019 to 2021 which can represent the condition since the beginning of the emergence of COVID-19 pandemic to more than one year of its existence.

The data were processed using the help of the SPSS application. Descriptive analysis methods were used in this research to show frequency and percentages of the data. The results of data processing are used to describe the phenomenon and do not have the purpose to find correlation of one variable to the others (Nasution, 2017). Descriptive analysis could be used for data in nominal, ordinal, interval or ratio form. Visualizations of the results are shown through tables, graphs, and also map supported by different colors and size in the results.

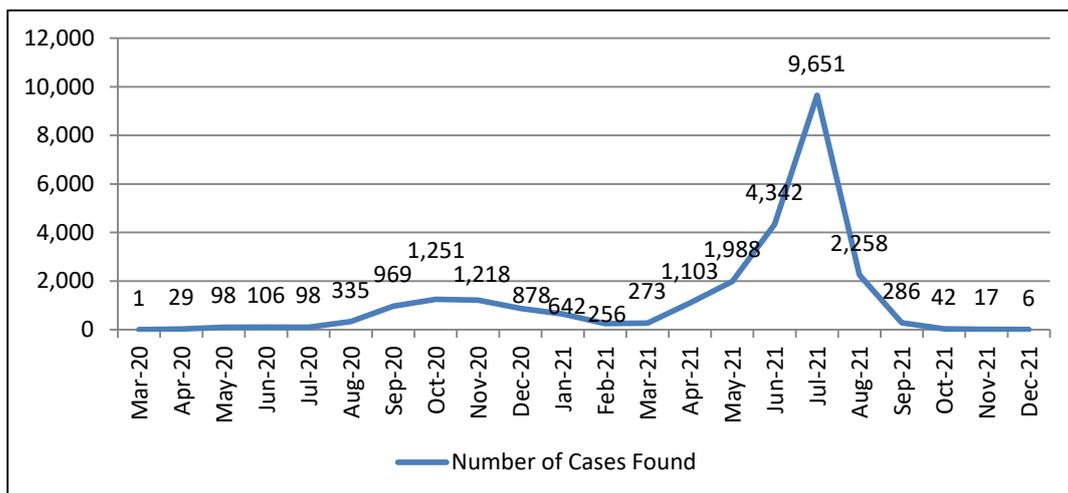
**Results and Discussion**

*COVID-19 Pandemic in Batam City*

The first COVID-19 case in Batam City was detected on March 2020 which the very first patient had a travel history from Malaysia, France, and also Singapore before finally arriving in Batam (Pemerintah Kota Batam, 2020). As shown by Figure 1, the peak cases found in 2020 was on October which recorded 1,251 cases found only on that month. The cases then showed decreasing numbers until March 2021. The number of cases then increased once more and had its highest peak where about 9,651 cases were found on July 2021. Since then, the

government tried to suppress the increasing number of COVID-19 cases by implementing new policies and protocols. New policies were made regarding transforming school lessons to online lessons, work from home (WFH) policy, and including policies regarding mobility.

Most of the new policies published in 2020 were about wearing masks and also to keep distance from one another as instructed by the Mayor in the forms of announcements of appeal. In this year, there were no strict and mandatory policies about mobility. The Government of Batam focused on non-permanent mobility and the places which could potentially be crowded.



Source: SATGAS COVID-19 Batam City, 2021

**Figure 1.** Number of Cases Found in Batam (March 2020-December 2021)

One of the efforts to prevent and slowing down the rate of COVID-19 transmission is to vaccinate the population in order to create community immunity or as known as herd immunity (Graham, 2020). The vaccination program in Batam started when the Mayor released a circular letter about the vaccination acceleration on June 10<sup>th</sup> 2021. Until December 31<sup>st</sup> 2021, most of the population in Batam received vaccination for the first dose and second dose. The third dose only applies for health workers. The

children ranging from the age 6 to 11 years old have only received the first dose for 64,678 children (SATGAS COVID-19 Kota Batam, 2021).

In the times of the peak of COVID-19 cases rising in 2021, the government eventually released a new policy regarding mobility due to limited access to Batam which can only be accessed using sea and air transportations. It is also correlated with the implementation of Community Activities Restrictions Enforcement (CARE) or known

as *Pemberlakuan Pembatasan Kegiatan Masyarakat* (PPKM).

The first policy includes the requirements needed for people to travel especially using air transportations. The requirements are vaccination card as to prove the person has already received the first dose and also the results of COVID-19 test whether it is the PCR test for air transportation or the rapid antigen test for sea and land transportations. The results of the tests must be used in 2 days for PCR test and 10 days for the rapid antigen test or it would not be considered valid anymore (Pemerintah Kota Batam, 2021a).

*Number of Migrants to and from Batam*

The policy mentioned only applies from and to regions with the same level of CARE. Batam was on level 4 from July to early August 2021 then leveled down to 3 until early October. This policy had a modification about inter-province travel and resulted in a stricter requirement. It is stated that travelers who use public transportation in Riau Islands Province must provide Reverse Transcription-Polymerase Chain Reaction (RT-PCR) test in 2x24 hours or Rapid Antigen test negative results in 1x24 hours before departing.

**Table 1. Number of Migrants to Batam**

<b>City/Regency</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Bintan	377	362	571
Karimun	1,077	921	1,278
Anambas Islands	81	76	65
Tanjung Pinang	640	534	894
Lingga	904	898	878
Natuna	118	106	106
<b>Total</b>	<b>3,924</b>	<b>2,897</b>	<b>3,792</b>

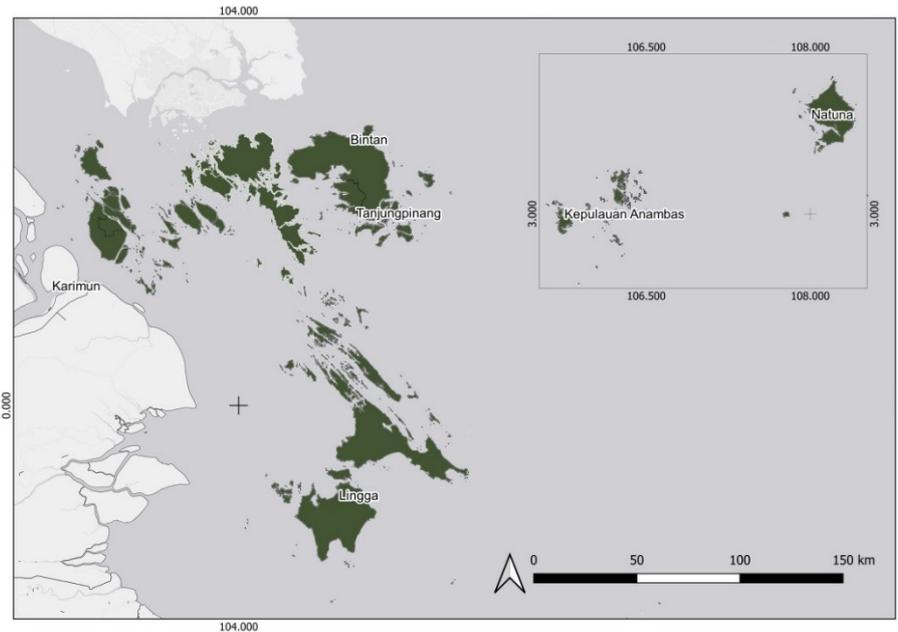
*Source:* Population and Civil Registration Service of Batam City, 2022

After the distribution of the second dose of vaccines, mobility policies loosened and tests results only applies for travelers who have not received the second dose. It is also due to Batam once again leveled down to level 2 of PPKM in October (Pemerintah Kota Batam, 2021b). It proved the success of the vaccination program and on slowing down the rate of COVID-19 infection.

These policies could indirectly affect the flow of migration from and to Batam. As shown in Table 1, the number of migrants heading to Batam from 3,924 migrants in 2019 to 2,897 migrants in 2020. The number

increased once more in 2021 and 3,792 migrants were recorded.

The migrants were predominantly coming from Karimun Regency. The number of migrants entering from Karimun Regency ranges from 921 residents to 1,278 residents. The second largest contributor is Lingga Regency which covers about 23 to 30 percent of the total population of Riau Islands Province which entered Batam City in those three years. This is supported by data showing that the population of Karimun Regency has more migrants exiting in general (BPS, 2018).

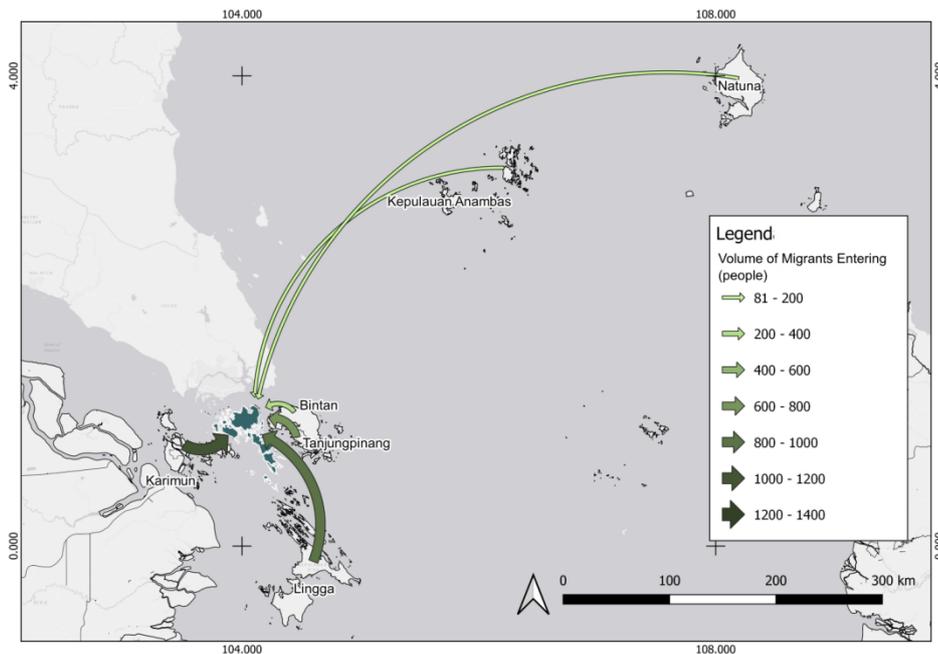


Source: Geospatial Information Agency, 2022 (processed)

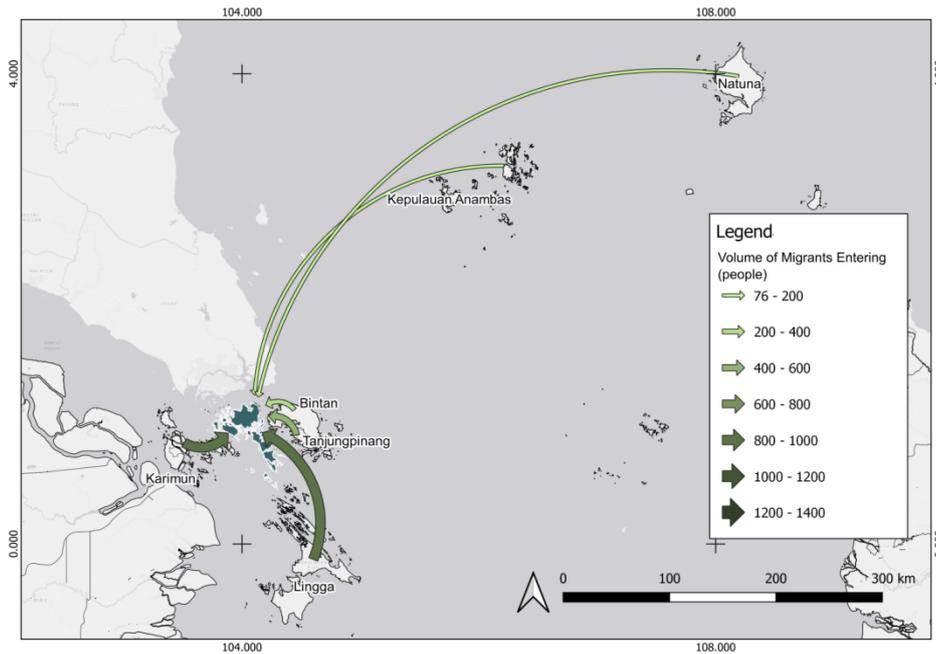
**Figure 2.** Riau islands Province Map

Other than push and pull factors, access which is one of the obstacles in migrating also played a role. Possible cause which allowed large number of migrants entering is the easy access due to the domestic ports dominantly located on the western part of Batam. In addition, it can also be seen that distance decay occurred in this case where

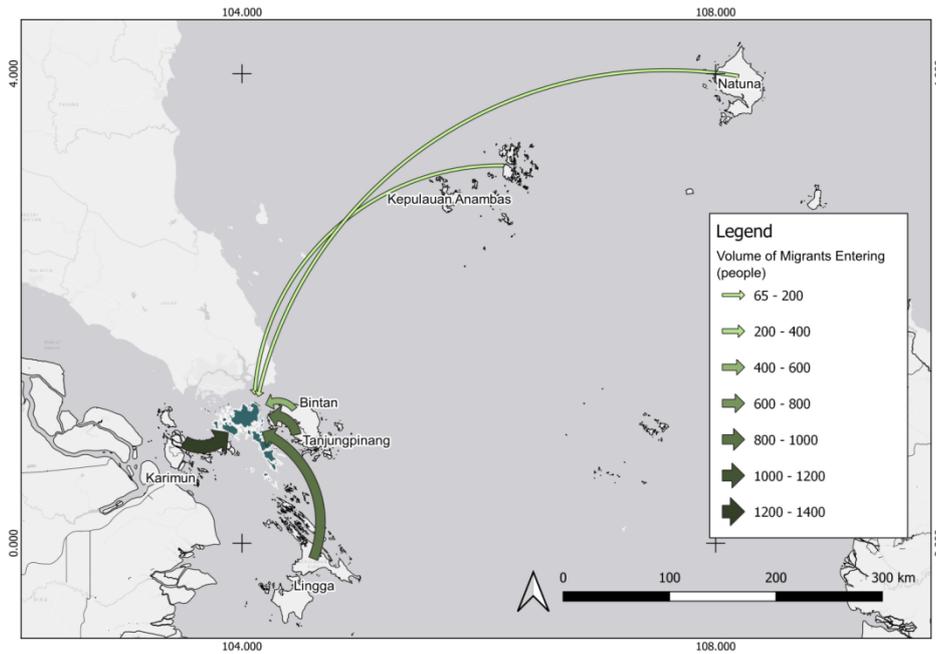
migrants entering from Natuna Regency and Anambas Islands numbered less than other regencies in the last three years. In addition, the frequency of flights between Batam City and Anambas Islands or Natuna Regency are less intense and there are not many flights available to these routes (Hang Nadim International Airport, n.d.)



(a)



(b)



(c)

Source: Geospatial Information Agency and Population and Civil Registration Service of Batam City 2022 (processed)

**Figure 3.** Volume of Migrants Entering Batam City in 2019 (a), 2020 (b), and 2021 (c)

On the other hand, the number of migrants exiting Batam to other city or regencies in Riau Islands increased from 2,045 migrants in

2019 to 2,348 migrants in 2020. The number then lowered once more in 2021 and it was recorded that 2,260 migrants exiting.

**Table 2. Number of Migrants from Batam**

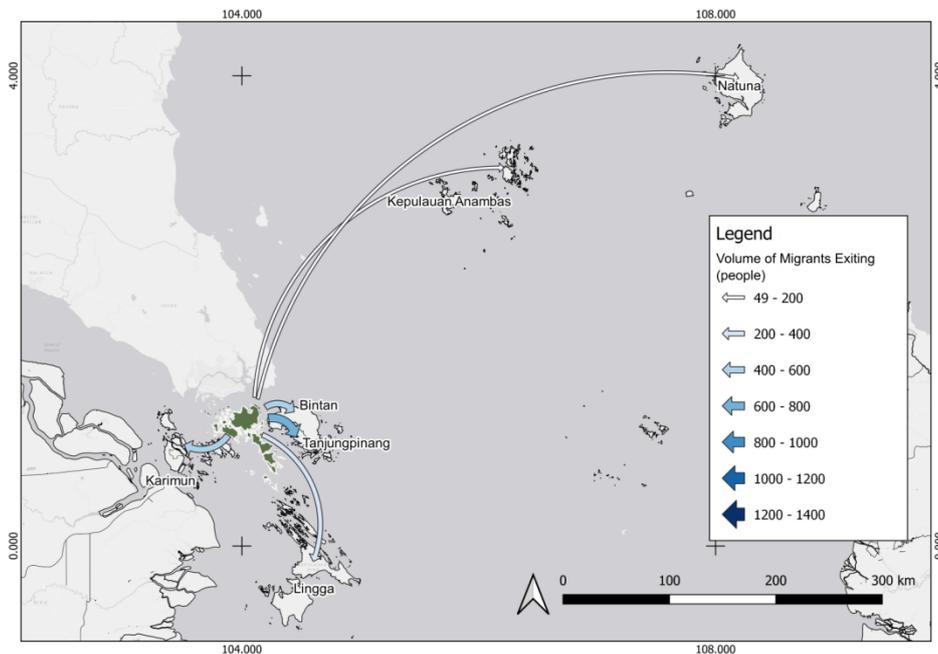
City/Regency	2019	2020	2021
Bintan	506	595	426
Karimun	554	617	671
Anambas Islands	49	60	72
Tanjung Pinang	617	673	746
Lingga	226	318	274
Natuna	93	85	71
<b>Total</b>	<b>2,045</b>	<b>2,348</b>	<b>2,260</b>

Source: Population and Civil Registration Service of Batam City, 2022

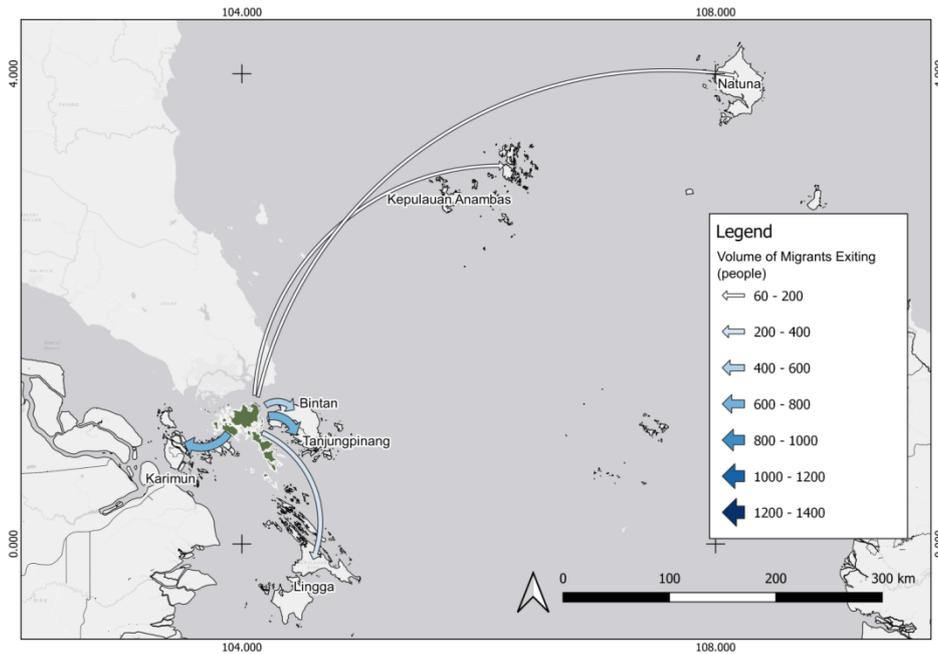
Based on Table 2, it is known that most of the migrants were headed to Tanjung Pinang City which is the capital city of Riau Islands Province. About 30.17 percent of the migrants chose Tanjung Pinang City as their destination in 2019. The same trend also happened in 2020 and 2021 with the numbers increasing each year.

The second destination dominated by migrants exiting Batam City in Riau Islands Province is Karimun Regency which is similar to the trend of migrants going into Batam City. About 24.7 percent or 554 migrants were headed to Karimun Regency in 2019 and the number increased to 617 migrants in 2020 and 671 migrants in 2021.

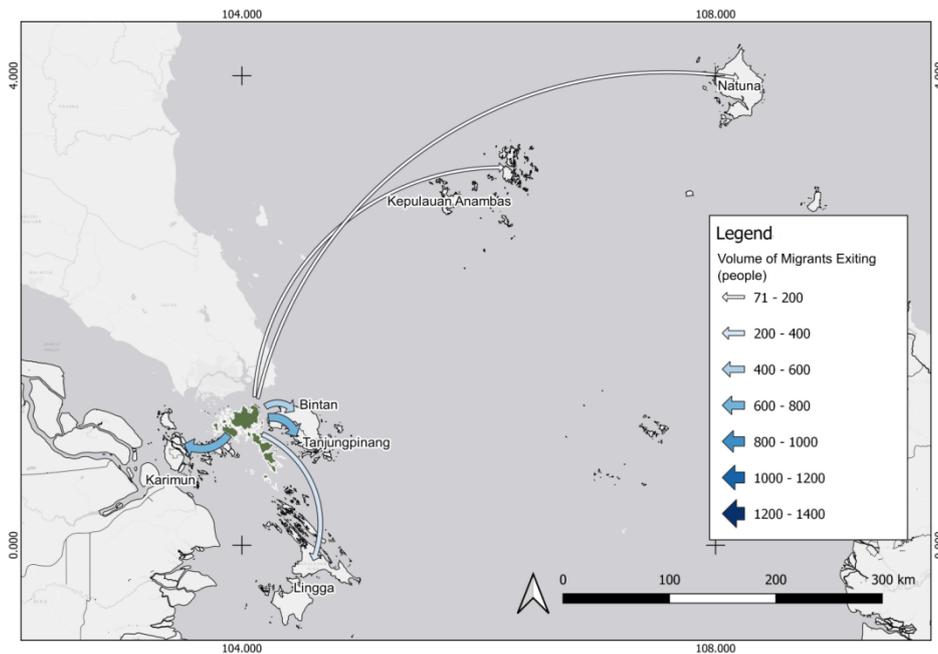
The least demanded destination for migrants exiting Batam in 2019 to 2021 was Anambas Islands. Less than 100 migrants chose this regency as their destination. This is similar to the prior trend in migrants going in Batam from Anambas Islands. It was recorded that flights between Batam City and Anambas Islands is only available for 4 days in one week and up to one flight per day (FlightsFrom.com, 2022). It is also known in 2020, the access using sea transportation has been stopped and the flights were reduced to only one day a week to Anambas Islands (Tika, 2020).



(a)



(b)



(c)

Source: Geospatial Information Agency and Population and Civil Registration Service of Batam City 2022 (processed)

**Figure 4.** Volume of Migrants Exiting Batam City in 2019 (a), 2020 (b), and 2021 (c)

Based on the previous statements, it is known that migration pattern in Batam City is similar to the discovery of Lee, et.al. (2021) which stated migrants tend to migrate

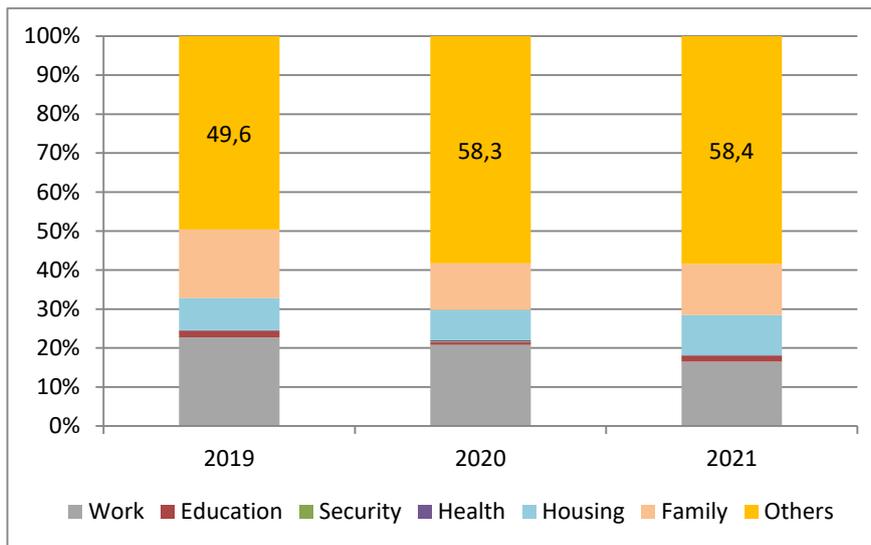
from urban to rural and it was caused by job losses. This pattern applies for migrant workers in Bangladesh, India, and Pakistan during COVID-19 pandemic. Furthermore,

the lowered number of migrant workers could led to low productivity and economic slowdown (Mukhra, et.al., 2020).

**Reasons to Migrate**

Many reasons can affect a migrant’s decision to move from one area to another. Factors which could influence are push and pull factors from the origin and destination. In addition to these factors, personal

considerations and obstacles are also influencing a person’s decision to migrate (Erlinghagen, et.al., 2021; E.S. Lee, 1966). One of the dominant factors to migrate is to improve their living standards (Sahrain, 2019). Reasons to migrate are provided in the form to change domiciles by Population and Civil Registration of Batam City which include seven main reasons, specifically are work, family, education, security, housing, family, and others.



Source: Population and Civil Registration Service of Batam City 2022 (processed)

**Figure 5.** Proportion Graph of Reasons to Migrate from Batam, 2019-2021

Based on Figure 4 which shows the percentages of the main reason of migrating from Batam, it is known that many migrants moved out for work and family, but most of the migrants chose “Others”. In 2019, 22.7 percent of migrants moved out from Batam City for work and 17.6 percent for family. The same trend happened for 2020, but the percentages for work and family decreased and for “Others” increased up to almost 10 percent. Meanwhile in 2021, reason to migrate for work and family once again decreased to 16.5 percent and 13.1 percent while “Others” stayed quite stable. The details of “Others” are unknown due to data excluded from the

provided database. Given the large numbers of migrants who chose “Others” as their reason to migrate, the data should have been specified by the Population and Civil Registration Service of Batam City for the public, yet it has not been done.

This data shows that people migrating to other city or regency in Riau Islands are mainly for work, family, and housing, This is also consistent with the data from Population Survey between Census or also known as SUPAS which stated the main reason people migrating to Batam is looking for work then followed by migrating with husband/wife/parent/child (BPS, 2016). This indicated that

Batam as an industrial city succeeded in attracting potential migrants by providing job vacancies. The decrease on the percentage for work from 2019 to 2021 indicated that COVID-19 pandemic has taken effect on economy and labor. It was recorded that there was an increase in industrial relations cases in 2020. In 2019, there were 118 cases of work termination and increased to 231 cases which involved 4,209 workers in 2020. On the other hand, job vacancies decreased drastically from 37,295 vacancies in 2019 to only 8,048 in 2020 (Disnaker Batam, 2020). Therefore, it is known that people migrate to and from Batam mainly to find jobs and for work.

## Conclusion

Cities and regencies in Riau Islands Province are the entrance gates to Indonesia from other countries due to its strategic locations. Batam City as the closest city to Singapore is considered successful in industry, tourism, and commerce. These traits attract potential migrants, especially worker ones, to migrate to Batam.

The COVID-19 pandemic was spread around the world including Indonesia. This affected the migrant flow to and from Batam due to the restrictions in mobility. Evidence shows that the number of migrants going into Batam from other city and regencies in Riau Islands Province lowered drastically from 2019 to 2020. The number then increased once more in 2021. In contrast, the number of migrants exiting Batam City to other regions in Riau Islands Province increased from 2019 to 2020, but then lowered once more in 2021.

The destinations and origins of migrants during COVID-19 pandemic varied. Distance decay occurred in this case where the least demanded destinations and origins were distant regions, such as Anambas Islands and Natuna Regency. Accesses to these regions were limited and became more limited due to restrictions in mobility during

COVID-19 pandemic. The main reasons for migrating recorded are for work, family, and housing. However, most migrants filled "Others" based on the form provided while the details of this reason are not included in the database.

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