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ECONOMIC CHARACTERISTICS AS PREDICTORS OF COVID-19 INFECTION, RECOVERY, AND DEATH RATES

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Abstract: The Covid-19 pandemic provided lesson-learnt that ineffective epidemic control was took place when it is only prioritized on individual level and disregard the regional level. This research aims to identify the regional economic characteristics as a basis to districts/cities level pandemic control. This study analyzed infection, recovery, and death cases during the peak wave of the Delta variant on 26 May to 15 July 2021. Data were collected from 128 cities/districts of Java-Bali isles. Multivariate Analysis of Variance (MANOVA) model was applied to investigate the correlation between intercorrelated health outcomes such as infection, recovery and death cases with regional economic characteristics. The results were divided into three economic characteristic domains that significantly affected the pandemic severity. Firstly, poverty characteristic as poor people density each 10.000 km^2 is prevention factor for infectious cases and risk factor for recovery cases. Second, income characteristics i.e. informal worker's income and formal worker's wage are the predictors for pandemic severity. Informal worker's income is risk factor for infectious and death cases, meanwhile formal worker's is prevention factor for death case. Third, industry characteristic significantly is the predictor for infection and recovery case. Infection case could be prevented by the regional characteristics involve workforce ratio, trade and service workforce, and middle-up enterprise. Recovery case could be prevented by workforce density characteristic and more in risky by trade and service workforce, and middle-up enterprise characteristics. This research provided the basic framework to determine non-pharmaceutical interventions as pandemic countermeasures including mobility and social interaction restriction, work from home, centralized isolation facilities, and empowering hospitalization and intensive-care resources.

Keywords: poverty, income, industry, epidemic prevention strategy, socio-economic determinants

Introduction

Several indicators of the COVID-19 pandemic in Indonesia in mid-2023 showed the improvement of epidemiological indicators trend after being struggled by previous three waves of COVID-19 variants i.e. 2020-2021 Alpha, mid-2021 Delta, and early 2022 Omicron (Wordlometer, 2024). June 2023 the Indonesian government officially revoked the pandemic status of the SARS-CoV-2 virus based on this better pandemic situation. To decided and declare the free pandemic status is a crucial and precarious task, because there is no quantitative measure that is widely accepted and the threat of new cases still

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continues to occur (Ioannidis, 2022). On the other hand, the countries need certain conditions to run the government and drive the development amidst the uncertain situation of the COVID-19 pandemic.

The journey of more than 3 years controlling the COVID-19 pandemic in Indonesia had inherited many valuable lessons. Indonesia was faced off a situation where the health system is not ready even has been built since decades ago, as is the case in other countries, especially in the aspect of clinical leadership as a policy maker (Sanders & Balcom, 2021). The world's four major pandemics over the last 100 years provided valuable lessons, i.e. the lack of health workers during the Spanish flu pandemic, weak guidelines for disease management during the SARS pandemic, the need for a global organization to handle the outbreak of the H1N1 pandemic, and the crucial role of virus-carrying media during the COVID-19 pandemic (Pergolizzi et al., 2021). Indonesia was also having difficult to identified virus-carrying media that have the potential cause of new disease outbreaks.

One important note from experience in controlling COVID-19 in Indonesia is the implementation of policies that create a tug-of-war between health and economic interests. The polarization of interests between the health and the economy has encouraged the Indonesian government to establish balancing policies. Several countries, including Indonesia, are trying to maintain a balance between protecting public health and preventing the economic impact due to policies implementing social restrictions (Moti & Goon, 2020). Longitudinal study in Germany by (Demirer & Pförtner, 2023) shows that there has been an increase in economic worries during the COVID-19 pandemic and has become a mediator of mental health problems. Based on this evidence, the policy of relaxing and tightening community activities carefully to control the transmission of the COVID-19 pandemic has provided many health and economic benefits (Dorn et al., 2023).

Economic factors as one of the determinants of regional infectious disease outbreaks also contribute to the complexity and dynamics of the COVID-19 pandemic. According to Bratianu (2020), the COVID-19 pandemic is a very complex phenomenon that caused an unexpected crisis in the national health, economic, educational, cultural, sports and social systems. Studies in Italy showed that the government's failure in handling COVID-19 cases stems from a health system that is not strong enough, namely aspects of recruiting doctors and nurses, building new service units and hospitals, adapting new service units, and procuring Personal Protective Equipment (Bolcato et al., 2021).

Policies to control infectious disease pandemics at the regional level need to be analysed further in order to make decisions by local, regional, national and global leaders. However, the decision-making process for controlling disease outbreaks at the regional level has not been clearly described (Morgan, 2019). It is still rare for research to specifically recommend policies for controlling outbreaks, especially pandemics, based on economic characteristics at the regional level. Provincial level study was conducted by Eichenbaum & Tate (2022) in Georgia to investigate the impact of economic disparities based on race and ethnicity on the severity of morbidity and mortality of the COVID-19 outbreak. Meanwhile Khan et al. (2022) conducted research at the household level to assess socio-economic vulnerability during the COVID-19 pandemic.

This research aims to provide recommendations for controlling infectious disease outbreaks at the regional level based on economic characteristics. Controlling disease outbreaks is aimed at the pandemic severity prevention and reduction consisting of cases of infection, recovery and death due to

COVID-19. Recommendations for interventions to control the COVID-19 pandemic were prepared based on case studies in districts and cities on the islands of Java and Bali in 2021.

Materials and Methods

This research analysed the severity of the COVID-19 pandemic on the island of Java-Bali for the period of May to July 2021 or the time when the Delta variant wave experienced a peak in daily infection cases. The COVID-19 cases as an health outcome in this study is defined as the severity of the outbreak which includes the incidence of infection, recovery and death cases. COVID-19 incidence data was obtained from the 2021 National Disaster Management Agency pandemic report. Regional economic characteristics as a predictor in this research are secondary data from the 2020 Central Statistics Agency report. Regional economic characteristics consist of 23 predictor variables which composed into poverty, economic growth, income, and industry factors. The population and sample in this study were all district and city at the island of Java-Bali, and we collected data totally from 128 regions.

In this study, the health outcome variables consist of the infection, recovery and deaths cases where empirically intercorrelated. The infection incidence referred to the number of confirmed cases of COVID-19 based on examination of swab samples. The recovery cases were measured as the number of people declared cured of COVID-19 infection based on a medical diagnosis. The death cases were measured as the number of people who are medically declared dead based on physician considerations.

The poverty factors consist of variables that described the number of poor people, density of poor people each 1000 km2, ratio of poor people each 1000 inhabitants, poverty line in rupiah, number of households receiving social assistance, and the ratio of social assistance recipients each 100 residents. The economic growth factors were measured as the growth of Gross Regional Domestic Product (GRDP) between 2020 and 2021 as percentage. The income factors consist of variables that describe the income characteristics of the population including salaries of formal workers in rupiah, income of informal workers in rupiah, and the income gap between poor and rich as measured as Gini Index. Industrial factors consist of variables that describe the characteristics of regional industry, such as number of workers, density of workers each 1000 km2, ratio of workers each 100 population, number of service and commerce workers, density of service and commerce workers each 1000 km2, ratio of the number of service and commercial workers each 100 population, number of medium-large scale companies, number of micro-small scale companies, total number of companies, company density each 1000 km2, ratio of companies each 1000 workers, number of hotel rooms, and density of hotel rooms each 1000 km2.

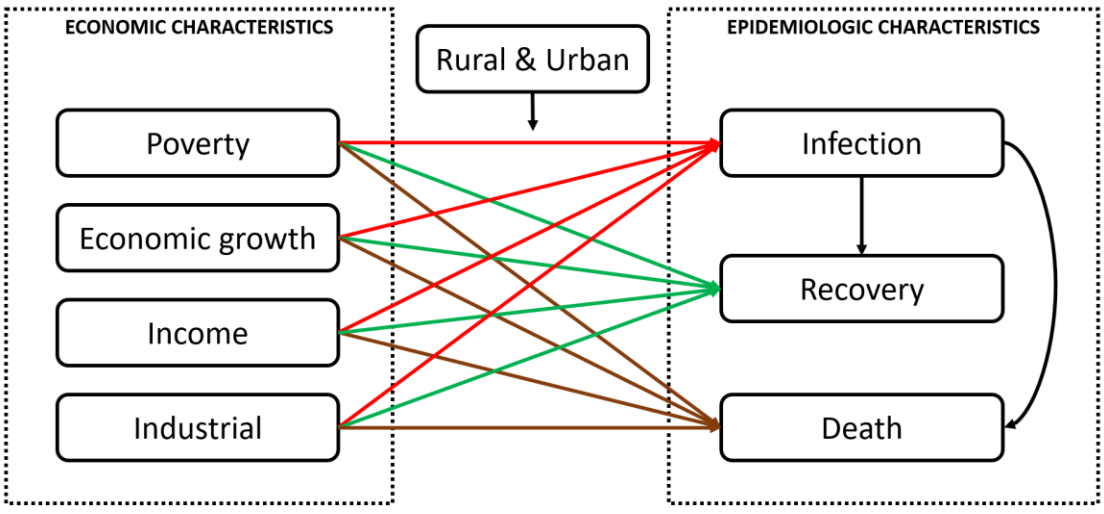

Figure 1: Conceptual framework for the association between economic determinants and COVID-19 infection, recovery, and death as intercorrelated health outcomes

All research outcomes are intercorrelated so that correlations between dependent and independent variables were analysed using the Multivariate Analysis of Variance model with a 95% confidence level to determine the significance of the influence of all regional economic characteristics to the health outcomes of the pandemic. The significancy of association was determined based on the p value parameter, if less than 0.05 the economic characteristic significantly influence the health outcomes. Pandemic prevention and handling policy were determined based on the value of exponential of regression model slope or exponential of □ parameter. Prevention policies determined for areas that have not yet been COVID-19 infected or zero cases are recommended if exponential of □ parameter less than 1. On the other hand, handling policy was determined for areas that have been COVID-19 outbreak affect and was recommended if exponential of □ parameter exceed of 1. We depicted the association between economic characteristics and COVID-19 case incidents in figure 1.

3. Results and Discussion

Epidemiologic and economic characteristics

We defined cases of COVID-19 infection, recovery and death as confirmed incidents obtained from the COVID-19 National Task Force report for the period of May to July 2024. This period is the peak of cases of the Delta variant of COVID-19 and experienced the highest daily peak of cases in June 2024 throughout the pandemic in Indonesia. Figure 2 describes the epidemiological characteristics of 128 districts/cities on the island of Java-Bali. The density of cases of infection, recovery and death tends to be more concentrated in the western region of the island of Java and Bali, particularly at Banten, West Java and DKI Jakarta provinces. The agglomeration area that consist of Jakarta, Bogor, Depok, Tangerang and Bekasi districts are the most congested region at Java and Bali isles. The density of death cases tends to spread along the island of Java-Bali compared to infection and recovery. Table 1 showed that there is a significant association between infection, recovery and death cases reciprocally. Based on these results, epidemiological indicators of the COVID-19 outbreak will be treated as intercorrelated variables for further analysis.

Table 1: COVID-19 incidence and association within group of 128 cities/regencies of Jawa-Bali 2021 (Chi-square test, $\alpha = 0.05$)

COVID-19 Incidence	**Mean**		**%**	**p-value (Prevalence Ratio)**	
				Infection	**Recovery**
Infection (case)	5427	> mean	21.1	-	-
		≥ mean	78.9		
Recovery (case)	3170	> mean	18.0	<0.001 (0.063)	-
		≥ mean	82.0		
Death (case)	125	> mean	28.9	<0.001 (3.577)	<0.001 (0.615)
		≥ mean	71.1		

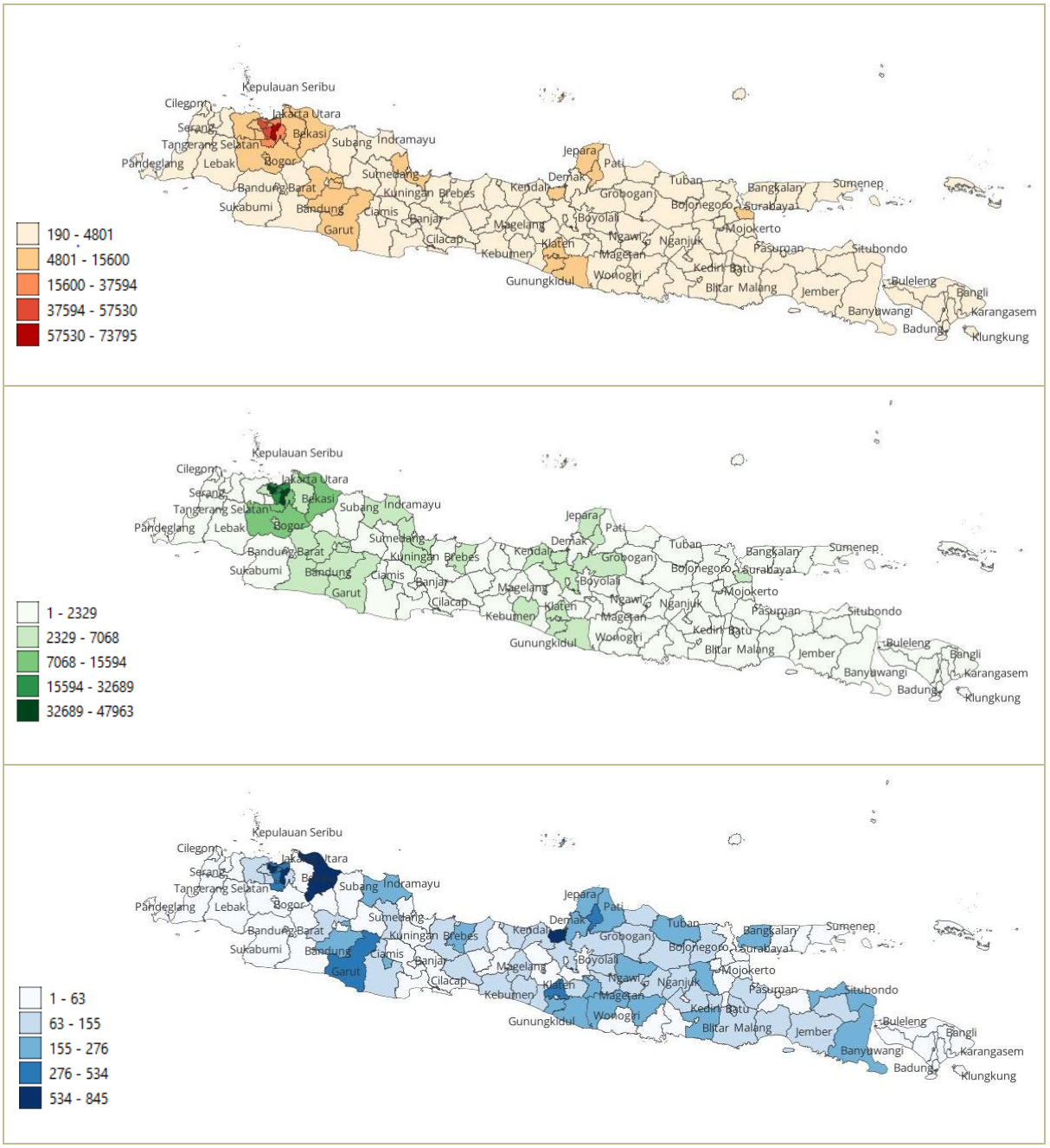

Figure 2: Distribution map of Covid-19 infection (red, upper), recovery (green, middle), and death (blue, lower) of 128 cities/regencies of Java and Bali isles 26 Mei – 15 Juli 2021

Table 2: Economic characteristics and individual association with COVID-19 infection, recovery, and death (Chi-square test, $\alpha = 0.05$)

Economic Characteristics	**Mean**	**% (>mean)**	**p-value (Infection)**	**p-value (Recovery)**	**p-value (Death)**
Poverty (peoples)	111062.1	46.1	0.372	0.181	0.572
Poverty density (each 10000 km^2)	2105.0	27.3	<0.001*	0.007*	0.867
Poverty ratio (each 1000 peoples)	92.5	39.8	0.001*	0.009*	1.000

Poverty line (rupiah per capita)	424439.1	39.8	0.003*	0.117	1.000
Social assistance (households)	79010.1	55.5	1.000	0.560	0.688
Social assistance ratio (each 100 households)	27.1	46.1	0.003*	0.058	0.339
Local GDP growth (percent)	-2.6	69.5	0.898	1.000	0.453
Worker's wage (rupiah)	2426749.7	31.3	<0.001*	0.002*	0.386
Informal worker's wage (rupiah)	1543187.3	35.2	<0.001*	<0.001*	0.154
Gini ratio (index)	0.344	45.3	0.002*	0.019*	0.774
Workforce (worker)	585436.8	43.0	<0.001*	<0.001*	0.070
Workforce density (each 1000 km^2)	1488.6	25.8	<0.001*	0.060	0.986
Workforce ratio (each 100 peoples)	49.1	50.8	1.000	0.316	0.910
Trade & services workforce (worker)	304516.8	32.0	<0.001*	<0.001*	0.127
Trade & services workforce density (each 1K km^2)	1023.1	24.2	<0.001*	0.035*	1.000
Trade & services workforce ratio (each 100 people)	25.1	37.5	<0.001*	0.020*	0.880
Middle-up enterprises (corporate)	194.2	25.0	<0.001*	<0.001*	0.311
Small and micro enterprises (corporate)	20745.7	43.8	0.148	0.468	0.606
Total enterprises (corporate)	21938.1	42.2	0.205	0.575	0.725
Industry density (each 1000 km^2)	45.9	30.5	0.003	0.081	0.924
Industry ratio (each 1000 workers)	44.8	42.2	0.001	0.001	0.405
Hotel room (unit)	3772.2	23.4	<0.001*	0.005*	1.000
Hotel room density (each 1000 km^2)	24.3	19.5	0.021	0.244	1.000

Table 2 shows the economic characteristics of 128 regencies/cities of Java and Bali in 2020. Most of regencies/cities (almost 70%) were experienced GRDP growth of less than -2.6%, around 80% had a low density of hotel rooms or below 24 .3 rooms per 1000 km2, three quarters of which have a number of companies less than 194.2, and a worker density less than 1489 per 1000 km2. Based on chi-square test, from 23 economic characteristics we got 15 factors that had significantly associate with infection cases, 11 factors that significantly associate with recovery, and there are no factors that significantly associate with of death cases.

Poverty

There were two groups of characteristics that had a significance influence to the infection cases, such as poverty (poverty density and income of informal workers), and industry (ratio of number of workers, number of service and commercial workers, and number of large and medium scale companies), see table 3. Based on the exp(β) parameter, the characteristics of poverty density, worker ratio, number of service and commercial workers, and number of large-medium scale companies are prevention factors to infection cases.

In order to prevent, control, and reduce infectious disease outbreak, poverty in regional area should be reduced that evidently in 2009-2010 anthrax outbreak in Bangladesh (Chakraborty et al., 2012), cholera

outbreak in Uganda (Bwire et al., 2017), and the Lassa Fever outbreak in Nigeria (Gulumbe et al., 2023). However, the effect of poverty to the three outbreaks mentioned had a different direction from the COVID-19 outbreak that analyzed in this study. Our analysis is in line with (Lancaster et al., 2022), that poverty has a negative effect on COVID-19 infection cases, although there are different in defining COVID-19 outcomes. We defined COVID-19 infections as the total incidence of confirmed cases, whereas Lancaster used household waste concentration to measure COVID-19 virus cases.

Table 3: The effect model of poverty factors to Covid-19 infection and recovery (MANOVA, $\alpha < 0.05$)

COVID-19 Incidence	**Economic Characteristics**	**p value**	**Exp(B)**	**Exp(B) 95%CI**
Infection	Poverty density (each 10000 km^2)	0.001	0.620	0.472 – 0.815
Recovery	Poverty density (each 10000 km^2)	0.045	1.332	1.007 – 1.762

The effect of poverty density on infection cases was negative and a prevention factor for area that has not experienced an infectious disease outbreak. Further the prevention effort was prioritized in areas with a lower density of poor people. From this result, prevention was prioritized in urban areas because most of them (93.5%) were areas with a lower density of poor people. To explain the mechanism by which poverty contributes to COVID-19 infection cases, we will focus on exploring individual behavior and characteristics of non-poor regions facing the pandemic. Based on the definition we had mentioned, non-poor people are community who have reserves of resources to spend on secondary and tertiary needs, such as traveling, traveling to other areas and so on. This activity generates non-poor residents at risk contact of COVID-19, so it could be concluded that areas with a low density of poor people are more at risk of being struggled with pandemic. A national survey of wealthy residents in urban China by Zhao & Yu (2021) showed that high mobility activities are significantly associate with an increase in residents' income. COVID-19 is an air-borne disease through droplets or material contaminated with the virus both indoors and outdoors. Prohibiting the people mobility during a pandemic is scientifically the right policy, but this implementation required attention to avoid further harm. Our analysis recommended that strict control of the COVID-19 pandemic could be carried out in urban areas with high poverty densities.

This study also provided evidence that poverty density had a positive effect or risk factor to recovery cases, so that the higher the poverty density the higher the recovery cases. This result had implication that if an area had experienced an CVID-19 outbreak, the hospitalization could be prioritized in high density of poor people areas. From this result, the priority for COVID-19 treatment or hospitalization could conducted in urban areas because most of them (82.9%) were areas with a high density of poor people. How did poverty density contribute to COVID-19 recovery bases? The district or city poverty profile depicted the less regional economic growth. Poverty and income inequality contributed negatively to economic growth (Zhu et al., 2022). The increasing of regional gross domestic product as a proxy for economic growth could improve the healthier and more productive workforce that increase the level of public health status (Esen & Çelik Keçili, 2022). The results of this research strengthen the hypothesis that there is a relationship between the density of poverty and COVID-19 recovery cases.

This study criticized epidemic control policies that do not pay attention the intervention priority merely based on the poverty characteristics of the population. Pandemic prevention policies such as mobility and activity restrictions should be prioritized at rural when an area still has not yet infecting the

infectious disease. Likewise, if an area had been infected, the policy of strengthening hospitalization should be focused at urban areas.

Income

The income factors that influenced the severity of the COVID-19 outbreak were the wages of informal workers and the salaries of formal workers. The income of informal workers significantly influenced infection and death case, while the salary of formal workers significantly influenced the death case. Workers' income, both as self-employed workers and wage-earning workers, had strongly correlated with health status (Hessels et al., 2020). Worker's salaries could be conducted as a proxy for population's income at one area based on evidence that high salaries workers are more likely to have health insurance and other health benefits, receive health checks from doctors, and receive preventive health services (Collins et al., 2004). Thus, areas with a high average worker salary tend to have a higher level of health and could be prevented from the spreading of disease outbreaks

The efforts to control infection cases based on worker income could not be applied for the areas that have not yet been affected the outbreak. The areas with lower incomes of informal workers were 1.27 times more likely to experienced incidents of COVID-19 infections. This result had the implication that if an area had been infected, the effort to reduce infection cases was prioritized at areas with lower incomes informal workers. From this result, the priority was given to rural area that had 72% lower incomes informal workers. COVID-19 infection posed an increasing risk to individuals with low incomes, who are unemployed, and do not receive unemployment benefits. This difference was higher in the female group and when the second wave of the pandemic occurred (Aguilar-Palacio et al., 2021). People with low incomes tend to live in slum and densely populated settlements, work with high levels of contact with other people and have high comorbid conditions, so they are more susceptible to being attacked by the COVID-19 virus (Demenech et al., 2020). At the group or community level, Kjøllesdal et al. (2022) reported a negative relationship between income and cases and hospitalization due to COVID-19.

The efforts to control death cases based on worker income could be implemented as prevention and handling death cases. In COVID-19 zero death rate areas, the prevention efforts were prioritized in areas with higher wages formal workers, both in urban and rural areas. Meanwhile, in areas where COVID-19 deaths had occurred, the efforts to reduce the death rate was prioritized in areas with higher incomes informal workers or in urban area. The results of this study was in line with previous one that showed a negative relationship between income per capita and the COVID-19 death rate in hospitals (Lorenz et al., 2021).

Table 4: The effect model of income factors to Covid-19 infection and death (MANOVA, $\alpha < 0.05$)

COVID-19 Incidence	Economic Characteristics	p value	Exp(B)	Exp(B) 95%CI
Infection	Informal worker's wage (rupiah)	0.005	1.269	1.077 – 1.496
Death	Informal worker's wage (rupiah)	0.027	1.332	1.034 – 1.718
Death	Worker's wage (rupiah)	0.009	0.691	0.524 – 0.911

Industry Sector

Industrial factors that significantly influenced infection cases were the workers ratio, the service and commercial workers, and the medium-large scale companies. Previous studies had shown that service workers are a group that is more contact risk along with the outbreak. An observational study of six countries in Asia showed that 15% of the total COVID-19 cases at the beginning of the pandemic occurred through transmission in the workplace. The types of high risk workers in this study after a 40-day follow-up were health service workers, drivers and transportation workers, service and sales workers, cleaning and housekeeping workers, and public security officers (Lan et al., 2020). Health care workers are at highest risk among the essential workers (Nwaru et al., 2022).

The influence of industrial factors on death cases was negative or as prevention factor. This implication of result is the efforts to prevent infection cases are prioritized in areas with higher labor ratios, the number of service and commercial workers, and the number of medium-low scale companies if the areas had not yet been outbreak affected. In this study, intervention priority based on industrial factors tend to be applied both at urban and rural areas. Macro-scale company and industry conditions significantly influenced the COVID-19 cases in the workplace. Studies in California showed that the COVID-19 outbreak occurred at least 60% in manufacturing, retail trade, and transportation and warehousing industry, furthermore the manufacturing industry was the highest contributor (Contreras et al., 2021).

Table 5: The effect model of industry factors to Covid-19 infection and recovery (MANOVA, $\alpha < 0.05$)

COVID-19 Incidence	Economic Characteristics	p value	Exp(B)	Exp(B) 95%CI
Infection	Workforce ratio (each 100 peoples)	0.048	0.888	0.789 – 0.999
Infection	Trade & services workforce (worker)	0.001	0.722	0.601 – 0.866
Infection	Middle-up enterprises (corporate)	0.008	0.795	0.672 – 0.941
Recovery	Workforce density (each 1000 km^2)	0.002	0.446	0.266 – 0.747
Recovery	Trade & services workforce (worker)	0.004	1.319	1.095 – 1.590
Recovery	Middle-up enterprises (corporate)	0.008	1.263	1.063 – 1.501

The industry factors that significantly influenced COVID-19 recovery were labour density, the number of service and commercial sector workers, and the number of medium-large scale companies. The effect of labour density to recovery cases is negative or as a prevention factor. This result concluded the implication that the prevention efforts to infection cases were prioritized in areas with higher labour density if had not yet been infected. In this study, high labour density area are urban. Meanwhile, the number of service and commercial workers and the number of medium-large scale companies had positively significance association with recovery cases. The higher the number of workers in the service and commercial sectors and medium-large scale companies, the higher the risk of recovery. We concluded that the hospitalization efforts are prioritized in high number of service & commercial sector workers and large-scale company areas if had experienced a decline in recovery cases. From this study, efforts to strengthen hospitalization were carried out in urban areas. Previous study conforming the result, that the risk of COVID-19 hospitalization in the UK is related to work (Batty et al., 2020), meanwhile based on an observational study of workers aged 20 – 65 years in Sweden, it was found that

essential workers have an increased risk of being diagnosed, experiencing hospitalization and receiving treatment intensive due to COVID-19.

Conclusion

This research proofed that the economic characteristics of a region are significantly influenced the COVID-19 pandemic health outcomes (see table 6). Furthermore, we proposed a non-pharmaceutical intervention policy framework to prevent and handle the future infectious disease outbreaks based on the regional economic characteristics. The restriction of mobility was prioritized in high poverty density area to prevent the emergence of infection cases, and in high incomes informal workers area to reduce infection cases. The Work from Home policy to prevent infection cases was prioritized in higher workforce ratio area. Reducing physical activity in public space was held to prevent cases of infection that prioritized in higher ratio of service to commercial workers area. The reducing of company operating hours policy was proposed to prevent infection case particularly in higher number of middle-up scale companies area.

The centralizing isolation facilities policy was carried out to prevent the longer time treatment process, particularly in higher workforce density area. To speed up the treatment process, empowering hospitalization resources policy was proposed, especially in higher density of poverty, service and commercial workers, and middle-up scale companies area. Empowering hospitalization resources could be proposed to prevent deaths, especially in higher wages formal workers area. Finally, an intensive-care resources empowering policy was proposed to reduce deaths case that prioritized in greater number of medium-large companies area.

Table 6: Preventing and handling policy recommendation to outbreak control

Outbreak Incidence	**Policy**	**Condition of priority area**	**Non- Pharmaceutical Intervention**
Infection	Preventing	Higher poverty density	Mobility restriction
		Higher workforce ratio	Work from home
		Higher trade & service workforce	Reducing physical groceries activity
		Higher middle-up enterprises	Reducing operational of M&B enterprises
	Handling	Higher informal worker's wage	Mobility restriction
Recovery	Preventing	Higher workforce density	Centralized isolation facility
	Handling	Higher poverty density	Hospitalization resources empowering
		Higher trade & service workforces	Hospitalization resources empowering
		Higher middle-up enterprises	Hospitalization resources empowering
Death	Preventing	Higher worker's wage (rupiah)	Hospitalization resources empowering
	Handling	Higher middle-up enterprises	Intensive-care resources empowering

It is important for government to conduct the pandemic mitigation based on the regional economic characteristics. The local government in district or city level should take full responsibility to identifying and controlling their economic characteristics such as poverty, income, economic growth and industry when pandemic emerge in the future. Local health authority should be reinforced with adequate sectional economic data to mitigate the risk of future pandemic as prepare and response countermeasures. Public health and economics sciences scholars should investigate the long-term effect of region economic characteristics to health outcome of post-pandemic with wider scope and region.

This study is cross-sectional research design so that we couldn't justify the correlation between economic characteristics and pandemic's health outcomes as causal-effect association. Subject of research are districts and cities at Java and Bali only, so we couldn't replicate the result of study to other islands in Indonesia such as Sumatera, Kalimantan, Nusa Tenggara, Maluku, and Papua that consist of 27 from 34 or almost 80% from all provinces. We suggest the future study that equip with longitudinal data and cover up to all provinces to address the potential bias.

Declaration of Interest Statement

The authors declare that they have no conflict of interests.

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