



## *Analysis of Cyclical Unemployment Impacted by Covid-19 in Indonesia: Inter-Island Study Based on 2020 Sakernas Data*

### **Analisis Pengangguran Siklikal Terdampak Covid-19 di Indonesia: Kajian Antar Pulau Berdasarkan Data Sakernas 2020**

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#### Abstract

*This study is motivated by the rise of cyclical unemployment during the Covid-19 recession, particularly in the form of temporary layoffs. Temporary unemployment differs from permanent unemployment because workers still have the possibility of being recalled to their jobs. This study aims to analyze the risk of individuals across Indonesian islands becoming temporarily unemployed due to Covid-19 and to examine the probability of receiving a job recall guarantee. A quantitative approach was employed using microdata from the August 2020 National Labor Force Survey (Sakernas), analyzed through logistic regression. The findings from 13,805 samples show that the highest risk of temporary unemployment occurred in Bali and Nusa Tenggara, especially in urban areas, where the risk was 4.348 times higher than in other islands. Young workers aged 15–24 also faced a 1.647 times higher risk. These results reflect the region's dependence on tourism.*

Penelitian ini dilatarbelakangi oleh meningkatnya pengangguran siklis selama resesi akibat pandemi Covid-19, terutama dalam bentuk pengangguran sementara atau *temporary layoff*. Pengangguran sementara berbeda dari pengangguran permanen karena masih memiliki peluang untuk dipanggil kembali bekerja. Penelitian ini bertujuan menganalisis risiko individu antar pulau di Indonesia mengalami pengangguran sementara akibat Covid-19 serta peluang memperoleh jaminan dipanggil kembali bekerja. Penelitian menggunakan pendekatan kuantitatif dengan data mikro Survei Angkatan Kerja Nasional (Sakernas) Agustus 2020 dan dianalisis menggunakan regresi logistik. Hasil penelitian terhadap 13.805 sampel menunjukkan bahwa risiko pengangguran sementara tertinggi terjadi di wilayah Bali dan Nusa Tenggara, terutama di daerah perkotaan dengan risiko 4,348 kali lebih tinggi dibandingkan pulau lain. Penduduk muda usia 15–24 tahun juga memiliki risiko 1,647 kali lebih tinggi. Temuan ini berkaitan dengan ketergantungan ekonomi wilayah tersebut pada sektor pariwisata.

## INTRODUCTION

Indonesia experienced severe multidimensional disruption during the Covid-19 pandemic, affecting not only public health but also economic and social activities. Regional quarantine measures and social restrictions limited mobility, constrained economic transactions, and slowed the circulation of goods and services, thereby weakening national economic growth (Chaplyuk et al., 2019; Whitehead et al., 2021). This economic contraction subsequently increased unemployment (Coibion et al., 2020), with developing countries experiencing deeper economic pressure than developed economies. In Indonesia, the most severe impact occurred in the second quarter of 2020, when economic growth reached its lowest level at -5.32%.

The pandemic also disrupted global labour markets through a sharp decline in working hours, particularly in developing countries. ILO (2020) reported that global working hours fell by 5.4 percent in the first quarter of 2020 and worsened to 14 percent in the second quarter, equivalent to nearly 400 million full-time jobs. This condition increased reduced working hours, temporary layoffs, and unemployment, although the magnitude varied across countries depending on economic structure and policy responses (Grainca, 2022). The Covid-19 recession generated cyclical unemployment, much of which appeared as temporary unemployment rather than permanent joblessness; therefore, distinguishing temporary unemployment from permanent unemployment is crucial to avoid overestimating unemployment and to understand recall dynamics (Notowidigdo et al., 2020; Hall & Kudlyak, 2022). Since empirical studies on Covid-19-related cyclical unemployment in Indonesia remain limited and often focus on specific provinces, this study examines inter-island differences in temporary unemployment risk, recall probability, and the potential transition of unrecalled workers into permanent unemployment.

Unemployment refers to working-age individuals who are not employed but are willing and actively seeking work. The OECD defines unemployment as being without a job while seeking employment, while the ILO emphasizes active efforts to enter the labour market; in Indonesia, Statistics Indonesia also includes individuals seeking work, preparing a business, or having a job that has not yet started (OECD, 2022; ILO, 2020). Theoretically, unemployment can be explained through classical, Keynesian, and Malthusian perspectives. The classical view sees unemployment as temporary resource misallocation that can be corrected through wage adjustment and market mechanisms, whereas Keynesian theory argues that unemployment is driven by insufficient aggregate demand and therefore requires government intervention to stabilize income, consumption, and private-sector job creation. Malthusian theory further explains unemployment as the result of an imbalance between rapid labour force growth and limited employment opportunities, which intensifies competition in the labour market (Gilarso, 2004; Sukirno, 2015).

Cyclical unemployment arises during recessions when firms reduce production and labour demand (Indeed, 2022). The Covid-19 pandemic acted as a recessionary shock by disrupting supply through mobility restrictions and demand through changing household expenditure patterns (Baqae & Farhi, 2020). In this context, temporary layoff became a major form of cyclical unemployment because workers could remain attached to their previous employers and expect recall, although some may lose this guarantee and shift into permanent unemployment or exit the labour market (Gertler et al., 2022; Hall & Kudlyak, 2022). In Indonesia, temporary layoffs created income uncertainty, as many workers received reduced or no wages while firms used efficiency measures to sustain operations under labour regulations (Anggi, 2022; Widiastiani, 2021). Although wage adjustments were permitted through employer-worker agreements, recall was not guaranteed, leaving workers vulnerable to prolonged unemployment or replacement (Rommalla, 2020).

## METHODOLOGY

This study employs a quantitative approach to examine the relationship between variables and empirically test the underlying theoretical framework. Quantitative research relies on measurable data collected through research instruments and analyzed using statistical procedures, allowing objective assessment of variable relationships (Creswell, 2017).

### Source of Data

This study uses microdata from the August 2020 National Labour Force Survey (Sakernas), conducted by Statistics Indonesia (BPS) to capture labour market conditions between census periods.

The August 2020 Sakernas is particularly relevant because it was the first Sakernas to include specific questions on the impact of COVID-19 on employment. From a total sample of 793,202 respondents, the analysis focuses on employment-related individual data. The study area is classified into seven regional proxies: Indonesia as a whole, Sumatra, Java, Bali and Nusa Tenggara, Kalimantan, Sulawesi, and Maluku and Papua. This regional grouping enables the study to examine inter-island differences in the risk of temporary unemployment and recall probability during the COVID-19 pandemic.

### Analysis Techniques and Research Models

This research uses logistic regression analysis techniques. Logistic regression is an approach to creating prediction models, such as linear regression (ordinary least squares). The difference is that in logistic regression, the dependent variable is on a dichotomous scale. A dichotomous scale is data with two categories, for example: Yes and No, Good and Bad, or High and Low (Gujarati & Porter, 2012)

This research adapts a logistic regression model from research (Singh et al., 2022) to test the impact of the Covid-19 pandemic on the labor market through some predictor variables, as in equation 1:

$$Y_{it} = \alpha_i + \theta_{month} + \tau_{year} + \delta_{prov} + \beta_1 COV_{it} + \sum_{j=1}^4 \rho_j X_{ijt} + \sum_{j=1}^3 \lambda_j (COV_{it} \times X_{ijt}) + \varepsilon_{it} \quad (1)$$

Where  $Y_{it}$  is unemployed.  $COV$  is observation during Covid-19,  $X_1$  is education (1= Bachelor's degree or above).  $X_2$  is immigration status (1=residing in Canada for more than 10 years),  $X_3$  is gender (1=female),  $X_4$  is marital status (1+married)  $\theta_{month}$  and  $\tau_{year}$  and  $\delta_{prov}$  is monthly data, year, and province considered a fixed effect.  $(COV_{it} \times X_{ijt})$  estimates interaction effects to assess the simultaneous effects of COVID-19 and other independent variables.

From equation 1 above, this research modified a number of research variables according to the availability of data in the August 2020 Sakernas. The results of modifying equation 1 above became the First Model (YTemporary Layoff) as seen in equation 10. Temporary Unemployment Model affected by Covid-19 (YTemporary Layoff). In theory, cyclical unemployment is unemployment caused by a downturn in the economic cycle. In this research, cyclical unemployment is unemployment due to being laid off from work temporarily due to the COVID-19 pandemic. So, the operational definition of cyclical unemployment here is YTemporary Layoff with a value of 1 if the sample respondent is one who temporarily stopped working for COVID-19 reasons. This is accommodated by the Sakernas questionnaire numbers r10a and r10c.

$$\text{LogitYTemporary Layoff(Indonesia, Pulau)} = \text{Ln}(\text{Odds}(P)) = \text{Ln}\left[\frac{P_i}{1-P_i}\right] = \beta_0 + \beta_1 KW + \beta_2 JK + \beta_3 Age + \beta_4 SK + \beta_5 Pend + \beta_6 Kur + \beta_7 Sektor + \beta_8 JP + \beta_9 Upah \quad (2)$$

For the Second Model, the YTemporary Layoff variable in equation 2 is modified to YRecall as seen in equation 3. The temporary unemployment model affected by Covid-19, with a guarantee of being called back to work (YRecall), is accommodated by Sakernas questionnaire numbers r10a, r10c, and r10d. The category that will be used is YRecall, with a value of 1 if the sample respondent temporarily stops working due to COVID-19, with the guarantee of being called back to work in their current work unit, and a value of zero otherwise.

$$\text{LogitYRecall(Indonesia, Pulau)} = \text{Ln}(\text{Odds}(P)) = \text{Ln}\left[\frac{P_i}{1-P_i}\right] = \beta_0 + \beta_1 KW + \beta_2 JK + \beta_3 Age + \beta_4 SK + \beta_5 Pend + \beta_6 Kur + \beta_7 Sektor + \beta_8 JP + \beta_9 Upah \quad (3)$$

#### Description:

Y Temporary Layoff is the dependent variable: 1 is temporary unemployment due to Covid-19 or 0 otherwise;

YRecall is the dependent variable: 1 if temporary unemployment due to Covid-19 has a guarantee of being called back to work or 0 otherwise;

$P_i$ : Higher opportunity/risk of Y

1-  $P_i$ : Lower chance/risk of Y

The variable Indonesia, Island is the division of the research area, namely based on the territory of Indonesia and based on the large islands in Indonesia (Sumatra, Java, Bali, Nusa Tenggara, Kalimantan, Sulawesi, Maluku, and Papua)

$\beta_0$  is the intercept/constant, namely the value of the dependent variable when the independent variable = 0;

$\beta_{1 \text{ to } 9}$  = logistic regression coefficient, namely the magnitude of the risk/chance of the dependent event (Y) occurring due to the independent variable (X);

$X_{1 \text{ to } 9}$  is an independent variable, consisting of:

1. KW is a regional classification: 1 if urban and 0 if rural;
2. JK is Gender: 1 if Female and 0 if Male;
3. Age is the Age category: 1 if Young Age (15 to 24 years) and 0 if Adult Age  $\geq$  25 years);
4. SK is Marital Status: 1 Not Married and 0 if Married/Ever Married;
5. Pend is Education: 1 if education is low (only up to junior high school), and 0 if education is upper secondary (at least high school);
6. Skill is: 1 if you have never taken a course and 0 if you have taken a course;
7. Sector is: 1 if Informal and 0 if Formal.
8. JP is Job Type: 1 if Business Personnel/Operator/Executor and 0 if working as a Professional/ Official/ Managerial Personnel. Wages are: 1 if below the 2020 average wage and 0 if above the 2020 average wage.

## RESULT AND DISCUSSION

### Descriptive Analysis

#### Data Cleaning and Filtering Process

Before the data is processed, a cleaning and filtering process is carried out. The data cleaning process is to remove empty data, while data filtering is carried out to separate and select data according to research objectives. Of the 793,202 Sakernas sample data in August 2020, only 13,805 samples were used as the unit of data analysis in this research for all of Indonesia. To see the impact of cyclical unemployment between islands, in this research, the data were filtered into 6 (six) large island groups, namely: 1) Sumatra Island, 2) Java Island, 3) Bali and Nusa Tenggara Islands, 4) Kalimantan Island, 5) Sulawesi Island, and 6) Maluku and Papua Islands. The results are as in Table 1.

**Table 1. Distribution of Data Analysis Units Inter Islands in Indonesia**

Island	Observation N	% N
Sumatera	3,636	26
Java	4,042	29
Bali and Nusa Tenggara	1,489	11
Kalimantan	1,406	10
Sulawesi	2,074	15
Maluku and Papua	1,158	9
INDONESIA	13.805	100

Sumber: Sakernas Agustus 2020

Java contributed the largest sample share at 29 percent, while Maluku and Papua had the smallest at 9 percent, reflecting Indonesia’s uneven inter-island population distribution.

#### Characteristics of Temporary Unemployment Affected by COVID-19

The analytical sample is examined across Indonesia and by island, focusing on workers experiencing Covid-19-induced temporary layoff and those with recall guarantees. In general, affected workers were concentrated in urban areas, except in Maluku and Papua, where rural workers dominated. Most were male, aged 25 years and above, married or formerly married, low-educated, without training experience, employed as business personnel, operators, or executors, and earned below the 2020 average wage. Sectorally, most were formal workers, although Sumatra and Sulawesi were dominated by informal employment, while Maluku and Papua showed a balanced formal–informal distribution.

**Table 2. Characteristics of Cyclical Unemployment Impacted by Covid-19**

No	Characteristics/ Region	Indonesia	Sumatera	Java	Bali and Nusa Tenggara	Kalimantan	Sulawesi	Maluku and Papua
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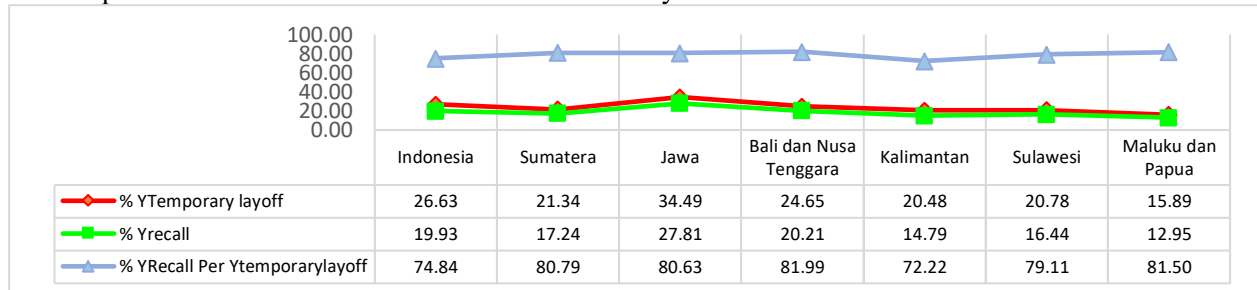
	YTL	YR	YTL	YR	YTL	YR	YTL	YR	YTL	YR	YTL	YR	YTL	YR
1 Regional Classification							Urban							Rural
2 Gender							Male							
3 Age							Adult Age (≥ 25 th)							
4 Marital Status							Married/Ever Married							
5 Education							Low Education (only up to junior high school)							
6 Skill							Never took a course							
7 Sector		Formal	Informal	Formal				Informal	Formal	=				
8 Type of Work							Business Personnel/Operators/Executors							
9 Wage							Below 2020 Average Wage (< 2.76 Million)							

Source: Sakernas August, 2020

Description: YTL (YTemporary Layoff), YR (YRecall)

**Distribution of Temporary Unemployment Impacted by COVID-19**

Temporary layoff is central to understanding cyclical unemployment because workers who lose recall guarantees may shift into permanent joblessness (Gertler et al., 2022). In Indonesia, Covid-19-related temporary unemployment ranged from 15 to 35 percent across islands, with Java recording the highest share and Maluku–Papua the lowest. Nationally, 26.63 percent of workers experienced temporary unemployment, while 19.93 percent had recall guarantees, indicating that nearly 75 percent were expected to return to work after economic recovery.



Source: Sakernas August 2020, processed

Graph 2. Distribution of Cyclical Unemployment in Indonesia

Covid-19 caused 26.63 percent of Indonesia’s workforce to temporarily stop working, reflecting the emergence of pandemic-induced cyclical unemployment, while 73.37 percent experienced temporary unemployment for non-Covid-related reasons. Among affected workers, 19.93 percent had recall guarantees, indicating that around 74.84 percent were expected to return to their previous jobs after recovery. Across islands, Java recorded the highest share of cyclical unemployment, while Maluku and Papua had the lowest. However, Bali and Nusa Tenggara showed the highest recall rate, whereas Kalimantan recorded the lowest, indicating substantial inter-island variation in both temporary unemployment and recall probability.

**Risk of becoming Temporarily Unemployed Affected by Covid-19 (YTemporaryLayoff Model)**

To see the variables that pose a significant risk of becoming temporarily unemployed as a result of Covid-19, look at the results of the partial test of the *YTemporaryLayoff* Model with a confidence level of 95%, if it is less than  $\alpha$  (0.05), then reject  $H_0$ , meaning the independent variable has a significant effect. The results can be seen in Table 3.

**Table 3. P value |z| YTemporaryLayoff Model Partial Test Results**

Variable	Indonesia (Robust)	Sumatera (Robust)	Java (Robust)	Bali and Nusa Tenggara	Kalimantan (Robust)	Sulawesi	Maluku and Papua
KW (Regional Classification)	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*
JK (Gender)	0.445	0.338	0.022*	0.189	0.439	0.000*	0.329
Age	0.956	0.224	0.482	0.065	0.962	0.817	0.199
SK (Marital Staus)	0.000*	0.000*	0.000*	0.037*	0.036*	0.001*	0.068

Pend (Education)	0.001*	0.214	0.297	0.436	0.01*	0.078	0.001*
Skill (Training)	0.000*	0.008*	0.314	0.000*	0.052	0.140	0.505
Sector (Formal-Informal)	0.000*	0.003*	0.000*	0.000*	0.066	0.000*	0.000*
JP (Type of Work)	0.754	0.008*	0.889	0.000*	0.017*	0.223	0.570
Wage	0.000*	0.001*	0.001*	0.795	0.077	0.797	0.821
<i>Pseudo R2</i>	0.0793	0.0662	0.0576	0.196	0.0725	0.0682	0.0674
<i>Prob &gt; chi2</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observation N	13,805	3,636	4,042	1,489	1,406	2,074	1,158

Source: Sakernas, August 2020; Processed, \*Significance 95%

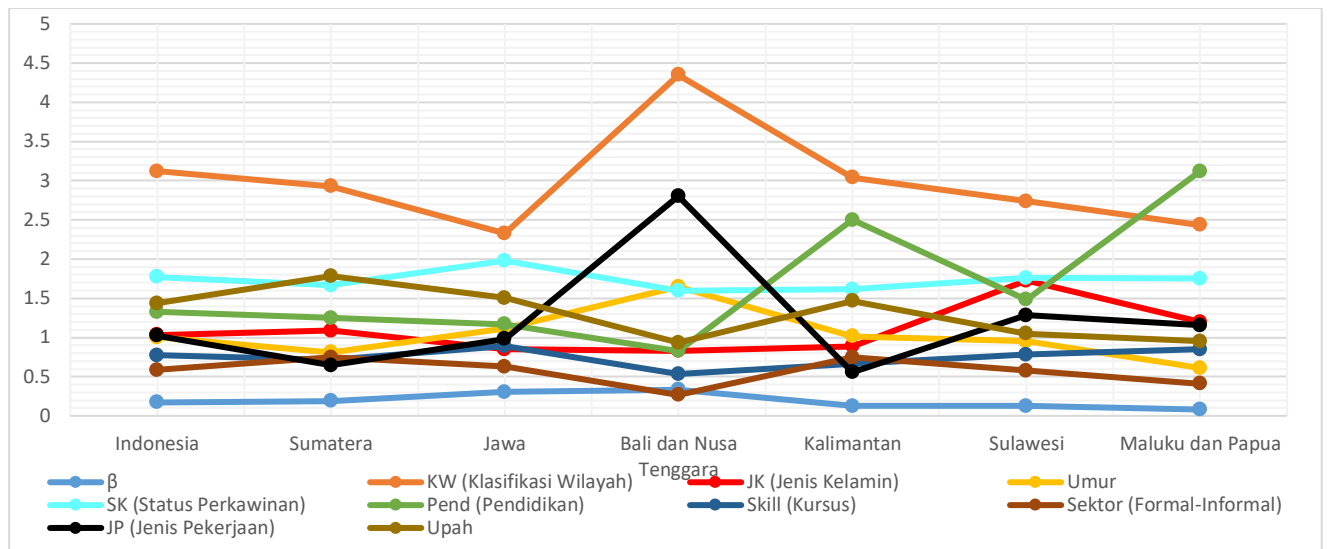
Covid-19-induced temporary unemployment in Indonesia is influenced by several variables, although the effects vary across islands. Regional classification is the only factor consistently significant in all regions, while gender, age, education, skills, employment sector, type of work, and wages show heterogeneous effects. Based on the odds ratio, Bali and Nusa Tenggara have the highest risk, particularly among urban workers, young workers aged 15–24, and those employed as business personnel, operators, or executors.

**Table 4. Nilai Odds Ratio Model 1-Y Temporary Layoff**

YTemporary Layoff	Indonesia	Sumatera	Java	Bali and Nusa Tenggara	Kalimantan	Sulawesi	Maluku and Papua
B	0.173	0.189	0.305	0.333*	0.125	0.124	0.081
KW (Regional Classification)	3.121	2.930	2.328	4.348*	3.040	2.738	2.435
JK (Gender)	1.033	1.087	0.849	0.829	0.888	1.727	1.196
Age	1.004	0.813	1.112	1.647*	1.013	0.950	0.611
SK (Marital Status)	1.773	1.666	1.980*	1.596	1.615	1.758	1.751
Pend (Education)	1.326	1.247	1.169	0.826	2.498	1.483	3.120*
Skill (Training)	0.773	0.715	0.890*	0.534	0.662	0.780	0.849
Sector (Informal-Formal)	0.587	0.748*	0.629	0.267	0.748*	0.576	0.409
JP (Type of Work)	1.025	0.644	0.981	2.802*	0.557	1.281	1.156
Wage	1.438	1.783*	1.506	0.935	1.466	1.049	0.950

Source: Sakernas August 2020, Processed; \*largest OR

Urban residents in Indonesia face a substantially higher risk of temporary unemployment, with odds approximately three times greater than those of rural residents. Unmarried individuals are also 1.7 times more likely to become temporarily unemployed than married or formerly married individuals. Although education has a significant effect, its magnitude is relatively modest, as individuals with low education are only 1.3 times more likely to experience temporary unemployment than those with secondary or higher education.



Source: Sakernas August 2020, processed

Figure 3. Recap of the Odds Ratio for the Risk of Temporary Unemployment

Based on the significance tests and odds ratio values, Bali and Nusa Tenggara show the highest overall risk of Covid-19-induced temporary unemployment. Regional classification is the only factor that consistently affects temporary unemployment risk across all Indonesian islands, with urban residents more vulnerable than rural residents. Other variables have heterogeneous effects: gender is significant only in Java and Sulawesi, age is not significant in any region, marital status affects most regions except Maluku and Papua, while education, skills, employment sector, and wages influence temporary unemployment only in selected regions. This indicates that Covid-19-related cyclical unemployment was shaped by both regional disparities and individual labour market characteristics.

### Opportunities to be Called Back to Work for Temporarily Unemployed People Affected by COVID-19 in Indonesia (YRecall)

The partial test of the *YRecall* model shows that the determinants of recall guarantees for temporarily unemployed workers vary across Indonesian islands, as presented in Table 5. Regional classification is the only variable that consistently affects recall probability in all regions. Other variables show heterogeneous effects: gender is significant only in Sulawesi; age only in Bali–Nusa Tenggara and Maluku–Papua; marital status only in Indonesia, Java, and Sulawesi; education only in Kalimantan, Maluku, and Papua; skills only in Indonesia, Java, Bali, and Nusa Tenggara; employment sector in most regions except Sumatra and Kalimantan; job type in Sumatra, Bali–Nusa Tenggara, and Kalimantan; and wages in Indonesia, Sumatra, Java, and Kalimantan.

Table 5. P value |z| YRecall Model 2 Partial Test Results

$Y_{Recall}$	Indonesia (Robust)	Sumatera (Robust)	Java (Robust)	Bali and Nusa Tenggara (Robust)	Kalimantan	Sulawesi	Maluku and Papua
KW (Regional Classification)	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*
JK (Gender)	0.100	0.774	0.604	0.870	0.305	0.000*	0.532
Age	0.762	0.792	0.777	0.033*	0.861	0.983	0.027*
SK (Marital Status)	0.000*	0.085	0.001*	0.436	0.208	0.014*	0.271
Pend (Education)	0.067	0.919	0.300	0.402	0.038*	0.179	0.020*
Skill (Training)	0.000*	0.087	0.003*	0.031*	0.062	0.100	0.855
Sektor (Formal-Infomal)	0.000*	0.202	0.000*	0.000*	0.394	0.001*	0.005*

JP (Type of Work)	0.101	0.000*	0.385	0.002*	0.001*	0.794	0.909
Wage	0.000*	0.008*	0.001*	0.260	0.002*	0.764	0.987
<i>Pseudo R2</i>	0.0558	0.0517	0.0376	0.1479	0.0609	0.0516	0.0425
<i>Prob &gt; chi2</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observation N	13,805	3,636	4,042	1,489	1,406	2,074	1,158

Source: Sakernas, August 2020; Processed, \*Significance 95%

Based on the odds ratio of the *YRecall* model, Bali and Nusa Tenggara show the highest probability of recall, with temporarily unemployed workers being 3.9 times more likely to be called back to work than those in other regions. Young workers aged 15–24 and those employed as business personnel, operators, or executors in these islands also have relatively higher recall probabilities. In Sumatra, workers earning below the 2020 average wage have a 1.766 times higher chance of recall, while in Sulawesi, workers with low education show the highest recall probability at 2.245 times. Nationally, recall probability is mainly influenced by regional classification, marital status, skills, employment sector, and wages, while lack of skills and informal employment reduce the likelihood of being recalled.

**Table 6. Odds Ratio Value Model 2- Y Recall**

<i>Y<sub>Recall</sub></i>	Indonesia ( <i>Robust</i> )	Sumatera ( <i>Robust</i> )	Java ( <i>Robust</i> )	Bali and Nusa Tenggara ( <i>Robust</i> )	Kalimantan	Sulawesi	Maluku and Papua
B	0.154	0.184	0.242	<b>0.250*</b>	0.093	0.138	0.084
KW (Regional Classification)	2.698	2.626	2.08	<b>3.916*</b>	2.723	2.239	2.101
JK (Gender)	1.079	1.028	0.961	1.024	0.837	<b>1.724*</b>	1.136
Age	1.027	0.952	1.044	<b>1.766*</b>	1.057	0.995	0.319
SK (Marital Status)	1.447	1.292	1.532	1.212	1.387	<b>1.587*</b>	1.468
Pend (Education)	1.19	1.019	1.184	0.796	1.042	1.371	<b>2.245*</b>
Skill (Training)	0.748	0.787	0.702	0.662	0.664	0.747	<b>0.952*</b>
Sector (Informal-Formal)	0.682	0.871	0.71	0.366	0.864	0.629	0.528
JP (Type of Work)	0.87	0.524	0.882	<b>2.446*</b>	0.445	1.057	0.968
Wage	1.42	<b>1.662*</b>	1.537	0.729	2.048	0.942	1.003

Source: Sakernas August 2020, Processed; \*largest OR

Recall probability was higher among urban, unmarried, skilled, and formal-sector workers, with Bali and Nusa Tenggara showing the highest recall likelihood. This pattern reflects differences in individual characteristics and inter-island labour market structures. The high cyclical unemployment risk in Bali and Nusa Tenggara was mainly driven by their dependence on tourism, which was severely disrupted by COVID-19 mobility restrictions. Skilled workers faced higher temporary unemployment risk but also greater recall probability because firms were more likely to retain or rehire workers with specific training and skills (Cairó & Cajner, 2018), while less-skilled workers had fewer alternative job opportunities during the recession (Investopedia, 2021).

**Temporary Unemployed Without Guarantee Called Back to Work (Unrecalled)**

Temporarily unemployed workers without recall guarantees can be considered at risk of becoming permanently jobless or *unrecalled unemployed*. In Indonesia, the estimated share of workers who may have permanently lost their jobs due to the absence of recall guarantees is around 6.7 percent, with the highest concentration in Java and the lowest in Maluku and Papua. Conversely, Bali and Nusa Tenggara recorded the highest recall guarantee rate at 81.99 percent, indicating that approximately 82 out of every

100 temporarily unemployed workers in these islands were expected to return to their previous jobs after the Covid-19 pandemic.

**Table 7. Estimated Number of Permanent/Jobless Unemployed (Unrecalled)**

No	Analysis Area (Island)	% $Y_{Temporary\ layoff}$	% $Y_{Recall}$	% $Unrecall (Y_{Temporary\ layoff} - Y_{Recall})$
1	Indonesia	26.63	19.93	6.70
2	Sumatera	23.49	17.24	6.25
3	Jawa	38.39	27.81	10.58
4	Bali dan Nusa Tenggara	24.65	20.21	4.44
5	Kalimantan	20.48	14.79	5.69
6	Sulawesi	20.78	16.44	4.34
7	Maluku dan Papua	15.89	12.95	2.94

Source: Sakernas August, 2020 processed

Java Island has the highest temporary unemployment rate compared to other islands. The number of possible Unrecalled in the island of Java is also the highest. Meanwhile, the islands of Bali and Nusa Tenggara also have the highest percentage of chances of being called back to work (recall) in Indonesia, followed by the islands of Maluku and Papua. On the other hand, Kalimantan Island shows a graph with the gentlest slope, with the smallest percentage of  $Y_{Recall}$  from  $Y_{Temporary\ layoff}$ .

#### Discussion: Other Concepts for Calculating Unemployment in Indonesia

Open unemployment is a key indicator of Indonesia's labour market performance, but it does not fully capture labour vulnerability. Although the unemployment rate rose from around 5 percent before COVID-19 to more than 7 percent during the pandemic and later declined, Table 8 shows that labour conditions must also consider full-time workers, underemployed workers, and part-time workers. This distinction is important because underemployment and part-time work may reveal deeper labour market problems beyond open unemployment alone.

**Table 8. Indonesian Labor Force Data for 2020**

Indonesian Labor Force		Number (Million people)
Working Age Population		203.97
Workforce		138.22
Work		128.45
	Working Full Time	82.02
	Working Part Time	33.34
	Underemployed	13.09
Open Unemployment/PT (Labor Force-Employment)		9.77
Disguised Unemployment (PT + Underemployment)		22.86
Unfull Economic Productivity (PT + Part time + Underemployed)		56.20
Unemployment		56.20

Source: BPS, 2021

In 2020, open unemployment in Indonesia reached 9.77 million people, largely reflecting the impact of COVID-19 on business closures and reduced production capacity. However, Table 9 shows that the unemployment problem becomes more substantial when broader labour underutilization is considered. If open unemployment is combined with underemployment, the unemployment rate rises to 16.54 percent, or around 22.86 million people. The figure becomes even more severe when part-time workers are included as part of unfulfilled economic productivity, reaching 40.66 percent or approximately 56.20 million people. This suggests that Indonesia's labour market vulnerability during Covid-19 was deeper than indicated by open unemployment alone, even exceeding South Africa's unemployment rate of 24.34 percent in 2020 (O'Neill, 2023).

**Table 9. Types of Unemployment in Indonesia**

Type of Unemployment		Number (million people)	%
TYPE I: Open Unemployment			
Workforce	Working (Full time+Part time+Underemployed)	128.45	92.93
	(Open) unemployment	<u>9.77</u>	<u>7.07</u>
		138.22	100.00
TYPE II: Disguised Unemployment			
Workforce	Working (Full time+Part time)	115.36	83.46
	Unemployment (Open+Underemployed)	<u>22.86</u>	<u>16.54</u>
		138.22	100.00
TYPE III: Unfull Economic Productivity Unemployment			
Workforce	Working (Full time)	82.02	59.34
	Unemployment (Open+Underemployed +Part time)	<u>56.20</u>	<u>40.66</u>
		138.22	100.00

Source: BPS 2021, processed

Unemployment in Indonesia resembles an iceberg, where open unemployment represents only the visible portion, while deeper labour market vulnerabilities remain less apparent. The economy has not yet achieved full productive employment, as available jobs are insufficient to absorb the continuously growing workforce. Each year, around 1.8 million high school graduates and 1.7 million tertiary graduates enter the labour market, requiring at least 3.6 million new jobs annually (Kemenko, 2021). Therefore, reducing unemployment is crucial not only for labour market stability, but also for addressing poverty, welfare, education, nutrition, economic growth, and broader socio-political stability.

## CONCLUSION

The risk of residents becoming temporarily unemployed due to COVID-19 is highest in the islands of Bali and Nusa Tenggara. In fact, the risk of becoming temporarily unemployed due to COVID-19 is 4,348 times higher in urban areas in the islands of Bali and Nusa Tenggara compared to other islands in Indonesia. The greatest risk is 1,647 times higher for young residents (15 to 24 years) in the islands of Bali and Nusa Tenggara compared to other islands in Indonesia. This is because the islands of Bali and Nusa Tenggara are regions with an economic base in the tourism sector. Lockdown policies and social restrictions have almost paralyzed the economic sector in these two tourism islands. In Bali and Nusa Tenggara, the chance of being called back to work is 3.9 times higher than in other regions of Indonesia. This is, of course, very closely related to the condition of economic recovery when the lockdown policy and social restrictions are lifted, so that these two tourism islands require more labor for their economic recovery.

## SUGGESTION

Based on the findings, the government should design targeted labor policies for regions most affected by COVID-19-induced cyclical unemployment, especially Bali and Nusa Tenggara, where urban and young workers faced the highest risk of temporary layoff. Recovery programs should focus on supporting tourism-related businesses, strengthening job recall mechanisms, providing wage subsidies or temporary income assistance, and expanding reskilling programs for vulnerable workers so they can adapt to changing labor market demands. In addition, unemployment policy should not only focus on open unemployment, but also consider temporary layoffs, underemployment, and part-time work to capture real labor market vulnerability in Indonesia better.

## REFERENCE

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