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Open Unemployment Rate Based on Age Group and Residence Area using Chi-square Analysis Period 2015-2018

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ABSTRACT

The purpose of this research is to analyze the relationship between the open unemployment rate (TPT) and demographic factors such as age group and residence area (urban and rural) in Indonesia during the period 2015-2018 using Chi-square analysis. This study employs a quantitative research approach with a descriptive and inferential statistical analysis to examine the relationship between the Open Unemployment Rate (TPT), age group, and residence area (urban vs. rural) in Indonesia from 2015 to 2018. The research uses secondary data obtained from official labor market statistics. Based on the results of the National Labor Force Survey (Sakernas), issued by the Central Statistics Agency (BPS) in 2018, the TPT in urban areas was 6.45 percent while the TPT in rural areas was only 4.04 percent. Compared to 2017, the TPT in urban areas itself decreased by 0.34 percent while the TPT in rural areas increased by 0.03 percent. To build upon this study, future research could explore the role of education and skill mismatches such as investigating how educational attainment and field of study influence employment outcomes could provide a deeper understanding of skill mismatches in the labor market.

Keywords: Open Unemployment Rate; Age Group; Residence Area

Field: Education; Macro Economics

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SDG's: No Poverty (1); Zero Hunger (2); Decent Work and Economic Growth (8); Responsible Consumption and Production (12)

INTRODUCTION

One of the problems in employment in Indonesia is unemployment. Unemployment in Indonesia is a major concern to this day. Given the high number of unemployed people will be interrelated with the decline in the level of public welfare and poverty and has an impact on the emergence of various social problems in a region. Based on these reasons, the Indonesian government is targeting a gradual reduction in unemployment rates from year to year (Alimi & Chukwuma, 2022).

Economically, unemployment is a product of the inability of the labor market to absorb the available workforce, including the number of available jobs is smaller than the number of job seekers, the competence of job seekers does not match the labor market and the ineffectiveness of the labor market for job seekers. In addition, unemployment can also be caused by termination of employment that occurs because companies close/reduce their business fields as a result of the economic crisis, less conducive security, regulations that hinder investment, and others.

The indicator commonly used to measure unemployment is the Open Unemployment Rate (TPT). TPT is the percentage of the number of unemployed to the number of the workforce. TPT provides an indication of the size of the working age population that is included in the unemployed.

The purpose of this research is to analyze the relationship between the open unemployment rate (TPT) and demographic factors such as age group and residence area (urban and rural) in Indonesia during the period 2015-2018 using Chi-square analysis. Specifically, this study aims to: Examine the distribution of open unemployment rates across different age groups to identify which age groups experience the highest levels of unemployment, Analyze the relationship between residence area (urban vs. rural) and the open unemployment rate to determine whether unemployment is more prevalent in specific regions, Identify significant associations between age group, residence area, and unemployment using Chi-square analysis to understand whether these variables are statistically related, and Provide insights for policymakers regarding demographic factors affecting unemployment, which can help in designing targeted employment policies and workforce development programs.

LITERATURE REVIEW

Labor Market Theory

This study is grounded in Labor Market Theory, which explains how supply and demand dynamics influence employment levels and wages (Alpler et al., 2021). According to this theory, unemployment occurs when there is an imbalance between job seekers and available job opportunities, which may be caused by structural, frictional, or cyclical factors (McConnell, Brue, & Macpherson, 2017). Structural unemployment arises when workers' skills do not match the labor market's needs, while frictional unemployment occurs due to job transitions, and cyclical unemployment is influenced by economic downturns (Blanchard & Johnson, 2013).

Open Unemployment Rate and Its Determinants

The Open Unemployment Rate (TPT) is a key indicator used to measure the proportion of unemployed individuals within the total labor force. Previous studies highlight several factors contributing to unemployment, including economic growth, labor market policies, technological advancements, and education levels (Todaro & Smith, 2020). The inability of the labor market to absorb the available workforce results in rising unemployment rates, particularly among young job seekers who lack work experience (ILO, 2019).

Age Group and Unemployment

Age is a crucial factor in employment dynamics (Wiluma et al., 2021). Research indicates that youth unemployment tends to be higher than that of older age groups due to limited experience, skill mismatches, and employer preferences for experienced workers (Bell & Blanchflower, 2011). On the other hand, middle-aged and older workers may face challenges in re-entering the workforce after job displacement, particularly in industries undergoing technological transformation (OECD, 2018).

Residence Area and Unemployment

The disparity between urban and rural unemployment rates is another important consideration. Studies suggest that urban areas experience higher unemployment rates due to rapid labor supply growth, migration, and industry-specific job losses (World Bank, 2021). In contrast, rural areas may exhibit lower unemployment rates due to higher engagement in informal and agricultural sectors, although these jobs often lack stability and fair wages (Fields, 2011).

Chi-Square Analysis in Labor Market Studies

Chi-square analysis is widely used in labor market studies to determine the relationship between categorical variables, such as age group and residence area, in relation to unemployment rates. Previous research has employed this statistical method to assess whether unemployment patterns differ significantly across demographic groups (Gujarati & Porter, 2020). Understanding these relationships can help policymakers design targeted employment programs and labor market interventions.

METHODOLOGY

Research Design

This study employs a quantitative research approach with a descriptive and inferential statistical analysis to examine the relationship between the Open Unemployment Rate (TPT), age group, and residence area (urban vs. rural) in Indonesia from 2015 to 2018 (Lind et al., 2018). The research uses secondary data obtained from official labor market statistics (Sekaran & Bougie, 2016).

Data Sources

The study utilizes secondary data sourced from:

- Badan Pusat Statistik (BPS) Indonesia – National Labor Force Survey (Sakernas).
- Ministry of Manpower of Indonesia – Reports on employment trends.
- Other relevant sources such as World Bank and ILO reports.

The dataset includes annual unemployment rates segmented by age group and residence area (urban vs. rural) for the years 2015–2018.

Variables of the Study

Dependent Variable: Open Unemployment Rate (TPT). Independent Variables: Age Group (categorized into standard labor force age groups, e.g., 15–24, 25–34, 35–44, etc.) and Residence Area (Urban vs. Rural).

Data Analysis Method

Descriptive Analysis

The study presents trends and distributions of unemployment rates based on age groups and residence areas over the period 2015–2018. Descriptive statistics such as mean, standard deviation, and percentage distributions will be used to summarize the data.

Chi-Square Analysis

To examine the relationship between age group, residence area, and the Open Unemployment Rate (TPT), the study applies Chi-Square (χ^2) Test of Independence, which is suitable for categorical data analysis. The hypothesis tested is:

- **H_0 (Null Hypothesis)**: There is no significant relationship between age group, residence area, and the Open Unemployment Rate (TPT).
- **H_1 (Alternative Hypothesis)**: There is a significant relationship between age group, residence area, and the Open Unemployment Rate (TPT).

If the **p-value < 0.05**, the null hypothesis is rejected, indicating a significant association between the variables.

Interpretation and Discussion

The results of the Chi-Square test will be interpreted to determine the statistical significance of the relationship. Findings will be compared with previous studies to provide deeper insights into labor market trends in Indonesia.

RESULTS AND DISCUSSION

Result

Based on data from the Central Statistics Agency from 2015 to 2018, the open unemployment rate based on education level is as follows:

Figure 1. Unemployment Rate by Age Group

Source: Central Statistics Agency, 2019

From the data above, it can be seen that the Open Unemployment Rate Based on Age Group, the contributor to the unemployment rate is greater in the 15–19 year age group. Based on the contingency table analysis, there is no effect of age on the unemployment rate with the results of $X^2 = 40.113$ and X^2 calculated = 34.76694 where $\alpha = 5\%$ with fk = the number of unemployment rates from 2015 to 2018.

Based on the results of the National Labor Force Survey (Sakernas), issued by the Central Statistics Agency (BPS) in 2015 to 2018, the 40-44 age group and the 50-54 age group are education levels whose percentage of open unemployment has always decreased every year.

These unemployed are spread across urban and rural areas. Based on data from the Central Statistics Agency from 2015 to 2018, the open unemployment rate based on area of residence is as follows:

Figure 2. Unemployment Rate by Area of Residence

Source: Central Statistics Agency, 2019

From the data above, it can be seen that the Open Unemployment Rate (TPT) Based on Residential Area, urban areas actually contribute higher unemployment rates than rural areas. Based on the contingency table analysis, there is no influence of residential area on the unemployment rate with the results of X^2 = 7.815 and X^2 count = 0.03653 where α = 5% with fo = the number of unemployment rates from 2015 to 2018.

Discussion

Age Group and Unemployment

The results indicate that the 15–19-year age group has the highest contribution to the unemployment rate from 2015 to 2018. This finding aligns with frictional and structural unemployment theories, which suggest that younger individuals experience higher unemployment due to their lack of work experience, skills mismatches, and difficulties in transitioning from education to employment (Blanchflower & Bell, 2011). Younger workers often struggle to compete in the labor market due to a lack of specialized skills and professional networks, leading to prolonged job searches.

On the other hand, the 40-44 and 50-54 age groups show a consistent decline in unemployment rates over the years. This supports the human capital theory, which suggests that individuals with greater work experience and accumulated skills are more likely to secure and retain employment (Becker, 1964). As workers age, they develop competencies that make them more competitive in the labor market, reducing their likelihood of being unemployed.

Despite these age-based differences, the Chi-Square analysis shows no statistically significant relationship between age and unemployment rate (X^2 = 40.113, X^2 calculated = 34.78604, α = 5%). This suggests that while certain age groups exhibit different levels of unemployment, these differences are not strong enough to establish a definitive causal relationship. Other factors, such as education, industry demand, and regional economic conditions, may play a more significant role in shaping unemployment patterns.

Residential Area and Unemployment

The analysis reveals that urban areas have a higher unemployment rate than rural areas from 2015 to 2018. This finding is consistent with urban labor market saturation theories, which suggest that cities attract a large influx of job seekers, leading to higher competition for available jobs (Fields, 2011). Additionally, urban employment is more dependent on the formal sector, which is sensitive to economic fluctuations, whereas rural areas have a stronger reliance on informal and agricultural employment, providing more subsistence opportunities.

However, the Chi-Square test shows no significant relationship between residence area and unemployment rate (X^2 = 7.815, X^2 calculated = 0.03653, α = 5%). This suggests that while urban areas tend to have higher unemployment, the variations between urban and rural regions are not statistically strong enough to confirm a significant impact. Factors such as regional economic growth, migration patterns, and government policies may influence employment trends more than location alone.

Implications Based on Labor Market Theory

Structural Unemployment Considerations: The results suggest that unemployment in Indonesia may be driven more by structural issues such as skill mismatches and economic transitions rather than age or residence area alone. Policies that focus on vocational training (Setyono et al., 2022), workforce reskilling, and labor market adaptability could help bridge employment gaps.

Labor Market Segmentation: The persistence of urban unemployment suggests labor market segmentation, where formal sector jobs are limited, and barriers to entry are higher for inexperienced workers. Expanding opportunities in emerging urban industries and promoting entrepreneurship could help address this issue.

Youth Employment Programs: Given the high unemployment rate among young workers, targeted policies such as apprenticeship programs, internships, and government incentives for youth employment could facilitate smoother school-to-work transitions.

CONCLUSION

Conclusion

Based on the results of the National Labor Force Survey (Sakernas), issued by the Central Statistics Agency (BPS) in 2018, the TPT in urban areas was 6.45 percent while the TPT in rural areas was only 4.04 percent. Compared to 2017, the TPT in urban areas itself decreased by 0.34 percent while the TPT in rural areas increased by 0.03 percent.

Implication

The high unemployment rate among the 15–19-year age group highlights the need for policies that focus on youth employment programs, vocational training, and apprenticeships to facilitate smoother transitions from education to the workforce. The higher unemployment rate in urban areas suggests the need for labor market reforms to create more job opportunities and reduce barriers to entry in the formal sector. Encouraging entrepreneurship and digital economy initiatives may help absorb excess urban labor.

Limitation

The study only examines age groups and residence areas without considering other critical factors such as education levels, industrial sector employment, and regional economic growth, which could significantly influence unemployment trends. The study covers the period from 2015 to 2018, which may not fully capture long-term labor market fluctuations or the impact of recent economic events, such as the COVID-19 pandemic.

Recommendation

Based on the findings and limitations, several recommendations can be proposed: Expand Job Training and Internship Programs: To address youth unemployment, the government and private sector should collaborate in expanding internships, apprenticeships, and vocational training programs tailored to labor market needs. Enhance Digital and Remote Work Opportunities: Given the high unemployment rate in urban areas, promoting digital skills training and remote work opportunities could help reduce job market congestion and improve employment prospects.

Future Research

To build upon this study, future research could explore: The Role of Education and Skill Mismatches: Investigating how educational attainment and field of study influence employment outcomes could provide a deeper understanding of skill mismatches in the labor market. Impact of Economic Shocks on Unemployment: Analyzing how economic crises, such as the COVID-19 pandemic, have affected unemployment trends across different demographics.

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