



URBAN-RURAL DISPARITIES IN THE DETERMINANTS OF YOUNG NEETS: EVIDENCE FROM INDONESIA

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ABSTRACT

Indonesia has the highest NEET rate in Southeast Asia, with 22.3% of its youth population categorized as NEET. This issue is crucial as Indonesia undergoes a demographic bonus, and ineffective utilization of this opportunity may lead to economic losses. Existing studies on NEET determinants in Indonesia have largely relied on pooled regression models and have not formally tested whether determinants differ between urban and rural labor markets. This study uses the August 2023 National Labor Force Survey (Sakernas) to estimate separate survey-weighted logistic regression models for urban and rural youth, and applies a Chow-type test to examine whether the coefficients are equal across the two settings. The results show that the determinants of NEET status differ significantly between urban and rural labor markets ($p < 0.001$). Health is the strongest predictor in both settings and does not differ significantly across locations. Marital status and tertiary education have stronger associations in urban areas, while gender and age group show stronger associations with NEET status in rural areas. These findings point to the need for policies that are tailored to the different structural conditions of urban and rural labor markets in Indonesia.

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1. INTRODUCTION

In September 2015, 193 member states of the United Nations agreed to adopt the Sustainable Development Goals (SDGs) as a shared framework for global action. The SDGs were created to focus on important areas that need immediate attention in order to support human development around the world (United Nations, 2020). Among those priorities, youth employment is one of the most highlighted issues. Goal 8 in particular calls for promoting economic growth that is sustainable and inclusive, while also ensuring that people can access full and productive employment and decent work. Within this goal, there are two targets that specifically relate to young people, which are reducing the number of youth who are not in employment, education, or training, and also expanding access to decent work for the younger generation (Elder, 2015).

Unemployment is disproportionately a burden of the youths worldwide. The unemployment level among young people is often two to three times higher than that of older generations (Marelli & Vakulenko, 2016), and young employees are more exposed to the impacts of economic crises because of their inadequate qualifications and work experience (Dagume & Gyekye, 2016; Yeung & Yang, 2020). This pattern is particularly observed in Indonesia. In 2023, the unemployment rate

among the age group 15 to 19 years stood at 25.77 percent and the unemployment rate of age group 20 to 24 years stood at 16.85 percent, much higher than the national average of 5.32 percent (Badan Pusat Statistik, 2024b). Moreover, urban areas experienced a higher unemployment rate (6.40 percent) compared to rural areas (3.88 percent) (Badan Pusat Statistik, 2024a), though this difference can be mostly attributed to the nature of employment structure rather than stronger economic opportunities in rural areas. A significant portion of the rural labor force gets absorbed into informal agriculture, family enterprises, and unpaid family work, which are considered employment even in cases of underemployment among workers (International Labour Organization, 2021). As a result, traditional measures of unemployment are prone to underestimation of labor market issues in rural contexts (Eurofound, 2012).

In response to these limitations, researchers and global organizations have increasingly adopted to the NEET (Not in Employment, Education, or Training) concept, which frames disengaged people in the 15 to 24 year old age bracket with regard to both employment and education (Wickremeratne & Dunusinghe, 2018). In contrast to traditional unemployment indicators, the NEET indicator includes youth who have not been in the labor force as a result of being discouraged, engaged in caregiving roles, or simply having limited access to opportunities. The long-term effects of being out of work and school are severe, as young people risk losing their human capital, facing prolonged labor market exclusion, and becoming vulnerable to poverty and inequality (Eurofound, 2012; Kovrova et al., 2013).

This situation of NEET young people creates an especially significant challenge to Indonesia, which is undergoing a demographic bonus between 2020 and 2030, a stage when the number of working age individuals will outnumber the number of dependent ones (Maryati, 2015). Nevertheless, this demographic advantage can only be realized if young people are engaged in productive activities. Since at some point, Indonesia will shift to an aging society, it is necessary to maximize the potential of its young population at this stage (Sari et al., 2022; Sutikno, 2020). In spite of this urgency, in regional terms, in 2022 the NEET rate in Indonesia was 22.3 percent, almost twice the level of Malaysia (10.2 percent) and more than three times that of Singapore (6.6 percent) (World Bank, 2024), indicating the presence of significant structural limitations in the manner in which the country is accommodating the young population into productive economic activities (International Labour Organization, 2024).

The rate of NEET in Indonesia is high as it indicates how young people struggle to transition from school to work. This transition is often longer and more uncertain in developing economies than in developed ones, with many young individuals spending more time in a state of disengagement before obtaining stable jobs (Doruk & Pastore, 2020; Ryan, 2001). These conditions, however, vary significantly, according to the place where young people live. The Labor Market Segmentation Theory is based on the assumption that urban and rural labor markets in developing economies are structurally differentiated segments with varying wage structures, employment stability, and availability of opportunities (Doeringer & Piore, 1971; Günther & Launov, 2012). In Indonesia, urban areas are characterized by more formal jobs and industrialization, whereas rural economies are dominated by agriculture, informality, and unpaid family labor (Ablaza et al., 2021). These structural variations imply that determinants of NEET status might not have similar effects in urban and rural settings.

Education, gender, marital status, health, and household size are found to be significant correlates of NEET status in a broad range of international studies (Chandler & Santos Lozada, 2021; Erdoğan et al., 2017; Mussida & Patimo, 2021; Quintano et al., 2018; Susanli, 2016; Wickremeratne & Dunusinghe, 2018), and Indonesian studies confirm these patterns (Anggraini et al., 2020; Elfindri et al., 2015; Hardiani et al., 2023; Pattinasarany, 2019). Although a well-documented set of individual-level correlates has been established in this literature, there are two noteworthy limitations. First, in the majority of the current literature, urban and rural location is treated as a single explanatory variable in a pooled model, which implicitly assumes that these correlates work alike in both spatial contexts. This supposition contradicts the expectations of Labor Market Segmentation Theory, which states that structurally different labor markets are expected to yield

different associations. Second, the majority of Indonesian research lacks the use of sampling weights, which implies that the estimates are not representative at the national level. These constraints leave unanswered the question of whether there is a systematic difference between urban and rural Indonesia in the determinants of NEET status.

This study addresses these limitations by estimating separate survey-weighted logistic regression models for urban and rural youth based on the August 2023 National Labor Force Survey (Sakernas). Instead of treating location as an explanatory variable in a single model, the analysis allows each variable to have different effects on NEET status across settings. In particular, this study utilizes a Chow test to assess differences in the strength and significance of determinants of NEET status between urban and rural locations and to examine which determinants contribute to these differences. In addition, this study offers two important contributions. First, it provides a theoretically informed and nationally representative comparison of determinants of NEET status in urban and rural Indonesia. Second, it yields evidence that may guide spatially differentiated policy responses to the unique structural conditions experienced by youth in either context.

2. RESEARCH METHODS

This study uses data from the August 2023 round of Indonesia's National Labor Force Survey (Survei Angkatan Kerja Nasional, Sakernas), a nationally representative household survey conducted by the Central Statistics Agency (Badan Pusat Statistik, BPS) across all 34 provinces (Badan Pusat Statistik, 2023). The survey collects detailed information on labor market participation, education, health, and demographic characteristics. Following the standard ILO definition of youth (Elder, 2015), the analytical sample is restricted to individuals aged 15 to 24. After excluding observations with missing values for the variables of interest, the final sample consists of 158,816 observations, divided into urban ($n = 77,910$) and rural ($n = 80,906$) subsamples based on the area classification provided in the survey.

The analysis accounts for the complex sampling design of Sakernas, which employs a multistage stratified sampling framework. In this design, census blocks are selected within strata defined by province and urban-rural classification, and households are then drawn systematically from selected blocks (Badan Pusat Statistik, 2023). The estimation specifies the primary sampling unit, sampling strata, and probability weights provided in the dataset, with variances computed using Taylor-series linearization to produce design-corrected standard errors (Heeringa et al., 2017). With survey weights applied, the analytical sample represents an estimated population of 44,468,214 Indonesian youth (25,680,963 urban and 18,787,251 rural).

The dependent variable is NEET status, defined as a binary indicator equal to 1 if a youth aged 15 to 24 is not employed, not enrolled in any formal or non-formal educational program, and not undertaking any training during the reference period. This operationalization follows the ILO and BPS classifications, which capture a broader segment of disengaged youth than conventional unemployment measures (Citra, 2022; Elder, 2015).

There are eight explanatory variables reflecting both individual and household characteristics. Marital status takes a value of 1 for currently married youth and 0 for all other categories, namely single, divorced, or widowed. Education is represented by two dummy variables for secondary and tertiary completion, with primary education or below serving as the reference category to examine whether higher qualifications facilitate or hinder labor market integration relative to lower educational attainment. Training experience assigns a value of 1 to the absence of vocational training and 0 to prior participation, highlighting the potential disadvantage faced by youth without supplementary skill development. The remaining variables, including gender, age group, health condition, and household size, follow standard binary classifications with reference categories as detailed in Table 1.

Table 1. Variable Definitions

Variable	Definition	Information
NEET Status	Youth (15–24) not in education, employment, or training.	1 = NEET 0 = Not NEET
Gender	Biological sex of the respondent.	1 = Female 0 = Male*
Age Group	Age category of the respondent.	1 = Aged 20–24 0 = Aged 15–19*
Marital Status	Legal civil status at the time of the survey	1 = Married 0 = Others (Single/Divorced/Widowed)*
Secondary Education	Completion of junior or senior high school.	1 = Completed Secondary 0 = Primary education or below*
Tertiary Education	Completion of a diploma or university degree.	1 = Completed Tertiary 0 = Primary education or below*
Training Experience	Participation in non-formal vocational or skills training.	1 = No training experience 0 = Has training experience*
Health Condition	Presence of self-reported health complaints or disabilities.	1 = Has health issues 0 = No health issues*
Household Size	Total number of individuals living in the household.	1 = > 5 members 0 = ≤ 5 members*

Description: *) Reference Category

To examine the determinants of NEET status, this study employs binary logistic regression. This specification is appropriate given the binary nature of the dependent variable (Gujarati & Porter, 2009). The model is expressed in terms of the log-odds as follows:

$$\ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 X_{1i} + \dots + \beta_n X_{ni} + u_i \dots\dots\dots(1)$$

Where P_i denotes the probability that individual is classified as NEET, $(1-P_i)$ denotes the probability of not being NEET, and $\frac{P_i}{1-P_i}$ represents the odds of being NEET. X_{ni} represents a set of explanatory variables capturing individual and household characteristics, and u_i is the error term.

Since the structural conditions shaping youth outcomes differ considerably between urban and rural areas, the same model specification is estimated separately for each subsample rather than pooling the data into a single equation. This approach allows the effects of each explanatory variable to vary across the two settings. Although both models share the same specification, they are estimated on distinct subsamples, enabling a direct comparison of how key determinants are associated with NEET status in urban and rural Indonesia. The models employed in this study are specified as follows.

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_{age} + \beta_2 X_{gender} + \beta_3 X_{marital} + \beta_4 X_{edu_secondary} + \beta_5 X_{edu_tertiary} + \beta_6 X_{training} + \beta_7 X_{health} + \beta_8 X_{hhsz} + u_i \dots\dots\dots(2)$$

Model fit is evaluated using the Wald F-test under the survey design framework to confirm the joint significance of all explanatory variables (Heeringa et al., 2017). Individual variable contributions are assessed using standard p-value thresholds of 0.01, 0.05, and 0.10. To improve interpretability, average marginal effects are reported alongside odds ratios. Marginal effects express the change in the predicted probability of being NEET associated with a discrete change in a given predictor, providing a clearer interpretation compared to standard odds ratios (Long & Freese, 2014; Williams, 2012).

To formally assess whether these determinants differ between urban and rural areas, a Chow-type test is implemented using a pooled specification that includes an urban indicator and its interactions with all explanatory variables (Wooldridge, 2010). A joint Wald test on all interaction terms evaluates whether the coefficients differ as a whole between the two models, while individual Wald tests identify the specific variables for which the urban-rural difference is statistically significant.

3. RESULTS AND DISCUSSION

3.1. RESULTS

This section first presents weighted descriptive statistics on the prevalence and composition of NEET youth, followed by survey-weighted logistic regression results for the urban and rural subsamples. The two sets of estimates are then compared side by side, and the section concludes with a Chow-type test examining whether the determinants of NEET status differ across urban and rural settings.

The weighted estimates indicate that 22.25 percent of Indonesian youth aged 15 to 24 are classified as NEET, representing approximately 9.9 million young people out of a total weighted population of 44.5 million. Moreover, the rate is higher in rural areas (24.79 percent) than in urban areas (20.40 percent). This spatial pattern is notable because it inverts the conventional unemployment narrative in which urban areas have consistently recorded higher unemployment rates than their rural counterparts.

Urban and rural NEET youth also differ substantially in labor market composition. In urban areas, 43.45 percent of NEET youth are actively searching for work, with the remaining 56.55 percent classified as economically inactive, meaning they are neither employed nor looking for employment. In rural areas, the share of active job seekers falls to 24.85 percent, while the remaining 75.15 percent are outside the labor force entirely, suggesting that rural NEET status is more closely associated with structural disengagement than with transitional unemployment.

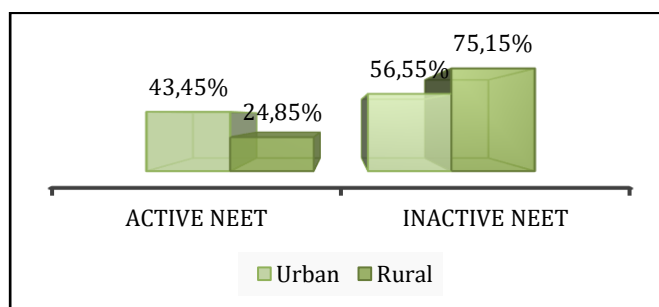


Figure 1. NEET Population by Location and Labour Market Status (%)

Source: Author calculation based on Sakernas August 2023.

Table 2 reports the weighted sociodemographic characteristics of NEET youth by location. Women constitute 57.86 percent of all NEET youth nationwide, with a higher share in rural areas (62.01 percent) than in urban areas (54.17 percent). The majority of NEET youth belong to the 20 to 24 age group, accounting for 64.18 percent in urban areas and 66.48 percent in rural areas. Married youth represent 20.14 percent of the urban NEET population and 29.43 percent of the rural NEET population.

The educational profiles of the two groups differ considerably. Urban NEET youth are concentrated at the secondary level (63.61 percent), followed by the primary level or below (28.70 percent) and tertiary level (7.69 percent). Rural NEET youth present a different distribution, with the largest share at the secondary level (54.32 percent), followed by the primary level or below (42.29 percent) and only 3.39 percent at the tertiary level. Participation

in non-formal vocational training is higher among urban NEET youth (16.05 percent) than rural NEET youth (12.20 percent). Health problems are reported by 2.52 percent of urban and 3.45 percent of rural NEET youth. Household size is distributed similarly across both groups, with approximately 84 percent residing in households of five members or fewer.

Table 2. Characteristics of NEET Youth by Location

Variable	Category	Urban NEET (%)	Rural NEET (%)	Total NEET (%)
Age Group	15-19	35.82	33.52	34.74
	20-24	64.18	66.48	65.26
Gender	Male	45.83	37.99	42.14
	Female	54.17	62.01	57.86
Marital Status	Not Married	79.86	70.57	75.49
	Married	20.14	29.43	24.51
Education	Primary	28.70	42.29	35.10
	Secondary	63.61	54.32	59.24
	Tertiary	7.69	3.39	5.67
Training	Has Experience	16.05	12.20	14.24
	No Experience	83.95	87.80	85.76
Health	No Problem	97.48	96.55	97.04
	Has Problem	2.52	3.45	2.96
Household Size	≤5 members	84.13	84.03	84.08
	>5 members	15.87	15.97	15.92

Source: Author calculation based on Sakernas August 2023.

Tables 3 and Table 4 present the survey-weighted logistic regression estimates for the urban and rural models, respectively. Both models are jointly significant ($p < 0.001$), indicating that the included explanatory variables collectively explain variation in NEET status in each setting.

Table 3. Determinants of NEET: Urban Model

Variable	Coefficient	St.Err	t	p- value	Sig	Odds Ratio	dy/dx
Age	0.072	0.038	1.89	0.059	*	1.075	0.011
Gender	0.100	0.028	3.65	0.000	***	1.106	0.015
Marital Status	1.527	0.045	34.21	0.000	***	4.606	0.227
Education Secondary	0.909	0.041	21.93	0.000	***	2.481	0.135
Education Tertiary	1.170	0.068	17.13	0.000	***	3.223	0.174
Training Experience	0.461	0.039	11.94	0.000	***	1.585	0.069
Health	1.688	0.111	15.18	0.000	***	5.411	0.251
Household Size	0.161	0.038	4.30	0.000	***	1.175	0.024
Constant	-2.641	0.046	-57.55	0.000	***	0.071	–
Population Size	25,680,963						
F(8, 14012)	342.97						
Prob > F	0.0000						

*** $p < .01$, ** $p < .05$, * $p < .1$

Source: Author calculation based on Sakernas August 2023.

In the urban sample, seven of the eight explanatory variables are statistically significant at the 1 percent level, with age group being marginally significant ($p = 0.059$). Health status and marital status display the largest associations with NEET status. Youth with health problems have a 25.1 percentage-point higher probability of being NEET than those without health problems. Married youth have a 22.7 percentage-point higher probability of being NEET than their unmarried

counterparts. Both education levels are positively associated with NEET status relative to primary education or below, with tertiary graduates having a 17.4 percentage-point higher probability and secondary graduates a 13.5 percentage-point higher probability. The absence of prior vocational training is associated with a 6.9 percentage-point higher probability of being NEET. The remaining variables, namely household size, gender, and age group, are statistically significant but show smaller associations, with marginal effects below 2.5 percentage points.

Table 4. Determinants of NEET: Rural Model

Variable	Coefficient	St.Err	t	p- value	Sig	Odds Ratio	dy/dx
Age	0.381	0.040	9.64	0.000	***	1.464	0.063
Gender	0.591	0.030	19.68	0.000	***	1.806	0.098
Marital Status	0.984	0.043	23.15	0.000	***	2.676	0.163
Education Secondary	0.808	0.040	20.00	0.000	***	2.243	0.134
Education Tertiary	0.571	0.087	6.53	0.000	***	1.771	0.095
Training Experience	0.519	0.049	10.54	0.000	***	1.680	0.086
Health	1.919	0.120	15.98	0.000	***	6.815	0.318
Household Size	0.033	0.038	0.89	0.374		1.034	0.006
Constant	-2.695	0.059	-45.49	0.000	***	0.068	–
Population Size	18,787,251						
F(8, 14730)	287.55						
Prob > F	0.0000						

*** $p < .01$, ** $p < .05$, * $p < .1$

Source: Author calculation based on Sakernas August 2023.

In the rural sample, seven of the eight explanatory variables are statistically significant at the 1 percent level, while household size shows no significant association ($p = 0.374$). Health status again emerges as the strongest factor, with affected youth having a 31.8 percentage-point higher probability of being NEET than those without health problems. Marital status and gender also show substantial associations, with married youth having a 16.3 percentage-point higher probability than their unmarried counterparts and female youth a 9.8 percentage-point higher probability than male youth. Education remains positively associated with NEET status at both levels, with secondary graduates having a 13.4 percentage-point higher probability and tertiary graduates a 9.5 percentage-point higher probability relative to primary education or below. Youth without training experience have an 8.6 percentage-point higher probability of being NEET than those with training, and youth aged 20 to 24 have a 6.3 percentage-point higher probability than those aged 15 to 19.

Table 5. Comparison of Odds Ratio: Urban vs Rural Models

Variable	Odds Ratio (Urban)	dy/dx (Urban)	Odds Ratio (Rural)	dy/dx (Rural)
Age	1.075 *	0.011 *	1.464 ***	0.063 ***
Gender	1.106 ***	0.015 ***	1.806 ***	0.098 ***
Marital Status	4.606 ***	0.227 ***	2.676 ***	0.163 ***
Education Secondary	2.481 ***	0.135 ***	2.243 ***	0.134 ***
Education Tertiary	3.223 ***	0.174 ***	1.771 ***	0.095 ***
Training Experience	1.585 ***	0.069 ***	1.680 ***	0.086 ***
Health	5.411 ***	0.251 ***	6.815 ***	0.318 ***
Household Size	1.175 ***	0.024 ***	1.034	0.006

*** $p < .01$, ** $p < .05$, * $p < .1$

Source: Author calculation based on Sakernas August 2023.

Table 5 compares the estimates from both settings side by side. While the direction of associations is consistent, the strength differs for several variables. The most notable contrast is marital status, where married youth show a 22.7 percentage-point higher probability of being NEET in urban areas compared to a 16.3 percentage-point higher probability in rural areas. Gender shows the opposite pattern, with female youth showing a 9.8 percentage-point higher probability in rural areas compared to only 1.5 percentage points in urban areas. Tertiary education also shows a more pronounced association in urban areas, while age and training experience show larger associations in rural areas. Secondary education shows comparable associations across both settings. Health remains the strongest factor in both models, with a 31.8 percentage-point higher probability in rural areas compared to 25.1 percentage points in urban areas. Household size is significantly associated with NEET status in urban areas but not in rural areas.

Table 6. Chow-Type Test

Test	F-statistic	df	p-value	Sig
Joint test (all interactions)	28.67	(8, 28749)	0.0000	***
Age × Urban	31.49	(1, 28756)	0.0000	***
Gender × Urban	145.07	(1, 28756)	0.0000	***
Marital Status × Urban	77.56	(1, 28756)	0.0000	***
Education Secondary × Urban	3.03	(1, 28756)	0.0819	*
Education Tertiary × Urban	29.12	(1, 28756)	0.0000	***
Training Experience × Urban	0.86	(1, 28756)	0.3546	
Health × Urban	1.99	(1, 28756)	0.1587	
Household Size × Urban	5.79	(1, 28756)	0.0161	**

*** $p < .01$, ** $p < .05$, * $p < .1$

Source: Author calculation based on Sakernas August 2023.

Table 6 reports the results of the Chow-type test, which evaluates the equality of coefficients between the urban and rural models. The joint test across all eight interaction terms is highly significant ($F(8, 28749) = 28.67, p < 0.001$), confirming that the determinants of NEET status differ across settings. At the individual variable level, age group, gender, marital status, and tertiary education all show significantly different associations at the 1 percent level. Household size also differs significantly at the 5 percent level, while secondary education shows a marginally significant difference ($p = 0.082$). By contrast, the interactions for training experience ($p = 0.355$) and health ($p = 0.159$) are not statistically significant, indicating that the associations for these two factors are broadly similar regardless of whether youth reside in urban or rural areas.

3.2. DISCUSSION

Estimates calculated based on survey weights indicate that NEET (Not in Education, Employment, or Training) rates vary across urban and rural areas. The NEET rate is higher in rural areas (24.79 percent) than in urban areas (20.40 percent), and the two groups also differ substantially in labor market composition. In urban areas, 43.45 percent of NEET youth are actively searching for work, while in rural areas only 24.85 percent are similarly active, leaving roughly three-quarters of the rural group classified as inactive. This indicates that NEET status carries a different meaning across the two areas, reflecting a transitional phase of job search in urban areas and a more persistent withdrawal from the labor market in rural areas.

One of the most notable differences between the two models is marital status. Although marriage is more common among rural NEET youth (29.43 percent) than urban NEET youth (20.14 percent), its association with NEET status is substantially stronger in urban areas (22.7 percentage points) than in rural areas (16.3 percentage points), and the Chow test confirms this difference ($p < 0.001$). This pattern is consistent with research showing that urban labor markets impose higher opportunity costs on married youth, particularly women, who face limited childcare infrastructure alongside stronger incentives to remain in formal employment (Cameron et al., 2019; Schaner & Das, 2016). In rural areas, the weaker association may reflect the greater availability of family-based agricultural and informal work that allows married youth to participate in productive activities outside formal employment categories (Cameron et al., 2024; World Bank, 2019).

Gender differences are also clearly evident in terms of statistical and economic significance. The marginal effect is small in urban areas (1.5 percentage points) but considerably larger in rural areas (9.8 percentage points), and the Chow test confirms this difference ($p < 0.001$). This rural disadvantage for female youth is consistent with evidence on gender norms that constrain female labor market participation in rural Indonesia, including expectations around domestic responsibility, restricted mobility, and limited access to formal job networks (Cameron et al., 2019; Rola-Rubzen et al., 2024). The broader NEET literature similarly finds that young women face greater risk of disengagement in areas where formal labor market opportunities are limited (Genda, 2007).

A particularly counterintuitive finding is the positive association between higher education and NEET status in both models, with a larger marginal effect in urban areas (17.4 percentage points) than in rural areas (9.5 percentage points) for tertiary graduates. Three possible explanations may help account for this pattern. First, there is education-occupation mismatch, where a large share of tertiary graduates remains outside employment while searching for positions that match their qualifications, a phenomenon often referred to as educated unemployment (Wicaksono et al., 2023). Second, tertiary graduates tend to set higher wage expectations and extend their job search rather than accept informal employment, which prolongs their period of disengagement (International Labour Organization, 2024). Third, consistent with Labor Market Segmentation Theory, urban graduates are more likely to wait for formal sector positions, while rural graduates face stronger pressure to accept available informal or family-based work given the limited formal employment opportunities (Doeringer & Piore, 1971; Doruk & Pastore, 2020). This pattern is consistent with evidence that tertiary unemployment rates remain high across many developing countries where the number of graduates has outpaced the capacity of formal labor markets to absorb them (International Labour Organization, 2024).

Health is the strongest factor in both models, with a larger marginal effect in rural areas (31.8 percentage points) than in urban areas (25.1 percentage points). Despite this numerical gap, the Chow test is not statistically significant ($p = 0.159$), indicating that health functions as a broadly uniform barrier to youth engagement across both areas rather than a source of urban-rural difference. This finding is consistent with international evidence identifying health limitations as one of the strongest correlates of NEET status across both developed and developing countries (Gunnes et al., 2025; Sadler et al., 2015).

Age group also shows a meaningful difference across settings. The association between youth aged 20 to 24 and NEET status is small in urban areas (1.1 percentage points) but considerably larger in rural areas (6.3 percentage points), and the Chow test confirms this difference ($p < 0.001$). This pattern is consistent with school-to-work transition perspectives, which suggest that the movement from education into stable employment is longer and more uncertain in rural areas, where fewer formal jobs and greater distance to employment opportunities widen the period of disengagement for older youth (Doruk & Pastore, 2020; Elder, 2015).

Secondary education and training experience show broadly similar patterns across urban and rural settings. The marginal effect of secondary education is comparable in urban (13.5 percentage points) and rural (13.4 percentage points) areas, with only a marginally significant Chow test difference ($p = 0.082$). This suggests that secondary graduates occupy a similar position in both labor markets, holding qualifications that exceed the requirements of low-skill informal work but fall short of what formal sector employers require (Battu & Bender, 2020; Wicaksono et al., 2023). A similar pattern emerges for training experience, where the absence of training is associated with higher NEET probability in both urban (6.9 percentage points) and rural (8.6 percentage points) settings, with no significant difference between the two areas ($p = 0.355$). This is in line with international evidence showing that vocational and non-formal training serves as a protective factor against youth disengagement regardless of location (Carranza & McKenzie, 2024).

The correlation between household size and youth disengagement is different in the two areas. In urban areas, youth from larger households have a higher probability of being NEET (2.4 percentage points), and the Chow test confirms that this differs significantly from the rural estimate ($p = 0.016$). In rural areas, the association is small and not statistically significant ($p = 0.374$). This difference likely reflects how the same household structure plays a different economic role in each area. In urban areas, larger households tend to mean more dependents sharing a fixed income and greater competition for educational resources. In rural areas, larger households often function as labor units running small farms or informal businesses, where additional members are absorbed into productive activities that are not captured by formal employment statistics (Ablaza et al., 2021; Günther & Launov, 2012).

Collectively, these findings provide empirical support for the theoretical framework adopted in this study. The joint Chow test confirms that the determinants of NEET status are not uniform across urban and rural areas, consistent with the predictions of Labor Market Segmentation Theory (Doeringer & Piore, 1971). School-to-work transition perspectives further help explain why age group and tertiary education show such different patterns across the two areas, with the rural transition appearing slower and more likely to lead to disengagement, and the urban transition being more affected by mismatch and job-waiting behavior (Doruk & Pastore, 2020; Ryan, 2001).

4. CONCLUSION

This study investigated the determinants of NEET status among youth aged 15 to 24 in Indonesia based on the August 2023 National Labor Force Survey (Sakernas). Separate survey-weighted logistic regression models were estimated for urban and rural youth, with coefficient equality formally tested through a Chow-type test and average marginal effects reported alongside odds ratios. The national NEET rate stands at 22.25 percent, with rural areas (24.79 percent) recording a higher rate than urban areas (20.40 percent). The Chow-type test rejects the null hypothesis of equal coefficients ($p < 0.001$), confirming that the determinants of NEET status are not uniform across urban and rural labor markets. Health is the strongest factor in both models and does not differ significantly between areas. Marital status and tertiary education show stronger associations in urban areas, while gender and age group show stronger associations in rural areas. Secondary education, training experience, and household size show more varied patterns, with household size significantly associated with NEET status in urban areas but not in rural areas.

The findings carry several policy implications. The consistently strong health association across both areas suggests that expanding youth health services should be a national priority, though the specific types of services may need to be adapted to the different healthcare infrastructure and needs of each setting. The stronger marital status association in urban areas points to the need for childcare services and flexible work arrangements in urban labor markets to reduce disengagement among married youth. The wider gender gap in rural areas suggests that programs aimed at increasing female labor market participation are likely to have the greatest impact in rural areas, where gender norms continue to limit women's access to employment. The positive association

between tertiary education and NEET status, particularly in urban areas, highlights the importance of aligning higher education with labor market demand and strengthening pathways from graduation to employment so that graduates do not experience extended periods of disengagement.

Several limitations should be acknowledged. The cross-sectional nature of Sakernas does not allow for causal claims, and all findings should be interpreted as associations rather than causal relationships. The binary NEET classification treats youth with very different circumstances as a single group, combining those who voluntarily withdrew from the labor force for caregiving, those actively searching for work, and those unable to participate due to health problems. This distinction matters when interpreting the marital status and health findings, as the underlying reasons for disengagement likely vary across these subgroups. In addition, potentially relevant factors such as household income and local labor market conditions are not included in the analysis and may influence the results. Future research could address these gaps by incorporating a wider set of explanatory variables, distinguishing between different types of NEET youth, and using qualitative approaches to better understand the positive association between education and NEET status.

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