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DEMOGRAPHIC DIFFERENTIALS IN HOUSEHOLD MIGRATION STATUS: EVIDENCE FROM BONE BOLANGO REGENCY, INDONESIA

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ABSTRACT

Household migration is an important demographic phenomenon shaped by individual and household characteristics. Understanding the relationship between demographic characteristics and household migration status is essential for explaining migration patterns at the regional level. This study aimed to analyze the relationship between demographic characteristics and household migration status in Bone Bolango Regency, Indonesia. A quantitative observational analytical study with a cross-sectional design was conducted using data from the 2025 Intercensal Population Survey. The analysis included 1,088 households, comprising 228 migrant households and 860 non-migrant households. Binary logistic regression was used to examine the associations between household migration status and the age, sex, educational attainment, and employment status of the household head, as well as household size. The results indicated that demographic characteristics were jointly associated with household migration status. Age, sex, educational attainment, and employment status showed statistically significant associations. Older household heads had lower odds of belonging to migrant households, whereas female-headed households and households with employed heads had higher odds, according to the categories used in the model. Household heads with primary education had lower odds of migrant status than those with higher education, while the difference between secondary and higher education was not statistically significant. Household size was also not significantly associated with migration status. Although the overall model was statistically significant, its explanatory capacity was limited, with a Nagelkerke coefficient of determination of 0.070, and it did not correctly classify migrant households at the selected probability threshold. These findings provide regional evidence of demographic selectivity in household migration status. Further research incorporating socioeconomic conditions, family networks, migration motives, and destination characteristics is needed to better understand the multidimensional nature of migration. The observed relationships should be interpreted as statistical associations rather than causal effects.

Keywords: Demographic Characteristics; Household Migration Status; Household Head; Lifetime Migration; Bone Bolango Regency

1 INTRODUCTION

Population migration is a fundamental component of demographic change because it influences population distribution, age composition, household structure, and the socioeconomic characteristics of communities. Beyond the physical movement of individuals across geographical boundaries, migration reflects differences in life opportunities, access to

resources, family circumstances, and individual capabilities. Understanding migration therefore requires more than examining the number of people who move between regions; it also requires investigating the characteristics that distinguish migrants from non-migrants. This distinction is particularly important at the household level, where migration experiences may be associated with the demographic characteristics of household members, the responsibilities of family life, and the resources available to support mobility. In regional development planning, evidence concerning the demographic profiles of migrant and non-migrant households can contribute to a more comprehensive understanding of population dynamics and provide an empirical basis for designing population policies and public services that respond to the needs of different population groups.

Theoretical perspectives on migration have progressively moved beyond explanations that emphasize isolated push and pull factors. Lee (1966) conceptualized migration as a process shaped by conditions in the place of origin, conditions in the destination, intervening obstacles, and personal factors. This framework established the importance of individual characteristics in explaining why people respond differently to similar geographical and socioeconomic circumstances. More recent theoretical developments have further emphasized the complexity of migration decisions. Van Hear, Bakewell, and Long (2018), through the Push-Pull Plus Framework, distinguish between predisposing, proximate, precipitating, and mediating drivers of migration. Similarly, de Haas (2021), through the Aspirations-Capabilities Framework, explains migration in terms of individuals' aspirations to move and their capabilities to realize those aspirations. These perspectives indicate that migration is not determined by a single characteristic but emerges from interactions among individual attributes, household circumstances, available opportunities, and structural constraints. Consequently, demographic characteristics provide an important analytical starting point for examining variations in migration status.

Despite these theoretical advances, an important empirical question remains concerning how demographic characteristics are associated with household migration status in specific regional contexts. Age, sex, educational attainment, employment status, and household size may distinguish migrant households from non-migrant households, but the direction and strength of these associations cannot be assumed to be uniform across populations. Migration experiences are selective: individuals and households differ in their resources, opportunities, family responsibilities, and capacity to move. Moreover, the characteristics observed at the time of a survey do not necessarily represent the circumstances that existed when migration occurred. This temporal distinction is particularly relevant when migration status is defined through a comparison between birthplace and current residence. Such a measure captures lifetime migration experience but does not establish when a move occurred, how many movements took place, or why migration happened. Therefore, demographic characteristics observed in a cross-sectional survey should be examined as correlates of migration status rather than automatically interpreted as determinants or causes of migration.

A further challenge concerns the distinction between individual migration and household migration. Migration is frequently discussed as an individual event, although decisions about moving or remaining in a particular location may be closely connected to family relationships and shared responsibilities. Coulter, van Ham, and Findlay (2016), drawing on the life-course perspective, emphasize that mobility and immobility are connected to life transitions and the circumstances of other people within an individual's social relationships. Age, education, employment, and family formation may correspond to different stages of the life course, each presenting different opportunities and constraints for mobility. Mulder (2018), through the Family Ties Perspective, similarly highlights the importance of family relationships in understanding migration and residential immobility. These perspectives suggest that household migration status should be examined in relation to both the characteristics of the household head and the composition of the household. An empirical approach that integrates these characteristics can help clarify which demographic attributes are statistically associated with differences between migrant and non-migrant households.

Previous scientific studies provide several approaches for investigating these relationships. First, the life-course perspective offers a conceptual basis for examining age, educational attainment, and employment status in relation to migration. Age represents an individual's position within the life course, while education can be associated with access to information, employment opportunities, and the resources required to move. Employment status reflects participation in economic activities and may be associated with differences in livelihood opportunities. Second, gender-sensitive perspectives suggest that men and women may experience different opportunities, social expectations, family responsibilities, and access to resources, potentially resulting in different migration experiences. Third, household-based approaches emphasize that household size may be associated with the costs, responsibilities, and practical considerations involved in geographical mobility. These dimensions are consistent with de Haas's (2021) argument that migration capabilities depend partly on the resources available to individuals and households. Collectively, these approaches provide a theoretical basis for analyzing demographic characteristics as a group while recognizing that individual characteristics may have different associations with migration status.

Empirical evidence from Indonesia also supports the relevance of demographic characteristics in migration research. Pardede, McCann, and Venhorst (2020), using longitudinal data from the Indonesia Family Life Survey, demonstrate that internal migration is associated with individual and household characteristics, including age, education, marital

status, relationship to the household head, gender, previous migration experience, and family size. Their findings reinforce the argument that migrants do not necessarily constitute a random selection of the population. Instead, migration experiences may vary systematically according to demographic and household characteristics. Czaika and Reinprecht (2022) likewise emphasize that migration drivers operate within complex demographic, economic, social, political, and developmental contexts. Importantly, Schewel (2020) cautions against mobility bias in migration research, arguing that explanations of mobility should be complemented by attention to immobility. Non-migration may reflect personal preferences, family attachments, limited capabilities, or structural constraints. Accordingly, comparisons between migrant and non-migrant households should be understood as an examination of differences in migration status rather than an assumption that migration is inherently preferable to remaining in one's place of origin.

Nevertheless, the relevance of these theoretical and empirical contributions does not eliminate the need for context-specific investigation. Migration patterns and their demographic correlates may differ across geographical settings because individuals encounter different opportunities, constraints, and household circumstances. Research on residential mobility has also demonstrated that demographic characteristics interact with housing conditions and residential preferences. Jiang, Feng, Timmermans, and Li (2017) explain residential mobility through the relationship between socioeconomic and demographic characteristics, actual housing conditions, residential aspirations, and satisfaction with the living environment. Šiljeg, Marić, and Cavrić (2018) similarly conceptualize housing quality as a multidimensional construct connected to household characteristics, residential satisfaction, and mobility. Although these studies primarily address residential mobility and housing conditions, they provide a broader context for understanding why migration status may be associated with circumstances beyond demographic attributes alone. The specific research gap addressed here concerns the empirical association between demographic characteristics and lifetime household migration status in Bone Bolango Regency, Indonesia, using the 2025 Intercensal Population Survey (SUPAS). In particular, further analysis is needed to establish whether age, sex, educational attainment, employment status, and household size are significantly associated with household migration status when examined simultaneously and individually within this regional context.

Accordingly, this study aims to analyze the relationship between demographic characteristics and household migration status in Bone Bolango Regency. Using secondary microdata from SUPAS 2025, the study examines five demographic variables: the age, sex, educational attainment, and employment status of the household head, together with household size. Household migration status is operationally defined according to the lifetime migration status of the household head, distinguishing migrant households from non-migrant households based on the relationship between birthplace and current residence at the relevant administrative level. Binary logistic regression is employed to assess the joint and individual associations between these demographic characteristics and household migration status, incorporating the survey weights specified for the analysis. The study contributes context-specific empirical evidence to migration research by examining demographic selectivity at the household level in an underexamined regional setting. Its principal contribution lies in identifying which demographic characteristics are statistically associated with lifetime household migration status, rather than establishing causal effects or reconstructing the circumstances preceding migration. Given the cross-sectional design and the retrospective nature of the migration measure, the findings are interpreted as statistical associations. This approach provides a focused empirical basis for understanding differences between migrant and non-migrant households and for informing further research on population dynamics in Bone Bolango Regency.

2 METHODOLOGY

This study employed a quantitative analytical observational approach with a cross-sectional design to examine the association between demographic characteristics and household migration status in Bone Bolango Regency, Indonesia. Secondary data were obtained from the 2025 Intercensal Population Survey (SUPAS 2025), conducted by Statistics Indonesia. The unit of analysis was the household, with migration status determined by the lifetime migration status of the household head, based on the comparison between birthplace and current residence. The analytical sample consisted of 1,088 households, including 228 migrant households and 860 non-migrant households. After applying survey weights, the sample represented an estimated population of 42,358 households.

The independent variables comprised five demographic characteristics: the age, sex, educational attainment, and employment status of the household head, as well as household size. Household migration status was the dependent variable, coded as 1 for migrant households and 0 for non-migrant households. Descriptive statistics were used to summarize the demographic profiles of the households, while binary logistic regression was employed to examine the joint and individual associations between demographic characteristics and migration status. The analysis incorporated SUPAS 2025 sampling weights, and statistical significance was assessed at the 0.05 level. Regression coefficients were exponentiated to obtain odds ratios (ORs), which indicated the relative odds of migrant household status.

The findings were interpreted as statistical associations rather than causal relationships because the study used a cross-sectional design and lifetime migration status may reflect movements that occurred before the demographic characteristics were recorded. The analysis focused specifically on the relationship between demographic characteristics and household migration status, without including residential environmental quality as a predictor.

3 RESULTS AND DISCUSSION

3.1 Demographic Characteristics of Migrant and Non-Migrant Households

The descriptive analysis identified differences in the demographic profiles of migrant and non-migrant households in Bone Bolango Regency. Of the 1,088 households included in the analytical sample, 228 were classified as migrant households and 860 as non-migrant households, based on the lifetime migration status of the household head. After applying the SUPAS 2025 sampling weights, migrant households accounted for approximately 21.89% of the estimated household population, whereas non-migrant households represented 78.11%. These findings indicate that non-migrant households constituted the majority of households in the study area, although migration experience remained an important feature of the region's population structure.

Differences were also observed in the age and employment characteristics of household heads. The mean age of household heads in migrant households was approximately 43.45 years, compared with 47.18 years among non-migrant households. Furthermore, approximately 62.66% of household heads in migrant households were employed, compared with 55.28% in non-migrant households. These descriptive differences suggest that household migration status may be associated with age and participation in economic activities. However, descriptive statistics alone cannot establish whether these differences are statistically significant after accounting for other demographic characteristics. Binary logistic regression was therefore employed to examine the individual and joint associations between demographic characteristics and household migration status.

The descriptive findings provide an initial indication of demographic selectivity in migration. Nevertheless, the interpretation requires an important distinction between lifetime migration status and demographic characteristics observed at the time of the survey. Because the study classified households according to the difference between the household head's birthplace and current residence, the recorded migration status may reflect a movement that occurred many years before the survey. Consequently, the observed age, education, and employment characteristics should not automatically be interpreted as conditions that preceded migration.

3.2 Overall Association Between Demographic Characteristics and Household Migration Status

The first logistic regression model examined the associations of five demographic characteristics with household migration status: the age, sex, educational attainment, and employment status of the household head, together with household size. The Omnibus Test of Model Coefficients indicated that the demographic model was statistically significant, with a chi-square statistic of 1,977.372, six degrees of freedom, and a p-value below 0.001. This result indicates that the model containing the demographic predictors provided a statistically significant improvement over the intercept-only model.

The model summary produced a Nagelkerke pseudo-(R^2) value of 0.070, indicating that the model's explanatory performance was relatively limited. Although the demographic variables were jointly associated with household migration status, they did not account for most of the observed variation in the outcome. Other potentially relevant factors, including household economic circumstances, employment opportunities in destination areas, family networks, accessibility, migration motives, and characteristics of origin and destination regions, were not included in this model.

These findings are consistent with Lee's (1966) migration theory, which conceptualizes migration as a process shaped by conditions at the place of origin, conditions at the destination, intervening obstacles, and personal factors. Lee's framework emphasizes that individuals may respond differently to similar circumstances because their personal characteristics and perceptions differ. The findings are also consistent with the Push-Pull Plus Framework proposed by Van Hear, Bakewell, and Long (2018), which explains migration through the interaction of multiple drivers rather than a single determining factor. In this context, demographic characteristics provide relevant information for understanding differences in migration status, but they should not be considered a comprehensive explanation of migration.

3.3 Association Between Household Head's Age and Migration Status

Age was negatively and significantly associated with household migration status. The estimated odds ratio was 0.988, with a 95% confidence interval of 0.986–0.990. This result indicates that, holding the other demographic variables constant, each additional year of age was associated with approximately a 1.2% decrease in the odds of a household being classified as migrant.

This finding corresponds with the descriptive results, which showed that household heads in migrant households were younger on average than those in non-migrant households. The association suggests that lifetime migration status differed according to the age of the household head. However, because the study used a cross-sectional design, the result does not demonstrate that younger individuals are necessarily more likely to migrate at a particular point in time. Rather, it indicates an association between current age and the accumulated migration experience represented by the household head's birthplace and current residence.

The finding can be interpreted through the life-course perspective discussed by Coulter, van Ham, and Findlay (2016). This perspective considers mobility and immobility in relation to life transitions, including education, entry into the labor market, family formation, employment changes, and evolving household responsibilities. Younger individuals may be situated at stages of life characterized by educational transitions, employment opportunities, or the formation of new households. Conversely, increasing age may coincide with stronger attachments to employment, family relationships, assets, and established residential environments. These mechanisms provide a plausible theoretical interpretation of the observed negative association, although the present study did not directly measure life-course transitions or establish the timing of migration.

The result also accords with the empirical evidence reported by Pardede, McCann, and Venhorst (2020), whose analysis of the Indonesia Family Life Survey identified age among the individual and household characteristics associated with internal migration in Indonesia. Taken together, these findings support the relevance of age as a demographic correlate of migration. Nevertheless, the magnitude and direction of the association should be interpreted within the geographical and operational scope of the present study.

3.4 Association Between Household Head's Sex and Migration Status

Sex was significantly associated with household migration status. The estimated odds ratio was 2.937, with a 95% confidence interval of 2.682–3.216. According to the model's coding, female-headed households had approximately 2.94 times the odds of being classified as migrant compared with male-headed households, after controlling for age, educational attainment, employment status, and household size.

This finding indicates that migration status differed substantially according to the sex of the household head in the surveyed population. It should not, however, be interpreted as evidence that women generally migrate more frequently than men. The dependent variable represented the lifetime migration status of the household head, while the model examined households residing in Bone Bolango Regency at the time of the survey. The result therefore describes a conditional association within this particular population and does not establish the migration behavior of women and men in other settings.

Several contextual mechanisms may help explain this association. Differences in employment opportunities, family responsibilities, marital transitions, access to resources, and family reunification may be associated with the likelihood that a household head has a migration history. These possibilities are compatible with Lee's (1966) emphasis on personal factors and with the broader framework of Van Hear, Bakewell, and Long (2018), which highlights the interaction of individual circumstances and structural conditions. However, because these mechanisms were not directly measured in the model, they should be treated as possible interpretations rather than demonstrated explanations for the observed relationship.

The finding also reinforces the importance of examining migration at the household level. The sex of the household head may reflect family structure and household circumstances as well as individual characteristics. Therefore, further research incorporating marital history, family relationships, reasons for migration, and the migration histories of other household members could help clarify the mechanisms underlying the observed association.

3.5 Association Between Educational Attainment and Migration Status

Educational attainment was significantly associated with household migration status overall. The model treated education as a categorical variable, using higher education as the reference category. The estimated odds ratio for household heads with primary education was 0.500, with a 95% confidence interval of 0.464–0.539. This indicates that, after controlling for the other demographic characteristics, households whose heads had primary education had approximately 50% lower odds of being classified as migrant than households whose heads had higher education.

By contrast, the odds ratio for secondary education was 0.960, with a 95% confidence interval of 0.887–1.039. This association was not statistically significant at the 5% level ((p=0.316)). Thus, the results did not provide sufficient evidence of a difference in migration status between household heads with secondary education and those with higher education. The significant overall association for education should therefore be distinguished from the significance of its individual categories.

The observed association is consistent with the Aspirations-Capabilities Framework proposed by de Haas (2021). Within this framework, migration depends not only on the aspiration to move but also on the capability to realize that aspiration. Educational attainment may be associated with access to information, employment opportunities, social networks, and resources that facilitate geographical mobility. The lower odds observed among household heads with primary education relative to those with higher education are compatible with this framework, although the study did not directly measure migration aspirations or capabilities.

Education should nevertheless not be interpreted as a direct cause of migration on the basis of these results. Educational attainment was recorded at the survey reference period and may have been acquired before or after the household head's migration. The association may therefore reflect a combination of educational opportunities, socioeconomic circumstances, and migration experiences. This distinction is important when interpreting lifetime migration status using cross-sectional data.

3.6 Association Between Employment Status and Migration Status

Employment status was also significantly associated with household migration status. The estimated odds ratio was 1.183, with a 95% confidence interval of 1.125–1.243. Based on the model's coding, household heads in the employed category had approximately 18.3% higher odds of belonging to a migrant household than those in the reference category, after controlling for the other demographic variables.

This finding is consistent with the descriptive results, which showed a higher proportion of employed household heads among migrant households than among non-migrant households. Employment may be associated with migration through differences in access to economic opportunities, labor-market participation, and the resources available to support mobility. In Lee's (1966) framework, employment opportunities may be relevant to the conditions that individuals encounter at places of origin and destination. Similarly, Van Hear, Bakewell, and Long (2018) emphasize that migration is shaped by interacting drivers operating at different levels.

However, the present study cannot determine whether employment preceded migration or resulted from circumstances following migration. Employment status was measured at the time of SUPAS 2025, whereas lifetime migration may have occurred substantially earlier. The significant association therefore indicates that employment status and household migration status were statistically related in the observed population, not that employment necessarily caused migration.

3.7 Association Between Household Size and Migration Status

Household size did not demonstrate a statistically significant independent association with household migration status in Model 1. The estimated odds ratio was 1.013, with a 95% confidence interval of 0.998–1.028 and a p-value of 0.082. Although the point estimate suggested a small positive association, the evidence was insufficient to establish statistical significance at the 5% level after controlling for age, sex, educational attainment, and employment status.

This result does not imply that family structure is irrelevant to migration. Mulder (2018), through the Family Ties Perspective, emphasizes that mobility and residential immobility are connected to relationships with spouses, children, parents, and other family members. Decisions to move or remain in a particular location may depend on family obligations, shared resources, and the circumstances of other household members. Household size, however, is a relatively broad measure that does not capture these relationships or the specific responsibilities associated with each household member.

The absence of a statistically significant association may therefore indicate that household size alone does not adequately represent the family mechanisms associated with migration status in this model. More detailed measures, such as household composition, dependency ratios, marital status, the presence of school-aged children, and migration histories of other household members, could provide additional information in future studies. Nevertheless, these possibilities remain hypotheses for further investigation rather than conclusions established by the current analysis.

3.8 Model Performance and Overall Interpretation

Although the demographic model was statistically significant overall, its diagnostic results indicate important limitations. The Hosmer–Lemeshow test was significant ((p=0.001)), suggesting that the model's predicted probabilities differed from the observed outcomes across the evaluated groups and that its goodness of fit was limited. The classification table, using a cutoff of 0.50, reported an overall classification accuracy of 78.1%. However, the model correctly classified 100% of non-migrant households and 0% of migrant households. The overall accuracy was therefore largely attributable to the predominance of non-migrant households rather than an ability to distinguish both groups effectively.

These findings demonstrate why overall classification accuracy should not be interpreted in isolation. A model can achieve apparently high accuracy when one outcome category dominates the sample while performing poorly in identifying the less frequent category. Accordingly, the results support the conclusion that demographic characteristics were jointly associated with household migration status, but the model's predictive and explanatory capabilities remained limited.

Overall, the analysis identified statistically significant associations for age, sex, educational attainment as a whole, primary education relative to higher education, and employment status. Secondary education relative to higher education and household size did not show statistically significant individual associations. These findings support the interpretation of migration as a selective and multidimensional process, consistent with Lee (1966), Van Hear, Bakewell, and Long (2018), and de Haas (2021). They also demonstrate the relevance of considering life-course circumstances and family relationships, as discussed by Coulter, van Ham, and Findlay (2016) and Mulder (2018).

The findings should be interpreted within the study's specific scope: households residing in Bone Bolango Regency, classified according to the lifetime migration status of the household head using SUPAS 2025 data. The cross-sectional design, limited explanatory performance, and absence of direct measures of migration timing and motives preclude causal conclusions. Nevertheless, the results provide empirical evidence that demographic characteristics distinguish household migration status in this regional context and establish a basis for more comprehensive research incorporating socioeconomic conditions, family dynamics, migration histories, and regional opportunities.

4 CONCLUSION

This study demonstrates that demographic characteristics are jointly associated with household migration status in Bone Bolango Regency, Indonesia. The binary logistic regression model showed a statistically significant overall relationship χ^2 = 1,977.372, df = 6, p < 0.001 Individually, household head's age, sex, educational attainment, and employment status were significantly associated with migration status. Older household heads had lower odds of belonging to migrant households, while female-headed households and households whose heads were employed had higher odds, based on the categories specified in the model. Household heads with primary education had lower odds of migrant status than those with higher education. Secondary education and household size were not statistically significant predictors after controlling for the other demographic variables.

Despite these findings, the model's explanatory capacity was limited, with a Nagelkerke $R^2 = 0.070$, and its classification performance for migrant households was poor. These limitations underscore the multidimensional nature of migration and the importance of considering factors beyond demographic characteristics. This study contributes regional empirical evidence on demographic selectivity in lifetime household migration status using SUPAS 2025 data. Future research should incorporate socioeconomic conditions, family networks, migration motives, and destination characteristics, preferably using longitudinal data to clarify temporal relationships. The findings should be interpreted as statistical associations rather than causal effects.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Disclosure of conflict of interest

The authors declare no conflicts of interest regarding this manuscript.

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