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Internal migration, group size, and ethnic endogamy in Indonesia

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Abstract

Much of the literature on assortative mating has centred on the social contexts of immigrant-receiving countries in the West. This article examines ethnic assortative mating (endogamy) against rising volumes and intensity of migration within a multi-ethnic lower middle-income country. We used full enumeration data from the 2010 Indonesian Population Census to create a national dataset of husband–wife pairs (n = 47.8 million couples), and five subsets of married couples from provinces with the highest proportion of lifetime migrants: Riau, Riau Islands, Jakarta, East Kalimantan, and West Papua (n = 4.05 million). First, we examined the association between migration, group size, and endogamy at the provincial level. We found a negative association between internal migrant stock and endogamy across 33 provinces in Indonesia. Using endogamy as a proxy of the strength of ethnic boundaries, we have shown that accounting for group size at the provincial level changes the overall ranking of endogamy among ethnic groups. Second, drawing on the subsets of couples in the five provinces with the highest proportion of migrants in their population, we used multivariate analysis to examine how migration status correlates with the likelihood of endogamy at the individual level. Controlling for sex, group size, age, education, and religion, we found that the relationship between an individual's migration status and endogamy varies across the five provinces, reflecting the different nature and history of migration, and the ethno-religious composition in these regions.

KEYWORDS

ethnicity, endogamy, internal migration, marriage, Indonesia, Census

1 | INTRODUCTION

Studies of marriage pairing across societies underscore a predominant pattern of assortative mating—a tendency for an individual to partner with someone who shares similar group characteristics such as race, ethnicity, religion, and social class (Morgan, 1979; Tindale & Klocker, 2018). This tendency to *marry your like* echoes the idea that coupling behaviour is far from random. Understanding patterns of who marries whom can therefore reveal a great deal about the nature of group boundaries, social stratification, and the complexities of development and change in ethnically diverse societies. This article considers the role of internal migration in ethnic assortative mating in Indonesia.

Indonesia is one of the most ethnically diverse countries in the world (Alesina, Devleeschauwer, Easterly, Kurlat, & Wacziarg, 2003). The first demographic account

of ethnic make-up in what is now known as Indonesia was conducted by the Dutch colonial administration in 1930. The 1930 colonial census counted 137 ethnic categories, a number that could have been far greater given the simplifying assumptions that put many ethnic and sub-ethnic groups under one category (Van Klinken, 2003).[1] Data on ethnicity were not collected again until the 2000 Population Census (Ananta et al., 2015). Such a long hiatus in the collection of data on ethnicity was primarily driven by the desire of past regimes to promote one collective national identity after Indonesia's independence from the Dutch in 1945 (Hugo, 2015). Although the latest two Censuses provide a detailed classification of over 1,300 ethnic and sub-ethnic groups, official publications aggregate ethnicities into 31 broad categories, with the three largest groups being the Javanese (40.2%), the Sundanese of West Java (15.5%), and the Bataks of North Sumatra (3.6%) (BPS-Statistics Indonesia, 2011a).

There has been little quantitative analysis on ethnic assortative mating in Indonesia. On the one hand, the dearth of demographic approaches to study this topic is partly explained by the 70-year hiatus in the country's data collection on ethnicity as described above (Ananta et al., 2015). More generally however, there is a paucity of ethno-demographic research on marriage pairing in developing counties. A demographic approach to study endogamy is timely given the continued increase in the volume and intensity of internal migration, which is bound to change the landscape of local marriage markets in these societies (Ananta et al., 2015; Hugo, 2000). Indeed, much of the literature on assortative mating and social stratification has been based on the social contexts of—and data collected from—the United States and other immigrant-receiving countries in the West (Kalmijn & van Tubergen, 2006; Qian & Lichter, 2007). Our article offers a platform to test the applicability of one aspect of what is largely a Western scholarship on endogamy in an ethnically diverse emerging democracy in Southeast Asia.

The scholarship on assortative mating proposes three main drivers of racial/ethnic endogamy, and conversely, of exogamy: individual preferences, the role of third parties, and group size (Blau, Blum, & Schwartz, 1982; Harris & Ono, 2005; Kalmijn, 1998). First, the frequency of marrying-in or -out reflects individual preferences in the spouse selection process. Individuals have preferences for a certain set of characteristics that they look out for in a spouse. Kalmijn (1998) outlines that these characteristics would include both the proxies of socio-economic resources in a potential partner—such as income, class, and education, and of cultural similarity—such as worldview, taste, and interests.

Key insights

We consider the role of internal migration in ethnic assortative mating in Indonesia. Data from the 2010 Population Census suggest that rates of endogamy varied across ethnic groups and across provinces. Larger ethnic groups had higher rates of endogamy but controlling for group size changed the overall ranking of endogamy by ethnicity. Provinces with higher share of internal migrants in their population had lower rates of endogamy. Younger individuals and those with higher levels of education were less likely to be in an endogamous marriage, but the patterns of association between an individual's migration status and endogamy were not consistent in top migrant destination provinces.

Second, it is predicted that the frequency of endogamy declines with the decline in third-party controls in the spouse selection process. Included in third parties are parents, extended kin networks, and socio-cultural institutions that may limit to individuals' agency to freely choose their romantic partner. One concrete example for the latter is the Indonesian Marriage Act 1974 that effectively inhibits interreligious marriage in Indonesia (Jones, Leng, & Mohamad, 2009).

Third, the rate of endogamy of a racial/ethnic group is positively related to its group size. For example, the chance for an individual to meet a romantic partner with same racial/ethnic background in a particular city is higher if there were more people with that racial/ethnic background residing in the city. Across the ethnically diverse Indonesian archipelago, internal migration is a powerful driver behind the change in the relative size of an ethnic group within a particular region (Ananta et al., 2015).

The literature uses group size as a proxy for the chances of meeting potential romantic partners; hence, it encapsulates the structural forces that shape marriage outcomes as opposed to cultural forces related to norms and preferences (Kalmijn & Van Tubergen, 2010). In other words, even with no ethno-cultural preferences for same group marriage, ethnic assortative mating would be higher among larger groups. Aside from group size, other measures of structural opportunities in marriage markets include residential segregation of a racial/ethnic group, the sex ratio of a particular group, and the availability of partners with similar class/education attainments from the same group (see Kalmijn & Van Tubergen, 2010).

Out of these three drivers of endogamy, the latest Indonesian Census data allow us to quantify and factor in group size in examining endogamy patterns. Controlling for group size allows us to speculate how preferences, norms, and institutions that regulate ethnic boundaries in the marriage market are driving ethnic-specific ranking in the likelihood of endogamy and to consider how internal migration may shape these processes.

Our current work examines the association between migration, group size, and endogamy in Indonesia and centres on the following sets of research questions. First, at the provincial level what is the association between internal migrant stocks endogamy, how does the rate of endogamy vary between migrants and non-migrants, and how does the likelihood of endogamy vary among major ethnic groups once we control for their size? Second, at the individual level what are the associations between the likelihood of endogamy and migration status, accounting for characteristics such as group size, age group, education, religion, and sub-national level clustering?

To address these questions, we first examined the association between rates of ethnic endogamy and the percentage of populations born outside of the province of current residence across all 33 provinces in Indonesia. We then considered the variations in endogamy among major ethnic groups nationally and within the five provinces with the highest proportions of internal migrants in their populations and correspondingly lowest rates of ethnic endogamy: Riau Islands, Jakarta, East Kalimantan, Riau, and West Papua. In these provinces, we also compared the rate of endogamy across migration categories.

Second, using a subset of married couples residing in the five provinces above, we used a multivariate approach to examine the association between migration status and endogamy at the individual level. Focusing on these five provinces allowed us to examine whether the individual-level effect of migration status on endogamy varies across one popular migration destination to another.

Before elaborating on those points, we begin with a brief overview of ethnicity, migration, and intergroup relations in Indonesia.

2 | BACKGROUND

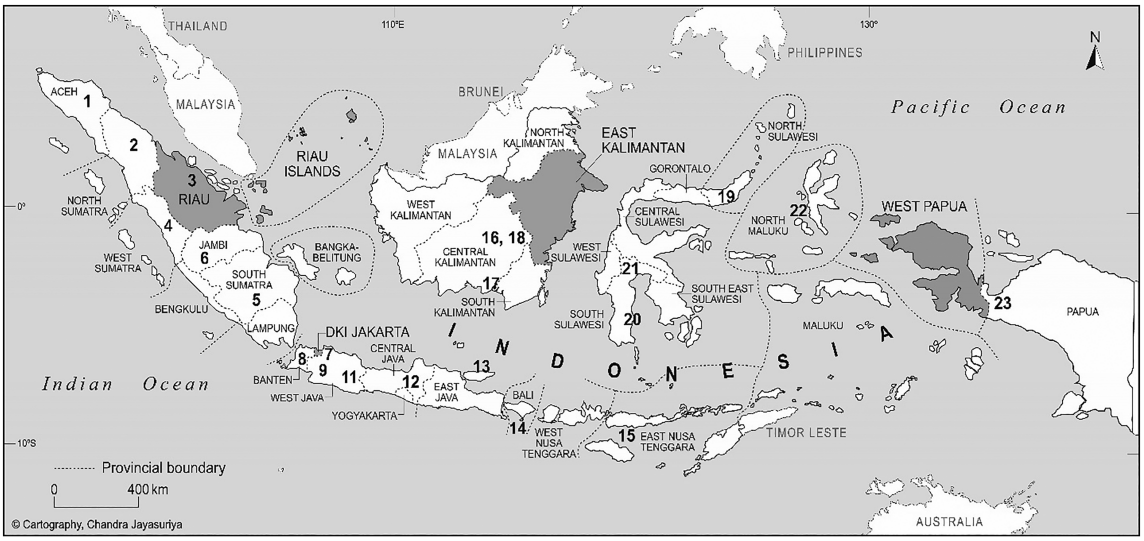
2.1 | Ethnicity

Ethnicity (Ind: *sukubangsa*) is a "ubiquitous" social category in contemporary Indonesia with Goebel (2013, pp. 4–5) noting that ideas about distinguishing group characteristics among people living in different parts of what is now Indonesia existed before the 19th century. However, following the arrival of the Dutch, the idea that the Indonesian archipelago consists of "geographically anchored" ethnic groups with different cultures and languages continued to circulate and evolve (Goebel, 2015, p. 1). Figure 1 is a map showing the province of origin of major ethno-regional groups in Indonesia.

When asked about what ethnicity is, Indonesians would speak of native languages, accents and dialects, traditional rituals and ceremonies, race, dominant religions, food and cooking habits or preferences, physical traits and gaits, characters, temperaments, and even typical occupations or trades attached to certain groups (Goebel, 2013; Jaspars & Warnaen, 1982; Kipp, 1996; Van Klinken, 2003). Ethnic stereotypes remain pervasive in everyday social interactions (Van Klinken, 2003). These stereotypes are commonly found in friendly banter among friends and neighbours, but can be "sensitive" and "discriminatory" and invoke a sense of unease and tension, and at times, can also be used to incite communal conflicts (see Bertrand, 2004). Ethnic boundaries do not necessarily equate to religious divisions, but the two often intersect and combine in discourses on authority, community, and identity.

The existence of generalised social anxiety about ethnicity's potentially divisive nature is best illustrated by its deliberate exclusion from the four Censuses following independence and from the conditional formats of the publicly released data on ethnicity in the last two Censuses.[2] In the 2010 Census, unlike other person-level variables such as education, age, or labour force participation, village and sub-district identifiers were removed from the person-level datasets containing ethnicity.[3]

Indeed, ethnicity is a complex social category. For example, as part of the ongoing process of nation-building after Indonesia's independence in 1945, ethnicity has evolved into a *state-sponsored* social category. Although politically defined cultural attributes to each ethnic groups have been celebrated as the fabric of the nation's diverse heritage, at the same time, "meaningful cultural distinctions" were "eliminated" and homogenisation was encouraged to promote a collective identity and what Ben Anderson proposed as an "imagined community" that is Indonesia (Aspinall, 2002; Hoey, 2003, p. 111). On one hand, there is certain rigidity associated with ethnic boundaries when it comes to long-standing conventions (Ind: *adat istiadat*) regarding rituals, kinship rules, and belief systems. On the other hand, ethnic identities and boundaries are rather fluid and incessantly negotiated by a long and complex history of migration and intergroup exchange, colonisation, proselytisation, and ethnic politics (see Hoon, 2006; Murray Li, 2000).



Note: The map outlines the 34 provinces in Indonesia as of 2013. At the time of the 2010 Population Census, there were only 33 provinces. The province of North Kalimantan was newly created in 2012. The shaded areas refer to the five provinces with the highest proportion of lifetime migrants: Riau Islands, Jakarta, East Kalimantan, Riau and West Papua.

The numbers in the map correspond to the approximated area of origin for the 24 aggregated ethno-regional groups used in the paper: 1. Acehnese; 2. Batak; 3. Malay; 4. Minangkabau; 5. All ethnicities from South Sumatra; 6. All other ethnicities from Sumatra; 7. Betawi; 8. Bantenese; 9. Sundanese; 10. Chinese; 11. Cirebonese; 12. Javanese; 13. Madurese; 14. Balinese; 15. All ethnicities from Nusa Tenggara; 16. Dayak; 17. Banjarese; 18. All other ethnicities from Kalimantan; 19. Minahasan; 20. Buginese/Makassarese; 21. All other ethnicities from Sulawesi; 22. All ethnicities from Maluku; 23. All ethnicities from Papua; 24. All ethnicities from foreign origins (not shown in map - not associated with any province of origin in the map).

FIGURE 1 A map of ethno-regional groups in Indonesia

2.2 | Internal migration, intergroup relations, and marriage

The long-standing process of ethnic intermixing goes hand in hand with a tradition of migration within the archipelago. Fielding (2015) proposes five categories of population movements within Indonesia. The first is what he calls Indigenous population mobility system. Several ethnic groups are renowned for their long traditions of migration (Ind: *merantau*), which is, for example, a rite of passage for Minang men from West Sumatra or part of the reputation of the Bugis/Makassar of South Sulawesi who are known as traders and seafarers. The second category of migration referred by Fielding is constituted by episodic migrations owing to wars, conflicts, and natural disasters. The third category comprises a more gradual but consistent flow of people from rural to urban areas, a prominent feature of contemporary development in Indonesia, with movements into the capital region of Greater Jakarta dominating the flows. What was not specifically mentioned as a sub-category by Fielding but is a key feature of population movement in Indonesia is that of circular migration (Hugo, 1982, 1988). Transmigration is the fourth category. Transmigration refers to the movements of people towards new lands; this would include both spontaneous movements and large-scale government-sponsored population resettlement policy to resettle people from densely populated areas in Java, Bali, and Madura to outer islands. Transmigration has been a core part of population policy in Indonesia and dates back to the Dutch colonial administration beginning in 1905, and the Javanese have made up the largest proportion of government-sponsored transmigrants. Other ethnic groups with sizeable representation as transmigrants are the Sundanese of West Java, the Balinese, and the Madurese. At its peak from 1979 to 1984, over 493,000 people were relocatedeach year into transmigration settlements (Fearnside, 1997). The fifth category describes a more recent phenomenon that Fielding has labelled spillover migration. Here, Fielding refers to movement to newly created economic zones in the Riau Islands. The Islands' proximity to Singapore has facilitated recent growth in manufacturing, trade, and tourism from Singapore.[4]

An analysis of migration trends in Indonesia from 1930 to 2000 indicates that economic motivation has been the primary driver of migration (van Lottum & Marks, 2012). Over the 70-year period, migration flows

were dominated by movements to Jakarta—the country's economic and political capital, whereas government-sponsored transmigration was relatively small.

Despite the varied categories of population movement within Indonesia, it is clear that together their volumes and intensity have risen overtime. The 1930 Population Census estimated that about 5.6% of Indonesians lived outside their birth province. Eight decades later, 2010 Census data show that this figure has doubled. In 2010, close to 28 million or about 12% of Indonesians live outside their birth province. In the five-year period prior to the 2010 Census, about 5.4 million individuals moved across provincial borders. Even taking into accounts changes in the provinces' administrative borders and the creation of new provinces, data on migration stocks and flows in Indonesia indicate rising population mobility across and within provincial borders—a core feature of contemporary social processes across developing countries.

In his seminal work on migration and ethnic conflict in India, Weiner (1978) has hypothesisedtwo counter processes of modernisation. On one hand, in the context of a low-income multi-ethnic country such as India, processes for modernisation provide the incentives and opportunities for increased mobility and migration. But, on the other hand, these processes of modernisation also fuel ethnic identification and ethnic cohesion; this is especially the case given that a large influx of migrants into a particular region would change the ethnic composition in that locality (Weiner, 1978, p. 3). Similarly, in Indonesia, increased population mobility was thought to be a driver of growing ethnic inequality and tensions during the rule of the New Order (1966–1998) (Tirtosudarmo, 1997). There is now growing amounts of scholarship focusing on the rise in horizontal conflicts associated with, among many other intricate factors, increased population mobility and the decentralisation of power following the fall of the New Order regime in 1998 (Barron, Kaiser, & Pradhan, 2009; Mancini, 2008).

That heightened ethnic tensions might be a by-product of population movements within a national boundary is one thing. Yet, on the opposite end of the spectrum, increased interactions between members of different population groups may promote tolerance and acceptance of *others*. To date, the empirical evidence for the Indonesian context is ambiguous. A recent article considering the causal relationship between ethnic diversity and social capital in Indonesian communities found that diversity promotes tolerance but also seems to negatively affect other social capital variables such as trust, perceived safety, and participation in community activities (Mavridis, 2015).

The marriage of individuals from two distinct ethno-religious groups symbolises a union that goes beyond the idea of peaceful coexistence in diverse communities. In this sense, ethic intermarriage can be conceptualised as an epitomical marker for the degree of interaction, cooperation, co-optation, and acceptance among individuals, families, and social groups embedded in ethnic divisions. For example, an anthropological study of intermarriage in a transmigrant village in the province of Lampung, Sumatra has found that even with the increasing agency among the children of Javanese transmigrants to choose their own partners, intermarriage between Javanese and Lampungnese is "very rare" and "inspires a certain amount of fear among parents in both groups" (Elmhirst, 2013, p. 216).

A rich anthropological literature documents changing norms characterising marital unions between individuals from different ethno-religious groups in Indonesia (see Carnegie, 2013; Connolly, 2009; Ida Bagus, 2008; Robinson, 1998). However, ethno-demographic research on the topic is comparatively lacking. In a recent comprehensive work on the demography of Indonesia's ethnicities, Ananta et al. (2015) have anticipated a rise in the frequency of ethnic intermarriage in Indonesia owing to the rise in the volume and intensity of migration. Coupled with increasing population mobility, increased years of schooling, later age at marriage, and the declining influence of parental and familial authorities in deciding who one should marry are all stylised facts of development. Thus, at least in theory, these forces would induce greater prevalence of interethnic relationships and marriages overtime.

Another study on the attitudes of senior high school students towards interethnic and interfaith romantic relationships has suggested that there is relatively little opposition to interethnic relationships. With a sample of over 3,000 respondents from five provinces, Parker, Hoon, and Raihani (2014, p. 484) found that about one third of their sample either strongly agree or agree with interethnic marriage, about 64% were neutral, and less than 4% disagree with interethnic marriage. The strongest opposition to interethnic marriage, at 9%, was found among their respondents in the province of Bali where the majority ethnic group represent the Hindu minority in Indonesia. Overall, 52% of the Bali respondents disagreed with interfaith marriage.

Although attitudinal data of relatively educated young people indicate a laxer stance towards interethnic marriages, does this reflect the practice in the general population? Indeed, interethnic marriage is more common today than in the past, but it is still a long way from the norm. Our recent work utilising ethnicity data from the 2010 Population Census shows that close to 9 in 10 marriages in Indonesia occur between individuals of the same ethnicity, that this rate of endogamy varies

across Indonesia's 33 provinces, and that the likelihood of endogamy was lower among those from the younger age group and those with higher levels of education (Utomo & McDonald, 2016). The current article continues on from this earlier endeavour to explore ethno-regional specific patterns of marriage pairing through examining the role of internal migration and group size at the sub-national level.

2.3 | Hypotheses

Insofar as internal migration changes ethnic composition in a given region, we are keen to see how the rates of endogamy for major ethnic groups compare with one another in top migrant destinations in Indonesia. At the outset, the prevalence of ethnic assortative mating within a particular ethnic group may indicate the strength of that group's boundary relative to others (Nave, 2000). For example, when the percentage of individuals who marry out in Group A is higher than in Group B, it is tempting to conclude that Group A is more "open" than Group B. At the national level, groups with lower rates of endogamy would be ranked higher for their relative openness. But the use of "open" must be treated with caution here. In the first instance, the ethnic groups may be of unequal size. Second, each group may have a different distance from other groups.

It is misleading simply to compare the rates of endogamy between one group and another and treat those rates as an indicator of the degree of intergroup exchange and/or relative openness. In a situation where we assume that there is zero individual and societal preference towards endogamy, the probability that an individual is endogamous is determined by his or her own group size in the relevant marriage market (Blau et al., 1982; Harris & Ono, 2005; Kalmijn, 1998). If the selection of a partner was purely random, groups with large population numbers would have higher rates of endogamy. Therefore, accounting for group size at both the national level and the more local level is important when comparing the practice of endogamy/exogamy across ethnic groups.[5]

Related to unequal group size, another factor to note when using endogamy as a proxy of relative openness is the unequal geographic distance between ethnic groups and the non-static nature of such distance (see Hugo, 2015). When all ethnic origins have equal geographic distance to one another, it would be fair to presume that groups with higher rates of intermarriage are more open by the virtue of having specific cultural attributes that are less inhibitory to interactions with outsiders. But such is not the case in Indonesia where some ethnic groups originate from areas that are more geographically and socio-economically isolated than others (see Ananta et al., 2015). For example, one would expect that the Betawi people, the native people of Jakarta, would have a higher likelihood of intermarriage than would the native populations of ethnicities from the interiors of Borneo.

But geographic distance between ethnic groups is not static, and migration plays an important part in changing it. The relative *openness* of a group reflects the underlying nature of its migratory traditions and the ensuing creation of ethno-migrant networks. At the national level, groups with long traditions of spontaneous migration, like the Minang of West Sumatra, and the Bugis of South Sulawesi (Ananta et al., 2015; Fielding, 2015), are expected to have higher likelihoods of intermarriage in their lands of destination. The Javanese, who were over-represented among government-sponsored transmigrants (Clauss, Evers, & Gerke, 1988; Hugo, 1997), would also have higher likelihood of intermarriage. These caveats in our use of the term "openness" shall be noted when interpreting the results of our analysis.

Drawing from group size theory outlined in the first part of this article, and the background literature of ethnicity, migration, and intergroup relations in Indonesia, we test the following series of hypothesis:

H1. The larger the ethnic group, the larger the rate of endogamy.

H2. Individuals who are younger and those with higher levels of education will have a lower likelihood of endogamy, but the effect of migration status on endogamy will vary by internal migration categories and by the demographic and historical contexts in the province of destination.

3 | DATA AND METHODS

3.1 | Census data

We have access to the full count data from the 2010 Population Census, which collects a detailed enumeration of 1,340 ethnic categories from over 237 million residents of Indonesia. Because our primary objective is to consider the relative frequency of endogamy among major groups, we have used an aggregated classification of ethnicity with 24 ethno-regional groupings as outlined previously in the map of Indonesia (Figure 1).[6] In other words, we have applied a looser definition of endogamy compared with our previous work that employed detailed sub-ethnic categories (Utomo, 2019; Utomo & McDonald,

2016). For example, in this article, a marriage between two individuals from different Batak subgroups of North Sumatra is classified as endogamous.

Our first analytical subset is the national couple subset. It consists of over 47 million primary co-resident couples in prevailing marriages.[7] The distribution of individuals by ethnicity in our analytical subset of the Census is a close match to the distribution of the total population by ethnicity in the Census (see Table A1). For example, the Javanese account for over 42% of individuals in our national subset, and the corresponding percentage of Javanese in the total population was 40%.

The 2010 Indonesian Census data record two types of individual migration status at the district and province levels. The Census defines a provincial lifetime migrant as an individual whose province of residence at the time of the census was different from his or her province of birth. A recent migrant is defined in the Census as an individual whose province of residence at the time of the census was different to his or her province of residence five years prior to the census. Hugo (1997) provided a critical assessment of the Census-derived data on internal migration in Indonesia—which to this day continues to be the main source of data on population mobility in the country (see Muhidin, 2014; Sukamdi, 2008).[8]

3.2 | Census provincial subsets: Top migrant destination provinces in Indonesia

Given the vast diversity in Indonesia, we have focused on ethnic specific patterns of endogamy in both the national level and within five of the 33 provinces in Indonesia. These five provinces have contrasting histories of development and geographical characteristics, but they represent the top five provinces with the highest rates of lifetime migrants in their population (Table A2): Riau, Kepulauan Riau (Riau Islands), DKI Jakarta (Special Capital Region of Jakarta), Kalimantan Timur (East Kalimantan), and Papua Barat (West Papua).

Jakarta, the nation's capital, has long been an economic magnet for migrants. East Kalimantan is a resource-rich province, with oil and gas, coal, and logging being the primary drivers of the economy. Being a sparsely populated area in the past, East Kalimantan has also been one of the destination provinces for the government-sponsored transmigration programs, with the first wave of transmigrants mostly from Java arriving in the early 1950s (Clauss et al., 1988). Riau is another resource-rich province in the eastern coast of central Sumatra, with oil and gas, rubber, and palm oil plantations being key sectors in its economy. Like East Kalimantan, Riau has received relatively large numbers of government-sponsored transmigrants. Riau Islands was newly created as a province in 2002 having been part of Riau province; it is a designated industrial zone set up to take advantage of its proximity to Singapore and its labour-intensive manufacturing is the core pull factor attracting recent migration flows. It is also a main corridor of transit for international migrant workers from Indonesia (see Ford & Lyons, 2006). West Papua Province was also created as a province when, in 2003, the existing administrative province of Papua was split into two separate provinces: West Papua and Papua. West Papua is ranked second, after Riau Islands, among the provinces with the highest share of recent migrants in its population. More than half of the West Papuan economy is driven by its natural gas sector (Resosudarmo, Mollet, Raya, & Kaiwai, 2014), but trade, transport, and services are also important sectors for migrants in the province.

Being top migrant destinations, these five provinces are expectedly diverse in their ethnic make-up, relative to other parts in Indonesia. The largest ethnic groups in these provinces made up between 14% and 36% of the population (Ananta et al., 2015). The Javanese comprised the largest ethnic group in Jakarta (36%), in East Kalimantan (30%), and in West Papua (14%). The Malays were the largest group in Riau Islands (30%) and in Riau (33%).

Out of the five, long-standing tensions and conflicts attributed to migration, ethnicity, and inequality are most pronounced in West Papua. When we used detailed coding for ethnic and sub-ethnic groups in Indonesia, West Papua stood out as the most ethnically fractionalised region in Indonesia (Anon, 2016). This result is because of the numerous ethnic and ethnic subgroups of local origin; not including sub-ethnic groups, Ananta et al. (2015) have identified that the land of Papua has at least 261 local ethnic groups, making it the region with the highest number of local ethnic groups within the Indonesian archipelago.

The five provinces also have distinct differences in the religious make-up of their population. Over 87% of Indonesians were enumerated as Muslims, 7% as Catholics, 3% as Protestants, 1.7% as Hindus, 0.7% as Buddhist, 0.05% as Confucians, and 0.13% as others (BPS-Statistics Indonesia, 2011b). Muslims are majority populations in Riau (88%), Riau Islands (79%), Jakarta (85%), and East Kalimantan (85%). In West Papua, Muslims account for 38%, and the Catholics make up 54% of the population (BPS-Statistics Indonesia, 2011b).

The different historical contexts and nature of migration, as well as the ethno-religious composition in these provinces, are likely to differentiate the ways and the extent to which an individual's migration status is associated with his or her likelihood of ethnic endogamy.

3.3 | Methods

The first part of our analysis below examines the association between migration, group size, and endogamy at the provincial level. We began by exploring the association between the rate of endogamy and the internal migrant stock (% of lifetime migrants) across all 33 provinces in Indonesia. An individual is classified as being endogamous if he or she is married with someone enumerated with the same ethno-regional group (out of the 24 groups).

To consider how ethnic composition and relative group size in different provinces correlate with ethnic pairing patterns, we started by creating five provincial couples subsets. We began with six 24 × 24 matrices outlining a cross tabulation of husband's and wife's ethnicity: a national pairing matrix and five provincial pairing matrices. Using these matrices, we compared and contrasted the provincial variations in ethno-specific measures of endogamy using two methods: calculating the *rate* of endogamy and calculating the *odds ratio* for endogamy for these 24 ethno-regional groupings accounting for their relative size in each province (Rosenfeld, 2008). Rosenfeld has suggested that because odds ratios are not affected by group size, larger odds ratio for endogamy can be interpreted as a signal of greater *isolation* for an ethnic group in the marriage market. We thus highlighted how the two measures produce a very different picture on the relative ranking of endogamy among the groups.[9]

The second part of the analysis examines how migration status is associated with endogamy at the individual level. Using the province subsets, we ran a series of multivariate analyses to examine how the likelihood of endogamy relates to group size and individual characteristics such as migration status, age group, and education.

We outlined results from a series of logit regressions with robust standard errors to account for district-level clustering, and we ran the models separately for males and females across six regional subsets: the five provinces and a combined subset of all the five provinces.

In our model, controlling for group size, we have been primarily interested in how the likelihood of endogamy differs between a migrant and a non-migrant. We measured the size of each ethnic group by taking natural log of their size in each of the five provinces. The natural log of group size is commonly used in the literature to address the skewness in group size (Van Tubergen & Maas, 2007). Here, for an individual i of ethnic j in province z, group size refers to the natural log of the number of people classified in ethnic group j enumerated in province z.

Using the information on migration in the census, we defined four categories of migration status for our analysis:

1. non-migrant: born in current province, residing in current province five years ago (reference category);
2. return migrant: born in current province, residing in another province five years ago;
3. non-recent migrant: born in another province, residing in current province five years ago; and
4. recent migrant: born in another province, residing in another province five years ago.

Our inclusion of migration status as an explanatory variable came with a caveat. Because the Census does not have data on age at which the current marriage took place nor age at first marriage, we had no way of knowing whether the marriage occurred prior to or after migration. Hence, our results can be interpreted as the differences in the likelihood of endogamy between migrants and non-migrants but shall not be interpreted as a causal claim of the effect of migration per se on endogamy.

Other control variables in our models are urban/rural residence, age cohort, education, relative education of husband and wife, and religion. We used the census variables of urban and rural to identify whether an individual resides in an urban or rural location. Statistics Indonesia assigned scores to each village unit to determine its urban/rural status based on population density, the percentage of households in agriculture, and the availability or provision of urban infrastructure (such as schools, markets, shopping centres, cinemas, and hotels/entertainment venues such as a nightclub/billiard/pool halls/massage parlours/hospitals), percentage of households with telephones, and percentage of households with electricity (BPS-Statistics Indonesia, 2010).

We highlighted age cohort differences in the odds of endogamy to illustrate how marriage pairing patterns may change across generations (Schwartz, 2013). Younger individuals were expected to have lower odds of endogamy as the opportunity to mix with potential partners increases over time, through increasing volumes and intensity of migration within the Indonesian archipelago, improvement in the general level of schooling, and changing norms around pairing that are more likely to accommodate interethnic marriages.

We used four categories of education measured by an individual's highest educational attainment/completed education: primary school or less, junior high school (nine years of schooling), senior high school (12 years of schooling), and tertiary including associate diploma and diploma, bachelor degree from a university, and a post-graduate degree (Masters/PhD). Higher levels of education may work to encourage interethnic marriage through expanding the opportunities for individuals

to interact with others from different ethnicities in diverse schooling, work, and social environments (Kalmijn, 1998; Schwartz, 2013). Individuals with higher levels of education are also likely to have greater agency to overcome third-party controls in their spouse selection process (Yeung & Mu, 2019).

The relative education levels secured by husband and wife were included in the model to capture the tendency for individuals to marry someone of similar socio-economic status. There are three categories in the variable *relative education of husband and wife*: husband having higher levels of education than wife, husband and wife with same levels of education, and husband having less education than wife. We used the four education categories as outlined above—primary school or less, junior high school, senior high school, and tertiary—to create the relative education of husband and wife variable. Utomo (2014) has already found that one in two married couples in Indonesia has the same education level. There is little evidence on the trade-off between education and ethnicity in assortative mating patterns in Indonesia. It is plausible to expect that those who marry out in terms of ethnicity are also more likely to marry someone from different categories.

We used two categories of religion: Muslims and non-Muslims. The latter included all individuals enumerated as Catholics, Protestants, Buddhist, Hindus, Confucians, and other religions. As a Muslim majority country, and given the importance of religion in governing who can legally married to whom and how ethnicity is coterminous with religion in Indonesia, it was expected that individuals from minority religions would have higher likelihood of ethnic endogamy (see Aini, 2008; Aini, Utomo, & McDonald, 2019; Ananta et al., 2015; Carnegie, 2013; Connolly, 2009; Nilan, 2008).

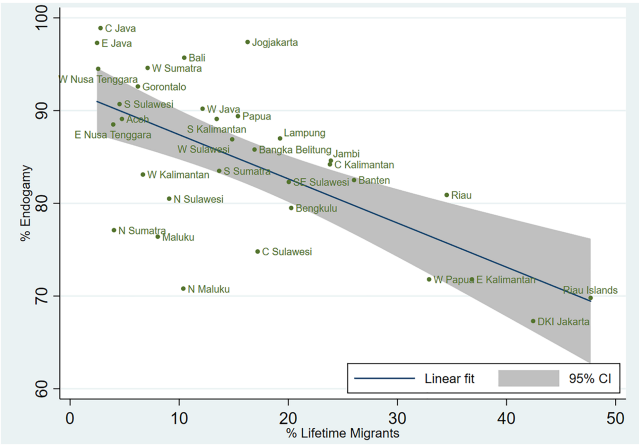


FIGURE 2 Rate of endogamy and share of lifetime migrants in 33 provinces: Indonesia, 2010. CI, confidence interval

4 | RESULTS

4.1 | Migration, group size, and endogamy: Interprovincial variation

A bivariate analysis of the provincial stocks of internal migrants and rates of endogamy suggests that there is a strong and statistically significant negative correlation between the two variables (Figure 2, $r = -.66$). This finding supports the idea that a population in a region with a larger stock of migrants is likely to have a lower rate of endogamy. We found that 90% of all co-resident married individuals in Indonesia was endogamous. As expected, the five top migrant destination provinces show the lowest rates of endogamy. The rate of endogamy was lowest in the nation's capital of Jakarta (67%).

Further analysis of the association between rates of endogamy and migration status in these five provinces yields mixed results (Table 1). Among both men and women, recent migrants have lower rates of endogamy than non-migrants in Riau, Riau Islands, and West Papua. But the opposite holds for the nation's capital of

TABLE 1 Percentage distribution of couples by migration status and ethnic endogamy

	All 5 provinces	Riau Islands	Riau	Jakarta	East Kalimantan	West Papua
% Endogamy—Married men						
Non-migrants	74.5	84.2	81.1	67.3	69.2	88.3
Return migrants	58.0	60.5	53.8	58.1	54.0	61.4
Non-recent migrants	72.0	80.5	65.9	67.4	75.0	72.6
Recent migrants	76.8	80.9	69.0	72.8	83.1	78.0
% Endogamy—Married women						
Non-migrants	73.2	82.8	80.1	66.5	67.0	88.3
Return migrants	58.5	64.0	56.4	58.5	50.0	64.6
Non-recent migrants	73.0	81.8	66.0	68.0	77.9	72.0
Recent migrants	75.9	80.0	68.9	71.9	82.9	76.4

Jakarta and East Kalimantan. As a group, out of the four categories, return migrants—those who were born in the current province but resided in another province five years prior—have the lowest rate of endogamy.

Tables 2 and 3 show how the two different endogamy measures produce a different ranking of relative "openness" among major ethno-regional groups in Indonesia. Calculating rates of endogamy by ethnic groups using the national couples subset, we find that larger groups such as the Javanese and the Sundanese have relatively high rates of endogamy. But as an exception to the rule that larger size implies higher rates of endogamy, at the national level, we observed high rates of endogamy among non-Muslim minority ethnic groups including the Papuans, the Chinese, and the Balinese.

Owing to their larger size in areas surrounding their native homeland in Sumatra, the rate of endogamy for the Malays in Riau and Riau Islands was higher than the rate at the national level. The only other group showing higher provincial rates of endogamy relative to the national rates was the Chinese, also in Riau and Riau Islands.

Table 3 outlines how the ranking of endogamy by ethnic group changes compared with Table 2 once we control for their size, both at the national level and within each of the five provinces in focus. Table 3 shows that the likelihood of endogamy for each ethnic grouping in the five selected provinces is generally lower than at the national level. The Malays in West Papua, other Sulawesi ethnicities and Minahasans in Riau, and the Chinese in Riau are exceptions to these rules. Native ethnic groups, or ethnicities whose native homeland is located in the vicinity of the province in question, also tend to have lower likelihoods of endogamy. The Betawi of Jakarta

TABLE 2 Rate of endogamy (% individuals of an ethnic-origin group who are married to someone from the same group)

	Rate of endogamy (all married individuals)					
Ethno-regional group	**Indonesia**	**Riau Islands**	**Riau**	**Jakarta**	**East Kalimantan**	**West Papua**
Foreign	70.1	22.1	40.5	79.0	39.4	65.8
Betawi	71.4	16.1	18.2	67.6	16.1	18.6
Malay	76.6	78.6	84.4	39.7	32.0	31.0
Minahasan	82.2	41.9	44.4	46.1	54.9	50.4
All from Maluku	82.9	33.4	29.8	41.6	30.5	60.6
Batak	83.3	78.6	81.1	74.7	68.8	66.3
Others from Kalimantan	83.3	37.4	47.6	47.6	70.9	44.2
Others from Sumatra	84.2	55.9	81.1	34.1	34.7	39.2
All from South Sumatra	84.4	45.5	39.3	31.1	35.0	22.1
Minang	85.3	66.7	76.9	60.6	47.7	40.9
Banjarese	85.8	37.8	80.6	30.2	61.4	23.2
Buginese/Makassarese	88.7	50.6	83.7	50.1	76.5	75.2
Others from Sulawesi	88.9	50.5	48.0	44.0	73.5	69.9
Dayak	89.1	16.2	19.5	37.8	81.8	18.3
Aceh	90.6	38.5	30.9	36.8	25.7	32.4
Chinese	91.0	91.3	94.5	93.2	81.3	69.5
Sundanese	91.5	40.8	59.6	50.8	49.8	55.3
All from Banten	92.9	16.4	24.8	47.9	38.8	62.9
Javanese	93.4	69.4	84.3	73.7	77.7	80.0
All from Papua	94.6	54.8	53.2	45.4	55.1	92.3
Madurese	95.1	44.6	66.4	78.1	71.2	56.3
All Nusa Tenggara	95.3	62.6	31.0	48.9	74.5	58.5
Cirebon	95.4	26.7	55.7	47.3	50.5	37.5
Balinese	96.3	42.1	45.8	51.0	68.3	53.6
Total	90.6	71.3	82.2	67.5	73.0	80.5

Note: Ranking of ethno-regional grouping based on their rate of endogamy, from lowest to highest.

TABLE 3 Odds ratio of endogamy: Controlling for group size at the sub-national level

	Odds ratio of endogamy					
Ethno-regional group	**Indonesia**	**Riau Islands**	**Riau**	**Jakarta**	**East Kalimantan**	**West Papua**
Javanese	280.3	19.2	67.1	15.1	29.2	95.5
Betawi	312.5	74.9	484.6	14.9	193.6	479.1
Malay	640.0	36.4	73.6	110.5	390.8	1,617.0
Sundanese	669.0	38.3	228.8	11.4	115.2	252.6
Batak	906.0	131.0	160.1	372.8	860.9	554.7
Others from Sumatra	1,220.3	228.8	966.7	84.9	339.3	465.1
Minang	1,518.3	52.2	101.9	137.1	916.4	1,410.0
All from South Sumatra	1,626.3	75.1	694.2	82.5	353.3	565.4
Buginese/Makassarese	2,019.6	95.8	1,908.4	237.2	52.0	138.3
Others from Sulawesi	2,270.4	229.2	4,728.9	450.1	180.1	82.0
Banjar	2,389.8	133.9	510.8	755.3	27.2	1,527.6
Other from Kalimantan	2,926.0	642.9	3,509.2	499.7	52.2	379.7
All from Maluku	3,850.7	427.9	2,510.1	389.2	344.0	33.2
Minahasan	4,687.0	672.0	6,908.7	450.2	454.7	105.2
Dayak	6,731.3	140.7	606.4	528.2	462.8	417.3
Aceh	8,415.1	150.6	271.9	372.6	932.1	2,849.9
All from Banten	9,922.1	897.5	1,729.5	556.6	8,957.4	4,376.5
Madura	11,652.6	781.2	5,763.5	1,789.6	573.3	1,741.8
Chinese	11,843.8	2,036.3	21,991.4	3,118.3	3,069.0	2,507.2
All Nusa Tenggara	13,770.2	364.9	1,165.3	460.5	636.8	182.5
Foreign	15,367.8	2,871.3	16,865.8	13,922.4	1,430.2	9,841.7
All from Papua	29,875.0	1,818.6	3,608.4	1,204.7	1,562.2	167.2
Balinese	40,602.1	1,656.2	9,028.4	1,494.5	2,734.3	2,100.0
Cirebon[a]	61,584.6	21,830.7	45,805.4	2,668.5	30,905.8	8,308.7

[a]Ranking of ethno-regional grouping based on their odds ratio of endogamy, from lowest to highest. BPS-Statistics Indonesia's 24 major ethnic categories included the Cirebons as a separate ethnic category. Out of all on the list, the Cirebons have the smallest area of origin size—a district—in the border of West Java and Central Java. Other major groups on this list are regionally bounded by much larger area.

consistently show low odds of endogamy both at the national level and in the five provinces we studied. This finding supports the popular perception that the Betawi people are relatively "open" given their heterogeneous origin and *creole* identities formed in Jakarta—the melting pot and long-time capital of the nation (Knorr, 2014).

We are especially interested in what happens to the likelihood of endogamy for the Javanese—the politically and demographically dominant ethnic group in Indonesia—once we control for their group size. For the national subset, the rate of endogamy for Javanese is 93%. Among the 24 groups, the Javanese have the fifth highest rate of endogamy. When we account for the marginal distribution of ethnic groups, we find that the odds ratio for a Javanese man to marry a Javanese woman is 280 times higher than the odds for a non-Javanese man to marry a Javanese woman. Using the odds ratio, the Javanese are least likely to be endogamous in relative terms. On the other end of the spectrum, the odds ratio for endogamy for the Hindu-Balinese is 40,602. Using either the rate of endogamy or the odds ratio measure would not change the relative ranking of certain ethnic minorities. Our results confirm that in the home of the world's largest Muslim population, endogamy is particularly strong within an ethnic category that is coterminous with a minority religion.

4.2 | Migration and endogamy: Multivariate analysis

At the individual level, we are interested to see whether there are differences in the likelihood of ethnic endogamy between migrants and non-migrants. Tables 4a

TABLE 4a Logistic regression of endogamy: Odds ratio for married men in Riau, Riau Islands, Jakarta, East Kalimantan, and West Papua

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**All 5 provinces**	**Riau**	**Riau Islands**	**Jakarta**	**East Kalimantan**	**West Papua**
Migration status[a]						
Non-migrant (ref)						
Return migrant	0.622***	0.433***	0.429***	0.722***	0.770*	0.423***
Migrant	1.057	0.795*	0.903	1.118	1.442***	0.920
Recent migrant	1.535***	0.919	1.245	1.625***	2.845***	1.511***
Log of group size	1.330***	1.458***	1.667***	1.420***	1.468***	1.583***
Urban/rural						
Urban (ref)						
Rural	2.121***	1.566***	1.519***		1.412***	1.321***
Age group						
10–19	0.694***	0.495***	0.838	0.670***	0.687***	1.478
20–29	0.769***	0.544***	0.641***	0.835***	0.741***	0.854**
30–39	0.828***	0.628***	0.707***	0.858***	0.801***	0.884***
40–49	0.893***	0.776***	0.841***	0.876***	0.895***	0.995
50–59 (ref)						
60–69	1.122***	1.249***	1.069**	1.150***	1.156***	1.134***
70–79	1.240***	1.427***	1.109*	1.284***	1.367***	1.161**
80+	1.293***	1.345***	1.105	1.282***	1.393***	2.342***
Relative education						
Husband > wife	0.986	1.009	1.009	0.956*	1.040***	1.048
Husband = wife (ref)						
Husband < wife	0.883***	0.856***	0.917***	0.878***	0.903***	0.939*
Highest education completed						
PS or less	1.989***	2.108***	1.966***	1.651***	2.232***	2.839***
JHS	1.308***	1.431***	1.275***	1.251***	1.373***	1.506***
SHS (ref)						
Tertiary	0.802***	0.806***	0.838***	0.838***	0.813***	0.864**
Religion						
Muslim (ref)						
Non-Muslim	3.617***	8.202***	5.302***	3.674***	3.653***	1.423**
Constant	0.036***	0.020***	0.004***	0.011***	0.009***	0.010***
Observations	4,047,916	1,110,000	327,474	1,769,147	708,330	132,965

Note: Robust standard error accounting for clustering at the district level.

[a]Non-migrant: born in current province, in current province five years ago (reference category); return migrant: born in current province, in another province five years ago; migrant: born in another province, in current province five years ago; recent migrant: born in another province, in another province five years ago.

***$p < .01$.

**$p < .05$.

*$p < .1$.

and 4b show how an individual's migration status is associated with the likelihood of ethnic endogamy controlling for group size, urban/rural residence, age group, education, relative education of husband and wife, and religion (see Tables A3a and A3b for descriptive statistics).

As suggested by the bivariate analysis provided above, once we controlled for these factors, we found that return

TABLE 4b Logistic regression of endogamy: Odds ratio for married women in Riau, Riau Islands, Jakarta, East Kalimantan, and West Papua

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**All 5 provinces**	**Riau**	**Riau Islands**	**Jakarta**	**East Kalimantan**	**West Papua**
Migration status[a]						
Non-migrant (ref)						
Return migrant	0.661***	0.515***	0.510***	0.729***	0.670***	0.585***
Migrant	1.115**	0.925	0.836	1.077	1.869***	0.807**
Recent migrant	1.504***	0.974	1.156	1.477***	3.159***	1.304***
Log of group size	1.214***	1.339***	1.376***	1.230***	1.408***	1.533***
Urban/rural						
Urban (ref)						
Rural	2.214***	1.648***	1.638***		1.533***	1.298***
Age group						
10–19	0.673***	0.452***	0.620***	0.731***	0.704***	0.738*
20–29	0.730***	0.499***	0.606***	0.780***	0.727***	0.765***
30–39	0.761***	0.562***	0.638***	0.783***	0.733***	0.754***
40–49	0.853***	0.732***	0.809***	0.843***	0.827***	0.846**
50–59 (ref)						
60–69	1.186***	1.364***	1.196***	1.176***	1.408***	1.357***
70–79	1.430***	1.888***	1.537***	1.374***	1.850***	2.918***
80+	1.541***	1.672***	1.323	1.502***	1.637***	1.639
Relative education						
Husband > wife	0.814***	0.877***	0.912***	0.773***	0.891***	0.917***
Husband = wife (ref)						
Husband < wife	1.073***	1.039***	1.025***	1.065***	1.064***	1.055***
Highest education completed						
PS or less	1.725***	1.861***	1.806***	1.507***	1.892***	2.611***
JHS	1.247***	1.328***	1.236***	1.226***	1.291***	1.447***
SHS (ref)						
Tertiary	0.787***	0.767***	0.905***	0.794***	0.793***	0.929
Religion						
Muslim (ref)						
Non-Muslim	3.237***	7.077***	4.992***	3.178***	3.226***	1.343*
Constant	0.136***	0.071**	0.048***	0.100***	0.016***	0.019***
Observations	4,047,916	1,110,000	327,474	1,769,147	708,330	132,965

Note: Robust standard error accounting for clustering at the district level.

[a]Non-migrant: born in current province, in current province five years ago (reference category); return migrant: born in current province, in another province five years ago; migrant: born in another province, in current province five years ago; recent migrant: born in another province, in another province five years ago.

***$p < .01$.

**$p < .05$.

*$p < .1$.

migrants have a significantly lower likelihood of endogamy relative to non-migrants across the five provinces. In the pooled sample of all five provinces, holding all else constant, recent migrants have the highest likelihood of endogamy. Both male and female recent migrants were 1.5 times more likely to be in an endogamous marriage than non-migrants. But there is no consistent pattern on how the likelihood of ethnic endogamy fares between

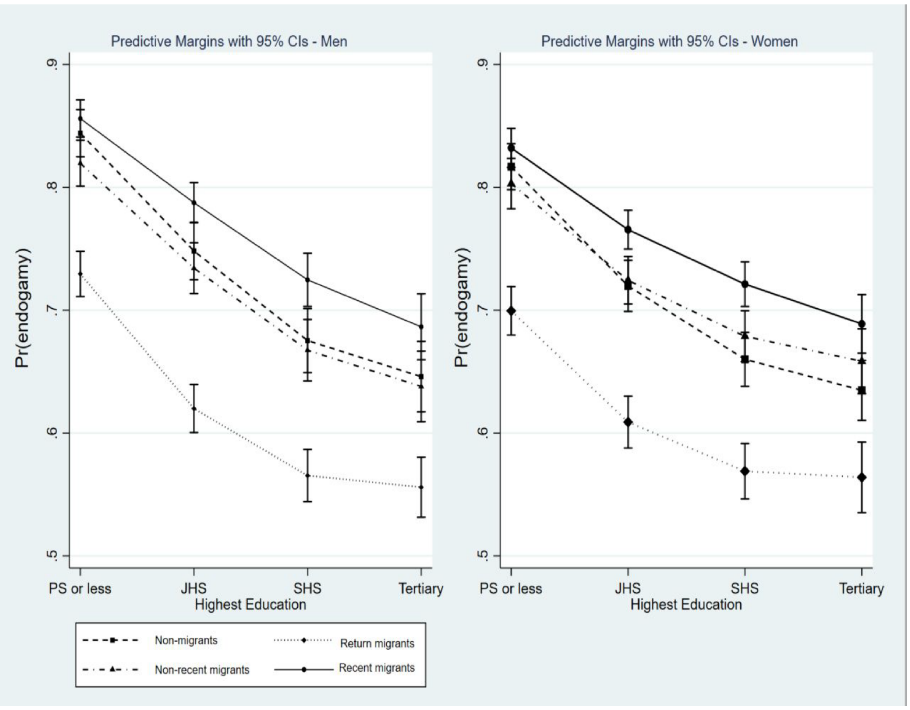


FIGURE 3 Likelihood of endogamy by highest education and migration status: all five provinces. Margins plotted from logistics regression detailed in Tables 4a and 4b. CIs, confidence intervals

Note: Margins plotted from logistics regression detailed in Table 4a and 4b

recent migrants/non-recent relative to a non-migrant in each province.[10] Recent migration has a relatively large effect on the likelihood of endogamy in East Kalimantan. In East Kalimantan, female recent migrants have three times the odds of being in an endogamous marriage compared with non-migrants, while the odds for male recent migrants are 2.8 times the odds of non-migrants. Recent migrants do not have a significantly different likelihood of endogamy relative to non-migrants in Riau and Riau Islands.

As expected, there is a positive association between endogamy with group size and with rural residence. Religion has a large effect on the odds of endogamy. For example, in Riau, the odds for ethnic endogamy for a non-Muslim man and woman are—respectively—eight and seven times higher than the odds for their Muslim counterparts.

Another factor we have incorporated in the multivariate analysis is the relative education of husband and wife. We have found that for both men and women, marrying up in education is associated with lower likelihood of endogamy relative to individuals whose spouse is of the same education level.

Our multivariate analysis suggests that ethnic endogamy is less common among younger age cohorts than among the previous generations. Holding all else constant, individuals with higher levels of education also have lower probabilities of ethnic endogamy. Unlike the inconsistent association between migration status and endogamy across sites, Figure 3 shows a clear and consistent negative gradient of the likelihood of endogamy and highest education attainment across all migration categories, for men and women in all five provinces.

5 | DISCUSSION

Using data from the Indonesian Census 2010, we have shown that theories traditionally applied to research interracial and interreligious marriage in the West (Blau et al., 1982; Harris & Ono, 2005; Kalmijn, 1998; Rosenfeld, 2008) can also be applied to examine (a) the nature of social stratification and intergroup relations in an ethnically diverse developing country and (b) by changing the regional landscape for family formation, how internal migration and broader forces of social change have the potential to shift the nature of such ethnic-based stratification.

Applying a broad classification of 24 ethno-regional groupings, our findings that nine in 10 Indonesians are endogamous are comparable with earlier estimates using a more detailed classification of ethnic and sub-ethnic groups in Indonesia (Utomo & McDonald, 2016). We have had reservations as to whether this finding was an underestimate of ethnic intermarriage in Indonesia given that only one ethnicity per individual was collected in the Census.

However, we remain confident of our estimates for two reasons. First, using data from the Indonesia Family Life Survey, Rammohan and Robertson (2012) investigated how kinship norms affect the education outcomes of women and found that only 1.4% of women in their analytical sample have parents of mixed ethnicities. Second, our subsequent findings on the sub-national and ethnic-specific variations and correlates of endogamy are also consistent with the hypotheses in this article.

Our results suggest that there is a negative association between the stocks of internal migrants of an ethnic group in a province with its rate of same-ethnic marriage. Bivariate analysis between rate of endogamy and the four categories of migration status yields mixed results: migrants do not always have lower rates of endogamy than non-migrants.

The rate of endogamy is higher among individuals in relatively large ethnic groups. Similar relationships between group size and endogamy have been found in earlier studies on racial intermarriage in migrant-receiving countries in the West (Blau et al., 1982; Kalmijn, 1998; Qian & Lichter, 2007; Van Tubergen & Maas, 2007). But, contrary to the idea that dominant ethnic groups have an in-group preference in the marriage markets, we have shown that once we control for group size at both the national and sub-national levels, the largest ethnic group in Indonesia, the Javanese, has the lowest odds of marrying-in.

At the national level, relatively large groups, like the Bataks of North Sumatra, and the Sundanese of West Java, are also highly ranked as groups with lower odds of endogamy (higher odds of exogamy). In the five provinces studied, those with relatively high likelihood of exogamy are other groups noted for their migratory practices and traditions: the Buginese/Makassarese, the Banjars, and the Minangs. Controlling for size, we found that the Balinese, the Madurese, and ethnicities of Papua, Nusa Tenggara, Chinese, and foreign origins have the highest likelihoods of endogamy. With the main exception of the Madurese, these ethnicities are characterised as having minority religions in Indonesia.[11] Our initial inquiry on ethnic marriage pairing patterns is supportive of the notion that rather than ethnicity per se, it is the dominant religion associated with particular ethnic groups that imposes a stronger boundary against marrying-out in this Muslim majority nation (see Aini, 2008; Carnegie, 2013; Connolly, 2009).

Our central purpose in this article has been to examine the association between endogamy and migration status, a topic rarely addressed in the literature. Indonesia is an ideal context for such a study because the variation in marriage practices and family systems across ethnic groups is very wide as explained above and because, in several areas of Indonesia, lifetime migrants into the area are common. This context provides the opportunity whether, among migrants, group size makes a difference to rates of endogamy. A complicating factor, however, is that the nature of areas where in-migration is common also varies. Some are developing areas where the in-migrants are mainly low skilled whereas others, such as Jakarta, have migrants across a wide spectrum of skills. This fact makes it necessary to control for education in the analysis, but, even then, results are variable across areas. Multivariate analysis of the correlates of endogamy at the individual level shows that migration status is not a consistent predictor of ethnic endogamy across the top migrant destination provinces. Furthermore, as shown in the case of West Papua, the association between migration status and endogamy is not always consistent between the bivariate and multivariate analyses.

As a group, return migrants have lower rates of endogamy in the bivariate analysis. In the multivariate analysis, being a return migrant is also associated with lower odds of endogamy compared with non-migrants in all of the five provinces. There are at least two potential explanations for this finding. Some return migrants were natives who married while migrating in another province and then returned to their province of birth to settle with their families. Moreover, their experience, encounters, and networks—perhaps facilitated through working or attending schools in another province—may encourage them to shift their preferences and become more "open" to the idea of interethnic marriage upon their return to their province of birth.

In line with the results of the bivariate analysis, recent and non-recent migrants have higher odds of endogamy than non-migrants in East Kalimantan and Jakarta. It should be noted that people born in the present location with parents who had migrated (prior to their birth) would have the ethnicity of their parents but are not migrants as defined here. They may be more likely to intermarry because they have had contact with people of other ethnicities through their place of education or in the general community. It is also possible that a person born in the present location has mixed ethnic parentage but is recorded in the census as the ethnicity of one of the parents. Marriage with a person of the other parent's ethnicity would then be considered in this analysis as exogamous. Both of these limitations of analysis would apply particularly in Jakarta (Utomo, 2019).

The bivariate analysis for West Papua shows that as group recent migrants have a lower rate of endogamy than non-migrants. But multivariate analysis suggests that a recent migrant has higher odds of endogamy than a non-migrant in West Papua. The significant influence of religion in shaping marriage outcome is likely to be

the key reason behind why we get a positive association between migration status and ethnic endogamy once we control for religion in West Papua, as well as in provinces such as East Kalimantan.

On one hand, we can interpret the religion variable in the regression as both a proxy of third-party control and a proxy for demographic factors that constrain the pool of potential spouses for individuals from ethno-religious minorities (McClendon, 2016). Existing studies in the United States suggest that although religious assortative mating has declined (Schwartz, 2013), religion remains a relevant driver of assortative mating among of young adults (McClendon, 2016). On the other hand, religion continues to be of critical importance in sorting partners for many Indonesian young adults in contemporary marriage market (see Aini, 2008; Aini et al., 2019; Nilan, 2008). The current Indonesian marriage law—enacted in 1974—discourages interreligious marriage and religious authorities also actively discourage such practice (Aini, 2008). Overall, the multivariate analysis underscores the importance of accounting for factors such as group size, religion, and the relative education of married couples when examining how migration status is associated with endogamy.

The findings that younger and more educated individuals are less likely to marry someone of the same ethnicity lend some support to the modernisation narratives of how urbanisation, extended duration of formal schooling, and the shifts from arranged to self-choice marriage are gradually changing the landscape of ethno-family formation in Indonesia (Nilan, 2008; Smith-Hefner, 2005; Utomo, Reimondos, Utomo, McDonald, & Hull, 2016) and across other parts of Asia (Raymo, Park, Xie, & Yeung, 2015; Yeung & Mu, 2019; see also Mu & Yeung, 2019, for the effect of education in moderating assortative mating and internal migration in the case of China).

In the context of the upward trends in migration flows, studying ethnic marriage pairing gives us a unique window into the changing conditions of marriage markets and the changing nature of intergroup relations in Indonesia and contributes to the burgeoning literature in this field (see Auwalin, 2019; Bazzi, Gaduh, Rothenberg, & Wong, 2019). However, it should be noted that because of the nature of the data collection, from our multivariate model of endogamy we cannot infer causality from migration because we did not have information on age at marriage and precise age at migration. Although a simple test of correlation shows a negative association between the prevalence of endogamy and the proportion of migrants living in a province, we do not know where the actual "local" marriage market was for each individual. It is certainly possible that an individual would return to their homeland, find a spouse and migrate together as a married couple. It is also common for endogamous couples to migrate together, as a family. In that case, endogamy can very well be endogenous with migration status. Future work on endogamy and migration in Indonesia would benefit from addressing these endogeneity issues.

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ENDNOTES

[1] For example, although many indigenous communities in Borneo/Kalimantan were referring to themselves as distinct tribes, such as the Ibans and the Kayans, the 1930 Census classified all native Christians and animists from this Island under one category: the Dayaks (Van Klinken, 2003, p. 68). In contrast, there were some 264 Dayak categories in the 2010 Population Census. From the same census year, an alternative classification for the Dayaks sub-categories produced 375 coded categories (Ananta, Arifin, Hasbullah, Handayani, & Pramono, 2015, p. 200).

[2] The first Population Census following Indonesia's independence in 1945 was conducted in 1960. The 1960 Census was a sample survey as opposed to a full enumeration of the population. The 1970, 1980, and 1990 Census were also sample surveys. The first complete enumeration of the population began in 2000. The latest Census was in 2010.

[3] Following the structure of local governments in Indonesia, the Census data included identifiers of provinces (33 provinces), which were divided into districts, sub-districts, and villages.

[4] This Fielding classification leaves out some important movements—in the past, the movement of large numbers of people as plantation labourers, for example, to North Sumatra (and to places outside Indonesia) and the Priangan. Also, spontaneous settlement of the Priangan and other upland areas in Java in the 19th century.

[5] As an example, the likelihood that a Javanese would marry a Javanese in the province of Central Java where over 98% of the population was enumerated as Javanese would be exceptionally high. But we would expect that the likelihood of a Javanese in East Kalimantan—where the Javanese make up 30% of the population—to be endogamous would be significantly lower than the Javanese in Central Java.

[6] In the 2010 Population Census, data on ethnicity were only collected for Indonesian nationals (although foreign citizens and details of their country of citizenship were also recorded in the

Census). The category "foreign" under the ethnicity variable refers to individuals with foreign ancestry except for Chinese. For example, Indonesian citizens reporting Indian and Arabic as their primary ethnicity/ancestry would be included under the "foreign" category.

[7] By primary co-resident couples, we mean heterosexual couples consisting of one head of the household and one spouse who were married at the time of the enumeration. Because we can only use the variable "relationship to household head" to identify the structure of the household, we do not include other married couples living in the household as we have no way of matching who was married to whom. For comparison, the Census indicated that there were 58.5 million married men and 57.4 married women aged 10 and over. This means that our analytical sample only accounts for around 80% of married men and women. Among exogamous couples with children in our analytical subset of the 2010 Census, the tendency (over 80%) is to have the children enumerated under the ethnicity of their father. Note also that the Census only records one ethnicity per individual collected on the basis of self-identification. We do not have information as to whether a head of household or his wife is of mixed ethnicity. Using data from the Indonesian and Family Life Survey fielded in 2007, Rammohan and Robertson (2012) found that only 1.4% of over 3,900 respondents in their sample were of mixed ethnicity (p. 291).

[8] The Census data cannot capture circular migration and/or other forms of non-permanent migration, nor does it offer insights on rural–rural, urban–urban, and urban–rural migrations. The Census also does not collect data on reasons of migration.

[9] In each geographical unit, calculating the rate and the odds ratio of endogamy for a particular ethnic group, say the Batak of North Sumatra, requires the following information: (a) the number of endogamous Batak marriages, (b) the number of marriages between Batak women and non-Batak men, (c) the number of marriages between Batak men and non-Batak women, and (d) the number of all other marriages (non-Batak men and non-Batak women).

Husband	Wife		Total
	Batak	All others	
Batak	1,286,883	294,364	1,581,247
All others	222,054	46,019,103	46,241,157
Total	1,508,937	46,313,467	47,822,404

The rate of endogamy among all married Batak individuals is defined as the percentage of the total number of Batak men and Batak women in endogamous marriages in the total number of Batak men and women in our subset. From the example, this corresponds to (1,286,883 + 1,286,883)/(1,508,937 + 1,581,247) × 100 = 83%. The odds ratio is a relatively simple method to measure how endogamy varies among population groups while controlling for their marginal distribution. The odds ratio is the cross product: ad/bc. For example, the odds ratio for a Batak man to marry a Batak woman is 1,286,883 × 46,019,103/294,364 × 222,054 = 906 times higher than the odds for a non-Batak man to marry a Batak woman. In essence, the odds ratio is useful when we want to compare two or more groups.

[10] The dependent variable in the current paper—ethnic endogamy—is correlated with spatial endogamy (marriage between individuals who shared the same birth province). A separate set of regression using spatial endogamy as a dependent variable suggests that migrants consistently have lower likelihood of spatial endogamy than non-migrants across the five provinces. We address spatial endogamy in a separate paper.

[11] Exceptions here would be the Madurese, which is predominantly Muslims, and Muslim-dominant ethnicities from West Nusa Tenggara such as the Sasak people. Out-migrants from Madura are primarily transmigrants who live in predominantly Madurese villages outside Java.

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APPENDIX A

TABLE A1 Distribution of married individuals in the subset by ethno-regional groups in selected provinces, Indonesia, 2010

Ethno-regional groups	Indonesia	Riau Islands	Riau	Jakarta	East Kalimantan	West Papua
Aceh	1.23	0.71	0.24	0.28	0.05	0.03
Batak	3.23	11.60	12.31	3.28	1.02	1.06
Malay	2.15	30.24	30.87	0.98	0.18	0.04
Minang	2.52	10.08	12.11	2.84	0.19	0.08
All from South Sumatra	2.09	1.98	0.15	0.79	0.24	0.07
Other Sumatran	2.70	1.23	2.31	0.91	0.24	0.23
Betawi	2.71	0.30	0.06	27.51	0.12	0.06
All from Banten	1.81	0.03	0.03	0.32	0.01	0.11
Sunda	15.92	2.95	1.56	14.48	1.68	1.09
Chinese	1.09	7.34	1.74	6.55	0.87	0.35
Cirebon	0.73	0.00	0.01	0.06	0.01	0.01
Jawa	42.43	25.63	32.21	37.39	32.41	18.04
Madura	3.36	0.19	0.11	0.98	1.47	0.17
Bali	1.77	0.08	0.02	0.16	0.27	0.13
All from Nusa Tenggara	3.34	2.63	0.13	0.53	2.34	2.14
Dayak	1.19	0.17	0.06	0.19	5.76	0.07
Banjar	1.78	0.72	4.04	0.08	12.65	0.03
Other Kalimantan	1.01	0.15	0.05	0.36	13.49	0.37
Minahasan	0.55	0.19	0.02	0.35	0.59	2.10
Bugis/Makassar	3.40	2.28	1.84	0.94	20.47	8.15
Other Sulawesi	3.10	1.10	0.04	0.33	5.46	8.42
All from Maluku	0.75	0.21	0.03	0.39	0.20	10.22
All from Papua	1.08	0.15	0.07	0.14	0.21	46.98
All from foreign origins	0.05	0.02	0.01	0.16	0.08	0.06
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	95,644,808	654,948	2,220,000	3,538,294	1,416,660	265,930

TABLE A2 Top five provinces with the highest proportion of lifetime migrants in Indonesia, Indonesia, 2010

Province	Population size	% Lifetime migrants	% Recent migrants
Riau Islands	1,679,163	47.7	14.2
Jakarta	9,607,787	42.4	7.3
East Kalimantan	3,553,143	36.8	6.8
West Papua	760,422	32.9	8.1
Riau	5,538,367	34.5	6.0

Source: Data for population size and migration taken from BPS-Statistics online database (BPS-Statistics Indonesia, 2011a). Recent migrants are those that moved in the 5 years prior to the census.

TABLE A3a Descriptive statistics: Married men

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**All 5 provinces**	**Riau**	**Riau Islands**	**Jakarta**	**East Kalimantan**	**West Papua**
Marriage pairing (%)						
Exogamy	26.8	17.8	28.7	32.5	27.0	19.5
Endogamy	73.2	82.2	71.3	67.5	73.0	80.5
Migration status (%)[a]						
Non-migrant	40.8	44.8	34.5	38.9	40.7	48.5
Return migrant	0.4	0.2	0.2	0.5	0.2	0.4
Migrant	53.8	49.5	57.8	56.3	54.0	45.0
Recent migrant	5.1	5.4	7.5	4.3	5.1	6.1
Urban/rural (%)						
Urban	72.3	37.4	82.2		61.3	28.8
Rural	27.7	62.6	17.8		38.7	71.2
Age group (%)						
10–19	0.1	0.1	0.1	0.1	0.1	0.3
20–29	13.4	14.7	16.2	11.8	13.3	16.9
30–39	33.7	35.4	40.9	31.5	33.5	33.6
40–49	27.6	27.1	25.0	28.0	28.7	27.0
50–59	16.3	14.9	11.7	18.1	16.5	15.0
60–69	6.6	5.6	4.6	7.9	5.8	5.6
70–79	2.0	1.8	1.3	2.3	1.6	1.3
80+	0.4	0.4	0.2	0.4	0.3	0.2
Relative education (%)						
Husband > wife	24.7	23.7	22.7	25.7	24.3	26.0
Husband = wife (ref)	63.0	63.0	64.8	62.8	62.9	60.8
Husband < wife	12.3	13.2	12.4	11.5	12.8	13.2
Highest education completed (%)						
PS or less	31.4	43.8	32.2	20.3	37.7	39.0
JHS	18.9	20.6	15.0	18.9	18.1	17.7
SHS	37.4	28.8	42.7	43.5	34.2	31.6
Tertiary	12.4	6.8	10.1	17.3	10.0	11.7
Religion (%)						
Muslim	85.1	89.0	81.0	86.0	86.5	41.9
Non-Muslim	14.9	11.0	19.0	14.0	13.5	58.1
Average group size	1,396,903	1,040,953	241,575	2,263,591	579,732	35,444
Observations	4,047,916	1,110,000	327,474	1,769,147	708,330	132,965

[a]Non-migrant: born in current province, in current province 5 years ago; return migrant: born in current province, in another province 5 years ago; migrant: born in another province, in current province 5 years ago; recent migrant: born in another province, in another province 5 years ago.

TABLE A3b Descriptive statistics: Married women

Variables	(1) All 5 provinces	(2) Riau	(3) Riau Islands	(4) Jakarta	(5) East Kalimantan	(6) West Papua
Marriage pairing (%)						
Exogamy	26.8	17.8	28.7	32.5	27.0	19.5
Endogamy	73.2	82.2	71.3	67.5	73.0	80.5
Migration status (%)[a]						
Non-migrant	44.0	48.0	36.0	41.2	47.1	50.5
Return migrant	0.4	0.2	0.2	0.6	0.2	0.3
Migrant	49.5	45.5	54.8	52.8	46.5	41.9
Recent migrant	6.1	6.3	9.0	5.4	6.2	7.4
Urban/rural (%)						
Urban	72.3	37.4	82.2		61.3	28.8
Rural	27.7	62.6	17.8		38.7	71.2
Age group (%)						
10–19	1.1	1.3	0.7	0.8	1.5	2.2
20–29	25.4	28.1	29.8	22.3	26.2	28.5
30–39	34.7	35.3	40.6	33.2	35.1	34.0
40–49	23.6	22.4	18.5	25.3	24.1	22.6
50–59	11.2	9.7	7.8	13.4	9.9	9.7
60–69	3.3	2.6	2.2	4.2	2.6	2.5
70–79	0.6	0.5	0.4	0.8	0.5	0.4
80+	0.1	0.1	0.0	0.1	0.1	0.0
Relative education (%)						
Husband > wife	24.7	23.7	22.7	25.7	24.3	26.0
Husband = wife	63.0	63.0	64.8	62.8	62.9	60.8
Husband < wife	12.3	13.2	12.4	11.5	12.8	13.2
Highest education completed (%)						
PS or less	36.8	46.9	34.9	26.9	44.4	48.0
JHS	21.2	21.4	15.6	22.6	20.4	18.9
SHS	31.6	24.3	41.1	36.6	27.3	25.4
Tertiary	10.4	7.4	8.4	13.9	7.9	7.6
Religion (%)						
Muslim	85.2	89.0	81.2	86.3	86.6	41.8
Non-Muslim	14.8	11.0	18.8	13.7	13.4	58.2
Average group size	1,421,099	1,046,602	248,778	2,316,546	573,144	37,653
Observations	4,047,916	1,110,000	327,474	1,769,147	708,330	132,965

[a]Non-migrant: born in current province, in current province 5 years ago; return migrant: born in current province, in another province 5 years ago; migrant: born in another province, in current province 5 years ago; recent migrant: born in another province, in another province 5 years ago.