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CENTRAL AMERICAN MIGRATION DATA

EXPLORATORY DATA ANALYSIS

Central American Migration Survey was conducted to study the factors behind migration for people in El Salvador, Guatemala, and Honduras. The study is to inform strategic discussions and policies to address the issues of migration. The data was collected from 4,998 households (Figure 1). In this report, we conduct an exploratory data analysis to answer the following questions:

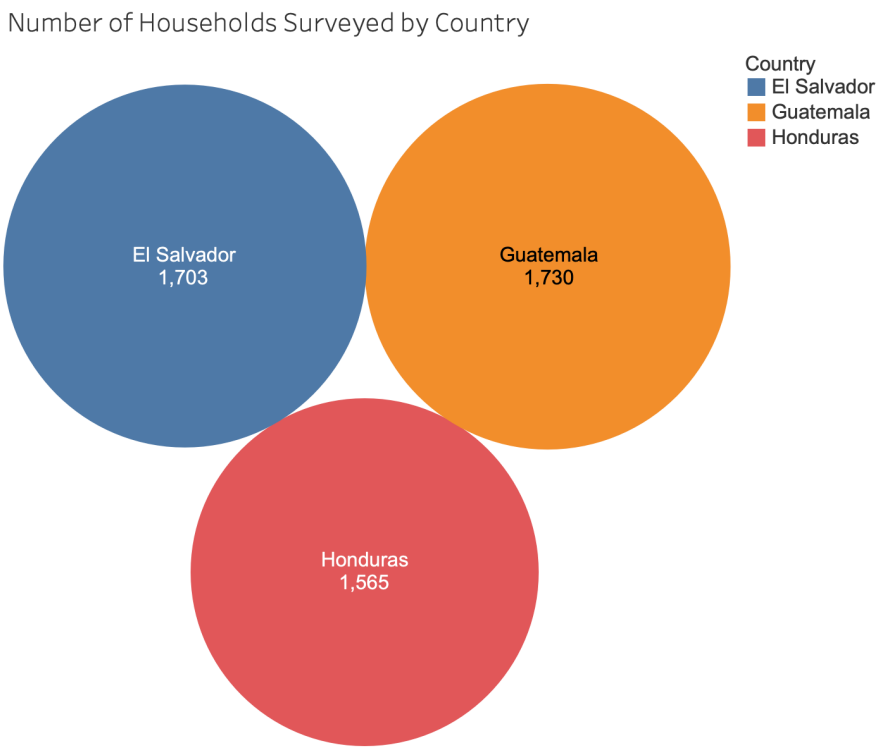
1. How does economic condition and human safety and security affect the choices of migration?

2. What drives individual households to migrate? More specifically, do motivations to migrate or not migrate vary across different characteristics of households (e.g. levels of income, levels of education, etc.)?

3. Are costs of migration (both explicit and implicit costs) a hindrance to migrate?

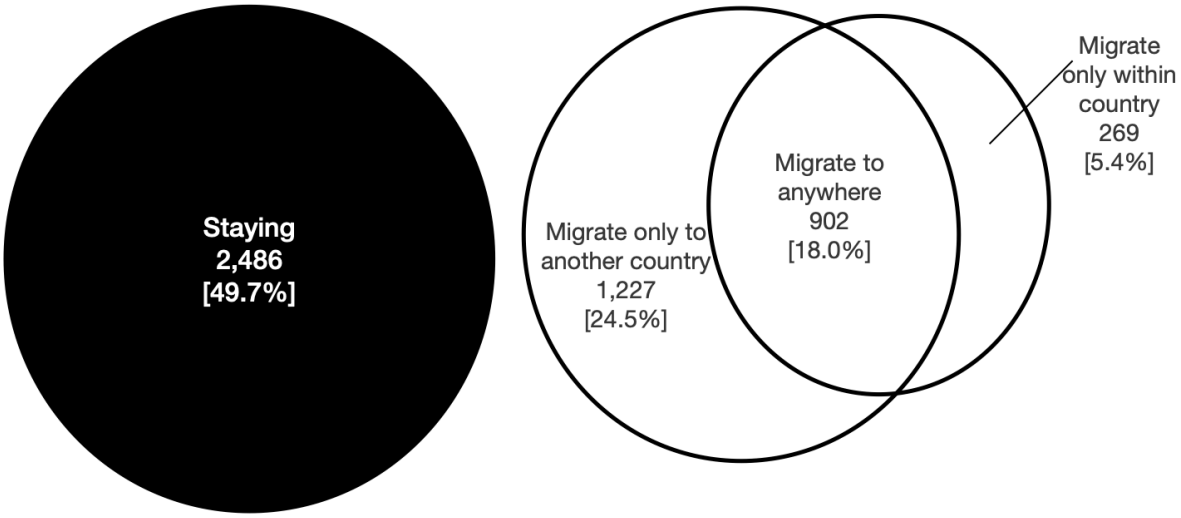
4. And ultimately, does migration mean an improvement in their lives?

Figure 1: Number of households surveyed from each country (El Salvador, Guatemala, and Honduras).



INTENTIONS TO MIGRATE OR STAY

Figure 2: Numbers and proportions of households indicating their intentions to migrate or not migrate externally or internally.

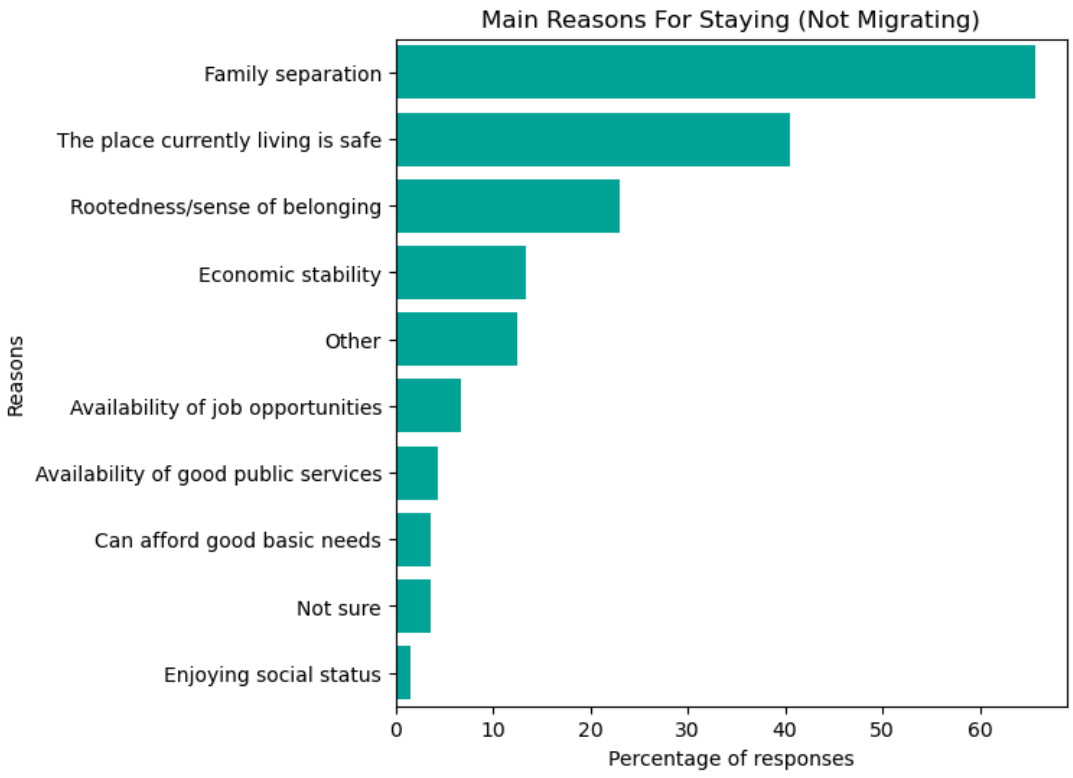


Note: The white circles represent numbers of households indicating "*Yes*" to the questions *"Ideally, if you had the opportunity, would you like to move permanently or for a long period to another country?"* and *"Ideally, if you had the opportunity, would you like to move to another part of the country?"* Note that there are 114 respondents (2.3%) who indicate "*Not Sure*" to either of the two questions and are not shown in this figure.

Figure 2 shows the numbers (and percentages) of households surveyed who indicates their intentions to migrate to another country or to another part of the country or their intentions to stay. Of 4,998 households surveyed, almost half of them indicates no intention of moving at all. For those who show intentions to migrate, the majority of them (2,129 respondents) are interested in moving to another country. More specifically, 902 of the 2,129 households indicate that they would like to move regardless of destinations (whether to another country or domestically).

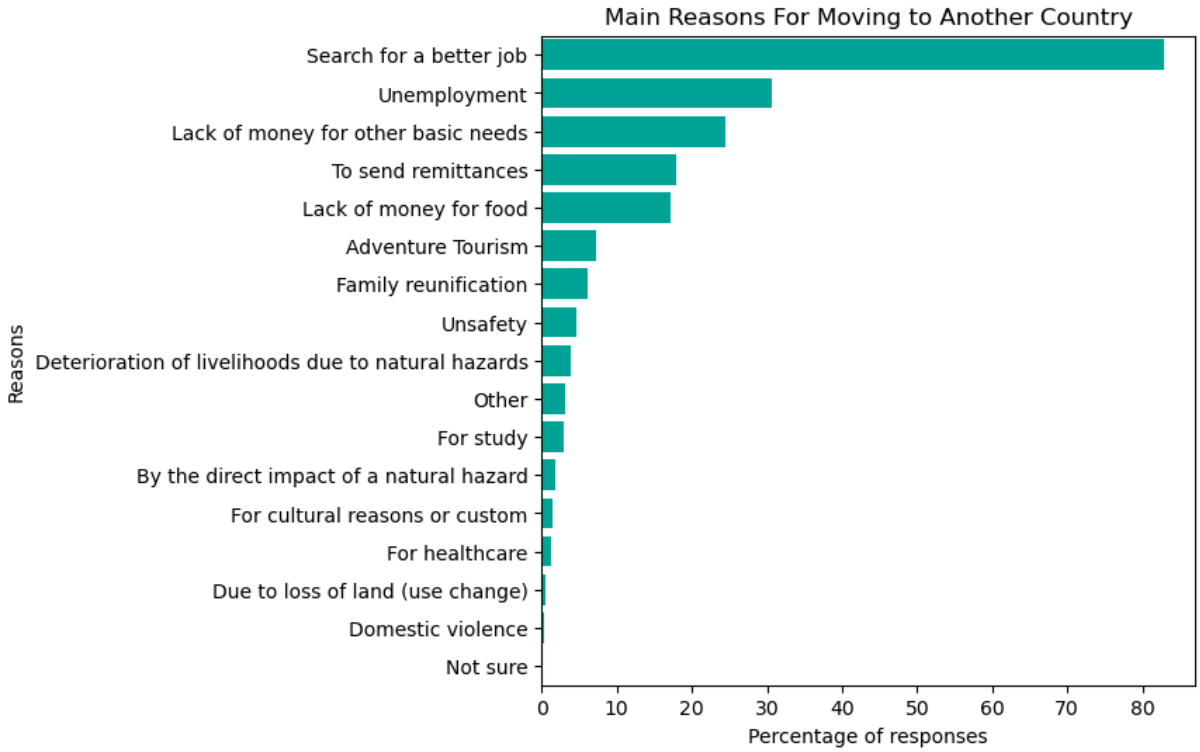
Since the majority of them indicates no desires to move at all, we look at the reasons that motivate them to stay where they are (Figure 3). Most of them cite non-monetary factors that drive them to stay including family separation and rootedness or sense of belonging.

Figure 3: Factors for households who would like to stay where they currently live.



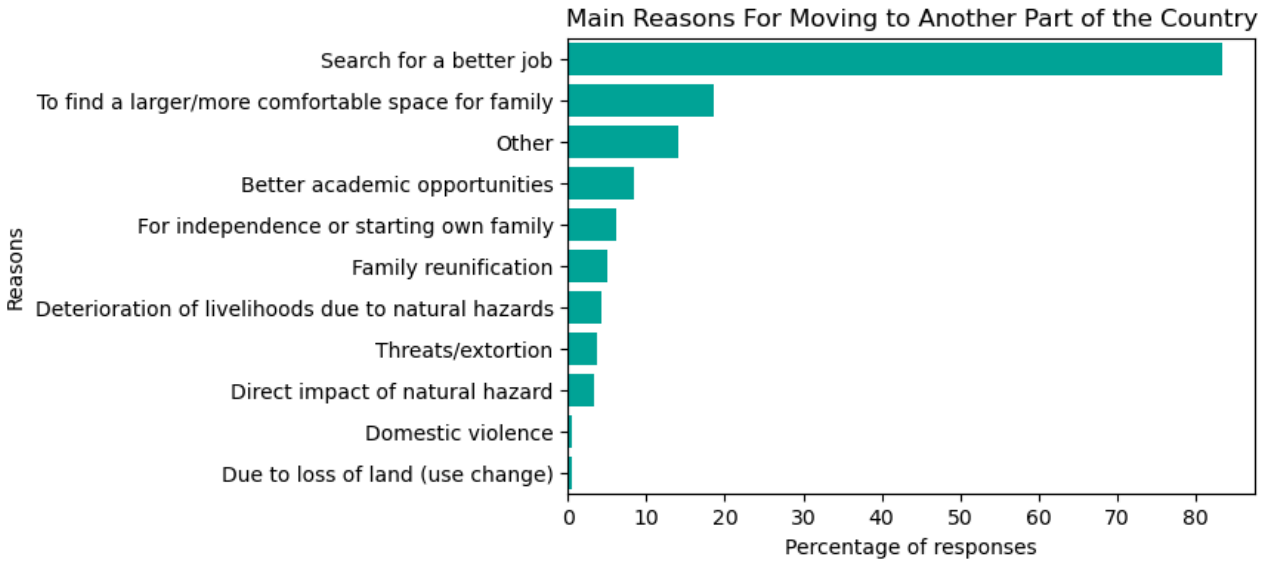
Note: This is a multiple choice question for those who indicate no desire to move at all. The sum of the percentages shown in the figure may exceed 100% since each respondent may indicate more than one reason.

Figure 4: Motivations that drive households to migrate externally.



Note: This is a multiple choice question for those who indicate that they would like to move to another country. The sum of the percentages shown in the figure may exceed 100% since each respondent may indicate more than one reason.

Figure 5: Motivations that drive households to migrate internally (domestically).



Note: This is a multiple choice question for those who indicate that they would like to move to another part of the country. The sum of the percentages shown in the figure may exceed 100% since each respondent may indicate more than one reason.

Whereas households who would like to stay embrace the sense of communities where they live in, those who indicate that they would like to migrate (either externally or internally) cite employment-related or monetary issues as their main reasons (Figure 4 and 5). The most prominent reason is their hope to search for a better job opportunity.

Figure 6: Motivations that drive households to migrate externally by their plans to move within the next 12 months.

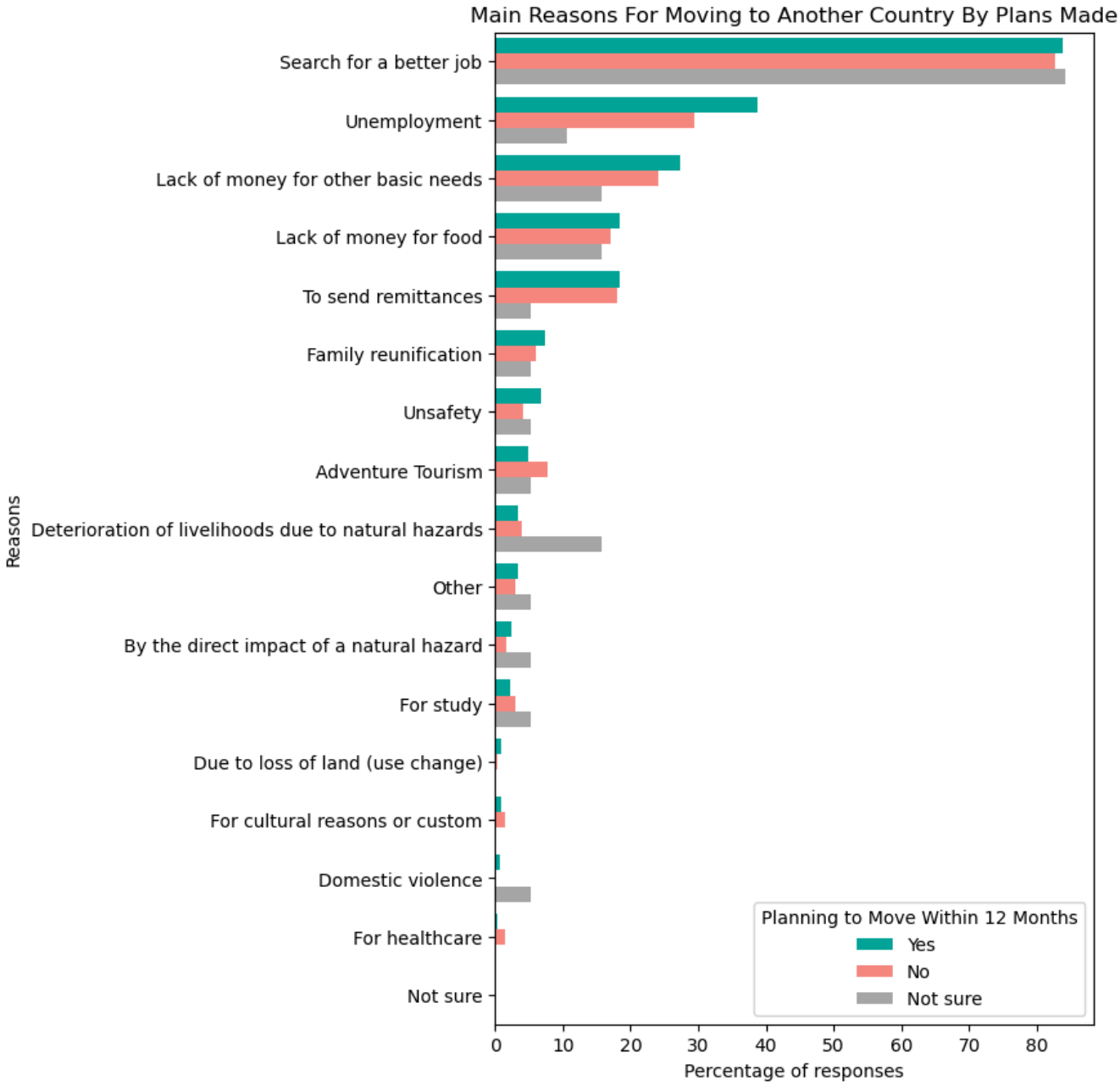
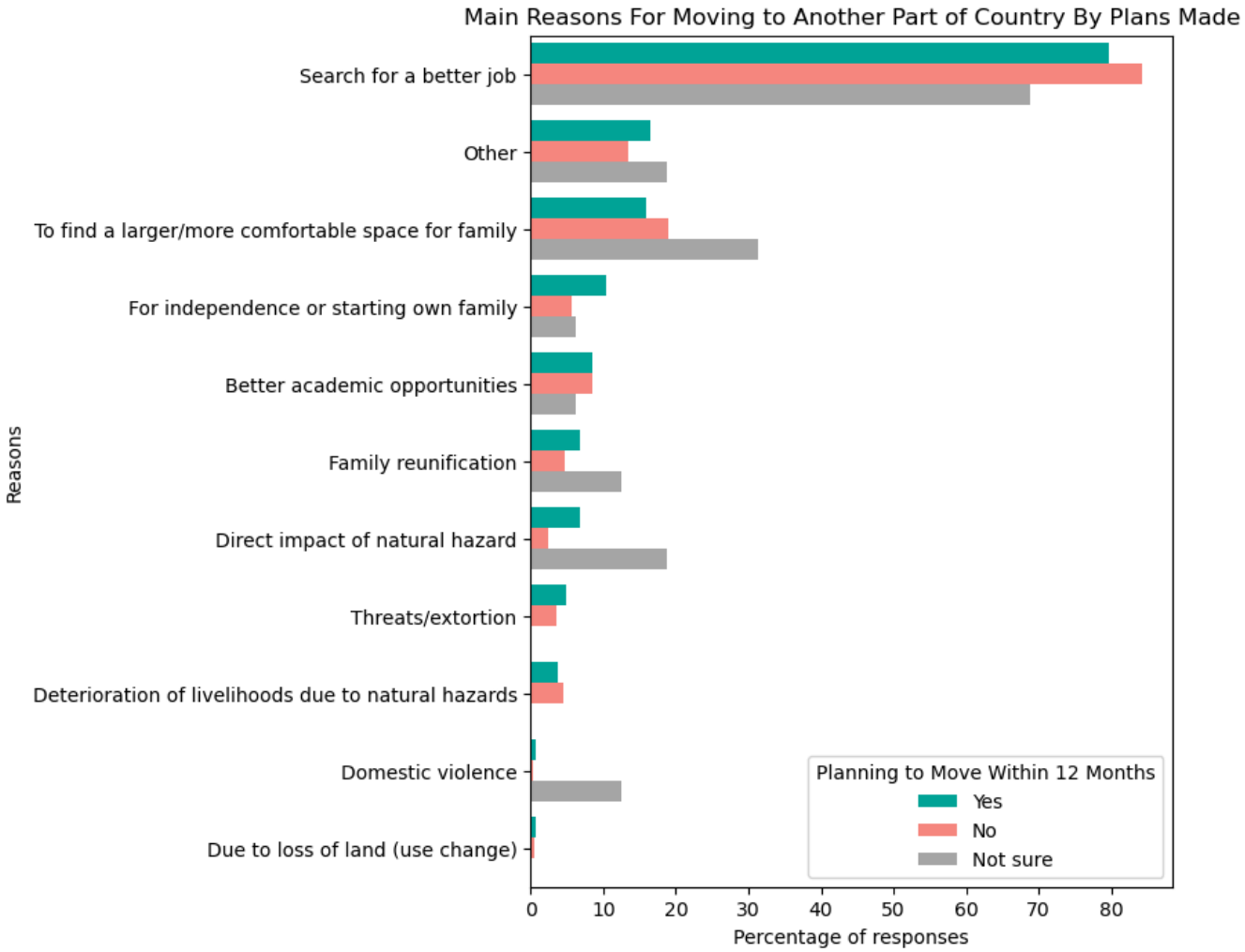


Figure 7: Motivations that drive households to migrate internally by their plans to move within the next 12 months.



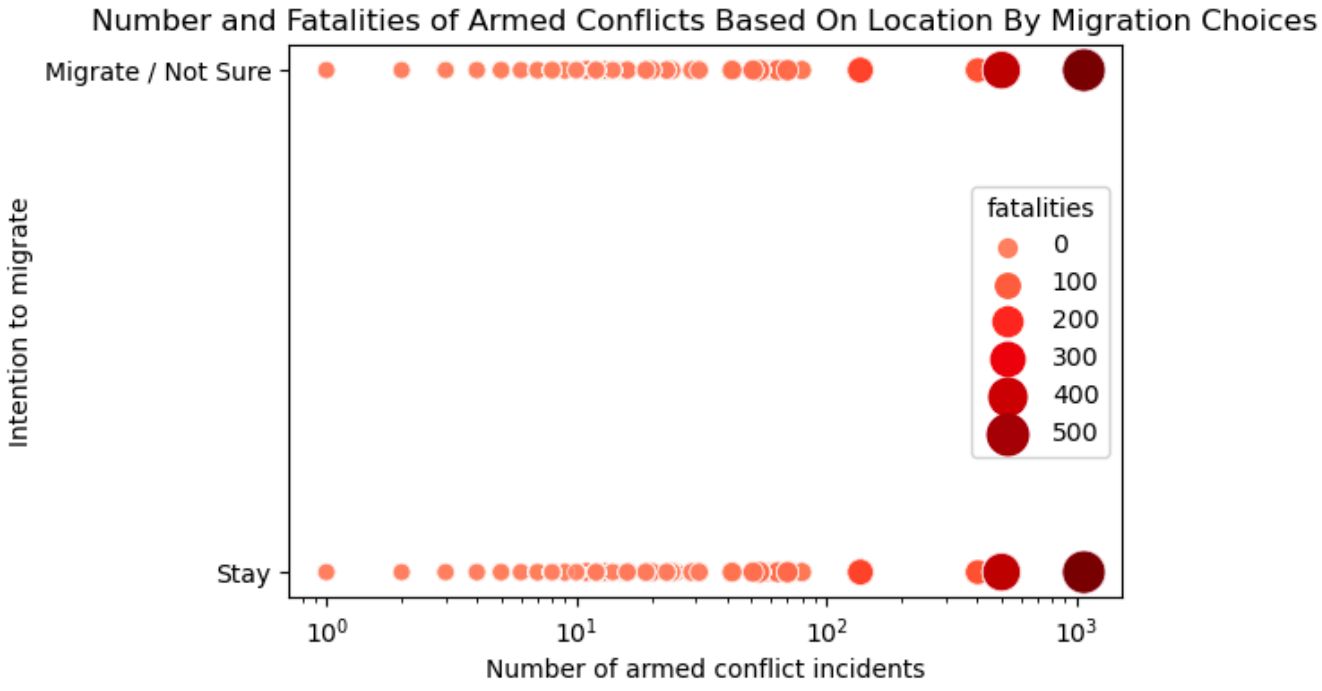
In addition, in Figure 6 and 7, we look to see if there is any significant difference for the migration factors among those who are planning to move in the next 12 months those who are not planning, and those who are unsure. In general, we observe no significant differences among these three groups.

For the rest of this report, we will separate households into 2 groups: 'migrating / unsure' and 'stay'. We group households who would like to migrate and those who are unsure together because the latter must have considered migration for a certain degree.

SAFETY

Since the households who indicate that they would like to stay where they currently live cite the safety of their local neighborhoods as the second reason, we look at the statistics for crimes in their areas compared to those who would like to migrate. Figure 8 shows the number of armed conflicts in the municipal-level neighborhoods between the two household groups. The data is collected by ACLED from 2015 to 2020. We map the number of armed conflicts as well as the total number of fatalities to our migration data using level-2 administrative district from the ACLED data and the municipalities of the households as mapping keys. We find one stance of inconsistency in the names of the locations which is "San Buenaventura" and "San Buena Ventura," and hence we correct them manually. We are able to merge the armed conflict data with 4,218 records in the migration dataset and use them to conduct the analysis on local safety and the choices to migrate or stay.

Figure 8: The effects of local safety and the choices to migrate or stay.

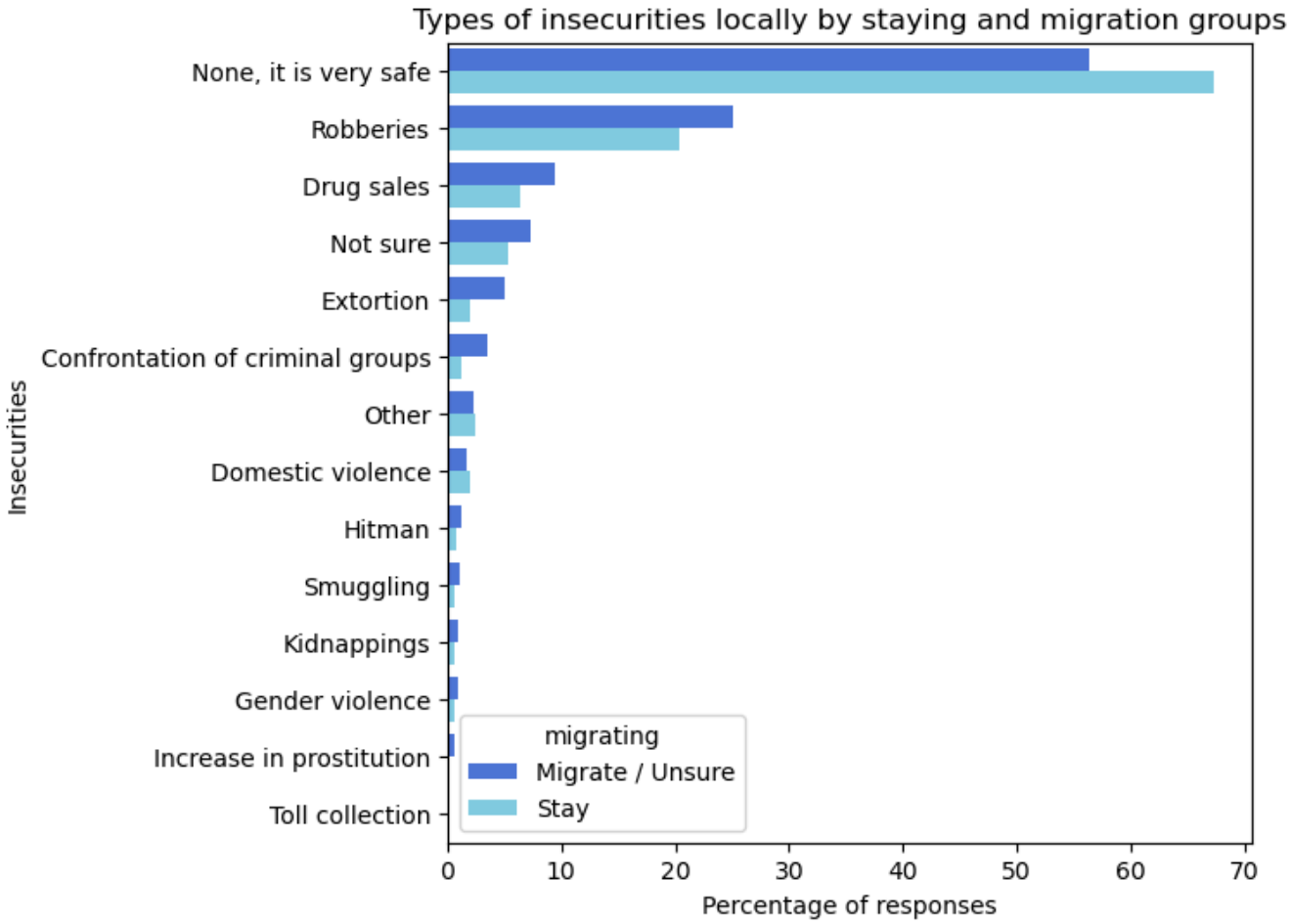


Note: Armed conflict data from ACLED, year 2015-2020. The data is mapped to the main migration data using level-2 administrative districts and municipalities as mapping keys. There are 790 records in the migration data that have missing information on the armed conflict data.

Figure 8 plots the number of armed conflict incidents within the period occurred in each household's local neighborhood. The rows indicate if the households would like to stay where they currently live or not. On the x-axis, we have the number of armed conflicts in log scale. And the size and color of the bubbles represent the total number of fatalities due to armed conflicts in each location of the households. Despite most households who do not want to migrate state that the places they live in are safe and many households who would like to migrate cite unsafety as their motivation, we observe no differences in the level of unsafety due to armed conflicts in their neighborhoods.

However, if we turn to their responses to the types of insecurities they face locally from the surveys, we find that households who express interests in migration suffer from robberies, drug sales, extortion, and confrontation of criminal groups more than those who are determined to stay (Figure 9).

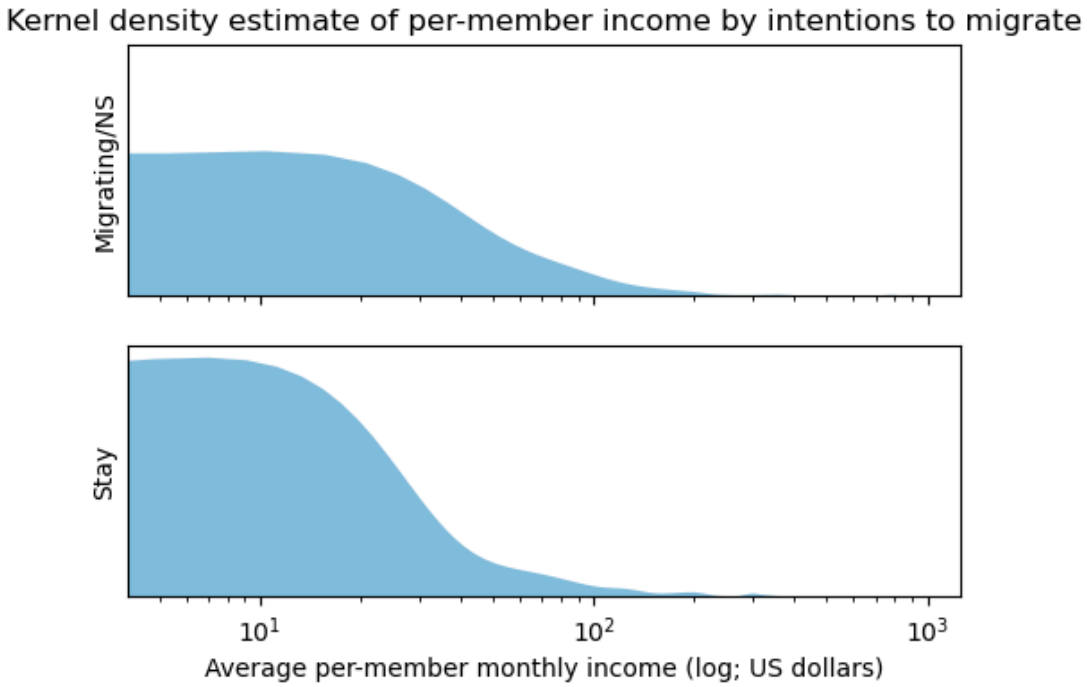
Figure 9: Types of local insecurities indicated by households who want to migrate and those who want to stay.



INCOME AND DEBT

Next, we then look at the levels of income for each household. We would like to see if there is any evidence that households that are better financially are less likely to migrate. Figure 10 plots the density of average monthly income per member (in log scale) for each household graph. Note that during the process of calculating the average income per household member, there are 23 records having household size of zero. Therefore, we correct the size of these households based on their indicated family types. For household types that suggest that they are parent(s), we assume that they have only one child. Specifically, those who say living alone will have household size of 1; those who answer 'biparental' or 'reconstituted', will have household size of 3 (two parents and one child); and those who answer 'single parent' or 'childless union' will have household size of 2.

Figure 10: Density plots of average per-member monthly income of households by their intentions to migrate or not migrate.



Evidence (Figure 10) suggests that our previous assumption is invalid: households who would like to migrate or not sure tend to have higher per-member income than those who want to stay where they are. Thus, we look to see if the amount of their debts influence their decisions to migrate or not. Figure 11 displays the relationships between income and

Figure 11: Relationships between income and debt levels for migration and staying households.

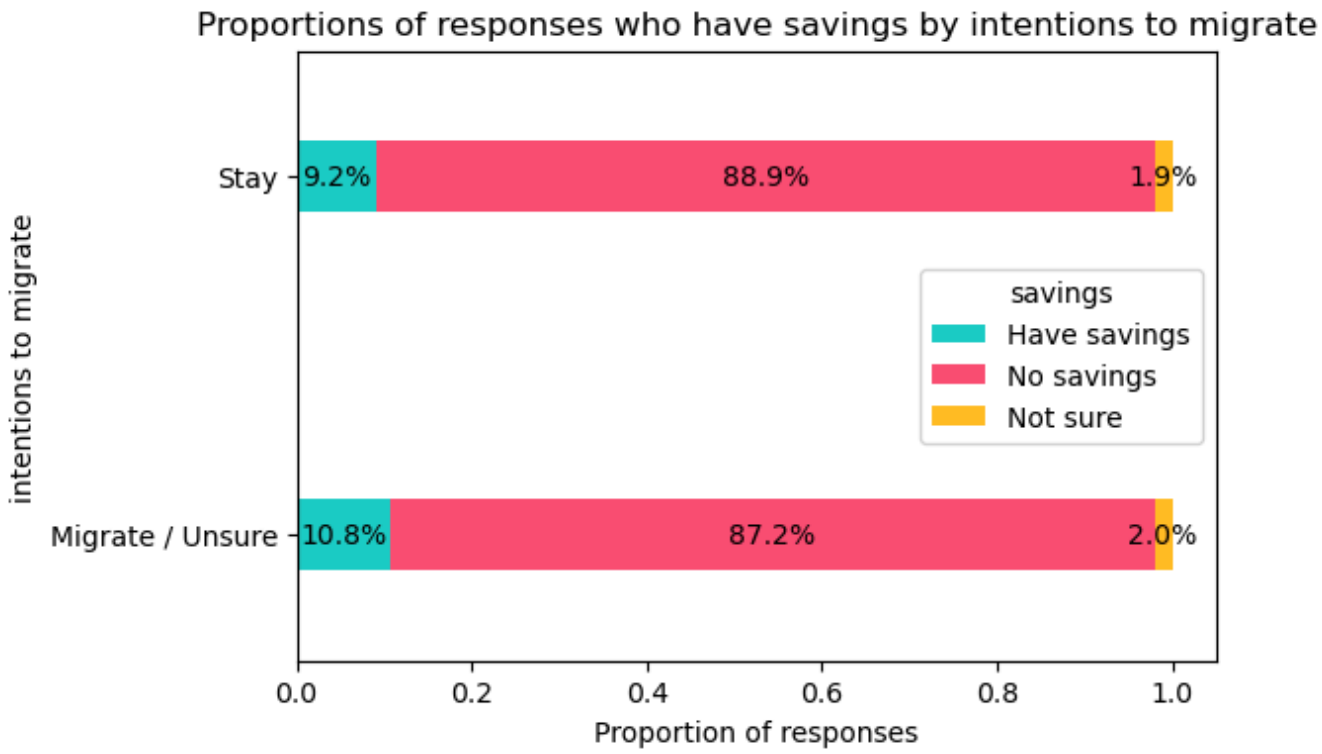
debt levels for each household group. The y-axis plots the households' amount of debt (in log scale) and the x-axis plots average monthly income per household member (in log scale). The dot colors, green and red represent households who want to stay and who would like to migrate (or unsure), respectively.

Regardless, our analysis on income and debt is rather restricted. There are 1,915 households who do not report their income levels, and 3,924 households not reporting the amount of debt. Thus, this leaves us with only 852 households whose income and debt data are present.

From these households who have income and debt information, we create a plot based on their intentions to migrate or not migrate as shown in Figure 11. All monetary values are in US dollars, using the current exchange rates of 0.041 dollars/lempirasand 0.13 dollars/quetzal. Note that many records have missing currencies of debt, and hence we fill in the values based on their countries.

We find that there is positive correlation between per-member income level and debt amount. However, the intentions to migrate or not migrate are similar across different levels of income and debt. In other words, households who are staying and those who would like to migrate have similar financial situations. Those are staying are not wealthier and those who are migrating are not financially worse off. We also take notes that a number of households have per-member income below 1 dollar per month. Most of these households have a large family size of more than 5 persons.

Figure 12: Proportions of households having savings by their indicated intentions to migrate.



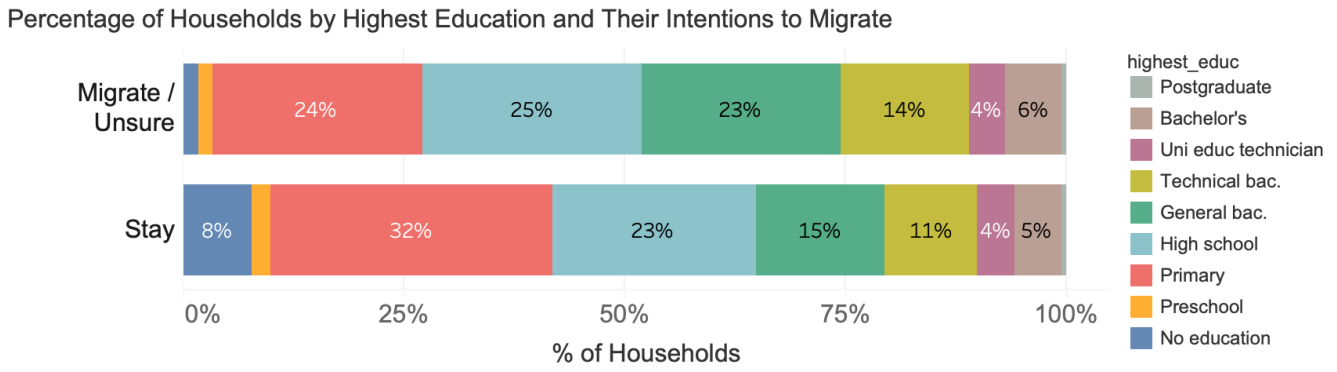
In fact, Figure 12 shows that more than 87% in both household groups indicate that they do not have savings at all. Yet, more households who want to migrate have savings than those who want to stay (10.8% vs 9.2%).

EDUCATION

Next, we investigate the role of formal education attained on households' choices to migrate or not migrate. We take the data of households' individual members from *hh_roster,* and map them to the main survey data using their *uuid*. There are 22

households that do not have any records on individual members, and hence we discard them from our analysis. Figure 13 shows the proportion of households by their highest level of education and their intentions to migrate.

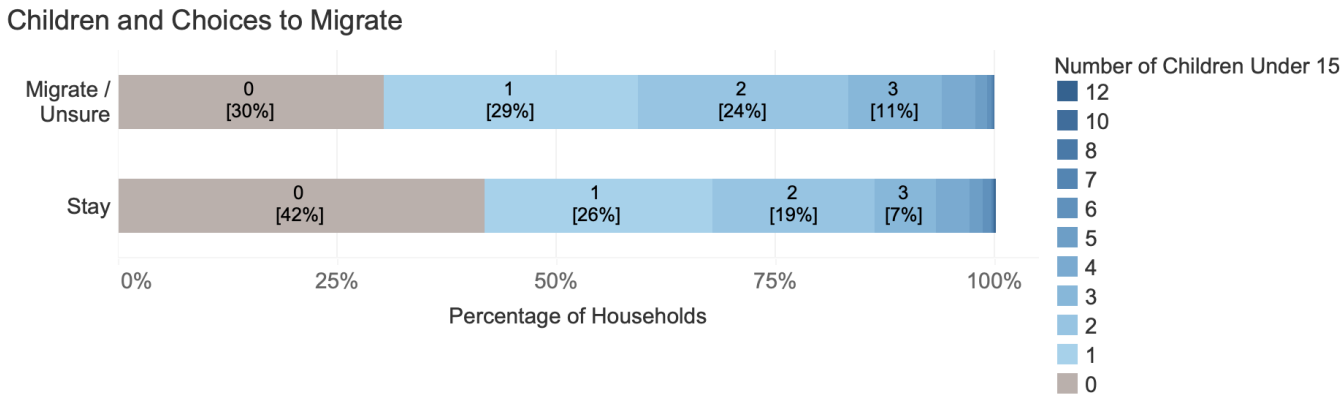
Figure 13: Percentage of households by highest education level and their intentions to migrate or not migrate.



We observe that households who express interests in migrating are more likely to have higher education than those who are determined to stay where they currently live. This piece of information might support our earlier discovery that households are migrating to seek better jobs. This might be because having a higher education degree is likely to open their doors of opportunities elsewhere. Further in-depth analysis should be explored on this insights as public policies could be made to promote more local opportunities.

HOUSEHOLD COMPOSITION

Figure 14: Percentage of households with respect to the number of children under age 15 and their choices to migrate or not migrate.



Similarly, we explore the effect of available opportunities in education and raising children on the choices to migrate or not migrate. We count the number of children under age 15 from the roster for each household. Note that there are 22 households who have missing roster records and are discarded from the analyses in this section.

Figure 14 displays the relationship between the number of children and households' interests in migrating. Over 60% of households who express interests in migrating have one or more children, compared to 48% for households who are staying. It suggests that households might be more likely to seek opportunities for their children such as education and overall quality of lives through migration.

Figure 15: Proportion of households that are breastfeeding with respect to their intentions to migrate.

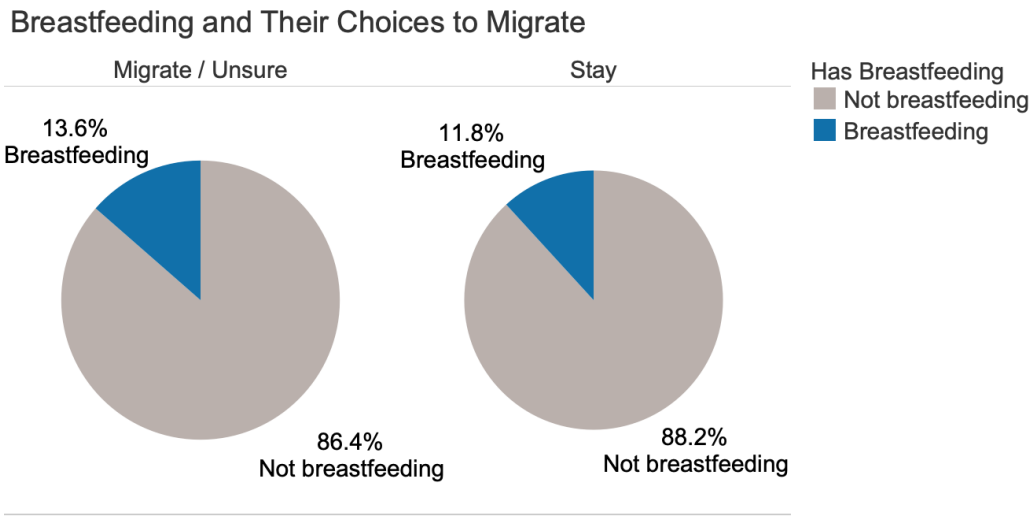
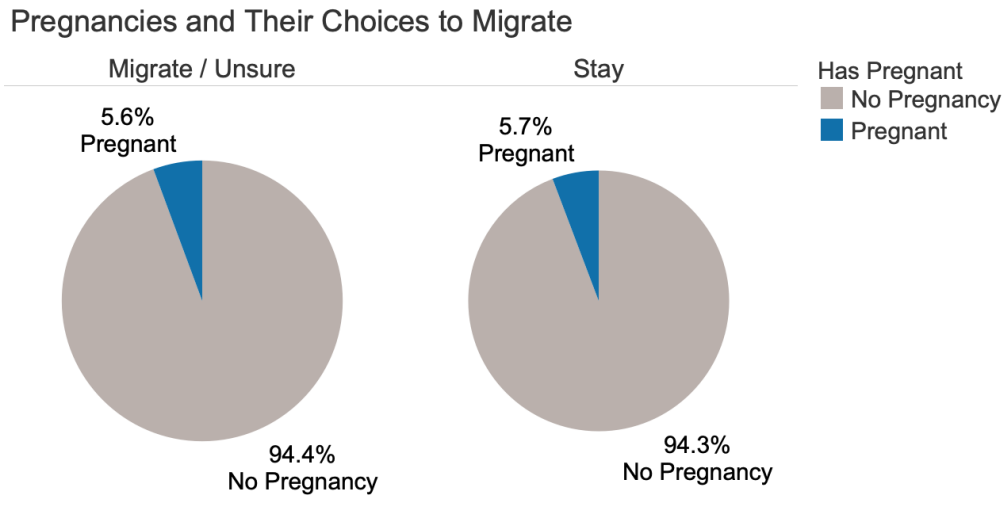
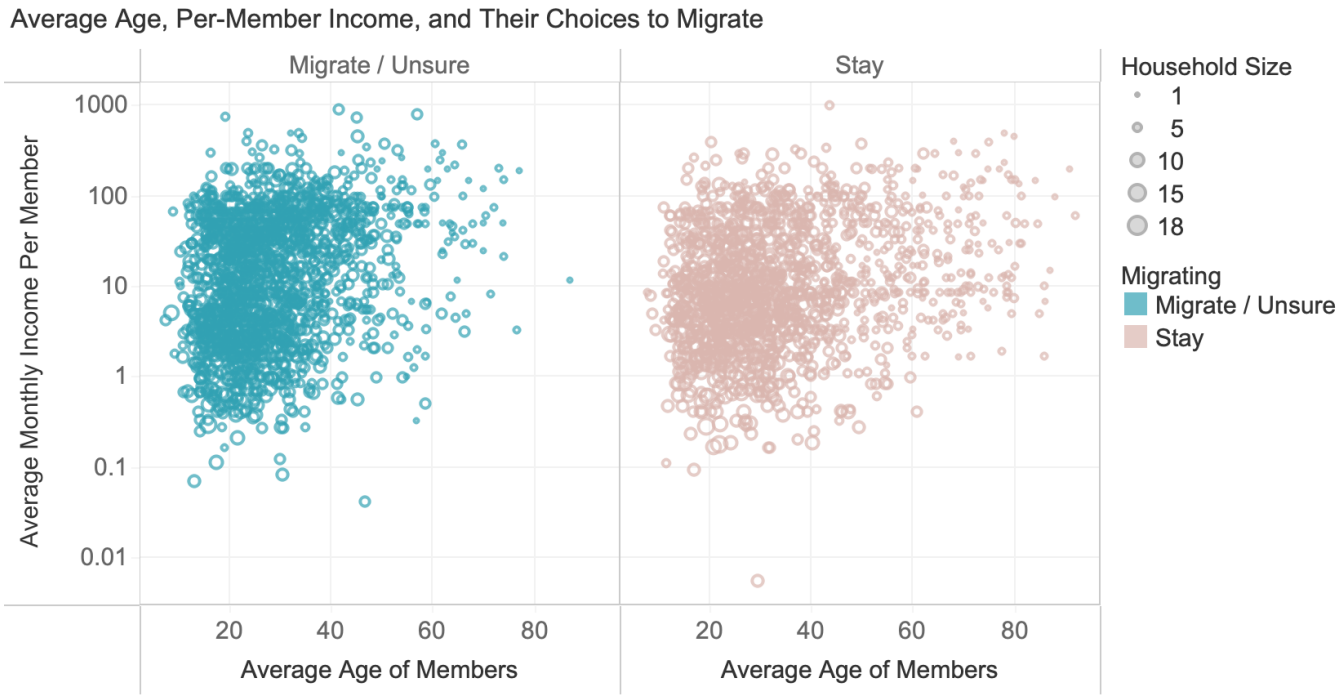


Figure 16: Proportion of households whose member(s) is/are pregnant and their intentions to migrate or not migrate.



The above finding is inline with the statistics on breastfeeding. From Figure 15, the migration group has higher percentage of households whose members are currently breastfeeding (13.6% versus 11.8%). However, when looking at the pregnancy data (Figure 16), the intentions to migrate or not migrate are similar regardless of a member having pregnancy. Note that there are 9 and 16 records whose breastfeeding and pregnancy data, respectively, are '99' even though the features are supposedly binary (0 and 1); and hence we assume that these records are not breastfeeding or not pregnant and replace the values accordingly.

Figure 17: Relationship between average per-member monthly income and average age of household members by their intentions to migrate.

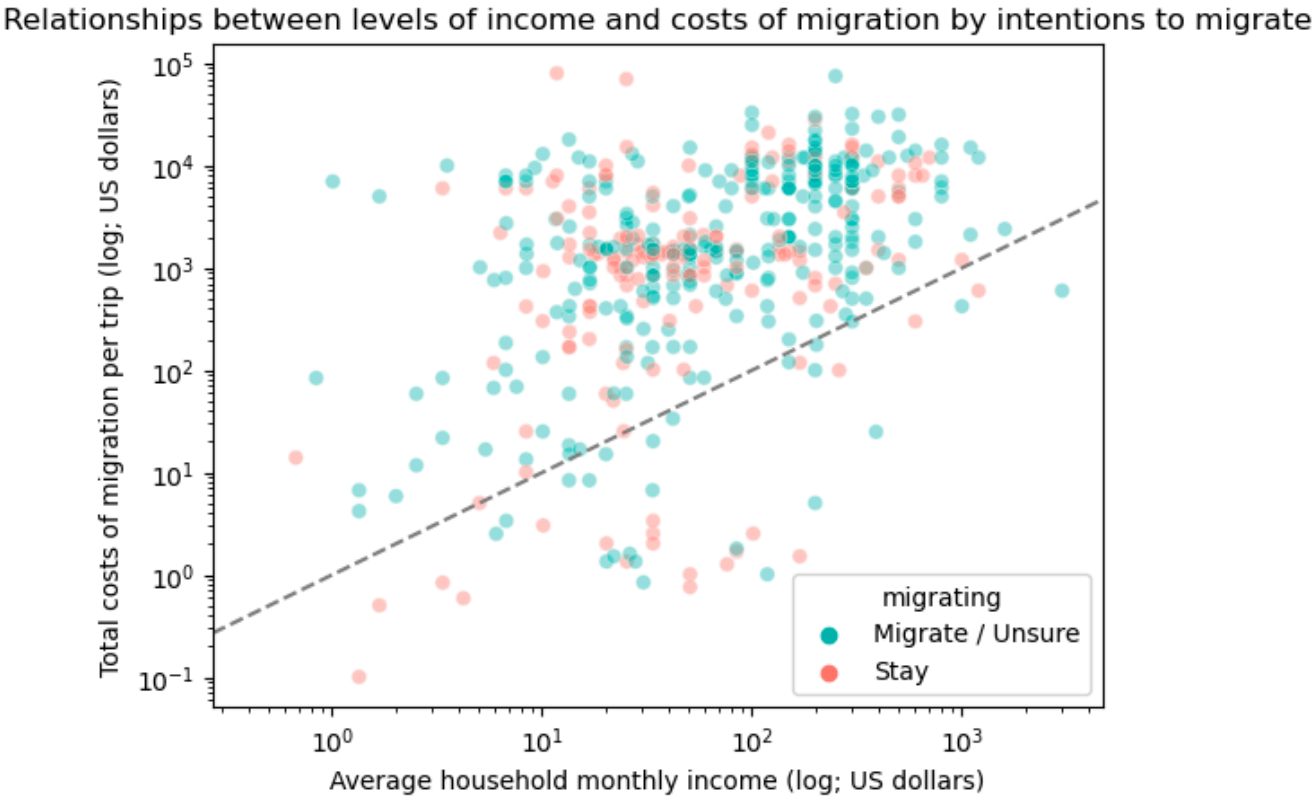


In addition, we look at the average age of household member and the income level. We would like to see (1) if average income increase with age and (2) if 'younger' households are more likely to migrate. We calculate the average age of the members using the roster data. Figure 17 shows the relationship between average per-member monthly income (on the y-axis) and average age (on the x-axis) for each of the household group we are interested in (*migrate* on the left and *stay* on the right). First, we do not observe a strong relationship between age and income. However, we do see the differences in the intentions to migrate for 'older' households. Households who would like to migrate tend

to have average age below 50 and those who would like to stay are spread across age over 50 years old and tend to be smaller in household size. This might be because people who are older are more settled into where they currently live and are less likely to seek opportunities elsewhere.

COSTS OF MIGRATION

Figure 18: relationship between income level and costs of migration by households' intentions to migrate or not migrate.

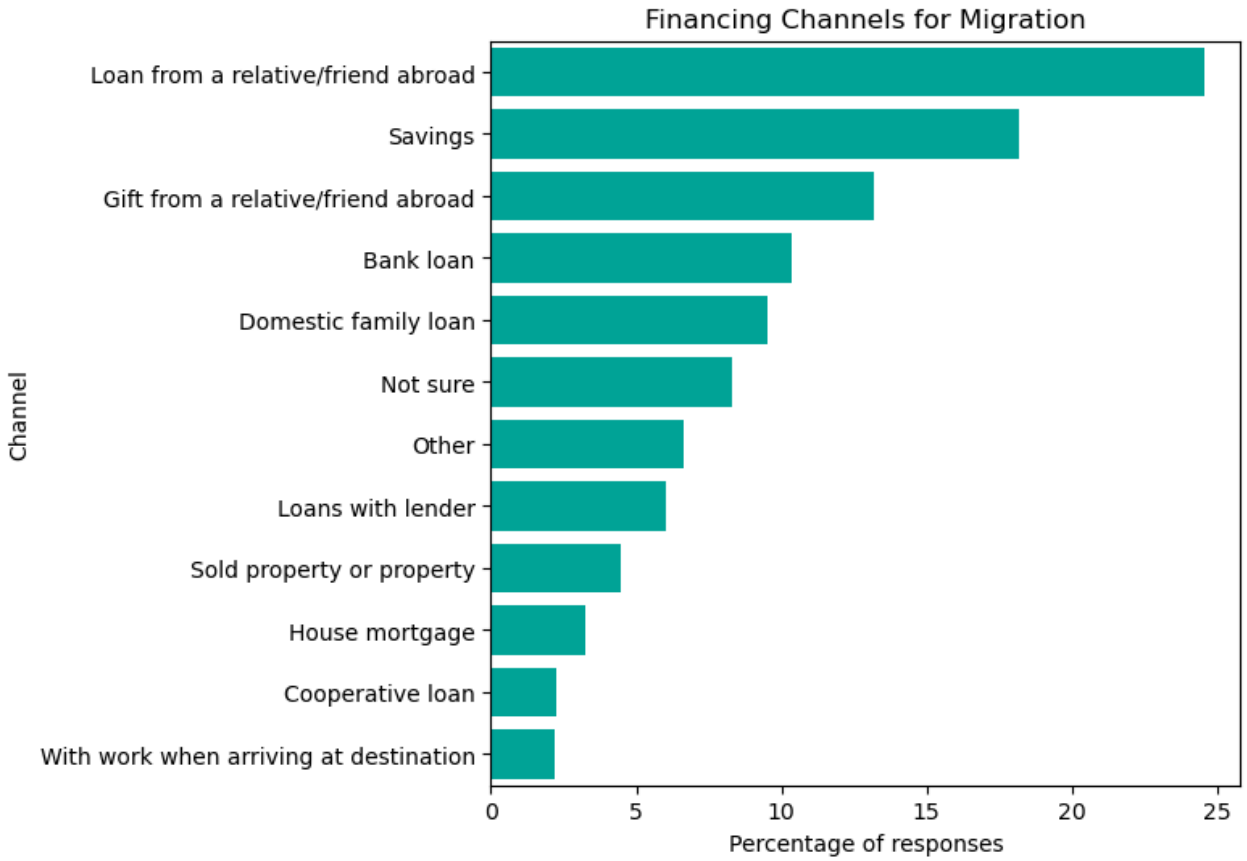


In this section, we will investigate the costs of migration. We take the data from *mig_ext_roster* which contain 1,624 persons who have migrated or attempted to migrate within the past 5 years. These 1,624 persons are from 1,186 different households. About 50.2% indicated that they know how much the trip costed, but a few of them do not fill in the amount or the currency. We discard those who do not provide the amount of money they used for migration from the following analysis, and fill in the missing currency for those who enter the amount based on their location. We convert all monetary values to

US dollars using the current exchange rates as of February 27, 2023. Then, we calculate the total costs of migration for each household and map them with the main migration data using the *uuid* as keys.

Figure 18 plots the relationship between income level (on the x-axis) and costs of migration (y-axis) by households' intentions to migrate or not migrate (green and pink colors). We have a large number of missing data for income and migration costs, leaving us with 750 households. As seen on the plot, the majority of the households lie above the dashed 45-degree line, meaning that it costs more to migrate per trip than their entire household's monthly income.

Figure 19: Percentage of responses by financing channels for migration

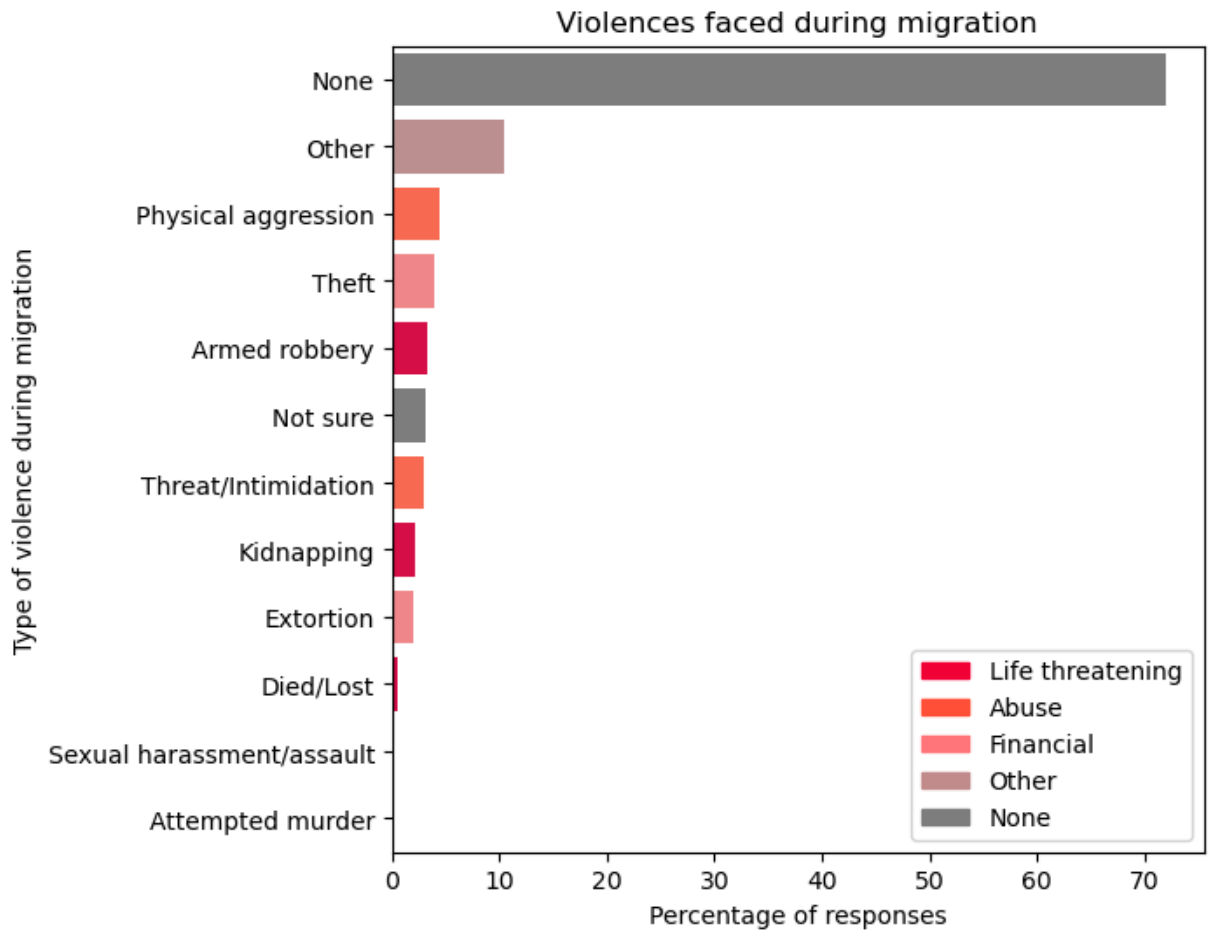


Thus, we further explore how they finance their trips to migrate (Figure 19). A large number of people indicate loans (including from family and friend, banks, lenders, mortgages) as their sources of finance for migration. Less than 20% finance their

migration through savings. However, we observe that the third most popular financing channel is gifts from family and friend abroad. Although less than 8% of households who indicate that they would like to migrate to another country cites family reunification as their motivation (see Figure 4), the fact that families and friends from abroad help financing might suggest that their quality of lives improve after migration and they would like those still in the home countries enjoy the same experience as well. More in-depth analysis needs to be conducted in order to confirm this hypothesis.

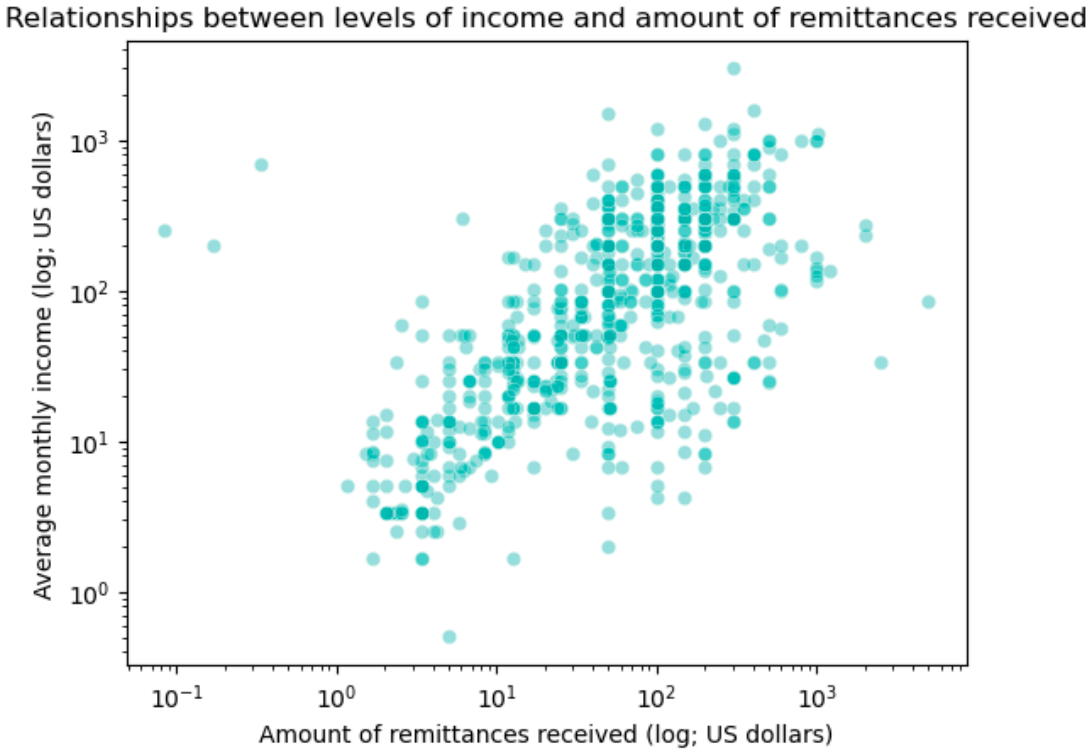
Yet, the costs of migration above include only costs for transportation, subsistence (food, medicine, accommodation, etc.), and intermediaries; but do not take into account the implicit costs incur during migration. The latter may include financial loss as well as physical and mental harms. Figure 20 shows the proportion of responses indicating the types of violences they faced on their migration trips. We group the colors of the bars based on the degree of the violences. Over 6% of the people have faced some forms of life threatening violences (armed robbery and kidnapping), 8% faced physical, verbal, and non-verbal abuses (physical aggression, threat, and intimidation), 6% incurred financial loss due to thefts and extortions, and more than 10% indicated that they face some other forms of violence.

Figure 20: Percentage of responses by types of violences faced during migration.



REMITTANCE

Figure 21: Relationship between households' income level and remittances received.



Now, we turn to explore the potential benefits of migration. First, we look at the amount of remittances. There are 1,027 households that receive financial aid from abroad. Of these households, we plot the relationship between their income level and the remittance amount in Figure 21. It appears that there is a positive relationship between income and remittance. Therefore, we investigate further if the remittance helps households to have a better life quality or not.

Figure 22 shows the percentages of living standard satisfaction levels compared between households who receive remittances and those who do not. It is evident that households who receive financial aid from abroad have a much higher chance of being satisfied with their standard of living and what they can buy and do, relative to households who do not receive remittances (63.4% versus 46.7%). This result gives hope that migration might lead to an improvement in lives (at least for their families who receive remittances).

Nonetheless, note that we cannot establish the causal relationship between migration and life improvement as we do not have data on the conditions of households prior to migration. Still, more studies should be conducted to further explore in this topic.

Figure 22: Percentage of households who are (un)satisfied with their living standards by receiving and not receiving remittances