Methodology for estimating the size of the Myanmar migrant population in an irregular situation in Thailand

October 2024

Highlights

- The Proportion-Inverse Proportion (PIP) approach, inspired by the multiplier method, was used to estimate the total number of migrants, including those in an irregular situation. This approach addresses data gaps in countries like Thailand, where national statistics methods often fall short.
- The PIP is based on the formula that estimates the total migrant population by dividing the number of migrants in a specific regular situation by their proportion. It then calculates the number of migrants in an irregular situation by multiplying total migrant population by one minus the cumulative proportion of migrants in regular situations.
- When applied in Thailand, the PIP approach aimed to estimate the Myanmar migrant population, including those in an irregular situation. Data sources utilized were the Department of Employment (DOE) statistics and multisectoral assessments of needs data gathered by the International Organization for Migration (IOM).
- As of July 2024, an estimated 4.1 million of Myanmar migrants living in Thailand was estimated, including 1.8 million in an irregular situation.
- While the PIP approach provides estimates based on a clear methodology, it is important to note that it relies on existing data sources, which may not capture all migrants; additionally, evolutions of legal status over time can affect the accuracy of these estimates.

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Co-funded by the European Union

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PROPORTION-INVERSE PROPORTION (PIP) APPROACH

The Proportion-Inverse Proportion (PIP) approach is derived from the multiplier method which is a way to estimate a total value, such as a population, using a smaller sample and scaling it up based on known ratios and percentages. The PIP approach uses known data on the migrant population and their proportion in a specific location and time to estimate the total migrant population and the migrant population in an irregular situation. This approach was developed to address gaps in estimating the overall migrant population, particularly in countries where census data may be outdated or fail to fully capture the migrant population.[1]

The PIP approach is based on two steps:

Step 1: The first step aims to estimate the total migrant population.

$$(TMP) = (NMSRS) * \frac{1}{(PMSRS)}$$

With TMP = total migrant population, NMSRS = number of migrants in a specific regular situation (i.e., migrant workers in a regular situation), and PMSRS = proportion of migrants in this specific situation (i.e., proportion of migrant workers in a regular situation). The total migrant population is obtained by dividing the number of migrants in a specific situation by the proportion of migrants in this specific situation. Both values are known.

Step 2: The second step aims to estimate the number of migrants in an irregular situation based on the total migrant population estimated in step 1.

$$(MI) = (TMP) * \left(1 - \sum(PRR)\right)$$

With MI = migrants in an irregular situation, TMP = total migrant population. ∑(PRR) represents the cumulative proportion of migrants in a regular situation. By subtracting this sum from 1, the proportion of migrants in an irregular situation is obtained. The product of this proportion and the total migrant population provides the number of migrants in an irregular situation.

Ideally, the metrics for NMSRS and PRR should be available at the country level through national statistics, administrative data or targeted assessments. However, in situations where these data points are accessible only at lower administrative levels, and if these lower-level findings are representative of the broader population, it is feasible to use interpolation techniques to estimate figures for the entire country.

APPLICATION: ESTIMATING THE MYANMAR POPULATION IN AN IRREGULAR SITUATION IN THAILAND

In Thailand, there is no updated estimate of the total migrant population. Last census data is from 2010. Besides, the sampling strategy of the census does not allow to capture well the number of migrants, especially because an important proportion is potentially in an irregular situation. Hence, the utilization of the PIP is appropriate.

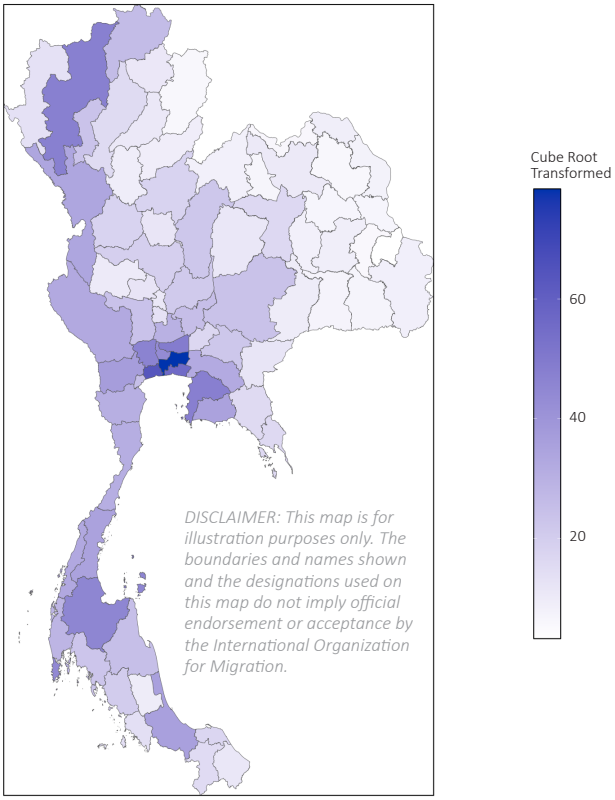
To apply the PIP method, two different data sources are used in the context of Thailand:

- The number of registered Myanmar migrant workers, made publicly available by the Department of Employment (DOE) of the Ministry of Labour of the Royal Thai Government, serves as the NMSRS. The number is available monthly and across the 77 provinces in the country. Map 1 presents the distribution of registered migrant workers across the 77 provinces in Thailand as of July 2024.

[1] Without the total migrant population, the residual method known as the most robust indirect approach to estimate the size of the migrant population in an irregular situation cannot be applied.

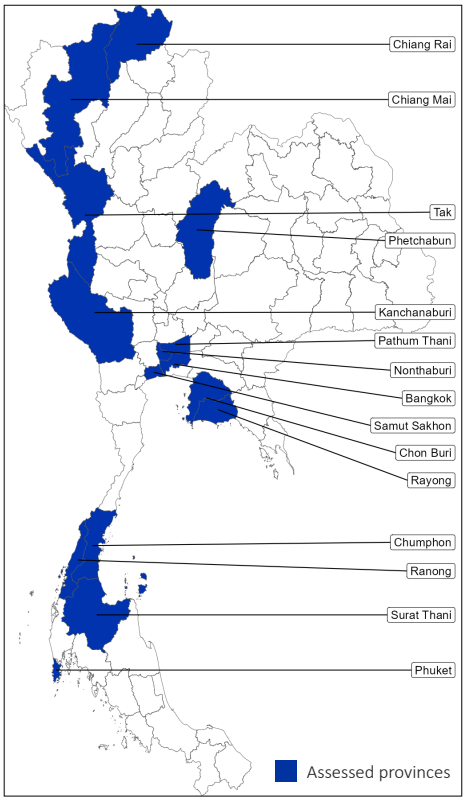
- Data from the multisectoral needs assessments (MSAs) conducted by IOM Thailand in 2023 and 2024 across 15 provinces[2] within the country constitutes the PMSRS. These MSAs survey migrants living in Thailand, including Myanmar migrants, using a household-level questionnaire. MSAs capture information on respondents' documentation status and employment status. This data helps categorize respondents into three key groups: workers in a regular situation, inactive migrants in a regular situation, and migrants in an irregular situation. Map 2 shows the 15 provinces assessed through the MSAs in 2023 and 2024.

Map 1 Distribution of registered Myanmar migrant workers (July 2024)



Source: Authors' computation based on the Department of Employment statistics as of July 2024.

Map 2 Provinces covered by the multisectoral assessment of needs in Thailand (July 2024)



Source: Authors' computation based on the multisectoral assessments of needs conducted in Thailand as of July 2024.
Note: Provinces assessed include: Bangkok, Chiang Mai, Chiang Rai, Chon Buri, Chumphon, Kanchanaburi, Nonthaburi, Pathum Thani, Phetchabun, Phuket, Ranong, Rayong, Surat Thani, Samut Sakhon, and Tak.

Two intermediate steps were implemented to determine the number of migrants in a regular situation and the proportion of migrants in a regular situation at the provincial level across the 15 provinces covered by the MSA. Given that the MSA does not directly ask respondents about their legal status in Thailand, a series of indicators was utilized to categorize respondents and assess their legal status. The indicators -documentation, work permit and number of employers- are crossed-referenced to create eight distinct categories (see Table 1).

[2] Bangkok, Chiang Mai, Chiang Rai, Chon Buri, Chumphon, Kanchanaburi, Nonthaburi, Pathum Thani, Phuket, Ranong, Rayong, Surat Thani, Samut Sakhon, and Tak. Provincial-level factsheets are available at https://dtm.iom.int/thailand.

Migrants who could be classified as being in a regular situation and thus be in the DOE statistics are those who have valid documentation and a work permit with one employer, and those who have valid documentation and a work permit with multiple employers. However, migrants who have valid documentation but do not work in Thailand are also considered in a regular situation but are not counted by the DOE. On the other hand, five categories comprise the migrant population in an irregular situation. It includes those who report being freelancers, a status not legally recognized for migrants in Thailand, those who have valid documentation but work without a work permit, those who have valid documentation and a work permit, but unemployed (no employer), and those who lack both valid documentation and a work permit, regardless of employment status.

Table 1 Categories of migrants by status

#	Documented	Work permit	Number of employers	Category name	Status
1	Yes	Yes	1	Under DOE, one employer	Regular
2	Yes	Yes	>1	Under DOE, multiple employers	Regular
3	Yes	Yes	Freelance	Freelance	Irregular
4	Yes	Yes	0	Unemployed	Irregular
5	Yes	No	>0	Worker but not registered by the DOE	Irregular
6	Yes	No	0	Inactive (e.g. retired worker, tourist)	Regular
7	No	No	>0	Undocumented worker	Irregular
8	No	No	0	Undocumented inactive	Irregular

Source: Authors' computation based on the tool of the multisectoral assessments of needs.

The two first categories, #1 and #2 are considered being the population reported by the DOE. A specific attention had to be made on the inactive population category (#6) which is also in a regular situation but not reported by the DOE.[3]

After getting the proportions of each category in the provinces covered by the MSA, an interpolation of the results is made to cover the whole country using the IDW technique.

Text box 1 Spatial interpolation technique

As the metrics are not available at the country level for Thailand, but only in some selected lower administrative levels (province), spatial interpolation techniques can be used to obtain country-level estimates. Among the various methods available, the inverse distance weighting (IDW) method was used to estimate the values of the proportions at unsampled locations based on values from nearby sampled locations. The technique assumes that points closer to the provinces not assessed should have more influence on their estimated value than the ones that are farther away. It has the advantage of overcoming the lack of clear understanding of spatial structure of the data.

The weighted average calculates the estimated value at a specific province by taking a weighted average of known values from surrounding points. The weights decrease with distance, meaning closer points contribute more to the estimate.

For the parameter used to determine how quickly the influence of a point decreases with distance, a power value is determined. The power value has an impact on the accuracy of the interpolation and can result in noticeable differences in the outputs. Thus, finding the best value of power used for the interpolation is of high importance. Indeed, as a lower power lead to a smoother interpolation, this could result in a higher chance of missing high difference between regions. But, using a high power value could result in over estimating them.

It is possible to run the interpolation with increasing power value and use the Leave-One Out Cross Validation (LOOCV) method to get the optimal one to be used. The LOOCV involves systematically removing one data point from the dataset, training the model on the remaining data, and then testing it on the omitted point. This process is repeated for each data point in the dataset, resulting in a robust assessment of the model's predictive ability.

Methodological limitations of the IDW

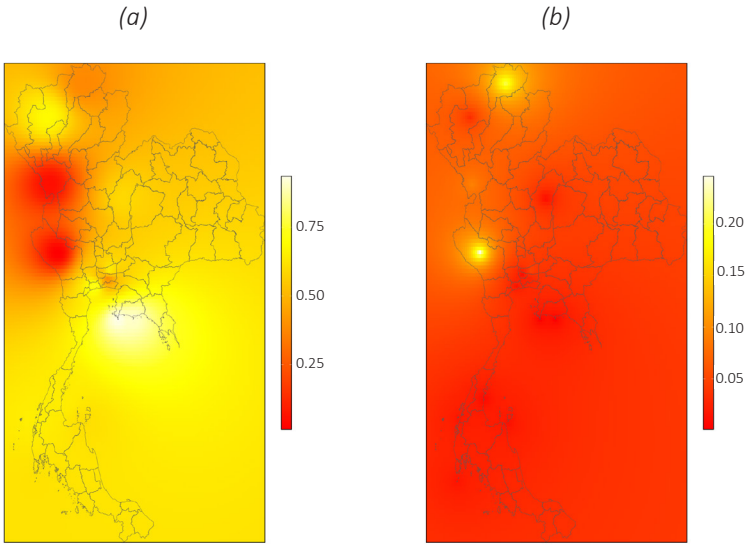
The IDW may not perform well in areas where fewer surrounding points are available. Besides, the selection of the power value is also critical, as it can significantly affect the results; a poorly chosen value could skew the estimates. Finally, the assumption that the proportions behave similarly across the entire study area may not always hold true, which could lead to inaccuracies if there are important spatial variations in the underlying data.

[3] Inactive population refers to those who do not work and are not actively looking for a job, for instance students and retirees.

As in Thailand, data points are not available at the national level but in some provinces, interpolation techniques were used (see Text box 1). Based on the simulations run using the LOOCV[4], the optimal power value for DoE migrants' workers is 2.381, while the optimal power value for regular inactive migrants is 1.151. The interpolation findings were then averaged across the covered areas and used to compute the Myanmar total population and the Myanmar regular inactive migrant population.

Map 3 shows that the proportion of Myanmar migrant workers in a regular situation is uneven across the country, with higher proportions around Bangkok and Chon Buri, while lower proportions were found in the western provinces bordering Myanmar, such as Tak and Kanchanaburi. Similarly, higher proportions of Myanmar inactive migrants in a regular situation are found primarily in Kanchanaburi and Chiang Rai provinces.

Map 3 Interpolated spatial variation of Myanmar migrant workers in a regular situation (left) and Myanmar inactive migrants in a regular situation (right) in Thailand



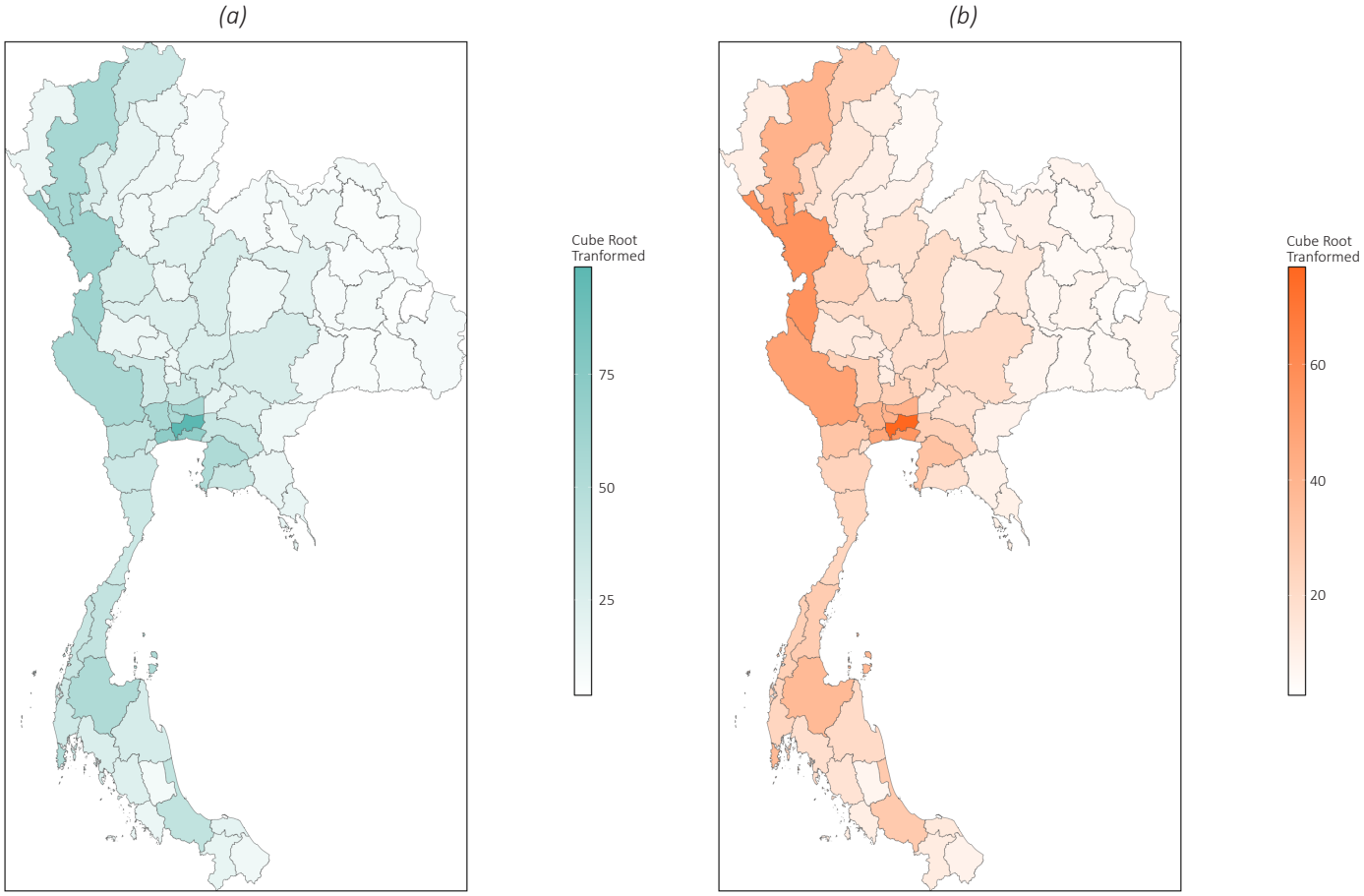
DISCLAIMER: This map is for illustration purposes only. The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the International Organization for Migration.

Source: Authors' computations based on the Department of Employment statistics and IOM multisectoral assessments of needs data.
Note: Power value for Myanmar migrant workers in a regular situation is 2.381 and power value of Myanmar inactive migrants in a regular situation is 1.151.
Interpretation: (a) From red to white with red representing a low presence of Myanmar migrant workers in a regular situation while white represents a high presence. (b) From red to white with red representing a low presence of Myanmar inactive migrants in a regular situation and white representing a high presence.

[4] Results of the simulations available upon request.

Using the PIP approach, IOM Thailand estimated that the number of Myanmar migrants in an irregular situation across the country as of July 2024 is 1,815,158 people. The total estimated population of Myanmar migrants living in Thailand is around 4.18 million. The distribution of Myanmar migrants including those in both regular and irregular situation, as well as the specific distribution of Myanmar migrants in an irregular situation are shown in Map 4, sections (a) and (b), respectively.

Map 4 Distribution of total Myanmar migrants (left) and Myanmar migrants in an irregular situation (right) in Thailand (July 2024)



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Source: Authors' computation based on the Department of Employment statistics and IOM multisectoral assessments of needs data.
Interpretation: (a) from white to dark green with dark green representing higher concentration of Myanmar migrants in Thailand. (b) from white to dark orange with dark orange representing higher concentration of Myanmar migrants in an irregular situation in Thailand.

The distribution of Myanmar migrants in Thailand is uneven, with most located along the Thailand-Myanmar border, particularly in Chiang Mai and Tak provinces. Important concentrations are also found in Surat Thani, Songkhla, and the Greater Bangkok area. In contrast, the presence of Myanmar migrants is lower in the eastern and central regions of the country. The distribution of Myanmar migrants in an irregular situation closely follows these overall patterns, with the highest concentrations in the Greater Bangkok area, including Bangkok and Pathum Thani, followed by Tak and Kanchanaburi.