

## Data for Cities

### A 2019 Urban Baseline for Mandalay City



#### In brief

- In developing countries, a lack of rich data can hinder evidence-based decision-making and research on urban areas for urban policymakers when making decisions on infrastructure and services.
- This brief presents the first urban baseline survey across all the six townships in Mandalay, and its analysis provides an outline for important city characteristics, including urban prices, commuting habits and employment.
- The survey finds that residents include their city of residence as an important element of their sense of identity; low levels of inequality and relatively high levels of access to services of the six townships studied; most means of transport are of low capacity; over a third of residents are self-employed; and a reconfirmation of the positive accolades the city has been receiving in the recent past
- The researchers recommend increasing funds for the city to be able to invest in increasing infrastructure and service provision. This survey can provide a baseline from which future data collection can build off to help policymakers assess the heterogeneity of impacts of their policy and investment decisions across geographies and different populations, as well as support future research for Mandalay.

*This project was funded  
by IGC Myanmar*

## Data for city decision making

On a daily basis, city policy makers make various decisions in a number of different areas. For example, the Mandalay City Development Committee (MCDC) makes decisions pertaining to service provision around water, sanitation and waste collection; decisions around municipal finances, including which taxes to set and at what rate, to ensure that they can raise enough revenue to finance all their city-related expenditures; and decisions around where to make investments.

Regarding investment, MCDC needs to also coordinate other outside investments in the city, to ensure they can achieve the greatest social and economic impact. Some of these investments can be fairly large-scale, like those planned under the Belt and Road Initiative.<sup>1</sup>

Therefore, well-thought decisions will have significant impact for the city. However, this requires evidence to make sound decisions that will allow MCDC to weigh the trade-offs, understand where it should devote its limited resources to maximise their potential and understand the impacts of investments on the people in the city.

City authorities in developing countries, like MCDC, are unable to provide the evidence to support their decisions making because of an overall lack of data. In the case of Mandalay, we believe that a full comprehensive baseline of the city does not exist. This is not uncommon for many cities, as there may be overall national censuses done but not any specific city related work.

The challenge with administrative data, like a census, is that they are not detailed enough for policymakers to use in decision making. Additionally, they are usually static (i.e. taken at a certain point in time), and therefore struggle to capture the dynamism of cities that urban policy makers contend with. There has been a move by some cities to start using big data sources, including night lights<sup>2</sup> Google Images<sup>3</sup>, and mobile phone data<sup>4</sup>. However, this type of data is not always readily available and easy to analyse from a policy maker's perspective. Also, this type of data may not be sufficient to fully scrutinise and understand certain city dynamics. For example, whilst this data can provide basic information on population movements, it is not yet able to provide accurate information on prices, such as wages or rents. Furthermore, it is still questionable whether we can accurately use big-data to elicit certain socio-economic characteristics of populations. Therefore, good data is needed for both the decision making ability of urban policy makers and to facilitate future research.

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1. Hammond, C. (2018, September 26). Frontier Myanmar. Behind Closed Doors, Myanmar Has Moved a Step Closer to Approving the Ambitious, Multi-billion Dollar China-Myanmar Economic Corridor. Retrieved from <https://frontiermyanmar.net/en/the-grand-plan-for-the-china-myanmar-economic-corridor>

2. Henderson, J.V., Storeygard, A. and Weil, D.N. (2012) "Measuring Economic Growth from Outer-space." *American Economic Review* Vol 12:2. Pp. 994-1028

3. Glaeser, E., Kominers, S.D., Luca, M. and Naik, N. (2015) "Big Data and Big Cities: The Promises and Limitations of Improved Measures of Urban Life: Big Data and Big Cities." *Economic Inquiry* 56(1)

4. Blumenstock, J., Cadamuro, G., On, R. (2015) "Predicting Poverty and Wealth from Mobile Phone Metadata." *Science* Vol 350, Issue 6264. Pp. 1073-1076.

## 2019 Urban baseline survey for Mandalay

To support the MCDC in enhancing its evidence based decision making capacity, a baseline survey of the city was conducted between April and May in 2019 (known as the *2019 Urban Baseline Survey*). This survey covered all six townships currently under MCDC's remit and undertook 1480 surveys in total. The enumerators undertook a random sampling of households, with the final number of surveys undertaken in each township reflecting the relative population weighting of that township relative to the others. The survey itself builds on a questionnaire that was designed and piloted in Kampala, Uganda.<sup>5</sup> It aims to collect a certain set of characteristics important to urban policy makers, such as prices (household and business income), commuting habits and overall employment patterns in the city.

The survey set up was intended to be easily replicable for MCDC, if it chooses to undertake further rounds of the survey in the future. Although the current brief can only provide analysis based on a static snapshot of the city from the first half of 2019, if the survey was carried out in further waves, it would provide MCDC more detail for it to be able to assess the dynamic effects of investments and changes in policy across the geography as well as amongst different populations in the city. Data from the survey can also be used to support further research in Mandalay, such as, to help calibrate some of the modelling work that is being considered. A potential further application is conducting the same survey across other cities in Myanmar, which could allow for a more detailed cross-city city comparisons to take place.

In the following sections of the brief we will outline relevant findings from the *2019 Urban Baseline Survey* and link these to policy implications that MCDC could address now, and with respect to potential future waves of this survey. Although there is no other known urban characteristics survey which we could compare the results to, in 2018, the Asia Foundation completed a perception survey across a number of cities in Myanmar (referred to as the *2018 City Life Survey*<sup>6</sup>). We have used the results from this survey to compare what is actually happening, as per the *2019 Urban Baseline Survey*, and to what citizens perceive to be happening from the *2018 City Life Survey*. We discovered that the findings from both surveys are mutually reinforcing.

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5. Bird, J., Bryan, G., Franklin, S. and Haas, A.R.N. (forthcoming) Cost-effective Panel Data Collection for Kampala? London: International Growth Centre.

6. The Asia Foundation (2018) Insight into Urban Well-Being in Myanmar: The 2018 City Life Survey. Myanmar: The Asia Foundation

## Residence as a sense of identity

One of the main findings of the 2018 *City Life Survey* was that “Residents of Mandalay (...) are the most likely to include their city of residence as one of the two most important elements for their sense of identity.”<sup>7</sup> This perception was very much reflected by the permanency of most city residents over time, as seen in our 2019 Urban Baseline Survey. For example, over 80% of those surveyed were born in Mandalay (see **Figure 1**), and for those who had migrated to the city, their average length of stay in Mandalay has been over 20 years.

Another potential reason that residents of Mandalay are more likely to feel a sense of permanency, and therefore identity linked with their city, is the strong security of tenure. Across the city, the respondents, on average, have stayed in their current dwelling 15 years or more. The highest average reported in Maha Aungmye Township is 25.4 years (see **Figure 2**). Also, over 60% of respondents reported that they owned the land they were living on. Overall, tenure security is quite remarkable, with only about 16% reporting that they did not have any form of ownership for their land.

According to the 2019 *Urban Baseline Survey*, most respondents are living in traditional wooden houses, with less than 2% reporting they were living in any type of high rise structure (see **Figure 3**). Interestingly, this finding is the same when stratified across income groups, indicating that the wooden house is the most preferred type of residential structure.

## Policy implications

*Migration:* The data from the 2019 *Urban Baseline Survey* on length of residence in the city implies that presently, most of the growth of the city is most likely a result of natural population growth rather than in-migration. However, the planned forthcoming large-scale investments, particularly linked to the Belt and Road Initiative, may bring more formal employment opportunities to Mandalay, which in turn may attract more migrants from other areas of Myanmar or further abroad. Therefore, future iterations of this survey may want to explore whether and how the balance between people born in the city and those who have migrated changes. This will include factors such as whether the overall number of migrants to the city increase, their socio-economic profile, where they settle and what they tend to do (employment) in the city.

*Social contract:* This permanency of residents in Mandalay may also affect how MCDC relates, and therefore, communicates with its citizens. For example, in areas such as municipal finance, ensuring compliance with property taxes may be easier, since people do not seem to be changing their

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7. Ibid 5, page 8

location very frequently. Furthermore, with taxes overall, this sense of identity linked to the city may support a stronger social contract of helping citizens understand why paying taxes will allow an increase of current and future investments for their city. As the city is now looking at improving tax compliance in various areas, experimenting with different messaging that directly links to their identity on the city may therefore be interesting.

*Tenure security:* Much of the research and literature around cities shows that security of tenure is one of the foundations that allow cities to become liveable and productive places<sup>8</sup>. This is because tenure security incentivises private individuals to make investments in their land and property. It also underpins the marketability of land, such that it can be traded to ultimately be put to its most efficient use. The high-rates of tenure security in Mandalay is an extremely positive feature of the city. As with a number of the variables assessed in this survey, this feature is actually found to be similar across income groups (i.e. both high and low income residents are secure in their tenure). Ensuring this tenure security is maintained can be monitored through future surveys. This will be particularly important with the number of large infrastructure investments that will require land. Therefore, it will be important to ensure that people are adequately consulted and compensated should they have to relocate off their land accordingly.

*Urban sprawl:* As noted, the wooden house is the preferred living option across townships and income groups in the survey. However, as these structures are mostly two stories high, it will not necessarily promote densification of the city. Although having wooden houses as the primary form of residence may not be a challenge at the current levels of urbanisation, this is an aspect that MCDC will want to monitor as the city grows. In particular, growth through low density residential development could lead to urban sprawl, where the city continues to grow outwards beyond its boundaries. Sprawl, in turn, can be challenging and costly for any city authority to manage as it will require providing services and infrastructure across larger geographic areas<sup>9</sup>. Furthermore, as discussed later in this brief, there is currently no large-scale public transport option in Mandalay. Although this is less of an issue when residents can be located close to jobs, it will become more challenging as the city becomes spatially further dispersed. In this case, without commensurate investments in transport, this could leave some citizens more isolated from social and economic life.

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8. Collier, P, Blake, M. and Manwaring, P. (2018) Growth Brief: Making the most of urban land. London: International Growth Centre

9. Collier, P, Glaeser, E., Venables, T., and Manwaring, P. (2018) Urban planning for productive and liveable cities. London: International Growth Centre.

## Low levels of inequality and relatively high levels of access to services

Perhaps one of the most surprising findings from the *2019 Urban Baseline Survey*, was the relative equality of income across all of the six townships that were studied. In particular, the median reported income for all of the townships was between 300,000 and 400,000 MMK ( $\approx 200 - 265$  USD) per month (see **Figure 4**). This median income is compared to the overall Myanmar average of about 169,000 MMK. This characteristic of relative equality across the townships is further reaffirmed by other parts of the survey as well, which display similar relative levels of equality, such as ownership of the assets that were asked. This feature, again, provides confirmation to the findings from the *2018 City Life Survey*, which found that “*Mandalay residents showed the lowest perceived wealth inequality {across Myanmar}, with 44% reporting that wealth inequality was not a problem.*”<sup>10</sup>

Across the survey, the highest average proportion of income is spent on food, making up over 50% of reported monthly spending (see **Figure 5**). This was followed by transportation ( $\approx 11\%$ ), education ( $\approx 8.5\%$ ), health ( $\approx 4.5\%$ ) and water ( $\approx 2.3\%$ ). It should be noted, however, that the spending on water is only for those with a piped connection from MCDC (for a further discussion on this, as well as the level and affordability of water connections, see the Policy Brief on setting water tariffs right: considerations and approaches<sup>11</sup>).

A further interesting and seemingly positive finding from the data in the *2019 Urban Baseline Survey* was the good accessibility of services. In particular, the average walking distance for respondents to their nearest school, health clinic, market and trishaw or motorcycle stand was all under 12 minutes (see **Table 1**). These short distances are potentially reflective of a good distribution of services across all the townships of the city and could indicate good equality of access. However, it should be noted that this survey only inquired about accessibility. This does not reflect anything about the quality of each of their services or their usage.

### Policy Implications

*Equality, urbanisation and development:* This finding of such relative wealth equality across all the dimensions asked in the *2019 Urban Baseline Survey* is uncharacteristic of many developing country cities, as often, urbanisation can be linked to rises in inequality<sup>12</sup>. Furthermore, the spatial set-up is that some areas are richer than others, which, from the data, interestingly does

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10. Ibid 5, page 38

11. Astrid R.N. Haas. (2018) Setting water tariffs right: considerations and approaches. London: International Growth Centre.

12. Glaeser, E., Resseger, M. and Tobio, K. (2009) “Inequality in Cities.” *Journal of Regional Science* Vol 49 (4). Pp 617-646.

not seem to be the case in Mandalay. It would therefore, be useful to have further research that can both confirm as well as understand a bit more why this is the case. This would then help MCDC target policies that help maintain this positive feature of the city as it grows.

*Service provision:* The 2018 *City Life Survey* found that residents of Mandalay actually perceived that “essential goods and services are relatively affordable. 23%, the lowest proportion of any city, say that food is difficult to afford.<sup>13</sup>” When combined with the fact that the 2019 *Urban Baseline Survey* shows the relative accessibility of services, this is a further particularly positive feature of the city, and again, something MCDC will want to monitor across potential further waves of this survey to ensure maintenance.

## Low capacity travel

One feature of Mandalay that is fairly evident even when just visiting the city is the fact that most of the means of transport are relatively low capacity, such as the large number of three-wheeled trishaws. This finding is confirmed by the 2019 *Urban Baseline Survey* where across the townships, the minority of people use higher capacity means of travel, such as buses or minibuses. Interestingly, car usage is still relatively low across the city as well as across income groups, and the preferred means of transport for all respondents of the survey is generally a motorbike followed by walking (see **Figure 6**). Particularly, walking is done by lower income groups and undertaken much less by the richer segments of the population surveyed (**Figure 7**).

## Policy Implications

*Congestion:* One of the major challenges of the widespread usage of low density transport, like in Mandalay, is that it can over time, as the population of the city grows, lead to congestion. This is because the type of technology used takes up more road space compared to the number of people it can carry<sup>14</sup>. However, congestion is, currently not a challenge for Mandalay. As the city grows and develops, this is one aspect that the Mandalay Regional Government, which is responsible for transportation, will want to monitor. Furthermore, increased economic activity, which will happen if Mandalay is successful in attracting further larger firms and investment, like the factories currently located in Pygidagun Township, will require the government to invest in more connectivity too. Connectivity, which can be achieved by good transportation opportunities, is important in allowing workers to reach their jobs from further afield, but also, for firms to export their goods to the rest of Myanmar, the region and globally. Therefore, as the city continues to grow economically, providing more high-

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13. Ibid 5, page 51

14. Collier, P., Glaeser, E., Venables, T., and Manwaring, P. (2018) Access to opportunity: Urban mobility for prosperous cities. London: International Growth Centre.

capacity transportation, is something that the regional government may want to further explore.

*Urban sprawl:* As noted previously, the low density development may result in the spatial pattern of Mandalay to sprawl as it grows. This means that people will need to travel further to access jobs. Given that the largest proportion of people who walk are in the poorer segments of society, this may affect their ability to reach better jobs, as walking limits how far you can reach. This is not a challenge yet, as shown by **Figure 8**, since most people still work in the same township as they reside, and therefore, do not have to travel far. However, this may change over time, as the spatial structure of the city changes. Therefore, implementation of more public transportation, like buses, will generally affect the poorest segment of them most positively, as it will allow them to travel further distances, caveated that it remains affordable. This will be key if MCDC continues to strive to maintain similar levels of equality of access to services as well as employment, as the city grows and develops.

*Car Usage and the Environment:* The low use of cars in Mandalay is a good sign for overall environmental sustainability of the city, as this can be one of the means of transport that is worst for the environment. However, a general trend seen across the globe has been that car usage increases with rises in income<sup>15</sup>. Therefore, as Mandalay city develops and grows further, the Mandalay Regional Government, which is responsible for transportation, will want to monitor to see whether there are commensurate increases in car ownership. This could lead to potential challenges, as noted, of congestion and regarding questions pertaining to environmental sustainability. Therefore, based on information from future surveys the Mandalay Regional Government can then consider whether there is a need to regulate car ownership accordingly.

## Employment in the city

Cities are the place that firms like to locate as they provide good connectivity: connectivity to people for labour, to other firms for inputs and to markets for the sale of their final goods and services. Due to the higher prevalence of firms, people also tend to move to cities in search of better employment opportunities. As noted previously, Mandalay has not yet experienced very much in-migration, with most of the residents having born and lived in the city all their life. Interestingly, however, employment opportunities are perceived by respondents of the *2018 City Life Survey* to be very good: “67% (in Mandalay) agree with the statement “There are good employment opportunities in my city.” This is much higher than the average for the rest of Myanmar, which is 58%<sup>16</sup>. Therefore, this may lead to more in-migration in the future.

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15. Ibid 12, page 13

16. Ibid 5, page 33

According to the *2019 Urban Baseline Survey*, over a third of people in Mandalay are self-employed and interestingly, this proportion increases depending on the income bracket you are in (see **Figure 9**). Therefore, it seems from this survey that the richer you are, the more you will prefer to set up your own business rather than engage in wage employment. Overall, the proportion of wage employment to self-employment is approximately equal across townships, with a slightly higher number of self-employed people found in Chanmyathazi Township (see **Figure 10**). The sector in which most wage employment is found ( $\approx 20\%$  of jobs) is the construction and craft sector (see **Figure 11**). This may be indicative of increasing levels of investment that is currently going on in Mandalay.

The profile of the average firm, as reported in the *2019 Urban Baseline Survey*, is relatively small. Across all townships, most firms seem to be single-owned businesses, i.e. not employing more workers - on average between 20% and 30% of all firms across townships have zero other workers employed (see **Figure 12**). Across townships, outside of Pyigyidagun, only about 2-5% of firms can be classified as large, employing 50 or more people. This proportion is slightly higher for Pyigyidagun at 12%, which is indicative of the number of factories operating there.

In addition to low levels of employment, the firms across the city are also reporting low levels of income, with about 50% of firms in all townships reporting their median income bracket to be between 100,000-300,000 MMK ( $\approx 66$ -100 USD) per month (see **Figure 13**). It is likely that some of this is due to underreporting, as there may be a fear that disclosing the true incomes of firms may lead to higher tax rates. However, it may also be indicative that many of these firms are household firms, and thus the income of the firm is directly reflective of the average income of the household, hence why these are similar.

## **Policy Implications**

*Underemployment:* As noted, the *2018 City Life Survey* indicated that nearly 50% of Mandalay residents perceived employment opportunities in Mandalay to be good. This is confirmed by the fact that the *2019 Urban Baseline Survey*, where findings highlight that those who report total unemployment are a very small proportion. However, the large number of small, both in terms of income and number of employees, firms may indicate that there is a challenge of underemployment in Mandalay. Underemployment is a situation where people are not working to their full capacity, either based on the type of job they are doing relative to their qualifications or with respect to their time. This is not something that can be directly discerned from the data in our survey and is something that could potentially be explored through further research, as it would have implications to any policy response related to employment.

*Firm growth:* Coupled with the response to potential underemployment, it would be important to determine which policies would potentially stimulate

firm growth, both in terms of employment and income. This will require further research, as what can currently be concluded from this data is that it seems that the average firm size in Mandalay is very small. This could also be coupled with research around what policy interventions could improve the investment environment and thus could help attract large foreign firms to locate in Mandalay as well. If further rounds of this data are collected, MCDC could also start to observe how its own investments, as well as those done by the private sector are affecting firm size and overall employment. For example, investments in the road network that result in increased connectivity may actually attract more investment from larger firms, which in turn, have larger employment opportunities.

## Moving Mandalay forward in the future

The results from this *2019 Urban Baseline Survey* for Mandalay reconfirm the positive accolades the city has been receiving in the recent past. In particular, in 2019, Mandalay was ranked as the best city to live in<sup>17</sup> and the *2018 City Life Survey* reported that “...(Mandalay) residents believe their city government has a vision and is responsive to the public’s needs. 69% agree the city government is responsive to the public’s needs.” This has now been further reflected, through aspects such as relative wealth equality across the city or good accessibility to services, in the descriptive data that has been summarised from the *2019 Urban Baseline Survey* as part of this policy brief.

For Mandalay to be able to maintain this status within Myanmar, as well as supporting the city to reach new and higher levels, it will require two main inputs, amongst others. The first input is increasing funds for the city to be able to invest in increasing infrastructure and service provision. Although the *2019 Urban Baseline Survey* did not delve too deeply into policy questions around property tax, it did ask questions about payment of taxes. Across all income groups about 70-75% of residents did report having made their last property tax payment. It is interesting to note, that according to the *2018 City Life Survey*, the median Mandalay resident apparently has the highest average property tax payment at 4,500 MMK ( $\approx 3$  USD) per payment cycle every 6 months<sup>18</sup>. In absolute levels, this is still quite low and will not sustain service and infrastructure provision for a growing city. Therefore, in Mandalay, like across the rest of Myanmar, addressing property tax rates to increase intake from this own-source revenue stream will be paramount. Politically, this may not be as difficult as in some other cities, because, according to the *2018 City Life Survey*, 74% of respondents indicated that they were actually willing to pay more property tax if it was linked to better

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17. Lago, C. (2018, October 22). Top 10 Smart Cities in Southeast Asia. Retrieved July 29, 2019, from <https://www.cio.in/feature/top-10-smart-cities-southeast-asia>

18. Ibid 5, page 45

services<sup>19</sup>. The Directorate of Revenue in MCDC is already exploring a few policy options in how to increase property tax revenues by improving compliance. These changes as well as exploring other areas, outside of property, for improving own source revenue collection will also be key in finding sustainable sources of large scale financing. This will be important to maintain MCDC's good level of responsiveness to city residents' needs.

A second important input is more data to ensure that MCDC can make evidenced based decisions. As noted in the outset of this brief, data can support policy makers like those in MCDC in three main ways<sup>20</sup>:

1. To identify gaps in infrastructure and service delivery based on the current allocation of resources;
2. To evaluate policy decisions that cities undertake and how these affect certain socioeconomic outcomes;
3. Forecasting for future planning and policy-making.

The *2019 Urban Baseline Survey* is a start. However, to adequately address these and other issues will require data to be collected in the same format at regular intervals over time. This will further allow MCDC to better understand the more dynamic nature of the changing city as well. As noted at the outset, the *2019 Urban Baseline Survey* has been set up that it should be relatively easy and cost effective to replicate: therefore, MCDC may want to consider doing this at regular intervals in the future. By asking the same questions over time, the city will be able to better assess the impacts that its various policies and investments are having and which areas may be struggling. Certain areas that it may want to pay particular attention to, have been highlighted as part of this policy brief, but others could be explored as well. However, there is little doubt that better data can help the city make better decisions overall.

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19. Ibid 5, page 45

20. Delbridge, V. and Kriticos, S. (forthcoming) *Data for decision-making*. London: International Growth Centre.

## Figures\*

\*All based on the data collected by the 2019 Urban Baseline Survey.

### Residence as a sense of identity

Figure 1: Region of birth

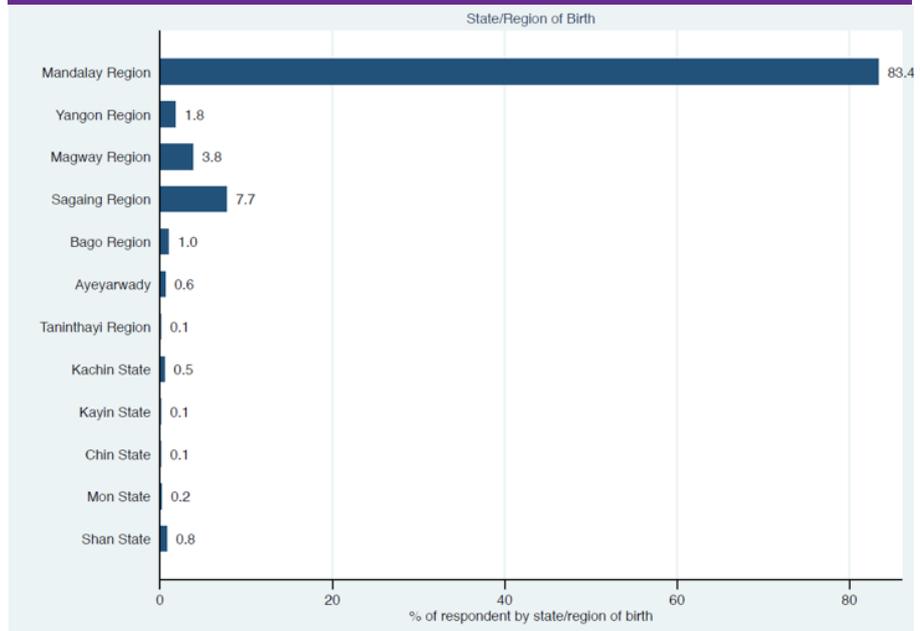
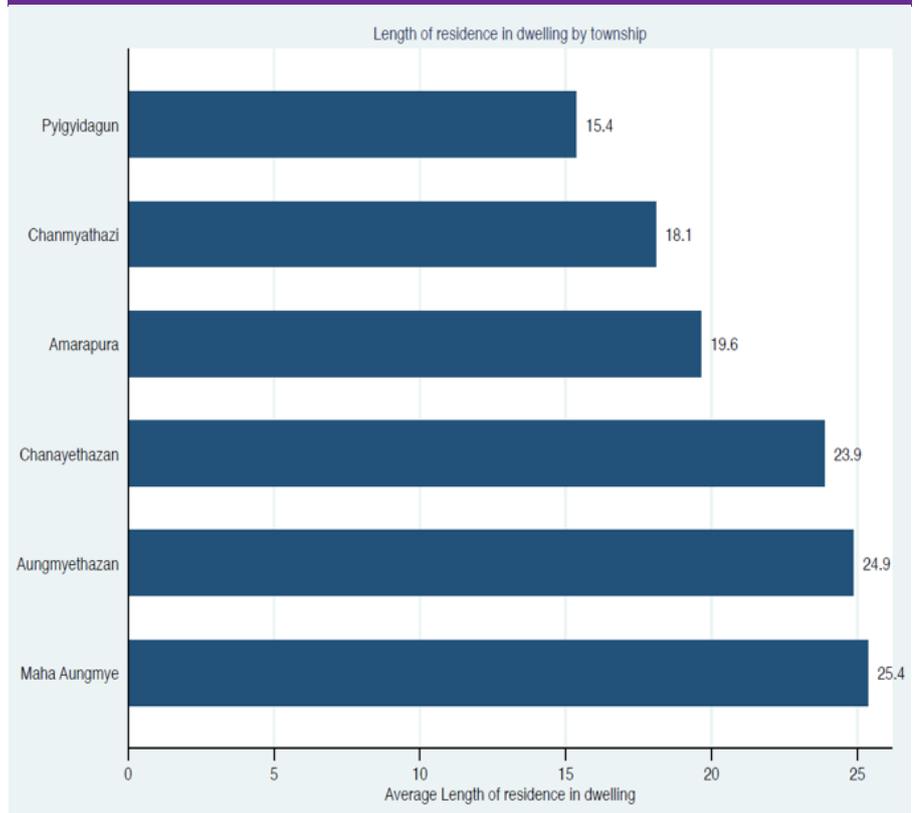
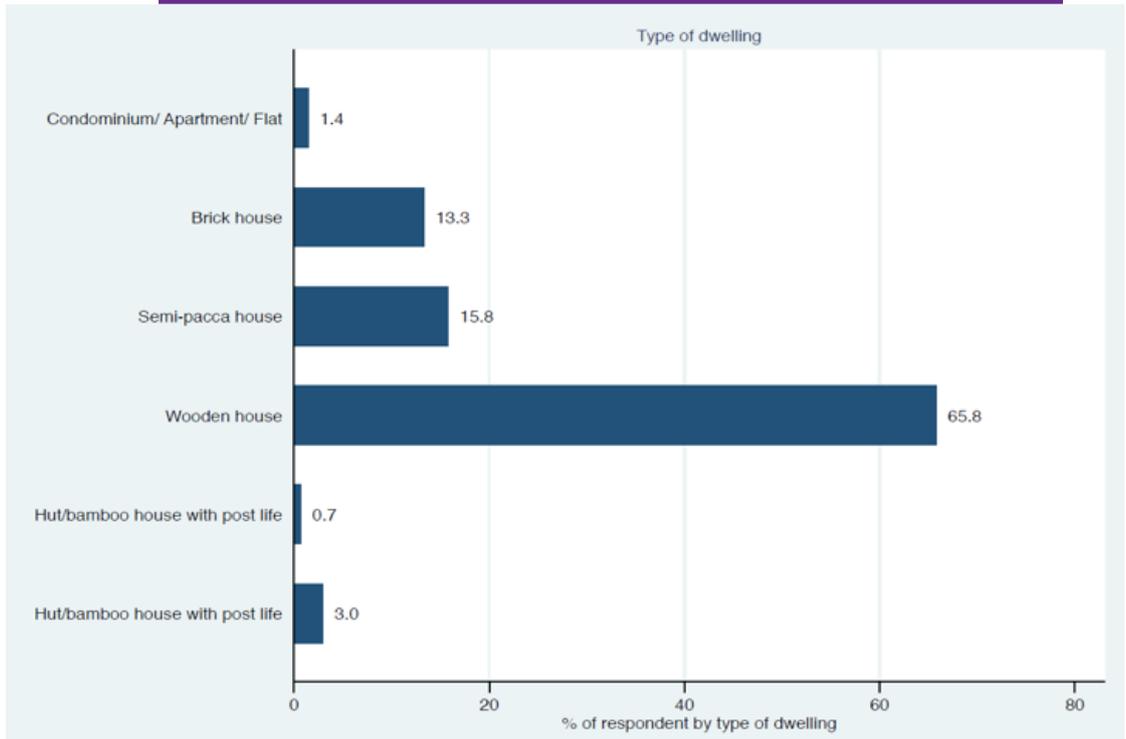


Figure 2: Average length of residence in current dwelling

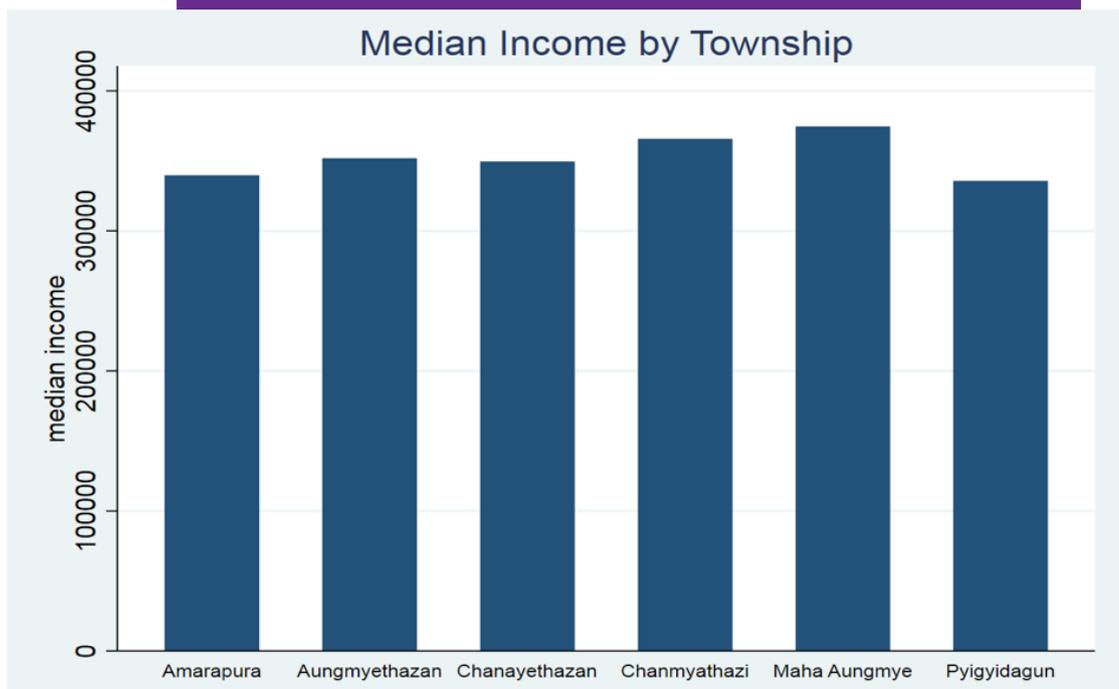


**Figure 3: Region of birth**

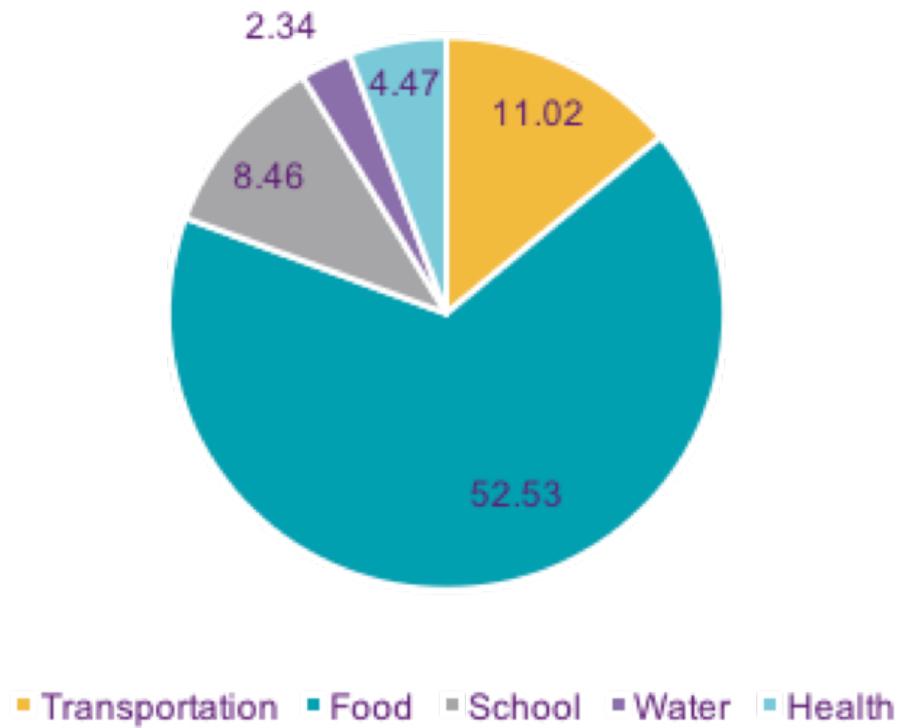


**Low levels of inequality and relatively high levels of access to services**

**Figure 4: Median income by township**



**Figure 5: Spending as an average proportion of income**

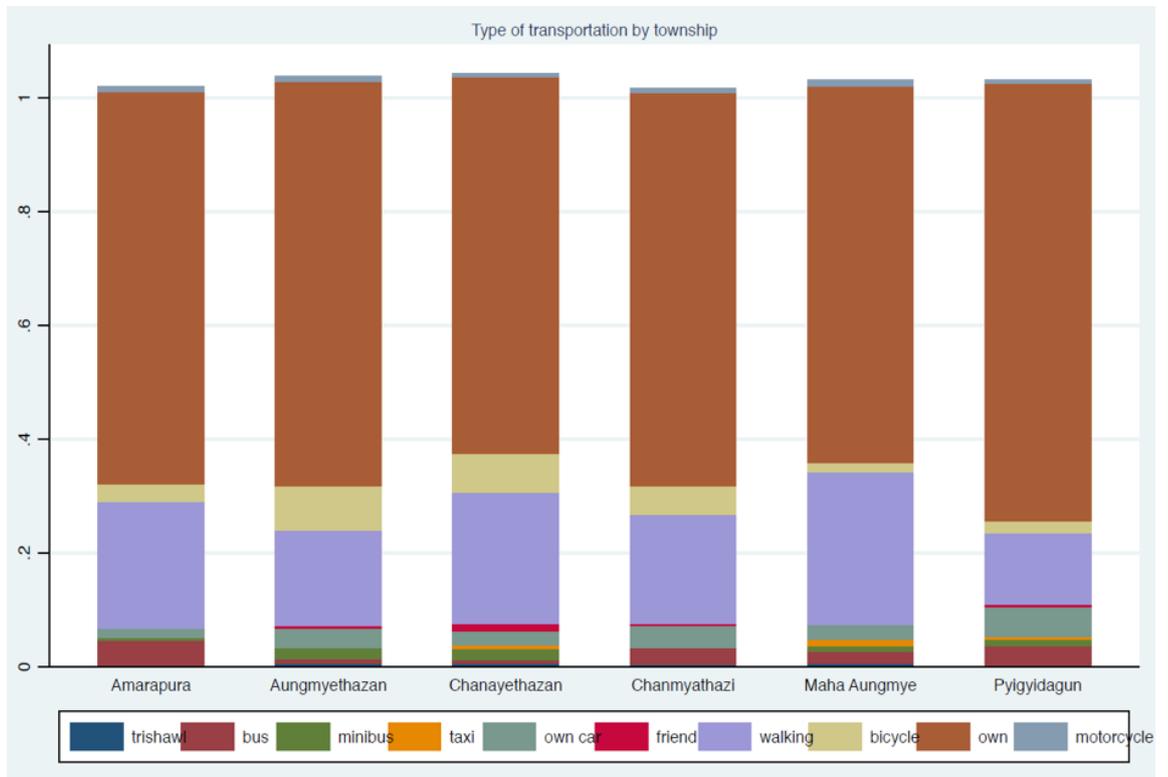


**Table 1: Accessibility of services**

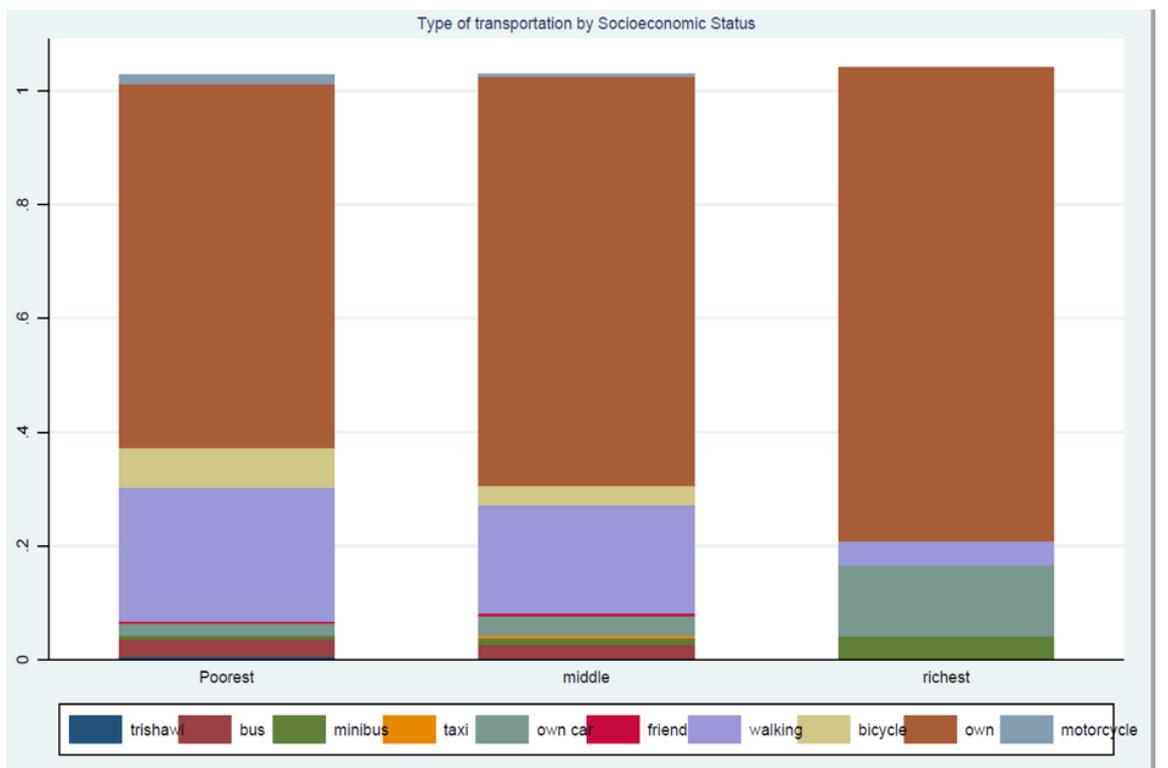
<i>Service</i>	<i>Average Distance (Walking in Minutes)</i>
<i>Trishaw</i>	0.55
<i>Motorcycle / Bus Stop</i>	9.8
<i>Market</i>	9.3
<i>School</i>	11.1
<i>Health Clinic</i>	10.7

## Low capacity travel

**Figure 6: Proportion of transportation modes across townships**

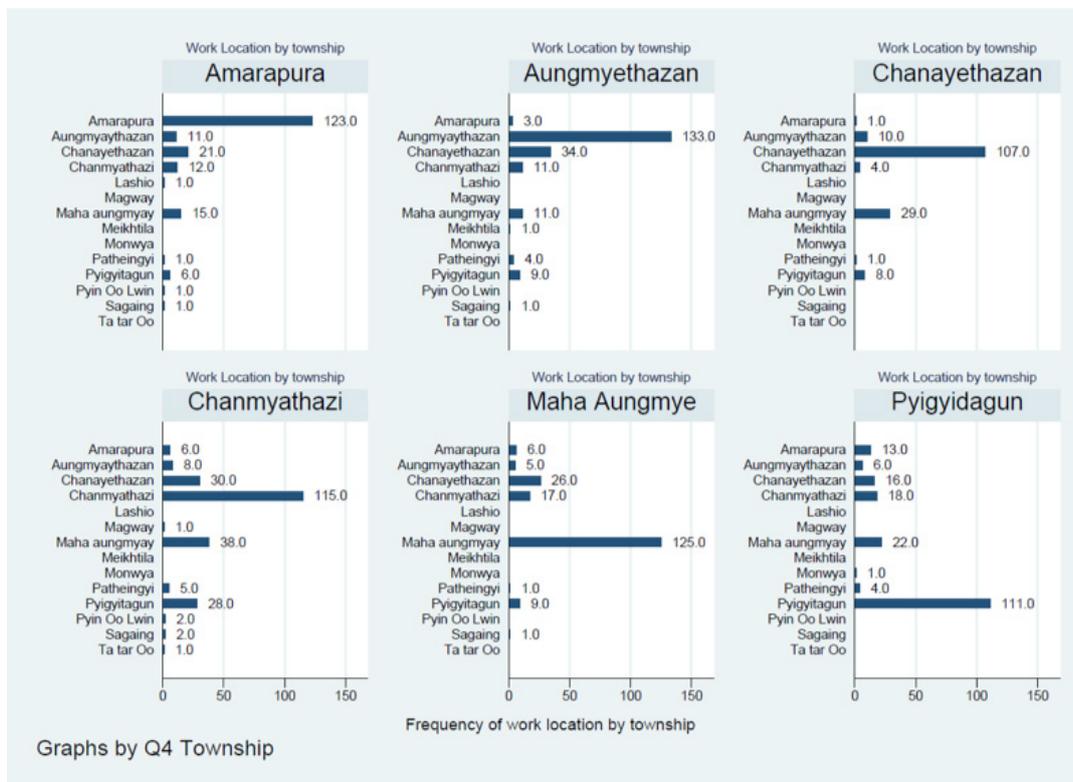


**Figure 7: Proportion of transportation modes across income groups**

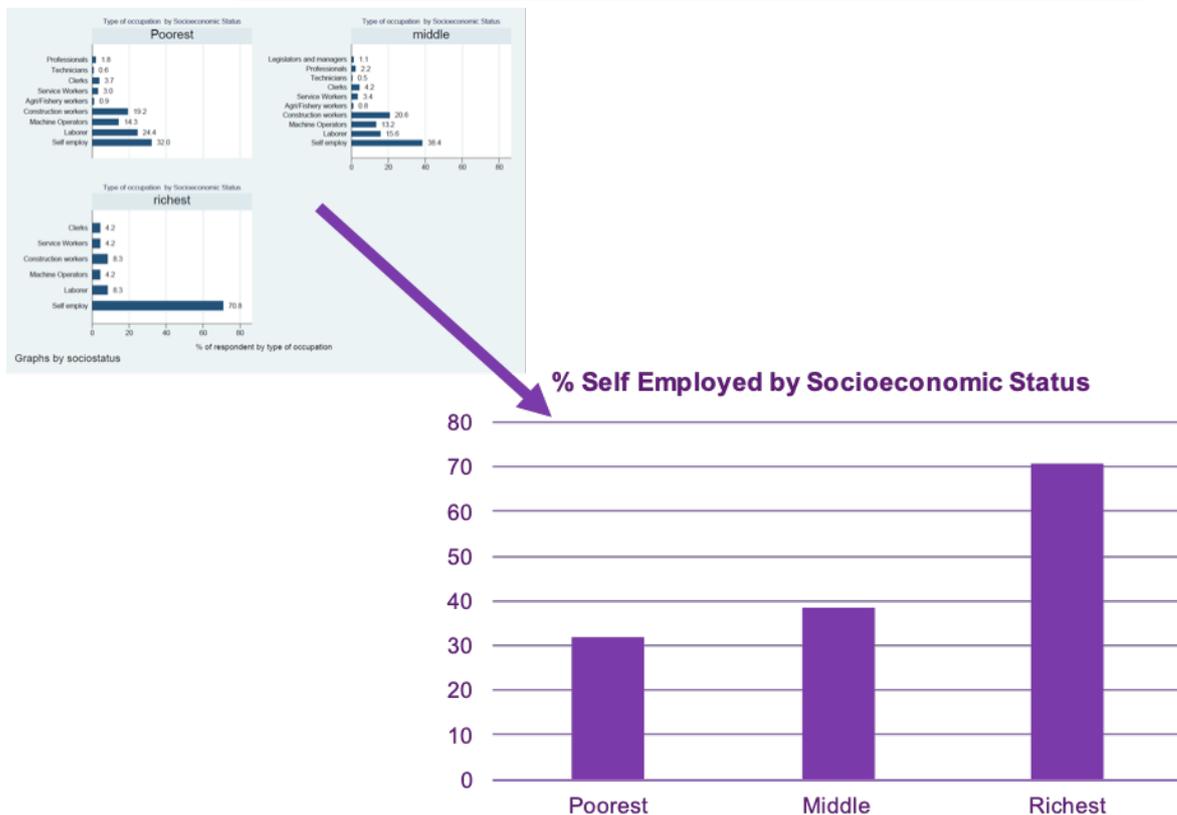


# Employment in the City

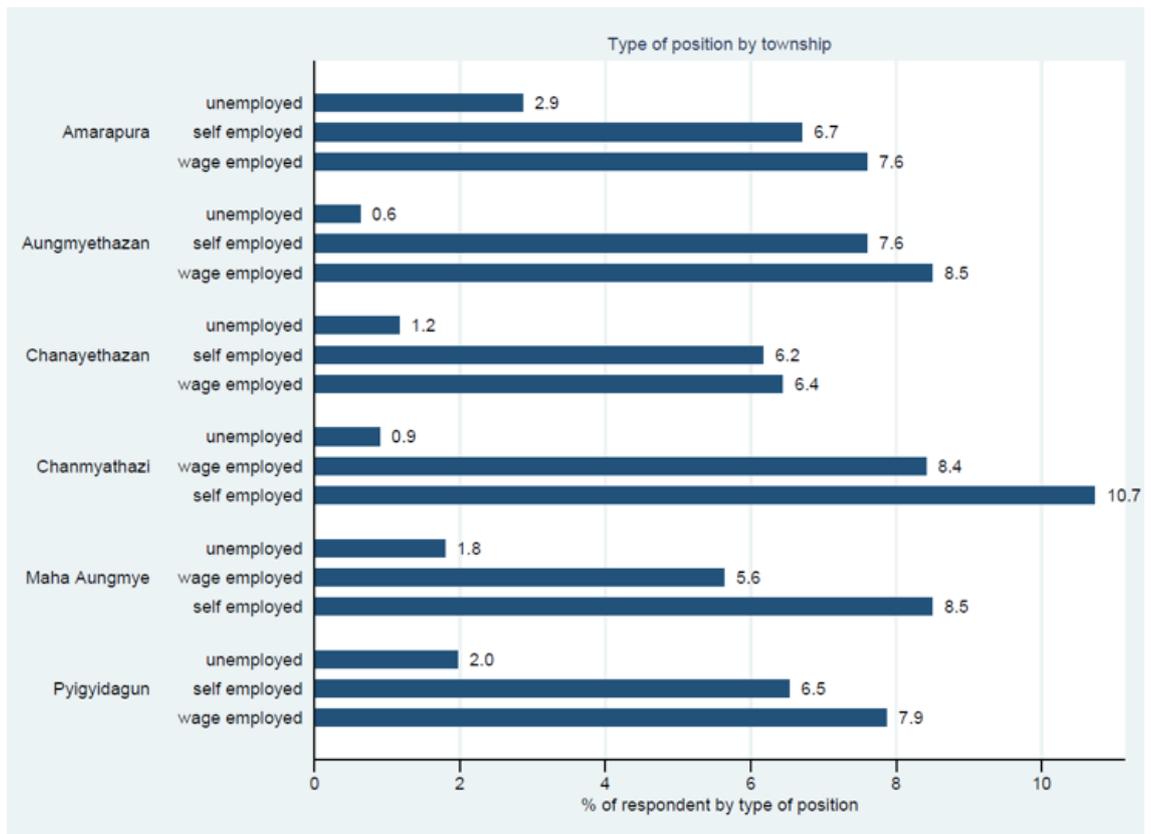
**Figure 8: Work compared to residential location**



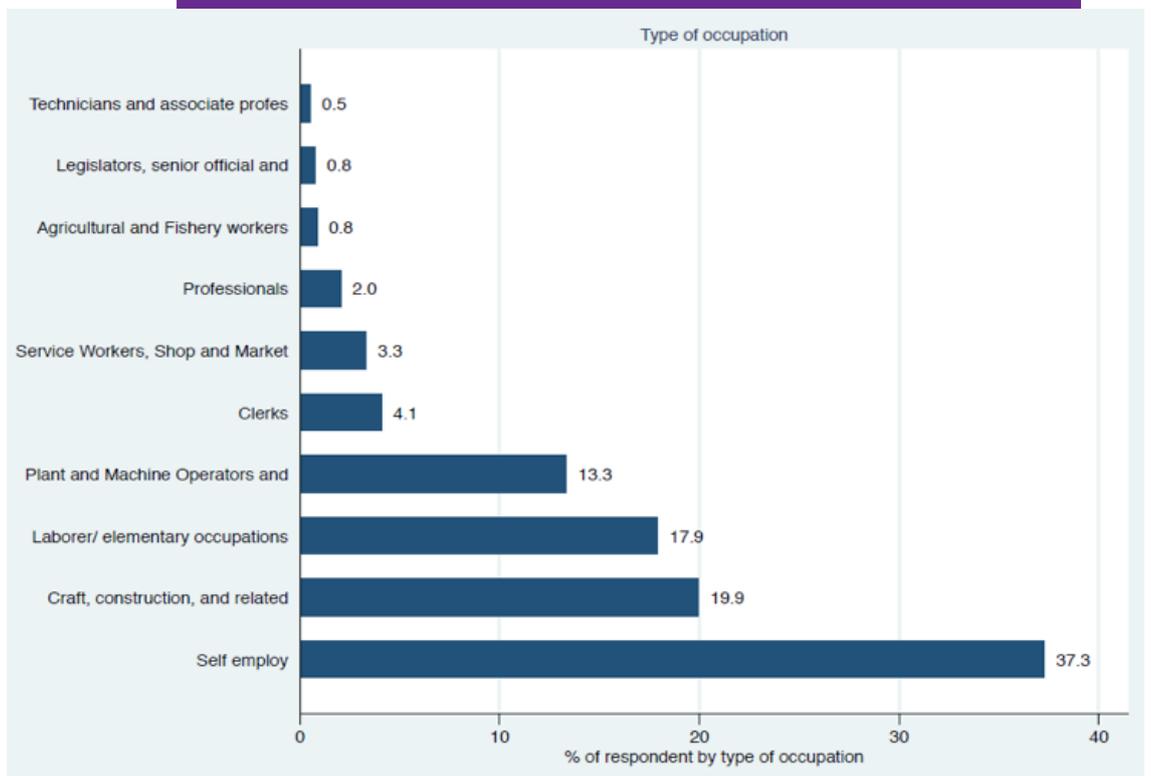
**Figure 9: Self-employment by income group**



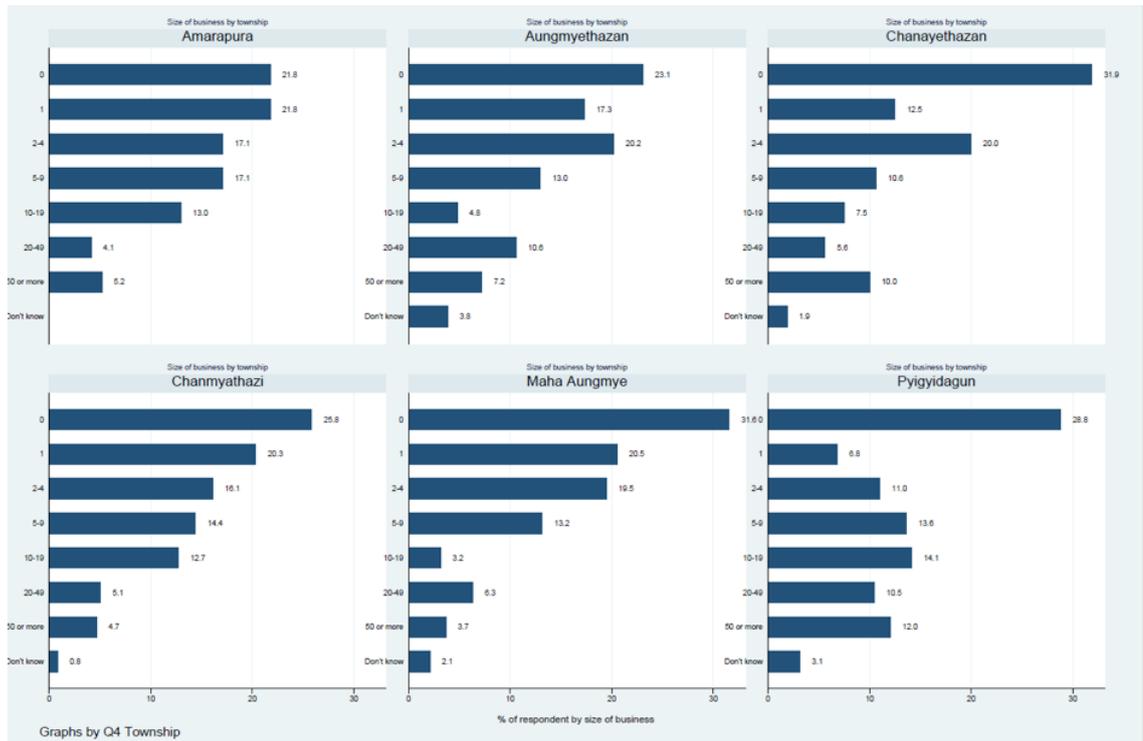
**Figure 10 – Wage employment and self employment across townships**



**Figure 11 – Types of occupation in Mandalay**



**Figure 12: Size of firm (employment) by Township**



**Figure 13: Size of firm (income) by Township**

