

# Chapter 4

## Sampling Strategy

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# Chapter 4

## Sampling Strategy

### **1. Introduction**

This chapter summarises the sampling strategies adopted for the two urban areas investigated in this report: Terengannu-Kuala Nerus in Malaysia and Jakarta in Indonesia. These describe the systematic approach for identifying respondents, limiting sampling bias, which would compromise the validity of the generalisation of the WTP results to the entire population surveyed. The sampling strategy adopted depends on the available data to the researchers. Hence, differences do exist between cities. These were designed so all households would have the closest possible probability of identifying as respondents for the survey. In both cities, the sampling strategy adopted was a multi-stage stratified sampling with differences to adapt to the local contexts explained below.

### **2. Indonesia — Jakarta**

This study covers the area of the Special Capital of Jakarta in Indonesia, the administrative and economic centre and largest city in the country (Figure 4.1). The initial sampling plan was a simple random sampling method using household lists provided by the local government's statistical agency. However, this approach was not possible due to a lack of consent from citizens to release such a list. An alternative approach was designed in consultation with an experienced surveying company to address the challenges due to local context, such as unstructured and mixed-used land parcels in a neighbourhood commonly found in Indonesia's cities.

**Figure 4.1. Special Capital Region of Jakarta in Indonesia**



Source: Authors. Created with mapchart.net

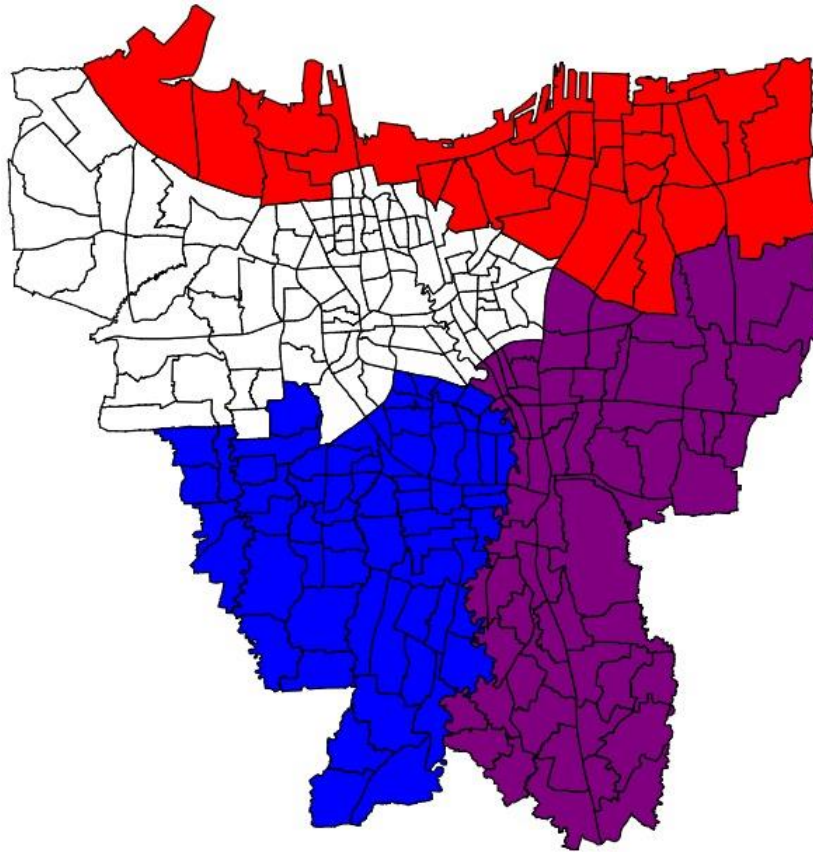
A stratified sampling method was adopted. The Special Capital Region of Jakarta consists of six cities: West, Central, South, East, North, and Thousand Islands (Table 4.1). The three cities were selected based on the diversity of economic situation. North Jakarta is predominantly lower income, South is wealthier, and East and West are relatively more balanced. Central Jakarta is concentrated with the governmental offices. Thousand Islands represents a majorly different context. Therefore, the surveyed areas included subdistricts in South, East, and North Jakarta (see Figure 4.2). The number of respondents was divided across these three areas proportionally to their population.

**Table 4.1. Jakarta's Administrative Districts and Population in 2021**

City	Number of Districts	Number of Sub-districts	Total Population
Central Jakarta	8 districts	44 sub-districts	1,066,460
North Jakarta	6 districts	31 sub-districts	1,834,501
West Jakarta	8 districts	56 sub-districts	2,569,462
South Jakarta	10 districts	65 sub-districts	2,373,219
East Jakarta	10 districts	65 sub-districts	3,234,003
Thousand Islands	2 districts	6 sub-districts	25,625

Source: Susenas dataset, accessed from <https://www.bps.go.id/index.php/subjek/81>

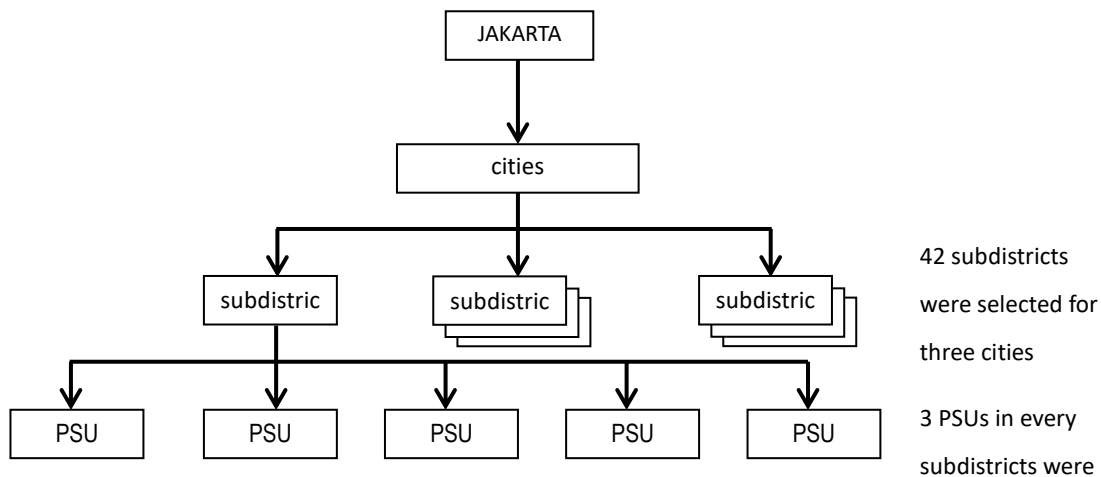
**Figure 4.2. Surveyed Cities in Jakarta (East, North, South)**



Source: Authors.

The respondents were divided into the following (see Figure 4.2): South Jakarta, 321 respondents; East Jakarta, 415 respondents; North Jakarta, 264 respondents. These three cities consist of 42 subdistricts (known as kelurahan), and from each subdistrict, three primary sampling units (PSUs) were randomly determined. The PSU was the smallest sampling unit at the smallest regional level (usually the Rukun Tetangga/RT). On average, 50 households live in a single PSU. A summary of the sampling method is presented Figure 4.2.

**Figure 4.3. Administrative Levels in Jakarta and Sampling Method**



Source: Authors.

PSU: primary sampling unit.

The detailed steps were as follows:

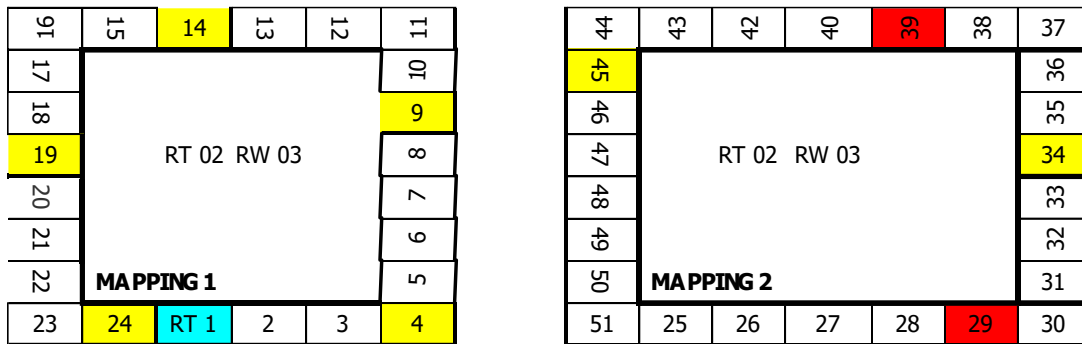
- (1) Three cities were selected from six cities in the Jakarta Province. These cities were proportionally selected according to three socio-economic levels, high, medium, and low income cities. The Jakarta Province was represented by North, East, and South Jakarta. Moreover, the number of respondents were proportionally distributed according to the city's population density. The respondents were divided as the following: South Jakarta, 321 respondent; East Jakarta, 415 respondents, and North Jakarta, 264 respondents.
- (2) 24 subdistricts (known as kelurahan) were randomly selected from these three cities. Then, from the each selected subdistrict, the primary sampling unit (PSU) was randomly determined. PSU was the smallest sampling unit at the smallest regional level (usually the Rukun Tetangga/RT). On average there are 50 households live in a single PSU.
- (3) In Indonesia, the use of land parcels is not uniform. There is a high possibility that public facilities such as schools, mosques, and informal shops are present amongst houses. Therefore, the common percentage for public facilities, including unoccupied houses and vacant parcels, was approximately assumed to be 40% while non-response rate caused by illiteracy or refusal to be interviewed was assumed to be 33.3%. Therefore the calculations were as follows (Formula (4-1) (4-2)):

$$\text{Number of house to be contacted: } 5 \times 1.4 \times 1.33 = 9.31 \quad (4 - 1)$$

$$\text{Interval between houses: } \frac{50}{9.31} = 5.37 \text{ rounded to } 5 \quad (4 - 2)$$

(4) Figure 4.4 describes an example of the process adopted for the respondents' identification within each land parcel. The first house belonged to the head of the RT who lives there or the one adjacent to it. Using results from the above calculation, the interviewers approached five households within one PSU; the houses were in land parcels 4, 9, 14, 19, etc.

**Figure 4.4. Example of The Identification Process for Respondents in Land Parcels**



RT = Rukun Tetangga

Legends:

- Blue Highlight : Start Respondent/Initial Respondent
- Yellow Highlight : Respondent that is successfully interviewed
- Red Highlight : Prospective Respondent who cannot be interviewed for various reasons

Source: Authors.

The number of successful respondents who can be interviewed in one sub-district is around 10–12.

Then the respondent's criteria are constructed based on the justification of the researchers, including the quota for these criteria. Most of the quota criteria used; refer to the proportion of data from BPS (Badan Pusat Statistik/Central Bureau of Statistics) Jakarta.

Several criteria for respondents in this study include:

- Sex
- Marital Status
- Prepaid and Postpaid
- Installed Capacity
- SEC (Social Economic Classification)

An exception is made for customers with an electricity capacity of 450 kVA; the recruitment for these customers utilised a method that used booster (finding respondents with certain criteria without following the randomisation rule with intervals). However, the number of successful respondents remains around 10–12 people per sub-district (kelurahan).

The Social Economic Classification (SEC) (Table 4.2) criteria utilised in this study refer to the latest classification used by Nielsen for the latest market research conducted in Indonesia.

**Table 4.2. Social Economic Classification (SEC)**

<b>A +</b>	More than Rp. 6,000,001
<b>A</b>	Rp. 4,000,001 – Rp. 6,000,000
<b>B</b>	Rp. 3,000,001 – Rp. 4,000,000
<b>C1</b>	Rp. 2,200,001 – Rp. 3,000,000
<b>C2</b>	Rp. 1,500,001 – Rp. 2,200,000
<b>D</b>	Rp. 1,200,001 – Rp. 1,500,000
<b>E</b>	Rp. 1,200,000 or less

Source: Nielsen, accessed from <https://indonesiadata.id/produk/profil-ses-indonesia-2021/>

### **3. Malaysia – Kuala Nerus and Kuala Terengganu**

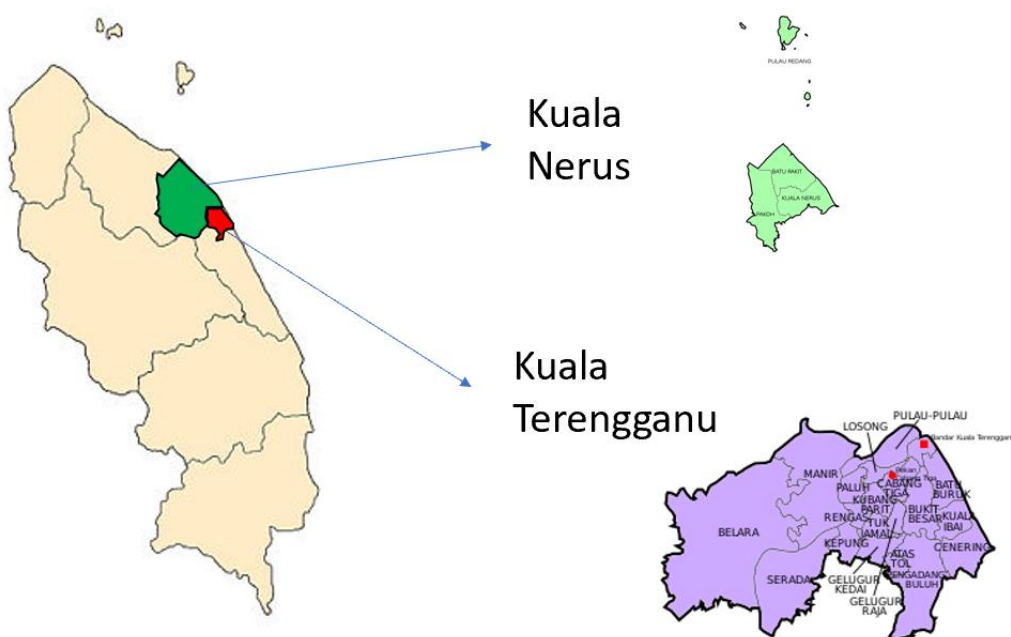
This study surveyed two of the eight administrative districts (AD) in the State of Terengganu on the East coast of Peninsular Malaysia (see Figure 4.5 and Figure 4.6). Kuala Terengganu is the royal capital of the state and its administrative and economic centre. Despite its small size, the city area, including Kuala Nerus, is the largest in the state. Kuala Nerus is a recent creation after its separation from the Kuala Terengganu district in 2014. Nonetheless, it is still governed by the Kuala Terengganu City Council. In practice, the urban area sprawls over the two districts.

**Figure 4.5. States in Malaysia (Terengganu highlighted)**



Source: Authors. Created with mapchart.net

**Figure 4.6. Administrative Districts Surveyed (Kuala Nerus and Kuala Terengganu)**



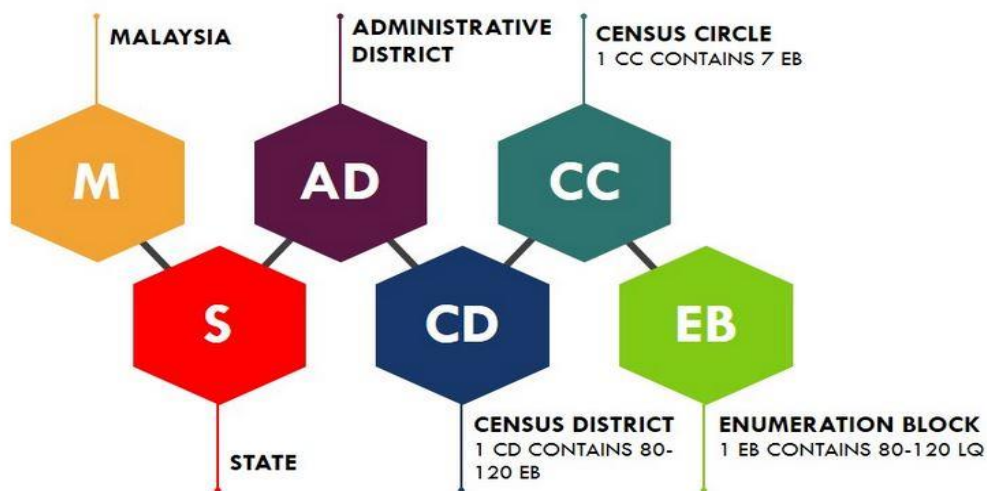
Source: Authors modified from (Fikku fiq, 2014; Zh9567, 2020).

The sampling strategy adopted was a multi-level stratified approach following the official division into enumeration blocks (EB) by the government of Malaysia census (see Figure .). The sampling framework used is a list of EBs updated with information on Living Quarters (LQ) from the 2020 Population and Housing Census. An EB is a land area artificially created



and consists of specific boundaries. On average, one EB contains about 80 to 120 LQ with approximately 500 to 600 persons. Sampling was developed by the Department of Statistics, Malaysia. Approximately 80 to 120 Ebs form a census district (CD). The survey covers only urban areas in both districts in Terengganu and therefore does not include the districts' rural areas. The following are the Ebs, EB's no, total LQs, and the number of samples in each EB of the two districts.

**Figure 4.7. Administrative Districts Surveyed (Kuala Nerus and Kuala Terengganu)**



Source: The official source (Department of Statistics Malaysia, 2020).

Following the official division provided by the national census, the number of samples was distributed proportionally between Kuala Terengganu and Kuala Nerus, considering their population. That is 51,778 and 30,397 people, respectively, resulting in 654 samples in Kuala Terengganu and 396 in Kuala Nerus (see Table 4.3). This required sample (KT=654, KN=396) was selected randomly by utilising Stata across the list of all LQs in the EB provided by the department of Official Statistics in Malaysia (DOSM). Table 4.4 summarises the resulting distribution of samples.

**Table 4.3. Samples by District**

District	Number of households (HHs)	Share of total	Number of samples
Kuala Terengganu	51,778	62	654
Kuala Nerus	30,397	38	396
	82,175	100	1,050

Source: Based on authors' calculations and the official source (Department of Statistics Malaysia, 2020).

**Table 4.4. Enumeration Block (EB), EB's number, Living Quarter and Number of Samples of Kuala Terengganu and Kuala Nerus Districts**

BLOCK	Enumeration Block (EB)	EB's number	Living Quarters	Number of Samples
<b>KUALA TERENGGANU</b>				
1	Tok Jamal	11024070C	74	42
2	Kuala Ibai 1	11008036B	83	40
	Kuala Ibai 2	11008130A	77	41
	Kuala Ibai 3	11005079	37	15
3	Cenering	11008058	135	49
4	Manir	11014017	92	52
5	Belara 1	11006064B	120	58
	Belara 2	11006079	137	42
6	Rengas	11024026B	80	32
7	Cabang Tiga	11024055A	125	44
8	Batu Buruk	11005089	111	32
9	Pengadang Buloh	11008097B	80	30
10	Kubang Parit	11024034C	127	31
11	Bandar 1	11005052	103	68
	Bandar 2	11005037	66	30
	Bandar 3	11005028	63	48
				<b>654</b>
<b>KUALA NERUS</b>				
1	Kuala Nerus 1	11006035	144	72
3	Kuala Nerus 2	11013102 B	105	62
5	Kuala Nerus 3	11006044B	120	71
7	Batu Rakit 1	11006018A	87	53
9	Batu Rakit 2	11013074	137	90
11	Batu Rakit 3	11013066B	92	48
				<b>396</b>

Source: The official source (Department of Statistics Malaysia, 2020).