

# Methodology Statement

## Esri Thailand: 2019 Demographic Data

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### Introduction

Esri Thailand demographic data provides key population and household attributes reported by both government agencies including Department of Provincial Administration, National Statistical Office, Community Development Department, and Thai private sector company GlobeTech Co., Ltd. Esri Thailand uses this information to create the Esri Thailand demographic dataset. In this document, methods and definitions of the data will be explained in detail.

### Geographic Levels

This dataset covers the administrative boundary of province, district, and sub-district for the whole country of Thailand.

- 77 provinces
- 928 districts
- 7,436 subdistricts

### Data Collection and Source

The total population of Thailand in 2019 was 66,558,935 people which is reported by Department of Provincial Administration. The source of each data topic is provided in the following table:

Variable	Area	Data Source
Population by Age	Bangkok	Department of Provincial Administration
	All Other Provinces	Department of Provincial Administration

Variable	Area	Data Source
Population by Education	Bangkok	National Statistical Office
	All Other Provinces	The Community Development Department
Population by Occupation	Bangkok	National Statistical Office
	All Other Provinces	The Community Development Department
Income	Bangkok	NOSTRA
	All Other Provinces	Department of Provincial Administration
Spending	Bangkok	National Statistical Office
	All Other Provinces	Department of Provincial Administration

- Department of Provincial Administration (DOPA) provides population data by age. This is the most reliable source of Thai data and it is updated and reported annually. The data is reported in sub-district level and the latest version of data was published in 2019.
- National Statistical Office (NSO) of Thailand is another source of Thai data. However, most of NSO data are provided at the provincial level, not sub-district level.
- The Community Development Department (CDD) is responsible for supporting community in the area of education and people engagement. It aims to increase community development and stability. Every year, the CDD collects quality of living data from a sample of people who have lived in their household for more than 6 months. The data is collected in each sub-district in every province of Thailand.
- GlobeTech Co., Ltd. develops and provides digital maps with comprehensive databases and high coverage under the “NOSTRA” brand in Thailand.

### 1.1 Age

Population by Age is provided by Department of Provincial Administration (DOPA) and is current as of March 2019. Data include:

- Population by age, age less than 1 year old to age greater than 101 years old.
- Population by age groups by 5 year range, for example 0 – 4, 5 – 9 to age greater than 100 years old.

However, total population by age or age ranges do not include the following population:

- Central house registered male and female population
- Male and female population in other nationalities (Non-Thai)
- Male and female migrant population.

## 1.2 Education

Population by education was categorized into two groups as follows:

- Uneducated population or never went to school.
- Educated population categories include:
  - Kindergarten / Child Center
  - Lower than Primary Level
  - Primary Level
  - Middle School
  - High School
  - Diploma or Equivalent
  - Bachelor's Degree or Equivalent
  - Postgraduate Degree

Esri Thailand is using two data sources for Population by Education

1. In the Bangkok area, the data was provided by National Statistical Office (NSO).
2. In other provinces, the data was provided by The Community Development Department (CDD), Ministry of Interior. The data is collected by population sampling for the discriminant indicators of the quality of life survey. The population samplings are only from household members who have lived over 6 months in the household. The source of data is from year 2019.

In order to calibrate the number to equal the DOPA total population, we are using the percentage of population by education in each level to calculate its value based on total population by age.

## 1.3 Occupation

Population by occupation was categorized into groups as follows:

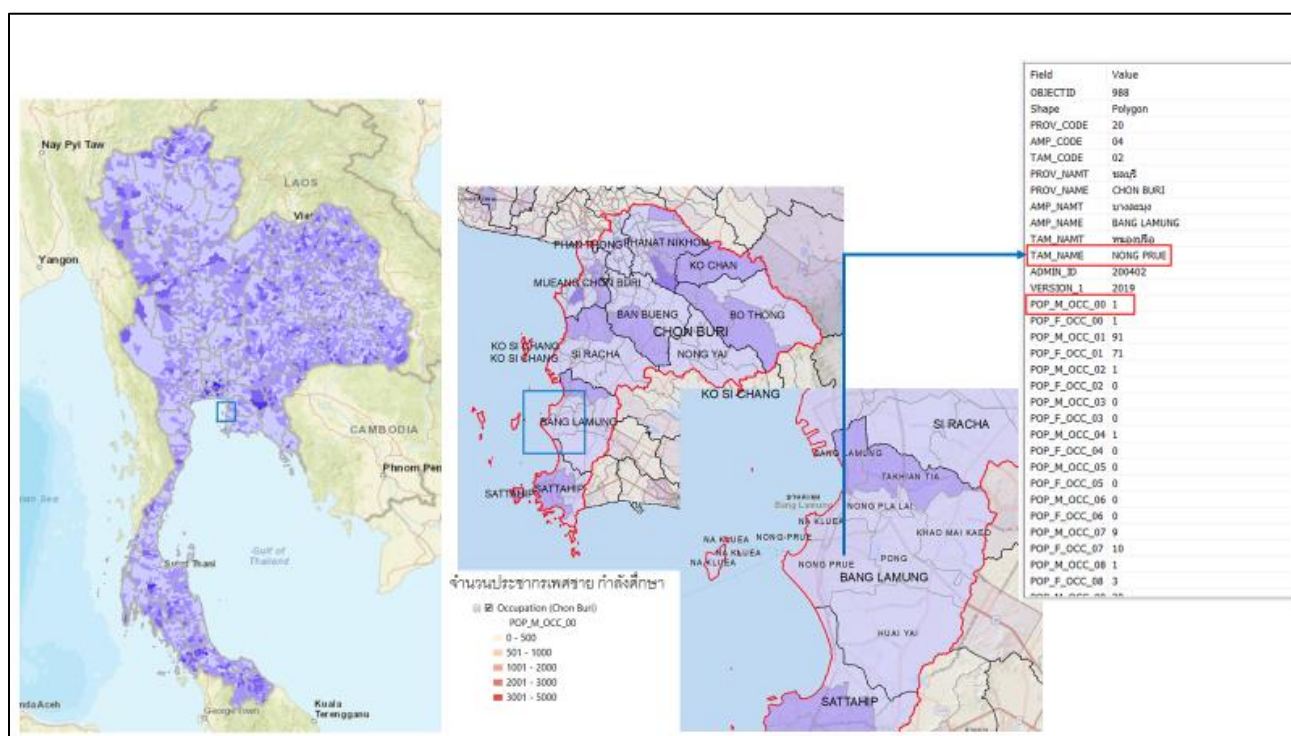
- Employed population which are grouped by:
  - Agriculture - Rice Fields
  - Agriculture - Farming
  - Agriculture - Gardening
  - Agriculture - Fishery
  - Agriculture - Livestock
  - In Civil Service
  - State Enterprise Employees
  - Company Employees
  - General Contractors
  - In Trade
  - In Personal Business
  - Other Occupations

- Unemployed population which are grouped by:
  - No occupation (population age 0 – 3 years old) and Population who are unemployed.
  - Population age 3 – 15 years old and population age greater than 15 years old who are studying.

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1. In the Bangkok area, the data was provided by National Statistical Office (NSO).
2. In other provinces, the data was provided by The Community Development Department (CDD), Ministry of Interior. The data is collected by population sampling for the discriminant indicators of the quality of life survey. The population samplings are only from household members who have lived over 6 months in the household. The source of data is from year 2019.

In order to calibrate the number to equal the DOPA total population, we are using the percentage of population by occupation in each level to calculate its value based on total population by age. Note that the data excludes population age 0-4 years old.



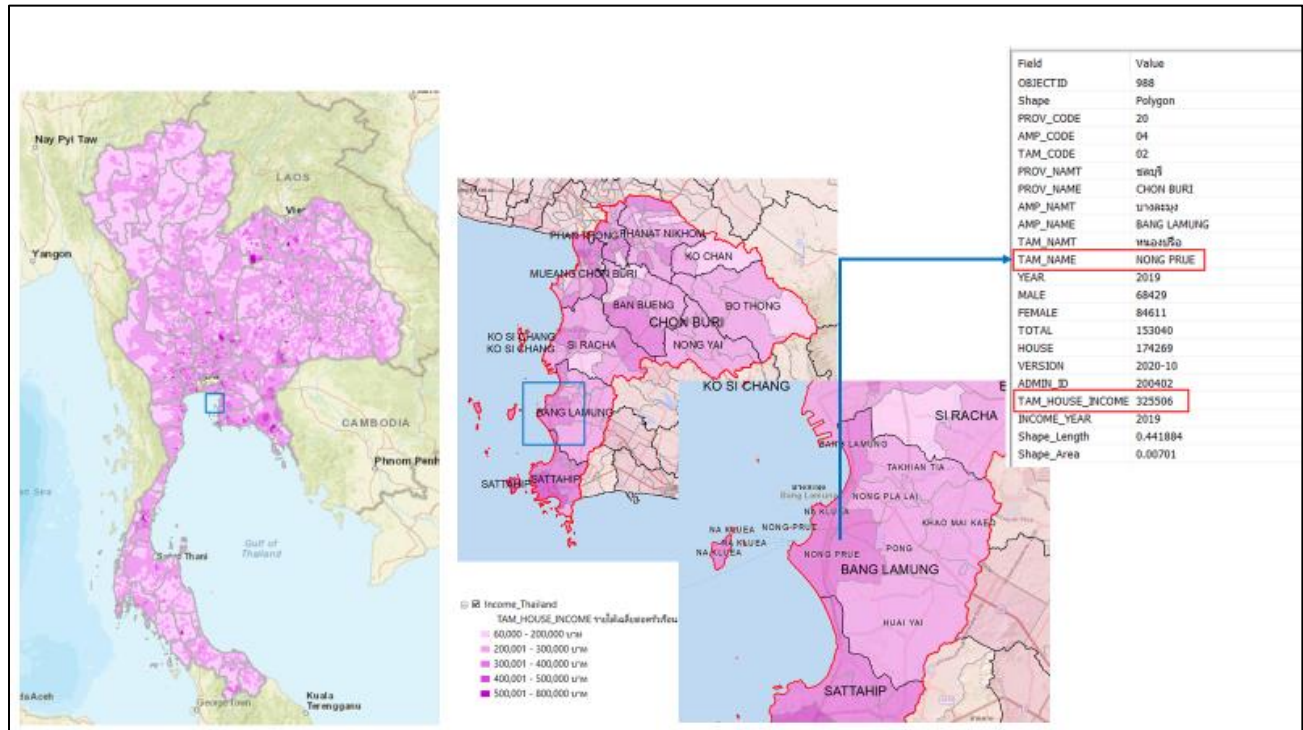
Picture 1 Sample data of Population by Occupation in Chonburi province

### 1.4 Average Income

Average household income (Baht/year) was classified by sub-district level from 2 data sources.

1. In the Bangkok area, the data has been provided by NOSTRA 2019.
2. In other provinces, the data was provided by The Community Development Department (CDD), Ministry of Interior. The data is collected by population sampling for the discriminant indicators

of the quality of life survey. The population samplings are only from household members who have lived over 6 months in the household. The source of data is from year 2019.



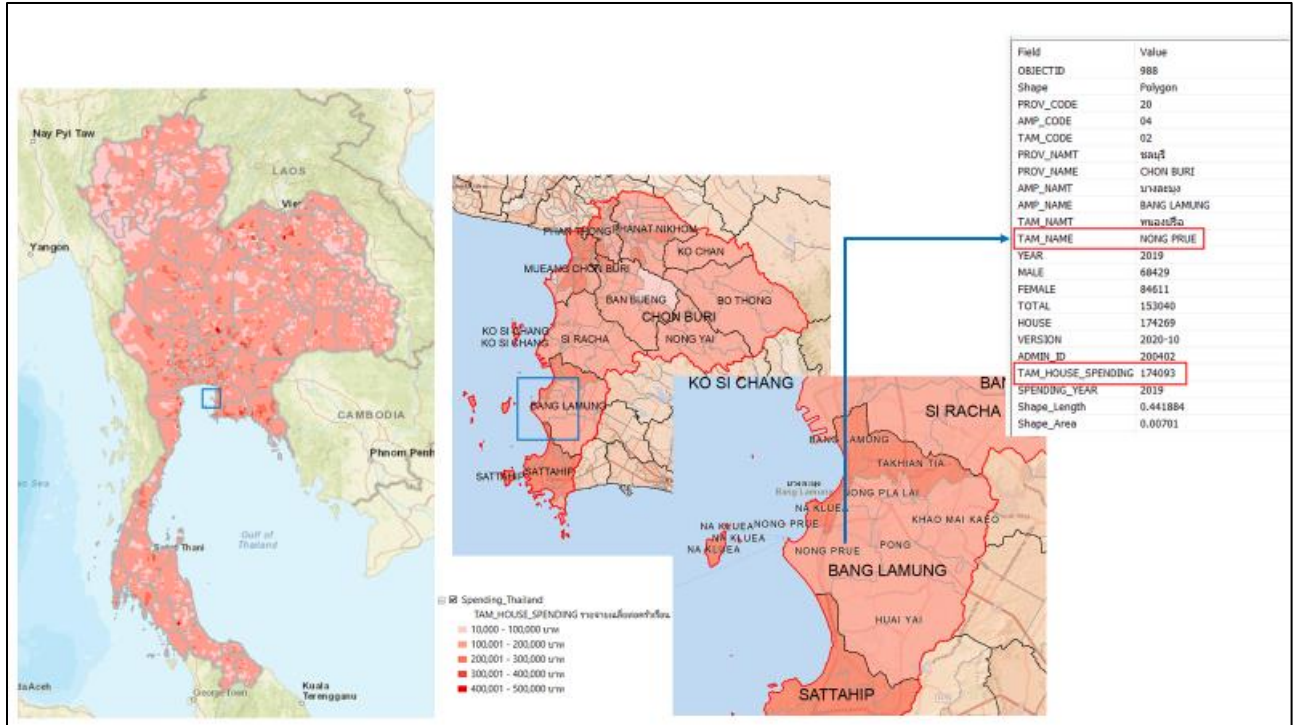
Picture 2: Sample data of Average Income

### 1.5 Average Spending

Average spending household (Baht/Year) was classified by sub-district level from 2 data sources.

1. In the Bangkok area, the data has been provided by NSO in year 2017. We don't use the data in recent years because it is provided only in province level. However, year 2017 is the latest year that NSO provided data in sub-district level.
2. In other provinces, the data was provided by The Community Development Department (CDD), Ministry of Interior. The data is collected by population sampling for the discriminant indicators of the quality of life survey. The population samplings are only from household members who have lived over 6 months in the household. The source of data is from year 2019.

Total Spending is calculated by multiplying the 2017 average spending by the 2019 households.



Picture 3: Sample data of Average Spending

## Methodology

Due to the variety of the data sources, we have the steps to make the data variables related. The summary of methodology of each dataset is as table below.

Variables	Area	Data Source	Base	Data updated in year	Frequency	Methodology	Remark
Household	The whole Country	Department of Provincial Administration (DOPA)	Actual Number in subdistrict (Registered population)	2019	Annually	Actual Number	Thai and non-Thai residence
Population by Age	Bangkok	Department of Provincial Administration (DOPA)	Actual Number in subdistrict (Registered population)	2019	Annually	Actual Number	Thai residence only
	Other Provinces	Department of Provincial Administration (DOPA)	Actual Number in subdistrict (Registered population)	2019	Annually	Actual Number	Thai residence only
Population by Education	Bangkok	National Statistical Office (NSO)	Percentage base divided by education level in province	2019	Annually	Using the percentage of Population by Education in each level to calculate its value based on Total Population by Age <b>Percentage x Pop by Age in each subdistrict (by gender)</b>	Thai residence only
	Other Provinces	The Community Development Department (CDD)	Percentage base divided by education level in subdistrict	2019	Annually	Using actual number which has different data source from Population by Age <b>(Actual number x Actual total)/100 = Percentage</b> then <b>Percentage x Pop by Age (by gender)</b>	Thai residence only



Methodology: Esri Thailand 2019 Demographic Data

Variables	Area	Data Source	Base	Data updated in year	Frequency	Methodology	Remark
Population by Occupation	Bangkok	National Statistical Office (NSO)	Percentage base divided by occupation level in province	2019	Annually	Using the percentage of Population by education in each level to calculate its value based on Total Population by Age <b>Percentage x Pop by Age in each subdistrict (by gender)</b>	Thai residence only
	Other Provinces	The Community Development Department (CDD)	Percentage base divided by occupation level in subdistrict	2019	Annually	Using actual number which has different data source from Population by Age <b>(Actual number x Actual total)/100 = Percentage x Pop by Age (by gender)</b>	Thai residence only
Income	Bangkok	NOSTRA	Actual number of average income household per year in subdistrict	2019	Annually	Using data from sampling survey and calculate average income per year in subdistrict level	Thai residence only
	Other Provinces	The Community Development Department (CDD)	Actual number of average income household per year in subdistrict	2019	Annually	Using data from sampling survey and calculate average income per year in subdistrict level	Thai residence only
Spending	Bangkok	National Statistical Office (NSO)	Actual number of average spending household per year in subdistrict	2017	Annually	Using data from sampling survey and calculate average spending per year in subdistrict level	<ul style="list-style-type: none"> <li>• Thai residence.</li> <li>• CDD doesn't provide data in Bangkok area so we use NSO data. NSO data might not be as accurate as it comes from sampling size of only 50,000 households for the whole country.</li> <li>• In year 2018 onwards, NSO</li> </ul>



Methodology: Esri Thailand 2019 Demographic Data

Variables	Area	Data Source	Base	Data updated in year	Frequency	Methodology	Remark
							changed to collecting data by province level instead of sub-district level. As a result, we use 2017 sub-district level average spending data and calculate total spending using 2019 total households.
	Other Provinces	The Community Development Department (CDD)	Actual number of average spending household per year in subdistrict	2019	Annually	Using data from sampling survey and calculate average spending per year in subdistrict level	Thai residence only