

Methodology Statement

Esri Thailand: 2021 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 2021 was 66,159,328 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	The whole country	Department of Provincial Administration
Population by Education	The whole country	Ministry of Education and Department of Provincial Administration (DOPA)
Population by Occupation	Bangkok	National Statistical Office and NOSTRA
	All Other Provinces	The Community Development Department

Income	Bangkok	National Statistical Office and The Community Development Department
	All Other Provinces	The Community Development Department
Spending	Bangkok	National Statistical Office and The Community Development Department
	All Other Provinces	The Community Development Department

- 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 December 2021.
- National Statistical Office (NSO) of Thailand is another source of Thai data. However, most of NSO data are provided at the province level, not in district and sub-district level.
- The Community Development Department (CDD) is responsible for supporting the community in the area of education and people engagement. It aims to increase community development and stability. Every year except the year 2020, 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 database and high coverage under the “NOSTRA” brand in Thailand.

1.1 Age

Population by Age is provided by the Department of Provincial Administration (DOPA) and is current as of December 2021. Data include:

- Population by age, age less than 1 year old to age greater than 101 years old.
- Population by age groups by 5 years 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 residence)
- 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. The kindergarten to high school categories, the data was provided by the Ministry of Education in sub-district level.
2. Bachelor or Postgraduate's Degree categories, the data was provided by the Ministry of Education in province level and using the proportion of population by age from the Department of Provincial Administration (DOPA) to distribute data into sub-district level.

The detail for population by age from DOPA as follows:

- Population by age 18-21 years for bachelor's degree.
 - Population by age 22-39 years for postgraduate's degree.
3. Uneducated Population and Never Went to School categories, the data was provided by the Department of Provincial Administration (DOPA) with population by age 0-1 year.

1.3 Occupation

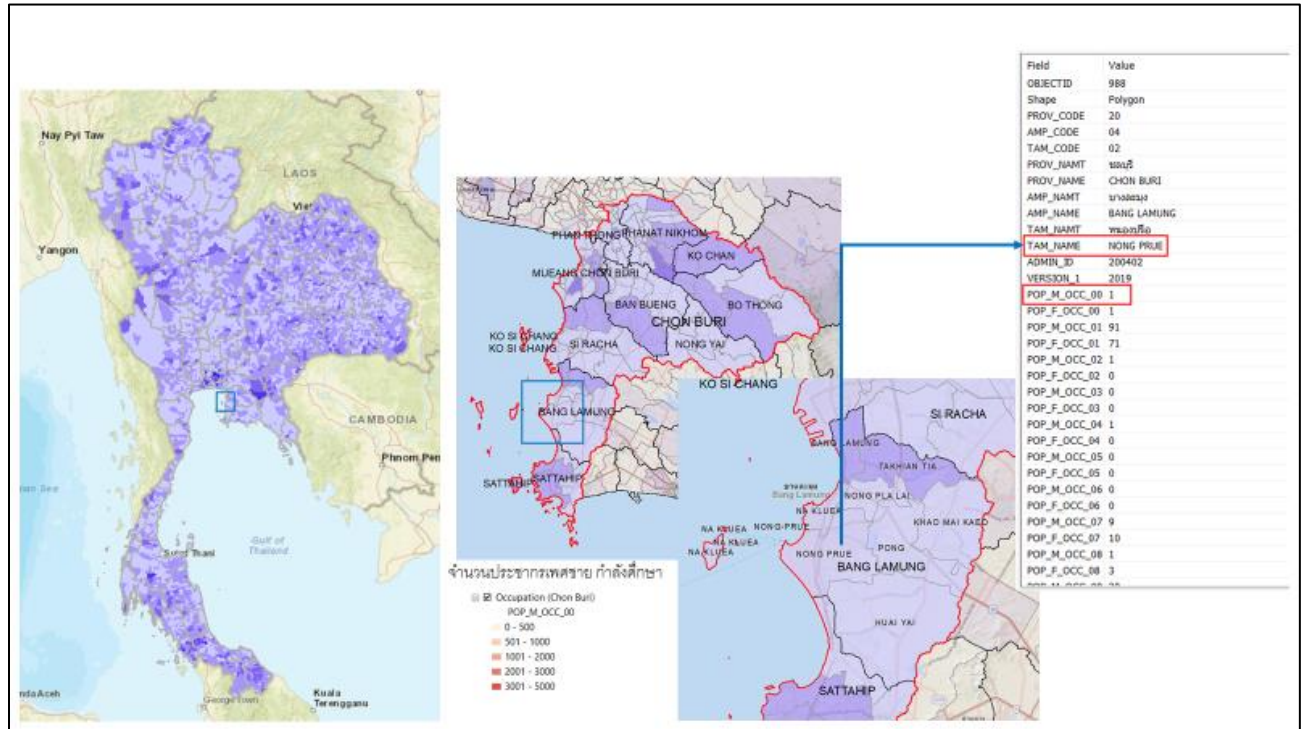
Population by occupation was categorized into groups as follows:

- 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 0-1 year old and 65+ years old) and Population who are unemployed.
 - Population by Education from Ministry of Education in Kindergarten– Bachelor's degree.

Esri Thailand is using three data sources for Population by Occupation

1. In Bangkok area, the data was provided by the National Statistical Office (NSO) and NOSTRA. Since NSO announced the data in province level only, we use the number of population density from NOSTRA POIs categorized by group of occupation in district and sub-district level.

- In other provinces, the data was provided by The Community Development Department (CDD). 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.

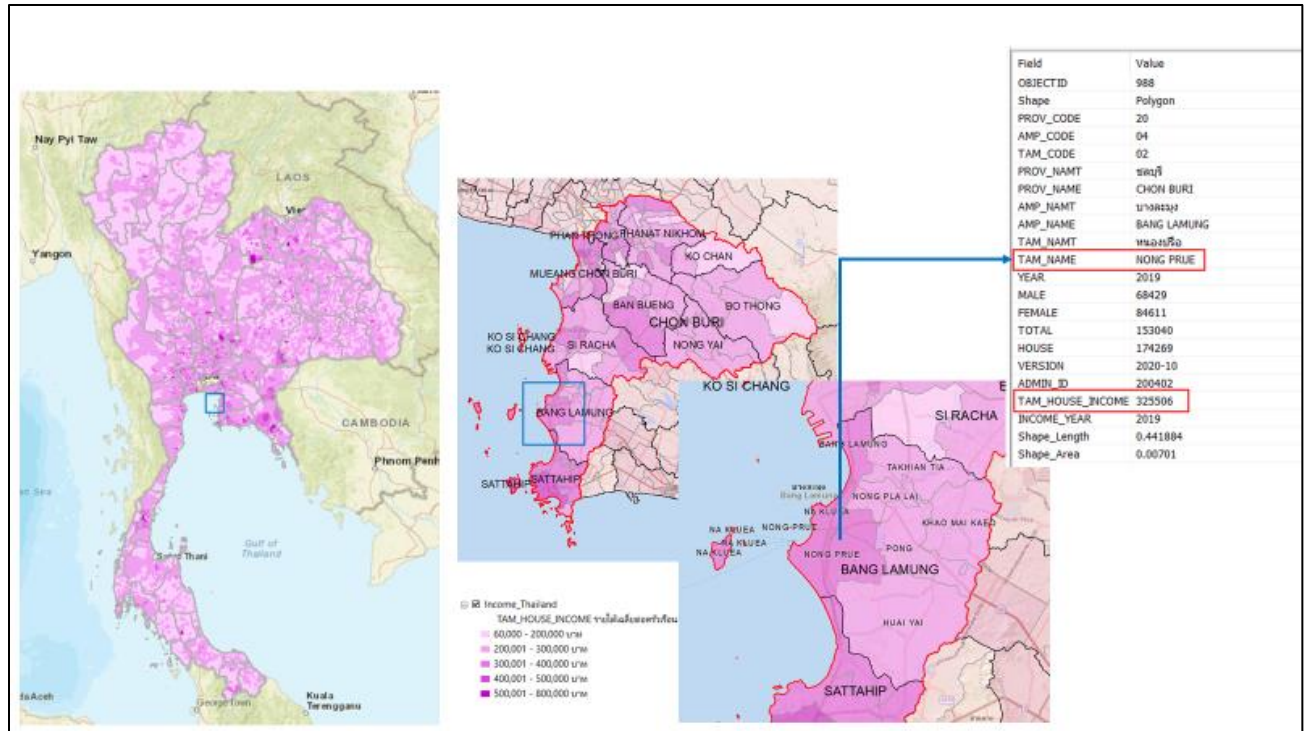


Picture 1: Sample data of Population by Occupation in Chonburi province

1.4 Average Income

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

- In Bangkok area, the data has been provided by the National Statistical Office (NSO) and the Community Development Department (CDD). Since NSO announces the data in province level only, we use the proportion average household income to calculate with average income of each occupation from CDD by district and sub- district level.
- In other provinces, the data was provided by The Community Development Department (CDD). 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.

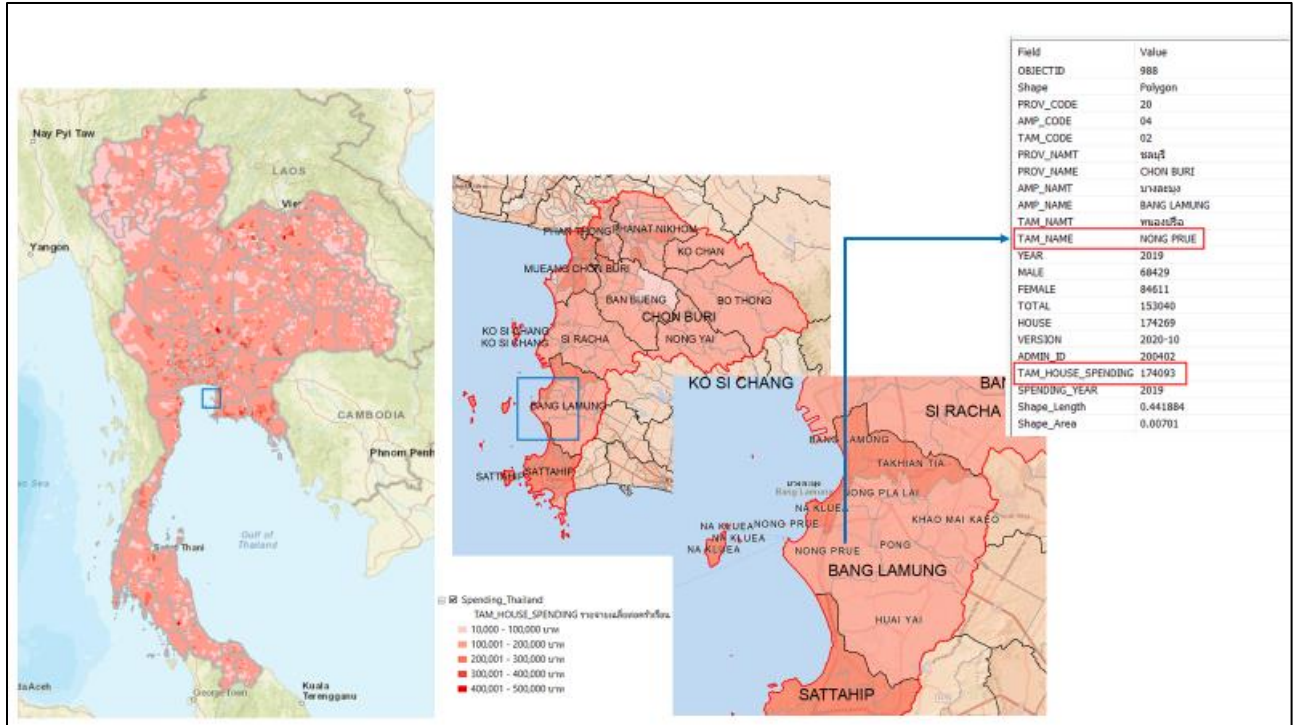


Picture 2: Sample data of Average Income

1.5 Average Spending

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

1. In Bangkok area, the data has been provided by the National Statistical Office (NSO) and the Community Development Department (CDD). Since NSO announces the data in province level only, we use the proportion average household spending to calculate with average spending of each occupation from CDD by district and sub- district level.
2. In other provinces, the data was provided by The Community Development Department (CDD). 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.



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 sub-district (Registered population)	2021	Annually	Actual number from the data source	Thai and non-Thai residence
Population by Age	The whole country	Department of Provincial Administration (DOPA)	Actual Number in sub-district (Registered population)	2021	Annually	Actual number from the data source	Thai residence only
Population by Education	The whole country	Ministry of Education and Department of Provincial Administration (DOPA)	Actual Number in sub-district	2021	Annually	<ul style="list-style-type: none"> Kindergarten to High school use actual number from Ministry of Education Bachelor and Postgraduate's degree use the proportion between the number of degrees student (in province level) from Ministry of Education and the degrees population by age from DOPA the detail as follows: Population by age 18-21 years for bachelor's degree. Population by age 22-39 years for Postgraduate's degree Never Went to School use Population by age from DOPA in Age 0-1 years 	Ministry of Education only provide the number of Bachelor or Post-graduate's degree students in province level

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Population by Occupation	Bangkok	National Statistical Office (NSO) and NOSTRA	Actual number in province level from NSO, in district and sub-district level use the number of population density from NOSTRA POIs which is not exceed from the total population from NSO	2021	Annually	<ul style="list-style-type: none"> The number of population density from NOSTRA POIs categorized by group of occupation in district and sub-district level Unemployed population is provided by: No Occupation (population age 0–1 year old and 65+ years old) and Population who are unemployed. Population by Education from Ministry of Education in Kindergarten– Bachelor’s degree. 	National Statistical Office (NSO) only provide the data in province level.
	Other Provinces	The Community Development Department (CDD)	Actual number in subdistrict	2021	Annually	Actual number from the data source	Thai residence only
Income	Bangkok	National Statistical Office (NSO) and The Community Development Department (CDD)	Actual number in province level from NSO, in district and sub-district level use the number from proportion of CDD	2021	Annually	Using the difference proportion of average household income calculate with average income of each occupation.	<ul style="list-style-type: none"> Thai residence only. National Statistical Office (NSO) only provide the number of average household income in province level. The average income of each occupation is provided by the Community Development Department (CDD).
	Other Provinces	The Community Development Department (CDD)	Actual number of average household income per year in sub-district	2021	Annually	Actual number from the data source	Thai residence only.
Spending	Bangkok	National Statistical Office (NSO) and The Community Development Department (CDD)	Actual number in province level from NSO, in district and sub-district level use the number from proportion of CDD	2021	Annually	Using the difference proportion of average household spending calculate with average spending of each occupation.	<ul style="list-style-type: none"> Thai residence only. National Statistical Office (NSO) only provide the number of average household spending in province level. The average spending of each occupation is provided by the Community Development Department (CDD).
	Other Provinces	The Community Development Department (CDD)	Actual number of average household spending per year in sub-district	2021	Annually	Actual number from the data source	Thai residence only.