

Regarding the path of dynamic population statistical model:

I am thinking of two methods, which depend on the specific context and objectives of the analysis you want.

First, the methodology for demographic analysis estimates which involves some estimation techniques to estimate demographic parameters:

- a. **Cohort-Component Method:** Uses age and sex cohorts to project population changes over time.
- b. **Synthetic Cohort Method:** Estimates future population based on the current demographic structure.

A common example of demographic models is **Cohort-Component Model**. This model projects population changes by breaking it down into cohorts (age groups) and considering components such as births, deaths, and migration for each cohort over time. We can define the parameters of the model to be **Birth Rate**, **Death Rate**, and **Migration**.

Another approach is to use **Network Growth Models** which are preferable when the relationships and interactions among population members are crucial to understanding the dynamics. These models focus on how networks evolve over time, which can be influenced by demographic changes, such as population growth.

There are also other methods, but the choice depends on your project questions, data availability, and the specific phenomena you aim to model.