In my hometown Shanghai, the data of spatial and temporal dynamics of population is very limited due to the fact that it was just in the turning point of becoming a smart city, which is very important for allocating public resources and infrasructure, especially in Shanghai as nowadays the population of this city is roaring where there are a lot of people either entering or leaving this city, the inequity of allocation of public resources has been headlines for long. So for this coming week’s topic, I found a research paper regarding collecting data of spatio-temporal dynamics based on cell phone signals since now every one in Shanghai has a phone whose signaling data is huge (cell phone polularizing rate in Shanghai is 132.5% in 2013) and contains individual dynamic information.

The data source they use is the signaling data created by 2G users in Shanghai, in which user ID, date, signal tower location number, incident categories (phone calls, text messages, etc.) and so on. And there was about 0.6 to 0.8 billion data collected per day.

An analytical framework was built on internal relations among population, time, and behavior, to recognize characteristics of spatial and temporal dynamic distribution of population in Shanghai.

The methodology they were using was spatial unit mapping, residential place and consumer leisure places recognizing and ratio of day to night population.

At last, the conclusion is interesting: 1. Population density seems to be monocentric distribution, and this characteristic is more significant during the day compared to that at night; 2. People’s behaviors like consuming, commuting or leisure could cause the spatial and temporal distribution of population change. 3. The dependence level of consumption and leisure on central area is significantly higher than that of employment, especially in the suburban areas adjacent to the central area.

References:

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