

# Demographic patterns analysis using SDAM: case of Kathmandu valley, Nepal.

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1. **Objective:** to analyze the population distribution and density patterns in Kathmandu valley.

2. **Database:** Kathmandu valley map (including Kathmandu metropolitan, other four municipalities and 114 surrounding villages) and population census 2001.

### 3. Methodology:

1. Run SDAM (Spatial Data Analysis Machine) software.
2. Open Kathmandu valley population map (Figure 3).

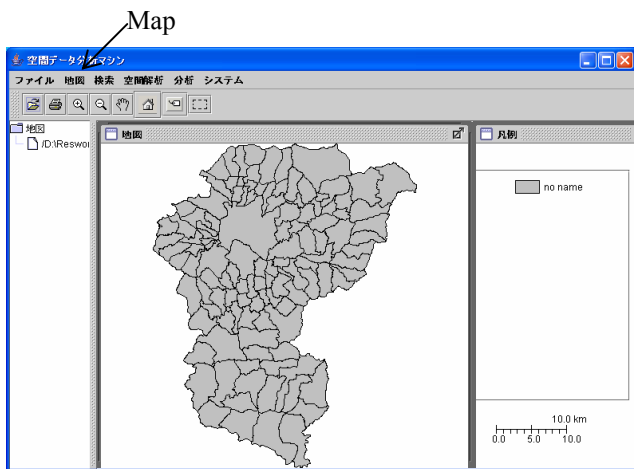


Figure 3: SDAM interface and map of Kathmandu valley

### 3.1 Population distribution patterns

1. Select Map menu and choose third sub menu (Cartogram), set the parameters as in Figure 3.1.
2. Click on OK button. A population distribution map in cartogram will be produced (Figure 4.1).

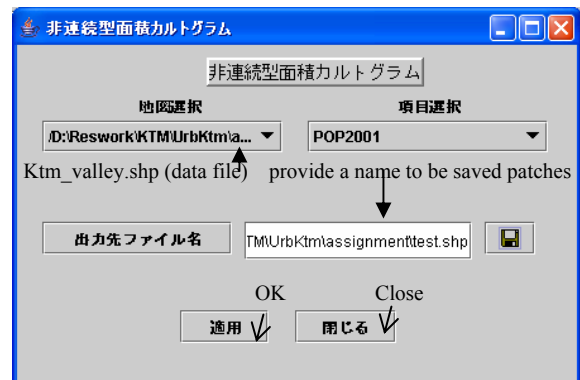


Figure 3.1: Process for pop. distribution mapping

### 3.2 Population density patterns

1. Select Map menu and choose Color place, set the parameters as in Color place dialog box (Figure 3.2.1).
2. Click OK button. If you want to create boundary less density map, select First item from Map menu and uncheck the Outline box as in Figure 3.2.2. A boundary less density map will be produced (Figure 4.2).

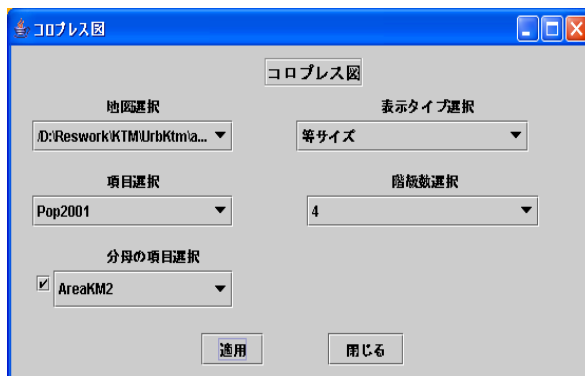


Figure 3.2.1: Process for pop. density mapping

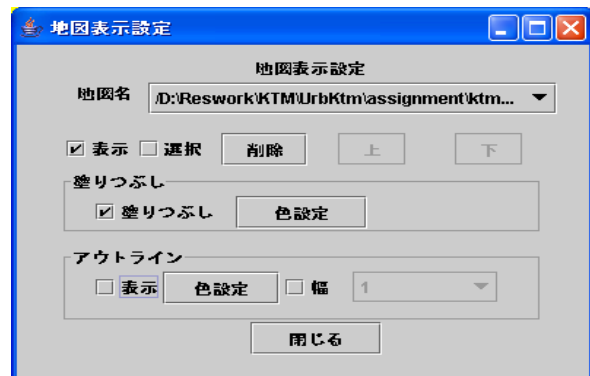


Figure 3.2.2: Process for removing boundary

#### 4. Results and discussion

**4.1 Population distribution analysis:** The figure 4.1 explains about the population distribution size of Kathmandu valley in boundary patch shape based on census report of 2001. The patch shape is called “Cartogram” in technical term. Bigger the patch size reflects higher the population concentration in particular area. Heavy population pressure can be observed northern center of the valley. The biggest patch is Kathmandu metropolitan city whereas the second biggest adjacent patch represents Lalitpur sub-metropolitan city. There are two bigger patches located east to the Kathmandu metropolitan city. These patches represent as sister municipalities of the metro namely Madhyapur and Bhaktapur, respectively. Large areas around the municipalities in the valley are found low population distribution. The southern part of the valley seems to be very low population pressure as compared to other surrounding villages. It might be due to high mountain topography and fragile land for living.

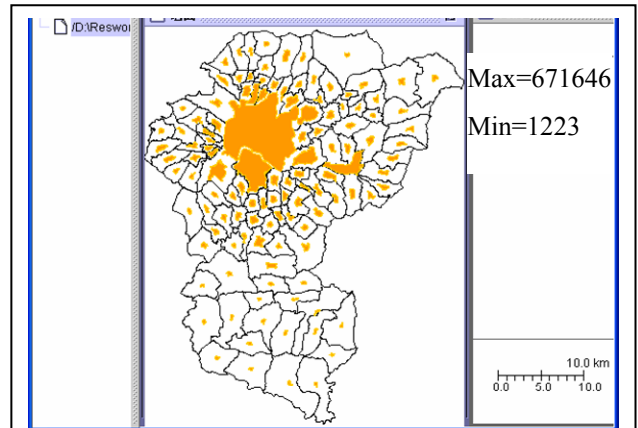


Figure 4.1: Population distribution size in the valley

**4.2 Population density analysis:** the figure 4.2 presents the population density patterns in Kathmandu valley. Diversified population density is observed. Some area in the valley has very low density as 71 people per square kilometers where as some places have more than 13 thousand persons per square kilometers. High density is observed in the northern central area of the valley. A large portion of southern part as well as north eastern edge of the valley has low population density.

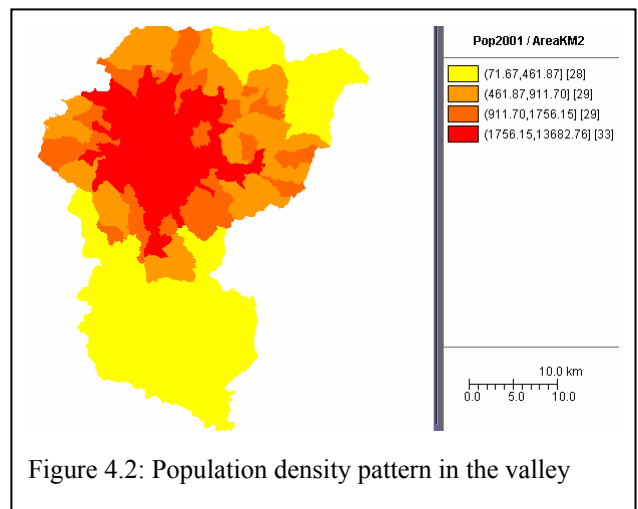


Figure 4.2: Population density pattern in the valley

**5. Conclusion:** this exercise is an application of the software where it analyzed the demographic patterns very efficiently. The software is powerful and easy to handle *just in click*. The documentation of the software presents many applications (such as spatial autocorrelation, minimum distance flows, hierarchical analysis, etc.) which are not easily available in other GIS platform. Documentation is available only in Japanese. The software is freeware, you can download from <http://giswin.geo.tsukuba.ac.jp/teacher/murayama/sdam/>.