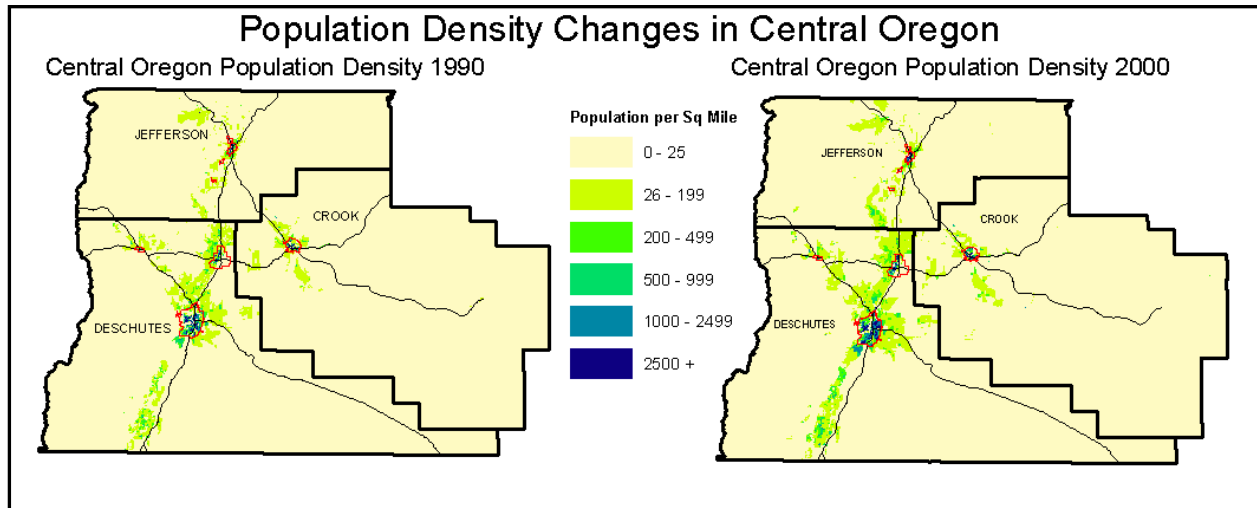


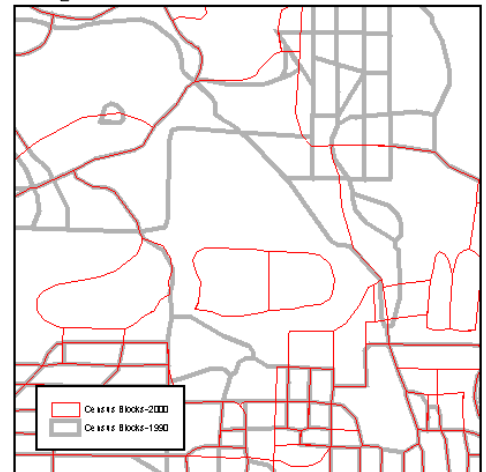
Population Density in Central Oregon 1990-2000



Purpose

1000 Friends of Oregon wanted to examine changes in population density in Central Oregon between 1990 and 2000, especially in areas outside the urban growth boundary. Creating maps that show the change visually is relatively easy, as seen in the illustration above. But because the size and area covered by census blocks are not consistent between 1990 and 2000, analyzing this change quantitatively is more difficult. The illustration to the right shows that in many cases, the 2000 census blocks have little or no correlation to the 1990 census blocks. This makes it difficult to pinpoint changes in density between individual 1990 census blocks and 2000 census blocks.

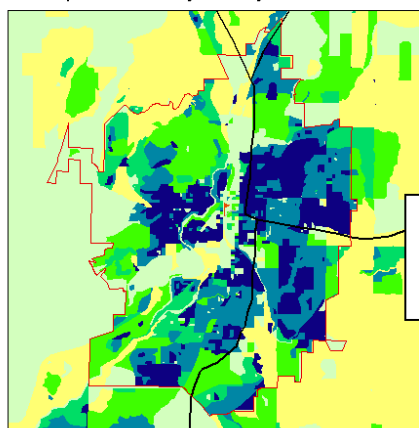
Alignment of 1990 and 2000 Census Blocks



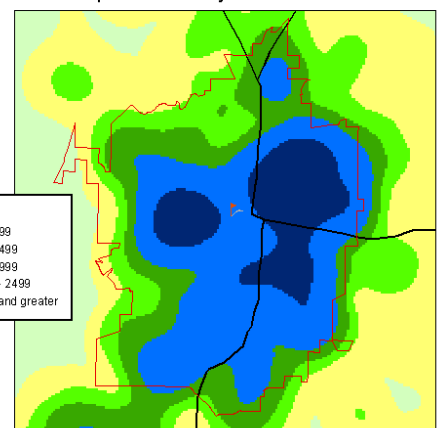
Methods

One method to compare density or other trends between differently sized measurement units is to change from a vector-based map where boundary lines are drawn arbitrarily to a cell-based map, where the data is interpolated and fit to consistently sized and aligned squares. This method also tends to smooth out the data and provides a more realistic picture of the trends over a large area.

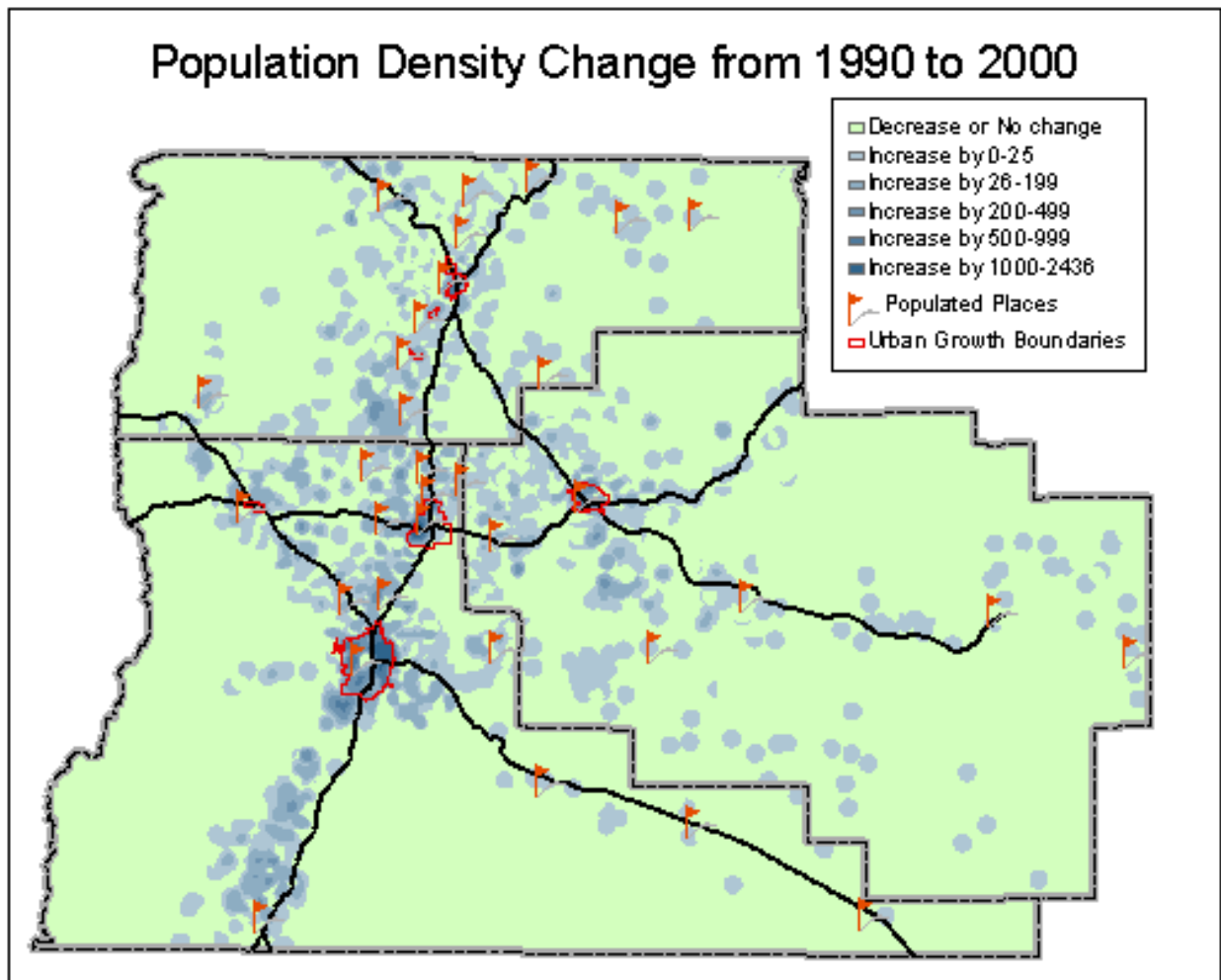
Population Density 2000 by Census Block



Population Density 2000 Raster Grid



These raster based density maps were created by finding the centroid of each census block, and then using the Density function in Spatial Analyst to interpolate the population density per square mile. Once density maps were created, raster functions were used to calculate the change between the two census years by “subtracting” the 1990 census surface from the 2000 census surface. Because the data has been interpolated, it is not possible to use this to pinpoint change in a particular census block, but this technique provides a landscape view of the change. (The circular shapes seen resulted from using a radius of one mile to determine density.)



Results

Using GIS, 1000 Friends of Oregon were able to create a series of maps illustrating the changes between 1990 and 2000, showing that in many cases, areas outside the urban growth boundary increased in density as much or more as areas inside the urban growth boundary.