Abstract

An analysis of selected physical and socio-economic determinants of rural population distribution in Birbhum district, West Bengal

This dissertation deals with a study of the impact of physical and socio-economic environment on population distribution in Birbhum district of West Bengal state in India. The present study aims at bringing out the direction and extent of relationship between the spatial distribution of population (only the rural component) and the spatial aspect of some parameters of physical and socio-economic environment. The parameters selected for the study are relative relief, dissection index, average slope, annual rainfall, drainage density, forest cover, depth of ground water table, soil fertility, proportion of cultivable area and irrigated area to total area, cropping intensity, agricultural density, literacy, road density and availability of electricity.

Birbhum district, the study area, is situated between the Chhotanagpur plateau to the west and the Lower Ganga plains to the east. It represents more physical heterogeneity within a reasonable range than any other district of West Bengal. The district exhibits a low level of urbanization, so that the rural component is significantly high in the total population compared to most of the other districts of the state. In this respect Birbhum is a representative of other districts of rural India inhabited by the majority of Indians.

In order to evaluate, in quantitative terms, the degree of correspondence between rural population distribution and the physical and socio-economic factors, the techniques of simple and multiple correlation and regression and stepwise regression have been employed. Such analyses show that the selected parameters have greater influence when functioning in combination, but 7 of the 15 selected elements account for most of the variation (>96%) in population distribution. Further analysis of the partial regression coefficients reveals that the 7 factors are not equally important. Two of them are considerably more effective than the others. With one or two alterations these 7 factors have been the more powerful ones from 1951 through to 1991.

This study highlights the technique of model building for finding out the relevant factors that influence the distribution of rural population in Birbhum district. The conclusions drawn from this analysis should contribute towards the construction of a general theory concerning the distribution of rural population in developing countries.

This study incorporates about 50 isopleth and choropleth maps and scatter graphs. There are 5 computerised stepwise regression analyses for five census years (1951-1991), each comprising not less than 13 steps showing 70 odd calculations.