

# **A Settlement Hierarchy for Limpopo Province, South Africa, Based on Road Network Density and Accessibility**

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## **Abstract**

This paper presents a settlement hierarchy for Limpopo Province in South Africa. The basis for this settlement hierarchy is the density of the road network within each settlement and the accessibility of the settlements. Research has shown that settlement hierarchies are increasingly being used as the building blocks for urban rural classifications. Different urban rural classifications are required for different purposes. Many countries have developed settlement hierarchies and then split these hierarchies into urban and rural settlements according to the purpose for which the classification is required. The datasets used include the CDSM road line vector dataset from 2006 and the Place Names dataset from Census 2001. South Africa is divided into place names for each Census and these place name boundaries are used to delimit the settlements for this study. The road network density and accessibility are analysed using ArcGIS. A grid-based analysis is used to determine the road density for each settlement. The accessibility of each settlement is determined using a buffering function. Settlements are then ranked from low order to high order settlements. It is assumed that higher order settlements will have a higher road network density and be more accessible than lower order settlements. The resultant settlement hierarchy is then compared to the settlement hierarchy for Limpopo Province from Census 2001. This comparison could be used to update the existing settlement hierarchy. On completion of the Dwelling Frame Project for Census 2011, future research could include examining the feasibility of a settlement hierarchy based on dwelling density using the Dwelling Frame data for Census 2011 and a buffering function.