

This study on transport in Kakamega district has a three-fold purpose: (a) to analyse the structure and pattern of the road network; (b) to examine household travel characteristics, and (c) to examine the spatial patterns of movement of people. Underlying the study are two theoretical formulations: (a) that the nature of road network is a product of the interaction of the road network and the physical and human characteristics of the area containing it; (b) that household travel characteristics are a reflection of land use activities; population characteristics and the transport system. This study had five hypotheses to test namely: (a) there is no relationship between variation in road density and variation in population, size and agricultural development of divisional units of observation; (b) there is no relationship between variation in the graph-theoretic indices of the road network development and variation in population, size, and agricultural development of the divisional units of observation; (c) trip length has no effect on the number of trips observed; (d) trip length has no effect on the mode of travel used, and (d) there is no relationship between spatial variation in movement of people by public modes and the population of divisions of trip origins and destinations and the distances separating them.

Data were collected from both primary and secondary sources in order to address the issues above. Using systematic sampling, villages and households were selected and an interview characteristics. Passengers were randomly selected and interviewed regarding their trip origins and destinations. Secondary sources were mainly maps, government files and documents aimed at collecting data on road network. Data processing and analysis utilized techniques such as computations of averages, percentages, frequencies, correlations, regressions, and cartographic and diagrammatic representations.

The major findings of this study can be summarized as: (b) there is uneven distribution of the road network with a concentration in the southern and central parts but a dispersion in the northern parts; (b) there are notable variations in the distribution of indices of the road network namely density, accessible distance, beta,  $\alpha$ ,  $\theta$  and  $\gamma$  indices; (c) nodes on the road network have varying levels of accessibility broadly classified as high, medium and low; (d) there are a variety of trips made by members of households, the most dominant being domestic and arm; (e) trip distribution by length shows a predominance of short-distance trips; (f) trip distribution by modes is predominated by walking; (g) there is dominance of trip so n lower classes of roads; (h) intra-divisional (zonal) patterns of movement are predominant over inter-divisional; (i) passenger movement is focused on the market and urban centres such as Kakamega, Mumias, Luanda, Majengo, Mbale and Chavakali; (j) two nodal regions are identified with respect to passenger movement. These are, the region focused on Kakamega town, which draws from Malava, Lurambi, Butere, Mumias, Hamisi, Ikolomani, Shinyalu, Kwisero and Iugari, and the region involving Emuhaya, Vihiga and Sabatia.

A statistical analysis using a regression model shows that area of divisions explains about 44.35 percent of the internal variation in road density. The unexplained variance is shown cartographically to be related to the physical environment, relative location and past and present development projects. Distance explains about 87 percent of the variation in trip making between Kakamega town and the twelve administrative divisions in the district.

The findings enumerated above are relevant in understanding transport in Kakamega District. The spatial forms of the road network and their relationships with physical and human

characteristics of the district are highlighted. The principal features of rural trip making are examined in relation to underlying factors. The possible future reorganisation of the district is discussed based on movement data.

From the results of the study, it is concluded that Kakamega District has a fairly high road density and is easily accessible. The main issues may be with the nature of the roads (muddy or narrow) and availability of vehicle service on certain routes. Another conclusion is that members of rural households are involved in several types of daily trips covering different distances, using various modes and on different types of routes. The orientation of passenger movement points to the possibility that the southern part of the district can form an independent region. It is recommended here that attention should be focused on road maintenance, development of intermediate transport modes suitable/or appropriate for rural conditions, and improvement in the type, quality and level of data collection. It is further recommended that road planning and development should aim at integrating the national classified road system with the local route network made up of footpaths and tracks. The small urban and market centres such as Luanda, Majengo and Khayega need to be well planned because they serve as origin-destinations and relayers of movement as well as providing essential services to their hinterlands. This study on transport in Kakamega district has a three-fold purpose: (a) to analyse the structure and pattern of the road network; (b) to examine household travel characteristics, and (c) to examine the spatial patterns of movement of people. Underlying the study are two theoretical formulations: (a) that the nature of road network is a product of the interaction of the road network and the physical and human characteristics of the area containing it; (b) that household travel characteristics are a reflection of land use activities; population characteristics and the transport system. This study had five hypotheses to test namely: (a) there is no relationship between variation in road density and variation in population, size and agricultural development of divisional units of observation; (b) there is no relationship between variation in the graph-theoretic indices of the road network development and variation in population, size, and agricultural development of the divisional units of observation; (c) trip length has no effect on the number of trips observed; (d) trip length has no effect on the mode of travel used, and (d) there is no relationship between spatial variation in movement of people by public modes and the population of divisions of trip origins and destinations and the distances separating them.

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