

Centrality in urban street networks of Korea: from classification to model

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Abstract

Centrality has played a crucial role of what a prominent node is within a social network in the past few decades. We adopt betweenness centrality and closeness centrality as the major measures for identification of importance of intersections and streets in dozens of urban street networks in Korea. Betweenness centrality in each street network shows a slight inequality between intersections and streets respectively, thus we calculate the Gini coefficient of centrality. By discrepancy in Gini coefficients, cities are classified into several groups, and each group possesses its own topological properties of the networks. Planned and unplanned cities are distinguished by the degree distributions, and whether urban-rural integrated cities or not also can be determined through closeness centrality. In order to obtain size dependence of the Gini coefficient for betweenness centrality, we make a square lattice as an idealized form of the street network and find a log function with size.

Keyword: Centrality, Street Network, Betweenness Centrality, Classification of Cities, Inequality in Transportation System