

## Passenger Flow Characteristics of Seoul Metropolitan Subway Network

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**Abstract :** Characterizing the network flow is of fundamental importance to understand the complex dynamics of networks. And passenger flow characteristics of the subway network are very relevant for an effective transportation management in urban cities. In this study, passenger flow of Seoul metropolitan subway network is investigated and characterized through statistical analysis. Traditional betweenness centrality measure considers only topological structure of the network and ignores the transportation factors. This paper proposes a weighted betweenness centrality measure that incorporates monthly passenger flow volume. We apply the proposed measure on the Seoul metropolitan subway network involving 493 stations and 16 lines. Several interesting insights about the network are derived from the new measures. Using Kolmogorov-Smirnov test, we also find out that monthly passenger flow between any two stations follows a power-law distribution and other traffic characteristics such as congestion level and throughflow traffic follow exponential distribution.

**Keywords :** betweenness centrality, correlation coefficient, power-law distribution, Korea traffic DB

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