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Visualization of the Mobility Patterns of Public Bike Sharing System in Seoul

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Abstract : This study analyzed and visualized the rental and return data of the public bike sharing system in Seoul, Ttareungyi, from September 2015 to October 2017. With the surge of system users, the number of times of collection and distribution in 2017 increased by three times compared to 2016. The city plans to deploy about 20,000 public bicycles by the end of 2017 to expand the system. Based on about 3.3 million historical data, we calculated the average trip time and the number of trips from one station to another station. The mobility patterns between stations are graphically displayed using R and Tableau. Demand for public bike sharing system is heavily influenced by day and weather. As a result of plotting the number of rentals and returns of some stations on weekdays and weekends at intervals of one hour, there was a difference in rental patterns. As a result of analysis of the rental and return patterns by time of day, there were a lot of returns at the morning peak and more rentals at the afternoon peak at the center of the city. It means that stock of bikes varies largely in the time zone and public bikes should be rebalanced timely. The result of this study can be applied as a primary data to construct the demand forecasting function of the station when establishing the rebalancing strategy of the public bicycle.

Keywords : demand forecasting, mobility patterns, public bike sharing system, visualization
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