

The Influence of Green Infrastructure on Urban Resilience in Greater London

Yukyung Oh

King's College London, United Kingdom (yu_kyung.oh@kcl.ac.uk)

High population densities and diverse economic activities in urban areas create social issues as well as a range of environmental impacts including air pollution, soil contamination, loss of biodiversity and health problems (Alberti et al., 2003; Dobbs, Escobedo, & Zipperer, 2011; Grimm et al., 2008). The concept of urban resilience has been used for increasing the capacity of the entities and players to adapt to rapid changes, and urban green spaces play a crucial role in increasing urban resilience. Greater London has a good case for increasing urban green spaces and resilience under the London Plan. The relevance of urban open spaces and several socioeconomic indicators would provide researchers and policy makers with the information for managing green coverage.

The correlation analysis of two quantitative data such as open space and socioeconomic data of Greater London was conducted with SPSS. The data for open spaces in Greater London was gained through Greenspace Information for Greater London. The data was converted from vector to raster in Geographic Information System (GIS), so as to calculate landscape metrics for open spaces in Greater London through a spatial pattern analysis program, FRAGSTATS 4.2. The socioeconomic data was obtained from "London Borough Profile", London Datastore. In addition, data on total carbon emissions from Industry and Commercial, Domestic, Transport, LULUCF Net Emissions, and per capita emissions were gained from UK local authority and regional carbon dioxide emissions national statistics: 2005-2014 released from Department of Energy and Climate Change. The indicators from open spaces are total area of open space and patch density or contagion of open spaces. The latter indicator allows to figure out the level of fragmentation of open spaces. The socioeconomic indicators cover number of jobs by workplace, jobs density, crime rates per thousand population, and several wellbeing indicators such as life satisfaction, worthwhileness, happiness and anxiety.

The correlation analysis outcomes can be divided into three levels such as Greater London as a whole, and Inner and Outer London. In Greater London, total area of green spaces has a strong relation with crime rates, and a less strong relation with number of jobs. Both socioeconomic indicators showed a negative trend along with the increase of open spaces. In terms of wellbeing indicators, the positive trend of life satisfaction, worthwhileness and happiness, and the negative trend of anxiety can be found in accordance with the increase of green coverage. In Inner London, job density and crime rates show a negative trend in accordance with the increase of total open space areas. And as contagion of open spaces is higher, the indicators of number of jobs, jobs density, and crime rates also showed an increase tendency. As for worthwhileness and happiness, it also showed a substantial correlation with contagion of open spaces. In Outer London, the correlation between job density and crime rates, and open space cannot be found, but the wellbeing indicators such as life satisfaction and worthwhileness show an increase trend along with larger green coverage.