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A Comparative Study of the Murray/Taylorsville and Salt Lake City Greenway Systems

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Introduction

Greenways are an important part of an urban system. They are linear strips of vegetated area that extend through or around cities. Greenways have various environmental, social, and economic benefits that contribute to healthy communities. Characteristics of greenway systems can be quantified and measured, allowing comparison between study areas. Our study uses landscape metrics to compare the total area, total edge, number of patches, and connectivity of the Salt Lake City and Murray, Utah greenway systems.

Methods

We obtained GIS data for the two study areas from the Utah GIS Portal, including layers depicting city boundaries, roads, parcels, rivers, and streams. We then georeferenced, or spatially aligned, the greenway maps to the data for the respective cities in order to digitize their greenway systems. This information was then prepared for FragStats, a program designed to quantify different elements of a landscape. The metrics we performed measure the total area, total edge, number of patches (an area that differs from its surroundings in composition), and connectivity (a measure of the continuity) of the Salt Lake City and Murray/Taylorsville greenway systems.

Results

The results of the metrics we performed are as follows:

SLC Total Area = 938.7 hectares
SLC Total Edge = 92,700 meters
SLC Number of Patches = 10
SLC Connectivity = 15.6%

Figure 1

Salt Lake City Greenway System

Figure 2

Murray/Taylorsville Greenway System

SLC Total Area = 938.7 hectares
SLC Total Edge = 92,700 meters
SLC Number of Patches = 10
SLC Connectivity = 15.6%

The total area and total edge metrics indicate that Salt Lake City has a more extensive greenway system. The higher number of patches and the greater distance between patches in the Salt Lake City system, however, lead to its lower connectivity value. The Murray/Taylorsville system is less extensive in terms of overall area and edge but exhibits a greater level of connectivity.

Discussion

These results reveal a number of important differences between the greenway systems and the cities in which they are located. As a much larger municipality, Salt Lake City can support a more complex and varied greenway system. Its higher population gives the city a broader tax base for maintaining its greenways and creates a greater demand for recreational usage. Salt Lake City also contains more natural waterways, as demonstrated by Figure 1 and Figure 2, giving it more potential to conserve natural riparian vegetation through the implementation of greenways. The relatively diverse demographic makeup of Salt Lake City’s population may contribute to more environmentally-minded leanings and policy.

In comparison, the Murray/Taylorsville greenway system, composed of one dominant linear strip along the Jordan River, is less complex and not as integrated into different areas of the two adjacent cities. The regional planning effort that established the Jordan River Parkway focused on ecological preservation along the Jordan River corridor and did not branch out to incorporate other potential greenway patches in the adjacent cities.

Conclusions

Performing landscape metrics on the total area, total edge, number of patches, and connectivity of the Salt Lake City and Murray, Utah greenway systems revealed important distinctions between the two systems. We conclude that the Salt Lake City greenway system has more total area and total edge due to the larger population and size of the city. The Murray/Taylorsville system is comparatively less extensive but exhibits a greater level of connectivity between greenway patches.