

Project Proposal

Title: Using Python and QGIS to Map Park Access in Austin, TX

Group:

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Relevance of the Problem:

Understanding a city's socio-demographic change is critical for future management of its resources, including public green spaces. Because public parks are managed by the government, it is vital for access to this resource be shared by all citizens in the same way other public utilities are shared and distributed. Accessibility to outdoor spaces in an urban environment has shown to have a positive impact on a person's physical and psychological well-being (Richardson, Pearce, Mitchell, & Kingham, 2013). This has led many researchers to view access to public green spaces as a social justice issue. Many studies have found that access to green spaces depends on factors such as race and income (Engemann et al., 2019). This inequality in access has led many planners and city officials to focus resources to close this gap.

The Austin Parks Foundation, the largest local non-profit supporting Austin's parks, has stated the city of Austin does well in the "the amount of dedicated parkland we have", however "...when it comes to ensuring that all Austinites have access to green spaces, and that we are investing and maintain them, we fall incredibly short" (Austin Parks Foundation, 2018). If the city wishes to create equal access opportunities for all its residents, then an accurate study of the distribution of access to parks must be created. The goal of this project is to create a map visualization of the distribution of people in Austin and their spatial relation to greenspaces, particularly City of Austin managed and owned parks. We predict areas with residents primarily of lower income and minorities will see the least equitable access to parks in Austin.

In order to accomplish this project, we will utilize QGIS software along with Python and Jupyter Notebooks to create a script that can be easily replicated and reproduced for future use by urban planners and managers. There are multiple packages that will be used within Python, for this Anaconda was downloaded for package management and support. The main packages used are GeoPandas, Matplotlib, and Pandas. The code and data are shared among collaborators through GitHub. Hardware used for this visualization project will be personal computers. All results will be displayed through QGIS.

Data needed for this project can be found on a few Government supported data repository sites. The following sources will contain the necessary data for this project:

- U.S Census Bureau
- City of Austin Open Data Portal

References:

- Austin Parks Foundation. (2018). The Challenge. Retrieved April 13, 2019, from Austin Parks Foundation website: <https://austinparks.org/the-challenge/>
- Engemann, K., Pedersen, C. B., Arge, L., Tsirogiannis, C., Mortensen, P. B., & Svenning, J.-C. (2019). Residential green space in childhood is associated with lower risk of psychiatric disorders from adolescence into adulthood. *Proceedings of the National Academy of Sciences*, 116(11), 5188–5193. <https://doi.org/10.1073/pnas.1807504116>
- Richardson, E. A., Pearce, J., Mitchell, R., & Kingham, S. (2013). Role of physical activity in the relationship between urban green space and health. *Public Health*, 127(4), 318–324. <https://doi.org/10.1016/j.puhe.2013.01.004>