

The understanding of landscape preference, using real estate appraisal as analyzing tool.

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Abstract:

Along with urban development, the concept, preference, and ideality of aesthetics change, which could be related to the change of culture, education, age, etc. In fact, it is difficult to understand well about the direct relationship between them, but it is undeniable that people incline to live in places making them feel pleased, which may include places with good views, natural environment, or forest parks. All of these are part of good landscape, therefore the topic is to understand what kind of qualities people would prefer and choose to live there. According to the literatures, there is an association of nature with safety in subconsciousness, so people may prefer being close to natural environment, and if this kind of residential areas are more popular, the real estate may be higher consequently. In addition, experts keep mentioning "good landscape can have a huge impact on real estate appraisal in a positive way". There are some existing researches also bringing out this phenomenon. (Oh and Lee; Cats-Baril and Gibson; Gao and Asami) The methodology is using the existing researches of the relationship between landscape quality and real estate appraisal as data source, and translating those to GIS data. This study will focusing on analyzing the relationship between greenspace and the property value per square foot, including distance and the different types.

The result could be shown as spatial pattern and may have some interesting applications, for example, people could search for a new home according to its proximity to a desired landscape type/feature, or a selection of new homes might be compared according to proximity to key landscape features.

Methodology:

The paper(Conway et al.) as my background knowledge is aimed to find the relationship between residential property values and greenspaces in urban area(figure 1). The main methodology is hedonic model, and the spatial lag model. The results show that the distance of greenspaces and residential areas from 200 to 300 ft implies the most significant effect of property values, increasing 1% of greenspace amount can create 0.07% increase of expected sale prices(Conway et al. 14), which could be powerful way to enhance real estate market and the quality of life within cities. There are a lot of types of open spaces which may influence the property values in the existing studies, for example. waterscape ,community garden, wood land, street trees, etc. These open spaces all have vegetation, so it is reasonable to summarize them as greenspace, for me, it is also more feasible and doable to verify their relationship by GIS.

The study area in the research is Los Angeles in which the lack of greenspaces is a problem for a long time. For my study, I choose the neighborhood near uptown Charlotte, North Carolina (figure 2). It is a district redeveloped these days, so it is more intriguing for me. Three neighborhoods are includes and have similar condition but different relationships with landscape.

I got the latest GIS data from Geospatial Information Services, Mecklenburg County, NC . My target is single family neighborhood, because it is easier to calculate the property value per unit. Before analyzing, it is appropriate to understand the distribution of total value per square foot, and make some modification about the samples. Based on the existing researches, greenspace can have positive impact, on the other hand high way, free way, and rail road are sometimes thought of as dislike landscape, because they provide noise and messy view, and it is expected to be reflected as results . To compare the value of property, it is better to use unit value. After identifying the greenspaces in study area, the buffer can be used to define the impact area of property values. According to the results of the study, the biggest positive impact distance of greenspace is 200~300ft, hence multiple buffers are generated with same interval which is 100ft, and the average value per square feet can be calculated within each buffer. The predicted results are the highest value would occur within 100 ft area, and it will decrease when the distance is farer, also, the value may go down near noisy traffic. On the other hand, different types of greenspace are important as well. The one with maintenance is considered preferable than the one with vegetation growing freely, which is related to the theory of aesthetics. Humans are inclined to like nature, but too natural environment may give the messy and undeveloped feeling. The results are generated by ArcGIS Statistics(table 1) and presented in the following part.

Discussion and Conclusion:

Through the analysis, it shows some positive relationship between greenspace and property values. But it is still not persuasive enough that greenspace has the absolute impact, because there are many other factors that would have influence. For example, the age of house, the condition of house, the distance to public transportation, etc. Also, people would have different aesthetics and preference related to different races or generations. The other factors may result in some uncertainties are errors, like typing errors or digitizing errors. When looking at the GIS data, there are weird polygons, unreasonable numbers, and sometimes the lands belonging to one house are divided by parts. All of them could make the analysis more difficult. In addition, the study area is a little small, so it is not valid enough. Trying to control variables could improve the analysis and facilitate future study. Greenspace is more and more important in urban area, both for human and environment. If there are more persuasive researches, then it is easier to get the investment and attention of greenspace. Also, it can be used to stimulate the real estates, reviving some areas on the downgrade. Collaborating with real estate business, governments, scholars, and landscape architects, it is possible to provide a more livable space, help people to find suitable houses and sale their properties effectively.

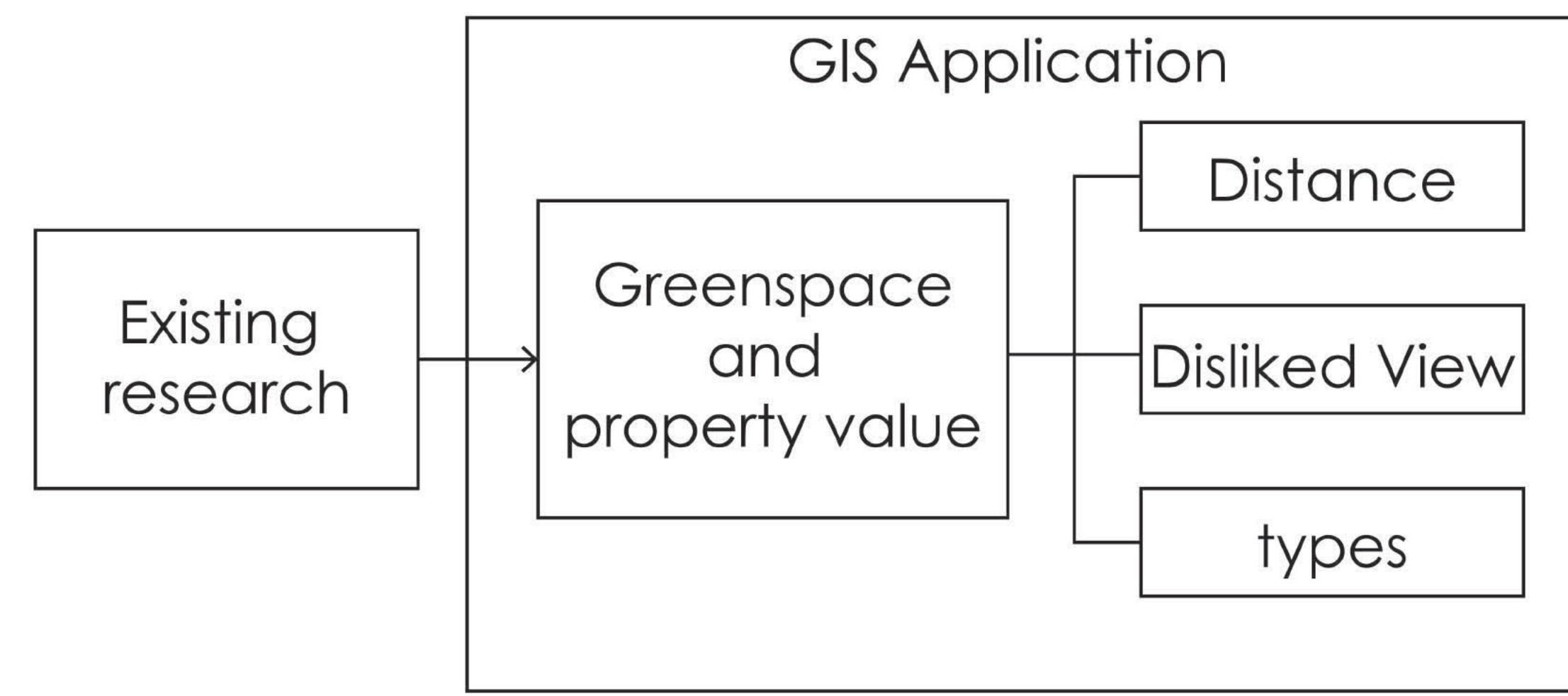
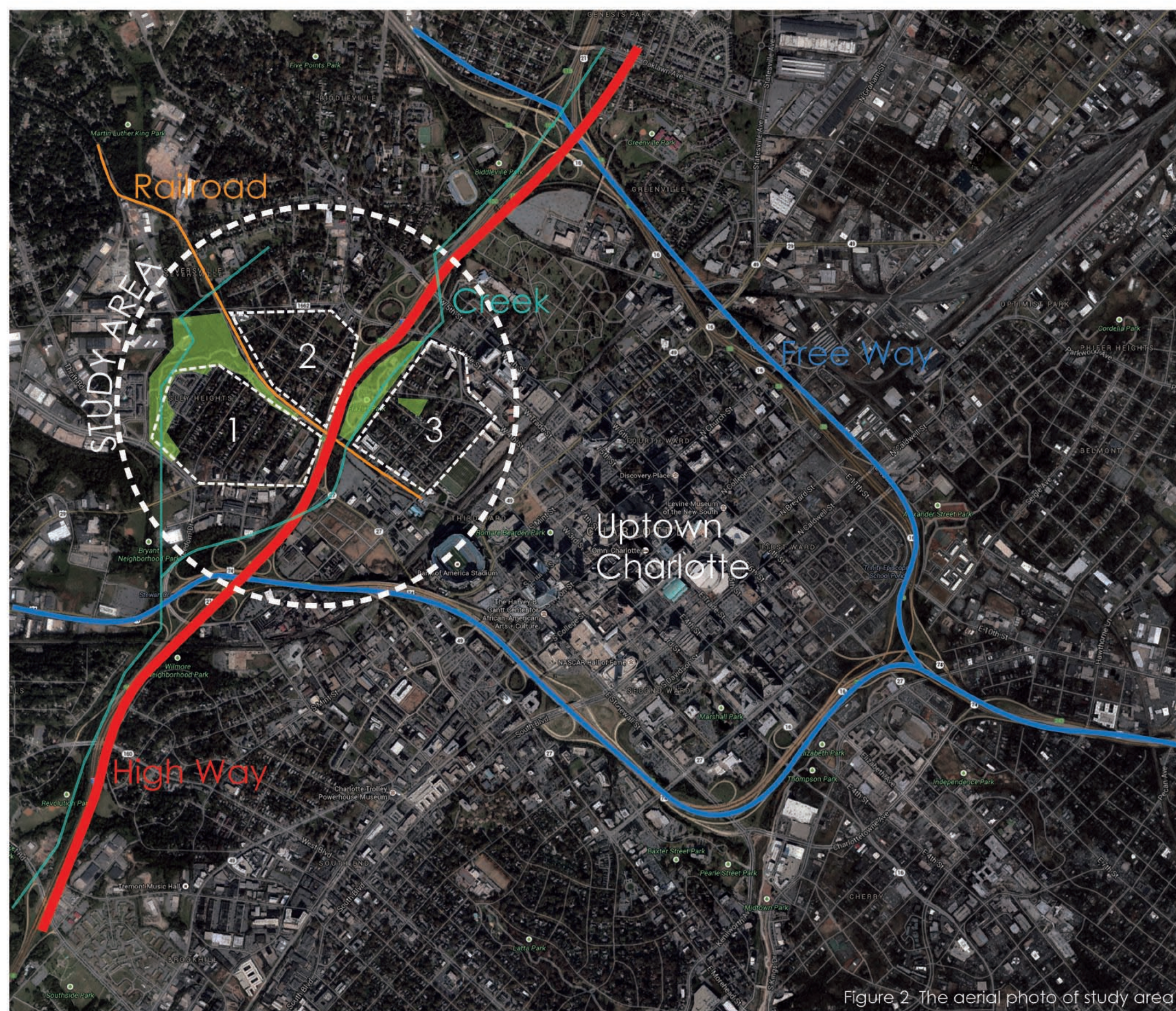


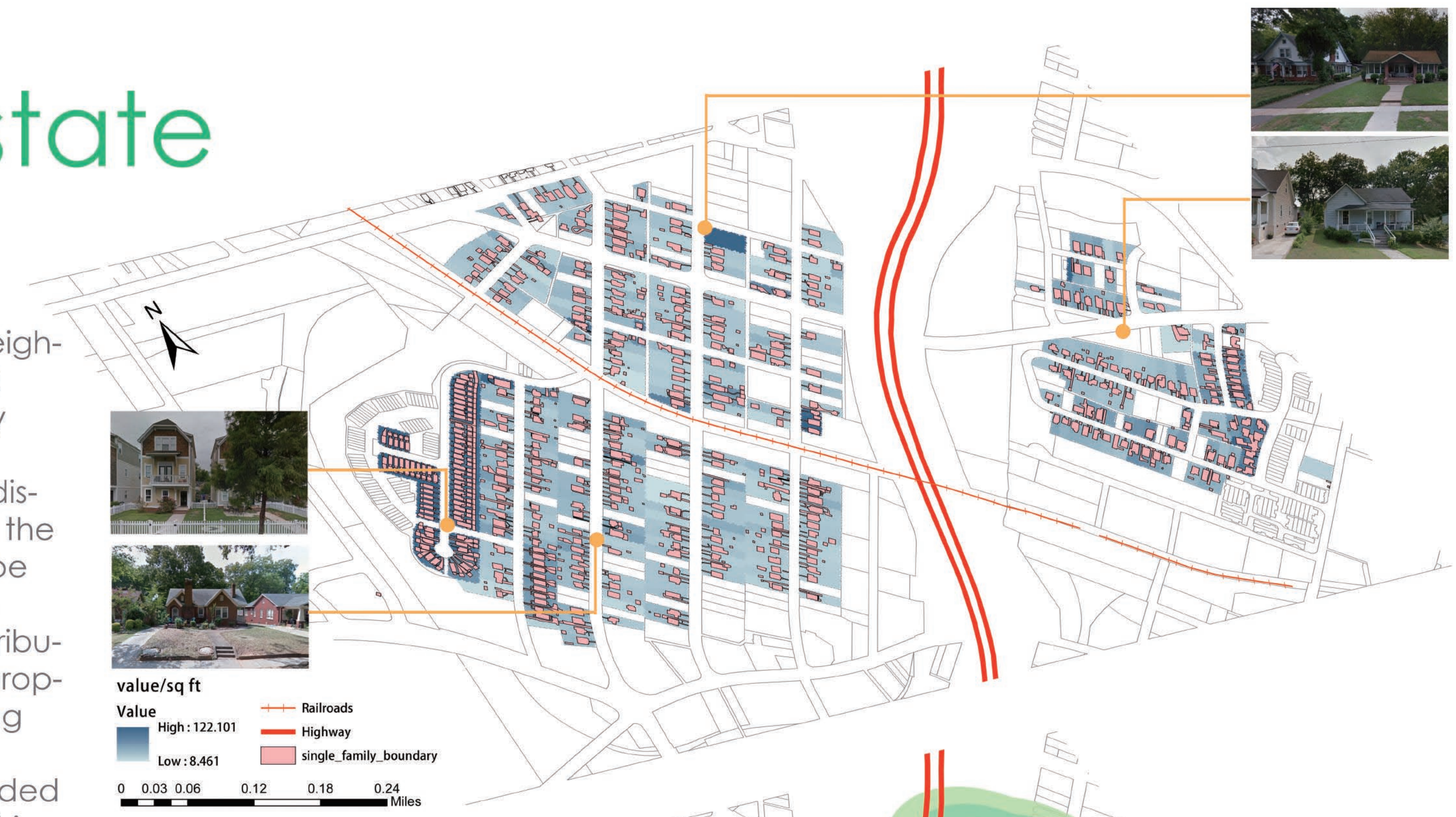
Figure 1 The methodology

Table 1 the results of all analysis

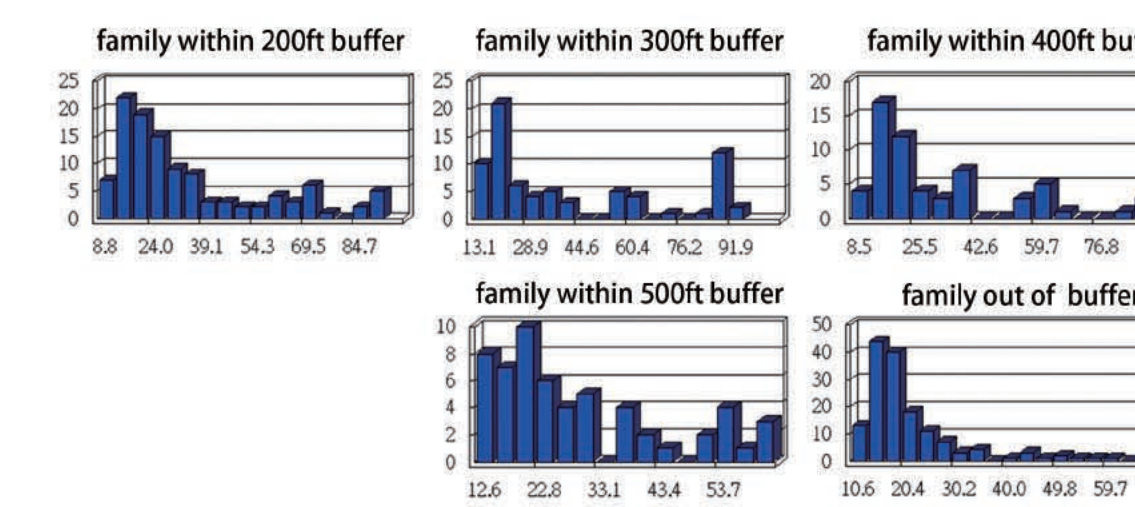
	Family within 200ft buffer	Family within 300ft buffer	Family within 400ft buffer	Family within 500ft buffer	Family out of buffer	Family next to railroad	Family next to greenspace	Family within buffer of park A	Family within buffer of park B	Family within buffer of park C
min	8.763743	13.098001	8.460998	12.563493	10.551218	8.763743	9.526875	9.526875	12.331444	9.806516
max	93.045751	93.481367	91.554908	62.016638	68.542641	65.300777	93.045751	93.045751	39.608505	34.48842
mean	34.814274	42.426161	33.313146	30.113398	22.285928	23.136554	36.098823	54.644384	21.715939	23.737321
SD	22.351486	27.990705	21.937951	14.744455	11.216131	16.583893	22.530873	23.776	6.850423	5.701957

Analysis and Results:

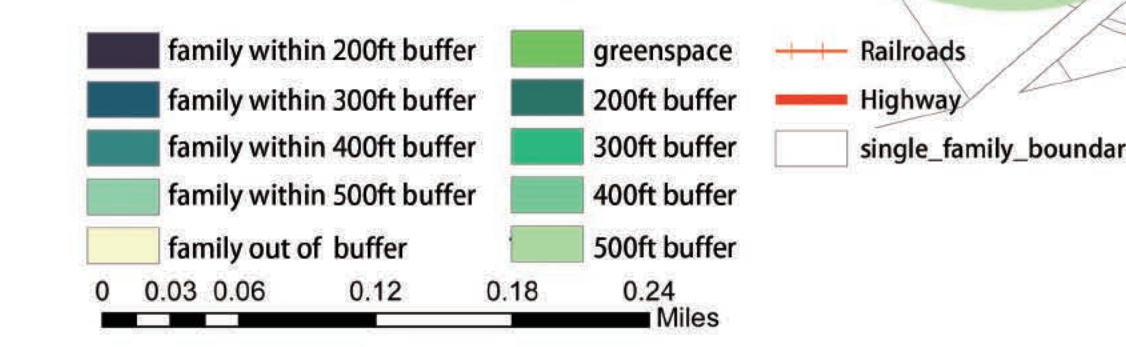
The study area includes three neighborhoods based on geographic condition. Most of them are very similar, even the total value per square foot, but the north west district seems to be built lately and the values are higher, which could be an important concern for future analysis. After looking at the distribution, some weird numbers and property shapes are removed, making values are all above 8, and the higher value houses will be included in each buffer, therefore I think it is fine to keep the data.



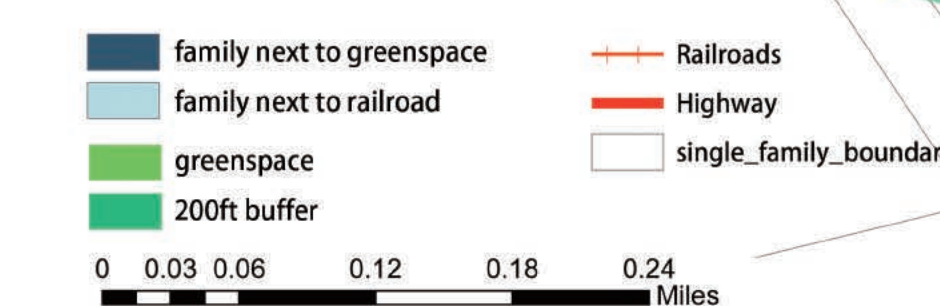
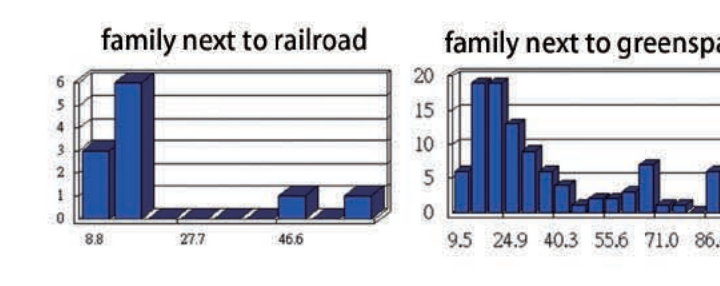
The results show that the value per sq ft have no significant difference within 200 and 300 ft buffer, which is cohesive to the research. But there is an obvious decrease of values when the houses are far away from 300 ft. Hence it is understandable that greenspace could have a positive impact on property value within some distance.



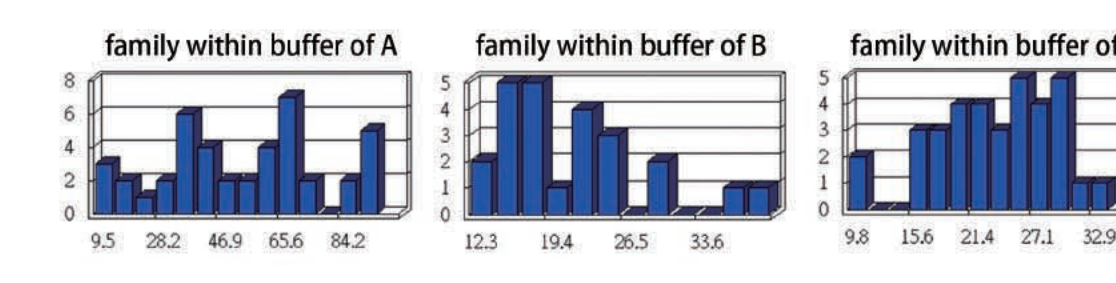
The relationship between the distance of greenspace and value per square foot



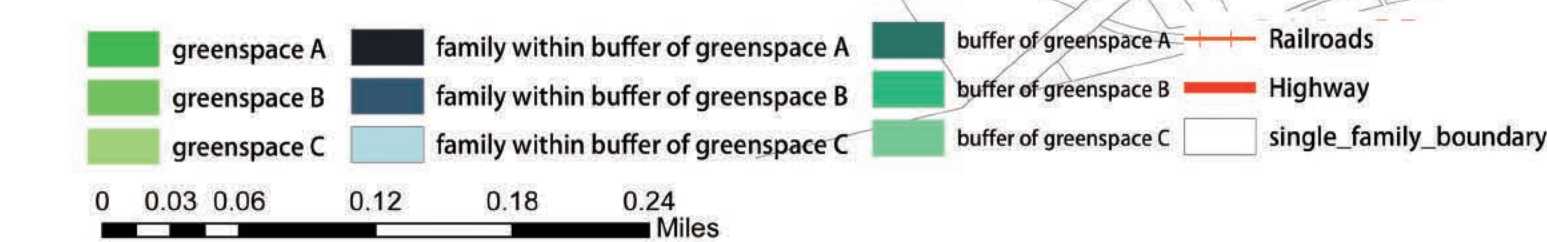
I compare the houses just next to the railroad with others which have greenspace as buffer, both of them are all within 200 ft buffer because greenspaces are closer and may have bigger impact. The results show that the average value of the ones next to the railroad is lower than the ones with greens, which means greens can decrease the negative impact of disliked view.



Comparing the property values within 200 ft buffer of different types of greenspace, it shows that the area with power utility is the least favorite, and has the lowest average value. But the area near woodland are mostly new houses, it is difficult to tell the difference between park A and C.



The influence of greenspace types



Reference:
Cats-Baril, William L., and Linda Gibson, "Evaluating Aesthetics: The Major Issues and a Bibliography," Landscape Journal 5.2 (1986): 93-102. Print.
Gao, Xiaolu, and Yasushi Asami, "Economic Value of Urban Landscapes: GIS Discussion Paper," 2005. Print.
Oh, Kyushik, and Wangkey Lee, "Estimating the Value of Landscape Visibility in Apartment Housing Prices," Journal of Architectural & Planning Research 19.1 (2002): 1-11. Print.
Conway, Delores, et al. "A Spatial Autocorrelation Approach for Examining the Effects of Urban Greenspace on Residential Property Values," Journal of Real Estate Finance and Economics 41.2 (2010): 150-69. Print.