Is Time Actually Money?: An Analysis of Building Value and Age

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Introduction

By 2050, the urban population is expected to gain an additional 2.5 billion people, which will raise the proportion of city dwellers to two-thirds of all people on the planet (United Nations). This is particularly problematic, as new growth is also associated with the demolition of current infrastructure (Thompson et al., 2011). The potential result of such demolition, and rapidly changing building demands, is the loss of culturally significant buildings, which has already begun to occur. Presumably these are number of historic preservation laws at the federal and state level that can protect historic buildings. The most notable laws occur at the local level, which for Boston is the Historic Districts Act of 1960 (HDA). The HDA allows for the creation of historic districts, which ensures that development and façade changes are closely monitored in these areas. Currently there are 23 districts in Boston. However, it’s possible that there should be more. The following spatial analysis not only identifies where new districts should be created, should there need to be more, but (hopefully) also provides an argument that supports the proliferation of historic preservation as a whole.

From past conducted research it was found that older buildings are more subconsciously fascinating to humans than newer buildings and contained a higher number of fixation points (Chojnacki et al., 2014). A higher number of fixation points is associated with increased memorability. Therefore, a building with more fixation points should be more subconsciously fascinating than a building with fewer red regions. However, no research has been conducted to determine if subconscious fixations are associated with building value. Presumably a building that is more memorable would be valued more than one that is less memorable. It is therefore hypothesized that old buildings, which have more fixation points than new buildings, are more expensive than new buildings with fewer fixation points. It is also hypothesized that regardless of building age, buildings with a higher number of fixation points, indicated by the number and regions from the VAS Analysis, will also be more expensive than buildings with fewer fixation points.

Methodology

First, to determine where historic districts should be placed, a Local Moran’s I comparing the ages of buildings was performed. Areas with LL clusters show where newer development has occurred. Areas with HH clusters indicate an area with a high concentration of older buildings, and thus an area that would require a historic district designation. A map showing the clustering of building age by can be found to the left and a map of the current historic districts can be used to the right.

The Local Moran’s I analysis provides another function as well. It allows researchers to infer a causal relationship between building age and price per square foot. By placing the two Local Moran’s I maps directly next to each other, researchers can casually infer if older buildings also have a higher price per square foot. As previously mentioned historic buildings are hypothesized to be valued higher than modern buildings. If the hypothesis holds the two maps should look similar. HH regions on the “Clustering by Building Age” map should also match the HH clusters on the “Clustering by Price per Square Foot”, which indicates buildings that have a high dollar per square foot value. L-L’s, H-L’s and L-H’s should also identify as well.

The second set of maps (shown above) directly compares red regions to building value. Prior conducted research has resulted in the evaluation of 19 different buildings shown by the blue points in the first distribution maps. Each building has a number of fixation points associated with it. These points were spatially joined to their respective parcels which were used to derive mean location and 1 standard deviation ellipsoid weighted by price per square foot, age, and fixation points. Each map shows a comparison of different weights. The first map shows how price affects the mean location sans any weighting. The second and third map compare mean location weighted by fixation points and building age to dollar per square foot respectively. These maps should not only show how these factors influence the average location, but also whether fixation points potentially factors into building price.

Results

From the Local Moran’s I of building age it is seen that the HH clusters are covered by the historic districts, showing that Boston has successfully addressed the building age that are oldest. The most obvious HH districts shown in the building age map appear near Beacon Hill, the Back Bay and Bay Village. These locations all have historic districts. The historic districts map even covers places unidentifed as having old buildings. These locations all have historic districts. The historic districts map even covers places unidentifed as having old buildings. The historic districts map even covers places unidentifed as having old buildings. These locations all have historic districts. The historic districts map even covers places unidentifed as having old buildings. These locations all have historic districts. The historic districts map even covers places unidentifed as having old buildings. These locations all have historic districts. 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