Transportation Accessibility, Housing Investments, and Housing Prices: Application of Hedonic Price Model in Des Moines, Iowa

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Affordable housing provision has been a challenge in the United States over the past years. As housing prices increase, a high number of people cannot afford to have their housing, and most residents can only afford to live in apartments in rental areas. The percentage of Americans who rent their houses was 31.2% in 2006, which increased to 36.6% in 2016 (U.S. Census Bureau, 2017). This problem becomes more substantial for low-income people, who cannot afford to live near their workplace. Due to this spatial mismatch, these low-income people are forced to commute longer to reach their workplaces every morning in the city of Des Moines. This highlights the importance of proximity and access to the public transport system in the city.

To help mitigate the housing demand, several non-profit organizations are working to provide affordable housing and keep the prices affordable for the people in need. Previous studies indicate that housing investments have a positive impact on nearby housing prices (Ding, Simons & Baku, 2000; De Sousa, Wu, & Westphal, 2009). This study examined the relationship between the investments by a non-profit organization in housing and housing price in Des Moines, Iowa. The hypotheses for this study were prepared to support these issues. The first hypothesis is that the relationship between the investment and housing price of the adjacent units is positive and geographically limited. The second hypothesis is that the proximity to public transport increases the housing prices.

There have been studies on the relationship between housing investment, transportation, and housing prices and they showed mixed results (Ding, Simons & Baku, 2000; De Sousa, Wu, & Westphal, 2009; Mulley et al., 2016). There is evidence of both positive and negative relationship between housing investment and housing prices. However, very few studies were found to incorporate housing investment, transportation and housing price in the same method. From the literature, the hedonic price model found to be the most suitable method to use to achieve the objective of this study. The housing sales price reported by the Polk County Assessor's Office was collected and used as the dependent variable for the model. The investment information and public transit information were used as independent variables. A buffer distance around the housing sales location was created, and the presence of investment and transit stops within that location was computed. However, housing price also depends on structural characteristics such as building age, number of bedrooms and bathrooms, and neighborhood characteristics such as

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median income, access to parks and schools, among other attributes. These were also incorporated in the model. Two different models were constructed for 2000 and 2018, one for before the investment and one after the investment took place.

The findings from this study indicate that there is a significant relationship between housing prices, investments in new affordable housing unit development and transit access. The results from the model indicated that housing prices had a significant negative relationship with the presence of new investment in the defined buffer distance — the presence of investment results in the decrease in housing prices. The models indicated an increasing rate of price drop with the increasing distance between the housing unit and new investment. Mixed output was found in case of transit access. The model indicated that the relationship between housing price and transit proximity is positive for closer distance in 2018, whereas it did not show any such evidence for 2000. This relationship differs from the previous studies as the context plays a role in housing prices. In a city where public transit is not the most efficient, and people prefer to live on their own houses, investment and transit access is not the most significant divided of the housing prices. Therefore, this study can be a model for these car-driven cities and also help incorporate multiple different attributes in a multiple regression model in future studies in planning.

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