

## **Abstract**

Cities throughout the country are constantly striving to improve their perceived image. Whether it is requiring lush landscaping in commercial developments, or simply making sure that the trim on a house is properly painted, cities are constantly struggling to get citizens to comply with municipal codes. Such is the case in the City of Victorville, CA, where economic recovery has been slow following the 2008 housing market crash, leaving poorly maintained properties in its wake. Presently, Victorville's code enforcement staff is doing a proactive enforcement survey of all single-family homes in the city in an effort to "clean up" these properties. However, the survey is inefficient and is taking up a good amount of officer time, leaving commercial and industrial areas of the city neglected. This project was able to predict which houses in Victorville are likely to have a code enforcement violation that requires action from staff in order to better allocate resources to areas that require more attention and pull resources from areas that do not require attention. The primary question here is what property attributes can be used to predict the occurrence of a code enforcement violation? Several have been selected, including property value, length of ownership, and presence of a previous violation. A binary logistic regression analysis was run on three areas of the city containing approximately 2,200 homes that have already been surveyed in order to train a model for predicting the remaining 29,000 homes. Geographically weighted logistic regression was then employed to factor in spatial variation in the relationships between the response variable and the explanatory variables. The success of this model will make Victorville's code enforcement more efficient, and it is a model that any city can employ to make its own code enforcement departments more effective.