**Measuring the impact of crime on house prices**

**ALLEN K. LYNCH\* and DAVID W. RASMUSSEN (2001)**

The first research estimates the cost of crime was conducted by Thaler (1978). The finding was that the average property crime lowered the house price by approximately $1930 in 1995 prices. Hellman and Naroff (1979) and Rizzo (1979) confirmed that crime substantially affects on house values. In 1990, Cohen suggested using the cost of specific crimes rather than index crime data to estimate a willingness-to-pay for reduced crime with hedonic model. Cohen et al. (1995) proposed cost of crime estimates which can be used to evaluate the seriousness of a crime.

The research explained that the Offences reported to the policed which measure the crime across jurisdiction did not offer an accurate assessment of differences in public safety between places or time period. The problem was that even the crime rates are the same but the place where there is more serious crime are less safe than those other then arguably public safety has declined. Therefore, It would be desirable to have a system of weights to measure the relative severity of crimes which could be used to compare different distribution of offenses.

Lynch and Rasmussen (2001) compared three alternative estimates of the cost of various crimes in 1993 dollars: NCVS, Philips and Votey (1981), and Cohen et al. (1995). When using the Cohen et al(1995) victim cost estimates to weight the seriousness of crime, the rankings of city by crime rate change dramatically. Cohen et al,’s victim cost estimates heavily laden with pain and suffering cost. Lynch and Rasmussen (2001) decided to adopt Cohen et al. estimates as being plausible and arguably preferred to index crime counts that are unranked as to seriousness. The Cohen estimates of victim cost of crime were used to weight the crimes reported in their analysis of house price in the Jacksonville (FL)

Lynch and Rasmussen (2001) applied regression model to estimate the effect of house and lot characteristics, neighborhood characteristics, and alternative measures of FBI index crimes occurring in the police bear on the house selling price. The estimated model showed that the cost of crime coefficients for the entire sample have a negative sign and moderate magnitude. These coefficients are statistically significant at the 0.10 and 0.01 level. Even though the research suggested that the estimated cost of crime did not have substantial effect on the price of average home, house values declined dramatically in high crime areas. Houses in areas which are in the top two cost of crime deciles are discounted by 39% relative to a comparable house in other areas. This result suggests that there is a discontinuity in the impact of crime on house prices, which is consistent with studies that show contagion and threshold effects in individual decisions that can affect neighborhood quality. Understanding the processes that are responsible for this discontinuity is an important issue for future research, as it makes clear that the impact of crimes on house prices is substantial in the most crime-ridden areas.

The Impact of Community Safety on House Ranking

Zijun Yao, Yanjie Fu*,* Bin Liu, Hui Xiong

Usually, the house values that people use to indicate the quality and benefit of the house based on the house attributes (the total square footage, number of bedrooms, bathrooms, year built, location, etc.). However, from buyers’ and investors’ perspective, there are more factor need to be considered for making an investment decision. One of the factors that often in consideration it the community safety degree of place where the house locates. Therefore, there is a demand for a tool to compare the house values which taking community safety degrees into account.

All the data of houses and crimes are collected from Denver Open Data Catalog. For the housing dataset, authors decided to only choose single-family detached home which is the major type in US. They selected 3000 houses evenly spread in a major residential region of north Denver which include North Park Hill, South Park Hill, Hale, Montclair, and Hilltop. All the appraised valued was in 2015. For crime data, the authors collected the residential forcible burglaries happened in Denver in five years before the appraisal implemented (2009-2014). For the house profiles, it was the neighborhood data from demographic data of 2010 and 2000 the US census.

This paper focuses on solving two research challenges relate to analyzing the impact of community safety degree on house value ranking. Challenge 1: what crime analysis can be done to generate an in-depth understanding of community safety. In other words, how can we assess the community safety degrees of an area by analyzing historical crime data? Challenge 2: How to systematically model the impacts of community safety on house values without the effects of other aspects, such as neighborhood income level and rating of a nearby school. This means building a model which can separately evaluate the impact of community safety degree on house value.

The authors presented a systematically study on house ranking. For the first challenge, they came up with the extract of community crimes evidence in crime severity and crime temporal correlation. To recognize which crime account to which house they calculated the distance between the house and the location where the crime committed. The crime will be counted to a house if it happens within a specific range from the house. To build the model, they adopted RankLib as baseline algorithm implementation.