

Section 5: Fair Housing Index

Introduction

The Fair Housing Index is a measure developed specifically for Analyses of Impediments to Fair Housing. The index combines the effects of several demographic variables with Home Mortgage Disclosure Act (HMDA) data and maps the results by census tract. The map provides a general indication of geographic regions within McLennan County where residents may experience some level of housing discrimination or have problems finding affordable, appropriate housing.

Methodology

Data for ten variables were gathered, by census tract, for analysis. These ten variables were: percent minority, percent female-headed households with children, median housing value, median contract rent, percent of the housing stock constructed prior to 1960, median household income, percent of the population with less than a high school degree, percent of the workforce unemployed, percent using public transportation to go to and from work, and the ratio of loan denials to loan originations for 1997 through 2005 from the Home Mortgage Disclosure Act (HMDA) report published by the Federal Financial Institutions Examination Council. With the exception of the HMDA data, all data were found in the 2000 U.S. Census of Population and Housing. Each variable contained data for every census tract in the county.

When the database was complete, Pearson correlation coefficients were calculated to assure that all variables displayed a high relationship to each other. It is important, in this type of analysis, that the variables selected are measuring similar aspects of the population. The results of the calculations showed that all variables displayed moderate to high degrees of correlation with other variables in the model, ranging up to 0.9146.

Once the relationship of the variables was established, each variable was standardized. This involves calculating a Z-score for each record by variable. For instance, for the variable percent minority, a mean and standard deviation were calculated. The mean for the variable was subtracted from data for each census tract and divided by the standard deviation. The result was a value representing the distance that the data point lay from the mean of the variable, reported in

number of standard deviations. This process allows all variables to be reported in the same units (standard deviations from the mean) and, thus, allows for mathematical manipulations using the variables.

When all variables were standardized, the data for each census tract were summed with negative or positive values given to each variable to assure that effects were being combined. For instance, in a fair housing environment, high minority concentrations raise suspicions that there may be problems in the area. Therefore, the percent minority variable would be given a negative value. Conversely, one would think that in areas of high housing values, the current residents are not having problems with fair housing choice. Median housing value, therefore, would be assigned a positive value. Each variable was considered in this light and assigned an appropriate sign, thus combining effects. This new variable, the total for each census tract, was then standardized as described for the original ten variables above.

The standardized form of the total variable provides a means of identifying individual census tracts where fair housing choice is at high risk due to demographic factors most often associated with housing discrimination. With the data presented in standardized form, the results can be compared to the standard normal distribution, represented by a bell curve with a mean of 0 and a standard deviation of 1. The analysis shows high risk areas as those census tracts with standard scores below -2.00 . Scores between -1.99 and -1 are designated as moderate risk areas. Scores between -0.99 and 0 are reported as low risk and above 0 very low risk areas. The results are summarized on Map 5.1, on page 90.

It should be emphasized that the data used to perform this analysis do not directly report fair housing violations. The data were utilized in order to measure potential problems based on concentrations of demographic groups who most often experience restrictions to fair housing choice. Areas identified as having high risk are those where there is a high concentration of minorities, female-headed households, unemployment, high school dropouts, low property values, and, most likely, are areas where a large proportion of loans (conventional home mortgages, FHA or VA home mortgages, refinance, or home improvement) have been denied.

Findings

Looking first at the correlation table (Table 5.1), several high correlations are worth noting. The loan origination/denial ratio has a relatively high correlation to percent minority (0.7704). This means that in areas with high concentrations of minorities, the loan origination rate is very low.

Not surprisingly, the percentage not graduating from high school has a strong negative correlation to median household income (-0.8003), median rental value (-0.7786) and median house value (-0.7354). Non-high school graduates are also highly correlated with percent minority (0.8567) and percent unemployed (0.8114).

As indicated on Map 5.1, the census tracts designated as having high risk of fair housing related issues are concentrated in the North Waco area and the eastern census tracts of the City of Waco. The East Waco area falls into the moderate risk category and most of the eastern and central census tracts fall into low risk category.

The areas of greatest concern contain the oldest housing stock (which is probably in poor condition), with low housing values and rents, and are primarily occupied by minority households (which are often headed by females with children). There is a higher than average unemployment rate and lower than average level of educational attainment. While not in the model, crime rates are probably higher, further depressing housing values and increasing insurance costs.

Included following the map is the correlation table (Table 5.1). MedValue is the median home value according to the 2000 census. MedRent is the median contract rent. XMinority is the percent minority. XFemHH is the percent female-headed household. XPre60 is the percent of housing built prior to 1960. MedHHI is the median household income. XLessHS is the percent of the population 25 years of age and older that has less than a high school degree. XUnemp is the unemployment rate for the population aged 16 and older considered being in the labor force. XPubTrans is the percent utilizing public transportation to get to and from work. TOTRAT is the ratio of denials to originations from the HMDA data from 1997 to 2005.

Map 5.1: Fair Housing Index

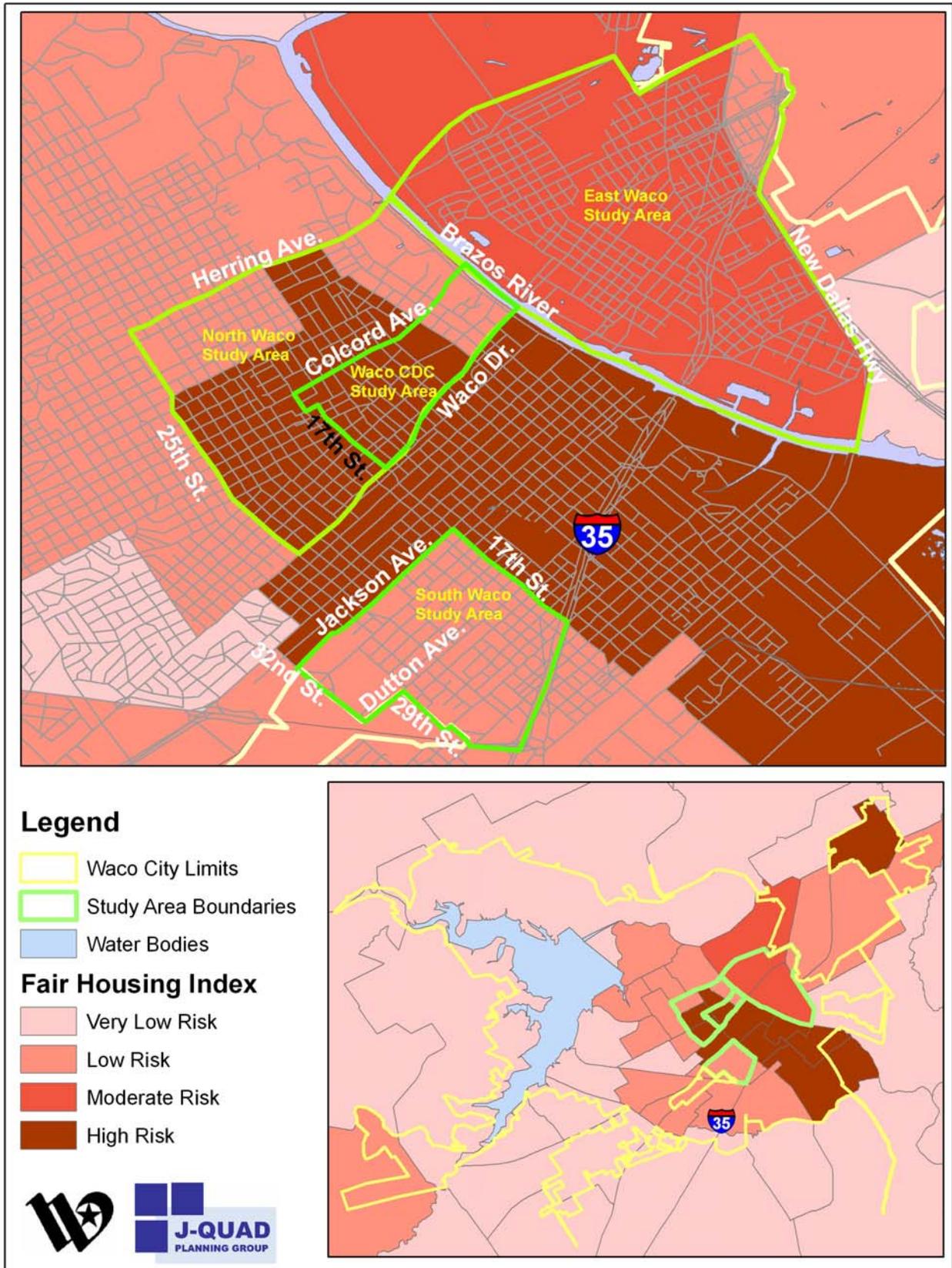


Table 5.1

Correlation Table of Index Variables

	AllRat	XPubTrans	XLessHS	XUnemp	MedHHI	XPre60	MedRent	MedValue	XMinority	XFemHH
AllRat	1.0000									
XPubTrans	0.7644	1.0000								
XLessHS	0.7666	0.4141	1.0000							
XUnemp	0.7481	0.7437	0.8114	1.0000						
MedHHI	-0.6863	-0.5797	-0.8003	-0.7347	1.0000					
XPre60	0.3806	0.4557	0.4093	0.4683	-0.4399	1.0000				
MedRent	-0.5749	-0.5844	-0.7786	-0.6487	0.7106	-0.3459	1.0000			
MedValue	-0.6712	-0.4545	-0.7354	-0.5969	0.9146	-0.3184	0.5664	1.0000		
XMinority	0.7704	0.3021	0.8567	0.8300	-0.7806	0.3889	-0.6332	-0.6802	1.0000	
XFemHH	0.5932	0.5876	0.6892	0.6514	-0.6872	0.3163	-0.4988	-0.5585	0.7791	1.0000

Variable	Definition
XFemHH	% Female Headed Households, 2000
XMinority	% Minority, 2000
MedValue	Median Home Value, 2000
MedRent	Median Contract Rent, 2000
XPre60	% of Housing Built Prior to 1960, 2000
MedHHI	Median Household Income, 2000
XLessHS	% Less than High School Degree, 2000
XUnemp	% Unemployed, 2000
XPubTrans	% Taking Public Transportation to Work, 2000
AllRat	Ratio of Originations to Denials, All Loan Types, 1997 - 2005