THAI and FTHAI Methodology

The Texas Housing Affordability Index (THAI) reflects the relationship between the median family income in a locale and the computed amount required to purchase a median-priced home. The required income is derived from the current mortgage interest rate, the down payment, and the lender's required mortgage debt-to-income ratio, or qualifying ratio. The qualifying ratio is a measure of the monthly mortgage payment to the borrower's gross monthly income. For example, a qualifying ratio of 25 percent means the monthly mortgage payment (principal and interest) cannot exceed 25 percent of the borrower's gross monthly income.

A higher THAI indicates relatively greater affordability. A ratio of 1.00 means that the median family income (MFI) is exactly sufficient to purchase the median-priced home. A THAI above 1.00 means the MFI exceeds the required income to purchase a median-priced home. Conversely, a THAI below 1.00 indicates the MFI is not sufficient to purchase the median-priced home.

For example, a THAI of 1.10 can be interpreted to mean that the MFI is 10 percent more than the required income to purchase the median-priced home. A THAI of 0.90 can be interpreted to mean that the MFI is 10 percent less than the required income to purchase the median-priced home. An increase in the THAI indicates a family is better able to afford the median-priced home.

The Real Estate Center computes the indexes for 45 geographies: Texas, 24 Metropolitan Statistical Areas (MSAs), two Metropolitan Divisions, and 18 counties (see Table 1).

Table 1. Texas Housing Affordability Geographies

Metropolitan Statistical Areas	Metropolitan Divisions	Individual Counties
Abilene	Dallas-Plano-Irving	Anderson County
Amarillo	Fort Worth-Arlington	Angelina County
Austin-Round Rock		Bexar County
Beaumont-Port Arthur		Brazoria County
Brownsville-Harlingen		Collin County
College Station-Bryan		Dallas County
Corpus Christi		Denton County
El Paso		El Paso County
Houston-The Woodlands-Sugar Land		Fort Bend County
Killeen-Temple		Galveston County
Laredo		Harris County
Longview		Hays County
Lubbock		Kerr County
McAllen-Edinburg-Mission		Lamar County
Midland		Montgomery County
Odessa		Nacogdoches County
San Angelo		Tarrant County
San Antonio-New Braunfels		Travis County
Sherman-Denison		
Texarkana		
Tyler		
Victoria		
Waco		
Wichita Falls		

Source: Real Estate Center at Texas A&M University

The Texas Housing Affordability Index (THAI) and First-Time Homebuyers Housing Affordability Index (FTHAI) use the quarterly median price for homes (both new and existing) sold through Multiple Listing Services in Texas to calculate the required monthly mortgage payment. As of first quarter 2019, the indexes use interest rate data from CoreLogic (see “Recent Change to Interest Rate Data in Indexes” for a detailed discussion). MFI figures were obtained from the Department of Housing and Urban Development and the Federal Financial Institutions Examination Council.

The equation to calculate both the THAI and FTHAI is:

Index = median family income / required income to qualify for a mortgage

Where required income= (required monthly mortgage payment x 12) / qualifying ratio

The underlying assumptions used to calculate the FTHAI differ slightly from those used to calculate the THAI. The first-time buyer home price was assumed to be 70 percent of the overall median home price. The required monthly mortgage payment is based on a 90 percent loan-to-value mortgage using the effective interest rate for the particular geography under consideration. One-half of a percentage point was added to the effective interest rate. The increase in the borrowing rate accounts for private mortgage insurance (required by the lender with a down payment of less than 20 percent) as well as the higher borrowing costs associated with a higher LTV. The MFI for first-time homebuyers is assumed to be 65 percent of the overall MFI.

Individuals in multiple professions—from real estate agents and developers to urban planners and governmental officials—can use the THAI and FTHAI in a myriad of ways, including to:

- assess housing affordability for a particular geography within a single point in time or track changes in affordability within that geography over time,
- compare affordability between different geographies (whether for a single point in time or over an extended period), and
- compare affordability for first-time homebuyers to that of all homebuyers.

Recent Change to Interest Rate Data in Indexes

The Center recently revised both indexes to include a different source of mortgage interest rate data. Previously, data for both indexes were derived from the monthly interest rate survey produced by the Federal Housing Finance Agency (FHFA). However, the FHFA published mortgage data for only three geographies in Texas (Dallas, Houston, and San Antonio) on a quarterly basis. Interest rates for the remaining geographies were based on their proximity to one of the three MSAs. In May 2019, this survey was discontinued “due to dwindling participation by financial institutions."

As of first quarter 2019, the Center uses mortgage interest data provided by CoreLogic. The annual indexes published through 2018 will continue to reflect the FHFA interest rate data. A key advantage to using the CoreLogic data is that it publishes quarterly interest rate data for all

45 geographies included in the indexes, while the FHFA only published data for the major MSAs.

Mortgage rates in the original FHFA dataset included any discount points, origination fees, and other up-front costs such as mortgage insurance premiums, producing an “effective" rate. Interest rates used in the revised indexes from CoreLogic reflect a nominal (contract) mortgage interest rate that does not consider these factors. Overall, changing from the FHFA effective rate to CoreLogic's contract rate had little impact on the indexes previously reported.