

A Study of Homesteaded Single-Family Homes Not Compliant with 2001 Florida Building Code.

Michael Fazio and Leigh Jeudevine

UWF GeoData Center Department of Earth and Environmental Science

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Contact Information:

11000 University Pkwy Building 13, Room 324 Pensacola, FL 32514 Phone: (850) 474-2648



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Commissioned by the Florida Division of Emergency Management (FDEM), this study aims to quantify the number of potentially "at risk" homes in the state of Florida in regards to the 2001 Florida Building Code (FBC). In this study, we assume a home is "at risk" if the effective build date is before the year 2002.

Using tax roll and parcel data downloaded from the Florida Department of Revenue, we were able to estimate the number of parcels per wind-borne debris region, per county, for all counties within the state of Florida. There are a few assumptions that were made for this study 1) If the parcel had a Just Value – Homestead Value greater than 0, then the property was likely a homestead and 2) If the parcel had an effective build date that was before the year 2002, then the property was likely out of code.

Our estimates reveal there are 2,523,335 homes built before the year 2002 and thus may not be in accordance with the 2001 FBC. According to the U.S. Census, Florida had an estimated total population of 19,934,451 in 2016^[3]. Suggesting that overall 1 in 8 residents could live in an at-risk home.

3 INTRODUCTION

Florida's Division of Emergency Management is charged with planning for and responding to both manmade and natural disasters. In order to accomplish that mission, FDEM must regularly identify potential vulnerabilities that could put Florida's citizens at risk. Making their mission more critical, Florida is particularly vulnerable to natural disasters such as those caused by hurricanes. According to a report by the National Weather Service, the state of Florida's shorelines have experienced nearly half (110) of the total US landfalling hurricanes (273) between the years of 1851-2004.^[1] The extreme likelihood of land falling hurricanes introduces the need to maintain the safest building construction standards. To help inform those standards, the state is divided into different regions aptly named "windborne debris" regions (WBDRs). WBDRs are determined by the Florida Department of Community Affairs and are regions that define the minimum wind load (in mph) a building must be able to withstand at 33 feet above ground level for sustained amounts of time, such as during hurricanes and severe storms.^[2]

In order to estimate the number of potentially "at risk" homes, we used a Geographic Information System to perform a state and county level analysis on the number of single-family residential homesteads that were built before 2002. To accomplish this goal, we used 2017 tax roll data from the Florida Department of Revenue, state level parcel data also provided from the Florida Department of Revenue, and a geo-referenced map from the 2017 Florida Building Code (See Figure 1609 A, 2017 FBC Code, Chapter 16). Using these data sources in conjunction with frequently used GIS methods, we were able to obtain parcel estimates for each WBDR in each county for the entire state. However, using this data also introduces many limitations that must be considered when interpreting the results from this analysis. Such limitations can be found below in section 5. The study was completed in three different sections. First we obtained and processed the data to prepare for the analysis before creating a shareable geodatabase that was provided for internal FDEM use. Second, we created a spatial model to perform the analysis, the output of this model provided the number of parcels per WBDR per county. Finally, we mapped the parcels to create visual representations of the model output. This report is a collection of all the information in a county-by-county basis, and a statewide summary.

4 LIMITATIONS AND COMMENTS

There were many limitations that had to be considered when starting this study. 1) Whether or not the limited parcel data available was able to represent the criteria that was needed. 2) Whether or not the statewide wind-borne debris region map found in the 2017 FBC was an accurate representation of county level WBDRs. 3) The entire state of Florida adopted the building codes at the same time.

1) With the limited amount of parcel data available, we had to make the following assumptions:

a) If a parcel had an "effective build year" before the 2002, then the home was likely not compliant with 2001 FBC.

b) If the parcel had any value greater than zero in the "Just Value – Homestead Property" field, then the parcel must be homesteaded.

c) If the parcel met all the criteria then the parcel was assumed to be a homesteaded single-family home that was not within 2001 FBC

2) We recognize that the statewide WBDR map (Figure 2) is not representative of the individual county level WBDRs. Furthermore, many counties have more strict WBDR guidelines than other counties making a consecutive report summary would not have been feasible. The purpose of this report is to provide an estimat3e that will highlight communities that are potentially at higher risk than other communities.

3) Finally, we understand that not all of Florida was required to meet the same WBDR requirements. For instance, until 2007 the Florida Panhandle was exempt from many of the building codes in which the rest of Florida had to comply.^[4] This could suggest skewedness in our analysis results, because for the Panhandle region, many homes may not have been required to meet the same safety standards as those in the southern areas of Florida.

5.1 SHAREABLE GEODATABASE

2017 county tax roll data and parcel shapefiles were obtained for each county from the Florida Department of Revenue. Tax roll data was imported into the R Studio software platform on a county-by-county basis and run through a series of set criteria to create a subset of the original data set. The following criteria were used to select homesteaded single-family residences built before 2002:

- Department of Revenue Land Use Code = 001
- Effective Year Built < 2002
- Just Value Homestead Property > 0

In using this method, we made two assumptions. First, if the effective year built is less than 2002 then the home is likely not within compliance of the 2001 building code. Second, if the parcel had any value in the "Just Value - Homestead Property" field greater than zero, then the parcel must be a homestead, because only homesteaded houses can have a homestead value. After sub-setting the data, the resulting tables were exported as a database file (.dbf) in preparation for joining to parcel shapefiles.

Next, a join process was made using ArcGIS Model Builder. In the model, the data subsets were joined to parcel shapefiles using the Parcel ID number, where only matching records were kept (Figure 1). Finally, all the feature classes in the geodatabase were projected to the NAD 1983 (2011) Florida GDL Albers (Meters) Projection. This projection was chosen because of this projection's ability to encompass the entire state, where other coordinate systems tend to break the state in to different regions. To ensure accuracy, percent error was calculated for each county.

For any county that had an error greater than 1.0%, the data was re-inspected to ensure there were no duplicate records or processing mistakes. Table 1 has been included to provide detailed record of % Error for each county. Only two counties continue to have greater than 1.0% error, Franklin County and Liberty County, with percent errors of 1.21% and 1.12%, respectively. These errors are likely due to the low amount of parcels used in each county leading the percent error to be exaggerated.



Figure 1: ArcGIS Model Used to Join Parcel Data to Parcel Shapes

5.2 GEO-REFERENCING 2017 WIND-BORNE DEBRIS REGIONS MAP

The Florida WBDRs shapefile was created by geo-referencing the WBDR Map for Category II Buildings as outlined by the 2017 Florida Building Code (Figure 1609A, 2017 FBC Code, Chapter 16; Figure 2a). Using a Florida county boundaries shapefile, points on the image were lined up with real world known locations, mainly using county borders as control points. Once the image was geo-referenced to the proper spatial orientation, the image was exported as a raster, and subsequently used to delineate the different WBDRs. By creating a new feature class and tracing over the geo-referenced WBDR map, we could adequately recreate the WBDR map in shapefile format (Figure 2b).

Finally, the geo-referenced image and WBDR shapefile were projected to NAD 1983 (2011) Florida GDL Albers (Meters) Projection in order to be consistent with the rest of the feature classes in the geodatabase. Again, this projection was chosen because a single projection scheme can encompass the entire state, where other coordinate systems tend to break the state in to different regions.



Figure 1609A Wind-Borne Debris Region, Category II and III Buildings and Structures except health care facilities

Figure 2a: Image used to geo-reference WBDRs



Figure 1689A Wind-Borne Debnis Region, Category II and III buildings and Structures except health care facilities

Figure 2b: WBDR Lines (Orange) Used in Analysis.

5.3 COUNTY PARCEL COUNT BY WBDRS ANALYSIS

To get the number of parcels per WBDRs per county, we first had to identify the WBDR boundary containing each parcel. The "Spatial Join" technique overlays two different layers and records which features fall within another specified feature in the overlapping layers. As outlined in Figure 3, we iterated through each feature class in the county parcel geodatabase, and used a spatial join to obtain the WBDR for each parcel. The output is another feature class that contains each parcel, along with a new field that has the WBDR "Id" for each parcel. The next step is to summarize the newly obtained information in a format that is easy to interpret. To accomplish this, we ran summary statistics for each county that obtains the number of parcels, per each individual WBDR "id" per county. Table 2 summarizes the number of parcels in each WBDR in each county.

5.4 STATEWIDE PARCEL COUNT BY WBDR ANALYSIS

There were two objectives when creating an entire statewide data table 1) to understand the total number of parcels that meet the given criteria per county, and 2) to understand the total number of parcels per WBDR.

To obtain the number of parcels per county, we ran Summary Statistics on the merged county tables using the county "Name" field as a constraint, and obtained the sum of all parcels in each WBDR. The results can be found in Table 2. In order to understand the total number of parcels are in each WBDR throughout the state, we ran a similar function as the one above. However, this time we used the WBDR "Id" field as a constraint, which provides the total number of counties in that fall within that WBDR, and the total parcels that are within that WBDR as seen within Table 3.



Figure 3: Spatial Analysis Model Used to Obtain Parcel per WBDR count



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Florida has an estimated total population of 19,934,451 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 2,523,335 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that overall, 1 in 8 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total Count	68,395	273,481	667,265	474,334	252,437	774,455	6,103	6,865

Over the course of the analysis, these values were achieved with an average error of 0.18% across all counties. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.



State Distribution by Year Built



8 COUNTY BREAKDOWN

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8.1 ALACHUA COUNTY, FLORIDA

Alachua County has an estimated total population of 256,581 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 32,797 single-family homes that were built before the year 2002, and were considered a homesteaded property. This suggests that 1 in 8 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	32797	0	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.01%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.2 BAKER COUNTY, FLORIDA

Baker County has an estimated total population of 27,312 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 2,203 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 12 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	2190	13	0	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.05%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.3 BAY COUNTY, FLORIDA

Bay County has an estimated total population of 178,361 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 25,286 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 7 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	430	24856	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.93%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







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8.4 BRADFORD COUNTY, FLORIDA

Bradford County has an estimated total population of 26,919 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 3,326 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 8 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	3326	0	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.48%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.5 BREVARD COUNTY, FLORIDA

Brevard County has an estimated total population of 560,683 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 60,695 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 9 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	37373	23322	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.04%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.6 BROWARD COUNTY, FLORIDA

Broward County has an estimated total population of 1,863,780 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 254,339 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 7 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	0	0	254339	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.16%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.









8.7 CALHOUN COUNTY, FLORIDA

Calhoun County has an estimated total population of 14,550 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 1,553 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 9 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	6	1547	0	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.06%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.8 CHARLOTTE COUNTY, FLORIDA

Charlotte County has an estimated total population of 169,642 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 32,345 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 5 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	11813	20532	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.02%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.9 CITRUS COUNTY, FLORIDA

Citrus County has an estimated total population of 140,453 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 26,963 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 5 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	26963	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.01%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.10 CLAY COUNTY, FLORIDA

Clay County has an estimated total population of 200,346 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 28,829 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 7 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	28829	0	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.09%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.






8.11 COLLIER COUNTY, FLORIDA

Collier County has an estimated total population of 348,236 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 35,743 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 10 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	5	8031	25828	1879	0
Count								







8.12 COLUMBIA COUNTY, FLORIDA

Columbia County has an estimated total population of 68,198 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 6,849 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 10 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	6105	744	0	0	0	0	0	0
Count								







8.13 DESOTO COUNTY, FLORIDA

DeSoto County has an estimated total population of 35,134 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 2,990 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 12 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	2990	0	0	0	0
Count								



County Distribution by Year Built



8.14 DIXIE COUNTY, FLORIDA

Dixie County has an estimated total population of 16,084 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 1,353 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 12 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	1353	0	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.07%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.



County Distribution by Year Built



8.15 DUVAL COUNTY, FLORIDA

Duval County has an estimated total population of 900,890 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 136,415 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 7 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	136415	0	0	0	0	0	0
Count								







8.16 ESCAMBIA COUNTY, FLORIDA

Escambia County has an estimated total population of 309,574 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 53,037 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 6 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	71	3711	49255	0	0	0
Count								









8.17 FLAGLER COUNTY, FLORIDA

Flagler County has an estimated total population of 102,917 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 13,748 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 7 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	141	13607	0	0	0	0	0
Count								







8.18 FRANKLIN COUNTY, FLORIDA

Franklin County has an estimated total population of 11,705 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 1,818 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 6 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	985	833	0	0	0	0	0
Count								



County Distribution by Year Built



8.19 GADSDEN COUNTY, FLORIDA

Gadsden County has an estimated total population of 46,153 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 5,695 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 8 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	5695	0	0	0	0	0	0	0
Count								







8.20 GILCHRIST COUNTY, FLORIDA

Gilchrist County has an estimated total population of 17,033 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 1,164 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 15 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	1164	0	0	0	0	0	0
Count								







8.21 GLADES COUNTY, FLORIDA

Glades County has an estimated total population of 13,420 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 702 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 19 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	702	0	0	0	0
Count								







8.22 GULF COUNTY, FLORIDA

Gulf County has an estimated total population of 15,851 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 1,934 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 8 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	653	1281	0	0	0	0	0
Count								







8.23 HAMILTON COUNTY, FLORIDA

Hamilton County has an estimated total population of 14,362 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 1,037 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 14 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	1037	0	0	0	0	0	0	0
Count								



County Distribution by Year Built



8.24 HARDEE COUNTY, FLORIDA

Hardee County has an estimated total population of 27,302 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 2,345 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 12 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	2282	63	0	0	0	0
Count								







8.25 HENDRY COUNTY, FLORIDA

Hendry County has an estimated total population of 38,376 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 2,988 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 13 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	2986	2	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.



County Distribution by Year Built



8.26 HERNANDO COUNTY, FLORIDA

Hernando County has an estimated total population of 176,797 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 30,067 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 6 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	30047	20	0	0	0	0
Count								







8.27 HIGHLANDS COUNTY, FLORIDA

Highlands County has an estimated total population of 98,862 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 16,613 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 6 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	16525	88	0	0	0	0
Count								



County Distribution by Year Built



8.28 HILLSBOROUGH COUNTY, FLORIDA

Hillsborough County has an estimated total population of 1,323,059 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 117,083 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 11 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	36611	80472	0	0	0	0
Count								






8.29 HOLMES COUNTY, FLORIDA

Holmes County has an estimated total population of 19,569 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 2,028 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 10 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	1840	188	0	0	0	0	0
Count								







8.30 INDIAN RIVER COUNTY, FLORIDA

Indian River County has an estimated total population of 145,342 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 22,590 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 10 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	9	22575	6	0	0
Count								







8.31 JACKSON COUNTY, FLORIDA

Jackson County has an estimated total population of 48,721 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 5,817 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 8 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	1635	4182	0	0	0	0	0	0
Count								







8.32 JEFFERSON COUNTY, FLORIDA

Jefferson County has an estimated total population of 14,082 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 1,365 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 10 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	1365	0	0	0	0	0	0	0
Count								







8.33 LAFAYETTE COUNTY, FLORIDA

Lafayette County has an estimated total population of 8,742 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 543 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 16 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	458	85	0	0	0	0	0	0
Count								







8.34 LAKE COUNTY, FLORIDA

Lake County has an estimated total population of 317,586 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 42,709 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 7 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	226	42483	0	0	0	0	0
Count								







8.35 LEE COUNTY, FLORIDA

Lee County has an estimated total population of 680,970 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 79,283 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 9 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	724	75801	2758	0	0
Count								







8.36 LEON COUNTY, FLORIDA

Leon County has an estimated total population of 284,788 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 40,330 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 7 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

	115	120	130	140	150	160	170	180
Total	40330	0	0	0	0	0	0	0
Count								







8.37 LEVY COUNTY, FLORIDA

Levy County has an estimated total population of 39,707 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 3,823 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 10 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	3030	793	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.94%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.



County Distribution by Year Built



8.38 LIBERTY COUNTY, FLORIDA

Liberty County has an estimated total population of 8,285 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 627 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 13 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	103	524	0	0	0	0	0	0
Count								







8.39 MADISON COUNTY, FLORIDA

Madison County has an estimated total population of 18,560 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 1,746 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 11 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	1746	0	0	0	0	0	0	0
Count								







8.40 MANATEE COUNTY, FLORIDA

Manatee County has an estimated total population of 353,411 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 27,420 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 13 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	27420	0	0	0	0
Count								







8.41 MARION COUNTY, FLORIDA

Marion County has an estimated total population of 340,341 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 31,886 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 11 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	13395	18491	0	0	0	0	0
Count								







8.42 MARTIN COUNTY, FLORIDA

Martin County has an estimated total population of 153,592 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 27,425 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 6 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	59	687	26679	0	0
Count								







8.43 MIAMI-DADE COUNTY, FLORIDA

Miami-Dade County has an estimated total population of 2,664,418 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 250,421 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 11 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	0	0	247949	2472	0
Count								







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8.44 MONROE COUNTY, FLORIDA

Monroe County has an estimated total population of 77,150 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 8,620 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 9 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	0	3	0	1752	6865
Count								







8.45 NASSAU COUNTY, FLORIDA

Nassau County has an estimated total population of 77,187 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 9,546 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 8 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	934	8612	0	0	0	0	0	0
Count								









8.46 OKALOOSA COUNTY, FLORIDA

Okaloosa County has an estimated total population of 195,798 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 32,211 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 6 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	6525	25686	0	0	0	0
Count								








8.47 OKEECHOBEE COUNTY, FLORIDA

Okeechobee County has an estimated total population of 39,420 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 3,619 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 11 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	3619	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.08%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.48 ORANGE COUNTY, FLORIDA

Orange County has an estimated total population of 1,256,055 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 144,868 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 9 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	144780	88	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.12%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.49 OSCEOLA COUNTY, FLORIDA

Osceola County has an estimated total population of 311,962 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 30,531 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 10 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	30446	85	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.50 PALM BEACH COUNTY, FLORIDA

Palm Beach County has an estimated total population of 1,398,757 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 201,452 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 7 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	2346	40	199066	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.40%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.51 PASCO COUNTY, FLORIDA

Pasco County has an estimated total population of 488,310 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 66,302 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 7 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	23662	42640	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.03%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.



County Distribution by Year Built



8.52 PINELLAS COUNTY, FLORIDA

Pinellas County has an estimated total population of 939,548 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 165,693 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 6 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	165693	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.



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8.53 POLK COUNTY, FLORIDA

Polk County has an estimated total population of 637,691 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 74,399 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 9 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	74399	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







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8.54 PUTNAM COUNTY, FLORIDA

Putnam County has an estimated total population of 72,304 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 9,134 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 8 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	9134	0	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.13%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.55 SAINT JOHNS COUNTY, FLORIDA

Saint Johns County has an estimated total population of 218,362 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 24,635 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 9 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	18776	5859	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.56 SAINT LUCIE COUNTY, FLORIDA

Saint Lucie County has an estimated total population of 293,136 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 39,982 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 7 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	1	22151	17830	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.08%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.57 SANTA ROSA COUNTY, FLORIDA

Santa Rosa County has an estimated total population of 163,903 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 25,026 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 7 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	306	19533	5187	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.39%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.58 SARASOTA COUNTY, FLORIDA

Sarasota County has an estimated total population of 398,011 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 61,209 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 7 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	0	36358	24851	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.59 SEMINOLE COUNTY, FLORIDA

Seminole County has an estimated total population of 442,905 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 74,266 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	74266	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.02%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.60 SUMTER COUNTY, FLORIDA

Sumter County has an estimated total population of 113,589 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 11,250 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 10 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	0	11250	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.02%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.61 SUWANNEE COUNTY, FLORIDA

Suwannee County has an estimated total population of 43,653 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 3,237 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 13 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	3079	158	0	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.49%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.



County Distribution by Year Built



8.62 TAYLOR COUNTY, FLORIDA

Taylor County has an estimated total population of 22,582 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 2,498 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 9 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	2171	327	0	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.04%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.63 UNION COUNTY, FLORIDA

Union County has an estimated total population of 15,159 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 762 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 20 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	19	743	0	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.39%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.



County Distribution by Year Built



8.64 VOLUSIA COUNTY, FLORIDA

Volusia County has an estimated total population of 510,806 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 84,747 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 6 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	538	75417	8792	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.65 WAKULLA COUNTY, FLORIDA

Wakulla County has an estimated total population of 31,314 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 2,959 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 11 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	1522	1437	0	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.81%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.



County Distribution by Year Built



8.66 WALTON COUNTY, FLORIDA

Walton County has an estimated total population of 61,528 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 6,175 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 10 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	85	5032	1058	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.11%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







8.67 WASHINGTON COUNTY, FLORIDA

Washington County has an estimated total population of 24,627 in 2016^[3]. According the Florida Department of Revenue's 2017 tax roll data, there was a total of 2,284 single-family homes that were built before the year 2002, and were considered a homesteaded property. Suggesting that 1 in 11 residents could live in an at-risk home. The following counts per WBDR were recovered from the analysis:

WBDR	115	120	130	140	150	160	170	180
Total	0	1992	292	0	0	0	0	0
Count								

Over the course of the analysis, these values were achieved with an overall % Error of 0.04%. For a more detailed breakdown of parcel counts throughout the analysis, please refer to Table 1. The histogram below shows the distribution of homes by the year built.







9 CONCLUSIONS

Commissioned by the Florida Division of Emergency Management (FDEM), this study aims to quantify the number of potentially "at risk" homes in the state of Florida in regards to the 2001 Florida Building Code (FBC). In this study, we assume a home is "at risk" if the effective build date is before the year 2002.

Using tax roll and parcel data downloaded from the Florida Department of Revenue, we were able to estimate the number of parcels per wind-borne debris region, per county, for all counties within the state of Florida. There are a few assumptions that were made for this study 1) If the parcel had a Just Value – Homestead Value greater than 0, then the property was likely a homestead and 2) If the parcel had an effective build date that was before the year 2002, then the property was likely out of code.

There were many limitations that had to be considered throughout this analysis: 1) whether or not the limited parcel data available was representative of the structures within it, 2) the fact that the statewide WBDR map (Figure 2) is not representative of the individual county level WBDRs, and 3) The fact that the entire state of Florida did not adopt the building codes at the same time. However, the purpose of this report is to provide an estimated number of "at-risk" homes, and to highlight communities that are potentially at higher risk than other communities within the state. For a more exact result, we recommend a follow-up study that allows for using county level WBDRs that often follow roads or rivers, providing much more discrete boundaries, and removing any uncertainty.

Our estimates reveal there are 2,523,335 homes built before the year 2002 and thus may not be in accordance with the 2001 FBC. With the greatest at-risk counties being located in southeastern Florida. According to the U.S. Census, Florida had an estimated total population of 19,934,451 in 2016^[3]. Suggesting that overall 1 in 8 residents could live in an at-risk home.

10 REFERENCES

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11 TABLES

<u>County</u> <u>Name</u>	<u>Pre-Join</u>	<u>Post-Join</u> (Table)	Difference	<u>% Error (%)</u>	<u>Post-Join</u> (Spatial)	Post-Spatial (% Error)	Overall Error (%)
Alachua	32801	32797	-4.0	0.0	32797	0.00	0.01
Baker	2202	2203	1.0	0.0	2203	0.00	0.05
Вау	25051	25289	238.0	0.9	25286	0.01	0.93
Bradford	3310	3326	16.0	0.4	3326	0.00	0.48
Brevard	60717	60695	-22.0	0.0	60695	0.00	0.04
Broward	25393	25433	408.0	0.1	25433	0.00	0.16
Calhoun	1552	1553	1.0	0.0	1553	0.00	0.06
Charlotte	32338	32345	7.0	0.0	32345	0.00	0.02
Citrus	26961	26963	2.0	0.0	26963	0.00	0.01
Clay	28803	28829	26.0	0.0	28829	0.00	0.09
Collier	35684	35743	59.0	0.1	35743	0.00	0.17
Columbia	6845	6849	4.0	0.0	6849	0.00	0.06
DeSoto	2968	2990	22.0	0.7	2990	0.00	0.74
Dixie	1354	1353	-1.0	0.0	1353	0.00	0.07
Duval	13644	13641	-26.0	0.0	13641	0.00	0.02
Escambia	53049	53037	-12.0	0.0	53037	0.00	0.02
Flagler	13749	13748	-1.0	0.0	13748	0.00	0.01
Franklin	1840	1818	-22.0	1.2	1818	0.00	1.21
Gadsden	5692	5727	35.0	0.6	5695	0.56	0.05
Gilchrist	1164	1164	0.0	0.0	1164	0.00	0.00
Glades	702	702	0.0	0.0	702	0.00	0.00
Gulf	1958	1958	0.0	0.0	1958	0.00	0.00
Hamilton	1039	1037	-2.0	0.1	1037	0.00	0.19
Hardee	2344	2345	1.0	0.0	2345	0.00	0.04
Hendry	2988	2988	0.0	0.0	2988	0.00	0.00
Henrando	30067	30067	0.0	0.0	30067	0.00	0.00
Highlands	16596	16613	17.0	0.1	16613	0.00	0.10
Hillsboroug	11690	11708	177.0	0.1	11708	0.00	0.15
Holmes	2034	2028	-6.0	0.3	2028	0.00	0.30
Indian River	22590	22590	0.0	0.0	22590	0.00	0.00
Jackson	5824	5817	-7.0	0.1	5817	0.00	0.12
Jefferson	1367	1365	-2.0	0.1	1365	0.00	0.15
Lafayeete	543	543	0.0	0.0	543	0.00	0.00
Lake	42437	42709	272.0	0.6	42709	0.00	0.64
Lee	79285	79283	-2.0	0.0	79283	0.00	0.00
Leon	40335	40330	-5.0	0.0	40330	0.00	0.01
Levy	3787	3823	36.0	0.9	3823	0.00	0.94
Liberty	634	627	-7.0	1.1	627	0.00	1.12
Madison	1747	1746	-1.0	0.0	1746	0.00	0.06
Manatee	27284	27420	136.0	0.5	27420	0.00	0.50
Marion	31869	31886	17.0	0.0	31886	0.00	0.05
Martin	27428	27425	-3.0	0.0	27425	0.00	0.01
Miami-Dade	25031	25042	105.0	0.0	25042	0.00	0.04
Monroe	8621	8620	-1.0	0.0	8620	0.00	0.01
Nassau	9544	9546	2.0	0.0	9546	0.00	0.02
Okaloosa	32211	32211	0.0	0.0	32211	0.00	0.00

11.1 TABLE 1 – PERCENT ERROR PER COUNTY

<u>County</u> <u>Name</u>	<u>Pre-Join</u>	<u>Post-Join</u> <u>(Table)</u>	Difference	<u>% Error (%)</u>	<u>Post-Join</u> (Spatial)	<u>Post-Spatial</u> (% Error)	<u>Overall Error</u> (%)
Okeechobe	3622	3622	0.0	0.0	3619	0.08	0.08
Orange	14469	14486	170.0	0.1	14486	0.00	0.12
Osceola	30532	30531	-1.0	0.0	30531	0.00	0.00
Palm_Beach	20065	20145	798.0	0.4	20145	0.00	0.40
Pasco	66285	66302	17.0	0.0	66302	0.00	0.03
Pinellas	16569	16569	-6.0	0.0	16569	0.00	0.00
Polk	74400	74399	-1.0	0.0	74399	0.00	0.00
Putnam	9146	9134	-12.0	0.1	9134	0.00	0.13
St. Johns	24636	24635	-1.0	0.0	24635	0.00	0.00
St. Lucie	39951	39983	32.0	0.0	39982	0.00	0.08
Santa_Rosa	24928	25026	98.0	0.3	25026	0.00	0.39
Sarasota	61209	61209	0.0	0.0	61209	0.00	0.00
Seminole	74252	74266	14.0	0.0	74266	0.00	0.02
Sumter	11252	11250	-2.0	0.0	11250	0.00	0.02
Suwannee	3253	3238	-15.0	0.4	3237	0.03	0.49
Taylor	2497	2498	1.0	0.0	2498	0.00	0.04
Union	759	762	3.0	0.3	762	0.00	0.39
Volusia	84749	84747	-2.0	0.0	84747	0.00	0.00
Wakulla	2935	2959	24.0	0.8	2959	0.00	0.81
Walton	6182	6179	-3.0	0.0	6175	0.06	0.11
Washington	2283	2284	1.0	0.0	2284	0.00	0.04

11.2 TABLE 2 – PARCELS PER WBDR PER COUNTY

NAME	115	120	130	140	150	160	170	180	Total
Alachua	-	32,797	-	-	-	-	-	-	32,797
Baker	2,190	13	-	-	-	-	-	-	2,203
Вау	-	430	24,856	-	-	-	-	-	25,286
Bradford	-	3,326	-	-	-	-	-	-	3,326
Brevard	-	-	-	37,373	23,322	-	-	-	60,695
Broward	-	-	-	-	-	254,339	-	-	254,339
Calhoun	6	1,547	-	-	-	-	-	-	1,553
Charlotte	-	-	-	11,813	20,532	-	-	-	32,345
Citrus	-	-	26,963	-	-	-	-	-	26,963
Clay	-	28,829	-	-	-	-	-	-	28,829
Collier	-	-	-	5	8,031	25,828	1,879	-	35,743
Columbia	6,105	744	-	-	-	-	-	-	6,849
DeSoto	-	-	-	2,990	-	-	-	-	2,990
Dixie	-	1,353	-	-	-	-	-	-	1,353
Duval	-	136,415	-	-	-	-	-	-	136,415
Escambia	-	-	71	3,711	49,255	-	-	-	53,037
Flagler	-	141	13,607	-	-	-	-	-	13,748
Franklin	-	985	833	-	-	-	-	-	1,818
Gadsden	5,695	-	-	-	-	-	-	-	5,695
Gilchrist	-	1,164	-	-	-	-	-	-	1,164
Glades	-	-	-	702	-	-	-	-	702
Gulf	-	653	1,281	-	-	-	-	-	1,934
Hamilton	1,037	-	-	-	-	-	-	-	1,037
Hardee	-	-	2,282	63	-	-	-	-	2,345
Hendry	-	-	-	2,986	2	-	-	-	2,988

NAME	115	120	130	140	150	160	170	180	Total
Hernando	-	-	30,047	20	-	-	-	-	30,067
Highlands	-	-	16,525	88	-	-	-	-	16,613
Hillsborough	-	-	36,611	80,472	-	-	-	-	117,083
Holmes	-	1,840	188	-	-	-	-	-	2,028
Indian River	-	-	-	9	22,575	6	-	-	22,590
Jackson	1,635	4,182	-	-	-	-	-	-	5,817
Jefferson	1,365	-	-	-	-	-	-	-	1,365
Lafayette	458	85	-	-	-	-	-	-	543
Lake	-	226	42,483	-	-	-	-	-	42,709
Lee	-	-	-	724	75,801	2,758	-	-	79,283
Leon	40,330	-	-	-	-	-	-	-	40,330
Levy	-	3,030	793	-	-	-	-	-	3,823
Liberty	103	524	-	-	-	-	-	-	627
Madison	1,746	-	-	-	-	-	-	-	1,746
Manatee	-	-	-	27,420	-	-	-	-	27,420
Marion	-	13,395	18,491	-	-	-	-	-	31,886
Martin	-	-	-	59	687	26,679	-	-	27,425
Miami-Dade	-	-	-	-	-	247,949	2,472	-	250,421
Monroe	-	-	-	-	3	-	1,752	6,865	8,620
Nassau	934	8,612	-	-	-	-	-	-	9,546
Okaloosa	-	-	6,525	25,686	-	-	-	-	32,211
Okeechobee	-	-	-	3,619	-	-	-	-	3,619
Orange	-	-	144,780	88	-	-	-	-	144,868
Osceola	-	-	30,446	85	-	-	-	-	30,531
Palm_Beach	-	-	-	2,346	40	199,066	-	-	201,452
Pasco	-	-	23,662	42,640	-	-	-	-	66,302
Pinellas	-	-	-	165,693	-	-	-	-	165,693
Polk	-	-	74,399	-	-	-	-	-	74,399
Putnam	-	9,134	-	-	-	-	-	-	9,134
Saint Johns	-	18,776	5,859	-	-	-	-	-	24,635
Saint Lucie	-	-	-	1	22,151	17,830	-	-	39,982
Santa Rosa	-	-	306	19,533	5,187	-	-	-	25,026
Sarasota	-	-	-	36,358	24,851	-	-	-	61,209
Seminole	-	-	74,266	-	-	-	-	-	74,266
Sumter	-	-	11,250	-	-	-	-	-	11,250
Suwannee	3,079	158	-	-	-	-	-	-	3,237
Taylor	2,171	327	-	-	-	-	-	-	2,498
Union	19	743	-	-	-	-	-	-	762
Volusia	-	538	75,417	8,792	-	-	-	-	84,747
Wakulla	1,522	1,437	-	-	-	-	-	-	2,959
Walton	-	85	5,032	1,058	-	-	-	-	6,175
Washington	-	1,992	292	-	-	-	-	-	2,284

11.3 TABLE 3 – TOTAL PARCELS PER WBDR

WBDR	Total Counties	Total Parcels
115	16	68395
120	30	273481
130	26	667265
140	27	474334
150	13	252437
160	8	774455
170	3	6103
180	1	6865