

REACH Affordable Housing Inundation Assessment
Collaboration with USF MURP



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Background

Many homes throughout the Tampa Bay region, especially those in low and moderate-income neighborhoods, are at risk from extreme weather, flooding, storm surge and future sea level rise. The region also faces a severe shortage of affordable and attainable housing, and many options such as mobile homes and older structures are not resilient to the increased effects of climate change.

To begin to address these issues, the Tampa Bay Regional Planning Council is leading a new initiative called Resilience and Energy Assessment of Communities and Housing (REACH) and is working with the Florida Housing Coalition, United Way Suncoast, USF Florida Center for Community Design & Research and the UF Shimberg Center for Housing Studies. The local governments are partners in this project and are integrating planning for resilience, neighborhood revitalization and housing strategies, and improving equity.

One of the primary goals is to develop a common framework, metrics, and methods to assess risks to the community and housing. The REACH project is developing three tools: 1) a community vulnerability assessment methodology and user guide; 2) a resilience and housing plan self-assessment checklist; and 3) maps and inundation assessments which integrate data from the TBRPC sea level rise and flood modelling, the housing coastal risk mapper [tool](#) developed by UF Shimberg Center for Housing Studies and social vulnerability sources.

To assess the utility of the maps and data, the REACH project will conduct a proof of concept using TBRPC datasets, new UF housing flood tool and a limited set of social vulnerability data sets. The TBRPC will collaborate with the USF Masters in Urban and Regional Planning faculty and engage students in the Urban Spatial Analysis course taught by Professor Steven Fernandez. The class will conduct geospatial analysis of 10+ local government defined community areas to assess potential flood risks to housing (publicly assisted and unassisted, single and multi-family), and specific vulnerable population segments. Students will create maps and analyze data, prepare brief reports and present their findings to the REACH team and participating local governments. The maps and data will be integrated into one regional map and a report. This information will help local governments and housing agencies to develop strategies to improve community resilience.

Project Schedule:

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The TBRPC will present the project on March 11, 2021. The students will complete the project by April 29th, 2021. Student Presentations can be no later than May 6th. Maps and data will be sent to Professor Fernandez and provided to the TBRPC.

Mapping Details

This section document defines the characteristics, visualization standards and outputs. Each student will complete the following items for one municipality/geographic area.

A: Flood risk /exposure to Affordable Housing

Define percent and total number of housing types at risk to each of the following hazards, using datasets provided by TBRPC:

- a. Category 1 storm surge
- b. Category 3 storm surge
- c. NOAA Intermediate High sea level rise 2070 + King Tide (Shapefile: 2070KNG)

Hurricane evacuation zones (boundary defined on all maps produced).

B: Create the Affordable Housing Baseline

Students will map and quantify the assisted multi-family and unassisted affordable housing stock for a defined area. The project will require multiple data sources based on the 2 different housing stocks.

1. **Multi-family properties** (Assisted and Unassisted) (source: UF tool, DOR or Florida Housing Data Clearinghouse)

Consult the UF Tool to define three categories: year built, construction type and development funding source (assisted). For the year built, the project is using the Florida Building Code updates to define three age categories: pre-1974, 1975-2001 and 2002-present.

- a. Use the UF tool to identify and record the number of assisted multifamily parcels and the total units that fall within Category 1, 3 and 2070 SLR exposure. Data will be collected in the Case Study report, in a table similar to Appendix A.
- b. Record the year built, construction type (Wood and Concrete) and funding source (only for assisted) in the Case Study report, in a table similar to Appendix B.
- c. Cross-check step: Occasionally, assisted housing may not appear in the UF Flood mapping tool because it is owned by a private company. For your assigned area, review the list of Housing Authorities and identify the list of owned properties

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and cross-check with the UF Tool. If absent, go to the Property Assessors list to define. Make a note and provide the data to UF.

2. Single family Homes (unassisted) (source: DOR)

We want to identify single family homes that would be considered affordable, based on each county's average media income, and understand their risk exposure. For this category, data will come from the Department of Revenue. The report for this section should define the housing prices of your selected area (Column K - JV), structure type (Column AU – CONST_CLASS) and the year built (Column AV - EFF_YR_BLT).

- a. Document the range of housing prices for the area (DOR data, value "JV")
 - i. Define # of homes that are below and above \$185,000.
- b. Identify housing age and construction type of homes and record information in Case Study Report.

3. Mobile homes

All mobile homes, despite location, are mandatory evacuation structures. To better assess the risks and potential mitigation strategies, it is important to map the number of mobile home units in addition to mobile home parks.

For this housing type, data will come from the Department of Revenue. Use the DOR code for mobile homes (002) and the code for mobile home parks (028) to assess the number of mobile homes at flood risk. Use the DOR Property Tax User Guide to assist with other data questions. TBRPC will also provide data on mobile home units.

- a. Use DOR data to identify and record the number of mobile home units that fall within Category 1, 3 and 2070 SLR exposure. Data will be collected in the Case Study report, in a table like Appendix A.
- b. Use DOR data to identify and record the number of mobile home parks that fall within Category 1, 3 and 2070 SLR exposure.

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C. Socio-demographic Factors:

The USF class project will create base maps for three indicators using ACS data by block group:

1. **Household income:** Research has shown a strong relationship between individuals' financial resources and their resilience. Low-income households are at greater risk because they tend to live in lower-quality housing, are less likely to have prepared for a disaster, and have fewer resources to support recovery.
2. **Minority status:** Persons who do NOT identify themselves as "white only".
3. **Age (persons 75 and older):** The CDC recommends researchers to use 65 years or older, but for this project 75 and older was chosen to get more specific findings.

REACH background: Public health officials have long used the Social Vulnerability Index [SVI] created by the CDC's Agency for Toxic Substances & Disease Registry's Geospatial Research, Analysis & Services Program [GRASP] to map community vulnerability. The CDC SVI uses 15 Census Bureau variables, including poverty, lack of vehicle access, and crowded housing, and groups them into four related themes. Other vulnerability factors which are correlated to disaster resilience are not included. The USF Florida Center for Community Research and Design in partnership with the USF College of Public Health developed a comprehensive list of 48 indicators to conduct the Hillsborough County Community Vulnerability Study (2018-2020).

The Federal Emergency Management Agency (FEMA) and the Argonne National Laboratory conducted a comprehensive analysis of peer-reviewed research to identify discrete indicators of community resilience used in multiple methodologies. The FEMA analysis identified 20 census and community data-layers, which have been included in the [FEMA Resilience and Analysis Planning Tool \(RAPT\)](#). RAPT is a publicly available GIS tool which supports a combined analysis of Population / Community data, Infrastructure data, and Hazard data. All data is open source, derived from federal sources including the American Community Survey (ACS), NOAA and others. The ACS is produced by the United States Census Bureau and is the premier source for detailed population and housing information.

The Tampa Bay Regional Planning Council REACH Community Vulnerability Assessment methodology recommends the CDC SVI and FEMA RAPT as a first level assessment and encourages additional issues-based analysis using the data sets defined in the USF methodology to address specific resilience and disaster preparedness questions.

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Appendix C: Average Median Income by County and Race

Area Median Income (AMI) Table					
	Black	Latino	White		Median Income (2019)
Citrus County, Florida	\$45,370.00	\$38,723.00	\$44,220.00		\$44,237
Hernando County, Florida	\$42,447.00	\$46,629.00	\$48,819.00		\$48,812
Hillsborough County, Florida	\$42,465.00	\$46,723.00	\$63,437.00		\$58,884
Manatee County, Florida	\$40,777.00	\$45,308.00	\$60,923.00		\$59,009
Pasco County, Florida	\$55,294.00	\$54,607.00	\$52,223.00		\$52,828
Pinellas County, Florida	\$39,080.00	\$46,567.00	\$55,791.00		\$54,090

(U.S. Census Bureau, 2019)

<https://data.census.gov/cedsci/table?text=S1903&g=0500000US12017,12053,12057,12081,12101,12103&tid=ACSST1Y2019.S1903&tp=true&hidePreview=true>

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To Access TBRPC Data Layers:

Data Layers provided by TBRPC, will be found in the SharePoint link [here](#).

1. Use this [link](#) from Florida Dept. of Revenue to obtain Tax Roll data for your selected county to join your parcels
2. Florida Dept. of Revenue - use this [link](#) to obtain Tax Roll data for your selected county (not used for joining)
 - a. Source: Florida Geographic Data Library ([FGDL](#))
3. Parcel/Taxroll User Guide [link](#) .

*data links for Inundation layers is Intermediate High 2020-2070. You will use 2070 SLR and 2070 KNG (SLR + King tides). All model runs referenced to MHHW = high tide