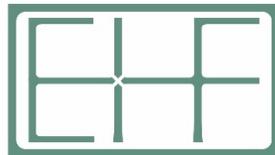
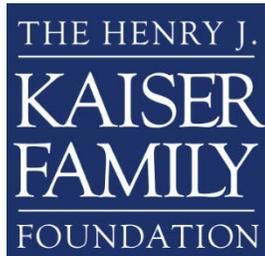




An Early Assessment of the Impact of Hurricane Harvey on the Golden Triangle



EPISCOPAL HEALTH
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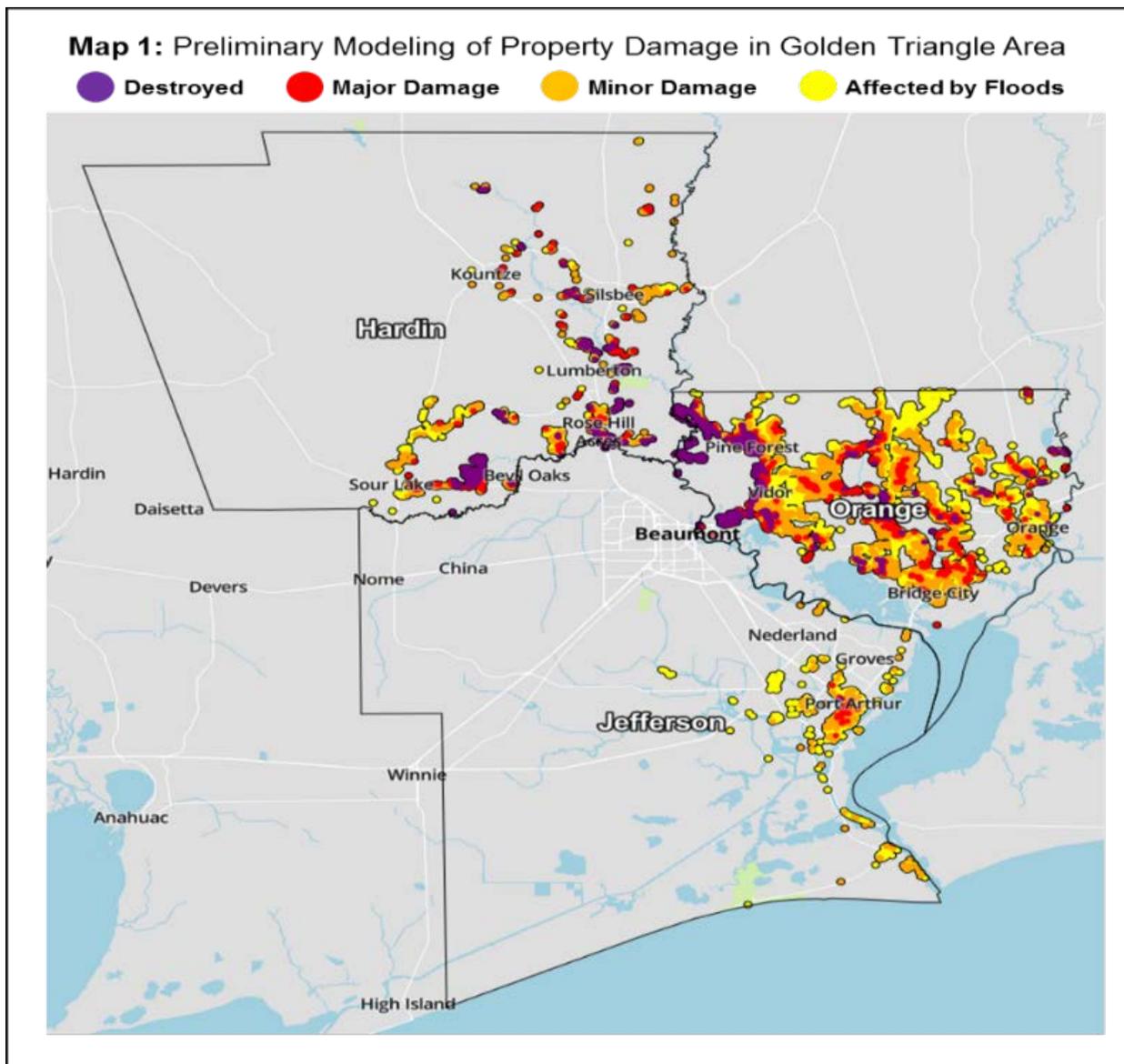
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In late August 2017, Hurricane Harvey pummeled the Texas Gulf Coast, dropping record amounts of rainfall and causing damage with estimates ranging as high as \$190 million. In an effort to understand the needs and circumstances of vulnerable Texans affected by the hurricane, the Episcopal Health Foundation (EHF) engaged in a three-part project to gather, analyze, and [report on the impact in Texas](#). The project included the development of web-based, user-friendly maps of the affected counties, and a survey and series of focus groups, in partnership with Kaiser Family Foundation (KFF), reflecting the experiences of the affected populations. One striking finding was the stark geographic variation in the effects of Harvey. Specifically, the report revealed that residents of the Golden Triangle (a region covering the counties of Orange, Jefferson and Hardin) were more likely to be adversely impacted than residents in other affected regions in a number of respects. This research brief is intended to offer a summary of data on Hurricane Harvey's impact on the Golden Triangle area so that policymakers, recovery agencies, and public and private funders can gain a deeper understanding of the needs of the population.

The Golden Triangle began experiencing heavy rainfall as Harvey moved eastward from the Houston metropolitan area toward the Texas/Louisiana border on August 28, 2017. The storm brought historic levels of flooding to the region with a record-breaking 60 inches of rainfall being recorded near both Nederland and Groves – two cities in Jefferson County. With this historic flooding, came widespread devastation. Shortly after the end of the storm, preliminary modeling of property damage conducted by the Federal Emergency Management Agency (FEMA) estimated that nearly 30,000 properties in the Golden Triangle were damaged in some capacity by the flood waters. Below is a map of the FEMA data which shows the broad geographic reach of the damage in the area (Map 1).



Source: FEMA Modeled Building Level Damage Assessments
https://gis.fema.gov/arcgis/rest/services/FEMA/FEMA_Damage_Assessments/FeatureServer

Survey Results

To capture the impact of Harvey on the residents, we conducted a survey three months after Harvey in which roughly three-quarters of the residents in the Golden Triangle reported being affected by Harvey either through home damage, vehicle damage, or loss of employment and income. Specifically, six in ten residents in the Golden Triangle experienced home damage while nearly half reported that someone in their households experienced income and/or job loss. (Table 1)

Table 1: Detailed Effects of Hurricane Harvey on Golden Triangle

Percent of residents in Golden Triangle who report the following as a result of Hurricane Harvey

Home was damaged (NET)	62%
Major damage or Destroyed	35%
Minor damage	26%
Vehicle was damaged	32%
Someone in household experienced income/job loss	46%
NET Affected in any of above ways	77%

Source: KFF/EHF Texas Post-Harvey survey

“I’m still without a job. My whole job was destroyed. I worked at a library, and they don’t know when it will be open. I’m still looking for a job. I filed for unemployment, but it will stop next week. I need to find work before next week.”

– 24-year-old Black female
Beaumont focus group participant

These survey findings mirror findings from publicly available federal data sources. As of February 14, 2018, FEMA reported receiving 105,711 applications for disaster assistance from households in the Golden Triangle, which represents about 72% of the total households in the area according to recent estimates from the U.S. Census Bureau. Among Golden Triangle residents applying for FEMA assistance, roughly half of the applications submitted for FEMA housing assistance were approved with homeowner applications experiencing a higher rate of approval than applications from renters. (Table 2)

Table 2. Number of Applications Submitted and Approved for FEMA Housing Assistance in the Golden Triangle

	Total Valid Applications	Total Applications Approved	Percent Approved
Homeowners	59,022	33,905	57%
Renters	46,689	20,108	43%
Total	105,711	54,013	51%

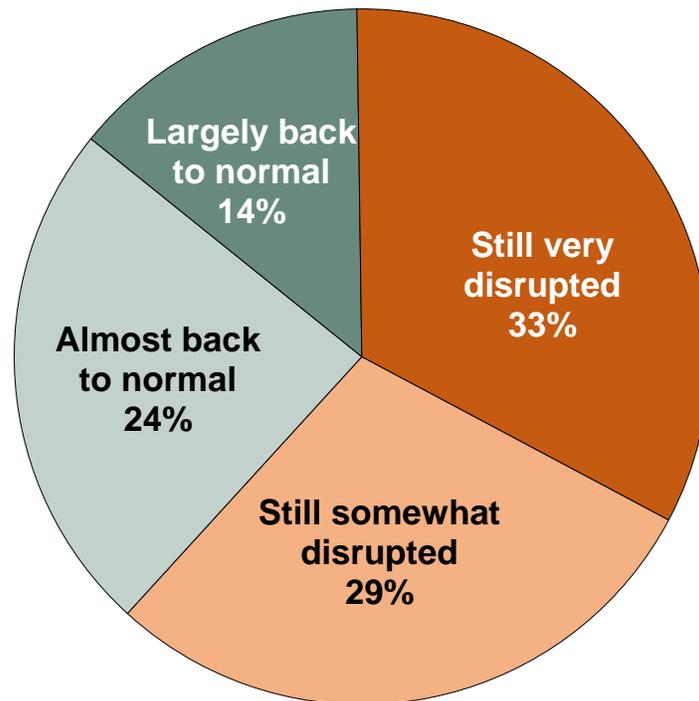
Source: FEMA Housing Assistance Program Data, <https://www.fema.gov/media-library/assets/documents/34758>

Research Findings on Recovery Efforts and Rebuilding Priorities

The impacts of Harvey remain a significant challenge for Golden Triangle residents even months after the storm made landfall. According to our survey findings, three months after Hurricane Harvey, six in ten residents in the Golden Triangle who were affected by Harvey reported their personal situation was still either very or somewhat disrupted (Figure 1).

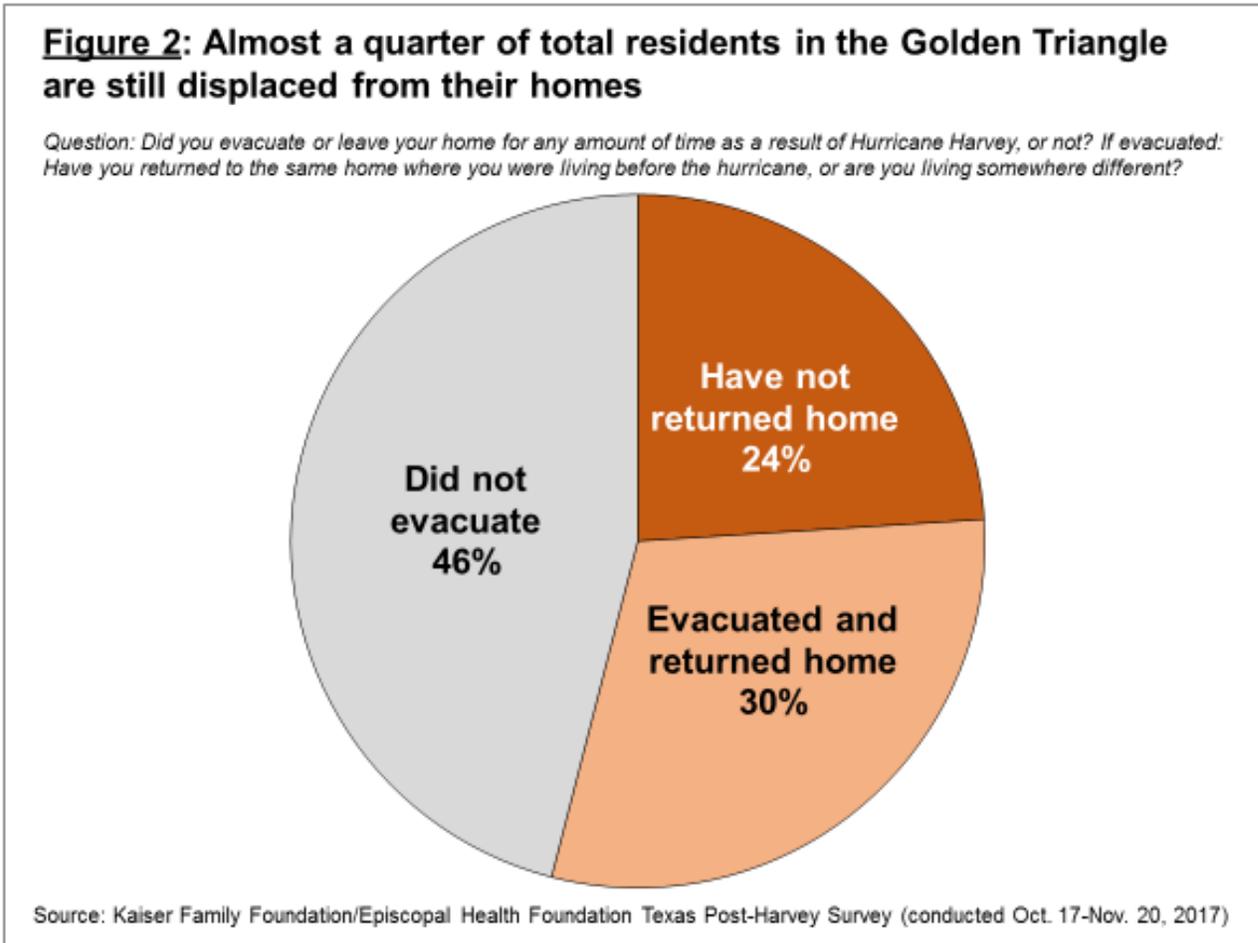
Figure 1: Most affected residents in the Golden Triangle reported their personal situation is still disrupted after Harvey

Question: Which of the following best describes your personal situation in terms of recovering from Hurricane Harvey?



Source: Kaiser Family Foundation/Episcopal Health Foundation Texas Post-Harvey Survey (conducted Oct. 17-Nov. 20, 2017)

Moreover, about a quarter of residents in Golden Triangle were still displaced from their homes (Figure 2).



When asked about the help they personally need to recover from Harvey, about half of those affected in the Golden Triangle said they needed help repairing damage to their homes and applying for disaster assistance. About one quarter of affected residents also identified finding temporary and affordable permanent housing as areas of need. (Table 3)

Table 3: Recovery Needs Identified by Golden Triangle Residents

Percent of Harvey-affected residents who reported needing more help in the following areas:

Repairing damage to their home	52%
Applying for disaster assistance	47%
Finding affordable permanent housing	25%
Finding temporary housing	24%
Getting needed medical care	22%
Finding a job	17%
Getting mental health care	13%
Getting transportation	12%

Source: KFF/EHF Texas Post-Harvey survey

“[Asked what type of help you need] Financing to help you get through until the insurance money comes. For a lot of people, by the time the insurance money comes you had to take money from so many other places, borrow so much money from family and friends. Some of that money you have to use just to get even on what you got behind on.”

– 64-year-old Black male
Beaumont focus group participant

In terms of broader recovery and rebuilding priorities for the community, almost three-quarters of residents identified direct financial assistance as an area where more resources should be devoted. Large majorities reported addressing housing related challenges such as repairing damaged homes or increasing the availability of housing options – both permanent or temporary – as important priority areas as well. Table 4 provides a more detailed summary of Golden Triangle residents’ rebuilding priorities.

Table 4: Rebuilding and Recovery Priorities Identified by Golden Triangle Residents

Percent of residents who reported that more resources need to be devoted to the following recovery efforts:

Getting financial help to the people who need it	73%
Making more affordable permanent housing available	71%
Rebuilding destroyed homes	70%
Making temporary housing available to those who need it	70%
Removing trash and debris	60%
Repairing damaged schools	54%
Cleaning up pollutants released by flooding	54%
Repairing roads and highways	53%
Helping small business that were affected by the storm	51%
Getting mental health services to those who need them	47%

Source: KFF/EHF Texas Post-Harvey survey

“Why didn’t the government have more funding like to rent out a building or facility instead having people with their families in tents?”

– 29-year-old White female

Beaumont focus group participant

Survey Methodology

The Kaiser Family Foundation/Episcopal Health Foundation *Post-Harvey Survey* was conducted by telephone October 17 – November 20, 2017 among a random representative sample of 1,635 adults age 18 and older living in 24 counties along the Texas gulf coast. The counties were chosen based on a mapping analysis of Harvey property damage developed by FEMA, in an effort to examine a contiguous area of counties that suffered the largest share of property damage. The region was further divided into four groupings of counties: 1) Harris County; 2) Counties surrounding Harris (Liberty, Chambers, Galveston, Brazoria, Matagorda, Wharton, Colorado, Austin, Waller, Fort Bend, Montgomery, and Walker counties); 3) Golden Triangle (Jefferson, Hardin, and Orange counties); and 4) Coastal counties (Nueces, San Patricio, Refugio, Aransas, Calhoun, Victoria, Jackson, and Lavaca counties). The total number of adults surveyed in the Golden Triangle was 305. Interviews were administered in English and Spanish, combining random samples of both cellular and landline telephones. Sampling, data collection, weighting and tabulation were managed by SSRS in close collaboration with Kaiser Family Foundation and Episcopal Health Foundation researchers. Episcopal Health Foundation paid for the costs of the survey fieldwork, and Kaiser Family Foundation contributed the time of its research staff. Both partners worked together to design the survey and analyze the results.

The sampling procedures were designed to reach set numbers of respondents in each of the four county-groups and to oversample particular vulnerable subpopulations who were likely to require assistance in the aftermath of the hurricane, namely: people who experienced property damage as a result of the hurricane, those with household incomes near or under poverty level, Hispanic residents (in particular, non-native Hispanics), and Black residents. Some respondents were reached by oversampling cellular and landline numbers matching directory-listings in areas where data from the Federal Emergency Management Agency (FEMA) indicated large amounts of property damage due to Harvey. The sampling and screening procedures included an oversample component designed to increase the number of low-income respondents, specifically low-income Hispanic and Black respondents. This included 104 respondents who were reached by calling back respondents in the affected areas who had previously completed an interview on the SSRS Omnibus poll and indicated they fit one of the oversample criteria (based on income and race).

The dual frame cellular and landline phone sample was generated by Survey Sampling International (SSI) using random digit dial (RDD) procedures. All respondents were screened to verify that they resided in one of the 24 counties covered by this study at the time Harvey hit Texas. For the landline sample, respondents were selected by asking for the youngest adult male or female currently at home based on a random rotation. If no one of that gender was available, interviewers asked to speak with the youngest adult of the opposite gender. For the cell phone sample, interviews were conducted with the adult who answered the phone.

A multi-stage weighting design was applied to ensure an accurate representation of the population of each county-group. The first stage of weighting involved corrections for sample design, including accounting for oversampling of the most-affected areas, as well as non-response for the callback sample. In the second weighting stage, demographic adjustments were applied to account for systematic non-response along known population parameters, within each county-group. Population parameters included gender, age, race, Hispanicity (broken down by nativity), educational attainment, and phone status (cell phone only or reachable by landline). This stage excluded the low-income oversample component. Based on this second stage of weighting, estimates were derived for the share of low-income respondents (Black, Hispanic and other) in the population. The third stage of weighting included all respondents in each county-group and included income-status (low or high) by race/ethnicity based on the previous stage's outcomes. In the last stage each county-group was weighted to accurately represent its adult-population share within the 24-county region. Weighting parameters were provided by SSI based on estimates from the U.S. Census Bureau's 2016 American Community Survey (ACS) for Harris County and 5-year (2011-2015) cumulative data from the ACS for other county groups.

The margin of sampling error including the design effect for results based on Golden Triangle residents is plus or minus 7 percentage points. For results based on other subgroups, the margin of sampling error may be higher. Sample sizes and margins of sampling error for other subgroups are available by request. Note that sampling error is only one of many potential sources of error in this or any other public opinion poll. Kaiser Family Foundation public opinion and survey research is a charter member of the [Transparency Initiative of the American Association for Public Opinion Research](#).



By providing millions of dollars in grants, working with congregations and community partners, and providing important research, the Episcopal Health Foundation supports solutions that address the underlying causes of poor health in Texas.

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Filling the need for trusted information on national health issues, the Kaiser Family Foundation is a nonprofit organization based in Menlo Park, California.

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