HEALTH AND RECOVERY IN THE NEW YEAR
A county-wide snapshot

April 2018
Summary

In December 2017, the Institute for Health Policy at the UTHealth School of Public Health conducted a brief survey of Harris County residents to assess their health and recovery status, four months after the Harvey floods. To complete the study quickly, we relied on an existing mobile panel of 500 respondents, aged 18 to 54 and based our questions on previous post-disaster surveys. We limited the number of questions to keep response times under 15 minutes. This work was funded by UTHealth.

Except in the still devastated flood areas, for example neighborhoods adjacent to the Addicks and Barker Reservoirs, and areas in Meyerland, Kingwood, and on the East side, people’s everyday lives appear to have returned to normal. Our findings from this brief survey suggest otherwise. Four months after the storm, we are still seeing dramatic effects, with around half of the residents expressing some unmet need as a result of the hurricane. The most concerning though is the lingering presence of Serious Psychological Distress (SPD) at levels rarely seen in the US. We measured this in 2010 (and will measure it again in the 2017-18 Health of Houston Survey) and found higher than national rates but nothing like what we see here after four months of recovery. Property and housing recovery is certainly a big part of the story, but the SPD reflects damage to people’s sense of well-being that will take much longer to repair. Recovery will continue: there are currently four FEMA/SBA disaster assistance centers actively providing assistance for Harris County residents.
Among the 25% who experienced serious damage\(^1\) to home or vehicle, home owners were affected disproportionately -- 61% owned and about a third (35%) rented.

\(^1\) Serious damage to home or vehicle includes significant or complete damage to either home or vehicle.
Hispanic (33%) and non-Hispanic African-American (26%) residents had serious damage in higher proportions than non-Hispanic white (16%) or non-Hispanic Asian (12%) residents. The survey findings indicate small differences in percent of people impacted by serious damage across various household income levels, with the highest in the low income group (27%). However, these differences were not statistically significant, suggesting that residents with serious damage came from all levels of income.
Among the 6 in 10 evacuees who had household pets, 90% took their pets with them. But it mattered where they went. Friends’ homes and shelters welcomed pets in equally high proportions.

Among those who evacuated to hotels, only half brought their pets.

Although evacuation was not mandatory for Harris County, the survey found that 29% of residents evacuated or were rescued. Among those who experienced serious property damage, the proportion of evacuees was twice as high (59%) as compared to those with limited or no damage (19%).

Approximately 28% of respondents evacuated as a result of the storm. The majority of those who evacuated went to the homes of family or friends (19% of all respondents - 66% of evacuees). Much smaller proportions of people went to hotels or motels (3%) or shelters (3%).

Just under 10% reported that they needed to be rescued. Six percent were rescued.
Four months after the storm, over a third of those who evacuated still plan to return to their homes\(^2\). The anticipated wait varies from a few weeks (4%) or months (13%) to half a year or more (9%). For 1 in 10 of these evacuees, how long they have to wait, remains uncertain.

Given the wait and uncertainty over their return home, displaced evacuees have had to make temporary living arrangements. The largest group (36%) is staying with family and friends. This is about half the number who stayed with family and friends right after the storm. Almost 1 in 5 (19%) are living in temporarily rented houses or apartments, and 16% in hotels or motels.

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\(^2\) Percentages might not add to 100% due to rounding.
Beyond the physical destruction of homes and property, the storm adversely affected people’s health. Those with chronic health conditions saw them worsen in 15% of the cases. Another 15% suffered new illnesses and injuries during or right after the storm. Just over one in five (22%) reported either a worsening of existing chronic conditions or new illnesses or injury at the time of the flooding. Among residents that reported illnesses and injuries at the time of the storm (15% of all residents), almost 4 in 10 (39%) reported a physical injury, such as cuts, bruises and bone lesions, during and after Harvey. About 1 in 5 (26%) reported upper and lower respiratory infections, while another 1 in 4 reported non-respiratory infections. More specific maladies -- allergies, self-reported depression and anxiety, headaches, and skin rashes, were experienced in smaller proportion.

Close to 1 in 10 residents (9%) experienced both a worsening of chronic conditions and new illnesses or injuries.
Natural disasters take a toll on the mental and emotional health of the population. We used a series of measures to get a more accurate picture of Harvey’s impact in our area. Together, these measures assess the presence of serious psychological distress\(^3\) (SPD), a tool used by the World Health Organization and the U.S. Centers for Disease Control & Prevention to measure the mental health of communities.

While national (2016) and local (Harris County, 2010) estimates of SPD are 4% and 8% respectively, in the aftermath of the storm, we found SPD present in 18% of the respondents, a level more than double the rate we found in 2010. For those experiencing serious property damage, the rate increases six-fold to half of the population affected.

18% of residents had signs of serious psychological distress.

The 18% rate overall was not distributed uniformly across social groupings. Females experienced SPD at almost twice the rate of males (23%). This is not a uniform pattern and is reversed in comparable counties such as Los Angeles, with men having the higher rate. There is also a difference across ethnic and racial groupings. The rate of SPD is highest among Hispanic residents and lowest (by a six-fold reduction) among non-Hispanic Asian residents.

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\(^3\) SPD is measured by Kessler short scale (K6) composed of six items (see Appendices) and was adapted in this survey to refer to the time since the hurricane. Responses are coded 0-4 and total scoring of 13 and over denotes SPD.
Economic impact of the storm was observed in changes in employment status and household income.

Although 7% of residents reported a loss of employment, 8% experienced a positive change in employment, moving to full-time. We were not able to determine if the 4% who reported “currently employed part-time” was a positive or a negative change in employment status. The negative impact on household income (which includes income from multiple jobs in households with two or more adults) affected more residents than loss of individual employment. Income decreased for 1 in 3 residents versus an increase for 1 in 20.

Although 65% reported loss of services at their homes because of the storm, 92% of them reported that their services had been restored four months later. However, the level of recovery differed according to the level of damage suffered.

While a little more than half of the respondents said that life was back to normal for them, 1 in 3 people who had serious property damage are still not back to normal, 17% finding their life still somewhat disrupted and 16% saying it is very disrupted.
852% of residents indicated they still have some unmet remaining needs.

The level and duration of disruption also differs across incomes. Those with lower incomes (<$50,000) were more than twice as likely to report that their life was still disrupted.

The priority of remaining needs, four months after the storm, is similar between those with serious damage and those with minor damage. Repairing homes is highest, with disaster assistance still important. However, the relative levels of these needs vary depending on the severity of damage experienced. The need for finding permanent housing is three times as high among those with serious damage; repairing home damage is twice as high. The same is true of getting mental health care: the need is twice as high in the “serious damage” group. The reported need for getting mental health care though is less than the level of psychological distress (SPD). The data suggest a disconnect between experiencing the negative feelings indicating SPD and the recognition of the need to seek mental health care from a health professional.

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4 Respondents were given the option to select multiple needs, and as such, the percentages do not add to 100%.
The level and combination of needs varies by income. Greater proportions of those with lower incomes report unmet needs in all areas except home repairs. The highest categories of need in this income group were for finding a job, disaster assistance, and transportation. Needs for mental health care and medical care were substantially greater than for those at higher incomes.

Following the storm, 40% received help from family or friends, while 23% got help from their neighbors. FEMA assisted 11%, although this figure was double (23%) among residents faced with serious property damage. Still, 23% of those with serious property damage said they had not received any help.

The ability of people to prepare for disasters depends on their access to storm-related information. The main sources of such information were the television, mentioned by 68%, followed by social media (54%), text messages (31%), and contacts with friends, family or neighbors (32%).

Lastly, it is inspiring to see people’s resilience and ability to come together to mitigate the negative impact of the storm. Almost 6 in 10 people (59%) donated money, clothing or food, 4 in 10 (41%) volunteered their time with an organization or on their own, while close to 1 in 3 (29%) provided housing for friends or neighbors.
Appendices

Technical Notes

Panel members received two notifications on their phone through a mobile application regarding the survey's availability. They also received an incentive through the vendor’s proprietary rewards system. Data collection lasted from December 21, 2017 until January 2, 2018.

Because the panel was non-probabilistic, we developed weights and propensity adjustments to make our respondents as comparable to Harris County demographics as possible. The panel data were calibrated to the Health of Houston Household Survey’s 2017-18 (HHS2018) telephone data using a propensity score weight. The HHS2018 had conducted 2,600 phone interviews by the time the hurricane made landfall. The propensity score is estimated using logistic regression to estimate the probability of observing a mobile panel respondent in the HHS versus a Random Digit Dial (RDD) telephone respondent.

The HHS2018 cell phone aligned well with the American Community Survey (ACS) for age, gender, and race. Based on the population comparison, we then calculated the propensity score using only the cell phone sample. Given the very small number of 55+ respondents, we removed these cases and weighted to the 18-54 year old population in Harris County. Data for adults age 18-54 was combined with the RDD cell phone survey data for adults in the same age group. We fit a logistic regression model to the probability of being a mobile panel respondent, using gender, age, race/ethnicity, education, tenure, employment status, health care coverage, presence of children, and landline ownership as independent predictors. The resulting probability scores were then grouped by percentile. For each group the propensity weight was computed as the number of phone respondents divided by the number of mobile panel respondents. The propensity weights for the mobile panel data were then post-stratified to population data from the 2012-2016 ACS in Harris County, using a raking adjustment with these dimensions: education level, healthcare coverage, tenure, race/ethnicity, and age by sex. All the finding presented in this report are weighted to represent Harris County population, ages 18-54.
Relocation and Displacement

Our panel provided good coverage of the county wide area, appearing in the vast majority of ZIP Codes. More importantly, we found that a large proportion moved in the 4 months after Harvey. Some of these moves will have been planned ahead of time. Others were the result of displacements due to damaged houses and apartments.
Population Characteristics

Sociodemographics

- **Female**: 50%
- **Male**: 50%
- **18-25**: 23%
- **26-35**: 31%
- **36-45**: 27%
- **46-54**: 19%
- **Hispanic**: 41%
- **White NH**: 32%
- **Black NH**: 19%
- **Asian NH**: 6%
- **Other NH**: 3%
- **College and Over**: 26%
- **Some College**: 31%
- **High School**: 32%
- **Less Than High School**: 11%
- **$100,000 or More**: 16%
- **$75,000 to $99,999**: 16%
- **$50,000 to $74,999**: 20%
- **$35,000 to $49,999**: 17%
- **$25,000 to $34,999**: 12%
- **Less Than $25,000**: 19%
- **Private**: 54%
- **Medicaid**: 7%
- **Medicare**: 4%
- **Other**: 2%
- **Uninsured**: 32%

**Race and ethnicity**

**Education**

**Household income**

**Health insurance**
Survey Questionnaire

Ask All
Elig. Were you living in Harris County, TX prior to August 25, 2017?

01 Yes
02 No → if no, they are not eligible for this survey

Ask All
PD1. Did you experience any flooding as a result of Hurricane Harvey?

01 No flooding
02 Street flooded but not my home
03 Some water entered my home but there was limited damage
04 Some water entered my home and there was fair amount of damage
05 My home was completely flooded
06 Prefer not to answer

Ask All
PD2. Were any vehicles that you own/lease damaged by flooding?

01 Do not own/lease a vehicle
02 No flood damage to owned/leased vehicle
03 Minor flood damage to owned/lease vehicle
04 Significant flood damage to owned/lease vehicle
05 Owned/leased vehicle totaled due to flood damage
06 Prefer not to answer

Ask All
EV1. Did you evacuate your home any time as a result of Hurricane Harvey?

01 Did not evacuate
02 Evacuated to a family/friend's home
03 Evacuated to a hotel/motel
04 Evacuated to a shelter
05 Evacuated to a different location not listed
06 Prefer not to answer

ASK those that evacuated
EV2. Were you able to take your household pets with you?

01 I don't have household pets
02 Yes, I took them
03 No, I did not take them
04 Prefer not to answer

ASK those that evacuated
EV3. How long do you think it will be before you can move back in?
01 I have already moved back in
02 A few weeks
03 A few months
04 Six months to a year
05 Longer than a year
06 Prefer not to answer
07 I don’t know

ASK those that have not yet returned home

EV5. Are you currently...?

01 Staying with friends or family
02 In a hotel or motel
03 In a house or apartment that you’re renting temporarily
04 Some other situation
05 Prefer not to answer

Ask All

R1. Did you need to be rescued as a result of Hurricane Harvey?

01 No, I didn’t need to be rescued
02 Yes, I was rescued
03 Yes, but was not rescued
04 Prefer not to answer

S1. What services in your home did you lack because of Harvey?
Mark all that apply

01 Did not lack any services //exclusive response//
02 Running water
03 Electricity
04 Garbage pickup
05 Debris pickup
06 Natural gas
07 Sewage service
08 Telephone (landline)
09 Cell phone
10 Other
11 Prefer not to answer

Ask those that lacked services

S2. What services in your home have not been restored yet?
Mark all that apply

01 All services have been restored //exclusive response//
02 Running water
03 Electricity
04 Garbage pickup
05 Debris pickup
06 Natural gas
07 Sewage service
08 Telephone (landline)
09 Cell phone
10 Other
11 Prefer not to answer

Ask All
PHO1. Did you help anyone that was affected by Hurricane Harvey?
Mark all that apply

01 Donation (financial, clothing, food)
02 Volunteered with a group or organization
03 Volunteered on your own
04 Housing for friends and/or neighbors
05 Other
06 No, did not help //exclusive response//
07 Prefer not to answer

Ask All
PHO2. Which of the following people/organizations helped you out following Hurricane Harvey?
Mark all that apply

01 First Responders
02 Family and/or Friends
03 Neighbors
04 Co-workers
05 Strangers or new acquaintances
06 Church of place of worship
07 Red Cross
08 Shelter volunteers
09 City of Houston officials
10 Harris County officials
11 FEMA
12 Other
13 No one helped me out following Hurricane Harvey //exclusive response//
14 Prefer not to answer

Ask All
HC1a. Did you have any health problems or chronic illness(es) that got worse during or right after Hurricane Harvey?

01 No health problems or chronic illness
02 Mild health problems/worsening of chronic illness (not requiring that I see a doctor )
03 Moderate health problems/worsening of chronic illness (requiring an ER or doctor visit)
04 Serious health problems/worsening of chronic illness (requiring me to be admitted into a hospital)
05 Prefer not to answer
Ask All

HC1b. Did you suffer any physical injuries or illnesses during or right after Hurricane Harvey?

01 No physical injuries or illness
02 Mild injury or illness (not requiring that I see a doctor)
03 Moderate injury or illness (requiring an ER or doctor visit)
04 Serious injury or illness (requiring me to be admitted into a hospital)
05 Prefer not to answer

Ask if HC1b ne 01 OR 05

HC2. What illness or injury was it?

Enter condition

Ask All

Kessler Scale (6 questions)

PSYDA. Please indicate the degree to which you experienced the following feelings:

Since Hurricane Harvey...

Ask All

PSYD1. ... how often did you feel nervous?

01 All of the time
02 Most of the time
03 Some of the time
04 A little of the time
05 None of the time
06 Prefer not to answer

Ask All

PSYD2. ... about how often did you feel hopeless?

01 All of the time
02 Most of the time
03 Some of the time
04 A little of the time
05 None of the time
06 Prefer not to answer

Ask All

PSYD3. ... how often did you feel restless or fidgety?

01 All of the time
02 Most of the time
03 Some of the time
04 A little of the time
05 None of the time
06 Prefer not to answer
Ask All  
**PSYD4.** ... how often did you feel so depressed that nothing could cheer you up?

01  All of the time  
02  Most of the time  
03  Some of the time  
04  A little of the time  
05  None of the time  
06  Prefer not to answer

Ask All  
**PSYD5.** ... about how often did you feel that everything was an effort?

01  All of the time  
02  Most of the time  
03  Some of the time  
04  A little of the time  
05  None of the time  
06  Prefer not to answer

Ask All  
**PSYD6.** ... about how often did you feel worthless?

01  All of the time  
02  Most of the time  
03  Some of the time  
04  A little of the time  
05  None of the time  
06  Prefer not to answer

Ask All  
**INS1.** Do you have any kind of health care coverage?  
*Mark all that apply*

01  No health insurance //exclusive response//  
02  Insurance through employer  
03  Privately purchased insurance  
04  Medicare  
05  Medicaid  
06  Other  
07  Prefer not to answer

Ask All  
**R1.** Which of the following best describes your personal situation in terms of recovering from the Hurricane Harvey? Would you say that your day to day life is....?

01  Back to normal  
02  Mostly back to normal  
03  Still somewhat disrupted  
04  Still very disrupted
Ask All

What is your greatest need as a result of the hurricane at this time?
Mark all that apply

01 I was not impacted by Harvey
02 Finding temporary housing
03 Finding affordable permanent housing
04 Repairing damage to your home
05 Getting transportation
06 Finding a job
07 Getting the medical care you and your family need
08 Getting mental health care for you and your family, such as professional counseling or other mental health assistance
09 Applying for disaster assistance
10 Prefer not answer

Ask All

Did your employment situation change due to Hurricane Harvey?

01 No, it did not change
02 Yes, I am currently employed full-time
03 Yes, I am currently employed part-time
04 Yes, I am currently unemployed
05 Prefer not to answer

Ask All

Which is the source of information you most relied upon immediately after Harvey?

01 I did not rely on any source of communication
02 Television
03 Radio
04 Facebook or other social media
05 Electronic news
06 Automated Call (e.g. reverse 911)
07 Text messages or smart phone alerts
08 Local newspaper
09 Church or other community group
10 Family, friend, neighbor/word of mouth
11 Other

Ask All

Did you own or rent the place where you were living at the time of Hurricane Harvey?

01 Own
02 Rent
03 Other arrangements
04 Prefer not to answer
Ask All

INC1. What is your annual household’s income from all sources?

01 Less than $25,000
02 $25,000 to $34,999
03 $35,000 to $49,999
04 $50,000 to $74,999
05 $75,000 to $99,999
06 $100,000 or more
07 Prefer not to answer

Ask All

INC2. How did the Hurricane Harvey affect your household income? Did it...

01 Decrease
02 Increase
03 Did not change
04 Prefer not to answer

Ask All

ETH1. Are you of Hispanic, Latino, or Spanish origin?

01 Yes
02 No
03 Prefer not to answer

Ask All

RACE1. Would you describe yourself as ...

Check all that apply

01 White
02 Black/African American
03 Asian
04 Some other category
05 Prefer not to answer

Ask All

ZIP1. Which ZIP code were you living in when Hurricane Harvey hit Texas?

_______ Enter ZIPcode

Ask All

ZIP2. In what ZIP Code do you currently live?

_______ Enter ZIPcode

Ask All

EDU1. What is the highest grade of education you have completed?

01 None
02 First through 8th grade  
03 Some high school, but no diploma  
04 High school graduate or GED  
05 Some college, but no degree  
06 Professional certification or occupational training  
07 2-year college degree (Associate’s degree)  
08 4-year college degree (Bachelor’s degree)  
09 Advanced degree (Master’s degree or higher)  
10 Prefer not to answer