HOW HEALTHCARE READY USED GOOGLE SEARCH TRENDS INFORMATION TO RESPOND TO DISASTERS

CHALLENGE »»»
Providing patients with healthcare in the wake of a disaster.

SOLUTION »»»
Using Rx Open data and aggregated Google search trends to identify patient concentrated areas, to prioritize healthcare resources, and to connect patients to healthcare.

UNDERSTANDING COMMUNITY ATTITUDES TOWARDS PREPAREDNESS

Healthcare Ready's annual patient preparedness survey, performed by YouGov, showed that Americans were more concerned about natural disasters than terrorist attacks, cyber-attacks, or environmental disasters (conducted in May 2017). While 15 percent of Americans reported that they could go only two days without their regular medication, more than half (53 percent) do not have an emergency plan in place.[1] This reveals that even though there is recognition that disasters are likely to occur, most individuals are grossly underprepared.

When it comes to deciding who is responsible for preparing communities, survey responses resulted in a three-way tie between individuals (22 percent), local entities (22 percent), and the federal government (21 percent). The reality is that in catastrophic events, emergency management and public safety officials will work to access all communities in an impacted area, but due to logistical challenges (road access, power outages, etc.) they will be unable to access remote communities immediately. This forces unprepared individuals to 'go it alone' for hours or even days after a disaster and can cause an emerging healthcare crisis in these areas.

2017 HURRICANE RESPONSE

The 2017 hurricane season was historic, seeing three catastrophic hurricanes impact the US and Caribbean within two months. For the first time in a decade, four Atlantic hurricanes made US landfall, three of which were Category 4.[2] Recovery costs have already surpassed $300 billion.[3] Flooding in Texas, specifically Houston due to Hurricane Harvey, set record annual rainfall amounts and damaged nearly 90,000 homes.[4] Hurricane Irma overwhelmed the Caribbean, including the US Virgin Islands (and impacted Puerto Rico), before moving on to Florida and surrounding states, leaving nearly 6 million people without power.[5] Hurricane Maria's devastation in the Caribbean, including Puerto Rico and the US Virgin Islands, caused widespread loss of electricity and communications in these regions, forcing hospitals and healthcare facilities to rely solely on generator power for critical operations.

From patients stranded in their flooded homes to healthcare facilities closing due to power outages, identifying where patients were located and connecting them to available healthcare resources proved necessary in the wake of these disasters.

HEALTHCARE READY

Healthcare Ready (HcR) led its longest activation in its 10 year history, providing critical response and recovery for Hurricanes Harvey, Irma, Maria, and Nate. For 81 consecutive days, Healthcare Ready's Emergency Operations Center responded urgently to patient pleas, facility needs, supply chain demands, and pharmacy status inquiries across the nation.

Healthcare Ready has again demonstrated its vital role during hurricane season, serving as a primary coordinator for healthcare needs between the public and private sectors during response and recovery efforts to catastrophic events. Private sector, NGO, and public sector partners relied on our expertise, routing patient pleas through our hotline and seeking our input across six different recurring coordination calls. As a result of the more than 1,000 direct patient and 300 organization (private or public sector) coordination requests received, Healthcare Ready surged its Emergency Response Center to address the needs created by the natural disasters.

RX OPEN AND GOOGLE

Rx Open (www.rxopen.org), Healthcare Ready's free interactive map that shows the operating status (open, closed) of pharmacies in areas impacted by disaster, supported activation efforts by tracking 16,000+ chain and community pharmacies from California to Florida and Puerto Rico. This crucial map directs patients and first-responders to vital medication access, while providing public agencies and private sector partners with insight into pharmacy status and healthcare recovery. Daily updates for over 100 days of activation ensured that Rx Open remained a useful tool for quick decisions during the 2017 response and recovery efforts.

By partnering with Google, Healthcare Ready strengthened its Rx Open data by overlaying a map with aggregated Google Search Trends from Harvey and Irma-impacted communities searching for health care information and hurricane relief.

IDENTIFYING HIGH CONCENTRATION PATIENT AREAS

Throughout response efforts for Hurricane Harvey, Healthcare Ready routed 280+ vulnerable patient cases from all over Houston, TX, while working with healthcare partners to resume supply chain operations. Due to flooding and road closures, patients were unable to evacuate their homes or gain access to regular healthcare.
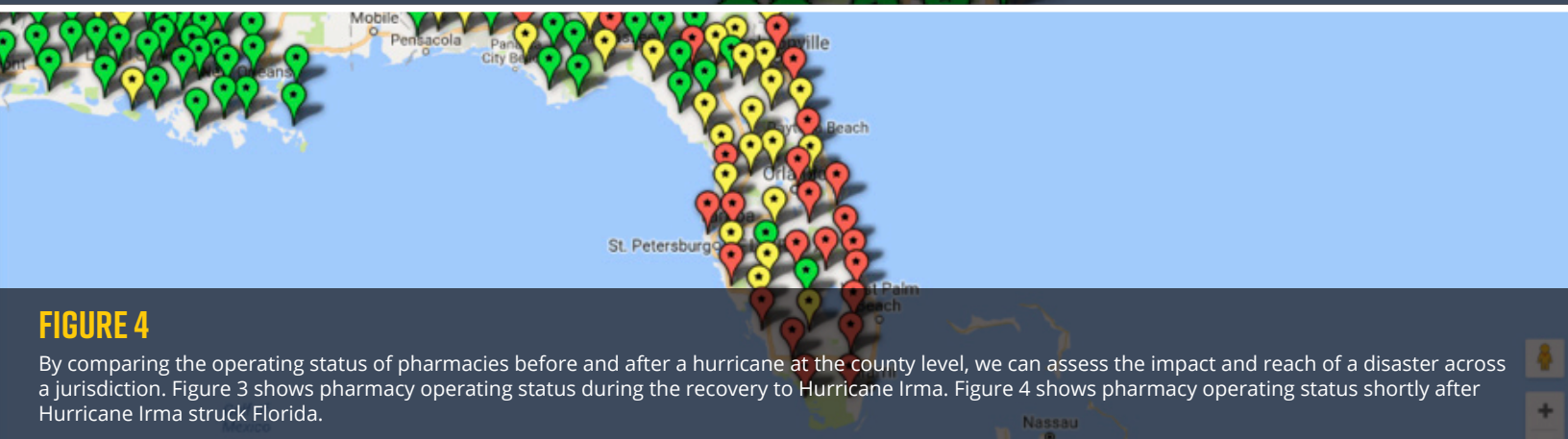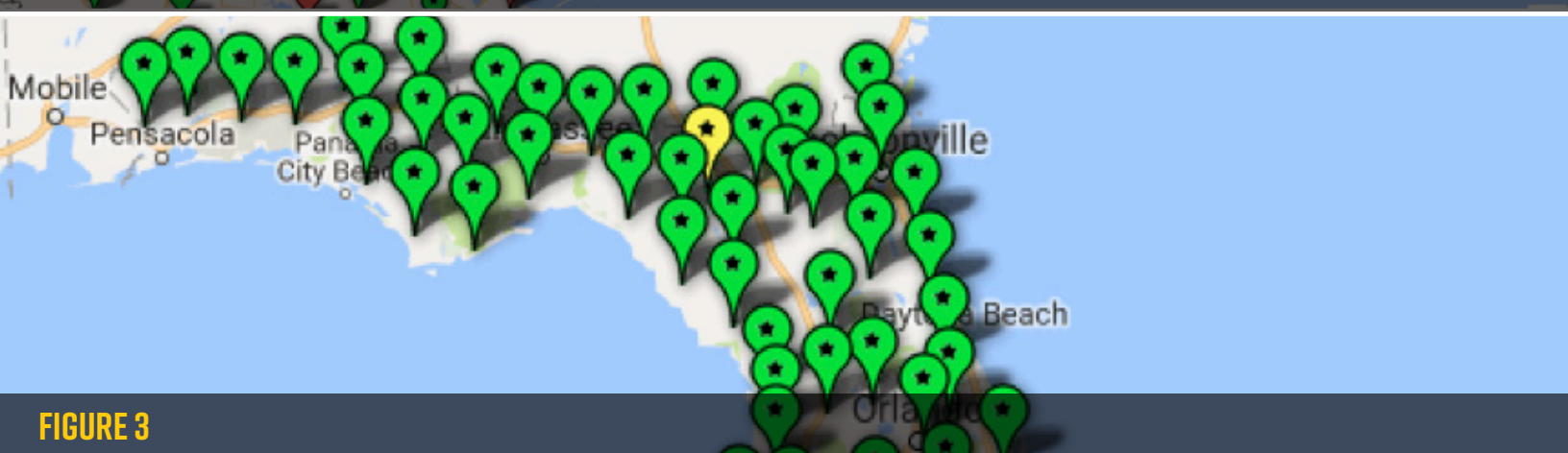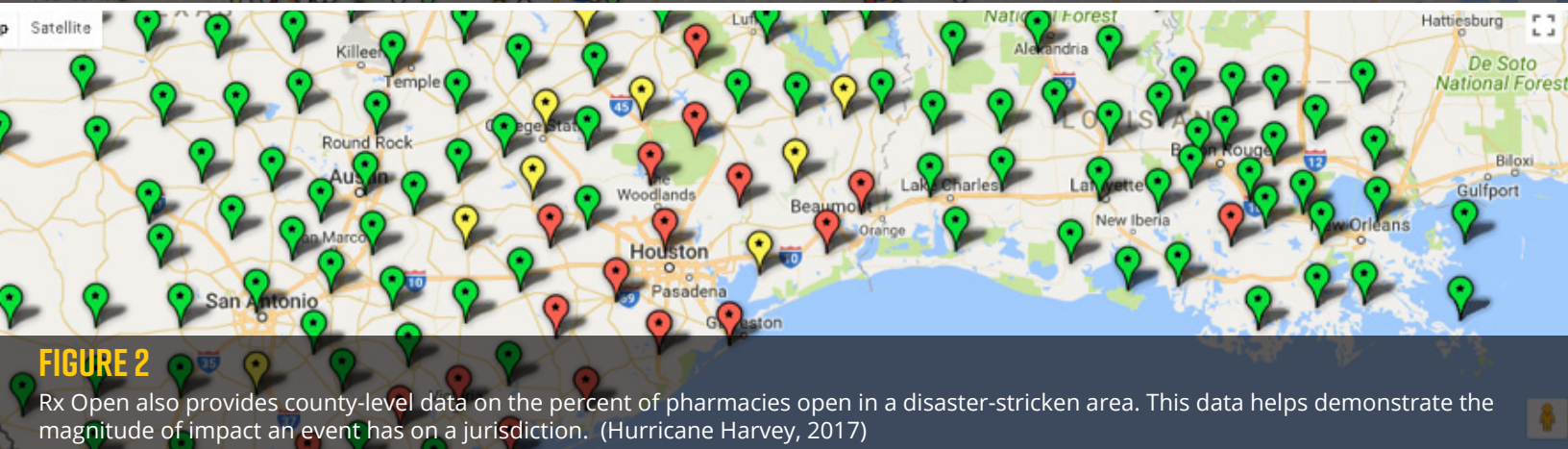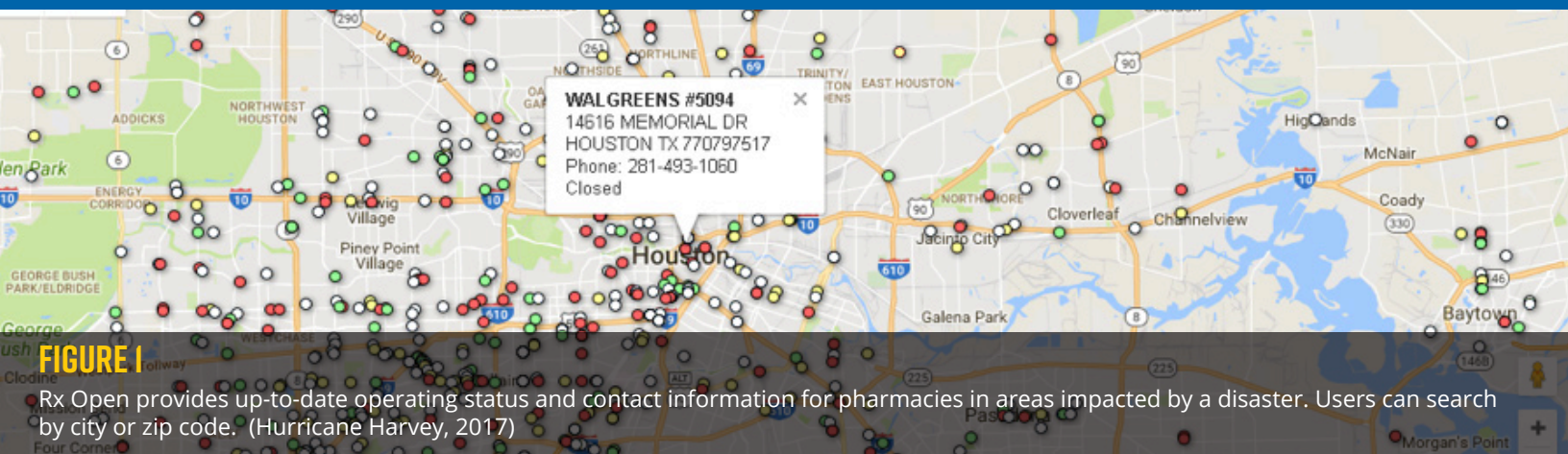
In Florida (before Hurricane Irma made landfall), patients made it safely to shelters but still found access to healthcare difficult when pharmacies and clinics began to close due to power outages.

Google search data from Houston and southern Florida showed key areas with great patient needs, explaining the rise in vulnerable patient cases. Aggregated search trends leading up to disasters can provide HcR with initial insights into where patients are located, how they prepared

CASE EXAMPLE: RACHEL, TX

Rachel's home in Richmond, Texas was flooded up to calf-level after Hurricane Harvey. As a dialysis patient, she very urgently needed to receive her treatment and supplies. Coordinating with Americares, Baxter, and DaVita, Healthcare Ready was able to evacuate Rachel and her mother within 5 hours. She was received at her uncle's home with supplies waiting for her.

RX OPEN DURING HURRICANE SEASON

FIGURE 1

Rx Open provides up-to-date operating status and contact information for pharmacies in areas impacted by a disaster. Users can search by city or zip code. (Hurricane Harvey, 2017)

FIGURE 2

Rx Open also provides county-level data on the percent of pharmacies open in a disaster-stricken area. This data helps demonstrate the magnitude of impact an event has on a jurisdiction. (Hurricane Harvey, 2017)

FIGURE 3

FIGURE 4

By comparing the operating status of pharmacies before and after a hurricane at the county level, we can assess the impact and reach of a disaster across a jurisdiction. Figure 3 shows pharmacy operating status during the recovery to Hurricane Irma. Figure 4 shows pharmacy operating status shortly after Hurricane Irma struck Florida.

FIGURE 5. HURRICANE IRMA FLORIDA MAP
Rx Open pharmacy data overlaid with Google search trend index rate.

Avg. Index Rank

0.519   2.500

Status
- Closed
- Status Unknown: No..
- Status: Unknown
- Unknown

for the hurricane (or what key issues should be anticipated), and what their medical concerns are. When less than half of Americans are prepared for a disaster, the ability to understand where patients are within a disaster impacted area is critical to response efforts.[6]

PRIORITIZING RESOURCES

Private sector, NGO, and public sector partners all worked together to serve people impacted by disasters. In Houston, prioritization of resources was facilitated with the creation of mega-shelters or hubs where evacuees and patients were being directed to , such as GRB Convention Center. In
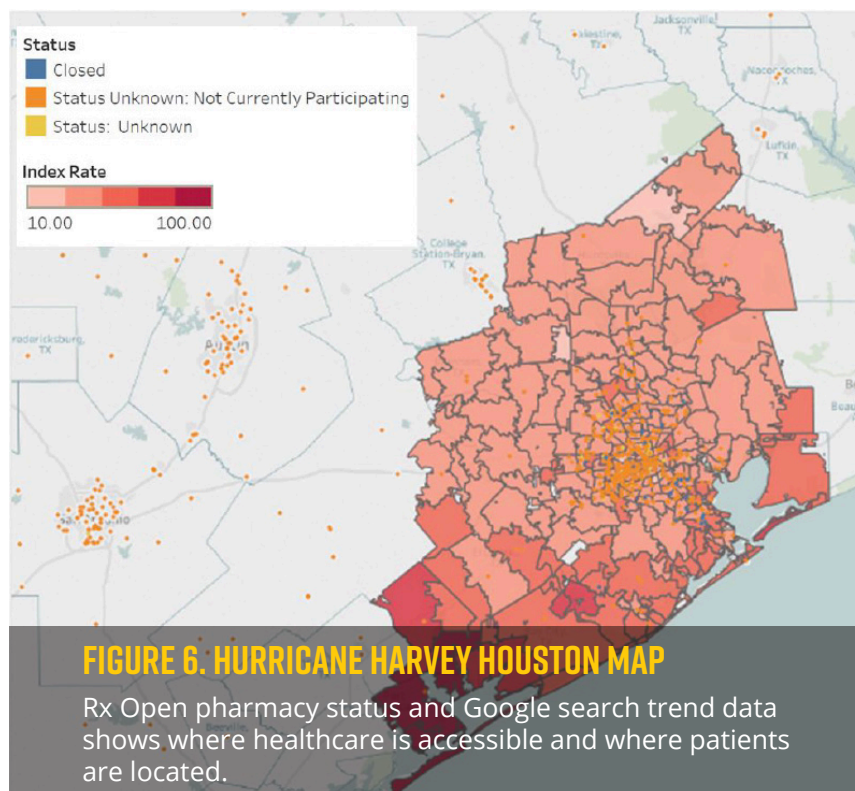
Florida, however, special needs shelters had issues maintaining consistent medical supply at the beginning of the response, and began to run low on certain resources.

The overlay of Rx Open data and Google aggregated search trends showed us where limited healthcare access and high-density patient areas existed, relative to open (or closed) pharmacies. This intersection of information helped HcR prioritize where to send resources and direct patients. The same overlay could flag strained areas early on so that facilities can be resupplied before shortages arise.

CONNECTING PATIENTS TO HEALTHCARE

Road closures and flooding are one of the many physical obstacles patients face when seeking healthcare access. In both Texas and Florida, HcR partnered with Uber, Americares, and Team Rubicon to evacuate patients and transport them to clinics or shelters to receive urgent healthcare.

Google aggregated search trends provided us with essential understanding on where patients were in respect to open pharmacies, shelters, and even dialysis centers. The ability to map out evacuations and transportation routes in a disaster battered area facilitates urgent access to healthcare, especially in an area where 16% of Americans could only go for 2-3 days without their medicine before experiencing adverse health effects.[7] Google's aggregated search trend information

FIGURE 6. HURRICANE HARVEY HOUSTON MAP
Rx Open pharmacy status and Google search trend data shows where healthcare is accessible and where patients are located.

should be updated periodically to better assist first-responders in a constantly changing landscape.

COMMUNITY AND DIRECT PATIENT IMPACT

Healthcare Ready has directly assisted more than 1,000 patients and 150 facilities during 2017 hurricane season. Most of these requests were for medicine assistance or re-supply needs.

Highlights:

- Fielded 14 requests for patient evacuations.
- Assisted over 100 healthcare facilities across 4 states and territories.
  - Identifying availability of resources for patients and medical depletions for the Department of Health.
- Triaged more than 1,000 patient requests for medicine assistance.
  - Using Rx Open data, patients were streamlined to open pharmacies and healthcare facilities with their medications.

HURRICANE HARVEY

Hurricane Harvey produced widespread challenges to patient access to medicine in Texas. Across the span of 57 days, Healthcare Ready triaged more than 750 patient pleas and provided Rx Open pharmacy data to several different public and private sector organizations, including HHS, FEMA, CDC, Direct Relief International, and the American Red Cross. Additional support Healthcare Ready provided is highlighted below."

→ Facilitated the resupply of 39 healthcare facilities running on strained resources.

→ Coordinated 5 helicopter deliveries of medical supplies to healthcare facilities in the impacted area

→ Partnered with Uber and Team Rubicon to assist with patient transportation, especially for dialysis patients needing emergency

evacuation from their homes and/or transportation to and from treatments.

→ Bridged the gap between areas with patients in need and areas with healthcare access, using data and insights from community health centers and organizations

CASE EXAMPLE: BEVERLY, TX

After Hurricane Harvey, Beverly needed to replace her nebulizer and refill her prescription. Her regular pharmacy was closed along with most pharmacies in the area. With the help of Rx Open and corporate EOCs, we identified nearby chain pharmacies available to assist. However, due to road conditions it was impossible for Beverly to travel. After several attempts, Healthcare Ready located an accessible community health center with Beverly's medicine in stock.

HURRICANE IRMA

As Texas began its recovery from Hurricane Harvey, Healthcare Ready turned its attention to response efforts in Florida. Patients preparing for Hurricane Irma sought assistance in filling prescriptions and were able to use Rx Open to find open pharmacies in their area.

→ Assisted the Florida Department of Health in facilitating 20 shelters with oxygen tanks and concentrators.

→ Triaged requests for controlled substance emergency refills.

→ Helped uninsured patients gain access to prescription medicines and needed care using various programs and medicine distributor hotlines.

CROSS-SECTOR INSIGHT

Healthcare Ready worked with over 30 NGOs, private sector partners, and government agencies this hurricane season. When responding to 4 different hurricanes across 8 states and territories, coordination is essential to effectively serve those directly impacted.

HcR shared overlaid Rx Open and aggregated Google search data with public and private sector partners, including FEMA, who were working to reach patients. Cross-sector visibility into patient location allowed groups to make informed, immediate decisions for their response efforts.

OPPORTUNITIES

Using Rx Open data and Google's aggregated search trends, communities with the greatest needs are easily identified and could receive assistance without undue delays. Understanding where pharmacies, safety net clinics, and Community Health Clinics (CHCs) are located can help to pinpoint which patients and what areas need the most urgent assistance.

While resupply efforts are funneled to areas with urgent needs, patients can be directed to facilities with resources. Insights into where patient-concentrated areas and relative healthcare facilities are located underscored the importance of patient transportation in times of crisis. Our

CASE EXAMPLE: ROSE, FL

In preparation for Hurricane Irma, Rose sought to fill her prescription at her pharmacy in Florida. Since her medicine was a controlled substance, it was not covered under the governor's executive order for a 30-day resupply. After much discussion with her pharmacist, she was authorized to receive her medicine.

Note: Names of patients have been changed for de-identification purposes

CASE EXAMPLE: WAYNE, USVI

After Hurricane Irma hit USVI, Wayne and his family found themselves in urgent need of heart failure medicine and evacuation. Despite limited electricity and communications, Healthcare Ready through FEMA's team on the ground was able to assess pharmacy status and provide Wayne with healthcare access. He received his heart failure medications before boarding a humanitarian cruise ship back to the mainland US.

partnership with Uber provided services to patients in Florida and Texas, creating a great opportunity to ease patient access to healthcare.

By sharing Rx Open and Google search trends overlay maps with private and public sector partners all types of healthcare facilities can be bolstered. This hurricane season we shared Rx Open data with FEMA, HHS, Direct Relief International, Americares, the Red Cross, Texas Community Healthcare Association, and dozens of local organizations.

LIMITATIONS

As seen in Puerto Rico and USVI, disasters impacting electricity and communications make it difficult to monitor and distribute data. In both Puerto Rico and USVI Google's search data was limited by the lack of residential internet access. And even though we were able to receive pharmacy status from pharmacies in Puerto Rico, information was essentially inaccessible to patients.

Endnotes

1 https://www.npr.org/sections/thetwo-way/2017/09/13/550674848/power-outages-persist-for-millions-in-florida-georgia-and-carolinas-after-irma
2 https://weather.com/storms/hurricane/news/2017-10-07-four-us-hurricane-landfalls-nate-maria-irma-harvey
3 https://www.usatoday.com/story/news/2017/10/27/harvey-irma-maria-different-disasters-different-recovery/807485001/
4 http://www.chron.com/news/houston-weather/hurricaneharvey/article/Harvey-s-broad-reach-12171168.php
5 https://www.npr.org/sections/thetwo-way/2017/09/13/550674848/power-outages-persist-for-millions-in-florida-georgia-and-carolinas-after-irma
6 Healthcare Ready 2017 National Preparedness Poll http://www.healthcareready.org/programs/community-preparedness
7 Healthcare Ready 2017 National Preparedness Poll http://www.healthcareready.org/programs/community-preparedness

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CHAIN DRUG STORES

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