

**UNMET NEEDS FOR EMERGENCY ORGANIZATIONS DURING  
DISASTER: RED CROSS AND SALVATION ARMY REFERRALS  
IN TEXAS DURING KATRINA-RITA, 2005**

A Senior Scholars Thesis

by

ALEXANDRIA NORMAN

Submitted to the Office of Undergraduate Research  
Texas A&M University  
in partial fulfillment of the requirements for the designation as

UNDERGRADUATE RESEARCH SCHOLAR

April 2010

Major: Urban and Regional Science

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Approved by:

Research Advisor:  
Associate Dean for Undergraduate Research:

Sherry Bame  
Robert C. Webb

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## ABSTRACT

Unmet Needs for Emergency Organizations During Disaster: Red Cross and Salvation Army Referrals in Texas During Katrina-Rita, 2005. (April 2010)

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The purpose of this study is to examine unmet needs for key emergency organizations - Red Cross and Salvation Army - in Texas during Katrina and Rita Hurricanes, 2005. Using Texas 2-1-1 data from 8/1/05 – 12/31/05 (N=635,983 calls), referrals to these organizations will be examined by location and disaster phase. This is the first time that “real time” disaster unmet needs of this geographic scope have been examined. The findings will help disaster organizations better understand unmet needs for their services at disaster sites and evacuation destinations.

Results show that major metropolitan areas have high volume of need for access to Red Cross. Harris County stands out with three times greater needs for Red Cross support. After adjusting for urban/rural bias, metropolitan counties have expected number of Red Cross needs per 1,000 households. In adjusted findings, there is a striking focus of Red

Cross unmet needs to the disaster area, especially Jasper County and surrounding area. For Salvation Army, the highest volume of unmet needs is in largest metropolitan counties as primary evacuation destinations. There is an exception of Lubbock County which had a local initiative for a non-disaster Salvation Army program. When adjusted by population size, disaster area and evacuation destinations have expected levels of unmet needs for Salvation Army. Taylor (Abilene) and Lubbock Counties had high demand for access to Salvation Army for local programs.

Less densely populated areas surrounding location of Hurricane Rita landfall were at “high-risk”. More densely populated areas are better able to absorb needs of evacuees, while less densely populated communities are “high-risk” for unmet needs. For future disaster management possible recommendations include long-term recovery supplies in less populated areas near disaster sites, distribution of supplies along evacuation routes, and recovery centers located in surrounding communities to help evacuees return home.

## **DEDICATION**

This thesis is dedicated to the victims of Hurricanes Katrina and Rita who were tragically lost in the Fall of 2005.

## ACKNOWLEDGMENTS

I would like to first and foremost thank Dr. Sherry Bame for her wonderful advice and help during this research process as well as my undergraduate career. Without her encouragement, I would never have imagined taking on this project. As anyone who has worked with her knows, Dr. Bame is a very special person who continually goes above and beyond to help students, and I am so grateful to have had her guidance.

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## NOMENCLATURE

AIC	Area Information Center
B/CS	Bryan/College Station
CDs	Compact Discs
DIZ	Disaster
FEMA	Federal Emergency Management Agency
I&R	Information and Referral
MISS	Missing
NGO	Non-Governmental Organization
RC	Red Cross
SA	Salvation Army
TIRN	Texas Information & Referral Network

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# CHAPTER I

## INTRODUCTION

### **Motivation for research**

The purpose of the study is to examine unmet needs for help from emergency organizations, namely, Salvation Army and Red Cross, during hurricanes Katrina and Rita, Fall 2005 in Texas. Use of these organizations' services is well documented for disaster events. However, little is known about access barriers to their services. A unique opportunity exists to measure unmet needs for Red Cross and Salvation Army services using Texas 2-1-1 data collected in "real time" before, during, and up to four months following Katrina-Rita. Texas' Emergency Management Office appointed the 2-1-1 Network as the State's communication hub during Katrina-Rita, linking callers with unmet non-emergency needs to available disaster and community services (Bame, et al., 2009a). Analysis of *unmet* needs for these emergency services over time and location will enable better planning by these emergency response organizations to reduce access barriers for more effective distribution of services and resources.

Similar to 9-1-1 for emergency needs, the FCC approved 2-1-1 as a three-digit number for information and referral regarding non-emergency services in 2000. In 2004, Texas completed its statewide 2-1-1 Information & Referral Network (TIRN, 2009), comprised

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This thesis follows the style of *Journal of the American Planning Association*.

of 25 regional programs where staff handled individual calls for information and referrals. In 2005, the 2-1-1 Texas Network was ready for the vast support network mobilized to help Katrina and Rita victims in Texas (2-1-1, 2009). Road signs for 2-1-1 were posted for Katrina evacuees evacuating into Texas. Rita evacuees and host communities used 2-1-1 to search for services needed anywhere in Texas (Bame, et al., 2009b). Staff and volunteers provided information and referrals to available, appropriate, and/or affordable services, at the same time logging the caller's location and unmet needs. To date, no disaster research has examined this statewide response for unmet needs both at disaster sites and evacuation destinations.

Salvation Army provided 5.6 million meals, assisted 3.3 million people, and donated a total of \$382 million for helping Katrina victims (The Salvation Army, 2009). In 2005 for Hurricanes Katrina, Rita and Wilma, American Red Cross spent \$227 million on food and shelter with nearly 500,000 hurricane survivors staying in Red Cross shelters (American Red Cross, 2009). But what about people who encountered barriers in accessing these emergency services? The media reported many anecdotes of problems obtaining emergency help during both Katrina and Rita hurricanes. This research will investigate "real time" requests throughout Texas for access to these emergency organizations. Understanding systematic patterns of these unmet needs over disaster phases and locations can help emergency organizations to better reduce access barriers for populations at risk during future disasters.

### **Review of research**

There has already been a large array of literature regarding management of and recovery from Hurricanes Rita and Katrina. The United States Government Accountability Office itself produced several accounts of the impact and recovery process. There were several Congressional Committees that have reviewed information regarding Hurricanes Katrina and Hurricane Rita. Since the topic of funding from FEMA was a popular and much criticized issue during the disasters' aftermath, there were also several news articles, as well as Government Accountability Office reports, regarding this. FEMA had a surplus of information in relation to its involvement in Hurricanes Katrina and Rita; however, information on Red Cross and Salvation Army services during Katrina and Rita was less published.

Hurricane Katrina made landfall as a category 4 hurricane on August 29, 2009 (Brodie, et al., 2006: 1402). As thousands of people evacuated the New Orleans area, "the public health community asked what it could do to protect victims' health and promote their recovery and what lessons it could learn to better plan for a future storm or other disaster" (Brodie, et al., 2006: 1402). Studies have shown that through the course of any given storm, there will always be people who do not evacuate and will need rescue and aid afterward (Brodie, et al., 2006: 1402). Higher income families, disabled residents, as well as residents with family in a location to evacuate to are more prone to evacuate (Brodie, et al., 2006: 1402). According to Brodie's survey, one quarter of people interviewed mentioned National Guard, Coast Guard or military as an organization that

helped most during the storms, while 19% mentioned private organizations, such as the Red Cross or Salvation Army (Brodie, et al, 2006: 1405). Evacuation has been shown to be at a higher rate if the household trusts the source of information and has clear instructions. In the case of New Orleans and Hurricane Katrina, approximately one third of the evacuees surveyed in the Houston shelters reported that they had not heard an evacuation order, and around thirty percent that had heard the order believed that no clear information about how to evacuate was provided (Brodie, et al., 2006: 1404).

Hurricane Katrina produced the largest relocation of people in the United States since the Dust Bowl in the 1930s (Nigg, 2006). The Dust Bowl resulted in the migration of 300,000 to 400,000 citizens from the southern plains states to California; however, this took place over several years. An estimated 1.2 million people evacuated from New Orleans within a matter of hours and days before Hurricane Katrina made landfall. Another 100,000 to 120,000 people were in a second evacuation that occurred after flooding had increased, which, in turn, increased the demand for shelter and supplies needed.

Hurricane Katrina resulted in the largest one-time response “in the history of American philanthropy or the world for that matter” (WDSU, 2007). A total of \$4.25 billion was donated to Hurricane Katrina relief. American Red Cross collected the most money, approximately \$2.1 billion, from all around the world after the storm. Within a month of landfall, 75 percent, or \$1.5 billion, was spent, according to Trent Stamp, the president

of watchdog group Charity Navigator (WDSU, 2007). The CEO of the Southeast Louisiana chapter of American Red Cross, Kay Wilkins, stated that a large quantity of the funds went to shelter and food for evacuees (WDSU, 2007). Wilkins also said that the Red Cross had established shelters for evacuees in 24 states. Although the majority of the money was used immediately after the storm, The Red Cross saved around \$193 million for long-term hurricane recovery programs (WDSU, 2007).

After the Red Cross' establishment in 1881, efforts were started to relieve the Great Fire of 1881 in the Thumb area of Michigan and eight years later, the Great Flood of 1889 in Johnstown Pennsylvania [see Table A.1.1 History of the Red Cross] (American Red Cross, 2009). Soon after this, Red Cross was granted a Congressional Charter and is still the only volunteer service organization to earn this title (Brudney and Gazley, 2009). In World War II efforts, the Red Cross was asked to begin charging for nominal items due to the fact that other organizations found it necessary to do so (American Red Cross, 2009). Over the last century, Red Cross has made several technological advances such as completing a transformation into re-engineered blood services and implementing a nucleic acid testing study (American Red Cross, 2009). After the Terrorist Attacks of 9/11, Red Cross solicited funds and donations for those affected. During Red Cross' efforts with Hurricane Katrina recovery, fundraising goals were met to ensure the needs of the victims (American Red Cross, 2009). Most recently, Red Cross has spent \$15 million on Midwestern flood victims (American Red Cross, 2009).



In just two weeks after Katrina made landfall, the Red Cross raised \$439.5 million (American Red Cross, 2009). Due to the hurricanes, basic amenities were demanded at ten to twenty times greater than any other disaster that the Red Cross had dealt with in their existence of 125 years (American Red Cross, 2009). Volunteers came from forty-seven states, three territories, and the District of Columbia in a combined effort that resulted in ninety-five percent of the Red Cross' efforts (American Red Cross, 2009). Although FEMA did provide temporary shelter for Katrina evacuees, Red Cross played a much larger role in supplying emergency, or immediate, sheltering. The Red Cross opened approximately 1400 shelters during the disaster that sheltered 3.8 million overnight stays and 68 million meals (American Red Cross, 2009). Five days after Katrina hit, the Red Cross served a record breaking 995,000 hot meals, which is five times the average number of meals served on a single day following a disaster (American Red Cross, 2009).

In the aftermath of the 2005 Hurricane Season, Red Cross stated that they learned many valuable lessons that could be spread to many other Non-Governmental Organizations (NGO's) as well. Some things that Red Cross has done to improve their organization for future disasters includes expanding operating capacity as well as developing and strengthening partnerships with local communities. Additionally, Red Cross has vastly increased the amount of warehouse space for disaster response supplies and has also created new ways to maintain communication systems after existing communication infrastructure has been disabled by disasters (American Red Cross, 2009).

Although on a smaller scale monetarily compared to the Red Cross, the Salvation Army also serves as a primary disaster response agency in the U.S [see Table A.1.2 History of Salvation Army]. Through the devastation and destruction of coastlines in Alabama, Louisiana Mississippi, and Texas, and the death of 1600 residents, the Salvation Army provided support for families in need after Hurricanes Katrina and Rita (The Salvation Army, 2009). During 2005 hurricane season, immediate needs of survivors of Katrina, Rita and Wilma were met by the Salvation Army provision of meals, shelter, and donations. The Salvation Army served 5.6 million meals and assisted 3.3 million people with the help of \$382 million in donations. The Salvation Army continues to serve those affected by Katrina through long-term clean up and restoration efforts, as well as providing financial and social service support to survivors. Additionally, spiritual and emotional support were offered to individuals and families that were impacted by the disasters.

Throughout history, The Salvation Army has provided support for some of the major disasters that have resulted in vast devastation. In 1900, the Galveston Hurricane became the organization's first major response (The Salvation Army, 2008). After Hurricane destroyed the city of Galveston and caused over 5,000 deaths, volunteers moved to the Galveston area and cleaned, fed, and sheltered thousands of survivors. The San Francisco Earthquake of 1906 with a 8.25 magnitude lead to fires throughout the city for 3 days as well as more than 3,000 deaths. During the recovery efforts the Salvation Army fed 30,000 people, sheltered 9,000 and donated \$15,000. The 9/11

Terrorist Attacks in 2001 were the next major disaster that the Salvation Army responded to. Relief workers at Ground Zero were served food by solely the Salvation Army as well as given emotional and spiritual support. 3.2 million meals were served, 39,000 people were assisted, 1 million volunteer hours were provided and \$90 million were donated during the months following the Attacks. The Indian Ocean Earthquake in 2004 led to 200,000 deaths in East Asia. Restoration and long-term recovery work were provided by the Salvation Army. Approximately 2,200 homes are in the process of being constructed, 250,000 people were assisted and \$43 million were donated to the cause. The most recent disaster that the Salvation Army has responded to is Hurricane Katrina in 2005.

The Salvation Army also has several programs within the organization that provide support. The organization provides Community and Fellowship services through Kroc Community Centers, Youth Camps and Recreation (The Salvation Army, 2009). Comfort and Support services are created through Christmas Charity, Elderly Services and Community Cares Ministries. Rebuilding Lives services include Disaster Relief, Prisoner Rehabilitation and Fight Human Trafficking. The Salvation Army's Disaster Relief program is often a first responder after a disaster. Trained officers are able to assist with a wide range of emergencies and provide food, shelter, clothing and spiritual comfort.

## Research questions

Research Objective: To determine variation in volume of unmet needs in Texas for emergency disaster services from a) Red Cross, and b) Salvation Army during Katrina-Rita, Fall 2005, by:

Hypothesis 1: Caller location:

Unmet needs for Red Cross and for Salvation Army help will differ by disaster sites vs. evacuation destinations.

Hypothesis 2: Disaster phase:

Unmet needs for Red Cross and for Salvation Army help will differ by disaster phase: evacuation vs. landfall vs. immediate post landfall vs. short-term recovery vs. long term recovery).

It should be noted that the above hypotheses predict differences in unmet needs for a) Red Cross and b) Salvation Army per location, phase, and population characteristics. The direction and magnitude of these differences were not specified as this is the first empirical analysis of this topic. No literature has been found to date as a conceptual or theoretical basis for such types of predictions, nor empirical evidence for contrasting one group vs. another.

The findings will be described for each hypothesis for each organization -- Red Cross and Salvation Army. Then the trends will be compared between Red Cross and Salvation Army. Moreover, unmet needs by location over time will also be compared for the two organizations. Population differences by location will be described, leading to recommendations for future research controlling for these population differences. Thus, this is an empirical, descriptive investigation of unmet needs for help to meet needs for

shelter, food, clothing and other basic needs that the Red Cross and Salvation Army provided as first responders in Hurricanes Katrina and Rita in Texas, 2005.

### **Scope of study**

As previously stated, a unique opportunity exists to measure needs for help from and referral to Red Cross and Salvation Army. There has been little to no research done reviewing access barriers to the services that Red Cross and Salvation Army provide. A total of 635,983 2-1-1 calls were recorded in Texas from 8/1/05 to 12/31/05. This analysis is the first time that “real time” disaster data of this geographic scope have been examined.

In the field of Urban and Regional Science, there is a need to improve emergency plans for evacuations in urban settings. Due to the fact that the population of America is aging as well as moving into more urban settings, planners are faced with new challenges when considering disaster evacuation and recovery. The importance of disaster planning is increasing as the population of America becomes older and more urbanized. As stated by Brudney and Gazley, “governmental responses to domestic disasters have emphasized the important role played by a sometimes extensive network of decentralized, voluntary organizations in emergency response” (Brudney and Gazley, 2009). In their article, *Planning to be Prepared: An Empirical Examination of the Role of Voluntary Organizations in Country Government Emergency Planning*, Brudney and Gazley go on to state that coordination between local governments and voluntary

organizations would improve their ability to respond to disasters. Cities should be better prepared to assist those with special needs who are unable to evacuate independently.

Rural communities need to anticipate disaster and evacuation needs with fewer resources to support their disaster planning efforts. In low-income areas, there needs to be better communication of how to evacuate or shelter safely with lesser resiliency for transportation and housing. Although 100% evacuation has always been impossible, better planning is needed for all communities to prepare for major disasters and to host large-scale evacuations.

Red Cross and Salvation Army have played major roles as first responders for disasters occurring over the past century. Determining the caller location for unmet needs will enable Red Cross and Salvation Army to be more efficiently prepared for meeting disasters by having supplies and workers located in close proximity to high-need areas. Identifying the disaster phases will assist the organizations in allotting supplies and funds throughout the various time periods of the disaster, which will better estimate what type and how much of a service or need to be prepared for use. Knowing the population characteristics will give the organizations specific information that will be used to locate areas that have specific needs, such as more evacuation buses for areas of high density, more medical supplies for areas with high proportions of disabilities, or temporary or permanent free shelters for counties with low median income and high unemployment rates. This information, once relayed to Red Cross and Salvation Army will show them

areas that need improvement in their system and give them a better warning of which services are needed when and where.

## CHAPTER II

### METHODS

#### **Study population**

The study population includes all 2-1-1 call data from Fall 2005 collected by the Texas 2-1-1 Information and Referral Network (TIRN) from the 25 Area Information Center (AIC) programs. All 2-1-1 calls from 8/1/05 through 12/31/05 were included, with any caller identification information deleted. August 1 – August 22 was taken as the baseline prior to Katrina landfall. Data were analyzed through December 31 in order to include recovery. During the surge of disaster calls, the Texas 2-1-1 AICs captured all calls on a rollover basis; for example, calls to Fort Worth AIC could be answered in San Antonio AIC. Approximately 8-10% of the population of Texas had used 2-1-1 prior to the hurricanes. This number increased significantly in Fall 2005 due to 2-1-1 serving as an emergency communication hub for non-emergency needs from Hurricanes Katrina and Rita plus ongoing community needs.

Limitations of the study population included missing populations with lack of awareness of 2-1-1 services. The Texas 2-1-1 program had existed only for a year prior to Katrina-Rita and there had been little marketing done during that initial year. Signs were posted along evacuation routes that instructed drivers to “call 2-1-1 for help” for disaster-related information and referral. Others were told by emergency and community services to use 2-1-1 for their other needs. The study does not include people who were able to meet



their own needs through either private or public means and those without a working cell phone or landline.

Individuals also may have known about the services, but the services might not have been available at the right time and/or location. Affordability was another access barrier that can affect the number of callers. Callers may not have been aware of financial aid that was available and therefore would not have bothered calling 2-1-1. Acceptance of language, social status, race, ethnicity, age and gender may also have been factors that may have discouraged evacuees from calling 2-1-1. Another population not included were people who were unmotivated or unable to seek services to meet their needs. Because there were no reliable demographic data collected for callers during the disasters, there was no capability to determine how representative the caller population was of the general or evacuation population groups.

### **Data collection**

Data were collected during each 2-1-1 call and recorded by various types of methods. At the 2-1-1 Centers, each call is handled by a person, not by a machine. Callers identified their problems to a staff or volunteer answering the phone. Staff were trained and certified for I&R Accreditation. During the disaster, volunteers worked throughout the state of Texas at their local AIC to help with the surge of calls. Texas 2-1-1 services were available 24 hours a day, 7 days a week, with roll-over capability to meet disaster needs regardless of location.

Staff entered caller information directly into the 2-1-1 software database. Volunteers logged call information on paper forms, with AICs devising any number of versions with up to 8 types of forms per AIC. In winter 2006, TIRN collected the electronic databases that had been exported into Excel or text files and stored on CDs. The paper data were copied and stored at TIRN headquarters in Austin. Six AICs had lost both paper and electronic data from Fall 2005, so a summary report of calls during the study period was used to determine number of calls by date and/or location and/or need.

### **Coding**

Once the data were received, the paper data were organized by AIC and coded into a consistent Excel data file format for each call. There were 9 AICs with paper data, recording approximately 40,000 calls. A team of 14 student workers took 7 months to code the paper data. Electronic data were available from 13 AICs; with approximately 380,000 calls. The original Excel files were reformatted into the study data file structure and validated, taking approximately 3 months by the 14 students. The report data from 6 different AICs were disaggregated to capture individual-level caller data by need, date, and/or location. The total number of 2-1-1 callers in Texas during the 5-month study period was 635,983.

### **Variables**

Caller information was entered into a consistent database format. A unique identification number was assigned to each call plus the AIC that reported it plus the

coder's initials and date coded. Call date is collected in mm/dd/yy format (32.5% of data had no date information). Caller location information including city, zip, and/or county was coded, aggregating to the county level. If the call was from out of state, the state the call was made from was recorded. (1% of calls were from out of state, 94% of calls were from the 254 counties of Texas and 5% of calls had no location information). The third variable collected was all information related to the caller's needs. The need was recorded by the team of students just as it appeared in the 2-1-1 format received from the AICs. Types of needs were documented and then any requests for information from Salvation Army, Red Cross, and FEMA were recorded. Another variable collected was any indication of Disaster (DIZ) and then if the DIZ was related to Hurricanes Katrina, Rita or Wilma. All data were reviewed and validated 100% for any mention of Red Cross/Salvation Army.

It is assumed that validity, reliability, and consistency of what was coded varied by staff/volunteer, shift, date, and other uncontrollable variables. This can be expected of any analysis of tertiary data due to the fact that there would be no control over data collection. Nevertheless, the caller information was as close to verbatim of what the caller identified, without recall or researcher interviewer biases. However, it must be noted that the completeness of the data was biased in 3 ways. First, the overwhelming surge of calls around landfall made it impossible to document each call and thus, some information regarding landfall needs and volume was lost. Second, AICs that lost their data were under-represented, with callers from their counties documented only in

rollover calls and aggregated summary reports. Last, two AICs with only report summary data (Dallas and Ft. Worth) were not able to reconstruct the date or location of caller needs. Thus, the data from these two major evacuation destinations would be missing in multivariable analyses, creating a bias under-representing urban evacuation needs. Other data collection problems were random, including illegibility and unidentifiable abbreviations and nomenclature. Coding errors were reduced via 100% validation.

### **Variable limitations**

Only what was documented was known, i.e., we only know “What” and not “Why”. Another limitation for this study included not knowing whether a Salvation Army/Red Cross referral was in the caller’s home county or an evacuation destination. There would also be a number of secondary needs that were not captured because the staff focused on immediate primary needs. Nevertheless, this was a remarkable collection of “real-time” need information from an unprecedented geographic scope, for both hurricane disaster problems as well as evacuation unmet needs.

### **Analysis**

The data were compiled in Excel databases by the research team and merged for analysis. First, the frequency of Red Cross/Salvation Army needs were tallied. Next these needs were described over time during the study period, aggregating into disaster phases:

- baseline
- pre-landfall
- landfall,
- immediate post-landfall
- short-term post-landfall
- short-term recovery
- intermediate-term recovery
- long-term recovery.

The third stage of analysis was investigating total Red Cross/Salvation Army unmet needs during the study period mapped by location (per Texas county), then differences in volume and location noted when mapped by disaster phase. The analysis of location by disaster phase examined significant differences between the primary and secondary disaster areas versus primary vs. secondary evacuation destinations, controlling for population size. Last, the analysis of Red Cross/Salvation Army unmet needs by Census characteristics empirically tested for variation by county size.

## CHAPTER III

### RESULTS

#### **Introduction**

Texas was involved with the recovery and evacuation of Hurricanes Katrina and Rita in Fall 2005. Texas 2-1-1 was appointed as the communication hub during the disasters in order to link callers to emergency services. A total of 635,983 calls were recorded by Texas 2-1-1 from August 1, 2005 to December 31, 2005. These calls were coded and analyzed by type of need according to location and disaster phase. Two specific needs discussed in this paper are Red Cross and Salvation Army analyzed a) by frequency of 2-1-1 calls for each unmet need, then the frequency of each b) by location, and c) by disaster phase. Two types of spatial analysis are included: 1) number of 2-1-1 calls per county reflecting simple volume of demand for help overcoming barriers to access Red Cross and Salvation Army, and 2) volume of calls controlling for urban/rural bias. The later analysis controls for population size, measured as number of households per county, and enables a comparison across counties of a rate (per 1000 households) of the population at risk for access barriers to these first-responder organizations.

#### **Results of total needs**

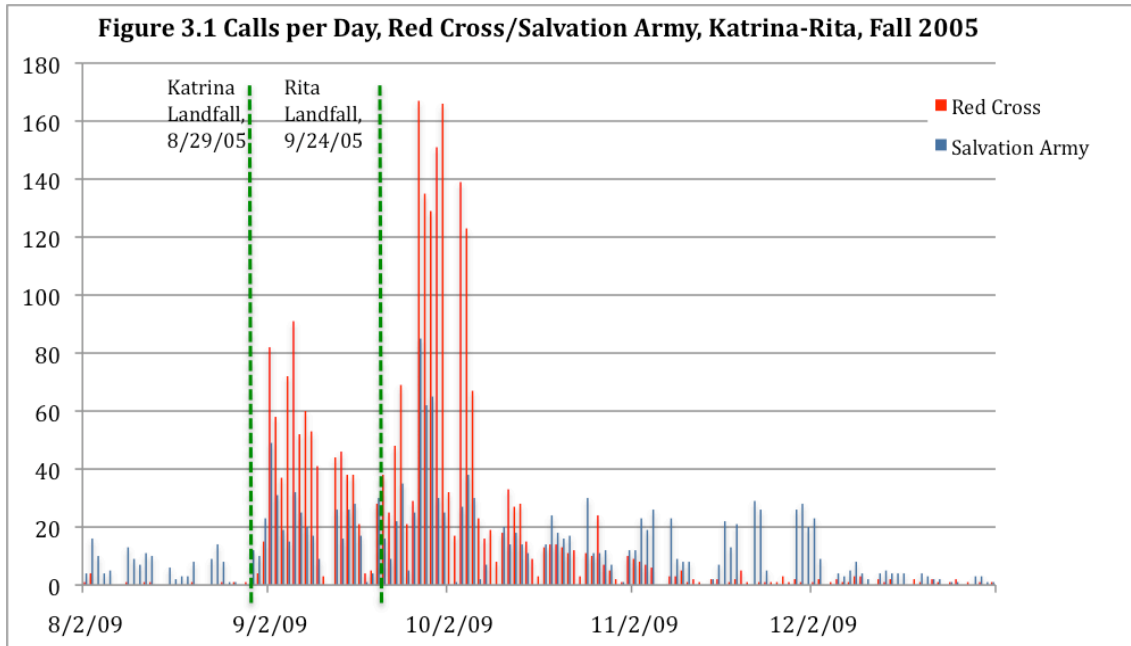
The total number of 2-1-1 calls logged during August 1, 2005 to December 31, 2005 was 635,983. In the Appendix, the total number of calls were tallied according to location (Table A.3.1) and date (Table A.3.2). Location by unmet need volume in Texas was mapped by Texas county and number of needs was graphed by date during the study

period and by aggregate disaster phase. There were three types of first-responder organizations coded – FEMA, Red Cross, and Salvation Army. The total number of callers needing help gaining access to first-responder organizations was 8,845, 1.39% of total needs. Of these calls for help connecting to first-responder organizations, 30.82% were for Red Cross (N=2726), 19.64% were for Salvation Army (N=1737), and 49.54% were for FEMA (N=4382). In this thesis, only Red Cross and Salvation Army needs were considered. Although the proportion of calls for these first responder organizations was relatively small compared to 2-1-1 calls for other unmet needs, the frequencies indicate that a number of the population “fell through the cracks” in managing the disasters and were in desperate need to connect with Red Cross for help getting shelter and to connect with Salvation Army to get access to food and other goods. By analyzing these calls for help to gain access to these organizations over time and location, we can determine when in the phases of disaster were there greater access barriers and more unmet needs as well as where these occurred in relation to counties at the disaster sites versus evacuation destinations. Tables A.3.1 and A.3.2 show total 2-1-1 calls by location and date [see appendix A.3.1 and A.3.2].

### **Results over time**

In Figure 3.1, the number of calls were plotted per day throughout the study period (8/1/05 – 12/31/05) for Red Cross and Salvation Army. The peak time period of requests for help to contact Red Cross was 9/26/05 (N=167/day, 6.13% of the total 2-1-1 calls for Red Cross). This peak occurred two days after Hurricane Rita made landfall in

western Louisiana and eastern Texas. Calls per day to Salvation Army also peaked on 9/26/05 (N=85/day, 4.89% of the total for Salvation Army). This high demand for help connecting to these first-responder organizations continued for 10 days from 9/26/05 to 10/05/05 and then dropped considerably.



There had been high numbers of 2-1-1 calls needing help to gain access to Red Cross and Salvation Army three days after Katrina made landfall when evacuees were sent into Texas. Requests for help to access Red Cross services started on 9/01/05 with 82 calls per day to a low of 40 calls per day, then rose again as more evacuees came into Texas. It is interesting to note that there were few sporadic calls for Red Cross help prior to 8/29/05 and after 10/30/05. Thus, 2-1-1 was able to help overcome access barriers to Red Cross during the acute phases of Hurricanes Katrina and Rita and into short-term recovery.



In contrast, unmet Salvation Army needs were fewer than for Red Cross but more continuous prior to Katrina until beginning of December. The first peak for 2-1-1 calls to help access Salvation Army occurred the same day as that of Red Cross, 9/01/05, and continued in a similar pattern as calls for Red Cross. Salvation Army peaked during Rita's immediate post-landfall phase, again at the same time as the peak of demand for help contacting Red Cross. Although these patterns were similar, the number of Salvation Army requests were about half those for Red Cross during immediate landfall and post-landfall. Beginning 10/31/05, six weeks after Rita landfall, Salvation Army and Red Cross calls per day returned to call rates similar to those during the baseline period.

Although during disaster periods Red Cross had about double the amount of requests of Salvation Army, prior to Katrina's landfall and then six weeks after Rita's landfall the number of 2-1-1 calls were considerably higher for Salvation Army than for Red Cross.

Salvation Army had significantly more average calls per day than Red Cross during the Baseline stage, 25 days prior to landfall. During evacuation, however, Red Cross had approximately double the average number of calls per day during both Katrina and Rita than Salvation Army did. Throughout immediate post-landfall, Red Cross had slightly more calls than Salvation Army, however; during Rita, Red Cross had almost double the average calls per day. After approximately a month post-Rita's landfall, Red Cross had fewer calls per day than Salvation Army. During intermediate recovery, Red Cross

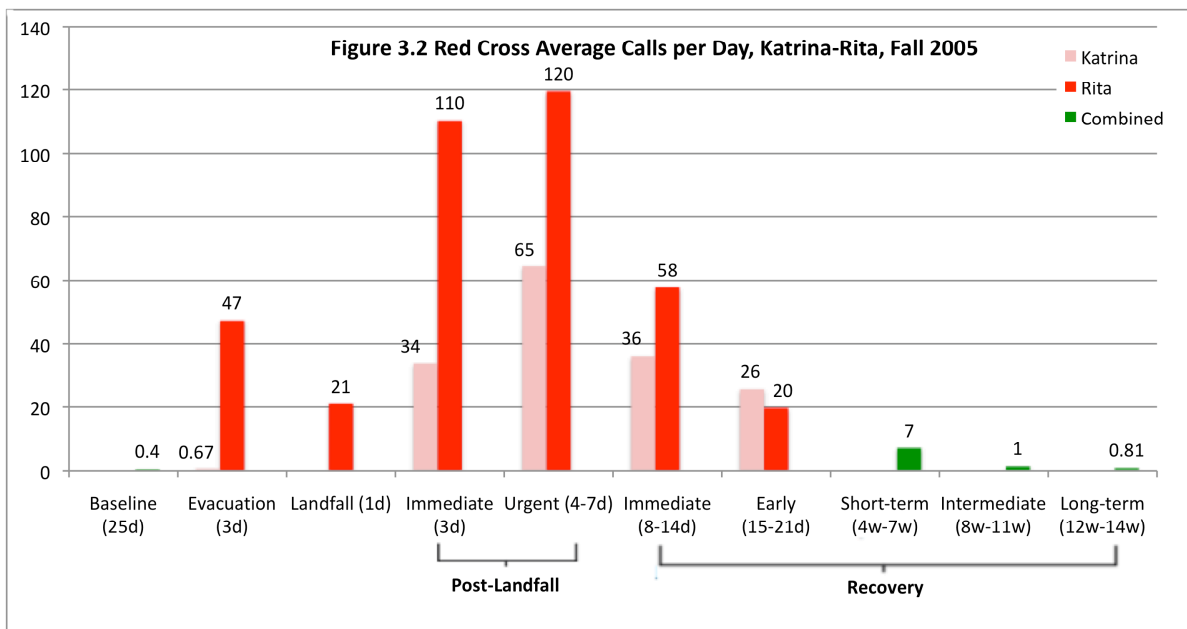
average calls per day decreased largely to 1.36 calls per day, while Salvation Army average calls per day remained higher at 9.17. During Long-Term Recovery, both Red Cross and Salvation Army average calls per day decreased to 0.81 and 2, respectively.

Thus, the number of 2-1-1 calls to help gain access to Red Cross services was greater than calls for Salvation Army during the acute disaster phases as would be expected. The spike of calls for Red Cross help following the first few days of emergency sheltering for Rita victims could indicate a problem in discontinuing Red Cross services too early for these devastating storms or in lack of communication to Katrina evacuees displaced yet again for Rita. After the second week of high demand for help overcoming barriers to Red Cross services, calls dropped considerably then dwindled to few if any calls during the recovery period. Either Red Cross increased their outreach to victims at this time or the evacuees were redirected to FEMA as Red Cross began to withdraw its services for hurricane victims in Texas. In contrast, demand for help to access Salvation Army services rose slightly during the acute disaster phases, indicating good outreach and communication to victims to direct them to Salvation Army resources. The demand for help to access Salvation Army for two more months into recovery may have needed greater outreach and communication, but these calls were limited in number and would be easily managed by 2-1-1.

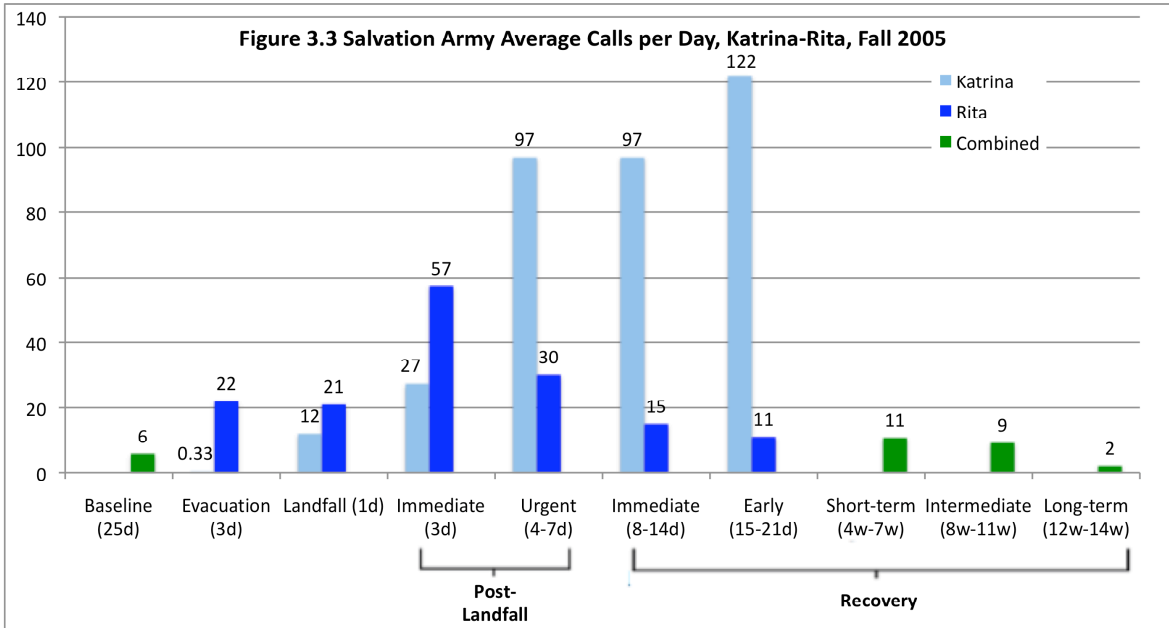
In Figures 3.2 and 3.3 and accompanying Tables 3.1 and 3.2, average calls per day for Red Cross (Figure 3.2) and for Salvation Army (Figure 3.3) were compared by disaster

phase for Katrina vs. Rita. Requests for help gaining access to Red Cross services were significantly higher during Hurricane Rita than Katrina except during early recovery. This perhaps reflected Katrina evacuees becoming Rita victims if they had evacuated to east Texas Gulf coast or metropolitan Houston area. The highest average daily number of Red Cross calls was during the urgent phase 4-7 days following both hurricanes when evacuees would traditionally begin preparing to return home and emergency shelters and first responders would begin to withdraw. Thus, availability of Red Cross services was decreasing and 2-1-1 calls for help gaining access to Red Cross reflected increase in unmet needs for their services. There were minimal requests for Red Cross services after 4 weeks post-Rita. Requests for help overcoming access barriers to Salvation Army were higher for Katrina evacuees once they were transported to Texas after 3 days post-landfall. Their 2-1-1 requests for Salvation Army help continued to rise until compounded by early evacuation for Rita. The peak of 2-1-1 calls for Rita evacuees needing access to Salvation Army services occurred as expected in the first few days immediately after landfall. Then as Rita evacuees were mobilizing to return home and deal with recovery, their unmet needs for Salvation Army began to reduce. Salvation Army requests continued throughout recovery, both as a component of disaster support services and as separate community initiatives such as “heat the town.”

	Baseline (25d)	Evacuation (3d)	Landfall (1d)	Immediate (3d)	Urgent (4-7d)	Immediate (8-14d)	Early (15-21d)	Short-term (4w-7w)	Intermediate (8w-11w)	Long-term (12w-14w)
Katrina	NA	0.67	NA	33.67	64.5	36.14	25.71	NA	NA	NA
Rita	NA	47.33	21	110.33	119.5	57.71	19.71	NA	NA	NA
Combined	0.4	NA	NA	NA	NA	NA	NA	7.07	1.36	0.81

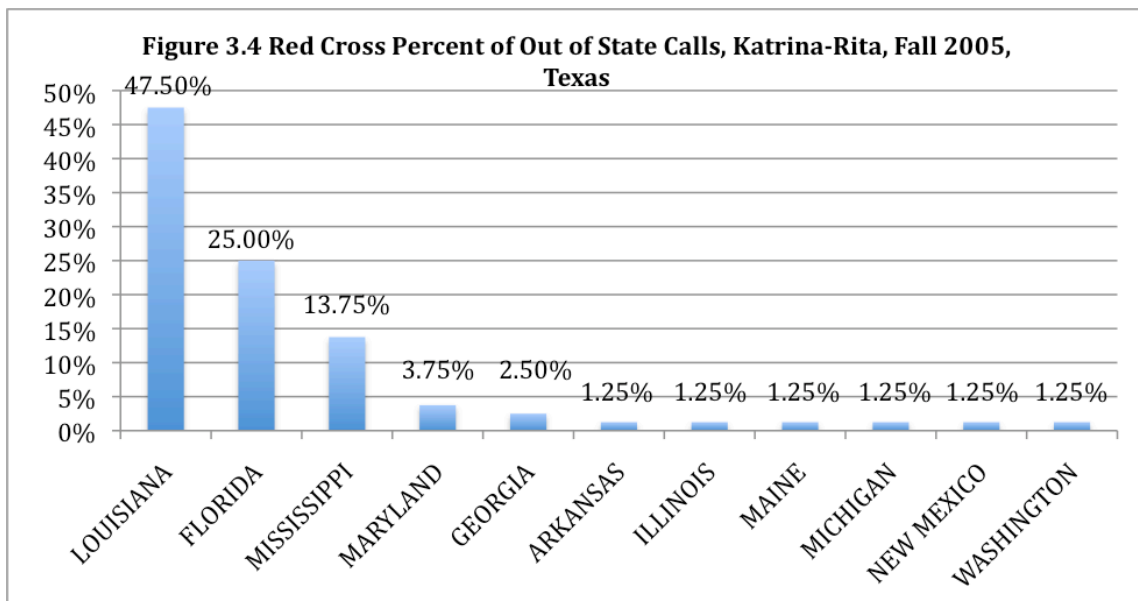


	Baseline (25d)	Evacuation (3d)	Landfall (1d)	Immediate (3d)	Urgent (4-7d)	Immediate (8-14d)	Early (15-21d)	Short-term (4w-7w)	Intermediate (8w-11w)	Long-term (12w-14w)
Katrina	NA	0.33	12	27.33	97	97	122	NA	NA	NA
Rita	NA	22	21	57.33	30	15	11	NA	NA	NA
Combined	5.72	NA	NA	NA	NA	NA	NA	10.75	9.17	2



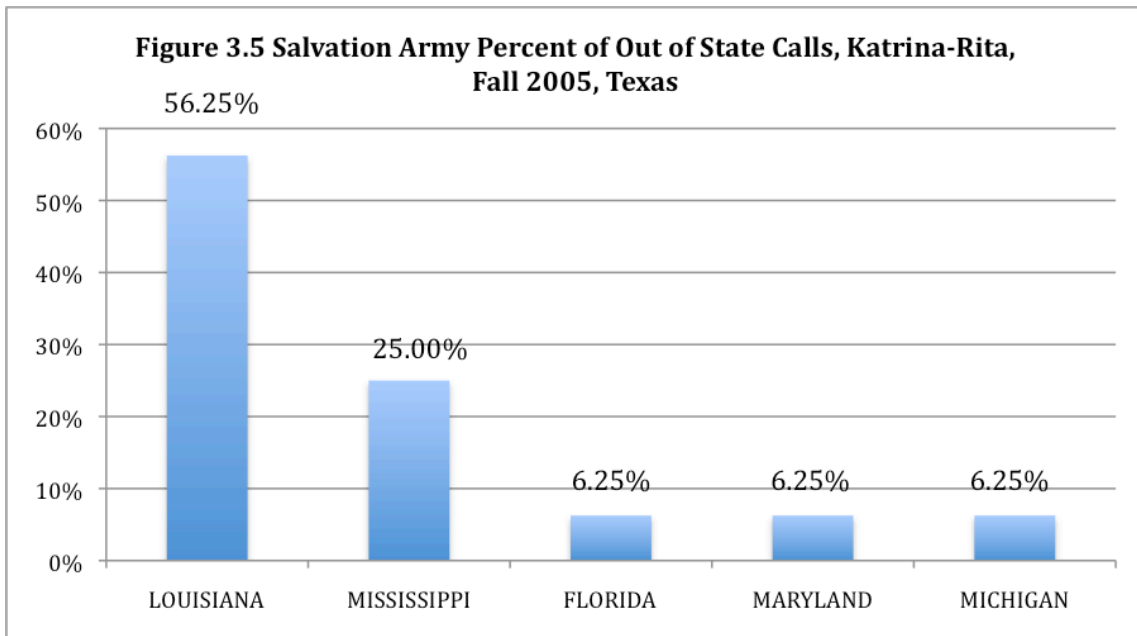
## Results by location

Out Of State 2-1-1 Calls for Red Cross: Caller location at the time of the call or destination where s/he was looking for help was logged by one or more indicator – county, city, zip, highway location. These were aggregated to the county level to reflect the jurisdiction for many types of support and emergency services. Aggregating at the county level also served to protect anonymity of callers when the data were analyzed by specific need by date by any of the 254 Texas counties. Ninety percent (N=2462) of the Red Cross calls were from within Texas and 3% (N=80) were out of state calls. A majority of Louisiana calls 1.39% (N=38) and 0.40% (N=11) from Mississippi related to Katrina recovery and evacuation. Less than one percent of all calls (N=20) were from Florida having to do with Hurricane Wilma later in Fall 2005. Other 2-1-1 out of state calls were included eight other states for a total of only 11 calls. (Also see Table 3.3).



<b>STATE</b>	<b>NUMBER CALLS</b>	<b>PERCENT OF TOTAL</b>
LOUISIANA	38	47.50%
FLORIDA	20	25.00%
MISSISSIPPI	11	13.75%
MARYLAND	3	3.75%
GEORGIA	2	2.50%
ARKANSAS	1	1.25%
ILLINOIS	1	1.25%
MAINE	1	1.25%
MICHIGAN	1	1.25%
NEW MEXICO	1	1.25%
WASHINGTON	1	1.25%
<b>TOTAL OUT OF STATE</b>	<b>80</b>	<b>100%</b>

Out of State 2-1-1 Calls for Salvation Army: Salvation Army calls were only from five other states – Louisiana (N=9) and Mississippi (N=4) regarding Katrina, with Florida, Maryland and Michigan each having only one call about Salvation Army unmet needs. Number of Texas calls for Salvation Army needs is listed per county in Appendix 1. Less than one percent of the total 2-1-1 Texas calls were for help to overcome access barriers to Red Cross and Salvation Army, nevertheless the total of 4463 for these first responder organizations was important to plan for future emergencies to reduce barriers for access to these urgent disaster service organizations.



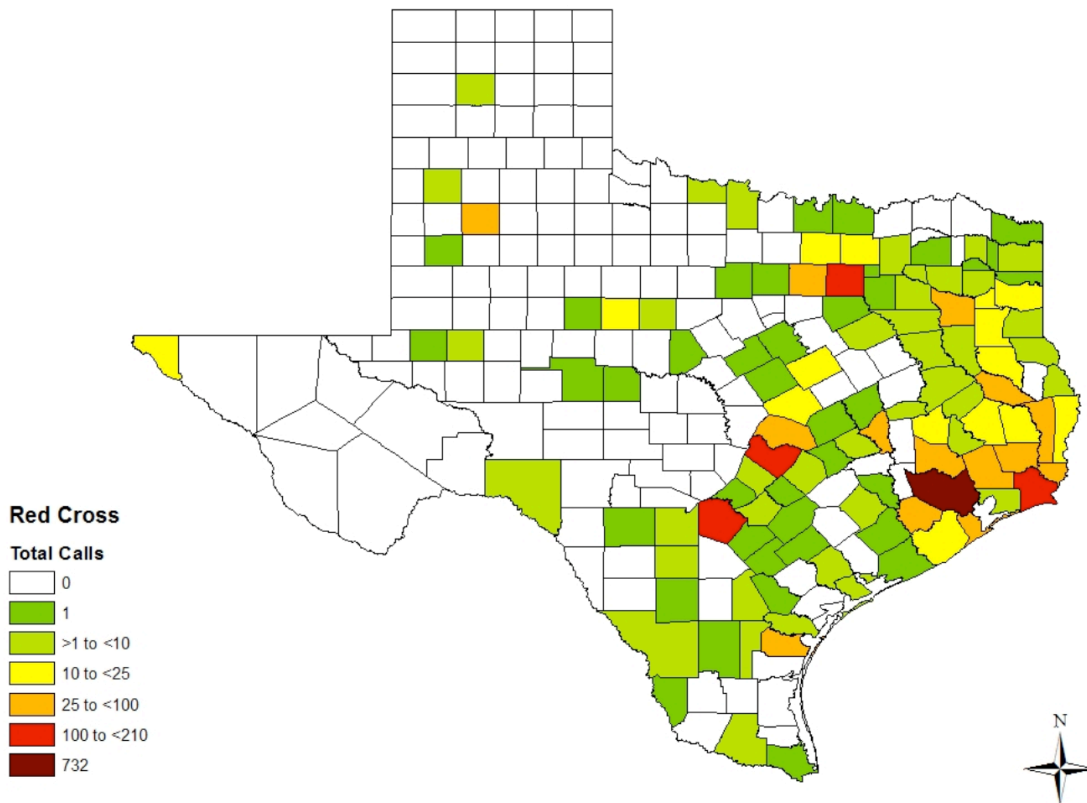
**Table 3.4 Salvation Army Out of State Calls, Katrina-Rita, Fall 2005, Texas**

STATE	NUMBER CALLS	PERCENT OF TOTAL
LOUISIANA	9	56.25%
MISSISSIPPI	4	25.00%
FLORIDA	1	6.25%
MARYLAND	1	6.25%
MICHIGAN	1	6.25%
TOTAL OUT OF STATE	16	100%

Red Cross Unmet Needs by Texas County: High volume of 2-1-1 calls requesting Red Cross were found in counties with the state's highly populated metropolitan areas, namely, Tarrant (Ft. Worth), Dallas (Dallas), Bexar (San Antonio), Travis (Austin), and Harris (Houston), as shown in Figure 3.6 that is a map of the volume of 2-1-1 calls for



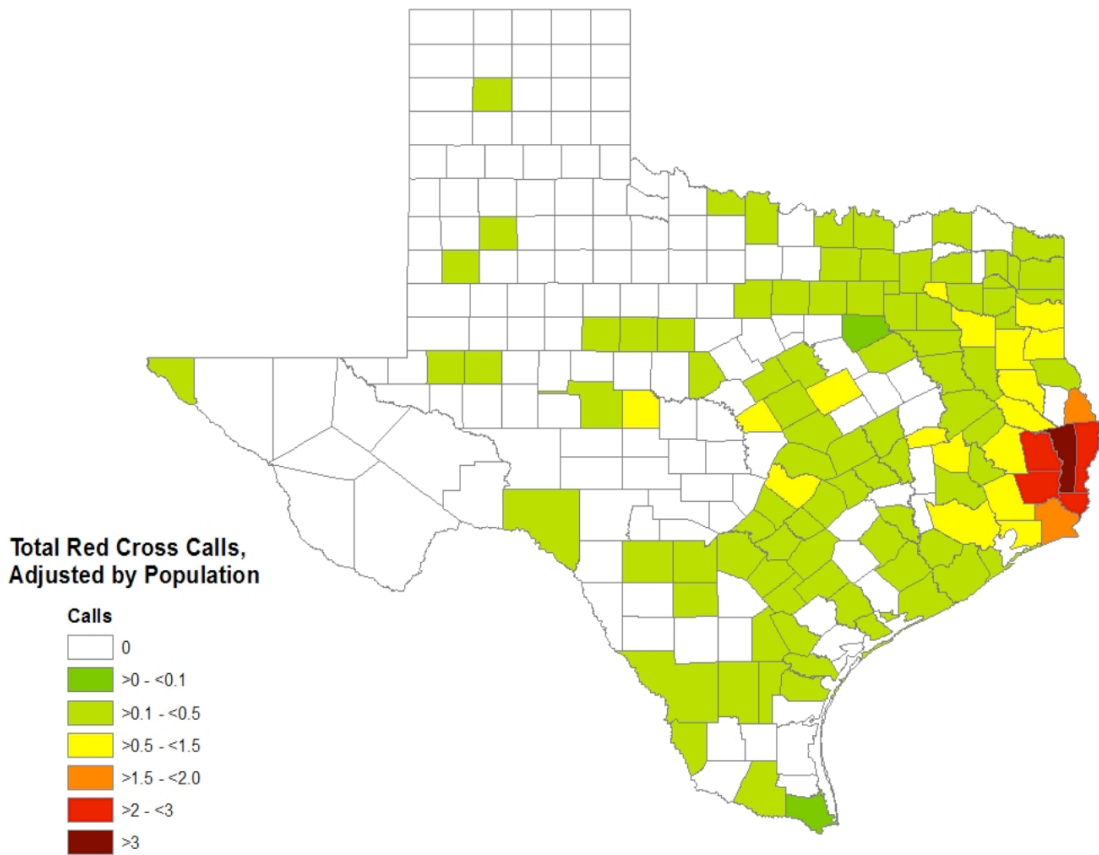
Red Cross, Harris County alone accounted for 29.74% of all Texas calls for Red Cross. This was not surprising given the number of both Katrina and Rita evacuees the area. The other large metropolitan areas were also high as expected, given that they were major evacuation destinations for both hurricanes. Tarrant County received 3.26% (N=89) Red Cross calls, Dallas County received 6.30% (N=172), Bexar County received 6.13% (N=167), and Travis County received 7.63% (N=208). Other urban areas along evacuation routes were also high in number of 2-1-1 calls for Red Cross. It is interesting to note in Figure 3.6 the volume of 2-1-1 calls follow the route north from Beaumont/Pt. Arthur to Tyler and the route northwest out of Houston along Highway 6 to Highway I-35 that took evacuees south to Waco, Austin, San Antonio and north to Ft. Worth and Dallas. Other urban areas more distant from the disaster sites had small to moderate number of 2-1-1 calls for help gaining access to Red Cross. This might reflect evacuees who sought destinations with family or friends in Texas. The number of calls from rural counties for Red Cross access were negligible. (Also see Table 3.4).



**Figure 3.6 Volume of Unmet Needs for Red Cross per Texas County, Katrina-Rita, Fall 2005**

<b>Table 3.5 Red Cross Calls per County, Katrina-Rita, Fall 2005, Texas</b>		
# CALLS	COLORING	N COUNTIES=
732		1
100- <210		4
25 - <100		14
10 - <25		15
>1 - <10		40
1		39
0		141

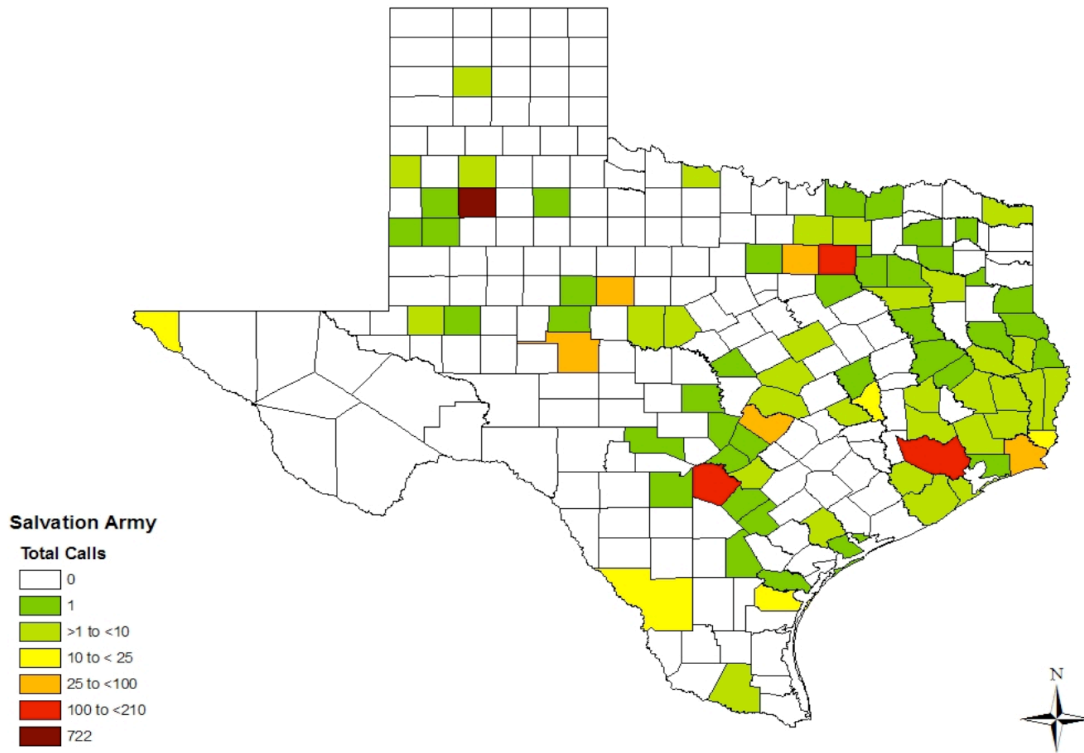
To control for the urban/rural bias of population size, the number of Red Cross calls were adjusted by population size according to number of households per county. This adjusted call rate reflected the location of populations at greater risk for access barriers to Red Cross services, regardless of population size. In Figure 3.7 map of this adjusted call demand, only the counties directly hit by hurricane Rita were “hot spots” for needing help to gain access to Red Cross services, namely, Jasper, Newton, Orange, Hardin, Tyler, Sabine, and Jefferson. Residents of these counties were over two to three times more vulnerable than expected with unmet needs to connect with Red Cross services. The adjustment by population size reduced the urban bias for the other metropolitan and urban evacuation destinations. Thus, greater outreach and media attention for referrals to Red Cross were needed for disaster locations. Access barriers to Red Cross were encountered in urban evacuation destinations, but did not exceed expected levels based on population size. (Also see Table 3.5).



**Figure 3.7 Unmet Needs for Red Cross per Texas County Adjusted by Population, Katrina-Rita, Fall 2005**

# CALLS PER 1,000 HOUSEHOLDS	COLORING	# COUNTIES
> 3		1
> 2 - < 3		4
> 1.5 - < 2.0		2
> 0.5 - < 1.5		17
> 0.1 - < 0.5		63
> 0 - < 0.1		26
0		141

Salvation Army Unmet Needs by Texas County: similar to Red Cross, 2-1-1 calls to help overcome access barriers to Salvation Army were more prevalent in the major metropolitan counties (with the exception of Lubbock County, which had a local Salvation Army program occurring during Fall 2005 called “Heat the Town”). These counties, namely, Dallas (Dallas), Bexar (San Antonio), and Harris (Houston) together account for 25.39% (N=441) of total Salvation Army Calls, as shown in Figure 3.8 map of total volume of 2-1-1 calls for Salvation Army. Dallas with 7.48% (N=130) calls, Bexar with 6.62% (N=115) calls, and Harris with 11.28% (N=196) calls. Travis, Tarrant, Jefferson, Taylor and Tom Green Counties also had significant number of calls per county. The volume of calls is quite strong along evacuation routes from Beaumont/Pt. Arthur through East Texas up to Dallas. Counties surrounding the major metropolitan areas saw fewer, but a still notable volume of calls. (Also see Table 3.6).

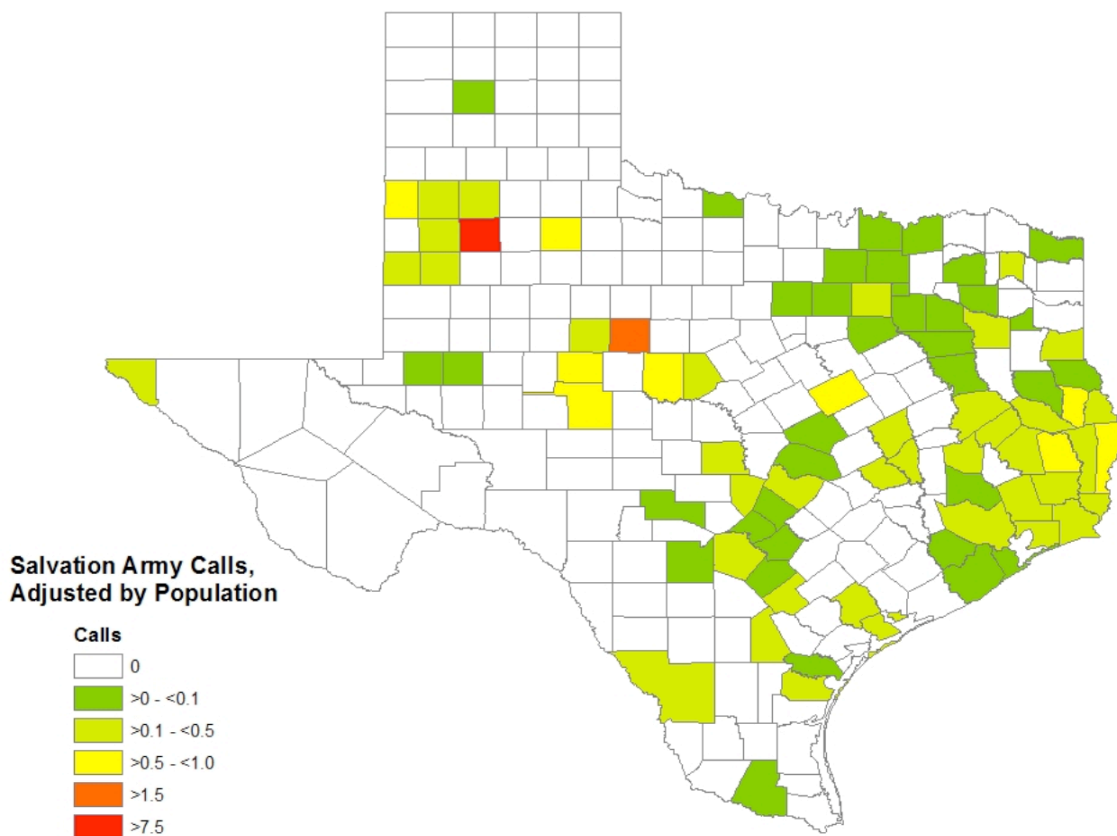


**Figure 3.8 Volume of Unmet Needs for Salvation Army per Texas County, Katrina-Rita, Fall 2005**

<b>Table 3.7 Salvation Army Calls per County, Katrina-Rita, Fall 2005, Texas</b>		
# CALLS	COLORING	N COUNTIES=
722		1
100 TO <210		3
25 TO <100		5
10 TO <25		5
>1 TO <10		32
1		39
0		169

Like the adjustments made for Red Cross to control rural/urban bias, Salvation Army calls per county were divided by population size according to number of households per county. Figure 3.9 shows the distribution of the adjusted call rate that indicated location

of areas at greater risk for access barriers to Salvation Army services. Again, Lubbock County and the surrounding areas might be an anomaly due to the fact that there was a local program occurring during the study period. Taylor County, where Abilene is located, had a higher than average caller frequency. The map also showed that the counties in the area affected by the hurricanes were prepared for the needs of callers, due to the fact that the calls adjusted by population were at an expected rate of less than 1.0 call per 1,000 households or less. (Also see Table 3.7)



**Figure 3.9 Unmet needs for Salvation Army per Texas County Adjusted by Population, Katrina-Rita, Fall 2005**

<b>Table 3.8 Salvation Army Calls per County, Adjusted by Population, Katrina-Rita, Fall 2005, Texas</b>		
# CALLS PER 1,000 HOUSEHOLDS	COLORING	# COUNTIES
> 7.5		1
> 1.5		1
> 0.5 - < 1.0		9
> 0.1 - < 0.5		38
> 0 - < 0.1		36
0		169

Red Cross and Salvation Army had similar areas of high call volumes in the “population triangle” created by Dallas, Houston and San Antonio. Jefferson County, hit by hurricane Rita, also had high call volume for both organizations. Additionally, the areas leading from Jefferson and Harris Counties along evacuation routes towards Travis and Bexar Counties and other routes towards Dallas and Tarrant Counties also had a notable call volume. Locations along evacuation routes could be an area for Red Cross and Salvation Army to examine while preparing for hurricanes or evacuations in the future. While obvious needs such as gasoline are expected during emergency evacuations, these first responder organizations could, for example, prepare for elderly people that may need to stop and rest more often than younger adult evacuees. Setting up shelters and food stations along the evacuation routes is also something Red Cross and Salvation Army could consider for the next time. (Also see Table 3.8)



In adjusting for urban/rural population differences, the urban evacuation hubs had expected ratios of 2-1-1 callers after taking into account population size measured as number of households. However, east Texas disaster counties along the Gulf coast and inland following the path of Rita had much greater than expected demand for help reaching Red Cross services. Jasper County had over three times the expected rate and the surrounding counties had two times greater or more than expected calls, given their population size. In stark contrast, the high-risk counties for unmet needs for Salvation Army calls were in west Texas, both to help displaced evacuees as well as help gaining access to local Salvation Army program initiatives. Hence, Red Cross and Salvation Army in the highly populated metropolitan areas in Tarrant, Dallas, Travis, Bexar and Harris Counties were able to absorb the needs of evacuees and were all at or below expected levels of calls when adjusted by population. This showed that the more scarcely populated areas closer to the disaster area were not adequately able to keep up with needs of evacuees. In the future, Red Cross and Salvation Army might allocate more goods and services to the more rural areas around the area of disaster in order to ensure that evacuees have food and shelter. This number might also be high due to the fact that evacuees opted to relocate closer to home instead of going further away to a metropolitan area. In this case, long-term recovery needs would have to be met. Lastly, evacuees trying to return to their home in the evacuated area might be seeking needs in more stable communities. In this case, perhaps Red Cross and Salvation Army could locate recovery centers in surrounding communities that help evacuees return home and provide food and shelter while they attempt to recover and rebuild their homes.

In summary, Fifty-six percent of Texas counties had no calls for Red Cross and 63% had no calls for Salvation Army. These counties with no calls were, for the majority, located in west Texas outside of the five counties with metropolitan areas (Bexar, Tarrant, Travis, Dallas and Harris), evacuation destinations, shelters, and evacuation routes. Fifty-six percent of 2-1-1 calls for Red Cross were located in the metropolitan counties of Bexar, Dallas, Harris, Tarrant and Travis, and 33% of calls for Salvation Army were within these 5 counties. Thus, the volume of unmet needs to connect with Red Cross and Salvation Army were concentrated in the urban areas that served as evacuation destinations and in the disaster counties. But once population size was controlled, the Rita disaster sites had the greatest risk for unmet needs to access first responder organizations, particularly in the more rural areas hard-hit along the path of the storm.

## **CHAPTER IV**

### **SUMMARY AND CONCLUSIONS**

#### **Purpose/objectives**

The purpose of the study is to examine unmet needs for help from Red Cross and Salvation Army during hurricanes Katrina and Rita, Fall 2005 in Texas. Little information is known about access barriers to these organizations' services. Using 2-1-1 data from over 635,983 2-1-1 calls collected in "real time" before, during, and up to four months following Katrina-Rita, unmet needs for Red Cross and Salvation Army services can be measured. By analyzing the unmet needs for these emergency services over time and location, better planning will be possible to ensure effective distribution of services and resources.

#### **Methods**

The study population includes all 2-1-1 call data from 8/1/05 through 12/31/05 from the 25 Area Information Centers in Texas. Prior to Fall 2005, approximately 8-10% of the Texas population had used 2-1-1. After using 2-1-1 as an emergency communication hub for non-emergency needs during the hurricanes, this percentage increased significantly. Limitations of the study included missing populations with lack of awareness, people who were able to meet their own needs, and those without access to phones.

Data collected during each 2-1-1 call were recorded using various types of paper forms and electronic software. Once the data were received, a team of 14 student workers took 7 months to code the paper data and 3 months to reformat electronic data into a consistent format.

To analyze the data, first the frequency of Red Cross and Salvation Army needs were tallied. Next, the needs were broken down into 8 disaster phases to determine when peak time periods occur. Lastly, the data were analyzed and mapped per Texas county by volume and then adjusted by population in order to locate areas of “high-risk.”

### **Findings**

The total number of calls needing access to first-responder organizations was 8,845, 1.39% of total needs. Of these calls to first-responder organizations, 30.82% were for Red Cross (N=2726) and 19.64% were for Salvation Army (N=1737). The peak time period of requests for help to contact Red Cross was 9/26/05 (N=167/day, 6.13% of the total 2-1-1 calls for Red Cross). Calls per day to Salvation Army also peaked on 9/26/05 (N=85/day, 4.89% of the total for Salvation Army).

Caller location at the time of the call was logged and aggregated to county level to determine the jurisdiction for support and services. Ninety percent (N=2462) of the Red Cross calls were from within the 254 Texas counties and 3% (N=80) were out of state

calls. Salvation Army out of state calls consisted of only 0.90% (N=16) of total Salvation Army Calls.

A high volume of 2-1-1 calls for Red Cross came from the state's highly populated metropolitan areas of Tarrant (Ft. Worth), Dallas (Dallas), Bexar (San Antonio), Travis (Austin), and Harris (Houston). Volume of calls also had an interesting trend of following evacuation routes from Beaumont/Pt. Arthur to Tyler and northwest out of Houston to Waco, Austin, San Antonio and north to Ft. Worth. To control urban/rural bias of population size, the number of calls were adjusted by population size. Residents in counties directly hit by hurricane Rita were over two to three times more vulnerable for unmet needs to connect to Red Cross than expected. Salvation Army unmet needs by Texas county were similar to Red Cross in that they were more prevalent in the major metropolitan counties, as well as a large number of calls along evacuation routes. Unmet needs for access to Salvation Army were adjusted for population as well, and the same area of counties directly hit by Rita were also a "hot spot."

## **Conclusions**

In conclusion, greater outreach and media attention for referrals to Red Cross were needed for disaster locations. Access barriers to Red Cross were encountered in urban evacuation destinations, but did not exceed expected levels based on population size. The volume of unmet needs to connect with Red Cross and Salvation Army were concentrated in the urban areas that served as evacuation destinations and in the disaster

counties. However, once population size was controlled, the Rita disaster sites had the greatest risk for unmet needs to access first responder organizations, particularly in the more rural areas hard-hit along the path of the storm.

The volume of unmet needs connecting to Salvation Army was primarily concentrated in urban areas that were designated as evacuation destinations. When the population size was controlled for urban/rural bias, the map showed that the counties in the area affected by the hurricanes were prepared for the needs of callers.

### **Red Cross recommendations**

In the future, Red Cross could possibly locate more supplies and shelters in the actual sight of the disaster location, rather than large surrounding communities. While the large metropolitan areas were able to absorb the needs of evacuees that relocated there, smaller communities were left with a larger demand per population. As seen in the maps, there was a heavy volume of Red Cross calls along routes from the location of the disaster to major metropolitan areas. In order to meet needs of those travelling to a safer destination, perhaps the Red Cross could locate more supplies and support services along these evacuation routes during evacuation periods. Lastly, the Red Cross can seek greater publicity in order to publicize their services to those in need.

**Salvation Army recommendations**

While the Salvation Army did not have any areas that were over expected call rates, there were similar patterns to those of the Red Cross, which showed the areas directly hit by the hurricanes were at higher risk for unmet needs for calls to Salvation Army.

Salvation Army could consider setting up shelters and food stations along evacuation routes in addition to those in densely populated areas.

**2-1-1 Recommendations**

In the future, perhaps 2-1-1/TIRN could implement a more uniform method of recording calls so that future unmet needs can be more quickly identified. This would allow first responder organizations to be more prepared with supplies and support services in the necessary locations.

**Disaster management recommendations**

Based on the findings, future planning for disaster management could possibly focus on increasing availability of supplies and support services both along evacuation routes and in areas directly affected by the disaster. Additionally, disaster management might consider allocating more resources to areas outside of densely populated areas in order to strengthen the abilities of smaller surrounding communities.

**Future research recommendations**

In future research, studies could be conducted to evaluate more specific demographics, such as age, income, sex, etc. to more specifically target areas or populations of “high-

risk.” Additionally, discovering if information is known about 2-1-1/Red Cross/Salvation Army could lead to better publicity and access to the Texas 2-1-1 Network.



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## APPENDIX

<b>Table 1.1 HISTORY OF THE RED CROSS</b>	
<b>YEAR</b>	<b>EVENT</b>
1821	CLARA BARTON BORN
1869	BARTON BRINGS IDEAS OF INTERNATIONAL RED CROSS TO AMERICA DURING FRANCO-PRUSSIAN WAR
1881	BARTON ESTABLISHES AMERICAN RED CROSS
1889	BARTON STARTS RELIEF EFFORTS FOR GREAT FIRE OF 1881, JOHNSTOWN FLOOD
1905	RED CROSS GRANTED CONGRESSIONAL CHARTER
1942	CHARGED FOR NOMINAL ITEMS IN WWII
1999	COMPLETES TRANSFORMATION INTO RE-ENGINEERED BLOOD SERVICES
1999	IMPLEMENTATION OF NUCLEIC ACID TESTING STUDY
2001	SOLICITS FUNDS AND DONATIONS FOR 9/11 ATTACKS
2004	ARC SUPPLIES 44% OF DONATED BLOOD IN US
2005	ENDS TISSUE SERVICES PROGRAM
2005	MEETS FUNDRAISING GOAL FOR HURRICANE KATRINA
2006	LAUNCHES KATRINA OPERATIONS
2008	\$15 MILLION SPENT ON MIDWESTERN FLOOD VICTIMS

(American Red Cross, 2009)

<b>A.1.2 HISTORY OF SALVATION ARMY</b>	
<b>YEAR</b>	<b>EVENT</b>
1878	SALVATION ARMY FOUNDED BY CATHERINE AND WILLIAM BOOTH
1900	GALVESTON HURRICANE - FIRST MAJOR DISASTER RESPONSE
1906	SAN FRANCISCO EARTHQUAKE
2001	9/11 TERRORIST ATTACKS
2004	INDIAN OCEAN EARTHQUAKE
2005	HURRICANE KATRINA
2007	VIRGINIA TECH SHOOTINGS
2007	MINNESOTA BRIDGE COLLAPSE
2008	SOUTHERN CALIFORNIA WILDFIRES
2008	MIDWEST FLOODS

(The Salvation Army, 2009)

<b>A.3.1 Calls by Need and Texas County, Katrina-Rita, Fall 2005</b>	
<b>COUNTY</b>	<b>NUMBER OF NEEDS</b>
ANDERSON	659
ANDREWS	173
ANGELINA	1326
ARANSAS	164
ARCHER	48
ARMSTRONG	13
ATASCOSA	174
AUSTIN	232
BAILEY	7
BANDERA	117
BASTROP	1180
BAYLOR	14
BEE	64
BELL	3442
BEXAR	49985
BLANCO	59
BORDEN	1
BOSQUE	208
BOWIE	324
BRAZORIA	2989
BRAZOS	6831
BREWSTER	36
BRISCOE	5
BROOKS	13
BROWN	216
BURLESON	320
BURNET	476
CALDWELL	408
CALHOUN	290
CALLAHAN	78
CAMERON	2256
CAMP	112
CARSON	7
CASS	153
CASTRO	9

CHAMBERS	426
CHEROKEE	568
CHILDRESS	16
CLAY	42
COCHRAN	7
COKE	19
COLEMAN	34
COLLIN	8967
COLLINGSWORTH	2
COLORADO	165
COMAL	580
COMANCHE	64
CONCHO	17
COOKE	267
CORYELL	442
COTTLE	11
CRANE	45
CROCKETT	13
CROSBY	26
CULBERSON	8
DALLAM	6
DALLAS	106900
DAWSON	149
DE WITT	254
DEAF SMITH	12
DELTA	78
DENTON	4975
DICKENS	12
DIMMIT	94
DONLEY	9
DUVAL	34
EASTLAND	90
ECTOR	3475
EDWARDS	7
EL PASO	1198
ELLIS	2127
ERATH	178
FALLS	279
FANNIN	325

FAYETTE	162
FISHER	10
FLOYD	13
FOARD	3
FORT BEND	9012
FRANKLIN	55
FREESTONE	221
FRIO	57
GAINES	60
GALVESTON	4041
GARZA	49
GILLESPIE	85
GLASSCOCK	12
GOLIAD	119
GONZALES	208
GRAY	12
GRAYSON	2976
GREGG	1247
GRIMES	353
GUADALUPE	596
HALE	65
HALL	5
HAMILTON	47
HANDSFORD	2
HARDEMAN	13
HARDIN	1929
HARRIS	137945
HARTLEY	0
HARRISON	509
HASKELL	19
HAYS	1550
HEMPHILL	0
HENDERSON	1043
HIDALGO	6696
HILL	771
HOCKLEY	45
HOOD	303
HOPKINS	1411
HOUSTON	221

HOWARD	702
HUDSPETH	4
HUNT	798
HUTCHINSON	18
IRION	8
JACK	68
JACKSON	257
JASPER	1566
JEFF DAVIS	3
JEFFERSON	10481
JIM HOGG	9
JIM WELLS	119
JOHNSON	1612
JONES	74
KARNES	55
KAUFMAN	1433
KENDALL	156
KENEDY	1
KENT	2
KERR	154
KIMBLE	14
KING	0
KINNEY	12
KLEBERG	115
KNOX	6
LA SALLE	62
LAMAR	599
LAMB	36
LAMPASAS	78
LAVACA	406
LEE	125
LEON	300
LIBERTY	1990
LIMESTONE	361
LIPSCOMB	2
LIVE OAK	32
LLANO	148
LOVING	2
LUBBOCK	5332

LYNN	25
MADISON	153
MARION	77
MARTIN	50
MASON	3
MATAGORDA	190
MAVERICK	91
MCCULLOCH	21
MCLENNAN	6774
MCMULLEN	1
MEDINA	235
MENARD	16
MIDLAND	6568
MILAM	252
MILLS	14
MITCHELL	43
MONTAGUE	97
MONTGOMERY	4049
MOORE	22
MORRIS	84
MOTLEY	6
NACOGDOCHES	598
NAVARRO	721
NEWTON	501
NOLAN	120
NUECES	5492
OCHILTREE	3
OLDHAM	4
ORANGE	3010
PALO PINTO	322
PANOLA	158
PARKER	691
PARMER	6
PECOS	71
POLK	480
POTTER	1254
PRESIDIO	2
RAINS	106
RANDALL	303



REAGAN	4
REAL	15
RED RIVER	161
REEVES	76
REFUGIO	18
ROBERTS	14
ROBERTSON	403
ROCKWALL	653
RUNNELS	31
RUSK	370
SABINE	378
SAN AUGUSTINE	110
SAN JACINTO	249
SAN PATRICIO	354
SAN SABA	15
SCHLEICHER	7
SCURRY	98
SHACKELFORD	6
SHELBY	202
SHERMAN	8
SMITH	5927
SOMERVELL	54
STARR	40
STEPHENS	42
STERLING	6
STONEWALL	2
SUTTON	7
SWISHER	9
TARRANT	48439
TAYLOR	5405
TERRELL	1
TERRY	50
THROCKMORTON	1
TITUS	153
TOM GREEN	1472
TRAVIS	66812
TRINITY	139
TYLER	681
UPSHUR	321

UPTON	41
UVALDE	98
VAL VERDE	147
VAN ZANDT	586
VICTORIA	2097
WALKER	550
WALLER	1486
WARD	171
WASHINGTON	302
WEBB	400
WHARTON	277
WHEELER	6
WICHITA	1980
WILBARGER	58
WILLACY	33
WILLIAMSON	8416
WILSON	185
WINKLER	57
WISE	474
WOOD	452
YOAKUM	10
YOUNG	158
ZAPATA	14
ZAVALA	88
ALABAMA	59
ARIZONA	15
ARKANSAS	54
CALIFORNIA	112
COLORADO	19
CONNECTICUT	2
DELAWARE	3
FLORIDA	3377
GEORGIA	220
HAWAII	1
IDAHO	1
ILLINOIS	40
INDIANA	23
IOWA	4
KANSAS	14

KENTUCKY	35
LOUISIANA	1955
MAINE	3
MARYLAND	12
MASSACHUSETTS	7
MEXICO	3
MICHIGAN	24
MINNESOTA	5
MISSISSIPPI	341
MISSOURI	22
MONTANA	2
NEBRASKA	3
NEVADA	7
NEW JERSEY	4
NEW MEXICO	19
NEW YORK	32
NORTH CAROLINA	36
NORTH DAKOTA	1
OHIO	8
OKLAHOMA	48
OREGON	3
PENNSYLVANIA	13
PUERTO RICO	3
SOUTH CAROLINA	5
SOUTH DAKOTA	3
TENNESSE	3
TENNESSEE	17
UTAH	7
VIRGINIA	26
WASHINGTON	19
WASHINGTON DC	12
WEST VRIGINIA	1
WISCONSIN	4
MISS	42609
Total	635983

<b>A.3.2 Calls by Need and Date, Katrina-Rita, Fall 2005, Texas</b>	
<b>DATE</b>	<b>NUMBER NEEDS</b>
<b>MISS</b>	207703
<b>8/2/09</b>	2998
<b>8/3/09</b>	2833
<b>8/4/09</b>	2571
<b>8/5/09</b>	2428
<b>8/6/09</b>	1885
<b>8/7/09</b>	423
<b>8/8/09</b>	222
<b>8/9/09</b>	2796
<b>8/10/09</b>	2525
<b>8/11/09</b>	2457
<b>8/12/09</b>	2331
<b>8/13/09</b>	1940
<b>8/14/09</b>	360
<b>8/15/09</b>	206
<b>8/16/09</b>	3131
<b>8/17/09</b>	2603
<b>8/18/09</b>	2509
<b>8/19/09</b>	2195
<b>8/20/09</b>	1876
<b>8/21/09</b>	313
<b>8/22/09</b>	221
<b>8/23/09</b>	3173
<b>8/24/09</b>	2568
<b>8/25/09</b>	2609
<b>8/26/09</b>	2150
<b>8/27/09</b>	2288
<b>8/28/09</b>	320
<b>8/29/09</b>	268
<b>8/30/09</b>	3017
<b>8/31/09</b>	3024
<b>9/1/09</b>	4154
<b>9/2/09</b>	5479
<b>9/3/09</b>	5850
<b>9/4/09</b>	2851

9/5/09	3811
9/6/09	5005
9/7/09	7315
9/8/09	6117
9/9/09	6133
9/10/09	5347
9/11/09	799
9/12/09	682
9/13/09	6365
9/14/09	4651
9/15/09	4890
9/16/09	4462
9/17/09	4111
9/18/09	1003
9/19/09	781
9/20/09	5455
9/21/09	4572
9/22/09	5269
9/23/09	5587
9/24/09	3179
9/25/09	804
9/26/09	768
9/27/09	6103
9/28/09	6580
9/29/09	6686
9/30/09	6262
10/1/09	5682
10/2/09	2177
10/3/09	1077
10/4/09	7236
10/5/09	5605
10/6/09	5713
10/7/09	4145
10/8/09	3496
10/9/09	1324
10/10/09	1025
10/11/09	4331
10/12/09	4357
10/13/09	3897

10/14/09	3627
10/15/09	3590
10/16/09	1002
10/17/09	831
10/18/09	4371
10/19/09	3495
10/20/09	3381
10/21/09	3101
10/22/09	2882
10/23/09	670
10/24/09	445
10/25/09	4351
10/26/09	3770
10/27/09	3790
10/28/09	3503
10/29/09	3180
10/30/09	866
10/31/09	534
11/1/09	3890
11/2/09	3826
11/3/09	3935
11/4/09	3706
11/5/09	3210
11/6/09	641
11/7/09	468
11/8/09	4236
11/9/09	3666
11/10/09	3579
11/11/09	3340
11/12/09	2529
11/13/09	542
11/14/09	349
11/15/09	3840
11/16/09	3727
11/17/09	3889
11/18/09	3673
11/19/09	3072
11/20/09	491
11/21/09	277

11/22/09	4533
11/23/09	3133
11/24/09	1994
11/25/09	226
11/26/09	968
11/27/09	418
11/28/09	400
11/29/09	4427
11/30/09	3621
12/1/09	3468
12/2/09	3319
12/3/09	2762
12/4/09	459
12/5/09	367
12/6/09	4136
12/7/09	2825
12/8/09	3827
12/9/09	3298
12/10/09	2718
12/11/09	521
12/12/09	311
12/13/09	3254
12/14/09	3469
12/15/09	3097
12/16/09	2793
12/17/09	2407
12/18/09	485
12/19/09	241
12/20/09	3409
12/21/09	2691
12/22/09	2488
12/23/09	2045
12/24/09	1239
12/25/09	251
12/26/09	126
12/27/09	898
12/28/09	1931
12/29/09	2271
12/30/09	1948

<b>12/31/09</b>	1584
<b>1/1/10</b>	271
<b>TOTAL</b>	635983



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