Access To Care Among Displaced Mississippi Residents In FEMA Travel Trailer Parks Two Years After Katrina

Serious deficits in services—especially for mental health—remain for Mississippi Gulf Coast residents displaced by the hurricanes of 2005.

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ABSTRACT: The health care needs of Gulf Coast residents displaced by Hurricane Katrina in 2005 who remain in travel trailer parks nearly three years later have not been evaluated. We conducted a population-based assessment of the health care access of residents of these travel trailer parks in Mississippi. Our findings indicate a worsening of chronic disease, mental illness, and barriers to health care access since displacement. Meeting both the chronic disease and the mental health needs of people displaced by the hurricanes of 2005 is essential for ensuring their full recovery and that of the region. [*Health Affairs* 27, no. 5 (2008): w416–w429 (published online 29 August 2008; 10.1377/hlthaff.27.5.w416)]

Hurricane katrina devastated the U.S. Gulf Coast, particularly Louisiana and Mississippi, which were declared federal disaster areas after the storm hit in August 2005.[1] More than 500,000 people were left homeless, and 2.5 million were displaced, resulting in the largest internal displacement of an urban population in U.S. history.[2] At the time, those displaced were among the most underserved and vulnerable Americans and accounted for 10 percent of the world's approximately twenty-five million internally displaced persons (IDPs).[3] The Federal Emergency Management Agency (FEMA) established semipermanent travel trailer park communities in which IDPs could reside for up to

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two years.[4] Although many residents of these parks have since relocated permanently to other parts of the country or returned home, as of November 2007 approximately 50,000 households were still residing in such communities in the Gulf Coast region.[5]

Not only are the numbers of people displaced by the 2005 Gulf Coast hurricane season virtually unheard-of in the United States, but also the chronic disease and mental health needs of this population are substantial.[6] In addition, the trailer parks to which Gulf Coast residents have been displaced provide substandard living conditions.[7] For these reasons, we conducted a cross-sectional survey of the health care needs and access of residents of FEMA trailer parks in Mississippi, to identify barriers to and gaps in the provision of health care services for this displaced population, with the goal of informing current and future disaster health policy.

Study Data And Methods

■ **Survey sample and administration.** At the time of the study, approximately 17,789 FEMA-supported travel trailers were present in twenty of Mississippi's eighty-two counties.[8] Based on previous household estimates in a similar population, the studied population would consist of 12,377 people.[9] FEMA group and commercial trailer parks were surveyed if they contained ten or more trailers as determined by the 14 September 2007 FEMA Principal Federal Official Housing Group Daily Tracking Report, a comprehensive list of FEMA-supported trailer parks.[10] Residents of individual trailers taken to previous home sites were not included in this list or surveyed. Of the 134 trailer park sites in the state, 69 were sampled. Fifty-four sites were excluded because they contained fewer than ten trailers (twenty-nine contained one to two trailers), ten because they were industrial or exclusive sites, and one because of safety concerns. Households in each trailer park were selected using systematic random sampling. Surveyors randomly determined a starting household at each trailer park with a coin toss, and every other household was interviewed until the entire trailer park had been surveyed. Two separate attempts were made for trailers without anyone home at the initial attempt. Respondents were eligible to participate in the survey if they were age eighteen or older, spoke English, and identified themselves as being able to accurately provide information about the experiences of the entire household.

Interviewer training consisted of a day of one-on-one instruction and role playing, followed by several days of field observation and continuous supervision by personnel from the Center for Disaster and Humanitarian Assistance Medicine (CDHAM), Uniformed Services University of the Health Sciences. Local health officials and FEMA granted official permission for the study. Interviews were conducted by nine interviewers during a two-week period in September 2007, seven days a week, beginning at approximately 9:00 a.m. and ending at sundown. Interviews averaged fifteen minutes and were conducted in the most private setting

available. Questionnaires were reviewed daily for completeness and for correctness of data recording.

To determine an appropriate sample size for this study, we assumed a prevalence of major depression between 0.5 and 0.1, ±0.05. The sample size required to estimate that prevalence via a simple random sample, to within 0.05 with 95 percent confidence, was 139–383 household respondents.

■ **Survey questionnaire.** The questionnaire, written in English, was administered orally and contained seventy-three questions about respondent demographics, displacement, self-reported health status, the extent and types of health care services needed and accessed during displacement, depression, suicidal ideation, suicide attempts, and reproductive and child health since the 2005 hurricane season. Survey questions were modeled on an epidemiological instrument previously developed for the assessment of these IDPs.[11]

■ **Human subjects protection.** The study was approved by the Institutional Review Board at the Uniformed Services University of the Health Sciences. The survey was voluntary, and all data were anonymous. Oral informed consent was obtained from all participants, who did not receive any material compensation.

■ **Definitions.** A *household* was defined as "persons sleeping and eating under the same roof or in the same structure." We relied on self-rated health, a single question asking people to rate their overall health on a scale from excellent to poor, to assess health status. Self-rated health has been found to have good reliability and validity as a measure of health status and is considered to be a reliable summary of self-perception of health status.[12] Chronic disease was assessed by asking about conditions with onset more than three months before the date of interview or conditions that ordinarily lasted more than three months.[13] *Major depressive disorder* was defined as whether the respondent answered "yes" to at least one of the two screening questions on the Patient Health Questionnaire (PHQ-9) and reported at least four additional symptoms of depression experienced nearly every day for a two-week period since the hurricane.[14] A *regular medical care provider* was defined as any health care professional routinely seen in a physician's office, clinic, or hospital outpatient department, and not in an emergency department (ED) or mobile clinic. *Access to health care services* was categorized as emergency and acute or chronic primary care. *Well-child visits* were defined as visits made to a health care provider at regularly scheduled time periods after a baby is born. *Prenatal care* was defined as visits to a health care provider where some kind of medical act was performed that implied that the pregnancy was being taken care of, not including visits intended only to confirm pregnancy.

■ **Analysis.** Stata statistical software, version 10, was used to analyze the data. All analyses were adjusted for response weight, and standard errors were robust to clustering by trailer park. Statistical significance levels were established at $p < 0.05$. Pearson's chi-square test was used for 2×2 cross-tabulations. Analysis of variance was used for statistical comparison of the mean Likert score for self-rated health. Lo-

gistic regression was used to examine the relationship of associations between sociodemographic variables and major depressive disorder, adjusting for potential confounders including sex, age, employment status, self-rated health, and time spent in the trailer park. Migration into and out of trailer parks did not need to be controlled for because 95 percent of the sample had lived in their current park for at least ninety days. Expected rates of suicide and suicide attempts were calculated based on the number of reported household rates in a 754-day period since the hurricane.

Study Results

■ **Demographic characteristics.** A total of 742 FEMA-supported travel trailer park households were contacted. Of these households, ninety-four refused to participate, nine did not complete the survey, and twenty-nine were ineligible, yielding a survey response rate of 82 percent. Half of respondents were female, and nearly two-thirds were Caucasian (Exhibit 1). The mean age of the respondents was 44.7 years. Mean household size was 2.9 people, and mean time spent in the trailer park was

EXHIBIT 1
Demographic Characteristics Of Respondents To The Survey Of FEMA Travel Trailer Park Residents In Mississippi, 2007

	Respondents overall	
Characteristic	**Number**	**Percent**
Sex (n = 610)		
Female	315	50.9
Age, years (n = 606)[a]		
18–24	63	10.1
25–35	117	19.5
36–44	114	18.6
45–64	262	43.3
65+	50	8.5
Marital status (n = 610)		
Divorced/separated[b]	219	35.8
Married	160	25.9
Never married	135	22.5
Widowed	57	9.5
Unmarried with partner	39	6.3
Ethnicity (n = 609)		
Caucasian	390	64.0
African American	190	31.1
Native American	10	1.7
Hispanic	10	1.6
Other	9	1.5
Employment status		
Employed before displacement (n = 609)	367	60.4
Currently employed (n = 610)	219	35.6

EXHIBIT 1
Demographic Characteristics Of Respondents To The Survey Of FEMA Travel Trailer Park Residents In Mississippi, 2007 (cont.)

	Respondents overall	
Characteristic	**Number**	**Percent**
Annual income		
Before displacement (n = 609)		
<$10,000	255	42.1
$11,000–$20,000	174	29.1
$21,000–$30,000	87	14.1
$31,000–$40,000	46	7.6
>$40,000	32	5.1
Don't know	15	2.3
Since displacement (n = 607)		
<$10,000	356	58.8
$11,000–$20,000	151	25.1
$21,000–$30,000	58	9.4
$31,000–$40,000	17	2.7
>$40,000	13	2.2
Don't know	12	1.8
Educational attainment (n = 594)		
Less than high school (1–8 years)	52	8.8
Some high school (8–12 years)	136	22.9
High school (or GED, vocational) (12 years)	215	35.7
Some college (12–16 years)	154	26.4
College degree or beyond (16+ years)	37	6.2
State before displacement (n = 609)		
Mississippi	581	95.8
Louisiana	25	3.8
Texas	3	0.4
	Mean	**SD**
Duration of displacement (n = 609)		
Days in present trailer park	451.7	4.1
Household composition (n = 610)		
Household size	2.9	0.4
Total adults	1.8	0.3
Members <18 years	1.0	0.3

SOURCE: Authors' survey.
NOTES: FEMA is Federal Emergency Management Agency. GED is general equivalency diploma. SD is standard deviation.
[a] Mean age, 44.7 years; standard deviation, 0.9.
[b] Divorced/separated implies no partner in the house.

451.7 days. Compared with the time period before displacement, the proportion of respondents who were employed decreased significantly, from 60 percent to 36 percent [95 percent confidence interval (CI) for the difference, 20–30 percent; $p < 0.001$], and the proportion of respondents with annual household salary less than $10,000 increased significantly, from 42 percent to 59 percent (95 percent CI for the

difference, 12–22 percent; $p < 0.001$).

■ **Chronic disease and self-rated health.** Four-fifths of respondents reported at least one adult in the household with a chronic condition, and approximately 58 percent of respondents reported at least one child in the household with a chronic condition (Exhibit 2). Since arrival at the trailer park, 58 percent of respondents perceived worsening of a household adult's chronic condition, and 68 percent reported such for a household child. Sixty-two percent of respondents reported their health status as being fair or poor since arrival at the trailer park, compared to 32 percent in the time period before displacement (95 percent CI for the difference, 27–32 percent; $p < 0.001$). Among household children, fair or poor health status since arrival at the park was reported by 43 percent of respondents, which was four times higher since displacement (10 percent) (95 percent CI for the difference, 30–37 percent; $p = 0.002$).

■ **Mental health.** Fifty-seven percent of respondents met criteria for major depressive disorder, and 72 percent reported symptoms of depression, including feel-

EXHIBIT 2
Chronic Disease And Mental Health Measures Among Population In FEMA Travel Trailer Parks In Mississippi, 2007

	Respondents overall	
Disease measure	**Number**	**Percent**
Chronic conditions		
Any household adult member with chronic condition (n = 610)	489	80.0
Any household child member with chronic condition (n = 278)	161	58.2
Physical handicap or disability		
Any household member who is bedbound or uses a wheelchair, cane, walker or any other device to aid in walking (n = 606)	125	20.3
Mental health		
Respondent reporting feeling down, depressed, or hopeless since displacement (n = 603)	443	72.4
Respondents with major depressive disorder[a] (n = 603)	347	57.0
Respondent reporting suicidal ideation since displacement (n = 608)	150	24.3
Respondent reporting suicide attempt since displacement (n = 609)	30	4.6
Believe the hurricane/displacement is responsible for suicidal ideation or attempted suicide (n = 122)[b]		
Not at all	11	9.6
A little	24	20.3
Quite a bit or extremely	87	70.1
Household member with suicide attempt since displacement (n = 604)	31	5.0
Household member committing suicide since displacement (n = 605)	1	0.1

SOURCE: Authors' survey.
NOTE: FEMA is Federal Emergency Management Agency.
[a] Assessed using the Patient Health Questionnaire-9.
[b] Only reported for people who experienced suicidal ideation (twenty-eight reported suicidal ideation but did not respond).

"Ensuring health insurance coverage during protracted displacement must become an integral component of disaster planning."

ing down, depressed, or hopeless since displacement (Exhibit 2). Major depressive disorder was more common among women [adjusted odds ratio (OR), 1.6; 95 percent CI, 1.1–2.3], and people who reported being unemployed since arrival at the trailer park (adjusted OR, 1.6; 95 percent CI, 1.02–2.5). The odds of major depressive disorder also increased with worsening self-rated health (adjusted OR, 2.1; 95 percent CI, 1.7–2.7). Since displacement, 24 percent of respondents reported suicidal ideation, and 5 percent reported personal suicide attempts. The majority of respondents with suicidal ideation could attribute them to the hurricane. Five percent of households reported that a household member had attempted suicide since displacement. We estimated suicide attempts and suicide rates to be 1,314 per 100,000 per year and 43.8 per 100,000 per year, respectively, in this population.

■ **Health care access and service use.** Nearly half of respondents had health insurance, compared to 59 percent with insurance before displacement (95 percent CI for the difference, 8–13 percent; $p < 0.001$) (Exhibit 3). More than half cited loss of or change in employment as the most common reason for loss of health insurance since displacement. Of those with newborns, prenatal care or well-care visits for a newborn were available for 55 percent and 62 percent of respondents, respectively, since displacement. Approximately 16 percent of respondents had been refused health care since arrival at the trailer park, most commonly by a private doctor's office (54 percent) or ED (19 percent). Ninety-four percent of respondents reported that health care services (for example, via a mobile medical unit) were not available in the trailer park.

Acute or primary care services and dental care for both adults and children were cited as most commonly needed and not available since arrival at the travel trailer park (Exhibit 4). Lack of finances and lack of health insurance were the most common reasons for delayed health care services. One-quarter of respondents cited the ED as the household's primary source of health care services, and 16 percent cited a community health clinic as such. Three-quarters of respondents reported no access to counseling or support services since displacement. Compared to all other respondents, people with major depressive disorder or those who reported suicidal ideation or suicide attempt were less able to access health care all or most of the time it was needed ($p = 0.03$), and two-thirds of such people had not received any counseling or support services since displacement.

Discussion And Policy Implications

We are unaware of other studies assessing the health care needs and access problems of people who remain displaced in FEMA travel trailer parks. Previous research has shown that displaced people with chronic diseases, mental illnesses,

EXHIBIT 3
Health Care Access Measures Among Population In FEMA Travel Trailer Parks In Mississippi, 2007

Access measure	Respondents overall	
	Number	Percent
Health insurance		
With health insurance (n = 609)	297	48.7[a]
Health insurance type (n = 292)		
Government	206	71.5
Private	86	28.5
Lost health insurance since arrival at trailer park	76	15.9
Reason for loss of health insurance since arrival at trailer park (n = 76)		
Lost or changed jobs after the hurricane	45	59.0
Government insurance stopped after the hurricane	17	21.6
Employer didn't offer or insurance company refused after the hurricane	6	8.2
Change in marital status or death of a parent/spouse after the hurricane	2	2.2
Other	6	9.0
Medical home		
Respondents with access to regular medical provider (n = 606)	306	49.9[b]
Household children with access to regular medical provider (n = 275)	211	76.9[b]
Proximity to health care services		
Proximity to health care facility (n = 609)		
1–20 minutes	331	54.1
20–40 minutes	166	27.2
>40 minutes	88	14.6
Have not visited a facility	24	4.1
Proximity to pharmacy (n = 600)		
1–20 minutes	387	64.2
20–40 minutes	101	16.7
>40 minutes	53	8.9
Have not visited a pharmacy	59	10.2
Frequency of health care service use when needed (n = 600)		
Every time	291	48.5
Most of the time	128	21.0
Sometimes	87	14.7
Rarely	34	5.6
Never	27	4.3
Have not needed services	33	5.8
Availability of health care services in trailer park (n = 598)		
Not offered	564	93.9
Don't know	30	5.4
2–3 times a week	2	0.4
Less than once a week	2	0.3

SOURCE: Authors' survey.
NOTES: FEMA is Federal Emergency Management Agency. Services in trailer park might be provided, for example, in a mobile medical unit.
[a] Fewer respondents with health insurance since arrival at trailer park ($p < 0.001$).
[b] Fewer respondents with regular medical provider since arrival at trailer park ($p < 0.001$).

EXHIBIT 4
Use Of Health Care Services Among Population Since Arrival At The FEMA Travel Trailer Park In Mississippi, 2007

	Respondents overall	
	Number	**Percent**
Delayed health care services, adults		
Type of delayed services (n = 374)		
Acute primary care	103	27.0
Dental care	85	22.7
Chronic/routine primary care	62	17.0
Prescription medications	34	8.8
Specialty care, surgery	33	9.0
Mental illness/substance abuse care	24	6.8
Emergency care	19	4.8
Other	14	4.0
Reason for delaying services (n = 361)		
No money to pay for services	179	49.6
No health insurance	105	29.3
No transportation/too far away from where services offered	24	6.4
Refused care	21	6.0
Did not know how to get services	11	3.0
Other	21	5.7
Delayed health care services, children		
Type of delayed services (n = 93)		
Acute primary care	24	26.3
Chronic/routine primary care	22	24.3
Dental care	22	23.0
Prescription medications	8	8.4
Specialty care, surgery	6	6.2
Other	11	11.8
Reason for delaying services (n = 96)		
No money to pay for services	36	37.1
No health insurance	33	34.8
Other	27	28.1
Primary source of health care services for the household (n = 600)		
Physician's office	252	41.7
Emergency department	157	25.9
Community health clinic	95	16.2
Have not received any services	78	13.1
Health department	7	1.2
Other	11	1.9

or physical disabilities; of low socioeconomic status; and who lack regular access to health care are at greatest risk of poor health outcomes after a disaster.[15] All of these characteristics are represented in this population of IDPs. Our findings suggest three major implications for meeting the needs of this population and for future U.S. disaster response health policy.

■ **Policy implications.** First, ensuring health insurance coverage during protracted displacement must become an integral component of disaster planning. Half

EXHIBIT 4
Use Of Health Care Services Among Population Since Arrival At The FEMA Travel Trailer Park In Mississippi, 2007 (cont.)

	Respondents overall	
	Number	**Percent**
Primary source of mental health services for the household (n = 584)		
Have not received any counseling/support services	443	75.1
Local community health/mental health clinic	48	8.6
Church	36	6.3
Physician's office or hospital	19	3.3
Nongovernmental organization or humanitarian aid group	13	2.3
Other	13	2.4
Government crisis counseling program	10	1.6
Health department	2	0.4

SOURCE: Authors' survey.
NOTE: FEMA is Federal Emergency Management Agency.

of the trailer park residents we surveyed reported no health insurance, compared to 17 percent of those who normally reside in Mississippi.[16] Legislation to ensure health care coverage for people who remain displaced in the aftermath of a disaster does not currently exist. Fully funded, temporary extensions through Medicaid as a bridge for low-income and disabled people who need health care, or the establishment of an emergency fund specifically for individual states to use in deciding how to ensure continuity of health care coverage for those affected by a disaster, might address this issue.[17]

Second, U.S. disaster recovery efforts should address the high burden of chronic disease among IDPs to ensure continuity and access to primary health care services. Despite data demonstrating that exacerbation of existing chronic disease is a threat to well-being after disasters and that lack of access to routine health care contributes to mortality after disasters (not simply injuries or diseases resulting from the event itself), there are few data to suggest how to minimize chronic disease exacerbations in emergencies.[18] An effort is under way to ensure that U.S. disaster response efforts include chronic disease considerations and are not limited to countermeasures for acute infectious disease outbreaks.[19] However, this will not be sufficient during protracted displacement. As evidenced by our findings, when large numbers of underserved people are displaced to semipermanent housing solutions such as these trailer parks, worsening of health status and health care access measures is to be expected. Four-fifths of surveyed households in our study reported an adult with a chronic condition, the worsening of chronic conditions was alarming, and only half could obtain care regularly. Our findings, consistent with those of other reports, demonstrate that the largest contribution to the morbidity among internally displaced Gulf Coast residents was not from acute injury and illness directly attributable to the disaster, but from chronic conditions.[20]

"More than two-thirds of those with major depressive disorder had not received mental health services since displacement."

One way to ensure reliable and adequate provisional access to primary care could be the regular use of mobile medical units to meet the health care needs of IDPs.[21] Although not a long-term answer to rebuilding the health care infrastructure, this approach may be necessary, well after the emergency phase of a disaster, in semipermanent housing settings such as FEMA trailer parks.[22] Appropriation of disaster relief funds specifically toward the provision of primary medical care services during the protracted phase of displacement should be done a priori in the disaster planning efforts, rather than as a temporary postdisaster measure.[23]

Third, legislative barriers to obtaining mental health services will have to be alleviated. Mental health has become increasingly recognized as an integral component of the response and recovery to emergencies worldwide.[24] When left unaddressed, long-term mental health and psychosocial problems threaten the stability and recovery of the affected population who become reliant on state and federal aid.[25] The Stafford Act of 1974, designed to supplement U.S. state and local emergency response efforts, mandates that funding for mental health programs during emergencies be used only for crisis management, and not for continuing treatment.[26] As a result, funding for crisis counseling programs essential for connecting IDPs to community mental health resources has since ended.[27] More than half of the population we sampled met criteria for major depressive disorder, which is similar to previously reported rates, and similar or higher than rates reported for other IDP populations.[28] With suicide attempt and suicide rates nearly four times the state's baseline rates, three-quarters of survey respondents reported receiving no counseling or support services since displacement, and more than two-thirds of those with major depressive disorder or suicidal ideation had not received mental health services since displacement.[29] In January 2006 it was estimated that as many as a half-million people living in areas affected by Hurricanes Katrina and Rita may require mental health services.[30] Unfortunately, a disproportionate disruption in mental health and substance abuse services has been found compared to other health services in these areas.[31] If the mental health needs of IDPs in the Gulf Coast region are to be met, short-lived crisis counseling programs and temporary funding will have to be replaced with long-term commitments to address the overwhelming need for mental health services in the aftermath of large and protracted disasters, and to prevent IDPs' long-term reliance on already stretched local and federal funding long after the disaster.

■ **Study limitations.** The findings of the study represent approximately 12,377 IDPs residing in travel trailer parks in Mississippi; thus, our results cannot be generalized to the entire internally displaced population affected by hurricanes. As with any survey, the accuracy of responses is subject to errors in recall, as respondents

were asked about past events over the preceding two years. However, a ten-year recall is considered acceptable and reliable after a disaster.[32] Although interviewers were careful to explain that there was no material or other gain for participation, respondents may have exaggerated or underestimated responses if they believed it would be in their interest to do so. Our estimates of the prevalence of major depressive disorder were based on the PHQ-9, a validated, widely used, and highly sensitive diagnostic measure for identifying people with current and past depression.[33] Our prevalence estimate of major depressive disorder may be a reflection of depression occurring in the past two years since displacement, rather than current depression. This partially explains the high prevalence we found. However, given the chronicity and persistence of symptoms associated with clinical depression and the obvious barriers to mental health care for this population, we would still expect prevalence to be much higher for these IDPs compared with that of the general population.

Thousands of American families remain internally displaced in temporary housing and face housing shortages and a dearth of employment opportunities in their home communities.[34] For the health needs of IDPs to be met, governmental (state and federal) and relief agencies need to ensure continuity of health care coverage in the aftermath of a disaster, and develop long-term plans to address both chronic disease and mental health needs beyond the emergency response. Without this commitment, internally displaced Americans will not have the opportunity to engage in the activities they need to improve their current condition, as they recover from disasters and try to move forward.

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NOTES

1. U.S. Congress, House of Representatives, "A Failure of Initiative: Final Reports of the Select Bipartisan Committee to Investigate the Preparation For and Response to Hurricane Katrina" (Washington: U.S. Government Printing Office, 2006).
2. Ibid; and U.S. Department of Homeland Security, "The First Year after Hurricane Katrina: What the Federal Government Did," 9 June 2008, http://www.dhs.gov/xprepresp/programs/gc_1157649340100.shtm (accessed 18 July 2008).
3. P.G. Greenough and T.D. Kirsch, "Public Health Response—Assessing Needs," *New England Journal of Medicine* 353, no. 15 (2005): 1544–1546; and Internal Displacement Monitoring Centre, *Internal Displacement: Global Overview of Trends and Developments in 2006,* April 2007, http://www.internal-displacement.org/8025708F004BE3B1/(httpInfoFiles)/9251510E3E5B6FC3C12572BF0029C267/$file/Global_Overview_2006.pdf (accessed 20 January 2008).
4. Federal Emergency Management Agency, "Travel Trailers Fill a Temporary Housing Need," Press Release, 7 January 2006, http://www.fema.gov/news/newsrelease.fema?id=22239 (accessed 20 January 2008).
5. FEMA, "Myths and Facts: Travel Trailers," Press Release, 8 November 2007, http://www.fema.gov/news/newsrelease.fema?id=41647 (accessed 20 January 2008).
6. P.G. Greenough et al., "Burden of Disease and Health Status among Hurricane Katrina–Displaced Persons in Shelters: A Population-Based Cluster Sample," *Annals of Emergency Medicine* 51, no. 4 (2008): 426–432; D. Abramson and R. Garfield, "On the Edge: Children and Families Displaced by Hurricanes Katrina and Rita Face a Looming Medical and Mental Health Crisis—A Report of the Louisiana Child and Family Health Study," 17 April 2006, http://www.ncdp.mailman.columbia.edu/files/LCAFH.pdf (accessed 20 January 2008); and A.L. Coker et al., "Social and Mental Health Needs Assessment of Katrina Evacuees," *Disaster Management and Response* 4, no. 3 (2006): 88–94.
7. FEMA, "Formaldehyde Information," 11 September 2007, http://www.fema.gov/hazard/hurricane/2005katrina/formaldehyde.shtm (accessed 20 January 2008); and R. Larrance, M. Anastario, and L. Lawry, "Health Status among Internally Displaced Persons in Louisiana and Mississippi Travel Trailer Parks," *Annals of Emergency Medicine* 49, no. 5 (2007): 590–601.
8. Louisiana Recovery Authority, "Recovery Funding Inequities," 8 September 2007, http://lra.louisiana.gov/assets/docs/searchable/reports/RecoveryFundingIneq090807.pdf (accessed 18 July 2008); and Tracy Crider, Department of Homeland Security, personal communication, 13 September 2007.
9. Larrance et al., "Health Status among Internally Displaced Persons."
10. Crider, personal communication.
11. Larrance et al., "Health Status among Internally Displaced Persons."
12. C.H. Hennessy et al., "Measuring Health-Related Quality of Life for Public Health Surveillance," *Public Health Reports* 109, no. 5 (1994): 665–672.
13. Centers for Disease Control and Prevention, "Behavioral Risk Factor Surveillance System Questionnaires," 19 May 2008, http://www.cdc.gov/brfss/questionnaires/questionnaires.htm (accessed 30 June 2008).
14. K. Kroenke, R.L. Spitzer, and J.B. Williams, "The PHQ-9: Validity of a Brief Depression Severity Measure," *Journal of General Internal Medicine* 16, no. 9 (2001): 606–613.
15. A.H. Mokdad et al., "When Chronic Conditions Become Acute: Prevention and Control of Chronic Diseases and Adverse Health Outcomes during Natural Disasters," *Preventing Chronic Disease* (serial online) 2, Special Issue (November 2005), http://www.cdc.gov/pcd/issues/2005/nov/pdf/05_0201.pdf (accessed 18 July 2008); E.S. Ford et al., "Chronic Disease in Health Emergencies: In the Eye of the Hurricane," *Preventing Chronic Disease* (serial online) 3, no. 2 (2006), http://www.cdc.gov/PCD/issues/2006/apr/pdf/05_0235.pdf (accessed 18 July 2008); E.K. Noji, "The Public Health Consequences of Disasters," *Prehospital and Disaster Medicine* 15, no. 4 (2000): 147–157; and M. Porter and N. Haslam. "Predisplacement and Postdisplacement Factors Associated with Mental Health of Refugees and Internally Displaced Persons: A Meta-Analysis," *Journal of the American Medical Association* 294, no. 5 (2005): 602–612.
16. Mississippi Development Authority, "Mississippi Average Annual Salaries for Calendar Year 2005," 2005, http://www.mississippi.org/content.aspx?url=/page/3153& (accessed 20 January 2008).
17. Regarding temporary Medicaid assistance, see J.M. Lambrew and D.E. Shalala, "Federal Health Policy Response to Hurricane Katrina: What It Was and What It Could Have Been," *Journal of the American Medical Association* 296, no. 11 (2006): 1394–1397; Hurricane Katrina Community Advisory Group and R.C. Kessler, "Hurricane Katrina's Impact on the Care of Survivors with Chronic Medical Conditions," *Journal of General*

Internal Medicine 22, no. 9 (2007): 1225–1230; and K. Haslanger, "Radical Simplification: Disaster Relief Medicaid in New York City," *Health Affairs* 22, no. 1 (2003): 252–258. Regarding an emergency fund, see E.F. Haislmaier, "After Katrina: How Congress Should Ensure Health Insurance Continuity," 2 December 2005, http://www.heritage.org/Research/ HealthCare/bg1900.cfm (accessed 30 June 2008).

18. Mokdad et al., "When Chronic Conditions Become Acute"; and Ford et al., "Chronic Disease in Health Emergencies.
19. CDC, "CDC Learns from Katrina, Plans for Pandemic," 5 November 2006, http://www.reliefweb.int/rw/rwb.nsf/db900sid/YAOI-6VA3GL?OpenDocument (accessed 20 January 2008).
20. Greenough et al., "Burden of Disease and Health Status"; M.A. Jhung et al., "Chronic Disease and Disasters: Medication Demands of Hurricane Katrina Evacuees," *American Journal of Preventive Medicine* 33, no. 3 (2007): 207–210; J.R. Vest and A.M. Valadez, "Health Conditions and Risk Factors of Sheltered Persons Displaced by Hurricane Katrina," *Prehospital and Disaster Medicine* 21, no. 2, Supp. 2 (2006): 55–58; and M.G. Millin, J.L. Jenkins, and T. Kirsch, "A Comparative Analysis of Two External Health Care Disaster Responses Following Hurricane Katrina," *Prehospital Emergency Care* 10, no. 4 (2006): 451–456.
21. D.M. Krol et al., "A Mobile Medical Care Approach Targeting Underserved Populations in Post–Hurricane Katrina Mississippi," *Journal of Health Care for the Poor and Underserved* 18, no. 2 (2007): 331–340.
22. S. Rosenbaum, "U.S. Health Policy in the Aftermath of Hurricane Katrina," *Journal of the American Medical Association* 295, no. 4 (2006): 437–440; and R. Rudowitz, D. Rowland and A. Shartzer, "Health Care in New Orleans Before and After Hurricane Katrina," *Health Affairs* 25 (2006): w393–w406 (published online 29 August 2006; 10.1377/hlthaff.25.w393).
23. Federal Grants Wire, "Public Health and Social Services Emergency Fund (93.003)," http://www.federalgrantswire.com/public-health-and-social-services-emergency-fund.html (accessed 30 June 2008).
24. R.F. Mollica et al., "Mental Health in Complex Emergencies," *Lancet* 364, no. 9450 (2004): 2058–2067.
25. Inter-Agency Standing Committee, "IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings," 14 September 2007, http://www.humanitarianinfo.org/iasc/mentalhealth_psychosocial_support (accessed 20 January 2008).
26. FEMA, "Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288) as Amended," 26 June 2007, http://www.fema.gov/about/stafact.shtm (accessed 1 February 2008).
27. R.H. Weisler, J.G. Barbee IV, and M.H. Townsend, "Mental Health and Recovery in the Gulf Coast after Hurricanes Katrina and Rita," *Journal of the American Medical Association* 296, no. 5 (2006): 585–588 and FEMA, "Project Recovery Services End, Healing Doesn't," Press Release, 23 April 2007, http://www.fema.gov/news/newsrelease.fema?id=35611 (accessed 20 January 2008).
28. Larrance et al., "Health Status among Internally Displaced Persons"; and Mollica et al., "Mental Health in Complex Emergencies."
29. Suicide Prevention Resource Center, "Mississippi Suicide Fact Sheet: Suicides 2000–2004," http://www.sprc.org/stateinformation/PDF/statedatasheets/ms_datasheet.pdf (accessed 20 January 2008).
30. R. Voelker, "Post-Katrina Mental Health Needs Prompt Group to Compile Disaster Medicine Guide," *Journal of the American Medical Association* 295, no. 3 (2006): 259–260.
31. Larrance et al., "Health Status among Internally Displaced Persons."; B.G. Druss, K.L. Henderson, R.A. Rosenheck, "Swept Away: Use of General Medical and Mental Health Services among Veterans Displaced by Hurricane Katrina," *American Journal of Psychiatry* 164, no. 1 (2007): 154–156; and Hurricane Katrina Information and Relief Efforts for Mississippi Hospitals, "Healthcare in Mississippi after Hurricane Katrina," 20 February 2006, http://mhanewsnow.typepad.com/katrina/2006/02/index.html (accessed 20 January 2008).
32. J. Thompson, J. Morton, and L. Fraser, "Memories for the Marchioness," *Memory* 5, no. 5 (1997): 615–638.
33. Kroenke et al., "The PHQ-9."
34. U.S. Department of Housing and Urban Development, "Fact Sheet: Providing Continued Assistance for Gulf Coast Hurricane Victims," 26 April 2007, http://www.hud.gov/news/releases/pr07-051.cfm (accessed 20 January 2008).

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