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An Evaluation of How ECU Staff Persons Coped With Hurricane Floyd

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INTRODUCTION

This research investigated the impacts of Hurricane Floyd on the staff of East Carolina University (ECU), which is located in the town of Greenville, North Carolina. Greenville is situated along the banks of the Tar River, which, like many of the region's waterways, flooded for an extended period in the aftermath of the hurricane, inundating hundreds of homes. Specifically, this study focuses first on the nature and extent of damage suffered by particular groups of staff persons. What was the role of race and class in shaping the impact of the flood? And how did levels of preparedness (defined as insurance coverage; previous experience with hurricanes; longevity of residence in eastern North Carolina; and perception of risk) mediate such impacts on particular groups of individuals? Second, we examined recovery assistance and community response to the flood. What was the role of race and class in shaping patterns of assistance, both institutional and voluntary? How much and what forms of assistance did people receive? How were these connected to people's networks of information and support? How effective were various government and institutional agencies in providing assistance? And how did individuals and community groups and organizations intervene to provide assistance to those affected?

The research method involved a survey that was distributed via campus mail to a randomly selected sample of 1100 non-faculty staff persons at ECU, which represents about half of the non-faculty staff. The survey was administered in early January 2000. Three hundred twenty-two, or 29%, of the surveys were returned. Faculty were not included in the sample, but because of the way in which the ECU Human Resources Office categorizes staff persons, unit (department) heads were included. Our rationale for selecting ECU staff as the focus of this impact study is two-fold. First, ECU's staff encompasses a wide range of occupations and levels of household income. Second, since ECU is one of largest employers in the region, its staff constitutes a significant subgroup of the general population. Although the sample of the population used within this research is relatively small, it does allow us to consider how people within the flood zone were affected according to both their class and race and, as such, lends insight into how the larger community in the region was impacted by this particular event.

METHODOLOGY AND SAMPLE CHARACTERISTICS

The survey described above covered a wide range of issues related to damage to home and property, evacuation and relocation, insurance coverage, level of other assistance received, information and support networks, perception of risk and preparedness, perception of

institutional effectiveness, and volunteer activities. We used univariate, bivariate, and multivariate analysis to identify patterns of impact, assistance, and community response. Statistical significance in our analyses was determined using chi-square in SPSS. Findings reported below are statistically significant at the 95% level.

Table 1 exhibits the characteristics of our sample population. Of the 322 respondents, 79% are white, 20% are black, and 2% are Hispanic, Asian or Other. This closely resembles the ECU staff as a whole in which 77% of non-faculty employees are white; 21% are black, and 2% are Hispanic, Asian or other. Women, however, are somewhat disproportionately represented in our sample population in that they constitute 75% of the respondents but only 67% of ECU's non-faculty staff. The mean age of our respondents is 41 years; age distribution of the sample peaks in the 40-49 age category.

Table 1 - Sample Characteristics
 # Respondents = 322

Race	#	%
White	253	79
Black	63	20
Other	5	2
Missing	1	0
Sex		
Female	243	75
Male	79	25
Age - Mean Age = 41		
20-29	48	15
30-39	84	26
40-49	119	37
50+	61	19
Missing	10	3
Income		
$0-14,999	8	3
$15,000-24,999	64	20
$25,000-39,999	57	18
$40,000-69,999	85	26
$70,000-99,999	53	17
$100,000+	19	6
Missing	36	12
Occupation		
Clerical	76	24
Janitorial	45	14
Trades	26	8
Academic-Professional	99	31
Medical	59	19

Other	3	1
Missing	14	4
Housing Status		
Own	194	60
Rent	124	39
Missing	4	1

In terms of occupation, 24% of respondents work in clerical positions; 14% in janitorial; 8% in trades; 31% in academic/professional positions; 19% are medical personnel, and 1% work in some "other" occupation. This also closely parallels the occupational profile of ECU's staff.

Income distribution of the sample closely follows a normal curve. However, income distribution by race is very uneven (see Table 2). Seventy-one percent of the black respondents occupy the lowest household income categories (<$25,000), compared to only 15% of white respondents, while only 10% of black respondents reported annual household incomes above $40,000, compared to 65% of white respondents. Related to this is the fact that black staff persons are disproportionately concentrated in "support services" - 62% of black respondents are employed in this area. Among the ECU staff as a whole, 75% of the service & maintenance staff at ECU are black, compared to less than 5% of professional/academic/executive-administrative employees.

Table 2 - Houslhold Income by Race

	Household Income													
Race	**<$15,000**		**$15,000-24,999**		**$25,000-39,999**		**$40,000-69,999**		**$70,000-69,999**		**$100,000+**		**Total**	
	#	**%**	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**
White	1	(0)	33	(14)	45	(19)	81	(35)	51	(22)	19	(8)	231	(100)
Black	7	(13)	30	(58)	9	(17)	4	(8)	1	(2)	0	(0)	52	(100)

Note: 34 cases are missing. Because of the small number of individuals in the "other" racial category, it is not included here. Percents are based on number of individuals within each race category, not on total number of responses.

PATTERNS OF IMPACT

The first indicator of impact we examined is damage to home (Tables 3 and 4). Fifty-eight percent of respondents experienced no damage to home or property, while 41% indicated that they had sustained some type of damage to their homes. Damage is categorized in four levels: 1) no damage; 2) minor damage - damage repairable while occupants remained in the house; 3) major damage - damage that required repair before occupant(s) could return home; 4) condemned/permanent - homes that were condemned or sustained damage preventing respondents from ever moving back. Most damage suffered by ECU staff was minor, but 4% of

the survey respondents sustained damage that needed repairing before they could move back, and 6% either had their homes condemned or suffered damage that will prevent them from moving back in to their homes.

Table 3 - Level of Damage

Level of Damage	#	%
No Damage	187	58
Minor Damage	101	31
Major Damage	12	4
Condemned/Permanent	2	1
Missing	2	1
Total	322	100

Table 4 - Cost of Damage to House/Property

Cost	#	%
<$1,000	29	22
$1,000-2,999	31	13
$3,000-4,999	13	10
$5,000-19,999	27	20
$20,000+	19	14
Missing	14	11
Total	133	100

Table 5 illustrates damage sustained by household income and race. Of the 10 persons who experienced major damage, 70% have household incomes of less than $50,000; 30% are African American with household incomes of less than $25,000 a year. Of the individuals whose homes were condemned or permanently destroyed, 61% are African American with household incomes of less than $25,000. The remaining 34% of these individuals are white and fall into the lower-middle and middle income categories ($25,000-39,999 and $40,000-69,999, though all but one have household incomes of less than $50,000). Collapsing categories 3 and 4 to correct for statistical problems associated with low cell counts did not change this analysis.

Table 5 - Level of Damage by Income and Race
Household Income and Race

	<$15,000				$15,000-24,999				$25,000-39,999				$40,000-69,999				$70,000-99,999				$100,000+				Total
Level of Damage	W		B		W		B		W		B		W		B		W		B		W		B		
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	
No Damage	1	(*)	2	(1)	23	(14)	10	(6)	26	(16)	7	(4)	51	(31)	0	(0)	32	(20)	1	(*)	10	(6)	0	(0)	163

Minor Damage	0	(0)	1	(1)	8	(9)	9	(10)	15	(17)	1	(1)	26	(30)	1	(1)	18	(21)	0	(0)	8	(9)	0	(0)	87
Major Damage	0	(0)	1	(10)	2	(20)	2	(20)	1	(10)	0	(0)	1	(10)	1	(10)	1	(10)	0	(0)	1	(10)	0	(0)	10
Condemned/ Permanent	0	(0)	3	(17)	0	(0)	8	(44)	3	(17)	1	(6)	3	(17)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)	18
Total	1		7		33		31		45		9		81		2		51		1		19		0		278

Missing Cases = 44 (14%). * = <1%.

Prior to Floyd, 86% of the respondents felt their risk of flood was low; 9% felt their risk was medium; and only 3% of the respondents indicated a high level of flood risk. Table 6 illustrates the relationship between perception of risk prior to the flood and level of damage sustained. Of the 20 respondents whose houses were condemned or damaged beyond repair, 75% believed their risk of flood to be low, as did 75% of those who experienced major damage. This indicates a relatively low level of preparedness in terms of perception of flood hazards.

Table 6 - Level of Damage by Perception of Risk

Level of Damage	**Moderate or High Risk**		**Low Risk**		**Total**
	#	**%**	**#**	**%**	**#**
No Damage	15	(8)	165	(92)	180
Minor Damage	14	(14)	87	(86)	101
Major Damage	3	(25)	9	(75)	12
Condemned/Permanent Damage	5	(25)	15	(75)	20

Note: Nine cases missing.

PATTERNS OF ASSISTANCE

An assessment of insurance coverage and damage reveals first that while 75% of respondents had some form of homeowners' or renters' insurance, only about 24% of those with insurance had coverage for flooding (Table 7). Of the 32 individuals who experienced major damage or whose homes were condemned or damaged beyond repair, only 25% reported having insurance that covers flooding. Although race is closely correlated with regular homeowner/renter's insurance (53% of black respondents reported no insurance coverage of any kind, compared to 17% of whites), neither race nor income is a statistically significant factor in predicting flood insurance coverage.

Table 7 - Insurance and Flood Insurance

	Yes		**No**		**Missing**	**Total**
	#	%	#	%		
Homeowner's/Renter's Insurance	242	(75)	74	(23)	6	322
Flood Insurance*	59	(24)	142	(59)	41	242

* Percents based on number of respondents with insurance.

Table 8 portrays the portion of damage to home or property respondents expected insurance to cover. Of the 133 individuals who experienced some damage to home or property, the majority (44%) estimated that less than 25% of their damage would be covered by insurance.

Table 8 - Portion of Damage Covered by Insurance

Portion Covered	#	%
0-25%	59	44
26-50%	14	11
51-75%	16	12
76-100%	33	25
Missing Cases	11	8
Total	133	100

Because race, income, and level of damage suffered are so highly correlated, we restrict our analysis of sources of assistance received to level of damage suffered. Table 9 illustrates this relationship. Persons who experienced the least amount of damage (damage that could be repaired while still living in the home), most often reported receiving assistance from no one, and when they did receive assistance, informal networks of support - friends, family, coworkers, church members - were the most important sources of assistance. For persons suffering major damage, informal networks, FEMA, and relief organizations such as Red Cross and Salvation Army were the most cited sources of assistance. Persons whose homes were condemned or damaged beyond repair obtained assistance from the entire range of both formal and informal sources. The ECU Relief Center was the most significant source, but informal networks and the Red Cross and Salvation Army were also very important. Interestingly, only six persons in this category (30%) reported receiving assistance from FEMA.

Table 9 - Sourcees of Assistance by Level of Damage

Source of Assistance

Level of Damage	No One	Informal Networks*	Red Cross, Salvation Army	FEMA	ECU	Other
	%	%	%	%	%	%
Minor Damage	60	13	4	12	6	3
Major Damge	8	20	24	50	25	12
Condemned/ Permanent Damage	10	44	38	30	65	10

*Includes friends, family, coworkers,church members

We next examined people's perceptions of the effectiveness of various levels of government and other institutions in dealing with Floyd and the flooding. Local utilities commissions were perceived to be the most effective institution dealing with the flood; 51% of respondents felt they

were very effective in coping with the flood, while another 19% ranked them as "effective." The county government came in second with 61% of respondents ranking it as either "very effective" or "effective." Somewhat fewer individuals ranked the state government and ECU as very effective or effective - both scored 55%. Only 16% of respondents felt the federal government was very effective, while 24% ranked it as "effective."

Table 10 - Perception of Effectiveness of Institutions

Institution	Very Effective		Effective		Somewhat Effective		Not Effective		Don't Know		Missing	
	#	%	#	%	#	%	#	%	#	%	#	%
Federal	52	(16)	76	(24)	74	(23)	29	(9)	59	(18)	32	(10)
State	71	(22)	106	(33)	63	(20)	8	(3)	36	(11)	38	(12)
County	89	(28)	105	(33)	55	(17)	10	(3)	27	(8)	36	(11)
Utilities	165	(51)	62	(19)	37	(11)	8	(2)	21	(6)	29	(9)
ECU	83	(26)	92	(29)	58	(18)	25	(8)	27	(8)	37	(12)

PATTERNS OF COMMUNITY RESPONSE

Our final set of questions examined community response, which we assessed in terms of volunteer activities in flood relief and perceived effectiveness of institutions. ECU staff volunteered over 5000 hours in flood relief activities. Fifty-two percent of survey respondents performed volunteer work, and the average number of hours performed was 30. Most people volunteered in church-related activities (44% of those who volunteered); the second highest rate of participation was at the Red Cross Distribution Centers (32%). Fourteen percent of the staff surveyed (46 individuals) reported volunteering at the ECU Relief Center, and approximately 12% offered assistance both in flood shelters and at the Salvation Army. Smaller numbers of individuals participated in clean-up programs, assisted the Humane Society, and/or aided local business efforts. Of those individuals who volunteered during the flood, 66% participate in church-related groups and 22% in some other community organization on a regular basis. The average number of hours people reported they normally perform such service is 6.6/week.

SUMMARY

In sum, our survey of ECU's staff demonstrates the extent of the crisis wrought by the Hurricane Floyd inland flooding in that roughly half of the sample population sustained some form of damage. Fortunately, most of this damage could be repaired while those affected remained in their homes. Our survey also highlights the fact that lower income groups and African Americans were disproportionately represented among the relatively small number of individuals who did experience severe damage.

Furthermore, the survey emphasizes that the location and extent of flooding was very much unexpected. Respondents as a whole (including those who lost their homes entirely) overwhelmingly perceived their risk from flooding to be very low, and as a result people were under-insured for flood damage to their homes. Only 25% of those whose houses were entirely lost were covered with flood insurance. Our findings reinforce previous findings that environmental hazards have a differential impact on a given population, in that those groups that are already marginalized through income or race are hardest hit and least prepared.

And yet, our survey also highlights the host of coping strategies adopted by these same groups. In general, the type of assistance received differed according to the level of damage sustained. Those with low levels of damage relied on informal networks for assistance, while those who experienced more serious damage received assistance from a wide range of both formal and informal sources. Of these the Red Cross, Salvation Army, and the ECU Relief Center were the most important formal sources. The number of those most severely affected by the flood who received assistance from FEMA was very low indeed (6 of 20 who lost everything).

Given that most people turned to local and regional institutions in the aftermath of the flood, it is not surprising to find that these same institutions received the higher approval ratings. Respondents perceived local levels of government and utilities commissions to be the most effective agencies in dealing with the flood; ECU and the state government received moderate levels of approval, while the federal government was perceived to be the least effective in dealing with the flood. It is, however, the high level of informal assistance networks that stand out from the survey; a large number of ECU staff volunteered in flood relief efforts (52%). This is largely explained by the fact that a significant number of staff regularly participate in church-related groups or other community organizations and usually perform nearly seven hours of volunteer work per week. In addition, many people who had never volunteered before were inspired to help because of extensive local TV coverage of the disaster. As the flood waters began to force thousands of people out of their homes, many staff (and students) helped friends and neighbors evacuate or assisted at rapidly established informal shelters that, in many locations, were the first sources of aid. What we can conclude from the experience of Greenville, then, is that it is the character and strength of local, social networks - sustained through media, church, school, kinship, or just plain neighborliness - that becomes primarily important in coping with events such as Hurricane Floyd.

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