

## HURRICANE HAZARDS: PERCEPTIONS OF NEW HOMEOWNERS

### IN THE LOWER KEYS<sup>1</sup>

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The concerns of newcomers to a hazard-prone area to such hazards is of considerable interest to geographers and planners. In the mid 1970's it was estimated that over 75 percent of the population on the Atlantic and Gulf coast had never experienced a major hurricane (Herbert and Taylor, 1975, p. 9). This coastal population subsequently grew rapidly,<sup>2</sup> and now Baker (1979a) estimates that less than 10 percent of the coastal residents have experienced a major hurricane. Thus it is not surprising that "With the rapid buildup of population in coastal areas, concerns are growing that hurricane disasters involving thousands of casualties may be in the the nation's not-so-distant future" (Baker, 1979b, p. 9)

Considerable interest has been expressed in the perceptions of new inexperienced residents of their vulnerability. Models of adjustment behavior indicate that mitigation actions result after a population's perception of a hazardous event has reached a threshold (Kates, 1971, p. 446); hence the necessity for perception research.

Hazard perception has been defined by Mileti, Drabek, and Haas (1975, p. 23) as

an individual's understanding of the character and relevance of a hazard for self and/or community. The perception may include notions about speed of onset, scope, intensity, duration, frequency, temporal spacing, causal mechanisms, and predictability.

Geographers have recognized that coastal inhabitants are more aware of the coastal flood hazard than are urban dwellers on river floodplains (Burton and Kates, 1964, p. 384), and that residents of various coastal communities differ in their perceptions of the hurricane threat (Baker and Patton, 1974, p. 34). Sociologists have described the development of "disaster cultures" among long-term residents (Moore, 1964, p. 195; Osborn, 1970), and newer residents have been observed to be more likely to evacuate in the face of storms (Windham, et al, 1977, p. 30). This paper, which examines hazard perceptions among recent homeowners of the Lower Florida Keys, is a follow-up to earlier studies (Cross, 1981; Cross, 1982).

#### Lower Florida Keys Study, 1983

Homeowners in the Lower Keys study area (ten to thirty-five miles east of Key West) who purchased their homes between January 1980 and August 1982 were mailed questionnaires in August and September 1983, the height of the hurricane season. Responses were received from 237 individuals, a 68 percent response rate.

The Lower Keys, 96 percent of which lies below the five foot contour, has one of the greatest probabilities of being hit by hurricanes of any area in the United States. These islands have experienced hurricanes once every seven years on the average (Simpson and Riehl, 1981, p. 272). Nevertheless, since the early 60's when the Florida Keys were struck three times, this area has gone unscathed, although it has been threatened by storms in the past several years.

## Perceptions of Hurricane Winds and Flooding

Most new residents appear well aware that the area can expect at least some hurricane damage within the next decade. In response to the question, "How likely do you think it is that a damaging hurricane will occur within the Lower Florida Keys during the next 10 years?" 64 percent of the new home owners indicated that it was "very likely" or "likely." Only one percent said it was "very unlikely."

The importance of the hurricane hazard to the newer households in the 1983 study was greater than that discerned in a 1976 survey (Cross, 1980) or a 1982 resurvey of long-term residents (Cross, 1983). Of the new residents, 71.3 percent felt that hurricane winds were either a "major problem" or "somewhat a problem" to their households, while only 5.7 percent stated that hurricane winds were "not a problem at all" (Table 1). Their evaluation of the hurricane wave and flooding hazard was nearly as high as their concern about hurricane winds. When compared with other problems within the Lower Keys, including such diverse items as the safety of highways and bridges, garbage disposal, police and fire protection, water supplies, and mosquitoes, over 20 percent of the respondents felt that hurricanes were the most important problems to their households. In the 1976 survey, less than 10 percent of the respondents expressed this concern.

TABLE 1  
PERCEPTIONS OF HURRICANE WIND AND FLOOD HAZARDS

	Hurricane Winds	Hurricane Waves and Flooding
Major Problem (N / %)	64 / 27.8%	61 / 27.2%
Somewhat a Problem (N / %)	100 / 43.5%	96 / 41.7%
Minor Problem (N / %)	53 / 23.0%	55 / 23.9%
Not a Problem at All (N / %)	13 / 05.7%	18 / 07.8%

## Perception of Lower Key Risk Compared with Risk in Other Locales

New homeowners, although aware that hurricanes are possible, do not consider their location more hazardous than other coastal location (Table 2). Fully 71.7 percent of these homeowners felt that the Lower Keys were equally likely to be hit by a hurricane as were other locations along the Gulf and Atlantic coasts. Two-thirds of the remaining homeowners stated that the Keys had a lower probability of experiencing hurricanes, not a greater probability, when "compared with other locations along the Gulf and Atlantic coasts of the U.S."

In comparing the vulnerability of the Lower Florida Keys to property damage should a hurricane occur, nearly half (47.2 percent) of the new homeowners expected damage equal to that which other coastal locations would experience. However, 34 percent felt that a "hurricane in the Keys was more likely to cause damage," compared with 18.7 percent who expected less damage. On the local scale, when asked to compare the hurricane vulnerability of the Lower Florida Keys with locations in the Middle and Upper Florida Keys, 63.6 percent of the Lower Florida Keys newcomers felt that they were equally likely

TABLE 2

PERCEPTIONS OF HURRICANE RISK IN THE LOWER FLORIDA KEYS COMPARED  
TO THE RISK IN OTHER COASTAL LOCATIONS

	! KEYS ! MORE ! LIKELY	KEYS LESS LIKELY	KEYS EQUALLY LIKELY
Compared with other locations along the Gulf and Atlantic Coasts of the U.S., do you believe that the Lower Florida Keys are more, less, or equally likely to be hit by hurricanes?	! 23 ! 9.7%	! 44 ! 18.6%	! 170 ! 71.7%
Compared with other locations along the Gulf and Atlantic Coasts of the U.S. do you believe that a hurricane hitting the Lower Florida Keys would be more, less, or equally likely to cause property damage?	! 80 ! 34.0%	! 44 ! 18.7%	! 111 ! 47.2%
Compared with locations in the Middle and Upper Keys, do you believe that the Lower Florida Keys are more, less, or equally likely to suffer hurricane damage?	! 20 ! 8.5%	! 66 ! 28.0%	! 150 ! 63.6%

to suffer hurricane damage as the other areas of the Keys. Twenty-eight percent stated that the Lower Keys were less vulnerable, and 8.5 percent felt that they were more likely to suffer damage. In a small pretest of the survey questionnaire within the Middle Florida Keys, similar responses were obtained.

#### Perception of Flood Damage

The perceived importance of hurricane wind and flooding hazards to the households was significantly related to the new residents' attitudes concerning how the damage vulnerability of the Florida Keys compared with other coastal locations (Table 3). For example, 41.6 percent of those who felt that hurricanes in the Keys are more likely to cause damage stated that hurricane flooding was a "major problem" in living in the area. Conversely, 62.8 percent of those new homeowners who claimed that the Keys are less likely to receive damage indicated that hurricane flooding was either a "minor problem" or "not a problem at all."

One half of those residents who believed that hurricanes are less likely to strike the Keys than other areas felt that hurricane flooding is either "not a problem" or a "minor problem." In contrast, among new homeowners who viewed the Keys as equally or more likely to be hit than other coastal areas, less than a quarter had such perceptions about the importance of hurricane flooding to their households.

Similar statistical associations exist between the perceptions of new homeowners about the importance of the hurricane wind problem and their perceptions about their comparative vulnerability to coastal storm damage. Thus the attitudes which new residents have concerning how their hazard exposure compares with that in other coastal locations are of significance in their perceptions of the importance of the hazard to their households within their home area.

TABLE 3

HURRICANE FLOOD HAZARD PERCEPTIONS AND THE PERCEPTION OF THE  
COMPARATIVE DAMAGE VULNERABILITY OF THE LOWER FLORIDA KEYS

Hurricane Waves and Flooding Are Considered:	Hurricane in Lower Florida Keys Likelihood of Causing Property Damage		
	More Likely	Less Likely	Equally Likely
A Major Problem (N / %)	32 41.6%	6 14.0%	23 21.3%
Somewhat a Problem (N / %)	33 42.9%	10 23.3%	53 49.1%
A Minor Problem (N / %)	12 15.6%	18 41.9%	23 21.3%
Not a Problem at All (N / %)	0 0.0%	9 20.9%	9 8.3%
Total (N / %)	77 100.0%	43 100.0%	108 100.0%

#### Perception of Immediacy of Hurricanes

The new homeowners' expectation of a damaging hurricane within the next decade is not statistically associated with the importance of either the hurricane wind or flooding hazards to their households. Nevertheless, the data do not suggest that residents who expressed greater concern about hurricane problems tend to believe that a damaging hurricane is more likely during the next ten years. Significant statistical relationships do exist, however, between the residents' evaluation of hurricane winds and flooding as problems and the new homeowners' evaluation of the vulnerability of their homes to hurricane destruction.

#### Experience with Hurricanes

Nearly two-thirds of the new homeowners within the Lower Florida Keys claim to have experienced at least one hurricane within the Keys or elsewhere. Although this figure is far higher than what might be expected based upon estimates for the entire American shore, several explanations should be considered. Immigrants to the Florida Keys are disproportionately drawn from other coastal communities (Cross, 1979). The previous "experiences" claimed range from individuals who experienced the 1938 New England hurricane or Hurricane Donna within the Keys in 1960 to those individuals who noted the recent hurricanes which threatened the Keys before skirting around the area.

Previous hurricane experience is not statistically associated with the new homeowners' perceived importance of either the hurricane wind or flood hazards. Although the data show that individuals who lack hurricane experience are slightly more likely to consider hurricane winds a major problem (34.2

percent to 24.0 percent), the concerns of both sets about hurricane flooding were virtually identical. Thus, while experience may be important in the development of individual hazard perceptions, its role is difficult to evaluate within a population with such a heterogeneous set of experiences as is found within the Lower Florida Keys.

Earlier research, both within the Keys and elsewhere, has demonstrated that the level of perceived concern changes with the passage of time. Numerous hazards researchers have written that hazard concerns diminish as either the time following a hazardous event, or length of residence increase (Palm, 1981, p. 48; Saarinen, 1966, p. 71; White and Haas, 1975, p. 100). Notwithstanding, no lessening of concern was evident in the Lower Keys when respondents to a 1976 survey were resurveyed in 1982. With respect to the threat from hurricane flooding, 37.5 percent of the long-term residents expressed increased concern, whereas 26.7 percent indicated diminished concerns. Over two-fifths of new homeowners surveyed in 1983 indicated that their concerns about the potential for hurricane damage had also changed since they first began living in the Lower Florida Keys, with those who felt more concern outnumbering those who were less concerned by 30.5 to 11.6 percent. It is interesting to note that 46.3 percent of the "inexperienced" respondents stated that they were now more concerned, while over two-thirds of the "experienced" respondents were unchanged in their concerns. The roles of several near misses by hurricanes and greater activity by the county's civil defense office over the past several years in these changing hurricane concerns deserve further attention.

#### Conclusion

New homeowners within a highly vulnerable coastal locale are not unaware that damaging hurricane may occur. Nevertheless, their community is not viewed as being any more hazardous than most other coastal locations by the major portion of these individuals. However, those new residents who perceive their community as more vulnerable than other coastal locations are more likely to perceive hurricanes as being a major local problem. Since residents who minimize the local threat are also the least concerned about hurricanes, it appears that public awareness programs should emphasize the greater risk of highly vulnerable coastal sites. While the majority of the new homeowners claim at least some hurricane experience, this experience has not increased the hazard concerns of the population. Comparative research in other growing coastal communities should permit greater understanding about how residents of highly vulnerable communities compare with coastal residents in general.

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2. For example, urban occupation of barrier islands from Maine through Texas increased by 153 percent over the two decades preceding the mid 1970's and urban land uses of Florida's barrier islands increased by 219 percent over the same period (Lins, 1980, p. 5).

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