

The Home Buyers' Perspective

Only 12.4% of the new home owners informed about hurricanes indicated that this disclosure influenced their selection of their homesite or house type, although this proportion was 22.9% between 1977 and 1979. Thus, it is not surprising that the individuals who received the hurricane flood disclosures were statistically no more likely to purchase stilt houses than were uninformed home buyers. Actually, 68.4% of post-1980 home buyers who received hurricane disclosures purchased or built stilt houses, compared with 72.4% of those that did not get the warning. Likewise, a greater proportion of the home owners that got flood zone disclosures purchased homesites along the shore or canals than did other home buyers, although this difference was also not significant.

The home buyers receiving the hurricane disclosures did not statistically differ from the other home purchasers with respect to the reported importance of the "elevation of house above ground" in their home selection. On the other hand, the importance of the "safety of home during a hurricane" consideration was statistically related to whether or not the home purchasers were informed about hurricane problems (Table 9). Home buyers not receiving the flood hazard disclosure were nearly twice as likely to have indicated that the hurricane safety was "not important at all." However, home buyers who had received hurricane information were slightly less likely to consider their home safety as "very important." This relationship was stronger among the newly arrived home buyers than among the already resident home purchasers.

TABLE 9

ASSOCIATION BETWEEN HURRICANE HAZARD DISCLOSURE
AND THE IMPORTANCE OF "SAFETY OF HOME DURING A HURRICANE"
IN THE SELECTION OF THE HOME

Importance of "Safety of Home During A Hurricane:"	Hazard Disclosure Given	Hazard Disclosure Not Given
Very Important	47 (51.1%)	45 (48.9%)
Important	52 (49.5%)	53 (50.5%)
Slightly Important	36 (67.9%)	17 (32.1%)
Not Important at All	15 (38.5%)	24 (61.5%)

Chi-Square = 8.535, 3 degrees of freedom, significance = 0.0362.

TABLE 10

ASSOCIATION BETWEEN HURRICANE HAZARD DISCLOSURE
AND THE IMPORTANCE OF THE "VULNERABILITY OF HOMESITE TO STORM
FLOODING" IN THE SELECTION OF THE HOME

Importance of "Vulnerability of Homesite to Storm Flooding":	Hazard Disclosure Given	Hazard Disclosure Not Given
Very Important	38 (43.7%)	49 (56.3%)
Important	54 (50.0%)	54 (50.0%)
Slightly Important	39 (65.0%)	21 (35.0%)
Not Important at All	18 (46.2%)	21 (53.8%)

Chi-Square = 6.968, 3 degrees of freedom, significance = 0.0729.

Similarly, customers warned about hurricanes differed from those not cautioned with respect to the "vulnerability of homesite to storm flooding" in their home selection (Table 10). Although this relationship was statistically weak (significance .08), purchasers not receiving hurricane information were more likely to claim that their homesite vulnerability was either "very important" or "not important at all." Of those customers purchasing stilt houses rather than ground-level houses, those who had received coastal flood hazard information from their realtors or the former property owner were not significantly more likely to indicate that flood protection was a very important factor in their choice. Thus, while several statistically significant relationships were noted, for most customers the hurricane flood hazard disclosure did not have a major impact upon their home selection.

Whether or not home buyers were informed about the hurricane flood hazard is only weakly associated (.10 significance level) with the residents' knowledge of their own home's hazard vulnerability. Although virtually all the residences within the Lower Florida Keys are in designated hurricane flood zones, home owners reporting that their realtors or the home's seller discussed hurricanes were more aware of this fact. For example, 62.6% of the informed home owners acknowledged their flood zone location, compared to 53.5% of the others. (It is interesting to note that this association is much stronger (.001 significance level) among persons purchasing homes in 1977 through 1979).

Home owners' awareness that their residences were located in mapped flood zones is generally unrelated to their overall perceptions of the hurricane hazard. On the other hand, this knowledge about their flood

zone location is statistically related (at the 0.05 significance level) to the residents' flood insurance coverage, their attitudes concerning their ability to safely ride out a hurricane within their homes, and their considerations of the vulnerability of their homesites to storm flooding during the selection of their homes. Ironically, residents aware that their homes were in a flood plain were less likely to claim they could safely remain at home during a storm, yet they were less likely to have considered the "vulnerability of their homesite to storm flooding" as important when they selected their homes.

The methods utilized to inform prospective home buyers about the hurricane threat had varying effects upon the home selection process (Table 11). For example, discussions about hurricanes were twice as likely to make a difference in a home buyer's choice of a house or home-site (as claimed by the home purchaser) if they were made when homes were shown (17.3%) compared with all other times (8.8%). Home purchasers who reported that their realtors "talked about hurricanes during [their] first office visit" were most likely to have considered as "very important" in their selection of their homes the "elevation of house above ground" (53%), the "safety of the home during a hurricane" (56%), and the "vulnerability of homesite to storm flooding" (50%). These factors were considered as "very important" to 29%, 26%, and 20%, respectively, of the home buyers informed about the hurricane hazards at later times during the home selection process.

The impact of informing customers about hurricanes early in the house selection can also be shown by the finding that 55% of those customers told about hurricanes just before closing or by a written disclosure (usually at closing) bought stilt houses, while 72% of those

TABLE 11

HURRICANE FLOOD ZONE DISCLOSURE METHODS AND THEIR EFFECTS
UPON THE POST-1980 BUYER'S HOME SELECTION PROCESS

Disclosure Method Realtor (or previous owner):	Proportion of Customers Considering Each Factor as "Very Important" in their Home Selection			
	Elevation of House Above Ground	Safety of Home During a Hurricane	Vulnerability of Homesite to Storm Flooding	
Talked about hurricanes during first office visit	53 %	56 %	50 %	
Talked about hurricanes when homes were shown	30 %	23 %	16 %	
Talked about hurricane problems just before closing.	28 %	30 %	25 %	
Included information on written disclosure form	33 %	22 %	22 %	
Flood insurance requirements mentioned when financing was discussed	31 %	38 %	15 %	
Miscellaneous other	22 %	25 %	26 %	

told about hurricanes during the first office visit or when property was shown selected stilt houses. It should be mentioned, however, that customers who received early disclosures, particularly during the first office visit, were also significantly more likely (91.4%) to select waterfront homesites than other buyers who received hurricane flood information (78.9%).

Flood and windstorm insurance was purchased significantly more often by post-1980 home buyers who received disclosures concerning the hurricane threat or the need for flood insurance from their realtor or the previous home owner (Table 12). This statistical association exists for both the newly arrived home seeker and the continuing resident who was purchasing a new house. This relationship was expected, considering the realtors' indications that they tended to point out hurricane problems and the need for flood insurance when discussing financing and general insurance needs. Indeed, the necessity of obtaining a mortgage gives many home owners little choice in obtaining both windstorm and flood insurance coverage. Nevertheless, of the post-1977 home buyers with mortgages (as recorded in the Monroe County Clerk's Office) who were not informed about hurricanes by their realtor or previous home seller, 5.6% did not have flood insurance or were uncertain about having any coverage (1.4%).

It is interesting to note that all of the above individuals lacking flood insurance in violation of federal regulations have mortgages from the same Monroe County financial institution. On the other hand, 100% of those individuals with mortgages who were informed about the hurricane threat had insurance. Even among those home owners lacking mortgages (which would have the legal effect of requiring insurance), the provision

TABLE 12

ASSOCIATION BETWEEN HURRICANE HAZARD DISCLOSURE
AND THE ACQUISITION OF FLOOD AND WINDSTORM INSURANCE

Windstorm Insurance		
	Hazard Disclosure Given	Hazard Disclosure Not Given
Windstorm Insurance Obtained	152 (97.4%)	133 (84.2%)
NO Windstorm Insurance Coverage	4 (2.6%)	25 (15.8%)
Chi-Square = 14.918 (after Yates Correction), 1 degree of freedom, Significance = 0.0001.		
Flood Insurance		
	Hazard Disclosure Given	Hazard Disclosure Not Given
Flood Insurance Obtained	136 (86.1%)	107 (67.7%)
NO Flood Insurance Coverage	22 (13.9%)	51 (32.3%)
Chi-Square = 13.966 (after Yates Correction), 1 degree of freedom Significance = 0.0002		

of hurricane information at the time of the home sale has a significant association with insurance coverage. For example, 93.4% of home buyers whose homes are mortgage free, but who were informed about the hurricane hazard, have windstorm insurance; however, only 74.8% of those not informed have such insurance, a difference significant at the 0.00005 level. Likewise, 77.7% of those home owners without mortgages who were told about the hurricane threat while purchasing their homes have flood insurance coverage, compared with 55.7% who were uninformed, another highly significant relationship. Thus, even controlling for the insurance requirements associated with home mortgages, the disclosure of hurricane flood information by the realtor is strongly associated with the acquisition of flood insurance.

The post-1980 home buyers generally favor the eight-foot minimum elevation requirements for new construction which were in effect when their homes were purchased. Likewise, those favoring the use of higher minimum elevations which include wave action (as shown on the Federal Insurance Rate Maps formally issued in December, 1983) outnumbered those opposing their adoption by better than three to one. The association between the home purchasers' favoring of the eight-foot requirements and whether or not the nonresident home purchaser received a hurricane disclosure was not significant. However, significant differences (at the 0.10 level) exist between those new resident home buyers who did and did not receive hurricane information with respect to their attitudes towards the adoption of the more stringent elevation levels and their attitudes towards Monroe County's building code and its enforcement. For example, 68.8% of the home buyers who received hurricane information favored the "use of these new [FIRM] maps to determine the minimum elevation levels

for new home construction," compared with 55.6% of the other home purchasers. Conversely, home buyers who did not receive disclosures were less than half as likely to feel that the present building code and its enforcement was "too restrictive."

Residents' Perception of Hurricane Threat

The disclosures appear to have had little influence upon the home owners' perceptions of the overall hurricane risk within the Keys. Although informed customers are twice as likely to claim that the Lower Florida Keys are more likely to experience hurricanes than other locations along the Gulf and Atlantic coasts of the United States, this relationship is not statistically significant (Table 13). Indeed, the majority of all recent home buyers feel that their vulnerability to hurricanes is equal to that of other coastal locations. Similarly, although slightly greater percentages of the survey respondents who were

TABLE 13

**ASSOCIATION BETWEEN HURRICANE HAZARD INFORMATION DISCLOSURE
AND THE PERCEPTIONS OF POST-1980 BUYERS OF THE VULNERABILITY
OF THE LOWER FLORIDA KEYS TO HURRICANE DAMAGE**

	MORE	LESS	EQUALLY
Hazard Disclosure Given	20 (12.8%)	33 (21.2%)	103 (66.0%)
Hazard Disclosure NOT Given	10 (6.8%)	32 (21.9%)	104 (71.2%)

Chi-Square = 3.026, 2 degrees of freedom, significance = 0.220.

informed about hurricanes by their realtor or previous owner feel that a hurricane hitting the Lower Florida Keys would be more likely to cause damage than at other coastal locations, these differences again lack statistical significance. Likewise, in their evaluations of the hurricane vulnerability of the Lower Florida Keys compared to Middle and Upper Keys locations, of the anticipated damage to their homes if the center of a hurricane were to pass over their area of the Florida Keys, and of the changes in their hurricane awareness since they began living in the area, no significant differences were discerned between those home owners who received hurricane information from their realtor or home seller and those who did not. Furthermore, the disclosures were not related to expected evacuation behavior in case of a hurricane warning. Thus, while the provision of hurricane information to home purchasers may influence certain aspects of their home acquisition process, it appears on the whole to have been inconsequential in the development of their overall perception of the hazard.

The methods utilized to disclose hurricane information appear more closely related to differences in the new home owners' perception of the area's hurricane risk. For example, 85% of those customers who were told about hurricanes during their first office visit stated that a damaging hurricane within the study area within the next decade was "likely" or "very likely" compared with 57% of those receiving disclosures at other times, and with 65% of those receiving no disclosures at all.

IMPORTANCE OF A HOME'S STORM SAFETY

Realtors and new home owners disagree about the importance of a dwelling's storm safety in the home selection process. For example, two-

thirds of the new home owners indicated that the home's storm safety was "very important" or "somewhat important" in choosing a house. Conversely, most realtors viewed this consideration as being of little importance--approximately equal to proximity of employment, a factor of dubious importance to a population largely composed of retired persons or vacationers. In fact, only 21.3% of house purchasers were concerned with their location vis-a-vis employment.

New home owners are typically more concerned about the threat of hurricane flooding than the area's realtors, just as they are more concerned than most longtime residents. For example, hurricane flooding is considered a "major problem" to 27% of the home owners and to 19% of the realtors. Proportionately, twice as many realtors claim that hurricane floods are "not a problem at all" as do new home owners.

DISCLOSURES AND THE PURCHASE OF MOBILE HOME RESIDENCES

Over one-third of the residences within the Lower Florida Keys are mobile homes; realtors are less likely to be involved with mobile home sales. Purchasers of mobile home residences were significantly more likely (47.4% versus 31.0%) to have purchased the mobile homesite directly from the previous owner than purchasers of houses were likely to deal directly with the former owner. The survey of realtors substantiates these claims, with 55% claiming they sold no on-site mobile homes and an additional 32% stating that such sales accounted for only 1%-5% of their total residential sales. Such a low sales involvement was explained by several realtors as due to most mobile home residences being sold among residents or friends of residents living within the various mobile home communities. Further, Florida's legal prohibition of realtors selling

mobile homes apart from their homesites was also frequently cited. Slightly less than half (46.5%) of the post-January 1980 mobile home buyers indicated that they obtained their mobile home and lot separately. Typically, the purchaser of a mobile home homesite (with or without the mobile home) spent less time searching than did the purchaser of a house (64% of the former spending less than a month, compared with 51% of house purchasers).

Slightly less than half of the mobile home purchasers reported that their realtor, or the previous land owner, informed them that the property was in a hurricane flood zone or that flood insurance might be needed, a proportion not significantly different from that reported by purchasers of houses. Likewise, the method of this disclosure was similar to that received by home buyers. In addition, mobile home residents and house residents appeared equally satisfied with the information they received. Although only a small proportion of either set of purchasers indicated that the information made any difference in their choice of property, mobile home purchasers reported it only half as frequently.

Since April of 1977, a Monroe County ordinance (Ordinance 8-1977) has required that variances be obtained from the Board of County Commissioners for all new mobile homes placed at an elevation of less than eight feet. The ordinance further stated:

If a mobile home is placed in an existing park or subdivision or varianced lot, the Building Department shall not issue a Building Permit or Certificate of Occupancy unless and until the owner of the mobile home or lessee, as the case may be, shows the Building Official a recorded deed or unrecorded written lease wherein the mobile home owner has the fact disclosed to him in said deed or lease that the mobile home is being located in a flood-prone area and that an evacuation plan indicating vehicular access and an escape route is filed with the Disaster Preparedness Authorities (Monroe County 1977, pp. 4-5).

This ordinance, however, has been basically ignored. While mobile homes have been added within the study area, no requests for mobile home variances had been filed with the Monroe County Building Department, which had received only 16 such requests for the remainder of the county between January of 1980 and December of 1983. However, substantial changes in personnel in the department were made in 1983, and the County Commission enacted a new ordinance in November, 1983, placing stricter elevation and variance requirements on mobile homes (Monroe County, 1983). Although not affecting real estate transactions during the time frame of this study, it appears these regulations will have a greater impact in the future.

There is relatively little evidence that realtors have targeted any particular group of mobile home seekers to receive the hurricane information disclosures, except that a greater proportion of persons that obtained their mobile home and homesite together reported receiving hurricane information (53.8%) than persons who purchased their lot separate from their mobile home (38.0%). Yet, even this relationship was only significant at the 0.134 level after Yates correction.

No significant differences existed between mobile home purchasers receiving disclosures and those who did not with respect to their socioeconomic characteristics (age, education, and income), or their previous residence (census region, urban versus rural background, and coastal versus inland location). It should be noted, however, that mobile home buyers significantly differed from purchasers of houses on several of the variables. For example, only 19.5% of the mobile home purchasers were from the South Atlantic states, compared with 47.7% of the house buyers, and they were less than half as likely to have previously lived within a

coastal county. Likewise, as a whole, mobile home buyers had less income.

The hurricane flood disclosures had virtually no impact on the mobile home purchasers' choice of a homesite--with only one of 54 post-1980 buyers who received the hurricane information reporting that it influenced his/her choice. Likewise, no statistical differences existed between mobile home purchasers receiving and not receiving hurricane information with respect to the importance in their home selection process of the "elevation of the homesite," the "safety of home during a hurricane," or the "vulnerability of homesite to storm flooding." However, it can be argued that because mobile home purchasers expect that their homes would be destroyed by hurricane winds anyway, efforts to obtain safer homesites would be futile. Indeed, 80.1% of the mobile home purchasers expected that their homes would receive major damage or be totally destroyed if the center of a hurricane were to pass over their area of the Keys, with only 19.5% believing that flooding would be the greatest cause of this damage. Thus, it appears that the perceived futility of physically protecting mobile homes negates any impact which the hurricane information might have on the choice of homesite.

The hurricane flood zone disclosures were much more strongly related to decisions to purchase windstorm and flood insurance. Of those mobile home purchasers told about the hazard or flood insurance, 90.4% carry windstorm insurance, compared with 55.9% of the uninformed. Likewise, 82.7% of the buyers receiving hurricane disclosures purchased flood insurance, compared with 44.1% of the other mobile home residents, a difference significant at the 0.0001 level. Nevertheless, while nearly two-thirds of all mobile home purchasers feel that the availability of

flood insurance will make it easier to sell their homes, no differences existed between mobile home buyers who did and did not receive the hurricane information.

The provision of hurricane information had little impact upon the mobile home buyers' perception of hurricanes, hurricane winds, or hurricane waves and flooding as problems related to living in the Keys. Likewise, no differences existed in the purchasers' perceptions of how likely a damaging hurricane might be within the next decade. Mobile home buyers with and without disclosures did not significantly differ in their evaluations of the vulnerability of the Lower Florida Keys to hurricane damage, as compared to other Gulf and Atlantic coast locations or the Middle and Upper Florida Keys. However, purchasers receiving disclosures were significantly more likely to claim that the Keys were either more or less likely to be struck by a hurricane (41.8%) than were other buyers, 80.3% of whom felt the Keys were equally vulnerable. Nevertheless, the disclosure's impact upon perceptions appears minimal at best.

CONCLUSIONS

While realtors may provide home buyers with coastal hazards information, this information is not of great significance to most of their customers when they select their homes. Indeed, only one-third of the home buyers who received disclosures considered realtors to be the best source of information concerning minimum elevation requirements (100-year flood levels), with county building and zoning officials (21%) and insurance agents (14%) viewed by others as the best sources. Interestingly, bankers were rarely (2.8%) viewed as a good information source,

even though it is their responsibility to assure that mortgaged homes carry flood insurance.

It is also possible that information about flood insurance may reduce the overall concern of customers about property losses, since buyers receiving disclosures more frequently located along the shore or in ground-level houses. Many realtors admitted this was the case. Half of the realtors interviewed who sold houses within the Lower Florida Keys affirmatively answered the question, "Have you found that the availability of flood insurance makes your customers more likely to locate near the water or on low-lying property?" Of course, it may also be argued that because of these sites' greater vulnerability, realtors made greater efforts to warn their purchasers.

Disclosure of hurricane flood zone information by realtors was strongly associated with the home owners' acquisition of both windstorm and flood insurance, even among residents lacking mortgages. Even though the effects of the disclosures were not always apparent, it appears that the disclosure of coastal flood hazard information by realtors could indeed raise customer awareness and contribute to hazard avoidance behavior if the information is provided early in the home selection process. However, the proportion of home buyers who received information about hurricanes early in the home selection process appears to be dropping. Disclosures at the time of closing may fulfill legal obligations, but are unlikely to alter a customer's selection. The disclosures given at the time homes are selected have had no apparent effect upon the long-term attitudes and concerns which residents have concerning the hurricane hazard, nor are they associated with anticipated behavior in the face of an imminent hurricane threat.

The results noted within the Lower Florida Keys are generally consistent with those observed by Palm (1981b) among buyers in both Berkeley and Contra Costa County, California. In both studies the survey populations were wealthier and better-educated than the national norm and included no large minority groups. The home search took approximately the same length of time in both areas. The home buyers within the special studies zones in California (near mapped earthquake fault lines) felt that "price, investment potential or resale value, number of bedrooms (size), and view to be of primary importance" in influencing their purchase decisions (Palm, 1981b, p. 48). Within the Lower Florida Keys, while both price and investment potential or resale value were "very important" to approximately half the respondents, the nearness to the shore or canals and access to deep-water boating were even more important.

Some differences did exist in the way residents received their hazard disclosures, with the use of contract addenda far more common in California (Palm, 1981b, pp. 54-55), and Florida buyers more often told while homes were shown--possibly as an explanation of the increasingly prevalent stilt architecture. Nevertheless, disclosures had minimal discernible consequences in either study area. In the California study, 22% of those respondents receiving disclosures felt that the information made a difference in their home selection, compared with 12% of the Florida Keys home seekers. The slight difference may be explained by the finding that the primary home selection motivations in the Keys inevitably bring home buyers into the hurricane flood zone, but in California no environmental amenities are attached to the special studies zones.

In both studies, however, location within a designated hazard zone is expected by new home owners to have little affect upon the price of their home or their ability to sell it sometime in the future. Indeed, Palm (1981b, p. 54) reports that 88.4% felt "that location within the [California] special studies zones would make no difference," while 72.1% of the Keys house purchasers stated that flood zone location would have no effect, with an additional 15.3% expressing uncertainty as to whether or not it would have an effect--findings which are quite similar. The purchase of hazard insurance (flood in Florida and earthquake in California) was positively influenced by the distribution of hazard information.

The relatively low proportion of home buyers who indicated that the hazards information influenced their home selection should be considered in the proper perspective. Indeed, considering all the information provided to home seekers, Hempel (1969, p. 56) discovered in his Connecticut study that "only 17% of the households reported the broker [real estate agents or realtors] had some influence on their choice of homes." While realtors may influence home buyers, Barresi (1968, p. 63) reports that the majority of "...agents attempt to direct the prospective buyers to particular houses and areas based on their interpretations of his desires, needs, and financial ability." Furthermore, the real estate agent is able to exert subtle control over the buyers by the selection of homes or areas which are shown, or even in the selection of clients.

Newcomers to the communities are typically most reliant upon realtors as information sources (Palm, 1976, p. 269). When home seekers have preconceived notions concerning residential areas, information provided by realtors may have minimal effects.

Buyer acceptance of the brokers's advice is likely to be significantly affected by the consistency of this information with the buyer's preconceptions and existing beliefs. Thus, the broker who rushes to correct the "misinformed" buyer may create suspicion and confusion which severely inhibits his subsequent efforts to help the buyer (Hempel, 1969, pp. 39,41).

Newcomers within coastal areas often have preconceived notions about coastal hazards. Windham and associates (1977, p. 32) note that many persons had already decided upon evacuation behavior before they moved to the shore. It should be further noted that many purchasers of coastal real estate are not exactly newcomers. Within the Lower Florida Keys over a third of the post-1980 home buyers had already lived in the area for at least a year before purchasing their present homes. Furthermore, since many of the coastal properties are purchased as nonpermanent residences, their acquisition often "may follow a period during which yearly or more frequent vacation or tourist trips are undertaken" (Gober and Mings, 1984, p. 172). Indeed, home buyers decided where to migrate before they decided to move and select a home--a characteristic of the migration of retired persons. Thus, it is not surprising that realtors may have little acknowledged impact upon their customers' decisions.

The findings within the Lower Florida Keys study support the California results that the disclosure of hazard information to home buyers had only minimal effects. Not only do most real estate agents disclose the information at the time and in the manner least likely to cost them a sale, but the recipient is often not inclined to act upon the information even if it is given. Indeed, the majority do not even want to receive such information. Some buyers, upon hearing the warnings, are likely to assuage their fear by claiming that they are less vulnerable than others, an observation of Sheaffer (1960, p. 73) which was also noticed in the Keys. As Marston (1984, p. 2) notes, others "informed of

the potential risk, still purchase the house because she/he plans to live in the house only a short time...." Where retirees dominate the population, as in the Keys, such a conclusion would not be surprising.

An implication of these findings might be that hazard disclosures are of little value except to ensure compliance with legal requirements or to eliminate possible liability claims against the seller. However, even influencing one in five buyers is better than nothing, and when the proper methods and timing are used, the number reached might be higher. Although disclosures can have a positive influence upon the acquisition of flood insurance, neither disclosures nor the National Flood Insurance Program have done much to slow the rapid growth of coastal population. This population is not unaware of the possibility of future hurricane destruction, but our research only strengthens the argument of Saarinen (1982, p. 1) that "...there is increasing skepticism that more information by itself will lead to appropriate adjustments."

REFERENCES

- Baker, E. J. and J. G. McPhee
 1975 Land Use Management and Regulation in Hazardous Areas: A Research Assessment. Program on Technology, Environment and Man Monograph #8. Boulder: University of Colorado, Institute of Behavioral Science.
- Barresi, Charles M.
 1968 "The Role of the Real Estate Agent in Residential Location." Sociological Focus 1, pp. 59-71.
- Burton, Ian and Robert W. Kates
 1964 "The Floodplain and the Seashore: A Comparative Analysis of Hazard-Zone Occupance." Geographical Review 54, pp. 366-385.
- Field Associates, Ralph M., Inc.
 1983 Preparing for Hurricanes and Coastal Flooding: A Handbook for Local Officials. Washington: Federal Emergency Management Agency.

Florida Coastal Coordinating Council

- 1974 Florida Keys Coastal Zone Management Study. Tallahassee:
Florida Department of Natural Resources.

Gober, Patricia, and Robert C. Mings

- 1984 "A Geography of Nonpermanent Residence in the U.S."
Professional Geographer 36, pp. 164-173.

Hempel, Donald J.

- 1969 The Role of the Real Estate Broker in the Home Buying
Process. Real Estate Reports #7. Storrs: University of
Connecticut Center for Real Estate and Urban Economic
Studies.

Marston, Sallie A.

- 1984 A Political Economy Approach to Hazards: A Case Study of
California Lenders and the Earthquake Hazard. Natural
Hazard Research Working Paper #49. Boulder: University of
Colorado, Institute of Behavioral Science.

Mitchell, James. K.

- 1974 Community Response to Coastal Erosion: Individual and
Collective Adjustments to the Hazard on the Atlantic Shore.
Department of Geography Research Paper #156. Chicago:
University of Chicago.

Monroe County, Florida

- 1977 Ordinance No. 8-1977. Monroe County Board of County
Commissioners, Key West.
- 1983 Ordinance No. 30-1983. Monroe County Board of County
Commissioners, Key West.

Palm, Risa

- 1976 "Real Estate Agents and Geographical Information."
Geographical Review 66: pp. 266-280.
- 1981a "Public Response to Earthquake Hazard Information." Annals
of the Association of American Geographers 71, pp. 389-399.
- 1981b Real Estate Agents and Special Studies Zones Disclosure: The
Response of California Home Buyers to Earthquake Hazards
Information. Program on Technology, Environment and Man
Monograph #32. Boulder: University of Colorado, Institute of
Behavioral Science.

Platt, Rutherford H.

- 1983 "Local Government Liability Regarding Coastal Hazards." In
Preventing Coastal Flood Disasters: The Role of the States
and Federal Response: Proceedings of a Symposium, Jacquelyn
Monday, ed. Natural Hazards Research and Applications
Information Center Special Publication #7. Boulder:
University of Colorado, Institute of Behavioral Science.

Saarinen, Thomas F.

- 1982 "The Relation of Hazard Awareness to the Adoption of Mitigation Measures." In Perspectives on Increasing Hazard Awareness, T. F. Saarinen, ed. Program on Environment and Behavior Monograph #35. Boulder: University of Colorado, Institute of Behavioral Science.

Sheaffer, J. R.

- 1960 Flood Proofing: An Element in a Flood Damage Reduction Program. Department of Geography Research Paper #65. Chicago: University of Chicago.

Simpson, Robert H. and Herbert Riehl

- 1981 The Hurricane and Its Impact. Baton Rouge: Louisiana State University Press.

Slosson, James E. and Gay W. Havens

- 1984 "Legal Liability: An Incentive for Mitigation." Paper (P/P-16) presented at Natural Hazards Research and Applications Information Center Workshop, Boulder, Colorado, July 15-18, 1984.

Wilson, John D., Daniel L. Trescott, DeeEll Fifield, and Vera McIntyre

- 1980 Hurricane Hazard Mitigation at the Local Government Level: The Roles of the Building Code and Other Development Management Strategies. Tallahassee: Florida Department of Community Affairs Bureau of Disaster Preparedness.

Windham, G. O., E. I. Posey, P. J. Ross, and B. G. Spencer

- 1977 Reactions to Storm Threat During Hurricane Eloise. Social Science Center Report #51. State College: Mississippi State University.

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