3 How Important Are Natural Hazards Problems to State and Community Elites?

PERCEIVED SERIOUSNESS OF NATURAL HAZARDS

Although all communities acknowledge that natural disasters are likely to happen and may constitute serious problems to some persons and communities, whether or not a given community will be moved to take action by that realization may turn largely on how menacing that danger appears. In addition, since there are many problems that need to be solved, the question of how serious natural hazards are compared to other problems needs to be raised. Of course, these are not the only factors in such decisions: There may be disagreement over what should be done; there may be side-benefits or ancillary costs that need also to be taken into account; and so on.

To assess the views of political influentials towards the seriousness of natural hazards problems, the opening question in the Key Persons Interview Schedule (see Appendix A) asked:

To begin with, we're interested in knowing what have been the serious problems facing (STATE/LPJ) over the past ten years. Here is a list of problems that have commonly faced (states/local political jurisdictions). Please take a moment to look over this list. I am going to ask you to rate each problem on this list with a score between 1 and 10 to represent just how

serious you think that problem has been in this state/community over the past 10 years. PAUSE TO LET R STUDY THE LIST, THEN CONTINUE: Thinking of a score of 1 as representing no problem *at all* and a score of 10 as a *most* serious problem, what score *between* 1 and 10 would you give to (REPEAT FOR EACH CATEGORY)?

The problems to be rated ran the gamut from inflation to pornographic literature to traffic congestion to too little economic growth. (The complete list of problems is shown in Table 3.1.) Of most importance for present purposes, the list also included five hazards problems: tornadoes, hurricanes, floods, fires, and earthquakes. The *seriousness ratings* given to these five problems represent the dependent measures for most of this chapter.

TABLE 3.1

Average Seriousness Ratings of 18 Problems in 20 States and 100 Local Communities

		AVERAGE SERIOUSNESS RATINGS			
	PROBLEM	TOTAL SAMPLE	LOCAL SAMPLE	STATE SAMPLE	DIFF[b]
1	Inflation	7.04[a]	6.93	7.44	+0.51*
2	Welfare Costs	6.16	6.05	6.60	+0.55*
3	Unemployment	5.93	5.90	6.03	+0.13
4	Crime	5.92	5.82	6.34	+0.52*
5	Drug Addiction	5.67	5.64	5.81	+0.17
6	Inadequate Housing	5.39	5.43	5.23	-0.20
7	Public Education	5.28	5.14	5.88	+0.74*
8	Too Little Growth	5.11	5.16	4.90	-0.26
9	Traffic Congestion	4.75	4.79	4.58	-0.21
10	Water and Air Pollution	4.56	4.36	5.36	+1.00*
11	Pornography	4.01	3.91	4.40	+0.49*
12	FLOODS	3.95	3.76	4.71	+0.95*
13	FIRES	3.69	3.64	3.87	+0.23*
14	Race Relations	3.57	3.45	4.07	+0.62*
15	HURRICANES	2.34	2.14	3.16	+1.02*
16	TORNADOES	2.00	1.85	2.58	+0.73*
17	Too Much Economic Growth	1.99	1.94	2.18	+0.24*
18	EARTHQUAKES	1.24	1.18	1.44	+0.26*
	N =	2292	1831	461	

[a]Cell entries are mean ratings, where 1 = "no problem at all" and 10 = "most serious problem."

[b]State mean minus local mean; positive entries denote problems seen to be more serious by state respondents than local respondents. Asterisks (*) denote differences that are statistically significant (Alpha = .05)

There are three points to emphasize. First, the question refers to problems faced by the specific state or local community of the respondent, not to problems of the nation as a whole or of the person interviewed. Second, each problem is rated according to its perceived seriousness; we have *not* asked respondents to rank order the list from most to least serious problem. The rank-orderings reported here are rankings of averages, not the results of direct comparisons. Third, we did not define what we meant by *seriousness*, but allowed persons interviewed to project into that term their own meaning. There are many good reasons for this procedure, but the main justification is that the term is used this way in ordinary conversation. In addition, many previous studies of such issues as *crime seriousness* and *child-abuse seriousness* have found that, used in this fashion, the term appears to be uniformly understood and used by the general population. Thus, a *serious* problem is to be interpreted as one that causes difficulties for the local community (or state) and that may therefore require collective action on the part of the local (or state) government.

Table 3.1 shows mean seriousness ratings for each of the 18 problems posed in the question sequence for the total sample, then separately for state and local respondents. Not surprisingly, in the total sample (the first column of Table 3.1), the problems rated most serious are inflation, welfare costs, unemployment, crime, and drug addiction, in that order. Inflation leads the list by a wide margin over its nearest competitor in both states and local communities. In addition to these, there are three problems that are relatively serious, in that their mean seriousness is above 5.0, the midpoint of the scale: housing, education, and too little economic growth. Economic issues dominate the list of state and local concerns—a pattern that is routinely found in studies of the mass public (e.g., Cantril and Roll, 1971; Hamilton, 1972).

The five natural hazards problems, in contrast, are at the *bottom* of the list, by rank-order. The most highly rated disaster problem, flooding, ranks twelfth overall and is seen by our respondents as slightly *less* serious than pornographic literature. Fires rank thirteenth, just below floods. Hurrican and tornadoes are the next most serious problems, ranked fifteenth a sixteenth, respectively, and seen as slightly *more* serious than "too much economic growth." Earthquakes round off the bottom of the list, eighteenth of 18 problems. Of the 2275 respondents who rated the earthquake problem, 91% gave it a "1"—no problem at all. (The percentage of respondents giving tornadoes, the second most serious hazard problem, a "1", is only 63%). Thus, earthquakes are the least serious problem on the list. But earthquakes differ only in degree from the other hazards problems, not in kind; *none* of the hazards problems is considered very serious. Thus, if state and local resources are allocated to problems *proportional to their perceived* seriousness, then it appears that new and more expensive state and local

hazard policies will be a long time coming. Of course, seriousness is not a sufficient predictor of where resources and energy will be placed. Some of the problems, for example, inflation, are beyond the competence, authority, and powers of local and state government. Others, such as crime, have proven so far to be intractable. Still others may require more resources than are available. Finally, some problems may require actions that are inexpensive and hence may be undertaken because some relief may be obtained at a low cost, for example, by accepting subsidies from the federal government for low-cost housing.

Differences between state and local views of these problems present an interesting pattern. In 15 of the 18 problems, and in all five of the hazards cases, state elites consider the problem to be more serious than do local elites; most of the mean differences are statistically significant. This suggests that the seriousness of problems in general, and natural-hazards problems in particular, tends to increase with the size of the political unit from whose perspective the problem is viewed. This would be generally true because larger political units tend to encompass in aggregate form all the problems of the smaller units of which they are composed.

The point can be easily exemplified in the case of floods. According to Federal Insurance Administration figures (1977), some 23,000 American communities have been identified as having nontrivial flood risks and for which 100-year floodplains have been designated. Under the simplifying assumption that the probabilities of experiencing a 100-year or greater flood in any given year are independent across these 23,000 communities, then the *1-year-odds* for any single community are, by definition, 1 in 100; for each, the expected return time for a 100-year or greater flood can be expressed as 365.25 days × 100, or 36,525 days.

Assuming a uniform distribution across states, there are thus about 460 flood-prone communities in any single state, each with a .01 probability of experiencing a 100-year or greater flood in any year. Each of the 50 states can therefore expect to experience about 4.6 100-year or greater floods *every year*, or one such flood every 80 days. By the same logic, the nation as a whole can expect to experience about 230 100-year or greater floods *every year*, or once every 1.6 days!

Obviously, the flood probabilities of the 23,000 communities are not perfectly independent (for example, they are mutually affected by local weather conditions, drainage, watershed patterns, etc.). Thus, these calculations can only be taken as approximations. They do serve to dramatize that the incidence of flooding tends to increase with the size of the political unit. If the logic is correct, the *objective* incidence varies by size of political unit. The perceptions of elite respondents recorded in Table 3.1 are weak reflections of this reality.

Whether this state-local difference in perceived seriousness accurately reflects the objective differential is a matter for speculation. It is certainly one thing if a serious problem (a big flood) recurs on 100-year cycles, and quite another thing to face 4 or 5 such floods in one or another local community every year when you are the governor of a state. The difference in incidence certainly means that the problem comes to your attention for action more frequently if you are a governor, but the impact of the event on the state is probably less for individual incidents. For governors and state legislatures, floods may be a recurring emergency with which they will have to deal almost five times a year, and hence flood policy may be a more continuous concern. This appears to create slightly but consistently higher seriousness ratings for natural-disaster hazards among state elite members.

Since there are 20 states and four natural hazards problems in our samples, it is possible to make 80 comparisons between state and local respondents. In 65 of the 80 comparisons, state elites rate the problem in question as more serious, a consistency that adds to the strength of our findings concerning the fact that state elites regard the problems of natural disasters as more serious. It should also be noted that the differences state by state are not very large, also consistent with the findings presented in Table 3.1.

This tendency for the seriousness of natural hazards problems to increase somewhat with the size of political units may have important implications for the politics of natural disaster. Consider, for example, the new look in hazard management through nonstructural methods and land-use management. Viewed from a federal perspective, the overall hazards problem may present itself frequently enough and be so costly as to justify the implementation of such measures. The most recent available estimates are that natural hazards cost the nation about $10 billion per year (White and Haas, 1975). But the incidence and costs of the problem are substantially less when viewed from a state perspective, still less when viewed from the local perspective. Policies that are efficient, rational, equitable, and appropriate from the larger perspective may thus seem arbitrary, capricious, and unreasonable from the smaller one.

This may lead to some unavoidable conflict among the various levels of government. Most of the impetus for new policy directions in the natural hazards area, it appears, is coming from the federal government. However, the tasks of implementing and enforcing these policies must fall to the states and, by delegation, to local communities, from whose perspectives the problem is substantially less serious in the first place. The resulting politics is a potential source of conflict and rancor.

Another interesting finding from our interviews (see Table 3.1) is that the problem of too *much* economic growth is rank-ordered seventeenth of the eighteen problems. Yet, "slow growth" or "no growth" has become a ban-

ner under which an increasing array of politically active groups march, some of whom are also active in what might be called (with perhaps some exaggeration) the nonstructural hazards-risk mitigation movement. These groups often present land-use management approaches to hazards-risk reduction as policies that are desirable because they also provide mechanisms to control the problem of unchecked growth. From the point of view of most of the influentials in our sample, this amounts to linking one nonproblem with another. Worse, it amounts to proposing a solution to what is seen as a trivial problem (namely, natural hazards) in such a way that the solution appears to exacerbate a serious problem (namely, the problem of too little economic growth). This linkage between hazard-risk mitigation and generalized slow-growth or no-growth philosophies therefore may be potentially detrimental to the adoption of nonstructural hazard-mitigation policies and create opportunity for backlash on hazards-management issues.

OTHER SERIOUS PROBLEMS MENTIONED

Every state and local community faces a large variety of problems, only some of which were included in the list for rating. Since virtually any state or local problem is in possible competition with natural hazards problems, the competitive position of hazards problems is thus only imperfectly represented in the data so far considered. What are some of the other problems with which states and local communities must deal?

A follow-up question to the seriousness sequence asked, "Are there any problems that are not on this list that have been very serious here in (STATE/LPJ) within the past 10 years?" About 60% of our respondents said yes and were asked what the problems were. The average number of additional problems mentioned was 2.08, but varied between 1 and 30.

Examination of the open-ended responses to the follow-up reveals, predictably, that they involve virtually all the toils and miseries that afflict the human species. The most commonly mentioned "other problems" were taxation, urban decay, energy, political corruption and incompetence, labor-management relations, transportation problems, recreational facilities, water quality, sewage treatment, and related waste-disposal issues. Other problems receiving at least one mention include noise pollution from a neighboring Air Force base, the absence of vocational training programs, sex discrimination, loss of lives from drowning accidents, nuclear power plant siting, sinkholes and potholes in the roads, weakening of morality, Supreme Court rulings, palm-tree blight, automobile insurance rates, fire ants, illiteracy, illegitimacy, preservation of historical structures, divorce and deterioration of the family unit, lack of discipline in public schools, lack of newspapers in the city, the image of the city, bank failures, obtaining qualified applicants for the police department, lack of a good ambulance service, the railroad going through the middle of town, dog litter and animal control (mentioned by several respondents), and even the devaluation of the Mexican peso (mentioned by several persons in Eagle Pass, Texas). One respondent mentioned what may well be the ultimate problem that states and localities face: "just the inability to cope with our problems."

Since the four major hazards problems included in the seriousness sequence by no means exhaust the natural hazards problems a state or community has to face, another follow-up asked whether mudslides, drought, hailstorms, or snowfalls had been problems in the past 10 years. More than 54% said that drought had been a problem, which was not surprising, since the survey was fielded during a particularly dry summer. Of the other three hazards, 31.2% said snowfalls were a problem, 22.5% cited hail, and 7.7% cited mudslides.

We also asked about various man-made emergency situations, for example, civil disorders, air pollution, and power failures. These were said to have been problems in the past 10 years by 31.6%, 21.2%, and 25.2% of the respondents, respectively. Finally, we asked whether there had been any types of natural hazards problems in the state or community not mentioned in the interview sequence or the first follow-up. More than 25% responded "yes," citing windstorms, ice storms, lightning, severe cold and frost, dust storms, peat-dust storms, cave-ins, beach erosion, river undertow, high waves, collapsing cliffs, brush, forest, and arson fires, temperature inversions, corn blight, "beetles in the horseradish crop," rats, mosquitoes, pine beetles, head lice, boll weavils, grasshoppers, "too many blackbirds," water weeds, Dutch elm disease, gypsy moths, "possible volcanic action," and even "radiation fallout in milk" and "blindness from watching the solar eclipse."

The point is that states and communities are literally overwhelmed with problems ranging from the trivial to the profound, each being something that at least somebody is concerned about, each in some sense competing for a share of finite resources and political attention, and each threatening, to one or another degree, the overall quality of community life. The data cannot reveal how many of these "other problems" are seen to be more serious than, say, floods, but it is a safe bet that at least some of them would be; almost certainly, many would be seen as more serious than earthquakes or, possibly, tornadoes. There are, then, two essential points to make about natural hazards problems: First, they are but a handful among a very large set of problems clamoring for attention and resources, and second, they are not seen to be, in general, among the most serious problems. So we should not be very surprised when the states and local communities seem in no

great hurry to do something about their natural hazards problems. There are, after all, so many other things to do something about instead.

DO SOME CARE MORE THAN OTHERS?

The relative nonseriousness attributed to hazards problems in the aggregate does not necessarily imply perfect agreement. One would expect to find that some sectors of the elite regard hazards problems more highly than the average. Table 3.2 lists the six problems receiving the highest mean ratings and rank-ordered placement of the five hazards problems for each state position sampled. As can readily be seen there is virtually unanimous agreement among state elites that inflation is the most serious problem facing the states. Inflation ranks first in 17 out of 18 groups, and second in the eighteenth. Unsurprisingly, inflation, the costs of welfare, unemployment, crime, drugs, education, pollution, and housing dominate the six leading concerns of all elite groups; other problems appear in the lists sporadically, if at all.

There are some interesting (though not surprising) variations on the "consensus" theme; problems that fall clearly and directly into a given group's bailiwick tend to be seen as somewhat more serious by that group than by others. Compared to other groups, for example, Republican legislators rate inflation, crime, and welfare as more serious; these are all traditionally conservative or Republican themes. Similarly, construction unionists are more concerned about unemployment, traffic congestion, and housing (and pornography, of all things); planners are more worried about air and water pollution and too *much* economic growth; insurance representatives are worried about crime and fires; homebuilders about too little economic growth, etc. Groups consistently most concerned about natural hazards problems are the Civil Defense and the Federal Insurance Administration. Thus, there is a noticeable tendency in the data for groups to inflate the seriousness of their "own" problems.

All told, the five hazards problems contained in the seriousness sequence appear seven times on the group-specific listings of six most serious problems reported in Table 3.2. Fires rank sixth among all problems for insurance representatives; the remaining six hazards mentioned are all for floods, which were rank-ordered fifth in seriousness among governors (or their surrogates), third among Civil Defense members, fifth among water resources directors, fourth among Farmers' Home Administration representatives, and sixth among Federal Insurance Administration and Small Business Administration representatives. Thus, elite groups, or, more appropriately, *suprastate*

TABLE 3.2

Problem Seriousness and Relative Ranking of Five Hazards Problems by Elite Position: State Respondents

	Problems with Highest Mean Ratings						Mean Hazard Ranking[b]	Hazard Rankings				
Position	1st	2nd	3rd	4th	5th	6th		TORN	HURRI	FLOOD	QUAKE	FIRE
Governor (19)[a]	Infl.	Welfare	Unemp.	Crime	FLOOD	Educ.	12.2	16	12	5	17	11
Rep. Leaders (38)	Infl.	Welfare	Crime	Educ.	Drugs	Unemp.	15.0	16	15	12	18	14
Dem. Leaders (35)	Infl.	Unemp.	Welfare	Crime	Drugs	Pollute	15.0	16	15	12	18	14
Dis. Legis. (72)	Infl.	Welfare	Crime	Educ	Unemp	Pollute	15.2	17	15	12	18	14
Civil Defense (21)	Infl.	Welfare	FLOOD	Crime	Unemp.	Drugs	10.6	13	9	3	17	11
Planners (19)	Infl.	Pollute	Unemp.	Educ.	Crime	Housing	14.2	17	15	8	18	13
Geologist (19)	Infl	Welfare	Educ.	Unemp.	Crime	Drugs	14.2	16	15	8	18	14
Comm. Affairs (17)	Infl.	Unemp.	Housing	Drugs	Educ.	Crime	14.0	15	14	10	18	13
Water Resour. (19)	Welfare	Infl.	Pollute	Crime	FLOOD	Drugs	13.6	17	13	5	18	15
Real Estate (20)	Infl.	Welfare	Crime	Drugs	Unemp.	Educ.	15.0	15	16	12	18	14
Homebuilders (19)	Infl.	Welfare	Too Little Growth	Unemp.	Crime	Housing	14.6	13	16	12	18	14
Insurance (36)	Infl.	Crime	Welfare	Educ.	Drugs	FIRE	13.6	16	15	13	18	6
Const. Union (20)	Infl.	Unemp.	Housing	Welfare	Crime	Drugs	15.0	16	15	12	18	14
Bankers (18)	Infl.	Welfare	Crime	Drugs	Unemp.	Educ.	14.8	17	15	10	18	14
Editors (27)	Infl.	Educ.	Crime	Unemp.	Pollute	Housing	14.8	16	15	12	18	13
FIA (20)	Infl	Crime	Welfare	Pollute	Drugs	FLOOD	13.6	16	13	6	18	15
FHmA (17)	Infl.	Welfare	Housing	FLOOD	Pollute	Drugs	13.6	17	14	4	18	15
SBA (22)	Intl.	Welfare	Educ.	Unemp.	Crime	FLOOD	13.8	16	15	6	18	14

[a] N's shown in parentheses.

[b] The average rank-order for the five hazard problems; see text.

elites with specific flood-related responsibilities tend to see the flood problem as much more serious than do other groups.

With the exceptions just noted, the five hazards problems are otherwise rated very low by all groups. Tornadoes are never rated higher than thirteenth, hurricanes never higher than ninth, fires never higher than eleventh (insurance representatives excepted), and earthquakes never higher than seventeenth. Among all groups other than insurance representatives, there is uniform agreement that flooding is the most serious of the five hazards problems and that earthquakes are the least serious. Even state geologists rate earthquakes eighteenth out of 18 problems. With the possible exception of flooding, there is essentially no group or faction of state elites in the aggregate for whom natural hazards generally are seen as relatively serious state problems.

Considering *all* hazards, which elite groups see the hazard problem as most serious, and which as least? An average *hazard ranking* was computed by summing the rank orders for the five hazards problems and dividing by five (see Table 3.2). This *average hazard-seriousness ranking* has three as a minimum value (when the five hazards are ranked first through fifth in relative seriousness) and 16 as a maximum value (where the five are ranked fourteenth through eighteenth). All the observed averages are much closer to the maximum than to the minimum.

The lowest average, and hence the greatest perceived seriousness, is registered for Civil Defense members, with no close competitor. Other groups who rate all hazards as relatively serious include governors, water resources representatives, insurance representatives, and the state Federal Insurance Administration, Small Business Administration, and Farmer's Home Administration representatives.

Of particular interest is that the highest mean hazard ranking (lowest seriousness) is registered for state legislators who sit on committees that are responsible for disaster-related legislation in the states. Thus, the one group in our sample with the most immediate and direct influence on state hazards legislation also has the lowest overall opinion of the seriousness of the hazards problem. Other state elite groups with mean hazard rankings of 15.0 and above include all other state legislators, real-estate representatives, and construction unionists.

The tendency for specialists to inflate the seriousness of their own problems is predictable and understandable. But in the case of hazards specialists, there is a second tendency that is much less understandable, a tendency to *deflate* the relative seriousness of other problems. The average seriousness hazards specialists attributed to each of the 18 problems is compared to average seriousness ratings for all other groups in Table 3.3. The most obvious pattern is that the difference is positive for 12 of the 13

TABLE 3.3

Comparison Between "Hazard Specialists" and All Other State Elites on Average Seriousness of Problems

		Average Seriousness Ratings		
	Problem	Hazard Specialists[a]	All Others	Diff.[b]
1	Inflation	7.07	7.57	+.50*
2	Welfare	6.50	6.63	+.13
3	Crime	5.74	6.54	+.80*
4	Unemployment	5.64	6.16	+.52*
5	Education	5.28	6.09	+.81*
6	Drugs	5.21	6.02	+.81*
7	Pollution	5.25	5.40	+.15
8	Housing	4.88	5.35	+.47*
9	Little Growth	4.44	5.06	+.62*
10	Traffic	4.33	4.66	+.33
11	Pornography	4.19	4.47	+.28
12	Race	3.92	4.12	+.20
13	Much Growth	2.34	2.13	-.21
14	FLOODS	5.69	4.37	-1.32*
15	FIRES	3.79	3.90	+.11
16	HURRICANES	3.88	2.92	-.96*
17	TORNADOES	2.95	2.46	-.49*
18	EARTHQUAKES	1.65	1.37	-.28*
	N =	118	343	

[a] Includes governors, Civil Defense, Water Resources, FIA, FHmA, and SBA.

[b] Mean for all others minus mean for hazard specialists. Asterisk (*) means difference is statistically significant (Alpha = .05).

nonhazards problems—in every case but that of too *much* economic growth: In other words, all others rate problems as *more serious* than do hazard specialists.

It might be thought that the tendency to downplay "other" problems would be generally true across the board, but a detailed analysis of the issue did not show this to be the case. Whereas the tendency to inflate the seriousness of one's own problems does tend to hold for most positions (as shown in Table 3.2), the opposite tendency—to downplay all other problems—apparently holds only for hazard specialists as defined here. It is uncertain what significance should be attributed to this result. It may mean that the bulk of such specialists (except, of course, governors) are not closely connected with policymaking of a general sort and hence do not have the

kind of direct acquaintance with all the problems faced by a state. It may also mean that the hazards specialists (again with the exceptions of governors) downplay the seriousness of the competing problems in order to obtain some attention for natural-hazards problems. Whatever the reasons, this pattern may prevent hazards specialists from achieving credibility in the eyes of other elite groups in the state.

WHY SOME CARE

People are more than their occupations or political positions. They bring to a particular post their previous experiences, relevant life philosophies, and so on. To capture these individual differences among state elite respondents, we have used regression analyses, as shown in Table 3.4.

For tornadoes, hurricanes, floods, and earthquakes, respondents' assessment of the state's past and future experience with the particular disaster type has the strongest effect on their perception of the hazard's seriousness In all cases, persons who report that their state had experienced a serious disaster of some type rate that disaster problem as *more* serious than respondents whose states had not experienced that disaster Likewise, as the return

TABLE 3.4

Regression of Hazard Seriousness Rating on Selected Individual Characteristics of State Elite Members (N = 429)

		Dependent Variable is Seriousness Rating of			
		VIB TORNADOES		VIE HURRICANES	
	INDEPENDENT VARIABLES	b[a]	s.e.	b[a]	s.e.
1.	Position Dummies[b]				
	Elected	-.22	.25	-.07	.30
	Media	-.46	.40	-.88*	.47
	Appointed	-.13	.25	.03	37
	Development	.31	.32	-.84**	.37
	Hazard Specialists	.30	.25	.33	.30
2.	Personal Disaster Exper.[c]	-.22	.18	.15	.23
3.	State Disaster Exper.[d]	.85***	.24	2.00***	.24
4.	Estimated Return Prob.[e]	.03***	.00	.02***	.00
5.	Personal Data				
	Education	-.07	.06	-.30	.13
	Age (Year Born)	.01	.01	-.06	.06
6.	Region[f]	--	--	.50*	.27
7.	Constant	3.37***	.72	5.24	.45
	R^2 =		.39***		

(Continued)

TABLE 3.4 (Continued)

		FLOODS		EARTHQUAKES	
		b[a]	s.e.	b[a]	s.e.
1.	Position Dummies[b]				
	Elected	-.41	.33	.01	.14
	Media	-.78	.52	-.40*	.23
	Appointed	.18	.32	-.06	.14
	Development	-.58	.40	-.11	.18
	Hazard Specialists	.20	.33	.02	.15
2.	Personal Disaster Exper.[c]	-.18	.22	.11	.12
3.	State Disaster Exper.[d]	1.57***	.26	1.93***	.25
4.	Estimated Return Prob.[e]	.01***	.00	.02***	.00
5.	Personal Data				
	Education	-.16**	.07	.03	.03
	Age (Year Born)	.02	.01	-.00	.00
6.	Region[f]	--	--	.24	.19
7.	Constant	6.80***	.80		
	R^2 =		.25***		.46***

[a] *** Denotes statistical significance Alpha = .01; ** Alpha = .05; * Alpha = .10.

[b] For this purpose, state position has been recoded as follows:

ELECTED = all categories of state legislators and governors
APPOINTED = state geologist, planner, and Community Affairs Director
MEDIA = editors
BUSINESS = insurance and banking (omitted category)
DEVELOPMENT = realtors, homebuilders, and construction unionists
HAZARD SPECIALISTS = FIA, FHmA, Civil Defense, Water Resources, SBA

[c] Whether the respondent has personally experienced a disaster of the type in question. Independent variables for each regression are hazard-specific; thus, in the tornado seriousness regression, the entered variable is personal tornado experience, etc. (1 = YES; 0 = NO).

[d] Whether the state has experienced a serious disaster of each type in the last ten years; entries are disaster-specific (see e, above). (1 = YES; 0 = NO).

[e] Respondents' estimates of the chances of a serious disaster of each type occurring in the state in the next ten years (also disaster specific).

[h] See previous chapter.

[i] See previous chapter (1 = most liberal, 4 = conservative).

[j] Probability greater than .10.

[k] In the hurricane regression, REGION is a dummy coded 1 for coastal states from Texas to New Hampshire, and 0 otherwise; in the earthquake regression, REGION is a dummy coded 1 for the eight states identified in the previous chapter as seismic risk states, and a 0 otherwise. No regional variable is entered in the flood and tornado regressions.

probability for a given disaster type is perceived to increase, so does the seriousness rating for that disaster type. All of these effects are statistically significant. None of the other variables are consistently related to hazard-seriousness ratings across types

It should be noted that position is not consistently related to hazard seriousness. With business as the reference point, for example, most of the coefficients for the position dummies are insignificant. It is apparent that hazard specialists were shown to rate hazard-risk problems as more serious because they are more likely to believe that their communities have suffered from natural hazards in the recent past and that they expect a return of those events in the future. Also of some interest, the respondents' personal experiences with disasters do *not* predict their seriousness ratings.

The most apparent lesson to be drawn from Table 3.4 is that, when it comes to regarding natural hazards as a serious problem, the state's prior experience is, for all practical purposes, the *only* teacher.

For earthquakes and hurricanes there is significant regional variation in the level of objective risk. Therefore, the hurricane regression includes a variable that takes the value of 1 for coastal states from Texas to New Hampshire and a zero otherwise; the coefficient for that variable is positive and significant Respondents living in coastal states rate hurricanes as a more serious problem than those living in noncoastal states, even when all other variables in the model are held constant. The earthquake regression includes a regional dummy variable that assumes the value of 1 for Utah and California and a zero otherwise The coefficient for this variable is also positive, but is not statistically significant Thus, respondents living in states of high seismic risk do not, on average, attribute greater seriousness to the earthquake problem than do other respondents (when all other variables are held constant).

VARIATION IN HAZARD SERIOUSNESS AMONG STATES

The analysis presented so far is somewhat misleading in that it averages responses across all 20 of the states, regardless of differences in objective risk. Thus, the seriousness of hurricanes in Utah is averaged in with that of Louisiana, the seriousness of earthquakes in Delaware is averaged in with that of California, etc. In addition, since our data show that prior disaster experience is a powerful predictor of the seriousness attributed to a natural hazard problem, a state-by-state analysis of hazard seriousness is essential (see Table 3.5)

The state-by-state analysis of the five most serious problems reveals that

TABLE 3.5

Problem Seriousness and Relative Ranking of Five Hazards Problems, by State: State Respondents

	Problems with Highest Mean Ratings					Average for all Hazards	Rank Order of Hazards				
STATE	1st	2nd	3rd	4th	5th		TORN	HURRI	FLOOD	QUAKE	FIRE
Ala(21)[b]	Infla	Welfa	Crime	Educa	Drugs	12.8	6	16	11	18	13
Cal(23)	Infla	Pollu	Unemp	Crime	Welfa	14.6	18	17	15	13	10
Col(24)	Infla	Welfa	Pollu	FLOOD	Crime	13.8	16	18	4	17	14
Con(21)	Infla	Unemp	Pollu	Crime	Grow[a]	14.6	17	12	11	18	15
Del(23)	Grow[a]	Unemp	Infla	Welfa	Crime	15.2	16	15	13	18	14
Flo(26)	Infla	Unemp	Crime	Educa	Drugs	14.8	17	11	12	18	16
Ill(21)	Infla	Welfa	Crime	Unemp	Educa	14.6	14	18	12	16	13
Lou(20)	HURRI	Educa	Crime	Welfa	Infla	11.1	13	1	7	18	16
Mas(22)	Unemp	Welfa	Grow[a]	Infla	Crime	14.0	16	15	13	18	8
Mis(23)	Infla	Crime	Welfa	Drugs	Unemp	13.6	10	18	8	17	15
NH (21)	Infla	Welfa	Educa	Drugs	Housing	14.0	16	13	9	18	14
NJ (23)	Unemp	Pollu	Infla	Grow[a]	Welfa	14.6	17	12	11	18	15
NY (23)	Welfa	Unemp	Grow[a]	Infla	Crime	12.8	16	13	6	17	12
NC (25)	Infla	Educa	Welfa	Crime	Unemp	15.2	16	15	14	18	13
Okl(23)	Infla	Drugs	Crime	Educa	Welfa	12.2	6	18	7	17	13
Pen(24)	Infla	FLOOD	Unemp	Welfa	Grow[a]	11.8	16	8	2	18	15
SC (24)	Infla	Educa	Welfa	Crime	Drugs	15.2	15	17	14	18	12
Tex(26)	Infla	Educa	Crime	Drugs	Welfa	11.0	10	6	7	18	14
Utah(24)	Infla	Welfa	Pollu	Crime	Drugs	15.2	18	17	14	15	12
Vir(24)	Infla	Welfa	Drugs	Crime	Educa	13.6	17	14	6	18	13

[a]Grow = Too Little Growth
[b]N's shown in parentheses

inflation is the leading problem in 15 of the 20 states and is among the top five problems in all states. As in all previous analyses, the problems of inflation, welfare, crime, education, drugs, unemployment, and pollution dominate.

One relative "newcomer" to the listing of most serious problems is that of too little economic growth, which rates as the number one problem in one state (Delaware) and is among the top five problems in five others, all large industrial states in the Northeast—Connecticut, Massachusetts, New Jersey, New York, and Pennsylvania. In Pennsylvania, where Hurricane Agnes's (1972) floods were heavy, flooding is seen to be a more serious problem than too little growth; Pennsylvania also happens to have very favorable attitudes toward the Flood Insurance Program (see Chapter 6). It is encouraging that Pennsylvania respondents considered too little economic growth a major problem yet support hazard-management innovation—a combination of concerns that is often felt to be inherently incompatible.

Hazards problems appear three times among states' five most serious problems. In Louisiana, hurricanes are perceived as *the* leading problem. Floods rank second in Pennsylvania and fourth in Colorado, which experienced the devastating Big Thompson Canyon flash-flood in 1976. Flooding falls among the top 10 problems in 9 of the 20 states: Colorado, Louisiana, Missouri, New Hampshire, New York, Oklahoma, Pennsylvania, Texas, and Virginia.

Hazard problems are otherwise rated relatively low, consistent with our previous results. Tornadoes rank sixth in two high-risk tornado states (Alabama and Oklahoma) and tenth in two additional states (Missouri and Texas, also high-risk tornado states), but otherwise rank no higher than thirteenth among the remaining 16 states. Hurricanes rank first in Louisiana, sixth in Texas, and eighth in Pennsylvania, but no higher than eleventh anywhere else. In Alabama, a state at considerable risk from hurricane, the problem rates sixteenth; in Florida, where some 5 million people inhabit coastal counties, hurricanes rank eleventh. Among the hurricane-risk states on the Atlantic seaboard, hurricanes rank seventeenth in South Carolina, fifteenth in North Carolina, fourteenth in Virginia, fifteenth in Delaware, twelfth in New Jersey, thirteenth in New York, twelfth in Connecticut, and fifteenth in Massachusetts. Concern over seismic risk is practically nonexistent, even in high seismic states. Earthquakes rank thirteenth in California and fifteenth in Utah. Among the remaining six states of moderate to high seismic risk (see Chapter 2), earthquakes are ranked highest in Illinois, where our respondents rated them sixteenth. They are ranked last or next-to-last in all other states. In California, fires are seen as a more serious problem than earthquakes. Fires, themselves, are among the top 10 problems in only two states, California and Massachusetts (ranked tenth and eighth, respectively)

although much of Southern California was ablaze during the field period of the study. The Massachusetts result probably reflects the very serious arson problems that the state had faced.

Considering only natural hazards problems, floods are seen to be the most serious of the hazards problems by one-half of the states. In Alabama and Oklahoma, tornadoes are seen as the most serious hazard problem. Hurricanes rank as the most serious hazard problem in Florida, Louisiana, and Texas; fires are the most serious hazard problem in the remaining five states (California, Massachusetts, North Carolina, South Carolina, and Utah). Predictably, no state sees earthquakes as its most serious hazard problem.

All hazards considered equally, Louisiana, Pennsylvania, and Texas have the highest overall opinion of the seriousness of hazards problems; Delaware, North Carolina, South Carolina, and Utah have the lowest.

The main lesson to be drawn is that states' previous disaster history, elite expectations about future disasters, and hazard-seriousness ratings are all strongly interconnected. All three of these variables are, in turn, a function of objective hazards risk; that is, the higher the actual objective risk, the greater one's previous experience, the higher the probability of a return experience, and the higher one's estimation of the seriousness of the problem.

VARIATION IN HAZARD SERIOUSNESS AMONG LOCAL COMMUNITIES

Although local community elites generally regard hazards as less serious than state elites, there are some that regard particular hazards as quite serious. When a local area has recently experienced a natural hazard event, it is regarded as a serious problem.

To illustrate community to community variation, we have displayed the communities that give high average seriousness ratings to each of the four natural hazards in Table 3.6.

In seven local communities, the mean tornado seriousness exceeds 4.0 (versus an overall mean for communities of 1.85). Tulsa leads the list by a wide margin. Tornadoes are the fourth most serious problem in the city (floods are first). Thus, there is more concern over natural hazards risk in Tulsa than in any other of the communities we surveyed in the United States. Note also that in all seven of the leading tornado cities, tornadoes are always among the top 10 most serious problems. And what makes tornadoes such a serious problem in these cities? In at least five of them, there is solid consensus that the city had experienced at least one serious tornado in the previous 10 years. (In the total sample, 19% say their community had a serious tornado in the last 10 years, a percentage substantially exceeded in all seven

TABLE 3.6

Local Communities with the Highest Average Seriousness Ratings for Each Major Disaster Type

1. TORNADOES	Average Rating	Rank[a]
Tulsa, OK	6.29	4th
Birmingham, AL	5.47	8th
Lee County, AL	4.94	6th
St Martin Parish, LA	4.38	7th
Oklahoma City, OK	4.38	9th
Kansas City, MO	4.22	10th
Holmes Co., FL	4.07	10th

2. FLOODS	Average Rating	Rank[a]
Northumberland, PA	9.06	1st
Tulsa, OK	8.24	1st
Richmond, VA	7.76	1st
Orlean, NY	7.32	1st
Elizabeth, NJ	7.00	4th
Chester, PA	6.54	6th
Montgomery Co., TX	6.50	1st
Houston, TX	6.32	5th
Metairie, LA	6.25	3rd
Pike Co., MO	6.15	3rd
Schuylkill Co., PA	6.00	6th

3. HURRICANES	Average Rating	Rank[a]
Corpus Christi, TX	7.45	1st
Walton Co., FL	6.71	2nd
New Orleans, LA	5.68	9th
Lee County, AL	5.50	2nd
Metairie, LA	5.30	7th
Holmes Co., FL	5.07	7th
St. John Baptist, LA	5.07	7th

4. EARTHQUAKES	Average Rating	Rank[a]
Los Angeles, CA	5.50	10th
Oakland, CA	2.59	14th
Sacramento, CA	2.05	14th

[a]The rank-order of the problem in the community.

of the major tornado cities). In six of the seven, the perceived odds on experiencing a serious tornado within the *next* 10 years are better than 50%. The chief characteristic of cities with the greatest concern over tornado risk is thus that they have been hit in the recent past and fully expect to be hit again.

Much the same pattern holds for each of the remaining hazard types. There are, for example, seven local communities where the average hurricane seriousness exceeds 5.0 (versus an overall community mean of 2.14). Of these, Corpus Christi, Texas, leads the list: Hurricanes are the number-one problem in that city. One-hundred percent of the respondents said that the city had experienced a serious hurricane in the last 10 years—presumably Hurricane Celia (1970) or possibly also Hurricane Beulah (1967). They collectively feel that the return probability in the next 10 years is about 70%. There is a reasonably firm consensus in each of the remaining hurricane cities that the city had experienced a serious hurricane in the previous 10 years; in all but one, the average perceived return probability is better than 50%.

In 11 communities, the average flood seriousness score exceeds 6.0 (versus an overall average score of 3.76), including three communities in Pennsylvania flooded during Hurricane Agnes (1972). Ten of the 11 show better than 90% agreement that the community had been seriously flooded in the previous decade. In 8, the perceived return probabilities average over 50%, and in all 11, floods rank among the top six most serious problems.

There are fewer communities with high average earthquake seriousness ratings; all three of them are in California. Los Angeles is highest, with a perceived earthquake seriousness of 5.50, placing earthquakes tenth on the list of local concerns. In contrast, earthquake seriousness barely exceeds 2.0 in the other two communities, Oakland and Sacramento, where earthquakes rank fourteenth. Los Angeles is the only city in the sample with a firm consensus (92%) that a serious earthquake had struck in the previous decade. The San Fernando quake of 1971, whose epicenter was approximately 20 miles north of Los Angeles, was felt over an area of approximately 80,000 square miles (National Oceanic and Atmospheric Administration, 1971: 1). In the collective judgment of Los Angeles respondents, the odds are just about 50% on another serious quake in the next decade.

The evidence from Table 3.6 sustains our conclusion that the seriousness attributed to natural hazards problems is a very strong function of the community's (or state's) previous experience with disasters and with the perceived return probabilities associated with the disaster type, both of these presumably a function of the underlying objective risk. This impression is given firmer standing by the quantitative findings of Table 3.7, which shows

TABLE 3.7

Zero-Order Correlates of Hazard Seriousness: Local Communities (N = 100)[a]

INDEPENDENT VARIABLES	TORNS	CANES	FLOODS	QUAKES
Return Probabilities[b]	.81	.63	.77	.68
Prior Experience[b]	.85	.88	.87	.87
Objective 60-70 Experience[c]	.34	.11	.06	--[d]
Located in SMSA	-.20	-.06	.01	.11
Owner-Occupied Housing Values (1970)	-.27	-.09	-.18	.26
1970 Population	-.09	-.09	-.10	.36
60-70 Growth	-.14	-.05	-.08	.03
Gulf Coast	.26	.33	-.04	-.20
South Atlantic	.02	.03	-.05	-.08
New England	-.21	.05	-.23	-.04
Mid Atlantic	-.22	.19	.36	-.14
Western	-.27	-.25	-.14	.56
Inland	.22	-.40	.03	.01

[a]Cell entries are Pearson correlation coefficients. Because of the small N, only correlations in excess of ± .15 are statistically significant.

[b]Disaster-specific measures.

[c]As estimated in CPAP data (Wright, et al., 1979).

[d]Too few earthquakes, 1960-1970 to calculate coefficient.

some of the zero-order correlates of average disaster seriousness ratings. A in the corresponding state analysis, the best predictors of average hazar seriousness ratings among the local communities are the average perceive return probabilities for the disaster type and the community's previous disa ter experience; All the relevant correlations exceed $r = +.60$, and correl tions with all other variables are generally weak or inconsistent.

The 1960-1970 disaster experiences of the communities, as estimat through Red Cross data (Wright *et al*, 1979), are positively related to th riousness, although the magnitudes of the coefficients are *much* lower th those shown for disaster experiences as recalled by respondents, a differe that probably reflects mainly that memories are short. It is thus the m recent disaster experiences that have the strongest impact on haz seriousness perceptions

Summary

To summarize, natural hazards are generally not seen as very pressing problems in local communities. The most serious hazard problem, flooding, ranks twelfth overall in the list of local concerns; the five hazards together occupy five of the bottom seven positions in the rank-ordering of 18 community problems (Table 3.1). Second, there are some sharp exceptions: For example, in some communities hurricanes are the first- or second-most serious problem; in several communities flooding ranks first or second; and in many communities at least one of the hazards ranks somewhere in the top 10. The key variable dividing the exceptions from the rule is apparently the community's previous experience with natural disaster and its collective sense of the probabilities of a return disaster The more recent the experience, the more serious the problem appears to be.

PERCEIVED HAZARD SERIOUSNESS: LOCAL VERSUS STATE ELITES

In analyzing hazard-seriousness ratings by political position among state elites, it became clear that hazards specialists tend to take natural hazards problems, especially flooding, more seriously than the remainder of the state elite. Can a similar hazards coalition be identified in the local communities?

The sharpest difference between the state and local elites is that none of the five hazards problems (fire included) ranks higher than ninth among any of the 19 local elite groups, whereas state hazard specialists often rank floods among the top six. In local communities, floods rank tenth or better only for Civil Defense and Flood Control District officials; likewise, fires rank tenth or better only among police and fire chiefs and local Red Cross officials. Hurricanes and tornadoes are never ranked higher than fifteenth, and earthquakes are ranked last by all but one group. *Among the local communities as a whole, then, not even hazards specialists are convinced of the seriousness of hazards problems,* at least not relative to the many other problems that their communities must face. Apparently, local communities a whole do not have a natural hazards coalition

Perhaps the contrast between state and local hazards specialists stems from differences in the degree of specialization as one goes from one level to State hazards specialists are likely to be full-time functionaries whose duties are more closely confined to natural hazards. A state Civil official, for example, is likely to perform this function full time, whereas the local Civil Defense director may take on that part time, and perform other jobs as well.

TABLE 3.8

Five Most Serious Problems and Relative Ranking of Five Hazards Problems, by Position: Local Respondents Only

Position	Problems with Highest Mean Ratings					Ranking of Hazards				
	1st	2nd	3rd	4th	5th	TORNS	CANES	FLOODS	QUAKE	FIRE
Exec (122)[a]	Infla	Unemp	Crime	Housing	Drugs	17	15	12	18	14
Legis (350)	Infla	Unemp	Crime	Drugs	Welfa	17	15	12	18	13
Plan/Zone (128)	Infla	Unemp	Welfa	Crime	Housing	17	16	11	18	14
Police/Fire (172)	Infla	Welfa	Drugs	Crime	Unemp	16	17	13	18	10
Public Works (67)	Infla	Unemp	Welfa	Crime	Drugs	17	15	11	18	13
Civil Def. (89)	Infla	Welfa	Crime	Drugs	Unemp	16	15	10	18	12
C. of C. (87)	Infla	Welfa	Unemp	Grow[b]	Crime	16	15	14	18	13
Red Cross (92)	Infla	Welfa	Housing	Unemp	Crime	15	16	13	18	9
Taxpayers (74)	Infla	Welfa	Unemp	Crime	Educa	18	16	14	17	12
LWV (63)	Educa	Infla	Unemp	Housing	Pollu	17	16	12	18	13
BTC[c] (55)	Unemp	Infla	Grow[b]	Welfa	Housing	16	17	14	18	12
Bankers (90)	Infla	Welfa	Crime	Drugs	Unemp	15	16	12	18	14
Realtors (81)	Infla	Welfa	Crime	Drugs	Unemp	16	15	13	18	12
Editors (96)	Infla	Housing	Educa	Crime	Unemp	17	16	11	18	12
Homebuilders (62)	Infla	Welfa	Crime	Unemp	Grow[b]	16	15	14	18	13
TV (53)	Infla	Educa	Crime	Unemp	Welfa	15	16	13	18	14
RALG (60)	Infla	Unemp	Housing	Welfa	Crime	16	15	11	18	13
Flood Control (42)	Infla	Welfa	Crime	Pollu	Unemp	17	15	10	18	14
FHmA (83)	Infla	Welfa	Housing	Unemp	Drugs	17	15	12	18	14

[a] N's shown in parentheses.

[b] Too little Growth.

[c] Building Trades Council.

Perceived Hazard Seriousness: Local versus State Elites

Because of the unique regional character of seismic and hurricane risk, the data in Table 3.8 are somewhat misleading. It is not surprising that local elites in Colorado or Utah are unconcerned with hurricane hazard! But the overall picture does not change very much, even when differences in risk are taken into account.

In Table 3-9, the 100 local communities are divided into three strata of seismic risk. The highest-risk stratum, Stratum I, includes local communities in California and Utah; the medium-risk, Stratum II, includes local communities in the six other states identified as being of moderate seismic risk (see Chapter 2). The stratum of low risk, Stratum III, includes local communities in all the other states we surveyed. Table 3 9 shows, by stratum, the average seriousness attributed to the earthquake problem for each local elite position and the corresponding rank-order position of the earthquake problem.

TABLE 3.9

Earthquake Seriousness in States with High Seismic Risk: Local Respondents

	Highest Risk California, Utah			Six[a] Higher Risk States			All Other		
	$\bar{X}$	Rank	(N)	$\bar{X}$	Rank	(N)	$\bar{X}$	Rank	(N)
Exec.	1.9	16	(18)	1.3	18	(31)	1.0	18	(74)
Legis.	1.7	16	(39)	1.0	18	(93)	1.0	18	(218)
Plan/Zone	1.9	15	(14)	1.2	18	(34)	1.1	18	(79)
Police/Fire	1.9	16	(19)	1.1	18	(46)	1.0	18	(106)
Pub. Works	2.7	16	(9)	1.1	18	(20)	1.1	18	(39)
Civil Def.	1.8	16	(11)	1.3	18	(25)	1.0	18	(53)
C. of C.	2.6	15	(9)	1.1	18	(25)	1.0	18	(53)
Red Cross	3.0	15	(8)	1.3	17	(27)	1.1	18	(57)
Taxpayers	3.1	14	(8)	1.0	18	(7)	1.0	18	(9)
LWV	2.0	16	(9)	1.0	18	(18)	1.0	18	(37)
BTC	1.9	15	(8)	1.1	18	(15)	1.0	18	(32)
Bankers	1.3	16	(9)	1.0	18	(24)	1.0	18	(57)
Realtors	1.7	15	(10)	1.1	18	(23)	1.1	18	(48)
Editors	2.8	15	(10)	1.0	18	(26)	1.1	18	(59)
Homebuild.	2.1	16	(8)	1.1	18	(15)	1.0	18	(39)
TV	2.5	15	(6)	1.0	18	(12)	1.3	18	(35)
RALG	3.3	13	(7)	1.1	18	(17)	1.0	18	(38)
Flood Cont.	2.1	16	(8)	1.2	18	(13)	1.0	18	(22)
FHmA	1.2	17	(9)	1.0	18	(22)	1.0	18	(52)

[a] Illinois, Massachusetts, Missouri, New Jersey, New York, South Carolina.

Earthquake hazard is not seen as a very serious problem even in Stratum I communities. Among local elites in California and Utah, the earthquake problem is never rated higher than thirteenth overall, and ranks fifteenth or sixteenth in virtually all other groups. The only problem consistently rated as less serious than earthquakes by local elites in these two states are tornadoes and hurricanes; in a few cases, earthquakes also rank somewhat ahead of too *much* economic growth. All elite groups in these two states perceive both floods and fires as more serious problems than earthquakes.

The same pattern held for states at relatively high risk from hurricanes (see Table 3.10). Among communities in Gulf Coast states, for example, the hurricane problem never rates higher than twelfth or thirteenth. In the South Atlantic communities, it is never higher than fifteenth; in New England communities, twelfth. In Mid-Atlantic states, hurricanes are ranked eighth among flood control officials and tenth among Farmer's Home Administration officials, but fifteenth by almost all other elite groups.

By and large, then, local elites do not see natural hazards as a serious problem. This is generally true of all elite groups, even the hazards specialists, and it tends to remain true regardless of the degree of objective risk. There are isolated exceptions to this general rule—Tulsa, Oklahoma, Corpus Christi, Texas, and a handful of other cities that had been ravaged by natural disaster not long before our survey—but these exceptional communities are distant outliers in the overall distribution. The opinion of most elites in the large majority of American communities is apparently that there are far more important things to worry about.

DETERMINANTS OF INDIVIDUAL SERIOUSNESS RATINGS: LOCAL ELITES

Individual characteristics that relate to seriousness ratings were determined through regression analyses (see Table 3.11), in a manner similar to that used earlier for state elite members (see Table 3.4). Indeed, the general findings are quite similar: experience with a past disaster and belief that it will be repeated increase seriousness. The equations in Table 3.11 fit the data rather well, as shown in the relatively large R^2's shown for each equation.

Most of the variables representing elite positions do not show a statistically significant effect. In short, there is relatively little variation from one elite group to the next in how seriously the hazard problem is rated. The only prominent exception to this pattern is shown for floods: Four of the seven elite groups rate floods as significantly *less* serious than the omitted category of legislators. The coefficient for hazard specialist is *negative* in three of four cases; with the exception of earthquakes, the hazards specialists rate

TABLE 3.10

Hurricane Seriousness in States with High Hurricane Risks: Local Respondents

	Gulf Coast[a]			South Atlantic[b]			Mid Atlantic[c]			New England[d]		
	$\bar{X}$	Rank	(N)	$\bar{X}$	Rank	(N)	$\bar{X}$	Rank	(N)	$\bar{X}$	Rank	(N)
Exec	2.9	14	42	2.9	15	14	2.9	15	13	2.5	15	12
Legis	2.9	15	116	2.2	15	48	2.4	15	50	2.1	15	33
Plan/Zone	2.0	16	34	2.2	15	14	2.8	15	24	1.7	16	17
Police/Fire	3.2	15	55	1.9	16	20	2.6	15	29	2.6	14	16
Public Works	2.8	14	18	2.1	15	7	3.5	13	8	3.3	15	9
Civil Def.	2.6	15	28	2.8	15	10	3.0	15	12	4.7	12	9
C. of C.	2.5	15	26	2.6	15	11	3.3	15	15	2.0	15	9
Red Cross	2.4	16	28	2.0	16	12	2.2	15	15	2.7	15	9
Taxpayers	1.6	17	5	1.0	--	1	1.8	15	4	2.4	15	5
LWV	2.1	17	16	2.6	15	7	2.8	15	13	2.0	16	8
BTC	2.8	14	18	1.8	16	5	1.8	16	10	1.0	—	6
Bankers	2.8	14	30	1.5	17	11	2.4	15	12	1.3	15	7
Realtors	2.9	15	21	1.4	17	10	2.7	15	15	2.3	14	9
Editors	2.9	15	30	2.7	15	12	2.1	15	15	2.3	14	9
Homebuild.	2.3	15	21	1.7	15	6	2.3	15	11	2.2	14	5
TV	2.5	15	20	2.2	15	9	2.8	15	6	2.0	16	5
RAIC	2.8	14	20	2.2	15	9	4.0	13	6	2.2	15	8
Flood Cont.	4.1	13	16	1.0	--	2	4.8	8	5	4.0	13	3
FHmA	3.2	12	29	2.3	15	11	4.1	10	10	2.7	12	9

[a] Alabama, Florida, Louisiana, Texas.
[b] Delaware, North Carolina, South Carolina, Virginia.
[c] New York, New Jersey, Pennsylvania.
[d] Connecticut, Massachusetts, New Hampshire.

TABLE 3.11

Regression of Hazard Seriousness on Selected Characteristics of Local Elites (N = 1,751)

INDEPENDENT VARIABLES	TORNADOES b[a]	TORNADOES s.e.	HURRICANES b[a]	HURRICANES s.e.
1. Position Dummies[b]				
Executives	-.00	.15	.11	.17
Appointed	.10	.10	.02	.12
Hazard	-.08	.22	.50*	.26*
Legislators	.04	.10	.10	.12
Media	-.01	.13	.02	.15
Supralocals	.15	.12	.14	.14
Development	-.01	.12	-.13	.14
2. Personal Experience[c]	-.10	.07	- 11	.08
3. Community Experience[d]	1.88***	.10	2.87***	.11
4. Return Probability[e]	.04***	.00	.01	.00***
5. Personal Characteristics				
Education	-.03	.02	-.02	.03
Age (Year Born)	-.00	.00	-.003	.003
6. Region Dummies				
Coastal State[f]	--	--	.31***	.09
7. Constant	5.24		7.16***	.31
	R^2 =	.35***		.43***

INDEPENDENT VARIABLES	FLOODS b[a]	FLOODS s.e.	EARTHQUAKES b[a]	EARTHQUAKES s.e.
1. Position Dummies[b]				
Executives	-.11	22	-.01	.08
Appointed	.14	.15	-.04	05
Hazard	.12	.34	00	.12
Legislators	32	.16**	-.12**	.05
Media	-.07	.20	-.11	.07
Supralocals	.04	.18	-.09	.06
Development	.11	.18	-.04	.06
2. Personal Experience[c]	.07	.10	.02	04
3. Community Experience[d]	2.04	.12***	2 79***	.13

(Continued)

hazards problems as *less* serious than local legislators. This again reinforces the conclusion that there is no coherent "natural hazard coalition" at the local level.

Personal characteristics of respondents, either ideological or sociodemographic, have no strong or consistent effects. Finally, all regional variables show consistent effects Hurricanes are rated as more serious in all regions from Texas to New Hampshire than in the remaining areas of the country, with the strongest effects for the Mid-Atlantic states and New England and the weakest for the South Atlantic. Likewise, earthquakes are regarded as

TABLE 3.11 *(Continued)*

4. Return Probability[e]	.02	.00***	.13***	.00
5. Personal Characteristics				
Education	.11	.03***		
Age (Year Born)	-.00	00		
6. Region Dummies				
Seismic State[g]	--	--	.36***	.07
7. Constant	6.65	.28***	6.57***	.28
	R^2 = .39***		.37***	

[a] *** Denotes statistical significance at Alpha = .01; ** Alpha = .05; * Alpha = .10.

[b] Position dummies are defined as follows:

EXECUTIVES = mayors, city managers.

LEGIS = local legislators

APPOINTED = planning and zoning officials, police and fire, and public works

HAZARD = Civil Defense, Red Cross, Flood Control

BUSINESS = Chamber of Commerce, taxpayers, bankers (omitted category).

MEDIA = newspaper editors, television managers

SUPRALOCALS = League of Women Voters, Regional Alliance, Farmers' Home.

DEVELOPMENT = Building trades, realtors, homebuilders.

[c] Whether respondent has personally experienced a disaster type (1 = YES; 0 = NO).

[d] Whether community had experienced a disaster type in previous ten years (1 = YES, 0 = NO).

[e] Estimated chances in 100 of another disaster type in the next ten years.

[f] Coastal State consists of all states with ocean borders on Atlantic or Gulf Coast.

[g] Seismic state consists of California and Utah.

significantly more serious in California and Utah than elsewhere in the United States.

CONCLUSIONS: ON THE SERIOUSNESS OF NATURAL HAZARDS

The major empirical lessons of the analysis of hazard seriousness are:

1 *In the minds of most politically influential people in most states and local communities, natural hazards problems are not especially serious*

ones, absolutely and relative to other problems. Indeed, although there are occasional exceptions to this pattern, one would be hard pressed to find a class of potential problems over which there is much less collective concern. These findings are all the more remarkable when one recalls that the positions sampled by the survey are heavily skewed toward those with presumed interests in or responsibilities for natural hazards issues, just as the states and communities sampled are those with disproportionately high levels of hazard risk. If anything, then, the data probably overstate the perceived seriousness of hazards issues relative to what would be found in a simple probability sample of politically influential positions taken from a simple probability sample of communities and states.

2. Hazards issues are consistently viewed as slightly more serious when viewed from the state perspective than from that of local communities. This finding holds both overall and in the majority of state-by-state comparisons. One plausible reason is that it reflects true differences in the objective nature of hazards problems; the state hazards problem, in short, can be seen as equivalent to the sum of all the hazards problems of the various communities that it contains. A second interesting pattern is that the *gap* between state and local views of hazard seriousness widens with the degree of objective hazards risk. One implication is that the states are probably rather more favorable ground for the introduction of hazards-management innovations than are the local communities. The NFIP, the most innovative hazard-management policy currently in force, operates in reverse fashion: The local communities play the key role in NFIP, with the states themselves relegated to a minor role.

3. Perhaps reflecting the differences in degree of objective risk, *state political structures contain a segment that can clearly be identified as a hazards coalition, whereas the local communities do not* By *hazards coalition*, we mean a group of elites that tend to see hazards problems as relatively more serious than do elites in other positions. At the state level, this hazards coalition is defined primarily by suprastate elites, those with regional or national constituencies. It is doubtful that these suprastate elites are as well-connected politically within the state political structure as are the more indigenous state elites; their lines of contact would presumably be vertical (connecting to regional or federal loci) rather than horizontal (connecting to other elements of the state influence structure), and this may well limit their influence. Secondly, at the state level, groups who rate the hazard problem as most serious are, by and large, the same groups who are most favorable to hazards-management innovations, as discussed in the next chapter. And finally, while this group tends to see hazards problems as more serious than do other state elites, they also tend to see other nonhazards problems as relatively less serious. In this sense, the hazards coalition at the state level tends not to participate in the state-wide consensus on issues, and although this may have positive implications for their own sense of commitment to natural hazards issues, it probably has negative implications for how well they are able to communicate this sense of commitment to others.

The local communities present a rather different picture. A group of hazards specialists can obviously be identified from their special hazards-related responsibilities. However, they do *not* tend to see hazards problems as more serious than do other local elite groups. Thus, there is no ready-made coalition convinced of the relative seriousness of hazards problems. In the communities, virtually *all* parties are agreed that hazards issues are not among their more serious problems.

4. There is general agreement that floods are the most serious hazard problem and earthquakes the least serious. Fires run a close second to floods in the aggregate, and are seen as rather more serious than floods among some elites and in some states and communities. In Alabama and Oklahoma, tornadoes are the most serious hazard problem; in Florida, Louisiana, and Texas, hurricanes Except for Los Angeles, there is no community or state that sees earthquakes as its most serious hazard problem.

5. At all levels, the only strong predictors of hazard-seriousness ratings are the previous experience of the state or community with the disaster type in question and the estimated return probabilities *Individual* hazard experiences are not strong predictors. The sense of natural hazards as a serious state or local problem is nowhere so well developed as in states and communities recently ravaged by natural disasters. Experience proves in this case to be the only significant teacher.