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EXPLAINING DIFFERENTIAL OUTCOMES IN THE
SMALL BUSINESS DISASTER LOAN
APPLICATION PROCESS

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Several methods currently exist for compensating victims of major disasters including: pay-outs from various forms of insurance; material assistance from private agencies, such as the Red Cross and the Salvation Army; individual and family grants administered by the Federal Emergency Management Agency (FEMA) and its counterparts on the state level; and disaster loans to businesses and households, administered by the Small Business Administration (SBA).

Of these categories of aid, disaster loans provide the largest monetary share of recovery funds for households and businesses that experience losses. With their comparatively low interest rates (4% and 8%), SBA loans constitute a desirable source of recovery assistance for disaster victims with uninsured losses. These loans may be the only source to significant funds for applicants who, for one reason or another, cannot afford to obtain commercial loans.

Small businesses are a particularly vulnerable segment of the disaster victim population. In contrast with large-scale enterprises, they are not likely to be insured against hazards. Unlike households, businesses are typically not eligible for grants-in-aid or vouchers to replace lost goods. A few small businesses may be able to close their doors or weather interruptions in cash flow for relatively long periods of time; but most disrupted businesses need to resume normal operations as quickly and economically as possible in order to stay viable. Since the ability to get back into business rapidly, finance repairs, and avoid accumulating additional debt is likely to be a

positive factor in business disaster recovery, success in obtaining a SBA loan, as well as the speed with which assistance is obtained, may be crucial for a disaster-stricken business.

With these points in mind, this paper focuses on decision-making in the SBA disaster loan process, specifically asking what factors are associated with success in obtaining loan funds. The variables that are taken into account in the analysis include community-level variables, the magnitude of the losses sustained, and a range of business and proprietor characteristics. The sample on which the analyses are conducted consists of 309 businesses from four Southern California communities that suffered losses in the October, 1987 Whittier Narrows earthquake.

BACKGROUND

One of the main issue areas in recent disaster research concerns the long-term effects of disasters and the factors that affect recovery capacity. The literature to date is uneven, with respect to both the units of analysis studied and findings. Of the empirical studies that have been undertaken on these topics, the majority have taken the individual as the unit of analysis. This literature has focused mainly on the individual's ability to recover from the psychological or emotional effects of catastrophic events (c.f. Gilbert, 1958; Takuma, 1978; Bell, 1978; Huerta and Horton, 1978; Flynn and Chalmers, 1980; Bartlett, 1985; Nigg and Mushkatel, 1985).

A smaller number of studies have focused on the short- and long-term recovery of larger social units such as families (c.f.

Bolin, 1976; 1982; Bolton, 1979; Quarantelli, 1982). These family-oriented studies are somewhat more sophisticated theoretically and methodologically than those focusing on individuals, in part because they are loosely based on earlier multivariate analyses of how families respond to disaster warnings and make evacuation decisions (c.f., Drabek, 1969; Drabek and Key, 1976; Perry, 1983).

Other research has focused on how disasters affect entire communities. Topics addressed include the long-term socioeconomic effects of disasters (Friesma et al., 1979; Rossi et al., 1978); the community characteristics that facilitate or impede recovery (Demerath and Wallace, 1957; Rubin et al., 1985); and the aspects of disaster response and recovery that appear to create problems for communities (Quarantelli and Dynes, 1976; Leivesley, 1977).

The processes and outcomes associated with the recovery of private businesses have almost never been studied. One notable exception is Durkin's (1984) work on small businesses recovering from the 1983 Coalinga earthquake. One of the implications of Durkin's study is that recovery-related problems are greater for some businesses than for others. The businesses particularly hard-hit in Coalinga were (1) small retail businesses that had leased space before the earthquake, were dependent on a favorable location to attract customers, and could not qualify for credit; (2) businesses that lost expensive inventories in the earthquake; and (3) businesses that were only marginally profitable or that were essentially not viable before the earthquake.

In related work Murray (n.d.) conducted a study that focused on local governmental units and households, as well as businesses. All the communities in the Murray study had experienced disasters, but had been denied a Federal disaster declaration. Business owners interviewed in the study reported that they coped with losses by using savings, declaring income tax losses, doing their own repairs instead of hiring someone to do them, borrowing money, and deferring planned expansions and improvements.

Even though the communities studied were not subject to a full Federal disaster declaration, Small Business Administration loans were available in several of the affected communities and were utilized by a few business owners. Some owners also used insurance to cover losses. However, despite the range of coping strategies employed, 71% of the business owners surveyed indicated they were worse off financially as a result of the disaster.

Our analysis of business recovery takes into account several general points made in the literature. First, research on families indicates that, while the precise nature of the relationship is unclear, the ability to recover from disaster losses is related to the utilization of post-disaster services.¹

¹ In a comparison of victim families in two flood-stricken communities, Bolin (1982) found no relationship between the number of aid sources used and a family's emotional recovery. In one community, he found a negative relationship between aid sources and economic recovery; that is, the more services used, the poorer the family's recovery. In the other, he found a curvilinear relationship; families using the most and the least services recovered quickest.

Thus, as suggested earlier, this might also be the case for small businesses.

Second, victim socio-demographic characteristics appear to influence disaster recovery in several ways. In the family recovery literature on service utilization, several characteristics have been studied, sometimes with contradictory results. For example, Cochrane (1975) found that low family income was associated with reluctance to seek aid; while Rossi and his colleagues (1983) found that more affluent families tended to avoid applying. Feld (1973) argued that, because higher SES families have more options, they were less likely to avail themselves of Federal housing assistance programs; yet Bolin (1982) found that higher-SES families used all Federally-sponsored services, including mobile homes, more often than lower-SES families.

With respect to age, service utilization, and recovery, most research indicates that older people lose more in disasters (Moore, 1958) and request more services (Friedsam, 1962) but receive proportionately less assistance than younger disaster victims (Bell et al., 1978; Kilijanek and Drabek, 1979; Rossi et al., 1983). This pattern is consistent even when older victims sustain extensive damage to their homes (Drabek et al., 1979). This may explain why, as Bolin (1976) found, older victims are less likely to regain comparable housing after disasters.

Ethnicity may also play a role in the aid process and, consequently, in recovery. Moore (1958) argues that Black families require a disproportionately greater amount of aid to recover,

compared with Whites. More recently, Bolin and Bolton (1986) concluded that White families recover more quickly and at higher rates than do Black families. For both racial groups, income is important: families with higher incomes and lower loss levels were more likely to report having recovered than their less well-off counterparts.

This body of literature suggests that social factors play a role in the willingness to seek assistance as well as in the extent to which assistance translates into benefits for the recipient. Our work extends this line of inquiry by asking whether factors such as ethnicity and age are also associated with the decision to grant assistance to business applicants.

A third relevant finding is that, among communities that are stricken by disasters, some apparently handle the tasks associated with recovery better than others. For example, Rubin et al. (1985) argue that the communities that go through the recovery process most smoothly are those in which government leaders possess both knowledge of how to use available resources and a high degree of management capability.

With respect specifically to businesses, the very small amount of work that has been done suggests that the recovery potential of a business may be linked to a range of factors, including the nature of the business, its dependence on a favorable location and business environment, and its pre-disaster profitability. Further, if ethnicity is a factor in the assistance process for individuals and households, proprietor ethnicity could also be a factor in

requesting and receiving aid, which could ultimately affect recovery.

Absent from the literature is any consideration of the relationship between community disaster recovery strategies and the recovery process at other levels of analysis. For example, no studies of which we are aware have explored the question of whether successful management strategies, exercised at the local level to help governmental recovery, also translate into benefits for households or businesses in a jurisdiction.

Equally important, relatively little work has been done on the question of whether the larger, pre-disaster socioeconomic climate in a community is related to the economic recovery of communities, households, or businesses. Some researchers, such as Rossi et al. (1978) and Friesema et al. (1979) argue that, at least in the United States, natural disasters have no discernable effects at the community level and that more general economic and social trends have the most significant influence on community outcomes. More frequently, disasters are seen as having the capacity to at least alter the pace, if not the direction, of larger socio-economic trends. Along this line, Francaviglia (1978) observes that, after the devastating 1974 tornado, reconstruction in Xenia, Ohio, both followed and intensified predisaster trends. Deteriorating residential areas that had been damaged failed to recover as neighborhoods after the tornado; predisaster patterns of commercial development were reestablished in the course of reconstruction,

despite plans to the contrary; and the central business district, which was already weak before the tornado, continued to decline.

The current analysis attempts to test hypotheses about factors that influence the business loan processes and to explore the link between the larger socioeconomic context in the community and disaster recovery chances of smaller social units. Specifically, it explores the relationship between community socioeconomic characteristics, proprietor attributes, types of losses associated with earthquake-generated business disruption, and loan decisions. Besides considering the question of whether loans from different applicants were accepted or denied, our analysis also considers more subtle distinctions, such as who got favorable loan rates and terms and who was more likely to appeal the initial SBA loan decision.

SAMPLE AND RESEARCH METHODS

The Communities. The group of businesses studied consists of all the businesses in each of four heavily-damaged Southern California cities that (1) applied for disaster loans as a result of damage sustained in the 1987 Whittier Narrows earthquake and (2) were something other than small-scale landlords.² The four study

² Our initial conception of a small business followed the typical proprietor-operator model: the gasoline station, the corner market, and so on. However, individuals who own property that they rent to others are qualified to apply for SBA disaster loans to cover what are technically "business" losses. A large proportion of the SBA loan applicants in the Whittier earthquake fell into this category. For the majority of such applicants, the rental income supplements income from another source. For example, a teacher in the public schools may own a small house that he or she rents out and, for SBA purposes, this individual would be considered a business owner. For purposes of this analysis, we

communities--Alhambra, Compton, Monterey Park, and Whittier--were selected from a larger group of seven high-damage communities³ and were chosen to take into account differences in population characteristics and community socio-economic climates.

As indicated in Table I, these communities differ markedly in socioeconomic composition, although they are roughly similar in size and in their geographic location in the Los Angeles basin. Whittier, the most seriously affected community, is a largely Anglo city with a high median household income. Incomes are also relatively high in Monterey Park, but Anglos constitute less than 20% of the population. Even prior to the 1980 census, Monterey Park had become one of the few U. S. cities to have a majority Asian population, and that population trend continued in the last decade. Alhambra, which is similar to Whittier in size, has a median income of about \$20,000 and a large Hispanic and Asian population. Compton is a low-income community in which about three-fourths of the population is Black. Unemployment was highest by far in Compton (12%), while the other three cities had similar relatively low rates.

excluded any businesses that consisted of four residential rental units or less, on the rationale that the remainder of the sample would include a substantially higher number of cases that would actually constitute the major income source for the owner. In the four study communities approximately 59% of the actual applicant cases did not fall into our sample.

³ The seven incorporated cities with the most damage were Alhambra, Compton, Los Angeles, Montebello, Monterey Park, Rosemead, and Whittier. Over 2,100 applications, or about 85% of all loan applications received by the SBA following the Whittier earthquake, came from these seven communities.

Besides being diverse with respect to population and income characteristics, other social indicators suggest that the four cities had diverse business climates at the time of the earthquake. All the communities saw some increase between 1970 and 1980 in housing units, but that increase was only 2% for Compton, while the Monterey Park housing market grew at a 15% rate. In Southern California's thriving economy, all communities saw some increase in the number of business establishments particularly in the rapidly-growing service sector. However, Compton's gains were rather modest and were more than offset by the 30% loss in the total number of retail businesses. While the other three communities experienced rather high percentages of net gains in the number of businesses (Monterey Park's was 63%, the highest by far), Compton experienced a 6% net loss.

The Businesses. Data on the key variables used in the analysis were obtained from the SBA business loan case file records. The application files, which tended to be quite voluminous, contained all materials relevant to the loan application, including standard SBA forms for reporting on the business and on disaster damage; financial data; SBA forms related to the tracking of the loan decisions; and records of correspondence. The loan application files were examined at the SBA's district office in Sacramento, California. Since the files could not be copied or removed from the office at any time, an abstracting instrument was used to obtain the relevant data. With

very few exceptions, all the applications that had been submitted prior to the application closing date were examined.⁴

Table II provides data on selected aspects of the businesses included in the analysis. Because of differences in community size and especially because of differential earthquake impacts, sample sizes varied by community. The largest subgroup of businesses in the sample (N=214) were located in the city of Whittier; the smallest number (N=17) were in Compton, which was the furthest of the four communities from the earthquake's epicenter. Reflecting the ethnic diversity of the Southern California region and the impacted communities, a large proportion of the businesses that applied for loans were minority-owned. Proprietor ethnicity roughly followed community demographics: Compton business owners were mostly Black; Asians predominated as business owners in Monterey Park; and three-fourths of the business owners in Whittier were Anglos. Alhambra departed somewhat from this pattern, with Hispanics underrepresented as business owners and Asians overrepresented, relative to their population size.

Just under one-half of the businesses were male-owned. The next most frequent ownership pattern, which was particularly common

⁴ Loan application files examined included those that had been accepted, rejected, and withdrawn by applicants, as well as those on which a decision was still pending as of the time the data were collected. Of the 803 applications submitted in the four cities, 309 businesses, or 41% of all those who applied, met our criteria for study inclusion, as described above. A very small number of application files (less than twenty altogether) could not be found at all in the system during the time period in which we collected data--either in the district office in Sacramento, or in Los Angeles, where most fully-disbursed loans were sent for servicing.

in Monterey Park, was the male-female partnership. Female proprietors made up a significant subgroup in all four communities; the largest proportion of female-owned businesses was in Compton.

Overall, about three-fourths of the businesses owned the buildings in which they were operating at the time of the earthquake, as opposed to owning only the inventory and equipment and leasing the space. Proportionately, owner-occupancy was highest in Monterey Park and lowest in Whittier.

These business owners were largely without earthquake insurance to cover losses. Overall, only 5% of the applicants indicated they were insured. Of the four communities, businesses in Alhambra were most likely to have had some form of insurance.

As part of the loan process, the SBA verifies disaster losses in various categories, including real property, leasehold improvements, machinery, equipment, and inventory. Average business losses varied by community, with businesses in Whittier highest, averaging about \$124,600 in damage, and businesses in Compton lowest, at just over \$29,000. These losses are, to a large degree, the result of differences in the magnitude of ground shaking experienced in the different communities, but are also undoubtedly the result of differences in the age and quality of the structures in which the businesses were located. Many of the small businesses in Whittier had been located in the "Uptown" area, which had a high proportion of unreinforced masonry buildings and was the commercial area that sustained the highest concentration of earthquake damage.

OUTCOMES OF THE LOAN APPLICATION PROCESS

As Table III indicates, businesses in the four communities had different experiences with the SBA loan process. First, loan approval rates varied by community. Overall, 54% of all applicants were approved and 25% were denied loans; but getting a loan was easier in some communities than in others. Only 31% of the Compton applicants had their loans accepted, compared with around one-half for the other three cities. One-half of the Compton applicants were denied SBA loans. Rates of loan withdrawal--that is, applicants making a decision not to continue with the application process--were marginally higher in Monterey Park but were roughly comparable for the four communities. On the whole, applicants whose businesses were in Whittier were more likely than other applicants to obtain loans, and owners of Compton businesses were by far the least likely.

Second, interest rates for the loans that were granted varied by community. The SBA analyzes the finances of all loan applicants in order to set interest rates and loan payback periods. The low SBA loan rate of 4% is assigned to businesses that are determined by the agency to be unable to obtain credit "elsewhere"--that is, on the commercial loan market. The low rate is also given for businesses that the SBA determines would be unable to pay back a higher-rate loan because of "hardship." Applicants judged able to obtain credit elsewhere and non-profit organizations are assigned rates of 8% and 9%, respectively. The 4% loans are desirable not only because of the low rate but because payback periods are more

advantageous to the business owner. Recipients can take up to thirty years to pay off these loans, while the 8% loans must be repaid within three years. In the Whittier earthquake, about two-thirds of all businesses that obtained loans were given the 4% rate, but businesses in Whittier and Compton were more likely than businesses in the other two communities to receive that rate. (Of course, in absolute terms, the largest number of low-interest loan recipients were in Whittier, because there were more applicants from Whittier than from anywhere else.) In terms of interest rates, Alhambra businesses fared worst: 50% of the owners received loans at the 8% rate.

Third, there was variation in the extent to which the loans business owners received approximated their disaster losses, as verified by the SBA. Averaged across the four communities, loan amounts covered approximately 94% of the verified losses. However, loan/loss ratios ranged from a low of 61% in Compton to a high of 115% in Alhambra. Whittier and Monterey Park ratios were 88% and 79%, respectively.

In summary, businesses in some communities stricken by the Whittier Narrows earthquake fared better in the loan process than businesses in other communities. On the positive side, Whittier businesses were more likely to receive loans and more likely to receive the favorable 4% interest rate than businesses in the other three communities. Loan applicants in Whittier also received nearly 90% of the dollar value of their losses. On the negative side, loan applications from Compton businesses were rejected at a

higher rate, and the loans that were granted covered only about 60% of their losses. For businesses in the other two communities, outcomes were mixed. More than half the Alhambra applicants received loans, and their loans actually exceeded verified losses, but they also had to contend with higher interest rates and short payback periods. Monterey Park applicants had an acceptance rate of just under 50%, but businesses that received loans had only about 80% of their losses covered, and they were also quite likely to fall into the 8% and 9% interest rate category.

EXPLAINING DIFFERENTIAL OUTCOMES

Two questions need to be addressed with respect to these differential outcomes: Who got loans? What accounted for the favorability of terms associated with those loans? In a preliminary attempt to answer these questions, a four component model was developed; those components are: community context; owner characteristics; business characteristics; and extent of earthquake effects (Figure 1).

Community context refers to the community in which the damaged or disrupted business was located. Because 69 percent of the businesses in this study were in Whittier, analysis was conducted to determine whether being a business owner in Whittier resulted in a greater number of loans and more favorable terms for those loans.

Owner characteristics were measured by four variables, all pertaining to the primary business owner: race; gender; age; and

citizenship status.⁵ Again, because race (or ethnicity) was skewed in its distribution, owners were differentiated into Anglo and non-Anglo categories for analytic purposes.⁶ While there were three gender categories (male; female; and male/female partner couples), female-headed businesses were distinguished from those with male partners or male sole owners. Citizenship status was added to this analysis to determine whether resident aliens (almost all of whom were Asian or Hispanic) who were owners of disrupted businesses fared worse than citizens in the loan granting process.

Two business characteristics were included in the analysis: whether the business property was owned or leased by the owner; and how long the business had been in operation. It was hypothesized that when the loan applicant owned commercial property or had been in business for some time, the SBA would look more favorably on their loan requests.

Finally, two variables were used to assess earthquake effects on these disrupted businesses: the total amount of loss or damage that the owner initially claimed; and the total amount of loss that SBA inspectors actually verified during the processing of the claim.

⁵When businesses were a partnership and no primary owner was identified, the demographic information on the partner who completed the loan application was used for this analysis.

⁶Initially, analysis was conducted to determine whether three categories of race/ethnicity were more appropriate: Anglos; Asians; and Blacks and Hispanics. Preliminary analysis, however, confirmed that Asians, in this study, functioned similarly to other racial and ethnic groups.

Who Got SBA Loans? As displayed in Table 4, three variables--two owner characteristics and one business characteristic--were significantly related to approvals for the SBA loan. Older business owners and female-headed businesses were **less** likely to get SBA loans than were younger people or businesses with a male as a primary owner. Those people who owned business--either as a commercial rental or for their own business use--were **more** likely to get loans than were lessees. Neither community context nor earthquake effects variables were related to successfully being given a loan.

Taken as a cluster, these variables seem to point to the ability of the applicant to successfully repay the loan from SBA. Older people may either not have a business that provides the resources to repay the loan (many of these were owners of older rental units that supplemented a fixed income and that had been owned for some time) or a sufficiently long period of productive time remaining in their lives to meet the pay-back terms. Female-headed businesses, as a category, are often newer businesses without adequate track records to establish themselves as good "financial risks" for such loan programs.

In contrast to these demographic characteristics that are related to the non-approval of loans, the availability of collateral--in the form of commercial property--seems to provide tangible evidence of business "stability" and relative health. Property owners were more successful in getting loans, even though

the amount of losses claimed and verified--which would be generally higher for the owners of buildings--is not related to loan awards.

Who Got More Favorable Loan Terms? A slightly different pattern is seen with respect to designations of "low interest" loans (i.e., 4 percent in contrast to 8 or 9 percent).

The only owner characteristic that is related to favorable loan terms is age. Although older business owners were less likely to get loans, those who did were given higher interest rates. This may indicate that for the older owners who could qualify for SBA loans, they did not fall under the "hardship" categorization or that they had credit available elsewhere. In either case, they would constitute a subset of older business owners who may not have been in the greatest need for recovery assistance.

Both business characteristics were found to be related to interest rates, but in opposite directions. Although those who owned commercial property were more likely than lessees to get loans, their repayment terms were not as favorable (i.e., they significantly got higher interest rate loans). Similarly, businesses that had been in operation longer also got loans with higher interest rates. In contrast, those businesses that sustained the highest amount of verified losses, were given lower interest loans to repay although they were no more likely than those with lower loss amounts to receive loans from SBA.

Conclusions

While there are various factors that are related to receiving an SBA loan and obtaining favorable terms for that loan for

businesses that were disrupted in the Whittier Narrows earthquake, the patterns are not clear. Age and the ownership of commercial property are obviously significant factors in both outcomes; however, the pattern of the relationships is different for the two variables. In order to look at the interactions among these variables, the next step in this analysis will be a log-linear analysis of the multivariate model presented in Figure 1.

Another issue that must be addressed is whether the granting of an SBA loan actually aided the business in its recovery from the earthquake disruption. This question was the subject of a follow-up study conducted with a subset of owners--half of whom got loans; and half of whom did not. These data are currently being analyzed in order to assess the usefulness of this Federal recovery program and to identify the types of additional assistance these small business owners felt would have been helpful to them.

TABLE I
COMMUNITY CHARACTERISTICS

	Alhambra	Compton	Monterey Park	Whittier
Population	64,615	81,286	54,338	69,717
1970-80 Change in Population(%)	+4	+3	+10	-5
College Educated(%)	19	6	21	20
Unemployment(%)	4	12	5	5
Median Income	20,065	14,292	22,568	24,392
Ethnic Populations(%)				
Hispanic	38	21	31	23
Asian	28	2	51	2
Black	1	74	2	1
1970-80 Housing Unit Increase(%)	4	2	15	7
Owner-Occupied Units(%)	34	48	45	52
1970-80 Business Trends(%)				
Retail	+8	-30	+8	-12
Manufacturing	-1	+6	-26	+23
Service	+44	+18	+58	+52

TABLE II
PROPRIETOR & BUSINESS CHARACTERISTICS

	Alhambra	Compton	Monterey Park	Whittier	Total
Ethnicity of Primary Owner(%)					
Anglo	43	29	14	75	62
Hispanic	9	0	4	14	11
Black	0	71	0	0	23
Asian	48	0	82	12	4
Gender of Primary Owner(%)					
Male	39	47	35	49	46
Female	24	41	17	21	22
Male/Female Partnership	37	12	48	30	32
Percent Owner-Occupied	76	82	96	72	75
Percent Earthquake Ins.	12	0	4	4	5
Average Verified Losses	94,164	29,274	70,190	124,662	110,301
Cases per City	(55)	(17)	(23)	(214)	(309)

TABLE III

LOAN OUTCOMES BY COMMUNITY

	Alhambra	Compton	Monterey Park	Whittier	Total
Loan Recommendation(%)					
Approved	55	31	48	56	54
Withdrawn	20	19	26	21	21
Denied	25	50	26	23	25
Interest Rate(%)					
4%	50	67	44	78	67
8%	50	33	44	19	30
9%	0	0	11	3	3
Amount of Loan	108,183	17,800	55,378	109,299	103,915
Loan/Loss Ratio(%)	115	61	79	88	94

FIGURE 1

INDEPENDENT VARIABLES USED IN REGRESSION
MODELS ON SBA LOAN OUTCOMES

Business Context:

City in which damaged business was located

Owner Characteristics:

Race

Age

Gender of primary owner

Citizenship status of primary owner

Business Characteristics:

Structure was owned

Years in business

Earthquake Effects:

Total amount of claimed loss

Total amount of verified loss

TABLE IV

BIVARIATE RELATIONSHIPS FOR LOAN OUTCOMES

Independent Variables	Received a Loan	Interest Rate
Context:		
City of Business Location	r = .04 p = .23	r = .11 p = .09
Owner Characteristics:		
Race	r = .08 p = .10	r = -.07 p = .22
Age	r = -.14 p = .01	r = .15 p = .04
Gender	r = .11 p = .03	r = .01 p = .47
Citizenship	r = .06 p = .19	r = -.13 p = .06
Business Characteristics:		
Owned Property	r = .30 p = .000	r = -.22 p = .01
Years in Business	r = .05 p = .22	r = .17 p = .04
Quake Effects:		
Total Claimed Loss	r = -.08 p = .13	r = -.12 p = .09
Total Verified Loss	r = .03 p = .34	r = -.16 p = .03

REFERENCES

- Bartlett, G. S., P. S. Houts, L. K. Byrnes, and R. W. Miller. 1983. "The Near Disaster at Three Mile Island." International Journal of Mass Emergencies and Disasters 1: 19-42.
- Bell, B. D. 1978. "Disaster Impact and Response: Overcoming the Thousand Natural Shocks." The Gerontologist 18: 531-540.
- Bolin, R. C. 1976. "Family Recovery from Natural Disaster: A Preliminary Model." Mass Emergencies 1: 267-277.
- Bolin, R. C. 1982. Long-Term Family Recovery from Disaster. Boulder, CO: Institute of Behavioral Science, University of Colorado.
- Bolin, R. C. and P. Bolton. 1986. Race, Religion, and Ethnicity in Disaster Recovery. Boulder, CO: Institute of Behavioral Science, University of Colorado.
- Bolton, P. 1979. Family Recovery Following a Natural Disaster: The Case of Managua, Nicaragua. Boulder, CO: Doctoral dissertation, University of Colorado.
- Cochrane, H. C. 1975. Natural Hazards and Their Distributive Effects. Boulder, CO: Institute of Behavioral Science, University of Colorado.
- Demerath, N. J. and A. F. C. Wallace. 1957. "Human Adaptation to Disaster." Human Organization 16: 1-2.
- Drabek, T. E. 1969. "Social Processes in Disaster: Family Evacuation." Social Problems 16: 336-349.
- Drabek, T. E. and W. Key. 1976. "The Impact of Disaster on Primary Group Linkages." Mass Emergencies 1: 89-106.
- Drabek, T. E., C. R. Adams, T. S. Kilijanek, and M. Tamminga. 1979. "Multiorganizational Coordination: It Can Be done!" Search and Rescue Magazine summer: 9-15.
- Durkin, M. E. 1984. "The Economic Recovery of Small Businesses After Earthquakes: The Coalinga Experience." Paper presented at the International Conference on Natural Hazards Mitigation Research and Practice, New Delhi, Oct. 6-8.
- Feld, A. 1973. "Reflections on the Agnes Flood." Social Work 18: 46-51.
- Flynn, C. G. and J. A. Chalmers. 1980. The Social and Economic Effects of the Accident at Three Mile Island. Tempe, AZ: Mountain West Research, with Social Impact Research, Inc.

Francaviglia, R. V. 1978. "Xenia Rebuilds--Effects of Pre-Disaster Conditioning on Post-Disaster Redevelopment." Journal of the American Institute of Planners 44: 13-24.

Friedsam, H. J. 1962. "Older Persons in Disaster." Pp. 151-182 in G. W. Baker and D. W. Chapman (eds.) Man and Society in Disaster. New York: Basic Books.

Friesema, H. P., J. Caporano, G. Goldstein, R. Lineberry, and R. McCleary. 1979. Aftermath: Communities After Natural Disasters. Beverly Hills: Sage Publications.

Gilbert, J. E. 1958. "Human Behavior Under Conditions of Disaster." Medical Service Journal 4: 318-324.

Huerta, F. and R. Horton. 1978. "Coping Behavior of Elderly Flood Victims." The Gerontologist 18: 541-546.

Leivesley, S. 1977. "Toowoomba: Victims and Helpers in an Australian Hailstorm Disaster." Disasters 1: 205-216.

Moore, H. E. 1958. Tornadoes Over Texas. Austin: University of Texas Press.

Murray, L. C. n. d. Socio-Economic Effects of Denied Requests for Major Disaster Declarations. Washington, D. C.: Federal Emergency Management Agency.

Nigg, J. M. and A. H. Mushkatel. 1985. "The Effects of Fear on Behavior Following a Natural Disaster." Paper presented at the annual meeting of the American Public Health Association, Washington, D. C.

Perry, R. W. 1983. "Environmental Hazards and Psychopathology." Environmental Management 7: 543-552.

Quarantelli, E. L. 1982. Sheltering and Housing After Major Community Disasters: Case Studies and General Conclusions. Newark, DE: Disaster Research Center, University of Delaware.

Quarantelli, E. L. and R. R. Dynes. 1976. "Community Conflict: Its Absence and Its Presence in Natural Disasters." Mass Emergencies 1: 139-152.

Rossi, P. H., J. D. Wright, S. R. Wright, and E. Weber-Burdin. 1978. "Are There Long Term Effects of American Natural Disasters?" Mass Emergencies 3: 117-132.

Rubin, C., with M. D. Saperstein and D. G. Barbee. 1985. Community Recovery From a Major Natural Disaster. Boulder, CO: Institute of Behavioral Science, University of Colorado.

Takuma, R. 1978. "Human Behavior in the Event of Earthquakes."
Pp. 159-172 in E. L. Quarantelli (ed.) Disasters: Theory and
Research. Beverly Hills: Sage Publications.