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# REAL ESTATE AGENTS AND THE DISSEMINATION OF INFORMATION ON NATURAL HAZARDS IN THE URBAN AREA

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**16. Abstract (Limit: 200 words)**

This study was undertaken to assess the effects of mandated disclosure as a means of informing and protecting prospective homebuyers of their financial commitments, especially in regard to natural hazards. Interest in the study was based on a California law which requires that the State's real estate agents or sellers inform prospective homebuyers if property lies within one-eighth mile of a trace of an active earthquake fault. The empirical portion of the study was based on surveys conducted in two housing submarkets within the San Francisco Bay region. The two areas provide a contrast in age of housing and visible damage attributable to fault creep, but are comparable in socioeconomic status and racial composition. Data were obtained from surveys of recent homebuyers within or close to the study zones and from real estate agents involved in disclosures. The clearest finding is the ineffectiveness of the law--that the legislation has failed to produce measurable response, either in buyer behavior or house price trends. Included in the report are reviews of empirical and theoretical literature from economics, communications, and social psychology.

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EXECUTIVE SUMMARY

In recent years, federal, state, and local laws have increasingly regulated certain aspects of real estate practice. Some of these regulations have been designed to inform prospective homebuyers about the financial commitments involved in a house purchase, as well as to provide equal access to housing opportunities. In a sense, this entire set of regulations can be understood as a form of "consumerism," aimed at informing and protecting the homebuyer. An example of state legislation regulating real estate practice is the portion of the Alquist-Priolo Special Studies Zones Act which requires that California real estate agents or sellers inform prospective homebuyers if property lies within one-eighth mile of a trace of an active earthquake fault. If effective, this law should permit homebuyers to decide whether they wished to live very close to an earthquake fault, and should also aid homeowners in decisions concerning the purchase of earthquake insurance or the adoption of measures such as structural reinforcements to the dwelling based on knowledge of geologic conditions and potential hazards.

Because this law generated interest in other states for similar legislation as a means of disseminating information on natural hazards to homebuyers, and also because similar requirements are presently used by agencies such as HUD to disclose potential hazards associated with residence close to nuclear facilities in places such as Boulder and Jefferson Counties (Colorado), this study was undertaken to assess the effects of mandated disclosure.

The clearest finding of the study is the ineffectiveness of the law: the legislation has failed to produce a measurable response, either in buyer behavior or house price trends. This result corresponds with those of several other studies which have refuted the simple notion that merely providing people with more information about hazards to life and property will

necessarily result in both greater awareness and the adoption of protective measures.

The report reviews empirical and theoretical literature from economics, communications, and social psychology. These studies together suggest a set of conditions which are necessary if disclosure legislation is to result in a change in buyer behavior. Few of the necessary conditions were present in the California circumstance.

The empirical portion of the study was based on surveys conducted in two housing submarkets within the San Francisco Bay region. These areas were the territories of two separate boards of Realtors, previously established as separate and self-contained housing submarkets. The study areas, Berkeley and central Contra Costa County, provide a contrast in age of housing and visible damage attributable to fault creep, but are comparable in such neighborhood characteristics as socioeconomic status and racial composition.

Data were obtained from surveys of recent homebuyers, both within and close to the special studies zones, and from real estate agents involved in disclosures. An effort to monitor disclosure was also made. Finally, a statistical analysis of property values was undertaken to isolate the effect of location within the special studies zones on house prices.

Four general questions were addressed. The first was whether real estate agents seem to be complying with the law. The study results on this issue are not clear. Although the California Department of Real Estate reports few complaints of nondisclosure, this survey showed that fewer than half of the homebuyers could remember a disclosure within six months of the time it was to have been made. This forgetfulness could be an indication that the disclosure itself was not particularly memorable, rather than a strict measure of compliance with the law.

The second question was whether buyers seem to be responding to information about special studies zones. A "response" was defined as a measurable reaction including the avoidance of purchase of houses in the zones, which would be indicated in the surveys of buyers outside the zones and of real estate agents dealing with property in the zones, and also by relative house price trends. Other measurable reactions could have included the adoption of mitigation measures to prepare for possible losses associated with a major earthquake, such as the purchase of earthquake insurance or the investment in structural reinforcements or modifications. There was little measurable buyer response, regardless of the indicator considered.

The third question addressed by the study was more general: is the law fulfilling its original purpose of providing homebuyers with the information they need to make informed decisions about environmental risks. The surveys showed that full information is not being provided. The reasons for this failure include the fact that not all real estate agents seem to understand the meaning and significance of the zones and also the disclosure process itself minimizes both the impact of the disclosure on the buyer and the amount of information conveyed.

The study notes that serious attention should be paid to the possibility of over-interpretation of the zones should disclosure be made more effective. It is not clear why the state has elected to require disclosure of only the special studies zones since they contain only a small fraction of the potential risk associated with earthquake activity. Full disclosure would also include areas susceptible to earthquake related damage such as liquifaction, shaking, and ground failure, not simply distance from an active fault trace.

The fourth question addressed by the study is the issue of whether real estate agent disclosure is an effective way to provide information to homebuyers about natural hazards. It is suggested that the real estate agent

because of his/her important relationship with the homebuyer is an appropriate purveyor of environmental hazards information. However, at present, neither the agent nor the buyer places much emphasis on environmental concerns. More important to both is the role of the house as a financial investment. Because of this value system associated with housing, and the relegation of environmental hazards to an extremely low priority ranking, it seems unlikely that even if better information were available and if this information were more effectively presented, it would have much impact on the purchase process. It is suggested that a variety of communications methods be considered, including financial incentives, if the goal is to effectively inform and protect consumers, and reduce the number of persons and dwellings at risk from earthquake activity.

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During the course of this study, many people have provided support and advice. Dr. William Anderson, program manager at the National Science Foundation, has been consistently supportive of the research effort and has added useful perspectives on the research design and analysis. The advisory committee was of great assistance throughout the project. Members of this committee were Mr. Richard Betts (real estate appraiser), Dr. Theodore Levin (Federal Insurance Administration, ret.), Mr. John Liberator (California Department of Real Estate), Dr. Donald Nichols (U.S.G.S.), Mr. Peter Stromberg (California Seismic Safety Commission), Dr. Gilbert White (University of Colorado, Institute of Behavioral Science), and Professor Stephen Williams (University of Colorado School of Law). Together they brought expertise from the fields of real estate, appraisal practice, housing policy, geological applications, geography, and law.

Interviews were conducted by two graduate research assistants: Mr. Rene DuFort and Mr. David Kuntz. Mr. DuFort was also responsible for the administration and reporting of the monitored disclosure element, and Mr. Kuntz took charge of the real estate agent survey portion of the study. Ms. Vickie Kendrick assisted in the preparation of the final report and the presentation phase of the study.

Consultants on the project were Professor Wallace F. Smith (School of Business Administration, University of California, Berkeley) and Professor Linda Putnam (Department of Communications, Purdue University). Professor Smith provided particular assistance in establishing working relationships with the real estate agent participants in the survey, as well as overall advice on management of the study. Professor Putnam assisted in the formulation of the questionnaires, and provided advice on theoretical literature in communications related to response to disclosure.

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## Part I. INTRODUCTION

In recent years, there has been increased federal and state regulation of house sales transactions. Some of this regulation is aimed at ensuring that prospective buyers are more fully aware of the total costs and risks associated with the home purchase process. For example, federal regulations now require complete disclosure of mortgage loan costs, including detailed estimates of closing or transaction costs; and state court decisions have mandated full disclosure of all material facts by real estate agents before the consummation of a purchase contract.

Environmental information, that concerning hazard potential emanating from proximity to a floodplain, unstable slope conditions which might result in landsliding under certain conditions, or proximity to active fault traces which might cause surface rupture in the event of even a minor earthquake, has also been provided to homebuyers under a variety of federal and state regulations, but in a less consistent manner. The federal government requires that lenders notify prospective borrowers that property is located in a flood hazard area as defined by the Federal Insurance Administrator, when communities are part of the federally subsidized flood insurance program. The Department of Housing and Urban Development currently requires that buyers of houses within ten miles of the Rocky Flats Arsenal (in Boulder and Jefferson Counties, Colorado) be informed of this relative location. At a more local level of government, the board of supervisors of Santa Clara County, California requires sellers of property partly or wholly within flood, landslide and fault-rupture zones to provide a written statement of geologic risk to prospective homebuyers. Similar, though less sweeping, California legislation is the Alquist-Priolo Special Studies Zones Act which, according to a 1975 amendment, requires the real estate agent, or the seller if not represented by an agent, to disclose to a prospective buyer the fact

that the property is located within the special studies zone (a fault-rupture zone) as defined by the state geologist. Such legislation has been designed to increase the information available to prospective homebuyers, on the assumption that individuals have the right to know the risks they are assuming in inhabiting a particular site. In addition, it is presumed that with provision of such information, buyers will be better informed and no longer have to make decisions concerning the physical hazards of site under conditions of *caveat emptor*. Although such legislation appears to fill a need for consumer protection and was assumed to be working to convey "complex hydrologic, seismic, and other geological information . . . to real-estate buyers before the sale" (Kockelman, 1980, p. 71), it was not known whether such information actually affected the behavior of homebuyers. Does the disclosure of environmental hazards information have an impact on the decision-making process of homebuyers? Is disclosure, as presently mandated, a sufficient method of influencing buyer decisions or subsequent mitigation measures? In short, are consumers actually being protected with legislation requiring that real estate agents disclose environmental hazards information? It is these questions, concerning the impact of disclosure legislation, to which this research was addressed.

## THE CALIFORNIA EARTHQUAKE HAZARD

Earthquake hazards have been a matter of considerable public concern in the United States over the past twenty years, a concern further heightened by two major disasters in 1964 and 1971. The major center of earthquake activity is located in the Pacific region, from Alaska to California, although there have been major earthquakes in New Madrid, Missouri (1811-12), Charleston, South Carolina (1886), Massena, New York (1944), and Wilkes-Barre, Pennsylvania (1944). The combined losses from five major earthquakes in

California and Alaska in this century totaled 1,025 lives and $2,857,500,000 in property damage in 1980 dollars (Visvader and Burton, 1974, p. 223).

It was estimated that in 1970 approximately 31 million people lived within areas of known distribution of damaging earthquakes corresponding to 8 or above on the Modified Mercalli Intensity Scale of 1931 (U.S. Office of Emergency Preparedness, 1972). Earthquakes of this magnitude have been described as producing general fright, alarm approaching panic, considerable damage to ordinary substantial buildings with some partial collapse, heavy damage to some wooden houses, cracking and breaking of solid stone walls, and twisting and falling of chimneys, columns, monuments, factory stacks and towers (Iacopi, 1971, p. 35).

Structural damage and injury may result both from the earthquake directly, and also because of associated disasters such as fires or flooding which may follow the earthquake. Property damage figures thus perforce underestimate the total losses sustained by a population which experiences a major damaging earthquake.

Further increasing the costs of earthquake damage are the human responses to major earthquakes. During the earthquake, physiological distortions may occur affecting one's observation of the event. Even more serious are the psychological distortions and fears engendered by an earthquake. Normal body equilibrium may be upset, affecting all of one's senses. After the earthquake, the temporary mental confusion may turn into a fear which may remain with people long after the event is over. This fear is not so much related to the actual damage associated with the earthquake, as the fear of the unknown force of a shaking earth (Iacopi, 1971).

In California, relatively severe earthquakes are not an infrequent occurrence. The 1971 San Fernando earthquake had a magnitude of 6.6 on the Richter scale, and resulted in over a million dollars worth of damage (in

1980 dollars). This earthquake was particularly damaging because its epicenter was located in a densely populated urban area. The San Francisco earthquake of 1906 was less costly in terms of lives lost and property damaged, although its force at a magnitude of 8.3 on the Richter scale was eighty times greater than that in San Fernando. Should an earthquake of such magnitude recur, losses to life and property would be unimaginable, and yet predictions of just such a disaster have already been made (Mukerjee, 1971, p. 10).

## CALIFORNIA LEGISLATION RELATED TO EARTHQUAKE HAZARDS

The research reported here is based on a law adopted by the State of California in the 1970's to attempt to reduce earthquake risks. Before reviewing this law, it is useful to summarize the ways in which the state has been involved in seismic safety regulations.[1]

The first evidence of official state involvement in earthquake hazards was the reprinting of the eighth annual report of the state mineralogist (now called the state geologist) in 1888 of the Owen Valley earthquake of 1872 which damaged the capitol building in Sacramento. Next, in 1906 following the San Francisco earthquake, the governor appointed a state earthquake investigation commission which published a two-volume report and atlas on the earthquake. In 1933 following the Long Beach earthquake, the state legislature passed the Field Act which required, among other things, that the State Office of Architecture and Construction set up rules and regulations concerning earthquake safety in the design and construction of school buildings. Other building code provisions were passed and strengthened on a state basis (such as the Riley Act and the Uniform Building Code), and

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[1] This section is based on a report issued by the Joint Committee on Seismic Safety (1974), updated with information from Mr. Peter Stromberg (1980).

also by counties and municipalities. A Joint Committee on Seismic Safety was established in 1969 and made up of four senate members and four assembly members. This committee, advised by five advisory groups, put together information on structural engineering, geological and seismological lessons, dams and soils, city lifelines, land-use planning, disaster preparedness, and government organization and performance. The Joint Committee influenced several earthquake-related measures introduced since its inception, and the damaging San Fernando erathquake of 1971. Of those enacted are the following:

Senate Bill 351 (1971) - Seismic Safety Element: that all general plans consider the following: (a) a land-use element, (b) a circulation element, (c) a housing element, (d) a conservation element, (e) an open-space element, and (f) a seismic safety element consisting of the identification and appraisal of seismic hazards.

Senate Bill 479 (1971) - Public School Siting: requires a geologic investigation of prospective sites for new schools and for additions to existing schools.

Senate Bill 519 (1972) - Seismic Structural Safety of Hospitals: requires that the State Department of Public Health develop hospital construction standards and regulations to assure adequate resistance to earthquake damage.

Senate Bill 520 (1972) - Alquist-Priolo Geologic Hazard Zones Act: State Mining and Geology Board to prepare policies and criteria for the development of areas encompassing major active fault traces, which are to be mapped by the state geologist.

Senate Bill 896 (1972) - Dam Safety: requires that owners of dams designated by the Office of Emergency Services prepare inundation maps.

Finally, the committee recommended the establishment of a permanent state seismic safety commission which would "develop seismic safety goals and programs, help evaluate and integrate the work of state and local agencies concerned with earthquake safety, and see that the programs are carried out effectively and the objectives accomplished" (Joint Committee on Seismic Safety, 1974, p. 11). This body was established in 1974.

The Seismic Safety Commission has been active over the past six years coordinating earthquake-related programs of governmental agencies, and attempting to increase state seismic safety levels. Its official responsibilities in the area of earthquake hazard reduction include the recommendation of program changes to reduce earthquake hazards to state, local and private agencies, and the coordination of seismic safety activities of government at all levels (Section 8897, Chapter 13 of the Government Code). Furthermore, the Seismic Safety Commission has been directed to study the feasibility of establishing a comprehensive program of earthquake hazard reduction and developing and implementing a system for the prediction of damaging earthquakes (Section 8897.5). Examples of the kinds of legislation which have been passed since the existence of the Commission are:

Assembly Bill 2202 (1980) - appropriation of $750,000 (with federal matching funds) to develop an earthquake response plan for portions of southern California.

ACR 96 (1980) - Seismic Safety of Mobile Homes: requires the Commission to study problems of mobile home bracing and make implementation recommendations.

Senate Bill 445 (1980) - Hazardous Buildings: gives local jurisdictions option for lowering building standards for upgrading of pre-1933 buildings.

In short, the state legislature has taken ever increasing note of earthquake hazards, and has instituted regulations to attempt to mitigate losses associated with earthquakes. One such piece of legislation, a bill which would provide information to prospective homebuyers, was the focus of this study.

## MITIGATION OF EARTHQUAKE LOSSES THROUGH THE PROVISION OF INFORMATION

Of the several legislative acts adopted in California, one focused on providing information about the location of fault rupture zones to residents. This is the Alquist-Priolo Special Studies Zone Act. The original legislation was passed in March 1972 following the destructive San Fernando earthquake of February 1971. It required the state geologist to delineate by the end of 1973 "appropriate wide special studies zones to encompass all potentially and recently active traces of the San Andreas, Calaveras, Hayward, and San Jacinto Faults," as well as other faults which were a "potential hazard to structures from surface faulting or fault creep." These zones were to be one-quarter mile in width or less. The original legislation required that within these zones, city or county approval would be required for all new real estate development or structure for human occupancy, and it was specified that "cities and counties shall not approve the location of such a development or structure within a delineated special studies zone if an undue hazard would be created" (Section 2623, California Public Resources Code). The purpose of the act was thus to prevent new large-scale development or the siting of such facilities as hospitals and schools in areas particularly susceptible to fault rupture.

In 1975, a major series of amendments to the act were passed, including one mandating disclosure of the location of the special studies zones to

persons considering the purchase of property within the zone. The disclosure amendment stated that "a person who is acting as an agent for a seller of real property which is located within a delineated special studies zone, or the seller if he is acting without an agent, shall disclose to any prospective purchaser the fact that the property is located within a delineated special studies zone" (Section 2621.9, California Public Resources Code). Given the strength of the real estate lobby in California, it might have been expected that the 1975 amendment would have generated controversy in the state legislature; instead, the act passed virtually unopposed after a few amendments were modified in the assembly. Part of the reason for the acquiescence on the part of the California Association of Relators was the package of amendments of which the disclosure provision was a part. It should be noted that along with disclosure, several changes favorable to real estate developers and agents were added, including a change of the name of the zones from "geologic hazard zones" to "special studies zone," the exemption of new single-family frame dwellings which were not part of large developments from geologic reports, the exemption of mobile homes and condominium conversions from reports, and the exemption of alterations or additions to structures when such alterations do not exceed 50 percent of the value of the structure. Although the California Association of Realtors would have preferred that if disclosure was to be written into the law at all, it would be made the responsibility of the seller (rather than the real estate agent), they acquiesced to the language, given the rest of the package (Gillies, 1980). Proponents of the disclosure provision also viewed the final package of amendments as a compromise, in which they had traded the exemption of single family dwellings for the disclosure provision (Hurst, 1980).

After some initial confusion over the issue of how the real estate agent was to determine if a particular parcel was within or outside a

special studies zone, and how precisely disclosure was to take place, a fairly standard procedure for disclosure was established. The standardization of disclosure was assisted by the 1977 publication of a well-written manual on special studies zone disclosure (California Association of Realtors, 1977), and the development of a contract addendum to the deposit receipt which was made available to California Realtors. Several Boards of Realtors took it upon themselves to produce colored maps outlining the location of the special studies zones (and sometimes other hazards areas such as floodplains or landslide prone areas) which they either used in their offices or gave to clients. The commission charged with regulating real estate practice, the California Department of Real Estate, seemed satisfied that disclosure was taking place--from 1975 to 1978 there were only 13 disclosure complaints in all of northern California, of which only two resulted in desist and refrain orders (Liberator, 1979). Disclosure was in place, and seemed to be "working." But were the conditions necessary to produce a response by homebuyers actually present?

## Part II. ECONOMIC AND COMMUNICATIONS THEORY AND DISASTER BEHAVIOR

Before discussing the results of the empirical study, it is useful to review previous research on the expected impact of new information on behavior, for mandated provision of information is based on several assumptions of how individuals and small groups use information about their environment in decision-making. These assumptions are derived primarily from work in economics and social psychology/communications on two questions: the response of individuals to uncertainty, and the relationships between the provision of information and changes in attitudes and behavior. In this section the largely non-intersecting work from these fields is reviewed to provide a set of expectations concerning the response of individuals to special studies zones disclosure by real estate agents.

CHOICES UNDER CONDITIONS OF UNCERTAINTY

Some early research in economics proceeded under the assumption that households attempt to optimize in decision-making. Two conditions are required for optimization: the existence of a set of criteria for decision-making which permits all alternatives to be compared, and behavior involving the selection of the alternative which is preferred by these criteria to all other alternatives (March and Simon, 1958). Modifications of these conditions allow for the use of "satisfactory" standards, easing the assumption of the omniscient "economic man." In these models, a set of criteria exists that describes the minimum satisfactory condition, and a selection is made if it "meets or exceeds all of these criteria." Since it may be assumed *post hoc* that the purchase of a particular residence involved the decision that this alternative met at least the set of "satisfactory" standards set up by the household, it follows that if a household chooses to locate close to an active earthquake fault (1) they were not aware of this location despite disclosure, or (2) they were aware of the location but for some reason it did not affect their decisions with respect to their set of "satisfactory criteria." The second condition would imply that either proximity to an active fault was not one of the criteria used in their home purchase decision or that it was important, but that other factors compelled the decision despite the unsatisfactory nature of the decision with respect to this one criterion. It is therefore important to assess the conditions considered in their home purchase decision, whether proximity to an earthquake fault was or would be considered, and if the decision performed satisfactorily on this criterion. One would hypothesize that: if proximity to an earthquake fault is considered of little importance or not considered at all in the home purchase decision, special studies zones disclosure will have little impact on the purchase decision or on subsequent mitigation

measures. This hypothesis can be tested by direct questions to homebuyers within and beyond the special studies zones to seek differences in attitudes to locations proximate to fault traces, and the impacts of disclosure on their purchase decisions.

The most straightforward application of optimization models is to cases where information, albeit incomplete and possibly poorly used, involves little risk. However, decisions become more complex under conditions of uncertainty. In general, the response to uncertainty has been described within the framework of expected utility theory, originally advanced by Bernoulli (1738), and formulated into a set of axioms by von Neumann and Morgenstern (1947). Under conditions of uncertainty, the decision to take or avoid risk is analyzed in the form of a set of utility functions derived from a combination of the sets of possible outcomes and the probabilities that various outcomes will occur.

It is assumed that most behavior is risk averse: that is, people would prefer a known but smaller pay-off than risk a large loss for a smaller probability of a large pay-off. For example, the individual will prefer to accept $50 than to take a chance of winning $100 or $0 in a 50-50 gamble. Such risk-averse behavior produces a utility function with a concave form and is the basis for expectations concerning the purchase of insurance, in which the individual *will* lose a given amount in a fixed insurance premium against the notion that one *could* lose a much larger amount if he were not insured. In the application of expected utility functions to the case of the decision to purchase a house in an area subject to destruction or damage from infrequent events such as earthquakes, it would be expected that the buyer would behave in a risk-averse fashion: the buyer, upon learning that an area is subject to threat from surface fault rupture, should respond by attempting to avoid the risk or lessen its impact through the purchase of

insurance (or a form of self-insurance in which a lower sales price is "traded" for a willingness to assume the risk of major structural damage).

Several discussions of insurance purchase have described purchase decisions in terms of expected utility (Friedman and Savage, 1948; Mosteller and Nogee, 1951), or a modified form of subjective expected utility (Edwards, 1955). Despite these studies, there is mounting evidence that decision making is not perfectly accounted for by such models (Tversky, 1972; Lichtenstein and Slovic, 1971; Lindman, 1971; Slovic, 1975; Grether and Plott, 1979). Experimental findings run counter to the model such as (1) that many people do not have correct information about many of the factors relevant to the expected utility model, such as information concerning fixed losses (premiums) and pay-offs (deductible levels, levels of subsidization) (Kunreuther et al., 1978a); (2) that even with correct information many insurance decisions are inconsistent with those which would be predicted from theory (Kunreuther et al., 1978b; Slovic et al., 1977); and (3) that there exists a general unwillingness to insure against low-probability, high-loss events (such as earthquakes) (Slovic et al., 1977).

Several notions have been postulated to account for these findings. The first is the interference of the "gambler's fallacy." This notion postulates that if a low-probability hazard has recently occurred, it is unlikely to occur again soon and therefore can be treated as a zero-probability event (Slovic, Kunreuther and White, 1974). The "gambler's fallacy" seems to affect those individuals who have had personal experience with a severe loss with a low probability; rather than increasing insurance coverage, individuals decrease their insurance purchases following a major loss on the assumption that there will be no recurrence of the event over the short run. In the case of flooding, once the "hundred year flood" has occurred, households appear to feel they can occupy the floodplain with impunity for the

next 99 years; in the case of a damaging earthquake, however, it is not clear what popular conceptions of recurrence are likely to be.

A second explanation for the empirical observation of a seemingly convex utility function, implying that marginal utility decreases with an increase in losses (Galanter, 1975; Kahneman and Tversky, 1979) is the existence of a probability threshold (Kunreuther et al., 1978b). In this explanation, it is expected that people will take risks (e.g., refuse to buy insurance) if the probability is extremely low, despite the possibility of very high losses. Probabilities below some minimum threshold are treated as if they were zero (Slovic et al., 1977). It should be noted that special studies zones do not have any given probability of damage associated with them, but even where these have been estimated and made public (Contra Costa Seismic Safety element, 1977), it is possible that the probabilities might fall below the threshold at which risk is attended to. If this is the case, then disclosure would still be expected to have little effect on buyer behavior since the probability of individual loss would be low.

Finally, some have hypothesized that it is the context of the decision which affects behavior under conditions of risk. In the case of insurance sales, it has been noted that commission structure can have a great effect on the purchase of insurance rather than the objective determination of utilities on the part of consumers (Kunreuther et al., 1978a; Pashigian et al., 1966). Similarly, since major decisions such as the purchase of insurance or a home are made in the context of a larger set of decisions not analyzed by the researcher, it is possible that individual decisions may not fit the utility maximization model, but that the conjunction of all related decisions would fit this model. This suggests the difficulty of analyzing the home purchase decision, and particularly that aspect of it dealing with environmental uncertainties, apart from the rest of the

constraints and utilities of the household (Pashigian et al., 1966). Related to this issue is the empirical demonstration that the utility function and its functional form is affected by the context of the decision, and that this is particularly true where probabilities and outcomes are not known with certainty (Schoemaker and Kunreuther, 1979; Hershey and Schoemaker, 1980). The pervasiveness of the effects of context on risk-taking behavior imply that utility functions can only be constructed within a particular decision context, and possibly the attempt to derive a general utility function for decisions under uncertainty may be futile. In any case, such findings weaken the applicability of a *general* expected utility model to expectations concerning the response of homebuyers to disclosure of earthquake hazards information.

## THE IMPACTS OF INFORMATION ON ATTITUDES AND BEHAVIOR

An entirely separate perspective on information provision and behavior change has been developed within the fields of social psychology and communication. In these research efforts, one framework has been frequently used as at least a starting point for hypothesis testing. This model was developed as part of a research project on communication and persuasion within the Yale Communication Research Program (Hovland, Janis and Kelley, 1953; Hovland and Janis, 1959; Sherif and Hovland, 1961). In the general model, independent variables included *source factors* (such as the expertise of the source, its trustworthiness, its likability, its status, and its personal characteristics such as race and religion), *message factors* (the order in which arguments were presented, the effects of presenting one-sided versus two-sided arguments, the type of appeal [emotional, logical, informational versus insight, fear], and whether the message included an explicit or an implicit conclusion), and *audience factors* (its persuasibility,

its initial position with respect to the message, its level of intelligence, its level of self-esteem, and other personality characteristics). To assess the combined effects of source, message, and audience factors, responses (attitude change) were measured including changes of opinion, changes of perception, and changes in intentions or behavior. The effect of any message would be mediated by the extent to which it was attended to, comprehended, and accepted.

Some of the specific findings as applied to manipulative communication or persuasion can be summarized as a set of expectations concerning the likelihood that information will result in opinion or attitude change (Zimbardo and Ebbesen, 1970; McGuire, 1969). With respect to the source factors (in our study, the real estate agent), it is likely that there will be more impact if (1) the real estate agent has high credibility, a function of his expertise (the ability to provide knowledge on a given subject) and his trustworthiness (based on his motivation to present information without bias); (2) if the information and opinions he expresses are also shared by the audience (the homebuyers); and (3) the source demands some extreme opinion change (the greater the discrepancy between the communicator's and the recipient's initial positions, the greater the attitude change). Findings concerning message factors have been codified as a series of statements on "how to present the issues" if attitude change is desired. Attitude change is greatest when (1) if the audience is friendly, and the communicator's message is the only one to be presented, he presents only one side of the argument; (2) when the audience is initially unfriendly, and will hear the other side from someone else, he presents both sides of the issue; (3) two messages are presented, the last one has greater impact; (4) conclusions are explicitly stated rather than letting the audience draw their own conclusions; and (5) when intense fear arousal is present, recommendations for

action are made explicit and are possible. Audience factors also affect the success of a persuasive message. Specifically, the effectiveness of messages is (1) variable depending on the level of intelligence of the audience, (2) increased when the individual's self-esteem is low (individuals are more susceptible to persuasion and more easily influenced when they are of low rather than high self-esteem), and (3) increased when the message is presented actively, for example in a role-playing situation. In addition, group memberships affect the likelihood of the effectiveness of communication, since they may reinforce or counteract the new information.

Two major modifications of this research model have been proffered. McGuire (1968; 1969) has developed a two-factor model involving both the reception of the information and the "yielding" to what is understood. Because the audience must both understand and yield to the message, no linear predictions can be made about personality characteristics such as intelligence on the probability that information will be converted into attitude (and behavior) change; in this example, because highly intelligent people may more easily comprehend the message, but are more unwilling to yield to it, there may be no straight-line correlation between intelligence and response to a given message. In addition, McGuire suggested that persuasion involves five steps: attention, comprehension, yielding, retention, and action. Each of the latter steps depends on the successful completion of the previous steps, and it is important to note that several of the steps cannot be measured directly.

Fishbein and Ajzen (1975) have made major modifications in the model of persuasive communication in emphasizing (1) the beliefs and feelings about engaging in particular behaviors rather than their beliefs about particular objects (for example, it is less important to stress the homebuyer's attitudes to earthquakes than it is to investigate their attitudes towards

particular behaviors such as insurance purchase or cost bargaining in an earthquake-prone region), and (2) the specification of other variables which should be measured along with the attitude change under study to increase behavioral prediction, the effects of what they term "external beliefs" on the communication process. Non-attitudinal variables such as personal and social norms may influence behavior, and therefore must be incorporated into the model.

Despite these modifications, several studies have expressed concern that the logic of incorporating "other variables" into general models linking attitudes and behavior may be formidable (Schwartz and Tessler, 1972; Bentler and Speckart, 1979). Weigel (1979, p. 23) has summarized these concerns: "It seems reasonable to ask whether or not the attitude concept has become somewhat sterile in evolving from a concept representing a relatively stable underlying disposition capable of mediating a variety of object-related behaviors to a concept which seems to equate attitudes and actions under specified situational circumstances." The same author, however, has argued that some studies have shown that attitude measures can be used to predict behavior *patterns*, even if they fail to predict particular single behaviors (Weigel and Newman, 1976). Finally, Weigel (1979, pp. 33-34) summarizes the likelihood that exposure to new knowledge will influence subsequent behavior, assuming that the audience has attended to, retained and been persuaded by the new information, is a function of "(1) the degree to which behavior-relevant information is incorporated into the knowledge synthesis, (2) the degree to which the new knowledge is consistent with other attitudes and perceived as instrumental to the attainment of valued goals, and (3) the degree of institutional support . . . ".

IMPLICATIONS OF ATTITUDE-BEHAVIOR AND COMMUNICATION RESEARCH

The social psychology and communication research on persuasive messages suggests several expectations concerning the response of homebuyers to information about earthquake hazards zones. Responses of homebuyers should vary according to:

1. the credibility and trustworthiness of the real estate agent;
2. the correspondence between the information provided by the agent and the previous beliefs and attitudes of the homebuyers;
3. the method (timing and materials used) by which the message is presented;
4. the extent to which disclosure (a fear message) is presented with accompanying specific mitigation suggestions;
5. the extent to which the homebuyer can comprehend the significance of the disclosure;
6. the impacts of possible external attitudes and beliefs on the response such as the perceived lack of optional locations, or the belief that there is little an individual can do to prevent death, injury or damage from an "act of God," if "one's number is up;"
7. the degree to which the disclosure is consistent with other attitudes and perceived of as significant with respect to the attainment of goals such as safe and secure housing.

Although the notion of "expected utility" is not explicitly introduced in the work of psychologists and communications researchers, it can be seen that some of these formulations are a more detailed representation of the factors that comprise a given "utility," and others go further to anticipate the conditions which could interfere with the predictive abilities of a strict utility model.

Combining the two methods of analysis, we should expect the provision of information concerning the special studies zones to result in a change in behavior because first, individuals tend to optimize or at least "satisfice" in residential decision-making, and more information enables them to better evaluate their alternatives, and second, people tend to be risk-averse, responding to the introduction of information concerning hazards with avoidance or mitigation. The extent to which such information is *not* converted into a behavioral response will be a function of (1) the impacts of a multidimensional stimulus (housing purchase) on the utility calculation for a single element (special studies zones location), (2) the possible underestimation of low-probability events, (3) the interference of the so-called gambler's fallacy, (4) the inability to estimate probabilities and therefore compute expected utility because of the lack of clarity of the information presented, (5) characteristics of the source of information interfering with the degree to which it is attended to, comprehended and accepted, (6) characteristics of the message itself--its presentation format and the accompaniment of specific mitigation suggestions, (7) characteristics of the homebuyer--for example, the degree to which they can be persuaded of the importance of the message, (8) the possible irrelevance of the information to the decision at hand, and (9) the possible inappropriateness of behavioral-level modeling--the constraints placed on the individual by the political-economic system may make response impossible in any case.

Experiments in social psychology raise another generalization which may apply to the response of homebuyers to disclosure: that of passivity. It has been proposed that a state of "learned helplessness" results if one "is led to believe that there is no relationship between . . . behavior and outcomes" (Wortman and Brehm, 1975, p. 305). Experimenters have not as yet specified the exact types of conditions which create helplessness. However,

it is possible to extend these experiments to the experience of homebuyers constrained to locate in an earthquake-prone region, who have been led to believe that earthquake damage is unpredictable and uncontrollable. In this case, when homebuyers are led to believe that there is little they as individuals can do to ameliorate the threat from earthquake hazards, they may respond by a state of helplessness, identified "by an absence of incentives for initiating strategies designed to escape from aversive outcomes" (Wortman and Brehm, 1975, p. 292; Miller and Seligman, 1973).

In addition to the more general, theoretical studies, empirical research has shown that the adoption of mitigation measures following the provision of information takes place only under the best of conditions. As Baumann (1980, p. 3) has put it, "It doesn't necessarily follow that because information is given, that it is received, because education is provided that there is learning, nor does it follow that even if a public *is* informed of a risk and *does* know what to do, that it therefore *will* do what it knows it could or should do." A survey of literature linking information programs with the adoption of mitigation measures concludes that nine conditions must obtain: first, the information should be made personal to the adoptor; second, information on risks associated with the hazards and costs and benefits of mitigation should be as specific as possible; third, information should be clear and unambiguous; fourth, information should prescribe precise appropriate measures to cope with the hazard; fifth, information should originate from a credible source; sixth, local social reinforcement of the information should be present; seventh, several different media should be used for information dissemination; eighth, fear appeal or positive action appeal should be used appropriately based on an understanding of the intended audience; and last, previous attitudes, values and beliefs of the audience should be considered when designing the message (Baumann, 1980).

But even if all of the above conditions are present, adjustments to natural hazards may still not take place because of the low priority attached to them. Saarinen (1979) has argued, for example, that if hazards are assigned a low priority, then there will be few mitigation measures adopted even by the very well-informed individual. For the Alquist-Priolo mandated disclosure program to result in measurable effects, seismic safety would have to rank at least moderately high in the priority schema of residents; yet studies by Wyner and Mann (1978) and Saarinen and McPherson (1977) suggest that such placement of seismic safety by California community leaders and residents was not evident. All of these findings suggest that even under the best of conditions, it was unlikely that mandated disclosure would result in significant measurable effects.

Finally, social psychological experiments provide theoretical background for the responses of real estate agents to the fact that disclosure is mandated rather than voluntary. It has been proposed that when an individual's freedom to behave in precisely the way he chooses becomes threatened, the individual will try to restore his freedom (Brehm, 1966; 1972). This tendency is called "reactance," and the theory surrounding this concept makes specific predictions about how people evaluate that which is forced on them, and how behavior as well as state of mind are affected (Wortman and Brehm, 1975). When the individual is forced to behave in a way which he would ordinarily choose to avoid, reactance theory proposes that the individual will attempt to restore the behavior by implication or at the very least harbor hostile and aggressive feelings towards the agency responsible for restricting behavioral freedom. If such generalizations apply to the behavior of real estate agents, we might expect that they would attempt to evade the disclosure requirement by subverting the intention of the legislation, and should harbor resentments against the governmental agencies responsible for the legislation.

Other social psychologists have described a reluctance to transmit bad news, or what is called the "MUM effect" (Tesser and Rosen, 1975). This effect, which has been demonstrated to be a pervasive and systematic bias in communication, implies that "good news tends to be communicated more frequently, more quickly, more fully, and more spontaneously than bad news" (Tesser and Rosen, 1975, p. 228). In the example of disclosure of negative environmental information about the property, even putting aside the other motivations of the real estate agents for consummating the sale, the MUM effect should further reduce the willingness to make a full and accurate disclosure.

## Part III. DESIGN OF THE EMPIRICAL STUDY

### MEASURABLE RESPONSES TO DISCLOSURE

In order to assess the existence of a behavioral response to the disclosure of special studies zones locations, it is necessary to postulate a range of possible actions which prospective buyers might take. The empirical study could then test to see if any of these responses were present to assess the impacts of the disclosure on buyer behavior.

There were two major ways in which homebuyers could respond to the disclosure that the property they were considering purchasing was located in a special studies zone which would indicate an awareness that this message connoted increased risk of financial or personal losses or damage. The first would involve the avoidance of the area--either through a refusal to buy within the special studies zone, or the insistence of a compensation within the selling price which would act as a kind of incentive to assume the increased risk of property damage in exchange for a lower sales price. If homebuyers choose this type of response, the researcher should find evidence of this response in (1) the testimony of recent homebuyers *within*

the special studies zones--such buyers should have responded to disclosure by seeking to negotiate more favorable sales terms, (2) the testimony of recent homebuyers *outside* the special studies zones--here one should find homebuyers who had considered houses within the special studies zones, but were dissuaded by the disclosure, (3) testimony of real estate agents actively selling houses within the special studies zones (either their own listings or those of other agents)--these agents should be able to indicate the approximate numbers of clients who had been dissuaded from purchasing houses within the special studies zones by the disclosure, (4) relative length of time the house was on the market and the relative listing to selling price--houses in the special studies zones should be more difficult to sell and therefore should be on the market for a longer average period of time; in addition, there should be more discrepancy between listing and selling price since there would be more latitude for seller-buyer negotiation (although this effect might be quickly eliminated as real estate agents appraising the likely possible selling price would adjust to known market conditions), (5) house price trends--*ceteris parabis*, houses within the special studies zones should command lower selling prices than those in comparable neighborhoods outside the zones.

A second form of response would be the purchase of the special studies zone home, but subsequent mitigation measures to attempt to minimize losses from fault rupture. The decision to take mitigation measures would be comparable to the more general decision to purchase insurance discussed in the review of economics research on response to uncertainty. According to the expected utility model, the homebuyer should be expected to expend a certain portion of his income on insurance in exchange for a guarantee of a minimum income level (a maximum possible loss): as Friedman and Savage (1948) have expressed it, if $\overline{I}$ is the actuarial value of alternative A, and I* is the

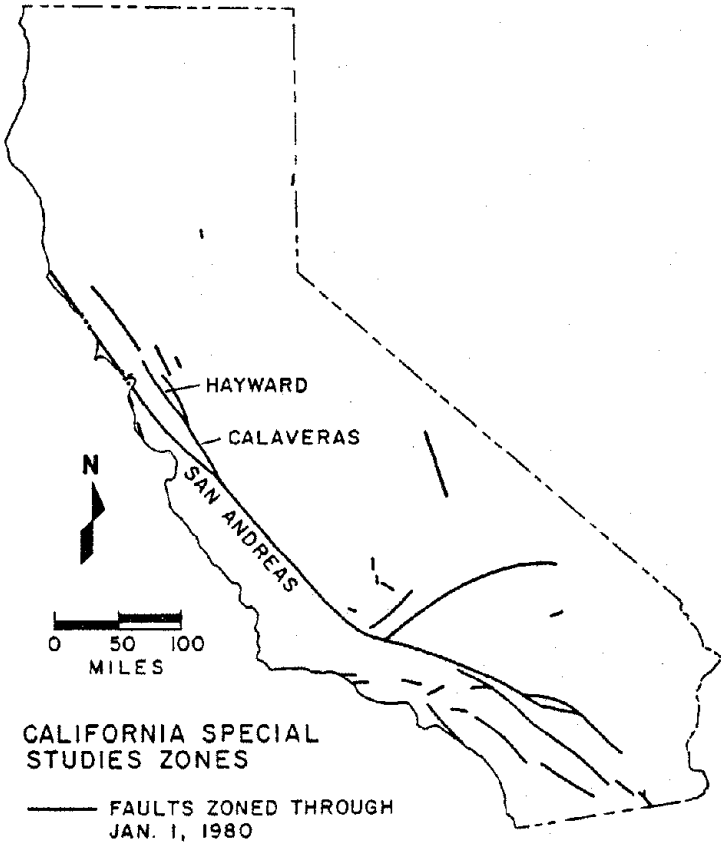
certain income that has the same utility as A, then the risk-averse consumer may be willing to pay a maximum of $\bar{I}$ - I* to insure the minimum I* income level. According to this model, the homebuyer should be willing to expend this amount in a combination of measures which would mitigate against major property losses.

Mitigation measures include everyday actions such as the possession of a working flashlight or battery radio as well as more formal and purposeful actions such as structural reinforcements on the house, the storage of food or water in preparation for a widespread disaster, institutional and family arrangements such as community contingency plans, plans for family reunions after an earthquake, plans for emergency procedures to be taken at the residence, and plans for neighborhood activities during and following the earthquake, or the purchase of earthquake insurance. Since a major study of the mitigation measures adopted by a random sample of Los Angeles County residents was available, covering the period immediately prior to the current study (Turner et al., 1979), it was possible to compare the responses of special studies zones residents in the Bay Area with a sample of the total population of Los Angeles. It would be expected that a survey sample limited to those residents of the special studies zones who had recently had a disclosure and comprehended the meaning of this information should have *higher rates* of adoptions of mitigation measures than the general Los Angeles population. If mitigation measures are taken by approximately the same or fewer special studies zones residents, then one would have to conclude that this index did not provide evidence of a measurable response to the disclosure.

Two California housing submarkets were selected for intensive study of disclosure practices and buyer responses. To make this selection, the range of communities covered by special studies zones in the state of California was first assessed (Figure 1). Although the zones themselves cover only a

Figure 1

California Special Studies Zones



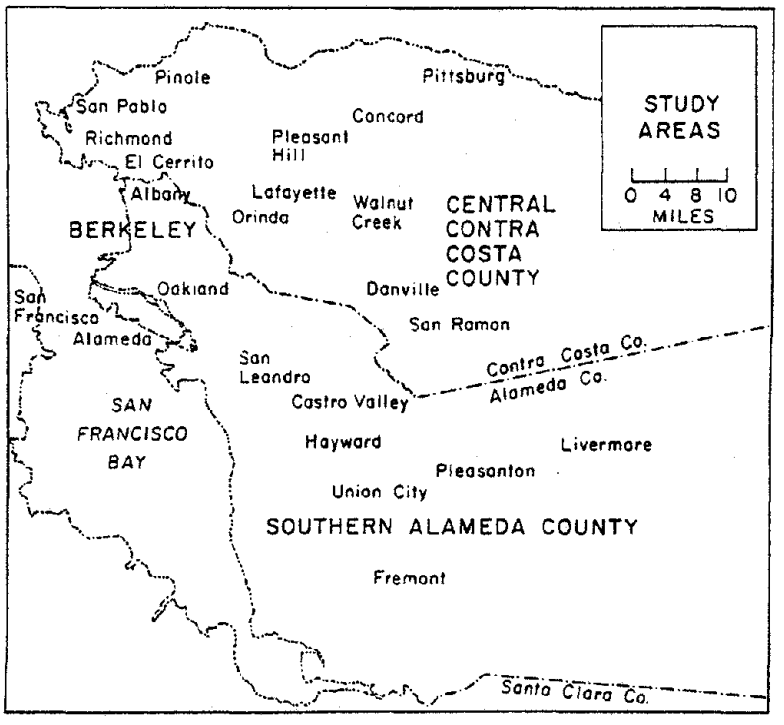
small portion of the residential property in the state, they are present in virtually every large metropolitan area. The zones include a wide range of property types and socioeconomic characteristics, from the relatively low-cost housing inhabited by a Hispanic population in San Fernando (near Los Angeles) and relatively low-cost housing in the distant San Francisco suburb of Antioch, to the relatively higher-cost housing of south Pasadena (near Los Angeles) and Portola Valley (near San Jose). The zones pass through smaller towns and cities such as Santa Rosa and Hollister, as well as major densely populated portions of Los Angeles and the San Francisco Bay Area. They include neighborhoods populated by whites, Hispanics, and blacks, and contain property with good views and high air quality as well as areas of dense development on flat land with poor air quality.

To select only two areas for intensive study (a selection necessitated by limitations in time and resources), it was decided to attempt to minimize contrasts in certain characteristics such as the ethnic composition of residents, socioeconomic status, regional culture, and extent of single-family dwellings in the area, which could confound the results in unpredictable ways. The two areas finally selected for surveys were the Boards of Realtors regions of Berkeley and central Contra Costa County (Figure 2). No claim is made that these areas are a representative sample of residences in all special studies zones in California; rather, the surveys and statistical analyses of these two areas should be interpreted merely as case studies of two housing submarkets which may differ markedly from other portions of California.

Both of the study areas are suburban to the city of San Francisco, although they have been established to constitute separate housing submarkets, with distinct price-attribute structures (Palm, 1976; 1979). The special studies zones within the study areas are generally inhabited by white, upper-middle class households, and housing is predominantly composed of single-family

Figure 2

Study Areas



detached dwellings. The areas differ in that they are located on different fault traces: Berkeley is on the Hayward fault (Figure 3) and central Contra Costa County contains several fault traces, most important of which is the Calaveras fault (Figure 4). These faults have had different activity, and there is more visible damage from fault creep to the retaining walls, houses, and curbs in Berkeley (Photo 1).

## ORGANIZATION OF THE STUDY

The study of the impacts of mandated disclosure on homebuyers and the housing market was divided into four portions: a monitored disclosure element, a survey of recent homebuyers, a survey of real estate agents active in special studies zones sales, and a study of house price trends within and adjacent to the special studies zones. An overview of these portions of the study is presented here, and the detailed findings will be discussed for each portion.

The monitored disclosure element was an attempt at constructing a "field laboratory" in which the stimulus--the timing and method of disclosure--could be somewhat controlled. The purpose of this portion of the study was to assess the effects of variations in methods of disclosure. Real estate agents were provided with far more detailed information on the nature of special studies zones than they were accustomed to using, and asked to distribute these materials at various points within the sales process. The survey team would later contact the homebuyers, to attempt to ascertain whether *ceteris parabis* the provision of additional information, or the provision of information at an earlier moment in the sales process might produce a different buyer response.

The survey of recent homebuyers was actually a set of three surveys. The first was a telephone survey of buyers who had purchased houses within

Figure 3
Special Studies Zone: Berkeley

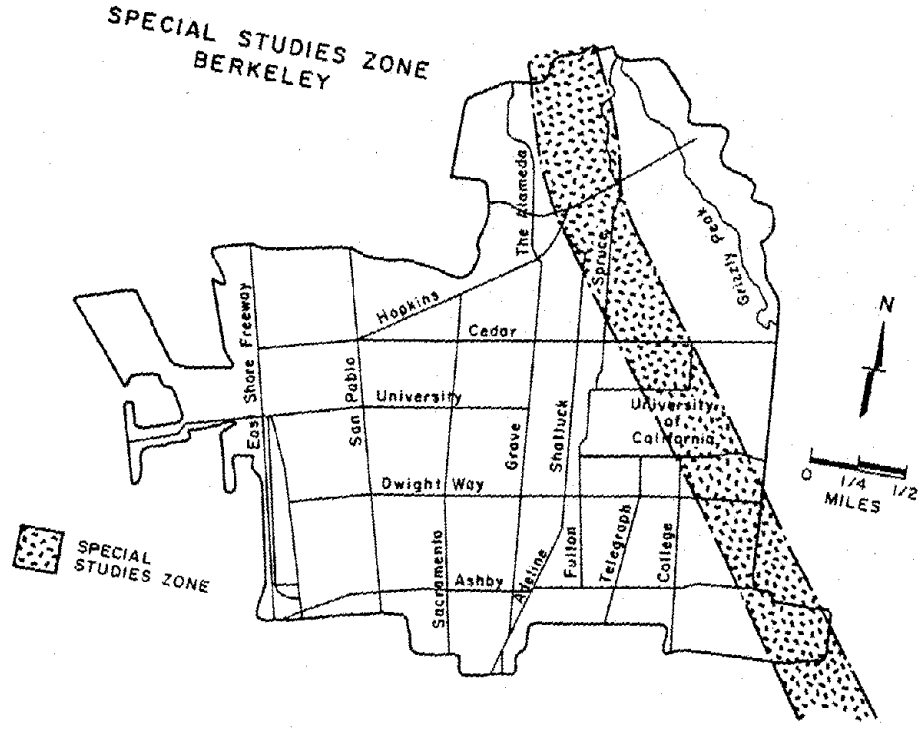


Figure 4

Special Studies Zone: Central Contra Costa County

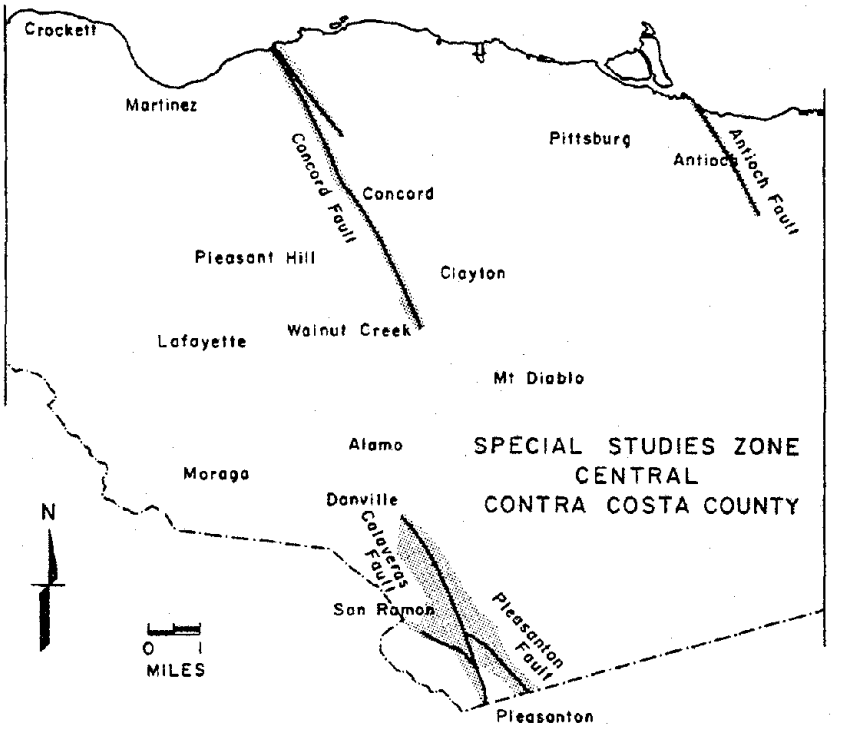


Photo 1

Damage to Berkeley House from Fault Creep

the special studies zones within the six months prior to being contacted for an interview. The purpose of this study was to find out (1) did the buyers recall a disclosure, (2) did the disclosure have any impact on their purchase behavior or search behavior, and (3) what were their attitudes towards earthquake hazards in general and the special studies zones in specific. A second survey was a comparable study of buyers who had purchased houses near but not actually within the special studies zones. It was assumed that these homebuyers might have different attitudes toward earthquake risk--be more concerned with location proximate to a fault trace than those within the zones, and they might have been told about the special studies zones when looking at other houses and responded by moving to an area outside the zone boundaries, because of greater concern with earthquake risks. This population was to provide a possible contrast to that which had moved to the special studies zones despite disclosure. A third survey was actually a re-survey by mail of those homebuyers who had responded to the first survey, and were aware of their locations within the special studies zones. Since it was obvious that disclosure had not deterred this population from purchasing a house within the zone, this survey was to ascertain whether disclosure had at least spurred these buyers to take other mitigation measures. The results of the third survey were to be compared with those of a similar survey of residents of Los Angeles County who had not been stratified by special studies zones locations, and who would be presumably less likely to take mitigation measures (because they had not systematically received a recent special studies zones disclosure).

The survey of real estate agents was conducted to attempt to monitor the methods currently used for disclosure, the extent to which the real estate agents understood what it was they were disclosing, and to ascertain the response of real estate agents to the legislation. It was hoped that a

matching of agent knowledge, methods, and attitudes with buyer responses might reveal something about the dynamics of decision-making, and provide guidelines for evaluation of the effectiveness of the legislation. This survey would be limited to those real estate agents actively selling real estate within the special studies zones to eliminate those persons simply holding licenses or those who could not be presumed to be familiar with the zones.

A fourth portion of the study was a hedonic price analysis. Using the kinds of data ordinarily used to appraise house prices in a multiple regression equation, the independent effects of location within a special studies zone on house prices were tested both before the disclosure legislation was in effect (in 1972) and after it was safely in place (in 1977). It was assumed that even a slight dampening of demand for houses within special studies zones caused by disclosures should be revealed in the 1977 equations.

In the next sections of this report, the detailed findings of these four portions of the study will be presented. This will be followed by general conclusions and recommendations based on the findings.

## Part IV. MONITORED DISCLOSURE: AN UNSUCCESSFUL FIELD EXPERIMENT

The objective of the monitored disclosure element was to differentiate and measure the effects of variations in both the method and the timing of disclosure on buyer search space. A single-page flyer and an illustrated brochure varied the amount of information presented. Times of disclosure varied from the initial agent-client meeting, showing of properties, signing of deposit receipt or offer to purchase, and closing of escrow. Following the completion of the sale, cooperating real estate agents were to report the names and addresses of persons to whom they had made a disclosure. These

buyers were to be interviewed to determine how and why they varied their search for houses in response to the study disclosure materials. It was hoped that some of the cooperating real estate agents would allow us to *observe* the special studies zones disclosures to assess if differences in timing or presentation affected buyer reaction to the earthquake fault location information.

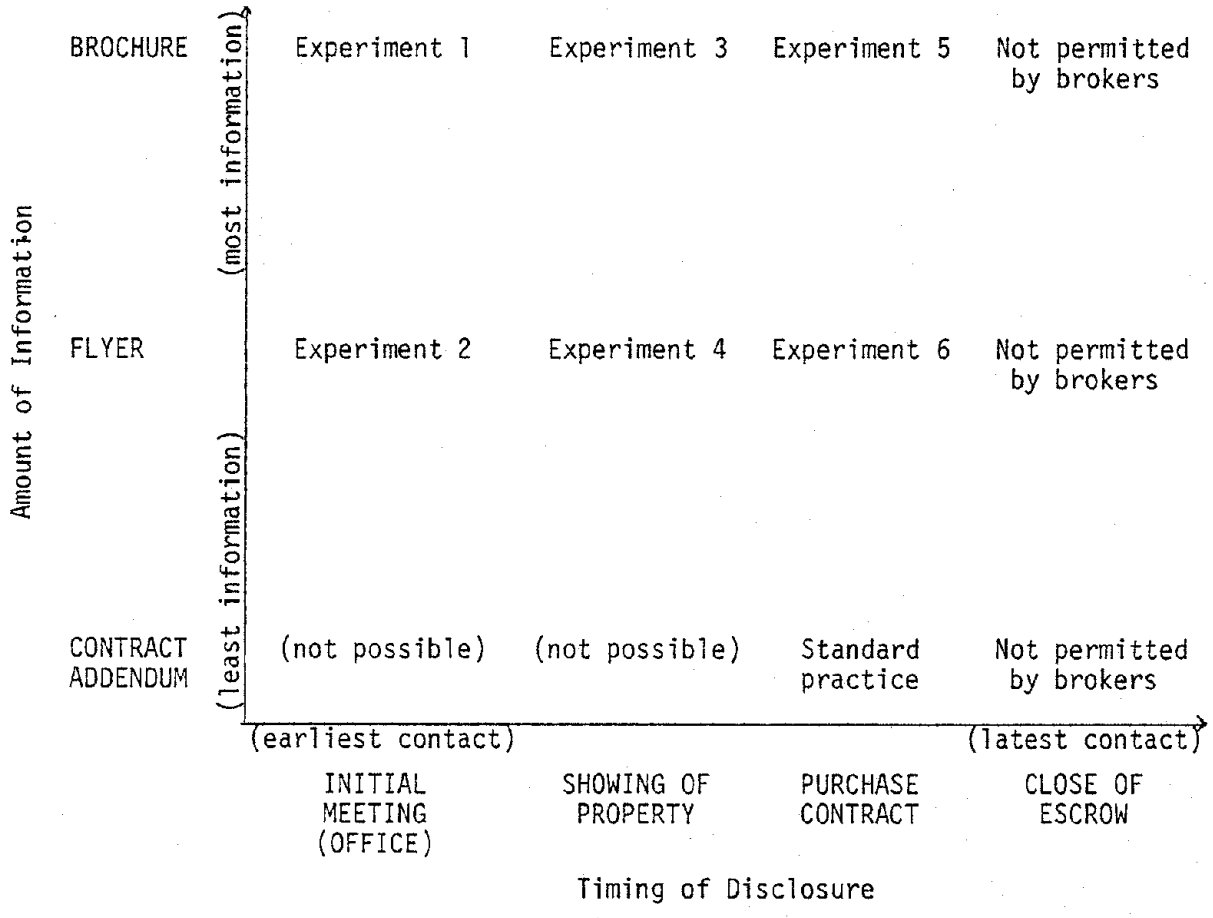
Securing cooperative real estate firms, sympathetic to the study's goals and willing to assist in achieving these goals, was the key ingredient for the success of the monitored disclosure study. It was also necessary to obtain individual agent's permission to accompany them during the sales process to observe their disclosures. Although the principal investigator had previously worked with some of the real estate firms in the Bay Area, it was apparent that much time would be required in researching the firms to find if they met study requirements for sales volume of properties in the special studies zones. To circumvent this lengthy process, Professor Wallace F. Smith (School of Business at the University of California, Berkeley) and Mr. Richard M. Betts (a real estate appraiser in Berkeley and Member of the Institute of Appraisers [MIA], Senior Real Property Appraiser Member of SREA, and member of the American Society of Appraisers [ASA]) recommended potentially cooperative firms that seemed best equipped to meet the study's requirements. Selection of firms was thus limited by these expert recommendations based on prior knowledge of agencies most likely to have a reasonable sales volume of properties in the special studies zones and a willingness to participate in a social research project.

## STUDY DESIGN

The simple nine-cell matrix shown in Figure 5 was conceived as the structural framework within which the study would evolve. The x-axis

Figure 5

Monitored Disclosure Plan



represents the time component, the y-axis represents the method of information presentation. Times designated as most likely for special studies zones disclosure to occur include pre-show, showing and contract signing. The pre-show period occurs early in the sales process when the agent introduces the client to the area and describes the characteristics of the location. The show period is the time when the agent is actively showing the client particular houses. This is often the time when the advantages of each property are discussed. At the time of contract signing (initialling the deposit receipt) the agent reviews in detail the advantages and disadvantages of the property. The client has already indicated a serious interest in a specific property and is ready to sign a deposit receipt (for earnest money) signifying his/her intent to purchase. The initialling of the deposit receipt, or the signing of the contract, is the traditional time in the real estate sales business when all the information relevant to the property exchange and pursuant to the sale is discussed.

The California Association of Realtors (CAR) has written a disclosure statement that legally satisfies legislative requirements and is usually included in the papers signed during the intent to purchase procedure. The use of the CAR form as a contract addendum is not possible prior to signing the offer to purchase. Use of any disclosure statement or information presentation at close of escrow is not practiced by real estate brokers and was not permitted by the cooperating Realtors for the purposes of our study. All of the cooperating Realtors also stipulated that they would continue to use either the CAR recommended disclosure statement or their agency's disclosure form at the time an offer to purchase was made. Information supplied homebuyers would supplement this procedure. These qualifiers reduced the research matrix to six operative cells.

Presentation of a single-page flyer (Figure 6) with the description of the hazards associated with surface faults in the Bay Area was the step in measuring the impacts of an increased amount of information on altering homebuyer search space or their decision to purchase. The study attempted to measure differences in homebuyer reaction to the flyer presented at the initial agent-client meeting (prior to home showing), at time of "showing" of properties, and in conjunction with making an offer to purchase and signing of the deposit recepit. An illustrated brochure with a map of the faults in the Bay Area and diagrams of potential fault damage further increased the amount of information and emotional impact of the disclosure. The goal for each of the study areas was to have at least five recent homebuyers, who had the study materials presented to them and agreed to be interviewed, in each of the remaining six functional cells of the conceptual matrix. Approximately two real estate agents per matrix cell were considered the number needed to generate the necessary homebuyer sample.

## RESULTS OF THE MONITORED DISCLOSURE PROGRAM

Forty-two agents from six of the eight real estate firms contacted in Berkeley agreed to participate in the monitored disclosure program. Following approval by the brokers, the study and its materials were introduced in training seminars conducted by the principal investigator and the research assistants. These meetings presented the overall goals of the study, the mechanics involved in achieving these objectives, and the nature of the experimental disclosure methods and materials. Although continuing telephone contact was maintained with the participating Berkeley agents, only two completed sales using the study materials were reported. This lack of data was due both to the relatively small number of sales within the special studies zones during the study period, and more importantly because of the apparent

Figure 6 Flyer

HOMEBUYING AND SPECIAL STUDIES ZONES

WHAT ARE THE ALQUIST-PRIOLO SPECIAL STUDIES ZONES?

Some of the homes you look at may be in the Alquist-Priolo Special Studies Zones. These zones are areas designated by the California State Geologist for mapping potentially active earthquake faults. The Special Studies Zones represent only one earthquake hazard - potential surface fault rupture. Other hazards associated with earthquakes include landslides and ground shaking. Location outside a Special Studies Zone is not a guarantee against damage to a home by an earthquake. Areas likely to have other forms of earthquake hazard than surface fault rupture have not been mapped and are not related to the Special Studies Zones.

WHAT DO SPECIAL STUDIES ZONES MEAN TO YOU AS A HOMEBUYER?

On property within the Special Studies Zones it is important to see if the home shows any prior damage from fault-related activity. Cracking in foundations, walls, and ceilings may result from fault creep - the tiny amount of sliding movement along a fault. Creep may also account for misalignment in curbs and streets.

HAS THERE BEEN RECENT MOVEMENT ALONG THE CONCORD FAULT?

An earthquake fault (a "potentially active surface fault") may have sudden ground movement during an earthquake. Sudden ground movements may occur every few years to several hundreds of years. In the past 200 years there has been no major earth movement along the Concord Fault. Tiny amounts of creep, however, have occurred along some sections of the fault.

HOW CAN YOU FIND OUT MORE ABOUT EARTHQUAKES AND SPECIAL STUDIES ZONES?

Information on properties in or near the Special Studies Zones is available from your city or county planning department. You should make your own inquiry or investigation regarding any particular property you are purchasing. Several helpful books of a general nature regarding California's earthquake hazards are:

Earthquake Country by Robert Iacopi

Lane Books, Menlo Park, California, 1978

Life Along the San Andreas Fault by John Fried

Saturday Review Press, New York, 1973

Peace of Mind in Earthquake Country by Peter Janev

Chronicle Books, San Francisco, 1974

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This information sheet was prepared by: The Institute of Behavioral Science
University of Colorado, Boulder
Boulder, Colorado 80309

reluctance of the agents to use the materials resulting in their "forgetting" to present them. A detailed report on the participation by individual companies is presented in Appendix 1.

In Contra Costa County, thirteen real estate agencies were asked to cooperate in the distribution of the study material. Although several firms showed an initial interest, and attended a meeting on the study organized by a particularly knowledgeable member of the board, none of the brokers agreed to participate in the monitored disclosure program. They indicated that they did not see their function, under the provision of the Alquist-Priolo Act, as providing earthquake hazard information or interpreting the meaning of the zones to clients.

Although the failed monitored disclosure did not generate substantive data, the interviews with brokers provided answers to unasked questions which assisted in more accurately analyzing the data from the other parts of the study. Brokers indicated that (1) realtors do not provide interpreted earthquake surface fault data to homebuyers; (2) real estate agents respond to client concerns about the dangers associated with the special studies zones by not showing properties in the zones; (3) clients are rarely concerned about locations of the special studies zones; (4) problems with clients and the special studies zones' locations are minimal; (5) Realtors are most comfortable referring questions on the special studies zones to municipal and county building or planning departments or to private consulting structural engineers or geologists; and (6) the use of the contract addendum (modeled more or less after the California Association of Realtors recommended form) at the signing of the deposit receipt is universal, although without legal stipulation or precedent.

The reluctance of Realtors to participate in this study refelects the highly competitive nature of their job with little flexibility to incorporate

a sales tactic which might jeopardize the sale's outcome. Real estate sales are predicated on the anticipation and removal of surprises. The study introduced an element that the agents thought was not adequately evaluated in terms of impacts on sales. Outright opposition to this element was most prevalent in Contra Costa County. While Berkeley agents appeared more amenable to using the materials, the eventual outcome--no data--meant that they, too, hesitated to actually distribute them. Closer working relations over a longer period of time might have alleviated the problem to some degree. It is interesting to note that the more structured survey of real estate agents in the two study areas reported later showed a significant portion of the agents commenting on the need for adequate, explanatory materials that they could provide homebuyers when discussing the Alquist-Priolo special studies zones. This ideal appears to have a disturbing tendency to clash with the reality of sales practices.

## Part V. THE SURVEY OF HOMEBUYERS

Surveys of recent homebuyers were undertaken throughout 1979. Homebuyers were identified for inclusion in the study by scanning the reports of real estate transfers in the legal newspapers serving the two study areas, the *Contra Costa News Register* and the *Inter-City Express* (Alameda County). All of those property transfers within the municipalities which included special studies zones over the period of August 1978 to January 1979 were considered as the initial study population. Each such listing associated with an existing dwelling (rather than vacant land) was checked to determine if it was *within* a special studies zone, in a *nearby and similar* area outside the special studies zone, or *more than three miles* from a special studies zone. In the case of Berkeley, the "nearby, similar neighborhood" was that adjacent but upslope from the special studies zone: the portion of the Berkeley hills east of the special studies zones both in north

Berkeley and in the Claremont district. In the case of the Contra Costa County study area, the nearby area was that part of San Ramon lying outside the special studies zone and those portions of Concord within three miles of the zones. In the subsequent discussion, the residents of the special studies zones are referred to as "inzone" or "within zone," and those in adjacent, similar neighborhoods are referred to as "adjacents." Households living more than three miles from a special studies zone were not surveyed. Each homebuyer to be surveyed was contacted by mail, and the nature of the survey was explained. Included in the cover letter was an explanation of the rights of study participants as human subjects, and the overall purpose of the study. Potential respondents were assured that information would be held confidential and reported only on an aggregated basis, and that interviewers would ask the respondents to share their "experiences in purchasing your present home, and the guidance provided you by the real estate agent." The cover letter included a postcard in which the respondent indicated permission for the interview and also days and times which were most convenient for a telephone interview. We next attempted to get telephone numbers for all identified homebuyers within and adjacent to the special studies zones. About 15 percent of the total sample (and up to 25 percent in certain districts) either had no telephone or had unlisted telephone numbers. This portion of the population was omitted from the survey, since they were not accessible for a telephone interview.

## THE RESULTS OF THE INZONE SURVEY OF HOMEBUYERS

Of 47 Berkeley buyers contacted within the special studies zones, 41 completed the permission and interview process, a response rate of 85.4 percent. Of 224 Contra Costa County buyers within the special studies zones contacted, 166 completed the permission and interview process, a response rate of 74.1 percent. Of the nonrespondents, most were the result of disconnected telephones, wrong telephone numbers, or the fact that the buyer had

already moved again by the time we attempted to contact them. There were only 12 outright refusals in Contra Costa County and four in Berkeley. The questionnaire was pretested in face-to-face interviews with special studies zones residents of San Ramon (in central Contra Costa County), revised, and pretested again in telephone interviews with San Ramon residents (Appendix 2). The following discussion will summarize the results of the telephone survey of residents of the special studies zones, and then report significant cross-tabulations of the variables.

Of the 207 special studies zones respondents from the two study areas, 70 percent had previously owned homes before moving to the present house. Over 80 percent had lived in California for more than a year, and almost half had lived there for ten years or more.

When asked to state the advantages which "make this a good place to live," respondents most frequently cited climate (31 percent), culture of the area (20 percent), a rural atmosphere (31 percent) and general access to the city of San Francisco (20 percent). The primary disadvantage was the long commuting distance (24 percent) (Table 1). Only three respondents (1.4 percent) volunteered that earthquake risk was a disadvantage of living in the area.

Table 1

Selected responses to the question, "What are some of the advantages/disadvantages of living in Berkeley/Contra Costa County?"

| | Berkeley | Contra Costa County | Overall Number | Overall Percentage |
|---|---|---|---|---|
| Advantages | | | | |
| Climate | 11 (26.8%) | 53 (31.9%) | 64 | 31 |
| Rural atmosphere | 1 (2.4%) | 64 (38.6%) | 65 | 31 |
| Access to San Francisco | 11 (26.8%) | 31 (18.7%) | 42 | 20 |
| Cultural characteristics of the area | 31 (75.6%) | 11 (6.6%) | 42 | 20 |
| Physical beauty of the area | 9 (22.0%) | 21 (12.7%) | 30 | 15 |
| Quality of the school system | 2 (4.9%) | 28 (16.9%) | 30 | 15 |
| Recreation opportunities | 2 (4.9%) | 10 (6.0%) | 12 | 6 |
| Disadvantages | | | | |
| Commuting distance | 10 (24.4%) | 39 (23.5%) | 49 | 24 |

A structured list of 15 factors which might have influenced the purchase decision elicited similar responses in the two study areas. Homebuyers in both areas considered price, investment potential or resale value, number of bedrooms (size), and view to be of primary importance (Table 2); of least importance were such physical environmental factors as air quality, location out of a floodplain or distance from an active earthquake fault. In addition, proximity to a BART (rapid transit) station was rarely considered in the location decision.

Table 2

Rate each of the following factors according to its importance with respect to your decision to buy your home. (presented in order of importance to buyers)

| Factor | | Very Important | Somewhat Important | Not Important | Did Not Consider | Chi square (significance) |
|---|---|---|---|---|---|---|
| Investment potential or resale | B | 25 | 9 | 4 | 1 | 10.32 |
| | CC | 131 | 22 | 3 | 1 | (.016) |
| Price | B | 23 | 15 | 1 | 0 | 1.05 |
| | CC | 110 | 50 | 6 | 0 | (.591) |
| Beauty of the area | B | 24 | 13 | 1 | 1 | 1.62 |
| | CC | 82 | 57 | 6 | 1 | (.655) |
| Number of bedrooms | B | 18 | 13 | 6 | 2 | 9.21 |
| | CC | 71 | 70 | 25 | 0 | (.027) |
| Views | B | 15 | 21 | 2 | 1 | 4.25 |
| | CC | 53 | 83 | 26 | 1 | (.236) |
| Distance to work | B | 13 | 17 | 7 | 2 | .758 |
| | CC | 56 | 62 | 39 | 9 | (.859) |
| Social composition of neighborhood | B | 11 | 20 | 5 | 2 | .95 |
| | CC | 49 | 74 | 31 | 12 | (.813) |
| Reputation of crime rate in neighborhood | B | 11 | 15 | 5 | 8 | 5.65 |
| | CC | 51 | 71 | 30 | 13 | (.129) |
| Air quality | B | 5 | 13 | 9 | 12 | 8.88 |
| | CC | 57 | 53 | 29 | 27 | (.031) |
| Quality of local public schools | B | 5 | 10 | 14 | 10 | 8.11 |
| | CC | 59 | 37 | 38 | 32 | (.044) |
| Closeness to schools | B | 7 | 8 | 17 | 7 | 4.32 |
| | CC | 49 | 40 | 46 | 31 | (.229) |
| Closeness to friends or relatives | B | 11 | 12 | 10 | 6 | |
| | CC | 16 | 45 | 64 | 21 | |
| Access to public transportation | B | 2 | 10 | 13 | 14 | 4.48 |
| | CC | 13 | 26 | 81 | 46 | (.215) |
| Distance from an active earthquake fault | B | 2 | 6 | 20 | 11 | 3.00 |
| | CC | 14 | 23 | 63 | 66 | (.391) |
| Location out of a floodplain | B | 0 | 4 | 8 | 27 | 10.99 |
| | CC | 21 | 35 | 36 | 73 | (.011) |

The attitudes of the respondents towards the significance of distance from an active surface fault did not vary according to location in Berkeley or Contra Costa County. However, it was dramatically affected by the length of time the respondent had lived in the Bay Area (Table 3). In general, the longer the respondent had lived in the Bay Area, the *less* likely he was to consider distance from a fault as a significant variable in the selection of a residence.

Table 3

Cross-tabulation of length of time lived in the Bay Area and attitude toward distance from a fault as affecting house selection

Significance of distance from fault trace in purchase decision:

| Length of Previous Residence in the Bay Area | Very Important | Somewhat Important | Not Important | Did Not Consider |
|---|---|---|---|---|
| 1 year or less | 5 | 9 | 8 | 5 |
| 1-5 years | 1 | 3 | 10 | 7 |
| 6 or more years | 4 | 13 | 31 | 42 |

Chi square = 15.756 Significance = .015

Most of the homebuyers had found their home in a relatively short period of time. About 40 percent spent only two weeks searching for their homes, and only a fourth indicated that they had spent more than 90 days looking at houses (Table 4). About one-fifth of the buyers purchased a home after inspecting only five houses, though another fifth personally looked at more than 35 houses before making the purchase decision.

Table 4

Time and Effort Spent in House Search

| Number of Days Spent in Search | Cumulative Percentage of Buyers | Number of Homes Personally Inspected | Percentage of Buyers |
|---|---|---|---|
| 1-7 | 31.2 | None | 4.4 |
| 8-14 | 39.6 | 1 | 2.0 |
| 15-21 | 41.6 | 2 | 4.4 |
| 22-30 | 51.5 | 3 | 3.9 |
| 31-60 | 65.3 | 4 | 3.4 |
| 61-90 | 72.8 | 5-10 | 15.9 |
| 91-120 | 77.7 | 11-20 | 27.5 |
| | | 21-30 | 14.3 |
| | | over 30 | 24.0 |

Most (88 percent) were satisfied that they had enough time to become thoroughly acquainted with the housing market before buying their present home.

The purpose of the next set of questions was to assess whether or not the buyers within the special studies zones were aware of their location. The sorting questions were asked sequentially: "Have you ever heard the term 'special studies zone' *or* 'Alquist-Priolo zone'?", then "As far as you know, is your home located in a specially designated floodplain or earthquake prone area as defined by state or federal laws?", then "Do you recall the real estate agent providing you with a form or an addendum to the contract indicating anything special or particular about the location of the house?". One could assume that if all three questions were answered negatively, the respondents were not aware they were in a special studies zone and had no recollection of a disclosure.

Of the 207 respondents, only 79 answered that they had heard the term special studies zone. This awareness differed sharply by study area, with Berkeley homebuyers far more likely to be aware of the term and its meaning than those in central Contra Costa County (Table 5).

Table 5

Question: Have you ever heard the term "special studies zone" or "Alquist-Priolo Zone?"

| | Yes | No |
|---|---|---|
| Berkeley | 34 | 7 |
| Contra Costa | 45 | 120 |

Corrected chi square = 40.70 Significance = .000

Of those who recalled the term, most (72 percent) indicated that they first learned of the existence of the special studies zones from a real estate agent. Although about 40 percent learned about special studies zones before they started looking for their house, one-fourth (16 people) learned about the zones only after they had already decided on the purchase of their home.

The most frequent methods used for the disclosure were the contract addendum (recalled by 28 respondents) and the board of Realtors map (recalled by 11 respondents).

The total number of homebuyers who were aware their house was in a special studies zone (through the three branches of questions) was 94 (45.4 percent of the total). The likelihood of such an understanding of location was related both to the location and the education of the buyers. On a percentage basis, Berkeley homebuyers were far more likely to be aware that their home was in a special studies zone than were Contra Costa residents (Table 6).

Table 6

Relationship between Location and Special Studies Zone Awareness

| | Berkeley | Central Contra Costa County |
|---|---|---|
| Knew their home was in a special studies zone | 35 | 59 |
| Did not know home was in a special studies zone | 3 | 93 |

Corrected chi square = 32.4 Significance = .000

Similarly, those with a higher educational completion were also more likely to be aware of the special studies zone location (Table 7).

Table 7

Relationship between Education and Awareness of Special Studies Zone Location

| | Knew their home was in special studies zone | Did not know home was in special studies zone |
|---|---|---|
| Less than 12 years of school completed | 13 | 31 |
| 12-16 years of school completed | 41 | 48 |
| More than 16 years of school completed | 40 | 17 |

Chi square = 17.2 Significance = .000

Knowledge that their home was in a special studies zone was not related, however, to attitudes to living close to active fault traces. When the

rating of the importance of "distance from an active surface fault" was cross-tabulated with awareness of location within the special studies zone, no significant relationship could be discerned (Table 8).

Table 8

Cross-tabulation of Attitude toward Proximity to Surface Fault and Knowledge that House Is within Special Studies Zone

| | Importance of Proximity to Active Earthquake Fault in Purchase Decision | | | |
|---|---|---|---|---|
| | Very Important | Somewhat Important | Not Important | Did Not Consider |
| Knew home was in special studies zone | 7 | 14 | 42 | 29 |
| Did not know home was in special studies zone | 6 | 12 | 34 | 44 |

Chi square = 4.07 Significance = .254

Of those aware they were located in a special studies zone, most (54.6 percent) indicated that people who live in the zones are either less susceptible to losses or not any different in susceptibility to losses due to earthquakes than those who live elsewhere in the zones (Table 9).

Table 9

Question asked of those who were aware they were located within a special studies zone:

To what degree are people who live in special studies zones more susceptible to losses from earthquakes compared to those who live elsewhere in the Bay Area?

| | Number | Adjusted Frequency (Percentage) |
|---|---|---|
| More susceptible | 28 | 28.9 |
| Less susceptible | 3 | 3.1 |
| No difference | 49 | 50.5 |
| Don't know | 17 | 17.5 |

Previous experience with earthquake damage did not affect this attitude: those with earthquake experience were no more likely to feel that people living in special studies zones are more susceptible to losses (Table 10).

Table 10

Cross-tabulation of Earthquake Experiences with Perceived Susceptibility to Losses within Special Studies Zones

Have you ever experienced a major earthquake?

| | | Yes | No |
|---|---|---|---|
| Are people in special studies zones more susceptible to losses? | More | 18 | 7 |
| | Less or no difference | 43 | 7 |

Corrected chi square = 1.328 significance = .249

Most (88.4 percent) felt that location within the special studies zone would make no difference in the price of the house or the ability to sell it when it came time to move again; only five felt the price would be negatively affected, and three felt it would be more difficult to sell the house (Table 11).

Table 11

Question asked of those who were aware they were located within a special studies zone:

Do you think that being in a special studies zone will affect the price of your house or your ability to sell it when you decide to move?

| | Number | Percentage |
|---|---|---|
| No | 76 | 88.4 |
| Yes | 10 | 11.6 |

When asked whether the location of the special studies zone made any difference in their decision to buy this particular house, 19 respondents indicated that it had, but of these 14 indicated that their initial reluctance had been compensated for by further discussion and consideration. Only three attempted to avoid the area in their search, and only one tried to use the special studies zone location to bargain for a lower price.

Most respondents had learned of the existence of special studies zones from real estate agents (59 respondents) (Table 12). About half (51) learned of the existence of special studies zones before starting to look for this house, and another one-fourth (28) learned during the time they were looking.

The remainder learned of the existence of special studies zones after they had decided on their home or even later.

Table 12

For those who were aware they were located within a special studies zone, how and when in the search process they learned of the existence of special studies zones.

| HOW | Number | Percentage |
|---|---|---|
| Real estate agent | 59 | 57.3 |
| Friend/associate | 10 | 9.7 |
| Neighbor | 1 | 1.0 |
| Newspaper story | 8 | 7.8 |
| Related business | 9 | 8.7 |

| WHEN | Number | Percentage |
|---|---|---|
| Before started looking for this house | 51 | 49.0 |
| During the time respondent was looking for a house | 28 | 26.9 |
| After already decided on home but before moved in | 22 | 21.2 |

Of those who learned of special studies zones from the real estate agent, most recalled the use of a contract addendum (45). Others indicated written explanations explaining earthquake hazards (six), the provision of engineer's or geological reports (four), the use of county or city planning maps (four), the use of a board of Realtors map of the area (18), and the use of the Multiple Listing Service book with the designation that the property was in the special studies zone (five).

All of the homeowners within the special studies zones, whether aware of their location or not, were asked about their subscription to earthquake insurance, and about the probabilities of and responses to major earthquakes. Of the 207 homeowners, only 18 (8.7 percent) indicated that they had earthquake insurance, although 52 (29.3 percent) indicated that a major earthquake

will definitely or probably occur in the area while they are living there. Those who believe that a major earthquake is likely to occur while they are living in their present house are no more likely to purchase earthquake insurance (Table 13).

Table 13

Cross-tabulation of Belief of Likelihood of Major Earthquake Occurrence while Living in Present House with Purchase of Earthquake Insurance

| Do you have earthquake insurance? | Is a major earthquake likely to occur while you are living here? | | | | | | |
|---|---|---|---|---|---|---|---|
| | Definitely | Probably | Possibly | Don't know | Don't think so | Probably not | No |
| Yes | 2 | 3 | 1 | 2 | 0 | 3 | 7 |
| No | 6 | 38 | 24 | 11 | 28 | 23 | 45 |

Somer's D with insurance as dependent variable = -.08

Similarly, those who had experienced a "major earthquake" (as defined by the respondent) were no more likely to purchase insurance than those who did not have earthquake experience (Table 14).

Table 14

Cross-tabulation of Earthquake Experience with Insurance Purchase

| | Have experienced a "major earthquake" | Have not experienced a "major earthquake" |
|---|---|---|
| Purchased earthquake insurance | 15 | 3 |
| Have not purchased earthquake insurance | 127 | 27 |

Corrected chi square = .056 Significance = .813

Those who felt that people living in special studies zones were more susceptible to losses than those living elsewhere in the Bay Area too were no more likely to purchase earthquake insurance (Table 15).

Table 15

Cross-tabulation of Beliefs Concerning Losses Associated with Special Studies Zones Residence and the Purchase of Earthquake Insurance

| | Believe that special studies zones residence is associated with greater susceptibility to losses | Believe that special studies zones residence makes no difference or less susceptibility to earthquake losses |
|---|---|---|
| Purchased earthquake insurance | 5 | 9 |
| Did not purchase earthquake insurance | 22 | 38 |

Corrected chi square = .058 Significance = .809

However, those aware of their location within a special studies zone were more likely to have purchased insurance than those not aware of their location (Table 16). This is a particularly important finding, since although the purchase of earthquake insurance is a relative rarity, it does seem to be related to the awareness of proximity to an active fault trace.

Table 16

Cross-tabulation of Awareness of Home within a Special Studies Zone and the Purchase of Earthquake Insurance

| Awareness of special studies zone location | Earthquake Insurance Yes | No |
|---|---|---|
| Yes | 14 | 73 |
| No | 2 | 88 |

Corrected chi square = 8.73 Significance = .003

When asked what response they would take if they were warned that a major earthquake would occur in the next month, almost half said they would buy earthquake insurance (96 of 207), and a third said they would attempt to secure their personal property. Few (only three) responded by saying that they would attempt to sell their house. Finally, almost half indicated that they feel there is nothing that either the government or people in the community can do to lessen damage from an earthquake (85 of 207). Of those who

did feel that mitigation measures were possible, the most frequent responses were better building codes (18.4 percent), community education (12.1 percent) and civil defense-type emergency preparedness (9.7 percent).

## RESULTS OF THE SURVEY OF BUYERS IN NEARBY AREAS

Because the research team felt that the attitudes of recent homebuyers within the special studies zones might not represent general attitudes in the study areas, it was decided that recent homebuyers in nearby neighborhoods, similar in social and economic composition, but lying outside the special studies zones would also be interviewed. As indicated earlier, these residents were identified by (1) scanning the listings of real estate transfers in the legal newspapers serving the study areas, (2) selecting homebuyers outside but within three miles of the special studies zones, (3) checking for telephone numbers, and then (4) contacting the remaining list by mail to introduce the nature of the survey. From an original list of 49 recent buyers in "adjacent" Contra Costa neighborhoods, and 51 such buyers in Berkeley neighborhoods, 77 interviews were completed, 36 in Contra Costa County and 41 in Berkeley, an overall response rate of 77 percent. The questionnaire for this survey was somewhat shorter and less complex than that for the within special studies zones buyers (Appendix 3), because only direct comparisons on particular attitudes and experiences were being sought.

When asked the unstructured question about the advantages and disadvantages of living in Berkeley or Contra Costa County, these homebuyers mentioned a similar set of items. Most frequently mentioned as an advantage was climate (37.7 percent), the cultural characteristics of the are (41.6 percent), the rural atmosphere (23.4 percent), and recreation opportunities (24.7 percent). The primary disadvantage, again, was the commuting distance (mentioned by 27.3 percent). Earthquake hazards were mentioned as a disadvantage only by three respondents (3.9 percent),

The structured question, asking recent homebuyers to rank a listing of factors as very important, somewhat important, not important or did not consider, elicited similar responses to those observed in the survey of special studies zones residents (Table 17).

Table 17

Rate each of the following factors according to its importance with respect to your decision to buy your home.

BERKELEY

| Factor | | Very Important | Somewhat Important | Not Important | Did Not Consider | Chi Square (Significant at .05?) |
|---|---|---|---|---|---|---|
| Investment potential or resale | Inzone | 25 | 9 | 4 | 1 | 7.76 |
| | Adjacent | 36 | 4 | 1 | 0 | (yes) |
| Price | Inzone | 23 | 15 | 1 | 0 | 4.73 |
| | Adjacent | 29 | 10 | 2 | 0 | (no) |
| Beauty of the area | Inzone | 24 | 13 | 1 | 1 | 1.33 |
| | Adjacent | 20 | 17 | 4 | 0 | (no) |
| Number of bedrooms | Inzone | 18 | 13 | 6 | 2 | 1.93 |
| | Adjacent | 16 | 20 | 5 | 0 | (no) |
| Views | Inzone | 15 | 21 | 2 | 1 | 14.67 |
| | Adjacent | 6 | 17 | 12 | 6 | (yes) |
| Distance to work | Inzone | 13 | 17 | 7 | 2 | 2.08 |
| | Adjacent | 15 | 20 | 5 | 1 | (no) |
| Social composition of neighborhood | Inzone | 11 | 20 | 5 | 2 | 0.41 |
| | Adjacent | 11 | 19 | 8 | 3 | (no) |
| Reputation of crime rate in neighborhood | Inzone | 11 | 15 | 5 | 8 | 3.90 |
| | Adjacent | 13 | 17 | 8 | 3 | (no) |
| Air quality | Inzone | 5 | 13 | 9 | 12 | 3.48 |
| | Adjacent | 10 | 17 | 6 | 8 | (no) |
| Quality of local public schools | Inzone | 5 | 10 | 14 | 10 | 3.70 |
| | Adjacent | 10 | 13 | 9 | 9 | (no) |
| Closeness to friends/ relatives | Inzone | 11 | 12 | 10 | 6 | 1.92 |
| | Adjacent | 10 | 9 | 13 | 9 | (no) |
| Closeness to schools | Inzone | 7 | 8 | 17 | 7 | 6.11 |
| | Adjacent | 12 | 11 | 7 | 11 | (no) |
| Access to public transportation | Inzone | 2 | 10 | 13 | 14 | 9.66 |
| | Adjacent | 8 | 10 | 19 | 4 | (yes) |
| Distance from active earthquake fault | Inzone | 2 | 6 | 20 | 11 | 7.94 |
| | Adjacent | 2 | 5 | 10 | 24 | (yes) |
| Location out of a floodplain | Inzone | 0 | 4 | 8 | 27 | 5.27 |
| | Adjacent | 5 | 4 | 13 | 19 | (no) |

Table 17 (continued)

CONTRA COSTA COUNTY

| Factor | | Very Important | Somewhat Important | Not Important | Did Not Consider | Chi Square (Significant at .05?) |
|---|---|---|---|---|---|---|
| Investment potential or resale | Inzone | 131 | 22 | 3 | 1 | 3.56 |
| | Adjacent | 24 | 9 | 1 | 1 | (no) |
| Price | Inzone | 110 | 50 | 6 | 0 | 4.25 |
| | Adjacent | 22 | 10 | 0 | 3 | (no) |
| Beauty of the area | Inzone | 82 | 57 | 6 | 1 | 5.73 |
| | Adjacent | 27 | 8 | 0 | 0 | (no) |
| Number of bedrooms | Inzone | 71 | 70 | 25 | 0 | 2.93 |
| | Adjacent | 14 | 18 | 2 | 1 | (no) |
| Views | Inzone | 53 | 83 | 26 | 1 | 12.20 |
| | Adjacent | 22 | 9 | 3 | 1 | (yes) |
| Distance to work | Inzone | 56 | 62 | 39 | 9 | 9.29 |
| | Adjacent | 9 | 19 | 4 | 3 | (no) |
| Social composition of neighborhood | Inzone | 49 | 74 | 31 | 12 | 3.69 |
| | Adjacent | 7 | 22 | 4 | 2 | (no) |
| Reputation of crime rate of neighborhood | Inzone | 51 | 71 | 30 | 13 | 4.12 |
| | Adjacent | 12 | 17 | 2 | 4 | (no) |
| Air quality | Inzone | 57 | 53 | 29 | 27 | 8.85 |
| | Adjacent | 9 | 19 | 2 | 5 | (yes) |
| Quality of local public schools | Inzone | 59 | 37 | 38 | 32 | 10.06 |
| | Adjacent | 8 | 6 | 6 | 15 | (yes) |
| Closeness to friends/ relatives | Inzone | 16 | 45 | 64 | 21 | 13.50 |
| | Adjacent | 4 | 13 | 6 | 12 | (yes) |
| Closeness to schools | Inzone | 49 | 40 | 46 | 31 | 2.71 |
| | Adjacent | 8 | 10 | 7 | 10 | (no) |
| Access to public transportation | Inzone | 13 | 26 | 81 | 46 | 22.60 |
| | Adjacent | 5 | 19 | 6 | 5 | (yes) |
| Distance from active earthquake fault | Inzone | 14 | 23 | 63 | 66 | 12.13 |
| | Adjacent | 3 | 13 | 10 | 9 | (yes) |
| Location out of a floodplain | Inzone | 21 | 35 | 36 | 73 | 2.31 |
| | Adjacent | 3 | 5 | 6 | 21 | (no) |

There are few significant differences between the evaluations of individual factors in the home purchase decisions by those locating within as opposed to *adjacent* to the special studies zones.

Of particular interest, however, is the comparison of the rating of "distance from an active earthquake fault." In both study areas when all four categories of ranking were used in the calculation of the chi square

statistic, inzone residents were found to differ from adjacents in their ranking of distance from an active earthquake fault. In Berkeley, this difference vanishes when the categories are reduced to three: very important, somewhat important, and a combination of "not important" and "did not consider" (chi square was .043 with 2 degrees of freedom). What this means is that although there was a difference in the response to "not important" and "did not consider," this difference is probably not meaningful, and one can conclude that measured attitudes to this factor did not vary between the inzone and adjacent respondents. In Contra Costa County, however, the statistical significance of the chi square remains whether a threefold or fourfold categorization is used. In the reduced form, the chi square is 12.08 with 2 degrees of freedom, significant at .001; in short, in Contra Costa County the adjacent residents were more likely to rank distance from an active earthquake fault as "somewhat important," and those locating within the special studies zones were more likely to evaluate it as "not important" or "did not consider." Thus, in one of the study areas there is some evidence of initial differences in attitudes towards a location proximate to the special studies zone.

"Adjacent" buyers were asked about their familiarity with special studies zones. Since they would *not* have routinely had a disclosure of the existence of such zones assuming they had not previously attempted to buy or sell a house within the zone, it was expected that they would be less likely to be aware of the term than those who were living within the zones. Adjacent buyers were asked, "Have you ever heard the term 'special studies zone' or 'Alquist-Priolo zone'?" If the answer was yes, they were asked to define the phrase, and if the respondent mentioned the idea of earthquake, it was assumed they were familiar with the idea. Perhaps surprisingly, the adjacent buyers were just as aware of the term "special studies zone" as those who were living within the zones and had recently had a mandated

disclosure (Table 18); there was no statistically significant difference between the inzone and adjacent respondents.

Table 18

Have you ever heard the term "special studies zone" or "Alquist-Priolo zone"?

| | Adjacent Berkeley | Inzone Berkeley | Adjacent Contra Costa | Inzone Contra Costa |
|---|---|---|---|---|
| Yes | 28 | 34 | 13 | 45 |
| No | 11 | 7 | 25 | 120 |
| | (no significant difference) | | (no significant difference) | |

When asked whether the location of an earthquake hazard zone (or special studies zone) had made a difference in their decision to buy this particular house, the adjacent homebuyers were no more likely to answer "yes" than those who had located within the special studies zones (Table 19); in most cases, the existence of special studies zones had made no difference in the location decision.

Table 19

Did the location of earthquake hazard zones make any difference in your decision to buy this particular house?

| | Adjacent Berkeley | Inzone Berkeley | Adjacent Contra Costa | Inzone Contra Costa |
|---|---|---|---|---|
| Yes | 12 | 9 | 3 | 9 |
| No | 23 | 28 | 34 | 50 |
| | (no significant difference) | | (no significant difference) | |

This finding indicates that it is probable that the "adjacent" buyers are in no sense "refugees" from the special studies zones who have sought and obtained "safer" housing outside the zones; on the contrary in neither area is there much evidence of concern with special studies zones as a significant factor in the house purchase decision.

There was evidence of contrast between the inzone and adjacent buyers with respect to their evaluation of special studies zones. Adjacent buyers

were asked, "To what degree are people who live near faults more susceptible to losses from earthquakes compared to those who live elsewhere in the Bay Area?" This question was comparable to that asked of the buyers within the special studies zones who were aware of their location: "To what degree are people who live in special studies zones more susceptible to losses from earthquakes compared to those who live elsewhere in the Bay Area?" Adjacent buyers were more likely to believe that living near a fault makes one more susceptible to losses (Table 20).

Table 20

To what degree are people who live near faults more susceptible to losses from earthquakes compared to those who live elsewhere in the Bay Area?

| | Adjacent | Inzone |
|---|---|---|
| More | 38 | 28 |
| Less or no difference | 23 | 52 |

Chi square = 10.47
Significant at .001

| | Adjacent Berkeley | Inzone Berkeley | Adjacent Contra Costa | Inzone Contra Costa |
|---|---|---|---|---|
| More | 24 | 12 | 14 | 16 |
| Less or no difference | 9 | 18 | 14 | 34 |

Chi square = 6.76
Significant at .01

Chi square = 2.41
Not significant at .10

Similarly, residents of adjacent areas were somewhat more pessimistic about the likelihood of a major damaging earthquake occurring in the area while they are living there (Table 21).

Table 21

Do you think that a major earthquake will occur in this area while you are living here?

| | Definitely | Probably | Possibly | Don't know | Don't think so | Probably not | No |
|---|---|---|---|---|---|---|---|
| Inzone | 8 | 41 | 25 | 13 | 28 | 26 | 52 |
| Adjacent | 4 | 12 | 28 | 11 | 7 | 8 | 7 |

Kolmogorov-Smirnov test, Chi square = 12.01
Significant at .01

Despite these differences there was no greater likelihood that adjacent residents took measures to protect their investment in their house through the purchase of earthquake insurance; there was no significant difference in the rate of adoption of earthquake insurance (Table 22). This may be interpreted as another indicator of the overall lack of concern with the possibility of earthquake damage associated with surface fault traces by residents of the special studies zones.

Table 22

Do you have earthquake insurance?

| | Adjacent Berkeley | Inzone Berkeley | Adjacent Contra Costa | Inzone Contra Costa |
|---|---|---|---|---|
| Yes | 10 | 14 | 4 | 4 |
| No | 25 | 23 | 36 | 162 |
| | (no significant difference) | | (no significant difference) | |

In sum, the survey results indicate that neither the homebuyers within nor those near the special studies zones attach much importance to earthquake hazards in their decision to buy a house; there was little evidence that buyers made any attempt to avoid special studies zone locations. It is important to note, however, that yet another type of response to special studies zones disclosure was possible: the adoption of mitigation measures *in situ*. In other words, although the disclosures might not have *prevented* the house purchase, it might have resulted in an increased likelihood of adoption of mitigation measures. To determine whether this response occurred a separate survey of recent homebuyers who had participated in the inzone survey was initiated.

## ADOPTION OF MITIGATION MEASURES

A variety of mitigation measures is available to residents of earthquake-prone areas, varying in cost and time commitment. It can be hypothesized

that each of these measures, particularly if undertaken primarily in response to earthquake hazards, involves a sequence of decisions suggested for the insurance purchase decision (Kunreuther et al., 1978b). These steps involve (1) the evaluation of the hazard as a problem, (2) the learning of the availability of a particular mitigation measure, and (3) the decision concerning the adoption of a particular measure. Since disclosure was by no means usually accompanied with a set of suggestions for hazard mitigation, it should not be assumed that the adoption of mitigation measures would be directly and automatically linked to disclosure. However, it is of interest to test whether those who had received a disclosure were any more likely to adopt mitigation measures than the general population, since such behavior could serve as a measurable response existing virtually outside the framework through which market responses are measured.

It should be noted that each type of mitigation strategy involves a different set of constraints and considerations in the adoption process. It is useful to consider some of the conclusions drawn concerning the relative market failure for adopting earthquake insurance in California (Kunreuther et al., 1978b). Among the reasons the research team found for low earthquake insurance sales were the low degree of concern with the earthquake hazard and the role of the insurance agent. The first point probably needs no further elaboration, in that it is merely a restatement of the now-frequent finding that earthquake hazards are relegated a low everyday salience by residents of earthquake-prone areas. The second point, however, is more complex. The Kunreuther group found that one reason why prospective purchasers were not buying insurance was a lack of interest on the part of the sales agent (1978b, p. 252):

> Today the agent has a limited economic incentive to initiate personal contact with his clients. Commissions are based on an amount proportional to the total premium, which, in the case of earthquake and flood insurance, is usually a small amount.

It was not in the agent's personal business interests to expend large amounts of time explaining the earthquake addendum to the homeowner's policy, since the financial rewards for such activity were seen to be small. Homeowners, and particularly those who had moved to the area from out of state, were therefore not only unlikely to have heard of earthquake insurance, but were unlikely to learn about such policies either from the home sales agents or the insurance agencies. Since information about the mitigation measures must be acquired for its adoption, and since advertisements in the mass media have had mixed success, at best, in alerting people to hazards and mitigation measures (Robertson, 1975; Roder, 1961), it is essential to consider the role of the individual change agent--real estate salesperson, insurance salesperson, neighbor, friend, or relative--in the diffusion of mitigation measures.

The objective of the next stage of the research was a comparison of the mitigation measures adopted by special studies zones residents who had received a disclosure with the general California population recent homebuyers. The Berkeley and Contra Costa County homebuyers who had indicated in the previous interview that they were aware they lived in a special studies zone were recontacted through a mail survey. Of the 94 original respondents, 58 replied to the mail questionnaire, 17 from Berkeley and 41 from central Contra Costa County (Appendix 3). It was this population which was taken to represent homebuyers who both received and recalled a disclosure that their property is within a special studies zone. It should be noted that this population is *not* representative of all those who should, by law, receive disclosures, in that it has both higher educational and income levels, and also probably greater awareness and concern with the earthquake hazard. Adoption of mitigation measures within the general population was measured in a major survey of residents of Los Angeles County over the 1977-78 period (Turner et al., 1979). A survey of 1,450 Los Angeles County

households, both within and outside special studies zones, and including recent as well as long-term residents, asked about the adoption of 15 mitigation measures. Although it can be argued that this sample, while representative of the Los Angeles population may reflect neither the attitudes of other state residents nor more particularly those of Bay Area residents, nonetheless it is probably the best reflection of current attitudes and responses to earthquake threat by a cross-section of income and ethnic groups in the largest California city. The responses to the Los Angeles survey were compared directly to those of the Berkeley/Contra Costa survey of recent homebuyers in special studies zones who were aware of the meaning of this location. It was hypothesized that since the Bay Area homebuyers were more concerned with earthquake hazards, were of higher average income and education than the general population and had received a disclosure concerning the location of their home in a special studies zone, they would have a greater propensity to adopt a variety of mitigation measures than the Los Angeles sample. This hypothesis was not borne out by the survey findings (Table 23).

Table 23

Mitigation Measures

| | Have done primarily because of earthquake threat | | Total percentage who have done | |
|---|---|---|---|---|
| | Bay Area | L.A. | Bay Area | L.A. |
| nquired about earthquake insurance | 41.4%* | 23.1% | 41.4* | 23.1 |
| ought earthquake insurance | 24.1* | 12.8 | 24.1* | 12.8 |
| nstruct children what to do in an earthquake | 20.0 | 47.6 | 22.2 | 50.4 |
| nergency procedures at residence | 15.6 | 26.1 | 25.4 | 34.1 |
| amily plans for reunion after earthquake | 14.0 | 19.9 | 16.0 | 22.1 |
| eplace cupboard latches | 13.8* | 4.5 | 22.4* | 10.2 |
| ave a working battery radio | 8.6 | 11.1 | 53.4 | 54.6 |
| tructurally reinforce home | 8.6* | 4.7 | 13.8* | 11.1 |
| ave a working flashlight | 6.9 | 10.8 | 86.2* | 71.5 |
| earrange cupboard contents | 5.2 | 9.7 | 12.1 | 16.3 |
| ontacted neighbors for information | 3.4 | 9.8 | 15.5 | 19.5 |
| ave first aid kit | 3.4 | 6.0 | 68.9 | 50.1 |
| tore food | 1.7 | 8.0 | 20.7 | 26.8 |
| tore water | 1.7 | 8.0 | 5.1 | 17.1 |
| et up neighborhood responsibility plans | 1.7 | 4.0 | 12.0 | 12.2 |

Bay Area respondents exceed Los Angeles respondents

Respondents were asked to indicate not only had they adopted a particular measure, but also had this adoption been primarily because of earthquake threat or for other reasons. What is perhaps most striking about the percentages adopting various mitigation strategies is the fact that only a minority of residents, either of the special studies zones or of the County of Los Angeles, have taken *any* of the measures. Of the 15 mitigation measures, the only ones adopted by a majority of respondents are the possession of a working battery radio, a flashlight, and a first aid kit. It should be noted that in all three cases, most respondents had taken this measure for reasons other than earthquake hazard.

The special studies zones residents had most frequently inquired about earthquake insurance (41.4 percent), but only one in four households had actually purchased it. Between 14 and 20 percent of the special studies zones residents had instructed children what to do in the event of an earthquake, established emergency procedures at the residence and made plans for a family reunion after the earthquake, but these percentages were lower than those of the Los Angeles respondents. Indeed, the special studies zones respondents exceeded the general population of Los Angeles only in the areas of earthquake insurance, replacement of cupboard latches, structural reinforcements, and possession of a working flashlight. In all other measures, special studies zones residents had less frequently adopted the mitigation measure with sometimes marked differences (as in the case of instruction to children and emergency procedures). A possible explanation for this finding is the combination of a fairly recent experience with a major damaging earthquake in the Los Angeles area (1971) and the discussion surrounding the so-called Palmdale bulge as a precursor of major movement along the southern portion of the San Andreas fault running through Los Angeles. But whatever the explanation for these frequencies, it is obvious that disclosure, even

when understood and remembered, did not increase the likelihood of the adoption of mitigation measures.

Mandated disclosure has not resulted in measurable responses on the part of homebuyers. The majority of homebuyers do not even recall a disclosure within six months of the home purchase. Even for those who do recall the disclosure and who understand its meaning, few have responded with purchase term negotiations, avoidance of the area, or subsequent hazard mitigation measures in their new homes.

## Part VI. THE SURVEY OF REAL ESTATE AGENTS

A survey of real estate agents was conducted to provide another perspective on the effectiveness of the mandated disclosure legislation. The purposes of this portion of the study were to determine (1) whether the real estate agents say they are regularly making the disclosure, (2) the understanding/knowledge of special studies zones on the part of the real estate agents, (3) the most common methods and timing of disclosure, (4) the perceptions of the effect disclosure has had on sales records, and (5) the attitudes real estate agents have to the subject of the disclosure or the process itself that could affect their effectiveness as information sources.

Real estate agents surveyed were identified during the interview of special studies zones *buyers*. Among the many questions asked of these respondents was the name of the real estate agent who had "helped" them with their home purchase. This sampling method was used (1) so that the responses of buyers and real estate agents could be matched, (2) to limit the survey to those agents actively involved in selling property (many California real estate license holders do not actually sell property), and (3) to limit the survey to those presently doing business within the special studies zones. Although 207 inzone homebuyers had been interviewed, only

seventy-seven real estate agents were identified. The reasons for this relatively low yield was the large number of builders' representatives selling houses within the San Ramon Valley of Contra Costa County. During the time in which the survey was taken, many new home sales were being handled by developers or their representatives rather than by licensed real estate agents. In these instances, buyers stated that a builder's representative had dealt with the sale and could recall no particular real estate agent. Other reasons for the low yield of real estate agents were incorrect agent names, homebuyers forgetting the names of agents, and direct sales by the previous owner. Of the list of 77 agents, 74 consented to a face-to-face or telephone interview.

Real estate agents were contacted first by mail. The letter stated that, "We are talking to people who are particularly active and successful in real estate, and who have experience selling homes in the Alquist-Priolo Special Studies Zone." They were notified that they would be asked "a few general questions regarding your experience selling real estate in the Special Studies Zones." It is recognized that because the term "Special Studies Zones" was mentioned in the cover letter, the respondents may have been better prepared for the interviews than they might have under other circumstances. The cover letter included a form giving permission for the interview and establishing a time which the real estate agents deemed best for a telephone interview. The telephone interviews lasted between 10 and 25 minutes, and often provided other background information not formally included in the set of questions. The questionnaires were pretested in face-to-face interviews, substantially revised, and pretested again in telephone interviews (Appendix 4).

SURVEY RESULTS

Real estate agents were first asked to rate the same set of 15 factors that homebuyers had ranked. The categorization to be used by the real estate agent was a three-value code varying according to the frequency with which the item is mentioned as important by homebuyers: usually mentioned, sometimes mentioned, and rarely mentioned. On this question, there was little difference between the responses of the Berkeley real estate agents and those in Contra Costa County, although view and distance from an earthquake fault were judged to be more important in Berkeley, and closeness to schools, perception of crime rate in the neighborhood, and social composition of the neighborhood were judged more important in Contra Costa County (Table 24).

Table 24

Based on your experience selling homes, rate the following factors according to how frequently they are mentioned as important by HOMEBUYERS. Rate as (1) usually mentioned, (2) sometimes mentioned, or (3) rarely mentioned.

| Factor* | Berkeley | Contra Costa | Statistical Significance |
|---|---|---|---|
| Price | | | |
| 1. | 19 | 54 | .40 |
| 2. | 1 | 0 | no difference |
| 3. | 0 | 0 | |
| Size of home or number of bedrooms | | | |
| 1. | 18 | 52 | .37 |
| 2. | 2 | 2 | no difference |
| 3. | 0 | 0 | |
| Investment potential or resale value | | | |
| 1. | 19 | 44 | .67 |
| 2. | 1 | 8 | no difference |
| 3. | 0 | 2 | |
| Beauty of the area | | | |
| 1. | 18 | 34 | .93 |
| 2. | 1 | 14 | no difference |
| 3. | 1 | 6 | |
| Distance to work | | | |
| 1. | 9 | 33 | .57 |
| 2. | 9 | 16 | no difference |
| 3. | 2 | 5 | |
| Quality of the local public schools | | | |
| 1. | 7 | 27 | .84 |
| 2. | 12 | 27 | no difference |
| 3. | 1 | 0 | |

Table 24 (continued)

| Factor* | Berkeley | Contra Costa | Statistical Significance |
|---|---|---|---|
| Closeness to schools | | | |
| 1. | 4 | 23 | .97 |
| 2. | 12 | 29 | more important in |
| 3. | 4 | 2 | Contra Costa |
| Accessibility to BART station or bus route | | | |
| 1. | 8 | 21 | .45 |
| 2. | 10 | 22 | no difference |
| 3. | 2 | 11 | |
| View | | | |
| 1. | 9 | 7 | .99 |
| 2. | 10 | 36 | more important in |
| 3. | 1 | 11 | Berkeley |
| Perception of crime rate in the neighborhood | | | |
| 1. | 10 | 13 | .99 |
| 2. | 8 | 13 | more important in |
| 3. | 2 | 28 | Contra Costa |
| Economic, ethnic and age composition of neighborhood | | | |
| 1. | 5 | 6 | .95 |
| 2. | 5 | 30 | less important in |
| 3. | 10 | 18 | Berkeley |
| Closeness to friends or relatives | | | |
| 1. | 0 | 2 | .32 |
| 2. | 6 | 15 | no difference |
| 3. | 14 | 37 | |
| Distance from active earthquake fault | | | |
| 1. | 1 | 0 | .98 |
| 2. | 8 | 9 | more important in |
| 3. | 11 | 45 | Berkeley |
| Air quality | | | |
| 1. | 0 | 3 | .54 |
| 2. | 3 | 11 | no difference |
| 3. | 17 | 40 | |
| Location outside a floodplain | | | |
| 1. | 0 | 0 | .72 |
| 2. | 1 | 10 | no difference |
| 3. | 19 | 44 | |

*Presented in order of importance to real estate agents

An overall comparison of the rankings by buyers and real estate agents showed that real estate agents were more likely to feel that buyers valued access

to public transportation, closeness to public schools, quality of public schools, distances to work and size of the house more than buyers claim they did; conversely, buyers placed more stress on view, social composition of the neighborhood, crime rate, and air quality than real estate agents perceived. Both groups agreed on the significance of location with respect to an active earthquake fault; this was *not an important factor* in the purchase decision (Figure 7).

When asked what do the real estate agents "tell your clients the special studies zones mean," most of the respondents were able to associate the zones with earthquakes or fault traces. Eighty-seven percent (64) indicated that the zones refer to some kind of "earthquake hazard area," and most frequently defined the special studies zone as an "earthquake zone." Nine of the agents, however, confused the special studies zone either with the one percent flood zone or felt that the special studies zones were areas in which "special studies" (transportation surveys) would be conducted. These errors were confined to the Contra Costa County agents (Table 25).

Table 25

What, in general, do you usually tell your clients the special studies zones mean? (What is the interpretation of the designated special studies zone in your area?)

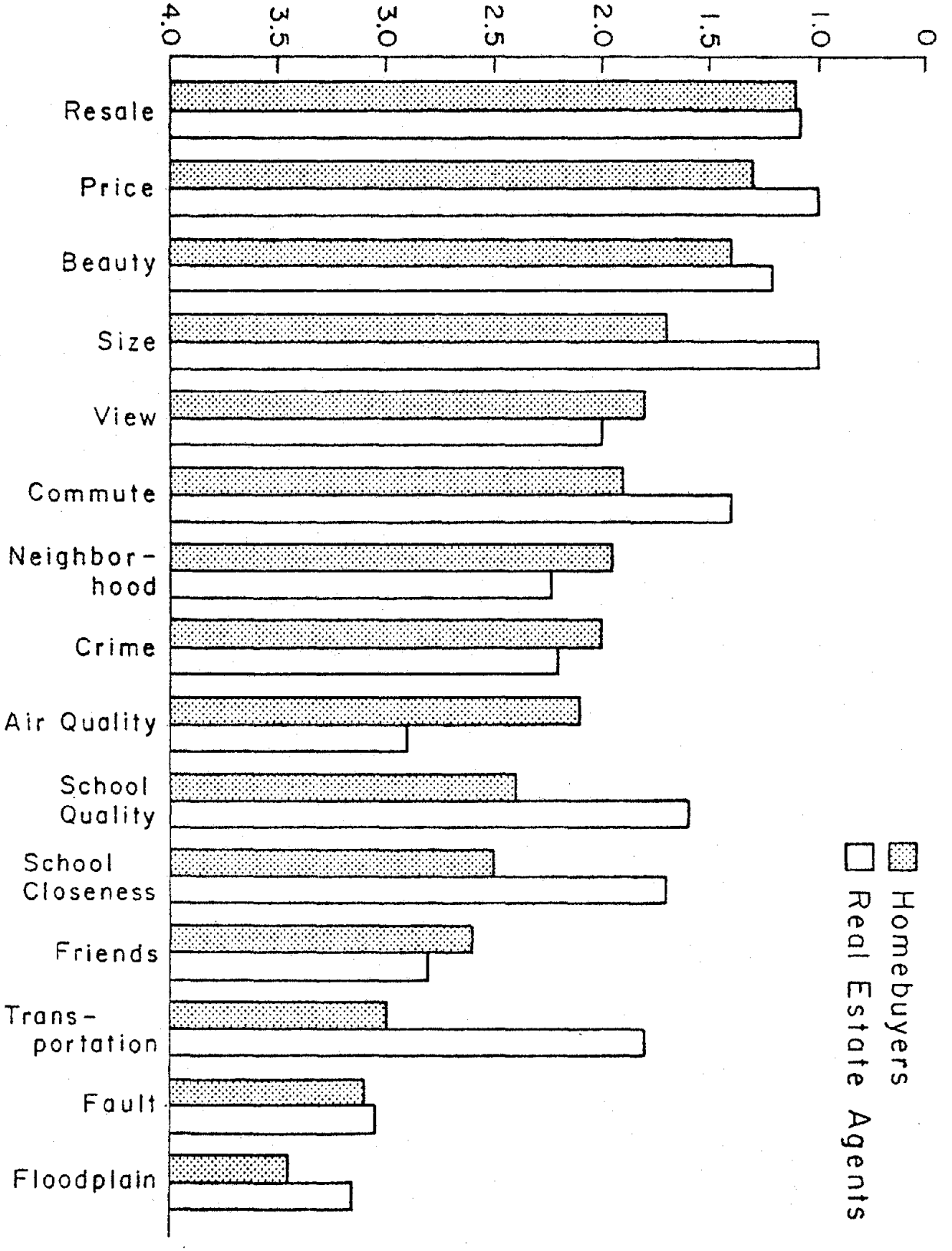
| | Berkeley | Contra Costa |
|---|---|---|
| Earthquake or fault hazard | 19 | 45 |
| Flood hazard, special surveys | 0 | 9 |

(Difference significant at .03)

It goes without saying that if the real estate agent does not even know what the special studies zone refers to, it is unlikely that the buyer will obtain accurate information from the agent despite mandated disclosure.

The next portion of the questionnaire addressed the methods and timing used in the disclosure. As was indicated earlier, these issues have been

Figure 7. Comparison of the Importance of Factors to Homebuyers and Real Estate Agent Perceptions of Buyer Evaluations



somewhat standardized among members of the California Association of Realtors (which claims at least half of those people holding real estate licenses in California among its members). Most respondents used the contract addendum as a method of disclosure (90.5 percent), although the board of Realtors maps and Multiple Listing Service forms were also used by sizable proportions in addition to the contract addendum (Table 26). It should be noted that none of these disclosure formats is designed to provide a great deal of geologic information about the special studies zones.

Table 26

How do you usually inform clients about property located in Special Studies Zones?

| | Number who mentioned | Percent |
|---|---|---|
| Use a contract addendum with purchase contract | 67 | 90.5 |
| Use map developed by board of Realtors | 44 | 59.5 |
| Inform clients verbally during office visit | 24 | 32.4 |
| Use the Multiple Listing Service form | 22 | 29.7 |
| Advise buyers to obtain a geologic or structural report | 12 | 16.2 |
| Advise buyers to go to the city or county planning department for more information | 9 | 12.2 |

The timing of the disclosure is also very significant in the potential impact on the homebuyer (Clark and Smith, 1979). It is an accepted axiom of general sales practice that the salesperson should (1) establish credibility in the initial meetings with the clients, (2) introduce potentially negative information either long before showing the client the product or after a decision has been firmly reached, and (3) minimize ambivalence during the drive to close the sale. What this general sales practice would prescribe as ideal timing would be a disclosure in very general terms during the "office visit," when the clients are being "qualified" (their financial situation and housing preferences determined), or preferably during the very last portion of the

sales process when the client has already psychologically committed himself to the house, has determined how resources will be allocated to the home purchase, and is hoping that the seller will find his terms acceptable--at the time the purchase contract is signed. Disclosure of special studies zone location, if it were to have an impact at all, would have the least impact at these two times. Not surprisingly, the common disclosure practice follows the ideal sales practice; that is, disclosure is not likely to take place at a time when it might most jeopardize the sale, at the time the real estate agent is showing the house to the buyer, but rather at the time the buyer has already decided on the house, at the purchase contract time (Table 27).

Table 27

When in the purchase process do you inform buyers about the Special Studies Zones?

| | Number who mentioned | Percent |
|---|---|---|
| When the purchase contract is signed | 67 | 90.5 |
| During the office visit | 24 | 32.4 |
| When showing the property | 7 | 9.5 |

The convergence in disclosure methods and timing has resulted in the provision of information in a way and at a time that will minimize its impact on the clients, a system which interferes as little as possible with the probability of a successful sale, and which decreases the likelihood that the disclosure will be taken into account by the buyers. This aspect of the legislation could be corrected with firmer guidance provided concerning method and timing of dislcosure, although the enforcement of an earlier disclosure might prove difficult in practice.

Given these practices, it is perhaps not surprising that real estate agents reported little adverse effect of disclosure on sales. When asked if they had ever had a client decide not to buy a home after being informed

that it was in a special studies zone, only 12 agents, five in Berkeley and seven in Contra Costa County said they had had such a refusal. Of these, only four agents could recall more than one client refusing to purchase a house in the special studies zone. Real estate agents indicated that such clients are more likely to have come from the East Coast or the Midwest; California buyers were not likely to be dissuaded from a home purchase simply by the fact that it lies on or near a fault trace. The "yes" responses (agents who had experienced refusals upon disclosure) were cross-tabulated with responses concerning both the usual timing of disclosure and the methods usually used. The only statistically significant effect was in the use of the board of Realtors map--contrary to expectations, the agents who used the map had *fewer* refusals than those who did not. Other variations in timing and materials did not make any difference in the likelihood of buyer refusals. One possible explanation for the possibly counterintuitive impact of the use of the map on buyer response lies in the way the map can be used; some agents indicated that they use the map to identify specific house locations within the zone, but at the same time show the overall extent of the zones and the amount of new construction occurring therein. The use of the map in this manner can actually lessen the impact of the information being provided by reassuring the buyers that the risk is spread among many homeowners in a wide area. However, it should be recalled that there is such uniformity in timing and methods that any differences in buyer response are probably due to other factors--personality and background of the buyer, the relationship between the buyer and the real estate agent, and other unique characteristics within the sales process.

When asked to assess why the real estate agents felt the homebuyers were not concerned with special studies zones locations, agents answered that they believe that buyers are generally fatalistic about "acts of God"

beyond their control, and tend to accept the notion that all California is earthquake country, and that to live in the state means to accept a certain risk of damage from earthquakes. In addition, agents believe that buyers attach more importance to other hazards, such as expansive soils or the possibility of landslides, and that they find security in the knowledge that theirs will certainly not be the only house which is damaged if a major earthquake occurs.

Another factor which could influence buyer response to mandated disclosure, in a perhaps more subtle way, is the attitude of the real estate agents concerning the special studies zones. In order to attempt to learn more about the real estate agent perceptions of the seriousness of the hazards associated with such zones, the survey included the same question that was asked buyers: "In your opinion are people who live in the special studies zones more likely to suffer financial losses or physical injuries in the event of an earthquake compared to those who live elsewhere in the Bay Area?" The overwhelming majority of real estate agents (68.9 percent) said that they were either less likely to suffer damage or it made no difference. This figure is very comparable to that for homebuyers (71.2 percent), and shows that neither the information agents nor those whom they are supposed to inform place much significance on the association of special studies zones and likelihood of injury or property damage associated with major earthquakes.

Finally, when asked whether they felt real estate agents should be required by law to make the disclosure of special studies zones, virtually all of the respondents said yes (96 percent). This finding may be evidence of a theoretical proposition of social psychology which suggests that individuals accommodate their attitudes when behavior is restricted by mandate. Examples of such research are found within the field of race relations, where it has been found that where racial integration in jobs and housing was

mandated, an attitude change ensued in which former opponents came to advocate integration as social policy (Wilner, Walkley and Cook, 1953; Harding and Hogrefe, 1952). In addition, this response seems to have a practical justification. When these responses were probed, the agents revealed that they felt the disclosure was particularly beneficial since a signed contract addendum in their files might protect the real estate agent from subsequent lawsuits. This concern has arisen as a result of a change in state law concerning the possible suspension or revocation of a real estate license where there has been "any substantial misrepresentation," a term which has been interpreted to mean that the "real estate agent must refrain from making any misrepresentations to his principal and must make to the principal the fullest disclosure of all material facts concerning the transaction that might affect the principal's decision" (Smith v. Zak [1971] 98 Ca. Reptr. 242, 20 C.A. 3d 785, from Business and Professions Code, Real Estate Law, Section 10176(a), Supplementary Index to notes). While the disclosure requirement concerning special studies zones may be seen as yet another regulation with which the real estate agent must contend, the existence of the signed contract addendum provides the agent with proof that misrepresentation did not occur.

Since it is obvious that disclosure of special studies zones has not in any way adversely affected the business practices of real estate agents, it is not surprising that they are at least resigned to its existence. However, many real estate agents volunteered other comments about the current legislation and its implementation. Almost two-thirds (63 percent) said that agents need more and better information about the nature of special studies zones, and particularly about whether a given property lies within or outside the zone. At present, the small-scale maps provided by the state, county, city of board of Realtors make it difficult to determine whether a given house is within the special studies zone. Indeed, some real estate firms have routinely contracted with consulting engineers and geologists to make detailed determinations

concerning individual property (Prendergast, 1980), and some county planning agencies have attempted to produce very large-scale maps showing the locations of special studies zones with respect to individual plots (Baker, 1980). The provision of this more detailed information in a routine and low-cost manner would greatly ease the problem of determining whether any individual property is within or outside the special studies zone.

Other issues raised by real estate agents concerned the overall purpose of the law. Almost half of the real estate agents questioned the intention of the law, particularly as it affects existing property. Although they could understand the state wishing to make it more difficult to build large-scale units astride active faults, they did not understand the reason why (1) this particular zone should be disclosed to buyers of existing single-family units, or (2) the real estate agents should be the disclosure vehicle. Finally, a few mentioned that they felt disclosure is not really needed because clients already know about the earthquake hazard, or that they would prefer not to frighten clients with negative information when they are not certain themselves of its meaning.

It might be noted that the real estate agents interviewed were a particularly stable and well-educated segment of the population. Only six had sold real estate in California for less than a year, and 28 (37.8 percent) had been selling real estate for more than six years in California. Eighty-five percent had at least some college education, and almost 20 percent (14 agents) had some graduate school training.

## MATCHED SAMPLE

As a final test of the relationship between the attitudes, experience and practices of real estate agents and the behavior of homebuyers, the responses of these two populations were matched. Seventy (of the original 74) real estate agents were matched with the 70 buyers who had identified them, and a series of

of cross-tabulations were run on the impacts of *agents'* (1) knowledge of special studies zones, (2) sales experience, (3) disclosure practice, and (4) interpretation of the special studies zone on whether or not the *buyer* was aware that their home was in a special studies zone and buyer beliefs concerning the likelihood of property damage in the event of a major earthquake.

It was expected that knowledge of the meaning of the special studies zone by the real estate agent would be associated with whether or not buyers were aware that their homes were in a special studies zone. Although there was a weak relationship between these variables, it was not statistically significant. When the real estate agent correctly identified the meaning of the special studies zones, 61 percent of the buyers were also correct in their knowledge of their house location; when the real estate agent was incorrect, only 43 percent of the buyers were correct. However, the numbers involved in the incorrect real estate agent assessment were so small that this simple relationship was not strong enough to reject the null hypothesis that such findings could result merely from sampling error (Table 28).

Table 28

| | | Buyers' awareness of house in special studies zone | |
|---|---|---|---|
| | | Yes | No |
| Real estate agents correctly identified the meaning of the special studies zone | yes | 39 | 24 |
| | no | 3 | 4 |

Accuracy of real estate agent knowledge of the meaning of the special studies zone had no impact on the interpretation of losses associated with living in the zones; when the realtor's knowledge was matched with buyer attitudes, the responses were virtually identical.

Knowledge on the part of buyers (awareness that their house was located in a special studies zone) was *not* affected by (1) the number of years the real estate agent who sold them their home had been selling real estate in California (chi square = .68, significance = .71); (2) the timing of the

disclosure (office visit: chi square = .13, significance = .71; disclosure when house was shown: chi square = .02, significance = .87); (3) the methods used to make the disclosure (contract addendum: chi square = .27, significance = .60; map: chi square = .01, significance = .92); or (4) the attitudes of real estate agents concerning the probability losses associated with living in a special studies zone (chi square = .10, significance = .75). When these cross-tabulations were subdivided into Berkeley and Contra Costa tables, no stronger relationships emerged. In sum, any variation in knowledge, attitude, sales experience, disclosure timing or disclosure method on the part of the real estate agent was not translated into a measurable effect on the knowledge of buyers concerning the location of their house with respect to the special studies zone.

The attitudes of buyers to the special studies zone were indexed by the question, "To what degree are people who live in special studies zones more susceptible to losses from earthquakes compared to those who live elsewhere in the Bay Area?". Respondents were classified into one of two categories: those who said such people were *more* susceptible to losses, and those who said they were either *less* susceptible or that it made *no difference*. Those who responded "don't know" were not considered in this tabulation. The attitudes of buyers thus measured were *not* affected by (1) the number of years their real estate salesperson had been selling real estate (chi square = .75, significance = .68); (2) the timing of disclosure (disclosure during office visit: chi square = .11, significance = .74; disclosure at time house shown: chi square = .08, significance = .77); (3) the method of disclosure (contract addendum: chi square = .06, significance = .81; board of Realtor map: chi square = .15, significance = .47); or (4) attitude of the real estate agent as measured by the same question (chi square = .03, significance = .85). No statistically significant differences emerged when the responses were subdivided into Berkeley and central Contra Costa County responses, although the

relationship between the office disclosure and buyer attitude in Contra Costa County and the use of the board map and buyer attitude in Contra Costa County was strengthened--in a negative direction: buyers were more likely to believe that special studies zone residence was less associated with damage or that there was no difference if disclosure was made during the office visit or if the board of Realtors map was used in the disclosure process.

Overall, variation in the knowledge, experience, sales methods, and attitudes of real estate agents had no association with variation in the knowledge or attitudes of homebuyers in the special studies zones. This finding may be interpreted as suggesting that minor changes in the legislation to increase the awareness of real estate agents of the meaning of the special studies zones might have little impact on the homebuyer.

## Part VII. MARKET BEHAVIOR

Since the survey of homebuyers did indicate some reluctance on the part of a small minority to purchase houses within the special studies zones, it might be expected that even this shift in demand might be reflected in the market--the relative price or length of time to consummate a sale in the special studies zones as compared to elsewhere in the submarket. Because Berkeley homebuyers showed greater awareness and concern about earthquake activity in their responses to the survey, it might have been expected that there would be more "softening" of the housing market in Berkeley--that houses within the special studies zones would be relatively more difficult to sell, and would command lower prices than comparable houses elsewhere.

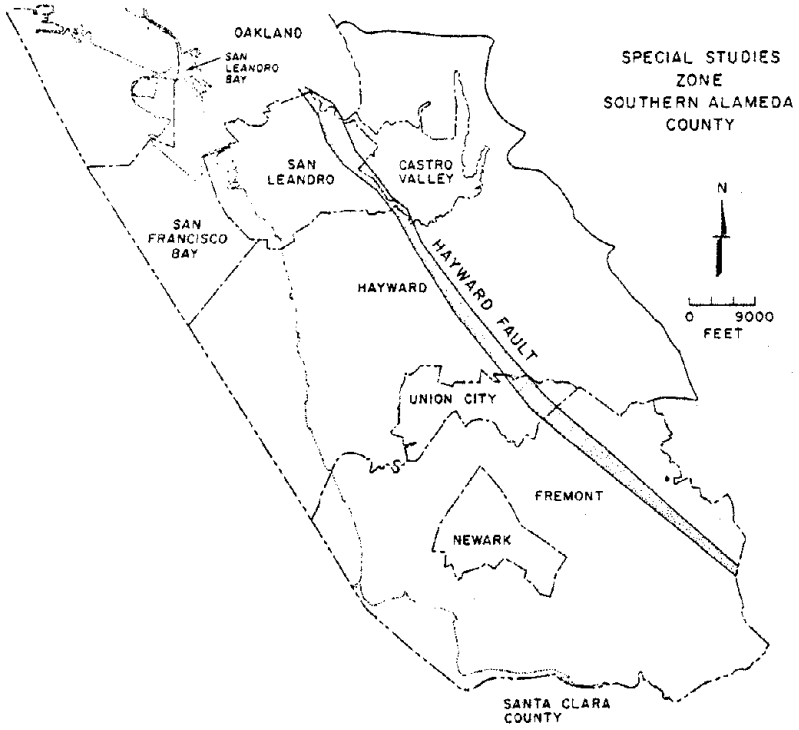
Two tests of the effects of special studies zones locations on market behavior are reported. The first was a weak test of the effects of special studies zone location on length of time on the market. This study was conducted as part of an earlier project focusing on the Berkeley housing market (Rosenthal, 1978). The test compared the number of days the house was listed on the market, as reported in the comprehensive sales books of the

Berkeley Board of Realtors, for houses within the special studies zones as compared to those outside the zones. No other controls were used--for example, there was no control for the effects of sales price on length of time on the market. Unfortunately, this is a major omission since houses within the zone sold for about $15,000 more than those outside the zone. Since number of days on the market is positively correlated with sales price, one would expect that *ceteris parabis* areas with higher sales prices would also have longer sales periods. Although houses in the special studies zones stayed on the market slightly longer than those outside the zones (116 compared to 108 days), the standard deviations were very large, and a t-test showed no significant difference between the two zones.

This project undertook more comprehensive comparison of house price levels in the houses within, adjacent to, and outside the special studies zones in the two study areas. In addition, a third study area, southern Alameda County, was added to attempt to further generalize the impacts of zonation on house prices (Figure 8). Hedonic price indices were calculated for house price levels in 1972, before the disclosure legislation was in effect, and in 1977, after disclosure was in force. Data on properties sold in the three study areas were obtained from the appraisal reports filed with the Society of Real Estate Appraisers, and included information on square footage of dwelling space, age of the house, quality of the house, condition of the house, size of the lot, and the presence of such contributors to price as a swimming pool, fireplace, or "view lot." Data on the economic status of the area (percentage professional-managerial occupations among residents of the census tract), and housing stock composition (percentage of single-family dwelling units in the census tract) were added based on the 1970 Census of Population. Location with respect to the special studies zones was coded as a dummy variable: the property

Figure 8

Special Studies Zone: Southern Alameda County



was considered to be within the special studies zone, close to (within one mile of) the zone, or outside (beyond one mile). The research hypothesis stated that: in 1972 location in the special studies zone was unrelated to house price (the coefficient should be close to zero), but in 1977 should be negatively related. In addition, in 1977 location near the special studies zone should have a positive regression coefficient because of a build-up of demand for housing *near* but not actually *in* the zones, and location outside the zones should continue to have no effect on house prices.

The results of a set of single ordinary least squares equations for the three study areas are complex and demand some explanation (Table 29). For the central Contra Costa County area, when location within, adjacent to, and outside the special studies zones was entered into the single-step regression equation, the results were nearly exactly as hypothesized. Although in 1972 location within a special studies zone had a negative partial effect on house prices, this effect was so variable that its coefficient was not statistically significant at the .10 level. However, in the 1977 equation, location in a special studies zone reduced the house price level by $4,182, and the partial regression coefficient was significant at the .001 level. Locations within one mile of the special studies zone, which had a slightly negative effect on the 1972 equation (although not significant at the .10 level), had a positive effect on 1977 prices at the .05 level. Similarly, locations beyond one mile of the zones change from negative (though not statistically significant) to positive and significant at .01. These results are surprising in light of the general lack of awareness of the existence of special studies zones on the part of both inzone and adjacent residents, and the lack of salience which proximity to an earthquake fault has for all homebuyers. However, these equations suggest that the few people who are concerned with proximity to an active

fault may have been a sufficient force in the marketplace to weaken prices within the zones, and boost them in outlying areas.

Table 29

Effects of Location in Special Studies Zones on House Prices

| | 1972 Beta for price impact in dollars (significance) | 1977 Beta for price impact in dollars (significance) | Hypothesized effect | Observed effect |
|---|---|---|---|---|
| Southern Alameda County | | | | |
| Inzone | -741 (.166) | -243 (.807) | negative | none |
| Adjacent | 807 (.030) | -1062 (.101) | positive | none |
| Outside | -422 (.234) | 1121 (.078) | none | positive at .10 |
| $r^2$ = | .74 | .75 | | |
| Berkeley | | | | |
| Inzone | 2617 (.000) | 9618 (.092) | negative | positive at .10 |
| Adjacent | 1162 (.061) | 9118 (.092) | positive | positive at .10 |
| Outside | -3121 (.000) | -1315 (.004) | none | negative at .01 |
| $r^2$ = | .84 | .74 | | |
| Central Contra Costa County | | | | |
| Inzone | -912 (.307) | -4182 (.000) | negative | negative at .00 |
| Adjacent | -473 (.620) | 1500 (.048) | positive | positive at .05 |
| Outside | -623 (.377) | 1705 (.007) | none | positive at .01 |
| $r^2$ = | .55 | .67 | | |

House prices in the other two study areas did not perform as hypothesized. In southern Alameda County, prices within the special studies zones were lower than elsewhere (that is, the partial effect of the inzone variable was negative), though the significance was weakened between 1972 and 1977.

By 1977 the partial effect was not significant at .10, and therefore the effect of zonation can be considered to be nil. Location adjacent to the special studies zone reversed its predicted sign: in 1972 (when it should have been neutral) it was positive, but in 1977 (when it should have been positive), it had become negative. Again, however, the variation in effects causes the coefficient not to be significant at the .10 level. Areas distant from the zones took on a positive partial correlation with house prices.

The Berkeley equations reflect the overwhelmingly positive effects of the hills neighborhood on house prices, even after "view" is taken into account, and despite the existence of fault traces and other geologic problems in the area. In both 1972 and 1977, location in the special studies zone was *positively* related to house price levels, although with a slight increase in the variability of this relationship in 1977 (a reduction of the significance level). Location adjacent to the zones also had a positive relationship in both years, although the strength of the partial regression coefficient was slighly less than that of location within the zone. In both years, location outside the zones had a *negative* impact on house price levels, a reflection of generally lower value attached to the smaller houses in the flat lands closer to the Bay. Although one should not interpret these equations as reflecting a positive preference for special studies zones in Berkeley, it can nonetheless be said with confidence that the disclosure legislation was not reflected in any apparent weakening of demand in the zones.

To summarize, the house price equations are somewhat contradictory. In the area in which buyers show most concern over earthquake faults and most knowledge of the meaning of special studies zones, there was the weakest effect of location within the zones on house price levels; conversely in

precisely the area with the largest number of buyers who did not remember a disclosure, and where there was the least concern with earthquake fault location, there seemed to be a strong effect of zonation on price levels. It would certainly be inappropriate to generalize from the central Contra Costa equation that throughout California house prices were negatively impacted within the zones by the emplacement of mandated disclosure, for the behavior of house prices in two areas with more active fault creep show just the reverse effect on house prices. Rather, it is probable that it is not the zonation itself that has affected house prices, but some correlated neighborhood characteristics omitted from the equation. This point needs further empirical corroboration, but it appears likely, on the basis of price equations for two of the three study areas, that the disclosure of zonation has not had a negative impact on house price levels.

From the combination of survey evidence and analysis of market behavior, it can be concluded that there is only slight evidence that buyers have avoided purchases within the special studies zones despite mandated disclosure. Real estate agents rarely report buyer reluctance to consummate sales after disclosure, buyers report little concern with earthquake hazards and virtually no impact of the disclosure on their final purchase decision or on subsequent mitigation measures adopted, and market data show little if any weakening of demand (and lowering of price) within the zones.

## Part VIII. THE IMPACTS OF LEGISLATION ON BUYER BEHAVIOR: IMPLICATIONS FOR POLICY

The empirical study of homebuyers within the special studies zones, homebuyers in nearby areas outside the zones, real estate agents, and housing market behavior clearly demonstrates that mandated disclosure has had little effect on buyer behavior or market performance. Despite the intentions of the authors of the legislation, homebuyers within the special

studies zones are no more informed about the existence of these zones and their meaning than those living outside the zones, and in any case the market is behaving as if the zones did not exist. Not all of the reasons for this lack of translation of mandated information into measurable behavior lie within the legislation itself; instead many of the reasons for the failure of this portion of the law are associated with the homebuying process, the relationships between the buyers and the real estate agent, and the definition of the zones. Each of these factors merits some attention if the current legislation is to be evaluated critically and constructively.

A first major impediment to the process of translation of mandated special studies zone disclosure into measurable buyer response is the value system of homebuyers. Earthquake hazards and other environmental disamenities are ranked relatively low in the priority system of homebuyers. Instead, the primary motivation of homebuyers, it appears, is to minimize the price paid for a dwelling unit of given characteristics and to maximize *its* potential resale value. The house is treated as an economic investment rather than a place which will be the focus of family activity for 10 to 20 years. Buyers often intend to stay in the house for only a short period of time, and frequently resell within three to five years. Since it is relatively unlikely that a major damaging earthquake will occur in that time period, they do not hesitate to buy a home in the special studies zone *as long as they believe it has a good potential resale value.*

In addition, homeowners do not feel that it is economically rational to take costly mitigation measures such as structural reinforcements or the purchase of earthquake insurance. Structural reinforcements are eschewed on the grounds that if the owners live in the house only for a limited period of time, and cannot recoup the investment in a subsequent house sale, these measures are not seen to be cost-efficient. Of course, over a longer period

of time, structural reinforcements or other such measures might reap the benefit of lessened property damage in the event of a damaging earthquake, but it is the *short time horizon* of the individual owner which affects the calculation of cost.

The purchase of earthquake insurance is a more complex issue, which has been thoroughly examined in previous research (Kunreuther et al., 1978b). Because the federal government may aid the individual homeowner through several agencies, it has been argued that the anticipation of such aid may affect the investment in individual insurance policies. For example, the Federal Housing Administration has at times deferred loan payments or re-arranged payment schedules to provide short-term relief for homeowners with FHA-insured loans. At an even larger scale, after the 1964 Alaska earthquake, the Federal National Mortgage Association (FNMA), which purchases FHA and VA insured mortgages instituted a ruling forgiving the indebtedness on mortgages not covered by other insurance in exchange for a payment of only $1,000. In the Alaska Omnibus Act, the same terms were granted for mortgages held by private lenders when the damage exceeded 60 percent of the market value of the dwelling. Because homeowners who had regularly made payments for earthquake insurance and those with no outstanding mortgage did not benefit from such programs, it could be asked: "Will the less prudent be rewarded for their lack of foresight and planning?" (Haas et al., 1977, p. 66). Other federal aid to homeowners is provided by tax laws. Under the present federal tax structure, the uninsured homeowner with property damage can write off the loss against his or her income. The value of this provision varies with the tax bracket of the individual, but it has been estimated that from 5 to 15 percent of the total disaster loss is borne by the federal government in the form of tax relief (Dacy and Kunreuther, 1969, p. 43).

However, despite the availability of such federal aid, it has been found that the individual homeowner is unlikely to consider possible federal assistance in his decision to purchase or forego disaster insurance. In a major survey of approximately one thousand residents of communities susceptible to damage from riverine and coastal flooding and earthquakes, Kunreuther et al. (1979) found that few expected to rely on the federal government for disaster relief. Of the homeowners who did not carry earthquake insurance policies, 75 percent indicated they expected no federal aid whatsoever if the damage was less than or equal to $10,000, and only 18 percent indicated they expected "considerable" (over two-thirds of the damage) federal aid; when the total amount of damage exceeded $30,000, 50 percent of the uninsured homeowners still indicated they expected no federal aid, and only 13 percent indicated an expectation of "considerable" aid. It is therefore likely that expectations of federal aid are not related to the decision to take mitigation measures including the purchase of insurance, possibly because the question of how the household would manage after a damaging earthquake has not been consciously considered.

In short, because the house is viewed as an economic investment, and because structural reinforcements or earthquake insurance are unlikely to yield the same economic rewards as the addition of an extra bathroom or the construction of a deck or garage, earthquake mitigation measures are not adopted. This short-term decision both to move to a special studies zone or other hazardous area, and to forego hazard mitigation measures should be understood as rational and cost-efficient from the viewpoint of the individual homeowner. Although this conclusion may be unpalatable to policy-makers or to those viewing the potential for damage at a community- or state-wide level, it is a realistic assessment of individual decision-making. Furthermore, unless environmental hazards become translated into economic risks to

*individuals*, hazard warnings not followed by severe disasters will probably not be heeded, and homeowners will continue to purchase housing in areas susceptible to natural disasters regardless of the timing or form of the warning.

A second problem with the current disclosure legislation is the role of the "change agent," in this case the real estate salesperson. To be effective, the salesperson (change agent) should have a generally high degree of credibility to the homebuyers; buyers should be willing to give their trust to what he has to say and his evaluation of what might be an ambiguous problem. Although there has been prior research on those aspects of the sale which are most influenced by the real estate agent (Hempel, 1969), and the general role of the real estate agent within society (House, 1977), we know little about the level of confidence which buyers in general place in real estate agents. On the other hand, there is a generally held belief that buyers might not trust real estate agents, a wariness which may be partly attributed to the uncertainty on the part of the buyer as to whom the real estate agent is representing when a house is shown. Since the more knowledgeable and experienced buyers and sellers realize that it is the seller who actually pays the real estate agent commission, such wariness on the part of buyers is not completely unwarranted. The fact that the real estate agent does not operate with the same level of trust and confidence as, say, a family doctor or lawyer, suggests that buyers might not change their behavior or beliefs solely on the basis of information provided by the real estate agent.

Related to this notion is the fact that real estate agents might provide misinformation concerning the special studies zones, or reinforce wishful thinking on the part of the buyer that such zones are not meaningful. The misinformation provided by real estate agents may be attributed to a simple

lack of understanding about what the special studies zones mean, a factor present in the responses of some Contra Costa County agents. The reinforcement of wishful thinking is more subtle. Since real estate agents routinely present the special studies zones disclosure at the time the purchase contract is signed (after "the wife has mentally arranged the furniture in the living room" and a psychological commitment has been made to purchase the house), the buyers will not at this point be looking for reasons to reject the house. Instead the psychological commitment is accompanied by a desire to have the decision reinforced by information on the advantages of the property. Real estate agents may (sometimes sincerely) pander to this desire by downplaying the importance of a special studies zone location. The survey of real estate agents showed that most are not convinced that the zones are particularly important or meaningful. For example, only about a third of the real estate agents believe that people living within the zones are more likely to suffer physical injuries or financial losses attributable to earthquake damage than those who live elsewhere. Given this general attitude, the real estate agent may sincerely both comply with the disclosure law, and yet minimize the impact of the disclosure by downplaying its importance:

> This is just another government regulation.
>
> or
>
> I've lived [in this city] for 25 years. There has never been an earthquake [in this area] in human history!
>
> or
>
> We don't get damage from earthquakes [in this area].

Since most real estate agents are not convinced that the special studies zones outline particularly hazardous areas, they can reassure the prospective buyer and reinforce the likelihood of the sale, while still meeting the

legal requirements of disclosure. When this practice is combined with the possible misinformation about the meaning of special studies zones, and the overall lack of credibility of the real estate agent, it can be concluded that there are many opportunities for information to be provided in such a way that responses would be minimized.

A third problem with the current legislation lies in the nature of the zones themselves. Not all of the fault traces are easily defined at every point, and trenching is not feasible in all areas, particularly those in densely built-up neighborhoods. Maps at the scale used by boards of Realtors may therefore be inaccurate, and in any case often cannot distinguish whether border properties are actually within or outside the zones. The problem of accurate portrayal of individual parcels has become so severe that boards of Realtors have been urged not to make assessments of the location of individual parcels but rather to recommend a geologic survey (Prendergast, personal communication, 1980). Furthermore, the Contra Costa County Board of Realtors, fearful of legal repercussions involved with inaccuracies in their map, has ceased distributing special studies zones maps to member Realtors or their clients.

Even more serious is the fact that the zones themselves were defined for one purpose and have been interpreted to cover a far wider range of hazards. The zones outline areas containing traces of active faults, but they were not designed to include all of the areas susceptible to damage from earthquakes. It has been estimated that damage from surface fault rupture comprises only about 10 percent of the total potential associated with seismic activity, the remainder being caused by liquifaction, shaking, or ground failure. These latter effects are related to bedrock conditions as well as proximity to the fault, and are therefore unrelated in distribution to the special studies zones. It is therefore possible that the

rare sophisticated buyer, who knows that his house is near a fault but not directly on one, may be correct in an assessment that the purchase of a house in a special studies zone does not increase his liability to damage or injury. This buyer may be fully aware that the bedrock conditions make his particular house less susceptible to damage than those built on unstable slopes or landfill. Although the special studies zones were legislatively simple to define (areas an eighth of a mile on either side of a designated fault trace regardless of bedrock conditions), their simplicity is a disadvantage as well as an advantage in the accurate portrayal of earthquake risk. It is essential that if it is deemed important to fully inform buyers of environmental hazards, then the governmental units (state and county) must take more responsibility in identifying the truly hazardous zones so that homebuyers are more completely informed about the range of possible damage associated with earthquake activities at a variety of sites.

Finally, there are problems with the disclosure legislation itself. As was pointed out earlier, the method of disclosure was not specified within the law, and the standard methods minimize the impact of disclosure on buyers. The three standard formats used are the information in the Multiple Listing Service pages (used by 30 percent of the real estate agents interviewed), a map of the area with special studies zones drawn in (used by 70 percent) and a contract addendum (used by 91 percent of the respondents). The Multiple Listing Service form presents little information to the buyer. In Berkeley, disclosure on this form is simply a typed line stating "in Alquist-Priolo zone" or "in Alquist-Priolo district." To the uninitiated buyer, such a statement might mean anything, most probably the names of the state legislators for the area. In Contra Costa County, the form includes a line stating "special studies zone" and a box marked "yes" or "no." This disclosure tells the buyer nothing about the *meaning* of the zones. The

map, used particularly in Contra Costa County at the time of the survey, is a detailed street map of the region with the one percent floodplain in blue, the special studies zone in yellow, and areas of combined hazard in green. Terms are not defined on the map, and the districts *can* be used by the real estate agents to demonstrate to the prospective buyers that many other properties share the same characteristics, and that therefore such a zonation cannot be very important since so many houses are at risk. The third disclosure method is the signing of a contract addendum. This addendum, until recently, stated that "the property *is or may be* situated in a Special Studies Zone" (emphasis added). No definition of the special studies zone is presented, although the form does note that construction for human occupancy on the property may be subject to the findings of a geologic report unless such buildings are single-family wood-frame dwellings or were in existence prior to May 4, 1975. The words "seismic," "earthquake," or "fault" are nowhere mentioned in the contract addendum.

Although the prescription of methods in the law itself would not guarantee that disclosure would be heeded, it is possible that the memorability of the disclosure could be increased. At present, real estate agents are disclosing at the least sensitive time, and using methods which convey the least amount of information about special studies zones. It is suggested that legislative attention to these simple notions might yield important results in increasing buyer response to mandated disclosure.

## CONCLUSIONS

The problem of the disposal of developed areas near active fault traces has not been effectively handled. Buyers have had little response to mandated disclosure for several reasons. First, the information agent (the real estate agent) may have problems of credibility and role conflict; since

it is not in the best business interests of the real estate agent to make a disclosure "too effective," and since he is legally representing the seller, he has difficulty in presenting much negative information to the prospective homebuyer. In addition, some real estate agents are not well informed as to the nature of the special studies zones, how they have been defined, and the hazards they encompass.

A second reason for low buyer response lies in the emphasis placed on the house as a financial investment rather than as a permanent residence. Avoidance of the zones or adoption of costly mitigation measures are not seen as economically rational.

An additional factor which may lessen buyer response to disclosure is the belief on the part of homebuyers that there are few real alternatives. It is stated many times by buyers and real estate agents that "all California is earthquake country." What this means is that microzonation within a metropolitan area is meaningless, since all neighborhoods will be equally susceptible to destruction when a major earthquake occurs. When this general belief is combined with the existence of a "seller's market" for real estate (few vacancies, excess of demand over supply), buyers have little choice but to purchase a home they can afford whenever and wherever it becomes available. These supply constraints are very real to homebuyers, and may account for some of the responses of buyers within special studies zones who said that the zones did make some difference in their purchase decision, but were unable to translate this attitude into market behavior.

The findings of this study suggest several legislative needs. First, the legislature has to attempt to deal with the full range of hazards, natural and human-made, which face state residents. If earthquake hazards are truly deemed more important than some others, and if the legislature wishes to take effective action to mitigate these hazards, it must deal with

a more comprehensive definition of earthquake hazards, and reconsider legislation which would better inform residents about the hazards and possible mitigation strategies. Although taking such action may sound feasible and perhaps even simple, it will involve the courage to face the inevitable lobbying by those whose property investments might be impaired if homebuyers were made fully aware of associated geologic risks. Second, to cope with hazardous areas which have already been densely developed in residential uses, the state might institute a systematic scheme to purchase these areas, or to rezone them such that property improvement would be limited. This type of action may seem draconian, and is probably not a politically feasible option, but if such action were attempted and well-publicized, the homebuying public might be made more aware of the seriousness of the environmental hazards with which they are living.

It is possible that land use regulation would not be necessary if the financial community--mortgage lenders and investors--were made more aware of the risk involved over the long-term to property located in particular hazardous areas. If mortgage lenders were to translate their understanding of this risk into additional charges for mortgage loans or were even to refuse loans in areas designated as geologically hazardous, a very effective means of "disclosure" would be put into place. In short, the self-interest of mortgage lenders and investors would be made to work in the public interest with respect to changing the market in geologically hazardous portions of California. Even this scheme, however, is not free from problematic social consequences, which might involve a new concentration of impoverished people in upgraded but lower cost housing--making the low income household far more susceptible to environmental hazards than it already is.

The state legislature should probably give added attention to construction regulations, beyond the present concerns raised within the Seismic

Safety Commission. Since homebuyers seem to show a lack of interest or concern in adopting mitigation measures voluntarily, it would be in the public interest to devote considerable attention to building codes which would further reduce the hazards to life and property from seismic activity. Although construction regulations on public buildings and government facilities are now quite effective, further attention should be given to the extension of these regulations to the construction of single-family dwellings, built individually or as parts of larger projects.

Finally, the state should devote further resources to multiple dissemination techniques. In addition to disclosure by real estate agents, there should be continuing campaigns to inform residents about not only emergency procedures, but also the relative likelihood of damage to particular portions of the built-up area. The distribution of maps in telephone books, mailings to residents of identified areas such as special studies zones, public information programs on local mass media, and periodic news releases might heighten the overall awareness that there is a spatial differentiation in susceptibility to damage from earthquakes, and that certain mitigation measures can be taken *before* a damaging earthquake to reduce loss of life, injury, or damage to property.

Unfortunately there is no clear-cut answer to the dilemma of the disposal of areas susceptible to severe earthquake damage. At present the problem has not been dealt with effectively, and it is important that policy-makers at both the state and federal level realize the weaknesses inherent in simply assigning the task of disclosure to the real estate industry and assuming that homebuyers will therefore be making more informed decisions. What is clear is that the present disclosure law, while it has probably affected the behavior of developers of large-scale new housing projects, seems to have little or no impact on individual homebuyers. It

is clearly not a sufficient method of influencing buyer decisions or subsequent mitigation measures, and should not be considered as an effective means of consumer protection.

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# APPENDIX 1

PARTICIPATION IN THE MONITORED DISCLOSURE PROGRAM

Eight Berkeley real estate firms were contacted, and the brokers from six of these firms agreed to take part in the study. The following summarizes the participation of each of these firms with monitored disclosure.

Company 1

Six agents from Company 1 signed forms volunteering their participation in the study. Company 1 agents were asked to cooperate in one of the most potentially sensitive aspects of the study: presenting the illustrated brochure or the flyer at the time the offer to purchase is made and the deposit receipt is signed (preliminary to signing the contract for purchase of the house). Some of the agents reiterated their concern about making this presentation so late in the sales process. The agents felt we were asking them to spring a surprise on their clients, and they were reluctant to do so. After some discussion, most of the staff thought that particular time was not critical and there would be little problem in presenting the material when the client offered to purchase the house. We assured the Company 1 staff that the study was not designed to jeopardize any sale and that if the presentation of materials at the offer to purchase time presented insurmountable problems, they should present the material at an appropriate time. However, agents were encouraged to present the disclosure materials at the specific time; the agents agreed to keep an accurate record of when the material presentations were made.

Subsequent telephone follow-ups at tri-monthly intervals yielded little data. Company 1 handled few houses in the special studies zones during the study period (none proved useful for follow-up interviews). Several of the staff, however, were helpful in sending additional relevant information to the study on the earthquake hazard potential of the Bay Area.

Company 2

Three agents from Company 2 agreed to participate in the monitored disclosure program. They cooperated in presenting the illustrated brochure during the time the offer to purchase was made. We were able to interview one of this firm's clients following the completion of the sale. This staff was the only group of agents who readily agreed to study members accompanying them during their sales process to personally observe buyer reaction to the presentation of special studies zones information. However, the idea was preemptively abandoned. It became readily apparent that it was impossible for us to respond quickly and effectively to notification that a special studies zone sale was in the offing; notification that might be immediate or several months hence. It was similarly impossible for agents to give lengthy advance warning since sales were consummated whenever and wherever appropriate. The staff agreed with us that agents would probably make the special studies zones disclosure at the most opportune time and would not be tied to an agreement to present the material solely at a specified time.

Company 3

As a past officer of both the Berkeley and Contra Costa Boards of Realtors, the broker was enthusiastic in his support of the study. Seven agents from this office volunteered to participate in the study. However, the initial indications of support for the study belied the reluctance on the agents' part to become actively involved in gathering information for the study. The staff was asked to provide prospective homebuyers with the illustrated brochure when the agent was showing the client a selection of houses. Although several houses were sold in the Berkeley special studies zone, Realtors failed to distribute brochures or flyers.

Company 4

Seven agents affiliated with this company agreed to participate in the study. They were asked to distribute the study flyer prior to showing houses to clients. Lack of data from this source resulted from two major problems: (1) lack of sales in the special studies zones, and (2) a casual attitude toward both the meaning of the existence of the special studies zones and the seriousness of the study's attempts to measure the impacts of fault hazard information on homebuyer search space resulting in a "forgetting" to use the study materials.

Company 5

Twelve agents of this company indicated an interest in cooperating with the study. Initially, the office manager told us that the agency would not supply names of clients for interview purposes to the study. It was agreed that an attached postcard to the materials, which the homebuyer could return to the study to indicate his/her interest in being interviewed, was acceptable. The staff was asked to present the illustrated brochure during the time prior to the showing of houses to clients. A misunderstanding of methodology resulted in the material not being distributed. It was, then, decided that a stack of the brochures on the front desk at the firm's entrance might generate some interest. However, the lack of control over timing and method of presentation meant that any returns from this effort would be interesting but unusable. The staff supplied the study with supplemental information on the disclosure of special studies zones on the multiple listing service form.

Company 6

Six agents from this office agreed to participate in the study. The staff was asked to present the study flyer at the time of the showing of homes. Unfortunately, no sales in the special studies zones occurred during the study period.

Companies 7 and 8

Both of the brokers of these firms were past officers of the California Association of Realtors, but following our study presentation they declined to participate in the study.

# Appendix 2

Interview completed _____

Coded _____

SPECIAL STUDIES ZONES QUESTIONAIRE

Institute of Behavioral Science
Department of Geography
University of Colorado
Boulder, Colorado 80309

SPRING, 1979

STUDY OF REAL ESTATE AGENTS AND THE DISSEMINATION OF HAZARDS INFORMATION (REAHI)

CARD 01

Time Interview began: _____ A.M. _____ P.M. DATE: _____ '79 _____

Time Interview ended: _____ " _____ "

Interviewer's Name: _____ DK(1) RdF(2) RP(3) 1 - 4

INTERVIEWEE: _____ Address: _____

Telephone Nr. _____

Respondent: M - 1
F - 2 5

///

NOTES:

Call Log _____

_____

_____

_____

Remarks of respondent of special interest:

_____

_____

_____

_____

Univ. of Colorado - IBS(REAHI) 3/19/'79 - 3rd run - 50 copies
- 4th run - 40 copies (no change)

RESIDENCE CARD 01 cont'd

1. FIRST, HOW LONG HAVE YOU LIVED IN YOUR PRESENT HOME? _____mo. 7-8

2. WAS YOUR PREVIOUS HOME IN THE San FRANCISCO AREA? _____yes(1) 10
_____no (2)

3. WHAT COMMUNITY WAS IT LOCATED IN? _____town 12-21
_____state 24
Calif.=1; Other=2

4. ABOUT HOW LONG DID YOU LIVE THERE? _____years 26-27

5. DID YOU RENT OR DID YOU OWN YOUR PREVIOUS HOME? _____rent (1) 29
_____own (2)

6. deleted (2/16/'79)

7. deleted (2/16/'79)

____native (1) 45

8. IN TOTAL, HOW LONG HAVE YOU LIVED IN CALIFORNIA? _____years 47-48

continue next page

OPEN ENDED, GENERAL

CARD 01 cont'd

9. WHAT ARE SOME OF THE THINGS THAT YOU LIKE MOST ABOUT LIVING IN _____; THINGS THAT YOU THINK ARE ADVANTAGES AND THAT MAKE THIS A GOOD PLACE TO LIVE?
(characterize responses)

50-69

10. WHAT ARE SOME OF THE THINGS THAT YOU DON'T LIKE ABOUT LIVING IN _____; THINGS THAT YOU THINK ARE DISADVANTAGES?
(characterize responses)

71-80

CARD 02

identification → 1-7

continue data ques.#10 → 8-17

continue to next page

SEARCH PROCESS CARD 02 cont'd

11. I WILL READ TO YOU A LIST OF FACTORS WHICH MAY HAVE BEEN IMPORTANT TO YOU WHEN YOU MADE YOUR DECISION TO BUY YOUR HOME.

PLEASE RATE EACH FACTOR ACCORDING TO IMPORTANCE:

VERY IMPORTANT, SOMEWHAT IMPORTANT, NOT IMPORTANT, OR DID NOT CONSIDER. 1 2 3 4

| | | |
|---|---|---|
| CLOSENESS TO FRIENDS OR RELATIVES | _____ | (19) |
| PRICE | _____ | (21) |
| NUMBER OF BEDROOMS | _____ | (23) |
| CLOSENESS TO SCHOOLS | _____ | (25) |
| QUALITY OF THE LOCAL PUBLIC SCHOOLS | _____ | (27) |
| DISTANCE TO WORK | _____ | (29) |
| AIR QUALITY | _____ | (31) |
| LOCATION OUT OF A FLOODPLAIN | _____ | (33) |
| ACCESSIBILITY TO BART STATION | _____ | (35) |
| BEAUTY OF THE AREA | _____ | (37) |
| INVESTMENT POTENTIAL OR RESALE VALUE | _____ | (39) |
| VIEW | _____ | (41) |
| DISTANCE FROM AN ACTIVE EARTHQUAKE FAULT | _____ | (43) |
| SOCIAL COMPOSITION OF THE NEIGHBORHOOD | _____ | (45) |
| REPUTATION OF CRIME RATE IN THE NEIGHBORHOOD | _____ | (47) |

Coding: vy important = 1, sm what improtant = 2,
not " = 3, did'nt consider = 4

12. WERE THERE ANY FACTORS THAT I HAVEN'T NAMED THAT WERE MORE IMPORTANT?

_____ yes, specify: _____ (49)

Note: coding to be assigned

_____ (51)

_____ (53)

_____ (55)

continue next page



3/19/79

SEARCH PROCESS cont'd

CARD 02 cont'd

13. HOW LONG DID IT TAKE YOU TO FIND YOUR HOME AFTER YOU STARTED LOOKING? _____ _____ days/weeks/months (57 58 59) 57-59 ____

14. ABOUT HOW MANY HOUSES DID YOU PERSONALLY LOOK AT (GO INTO) BEFORE YOU BOUGHT THIS ONE? _____ (number) 61-63 _____

SEARCH AREA

Bay Area → CARD 03

LA Area → CARD 04

15. WHAT WERE THE NEIGHBORHOODS OR COMMUNITIES IN WHICH THESE HOMES WERE LOCATED?

A. _____ B. _____ C. _____ _____

D. _____ E. _____ F. _____ _____

G. _____ _____

CARD 03

1-7 Identification

| | | |
|---|---|---|
| 8 Alamo | 26 BLANK | 44 Kensignton |
| 9 Antioch | 27 San Ramon | 45 Novato |
| 10 Brentwood | 28 Walnut Creek | 46 BLANK |
| 11 Clayton | 29 tba | 47 San Rafael |
| 12 Concord | 30 BLANK | 48 Sausilito |
| 13 Cowell | 31 Berkley | 49 Montclair |
| 14 Danville | 32 tba | 50 Oakland |
| 15 Diablo | 33 tba | 51 BLANK |
| 16 Dublin | 34 tba | 52 Piedmont |
| 17 Lafayette | 35 tba | 53 San Mateo |
| 18 Martinez | 36 BLANK | 54 San Frncsco |
| 19 Moraga | 37 BLANK | 55 tba |
| 20 BLANK | 38 BLANK | 56 BLANK |
| 21 Orinda | 39 BLANK | 57 tba |
| 22 Pittsburg | 40 Alameda | 58 tba |
| 23 Pleasant Hill | 41 Albany | 59 tba |
| 24 Rheem Valley | 42 El Cerrito | 60 tba |
| 25 San Jose | 43 Hayward | 61 OTHER → (outside of SFBA SMSA) |

CARD 04

1-7 Identification

| | |
|---|---|
| 8 Altadena | 26 BLANK |
| 9 Burbank | 27 Tarzana |
| 10 Canoga Park | 28 Tujunga |
| 11 Chalsworth | 29 Van Nuys |
| 12 Encino | 30 Woodland Hills |
| 13 Glendale | 31 BLANK |
| 14 Granada Hills | 32 tba |
| 15 Hidden Hills | 33 tba |
| 16 La Canada | 34 tba |
| 17 Los Angeles | 35 tba |
| 18 Mission Hills | 36 tba |
| 19 No. Hollywood | |
| 20 BLANK | |
| 21 Northridge | |
| 22 Panorama City | |
| 23 Pasadena | 61 OTHER → (outside of LA SMSA) |
| 24 Resida | |
| 25 Sherman Oaks | |

continue next page

MISCELLANEOUS INFORMATION

CARD 05

Identification ---- 1-7

16. DID YOU FEEL THAT YOU HAD ENOUGH TIME TO BECOME THOROUGHLY ACQUAINTED WITH THE HOUSING MARKET BEFORE YOU BOUGHT THIS HOME?

_____yes (1) _____no (2) 9

17. WHAT WAS THE NAME OF THE REAL ESTATE AGENT THAT HELPED YOU BUY YOUR HOUSE?

_____(name) 11-13

Coding: see Realtor/Real Estate Agents Code

18. WHAT REAL ESTATE COMPANY DID YOUR AGENT REPRESENT?

_____(company name) 14-16

Coding: see company code list

19. not used

continue next page

SORTING CARD 05 cont'd

20. HAVE YOU EVER HEARD THE TERM "SPECIAL STUDIES ZONE" OR "ALQUIST - PRIOLO ZONE?"

_____no (1) _____yes (2) probe 18

continue

say: THE TERMS SPECIAL STUDIES ZONES AND ALQUIST-PRIOLO ZONE ARE USED INTERCHANGEABLY. I WILL BE REFERRING TO THESE AS SPECIAL STUDIES ZONES.

ask: WHAT DOES THE PHRASE "SPECIAL STUDIES ZONE" MEAN TO YOU?

(1) _____earthquake hazard 20

GO TO QUESTION # 30

(2) _____other

continue

21. AS FAR AS YOU KNOW, IS YOUR HOME LOCATED IN A SPECIALLY DESIGNATED FLOOD PLAIN OR EARTHQUAKE PRONE AREA AS DEFINED BY STATE OR FEDERAL LAWS?

_____no (1) _____yes (2) probe 22

continue

ask: WHAT KIND OF SPECIALLY DESIGNATED AREA?

(1) _____earthquake fault zone 24

GO TO QUESTION # 40

(2) _____other

continue

continue next page

SORTING cont'd

CARD 05 cont'd

22. MY NEXT QUESTION INVOLVES YOUR RECALLING THE TIME WHEN YOU FIRST MADE A FORMAL OFFER TO PURCHASE YOUR HOME.

WHEN YOU FIRST SIGNED A CONTRACT OFFERING TO BUY THE HOUSE YOU ARE LIVING IN, DO YOU RECALL THE REAL ESTATE AGENT PROVIDING YOU WITH A FORM OR AN ADDENDUM TO THE CONTRACT INDICATING ANYTHING SPECIAL OR PARTICULAR ABOUT THE LOCATION OF THE HOUSE?

_____no (1) ---------- GO TO QUESTION # 50

_____yes(2) probe 26

ask: DO YOU RECALL WHAT WAS THE SPECIAL CONDITION REFERRED TO?

____no (1) ---------- GO TO QUESTION # 50

____yes (2) (earthquake hazard) 28

continue

23. DID THE LOCATION OF (their term for earthquake hazard) MAKE ANY DIFFERENCE IN YOUR DECISION TO BUY THIS PARTICULAR HOUSE?

_____no (1) ____yes (2) probe 30

continue

ask: HOW DID IT AFFECT YOUR DECISION?

___tried to avoid areas in search (1)

___tried to bargain for lwr price (2)

___other (specify) (3-9, tba)

32

continue

24. TO WHAT DEGREE ARE PEOPLE WHO LIVE IN (their term) MORE SUSCEPTIBLE TO LOSSES FROM EARTHQUAKES COMPARED TO THOSE WHO LIVE ELSEWHERE IN THE BAY AREA (or LOS ANGELES AREA)? ARE THEY MORE SUSCEPTIBLE, LESS SUSCEPTIBLE, OR DOESN'T IT MAKE ANY DIFFERENCE?

____more (1) ____less (2) ___no difference (3) ____dont known (4)

34

25. DO YOU THINK THAT BEING IN A (their term) WILL AFFECT THE PRICE OF YOUR HOUSE OR YOUR ABILITY TO SELL IT WHEN YOU DECIDE TO MOVE?

____no (1) ____dont know (2) ____yes (3) probe 36

Coding: see checklist tba HOW? _____ 38



GO TO QUESTION # 50

TERM A-PZ OR SSZ CORRECTLY IDENTIFIED — CARD 05 cont'd

30. HOW DID YOU FIRST LEARN OF THE EXISTENCE OF SPECIAL STUDIES ZONES?

___real estate agent (1) ___friend/associate (2)

___neighbor (3) ____newspaper story (4) 40

___city/county gov't (5) ____other (specify) (6,7,8,9)

_____

31. WHEN DID YOU FIRST HEAR ABOUT SPECIAL STUDIES ZONES? WAS IT:

____BEFORE YOU STARTED LOOKING FOR THIS HOUSE? (1)

____DURING THE TIME YOU WERE LOOKING FOR A HOME? (2)

____AFTER YOU HAD ALREADY DECIDED ON YOUR HOME BUT BEFORE YOU MOVED IN? (3) 42

____other (specify) _____ (4-9)

32. IS YOUR PRESENT HOME IN A SPECIAL STUDIES ZONE? (2/16/79)

_____yes (1) _____no (2) probe 44

continue

Say: MY NEXT QUESTION INVOLVES YOUR RECALLING THE TIME WHEN YOU FIRST MADE A FORMAL OFFER TO PURCHASE YOUR HOME.

Ask: WHEN YOU FIRST SIGNED A CONTRACT OFFERING TO BUY YOUR HOUSE, DO YOU RECALL THE REAL ESTATE AGENT PROVIDING YOU WITH A FORM OR AN ADDENDUM TO THE CONTRACT INDICATING THAT THE HOUSE WAS IN A SPECIAL STUDIES ZONE?

____no (2) → JUMP TO QUESTION # 50

____yes (1) continue 46

continue next page

TERM CORRECTLY IDENTIFIED cont'd

CARD 05 cont'd

33. WHEN DID YOU FIRST LEARN THAT IT WAS IN A SPECIAL STUDIES ZONE?

____WHEN YOU FIRST SAW IT, AT SHOWING? (1)

____WHEN YOU SIGNED THE PURCHASE AGREEMENT? (2)

____OR, WAS IT WHEN YOU ATTENDED THE CLOSING? (3)

_____other time (specify) (4,5-9 tba) 48

_____(n)

34. HOW OR FROM WHOM DID YOU LEARN THAT IT WAS IN A SPECIAL STUDIES ZONE? 50

_____neighbor (1)

_____picture in MLS Bk (2)

_____other (specify) (4, 5-9 tba)

_____

continue next page

_____real estate agent (3) probe

Ask: HOW DID THE REAL ESTATE AGENT GO ABOUT INFORMING YOU THAT THE PROPERTY WAS IN THE SPECIAL STUDIES ZONE?

FOR EXAMPLE, DID HE OR SHE ASK YOU TO INITIAL OR SIGN A PORTION OF THE PURCHASE CONTRACT INDICATING THAT THE HOUSE WAS IN A SPECIAL STUDIES ZONE?

_____yes (1) probe 52

Ask: DID THE REAL ESTATE AGENT DESCRIBE TO YOU WHAT THIS MEANT: WHAT DID HE/SHE SAY? (see code below)

_____no (1) probe 54

Ask: THEN WHAT DID THE REAL ESTATE AGENT DO? (see coding below)

Coding: Real Estate Action (multiple answers possible) (code all = 1)

56 ____contract addendum

57 ____Board of Realtors Map used 56-57

59 ____other written explanation on earthquake haz.

60 ____county/city planning map used 59-60

62 ____suggested books to read on earthquake hazards

63 ____USGS topo map with SSZ's 62-63

65 ____engineer/geologist's report

66 ____MLS book with SSZ designation 65-66

68 ____other: _____(tba) 68

TERM CORRECTLY IDENTIFIED cont'd

CARD 05 cont'd

35. Note: If the role of the real estate agent has not been probed thru the right hand branch of question #34, do so at this time.

Say: MY NEXT QUESTION INVOLVES YOUR RECALLING THE TIME WHEN YOU FIRST MADE A FORMAL OFFER TO PURCHASE YOUR HOME.

Ask: WHEN YOU FIRST SIGNED A CONTRACT OFFERING TO BUY YOUR HOUSE, DO YOU RECALL THE REAL ESTATE AGENT PROVIDING YOU WITH A FORM OR AN ADDENDUM TO THE CONTRACT INDICATING THAT THE HOUSE WAS IN A SPECIAL STUDIES ZONE?

____yes (1) ____no (2) ____dont know (3) → 70 ____

36. DID THE LOCATION OF THE SPECIAL STUDIES ZONES MAKE ANY DIFFERENCE IN YOUR DECISION TO BUY THIS PARTICULAR HOUSE?

____no (1) ____yes (2) probe 72 ____

continue

Ask: HOW DID IT AFFECT YOUR DECISION?

____tried to avoid areas in search (1)

____tried to bargain for lwr price (2)

____other (specify) (3, 4-9 tba)

_____ 74 ____

37. TO WHAT DEGREE ARE PEOPLE WHO LIVE IN SPECIAL STUDIES ZONES MORE SUSCEPTIBLE TO LOSSES FROM EARTHQUAKES COMPARED TO THOSE WHO LIVE ELSEWHERE IN THE BAY (LOS ANGELES) AREA?

ARE THEY MORE SUSCEPTIBLE, LESS SUSCEPTIBLE, OR DOSEN'T MAKE ANY DIFFERENCE?

____more (1) ____less (2) ____no diff. (3) ____dont know (4) 76 ____

38. DO YOU THINK THAT BEING IN A SPECIAL STUDIES ZONE WILL AFFECT THE PRICE OF YOUR HOUSE OR YOUR ABILITY TO SELL IT WHEN YOU DECIDE TO MOVE?

____no (1) ____yes, price lower (2) ____yes, more difficult to sell (3) 78 ____

____dont know (4) ____other:_____(5,6-9 tba)

→ JUMP TO QUESTION # 50

PHENOMENA CORRECTLY IDENTIFIED

CARD 06

identification -- 1-7

40. HOW DID YOU FIRST LEARN OF THE EXISTANCE OF (their term)?

_____real estate agent (1)
_____friend/associate (2)
_____neighbor (3)
_____newspaper account (4)
_____read about them somewhere (5)
_____city/county gov't (6)
_____TV pub. info. (7)
_____other (8)_____ 9

41. WHEN DID YOU FIRST LEARN THAT THERE WERE SUCH AREAS AS (term)?

_____before starting to look for this house (1)
_____during the time you were looking for this house (2)
_____after you had already decided on your home but before you moved in? (3)
_____other (4) _____(5-9,tba) 11

42. WHEN DID YOU FIRST LEARN THAT THIS PARTICULAR HOUSE WAS IN A ( their term )?

_____when I first saw it - at showing (1)
_____when I signed the purchase agreement (2)
_____at closing (3)
_____other (4) _____(5-9,tba) 13

continue next page

PHENOMENA CORRECTLY IDENTIFIED cont'd — CARD 06 cont'd

43. FROM WHOM OR HOW DID YOU LEARN THAT IT WAS IN A ( their term )? FOR EXAMPLE, WAS IT FROM: 15

____A NEIGHBOR? (1)

____PICTURE IN MLS BK? (3)

____OTHER PERSON? (4)

_____(5-9)

continue: MY NEXT QUESTION INVOLVES YOUR RECALLING THE TIME WHEN YOU FIRST MADE A FORMAL OFFER TO PURCHASE YOUR HOME.

WHEN YOU FIRST SIGNED A CONTRACT OFFERING TO BUY THIS HOUSE, DO YOU RECALL THE REAL ESTATE AGENT PROVIDING YOU WITH A FORM OR AN ADDENDUM TO THE CONTRACT INDICATING THAT THE HOUSE WAS IN A ( their term )?

____ no (code "1" @ 21)

____dk (code "2" @ 21)

____yes (code "3" @ 21) probe

Ask: DID THE REAL ESTATE AGENT DESCRIBE WHAT THIS MEANT? (see code below)

____REAL ESTATE AGENT (2) probe

Ask: HOW DID THE REAL ESTATE AGENT GO ABOUT INFORMING YOU THAT THE PROPERTY WAS IN ( their term)?

FOR EXAMPLE, DID HE/SHE ASK YOU TO INITIAL OR SIGN A PORTION OF THE PURCHASE CONTRACT INDICATING THAT THE HOUSE WAS IN ( term )?

____yes (1) probe 17

Ask: DID THE REAL ESTATE AGENT DESCRIBE TO YOU WHAT THIS MEANT: WHAT DID HE/SHE SAY? (see code below)

____no (1) probe 19

Ask: THEN WHAT DID THE REAL ESTATE AGENT DO? (see coding below)

21

Coding: Real Estate Action (multiple answers possible) (code all = 1)

23 ____contract addendum

24 ____Board of Realtors Map used 23-24

26 ____other written explanation on hazard

27 ____county/city planning map used 26-27

29 ____suggested books to read on earthquake hazard

30 ____USGS topo map with SSZ's 29-30

32 ____engineer/geologist's report

33 ____MLS book with SSZ designation 32-33

35 ____other: _____(tba) 35

continue next page

PHENOMENA CORRECTLY IDENTIFIED cont'd — CARD 06 cont'd

44. DID THE LOCATION OF THE ( their term ) MAKE ANY DIFFERENCE IN YOUR DECISION TO BUY THIS PARTICULAR HOUSE?

_____no (1) _____yes (2) probe 40

continue

Ask: HOW DID IT AFFECT YOUR DECISION?

_____tried to avoid area in search (1)

_____tried to bargain for lower price (2)

_____other: _____(3,4-9) 42

continue

45. TO WHAT DEGREE ARE PEOPLE WHO LIVE IN ( their term ) MORE SUSCEPTIBLE TO LOSSES FROM EARTHQUAKES COMPARED TO THOSE WHO LIVE ELSEWHERE IN THE BAY (LOS ANGELES) AREA?

ARE THEY MORE SUSCEPTIBLE, LESS SUSCEPTIBLE, OR DOSEN'T MAKE ANY DIFFERENCE?

_____more (1) ____less (2) ____no difference (3) _____dont know (4) 44

46. DO YOU THINK THAT BEING IN A ( their term ), WILL AFFECT THE PRICE OF YOUR HOUSE OR YOUR ABILITY TO SELL IT?

_____no (1) _____yes (2) probe 46

continue

Ask: HOW?

____price lower (1)

____more difficult to sell (2)

____dont know (3)

____other: _____(4,5-9) 48

continue

continue next page

CONCLUDING QUESTIONS (All Respondents) CARD 06 cont'd

50. DO PEOPLE IN YOUR NEIGHBORHOOD USUALLY HAVE EARTHQUAKE INSURANCE?

_____yes (1) _____no (2) _____dont know (3) 50 _____

51. DO YOU HAVE EARTHQUAKE INSURANCE?

_____yes (1) _____ no (2) _____dont know (3) 52 _____

52. DO YOU THINK THAT A MAJOR EARTHQUAKE WILL OCCUR IN THIS AREA WHILE YOU ARE LIVING HERE?

definitely probably possibly dont think so prob. not no 54 _____

1 2 3 4 5 6

53. IF YOU WERE WARNED THAT A MAJOR EARTHQUAKE WOULD OCCUR HERE IN THE NEXT MONTH, WHAT WOULD YOU DO?

_____try to sell house (1) _____wait for more information (2)

_____buy earthquake insurance (3) _____secure pers. property (4)

_____nothing (5) _____shut off utilities (6)

_____evacuate (7) _____other (describe) (8,9) 56 _____

_____ 57 _____

_____

54. IS THERE ANYTHING THAT THE GOVERNMENT OR PEOPLE IN YOUR COMMUNITY WORKING TOGETHER COULD DO TO LESSEN THE DAMAGE FROM AN EARTHQUAKE?

_____no (1) _____yes (3) probe

_____dont know (2) WHAT? _____ 58-59 _____

_____

_____

_____

_____

_____

_____

continue

continue next page

****** NOW I HAVE JUST THREE FINAL QUESTION ABOUT YOU. CARD 06cont'd ____

55. HAVE YOU EVER BEEN IN AN EARTHQUAKE?

_____yes (1) _____no (2) _____dont know (3) 61 _____

56. HOW MANY YEARS OF SCHOOL HAVE YOU COMPLETED? _____yrs 63-64 _____

57. DO YOU IDENTIFY WITH ANY PARTICULAR ETHNIC OR RACIAL GROUP?

_____ (probe for name of group) 66 _____

| Coding: | 1 white/cau - Foreign born |
|---|---|
| | 2 " " - Native |
| | 3 Arabic |
| | 4 black/Afro-American |
| | 5 Hispanic/Chicano/Spanish American/Mexican |
| | 6 Oriental/Chinese/Japanese/Korean/East Indian |
| | 7 Indian/Native American/American Indian |
| | 8 Other |

**********THANKYOU VERY MUCH FOR YOUR TIME AND FOR SHARING YOUR EXPERIENCE WITH US. YOU HAVE HELPED US A GREAT DEAL WITH YOUR ANSWERS.

_____ _____

GOODBYE.

(Enter Time interview concluded) _____

_____

NOTES:

IS THIS INTERVIEW QUESTIONABLE IN QUALITY? _____(1) 72 _____

REASON FOR QUESTIONABLE QUALITY: spoke English poorly ___(1)

evasive, suspicious ___(2)

confused by interruptions ____(3) drunk, mentaly disturbed ___(4)

bored or uninterested _____(5) poor hearing ____(6)

other _____(8) low intelligence ____(7)

_____ 74 _____

END DECK ___



2/16/79

Appendix 3

Institute of Behavioral Science - University of Colorado - Boulder, Colorado 80309

NAME _____ ADDRESS _____

1. Please indicate the most severe earthquake you have personally experienced:

_____ major damaging earthquake (e.g., San Fernando of 1971)

_____ moderate tremor (e.g., Santa Barbara, 1978)

_____ minor tremor (barely felt movement)

_____ no major or minor earthquake

Have you ever been injured or your home damaged by an earthquake?

_____ no _____ yes (If yes, what type of injury or property damage?)

_____

_____

2. Have you taken any specific actions to reduce possible earthquake damage to your house and its contents?

_____ no _____ yes (If yes, describe what actions you have taken and give a rough estimate of the dollar cost of each.)

_____

_____

_____

3. Do you recall ever having received any information that might have been helpful to you concerning earthquake preparedness?

_____ no _____ yes (If yes, what were the sources of this information - please check as many as are appropriate.)

_____ radio _____ newspaper articles

_____ TV advertisements _____ newspaper advertisements

_____ TV programs _____ telephone book

_____ neighborhood group or other organization (please name the group or organization _____)

_____ other (please specify _____)

4. How long do you plan on living in your present home?

_____ less than 1 year _____ 1-3 years _____ 4-6 years _____ 7 or more years

5. If you decide to sell your home, what will you tell future residents about the Alquist-Priolo Special Studies Zone?

_____

_____

(over)

_____

6. The following is a list of preparation suggestions that have been made by various agencies and groups that are concerned with earthquake preparedness. Please indicate if you HAVE DONE any of these things either because of a future earthquake or for some other reasons, or whether you PLAN TO DO any of these things because of a future earthquake or for some other reasons, or whether you DON'T PLAN TO DO any of these.

| | HAVE DONE | | PLAN TO DO | DON'T PLAN TO DO |
|---|---|---|---|---|
| | primarily because of a future earthquake | primarily for other reasons | | |
| Maintain emergency supplies of water | | | | |
| Maintain emergency supplies of canned and dehydrated food | | | | |
| Have a working battery radio | | | | |
| Have a first aid kit | | | | |
| Have a working flashlight | | | | |
| Structurally reinforced house | | | | |
| Re-arrange contents of cupboards to minimize risk of breakages | | | | |
| Install or replace secure latches on cupboard doors | | | | |
| Inquired about earthquake insurance | | | | |
| Bought earthquake insurance (as separate policy from usual home-owner's policy on theft and fire) | | | | |
| If you have children: instructed the children in what to do in an earthquake | | | | |
| Developed family plans to meet somewhere after the earthquake | | | | |
| Developed family plans to be followed in an emergency such as shutting off gas, etc. | | | | |
| Asked for information and ideas from neighbors and friends concerning earthquake preparedness | | | | |
| Set up neighborhood responsibility plans in the event of an emergency to care for children, the elderly, and others requiring special care | | | | |

Appendix 4

Interview completed _____

IDENTIFIED REAL ESTATE QUESTIONNAIRE-- TELEPHONE INTERVIEW

Coded _____

Institute of Behavioral Science
Department of Geography
University of Colorado
Boulder, Colorado 80309

SPRING, 1979

STUDY OF REAL ESTATE AGENTS AND THE DISSEMINATION OF HAZARDS INFORMATION

CARD 01

Time interview began: _____ A.M. _____ P.M. Date: _____ '79

Time interview ended: _____ A.M. _____ P.M.

Interview's Name: _____ DK(1) RdF (2) (1-4) _____

REAL ESTATE AGENT _____

AGENCY _____

ADDRESS _____

_____

PHONE _____

(script) HELLO. THIS IS _____ CALLING LONG DISTANCE FROM THE UNIVERSITY OF COLORADO IN BOULDER. I AM FOLLOWING UP A LETTER WE SENT TO YOU A FEW WEEKS AGO EXPLAINING A STUDY THE DEPARTMENT OF GEOGRAPHY IS DOING REGARDING THE EXPERIENCES OF REAL ESTATE AGENTS SELLING PROPERTY IN THE ALQUIST-PRIOLO SPECIAL STUDIES ZONES.

WOULD IT BE MOST CONVENIENT FOR ME TO MAIL A QUESTIONNAIRE FOR YOU TO FILL OUT AND RETURN TO US;

Mail _____ Pick up _____

OR TO ARRANGE A PHONE INTERVIEW AT ANOTHER TIME;

Time _____ Date _____

OR IS IT CONVENIENT FOR ME TO INTERVIEW YOU BY PHONE NOW?

THE INTERVIEW TAKES 5-10 MINUTES AND CONSISTS OF GENERAL OPEN-ENDED QUESTIONS. IF THERE ARE ANY QUESTIONS WHICH FOR ANY REASON YOU DO NOT CARE TO ANSWER, YOU ARE IN NO WAY OBLIGED TO DO SO. EVERYTHING YOU TELL US WILL BE KEPT COMPLETELY CONFIDENTIAL AND YOUR NAME WILL NOT BE CONNECTED IN ANY WAY WITH THE FINDINGS OF THIS STUDY.

FIRST, I'D LIKE YOU TO GENERALIZE, AS MUCH AS POSSIBLE, YOUR TOTAL RESIDENTIAL SALES EXPERIENCES.

CARD 01 (cont.)

1. BASED ON YOUR EXPERIENCE SELLING HOMES, RATE THE FOLLOWING FACTORS ACCORDING TO HOW FREQUENTLY THEY ARE MENTIONED AS IMPORTANT BY HOMEBUYERS. I'D LIKE YOU TO RATE EACH ITEM AS USUALLY MENTIONED BY HOMEBUYERS, SOMETIMES MENTIONED, OR RARELY MENTIONED.

| Code: 1 - usually mentioned<br>2 - sometimes mentioned<br>3 - rarely mentioned |
|---|

| | | |
|---|---|---|
| CLOSENESS TO FRIENDS OR RELATIVES . . . . . | _____ | (5) _____ |
| PRICE OF HOME . . . . . | _____ | (6) _____ |
| NUMBER OF BEDROOMS OR SIZE OF HOME . . . . | _____ | (7) _____ |
| CLOSENESS TO SCHOOLS . . . . . | _____ | (8) _____ |
| QUALITY OF THE LOCAL PUBLIC SCHOOLS . . . . | _____ | (9) _____ |
| DISTANCE TO WORK . . . . . | _____ | (10) _____ |
| AIR QUALITY . . . . . | _____ | (11) _____ |
| LOCATION OUTSIDE A FLOODPLAIN . . . . . | _____ | (12) _____ |
| ACCESSIBILITY TO BART STATION OR BUS ROUTE . . . . . | _____ | (13) _____ |
| BEAUTY OF THE AREA . . . . . | _____ | (14) _____ |
| INVESTMENT POTENTIAL OR RESALE VALUE . . . | _____ | (15) _____ |
| VIEW . . . . . | _____ | (16) _____ |
| DISTANCE FROM AN ACTIVE EARTHQUAKE FAULT . | _____ | (17) _____ |
| ECONOMIC AND AGE COMPOSITION OF THE NEIGHBORHOOD . . . . . | _____ | (18) _____ |
| PERCEPTION OF CRIME RATE IN THE NEIGHBORHOOD . . . . . | _____ | (19) _____ |

2. WERE THERE ANY OTHER FACTORS WHICH WERE MORE FREQUENTLY MENTIONED BY HOMEBUYERS?

_____ Yes. Specify: _____ (20) _____

_____ (21) _____

_____ (22) _____

_____ (23) _____

(24) _____

(25) _____

(26) _____

CARD 01 (cont.)

WE WOULD NOW LIKE TO ASK YOU SOME QUESTIONS ABOUT YOUR EXPERIENCES WITH THE ALQUIST-PRIOLO SPECIAL STUDIES ZONES.

FIRST,

3. WHAT, IN GENERAL, DO YOU USUALLY TELL YOUR CLIENTS THE SPECIAL STUDIES ZONES MEAN? (WHAT IS THE INTERPRETATION OF THE DESIGNATED SSZ IN YOUR AREA?)

_____ earthquake/fault hazard (1)

_____ flood hazard (2)

_____ other geologic hazard (3) (28)_____

other (specify) _____

_____

_____

4. HOW DO YOU USUALLY GO ABOUT INFORMING CLIENTS ABOUT PROPERTY LOCATED IN SPECIAL STUDIES ZONES?

(30)_____

(31)_____

(32)_____

(33)_____

(34)_____

(35)_____

(36)_____

5. HAVE YOU EVER HAD A CLIENT DECIDE NOT TO BUY A HOME AFTER BEING INFORMED THAT THE PROPERTY WAS IN AN ALQUIST-PRIOLO SPECIAL STUDIES ZONE?

_____ yes (1)

If yes: HOW MANY OF YOUR CLIENTS HAVE DECIDED NOT TO BUY HOMES IN SPECIAL STUDIES ZONES?

_____ (40-41)

WHAT PERCENTAGE OF CLIENTS DOES THIS REPRESENT?

_____ % (43-44)

IS THE CLIENT WHO REFUSES TO PURCHASE A HOME IN THE SPECIAL STUDIES ZONES MORE LIKELY TO BE AN IN-STATE OR OUT-OF-STATE BUYER? (50)

_____ in-state (1)

_____ out-of-state (2)

_____ no difference (3)

_____ no (2)

If no: DO YOU THINK HOME-BUYERS ARE WORRIED ABOUT HOUSE LOCATION IN THE SPECIAL STUDIES ZONES?

Probe: WHY? (46-49)

(Note: Coding to be assigned.)

(38) _____

(40-41) _____

(43-44) _____

(46) _____

(48) _____

(49) _____

(50) _____

(51) _____

(52) _____

(53) _____

(54) _____

(55) _____

(56) _____

(57) _____

6. ABOUT HOW MANY PEOPLE WHO PURCHASED HOMES FROM YOU IN THE SPECIAL STUDIES ZONES ASKED YOU ABOUT THE AVAILABILITY OF EARTHQUAKE INSURANCE

_____ #

(59-60) _____

ABOUT WHAT PERCENTAGE OF YOUR CLIENTS DOES THIS REPRESENT?

_____ %

(62-63) _____

7. IN YOUR OPINION, DO YOU THINK PEOPLE WHO LIVE IN SPECIAL STUDIES ZONES ARE MORE LIKELY TO SUFFER FINANCIAL LOSSES OR PHYSICAL INJURIES IN THE EVENT OF AN EARTHQUAKE COMPARED TO PEOPLE WHO LIVE ELSEWHERE IN THE BAY AREA?

   ARE THEY MORE LIKELY TO SUFFER LOSSES, LESS LIKELY, OR IT DOESN'T MAKE ANY DIFFERENCE?

   _____ more likely (1) _____ less likely (2)

   _____ no difference (3) (65)

(66)

(67)

(68)

(69)

8. DO YOU THINK THAT REAL ESTATE AGENTS SHOULD BE REQUIRED BY LAW TO MAKE THE DISCLOSURE OF SPECIAL STUDIES ZONES? EXPLAIN. (70)

(71)

   Probe: IS THE INFORMATION CURRENTLY PROVIDED HOMEOWNERS ACTUALLY MEANINGFUL OR READILY UNDERSTOOD? (72)

(73)

(74)

NOW, I HAVE A FEW GENERAL QUESTIONS ABOUT YOUR WORK IN REAL ESTATE. (75)

9. IN TOTAL, HOW LONG HAVE YOU SOLD REAL ESTATE IN CALIFORNIA? (76)

(77)

   _____ years

(78)

(79)

10. WHAT IS YOUR CURRENT JOB TITLE?

   _____ independent broker (1) (1-5)

   _____ broker/office manager (2) (7-8)

   _____ associated broker/salesperson (3) (10)

   _____ salesperson (4)

   _____ other

CARD 02 (cont.)

11. HOW LONG HAVE YOU WORKED WITH YOUR PRESENT COMPANY?

_____ years (12-13)

12. IF YOU PREVIOUSLY SOLD REAL ESTATE FOR ANOTHER COMPANY, WAS IT IN THE BAY AREA?

_____ yes (1) _____ no (2) (15)

13. WHAT COMMUNITY WAS IT LOCATED IN?

_____ town (17-25)

_____ state (CA = 1; other = 2) (27)

14. HOW LONG DID YOU SELL REAL ESTATE THERE?

_____ years (29-30)

15. HOW MANY YEARS OF SCHOOL HAVE YOU COMPLETED?

_____ years (32-33)

_____ Please send copy of final summary report.

THANK YOU VERY MUCH FOR YOUR TIME AND FOR SHARING YOUR EXPERIENCE WITH US. YOU HAVE HELPED US A GREAT DEAL WITH YOUR ANSWERS. GOOD-BYE.

Notes: Is this interview questionable in quality: _____ (1) (35)

Reason for questionable quality:

_____ spoke English poorly (1)
_____ evasive, suspicious (2)
_____ confused by interruptions (3)
_____ drunk, mentally disturbed (4)
_____ bored or uninterested (5)
_____ poor hearing (6)
_____ low intelligence (7)
_____ other (8)
_____ (37)

END DECK