



The Study of Household Preparedness: Preparing California for Earthquakes

A Report by
The Alfred E. Alquist Seismic Safety Commission
to the California State Legislature

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EXECUTIVE SUMMARY

The California Earthquake Preparedness Survey (CEPS) was conducted by the UCLA School of Public Health and Survey Research Center for the State of California. The objective was to provide baseline data describing how prepared California households are for earthquakes and where they get their information about preparedness and mitigation. In developing the questionnaire for the survey, UCLA created a number of other products. These products are listed on page 21 at the end of this report. They are referenced when appropriate in the text. Telephone interviews were conducted with a representative sample of 2,081 households in California between June 26 and December 18, 2008. The sample was stratified into: the ten northern California counties at greatest risk of earthquakes, the six southern California counties at greatest risk, and the remaining 42 lower-risk counties.

FINDINGS

1. *California residents are exposed to numerous ongoing programs and recommended actions designed to increase household earthquake preparedness and mitigation (Chapter 1).*
2. *The many actions recommended for increasing earthquake preparedness and mitigation can be consolidated into the “Get Ready” Pyramid (Chapter 2).*
3. *Californians in high risk areas are not getting ready in proportion to the differential risks they face (Chapter 3).*
4. *People who have done things to get ready have done them for a variety of reasons and not just because of earthquakes (Chapter 3).*
5. *Most of the actions Californians have taken are simple preparations; relatively few households have acted to mitigate losses and reduce injuries (Chapter 3).*
6. *Some Californians believe earthquake myths that could lead to loss of life and injuries in an earthquake (Chapter 3).*
7. *Messages on earthquake preparedness and mitigation developed specifically for dissemination in California have low market penetration (Chapter 3).*
8. *In the absence of an actual disaster, “information received” and “information observed” are most likely to increase household investment in earthquake preparedness and mitigation (Chapter 4).*
9. *Many of the messages delivered to Californians about earthquake preparedness and mitigation are diluted and take a “one-size-fits-all” approach (Chapters 1-4).*
10. *Intuition has most frequently been used as the basis for developing the content and dissemination of earthquake preparedness and mitigation programs in California; evidence-based knowledge about how to motivate people to get ready has been underutilized (Chapters 1-4).*

RECOMMENDATIONS

1. *Coordinate the content and dissemination efforts of information providers so that they constitute an ongoing stream of communication across time and targets (Findings 1-4, 7-9).*
2. *Prompt household action by increasing the visibility of preparedness and mitigation activities throughout the State of California (Finding 8).*
3. *Disseminate a standardized message to households about earthquake preparedness and mitigation (Findings 1-5, 7-9).*
4. *Provide additional customized messages targeted to special sub-populations (Finding 6).*
5. *Supplement information with other strategies to help Californians who have difficulty preparing for earthquakes (Findings 1-7).*
6. *Use evidence-based information to develop and disseminate information about earthquake preparedness and mitigation to households (Findings 9-10).*

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Chapter 1

EARTHQUAKE PREPAREDNESS AND MITIGATION PROGRAMS IN CALIFORNIA

In the fall of 2007, a review was conducted to identify major local, state, and national public readiness programs pertinent to California residents (*Existing Major Public Education/Information Campaigns on Household Mitigation and Preparedness in the State of California*, September 24, 2007). The review revealed numerous ongoing efforts which varied in target audience, content, and level and method of dissemination.

Two major national campaigns were identified. Both the U.S. Department of Homeland Security's "Ready" campaign and the American Red Cross' "Get Prepared" campaign emphasize getting an emergency kit, making a plan, and staying informed. They provide tailored information to population subgroups, including Spanish speakers, people with disabilities, children, and small business owners. They also endorse National Preparedness Month (September).

State-wide programs include the "Be Smart, Be Responsible, Be Prepared. Get Ready!" campaign for which the First Lady, Maria Shriver, serves as Honorary Chairperson; the earthquake safety information and publications provided by the Alfred E. Alquist Seismic Safety Commission; and the California Department of Public Health's "Be Prepared California" program. The "Be Smart, ..." campaign is a statewide disaster preparedness campaign. As part of its extensive media campaign, it proclaimed May as Disaster Preparedness Month and September 20th as Day of Preparedness. State law requires that the "Homeowner's Guide to Earthquake Safety," one of several publications developed by the Seismic Safety Commission, be given to every buyer of a home built before 1960. The Department of Public Health's program is unique in that it focuses on preparedness for bioterrorism and other public health threats and emergencies.

A few regional programs were identified, including the Earthquake Country Alliance's "Dare to Prepare" campaign launched in 2007. It focuses on the earthquake hazard in southern California and is perhaps best known for organizing the largest-ever earthquake drill, the "Great Southern California Shakeout," in 2008. The U.S. Geological Survey's Earthquake Hazard Program has partnered with several government agencies and other groups to educate and inform the public about earthquake preparedness and safety. It has made an exceptional effort to reach out to the limited English proficient ethnic communities in the San Francisco Bay Area region through the distribution of multilingual publications and partnerships with local ethnic media and businesses.

Finally, several local programs at the county and city level were identified. Some of the better advertised campaigns include San Francisco Department of Emergency Management's "Are you Prepared?" campaign, the Los Angeles County Office of Emergency Management's "Emergency Survival Program" and the Los Angeles County Department of Public Health's "Just Be Ready: Prepare Together!" campaign. These programs are well tailored to the demographics of the local communities and effectively

use local media outlets (e.g., local news, PSAs, bus and shelter ads, community fairs, etc.) to disseminate their messages.

A wide range of active earthquake preparedness and mitigation information programs exist in California, and many Californians have likely heard one or more of their messages. But, numerous independent programs can make it difficult for the public to identify clear and consistent messages which are important to guide them toward action.

Chapter 2

THE FRAMEWORK FOR EARTHQUAKE PREPAREDNESS AND MITIGATION ACTIVITIES

The "*Get Ready*" *Pyramid* provides a framework within which the many actions recommended by various agencies and programs to promote household preparedness for earthquakes and other emergency events can be organized (*Household Readiness/Preparedness Actions Inventory*, October 8, 2007).

The “Get Ready” Pyramid



Many of the things you can do to “get ready” are free!
You may already have some things in place.



The “Get Ready” Pyramid

The “Get Ready Pyramid” combines different things people can do to get ready for earthquakes and other disasters. Layers of the pyramid are organized by cost, with activities that are completely free at the bottom, and increasing in cost as one moves up the pyramid. Many of the things people can do to “get ready” are free. Everyone can do something to get ready.

1 Learn How to Be Ready
1 Everyone can learn how to get ready. The base of the pyramid includes learning what to do to stay safe during an earthquake, and learning about all the other layers.
 • *Learn where to get more information.*

5 Secure Building Contents
5 Many of the things people can do to secure the things in their buildings are free. Some things, like latches and brackets, are low cost.
 • *Reorganize shelves and cupboards.*
 • *Attach heavy furniture to walls.*

2 Plan & Organize
2 Everyone can plan what to do when disaster strikes. This involves making plans for what to do before, during, and after a disaster.
 • *Make a household disaster plan.*
 • *Duplicate important documents.*

6 Protect Building Structure
6 Protecting the structure of buildings is a more costly investment, and an important part of getting ready for many people.
 • *Have home evaluated for safety.*
 • *Bolt home to foundation.*

3 Train & Practice
3 Training provides skills that are critical during disasters. Practicing these skills and disaster plans can make a difference.
 • *Receive first aid and CERT training.*
 • *Practice evacuation plans.*

7 Safeguard Finances
7 At the top of the pyramid, investing in ways to safeguard finances is a more costly outlay. Not all will benefit, but it can make a great difference for some people.
 • *Purchase earthquake insurance.*

4 Manage Supplies & Equipment
4 Once people know what kinds of supplies they need, they can determine what they already have on hand and what they need to get.
 • *Stockpile food, water, and supplies.*
 • *Keep supplies in strategic locations.*

People may already have done many of the things that they need to “Get Ready.”
Many things may already be in place.

Figure 1. The “Get Ready” Pyramid

The layers are organized along a continuum of cost and presented as a stacked pyramid with seven mutually exclusive and exhaustive layers; each recommended action can be categorized into one of the pyramid's layers (see Figure 1). The seven layers of the pyramid from the bottom up are: "Learn How to be Ready," "Plan and Organize," "Train and Practice," "Manage Supplies and Equipment," "Secure Building Contents," "Protect Building Structure," and "Safeguard Finances."

The general cost of "getting ready" increases as one moves up the pyramid, to the extent that households must pay for training, supplies, equipment, etc. Actions toward the base of the pyramid are intended to engage people further by attuning them to actions they can perform at little or no financial cost and to things they already know or have. With the exception of the base level of the pyramid, which involves learning about how to be ready, actions need not be initiated at a lower level on the pyramid; they can be completed in any order.

Developed to organize recommended activities for earthquake preparedness and mitigation in California, the "*Get Ready*" *Pyramid* can be adapted for use in promoting preparedness and mitigation in other settings. Its seven categories of recommended actions capture every specific individual or household action that could be taken and provide a comprehensive typology of these actions. This new framework does not replace existing public education or information; rather, it integrates various programs and their messages, highlighting the consistency across them. Although developed in the context of earthquake readiness, the typology is applicable to all types of hazards. The explicit focus on the affordability of many of the recommended activities may facilitate engagement in preparedness activities, particularly among those with fewer resources.

The California Earthquake Preparedness Survey conducted by UCLA sought to measure, among other things, the extent to which households in California have adopted earthquake readiness actions in each of the seven categories represented by the "*Get Ready*" *Pyramid*.

Chapter 3

EARTHQUAKE PREPAREDNESS AND MITIGATION BY CALIFORNIA HOUSEHOLDS IN 2008

The California Earthquake Preparedness Survey (CEPS) was conducted by the UCLA School of Public Health for the State of California to describe how prepared California households are for earthquakes and where they get their information about preparedness and mitigation. The content of the questionnaire was developed from the products listed on page 21. Telephone interviews were conducted with a probability sample of 2,081 households in California. The sample was stratified into three areas: the ten northern California counties at greatest risk of earthquakes, the six southern California counties at

greatest risk, and the remaining 42 lower-risk counties. Interviews were conducted by the UCLA Survey Research Center in either English or Spanish between June 26 and December 18, 2008.

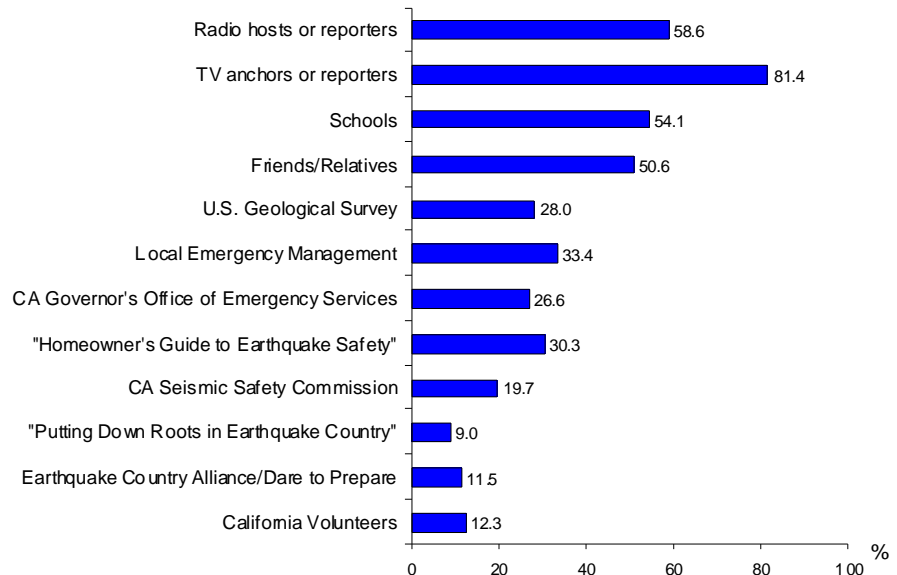
1. Perceived effect of worst earthquake ever experienced

Over 70% of California residents have been affected by earthquakes, with residents of high-risk northern and southern California counties, and Black residents reporting more effects from past earthquakes than other groups from a past earthquake.

2. Information received about earthquake preparedness

a. Information sources

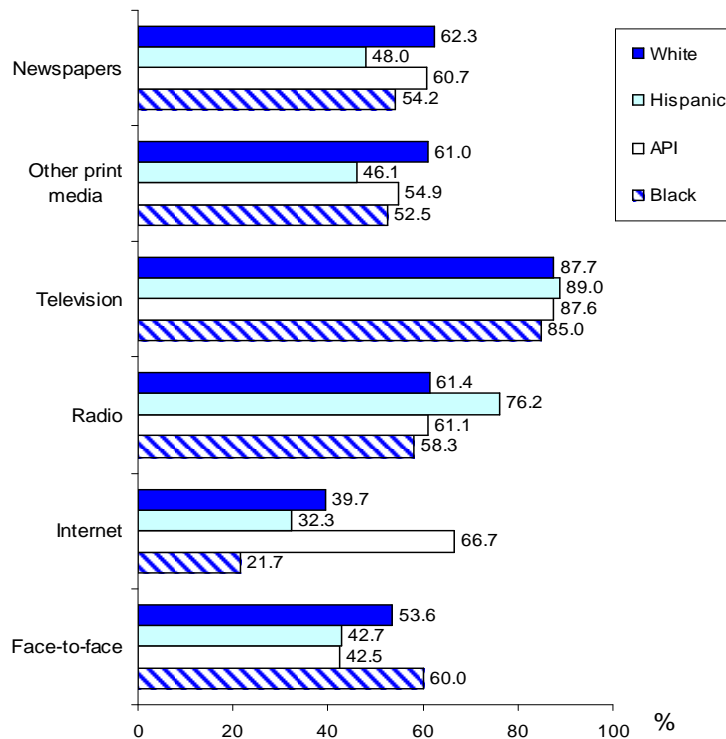
Over 80% of California residents have gotten information about earthquake preparedness from television anchors or reporters and, to a lesser extent, from radio hosts or reporters (58.6%), schools (54.1%), and friends and relatives (50.6%). About half of Californians recall getting information about earthquake safety from the Red Cross (not shown), but less than 35% recall getting



information from official sources, such as the State Office of Emergency Services, the Seismic Safety Commission, local emergency management agencies, or their earthquake-safety publications. There were some differences in sources of information by geographic/risk area, most notably, northern California's greater exposure to information provided by the U.S Geological Survey compared to that of the rest of the state. There were also differences by racial/ethnic group, with Asian/Pacific Islanders (API) less likely than other groups to have received information about earthquake safety from official sources. (See *Existing Major Public Education/Information Campaigns on Household Mitigation and Preparedness in the State of California*, September 16, 2007.)

b. Information channels

Over 80% of respondents received earthquake preparedness information through television, with 70% of northern and southern California residents getting information from the radio and internet. Channels of information differed by racial/ethnic group. Of particular relevance is the use of radios by Hispanic respondents, the internet by API respondents, and personal networks by Black respondents.

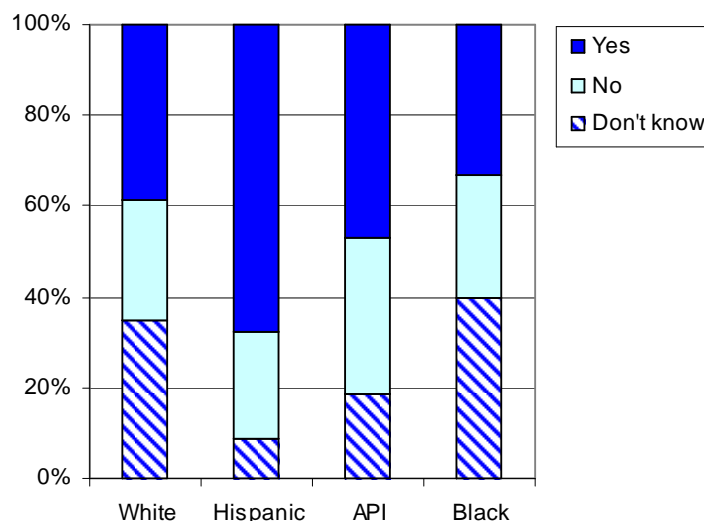


c. Information type

Over 70% of people have gotten information about learning how to be ready for an earthquake, organizing equipment and supplies, and making disaster plans. Fewer people have heard about emergency response trainings, structural and non-structural mitigation, or earthquake insurance. Residents of low-risk areas (compared to those of high-risk areas), and Hispanics and APIs (compared to Whites and Blacks) were less likely to have received specific kinds of information about earthquake preparedness.

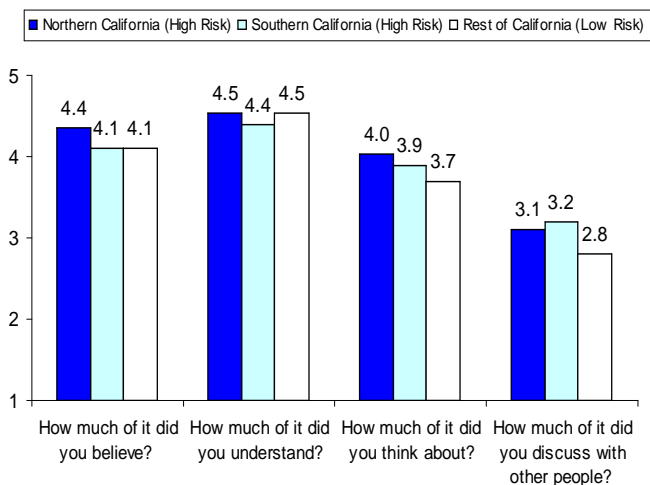
d. Foreign language materials

Between 40 and 50% of Californians are aware that earthquake preparedness information has been provided in languages other than English. Awareness differs by racial/ethnic group, with Hispanics being *most* aware that information has been communicated in languages other than English, APIs being most likely to say information has *not* been communicated in other languages, and Whites and Blacks saying they do not know.



e. Milling behavior

On average, Californians believe and understand most of the information they receive about earthquake preparedness and mitigation, but are less likely to think about or discuss the information with other people. People in high-risk areas were more likely to discuss the information with other people. Non-Whites were somewhat less likely to believe or understand the information they received compared to Whites, and APIs were least likely among all groups to think about or discuss the information with others.



Note: Responses were measured on a scale of 1 = "None of it" to 5 = "All of it."

3. Observation of other people performing earthquake preparedness

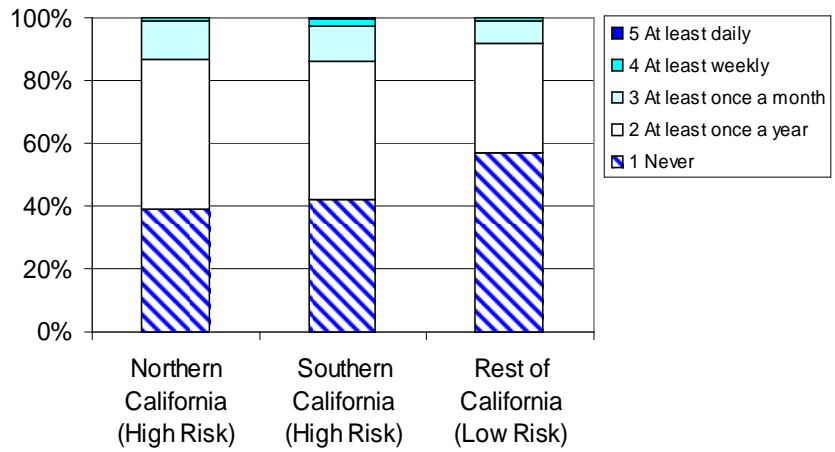
While 80% of Californians know someone, besides themselves, who has done at least one thing to prepare for earthquakes, only 10% have observed people performing the full range of earthquake preparedness and mitigation activities. Less than 40% had observed others structurally reinforcing their homes, and less than 30% knew someone who had purchased earthquake insurance. Whites living in high-risk northern and southern California counties were most likely to know others who had made preparations, while Hispanics were least likely to know of anyone.

4. Belief in earthquake safety myths

On average, respondents did not agree with most of the myths about earthquake safety (*Household Myth Inventory*, December 11, 2007). There were, however, some myths that are still commonly believed, including that: the safest place to be when an earthquake occurs is under the doorway, and buildings in California are safe because of good building codes. Less than 50% of respondents knew what the "triangle of life" was, but many of those who did know thought the "triangle of life" was safer than "drop, cover and hold on." Hispanic and API respondents were more likely than other groups to agree with several of the earthquake safety myths, especially when compared with White respondents.

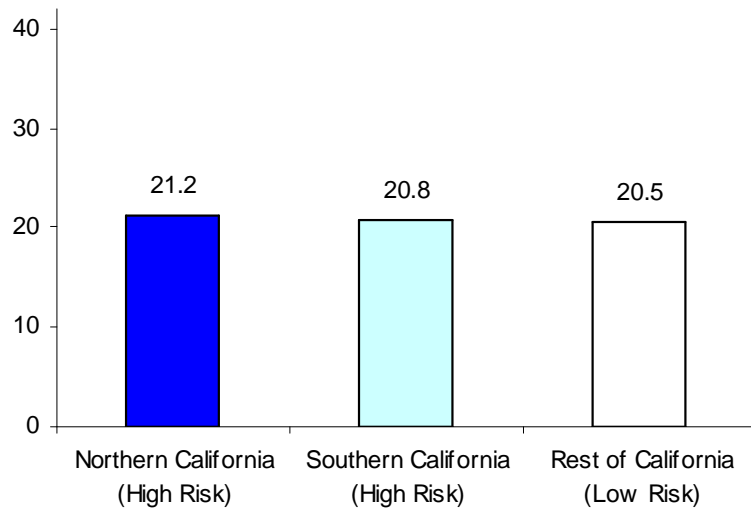
5. Active information-seeking about earthquake preparedness

Few Californians actively look for information about earthquake preparedness and mitigation on a regular basis. Of those who looked for information, most found what they were looking for. Residents of high-risk northern and southern California counties looked for information more frequently than others, but there were no differences by racial/ethnic group.

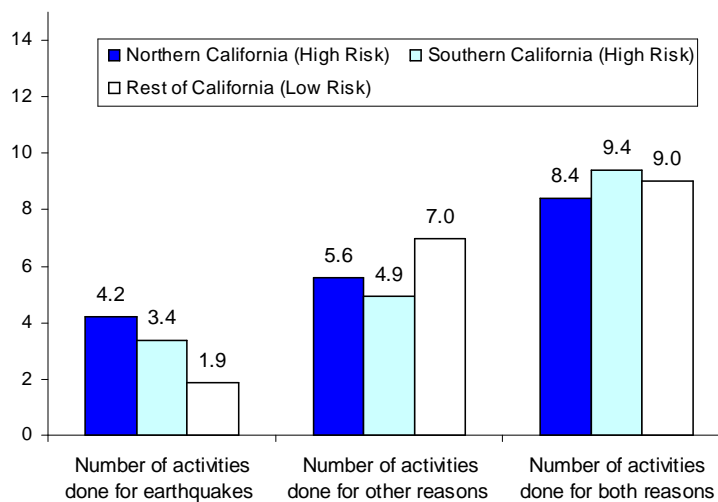


6. Earthquake preparedness and reasons for action

On average, the number of earthquake preparedness and mitigation actions adopted by California households did not differ by geographic area, or earthquake risk (Chapter 2; *Household Readiness/Preparedness Actions Inventory*, October 8, 2007).



The reasons given for taking actions *did* differ by geographic area. Those living in high-risk northern and southern California counties did more things specifically because of earthquakes, while those living in low-risk areas did more things specifically because of other reasons. On average, Whites reported doing more earthquake readiness actions in total and specifically in response to the earthquake risk, compared to other groups, especially Hispanics.



The preparedness and mitigation activities reported by households can be examined within the seven levels of the “*Get Ready*” Pyramid described in Chapter 2.

Level 1: Learning how to be ready

More than 60% of Californians have learned how to be safe during an earthquake, what supplies and equipment to have, and how to make their home contents safe. Less than 35% have learned how to make their home structure safer or how to safeguard their finances. Residents of high-risk areas were more likely to have learned about how to be safe during an earthquake and how to make the things inside their home safe during an earthquake. In general, Hispanic respondents tended to be the least likely among all racial/ethnic groups to have learned about earthquake preparedness.

Level 2: Plan and organize

While 60% of Californians have made back-up copies of important documents, only 40% have made family disaster plans, and less than 20% have participated in neighborhood disaster planning. Northern California residents were more likely than others to have participated in neighborhood disaster planning. APIs were more likely than others to have duplicated important documents.

Level 3: Train and practice

Over 65% of Californians reported being trained to administer first aid, but less than 5% learned first aid because of earthquakes, while 60% learned for other reasons. About 70% knew how to shut off the utilities in their home, but less than 50% had participated in disaster trainings at work, and less than 20% had received specific disaster trainings, like CERT (Community Emergency Response Training). Hispanic respondents were the least likely among the groups to have received these kinds of trainings. There were no differences by geographic/risk area.

Level 4: Manage supplies and equipment

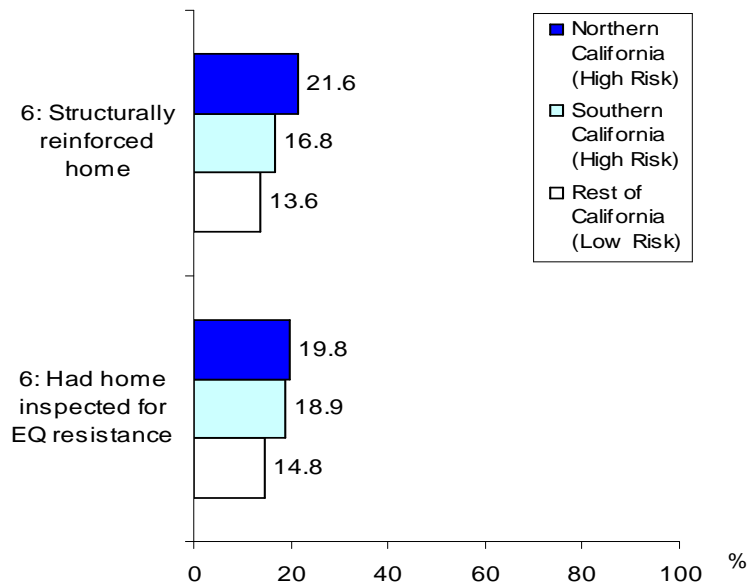
Certain supplies and equipment that would be useful in an earthquake or other disaster are commonly found in California households. Over 80% have first aid kits, flashlights and batteries, and tools to turn off utilities in the house. There are other kinds of items that are not as commonly maintained by California households. Fewer than 50% have dust masks, tools to rescue trapped people, or an extra set of emergency supplies in the car. Of those who said they store an extra supply of food and water, over 80% keep the minimum 3-day supply of food per person, but only 40% keep the recommended minimum of 3 gallons of water per person. On average, Whites were more likely than other groups to have various equipment and supplies. In general, there were no differences between households in high- and low-risk areas of California.

Level 5: Secure building contents

Securing building contents was not a common activity among California households. Securing the water heater and storing hazardous materials safely were the only actions done by more than half of the households. Fewer than 30% added latches to cupboards and cabinets, strapped or buckled down heavy appliances, or secured picture frames and wall hangings. Whites tended to have done more of these mitigation activities than other groups, particularly Blacks. There were no differences by geographic/risk area.

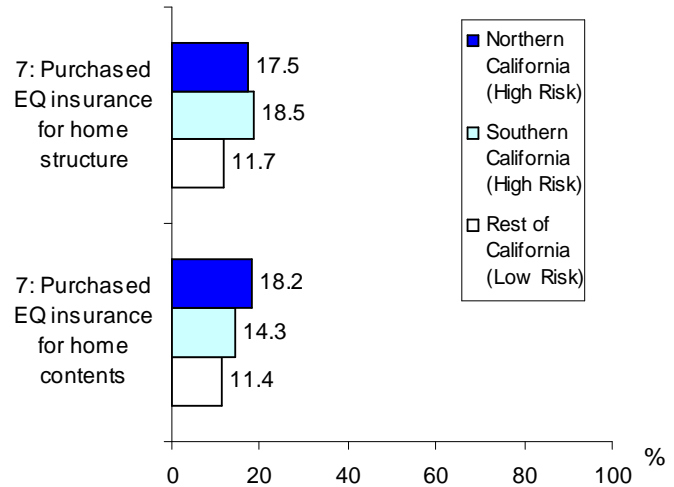
Level 6: Protect building structure

Structural mitigation was not common among California households, regardless of geographic area/risk. Fewer than 20% of the households had structurally reinforced their home or had their home inspected for earthquake resistance. There were no significant differences by race/ethnicity.



Level 7: Safeguard finances

Fewer than 20% of California households have purchased earthquake insurance for their home structure or contents, with slightly more households in the high risk areas reporting earthquake insurance coverage. White respondents were most likely to have purchased earthquake insurance for their home structure and contents, followed by API, Black, and Hispanic respondents.



7. Preferred web address extension for preparedness information

For information about earthquake preparedness provided on a website, the preferred web address extension is .gov (35%) followed by .com (17%). There were no differences by geographic area/risk or race/ethnicity, but it is important to note that 23% said they do not use the internet. Consistent with other studies of computer utilization, this group has less education (11.6 vs. 14.9 years), is older (58.9 vs. 44.5 years), has lower income (\$41,000 vs. \$80,000), is more likely to identify as Hispanic (41% vs. 23%), and more likely to have been interviewed in Spanish (29% vs. 5%).

8. Preferred source and channel for warning, alerts, and notifications

Californians generally said they prefer to receive official disaster warnings, alerts and notifications from their local fire department (43%), followed by local emergency management offices (22%) and local law enforcement (14%). The preferred channel for receiving such messages was television (35%) followed by telephone (18%) and radio (17%). Hispanics (59%) and those living in high-risk southern California counties (49%) strongly preferred receiving this information from local fire departments. Hispanics (45%) and Blacks (52%) strongly preferred television for official emergency communication. In addition to television, Whites indicated interest in radio (20%) and telephone calls (25%), and APIs indicated interest in text messages to wireless devices (19%).

Chapter 4

WHAT MOTIVATES HOUSEHOLD PREPAREDNESS AND MITIGATION?

Relatively strong, conclusive, and replicated science-based evidence now exists in the social and behavioral sciences regarding exactly what it takes to teach the public what they need to know, and how to motivate them to take actions to prepare and mitigate for possible future events like earthquakes. This evidence provides a stronger basis for increasing public knowledge and motivating public readiness than approaches based on good intentions and intuition. It is summarized below.

The key question is behavioral: “how do you help people to stop, listen, and get ready for future disasters that most think won’t really happen, and, if they do, will happen to other people and not them?” Most people think that way because they think that they are not at risk of high consequence low probability events. This perception of being safe is reinforced every day that a disaster does not occur. Perceptions of “being safe” change to perceptions of “being at risk” immediately after a disaster. Research has demonstrated, however, that perceptions of risk decline and perceptions of safety increase to pre-disaster levels within a two-year period.

In the absence of an actual disaster, two factors are by far the strongest motivators of household preparedness and mitigation. The first is “information received” about readiness. To be effective, information must: come from multiple sources, be communicated over multiple channels of communication, focus on what actions to take, explain how those actions cut future losses, and be consistent (the same) across the different messages received. The second factor is “information observed.” The impact of “seeing” others prepare and mitigate is generally stronger than passively receiving information.

These two key factors have “direct” effects on increasing household preparedness and mitigation. The more people hear, read, and see, the more they do to get ready. These factors also “indirectly” affect household preparedness. They do this by increasing people’s knowledge and their perception that recommended actions are effective, and by increasing discussions with others about earthquake preparedness and mitigation. These factors, knowledge, perceived effectiveness, and discussion, in turn, increase household preparedness and mitigation.

These clear and consistent findings are very good news. In the absence of an actual disaster (the strongest way to get people’s attention and motivate action), the two major determinants of household preparedness and mitigation are both “pliable.” Policies and programs can be developed that increase information dissemination in ways that increase earthquake preparedness and mitigation. Moreover, the information to action-taking relationship is linear: the more information disseminated to households, the more they prepare and mitigate; the less information, the less preparedness and mitigation.

In comparison to information received and seen, most other factors do not matter much. Other factors either are not related to household preparedness and mitigation, or their effects are small and disappear when the information factors just described are included and “controlled” in models. These other factors include the increased probability of a future event (which is certainly useful to know about for other reasons) and demographic characteristics (which can constrain what people can afford, but have little effect on readiness motivation).

Chapter 5

FINDINGS AND RECOMMENDATIONS

FINDING 1 (Chapter 1): *California residents are exposed to numerous programs and recommended actions designed to increase household earthquake preparedness and mitigation.*

Programs to increase earthquake preparedness and mitigation have been developed at the federal, state, regional and local level. The existence of numerous, uncoordinated programs makes it difficult for the public to identify clear and consistent messages on which they can act.

FINDING 2 (Chapter 2): *The many actions recommended for increasing earthquake preparedness and mitigation can be consolidated into the “Get Ready” Pyramid.* The numerous recommendations made by the many programs to which Californians are exposed can be combined into a 7-layer typology that ranges from those activities requiring no financial cost to those that require substantial financial investment.

FINDING 3 (Chapter 3): *Californians in high risk areas are not getting ready in proportion to the differential risks that they face.* The actions that Californians have taken to get ready for earthquakes are relatively evenly distributed across the state. People in the high-risk northern and southern California counties have not done more or less than people in low-risk areas of the state.

FINDING 4 (Chapter 3): *People who have done things to get ready have done them for a variety of reasons and not just because of earthquakes.* The actions Californians have taken that are consistent with getting ready for earthquakes are more likely to have been performed for a variety of reasons and not just earthquakes. People in California’s high-risk counties are more likely to attribute their preparedness and mitigation actions to earthquakes compared to people in the lower-risk areas of the state.

FINDING 5 (Chapter 3): *Most of the actions Californians have taken are simple preparations; relatively few households have acted to mitigate losses and reduce injuries.* Most California households have done some preparedness and mitigation for earthquakes. The activities they have done tend to focus on easier preparations, with few households reporting more complicated or costly actions such as structural reinforcement of homes, securing contents, or investment in earthquake insurance.

FINDING 6 (Chapter 3): *Some Californians believe earthquake myths that could lead to loss of life and injuries in an earthquake.* Most residents do not believe most earthquake myths, but substantial numbers believe myths that could threaten life and safety during an earthquake, for example, believing that standing in doorways or running outside reduces risk. Although over 50% of Californians do not know about the “triangle of life,” those who do know about it believe it is safer than “drop, cover, and hold on.”

FINDING 7 (Chapter 3): *Messages on earthquake preparedness and mitigation developed specifically for dissemination in California have low market penetration.* Although most groups that provide information in California know each other, most groups disseminate information independently rather than in coordination with others. Much of the information is disseminated passively or infrequently. Coordination would increase effectiveness.

FINDING 8 (Chapter 4): *In the absence of an actual disaster, “information received” and “information observed” are most likely to increase household investment in earthquake preparedness and mitigation.* The amount of information people hear, read and see determines whether they prepare and mitigate. Other factors, including the increased probability of a future event, perception of risk from a future event, and demographic characteristics like income, education, and age, which may constrain what people can afford, have little effect on motivating people to prepare.

FINDING 9 (Chapters 1-4): *Many of the messages delivered to Californians about earthquake preparedness and mitigation are diluted and take a “one-size-fits-all” approach.* Many groups in California disseminate information about earthquake preparedness and mitigation (see Finding 7). Most information providers recommend similar kinds of activities, but with different labels and variations in completeness or “dose.” For example, some groups recommend the purchase of a preparedness kit, others describe the full range of possible activities that could be taken, and most are somewhere in between these two extremes. In disseminating information, most groups do not differentiate between households in high-risk and low-risk communities, or between households that are already partially prepared and motivated to actively seek information and those who are not yet ready either to prepare or to search for information. Failure to discriminate between levels of preparedness and motivation may explain why some dissemination efforts miss their audience.

FINDING 10 (Chapters 1-4): *Intuition has most frequently been used as the basis for developing the content and dissemination of earthquake preparedness and mitigation programs in California; evidence-based knowledge about how to motivate people to get ready is under-utilized.* Most public messages and dissemination plans for motivating earthquake preparedness and mitigation are based on good intentions and intuition; some, but not most, are informed by research on how households are motivated to take action to prepare and mitigate for earthquakes.

RECOMMENDATION 1 (Findings 1-4, 7-9): *Coordinate the content and dissemination efforts of information providers so that they constitute an ongoing stream of earthquake preparedness and mitigation information across time and targets.* Currently, information disseminated in California about earthquake preparedness and mitigation is diverse, comes from many different providers, and is disseminated in different ways and at different times. This range of sources and approaches needs to be organized and coordinated into an “ongoing and diverse stream” of public information. This would result in maximizing each information provider’s effectiveness. Ideally the many providers of information would endorse the creation of an institutionalized leadership position that coordinates, integrates, and orchestrates public education in California. The plan should include a mix of passive and proactive dissemination of information that utilizes both traditional and emerging information technologies with the objective of reaching all California residents and tourists independent of their level of interest in earthquake preparedness and mitigation. Creating a statewide preparedness logo that identifies the message, but not the messengers, could enhance coordination.

RECOMMENDATION 2 (Finding 8): *Prompt household action by increasing the visibility of preparedness and mitigation activities throughout the State of California.* Develop ways to expand the basic written message about preparedness and mitigation into actions that the public can “see.” Preparedness and mitigation actions that others have done that people can “see and imitate” are the strongest of all single motivators for public action-taking. All organizations (public, private, NGO) are encouraged to “make their preparedness and mitigation actions visible to others.” The effectiveness of these “visual activities” should be evaluated to inform future program development.

RECOMMENDATION 3 (Findings 1-5, 7-9): *Disseminate a standardized message to households about earthquake preparedness and mitigation.* Message providers could accomplish more if they worked together to develop and disseminate a common and consistent basic message to the public. A common, consistent message about which everyone agrees would facilitate repetitive public messaging.

RECOMMENDATION 4 (Finding 6): *Provide additional customized messages targeted to special sub-populations.* One size does not fit all. The standardized basic public message should be supplemented with “targeted messages.” These messages would vary across time and place, and they

should be informed by obvious need and the results of population surveys to determine what Californians think and have and have not done to get ready in the context of changing risk information. Examples include tsunami readiness information for coastal populations, removing “dangerous” beliefs such as it is safe to get in a doorway or into the “triangle-of-life” during earthquakes, unique ways to reach special sub-populations such as visitors and tourists, and local customized information needs. For example, in preparation for a large earthquake on the San Andreas’ fault in southern California, Los Angeles area households can be encouraged to invest in fire extinguishers and desert households to invest in more water and food so they can be on their own for more than 72 hours.

RECOMMENDATION 5 (Findings 1-7): *Supplement information with other strategies to help Californians who have difficulty preparing for earthquakes.* Even the most well-crafted and informed program cannot achieve satisfactory levels of preparedness for the state’s entire population. Some societal segments cannot afford to buy what might be needed to be ready, and others may be too distracted by the basic needs of everyday life to “hear” or “see” the best readiness messages delivered in the most appropriate ways. The state’s public education plan for public readiness should be supplemented with what is needed to take these Californians into account. One strategy might be to work with and assist the many, diverse NGOs throughout California in disseminating important information to their constituents (e.g., drop, cover and hold on), and stockpiling materials that their population segment might need, but would be unable to provide for themselves after an earthquake.

RECOMMENDATION 6 (Findings 9-10): *Use evidence-based information to develop and disseminate information about earthquake preparedness and mitigation to households.* Use available, applicable research findings developing and disseminating programs designed to increase household earthquake preparedness and mitigation. Evaluate the effectiveness of programs whenever possible.

LIST OF PRODUCTS

In designing the survey and developing the content of the questionnaire used in the survey a number of other products were created which provided background information. Those pertinent to the content of the questionnaire are listed below.

1. *Lay Description of Initial Model* (September 20, 2007)
2. *Existing Major Public Education/Information Campaigns on Household Mitigation and Preparedness in the State of California* (September 24, 2007)
3. *Preliminary Recommendations for Conducting Public Education on Household Mitigation and Preparedness* (September 16, 2007)
4. Meeting with the Citizen Readiness Advisory Group (October 2007)
5. *Household Readiness/Preparedness Actions Inventory* (October 8, 2007)
6. *Knowledge About Household Mitigation and Preparedness Inventory* (December 11, 2007)
7. *Household Myth Inventory* (December 11, 2007)
8. *Inventory of Knowledge About Self-Protective Actions During and Immediately After An Earthquake* (December 11, 2007)
9. *Perceived Risk Inventory* (December 11, 2007)
10. *Questionnaire Specifications: Documentation of the CA Survey of Household Earthquake Preparedness and Mitigation* (July 1, 2009)

APPENDIX

Append the following report here:

Kano, Megumi, Michele Wood, Melissa M. Kelley, and Linda B. Bourque. 2009. *California Earthquake Preparedness Survey Report: Findings and Recommendations for Strengthening Household Resiliency to Earthquakes*. Final Report to the Alfred E. Alquist Seismic Safety Commission and the California Emergency Management Agency. Los Angeles, CA: University of California at Los Angeles.