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TITLE

Increasing the Los Angeles Metropolitan Region’s Resiliency by Implementing Emergency Preparedness Education in Los Angeles County Elementary and Middle Schools.

ABSTRACT

The fact that a large number of Los Angeles (LA) County adults have failed to prepare themselves and their households for emergencies or disasters will have serious consequences for families and the metropolitan region’s resiliency after a large-scale mass-casualty event. This paper examines the consequences of unpreparedness, the benefits of becoming prepared, and current research and education programs, in the context of the LA county metropolitan region’s risks. To increase preparedness of individuals and families, LA County should explore the practical solution of incorporating emergency preparedness and response curricula into K-8 public education. Implementing such a program countywide would increase resiliency and provide the world an active, large experiment on the positive effects of emergency preparedness education.
ISSUE STATEMENT

Background. LA County (the county) is the most populous county in nation\(^1\). It is home to the City of LA, the second largest city in the United States\(^2\) and the largest city in the state of California.\(^3\) In addition, there are a total of 87 other cities within the county’s 4,084 square miles.\(^4\) The county itself anchors a larger metropolitan region that generally includes parts of neighboring San Bernardino, Ventura, and Orange counties.

Of the county’s estimated 2010 population of 10.44 million, 9.34 million Angelenos live in cities, while 1.09 million of their neighbors reside in the county’s 2,638 square miles of unincorporated territory.\(^5\) The county’s residents are diverse in age, race, ethnicity, and educational levels (see Table 1).\(^6\) Furthermore, it is estimated that residents of the county speak over 100 different languages.\(^7\)

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<th>Table 1. LA County: 2011</th>
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<tr>
<td>Persons under 18 years, percent</td>
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<td>Persons 65 years and over, percent</td>
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<td>White persons, percent</td>
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<td>Black persons, percent</td>
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<tr>
<td>American Indian and Alaska Native persons, percent</td>
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<td>Asian persons, percent</td>
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<td>Native Hawaiian and Other Pacific Islander persons, percent</td>
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<td>Persons reporting two or more races, percent</td>
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<td>Persons of Hispanic or Latino Origin, percent</td>
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<td>White persons not Hispanic, percent</td>
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<tr>
<td>Foreign born persons, 2006-2010</td>
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<tr>
<td>Language other than English spoken at home, pct age 5+, 2006-2010</td>
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<td>High school graduates, age 25+, 2006-2010</td>
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<td>Bachelor's degree or higher, persons age 25+, 2006-2010</td>
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<td>Households, 2006-2010</td>
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<td>Persons per household, 2006-2010</td>
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<td>Persons below poverty level, percent, 2006-2010</td>
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The county is also home to many different sites of significance, including major entertainment venues, film and television producing companies, world-renowned amusement parks, large universities, and centers for world trade and transport such as the Ports of Los Angeles and Long Beach and three airports. The Port of Los Angeles and Los Angeles International Airport (LAX) are the largest container port and airport on the American west coast in terms of freight and passenger travel, respectively.

The fact that the county leads the way in several industries is sometimes complicated by the fact the county is not immune to disasters—both natural and man-made. As stated in the previous paragraph, the region is home to many sites of societal significance, making any damage sustained in an emergency potentially far-reaching. In terms of risks, the most well known in the area are earthquakes. The county is affected by several active fault systems, including the San Andreas, which caused the 1989 Loma Prieta earthquake in northern California as well as the Pico thrust fault, which caused the 6.7-magnitude Northridge quake in 1994. The Northridge earthquake caused extensive structural damage. Many buildings collapsed partially or completely, causing over $20 billion in property damage. It was the most damaging earthquake in the history of the United States. The quake took the lives of 57 people and caused over 5,000 injuries, taxing the capacity of hospitals and health care responders. For many Angelenos, the Northridge earthquake was the last major earthquake to occur in their lifetime.

According to the United States Geological Surveys (USGS), however, a similar event will happen in the next 30 years. Their report, *Forecasting California’s Earthquakes—What Can We Expect in the Next 30 Years?*, found an over 99% probability that a 6.7 magnitude or
larger earthquake will occur in California in the next three decades. Furthermore, they predict a 46% chance that at least one earthquake with a 7.5 magnitude or larger will happen in the same time period.¹⁴ For both probabilities, they predict that such an event is most likely to occur in Southern California.

In one real, plausible scenario researched and conducted by the Great Southern California ShakeOut exercise of 2008, a 7.8 magnitude earthquake would occur along the south San Andreas Fault 50 miles from downtown LA. As researched and exercised,

Such an earthquake [would] cause unprecedented damage to Southern California—greatly dwarfing the massive damage that occurred in Northridge’s 6.7-magnitude earthquake in 1994. In summary, the ShakeOut Scenario estimates this earthquake will cause over 1,800 deaths, 50,000 injuries, $200 billion in damage and other losses, and severe, long-lasting disruption.¹⁵

The exercise earthquake would potentially collapse downtown high-rise buildings constructed of older reinforced concrete or steel frames with brittle welds,¹⁶ and cause long-term regional problems, both economic and otherwise¹⁷ (see Table 2¹⁸).

In addition, the City of LA Emergency Management Department, the City of LA and the surrounding county are also “particularly vulnerable to the destructive affects of wildfires, flooding, and mudslides” as well as acts of terror against many of its landmarks and gathering places.¹⁹ In fact, a RAND study conducted in 2005 found the city of LA to be one of the most likely future terrorist targets, based on a model which considers an area’s or target’s vulnerability and the consequences should the attack be successful.²⁰

With such a diverse and large population and land area, a catastrophic event—natural or man-made—would strain the response resources of the county and its cities. The ability for
residents to prepare, respond on their own to reasonable problems, and take care of their families for the first few days or week after the event is necessary. This increase in personal resiliency, also known as the ability to “shelter in place,” would allow responders to focus on the critically injured or the areas in continued danger.

<table>
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<th>Table 2. Damages in ShakeOut Scenario in LA</th>
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<tr>
<td><strong>Power</strong></td>
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<td>Power will go out immediately, everywhere, and restoration times vary. In the most heavily damaged areas, electricity will remain out for weeks or longer. Some residences will suffer broken gas lines when their houses slip from unbolted foundations.</td>
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<td><strong>Water</strong></td>
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<td>Water will stop flowing in many taps for weeks or months. In many communities, strong ground shaking will break old, brittle water pipes and connectors, and there will be so many breaks that it will prove cheaper and faster to replace the entire conveyance system, rather than hunt and repair every break. The process will be neither cheap nor fast, and communities will compete for repair priority.</td>
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<tr>
<td><strong>Waste</strong></td>
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<td>Many wastewater pipes are also old and brittle, and run alongside water pipes under the streets. Broken sewer pipes will contaminate broken water pipes, and in some places, tap water will be unsafe to drink for as long as a year.</td>
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<tr>
<td><strong>Communication</strong></td>
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<td>Telecommunications will be out for at least a day, because of some damage and much overuse. Phone systems will be oversaturated because millions are trying to make calls at once. How cell phone towers are affixed to buildings is not regulated, so towers will be damaged by shaking. Two thirds of the region's internet lines will be ruptured by the fault.</td>
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<tr>
<td><strong>Transportation</strong></td>
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<td>Transportation by road and rail will be disrupted by fault rupture and landslides, and take months to repair. Retrofitting of state highway bridges prevents their collapse, but not those under most local jurisdictions. For months, getting around the southland will take longer, and travel time delays add more than $4 billion to economic losses.</td>
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<tr>
<td><strong>Hospitals</strong></td>
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<td>Hospitals in the hardest hit counties of Riverside, San Bernardino, and Los Angeles will be operating at reduced functionality. At a time when thousands of disaster victims need hospital care, some hospital buildings will be closed by structural damage; many others will be unusable because of non-structural damage such as broken water pipes and unsecured equipment.</td>
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</tbody>
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Public schools—grades K-12 and community colleges—are protected by the Field Act, legislation that sets special construction and inspection standards. Structurally, public schools will hold up well, although non-structural and contents damage will pose problems. Private schools and universities are not protected by the Field Act and some will suffer both structural and non-structural damage.

| Ports       | The Ports of Los Angeles and Long Beach are important contributors to the region's economy. They will not suffer much damage from this far-away earthquake, but their flow of goods will be disrupted for months, as many principal train routes and truck routes are damaged. |

Preparedness also speeds up the recovery process, especially when steps are taken beyond the basic steps of creating a plan and kit (e.g., structurally reinforcing buildings and bolting down home foundations that remain unmitigated). It is important to note that the California Emergency Management Agency (Cal EMA) recommends an “all-hazard” comprehensive approach to basic family and individual preparedness. This means that taking steps to prepare for an earthquake would also increase preparedness for other types of emergencies.

### Table 3. Preparedness Steps

1. Identify Your Risk
2. Create a Family Disaster Plan
3. Practice Your Disaster Plan
4. Build a Disaster Supply Kit For Your Home and Car
5. Prepare Your Children
6. Don’t Forget Those With Special Needs
7. Learn CPR and First Aid
8. Eliminate Hazards in Your Home and The Workplace
9. Understand Post 9/11 Risks
10. Get Involved, Volunteer, Bear Responsibility

Source: Cal EMA, 2012

Fundamental preparedness steps include: 1) Identify your risk, 2) Make a plan, 3) Build a kit, and 4) Get involved (see Table 3). At the most basic level, preparedness means
individuals and families must be capable of remaining self-sufficient for a short period of time, without any outside assistance or resources. This requires that regardless of where and when a disaster strikes, each family must have emergency supplies and a family emergency plan. Emergency supplies include a three to seven-day supply of drinking water and non-perishable food (that does not require refrigeration) for each family member, a battery-powered radio, a flashlight, a first aid kit, and some extra batteries.\(^\text{22}\)

Preparedness not only helps first responders and recovery, but also brings multiple personal benefits. According to the Federal Emergency Management Agency (FEMA) Are you ready? Guide, “Being prepared can reduce fear, anxiety, and losses that accompany disasters.”\(^\text{23}\) This is especially true for children, whose preparedness efforts with family or in school settings can mitigate the terrifying reality of a child not knowing what to do or where to go.

**State of Knowledge and Related Research.** There is a growing amount of literature on children and their capabilities before, during, and after disasters. First and very important, children are deeply affected by disasters and often their needs are unmet. According to Dr. Lori Peek, sociologist at Colorado State University, disasters are expected to affect over 175 million children annually in the 21\(^{\text{st}}\) century.\(^\text{24}\) Often, the emotional, behavioral, and physical effects on children are underappreciated and children may require different support in a situation depending on their age, developmental stage, and other factors.

Stress from an event can affect children, like adults, in the form of Post Traumatic Stress Disorder (PTSD)\(^\text{25}\) but emergency preparedness education may mitigate the onset or the severity of the disorder. This has been found to be the case in some studies concerning adults.\(^\text{26}\) One study examined disaster rescue and recovery workers who responded to the World Trade Center site during and after the 9/11 attacks. It was found that “workers and volunteers in occupations
least likely to have had prior disaster training or experience were at greatest risk of PTSD. In a study of the role of the workplace in response, it was found that disaster preparedness not only increases “optimal behavior” and decreases “the risk of physical injury and property damage in a disaster” but also reduces “stress by providing participants with a sense of control.” Accordingly, “that perceived control was associated with improved emotional well-being, either directly or indirectly through the reduction of fear.”

Dr. Peek also suggests that children are under-involved in disaster planning or education because they lack the voice necessary to make their needs heard, and because planning professionals often lack expertise in children’s issues. Despite often being enthusiastic about being involved in disaster risk reduction activities, children are also often excluded from that process due to cultural or societal norms.

Research has shown that children, like adults, have fears. But while they are vulnerable, they are not helpless. In her book Too Scared To Cry: Psychic Trauma In Childhood, Dr. Lenore Terr found that children are subject to fear of helplessness, separation, and death. However, after an event children are still capable of determining real-time needs and planning in the long term. This capability, even without prior training, further supports the idea that children are capable in their own right to become instrumental in the process of response and recovery.

It has been shown that those children who are given training or education are less vulnerable after a disaster and are at a lesser risk for death or injury than their peers. This is related to the finding that children who participate in preparedness or hazard programs report greater (and more realistic) expectations that they will be affected or injured, but also report lesser amounts of fear. According to Ronan and Johnson, “the provision of realistic risk perception appears to reduce, rather than increase, negative emotional arousal.” So while
children in education programs “reported more realistic perceptions of risk” they also reported “reduced fears, and increased knowledge of protective behaviours” when compared to peers who did not participate in such programs.

Not only does preparedness education help children to cope and recover personally, it can also serve to augment children’s possibly natural ability to participate successfully in response and recovery activities. Properly prepared, children can save lives. For example, in December 2004, Tilly Smith, a 10-year-old British child, was on vacation in Thailand with her parents. During a walk on the beach, she observed the ocean behaving strangely. Connecting the water’s behavior with the characteristics of tsunamis that she had learned in geography class, she convinced her parents to return to the hotel. Her insistence also led their hotel to take precautions. She was credited later with saving perhaps over 100 lives that day. That disaster claimed the lives of approximately 200,000 people in 13 countries.35

In addition to being able to warn others, children also have the capability to serve as effective first responders, as evidenced when emergency-trained street children, called the Child Brigade, evacuated and sheltered other children affected by a large urban fire in Bangladesh.36 Young Americans have also been successfully and critically involved as first responders, often helping family members (as happened in 2005 during the massive evacuations and rescues due to Hurricane Katrina37).

Finally, children can also be instrumental in recovery processes. It has been shown that they can and do lead initiatives to facilitate their own emotional and psychological recovery and that of those around them. Studies have shown that effective coping mechanisms for children are often common childhood activities, such as writing, coloring, drawing, taking pictures, talking with others, and creating games. After the South Asia tsunami in 2004, for example, Indian
children were observed leading their own healing sessions comprised of but not limited to activities incorporating elements of games, fun, and laughter among peers. In addition, children have often been observed completing service to their communities in the aftermath of a disaster by raising money and gathering supplies.\textsuperscript{38}

Additionally, children may have unique, creative, and practical ideas to offer adults in order to speed or enhance the recovery process. Disasters affect the physical spaces that children occupy on a daily basis, and programs can be designed so that they allow children a voice in how those spaces should be rebuilt. This would result in more inclusive community recovery. Peek states, “Bartlett makes a compelling case for the inclusion of both children and adults in post-disaster rebuilding processes.”\textsuperscript{39} Bartlett found that “children are aware of their capacity to contribute to various community rebuilding and recovery initiatives. They are knowledgeable and resourceful when it comes to their surroundings, and quick to come up with interesting and practical ideas...”\textsuperscript{40} Barlett uses children affected by the 2001 El Salvador earthquake as an example, showing that they served their communities in various ways. These included helping to clean up, plant greenery, rebuild, and bring food and water to recovery workers. Rafter also notes the significance of these children’s efforts, highlighting their involvement in “reconstruction planning, including helping with the design of houses.”\textsuperscript{41}

Furthermore, educating children can help their families and the greater community’s resiliency, and using the school-based model to do so shows promise. Research has also shown that while children sometimes take cues from adults in responding to events, they can also serve to inform adults.\textsuperscript{42} It is true that if children are not trained, they model their reactionary behavior to an event on the behavior of adults around them.\textsuperscript{43} Research has found, however, that children with training can act as “agents of socialization in their own families,” taking information
learned elsewhere home to prepare their families.\textsuperscript{44} In fact, taking “proactive steps to prevent our children from becoming victims” and to allow “them to be true participants in preparedness efforts” is the good way to support the community as a whole.\textsuperscript{45} Peek sums that idea up, saying, 

[b]y focusing on developing children’s resilience, we are also increasing the resilience of families and entire communities…disaster researchers and practitioners [need] to develop new ways to learn from and work with children to make their lives safer and their communities more resilient to disasters.\textsuperscript{46}

Developing children’s skills as discussed above can be effectively done in education-based programs. Ronan and colleagues found that children’s education programs are effective community-wide as children share knowledge with their families.\textsuperscript{47} In a study of 560 children, they examined the children’s involvement in education programs, and measured child and parent-reported “home adjustments” made as part of or due to the education programs. They found children’s participation in these programs resulted in:

- Increased accurate knowledge of hazards,
- Increased reports of home adjustments for hazards preparedness,
- Increased interaction with parents,
- Reduced levels of fear, and
- More realistic risk perceptions than their peers.

Further, they found that “particularly important predictors of home based preparedness activity” include “the providing of emergency management focused information, involvement in multiple programs, and, significantly, an increased frequency of interactions between children and caregivers about what children learned in these programs.” In addition, the authors find an
emergency management-focused curriculum, as opposed to one based on the science of risks or hazards, to be most useful.

International examples show us that formal preparedness education, as offered in classrooms or otherwise, may be best done in a hands-on, experiential manner. For example, children in India and other disaster-prone countries are taught in various ways. Various programs practice first aid, run mock disaster drills, incorporate risk-mapping projects, and learn about post-disaster food safety through culinary competitions. In addition, while the United States operates ad hoc education programs, other countries have incorporated emergency preparedness in their national curricula. Integration into national curricula worldwide was recommended in 2005 at the World Conference on Disaster Reduction (WCDR), as part of the resulting “Hyogo Framework.” Cuba, China, Jamaica, and Japan all have national programs. Formalized programs serve to support children’s contributions throughout the disaster life cycle (see Table 4).

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<tr>
<th>Preparedness</th>
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<tr>
<td>· Disaster drills</td>
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<td>· Risk mapping</td>
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<td>· Evacuation planning</td>
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<td>· Home hazards adjustments</td>
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<tr>
<td>· Search and rescue training</td>
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<td>· Risk communication</td>
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<td>· Formal and informal hazards education</td>
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<th>Response</th>
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<tr>
<td>· Warning others</td>
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<tr>
<td>· Risk communication</td>
</tr>
<tr>
<td>· Translation of disaster materials</td>
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<tr>
<td>· Evacuation assistance</td>
</tr>
<tr>
<td>· Physical protection</td>
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<tr>
<td>· Search and rescue</td>
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<th>Recovery</th>
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<tr>
<td>· Effective coping strategies: writing, drawing, taking pictures</td>
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<td>· Peer counseling</td>
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<tr>
<td>· Aid collection/distribution</td>
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<tr>
<td>· Planning and rebuilding efforts</td>
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<tr>
<td>· Caring for other children</td>
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<tr>
<td>· Assisting with household chores</td>
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<td>· Participating in paid labor</td>
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Source: [http://www.cdra.colostate.edu/Data/Sites/1/cdra-research/peek2008intro.pdf](http://www.cdra.colostate.edu/Data/Sites/1/cdra-research/peek2008intro.pdf)
**Extent and Magnitude of the Problem.** Despite significant evidence that preparedness is worth the effort, the extent and magnitude of unpreparedness among the residents of LA county is concerning. All residents of the county have the potential to be affected by disasters of one kind or another, albeit differently by area and by socioeconomic ability to prepare or recover quickly. Nevertheless, no one should be immune from preparing and preparedness among all families and demographics should be stressed countywide.

The extent of the problem is clear. In 2005, the LA County Department of Public Health released results of a 2005 Los Angeles County Health Survey (LACHS) and a 2004 Public Health Response to Emergent Threats Survey (PHRETS). Adults age 18 and over were surveyed. When asked if they were ready “to deal with or manage after a catastrophic disaster such as an earthquake or terrorist attack”, 36% of respondents “reported that they were not very or not at all prepared to deal with a large-scale disaster.” A majority (58%) said they were either "mostly or somewhat prepared” while just 6% stated they were "completely prepared” (see *Figure 1*).

*Figure 1. Preparedness Rates*
The seriousness of the problem is also clear. The survey showed that on average, only 74% of respondents said they had a 3-day supply of food and water, and only 41% said they had a family emergency plan. These are the most basic and most important components of preparedness at the family level. A complete family emergency plan requires that all family members know the basic pre-designated family meeting place and have contact phone numbers to reach one another in the event of an emergency. In addition, families should select a meeting place outside their neighborhood to use if an emergency prevents returning to the area. Finally, in the event that the family home is destroyed, all family members should also be aware of a meeting place in their neighborhood but outside their immediate home area. 54

These numbers parallel national figures collected by the 2012 Adelphi Natural Disaster Survey, which involved over 1,000 adult Americans via random-dialing telephone methods. In that survey, only 47% of U.S. adults reported having a minimum three-day supply of nonperishable food and water at home and only 48% had designated a family meeting place (part of a family emergency plan). 55 Although personal responsibility necessitates higher levels of readiness than those currently reported by adults in the county, it is important to note that the county’s food and water preparedness percentages are higher than the national average cited above.

Causes. As one can see, the preparedness numbers are low despite clear dangers and incentives. Why is this? Immediate or proximate causes include that it takes time and, in some cases, money to prepare. Putting together a personalized plan takes thought and effort. Preparing children for
crisis is both difficult and emotional. Spending money to put together a kit can be a heavy burden to some families with limited resources.

Another very important underlying cause is more psychological. Cal EMA’s *Study of Household Preparedness: Preparing California for Earthquakes* explains the problem well:

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.56

Put another way, if people are aware of the risks of living where they do, they usually do one of two things: 1) underestimate the problem and thus do not prepare, or 2) turn a blind eye and avoid preparing for it because they are in denial.

**ANALYSIS**

**Current Efforts.** There are currently many efforts at the national, state, and local (city and county) levels to increase awareness about the importance of emergency preparedness. At the national level, the U.S. Department of Homeland Security’s (DHS) “Ready” campaign and the American Red Cross’s “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).”  

There is also the Federal Emergency Management Agency’s (FEMA) Citizens Corps initiative, which has online activities geared toward children as well as national conferences and working groups concerned with children's preparedness. FEMA also operates the “Ready Kids” website, which provides an online interactive emergency preparedness learning experience. The National Service-Learning Clearinghouse also maintains a list of service-learning activities related to homeland security for students in grades K-12.  

Also available nationally is the Community Emergency Response Team (CERT). Originally devised to train adults as first responders, the program has been modified for teenagers. The program involves 20-30 hours of training in:

- Disaster Preparedness
- Disaster Fire Suppression
- Disaster Medical Operations
- Light Search and Rescue Operations
- Team Organization
- Disaster Psychology
- Terrorism

It allows teens to become leaders in readiness and response skills in their schools. Funded in the U.S. by the federal government’s Citizens Corps, the program was used in 2011 in 50 states, 3 territories, and 6 foreign countries.  

At the California state level, there is California Volunteers’ “We Prepare” campaign. The Alfred E. Alquist Seismic Safety Commission publishes earthquake safety information and the
California Department of Public Health runs the “Be Prepared California” program. Cal EMA also partners with the California Seismic Safety Commission (CSSC) and the California Earthquake Authority (CEA) on the yearlong “Totally Unprepared” program using multimedia to help Californians assess risk and prepare. According to the program, “Totally Unprepared uses social media, video, and mobile applications to increase pervasiveness of earthquake preparedness issues.” Cal EMA also sponsors California’s Earthquake Preparedness Month in April, and operates the “My Hazards” website, which allows citizens to assess their risk according to their location.

At the local level in the LA area, the Earthquake Country Alliance has run the “Dare to Prepare” campaign since 2007. It is known for organizing the first annual and largest-ever earthquake drill at the time, the Great Southern California ShakeOut in 2008. The county’s Office of Emergency Management also runs the “Emergency Survival Program” alongside the county Department of Public Health’s “Just Be Ready: Prepare Together!” effort. The Red Cross also administers a PrepareLA campaign.

In terms of school-based programs, there are the following:

*The Red Cross Master of Disaster Curriculum.* The American Red Cross’s Masters of Disaster educator’s curriculum set is a complete curriculum used to teach children disaster safety and preparedness skills. The curriculum meets national educational standards and is specifically tailored for lower elementary (K–2), upper elementary (3–5) and middle school (6–8) classes (high school material is also available online in a more limited manner). The materials are designed to supplement teachers' existing lesson plans. Each kit contains lessons, activities, and demonstrations. The curriculum is also non-sequential, allowing organizers to pick and choose lessons according to locality or school preference. Interactive lessons support Mathematics,
Language Arts, Social Studies, and Science skills while teaching preparedness. The curriculum is sold nationwide.

**STEP Program.** The Federal Emergency Management Agency’s (FEMA) Student Tools for Emergency Planning (STEP) program is also school-based. Although it requires just one one-hour lesson, the program can be taught for up to 15 hours per year, covering multiple aspects of preparedness. This curriculum is taught by teachers and school visitors (such as public safety representatives) and is currently implemented in FEMA regions I, II, V, and IX. The STEP program has been evaluated for satisfaction via surveys given to teachers during its pilot phase in 2008-2009. It is currently being prepared to launch nationwide.

Similar programs have been implemented in other states. Michigan uses the *Michigan Model of Health Emergency Preparedness Supplement.* New York City teaches school children through its *Ready Schools* program and the San Francisco Bay Area utilizes the *Get Ready 5th Grade Bay Area Program.*

**Goals.** While these programs are a good start, they do have shortcomings. According to the Alfred E. Alquist Seismic Safety Commission, unless there is a real disaster, there are two factors that affect or motivate a person’s preparedness most: information received and information observed. School-based preparedness programs should attempt to provide both types of information.

For the first type to be effective, information must be “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.” This is difficult to achieve across public programs that are large in scale. In the case of implementing a curriculum countywide, this could be detrimental. For example, if the children
only hear these messages in school and nowhere else, then the program may not be as efficient or effective as it could be. In the case of LA county, when one considers the demographics and geography of the region, it is easy to imagine the incongruity and other difficulties that plague even the most well-intentioned programs. This is especially complicated as there are many programs in one region (which is why a uniform curriculum may be the best option).

The second factor, information observed, relies on “the impact of ‘seeing’ others prepare and mitigate,” an impact which “is generally stronger than passively receiving information.”72 For children and families, seeing others preparing, however, might require attendance at an event. In the county’s case, it is hard to do events that reach the entirety of a population of over 10 million. One could also speak to family, friends, and neighbors, but that would probably require a larger community culture of preparedness. This, as evidenced by the aforementioned statistics on preparedness, is still in the infancy stage in the U.S. Significant momentum would have to be gained before spreading preparedness messages through interpersonal networks would become effective. This is where school programs could make a significant impact. Through the curriculum in school, children would be exposed to seeing other adults and students prepare. Parents would then be exposed to their children’s learning, as well as other families’ preparedness actions. This could contribute to an increased culture of preparedness awareness.

One thing is certain, however: “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.”73 Again, this is where a uniform countywide program could really accelerate family preparedness.

Values. Disasters do not discriminate. While some families and students may be more affected than others based on location or ability to prepare or recover quickly, the fact remains that large-
scale events will touch most citizens in some way. LA County has a diverse student body that is indicative of the diversity of the families it serves. For the most part, all are susceptible either directly or indirectly to most risks—earthquakes certainly, and most likely also events such as wildfires or terrorism. For this reason, it is important that solutions to help raise the preparedness rate among students and their families should be judged not only on their ability to complete the aforementioned goals, but also on the value of equity. Programs should be accessible and understandable by all. This includes English-language learners and their non-English speaking parents, as well as children with disabilities.

Related to this value is effectiveness. Since preparedness is heavily community-based, one family’s action or inaction affects the entire community’s resources, coordination, and resiliency. Without equitable programs that reach out to all types of students (and thus all types of adults), the additional value of effectiveness cannot be achieved.

At the same time, solutions must be efficient in this fiscal climate. In an ideal world, programs would be judged on cost effectiveness for no other reason than to save public dollars for a disaster “rainy day fund” meant to help Angelenos recover when needed. In reality, high cost or cost inefficient programs might never get off the ground, and might face public backlash if they did.

**POLICY SOLUTIONS**

**Scale Up.** One of the most ordinary solutions to this issue would be to complete a large scale-up of current programs so that they reach more people and continue to increase (albeit slowly) the preparedness rate. It is not an issue of these programs being completely ineffective, as one can
see from the preparedness statistics as a whole. With this solution, it is possible to increase both information received and information seen, and through them higher emergency preparedness.

However, the values of equity and efficiency would be severely compromised in this case. For example, imagine if school visit programs by emergency managers were scaled-up, with the goal of reaching each school at least once yearly. Equity in this example of a large scale-up would be scarce absent a state or national law requiring even funding per capita for preparedness programs (some localities are more well-funded than others as it is). Furthermore, one would have to dictate the exact programs that would be offered in the site visits in order for all people to have equality. Second, this approach would simply be too costly. While an approach along these lines might yield cost efficient rewards (i.e. comparable yet inequitable increases in family preparedness), the feasibility of getting a large, expensive program like this passed in the current climate is near zero.

**Requiring Emergency Preparedness Education in Schools.** Another solution would be to require emergency preparedness education in the county’s K-8 public schools. By focusing the lessons on younger students, the burden on schools and teachers would be minimized without losing sight of the program’s need to teach children while they are most impressionable.

In the 2010-2011 school year, the county educated a total of 1,065,939 public school students in grades K-8. Students in these grades were educated in 1,591 elementary, middle, K-8 and K-12 schools. Of the county’s total K-12 students, 25% were English learners and 65.3% qualified for free or reduced price lunch. The state of California requires most traditional-track schools to have 175 days of instruction per year.

If students were taught emergency preparedness in schools via required curricula, the goal of “information received” would be greatly enhanced in the county. At the most, children
would go home and talk to their parents about their preparedness lessons—hopefully resulting in parents taking additional steps to prepare the family. At the least, parents would receive information packets regarding the curriculum from their children’s schools. It is important to note here that the K-8 public school students of LA County are diverse in background, socioeconomic status, race, ethnicity, and family situation. Enrollment mirrors that of the county’s demographics. This means that when students share with the adults in their lives, the program helps reach a broad and diverse population of adults in the county.

Additionally, children would be more likely to think about preparedness as a result of seeing other children do so (“information seen”). The same can be said for uniformed adults who see other adults (whose children have informed them) taking steps to prepare.

In terms of values, this would be an equitable solution, at least among students and families in public schools in the county. All children would receive a minimum amount of hours in the classroom on the subject, from the same curriculum tailored to their grade level. While it is possible that some schools in the district may emphasize the curriculum more, every student would be exposed at the same minimal level with the same material.

**Example.** On the whole, this approach would also meet the value of efficiency. There are several curriculum options on the market today, many of which could be adapted or taken off the shelf to work in LA county schools. In the case of the American Red Cross Master of Disaster Program, teaching packets are available for levels K-2, 3-5, and 6-8 at a price of $30 each. Schools could use one set of curricula per level.

If all the elementary schools in Table 5 are K-8 (an overestimate), would each need three different sets of curricula, a total of 4,175 sets would be needed to initially equip all of the appropriate schools in the county. Doing so would cost the county just $125,250. This figure
represents a mere 0.0002% share of the LA County Office of Education’s 2010-2011 educational programs and specially funded projects budget of $594 million. As one can see, when compared to the overall budget, it is not a very costly program. In terms of cost efficiency, the program would reach over one million children for a curriculum cost of less than 11.75 cents per student.

<table>
<thead>
<tr>
<th>Table 5. Schools in the County by Level</th>
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<tbody>
<tr>
<td>Elementary schools (K-5 or K-8): 1,265</td>
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<tr>
<td>K-12 schools: 27</td>
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<tr>
<td>Middle schools: 299</td>
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Source: County of LA Office of Education, 2012

Other pros of the program include that the curriculum is fully integrated with national curriculum standards in each respective grade group. The “lessons, activities, and demonstrations on disaster-related topics” are easily incorporated “into daily or thematic programming.” Therefore, they do not have to be stand-alone lessons that monopolize precious instructional minutes. Incorporation ensures that while students enjoy interactive lessons that allow them to have “fun while internalizing important life skills,” they also increase skills in other academic areas such as Mathematics, Language Arts, Social Studies, and Science. Therefore, the county is free to mandate a higher amount of hours or lessons, knowing that they are not in conflict with the building of academic skills.

Furthermore, “the curriculum is non-sequential, allowing organizers to choose the lesson plans that best fit into their topics of interest.” This means that where specialized state and
district curricula differ from national general standards, catering to the more specific standards will not disrupt students’ learning. This means that the county could ensure increased preparedness by mandating a certain number of hours or lessons required, but not mandate specific lessons. This avoids tying teachers’ hands.

While supporting academic and disaster-related skills, the program will increase students’ confidence in dealing with the unknown in all life situations and reduce disaster- and tragedy-related anxiety. Students learn the following in various capacities:

- Prepare for any disaster with Be Disaster Safe
- Cope with tough issues like terrorism, war and pandemic flu with Facing Fear
- Recover and rebuild from any disaster with In the Aftermath
- Prevent injuries that happen at home with Home Safety
- Earthquakes
- Fire Prevention and Safety
- Floods
- Hurricanes
- Lightning
- Tornadoes
- Wildland Fires

There are some drawbacks to this program, including the fact that teachers would have to take time to learn the new curriculum and to integrate it into their existing yearly calendars (which often are simply repeated year-to-year). On the whole, this is not a significant issue due to the lesson alignment with the standards. But in its initial phase, teachers would admittedly have to make some adjustments.
In addition, the county would have to handle the purchase and distribution of the packets or handle the allocation of money to schools for the purchase of packets. Additionally, it would have to rely on districts to report on compliance with the minimum requirements of the program. This requires trust between the county and the districts. In turn, districts would have to monitor implementation at the school-level, probably relying on principals to enforce and report on the program. So long as principals take the county mandate and implement it at the classroom level as part of an integrated learning day, this should not have to be a significant issue.

LA County could also work with FEMA to implement the STEP program. On the whole, this too might be a good way to introduce the local education community to preparedness education. STEP is free to most users and requires just one initial hour of instruction time, either by teachers or outside volunteers such as school safety officers. It also makes available additional, more in-depth lessons if desired. Although the Red Cross curriculum may be more comprehensive, the STEP program may be a good alternative if the teacher time commitment and cost of the former prove to be prohibitive.

**SUMMARY**

The citizens and families of LA County are unprepared for a disaster or emergency, and this makes them and the entire LA region more vulnerable. The economic and physical consequences to infrastructure and vital services like trade are too serious to ignore, as are the physical and psychological effects on adults and children alike. The benefits of becoming prepared, especially using a school-based curriculum, are significant. LA County should explore the practical solution of incorporating emergency preparedness and response curricula uniformly in K-8 public schools, possibly using one or more of the curricula outlined here. If the county
were to do this, children would receive skills that would allow them to personally become more prepared. More importantly, they would do so while passing on that message to their families and communities. Resiliency in the region would increase and the county would have the opportunity to showcase the importance and viability of such a program both domestically and internationally.

References

2 Ibid.
5 Ibid.
6 Ibid.
7 Ibid.
12 Ibid.
14 Ibid.
15 The Great California ShakeOut. "SOUTHERN SAN ANDREAS SHAKEOUT SCENARIO."
17 The Great California ShakeOut. "SOUTHERN SAN ANDREAS SHAKEOUT SCENARIO."
29 Ibid.
30 Ibid.
33 Ibid.
35 Ibid.
37 Ibid.
38 Ibid.

41 Ibid.


43 Ibid.


48 Ibid.


51 Ibid.  


53 Ibid.

54 Ibid.


Ibid.


Ibid.


Ibid.


Ibid.


Ibid.


Ibid.

Ibid.