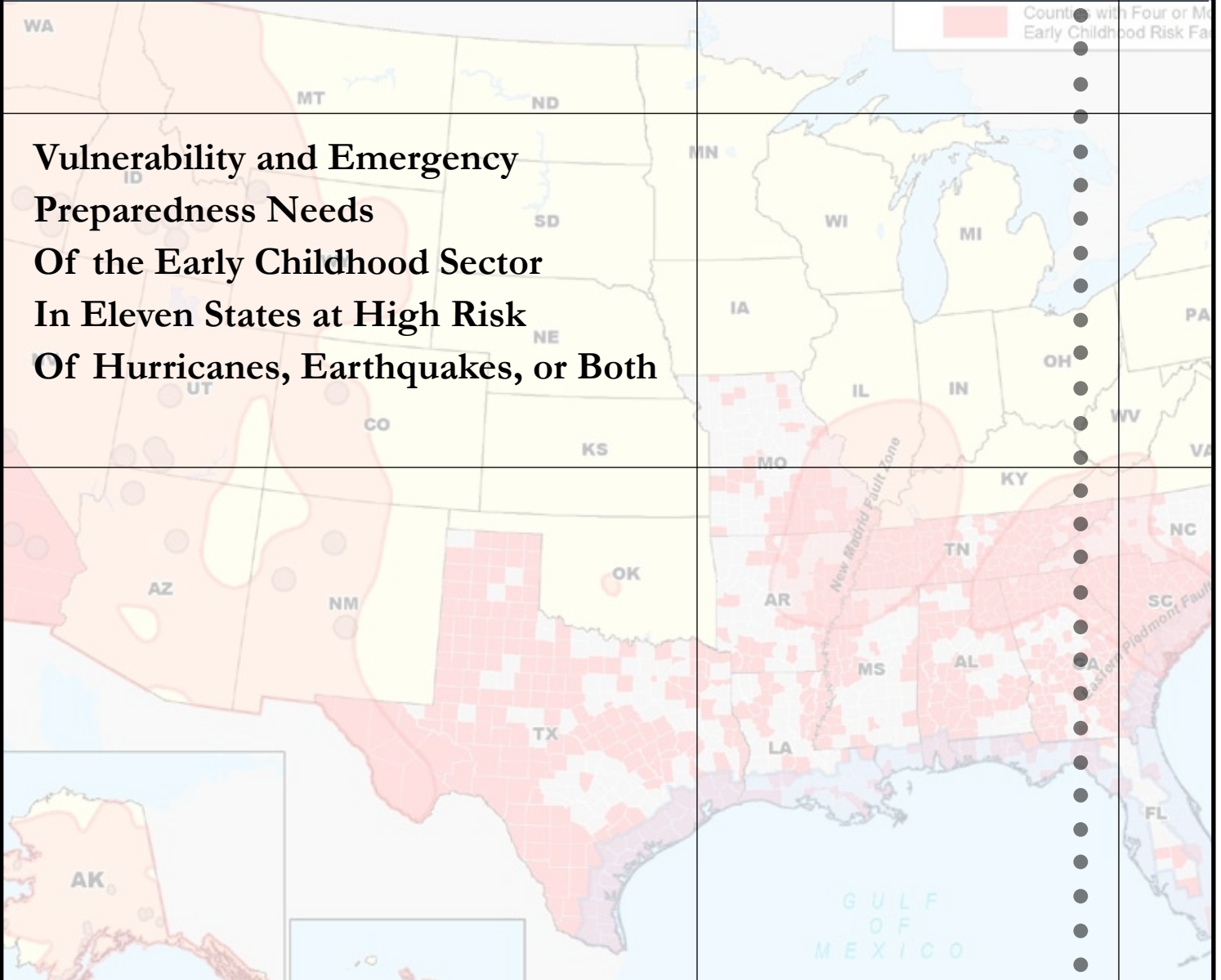


THE EARLY CHILDHOOD DISASTER RISK INDEX 2007



**Vulnerability and Emergency Preparedness Needs
Of the Early Childhood Sector
In Eleven States at High Risk
Of Hurricanes, Earthquakes, or Both**



Mississippi State University
Early Childhood Institute



COMMUNITY INFORMATION
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Vulnerability and Emergency Preparedness Needs of the Early Childhood Sector
In Eleven States at High Risk of Hurricanes, Earthquakes, or Both

Mississippi State University Early Childhood Institute

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INTRODUCTION

The Early Childhood Disaster Risk Index emerged from the Rebuilding After Katrina Initiative to restore early childhood services in Mississippi following Hurricane Katrina (Aug. 29, 2005). That initiative, coordinated by the Mississippi State University (MSU) Early Childhood Institute, helped 267 early care and education programs, with a combined capacity of 15,178 children, reopen within a year of the storm. The initiative was a complicated project with numerous governmental, nongovernmental, and corporate partners, many sources of revenue, and an array of material contributions and forms of technical assistance allocated on the basis of needs assessments (Mississippi State University Early Childhood Institute, 2006a).

One of the advantages that the MSU Early Childhood Institute had in rapidly mobilizing assistance after Katrina was its Early Childhood Atlas. The institute had collaborated with the Community Information Resource Center at the University of Missouri to develop the Atlas, intending for it to be used to measure and map the characteristics and quality of the early childhood sector nationwide. Initial funding for the Atlas was by the U.S. Department of Education (Grant #P116Z05-0056). In the days and weeks following Katrina, using this spatially enabled database and set of map-making tools, analysts and geographic information specialists with the institute were able to quickly incorporate damage reports from early childhood programs in the disaster area and assess the impact on the region's early childhood sector.

As the Rebuilding After Katrina Initiative gained momentum, representatives of many associations concerned with early care and education contacted the MSU Early Childhood Institute to offer help. They often asked how they could

reduce the threat of major disasters to early childhood services in their areas. Beginning with a forum in Mobile, Alabama, in December 2005, the institute has taken a series of steps to foster improvements in emergency preparedness for the early childhood sector and to continue the discussion of this important topic (National Center for Rural Early Childhood Learning Initiatives, 2006).

Part of that initiative has been the Early Childhood Atlas Readiness Project, a concentrated effort to collect core data about the locations of early childhood services in states at high risk of hurricanes, earthquakes, or both, to merge overlapping datasets, to geocode the data, and to offer it in the form of maps and spatially enabled datasets to state child care and emergency management agencies for use in actual disasters (Mississippi State University Early Childhood Institute, 2006b).

Expanding upon the Early Childhood Atlas Readiness Project, the authors of this report surveyed key indicators of disaster risk and of emergency preparedness of the early childhood sector in 11 states. We have combined their findings with the core data in the Early Childhood Atlas to create the Early Childhood Disaster Risk Index.

We present the first edition of this index at an important time in the history of early care and education. Many forces are at work to make the early years safer and richer, in terms of caring relationships and learning experiences, for America's children:

- The movement in a majority of states around the country to establish quality rating systems for child care programs

- The growing support for publicly funded pre-kindergarten programs
- The post-Katrina awareness that emergency preparedness must involve reduction of risk and immediate first response to protect young children
- The burgeoning child indicators movement in sociological and early childhood services research – a movement that should help governments at all levels make decisions about children on the basis of evidence, rather than assumptions or ideology

As the Early Childhood Disaster Risk Index clearly indicates, we as a nation and as individual states and communities can do a

great deal to reduce the threats from major disasters for young children.

We can never adequately thank the hundreds of individuals and organizations around the country that contributed to restoration of early childhood services in Mississippi. The Early Childhood Disaster Risk Index is one way in which we have tried to demonstrate our gratitude. We hope this tool will help our colleagues make plans and allocate resources for early childhood emergency preparedness.

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July 2007

METHODS

This index is a compilation of risk factors and early childhood services data for counties in 11 states that are at high risk for hurricanes, earthquakes, or both. Those states are Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Missouri, North Carolina, South Carolina, Tennessee, and Texas. (See map on page 4.)

RANKING COUNTIES BY NUMBER OF RISK INDICATORS

To create the Early Childhood Disaster Risk Index, the authors selected 10 indicators of vulnerability of early childhood services to major disasters. Together, the indicators suggest the need for early childhood services, the level of threat from major disasters, and the potential of the early childhood services sector to recover rapidly from major disasters. For some of the indicators, data was readily available. For others, it was necessary to obtain and geocode location data and then sort the data in order to arrive at relative degrees of need or risk. For still others, it was necessary to survey state agencies that provide early childhood services. The appendix is a list of the datasets that support these indicators.

This index provides disaster preparedness scores for the early childhood sectors in all counties in the 11 states. To arrive at the scores, counties are assessed for the 10 risk factors, or indicators of vulnerability, and the number of *absent* risk factors for each county is converted to a percentage. Thus, a county with one of the 10 risk factors has a score of 90 percent. A county with seven risk factors has a score of 30 percent. In the index, counties with scores of 60 percent or less are considered to have *highly vulnerable* early childhood sectors.

The indicators that are the basis of the vulnerability scores are in four major categories:

- Disaster Risk Areas
- Child Well-Being
- Early Childhood Services
- Emergency Preparedness

DISASTER RISK AREAS

The 2007 index incorporates indicators for four types of natural disaster risk: hurricane, earthquake, tornado, and volcano. Tornadoes are a significant risk in almost all of the counties in the 11-state study area. While the areas affected by individual tornadoes may not be large, the losses can be great. Thus, the need for tornado preparedness is widespread and a reasonable foundation for other improvements in emergency preparedness. Volcanoes are not a risk in any of the counties, but the risk factor is included here to support expansion of the index to western states. For each type of natural disaster risk, the index relies on a map of high-risk areas, with boundaries drawn across county lines and any county with a portion of its area within a risk area considered at high risk for the disaster.

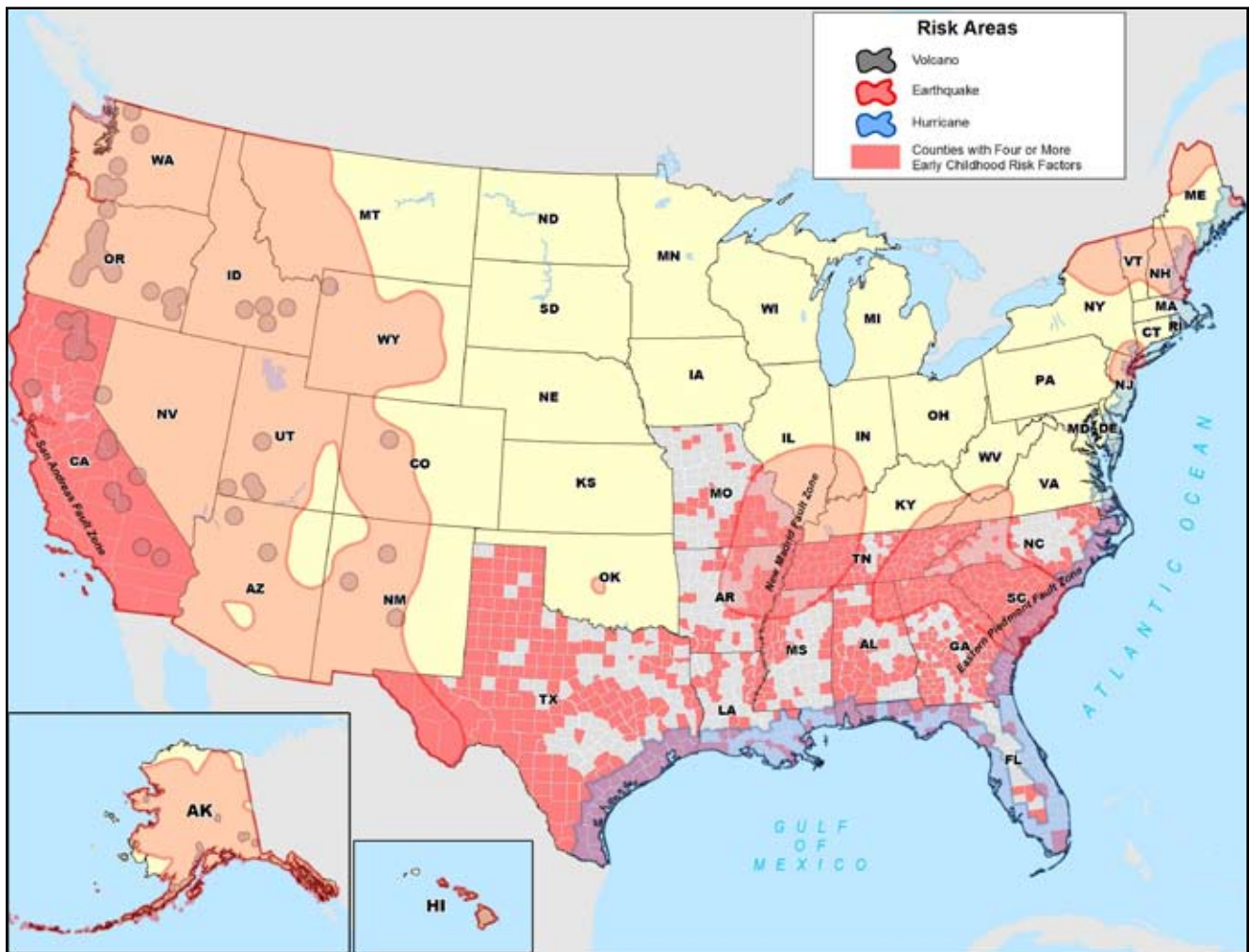
Hurricane Risk Areas

Due to ever-changing weather patterns and ocean temperatures, hurricane prediction is an inexact science. In this index, all Atlantic and Gulf Coast counties in the United States Landfalling Hurricane Probability Project were considered at high risk for hurricanes (Tropical Meteorology Research Project, 2007).

Tornado Risk Areas

Any county that has experienced one or more tornado touchdowns with a Fujita Scale rating of F1 or greater during the period 1950-2004 is considered at high risk for purposes of this index (National Atlas of the United States, n. d.).

Natural Disaster Risk Areas in the United States



Source: ESRI Street Map USA

Credit: RUPRI's Community Information Resource Center, University of Missouri

Earthquake Risk Areas

Counties that are at risk for potential damage from earthquakes, according to the National Seismic Hazard Map of the U.S. Geological Survey (2002), are considered high-risk for purposes of this index.

Volcano Risk Areas

To define areas at a high risk for volcanoes, the authors drew circular boundaries at a 20-mile radius around locations of known active volcanoes as reported by the USGS Global Volcanism project (National Atlas of the United States, n.d.). The 20-mile radius is based upon the Federal Emergency Management Agency's approximation of the radius around

which damage can be expected (2006).

CHILD WELL-BEING

Using a single indicator of child well-being, the percentage of children ages 0-4 years living in poverty, the index categorizes counties ranking in the top, or poorest, third of counties in their respective states as having high child poverty.

In counting risk factors for individual counties, this indicator of high young child poverty is given twice the weight of other factors, because children in poverty are more likely than other children to need access to child care in order for their parents to work and for the children to receive the benefits of early learning experiences.

EARLY CHILDHOOD SERVICES

The index includes low access to licensed and registered child care, or a shortage of care, as an indicator of vulnerability. Access is calculated as a ratio based upon the maximum capacity of licensed and registered child care facilities in each county and the number of children ages 0-4 years in each county. Thus, a county with 50 slots and 100 children will have a ratio of one slot for every two children, expressed as 1:2. (For family child care homes with missing capacity data, the authors assumed enrollment was the maximum permitted under relevant state regulations (Lemoine & Azer, 2006).)

Low access is defined as falling in the bottom third of counties within a state for ratios of slots to children. This means that the criterion for low access is different in each state. For example, the ceiling for designation as a low-access county is a ratio of 1:1.7 in Arkansas, while it is 1:3.23 in Texas.

Two other indicators relate to the resources and resiliency of early childhood services in a county: The availability of a child care resource and referral agency (CCR&R) suggests a capacity in the county to help child care facilities improve their emergency preparedness and to refer displaced families to substitute child care. The availability of a statewide child care quality rating system (QRS) (National Child Care Information and Technical Assistance Center, April 2007; National Association for the Education of Young Children, 2006) suggests a commitment to systemic improvements in quality of child care facilities that could include standards for emergency preparedness, as well as clear benchmarks for restoring the quality of individual facilities to their pre-disaster levels or higher.

EMERGENCY PREPAREDNESS

This first edition of the Early Childhood Disaster Risk Index includes two indicators of emergency preparedness of the early childhood sector: whether states require licensed child care facilities to maintain emergency evacuation plans and whether adequate data-sharing occurs between the early childhood and emergency management sectors in each state. In counting risk factors for individual counties, these two indicators of inadequate emergency preparedness are given half the weight of other risk factors because they are statewide indicators.

Lack of Mandatory Evacuation Planning

As of 2006, only eight states required child care facilities to maintain evacuation plans as a condition of licensing: Alaska, Arizona, Delaware, Florida, Massachusetts, Mississippi, Vermont, and West Virginia (National Association for Regulatory Administration, 2006).

Inadequate Data-Sharing

Data-sharing, *among* the agencies with oversight for the five types of child care described here (licensed and registered care, subsidy-participating care, food program-participating care, Head Start and Early Head Start, and state-funded pre-kindergarten), and *between* those agencies and emergency management agencies, is very important to the safety of young children during disasters and to the resilience of the early childhood sector following disasters.

Without integrated lists of child care providers, including their locations, maximum capacity, and hours of operation, disaster warning systems have no way to alert providers of impending danger, such as tornadoes approaching their areas, and first responders such as fire and police departments have

no way of checking on the safety of young children in congregate care after disasters.

Moreover, in the aftermath of major disasters, each state and federal agency with an oversight or funding responsibility for early childhood services needs accurate projections of losses to its part of the sector and costs to restore services. Without integrated, spatially enabled data about locations and maximum capacity, rapid assessments of losses are not possible.

Between June 2006 and February 2007, the authors surveyed the agencies responsible for the five types of child care providers in each state to determine whether data was available in a format that could be merged and spatially coded. The authors also surveyed child care licensing agencies in the 11 states under study here to determine if the agencies had had opportunities to share location data about child care providers with state emergency management agencies (Shores et al., 2007). (The authors were able to obtain more recent datasets for some categories of providers in March and April 2007.)

A CLOSER LOOK AT HIGHLY VULNERABLE EARLY CHILDHOOD SERVICES

For counties found to have highly vulnerable early childhood sectors, the index identifies the numbers and capacity of up to five types of early childhood services:

- State-listed facilities
- Subsidy-participating care
- Food program-participating care
- State-funded pre-kindergarten
- Head Start and Early Head Start

The latter four types are important social supports for low-income families with young children and for children with special needs for high-quality early learning experiences.

Two of the types, subsidy-participating and food program-participating providers, are important for a second reason: these providers may be license-exempt, home-based child care businesses that do not appear on lists of licensed or registered providers. Although they are not licensed or registered, these providers care for many children below school-age and thus represent an important social support for families and important locations for search-and-rescue operations to include.

SUBSIDY-PARTICIPATING CARE

Each state uses federal funds to subsidize child care for parents who are making the transition from welfare payments to economic self-sufficiency. These subsidies are typically known as “vouchers” or “certificates” and are paid directly to child care providers that participate in the states’ subsidy programs.

The providers that participate in their states’ child care subsidy programs are a crucial part of the early childhood sector, but can be difficult to identify and locate within disaster risk areas. The difficulty stems from the lack of consistent lists of subsidy-participating providers. State agencies that administer the child care subsidies are not required by the federal Child Care Bureau to report which providers receive subsidy payments, so state agencies do not maintain lists in a standard format. Moreover, some child care agencies decline to make lists of subsidy-participating providers available to the public in formats that can be merged and compared to comprehensive lists of licensed and registered providers. Seven of the 11 states covered by this index do not make lists of subsidy-participating providers available (Shores et al., n.d.).

FOOD PROGRAM-PARTICIPATING CARE

Eligible child care providers, including licensed and license-exempt providers, may choose to

participate in the federally funded Child and Adult Care Food Program. The U.S. Food and Nutrition Service provides grants to individual states, which then contract with individual child care providers to provide cash reimbursement for serving meals to enrolled children (U.S. Food and Nutrition Service, n.d.).

STATE-FUNDED PRE-KINDERGARTENS

The availability of publicly funded pre-kindergartens, or early childhood programs for four-year-olds, varies widely from state and to state and within states. States use a variety of mechanisms to fund pre-kindergarten programs. In addition, some public school districts operate voluntary pre-kindergarten programs for some or all four-year-olds within their boundaries.

This index provides the numbers of pre-kindergarten programs and slots that receive state funding. It does not incorporate school-based pre-kindergarten programs.

HEAD START AND EARLY HEAD START

Head Start and Early Head Start programs are operated by local agencies but funded through a competitive grant process by the U.S. Administration for Children and Families. Head Start and Early Head Start programs serve economically disadvantaged young children (U.S. Administration for Children and Families, n.d.). As with state-funded pre-kindergarten programs, access to Head Start and Early Head Start can vary considerably from county to county.

LIMITATIONS OF THE DATA

As a practical matter, the availability of datasets fluctuates as agencies change personnel and procedures. For example, the authors found in June 2006 that Alabama could not provide

license numbers or maximum capacity of its licensed child care centers. In February 2007, however, a list with those data elements was available. In addition, serious gaps in the available data mean that the full risks to young children in congregate care, during and after major disasters, cannot be predicted.

This index does not include risk factors for technological disasters such as chemical spills, radiation leaks, or terrorist attacks. Nor does it provide proximity of designated evacuation shelters to child care facilities. Although Cutter, Mitchell, and Scott (1997) recommended mapping vulnerable populations with their proximity to shelters, no state emergency management agency in the study area was able to provide a list of designated shelters.

Determining the capacity, and thus the potential losses in terms of child care slots, of all major types of child care facilities was not possible for all of the 11 states, because typically only the lists of licensed and registered providers include maximum capacity for each facility, while lists of other types of child care do not usually include state license numbers. Matching lists of different types of child care by provider names and/or physical addresses, rather than license numbers, is a labor-intensive task that was beyond the scope of this study. Moreover, available datasets may be incomplete. For example, some states provided maximum capacity for some, but not all, licensed centers. Consequently, the estimates in this report of access to child care and of numbers of vulnerable slots could be low. Further, some agencies declined to provide lists of participating providers in usable formats. The appendix includes the agencies in each state that could, and in many cases did, provide data for this index.

HIGHLIGHTS — 2007

- Early childhood services in 691 counties in the 11 states examined in this index are highly vulnerable to disasters.
- In those counties, approximately 33,194 child care facilities are highly vulnerable to disasters.
- An estimated 1,536,256 young children in the 11 states spend their days in highly vulnerable child care facilities.
- The proportion of child care slots in the 11 states that are highly vulnerable to disasters varies from 17.44 percent in Missouri to 100 percent in South Carolina.
- The availability of state-listed child care ranges widely between states and within states, from two slots available for each young child in Fort Bend County, Texas, to one slot for every 415 children in Chattahoochee County, Georgia.
- Fully assessing the risks for early childhood services in the 11 states is not possible because of gaps in available data, making inadequate data-sharing itself a risk factor for the early childhood sector.

HIGHLY VULNERABLE TO MAJOR DISASTERS

691 Counties
33,194 Child Care Facilities
1.5 Million Young Children

EARLY CHILDHOOD DISASTER RISK INDEX

Early Childhood Service Indicators for Counties, in Hurricane- and Earthquake-Prone States, With Highly Vulnerable Early Childhood Sectors

| State | AL | AR | FL | GA | LA | MS | MO | NC | SC | TN | TX |
|--|---------|-----------|------------|--|-------------|------------|----------------|------------|------------|----------|----------------------------|
| Number of Counties ¹ | 46 | 32 | 21 | 122 | 26 | 33 | 41 | 48 | 46 | 87 | 189 |
| Number of Child Care Facilities ² | 591 | 832 | 2,211 | 6,173 | 383 | 536 | 921 | 2,325 | 3,683 | 4,580 | 10,959 |
| Number of Child Care Slots ³ | 40,430 | 35,207 | 126,143 | 103,112 | 23,373 | 35,366 | 25,965 | 84,837 | 179,069 | 319,007 | 563,747 |
| Proportion of State's Child Care Slots ⁴ | 43.47 | 21.64 | 18 | 65.04 | 17.62 | 27.49 | 17.44 | 21 | 100 | 91.23 | 58.55 |
| Lowest One-County Total for Child Care Slots | 45 | 156 | 176 | 3 (each) | 62 | 136 | 16 | 142 | 252 | 71 | 12 (each) |
| Counties with Lowest Totals for Child Care Slots ⁵ | Greene | Searcy | Franklin | Baker, Chattahoochee, Clay, Echols, Glascock, Jenkins, Long, Quitman, Randolph, Schley, Stewart, Talbot, Taliaferro, Taylor, Telfair, Turner, Union, Wheeler | Tensas | Franklin | Douglas | Hyde | Calhoun | Pickett | Glasscock, Sterling, Throc |
| Highest One-County Total for Child Care Slots | 9,185 | 5,234 | 92,700 | 16,715 | 6,104 | 4,500 | 13,354 | 7,794 | 19,978 | 123,121 | 183,081 |
| Counties with Highest Totals for Child Care Slots ⁵ | Mobile | Jefferson | Miami-Dade | Cobb | Orleans | Washington | St. Louis City | Gaston | Greenville | Shelby | Harris |
| Lowest County-Wide Ratio of Child Care Slots to Children Ages 0-4 ⁶ | 1:2.35 | 1:0.65 | 1:1.33 | 1:0.96 | 1:1.61 | 1:0.58 | 1:1.76 | 1:0.7 | 1:1.06 | 1:0.56 | 1:0.54 |
| Counties with Lowest County-Wide Ratios of Child Care Slots to Children Ages 0-4 | Madison | Desha | Levy | Dawson | Lincoln | Issaquena | St. Louis City | Swain | Richland | Shelby | Fort Bend |
| Highest County-Wide Ratio of Child Care Slots to Children Ages 0-4 | 1:23.85 | 1:3.29 | 1:2.89 | 1:415 | 1:17.46 | 1:4.07 | 1:49.06 | 1:3.09 | 1:3.8 | 1:6.43 | 1:26.42 |
| Counties with Highest County-Wide Ratio of Child Care Slots to Children Ages 0-4 | Jackson | Prairie | Franklin | Chattahoochee | St. Bernard | Franklin | Douglas | Perquimans | Calhoun | Grainger | Wheeler |

¹ Counties with highly vulnerable early childhood sectors

² Licensed and registered facilities in counties with highly vulnerable early childhood sectors

³ Maximum capacity of licensed and registered facilities in counties with highly vulnerable early childhood sectors

⁴ Percentage of total licensed and registered child care slots

⁵ Counties, among state's counties with highly vulnerable early childhood sectors, with lowest number of licensed and registered child care slots

⁶ Counties, among state's counties with highly vulnerable early childhood sectors, with highest number of licensed and registered child care slots