

Measuring Community Resilience using Online Toolkits¹

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This EDIS document is one in a series that explores how Extension can conduct programming that helps make communities more resilient. *Community Resilience* (CR) generally is defined as the ability for a community to bounce back from a disaster, adapt to changes, and become more sustainable. When we return to the scene of recent disasters like New Orleans, we find that some communities and neighborhoods are able to recover faster than others, while some never completely recover.

Florida is particularly vulnerable to disasters, with its large coastline, and one measure found in the literature—the Social Vulnerability Index—puts the state at the highest level of risk. This level of vulnerability in Florida is made worse because of the large populations of elderly and concentrated communities of minorities. When disasters strike, it is more difficult for these populations to prepare, survive, and rebuild. Climate change will bring uncertain weather risks, sea level rise, and rising costs to taxpayers for disaster response and reconstruction.

CR is important to Extension agents because of the economic and psychological damage and the social disruption to communities that accompanies the physical destruction from natural and man-made disasters. Extension agents, regardless of their academic discipline or programmatic focus, can play a key role as change agents in helping communities become more resilient. There are things which citizens, elected officials, agencies, and key stakeholders can do to ensure that response to the next disaster is effective

and the return to normal is rapid and equitable for all those affected. To get to this stage of preparation, communities can use qualitative and quantitative measures to identify key components of CR to highlight vulnerabilities and find ways to strengthen them. These measures of CR are presented as checklists and rankings for developing do-it-yourself preparedness strategies. Extension agents and community development practitioners can more effectively serve their communities by learning to use some of these easy-to-use CR resources and toolkits.

This EDIS document originates from a UF-led program called Healthy Gulf, Healthy Communities (<http://healthygulfcoast.org>). The goal of the program is to report on the findings of the research conducted by a National Institute of Environmental Health Sciences (NIEHS) study called “Health Impact of Deepwater Horizon (DWH) Oil Spill in Eastern Gulf Coast.” In addition, the goal of the study is to use the latest science to help coastal communities improve their resilience to future disasters.

This document highlights the usefulness of different CR toolkits that are available online. It provides Extension agents with resources to share with government, corporate, and civic leaders and individual citizens to enhance their ability to plan for, respond to, and recover from natural and man-made disasters. The resilience assessment and planning tools reviewed here range from simple, ready-to-print worksheets intended for use by average citizens to comprehensive planning exercises more appropriate for city

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planners, emergency service providers, and elected officials. Not all of the toolkits will apply to every community, and any individual toolkit may need to be adapted by practitioners to fit their situation. There is help for this online and in communities of practice in the Extension field.

Table 1 allows Extension faculty to rapidly identify the most appropriate community resilience (CR) toolkit(s) for use in their programming. Agents might want to mix and match components from several toolkits to meet the needs of their communities.

Toolkit 1

Coastal Community Resilience Index: A Community Self-Assessment. 19 pages

http://www.gulfofmexicoalliance.org/projects/files/83Community_Resilience_Index.pdf

This self-assessment was developed by Alabama and Mississippi Sea Grant to gauge how well a community might recover from a future hurricane. It has been widely used in Gulf Coast and Southeast coastal communities. The tool provides different scenarios that emphasize flood and wind damage. To use it, Extension and community planners conduct a self-assessment of two hurricanes: one that

actually occurred in the past and a future hypothetical one. After evaluating infrastructure, transportation, community, and business plans, users then develop a resilience score of low, medium, or high. This process (including the discussion among attendees) and the final scoring method can help communities better prepare and plan for future threats.

To use this tool, participants need familiarity with their community and some existing data such as flood maps. Using the Coastal Resiliency Index, Extension and community leaders can:

- identify potential problems and make plans to target resources
- compile disaster scenario data from previous events
- predict a future threat of increased intensity
- assess community and business plans
- understand how social systems may serve community resilience
- predict how transportation routes will be affected
- plan disaster mitigation projects
- gauge how soon critical infrastructure and facilities will function post-disaster

Table 1. Toolkit Comparison Chart

Toolkit #	Special Focus	Format	Rural or Urban	Intended Participants	Primary Activities	Comprehensive or Partial Orientation
1	Natural disaster	Workbook & checklists	Both	Planners & Emergency responders	Evaluation of past & future simulated storm impact	Comprehensive hurricane focused
2	General	Illustrated book	Rural	Community residents	Lit. review case studies & Semi-structured interviews	Comprehensive social focus
3	General	Scorecard	Both	General	Scores community network, vulnerability, procedures, & resources	General
4	Health	Tech report	Urban	Health planners	Analyzes community organization	Public health organization
5	Nat. disaster Terrorism Health & mental health	Integrated system of instruments	Both	Health planners and Community leaders	Surveys, interviews, & focus groups Assessment instruments Data analysis framework	Social networking, Health and mental health services.
6	General, Child health	Online courses	Both	General	Online courses Audio, video, & print resources Case studies	Encyclopedic

Extension agents in coastal Florida have already used this toolkit to help several communities evaluate their resilience and vulnerable characteristics. They invited emergency managers, planners, public works administrators, and building and codes officers to participate in a facilitated exercise. The disaster scenarios are helpful for stakeholders to think about their community's strengths and weaknesses. The resulting rankings of resilience, suggested next steps, and links to additional resources form a valuable starting point to help community leaders think about disaster preparedness. It can also be updated periodically.

Toolkit 2

Building Resilience In Rural Communities 52 pages

<http://learningforsustainability.net/pubs/Building%20Resilience%20in%20Rural%20Communities%20Toolkit.pdf>

Designed with a focus on rural communities, this kit contains a useful literature review of community resilience topics. The book is well-written, comprehensive, and easy to use. Extension agents may find the guidelines for gathering qualitative information from diverse communities useful. Much of the qualitative data collected can help agents and decision makers to better understand the people and assets in their communities. Each section includes a brief description of how the concept contributed to resilience using a case-study format. The description is followed by questions that prompt critical thinking about how to enhance individual, group, and community resilience. An agent can ask the participants to identify local examples or events that show community resilience or vulnerability in these categories. Some of the concepts include:

- **Social networks and support**—families, friends, organizations, and other groups that can provide social, financial, political, emotional and practical support, and information.
- **Positive outlook**—confidence and optimism about the future, perseverance and determination; viewing adversity as a challenge to overcome rather than an insurmountable obstacle.
- **Learning**—resilient individuals and groups seek out opportunities to learn from previous disasters and continue to develop.
- **Early Experiences**—positive and negative experiences during childhood can provide coping mechanisms and other skills to build individual resilience.

- **Environment and lifestyle**—the natural and built environment can impact how people relate to their surroundings and their community.
- **Infrastructure and support services**—water and power supplies and public transportation, sanitation, health, education, and telecommunication services are important. Social services that share food, shelter, and physical and mental health services strengthen a community.
- **Diverse and innovative economy**—when employment and business do not depend on one market, they can cooperate rather than compete and income is retained in the community.
- **Embracing differences**—including variations of age, gender, ability, culture, language, race, income, values, and sexuality. When diverse groups are accepted and valued, it increases both individual and community resilience.
- **Beliefs**—religious beliefs, spirituality, and a sense of connection to nature can enhance the life of individuals, while nurturing supportive social networks.

Toolkit 3

Community Disaster Resilience Scorecard. 28 pages

<http://www.torrensresilience.org/images/pdfs/toolkit/tritoolkit.pdf>

This scorecard includes comprehensive instructions and materials. The intended audience is broad and can be useful to anyone who wants to better understand their community and help their community plan for and recover from disasters. The kit includes simple instructions, an example invitation letter, sample agendas for working group meetings, and scorecards. The scorecards measure four components of community resilience:

- **Connectedness** of community members
- **Risk and vulnerability levels** in the community
- **Planning, response, and recovery procedures** for disasters
- **Resources available** for planning, response, and recovery

Examples of connectedness include the percentage of your population involved in community organizations, the relationship of your community with the larger region, and the degree of connectedness across ethnicities. Examples of risk and vulnerability include the rate of change in the population, what proportion of the population primarily

speaks a different language, and the risk that your population might be isolated in the event of a disaster.

In addition to the scorecard, the toolkit provides help with locating sources of information needed and describes the significance of the different scores in each question. For example, if there is a pattern of ethnic division in a county or community, it is up to civic, government, and business organizations that already bridge that divide to become a part of disaster resilience planning to improve the “degree of connectedness.”

Toolkit 4

Building Community Resilience to Disasters: A Way Forward to Enhance National Health Security. 104 pages

http://www.rand.org/content/dam/rand/pubs/technical_reports/2011/RAND_TR915.pdf

This lengthy technical report sponsored by the U.S. Department of Health and Human Services outlines how community planning teams can enhance community resilience. This document can be used as a way to bolster community capacity to respond to and recover from a health security incident.

The study includes a definition of community resilience that differs from that of other toolkits in that it is specific to the context of health security. This research defines resilience as the “ongoing and developing capacity of the community to **account for its vulnerabilities** and **develop capabilities**... to prevent, withstand, and mitigate the stress of a health incident.” The definition emphasizes the key concepts of:

- **Community engagement**
- **Partnership among organizations**
- **Sustained local leadership**
- **Culturally relevant education about risks**
- **Individual and community preparedness**
- **Self-sufficiency**

This concept of resiliency was developed by using the analysis of six focus groups conducted with key stakeholders in the diverse urban centers of New Orleans, Los Angeles, Washington, D.C., Chicago, and Miami. The resource is divided into chapter topics that are key “levers” for building community resilience. These include:

- **Wellness**—health services before incidents and a continuity of care afterward
- **Access**—to health resources and services including “psychological first aid” as disaster response and post-disaster interventions.
- **Education**—including ongoing public health campaigns on coping skills and psychological wellness.
- **Engagement**—active participation of the whole community from planning through recovery.
- **Self-sufficiency**—recognize the critical role individual citizens play as immediate “first responders.”
- **Partnership**—collaborating with local organizations and social networks to develop and disseminate preparedness information and supplies.
- **Quality**—develop monitoring and evaluation plans to facilitate seamless monitoring throughout the course of the incident.
- **Efficiency**—develop clear guidance for donations and policies for effective donation management.

The information is well-organized and comprehensive. The report provides a menu of options for building community resilience that can be prioritized by communities. Each level of community resilience includes specific activities for community leaders. Each activity includes a rationale, a “key leaders” section of relevant stakeholders to involve, and steps leaders can take to perform the resilience-building activity. Extension agents could use this report as a robust introduction to resilience concepts with a focus on health.

Toolkit 5

Communities Advancing Resilience Toolkit (CART): The CART Integrated System. 87 pages

<http://www.oumedicine.com/docs/default-source/ad-psychiatry-workfiles/here.pdf?sfvrsn=0>

This is a fairly complicated and comprehensive system of tools that communities can use to enhance community resilience through self-assessment, group planning processes, and action steps. The CART has four domains:

- **Connection and Caring**
- **Resources**
- **Transformative Potential**
- **Disaster Management**

Extension agents may find this tool to be most useful in supporting advanced stages of community resilience development. Specific assessment tools and ways to implement them are described so that agents and citizens can collect, analyze, and interpret local data. These include:

- **The CART Assessment Survey**—a field-tested instrument to assess community resilience across the four CART domains.
- **Key Informant Interviews**—a way of collecting qualitative information from knowledgeable community members.
- **The Data Collection Framework**—used to identify the type and sources of existing data that can serve as indicators of resilience.
- **Community Conversations**—these facilitated dialogues can be used to foster information exchange across community sectors.
- **Neighborhood Infrastructure Maps**—can help community members become more aware of their neighborhoods' physical infrastructure and resources.
- **Community Ecological Maps**—a visual way of understanding the prevalence and strength of social networks and relationships within a community; can be used as a starting point to improve relationships and partnerships.
- **Stakeholder Analysis**—this tool helps assess key individuals, groups and organizations who have a stake in your activities.
- **SWOT Analysis**—stands for Strengths, Weaknesses, Opportunities, and Threats/vulnerabilities. It is a self-assessment tool to identify community resources and capabilities.
- **Capacity and Vulnerability Assessment**—this tool can be especially helpful in communities where certain people or groups may be impacted differently depending on characteristics like health, socio-economic status, or ethnicity.

Toolkit 6

The National Center for Disaster Preparedness Online Training Center.

<http://www.ncdp.mailman.columbia.edu/>

The site contains over 50 free courses in emergency and disaster preparedness, from the [Columbia Regional Learning Center \(CRLC\)](#). They cover a wide variety of disaster preparedness and resiliency topics. The courses are oriented

toward health workers of all kinds. Some illustrations focus on the 2011 tsunami in Japan as a good example of strong community response. There are case studies collected from influenza epidemics, chemical spills, hurricanes, typhoons, and oil spills. There are many examples of disaster preparedness strategies such as Operation Assist, a mobile medical unit that has served over 19,000 since 2005 and includes art therapy and “coping boxes” for children.

One of the important features of this website is called the Gulf Coast Population Impact Study (<http://ncdp.columbia.edu/microsite-page/gcpi/gcpi-home/>). Its Gulf Coast child and family health study is a longitudinal cohort study of 1,074 randomly sampled households. They conducted a baseline interview within a year of a disaster, then a second interview two years after. One analysis used the sample to estimate the total population of children at increased risk due to health and education deficits caused by Katrina and then later by Deepwater Horizon. As a result of that research a project was launched that involves youth helping youth recover from disasters. <http://ncdp.columbia.edu/microsite-page/shoreline/shoreline-home/>.

This toolkit is a treasure trove of information for the Extension agent, and it is presented through a variety of methods including online courses, short webinars, and many videos. There are qualitative case studies and testimonies, academic and professional lectures, and tables and charts with lots of quantitative data and analysis. Agents may use this tool kit as a source of professional development and to provide content for most aspects of disaster preparedness and community resilience. Its special strength is in health-related, particularly pediatric, concerns.

Conclusion

Community resilience will increasingly become an issue for Extension agents in the future. It can be directly related to disaster preparation but also can help communities respond to any external shock, such as a downturn in the economy. Using these toolkits is a great way to start the community discussion about resiliency, how to measure it, and how to improve it.

We suggest starting with the Coastal Resiliency Index if agents are focused on a coastal community or the Torrens Resilience Institute disaster resilience scorecard. Agents should assemble a small advisory group and review the steps outlined in the toolkit, decide who should participate on a larger scale, and create an agenda that allows enough time to make the exercise useful. Remember that the CR

process, while ongoing, begins with discussion. These are all good ways to start the conversation.

References

Sempier, T. T., D. L. Swann, R. Emmer, S. H. Sempier, and M. Schneider. 2010. "Coastal community resilience index: A community self-assessment." 19 pages. http://www.gulfofmexicoalliance.org/projects/files/83Community_Resilience_Index.pdf.

Hegney, D., H. Ross, P. Baker, C. Rogers-Clark, C. King, E. Buikstra, A. Watson-Luke, K. McLachlan, and L. Stallard. 2008. "Building resilience in rural communities toolkit." Toowoomba, Queensland: the University of Queensland and University of Southern Queensland. 52 pages. <http://learningforsustainability.net/pubs/Building%20Resilience%20in%20Rural%20Communities%20Toolkit.pdf>.

Torrens Resilience Institute. 2012 "Developing a model and tool to measure community disaster resilience: Community disaster resilience scorecard toolkit. An Australian Government Initiative." 28 pages. <http://www.torrensresilience.org/images/pdfs/toolkit/tritoolkit.pdf>.

Chandra, A., J. Acosta, S. Stern, L. Uscher-Pines, M. V. Williams, D. Yueng, J. Garnett, and L. S. Meredith. 2011. "Building community resilience to disasters: A way forward to enhance National Health Security." Santa Monica, CA: RAND Corporation. 104 pages. http://www.rand.org/content/dam/rand/pubs/technical_reports/2011/RAND_TR915.pdf.

Pfefferbaum, R. L., B. Pfefferbaum, and R. L. Van Horn. 2011. "Communities advancing resilience toolkit (CART): The CART integrated system." Oklahoma City, OK: Terrorism and Disaster Center at the University of Oklahoma Health Sciences Center. 87 pages. <http://www.oumedicine.com/docs/default-source/ad-psychiatry-workfiles/here.pdf?sfvrsn=0>.

The National Center for Disaster Preparedness. 2013. The Earth Institute: Columbia University. <http://www.ncdp.mailman.columbia.edu/>.