

A stylized illustration of an orange with two green leaves, centered in the background. The orange is a warm, light orange color, and the leaves are a vibrant green with dark green outlines. The entire graphic is set against a white background.

DISASTER PLANNING FOR THE ARTS AND SCIENCES

**Dr. Barb Russo, C.E.M.
University of West Alabama**



Presentation Abstract:

This disaster planning session will help academic leaders identify potential losses and design ways to preserve and continue their academic mission. Case examples will reveal how disasters can disrupt the functioning of academic units and alert leaders as to the potential impacts. Participants will learn how to build a planning team, secure buy-in from stakeholders, and work through the academic/business continuity planning process. Content, ideas, and strategies will address the breadth of disciplines that span the arts and sciences. The session will conclude with handouts, resources, and an open source software demonstration that participants can use to build a more disaster resistant and resilient campus.

Today's Agenda



- What is a disaster?
 - Case Examples
 - Becoming Disaster Resilient
- What is disaster planning?
 - Who handles emergency response? – Police, Fire, EMS, EM, RM
 - Who gets things back to normal? – That would be you.
 - So, what's your role? *Let's talk.*
- How do we plan for a disaster?
 - Getting Administrators' Attention (Handout)
 - Downtime and Displacement
 - Building a Planning Team
 - The Challenges of Building a Team
 - Hazard Identification & Risk Assessment (Hands-on Exercise)
 - Loss Estimation (Hands-on Exercise)
 - Building an Academic Continuity Plan (Hands-on Exercise)
 - Staying on Track to Complete Your Plan
 - Software – including an open source
 - Resources

What is a Disaster?



Emergency

Routine
Predictable
Handled Locally

Disaster

Community Disruption
Local Capacity
Overwhelmed
Outside Help Needed

Catastrophe

Regional Impact

We will be planning for the aftermath of a disaster or catastrophe – how to **restore critical functions** in your academic unit.



College Park, Md., 2001 -- University and private properties were damaged when the tornado, which caused more than \$16.5 million in damages, hit College Park.

Jocelyn Augustino/ FEMA

.....How prepared are we?

Tell us what you do at your institution

- First aid kits, not updated
- First aid training for some
- Increasing AED but lacks regular training
- Employee contact lists.....on our phones, maybe
- OSHA and related compliance/MSDS
- Safe Room?
- Shelter in place procedure?
- Evacuation procedure?
- Active aggressor drills?
- Business Continuity Plan?

What You Should do When Your Home or Office Starts Shaking in an Earthquake

In Alaska quake, some people ran outside of their homes, while others pressed themselves into doorways. Some people hurried down the stairs of hotels in their underwear.

Tegan Hanlon, Alaska Dispatch News, Anchorage | January 26, 2016



CASE EXAMPLES



Just in Time for Fall Term, a Cyberattack Forces an Entire College's Systems Offline

By Steven Johnson | AUGUST 16, 2019 ✓ PREMIUM

A debilitating malware attack has forced a college known for “powerhouse” cybersecurity programs to shut down all its systems, just as it prepares for the fall semester.

On August 8 the Stevens Institute of Technology noticed “system-access issues” and alerted users to what it later called a “very severe and sophisticated” cyberattack. The college disabled its systems and networks as a precaution, it said, apparently **disrupting** a swath of tasks needed to run the college: email, payroll, tuition



Sharkface217, Wikimedia Commons

The campus of the Stevens Institute of Technology



WHAT IF IT IS NOT YOUR CAMPUS, BUT YOUR COMMUNITY?

Atlanta Paralyzed For More Than A Week By Cyber Attack

March 30, 2018 · 4:26 PM ET

Heard on [All Things Considered](#)

TASNIM SHAMMA

The city of Atlanta has entered its eighth day crippled by a cyber attack. NPR's Ailsa Chang talks with WABE's Tasnim Shamma about how the city is coping.

Transcript

AILSAL CHANG, HOST:

The city of Atlanta has gone back in time. Police officers are writing their reports up by hand. City workers are punching in and out with time clocks and using manual timesheets. Courts can't get into their computer files, so they're notifying people to reschedule cases. Atlanta has been paralyzed for more than a week by a ransomware attack. And to catch us up on the latest, Tasnim Shamma from member station WABE in Atlanta joins us now. Welcome.

UNIVERSITY OF IOWA FLOOD, 2008



<https://www.youtube.com/watch?v=C8eperGDNZ4>

TULANE UNIVERSITY, KATRINA



<https://www.youtube.com/watch?v=xpctyVcLas>

FRACKING IN OKLAHOMA, SIGNIFICANT IMPACT



<https://youtu.be/MpVRRht3kIU>

FLOODING IN NORTH CAROLINA



<https://www.insidehighered.com/news/2018/09/17/campuses-start-resume-operations-wake-hurricane-florence>

WHAT IS YOUR ROLE?

Chancellor/President – decision-maker

Police/Fire/EM/Risk Manager/Facilities – emergency response

Vice Chancellors/Provosts – manage campus-wide return to normal

Deans – in the trenches

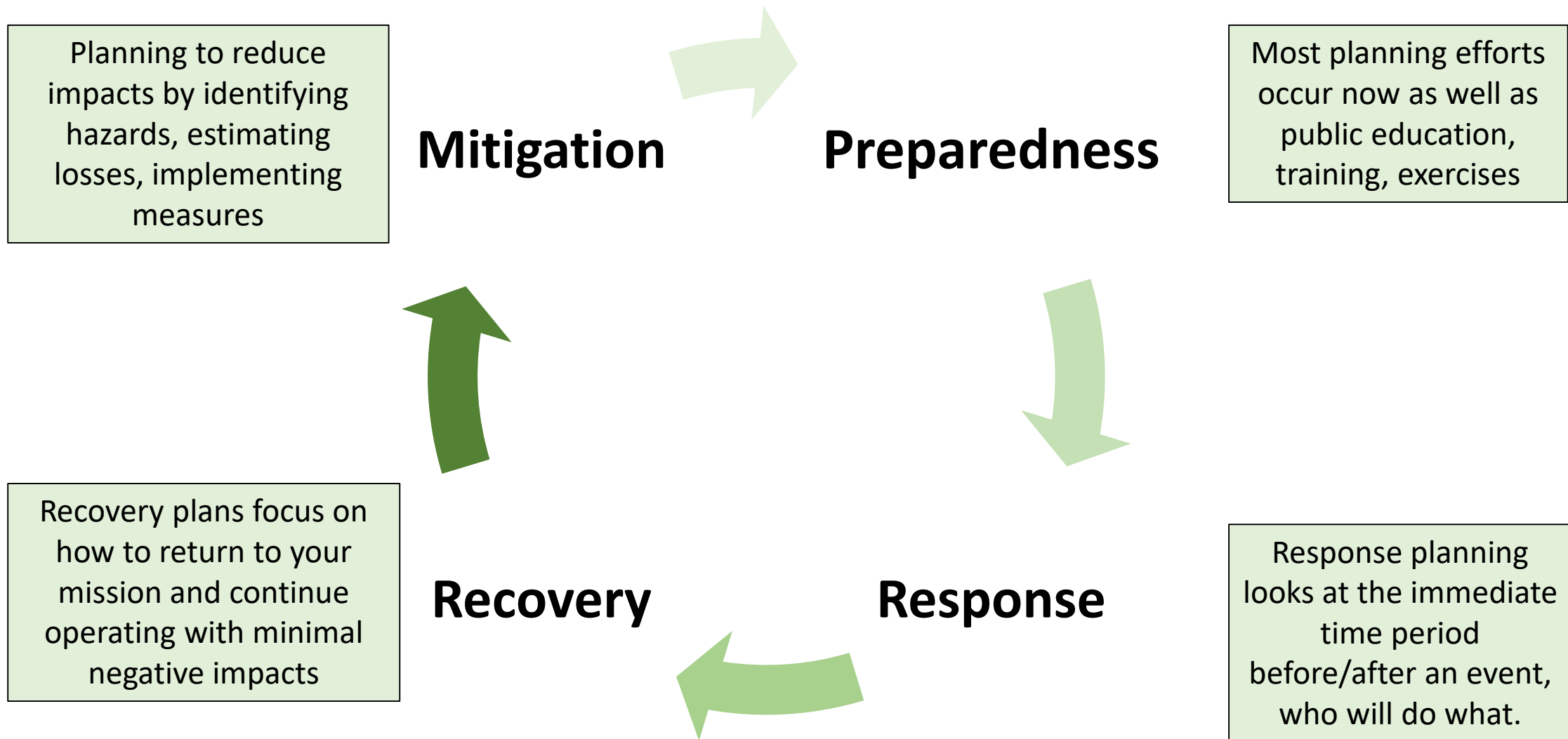
- Meet the instructional mission of the campus
- Do not lose faculty, students, staff through attrition
- Maintain revenue streams
- Preserve scholarly and creative efforts
- Relocate classes, provide critical support
- Communication
- Support faculty and staff
- Hiring/paperwork for new or temporary personnel.

What is Disaster Planning

- It is a process.
- It should never be boiler-plated.
- Consultants should guide, not write the plan.
- You know your campus best.
- You know your resources best.
- You know your people best.
- Who do you want to make the decisions for your campus?



Planning in the Life Cycle of Disasters



Getting Administrators' Attention



- Handout/OSU Disasters & Hazards 2008-2012
- From the book *Managing the Unthinkable: Crisis Preparation and Response for Campus Leaders*

Case Example Mitigation Planning UC-Berkeley (1990s)

(Professor Mary Comerio)



- The Hayward Fault and UC-Berkeley
- Assessment
 - Microzonation soil map
 - Estimates of ground shaking
 - Maps of location and condition of campus infrastructure
 - Structural and nonstructural conditions of buildings
 - Examined use: class, lab, office, library, events
 - Peak hour and number of occupants
- Scenarios for repair and downtime
 - Occasional, Rare and Very Rare

Impacts on the university *and* community (3 counties)

Very rare event, magnitude 7.5

8,900 jobs

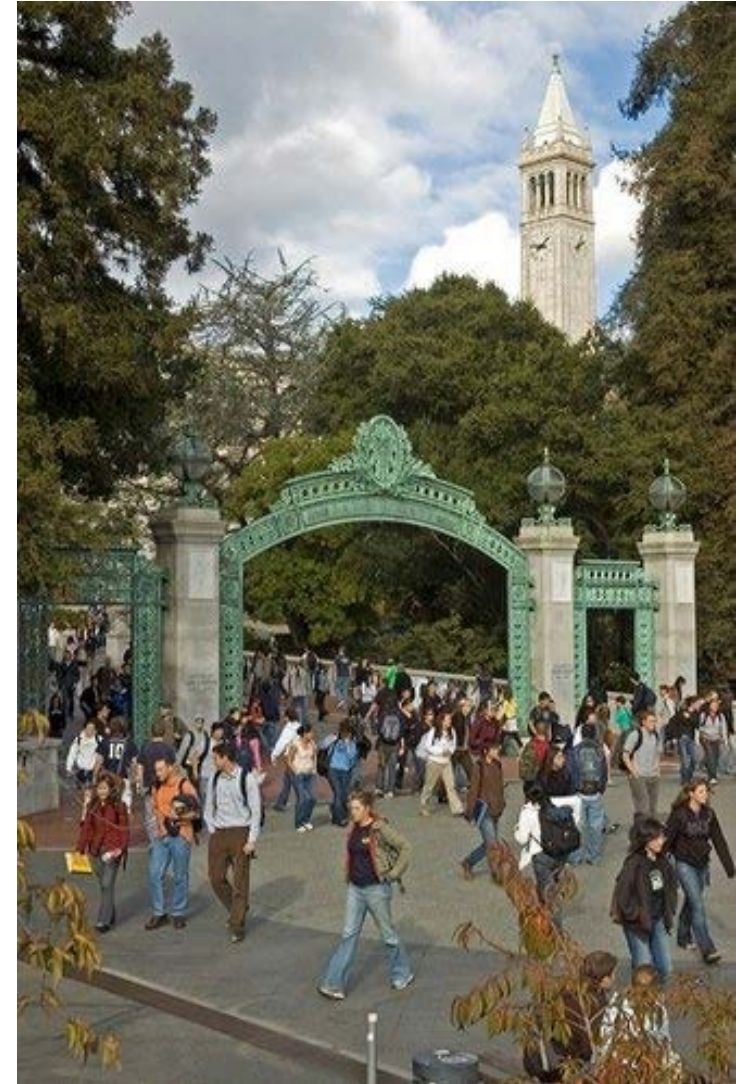
\$680 million in personal income

\$861 million in sales



Where do you start? *Prioritize.*

- Back to UC Berkeley
- 75% of research funds expended in 17 bldgs, one third of campus space
 - 11 buildings, based on seismic ratings, closed extensively
- 50% of research \$ in 7 buildings, 12% of campus space
- ***Decision by the Chancellor***
 - 20 year timeline
 - \$1 billion budget



DOWNTIME

The amount of time that a business or workplace cannot function due to the disaster.

The amount of time that employees cannot contribute to work or potentially receive a paycheck.

The amount of time that we spend trying to get back to normal.



New Orleans **2012** -- Southern University of New Orleans (SUNO) celebrated the commencement of the restoration of the Leonard S. Washington Memorial Library funded for a total obligated amount of \$26,019,471.96. FEMA News Photo

DISPLACEMENT

- Losing your workplace.
- Where is the backup site?
- What MOU's need to be in place for this?
- Do you have a *go kit* ready to take to that site?
- Is the new site safe?
- Can faculty, staff, students get to it?
- What is the impact on retention?



New Orleans, La., 1-23-06 -- FEMA is providing the Southern University at New Orleans (S.U.N.O.) with 45 Modular Buildings to provide instructional Classrooms, Offices, Cafeteria, and facilities staffed for student education.


MARVIN NAUMAN/FEMA photo

Direct Effects

Northridge Earthquake, CA 1994

- 57% of businesses had physical damage
 - Windows, light fixtures, light partitions most common
- 70% had nonstructural damage
- 56% damage to furnishings
- 51% damage to equipment
- 50% damage to stock or inventory
- 39% buildings had structural damage



- 
- Over 50,000 businesses applied to SBA, over \$1.3 billion in loans paid out.
 - Median dollar loss \$5000 (highest was \$14 million)
 - Average dollar loss was \$156,273
 - Largest losses were in manufacturing and construction

(Tierney et al.; Webb et al; Photo credit: FEMA)

Indirect Effects

Northridge, CA 1994

- **Utilities**
 - 60% lost electricity
 - 50% lost phone service
 - 20% lost water
 - 17% lost natural gas service
- **Service**
 - 25% had trouble getting deliveries
 - 40% reported reduced customer traffic
- **Impacts on personnel**
 - 60% said employees could not get to work for a time
 - Half of owners or managers had personal property damage

Midwest Floods, 1993

- 1993 Midwest floods – 9 states
 - MS River closes– single largest waterway transporting cargo in the U.S.
- Des Moines, Iowa - \$500 million lost
 - \$10,000 to \$2.5 million range in damage
 - An average of 12 days without key utilities

What if the university survives....but the homes of faculty, staff, and students are damaged?



Jackson, Tenn, 2008 -- Blown in walls and missing roofs, tornado damaged buildings at Union University.

Jocelyn Augustino/FEMA - Location: Jackson, TN



Weir, Miss., 2010 -- Selected tenants are arriving at a FEMA temporary housing unit park.

George Armstrong/FEMA

Key Parts of an Academic Continuity Plan

Getting things up and running again

- Building your Team
- Hazard Identification and Risk Assessment
- Loss Estimation
- Identify Critical Functions
- Reflect on Scenarios
- Timeline
- Resources



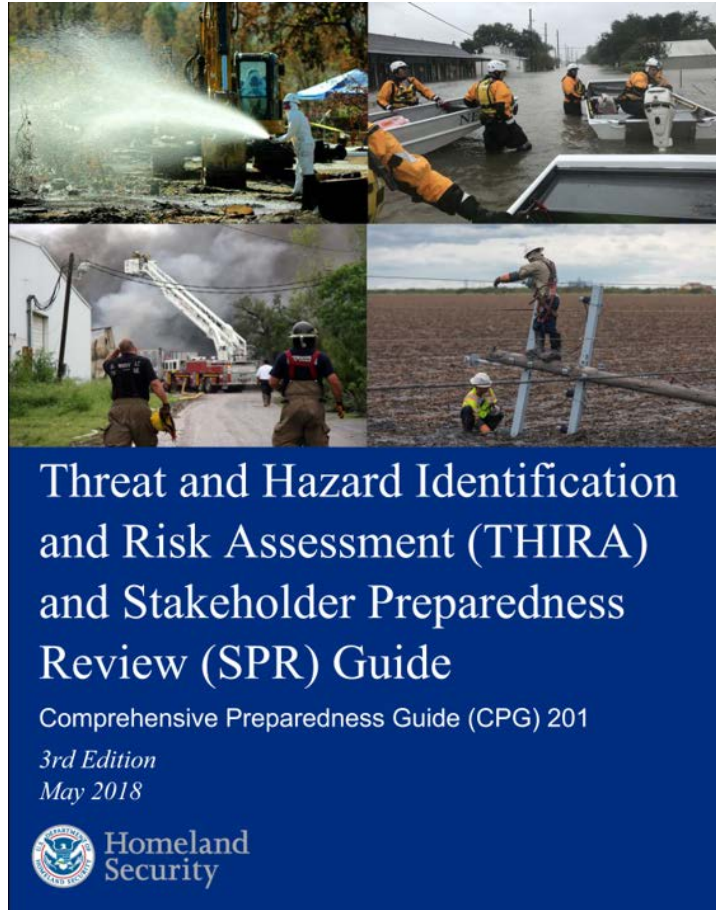
Business adjacent to the World Trade Center
Andrea Booher/FEMA News Photo

Building Your Team

- Why we involve stakeholders!
 - They know their college best.
 - They know their programs best.
 - They know their facilities best.
- Who do we invite?

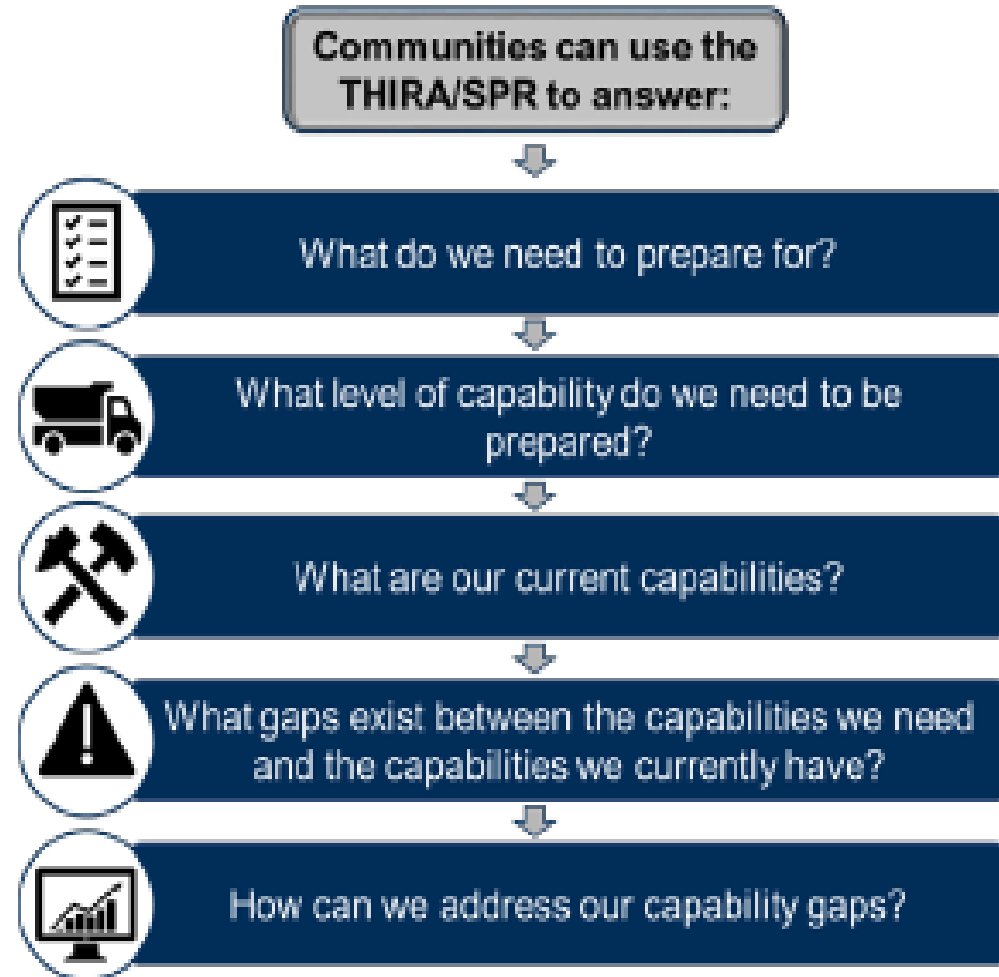


Hazard Identification and Risk Assessment



- CPG-201 is now in its 3rd iteration (2018).
- The Comprehensive Preparedness Guide was written by FEMA to provide guidance for conducting a Threat and Hazard Identification and Risk Assessment (THIRA).
- The THIRA includes standardized language to describe threat and hazard impacts.

How THIRA Can Be Used to Assess Risk

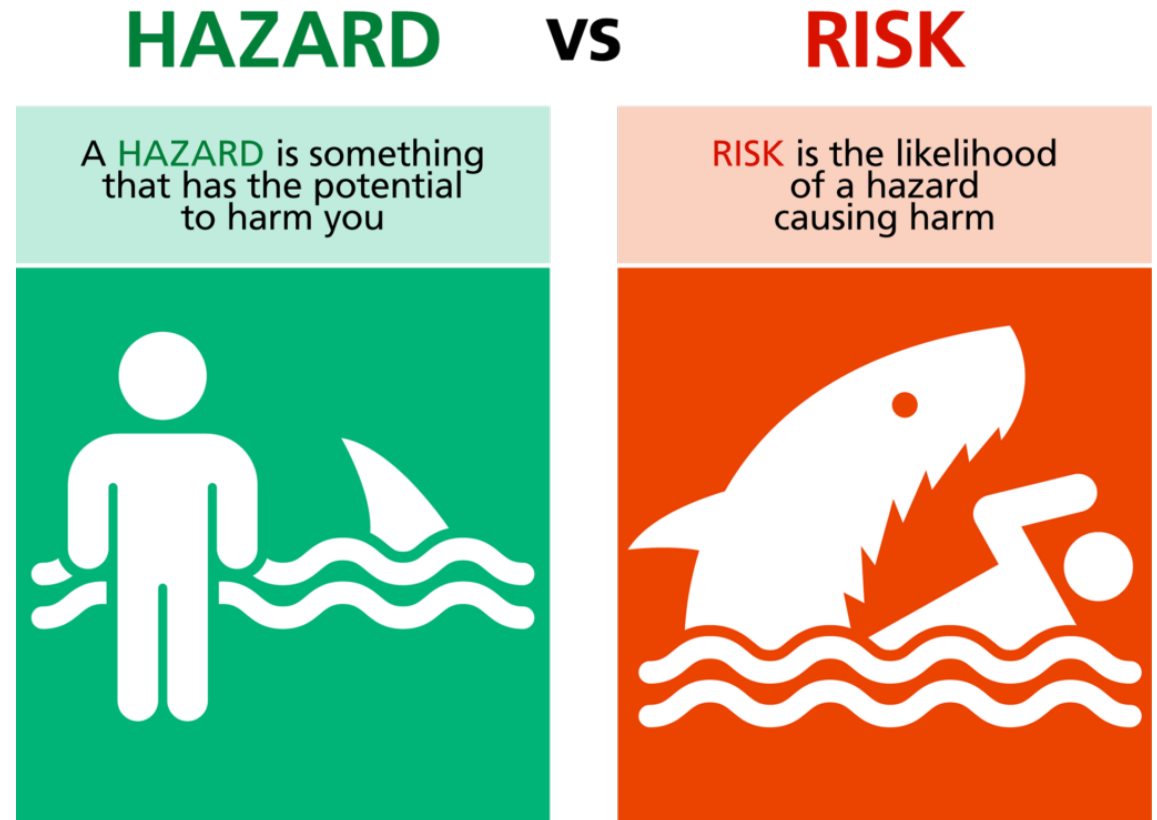


The 3-Step THIRA Risk Assessment Process

- It helps answer the following three questions:
 - What threats and hazards can affect us?
 - If they occurred, what impacts would those threats and hazards have on us?
 - Based on those impacts, what capabilities should we have?

Step 1: Identify Threats & Hazards of Concern

- Develop a list of threats and hazards that could affect the institution (and community).
- Think not only about your institution but also the immediate surroundings.
- Does your institution have CAS facilities separate from the main campus?



Threats & Hazards By Category

Table 1: Example threats and hazards by category.

Natural	Technological	Human-caused
Avalanche	Dam failure	Active shooter incident
Drought	Hazardous materials release	Armed assault
Earthquake	Industrial accident	Biological attack
Epidemic	Levee failure	Chemical attack
Flood	Mine accident	Cyber-attack against data
Hurricane/Typhoon	Pipeline explosion	Cyber-attack against infrastructure
Space weather	Radiological release	Explosives attack
Tornado	Train derailment	Improvised nuclear attack
Tsunami	Transportation accident	Nuclear terrorism attack
Volcanic eruption	Urban conflagration	Radiological attack
Winter storm	Utility disruption	

Where Can I Find Information on Hazards Facing My Community and Campus?

These sources may include, but are not limited to:

- Your campus Emergency Operations Plan – reach out to your campus Emergency Manager
- Existing Federal, state, local, and tribal strategic and operational plans
- Forecasts or models of future risks due to changing weather and demographic patterns or emerging threats
- State hazard mitigation plans
- Local, regional, tribal, and neighboring community THIRAs
- Records from previous incidents, including historical data
- Private-sector plans and risk assessments, including those for lifeline functions (communications, energy, transportation, and water)

Useful Websites for Historical Data



- National Weather Service (Tornadoes)
<https://www.weather.gov/oun/tornadodata>
- US Geological Survey (Earthquakes)
<https://earthquake.usgs.gov/earthquakes/search/>
- Data.gov (Floods & other disasters)
<https://www.data.gov/disasters/floods/>

Selecting Hazards to Incorporate in Plans

Two considerations must be made:

1. The likelihood of the event occurring
2. The magnitude or severity of the event

There are **low probability** but **high consequence** events (such as earthquakes) and there are also **high probability** events (such as flooding) that will happen on campus and only impact a small part (normally) with **lesser consequences**.

Loss Estimation

<http://www.fema.gov/media-library-data/20130726-1521-20490-0063/4howto2step4.pdf>

Steps in Loss Estimation

- Inventory resources
- Estimate content loss
- Estimate downtime
- Estimate displacement
- Estimate structure loss

Building Loss - Flood

- One story building
- No basement
- One foot of water
 - 14% of building damaged
- Two feet of water
 - 22% of building damaged

Loss Estimation (FEMA)

Content Loss - Flood

- One foot of water
 - 21% contents damaged
- Two feet of water
 - 33% of contents damaged

Downtime

- One foot of water
 - 23 days
- Two feet of water
 - 30 days

Displacement

One foot = 134 days

Two feet = 230 days

Let's make a ballpark estimate

<http://www.fema.gov/media-library-data/20130726-1521-20490-0063/4howto2step4.pdf>

- What is in your workplace/home below the 2-3 foot mark?
 - Let's make a list – your cubicle, the main office, entire building (you pick)
- Flooding is the most likely hazard in US – assume 2 feet
- Overall building damage
 - 22% of building damaged
- Structural Impacts
 - 30 days of downtime (average daily operational costs)
 - 230 days of displacement (cost to rent for 200 days)
- Contents
 - 33% of your contents damaged

Tools to Help You



ready.gov/business

Business Continuity Resource Requirements

Resource Category	Resource Details	Normal Quantity	Specialized Quantity			
			24 hours	72 hours	1 week	Later (specify)
Managers						
Staff	Primary site, relocation site and recovery site					
Office space						
Office equipment	Furniture, phone, fax, copiers					
Office technology	Desktops and laptops (with software), printers with connectivity, wireless devices (with email access)					
Vital records, data, information	Location, backups, and media type					
Production Facilities	Owned, leased, or reciprocal agreement					
Production machinery & Equipment	Especially custom equipment with long replacement time					
Dies, patterns, molds, etc. for machinery & equipment						
Raw Materials	Single or sole source suppliers and possible alternates					
Third party services						

Instructions: Identify resources required to restore business operations following a disaster. Estimate the resources needed in the days and weeks following the disaster. Also review information technology disaster recovery plan for restoration of hardware and software.



Ready Business.

Computer Inventory Form

[Open for Business Worksheet](#)

Computer Hardware Inventory

Use this form to:

- Log your computer hardware serial and model numbers. Attach a copy of your vendor documentation to this document.
- Record the name of the company from which you purchased or leased this equipment and the contact name to notify for your computer repairs.
- Record the name of the company that provides repair and support for your computer hardware.

Make additional copies as needed.

Keep one copy of this list in a secure place on your premises and another in an off-site location.

Hardware Inventory List

[illegible]

The Starting Point for Planning: Critical Functions

What do you absolutely have to do in order to restore normal routines like classes?

Ohio Ready

A Demo Plan Editing		
Critical Functions		
Function	Level of Criticality	
Instructional delivery of courses (face-to-face, online, and blended).	Critical 2: Must continue, perhaps in reduced mode. Pausing completely will have grave consequences. (Examples: provision of care to at-risk outpatients, functioning of data networks, at-risk research)	
Maintain research facilities including laboratories.	Critical 2: Must continue, perhaps in reduced mode. Pausing completely will have grave consequences. (Examples: provision of care to at-risk outpatients, functioning of data networks, at-risk research)	
Restore utilities.	Critical 1: Must continue (necessary to life, health, security). Examples: inpatient care, police services, etc.	
Maintain and deliver payroll and benefits.	Critical 2: Must continue, perhaps in reduced mode. Pausing completely will have grave consequences. (Examples: provision of care to at-risk outpatients, functioning of data networks, at-risk research)	
Make decisions regarding budget particularly in an emergency situation.	Critical 1: Must continue (necessary to life, health, security). Examples: inpatient care, police services, etc.	

College of Liberal Arts and Sciences | In Progress

Plan Details	Critical Functions	Key Resources
Critical Functions		
Function	Level of Criticality	
Delivery of instruction in classes, labs, and related spaces.	Critical 2: must continue, perhaps in reduced mode	
Scholarly Activity	Critical 2: must continue, perhaps in reduced mode	
Administrative Support	Critical 2: must continue, perhaps in reduced mode	
Advising and Student Support	Critical 2: must continue, perhaps in reduced mode	
Service and Shared Governance	Critical 3: pause if forced, but must resume in 30 days or sooner	

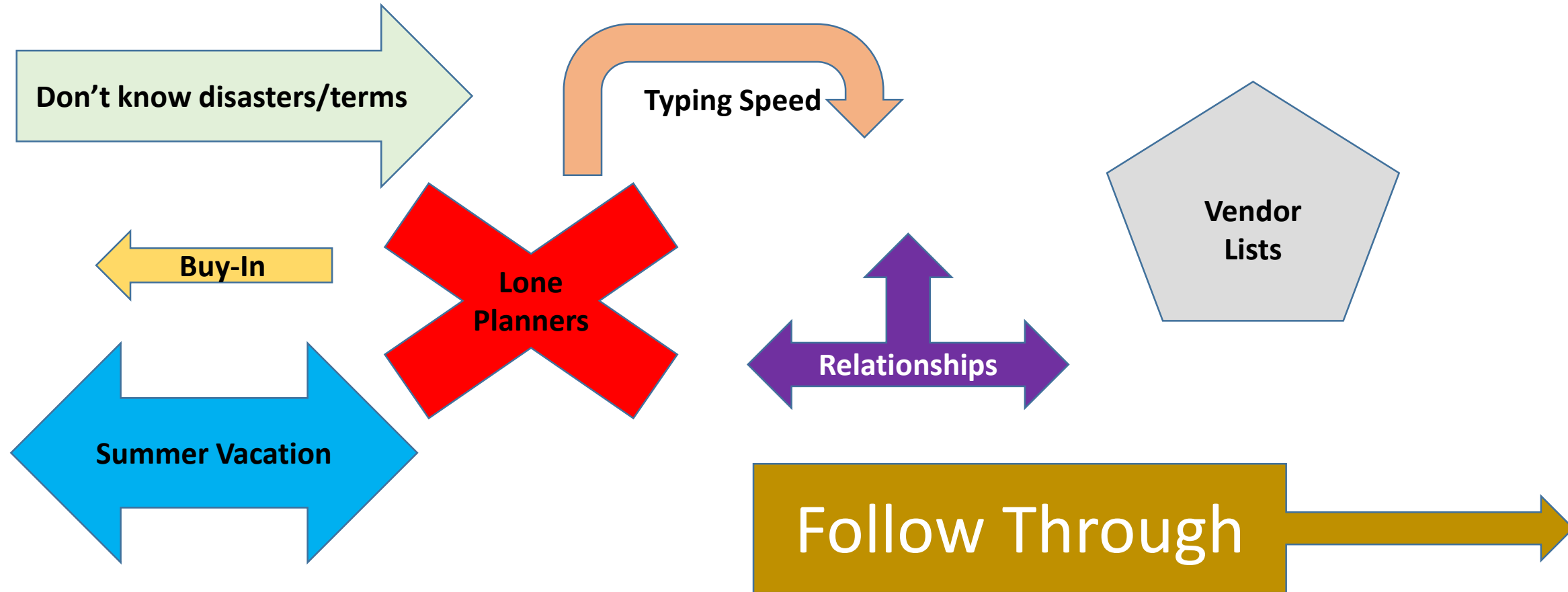
Software: Kuali.co

Staying On Track to Complete Your Plan

- People will be uncertain.
- Treat it like a thesis or dissertation – break it down into steps for everyone.
- Set reasonable timelines.
- Provide incentives like a working lunch.
- Use moments like a recent disaster or a software disruption to inspire planners.



Challenges



Timelines.....more timelines.....revised timelines.....

Business Continuity Planning Software Suite

<https://www.ready.gov/business-continuity-planning-suite>

› Expand All Sections

▼ Business Continuity Planning Suite

1. [Download and **EXTRACT** the Business Continuity Planning Suite \(BCPS\)](#) (ZIP Archive - 13 Mb; PC Compatible)
2. Once downloaded, **EXTRACT** the Business Continuity Planning Suite file and click "START_NOW."
3. [Step-by-Step Instructions for BCPS Installation](#) (PDF-1.2 Mb)

› Learn About The Tools

› Business Continuity Video Training

• Videos – Multiple FREE

- What is BCP?
- Prepare
- Define
- Identify
- Develop
- Teams
- Test



Tabletop, Functional, Full Exercises

<https://www.ready.gov/business/testing/exercises>



FEMA Photo; Miami-Dade County EM leads faith leaders at a table top exercise, 2014.



FEMA Photo; Cumberland County PA Pandemic Table Top, 2014.

Resources for Recovery

- Insurance
- Savings
- Rainy day funds
- Government
 - Partnerships
 - Loans only
 - Some grants may be possible

People are resources too. Employees are valuable assets and we need to keep them. Employees may need flex time, insurance provision, child care, temporary housing, trauma support, loans, training into new positions. We also need to have backups for key positions and plans for hiring temporary personnel.



Resources

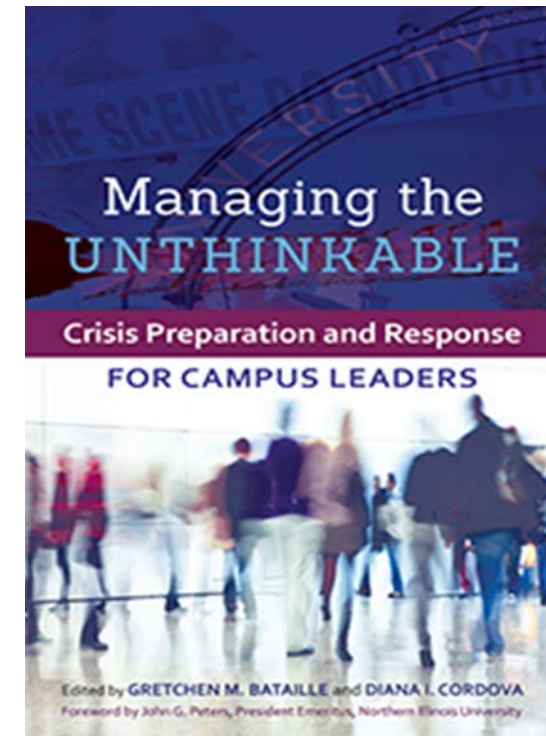
UC Berkeley

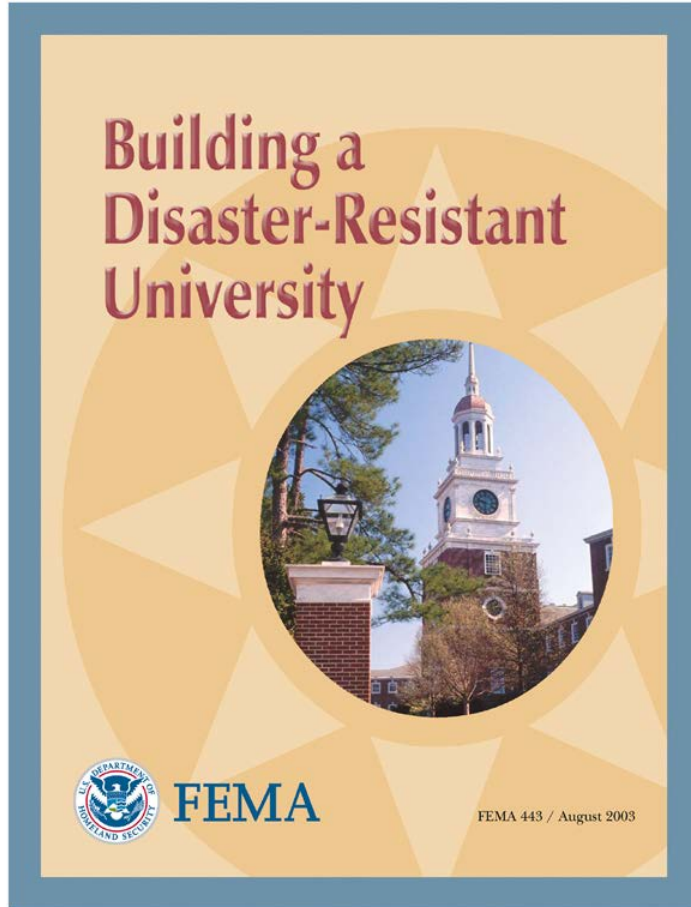
***The Economic Benefits of a
Disaster-Resistant University:
Earthquake Loss Estimation for UC
Berkeley***, Working Paper 2000-02

<http://www.escholarship.org/uc/item/78g7j8jq>

Mary Comerio

Key Book for Academic Leaders





From FEMA DRU Booklet

- Worksheet #1 Planning Team
- Worksheet #2 Hazard ID
- Worksheet #3 Identify Hazards
- Worksheet #4 Profile Hazards
- Worksheet #5 Inventory Assets
- Worksheet #6 Assess Priority Assets
- Worksheet #7 Estimate Losses

Free pdf: <http://www.fema.gov/hazard-mitigation-assistance/building-disaster-resistant-university>

Keep Awareness Up

Use Events to Raise Awareness

- Power outages
- Storms
- Loss of IT
- Flu Shot Clinic & Influenza
- “Annual” seasons/tornado
- National Preparedness Month
- Employee Appreciation Events



Kansas City, MO September 10, 2014 -- Jaquela Stewart participates in a demonstration at a **ReadyCampus** event on the University of Missouri in Kansas City (UMKC) campus.
Steve Zumwalt/FEMA

Other Useful Resources

- Protect IU Business Continuity Planning

<https://protect.iu.edu/emergency-planning/continuity-planning/index.html>

- Chronicle of Higher Ed Special Edition on Climate Change

https://www.chronicle.com/interactives/rising-threat?utm_source=at&utm_medium=en&cid=at

- Entire Chronicle Report on Climate Change

<https://www.chronicle.com/interactives/20190503-campus-spaces-00-landing?cid=at>

- *How the University of Iowa Recovered from the 'Unfathomable' Flood That Ruined It*

<https://www.nytimes.com/2019/05/10/climate/iowa-floods-disasters-lessons-learned.html?action=click&module=Well&pgtype=Homepage§ion=Climate%20and%20Environment>

Ohio University observes National Preparedness Month with continuity planning, crisis resources

Sep 6, 2016
From staff reports

The U.S. Department of Homeland Security encourages individuals to be prepared for emergency situations they may face where they live, work and visit during [National Preparedness Month](#) each September – and Ohio University is undertaking its own preparedness efforts to address the ways in which campuses, colleges and departments are equipped to handle emergency situations that could affect day-to-day operations.

OHIO increased its business continuity planning efforts with an initiative in January 2015 with the Heritage College of Osteopathic Medicine. In April 2015, a part-time coordinator, Beverley Wyatt, was hired in the Office of Emergency Programs to reach out to departments and offices to inform them of the value and importance of having written plans to assist with business continuity and recovery efforts should a need occur.

Wyatt also helps guide the development of a plan and helps identify and establish connections with partnering units. Since January 2015, there have been 154 business continuity plans established that are in various stages of completion, and Wyatt is now preparing to engage OHIO's academic colleges in business continuity planning.

Assisting her in this endeavor is an open-source software application specifically designed by Kual Systems for use in higher education. At Ohio University, it is called OHIO Ready, and it guides users with a series of questions as they navigate through the business continuity planning process.

Preparedness at OHIO: Southern Campus overcomes staffing challenge with the help of its continuity plan

Sep 15, 2016
From staff reports

This article is second in a series highlighting preparedness efforts at Ohio University in observance of National Preparedness Month.

The Office of Student Services at Ohio University's Southern Campus provides academic advising, financial aid assistance, counseling services, student activities support, and a broad range of resources for students including adult students, veterans and senior citizens. So, when on April 27, 2016, more than half of the office's staff was out due to illness, Director of Enrollment and Student Services Kim Keffer knew she would have to find a way to cover the office – and continue providing necessary services to Southern Campus students.

"I received a phone call from Kim early in the morning detailing that she and two others on staff in Student Services would not be able to cover the office due to illness," said Miki Crawford, interim associate dean of the Southern Campus. "The assistant director was out of the office on that day, as well, leaving one advisor and the new recruiter to staff the entire office. It was a quick conversation because I asked, 'What does your continuity plan state?' We were able to make a quick

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THANK YOU!

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