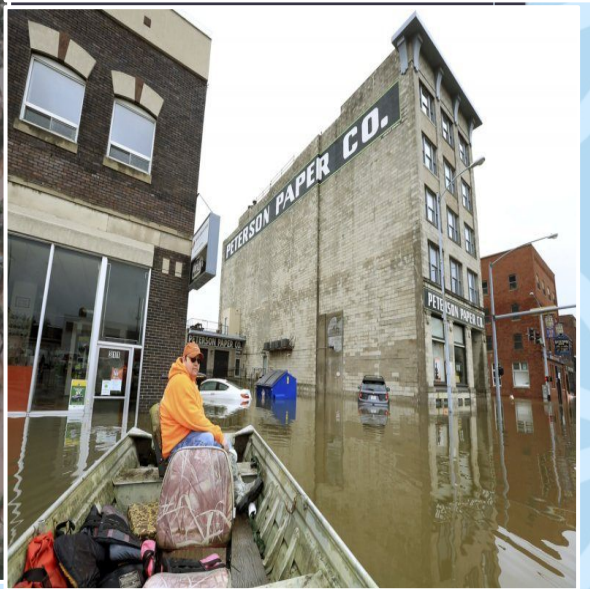




SURVIVING THE STORM: INDIVIDUAL RESILIENCE IN AGRICULTURAL LEADERS AFTER HURRICANE IRMA

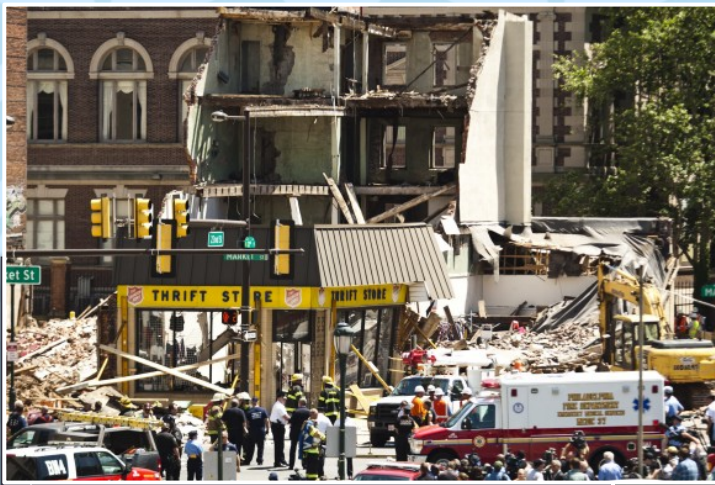
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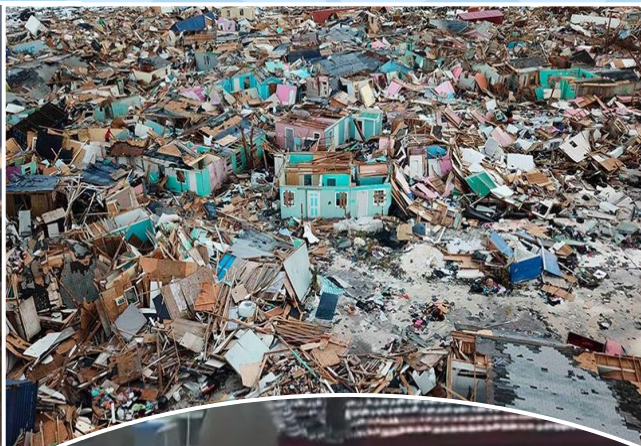




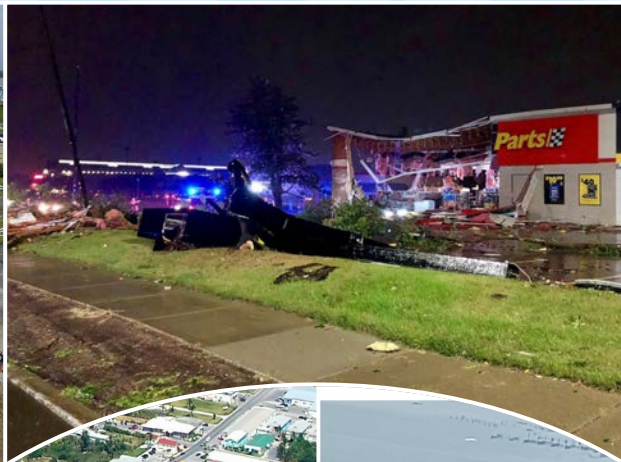












Overview

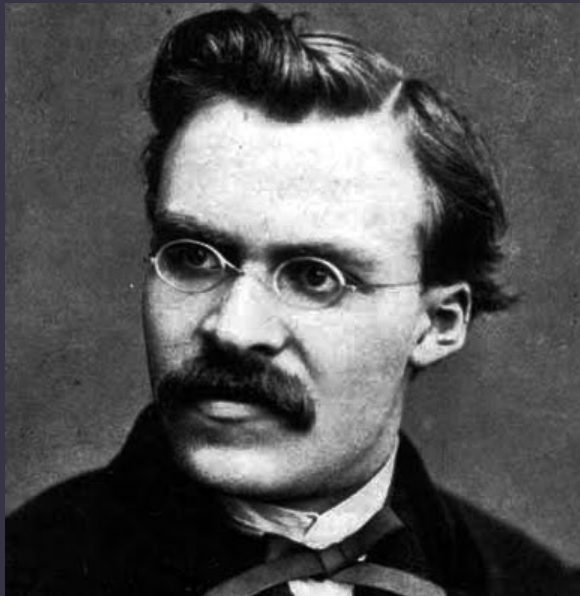
- 1. What is resilience?**
- 2. The Disaster**
- 3. Aims**
- 4. Methods**
- 5. Results**
- 6. Discussion/Implications**



WHAT IS RESILIENCE?

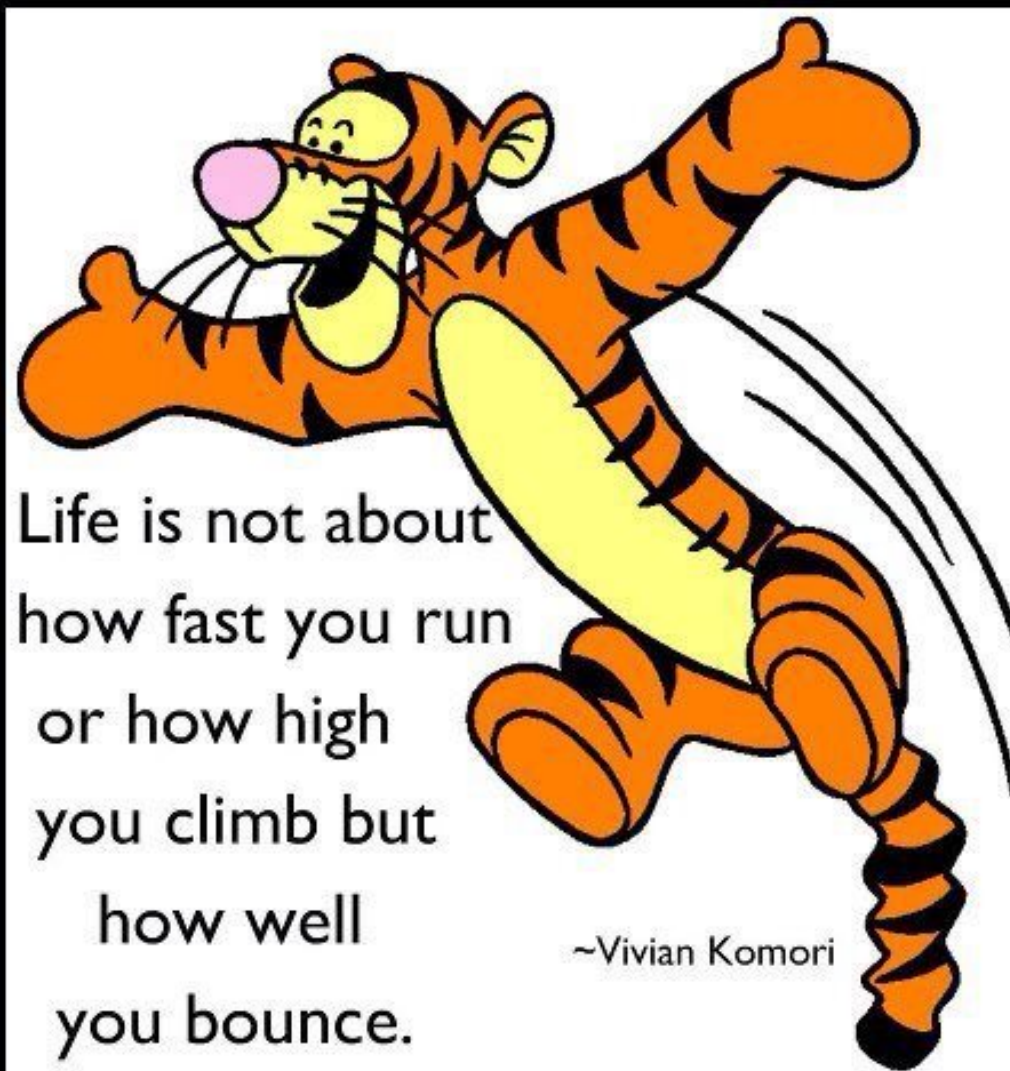
**“Our greatest glory is not in never falling,
but in rising every time we fall”**

(Confucius)



**“That which does not kill us can only
make us stronger”**

(Nietzsche)



Life is not about
how fast you run
or how high
you climb but
how well
you bounce.

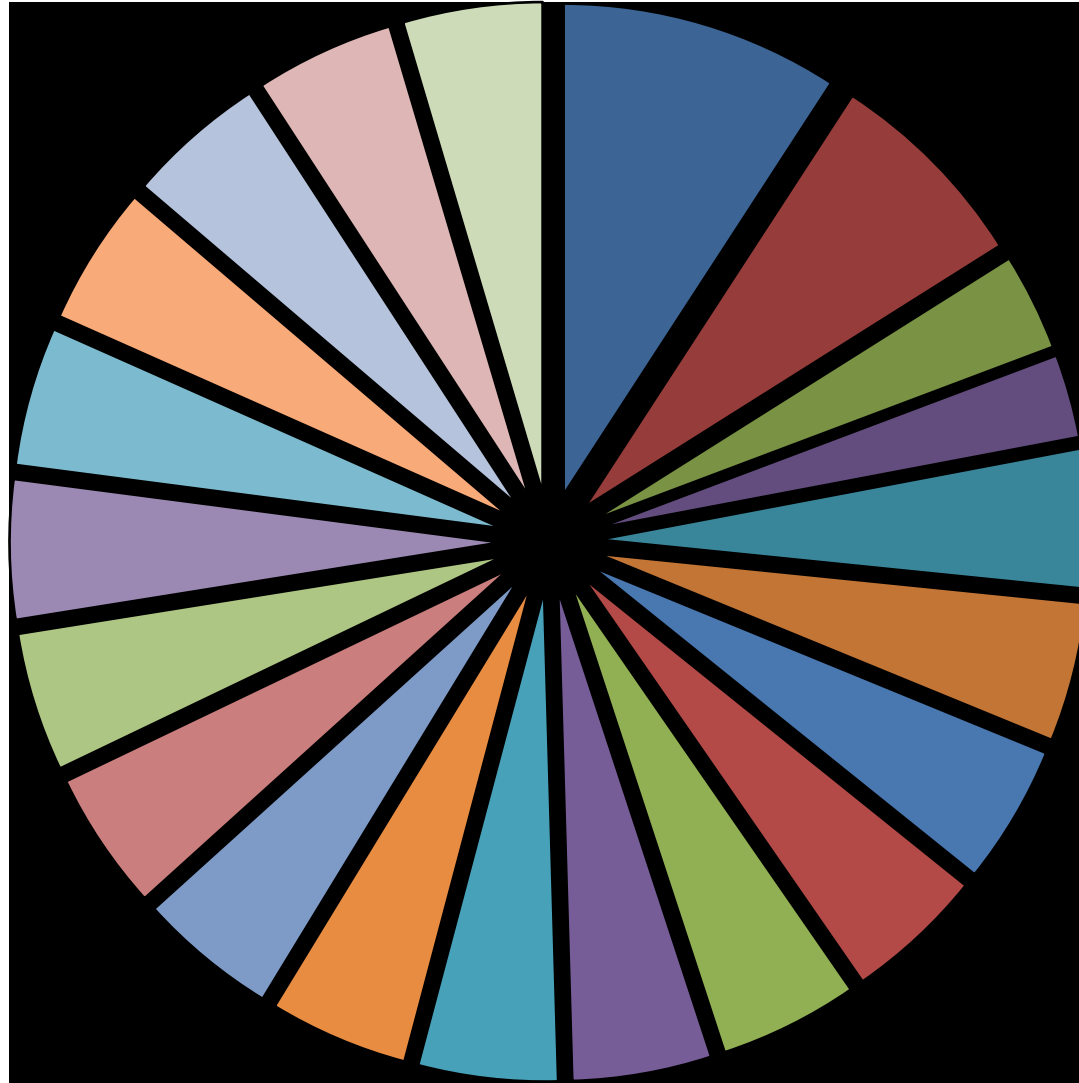
~Vivian Komori

Processes that allow people to *withstand*, *adapt*, or *quickly recover* from disaster varies with context, time frame, study sample, and the theoretical orientation of a diverse array of clinicians and scientists.

- **Personality trait**
- **Attitude**
- **Physiological response**
- **An adaptive process**
- **An outcome**

Abramson, D.M., Grattan, L.M., Mayer, B., Colten, C.E., Arosemena, F.A., Bedimo-Rung, A., Lichtveld, M. (2015). The Resilience Activation Framework: a conceptual model of how access to social resources promotes adaptation and rapid recovery in post-disaster settings. J. Behav. Health Ser. R. 42(1):42-57. PMID: PMC4247807.

RESILIENCE



- Social Support
- Risk Perception
- Coping
- Family Cohesion
- Emotional Control
- Financial
- Event Impact
- Gender
- Time
- Temperament
- Drugs/Alcohol
- Optimism
- Traumatic Life Events
- Community
- Bitterness
- Stressors
- Cortisol Level
- Effortful control
- Disengagement
- Time

Resilience: Multi factorial



THE DISASTER



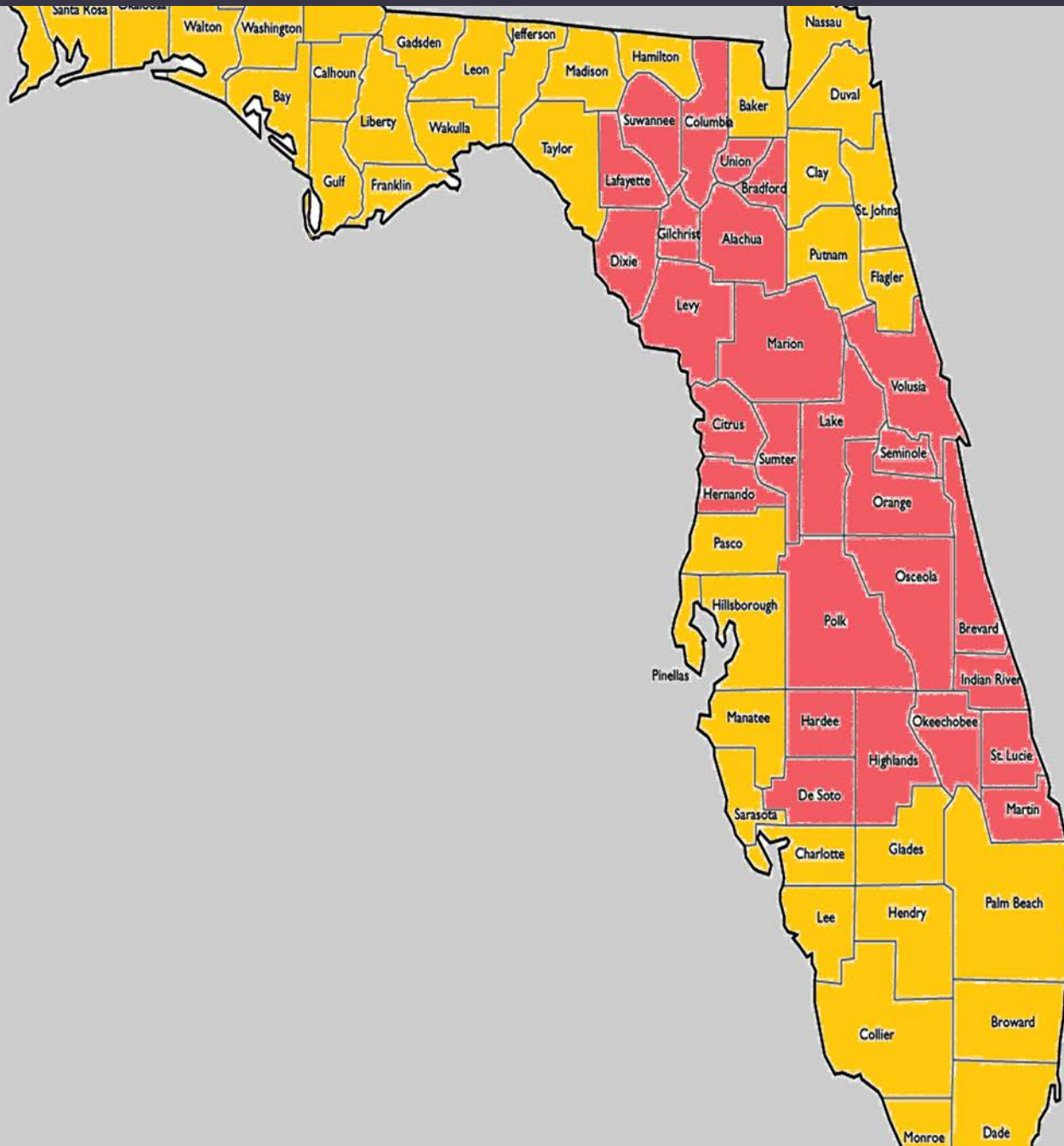
Hurricane Irma

September 10
2017

Category 5

IMPACTS

- **More than 38 million residents were left without power and were forced to deal with structural damage to their homes, property and workplace.**
- **Fuel, food, and construction material shortages**
- **Extensive losses of fields, orchards and livestock.**
- **The immediate death toll was 75**
- **The entire state of FL was designated a disaster region.**



Impacted Florida Counties

University of Florida

Southeast Coastal
Center for
Agricultural Health
and Safety
(SCCAHS)

Concern for
agricultural workers.

UFAS Extension Workers: What About Us?

- Involved in emergency operations and control
- Leading and managing shelters
- Operating points of distribution for food and water for residents and livestock
- Helping to dispose of dead livestock
- Providing emotional support to distraught farm owners
- *Meanwhile*, their own homes and workplaces were damaged



AIMS

Study Aims

- 1) To document the stresses, medical symptoms and behavioral health status of FL County Extension Workers 6 to 8 weeks and 1 year post Hurricane Irma toward increasing understanding of the acute psychological impacts of a severe hurricane.
- 2) Identify the short and long term predictors of mental health outcome
- 3) Obtain baseline data for monitoring recovery over time.



METHODS

Participants

- Recruitment by Dr. Angela Lindsay targeting most heavily impacted UF extension office communities and comparison communities.
- 36 UF Agricultural Extension Agents were studied
- Two *Listening Sessions* with extension worker communities to identify stressors and reactivity 4 weeks post hurricane.
- Resilience Training of a subset of extension agents and their staff (80%)
- Participants received \$25 for study participation

Demographic and Hurricane Exposure

Demographic	Time 1 (n=36)
Age	
N	36
Mean±SD	46.50 ± 13.55
Min, Max	25, 65
Sex	
Female	24 (66.7%)
Male	12 (33.3%)
Total	36
Ethnicity	
Hispanic or Latino	3 (8.3%)
Other	1 (2.8%)
White or Caucasian	32 (88.9%)
Total	36
Total Annual Household Income	
\$15,000 to \$24,999	1 (2.8%)
\$25,000 to \$34,999	1 (2.8%)
\$35,000 to \$49,999	2 (5.6%)
\$50,000 to \$74,000	5 (13.9%)
\$75,000 to \$99,999	12 (33.3%)
\$100,000 and higher	15 (41.7%)
Total	36

Demographic	Time 1 (n=36)
Marital Status	
Married/Partnered	26 (72.2%)
Single/Widowed/Divorced	10 (27.8%)
Total	36
Children (under 18) living in Home	
Yes	12 (33.3%)
No	24 (66.7%)
Total	36
Years of Education	
N	36
Mean±SD	17.53 ± 1.73
Min, Max	13, 20
Hurricane Irma Exposure	
N	36
Mean±SD	8.33 ± 2.92
Min, Max	3, 15

Measures

- Demographics
- Medical symptoms,
- **Hurricane Impact (HI)**
- Attention/Concentration (Digit Symbol)
- Coping strategies (Cope Disengagement)
- PTSD (PTSD-Checklist)
- Depression (Beck Depression Inventory)

Exposure to Hurricane Irma

PID: _____

Date: _____

Interviewer Initials: _____

Please consider each question and answer "yes" or "no".

1. Were you physically present in the region during hurricane –force winds?	<input type="checkbox"/> No	<input type="checkbox"/> Yes
2. Were you physically present in the region during hurricane-related flooding?	<input type="checkbox"/> No	<input type="checkbox"/> Yes
3. Did you get a storm related physical injury (anything more than a bruise)?	<input type="checkbox"/> No	<input type="checkbox"/> Yes
4. Did you see anyone else get a storm related physical injury (anything more than a bruise)?	<input type="checkbox"/> No	<input type="checkbox"/> Yes
5. Was your home or other personal property lost or damaged by Hurricane Irma? <i>If no, go to 6</i>	<input type="checkbox"/> No	<input type="checkbox"/> Yes
5a. If your personal property was damaged, were your total losses (regardless of insurance coverage) greater than \$10,000?	<input type="checkbox"/> No	<input type="checkbox"/> Yes
5b. Were your out-of-pocket losses greater than \$1,000?	<input type="checkbox"/> No	<input type="checkbox"/> Yes
6. Were you displaced from your home for at least a week due to Hurricane Irma? If yes, how long? _____ days Are currently displaced from your home? <input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes
7. Did Hurricane Irma interfere with your ability to work?	<input type="checkbox"/> No	<input type="checkbox"/> Yes
8. Were you displaced from your place of work as a result of Hurricane Irma? If yes, how long? _____ days Are currently displaced from your work? <input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes
9. Did you lose days of work because of Hurricane Irma? If yes, how many? _____ days	<input type="checkbox"/> No	<input type="checkbox"/> Yes
10. Did you work extra days/hours due to Hurricane Irma?	<input type="checkbox"/> No	<input type="checkbox"/> Yes

*Adapted from Palinkas LA, Russell J, Downs MA, Patterson JS. 1992. Ethnic differences in stress, coping, and depressive symptoms after the Exxon Valdez oil spill. *J Nerv Ment Dis* 180(5):287-295 and Acemio R, Ruggiero KJ, Galea S, Resnick HS, Koenen K, Roitzsch J, de Arellano M, Boyle J, Kilpatrick DG. 2007. Psychological sequelae resulting from the 2004 Florida hurricanes: implications for postdisaster intervention. *Am J Pub Health* 97:S103-S108

What *additional* work duties did you perform as a result of Hurricane Irma? (e.g. worked at EOC, shelter, etc): _____

What was your greatest work related stress due to Hurricane Irma?

Following Hurricane Irma, did you experience any of the following for more than one week? (Please check all that apply)

- ☐ Lack of clean clothing
☐ No electricity
☐ Lack of clean water
☐ Lack of food |
☐ Limited transportation
☐ Financial losses
☐ Exposure to mold

Did you experience any of the following losses as a result of hurricane Irma? (Please check all that apply)

- ☐ Damage to household contents
☐ Loss of sentimental possessions
☐ Loss of pets
☐ Damage to crops, trees, and/or garden
☐ Loss of transportation
☐ Other: _____



MEASURES

- **Demographics**
- **Medical symptoms**
- **Hurricane Impact (HI)**
- **Attention/Concentration (Digit Symbol)**
- **Coping strategies (COPE)**
- **PTSD (PCL-5)**
- **Depression (Beck Depression Inventory)**



RESULTS

Medical Symptoms

Medical Symptom	Percent Reported
Fatigue	69%
Irritability	50%
Concentration problems	40%
Losing or misplacing things	33%
Sleep Disturbance	31%
Lower Back Pain	31%
Headache	27.8%

RESULT 1: ATTENTION CONCENTRATION 6-10 WEEKS POST LANDFALL

All participants obtained scores within the *high average to very superior* range on the Symbol Digits Modalities Test.

RESULT 2: *DEPRESSION, PTSD, NUMBER OF MEDICAL SYMPTOMS AND EXPOSURE (n=36)*

	Beck Depression Inventory total score		Post Traumatic Checklist-5 Total Score		Total Number of Medical Symptoms	
	Coefficient (SE)	P value	Coefficient (SE)	P value	Coefficient (SE)	P value
Model 1:						
Exposure High vs. low	5.111111	.036	11.22222	.01	5.111111	.002
Model 2:						
Exposure High vs. low	5.228696	.04	10.97848	.06	4.906668	.005
Past exposure	5.228696	.27	-.0248143	.97	.0126636	.57
Age	-.051819	.25	-.1153924	.47	.0126636	.83

RESULT 2

- **Greater Hurricane Impact (home+work) was associated with elevated Depression, PTSD sx, Medical Symptoms 6-10 weeks post hurricane (controlling for age and prior hurricane exposure).**
- **All Coping strategies - problem focused, emotion focused and disengagement - were equally and actively used.**

RESULT 3. GEE MODELS ASSESSING CHANGE IN BDI AND COPE DISENGAGEMENT SCORE OVER 1 YEAR

	Beck Depression Inventory Score						COPE Disengagement Score				
	Unadjusted			Adjusted			Unadjusted			Adjusted	
	Estimate (95CI)	P value		Estimate (95CI)	P value		Estimate (95CI)	P value		Estimate (95CI)	P value
Intercept	6.83 (4.45, 9.22)	<0.001		2.73 (-3.29, 8.75)	0.374		6.83 (4.45, 9.22)	<0.001		11.1 (8.75, 13.5)	<0.001
Time Period											
T2 vs T1	0.97 (-1.62, 3.56)	0.464		3.91 (0.24, 7.58)	0.037		0.97 (-1.62, 3.56)	0.464		1.75 (0.40, 3.10)	0.011
EHI Scores											
Home Score Total				1.10 (-0.26, 2.45)	0.113					0.30 (-0.22, 0.81)	0.260
Work Score Total				1.58 (0.44, 2.73)	0.007					0.59 (0.02, 1.16)	0.044
Age Group											
≥ 55 vs. <55 Years				-2.55 (-5.81, 0.71)	0.123					-0.46 (-2.32, 1.40)	0.627
Gender											
Female vs. Male				1.78 (-1.00, 4.56)	0.210					0.48 (-1.37 – 2.32)	0.613
Marital Status (vs. Single)											
Married or Partnered				-2.32 (-8.32, 3.69)	0.704					-2.21 (-4.05, -0.37)	0.018
Divorced, Widowed, Separated				-2.25 (-13.8, 9.33)	0.449					-1.80 (-6.28, 2.68)	0.431

RESULT 3: 1 YEAR OUTCOME

1. Beck Depression Inventory and Disengagement Coping Score **increased** from T1 to T2
2. Hurricane impact at work mediated the relationship between time and outcome, with integrity of workplace being protective of the negative outcomes.
3. Having a partner was also considered protective, to a lesser extent
4. Most people (55%) felt “back to normal” 4 months post impact; 20% were still feeling hurricane related distress 12 months post impact.



DISCUSSION/IMPLICATIONS

TENTATIVE CONCLUSIONS

- 1. Objective measures of rudimentary attention and concentration skills may be fine, but the ability to apply them under stressful circumstances was difficult.**
- 2. Hurricane impact in both the personal and work setting combine to contribute to symptoms of depression and anxiety in the short term.**
- 3. Reduced hurricane impact in the work setting is associated with better outcomes in the long run.**
- 4. Stability in the work setting is important to mental health outcomes post hurricane related disaster.**

PRACTICAL INTERVENTIONS

- Reassure the EA's that they have the cognitive resources to withstand the stressful demands. Enhance organizational and time management skills.
- Coverage from non-impacted Extension Agents in hurricane impacted regions.
- First Responder Training: Psychological First Aid
- Recognize and work toward stabilizing the work environment.

LIMITATIONS

- **Small Sample size**
- **Restricted SES**
- **Generalizability to other Agricultural Leaders**
- **Generalizability to other disaster settings.**

FUTURE DIRECTIONS

Examine factors that mediate the relationship between workplace disruption and resilient outcomes

THE NEW NORMAL



Thank you