

Communicating Risk to Motivate Individual Action

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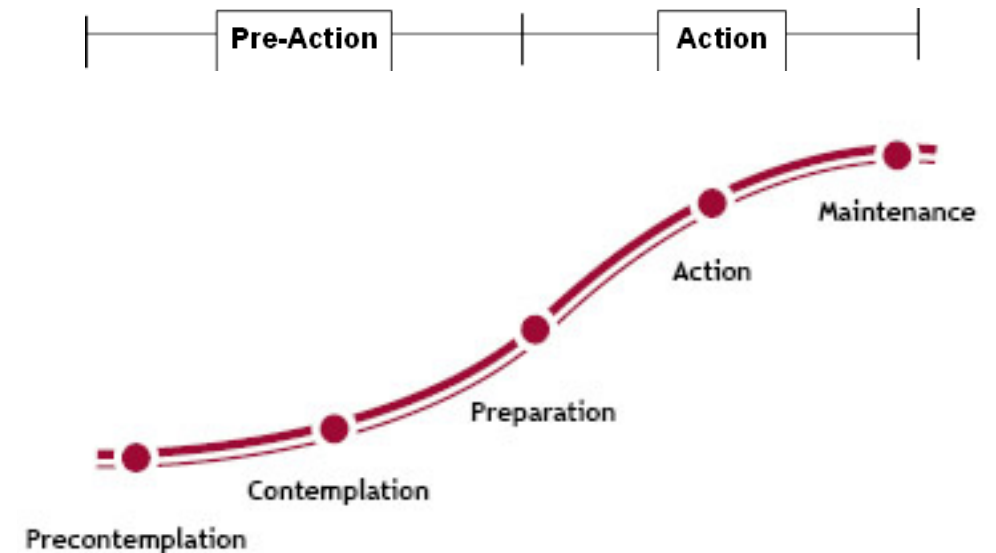
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Project Goal: Apply the Transtheoretical Model (TTM) to develop and test computer tailored interventions (CTIs) via text messaging designed to facilitate and accelerate coastal residents (NE and FL) through the stages of change to take action to prepare for and mitigate impacts of coastal storms.

Relevance to Homeland Security

Relevance to Homeland Security. This research will strengthen national preparedness and improve the resilience of coastal communities in the face of coastal storm hazards.

- Coastal residents who are not ready or do not see the benefits of becoming prepared will be hit the hardest and will eventually cost the most money.
- By engaging the entire population, we are able to make larger impacts on the community and conform to the core guiding principles of the DHS Whole Community Approach:
 1. understand and meet the needs of the Whole Community
 2. engage and empower all of the community
 3. strengthen what works well in communities on a daily basis.



THE PROJECT Overview

- Pre/Post Intervention trial that includes text messaging to increase disaster preparedness
- Tailoring intervention and text messages to the most important change variables
- 3,043 people from New England and Gulf Coast States collected during the Spring of 2017, although funded for only 1000.

This material is based upon work supported by the U.S. Department of Homeland Security under Grant Award Number 2015-ST-061-ND0001-01.

DHS Baseline Data Summary (N+3043)

		N	%
Gender	Female	1938	63.7
	Male	1094	36
	Transgender	9	0.3
	Other	2	0.1
Race	American Indian/Alaska Native	37	1.2
	Asian	122	4
	Black/African American	236	7.8
	Native Hawaiian/Pacific Islander	15	0.5
	White	2633	86.5
Ethnicity	Hispanic	332	10.9
	Not Hispanic	2711	89.1

COASTAL RESILIENCE CENTER

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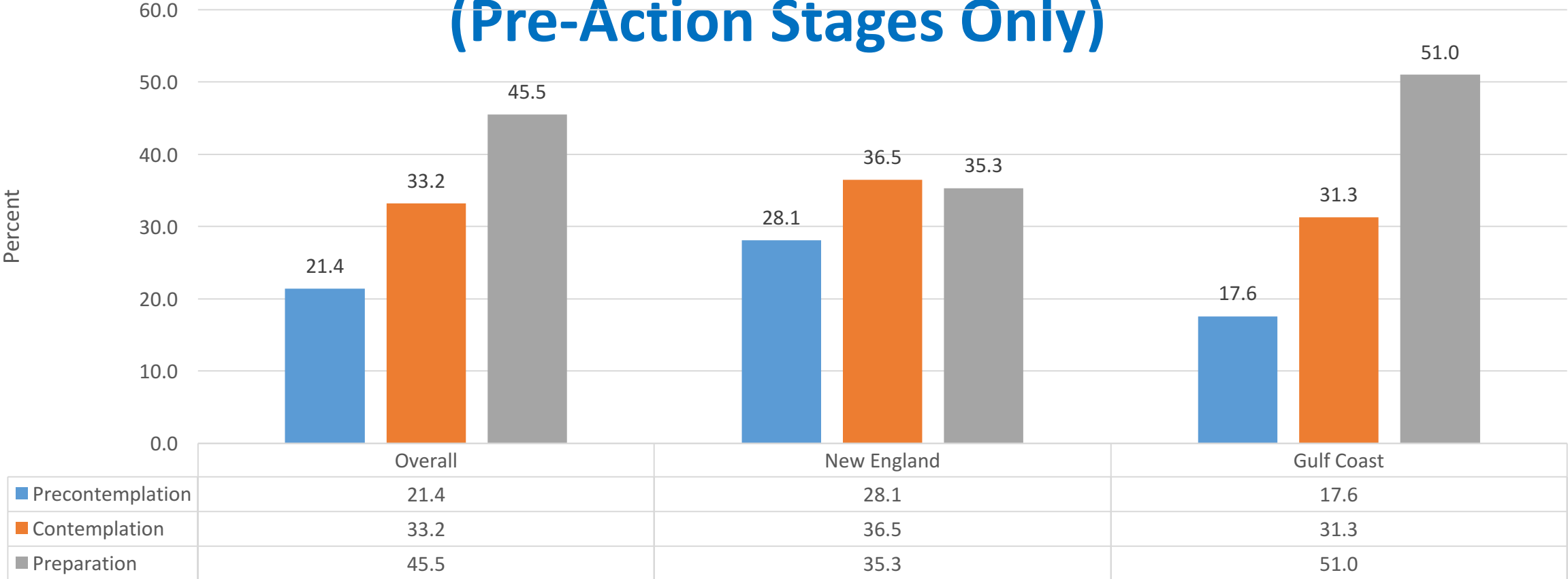
DHS Baseline Data Summary (N+3043)

Education	High school graduate	469	15.4
	Some college	895	29.4
	Bachelor's degree	942	31
	Graduate degree	611	20.1
	Certificate	85	2.8
	Other	41	1.3
Own Home	Yes	2126	69.9
	No	917	30.1
State	Alabama	390	12.8
	Connecticut	306	10.1
	Florida	1787	58.8
	Massachusetts	477	15.7
	Rhode Island	77	2.5

Stage of Change by Region

		New England		Gulf States (n= 2,177)	
		N 866	28%	n	72%
Baseline Stage – Disaster	Precontemplation	164	19.1	187	8.6
	Contemplation	213	24.8	332	15.3
	Preparation	206	24	541	24.9
	Action	145	16.9	636	29.2
	Maintenance	132	15.3	481	22.1

Stage of Change by Region (Pre-Action Stages Only)



Axis Title

Baseline Variable Comparison

- We dichotomize the Stage of Change variable into Pre-Action vs. A/M to explore differences between those people who have not yet taken action (PC, C, & Prep) and those who have taken action (Action & Maintenance).
- Analyses compare these groups on:
 - Demographic variables
 - TTM variables

Demographic Variables

- **Race, Ethnicity, and Gender:**

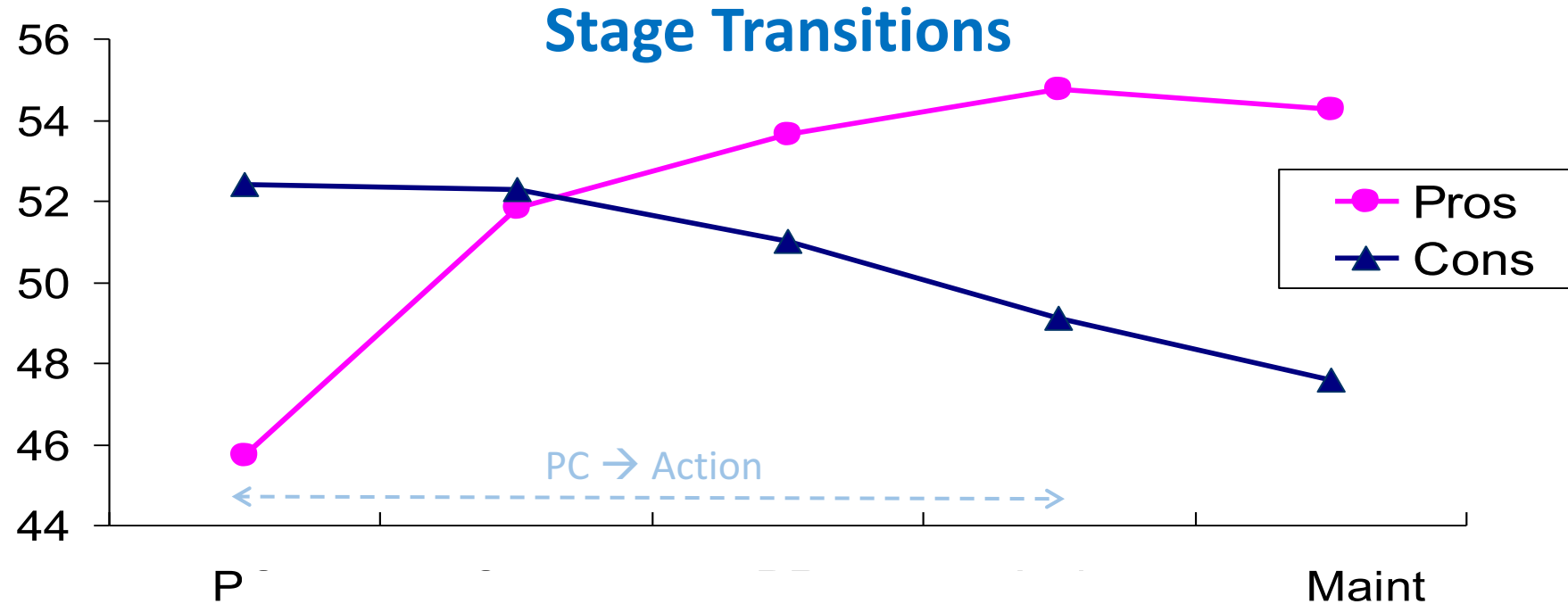
- Differences were not found between Pre-Action and A/M individuals on race or ethnicity however significant differences were found on gender with a higher % of men being in A/M.

- **Education:**

- No significant differences, but the percent of people in A/M increases across levels of education (High School → College → Graduate Degree).

- **Home Ownership:**

- Significantly more homeowners (50.6%) were in A/M compared to 35.2% of non homeowners.



The pros and cons of changing across stages of change from PC to Action

	48 behaviors	Preparedness
Pros	↑ 1.00 S.D.	↑ .92 S.D.
Cons	↓ .54 S.D.	↓ .49 S.D.

Hall, K. L. & Rossi, J. S. (2008). Meta-analytic examination of the strong and weak principles across 48 health behaviors. *Preventive Medicine, 46*, 266-274.

Intervention Targeting and Tailoring

One Size Fits All



Intervention Targeting and Tailoring

One Size Fits All



Stage of Change

Targeted (Stage-Matched)



Intervention Targeting and Tailoring

One Size Fits All



Stage of Change

Targeted (Stage-Matched)



Pros & Cons

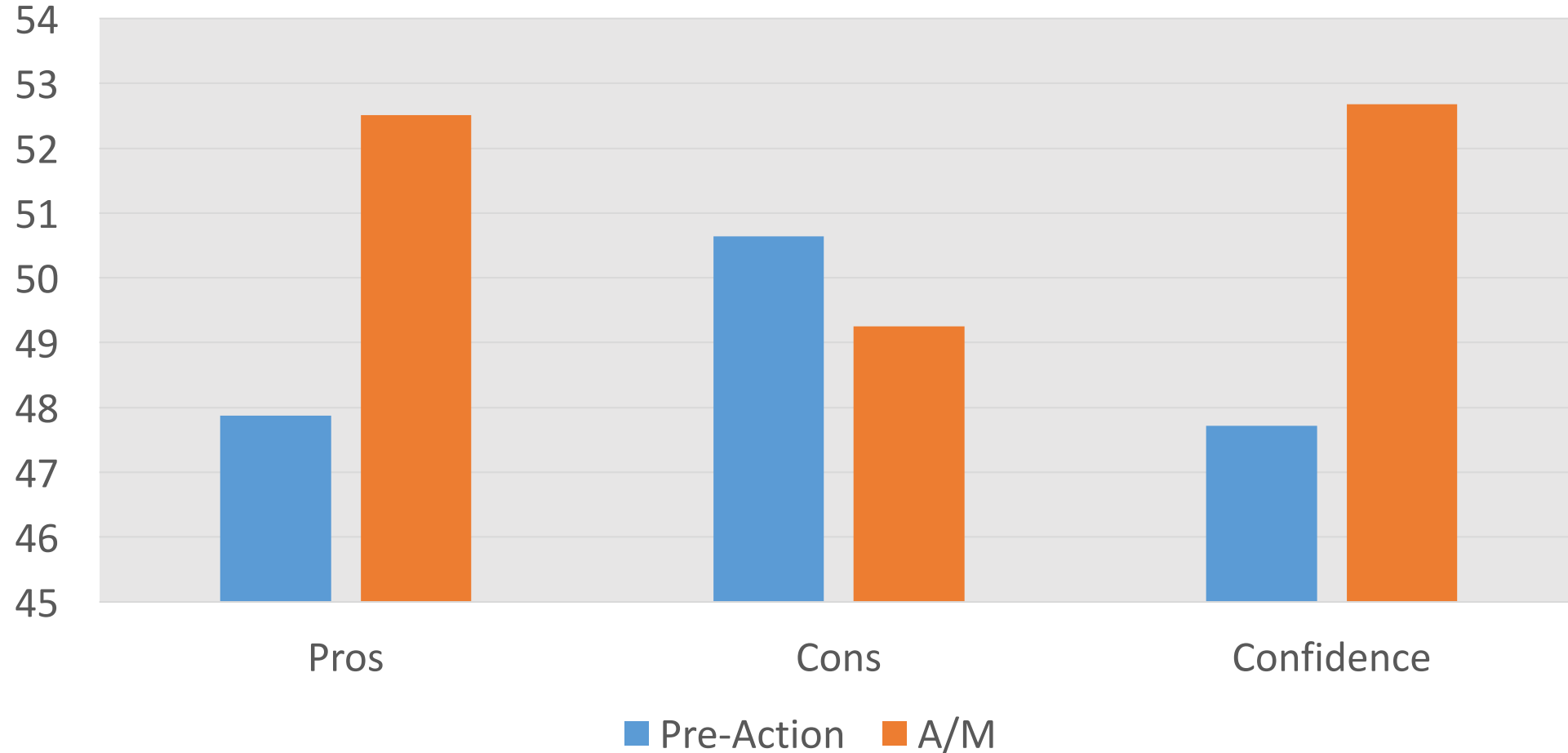
Self-Efficacy

Processes

Tailored (Individualized)



TTM Variables



Significant differences were found on Pros, Cons, and Confidence

Research Work and Accomplishment

Activities, findings and outcomes to date

1. Fully functioning program is now available. This involved incorporating changes based on advice from end-users and widened the content to include New England, Alabama, and Florida residents, and now includes text messaging that has been delivered to over 3,000 participants over the next year.

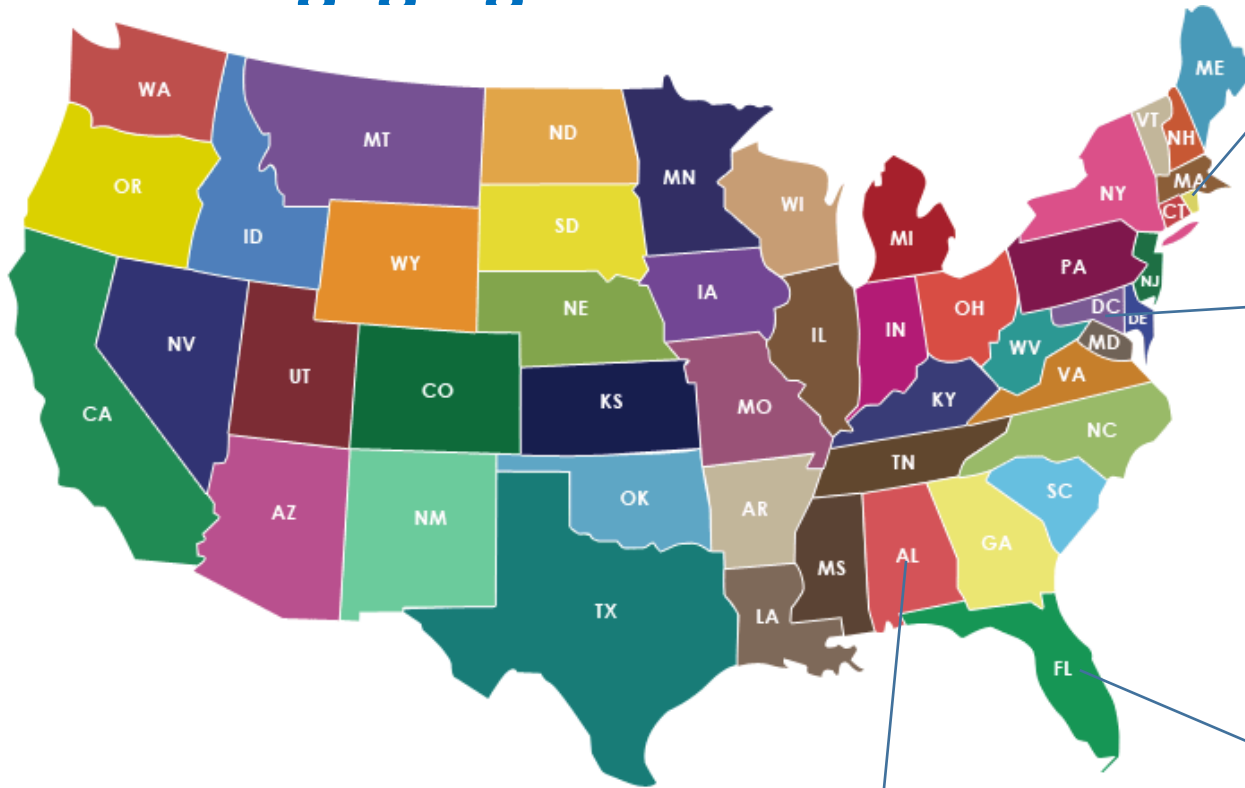
Expected activities, findings, and outcomes for remainder of project

1. Cross-sectional Model for Tailoring Disaster Preparedness Communications Based on over 3,000 participants
2. Longitudinal Model for Tailoring Disaster Preparedness Communications Based on over 3,000 participants
3. Intervention Impacts of Tailored Communications Comparing Intervention and Control Groups at 12 months.
4. Expect at least 10 x greater preparedness in intervention group compared to secular trends.

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Engaging End Users



RI Red Cross, RI Emergency Management Agency

- Interest in expanding outreach programs to improve preparedness
- Model for other state chapters

FEMA Individual and Community Preparedness Division

- Research design , evaluation,
- Tool to increase and monitor behavior change nation-wide

IBHS – Insurance Institute of Business and Home Safety

- Research-oriented association, supports nationwide insurance industry partners

Smart Home America

- Tool for citizen outreach for preparedness.

Research Work and Accomplishment

Technical Activities and Milestones – 1/1/2016 to 6/30/18

Research Activity	Start/Completion
Update/customize Internet CTI; Develop statistical decision rules for text-based CTIs.	Completed 6/30/16
Create TTM-based text messages; Program and test text system.	Completed 12/31/16
Complete updated CTI system, including text messages, ready to disseminate.	Completed 12/31/16
Recruit census-based sample of 3,000 coastal residents (NE, AL, and FL)	Completed 1/31/17
Analyze and report baseline data on 3,000 coastal residents recruited into the study.	2/15/17 - 3/15/17
Deliver Internet CTI and first 12 months of text messaging with frequency tailored to stage.	1/15/17 – 12/31/17
Follow-up Participants	1/15/18 – 3/31/18
Analyze and report data on 12 month outcomes of coastal residents recruited into the study.	4/01/18 – 6/30/18

Anticipated Project Impact

1. Evidence-based tailored digital communication will be ready for dissemination by end-users.
2. Cross-sectional results will be amongst the highest impact studies of risk communications and behavior change for population preparedness.
3. Longitudinal results will be amongst the highest impact studies for population preparedness.
4. Empirical model for tailoring digital communications will be amongst the highest impact studies for population preparedness.
5. Intervention preparedness outcomes will be amongst the highest impact studies for population preparedness.

Proposed Follow-on Work

Proposed Project Title: Digital Technologies Delivered in Schools to Increase Household Preparedness Behaviors to Reduce Risks for Natural Disasters

Objective: Adapt our CTIs and text messages to prepare high school students to become change agents in helping their households make behavior changes needed to reduce risks.



**University of Rhode Island
&
Westerly High School**

“Together...Creating a Positive Change in Our Coastal Community”

An Educational Community Partnership

using evidence-based health interventions to help students become agents of change

in helping their households reduce risks from natural disasters

Brief Summary & Timeline

- Approximately 400 high school students (Freshman and Sophomores only) to participate in an online brief assessment followed by an individually tailored computerized intervention helping them to be agents of change within their household in the area of emergency preparedness.
- Utilization of a passive parental consent process.
- Access to participants two times during the 2017-18 school year (February & May).
- Classroom time needed - approximately 25 minutes total - 5 minutes for the brief introduction and 18 minutes for the assessment & tailored TTM feedback.
- Between classroom visits student participants will be asked to receive 1-4 text messages per month which also provide stage-matched feedback regarding emergency preparedness.