MENTAL HEALTH CORRELATES OF HURRICANE SANDY EXPOSURE AMONG NY RESIDENTS

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Extensive Project Advisory Board
  Subcommittees
  Integral in implementation and dissemination activities
  http://www.feinsteininstitute.org/project-light/
Research reported in this presentation was supported by The Centers for Disease Control and Prevention under award number U01-TP000573-01.

Presenter Disclosures
Rebecca M. Schwartz, Ph.D.

(1) The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:
- No relationships to disclose

Research Questions, Aims, and Objectives

Objective: To understand the psychological impact of Hurricane Sandy in an effort to inform current intervention and future prevention efforts. This is a partnership between the North Shore-LIJ Health System (NSLIHS), and the Nassau County Department of Human Services.

Aim 1: Assess the psychological and behavioral effects of Hurricane Sandy on the residents of Nassau, Suffolk, Queens and Richmond (Staten Island) counties.
Aim 2: Examine the prevalence of specific mental health diagnoses presenting to local Emergency Departments in the affected counties.
Aim 3: Develop a vulnerability profile based on the results of Aims 1 and 2, and disseminate findings to local and national public health stakeholders.
Sampling Goals

- Recruitment of 669 study participants.
- Sampling areas: Nassau County, Suffolk County, Queens County, and Richmond County (Staten Island).
- Sampling was conducted from both heavily and mildly affected areas to ensure variability in exposure.
- Recruitment strategy is one of convenience sampling at various community sites and events
  - Contacts established through key stakeholders have been crucial to success.

Questionnaire Sections

- General Information:
  - Section A: Basic Information
  - Section B: Demographic Information
  - Section C: Occupation and Environment
  - Section D: Medical History
  - Section E: Behavioral Health (Tobacco, Alcohol and Substance Use)

- Mental Health Measures:
  - Section F: Perceived Stress Scale (Stress)
  - Section G: PHQ-4 (Anxiety and Depression Symptoms)
  - Section H: PCL-S (PTSD Symptoms)
  - Section I: Mental Health History
  - Section J: PTGI (Post-Traumatic Growth)
  - Section K: Hurricane Sandy Exposure Assessment

Demographics

- Total sample size through 2/25/15 - 669
- Gender: 36% male; 64% female
- Race:
  - 65% White
  - 20% Black/African American
  - 3% Native American/Pacific Islander
  - 3% Asian
  - 2% Other
- Ethnicity:
  - 20% Hispanic
- Mean age = 47.6 Years; Range = 18-104 Years

Sampling Area and Demographics
Sample Hurricane Exposure Items

- Family member missing: 2%
- Physical harm to family member: 5%
- Felt life was in danger: 8%
- Evacuated emergently: 11%
- Loss of electricity: 71%
- Displaced from home: 31%
- Home damaged: 31%
- Vehicle loss: 14%
- Became unemployed: 5%
- No access to gasoline: 33%
- Difficulty accessing food: 15%
- Flooding in the home: 26%

Overall mean (out of 30 items): 3.83 items endorsed (SD=3.86)

Personal and Property Exposures Based on Principal Components Analysis

Median=0, Q1=0, Q3=2
Mean=0.93, SD=1.51, Range: 0-12

Median=2, Q1=1, Q3=5
Mean=3.1, SD=2.92, Range: 0-14

Examples of Frequencies of “Property” Exposures

- % of residents

Mental Health Outcomes

- **Perceived Stress**: Mean=15.6, SD=7.3, Range=0-37
  - General population mean = 13

- **Anxiety**: Mean=1.6, SD=1.7, Range: 0-6
  - Mean>2 = Probable anxiety; 47.5% of sample

- **Depression**: Mean=1.2, SD=1.7, Range: 0-6
  - Mean>2 = Probable depression; 34.3% of sample

- **PTSD**: Mean=25.0, SD=11.1, Range: 16-85
  - Mean>30 = Probable PTSD; 20.5% of sample
### Perceived Stress Findings

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Parameter Estimate</th>
<th>SE</th>
<th>p-value</th>
</tr>
</thead>
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<td>&lt; .0001</td>
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<td>Female Gender</td>
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<td>Lower Education</td>
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<td>0.06</td>
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<td>Mental Health History</td>
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<tr>
<td>Total Hurricane Exposure</td>
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<td>&lt; .0001</td>
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</table>

### Overall Mental Health Findings

#### DEPRESSION

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<th>Variable</th>
<th>OR</th>
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</thead>
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<td>AGE</td>
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<td>0.94 - 1.00</td>
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<tr>
<td>Female-Gender</td>
<td>0.93</td>
<td>0.83 - 1.04</td>
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<tr>
<td>Education (hs or less)</td>
<td>1.18*</td>
<td>1.04 - 1.32</td>
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<tr>
<td>Race (non-white)</td>
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<td>0.71 - 0.92</td>
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<tr>
<td>Hispanic Ethnicity</td>
<td>1.17*</td>
<td>1.07 - 1.29</td>
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<tr>
<td>Previous Mental Health History</td>
<td>3.15*</td>
<td>2.87 - 3.45</td>
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<tr>
<td>Total Hurricane Exposures</td>
<td>1.13*</td>
<td>1.04 - 1.23</td>
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#### ANXIETY

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<td>AGE</td>
<td>0.98</td>
<td>0.96 - 1.00</td>
</tr>
<tr>
<td>Female-Gender</td>
<td>0.93</td>
<td>0.84 - 1.03</td>
</tr>
<tr>
<td>Education (hs or less)</td>
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<td>Race (non-white)</td>
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<td>1.07 - 1.96</td>
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<td>Previous Mental Health History</td>
<td>3.18*</td>
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<td>Total Hurricane Exposures</td>
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<td>1.09 - 1.30</td>
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#### PTSD

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<td>AGE</td>
<td>0.99</td>
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</tr>
<tr>
<td>Female-Gender</td>
<td>0.93</td>
<td>0.84 - 1.03</td>
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<td>Education (hs or less)</td>
<td>1.35</td>
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<td>1.07 - 2.19</td>
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<td>Previous Mental Health History</td>
<td>3.17*</td>
<td>2.72 - 3.69</td>
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<tr>
<td>Total Hurricane Exposures</td>
<td>1.22*</td>
<td>1.08 - 1.37</td>
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</table>

### Factors Associated with Mental Health Outcomes

#### Mental Health Findings by Gender

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>AGE</td>
<td>0.98</td>
<td>0.96 - 1.00</td>
</tr>
<tr>
<td>Female-Gender</td>
<td>0.93</td>
<td>0.84 - 1.03</td>
</tr>
<tr>
<td>Education (hs or less)</td>
<td>1.18</td>
<td>0.94 - 1.48</td>
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<tr>
<td>Race (non-white)</td>
<td>0.86</td>
<td>0.49 - 1.54</td>
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<tr>
<td>Hispanic Ethnicity</td>
<td>1.31*</td>
<td>1.03 - 1.66</td>
</tr>
<tr>
<td>Previous Mental Health History</td>
<td>3.12*</td>
<td>2.36 - 4.18</td>
</tr>
<tr>
<td>Total Hurricane Exposures</td>
<td>1.08*</td>
<td>0.88 - 1.32</td>
</tr>
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### Mental Health Findings by Gender

- Total hurricane exposure was associated with all outcomes for both males and females.
- With one exception: hurricane exposure was not associated with depression among males.
- Lower education was consistently associated with poorer mental health among males, not females.

### Additional Findings

- Personal exposure was significantly associated with PTSD only.
- Property exposure was significantly associated with all outcomes.
- Days since hurricane was NOT associated with any associated outcome except for lower stress.

### Project LIGHT Summary

- Increased Hurricane Sandy exposure was significantly associated with increased mental health difficulties across all outcomes (i.e., stress, anxiety, depression and PTSD symptoms) even after adjusting for factors known to be associated with mental health.
- A history of mental health difficulties and lower education were consistently associated with poorer mental health across most outcomes.
- Depending on the outcome, age, gender, race and ethnicity also may have had an impact.
- Property (as compared to personal) exposure drove the effect of total hurricane exposure on outcomes.

### Implications/Future Research

- Findings are being disseminated to local mental health and disaster preparedness stakeholders particularly with respect to vulnerable populations and high exposure areas.
- Findings can inform current post-disaster assessment and treatment as well as planning in the case of future disasters.
- Future analyses:
  - Substance use
  - Stratification by exposure
  - GIS analysis
Any questions? Contact Dr. Rebecca Schwartz:
schwartz3@nshs.edu
Thank you!