Older Adult Disaster Recovery and Resilience

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Aging Incubator
December 13, 2018
• Trained as Sociologist
• Housing and Health
• Disaster Recovery & Resilience
• Aging in place
• Qualitative & Quantitative Methods
• Program on Population Impact, Recovery and Resilience (PiR²)
Older adults are vulnerable to disaster.
Elderly are among the most vulnerable during Harvey

Report: Assisted living residents left in peril as Hurricane Harvey hit

For elderly residents, hurricanes bring increased risks
Life or death as Puerto Rico's older people go without essentials

Puerto Rico Deaths Spike, but Few Are Attributed to Hurricane

Seniors in Puerto Rico Face Appalling Conditions After Hurricane Maria
• The biggest single death toll was the 12 residents of a Florida nursing home
• Widespread power outages caused the Rehabilitation Center at Hollywood Hills to lose air conditioning
The storm destroyed buildings and flattened communities as it tore through the Florida panhandle region.

27 deaths reported and over 1,100 people were unaccounted for more than a week after the storm.

Most of the missing were “elderly, disabled or lived alone.”
California Wildfires

Why Older People Didn’t Fare Well In Northern California Wildfires
• Older adults vulnerable to exposure and consequences of disaster due to chronic illnesses, mobility problems and depleted social networks
• Growing number of older adults living in high-risk coastal areas prone to flooding and environmental stressors
• Little focus on unique needs of older populations following disasters – especially, long-term
Older adults are vulnerable to disaster.

What do we mean by older adults?

How does vulnerability vary depending on stage of disaster?
<table>
<thead>
<tr>
<th>Datasets</th>
<th>Gulf Coast Child &amp; Family Health Study (G-CAFH)</th>
<th>Sandy Child &amp; Family Health Study (S-CAFH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event</td>
<td>Katrina</td>
<td>Sandy</td>
</tr>
<tr>
<td>n</td>
<td>1,079</td>
<td>1,000</td>
</tr>
<tr>
<td>Type</td>
<td>Longitudinal cohort</td>
<td>Longitudinal cohort</td>
</tr>
<tr>
<td>Representative population</td>
<td>Displaced &gt;6 months or greatly impacted areas, LA &amp; MS</td>
<td>Representative of 1 million exposed NJ residents</td>
</tr>
</tbody>
</table>
Sandy Child and Family Health (S-CAFH) Study
• Funded by NJ Department of Health using Social Services Block Grant funds
• Random sample of 1,000 residents living in or near those coastal areas of the state most directly exposed to the storm
• Describes and analyzes the impacts and long-term effects of Hurricane Sandy on residents living in nine of the hardest-hit counties in New Jersey
• Examines the factors that helped or hindered people in the recovery process from the perspective of affected residents
• Nine New Jersey counties designated “Very High Impact”
• Overlaid three geographical layers (Storm surge, individual assistance claims, housing damage)
• Census block groups that satisfied ANY of the three criteria were extracted and merged to create the final Disaster Footprint
• $N = 1,000$
S-CAFH Age Distribution

- 18-54: 45%
- 55-64: 23%
- 65-74: 19%
- 75+: 13%
Housing Transitions and Recovery of Older Adults Following Hurricane Sandy

• Explored the effects of social and environmental disruption on emergency housing transitions

• Analyses examined post-Sandy housing transitions and recovery of the young-old (55-64) mid-old (65-74), and old-old (75+) compared with younger adults (19-54)

• Length of displacement, number of places stayed after Sandy, housing host and self-reported recovery
Displacement among age groups following Hurricane Sandy

Percent of Those Displaced by Age Group

Age Group:
- 19-54
- 55-64
- 65-74
- 75+

Weeks Displaced:
- 1-5 Weeks
- 6-20 Weeks
- 21+ Weeks
Numbers of Places Stayed by Age

Age Group

- 19-54
  - Zero: 28%
  - One: 19%
  - Two or More: 14%

- 55-64
  - Zero: 52%
  - One: 34%
  - Two or More: 17%

- 65-74
  - Zero: 42%
  - One: 41%
  - Two or More: 17%

- 75+
  - Zero: 39%
  - One: 40%
  - Two or More: 22%
Hosts following Hurricane Sandy

<table>
<thead>
<tr>
<th>Age Group</th>
<th>No Host</th>
<th>Multiple Hosts</th>
<th>Family Only</th>
<th>Friends Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-54</td>
<td>5%</td>
<td>20%</td>
<td>22%</td>
<td>20%</td>
</tr>
<tr>
<td>55-64</td>
<td>20%</td>
<td>9%</td>
<td>20%</td>
<td>22%</td>
</tr>
<tr>
<td>65-74</td>
<td>31%</td>
<td>31%</td>
<td>18%</td>
<td>18%</td>
</tr>
<tr>
<td>75+</td>
<td>8%</td>
<td>18%</td>
<td>39%</td>
<td>35%</td>
</tr>
</tbody>
</table>
Housing Damage

<table>
<thead>
<tr>
<th>Age Group</th>
<th>No Damage</th>
<th>Minor/Affected</th>
<th>Major/Destroyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-54</td>
<td>50%</td>
<td>28%</td>
<td>22%</td>
</tr>
<tr>
<td>55-64</td>
<td>48%</td>
<td>29%</td>
<td>23%</td>
</tr>
<tr>
<td>65-74</td>
<td>46%</td>
<td>30%</td>
<td>24%</td>
</tr>
<tr>
<td>75+</td>
<td>39%</td>
<td>41%</td>
<td>20%</td>
</tr>
</tbody>
</table>
Self-Reported Recovery

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Better/Same</th>
<th>Worse/Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-54</td>
<td>66%</td>
<td>34%</td>
</tr>
<tr>
<td>55-64</td>
<td>63%</td>
<td>37%</td>
</tr>
<tr>
<td>65-74</td>
<td>67%</td>
<td>33%</td>
</tr>
<tr>
<td>75+</td>
<td>76%</td>
<td>24%</td>
</tr>
</tbody>
</table>
• The mid-old were 88% more likely to stay in one place besides home

• The old-old were nearly 2x more likely to stay in one place besides home

• The young-old were 67% less likely to stay in two places besides home

• Housing damage, housing tenure, mental health and region were also significant predictors
• Older age was significantly associated with staying with family relative to staying alone
• The mid-old were 81% more likely to stay with family
• The old-old were more than 2x as likely to stay with family
• Those with social support were 68% more likely to stay with family
• Other significant predictors included housing damage, housing tenure, region
• Age, number of places stayed, damage, social support, mental health, physical health, housing tenure, and education all significant predictors of disaster recovery
  • Old-old were 2.21 times as likely to report they had recovered compared to younger adults
  • Age was not a significant predictor of recovery for young-old or mid-old
Findings suggest the old-old were more resilient to Hurricane Sandy than younger age groups

Among all age groups, the old-old (75+):
  • Reported the highest rates of housing damage
  • More likely to stay in one place besides their home
  • More likely to stay with family rather than by themselves

Despite disruption, the old-old were most likely to have recovered from Hurricane Sandy

Understanding the unique post-disaster housing needs of older adults can help identify critical points of intervention for their post-disaster recovery
GULF COAST CHILD AND FAMILY HEALTH (G-CAFH) STUDY
• Devastation and destruction from Katrina remains unmatched in modern U.S. history
• Displaced 1.5 million residents across the Gulf Coast
• Largest displacement since 1930s dust bowl migration
• Residents migrated to states as far from the Gulf Coast as Colorado, Georgia, Missouri, South Carolina and Texas
G-CAFH: The Gulf Coast Child and Family Health Study

• Funded by Children’s Health Fund

• G-CAFH follows 1,079 households from 2006-2009; 2017-18

• Residents from Louisiana and Mississippi – nearly all displaced

• Disaster research is often cross-sectional and focuses on the immediate aftermath of an event

• Retention rate of 81% for wave 5
## Contributors to Self-Reported Recovery

<table>
<thead>
<tr>
<th>Component</th>
<th>Measures</th>
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<tbody>
<tr>
<td>Housing stability</td>
<td>• Permanent and Stable Housing</td>
</tr>
<tr>
<td>Mental health</td>
<td>• MCS &gt; 42.0 (SF-12 mental component scale)</td>
</tr>
<tr>
<td>Physical health</td>
<td>• PCS &gt; 45.0 (SF-12 physical component scale)</td>
</tr>
<tr>
<td>Social Support</td>
<td>• Perceived social support</td>
</tr>
<tr>
<td></td>
<td>• Family functioning scale</td>
</tr>
<tr>
<td>Household Income</td>
<td>• Annual household income</td>
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</tbody>
</table>
Housing Stability and Recovery

• Disaster survivors often displaced to areas close to their homes and communities for several days or weeks

• Katrina was unusual in that residents frequently spent months displaced from their homes spanning across several states

• Unstable housing can delay recovery and undermine financial, emotional, and educational resilience

• How much time passes before affected residents are able to find stable housing following a major disaster

• Applying methods from survival analysis to examine the relationship between time to stable housing and certain explanatory variables
Kaplan-Meier Survival Estimate

Time to Stable Housing

1,082
Age: Kaplan-Meier Survival Estimate

- 18-34
- 35-49
- 50-65
- 66+

Time to Stable Housing

0 250 500 750 1000 1250 1500 1750

0.00 0.25 0.50 0.75 1.00

1,355
1,143
838
1,021
G-CAFH Household Income by Age

Household Income

Wave 18-35 36-54 55-64 65+

10-20K

20-35K

12/13/2018
MCS Score by Age

G-CAFH Mental Health by Age
G-CAFH Physical Health by Age

Physical Health

Wave
18-35 36-54 55-64 65+

PCG Score

Wave
1 2 3 4 5

46

50

42

38

34

12/13/2018
G-CAFH Social Support by Age

Social Support

Wave 18-35 36-54 55-64 65+

Social Support

Wave

12/13/2018
G-CAFH Housing Stability by Age

Housing Stability

Time to Stable Housing

Housing Stability

18-35
36-54
55-64
65+
G-CAFH Self-Reported Recovery by Age

Self-Reported Recovery

Wave 18-35 36-54 55-64 65+

Better
Same
Worse

Wave

12/13/2018

39
Path Analysis of Self-Reported Recovery (55-64)

hsincome → housing: .252

housing ← recov: .900

pcs

mcs

soc_supp ← recov: .952

soc_supp ← mcs: .971
Path Analysis of Self-Reported Recovery (65+)

- hsincome → housing: 0.264
- housing → recov: 0.937
- pcs → recov: 0.281
- mcs → recov: 0.473
- soc_supp → recov: 0.999
• Estimated 80% increase in the older adult population over the next 20 years
• Collision course between natural environment and built environment
• The vulnerability of this aging population to future environmental hazards will surely increase as sea levels rise and greater numbers flock to settle along the coastal regions
• Additional policy efforts are needed to ensure permanent housing is established quickly to enable recovery of older adults
• Community-dwelling, living alone, mobility issues, caregivers, retirement homes, etc.
• Next steps include identifying unique drivers of recovery among young-old, mid-old and old-old
Thanks to the PiR2 team:

David Abramson (PI, PiR2 Director)
Rachael Piltch-Loeb (Doctoral Candidate)
Sarah Friedman (PiR2 Data Scientist)
Yoon Soo Park (Biostatistician)
Thank you!

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