

Reducing Community and Nursing Home Exposure to Climate Change Related Disasters

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- Disclosures: None
- Agenda:
 - Introduction to Safe Haven
 - What we can learn from Prisons
 - What's Next

Two Decades of Research Related Disasters

- Collaboration between Brown University, University of South Florida, Arizona State
 - University of Massachusetts (previously at Brown University)
 - David Dosa, Cassandra Hua, Vincent Mor
 - University of South Florida
 - Lindsay Peterson, Debra Dobbs, Kathryn Hyer
 - Arizona State University
 - Ross Andel
 - Others
 - Kali Thomas (JHU); Julia Skaraha (U Vermont); Dylan Jester (Stanford), Natalia Festa (Yale)

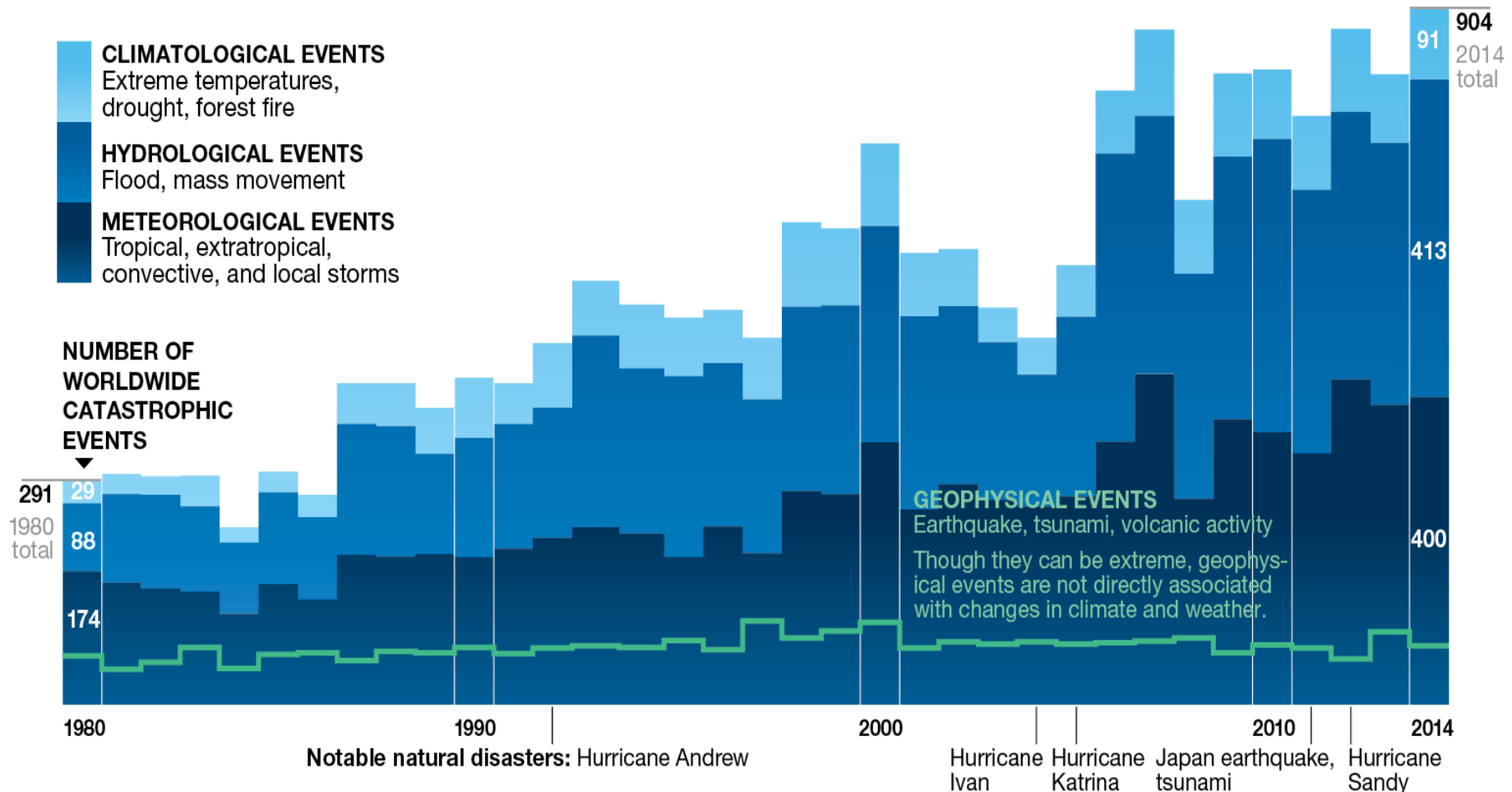
Climate Change: The Next Big Thing



Hurricane Katrina



Climate Change: Catastrophes on the rise



Elderly are at heightened risk

- Comorbidities such as congestive heart failure, diabetes and COPD
- Mobility issues (ADL deficiencies)
- Cognition (Dementia)
- **Medications!!!!**

Background on SafeHaven Projects



- Kaiser Family Foundation grant
- Interviewed Administrators of Nursing Homes about their experiences during Katrina.
 - Difficulty securing reliable transportation
 - Difficulty retaining adequate staffing
 - Difficulty Evacuating

Older Adults with Unmet Needs

- 21% of older adults do not drive or lack access to a vehicle
- 48% of older adults age 65+ reporting needing help with 1 or 2 ADLs did not receive ANY help
- 11% of older adults age 65+ reporting needing help with 3+ ADLs did not receive ANY help
- 66% of older adults age 65+ reporting needing help with 1 or more IADLs did not receive ANY help

Source: Government Accounting Office

On the difficulties of evacuating:

- ““When you start moving [the residents] out, it’s a tremendous burden, its very hard. They’re pulled and tugged. Their bodies are contorted into those buses. They’re so heavy. It’s not an easy thing to do to get these people on charter busses when they’re wheelchair bound. No one has any idea how much strength it takes to do that. And how much of a toll it takes on the residents just to do that to them”—New Orleans NH Administrator

Source: Dosa D, Grossman N, Wetle T, Mor V. To evacuate or not to evacuate: Lessons learned from Louisiana nursing home administrators following Hurricanes Katrina and Rita. *J Am Med Dir Assoc* 2007;8:142–149.

SafeHaven 1

- *Strategic Approach to Facilitating Evacuation by Health Assessment of Vulnerable Elderly in Nursing Homes (Safe Haven Study)*--NIA Grant: AG#30619
 - Awarded to Brown University and The University of South Florida in October 2008
- Aims of the Grant:
 - **Aim 1:** To describe and compare nursing homes which evacuated or sheltered in place during hurricanes and to describe the 30 day, 3-month, and 6-month mortality and morbidity outcomes that residents experienced.
 - **Aim 2:** To estimate the effect of the decision to evacuate or shelter in place in the face of hurricane warnings on the mortality and morbidity outcomes of nursing home residents.

To Evacuate or Not to Evacuate?



- NH Residents are at profound risk for morbidity and mortality related to Hurricane Exposure
- Risk greater among those with significant ADL limitations and among those with Dementia
- Identified evacuation as an independent risk factor for mortality

SafeHaven 2

- *Strategic Approach to Facilitating Evacuation by Health Assessment of Vulnerable Elderly in Nursing Homes II(Safe Haven Study)*--NIA Grant: RO1 AG060581: Awarded to Brown University and The University of South Florida in Sept 2018

Aim 1:To compare NHs which evacuated or sheltered in place during Hurricanes Harvey and Irma and:

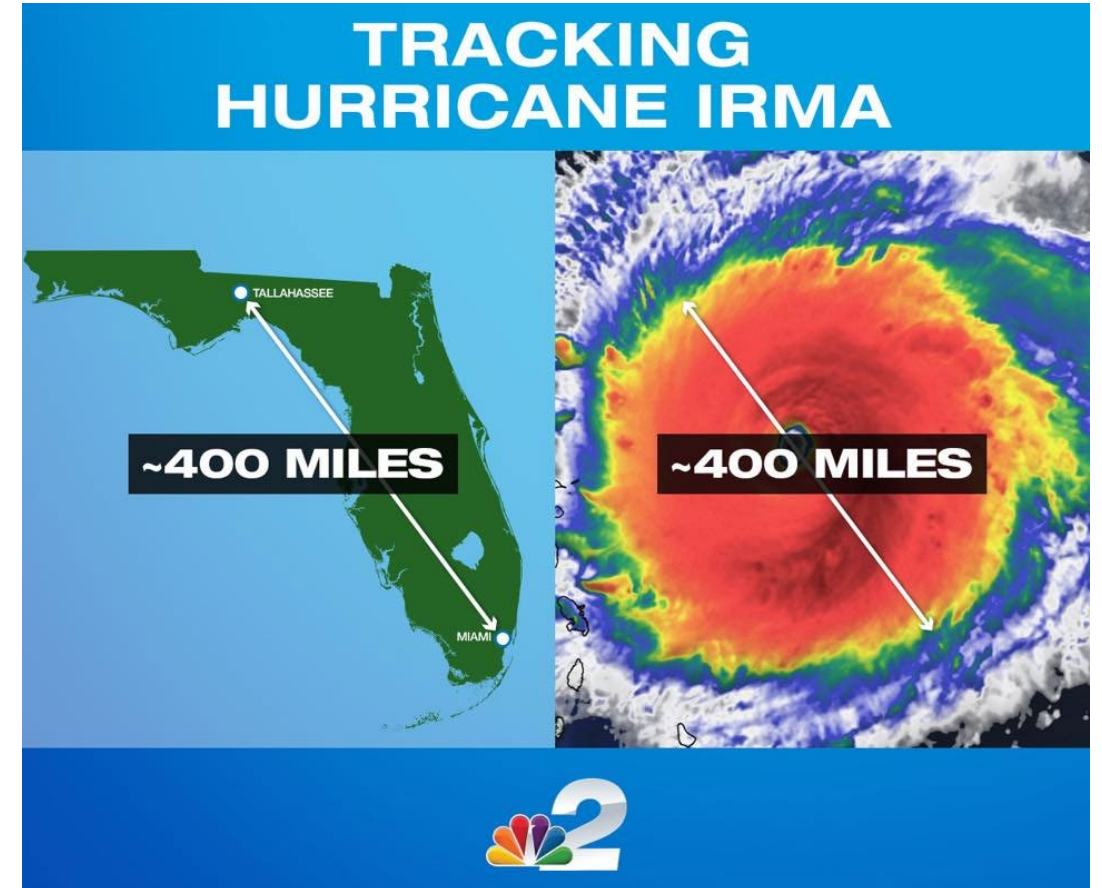
- a) Describe the 30-day and 90-day mortality and morbidity outcomes that NH residents experienced.
- b) Estimate the effect of the decision to evacuate or shelter in place in the face of hurricane warnings on the mortality and morbidity outcomes of NH residents.
- c) Determine the effect of impaired cognitive status on the outcomes of NH residents who evacuate or shelter in place during Hurricane disasters.

Aim 2: To describe the 30- and 90-day mortality and morbidity (e.g. hospitalization, transfer to nursing home) of residents residing in AL communities during Hurricane Harvey and Irma.

Aim 3: To interview and conduct focus groups with AL administrators or owners at small (<25 beds) and large (>25 bed) communities and NH administrators to better understand the reasons for and impact of evacuation and sheltering in place in those communities.

Hurricane Irma

- Category 4 storm made landfall on Sept. 10, 2017 at Cudjoe Key, Florida with windspeeds of 130 mph
- One of the largest storms on record at 400 miles across
- 80+ fatalities reported by federal officials including at least 12 at Hollywood Hills Nursing Home



SafeHaven II Products

- 12 papers published to date
- Additional 2 in preparation



Association Between Exposure to Hurricane Irma and Mortality and Hospitalization in Florida Nursing Home Residents

David M. Dosa, MD, MPH; Julianne Skarha, BA, BSc; Lindsay J. Peterson, PhD; Dylan J. Jester, BS; Nazmus Sakib, MS; Jessica Ogarek, MS; Kali S. Thomas, PhD, MA; Ross Andel, PhD; Kathryn Hyer, PhD, MPP

Abstract

IMPORTANCE Nursing home residents are at heightened risk for morbidity and mortality following an exposure to a disaster such as a hurricane or the COVID19 pandemic. Previous research has shown that nursing home resident mortality related to disasters is frequently underreported. There is a need to better understand the consequences of disasters on nursing home residents and to differentiate vulnerability based on patient characteristics.

OBJECTIVE To evaluate mortality and morbidity associated with exposure to Hurricane Irma, a Category 4 storm that made landfall on September 10, 2017, in Cudjoe Key, Florida, among short-stay (<90-day residence) and long-stay (≥90-day residence) residents of nursing homes.

DESIGN, SETTING, AND PARTICIPANTS Cohort study of Florida nursing home residents comparing residents exposed to Hurricane Irma in September 2017 to a control group of residents residing at the same nursing homes over the same time period in calendar year 2015. Data were analyzed from August 28, 2019, to July 22, 2020.

EXPOSURE Residents who experienced Hurricane Irma were considered exposed; those who did not were considered unexposed.

MAIN OUTCOME AND MEASURES Outcome variables included 30-day and 90-day mortality and first hospitalizations after the storm in both the short term and the long term.

RESULTS A total of 61 564 residents who were present in 640 Florida nursing home facilities on September 7, 2017, were identified. A comparison cohort of 61 813 residents was evaluated in 2015. Both cohorts were mostly female (2015, 68%; 2017, 67%), mostly White (2015, 79%; 2017, 78%), and approximately 40% of the residents in each group were over the age of 85 years. Compared with the control group in 2015, an additional 262 more nursing home deaths were identified at 30 days and 433 more deaths at 90 days. The odds of a first hospitalization for those exposed (vs

Key Points

Question Was exposure to Hurricane Irma associated with an increased risk of hospitalization and mortality among nursing home residents in the 30 and 90 days after the storm compared with a control group?

Findings In this cohort study of 61 564 nursing home residents exposed to Hurricane Irma and a control group of 61 813 nonexposed residents, the odds of a first hospitalization and mortality increased significantly at 30 and 90 days for those exposed. A long nursing home stay was associated with a greater risk for mortality compared with a short stay.

Meaning Findings suggest that prioritizing heightened emergency preparedness in disaster situations for nursing home residents is warranted.

+ Supplemental content


Author affiliations and article information are listed at the end of this article.

Key Findings to Date

- Considerable increases in mortality among NH population related to exposure to the hurricane
 - Mortality is severely undercounted
 - NH residents represent only a small portion of FL's population, yet our analysis showed more 30-day post-storm deaths (139 deaths) than CDC reported for the entire state (123 deaths)
- Hurricane Exposure Risk for AL residents is profound and potentially greater than NH. Als are not federally regulated
- Post Disaster care make a tremendous difference in event mortality(Power Loss, Restoration of Services, etc.)
- Disasters and old people do not mix!

What can we learn from prisons?

OMB No. 1121-0249 Approval Expires 03/31/2019

Form NPS-4A (Addendum)		MORTALITY IN CORRECTIONAL INSTITUTIONS 2018 STATE PRISON INMATE DEATH REPORT	U.S. DEPARTMENT OF JUSTICE BUREAU OF JUSTICE STATISTICS AND ACTING AS COLLECTION AGENT: RTI INTERNATIONAL
FORM COMPLETED BY:			
Name <input type="text"/>	Title <input type="text"/>		
Official Address <input type="text"/>	Telephone <input type="text"/>	<input type="text"/>	
City <input type="text"/>	FAX <input type="text"/>	<input type="text"/>	
State <input type="text"/>	Zip <input type="text"/>	E-mail <input type="text"/>	

Instructions for Completion

If no deaths occurred in 2018:

- You do not need to complete this form.

If you had more than one death in 2018:

- Make copies of this form for each additional death.
- Complete the entire form for each inmate death.
- Once your death records are complete, there are several ways to submit a death report:

ONLINE: Complete the report online at: <https://bjsmci.rti.org>

E-MAIL: bjsmci@rti.org

FAX (TOLL-FREE): (866) 800-9179

MAIL: RTI International, Attn: Data Capture
Project #: 0215015.001.300.117.102.100
5265 Capital Boulevard
Raleigh, NC 27690-1652

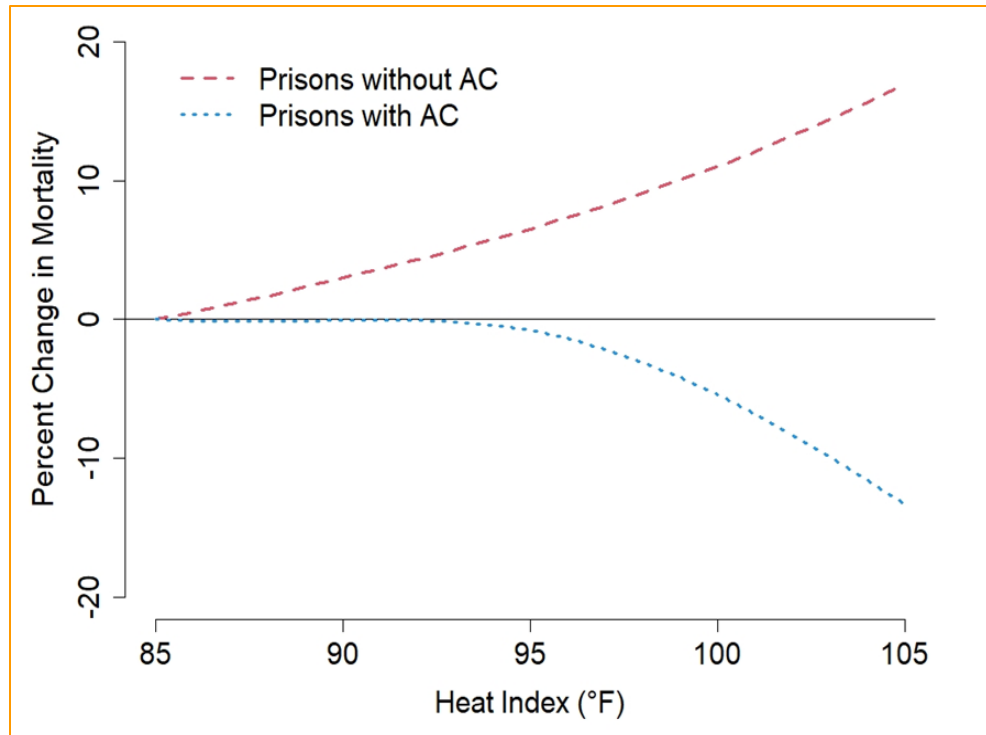
If you need assistance, contact the data collection team at RTI International toll-free at (800) 344-1387 or bjsmci@rti.org



What can we learn from prisons?

- We looked at death records of incarcerated individuals that died between 2001-2019 while in the custody of state or federal prisons
- We utilized a time-stratified case crossover design estimating the effect of extreme heat on mortality
- A 10°F increase was associated with a 5.2% (95% CI: 1.5%, 9.0%) increase in total mortality and a 6.7% (95% CI: -0.6%, 14.0%) increase in heart disease mortality.
- The cumulative effect of a 3 day-extreme heat wave was associated with a 22.8% (95% CI: 3.3%, 46.0%) increase in suicides.

Texas Prisons and Air Conditioning (2001-2019)



Percent change in mortality for 1°F increase above 85°F, 95% CI
Lag 0

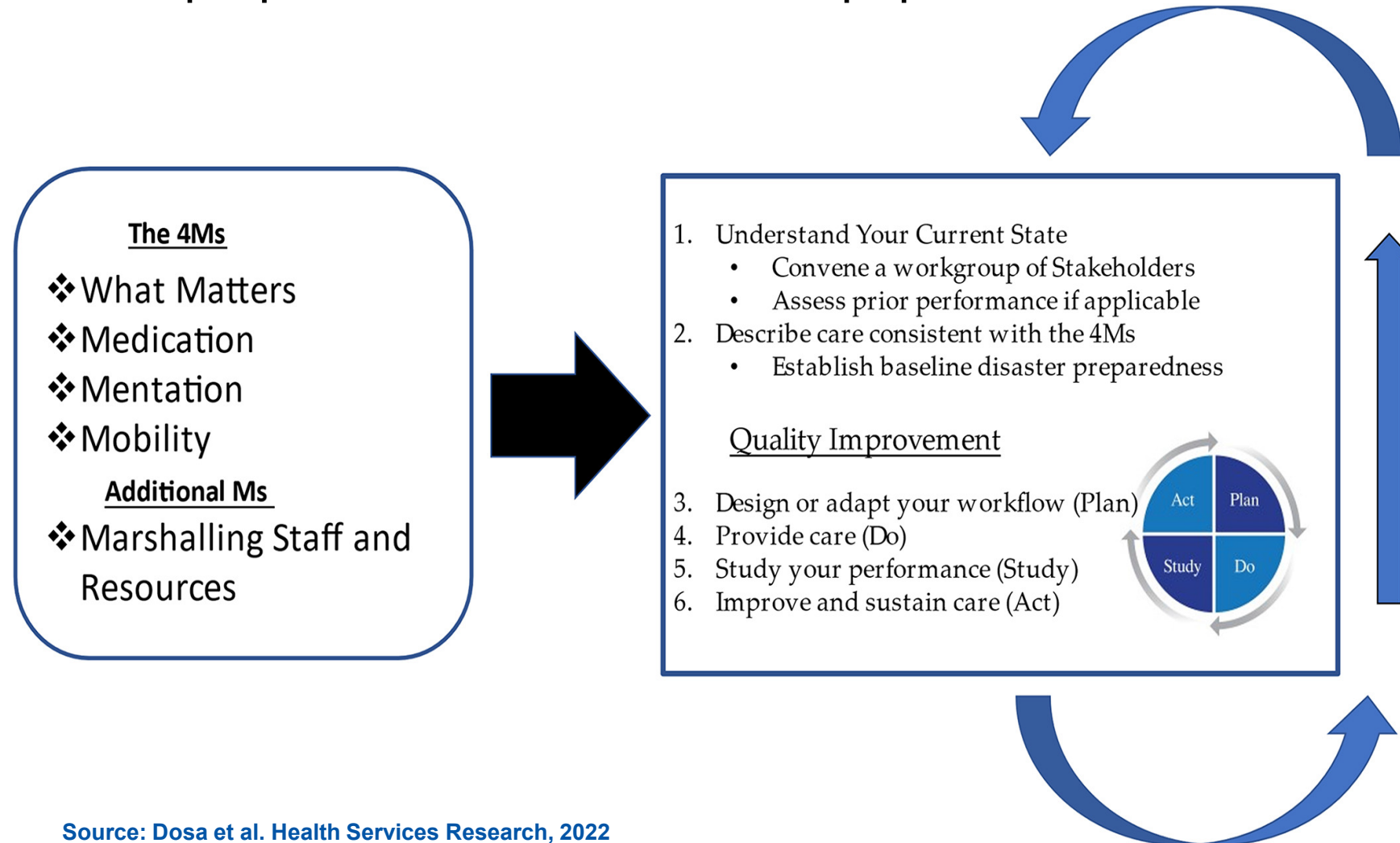
w/o AC	0.7% (0.1%, 1.3%)
with AC	-0.6% (-1.6%, 0.5%)

Source: Skarha et al; JAMA Open, 2022



So Now What...

Applying the age-friendly-health system 4M paradigm to reframe climate-related disaster preparedness for vulnerable populations





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Three Little Pigs Analogy

- Hardening Facilities to deal with increased climate change related disasters
- Collaborations with Structural Engineers,

o



Next Steps

- Qualitative Grant to cognitively test the IHI Age Friendly Paradigm
- Implementation Study to develop toolkits for NH/AL Disaster Preparedness
- Moving beyond “All or Nothing” Evacuation/Sheltering
- Hardening Facilities (Three Little Pigs)
- Importance of Rapid Cycle funding (Getting into the field quickly)

Questions?



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