12 Years Later: The Resilience in Survivors of Katrina (RISK) Project

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SEPTEMBER 20, 2019

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Plan for the Talk

- Overview of the project and key findings
  - What does recovery look like 12-14 years later?
- Some thoughts about disasters, climate change and social science research.

Funding Support

- NICHD (NIH)
  - RO1 HD046162 PO1 116353
  - R01 HD057599
- National Science Foundation (NSF)
- MacArthur Foundation
- Robert Wood Johnson Foundation Investigator Awards in Health Care Policy
- Harvard Catalyst
  - National Center for Research Resources and the National Center for Advancing Translational Sciences, NIH Award 8UL1TR000170-05

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Opening Doors Demonstration Project

Becoming a Disaster Researcher

RISK sample baseline characteristics

- To qualify for the *Opening Doors Demonstration* in Louisiana, students had to be:
  - Between the ages of 18-34
  - Parent of at least one dependent child under the age of 18
  - Family income < 200% of poverty level
  - GED or High School diploma
  - No degree or occupational certificate from an accredited college or university

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RISK sample baseline characteristics

- Baseline characteristics of the *Opening Doors* Louisiana sample:
  - 92% female
  - 85% black
  - Average age 26
  - Average age of children 3 years
  - 98% had ever worked
  - 52% currently employed
  - 71% receiving government benefits (mostly food stamps)
  - Median monthly income ($619.85)
  - A disproportionate number (40%) come from the 9th Ward

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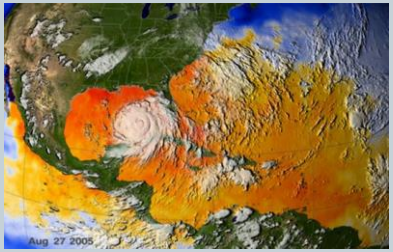
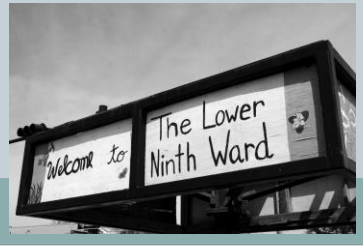
Hurricane Katrina – 2005 Timeline



- August 25th
  - Arrives in the Gulf of Mexico
- August 28th
  - Increased to Category 5 with winds at 175 mph
  - Mandatory evacuation of New Orleans City
  - Approx. 85% of New Orleans City evacuates (Groen and Polivka 2010)
- August 29th
  - Landfall in Louisiana as Category 3 with winds at ~125 mph
  - 53 levee breaches produce extensive flooding
- September 2nd
  - 80% of New Orleans City flooded, with water reaching 20 feet

Hurricane Katrina - overview

- > 1,800 deaths
  - The majority of which were in Louisiana
- Destroyed 217,000 homes
  - 60% of housing stock in the City of New Orleans was destroyed
  - 30% of housing stock in the New Orleans MSA (city and inner suburbs) was destroyed
- Displaced > 600,000 people in Louisiana
  - > 85% of population in the City of New Orleans evacuated
  - The City of New Orleans lost 29.1% of its population between 2000 and 2010



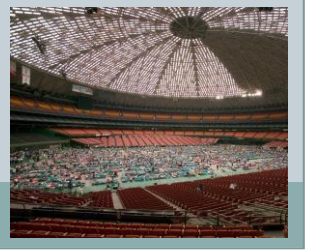
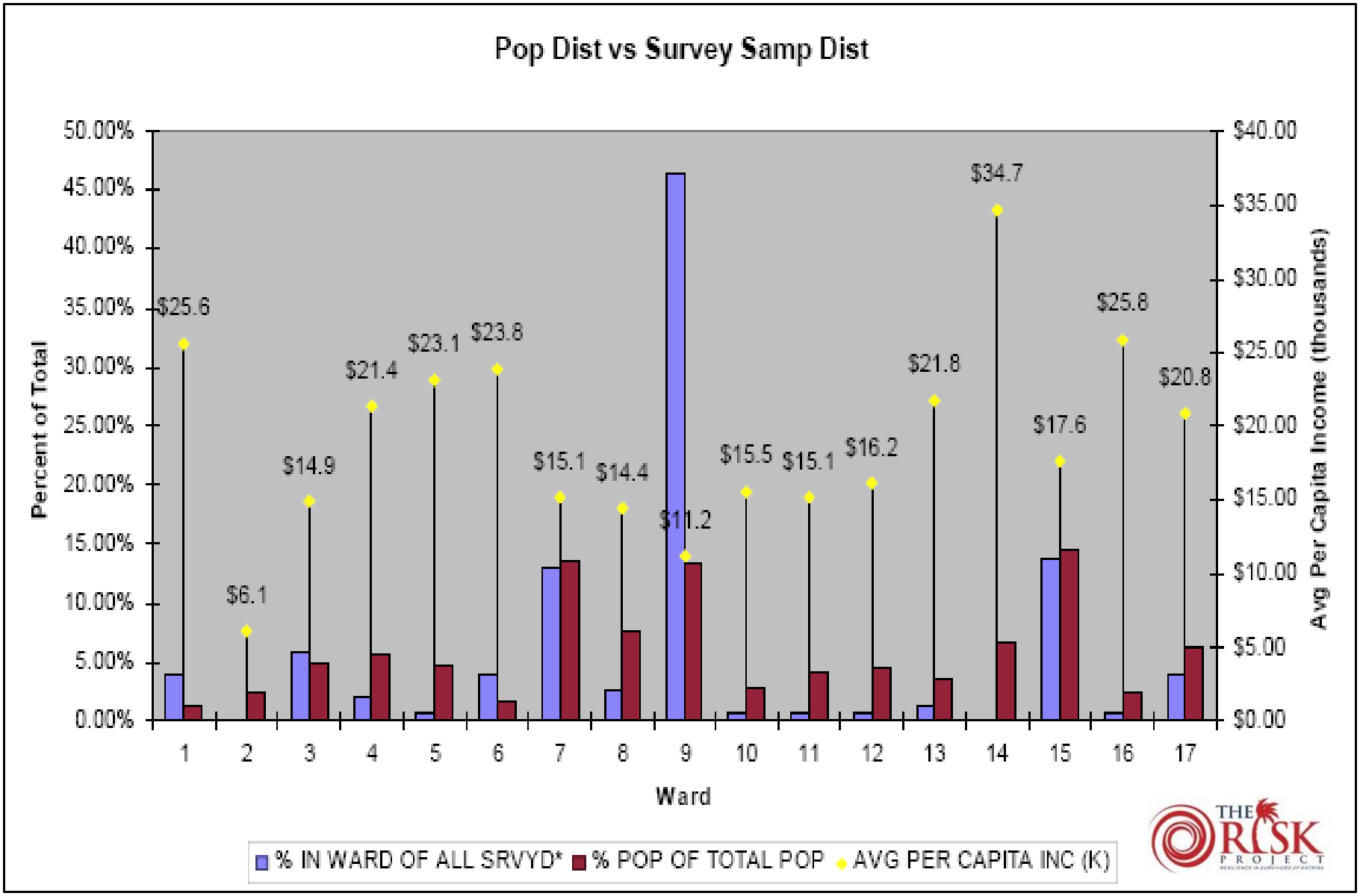


Figure 1: Distribution of survey sample across wards (pre–Katrina)



Resilience in Survivors of Katrina Study (RISK)

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Overview

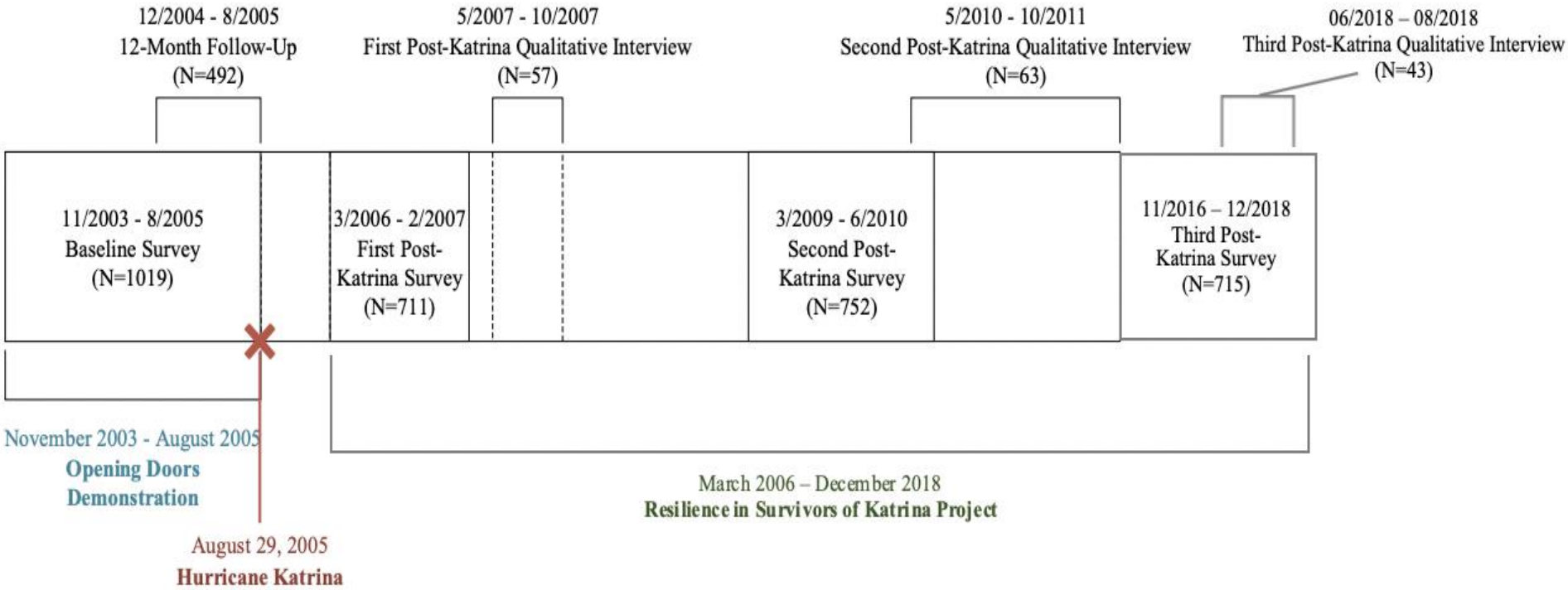
The Resilience in Survivors of Katrina Project ("RISK") Project (Mary Waters, PI, Jean Rhodes and Beth Fussell, co-PI's) is a longitudinal study of low-income parents who lived in New Orleans at the time of Hurricane Katrina. Starting in 2003—before the hurricane occurred—1,019 low-income parents from New Orleans enrolled in a study designed to increase educational attainment among community college students. The study measured participants' economic status, social ties, and mental and physical health prior to the hurricane. Although Hurricane Katrina disrupted the study in August of 2005, it provided an extremely rare opportunity to study the consequences of a disaster for the

Projects

Post Traumatic Growth
As part of the Risk Project, our team has been researching self reported positive psychological changes that are attributed to having experienced a trauma. We have examined the relationship of posttraumatic growth to posttraumatic stress, global psychological distress, religiosity and …
Continue reading →

Child Outcomes
Children who were exposed to Hurricane Katrina faced a range of stressors, including the loss of loved ones and threats to their physical safety. In the years since the disaster, many have faced ongoing stressors

Latest Videos


12/2004 - 8/2005
12-Month Follow-Up
(N=492)
5/2007 - 10/2007
First Post-Katrina Qualitative Interview
(N=57)
5/2010 - 10/2011
Second Post-Katrina Qualitative Interview
(N=63)
06/2018 – 08/2018
Third Post-Katrina Qualitative Interview
(N=43)
11/2003 - 8/2005
Baseline Survey
(N=1019)
3/2006 - 2/2007
First Post-Katrina Survey
(N=711)
3/2009 - 6/2010
Second Post-Katrina Survey
(N=752)
11/2016 – 12/2018
Third Post-Katrina Survey
(N=715)
November 2003 - August 2005
Opening Doors
Demonstration
March 2006 – December 2018
Resilience in Survivors of Katrina Project
August 29, 2005
Hurricane Katrina

Response Rates by Wave

Wave	Baseline 2004-5	12M 2005	PK1 2005-6	PK2 2009-10	PK3 2016-2018
N	1019	492	711	752	715
Response rate			(69.8%)	(71.7%)	(75.9%)
					(dropped men)

Of the original 1, 019 respondents, 938 or 92.1% of respondents were surveyed at least once since baseline.
9 respondents had died by 2016-2018.

RISK Collects:

Psychological Health

- Psychological distress (K-6 scale); Perceived stress scale (PSS); PTSD symptoms (IES-R);Post-traumatic Growth (PTG);Scales for optimism, self-esteem and goal and life engagement

Physical health

- Self-rated health status; Chronic conditions (e.g. asthma, diagnosed depression, etc.); Body weight, exercise activities ; Tobacco use ; Alcohol use, binge drinking and illicit drug use; Use of medical care; reasons for lack of use of medical care

Social Resources

- Current marital status; family structure; Social support (Social Provisions Scale); Social trust (General Social Survey scale); Civic engagement (volunteering, community service); Attendance at religious services/importance of religion; Effects of hurricane on church and church membership; Social network composition and attributes

Socioeconomics and education

- School enrollment by month; Plans for continuing education in the future; Employment ; Current employment, including work hours, earnings; Total family income in past month; Current receipt of government transfers (e.g., TANF, food stamps, etc.); Housing tenure, residence in public housing, residential location; Neighborhood perceptions (safety, amenities, satisfaction, preferences)

Child –related outcomes

- Problems with child care; spending on childcare; Children's school history ; Child behavior problems (maternal report)

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Gaps in the Literature

- pre-disaster data
  - Health and Mental Health
- multi-wave longitudinal research
- multilevel research
- mixed-methods research

Studies to Date
Available at www.riskproject.org

- College Re-enrollment
- Pet Loss
- Pre-disaster social support
- Child-related stressors
- Natural mentors
- Intimate relationships
- Interviewer race
- Decisions to evacuate
- Resilience Trajectories
- Children's Functioning
- Combining Quantitative and Qualitative Methods
- Religion
- Barriers to Community College Completion
- Geographic Mobility
- Relocation Decision Making
- Neighborhood Attainment
- Employment Trajectories
- Changes in BMI
- Post Traumatic Growth
- Conservation of Resources Theory
- Transition to Adulthood

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Trauma Exposure

Katrina Traumas	Percent
Did not have enough fresh water to drink	26
Did not have enough food to eat	35
Felt your life was in danger	32
Didn’t have medicine you needed	32
Needed medical care and couldn’t get it	30
With a family member who needed medical care and could not get it.	33
Didn’t know if child/children were safe	23
Didn’t know if other family members were safe	77
Were any of your relatives or close friends killed because of Hurricane Katrina or Rita?	31
Mean # Katrina Traumas	**3.14**

Additional Measures of Exposure to Katrina

- Home Damage
- Flood Depth

Exposure

- The six items most strongly associated with poor functioning were
  - bereavement
  - property loss
  - pet loss
  - lack of food
  - lack of medicine
  - not evacuating

Chan, C. & Rhodes, J. (2014). Measuring exposure in Hurricane Katrina: A meta-analysis and an integrative data analysis. *PLOS ONE*. Vol. 9 Issue 4, p1-15. 15p. DOI: 10.1371/journal.pone.0092899.

Voices of Katrina (truncated)

- IT WAS VERY DEVASTING. ESPECIALLY IN NOT HAVING FOOD OR WATER
- MY DAD WAS ON EMERGENCY RESPONSE TEAM AND WE DIDN'T KNOW WHERE HE WAS
- HAD A BABY IT WAS HARD. HELICOPTERS DIDN'T PICK THEM UP WERE STRANDED ON THE ROOF
- IT WAS HORRIBLE FOR YOU BECAUSE MY MOM WAS TRAPPED IN THE ATTIC FOR 2-3 DAYS
- WE WERE STRANDED ABOUT 2 DAYS WITH MY 3 KIDS IN OUR CAR BECAUSE THE TRAFFIC
- IT WASA LIVING HELL/NOT HAVING ANYTHING TO EAT OR DRINK/WATCHING PEOPLE SUFFER
- IT WAS TERRIBLE/SLEEP ON THE STREET SLEPT IN THE CAR FOR ONE NITE
- BABY WAS BORN AT 26 WEEKS ON ROOF OF HOUSE SURROUNDED BY WATER
- IT WAS VERY SAD, I HAD FAMILY MEMBERS WHO NEEDED MEDICINES AND THEY COULD NOT GET
- I WAS HYSTERICAL, DIDN'T SLEEP FOR FIVE DAYS, WAS ON A BRIDGE, TERRIFIED FOR MY LIFE

Health-related research

- Post-traumatic stress disorder symptoms and health
  - Avoidance based coping predicted asthma attacks
  - Intrusive reminders predicted Migraine/frequent headache

Arcaya, M., Lowe, S., Asad, A.L, Subramanian, S.V., Waters, M.C., & Rhodes, J. (2017). Association of Post-Traumatic Stress Disorder Symptoms with Migraine and Headache after a Natural Disaster. *Health Psychology*. .

Arcaya, M. C., Lowe, S. R., Rhodes, J. E., Lowe, Waters, M. C., & Subramanian, S. V.(2014). Association of PTSD symptoms with asthma attacks among Hurricane Katrina survivors. *Journal of Traumatic Stress*

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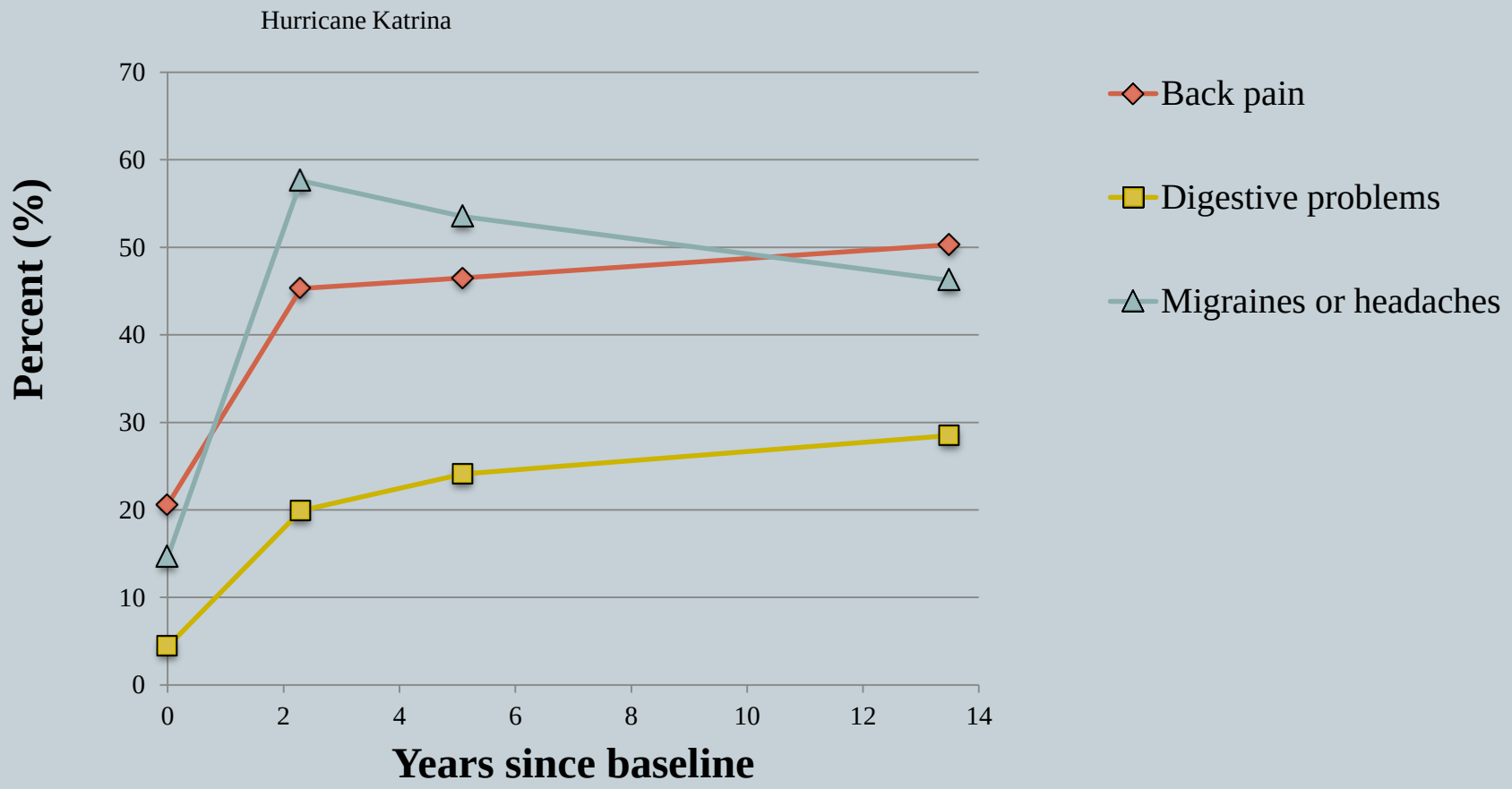
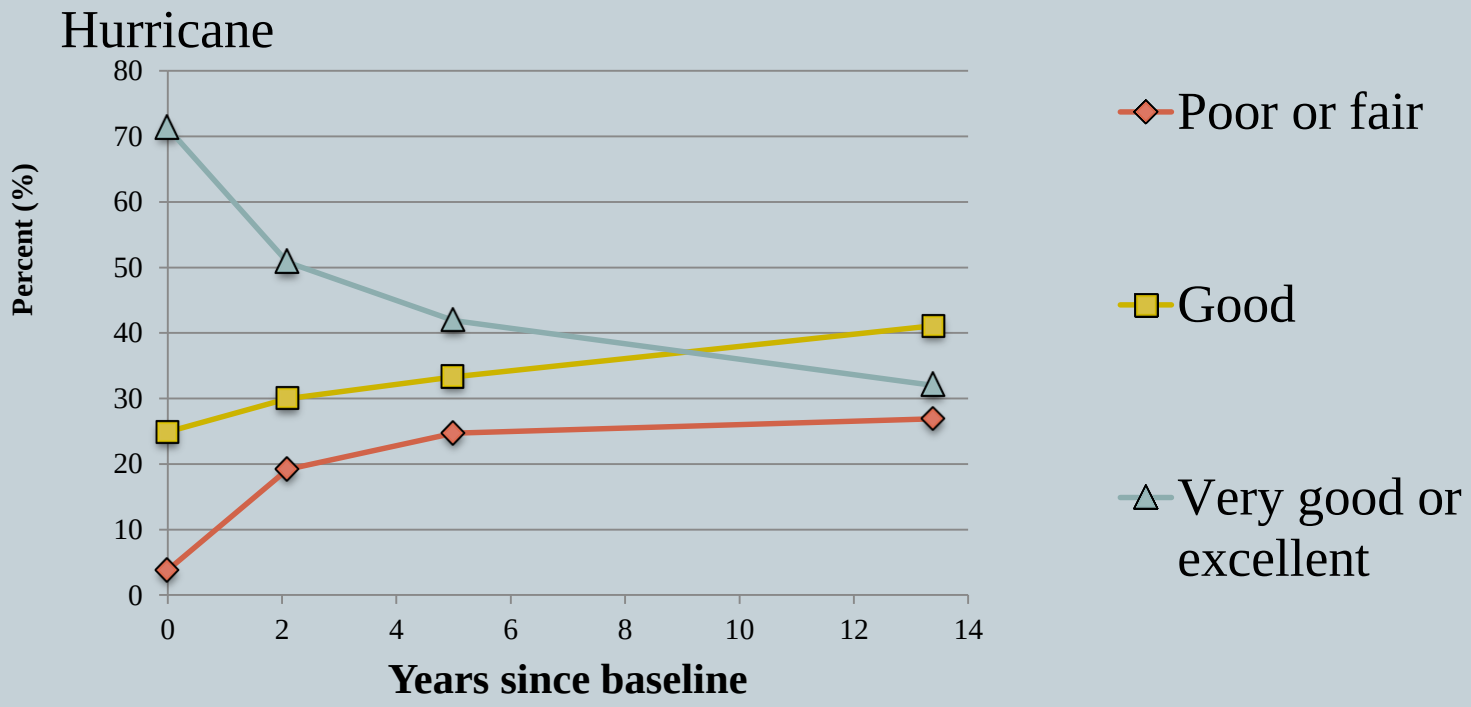
Physical Health trajectories

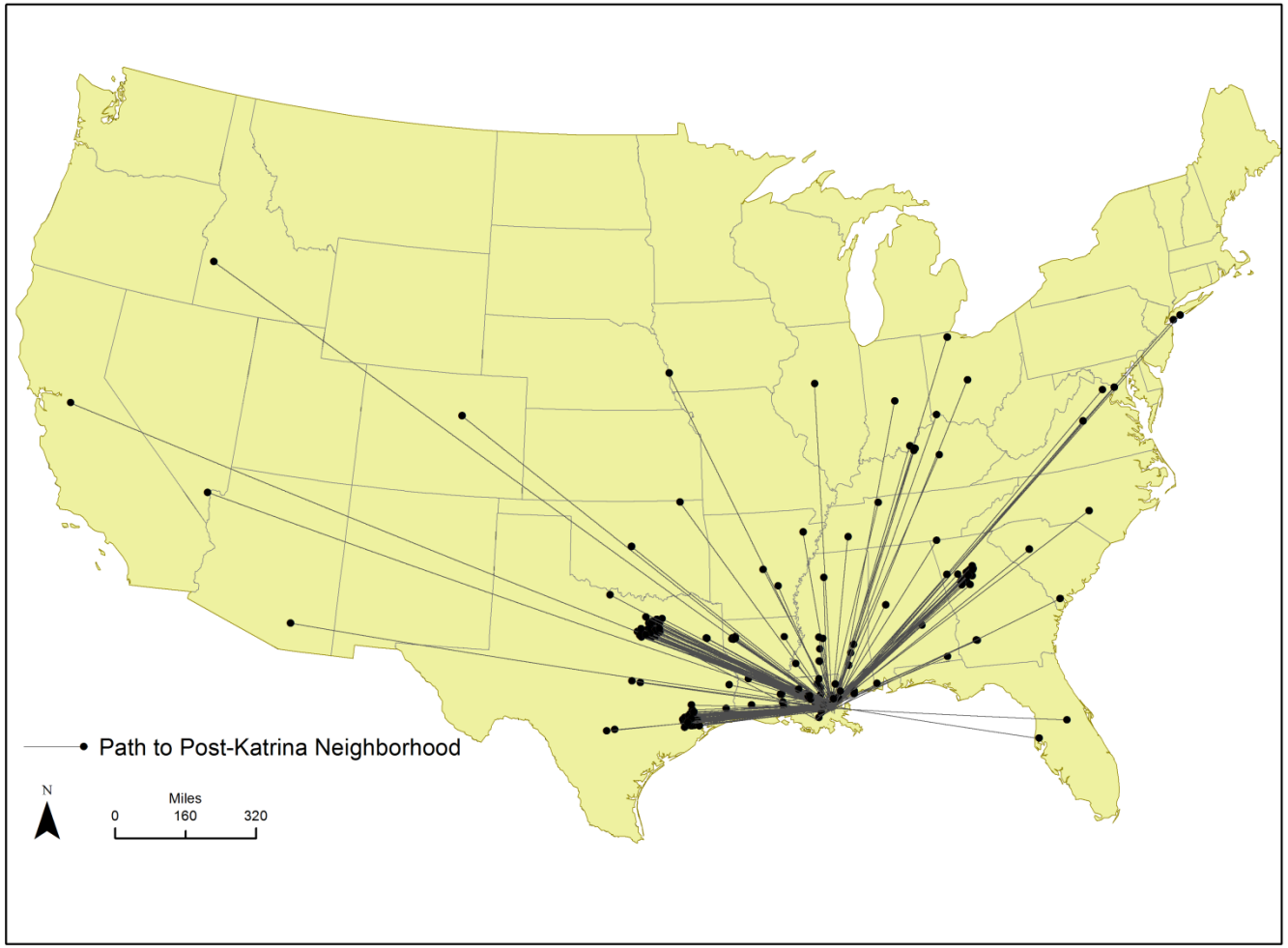


Self Rated Physical Health

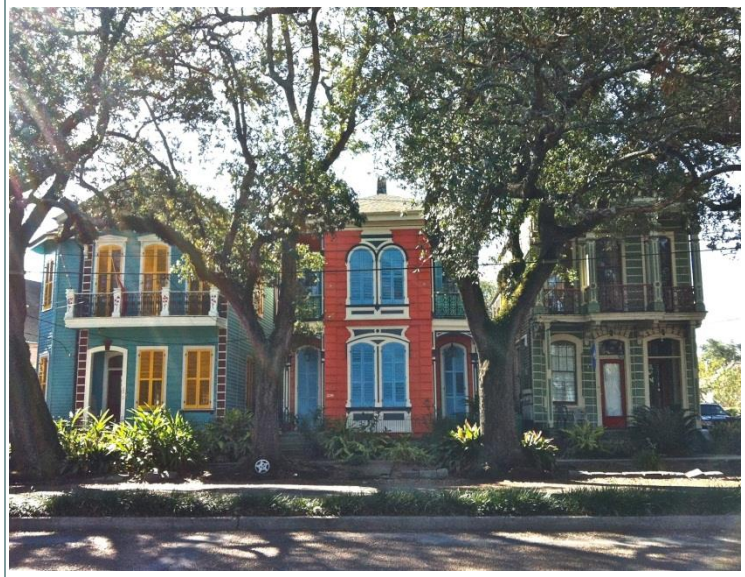


Percent reporting poor or fair, good, and very good or excellent health in each survey

Neighborhood effects on health



New Orleans



Neighborhood effects on BMI

- Participants moved to areas that were 1.5 standard deviations (SD) more sprawling than New Orleans, on average.

- Each SD change in sprawl was associated with 1.49 unit increase in BMI

Arcaya, M. C., Subramanian, S. V., Rhodes, J. E., & Waters, M. C. (2014). The role of health in predicting moves to poor neighborhoods among Hurricane Katrina survivors. *Proceedings of the National Academy of Science*, *111*(46), 16246-16253

Short- and Long-term Mental Health

- PTSS – Post-Traumatic Stress Symptoms (IES-R)
- PD – Psychological Distress (Kessler-6)
- SMI – Serious Mental Illness (Kessler-6)

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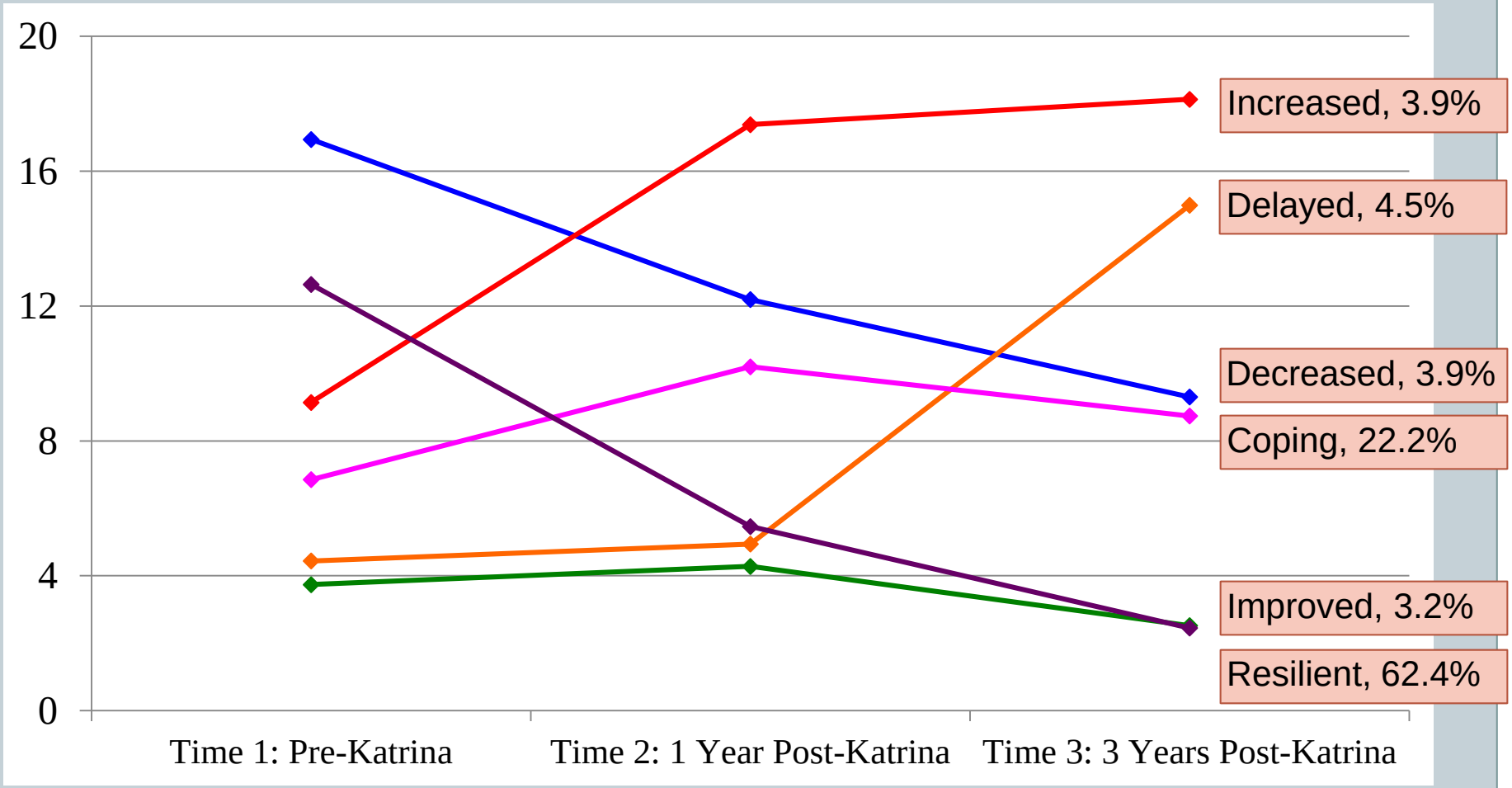
1-3 Years Later: Mental health effects

- Prevalence of serious mental illness doubled from 6.9% to 13.8%

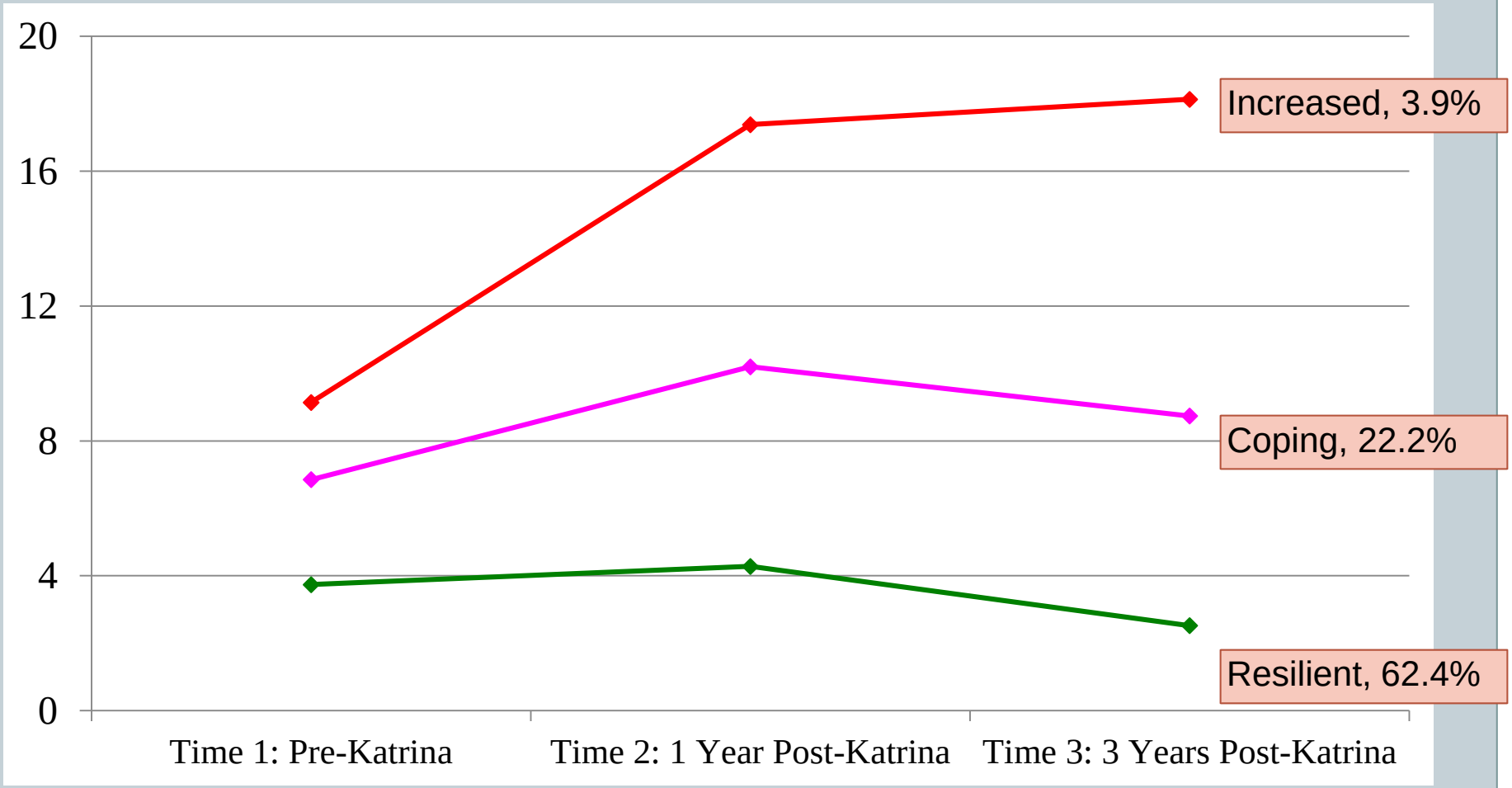
- Nearly half (47.9%) of respondents exhibited probable PTSD post Katrina.

Lowe, S. R., & Rhodes, J.E.(2013). Trajectories of psychological distress among low-income,female survivors of Hurricane Katrina. *American Journal of Orthopsychiatry, 83*(2-3), 398-412.

Six Trajectory Solution:1-3 years



Key Finding 1:
The Role of Pre-Disaster Functioning



Predictors of Resilience vs. Other Trajectories

- Some of (but not all) the "usual suspects"
  - Pre-Katrina mental health
  - Exposure to fewer hurricane-related stressors
  - Fewer experiences of bereavement
  - Higher social support

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5 Years Later Findings

- *Predictors of PD and PTSD*
  - Katrina-related home damage
  - Exposure to traumatic events
  - Lower earnings
  - Less social support

Paxson, C., Rhodes, J., Waters, M. & Fussell, E. (2012). Five years later: Recovery from posttraumatic stress and psychological distress among low-income mothers affected by Hurricane Katrina. *Social Science and Medicine, 74*(2), 150-157

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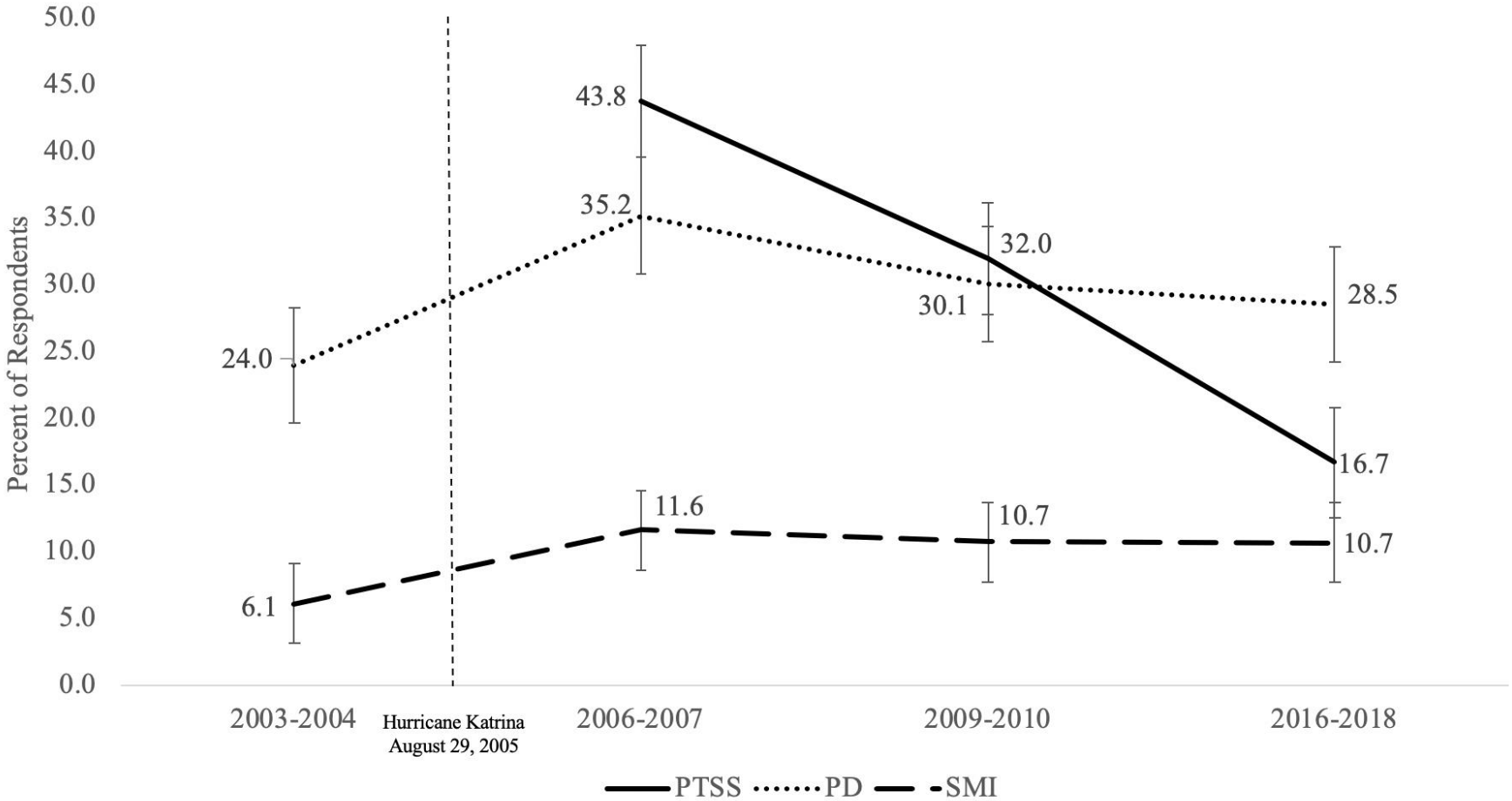
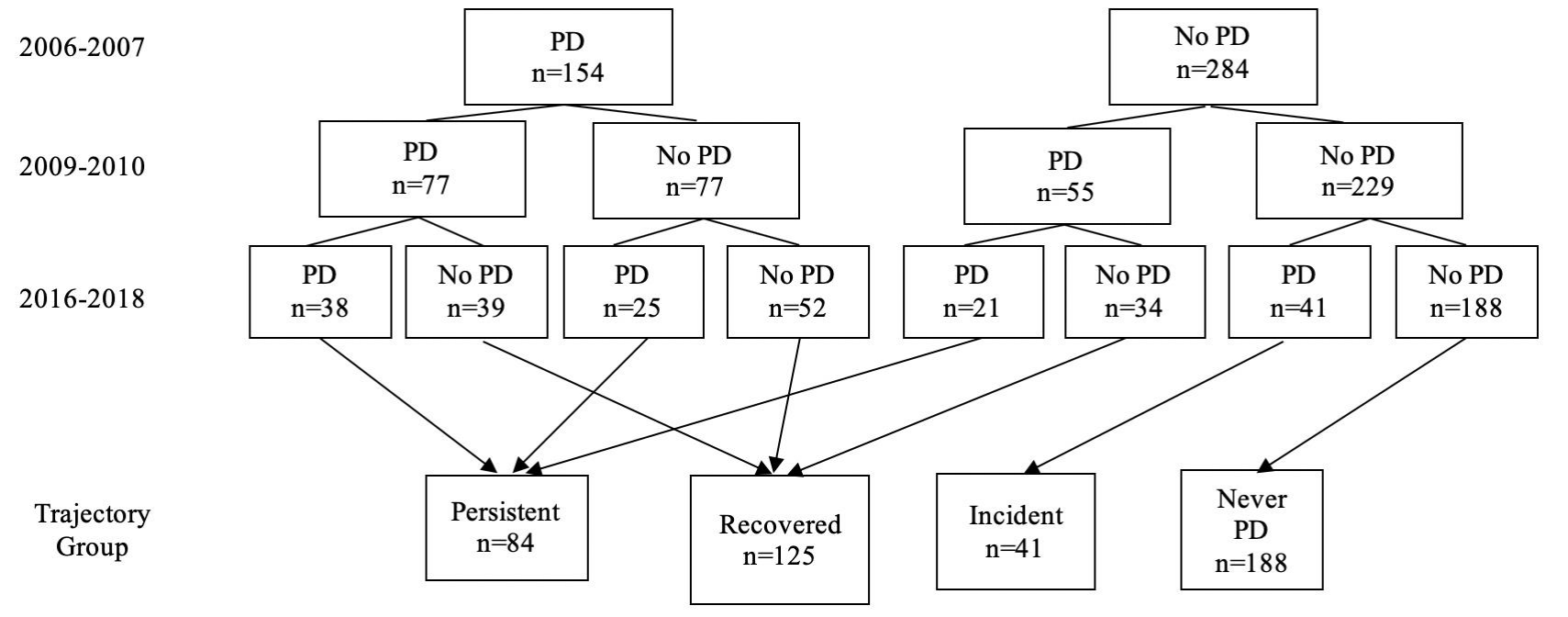
12 Years Later Findings (N = 438)

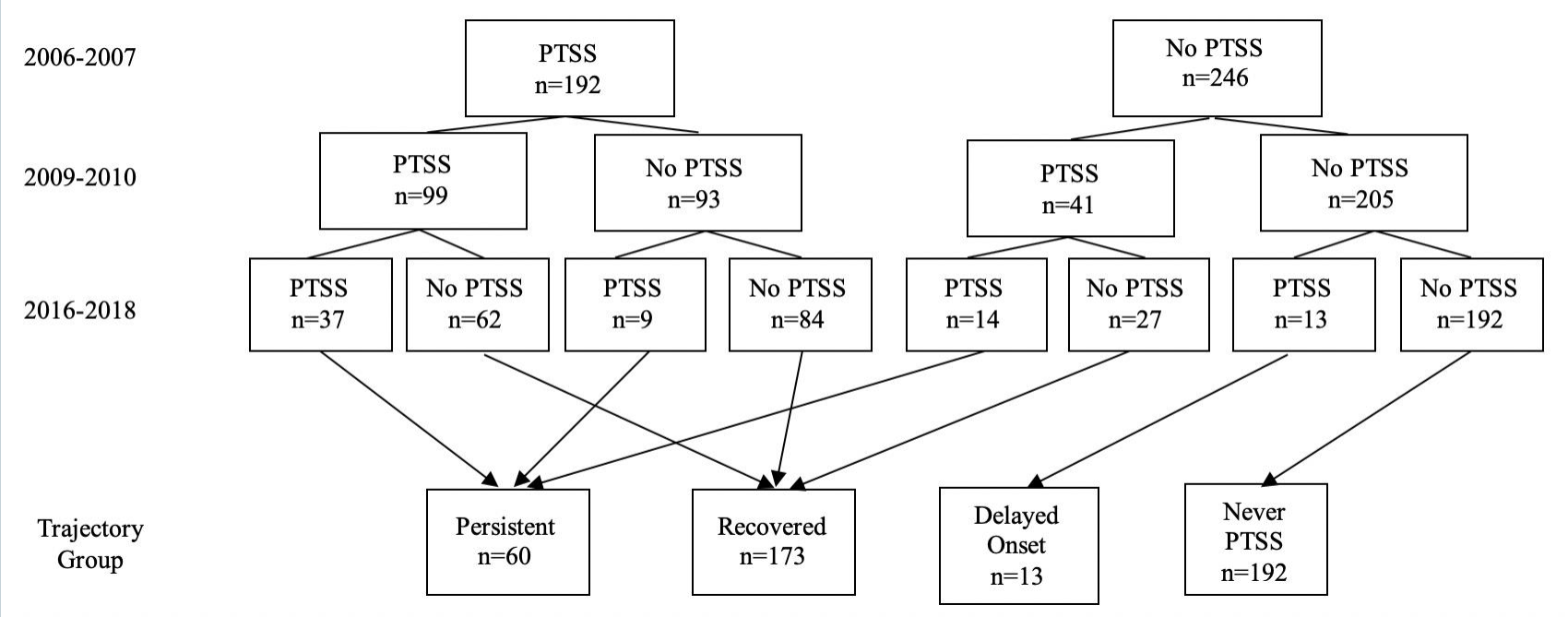


Raker et al. (2019). Twelve years later: Recovery from posttraumatic stress and psychological distress among low-income mothers affected by Hurricane Katrina. *Manuscript under review*

Within Respondent Transition in PD (n=438)



Within Respondent Transition in PTSS (n=438)



Results – 12 Year Follow-Up (2016-2018)

- Multinomial Logistic Regression: For each wave, relative risk ratios of (1) PTSS alone, (2) PD alone, & (3) PTSS and PD, relative to having neither PTSS nor PD.

No relationship between sociodemographic variables and PTSS and PD in 2016-2018

- Time to follow-up (months); baseline: age, partnership status, race, number of children, earnings before hurricane

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Results – Third Follow-Up (2016-2018)

Relative to having neither PD nor PTSS, net of other covariates…

- Pre-K PD increases risk of PTSS & PD by 4.61 (p.001)
- Trauma score increases risk of PTSS & PD by 1.26 (p.05)

Results – Within-Respondent Trajectories

Multinomial Logistic Regression: For each condition, relative risk ratios of (1) never, (2) delayed, (3) recovered, (4) persistent

PTSS Trajectories

- Black = 3X more likely to be persistent (vs. never)
- Age = 10% more likely to be recovered (vs. never)
- Bereavement = 2X more likely to be persistent (versus never)
- Trauma Score = 15% more likely to be persistent (vs recovered or incident)
- Pre-K PD = 3x increased likelihood of all trajectories (vs. never)
- Home damage = no associations

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Conclusions (12 -13 years out)

- Mental health problems declined but remained high in our sample
  - 1 in 6 have PTSS 12 years later
- At each wave, Pre-K PD and Traumatic Events were strongest predictors of PTSS & PD
- Housing damage was very consequential early on for PTSS but not in long-term for either PTSS or PD

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Thank you!

Riskproject.org