Why Civil and Social Infrastructure Should be In Your Toolkit

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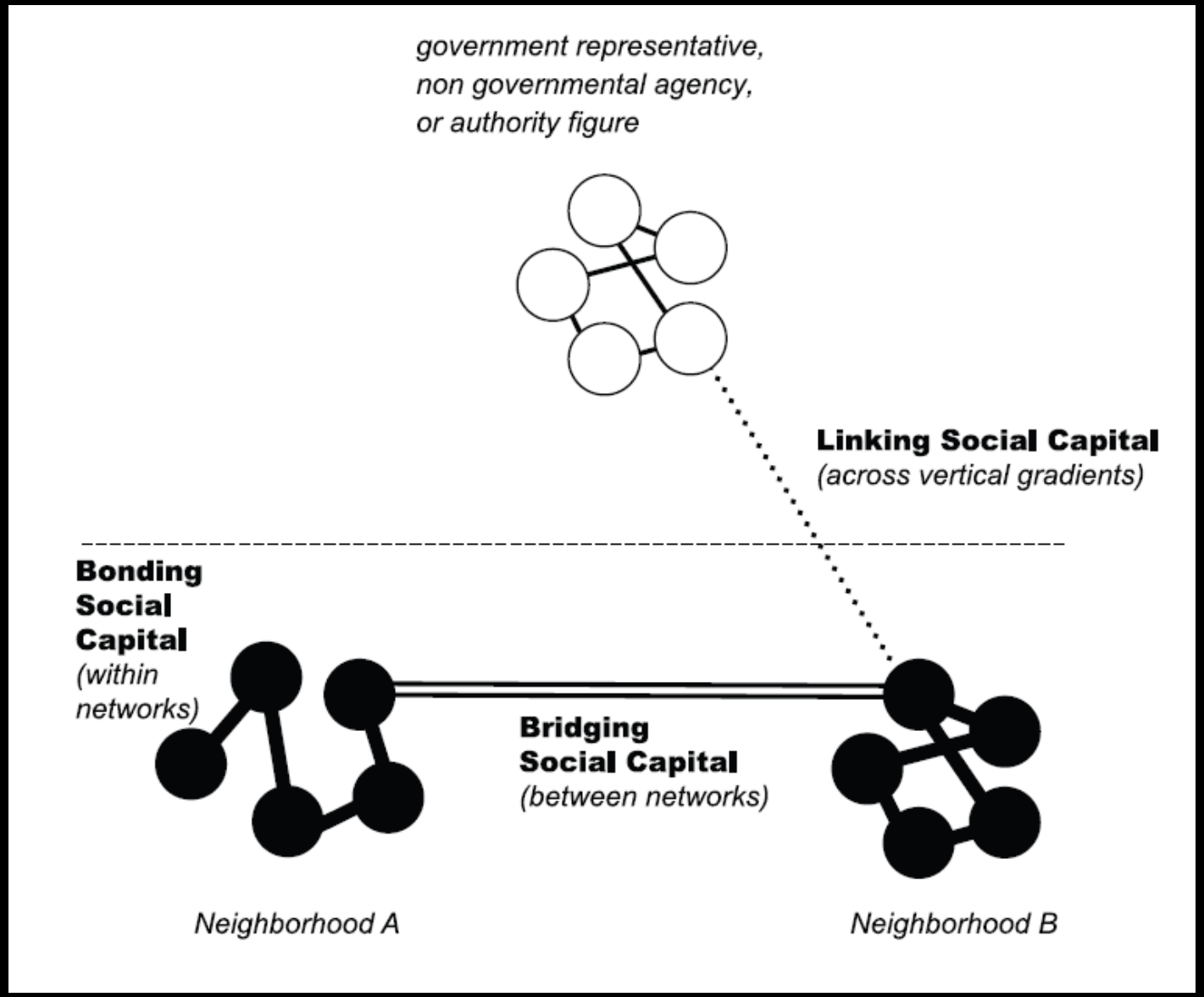
#EveryKitShouldHaveLB

Prepare an Emergency Kit for your home, work, and car.

Trust, neighbors, networks



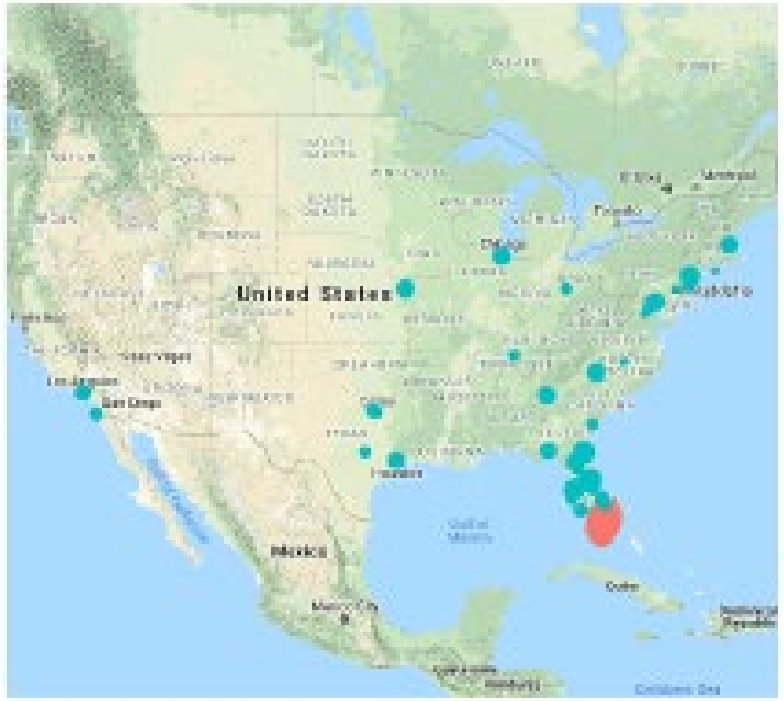
How Social Capital Helps

Evacuation

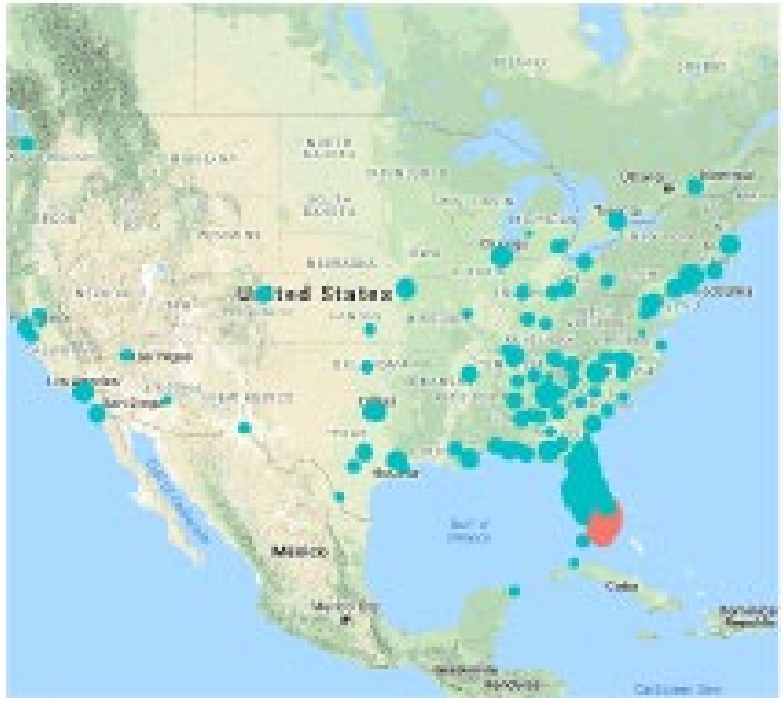
Displacement from Hurricane Irma

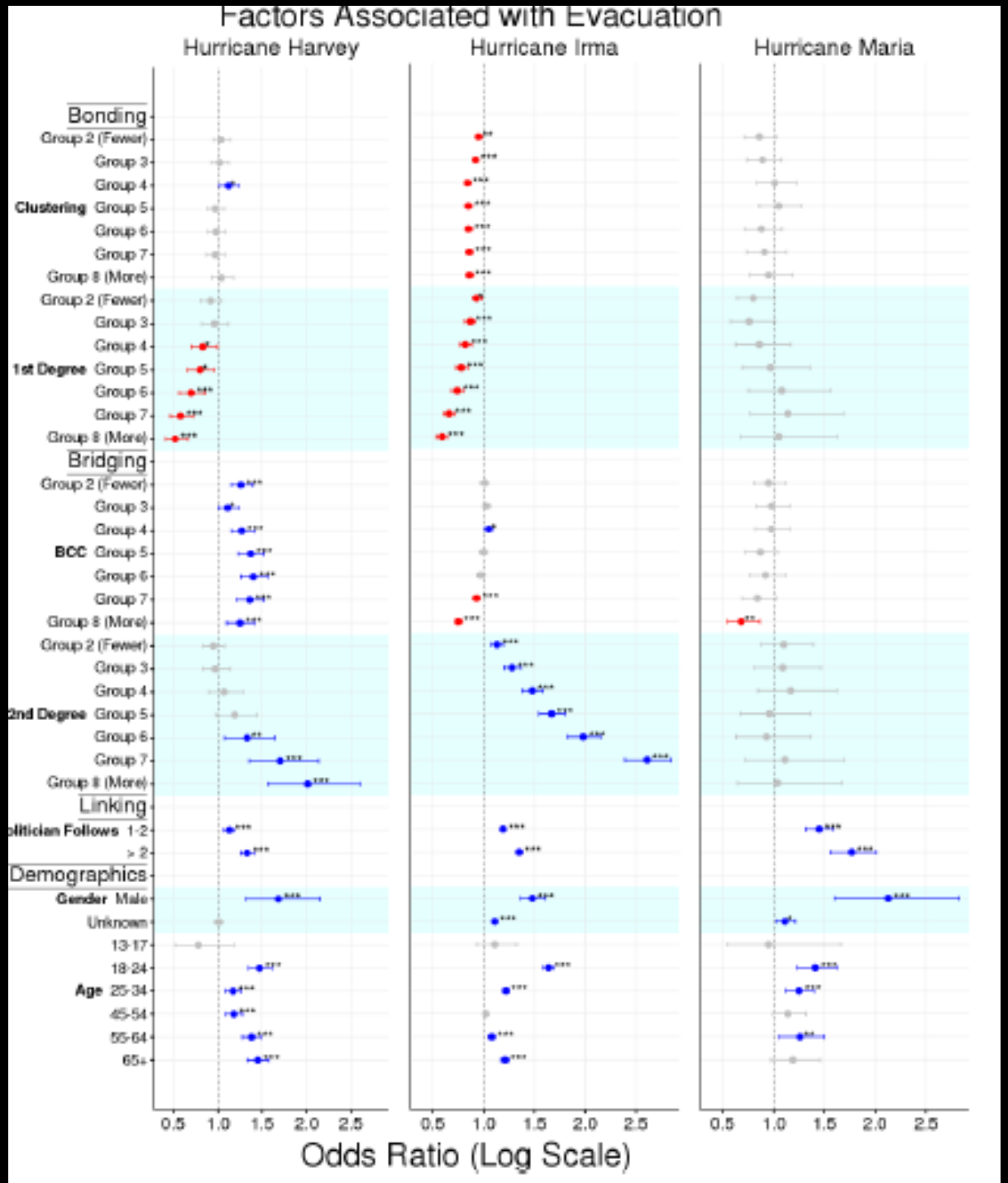
September 4, 2017

September 6, 2017

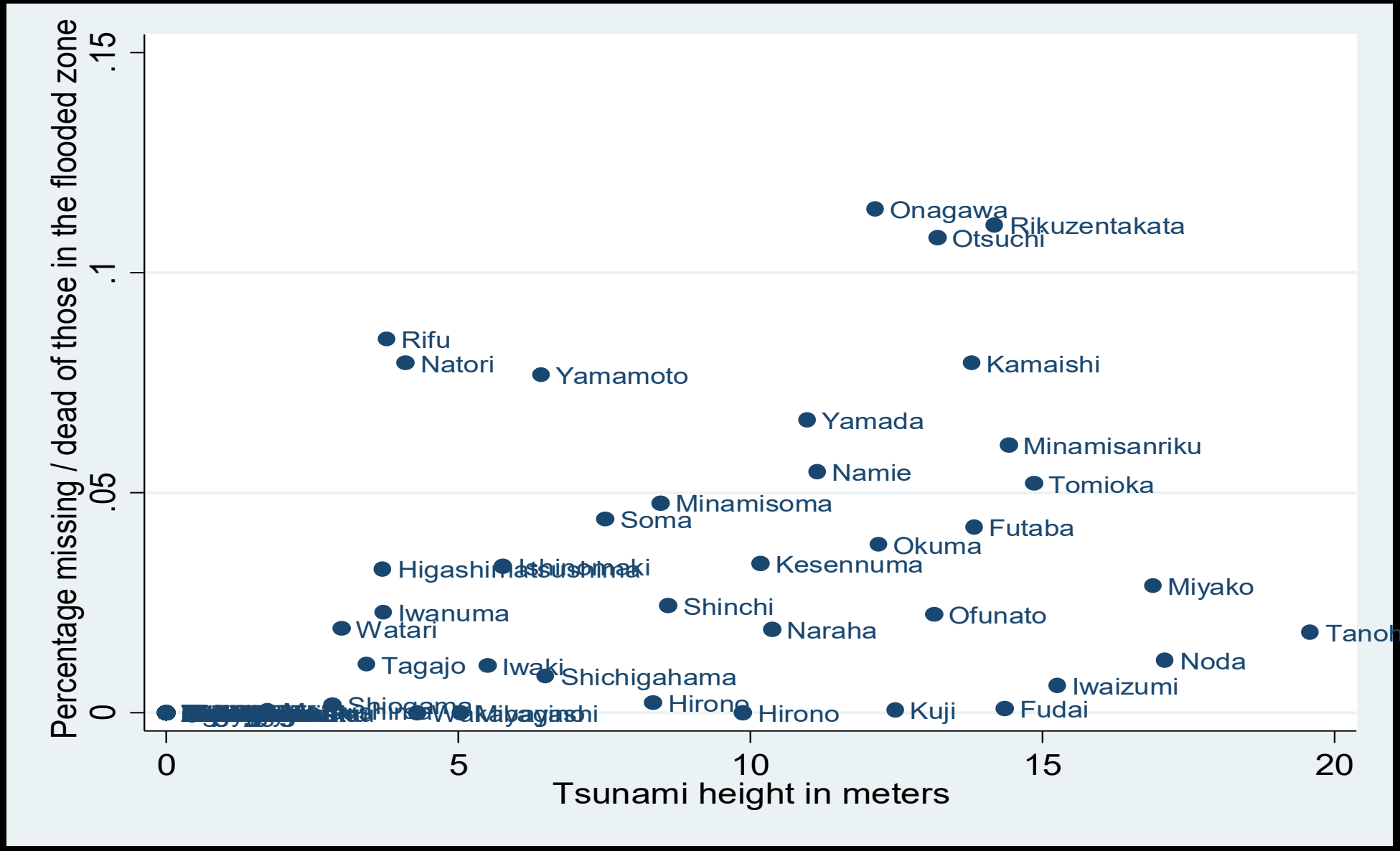


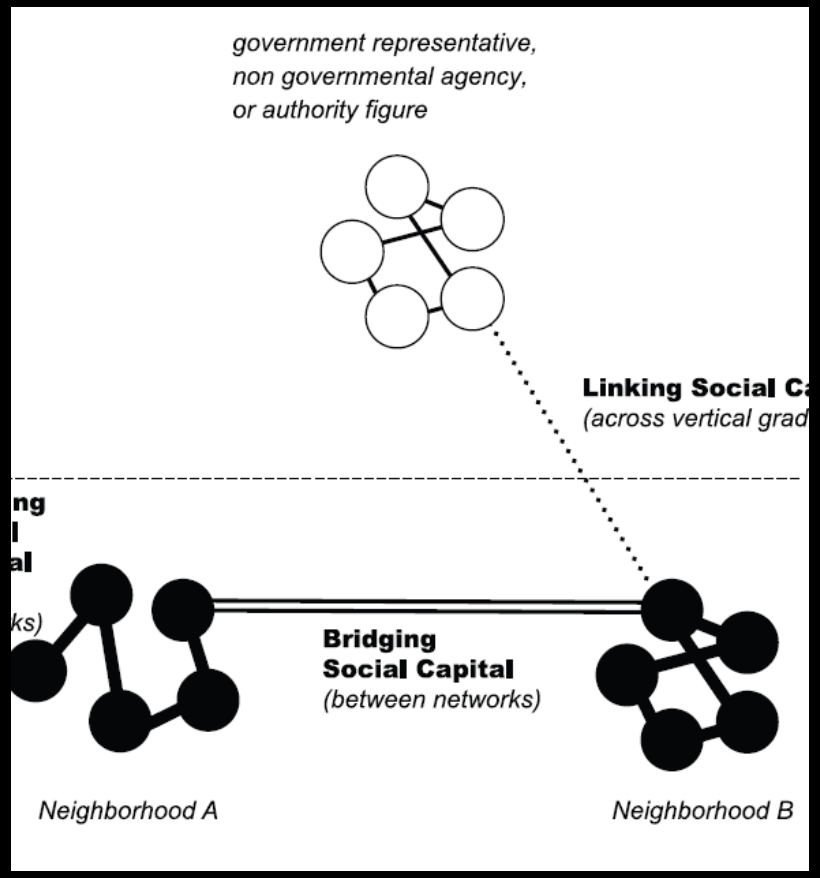
September 8, 2017




Factors Associated with Evacuation
Hurricane Harvey
Hurricane Irma
Hurricane Maria
Bonding
Group 2 (Fewer)
Group 3
Group 4
Clustering
Group 5
Group 6
Group 7
Group 8 (More)
Group 2 (Fewer)
Group 3
Group 4
1st Degree
Group 5
Group 6
Group 7
Group 8 (More)
Bridging
Group 2 (Fewer)
Group 3
Group 4
BCC
Group 5
Group 6
Group 7
Group 8 (More)
Group 2 (Fewer)
Group 3
Group 4
2nd Degree
Group 5
Group 6
Group 7
Group 8 (More)
Linking
litician Follows
1-2
> 2
Demographics
Gender
Male
Unknown
13-17
18-24
Age
25-34
45-54
55-64
65+
0.5
1.0
1.5
2.0
2.5
Odds Ratio (Log Scale)

Mortality not well correlated with height





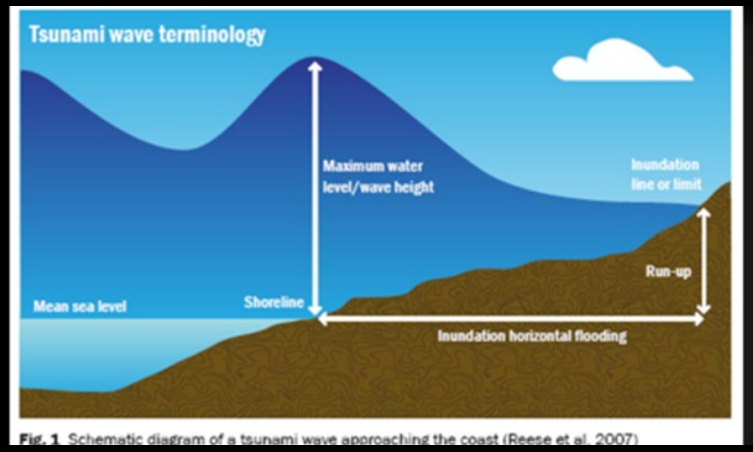
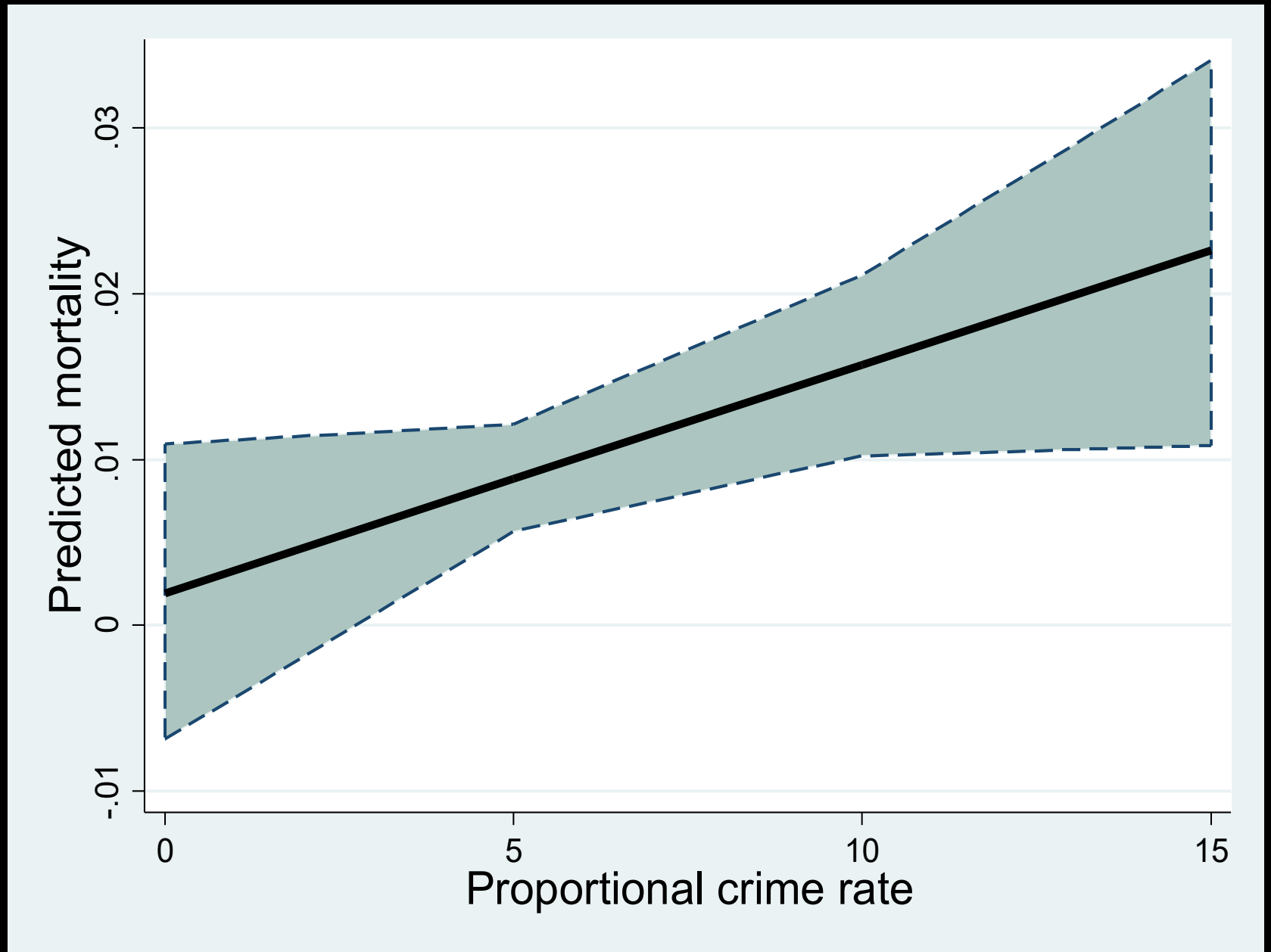


Fig. 1 Schematic diagram of a tsunami wave approaching the coast (Reese et al. 2007)

Theories of Mortality

Social Networks Critical



CITY	IMMEDIATE CONDITIONS ON 3/2011	2 YEARS AFTER DISASTERS	3 YEARS AFTER DISASTERS	DIFFERENCE IN RECOVERY
SLOW RECOVERY TIME				
Namie	33	49	49	**16**
Futaba	29	46	48	**18**
Okuma	32	50	51	**19**
INTERMEDIATE RECOVERY TIME				
Minamisoma	35	74	75	**40**
Shinchi	41	75	82	**41**
Watari	52	94	96	**47**
FAST RECOVERY TIME				
Ofunato	29	89	99	**70**
Yamada	14	75	87	**71**
Rikuzentakata	23	92	96	**73**

Point Scale: 0 –100

0 – All Systems Offline

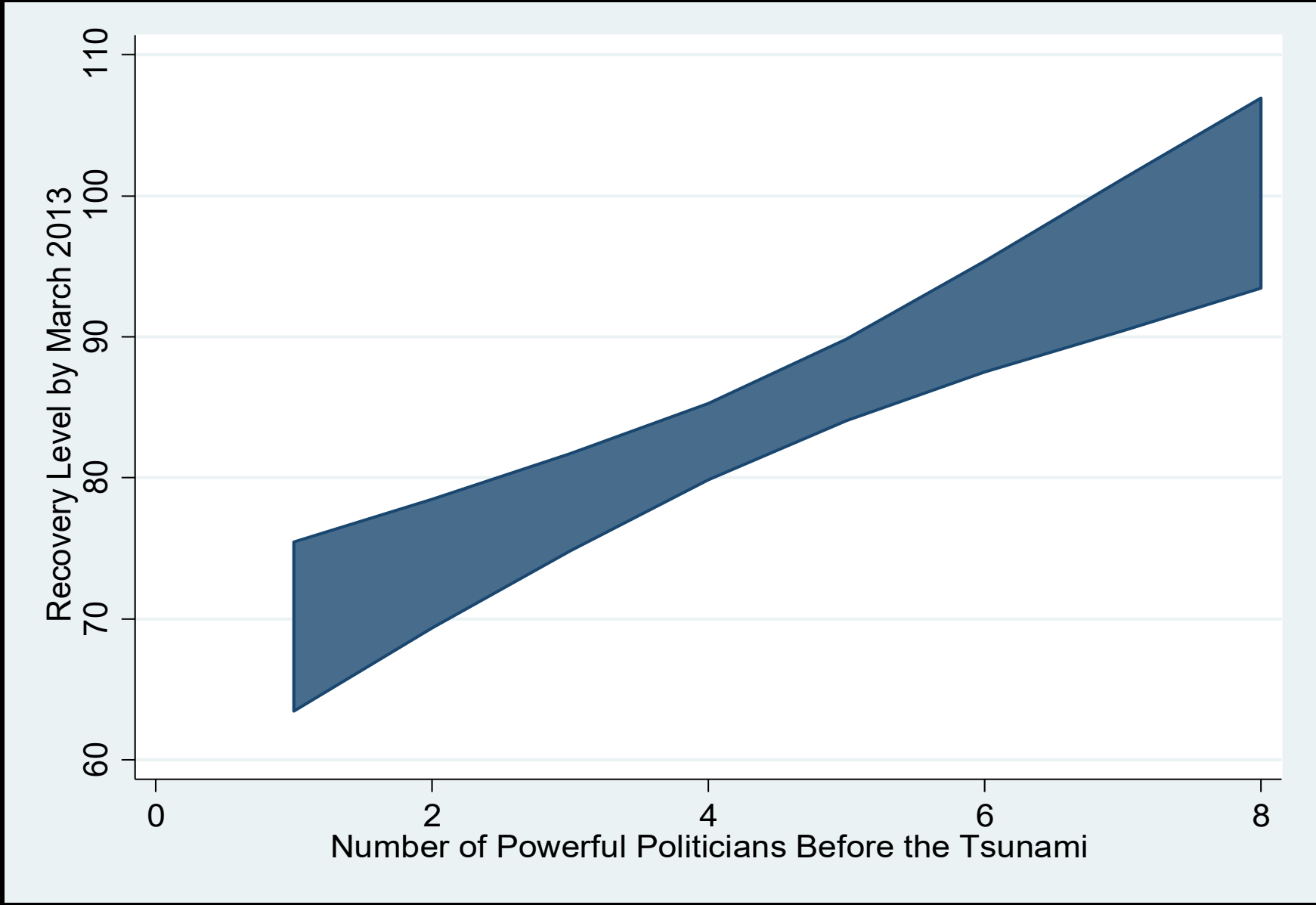
100 – Everything Operational

一平寿司
一蔵

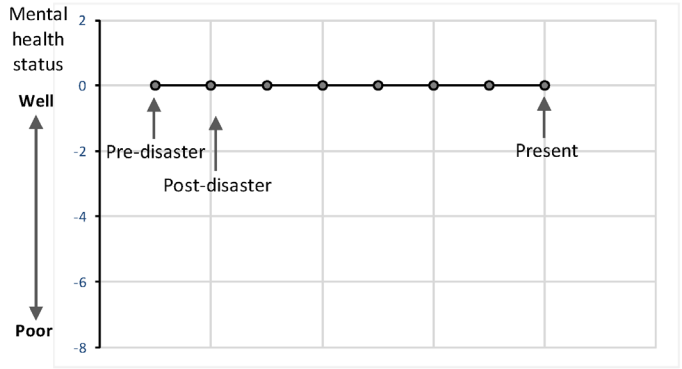
一平寿司
一蔵

Coastal City

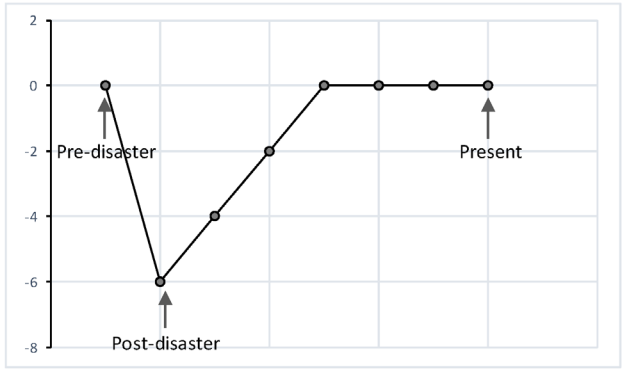
Linking social capital critical



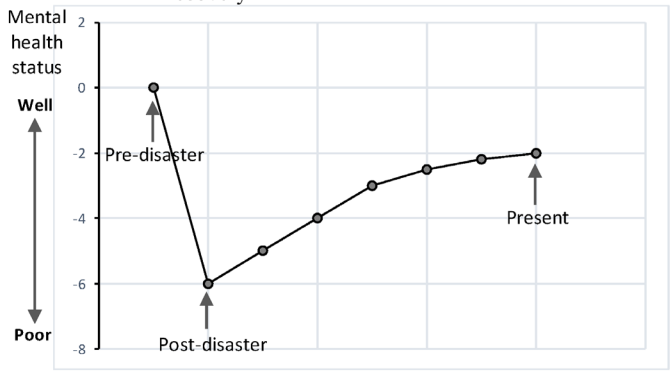
Pattern 1. Resistance



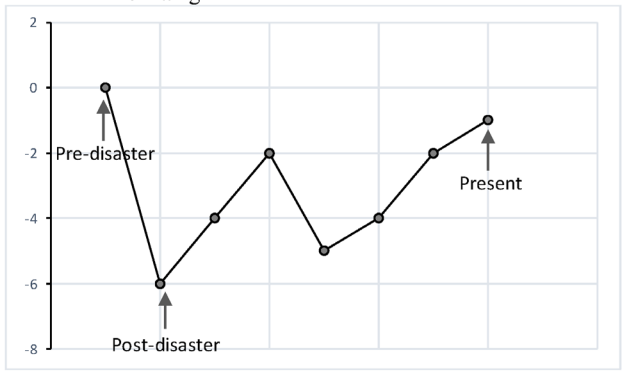
Pattern 2. Resilience



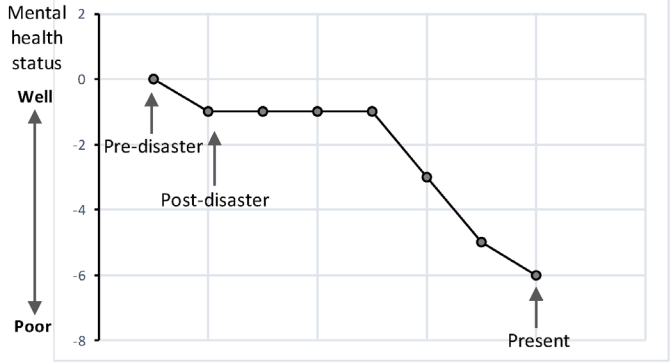
Pattern 3. Recovery



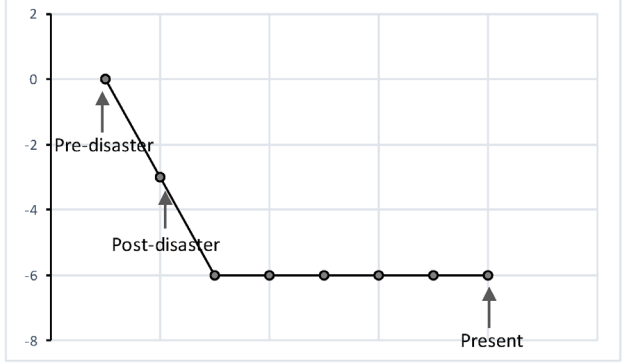
Pattern 4. Remitting



Pattern 5. Delayed dysfunction

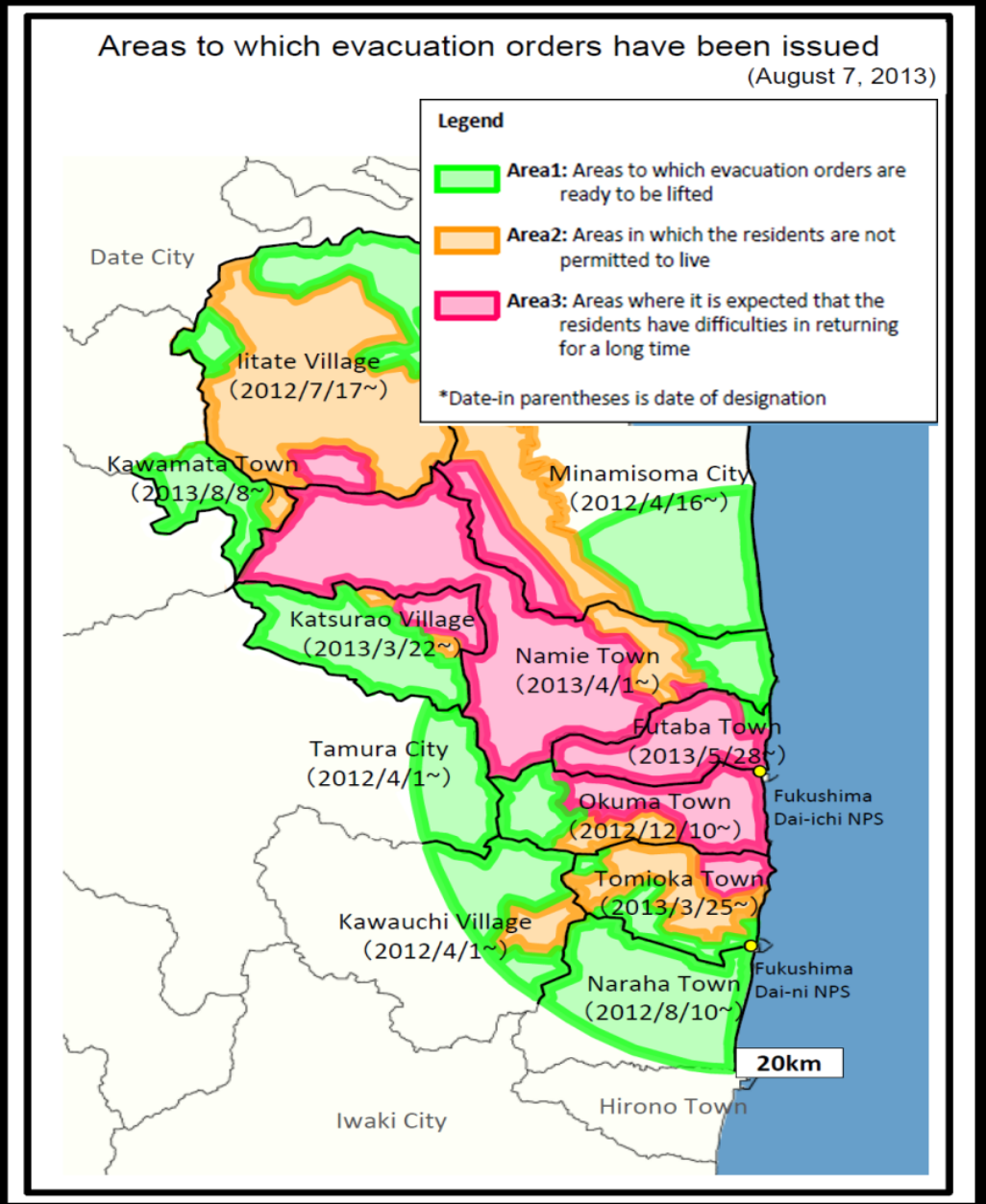


Pattern 6. Chronic dysfunction

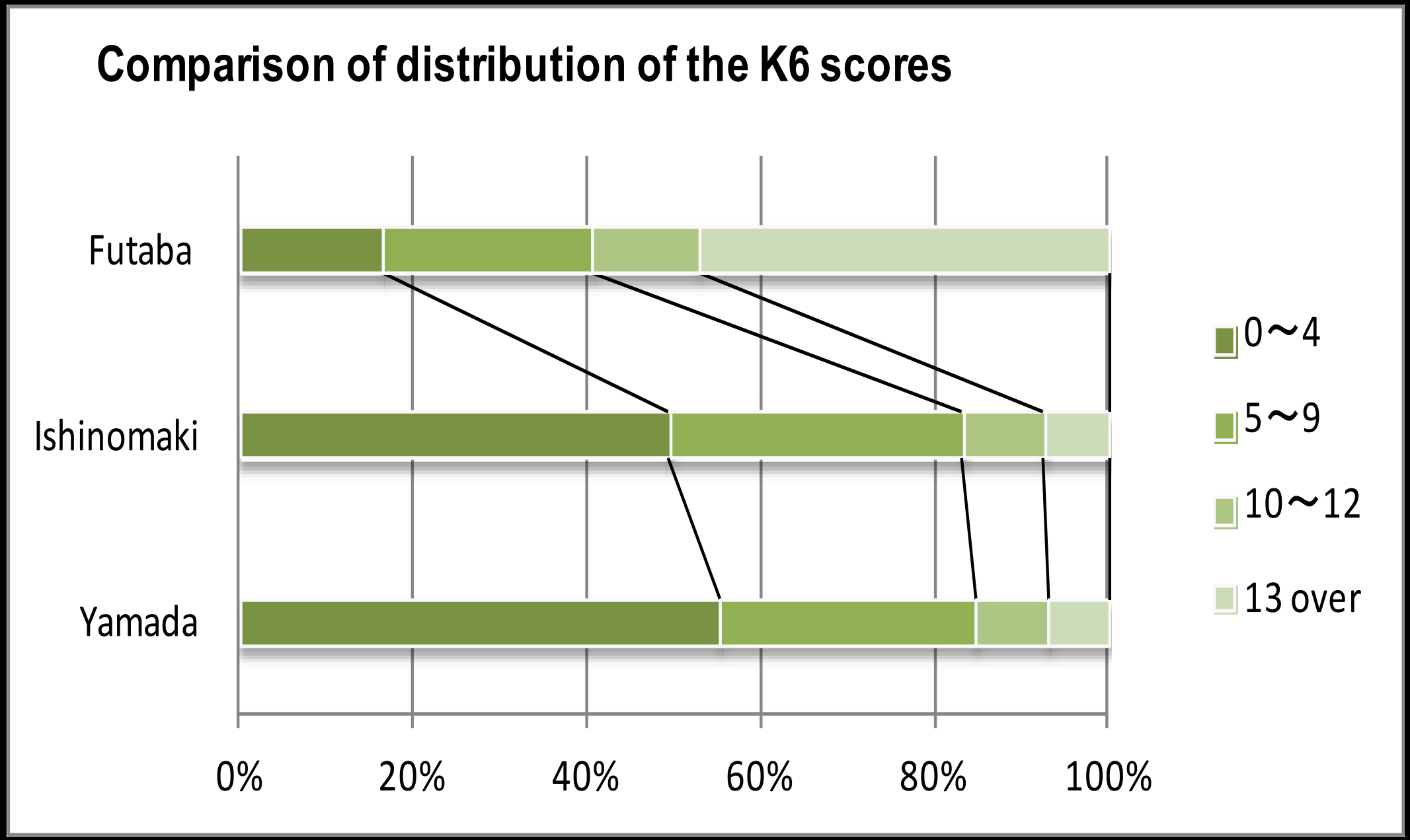


Pattern 7. None of above six patterns

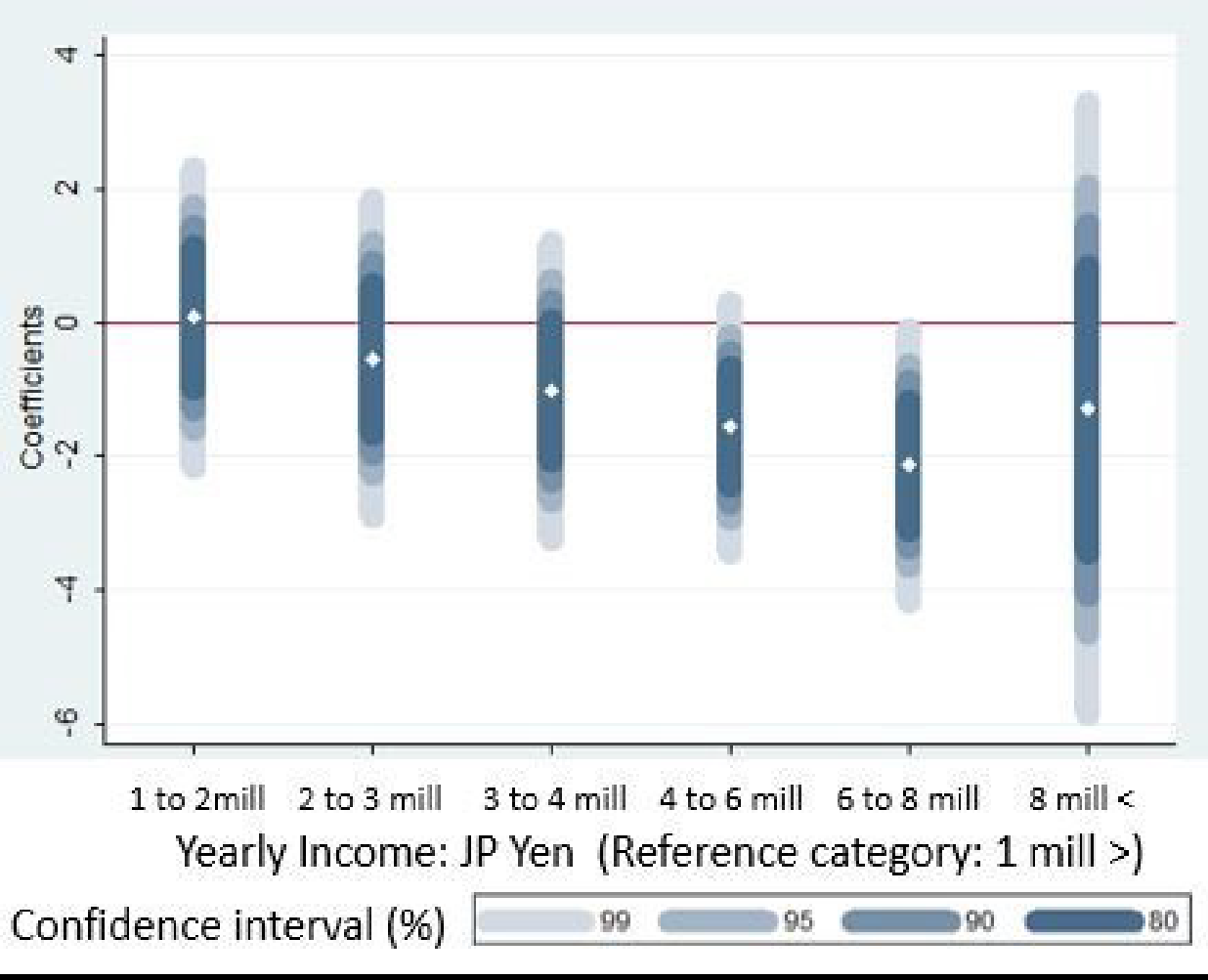
Futaba town and Evacuation Orders

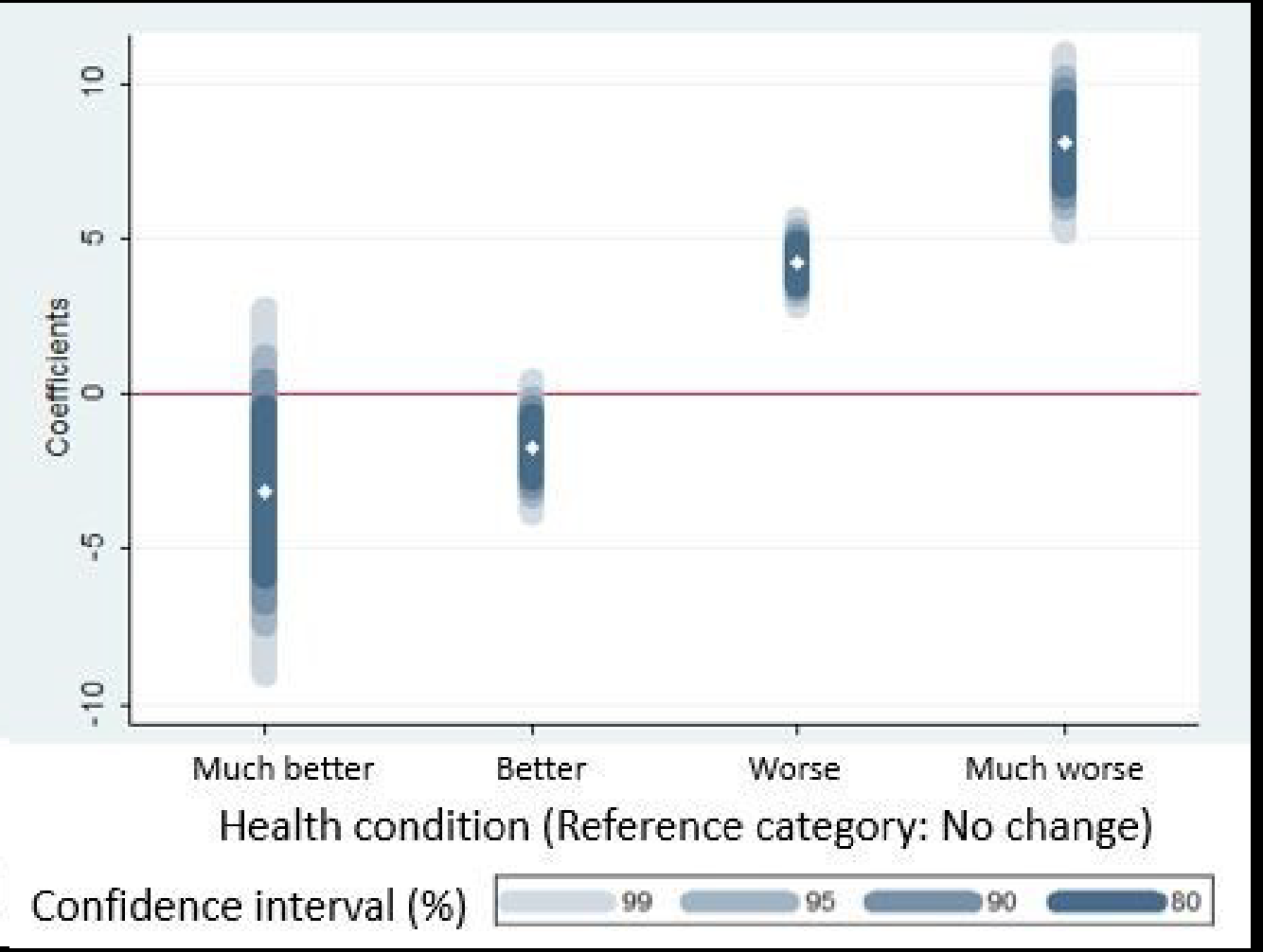


Different from other disaster survivors

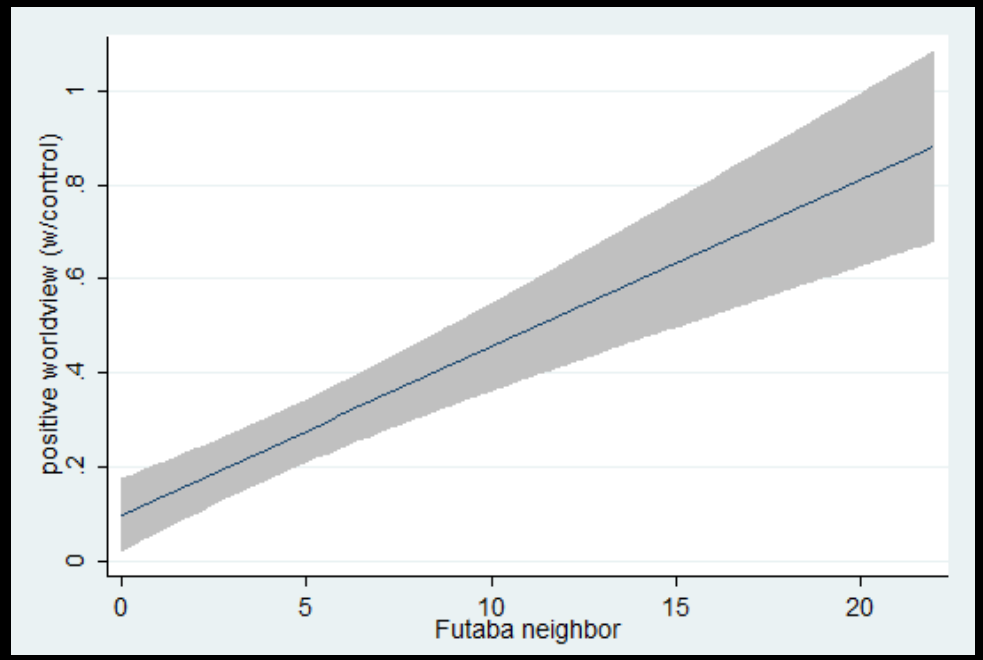


Income and health do not affect K6 scores

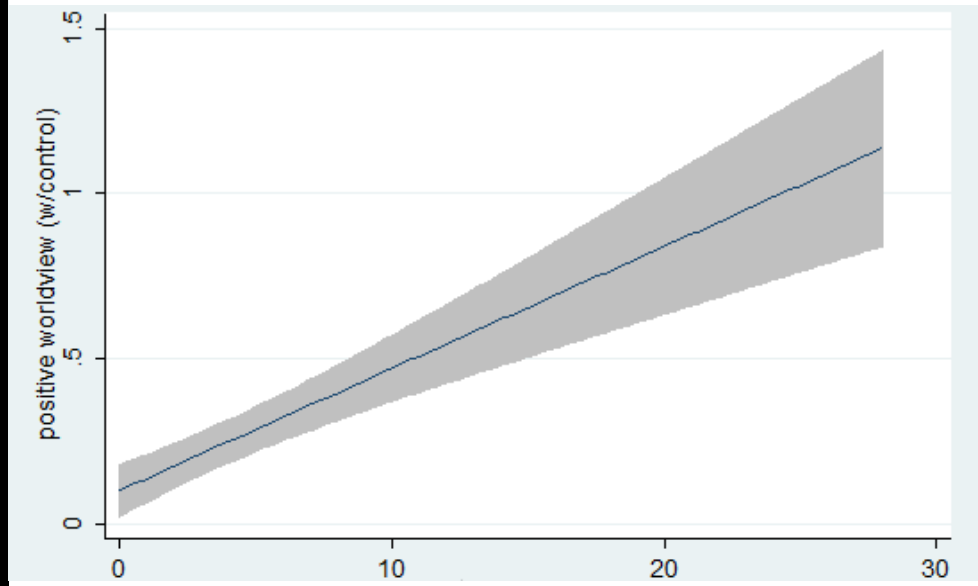




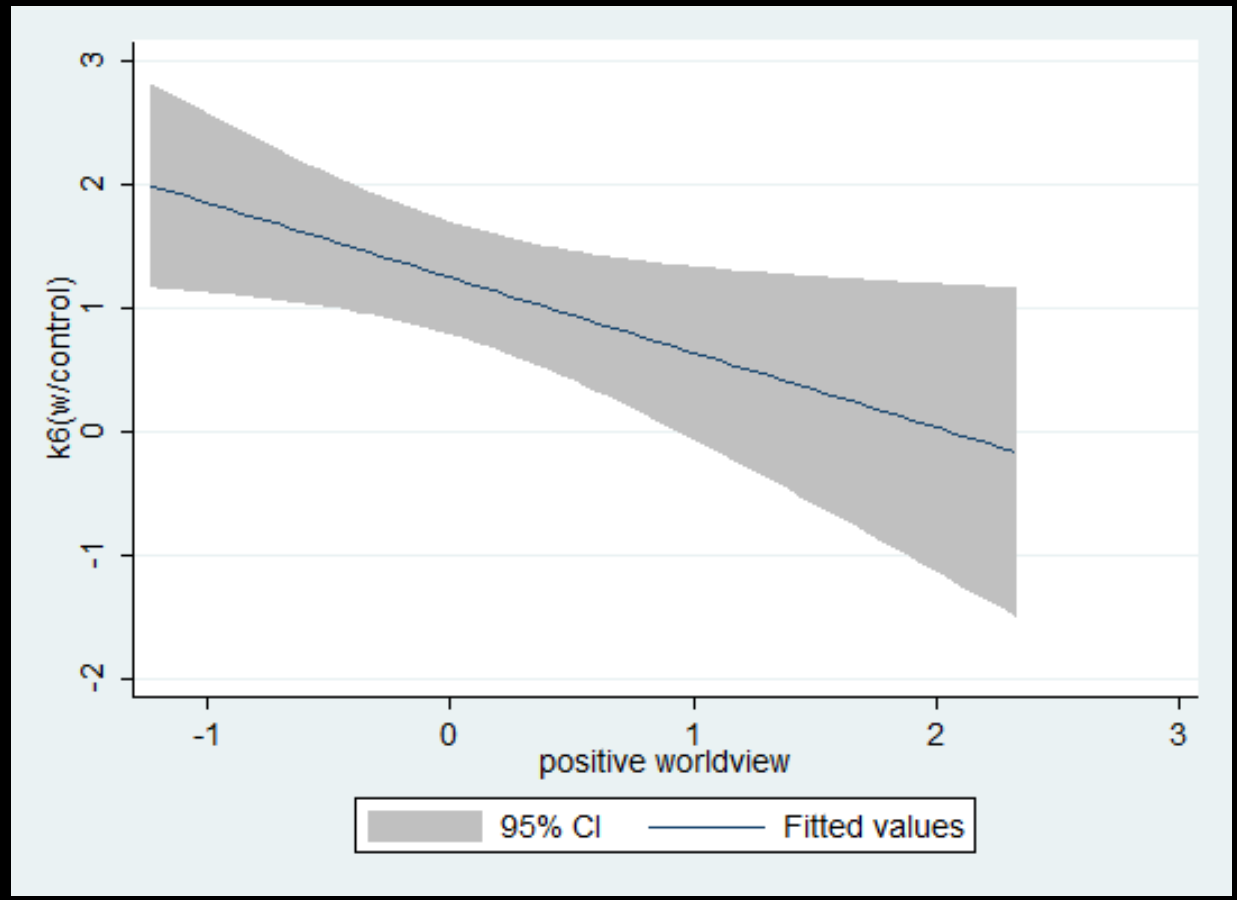
Social capital serves as a shield against mental illness



Futaba unknown neighbor



Futaba known neighbor



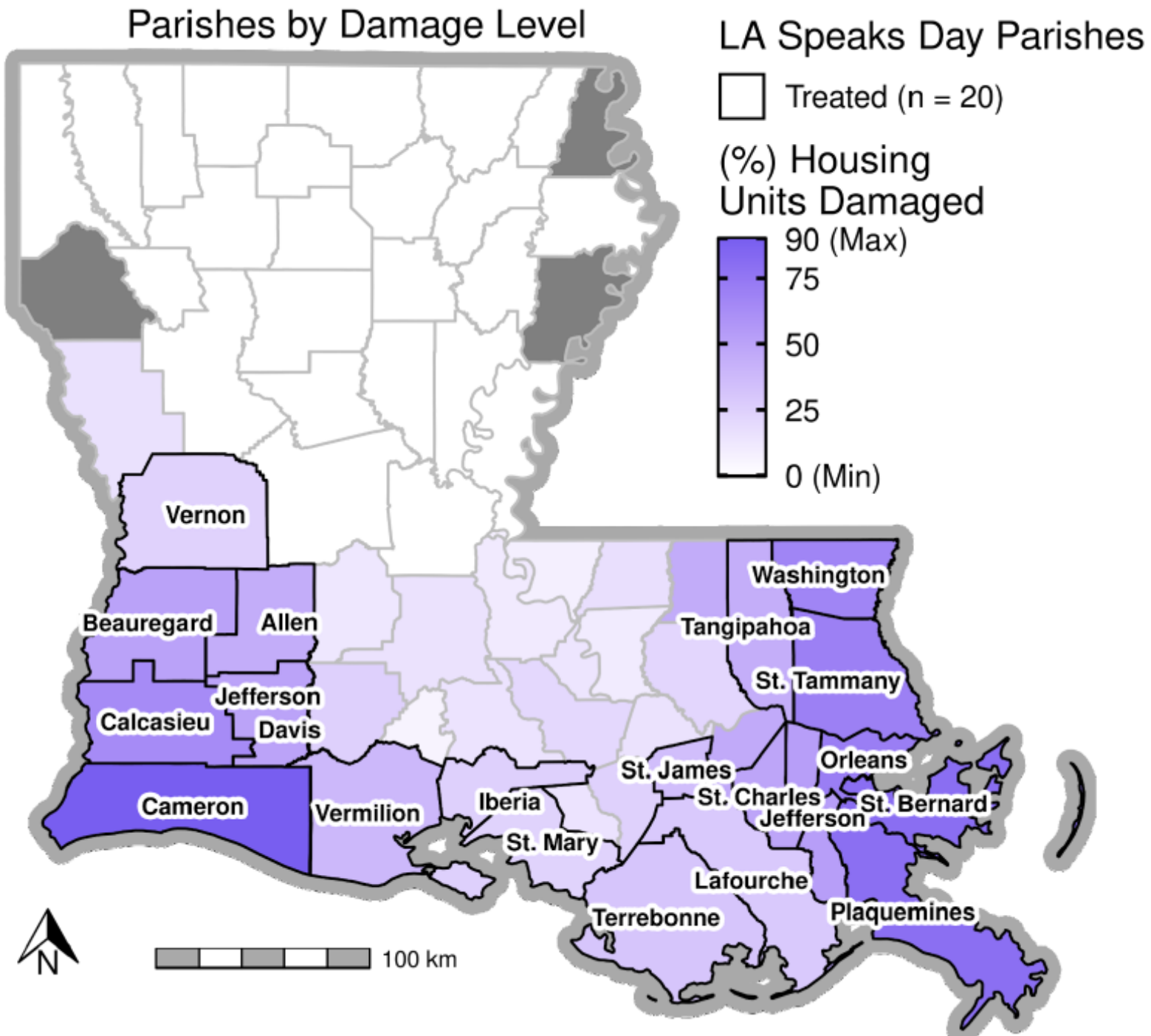
©Trafikverket and Degree of Freedom

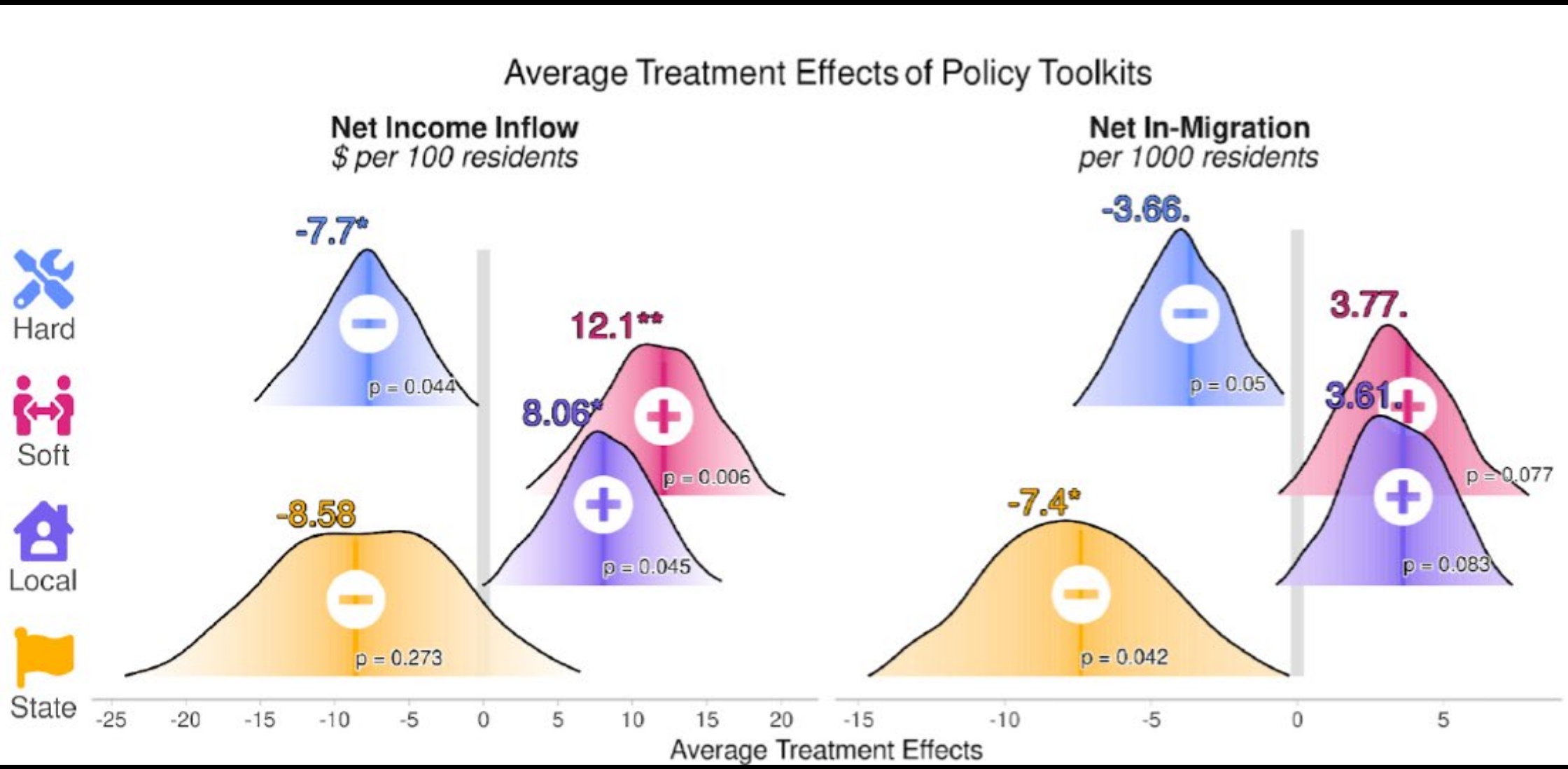
2021 Infrastructure Grades

AVIATION	↑ D+
BRIDGES	↓ C
DAMS	D
DRINKING WATER	↑ C-
ENERGY	↑ C-
HAZARDOUS WASTE	D+
INLAND WATERWAYS	↑ D+
LEVEES	D
PARKS AND RECREATION	D+
PORTS	↑ B-
RAIL	B
ROADS	D
SCHOOLS	D+
SOLID WASTE	C+
STORM WATER	D
TRANSIT	D-
WASTEWATER	D+

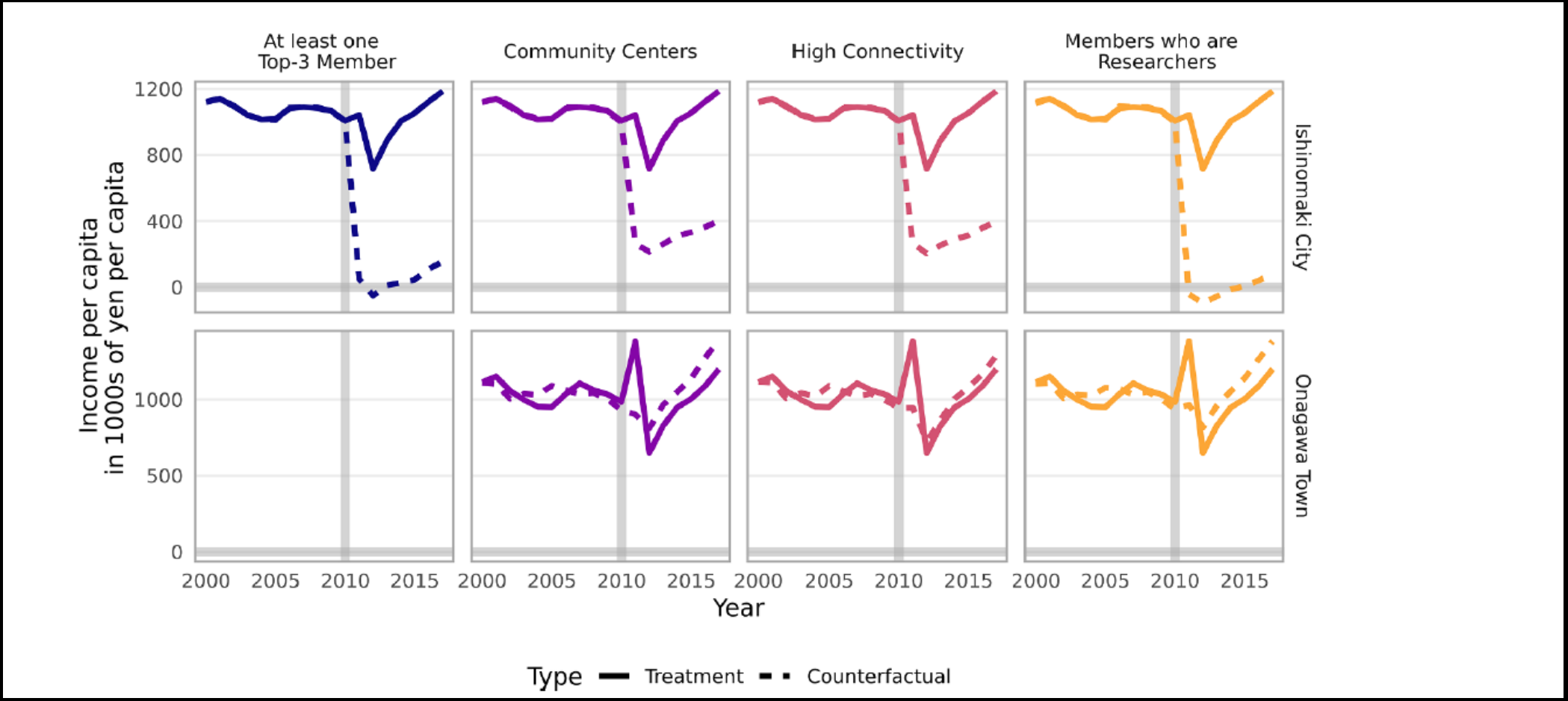
America's Cumulative Infrastructure Grade

A	EXCEPTIONAL
B	GOOD
C	MEDIOCRE
D	POOR
F	FAILING

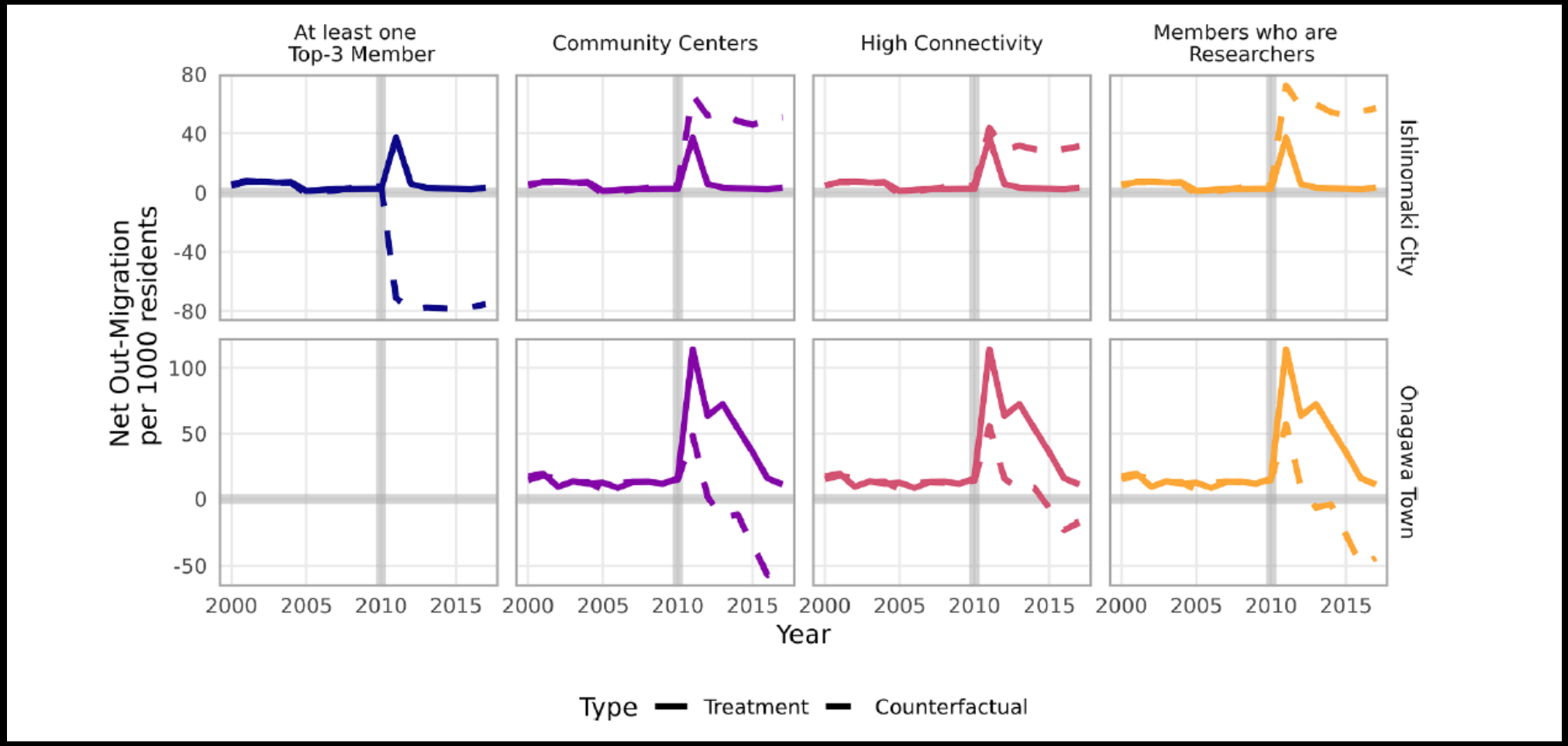

Parishes by Damage Level
LA Speaks Day Parishes
Treated (n = 20)
(%) Housing Units Damaged
90 (Max)
75
50
25
0 (Min)
Vernon
Beauregard
Allen
Jefferson
Calcasieu
Davis
Cameron
Vermilion
Iberia
St. Mary
Washington
Tangipahoa
St. Tammany
Orleans
St. James
St. Charles
Jefferson
St. Bernard
Lafourche
Terrebonne
Plaquemines
N
100 km


Average Treatment Effects of Policy Toolkits
Net Income Inflow
$ per 100 residents
Net In-Migration
per 1000 residents
Hard
Soft
Local
State
-7.7*
p = 0.044
12.1**
8.06*
p = 0.006
p = 0.045
-8.58
p = 0.273
-3.66.
p = 0.05
3.77.
3.61.
p = 0.077
p = 0.083
-7.4*
p = 0.042
-25
-20
-15
-10
-5
0
5
10
15
20
-15
-10
-5
0
5
Average Treatment Effects

Social Infrastructure Drives Economic Recovery

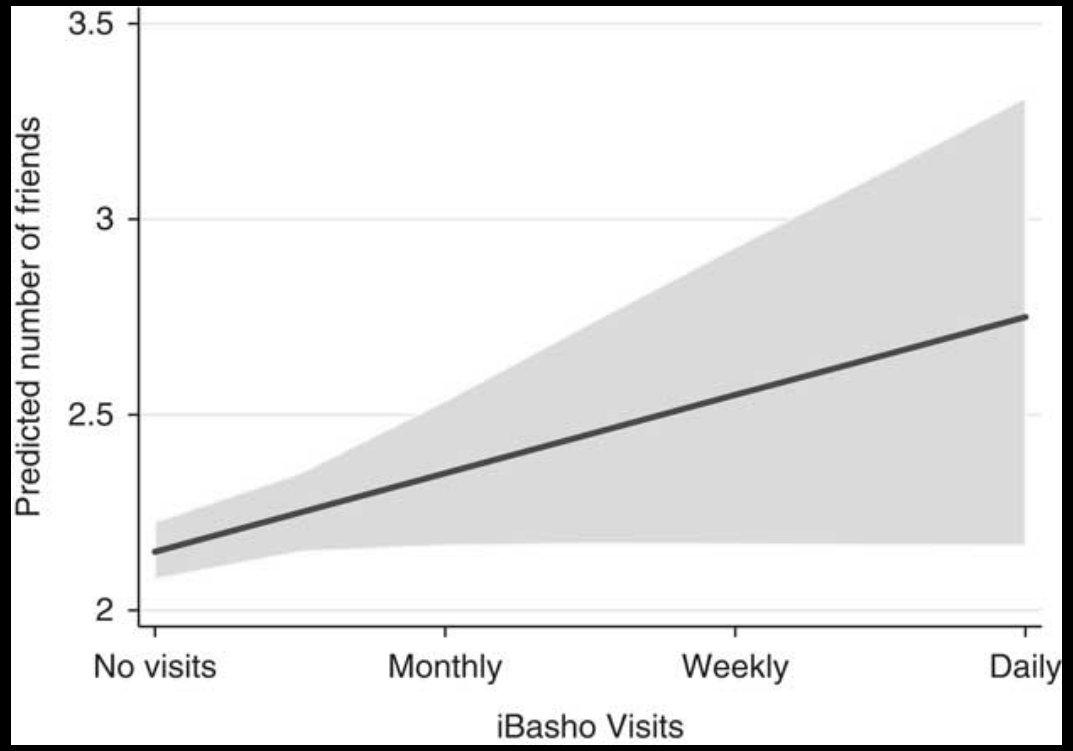


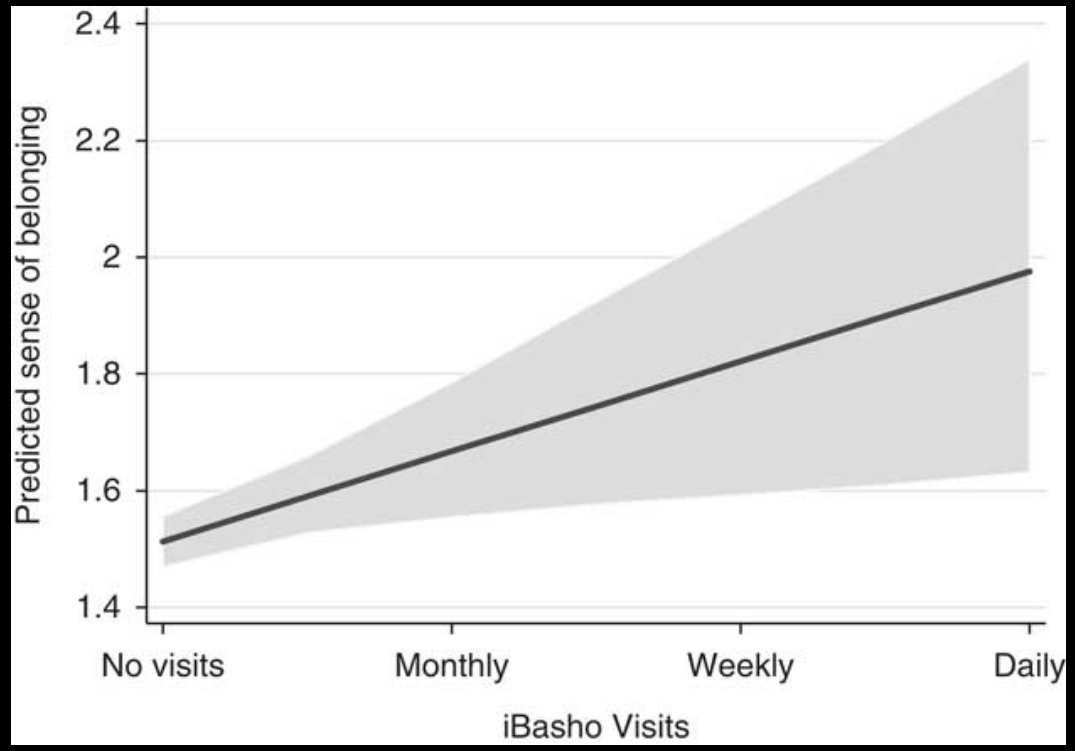
Social Infrastructure Helps Population Recovery



Our experiment in Japan, Philippines, and Nepal: Ibasho

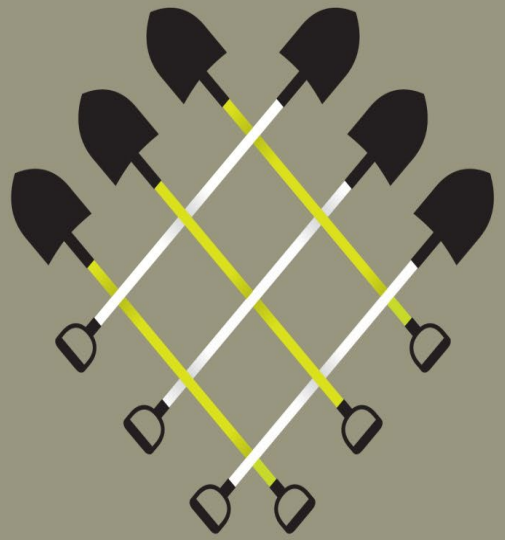
Ibasho – e.g. social infrastructure - broadens networks and deepens efficacy





Conclusions

- Society has finally recognized the importance of bridges, dams, and ports but we overlook the critical role of social infrastructure
- Social infrastructure serves as the foundation of civic infrastructure and can be built and grown (e.g. Ibasho in Massaki-cho, Japan)
- Need to focus equally on role of our built environment and the social environment those structures enable



Building Resilience

SOCIAL CAPITAL IN POST-DISASTER RECOVERY

Daniel P. Aldrich

DANIEL P. ALDRICH

BLACK WAVE

HOW NETWORKS AND GOVERNANCE SHAPED JAPAN'S 3/11 DISASTERS

Healthy, Resilient, and Sustainable

COMMUNITIES AFTER DISASTERS

Strategies, Opportunities, and Planning for Recovery

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