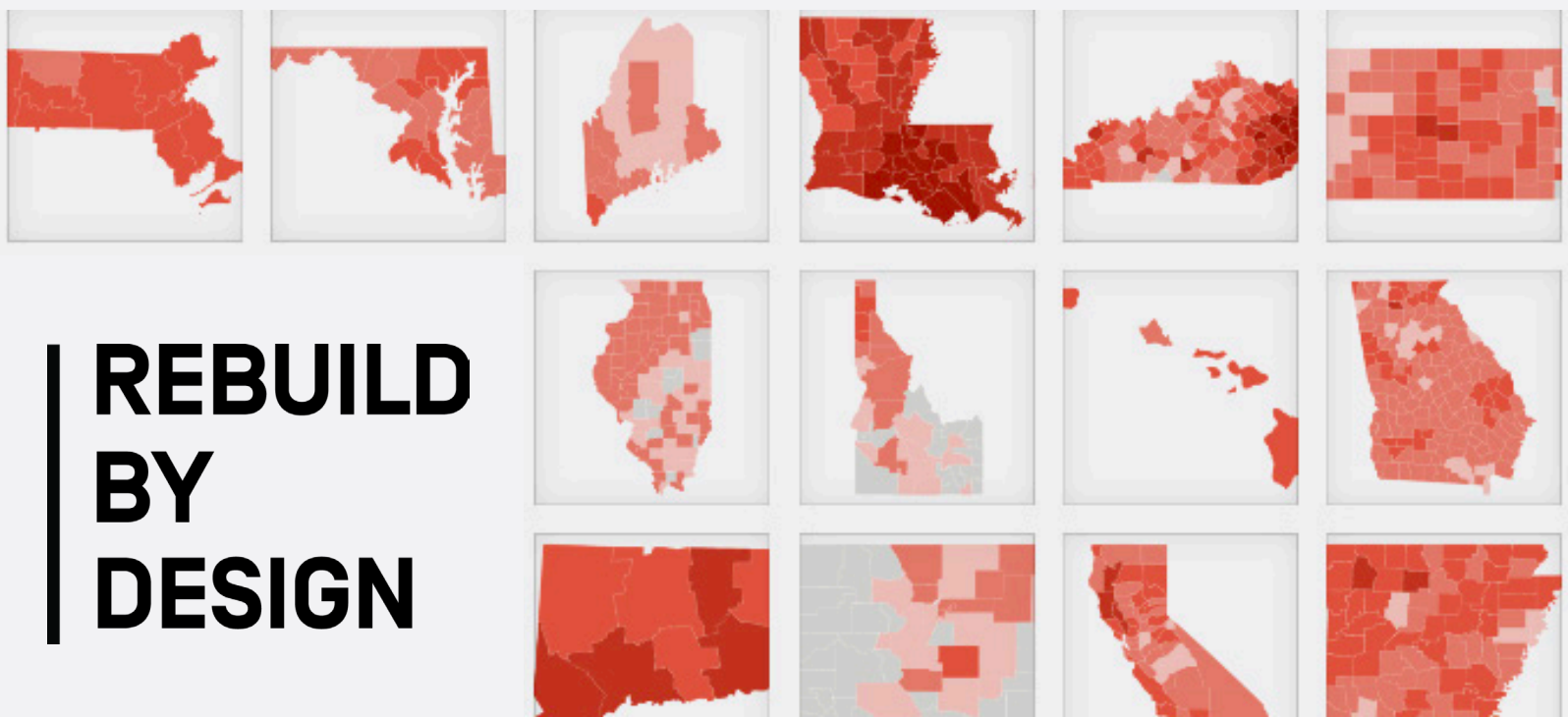


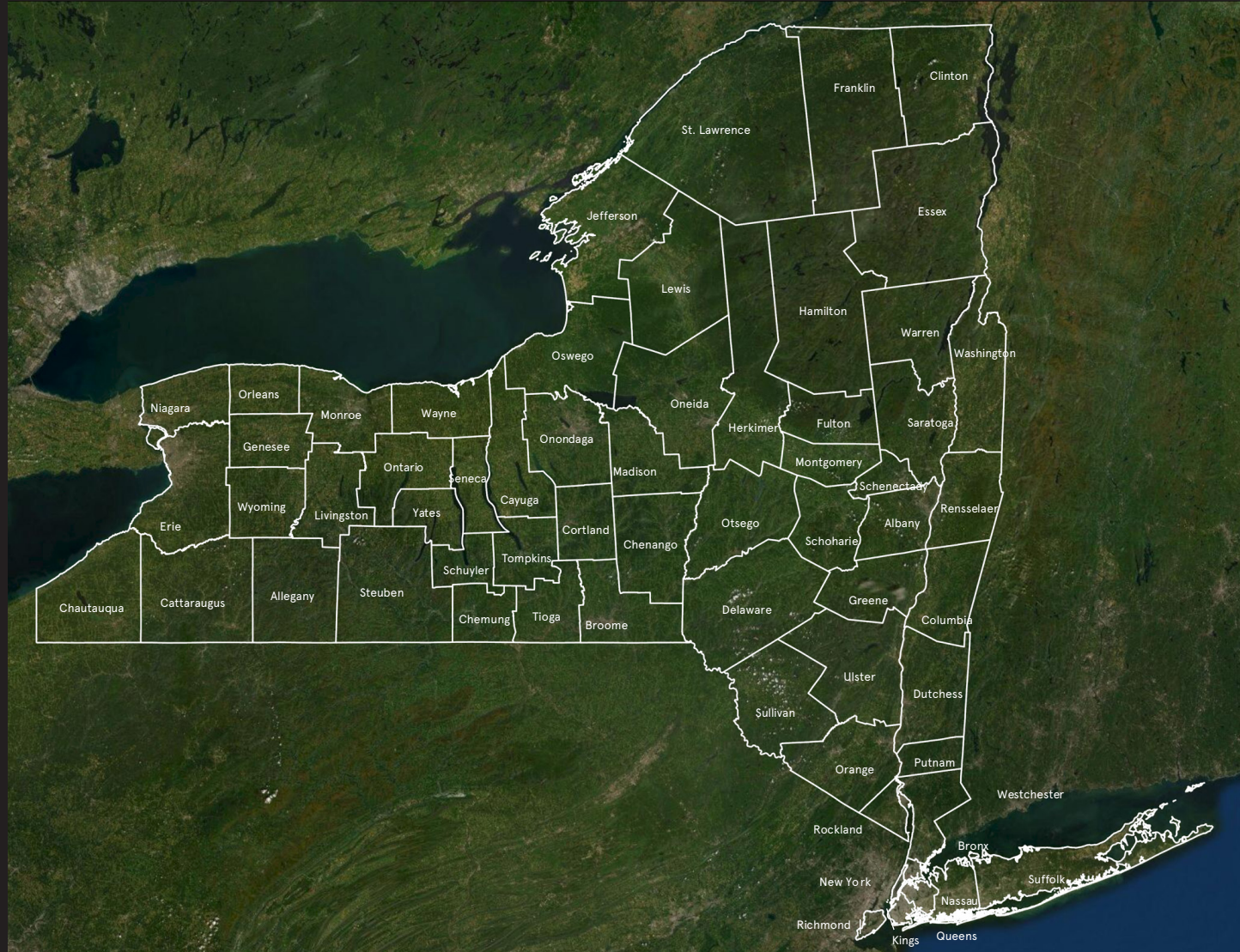
NEW YORK

ATLAS OF DISASTER



**REBUILD
BY
DESIGN**

NEW YORK



EXECUTIVE SUMMARY

In the decade since Hurricane Sandy, we have witnessed a shift in public understanding of how climate change will affect our communities. New Yorkers are seeing the impacts nearly every day on the news and on their doorsteps. Republican and Democrat, coastal and inland, urban and rural communities are all affected. Communities went from scorching politicians who mentioned the words “managed retreat,” to asking for buyouts and comprehensive climate adaptation planning.

Though New York State has some of the most aggressive carbon reduction targets through the Climate Leadership & Community Protection Act (CLCPA), and has recently passed the 2022 New York State Bond Act, we have not seen the investment in climate adaptation infrastructure necessary to help New Yorkers withstand massive devastation from increasingly frequent and intense climate events. Just recently, Winter Storm Elliott resulted in the deaths of 39 residents in Buffalo. The year before, Hurricane Ida claimed the lives of 16 New Yorkers, many of whom drowned in their own homes. While these might seem like one-off events, we know they are not. Every single county in New York has experienced a federal climate disaster between 2011-2021, with 16 having five or more disasters during that time. The counties of Suffolk, Herkimer, and Delaware have had the most federal disaster declarations at a total of seven each.

The following pages show county-level data for the real experiences that New Yorkers are facing. This report includes eight maps that show where major disasters have occurred, where post-disaster support has been given, where the most socially vulnerable populations reside, and the energy reliability by utility area. It also provides county-level disaster data within State Assembly, Senate, and Congressional district boundaries. Assembly Districts 101 and 102 have the highest, each experiencing 10 different recent disasters. Likewise, District 49 and District 51 in the State Senate have experienced 10 different recent disasters. The highest number of disasters rises to 12 when we look at New York’s Congressional Districts and can be attributed to District 19.

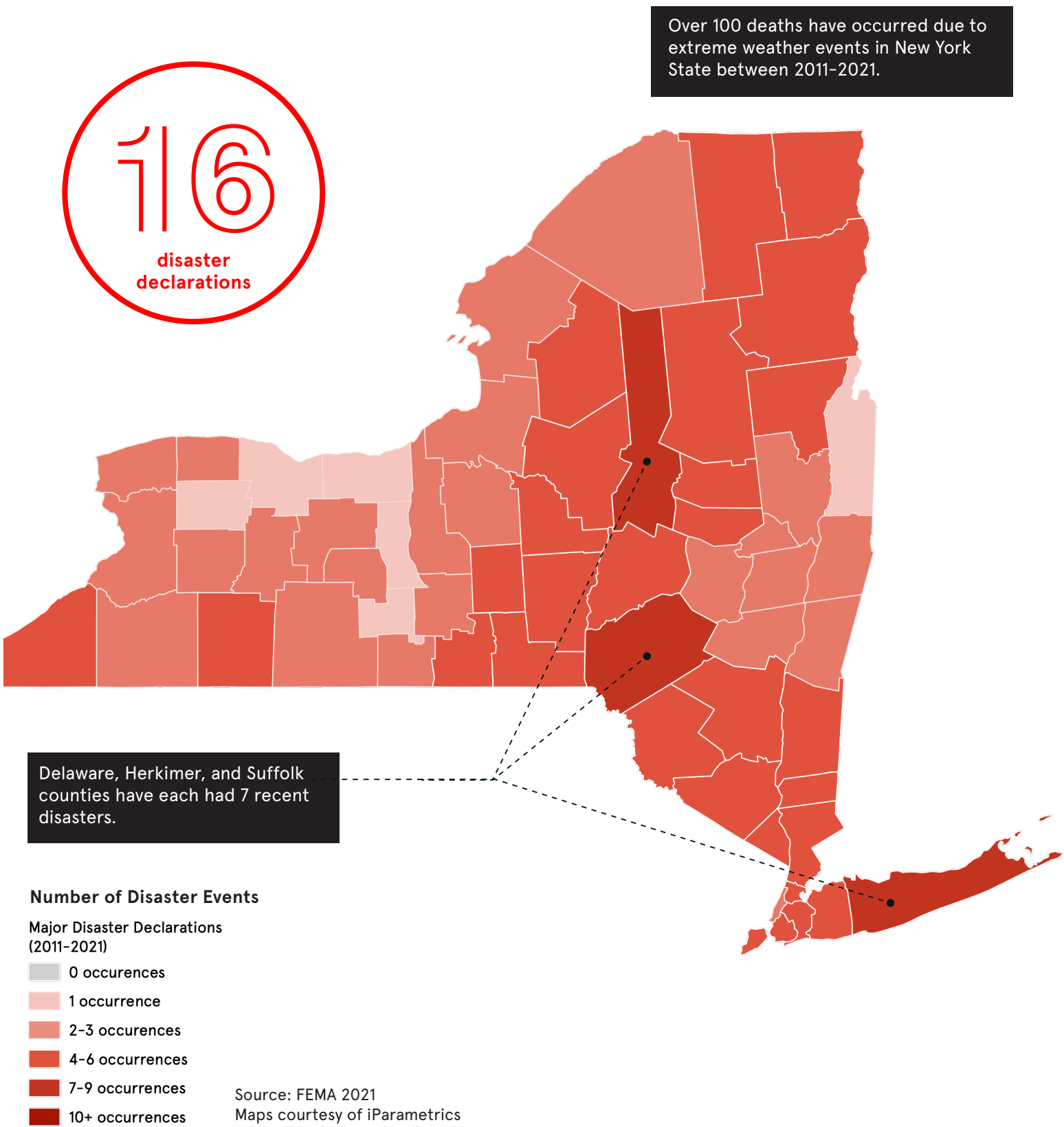
New York State needs new, long-term, funding sources for climate adaptation infrastructure such as upgrades to sewer infrastructure, raising roads, helping communities move from risky areas, restoring natural resources to reduce risk, and needless death from extreme weather events. State funding would also leverage additional federal funding by providing a local match for programs that will be made available under the Inflation Reduction Act and other federal sources.

This report could not have been created without the incredible partnership of APTIM and iParametrics as well as the generous support of the Siegel Family Endowment, the Rockefeller Brothers Foundation, and Tiger Global Philanthropic Ventures. Rebuild by Design worked with an unbelievable team of engineers, researchers, finance experts, data managers, and volunteers supporting, identifying, analyzing, and synthesizing different data sets and ideas into an accessible compendium of county-by-county climate impacts.

We are so fortunate to work with these partners, and we want to work with you, too. If you are passionate about these issues and are interested in our work, please reach out to info@rebuildbydesign.org to explore how to build climate-forward communities together.

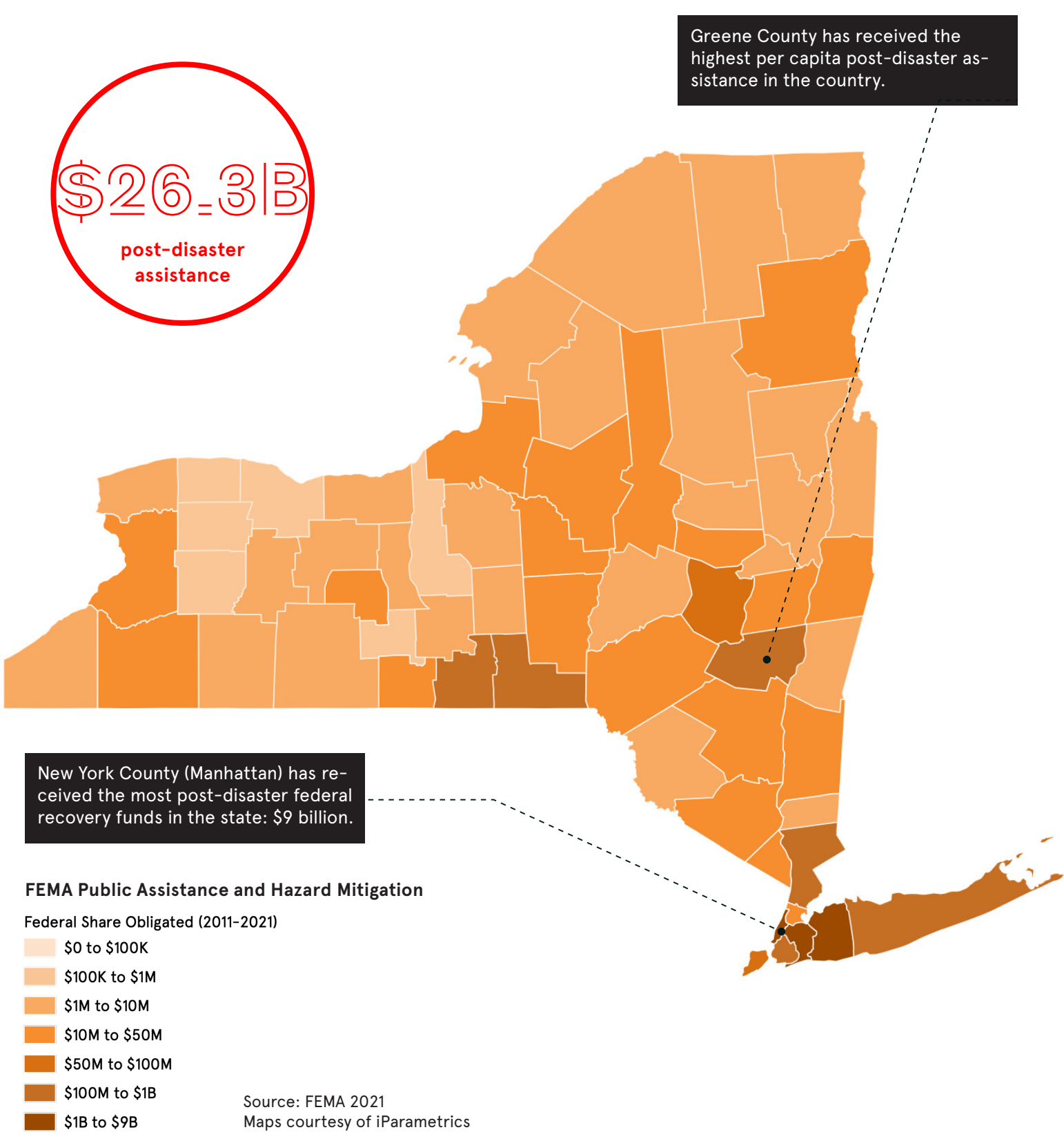
DISASTER OCCURRENCES 2011-2021

FEDERALLY DECLARED CLIMATE DISASTERS BY COUNTY



FEDERAL ASSISTANCE 2011-2021

POST-DISASTER PUBLIC ASSISTANCE AND HAZARD MITIGATION FUNDS
OBLIGATED BY COUNTY FOR CLIMATE DISASTERS



RENSSELAER COUNTY

HEAVY RAIN AND SEVER FLOODING CAUSE DAMAGE
IN SAND LAKE, CLOSING ROADS AND HIGHWAYS,
CAUSING POWER OUTAGES, AND CREATING A POTENTIAL
HAZARD FROM NEARBY TOXIC WASTE SITES

JULY 2021

IMAGE SOURCE: U.S. DEPARTMENT OF AGRICULTURE

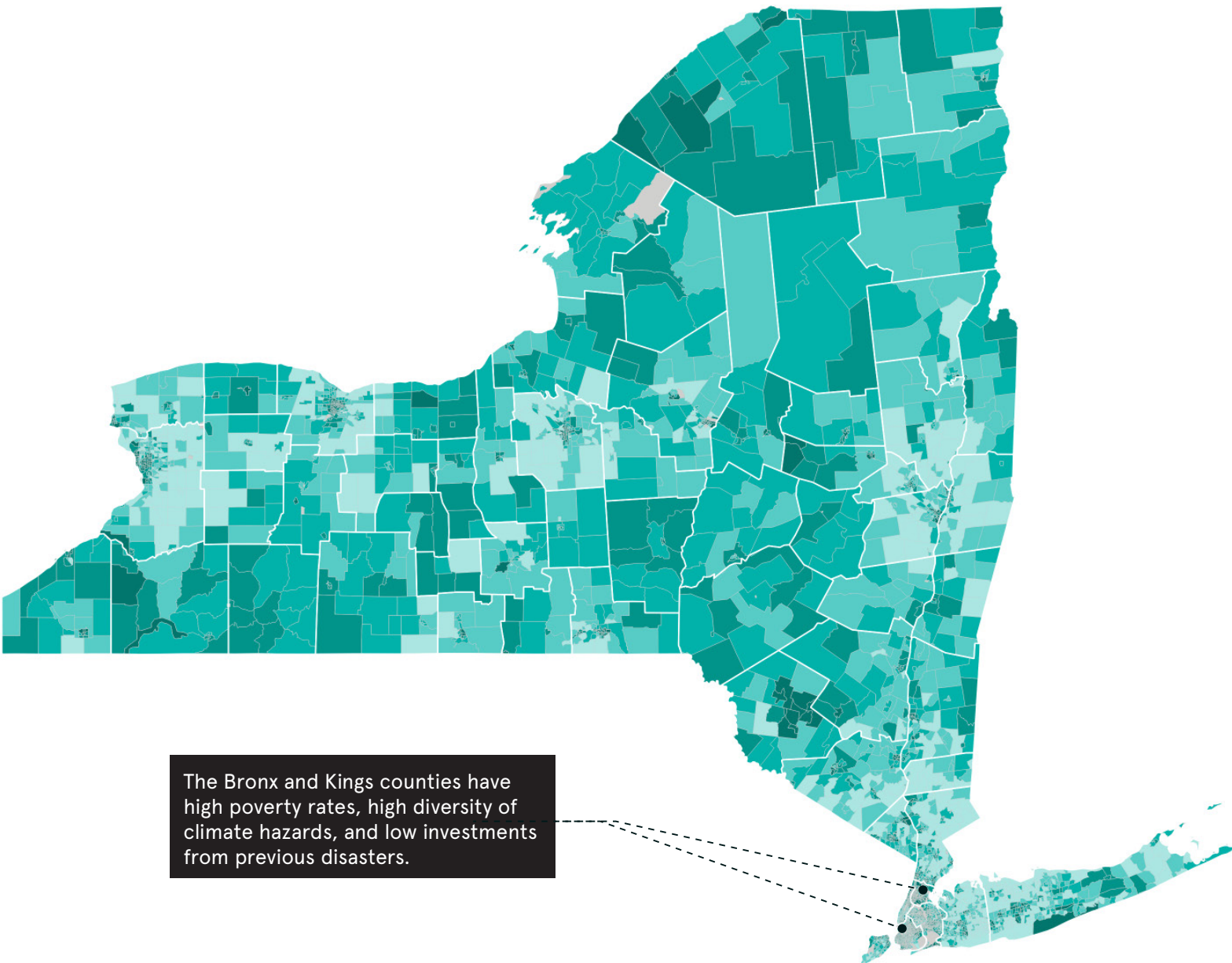


100%

Of New York's counties
have experienced a re-
cent climate disaster.

SOCIAL VULNERABILITY INDEX 2011-2021

AREAS OF GREATEST SOCIAL VULNERABILITY



Social Vulnerability Index

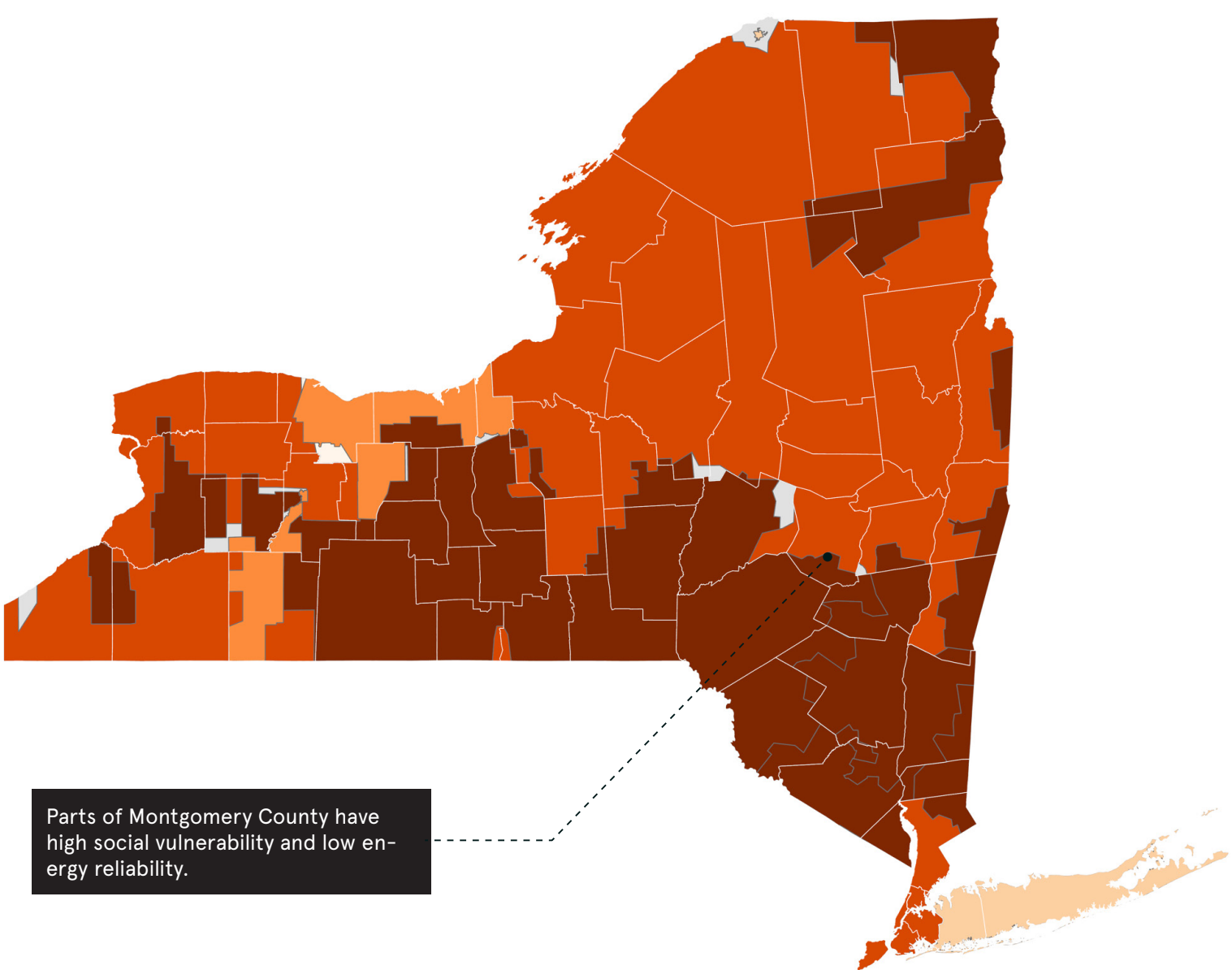
CDC (2018)

- No Value
- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Source: CDC/ATSDR 2018 Social Vulnerability Index
Maps courtesy of iParametrics

ENERGY RELIABILITY 2011-2021

COUNTIES AT GREATEST RISK OF POWER OUTAGES



Aggregated Annual Electric Outage Duration

Including major events - SAIDI_W_MED

- missing electric outage data
- 0 - 60 minutes
- 60 - 120 minutes
- 120 - 240 minutes
- 240 - 456 minutes
- 456 - 7,700 minutes

Source: U.S. Energy Information Administration
Maps courtesy of APTIM



23-19%

Daily probability
of flooding
episodes*

* 2019 DHSES HAZARD MITIGATION PLAN

THE BRONX

THE REMNANTS OF HURRICANE IDA CAUSED
FLASH FLOODING, TAKING THE LIVES OF 16
NEW YORKERS AND DISRUPTING TRANSIT
ACROSS PARTS OF NEW YORK.

SEPTEMBER 2021

IMAGE SOURCE: JIM GRIFFIN

CLIMATE CHANGE INCREASES INEQUITIES

The impacts of storms and flooding disproportionately affect the most vulnerable people. Disasters are not created by natural events alone; rather, they are the product of natural events and a combination of social, political, and economic stressors. Therefore, as climate change increases the frequency of flooding, it will further reinforce underlying vulnerabilities and systemic inequality.

DURING A FLOOD

Low-income communities experience greater challenges evacuating due to the cost of transportation and relocation, placing them at a greater risk of injury, disease, or death.

Residents who do not leave during a storm have increased health risks, such as exposure to contaminated water, interrupted access to medical care, and difficulty acquiring food.

Low-income and minority populations, as well as elderly nursing home residents are more likely to have chronic health problems, increasing their vulnerability to other storm hazards.¹

AFTER A FLOOD

A medium-sized natural disaster leads to a 5% increase in the share of people with debt collections after one year, which doubles to 10% after four years.²

People in poverty are less likely to have flood insurance or to maintain flood insurance payments.

The Urban Institute has found that after 4 years, a medium-sized disaster has caused an average 31-point decline in credit scores for people living in communities of color, whereas people living in majority white communities experienced a 4-point decline.³

FEMA funding largely focuses on homeowners, meanwhile renters typically face rent hikes and mass evictions.

Lower income households may not have the financial and educational resources to advocate for fair buyouts, repair damages, and afford temporary housing.

After federal aid has been distributed to communities that have experienced a disaster, predominantly white, well-educated home-owners experience a significant increase in wealth. Conversely, communities of color, particularly those who are less educated renters, experience a decline in wealth.⁴

1. Lane et. al, "Health Effects of Coastal Storms and Flooding in Urban Areas: A Review and Vulnerability Assessment," 2013.
2. Urban Institute, "Insult to Injury: Natural Disasters and Residents' Financial Health," 2019.
3. Urban Institute, 2019.
4. Howell & Elliott, "Damages Done, the Longitudinal Impacts of Natural Hazards on Wealth Inequality in the United States,"; Muñoz & Tate, "Unequal Recovery? Federal Resource Distribution after Midwest Flood Disaster," 2016.

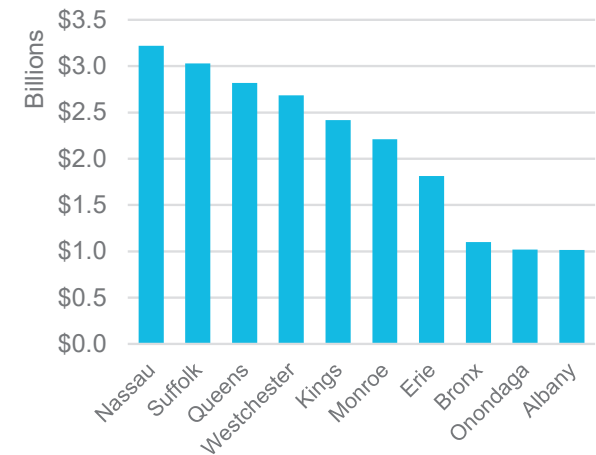
THE COST OF DISASTERS

Benefit - Cost Ratio for Investing in Hazard Mitigation Infrastructure



The National Institute of Building Sciences (NIBS) found that every \$1 invested in disaster mitigation by three federal agencies (FEMA, EDA, & HUD) saves society \$6.

Cost of Inaction 2020-2029



AECOM conservatively estimates that the cost of inaction (doing nothing) will be \$55 billion in the next decade for coastal storm and flood-event-related damages.

THIS FUND SHOULD SUPPORT GREEN INFRASTRUCTURE, GREY INFRASTRUCTURE, AND A PROGRAM TO BUY-OUT PROPERTY IN HARM'S WAY

Project types range from green infrastructure, such as wetlands restoration or bioswales for stormwater management, to grey infrastructure, such as right-sizing a dam or bridge.

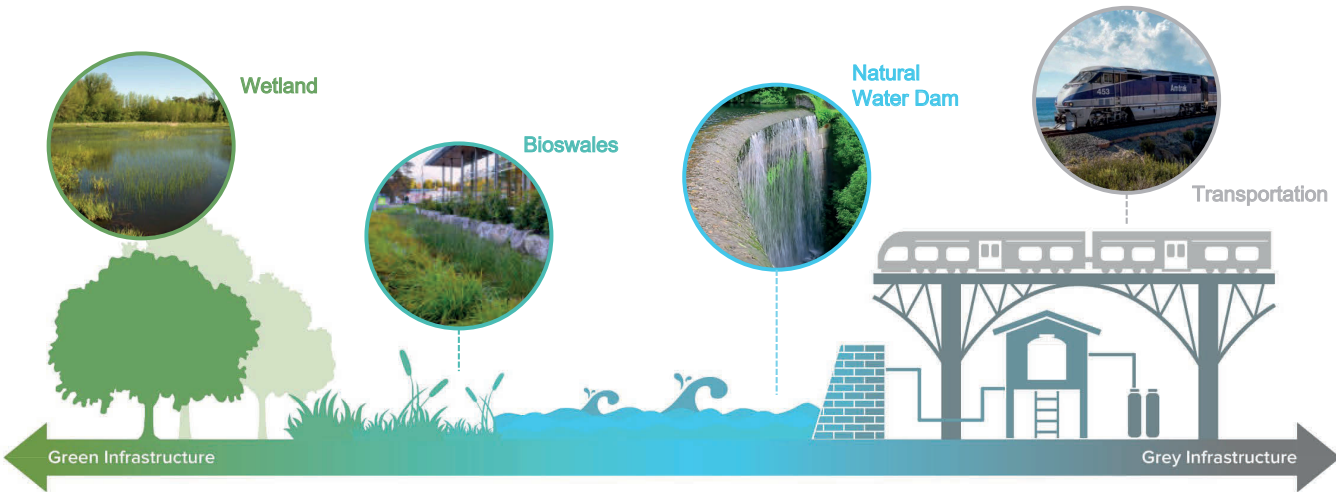
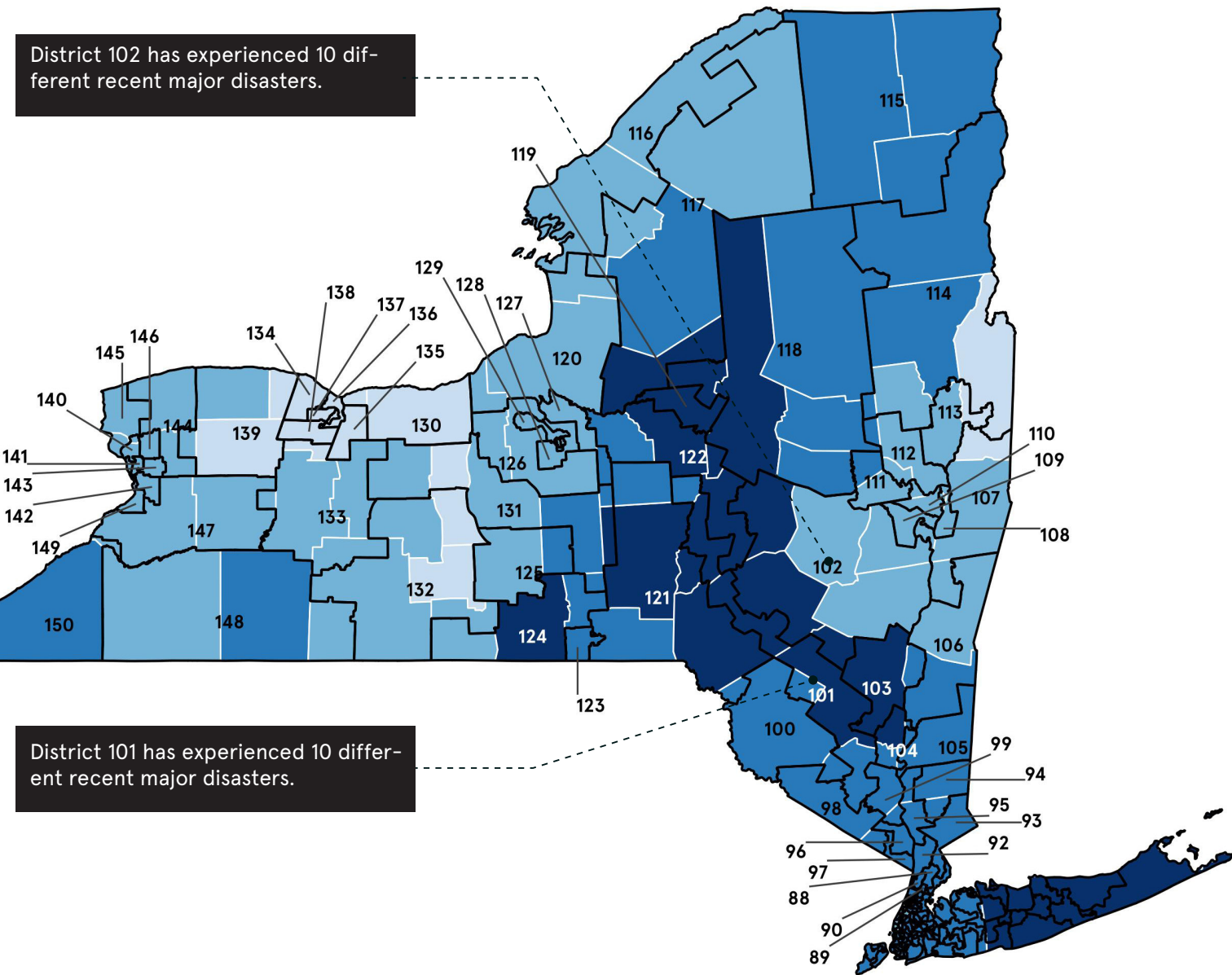


IMAGE SOURCE: BURO HAPPOLD

NYS ASSEMBLY DISTRICTS

MAJOR DISASTER DECLARATIONS 2011-2021



Major Disaster Declarations (2011-2021)

- 1 occurrence
- 2 to 3 occurrences
- 4 to 5 occurrences
- 6 to 7 occurrences

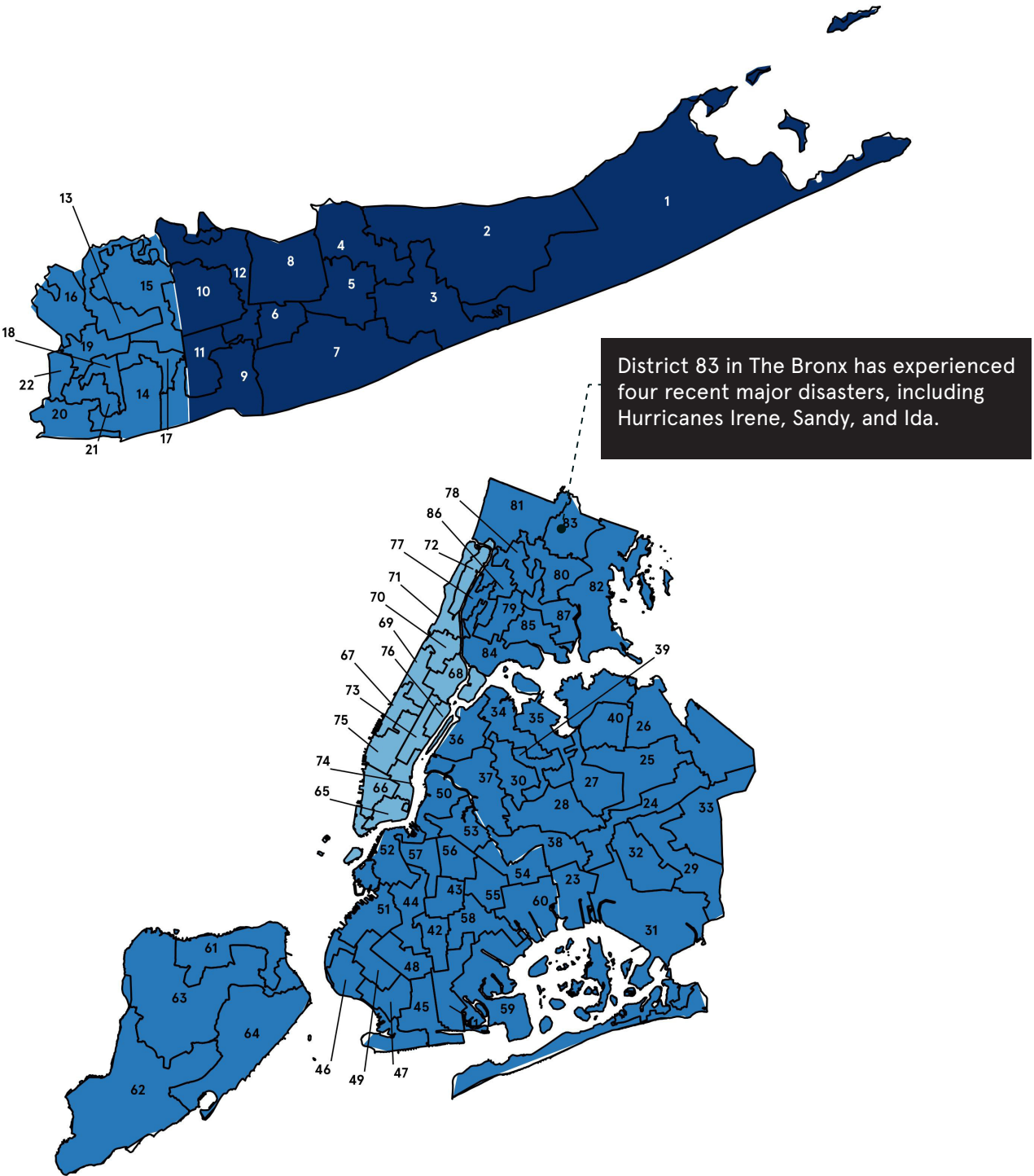
Assembly Districts



Source: FEMA 2021; NYS Legislative Boundaries
Maps courtesy of iParametrics

NYS ASSEMBLY DISTRICTS

MAJOR DISASTER DECLARATIONS 2011-2021: NEW YORK CITY & LONG ISLAND



NYS DISASTER OCCURRENCES 2011-2021

ASSEMBLY DISTRICTS

DISTRICT REPRESENTATIVE		COUNTIES (# OF DISASTERS)
1	Fred Thiele	Suffolk (7)
2	Jodi Giglio	Suffolk (7)
3	Joseph DeStefano	Suffolk (7)
4	Edward Flood	Suffolk (7)
5	Doug Smith	Suffolk (7)
6	Philip Ramos	Suffolk (7)
7	Jarett Gandolfo	Suffolk (7)
8	Michael Fitzpatrick	Suffolk (7), Nassau (5)
9	Michael Durso	Suffolk (7), Nassau (5)
10	Steve Stern	Suffolk (7), Nassau (5)
11	Kimberly Jean-Pierre	Suffolk (7)
12	Keith Brown	Suffolk (7), Nassau (5)
13	Charles Lavine	Nassau (5)
14	David McDonough	Nassau (5)
15	Jake Blumencranz	Nassau (5)
16	Gina Sillitti	Nassau (5)
17	John Mikulin	Nassau (5)
18	Taylor Darling	Nassau (5)
19	Edward Ra	Nassau (5)
20	Eric Ari Brown	Nassau (5)
21	Brian Curran	Nassau (5)
22	Michaelle Solages	Nassau (5)
23	Stacey G. Pheffer Amato	Queens (5)
24	David Weprin	Queens (5)
25	Nily Rozic	Queens (5)

Blue text indicates districts that encompass a county with six or more disasters.

NYS DISASTER OCCURRENCES 2011-2021

ASSEMBLY DISTRICTS CONTINUED

DISTRICT REPRESENTATIVE		COUNTIES (# OF DISASTERS)
26	Edward Braunstein	Queens (5)
27	Daniel Rosenthal	Queens (5)
28	Andrew Hevesi	Queens (5)
29	Alicia Hyndman	Queens (5)
30	Steven Raga	Queens (5)
31	Khaleel Anderson	Queens (5)
32	Vivian Cook	Queens (5)
33	Clyde Vanel	Queens (5)
34	Jessica González-Rojas	Queens (5)
35	Jeffrion Aubry	Queens (5)
36	Zohran Kwame Mamdani	Queens (5)
37	Juan Ardila	Queens (5)
38	Jenifer Rajkumar	Queens (5)
39	Catalina Cruz	Queens (5)
40	Ron Kim	Queens (5)
41	Helene Weinstein	Kings (4)
42	Rodneyse Bichotte Hermelyn	Kings (4)
43	Brian A. Cunningham	Kings (4)
44	Robert C. Carroll	Kings (4)
45	Michael Novakhov	Kings (4)
46	Alec Brook-Krasny	Kings (4)
47	William Colton	Kings (4)
48	Simcha Eichenstein	Kings (4)
49	Lester Chang	Kings (4)
50	Emily Gallagher	Kings (4)

DISASTER OCCURRENCES 2011-2021

ASSEMBLY DISTRICTS CONTINUED

DISTRICT REPRESENTATIVE		COUNTIES (# OF DISASTERS)
51	Marcela Mitaynes	Kings (4)
52	Jo Anne Simon	Kings (4)
53	Maritza Davila	Kings (4)
54	Erik Dilan	Kings (4)
55	Latrice Walker	Kings (4)
56	Stefani Zinerman	Kings (4)
57	Phara Souffrant Forrest	Kings (4)
58	Monique Chandler-Waterman	Kings (4)
59	Jaime Williams	Kings (4)
60	Nikki Lucas	Kings (4)
61	Charles Fall	Richmond (5), Kings (4), New York (3)
62	Michael Reilly	Richmond (5)
63	Samuel Pirozzolo	Richmond (5)
64	Michael Tannousis	Richmond (5), Kings (4)
65	Grace Lee	New York (3)
66	Deborah Glick	New York (3)
67	Linda Rosenthal	New York (3)
68	Edward Gibbs	New York (3)
69	Daniel O'Donnell	New York (3)
70	Inez Dickens	New York (3)
71	Alfred Taylor	New York (3)
72	Manny De Los Santos	New York (3)
73	Alex Bores	New York (3)
74	Harvey Epstein	New York (3)
75	Tony Simone	New York (3)

NYS DISASTER OCCURRENCES 2011-2021

ASSEMBLY DISTRICTS CONTINUED

DISTRICT REPRESENTATIVE		COUNTIES (# OF DISASTERS)
76	Rebecca Seawright	New York (3)
77	Latoya Joyner	The Bronx (4)
78	George Alvarez	The Bronx (4)
79	Chantel Jackson	The Bronx (4)
80	John Zaccaro Jr.	The Bronx (4)
81	Jeffrey Dinowitz	The Bronx (4)
82	Michael Benedetto	The Bronx (4)
83	Carl Heastie	The Bronx (4)
84	Amanda Septimo	The Bronx (4)
85	Kenneth Burgos	The Bronx (4)
86	Yudelka Tapia	The Bronx (4)
87	Karines Reyes	The Bronx (4)
88	Amy Paulin	Westchester (4)
89	J. Gary Pretlow	Westchester (4)
90	Nader Sayegh	Westchester (4)
91	Steven Otis	Westchester (4)
92	MaryJane Shimsky	Westchester (4)
93	Chris Burdick	Westchester (4)
94	Matthew Slater	Westchester (4), Putnam (4)
95	Dana Levenberg	Westchester (4), Putnam (4)
96	Kenneth Zebrowski	Rockland (5)
97	John W. McGowan	Rockland (5)
98	Karl Brabenec	Rockland (5), Orange (4)
99	Christopher Eachus	Rockland (5), Orange (4)
100	Aileen Gunther	Otsego (6), Orange (4), Sullivan (4)

DISASTER OCCURRENCES 2011–2021

ASSEMBLY DISTRICTS CONTINUED

DISTRICT REPRESENTATIVE		COUNTIES (# OF DISASTERS)
101	Brian Maher	Delaware (7), Otsego (6), Orange (4), Sullivan (4), Madison (4)
102	Christopher Tague	Delaware (7), Otsego (6), Ulster (6), Greene (3), Schoharie (3), Albany (2)
103	Sarahana Shrestha	Ulster (6)
104	Jonathan Jacobson	Ulster (6), Orange (4), Dutchess (4)
105	Anil Beephan Jr.	Dutchess (4)
106	Didi Barrett	Dutchess (4), Columbia (3)
107	Scott H. Bendett	Columbia (3), Rensselaer (3), Albany (2), Washington (1)
108	John McDonald III	Rensselaer (3), Saratoga (3), Albany (2)
109	Patricia Fahy	Albany (2)
110	Phil Steck	Schenectady (3), Albany (2)
111	Angelo Santabarbara	Montgomery (5), Schenectady (3)
112	Mary Beth Walsh	Fulton (4), Schenectady (3), Saratoga (3)
113	Carrie Woerner	Warren (4), Saratoga (3), Washington (1)
114	Matthew Simpson	Essex (5), Saratoga (3), Washington (1)
115	D. Billy Jones	Essex (5), Clinton (4), Franklin (4)
116	Scott Gray	Jefferson (3), St. Lawrence (2)
117	Kenneth Blankenbush	Oneida (6), Lewis (5), Jefferson (3), St. Lawrence (2)
118	Robert Smullen	Herkimer (7), Oneida (6), Montgomery (5), Fulton (4), Hamilton (4)
119	Marianne Buttenschon	Oneida (6)
120	William Barclay	Jefferson (3), Cayuga (2), Oswego (2),
121	Joe Angelino	Delaware (7), Chenango (6), Otsego (6), Broome (5), Madison (4), Sullivan (4)
122	Brian Miller	Herkimer (7), Otsego (6), Oneida (6), Madison (4)
123	Donna Lupardo	Broome (5)
124	Christopher Friend	Tioga (6), Broome (5), Chemung (3)
125	Anna Kelles	Cortland (4), Tompkins (2)

NYS DISASTER OCCURRENCES 2011–2021

ASSEMBLY DISTRICTS CONTINUED

DISTRICT REPRESENTATIVE		COUNTIES (# OF DISASTERS)
126	John Lemondes Jr.	Tompkins (2), Cayuga (2), Onondaga (2)
127	Al Stirpe	Madison (4), Onondago (2)
128	Pamela Hunter	Onondago (2)
129	William Magnarelli	Onondago (2)
130	Brian Manktelow	Monroe (1), Wayne (1)
131	Jeff Gallahan	Chenango (6), Broome (5), Cortland (4), Madison (4), Ontario (2), Cayuga (2), Seneca (1)
132	Philip Palmesano	Chemung (3), Steuben (3), Yates (3), Seneca (1), Schuyler (1)
133	Marjorie Byrnes	Steuben (3), Livingston (2), Ontario (2), Wyoming (2), Monroe (1)
134	Josh Jensen	Monroe (1)
135	Jennifer Lunsford	Monroe (1)
136	Sarah Clark	Monroe (1)
137	Demond Meeks	Monroe (1)
138	Harry Bronson	Monroe (1)
139	Stephen Hawley	Orleans (3), Erie (2), Monroe (1), Genesee (1)
140	William Conrad	Niagara (3), Erie (2)
141	Crystal Peoples-Stokes	Erie (2)
142	Patrick Burke	Erie (2)
143	Monica P. Wallace	Erie (2)
144	Michael J. Norris	Niagara (3), Erie (2)
145	Angelo J. Morinello	Niagara (3), Erie (2)
146	Karen McMahon	Erie (2)
147	David DiPietro	Erie (2), Wyoming (2)
148	Joseph Giglio	Allegany (4), Steuben (3), Cattaraugus (2)
149	Jonathan Rivera	Erie (2)
150	Andrew Goodell	Chautauqua (4), Erie (2)



39

Deaths from
Winter Storm Elliott in Buf-
falo in December 2022.

ERIE COUNTY

A JANUARY NOR'EASTER BRINGS HEAVY SNOWFALL
TO DOWNTOWN BUFFALO, LEAVING RESIDENTS
TO SHOVEL OUT SEVERAL FEET OF SNOW

JANUARY 2022

IMAGE SOURCE: ANDRE CARROTFLOWER

\$1,348

Per capita cost of disasters in federal assistance. The second highest per capita cost in the country.



BROOME COUNTY

REMNANTS FROM TROPICAL STORM LEE CAUSE
FLOODING IN DOWNTOWN BINGHAMTON

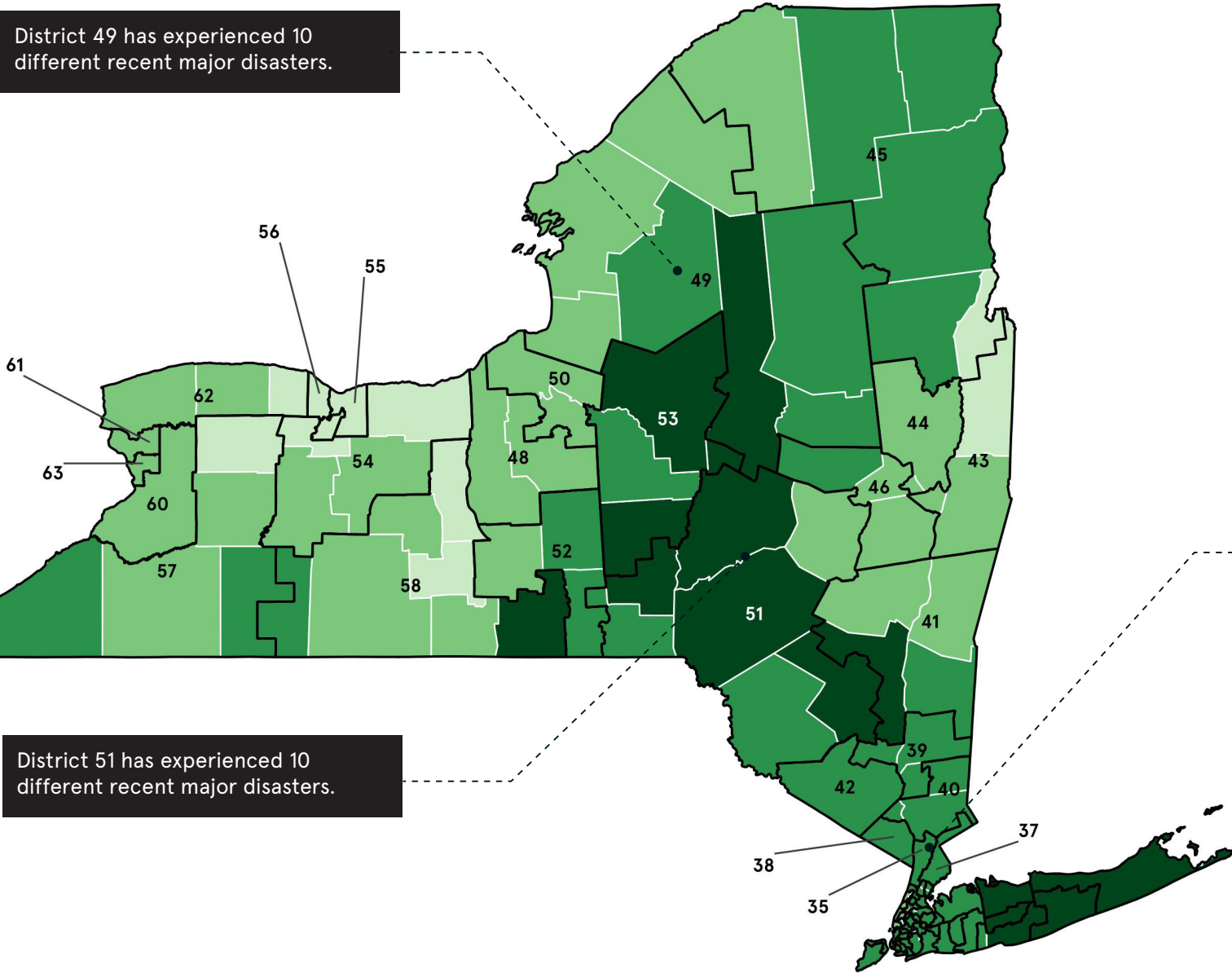
SEPTEMBER 2011

IMAGE SOURCE: NOAA

NYS SENATE DISTRICTS

MAJOR DISASTER DECLARATIONS 2011-2021

District 49 has experienced 10 different recent major disasters.



District 51 has experienced 10 different recent major disasters.

Major Disaster Declarations (2011-2021)

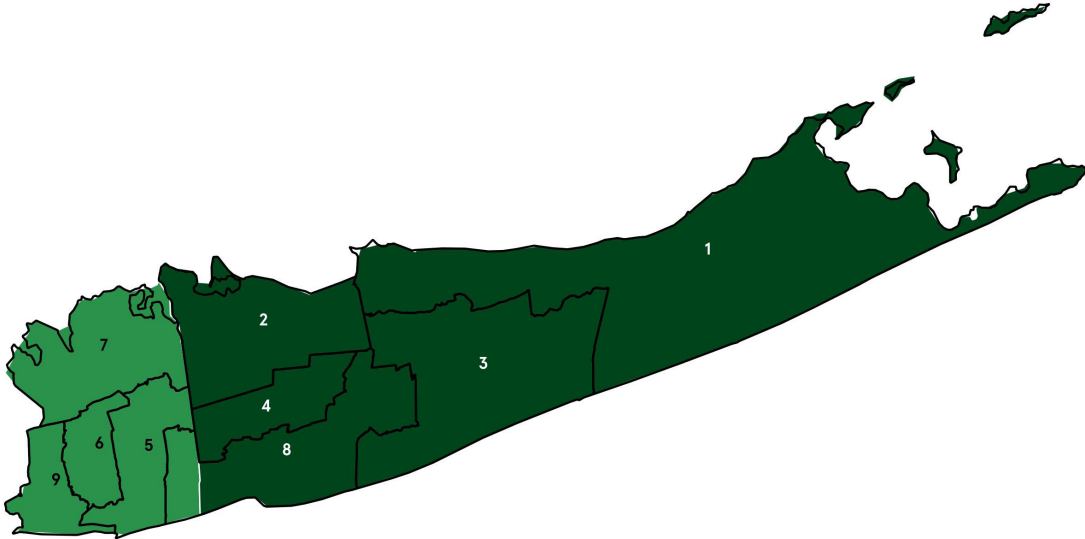
- 1 occurrence
- 2 to 3 occurrences
- 4 to 5 occurrences
- 6 to 7 occurrences

Senate Districts

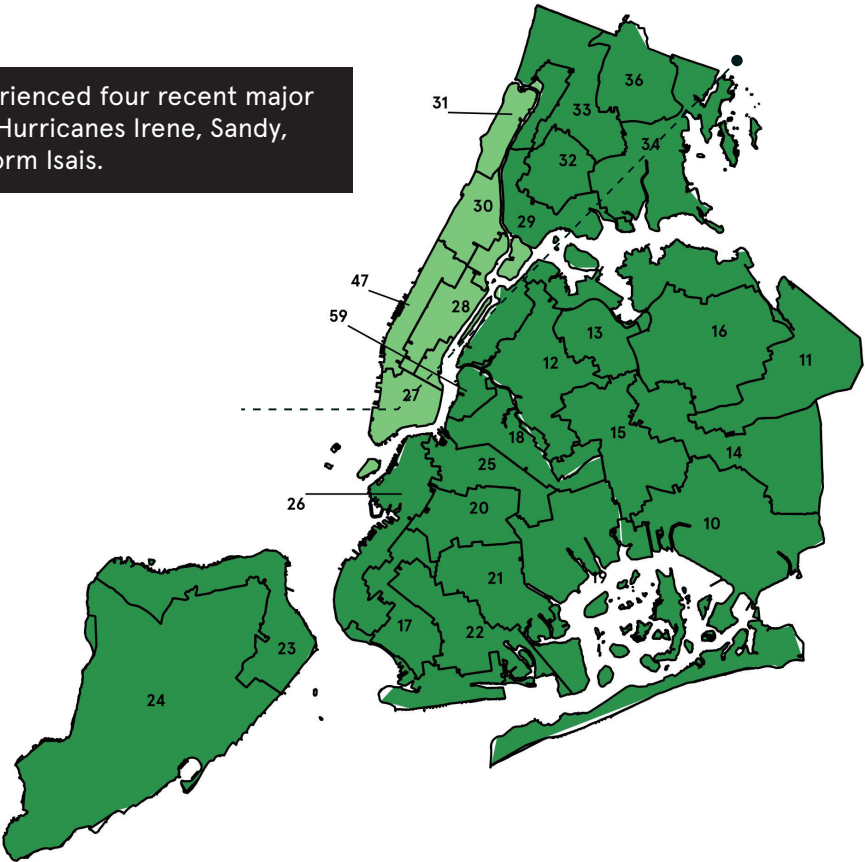
Source: FEMA 2021; NYS Legislative Boundaries
Maps courtesy of iParametrics

NYS SENATE DISTRICTS

MAJOR DISASTER DECLARATIONS 2011-2021: NEW YORK CITY & LONG ISLAND



District 35 has experienced four recent major disasters, including Hurricanes Irene, Sandy, Ida, and Tropical Storm Isais.



DISASTER OCCURRENCES 2011–2021

SENATE DISTRICTS

	DISTRICT REPRESENTATIVE	COUNTIES (# OF DISASTERS)
1	Anthony Palumbo	Suffolk (7)
2	Mario Mattera	Suffolk (7)
3	Dean Murray	Suffolk (7)
4	Monica Martinez	Suffolk (7)
5	Steven Rhoads	Nassau (5)
6	Kevin Thomas	Nassau (5)
7	Jack Martins	Nassau (5)
8	Alexis Welk	Suffolk (7), Nassau (5)
9	Patricia Canzoneri-Fitzpatrick	Nassau (5)
10	James Sanders, Jr.	Queens (5)
11	Toby Ann Stavisky	Queens (5)
12	Michael Gianaris	Queens (5), Kings (4)
13	Jessica Ramos	Queens (5)
14	Leroy Comrie, Jr.	Queens (5)
15	Joseph Addabbo, Jr.	Queens (5), Kings (4)
16	John Liu	Queens (5)
17	Iwen Chu	Queens (5), Kings (4)
18	Julia Salazar	Queens (5), Kings (4)
19	Roxanne Persaud	Queens (5), Kings (4)
20	Zellnor Myrie	Kings (4)
21	Kevin Parker	Kings (4)
22	Simcha Felder	Kings (4)
23	Jessica Scarcella-Spanton	Richmond (5), Kings (4)
24	Andrew Lanza	Richmond (5)
25	Jabari Brisport	Kings (4)

Green text indicates districts that encompass a county with six or more disasters.

NYS DISASTER OCCURRENCES 2011–2021

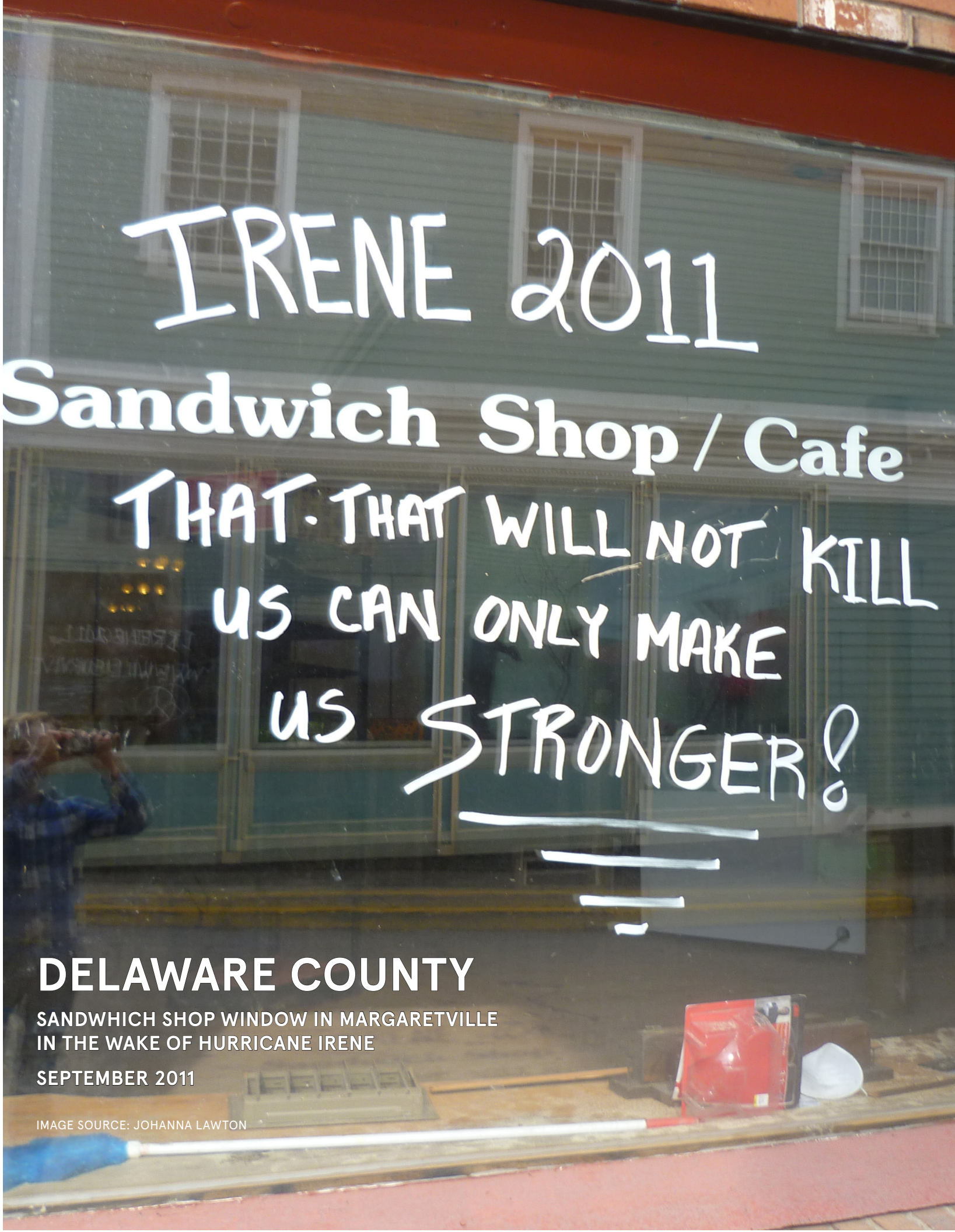
SENATE DISTRICTS CONTINUED

	DISTRICT REPRESENTATIVE	COUNTIES (# OF DISASTERS)
26	Andrew Gounardes	Kings (4), New York (3)
27	Brian Kavanagh	New York (3)
28	Liz Krueger	New York (3)
29	Jose M. Serrano	The Bronx (4), New York (3)
30	Cordell Cleare	The Bronx (4), New York (3)
31	Robert Jackson	The Bronx (4), New York (3)
32	Luis Sepúlveda	The Bronx (4)
33	J. Gustavo Rivera	The Bronx (4)
34	Nathalia Fernandez	Westchester (4), The Bronx (4)
35	Andrea Stewart-Cousins	Westchester (4)
36	Jamaal Bailey	Westchester (4), The Bronx (4)
37	Shelley Mayer	Westchester (4)
38	Bill Weber	Rockland (5)
39	Rob Rolison	Dutchess (4), Orange (4), Putnam (4)
40	Peter Harckham	Rockland (5), Putnam (4), Westchester (4)
41	Michelle Hinchey	Ulster (6), Columbia (3), Dutchess (4), Greene (3)
42	James Skoufis	Orange (4)
43	Jacob Ashby	Rensselaer (3), Albany (2), Washington (1)
44	James Tedisco	Saratoga (3), Schenectady (3)
45	Dan Stec	Essex (5), Clinton (4), Franklin (4), Warren (4), St. Lawrence (2), Washington (1)
46	Neil Breslin	Montgomery (5), Schenectady (3), Albany (2)
47	Brad Hoylman	New York (3)
48	Rachel May	Cayuga (2), Onondago (2)
49	Mark Walczyk	Herkimer (7), Lewis (5), Fulton (4), Hamilton (4), Jefferson (3), Oswego (2), St. Lawrence (2)
50	John Mannion	Oswego (2), Onondago (2)

DISASTER OCCURRENCES 2011-2021

SENATE DISTRICTS CONTINUED

	DISTRICT REPRESENTATIVE	COUNTIES (# OF DISASTERS)
51	Peter Oberacker	Delaware (7), Chenango (6), Otsego (6), Ulster (6), Sullivan (4), Broome (4)Schoharie (3)
52	Lea Webb	Broome (4), Cortlandt (4), Tompkins (2)
53	Joseph Griffo	Herkimer (7) , Chenango (6), Oneida (6), Madison (4)
54	Pamela Helming	Livingston (2), Ontario (2), Monroe (1), Wayne (1)
55	Samra Brouk	Monroe (1)
56	Jeremy Cooney	Monroe (1)
57	George Borrello	Allegany (4), Chautauqua (4), Cattaraugus (2), Wyoming (2), Genesee (1)
58	Thomas O'Mara	Tioga (6), Allegany (4), Chemung (4), Yates (3), Steuben (3), Schuyler (1), Seneca (1)
59	Kristen Gonzalez	Queens (5), Kings (4), New York (3)
60	Patrick Gallivan	Erie (2)
61	Sean Ryan	Erie (2)
62	Robert Ortt	Niagara (3), Orleans (3), Monroe (1)
63	Timothy M. Kennedy	Erie (2)

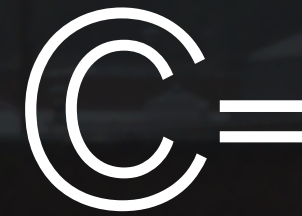


DELAWARE COUNTY

SANDWHICH SHOP WINDOW IN MARGARETVILLE
IN THE WAKE OF HURRICANE IRENE

SEPTEMBER 2011

IMAGE SOURCE: JOHANNA LAWTON



American Society of
Civil Engineers
Infrastructure
Report Card Grade

Trespassing
any onto track area
property is prohibited.
Violators will be prosecuted.

Prohibido pasar.
Entrada al área de rieles o a
propiedad está prohibida.

WESTCHESTER COUNTY

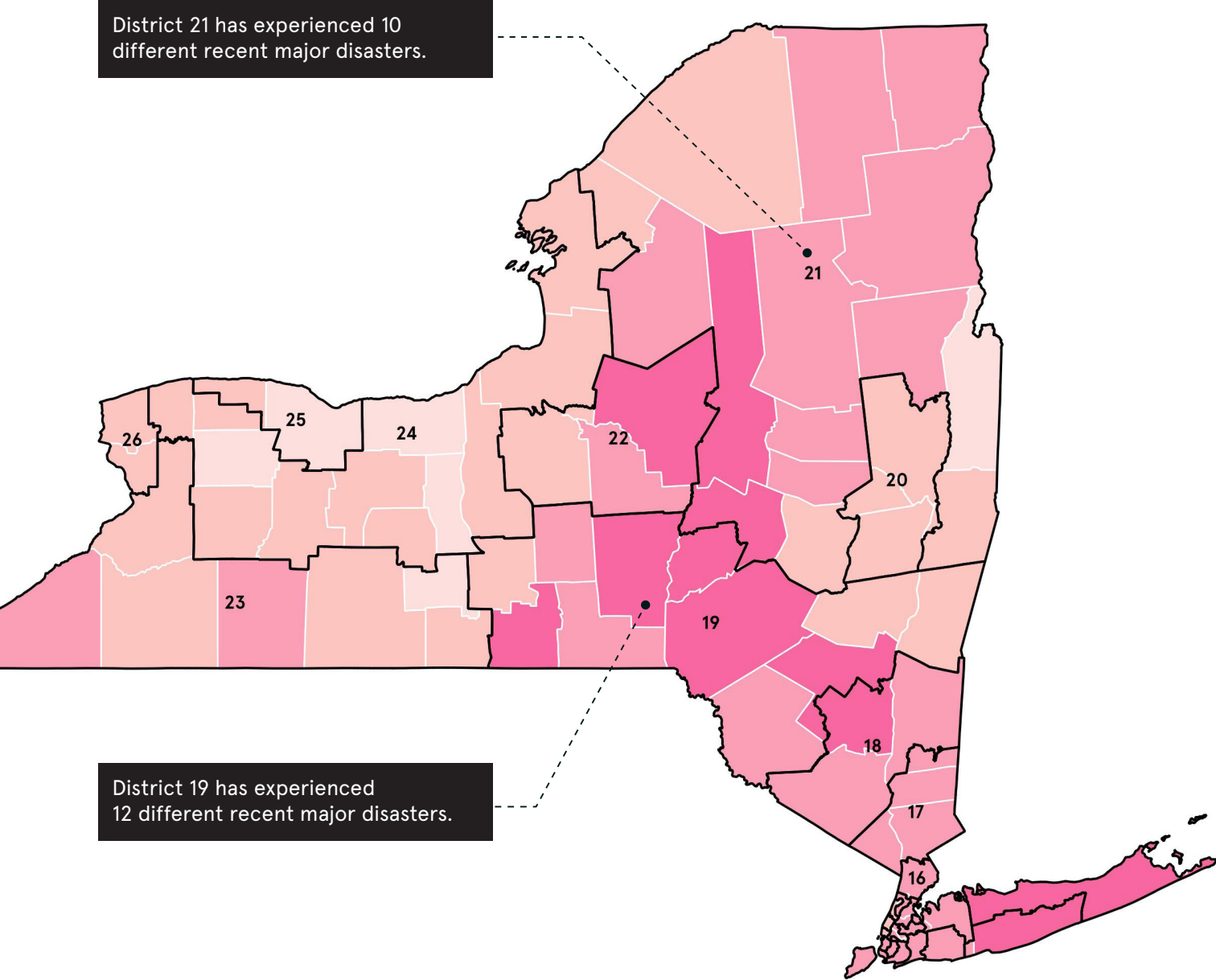
FLOODWATERS COVERED THE TRACKS OF
METRO-NORTH RAILROAD'S HUDSON LINE AT
OSSINING DURING HURRICANE IRENE

AUGUST 2011

IMAGE SOURCE: METROPOLITAN TRANSIT AUTHORITY

NYS CONGRESSIONAL DISTRICTS

MAJOR DISASTER DECLARATIONS 2011-2021



Major Disaster Declarations (2011-2021)

- 1 occurrence
- 2 to 3 occurrences
- 4 to 5 occurrences
- 6 to 7 occurrences

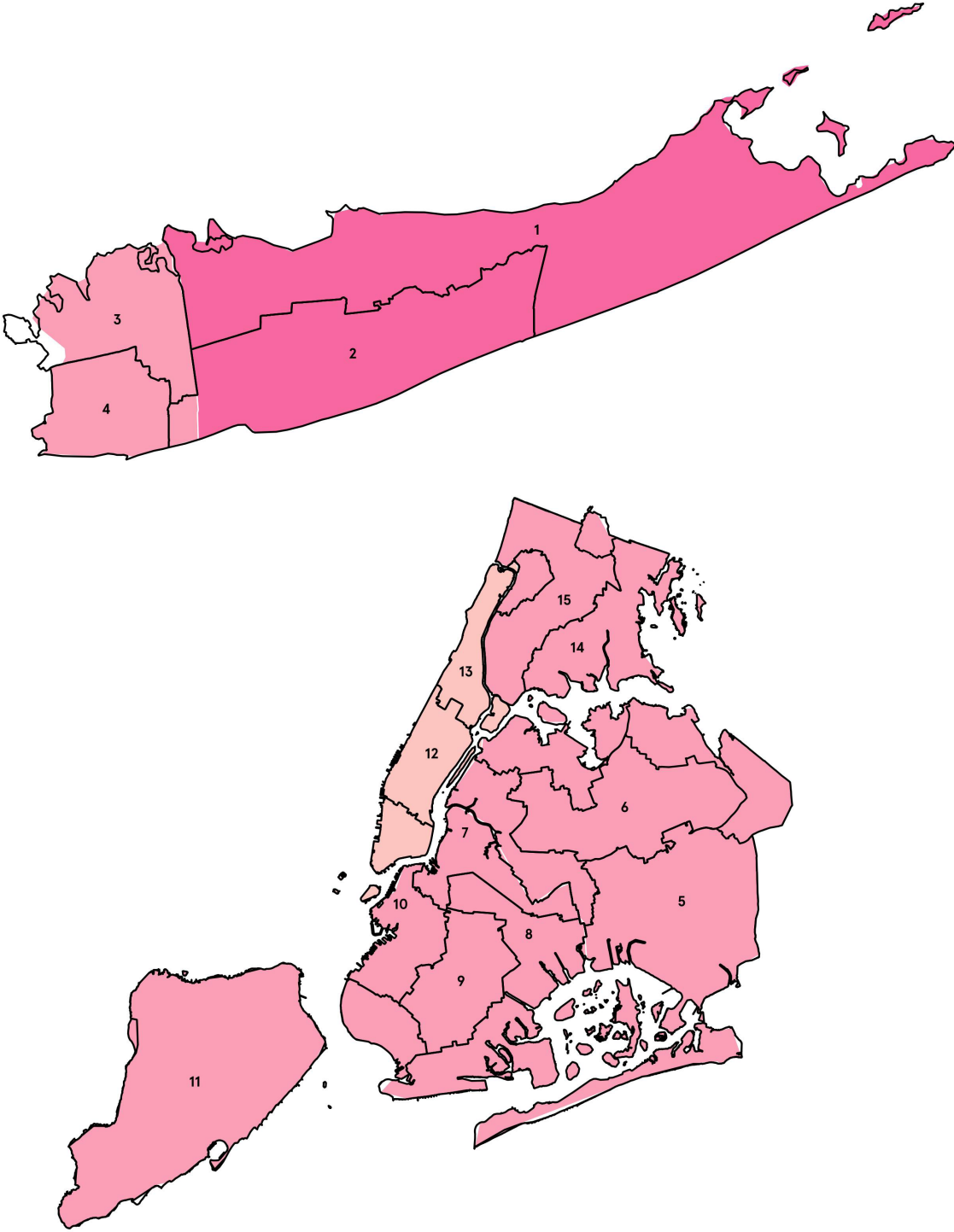
Congressional Districts



Source: FEMA 2021; NYS Legislative Boundaries
Maps courtesy of iParametrics

NYS CONGRESSIONAL DISTRICTS

MAJOR DISASTER DECLARATIONS 2011-2021: NEW YORK CITY & LONG ISLAND



NYS DISASTER OCCURRENCES 2011-2021

CONGRESSIONAL DISTRICTS

DISTRICT REPRESENTATIVE		COUNTIES (# OF DISASTERS)
1	Nicholas J. LaLota	Suffolk (7)
2	Andrew Garbarino	Suffolk (7), Nassau (5)
3	George Devolder-Santos	Nassau (5)
4	Anthony D'Esposito	Nassau (5)
5	Gregory W. Meeks	Queens (5)
6	Grace Meng	Queens (5)
7	Nydia Velazquez	Queens (5), Kings (4)
8	Hakeem Jeffries	Kings (4)
9	Yvette D. Clarke	Kings (4)
10	Daniel Goldman	Kings (4), New York (3)
11	Nicole Malliotakis	Richmond (5), Kings (4),
12	Jerrold Nadler	New York (3)
13	Adriano Espaillat	Bronx (4), New York (3)
14	Alexandria Ocasio-Cortez	Queens (5), Bronx (4)
15	Ritchie Torres	Bronx (4)
16	Jamaal Bowman	Westchester (4)
17	Michael Lawler	Rockland (5), Dutchess (4), Putnam (4), Westchester (4)
18	Pat Ryan	Ulster (6), Dutchess (4), Orange (4)
19	Marcus Molinaro	Delaware (7), Chenango (6), Tioga (6), Ulster (6), Otsego (6), Broome (5), Cortland (4), Sullivan (4), Columbia (3), Greene (3), Tompkins (2)
20	Paul Tonko	Rensselaer (3), Saratoga (3), Schenectady (3), Albany (2)
21	Elise Stefanik	Herkimer (7), Otsego (6), Montgomery (5), Essex (5), Lewis (5), Warren (4), Franklin (4), Clinton (4), Fulton (4), Hamilton (4), Jefferson (3), Schoharie (3), Rensselaer (3), St. Lawrence (2), Washington (1)
22	Brandon Williams	Oneida (6), Madison (4), Onondaga (2)
23	Nicholas A. Langworthy	Allegany (4), Chautauqua (4), Chemung (3), Erie (2), Cattaraugus (2), Schuyler (1)

NYS DISASTER OCCURRENCES 2011-2021

CONGRESSIONAL DISTRICTS CONTINUED

DISTRICT REPRESENTATIVE		COUNTIES (# OF DISASTERS)
24	Claudia Tenney	Jefferson (3), Orleans (3), Yates (3), Niagara (3), Cayuga (2), Livingston (2), Ontario (2), Oswego (2), Wyoming (2), Seneca (1), Wayne (1), Genesee (1)
25	Joseph Morelle	Orleans (3), Steuben (3), Monroe (1)
26	Brian Higgins	Niagara (3), Erie (2)

Pink text indicates districts that encompass a county with six or more disasters.

CASCADING IMPACTS OF CLIMATE EVENTS

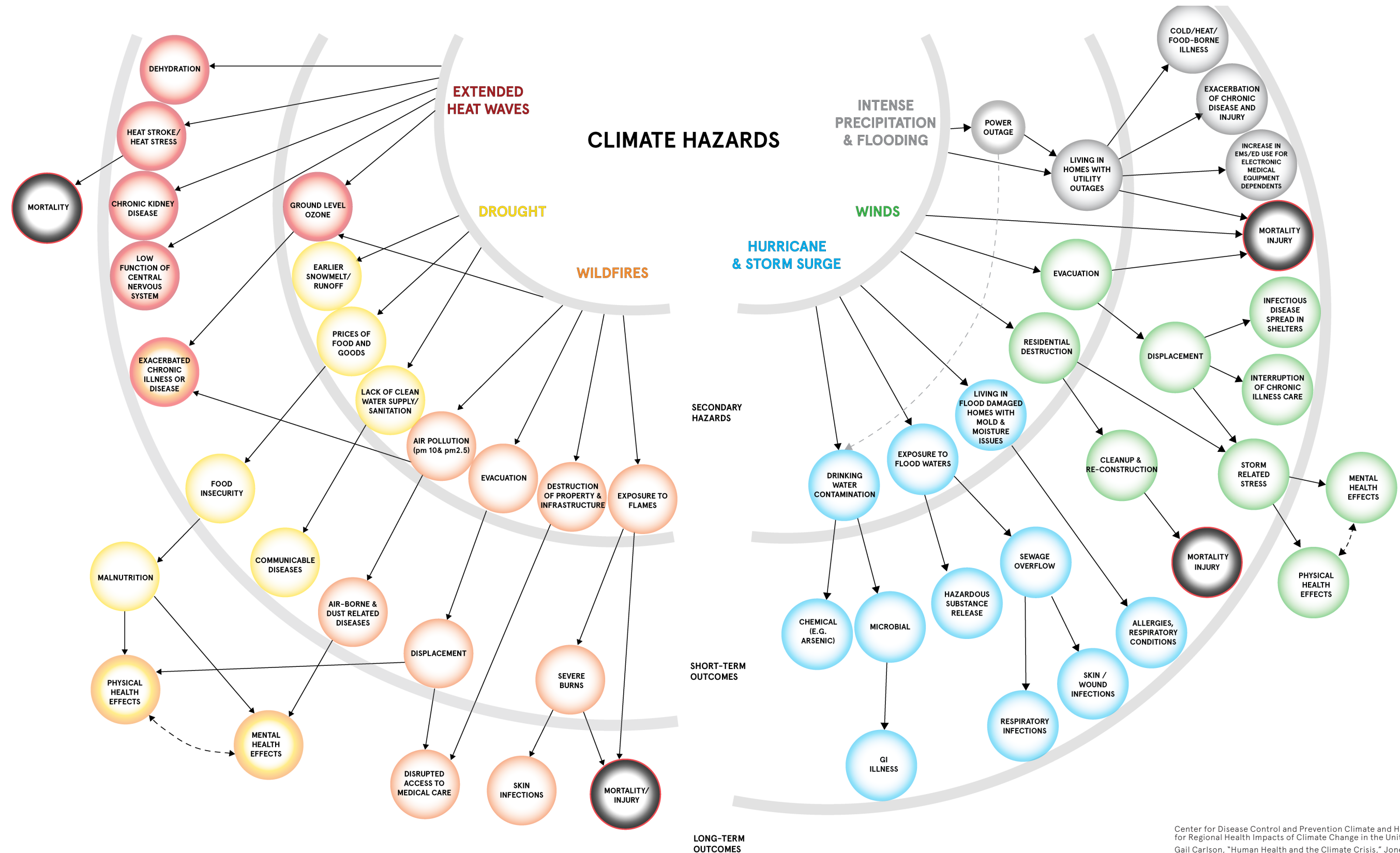


Illustration: Geethanjali MR

Center for Disease Control and Prevention Climate and Health Program, "Preparing for Regional Health Impacts of Climate Change in the United States," July 2020.

Gail Carlson, "Human Health and the Climate Crisis," Jones and Bartlett Learning, Jan. 2022.

Kathryn Lane, Kizzy Charles-Guzman, Katherine Wheeler, Zaynah Abid, Nathan Goebel, and Thomas Matto, "Health effects of coastal storms and flooding in Urban Areas: A Review and Vulnerability Assessment," *Journal of Environmental and Public Health* Volume 2013. <http://dx.doi.org/10.1155/2013/913064>

the River | A Project of
HUDSON VALLEY NEWSROOM Chronogram

With Flooding on the Rise, Hudson Valley Superfund Sites Are at Risk

868

Superfund sites in New York State. During a flood event, these sites pose an additional risk to nearby communities as toxins are released into the water.

**SPECTRUM
NEWS1**

Concern in Rensselaer County that floodwater carried toxins from a dump

BY ARIN COTEL-ALTMAN | RENSSELAER COUNTY
UPDATED 6:16 PM ET JUL. 27, 2021 | PUBLISHED 4:27 PM ET JUL. 27, 2021

Gothamist A non-profit newsroom,
powered by WNYC.

NEWS

Photos, Video: Toxic Gowanus Canal Flooding The Neighborhood

The New York Times

THE APPRAISAL

In Brooklyn, Worrying About Not Only Flooding but Also What's in Water

**KINGS COUNTY
(BROOKLYN)**

DREDGING TO REMOVE TOXIC SUBSTANCES FROM
THE GOWANUS CANAL, A SUPERFUND SITE

APRIL 2022

IMAGE SOURCE: ANAHITA ROUZBEH



WAYNE COUNTY

RISING WATER LEVELS IN LAKE ONTARIO CAUSE MONTHS OF SUMMER FLOODING. RESIDENTS CONFER ON FLOODED GREIG STREET IN SODUS POINT IN EFFORTS TO KEEP WATER OUT OF THEIR HOMES

MAY 2017

IMAGE SOURCE: DANIEL PENFIELD

NEW YORK

TOTAL: 16 DISASTERS FEMA PA + HM: \$17.1B HUD CDBG-DR: \$9.2B FEMA + HUD ASSISTANCE: \$26.3B			2011						2012		2013		2014		2017		2018		2019		2020		2021										
			1957: SEVERE WINTER STORM AND SNOWSTORM		1993: SEVERE STORMS, FLOODING, TORNADOES, AND STRAIGHT-LINE WINDS		4020: HURRICANE IRENE		4031: REMNANTS OF TROPICAL STORM LEE		4085: HURRICANE SANDY		4111: SEVERE WINTER STORM AND SNOWSTORM		4129: SEVERE STORMS AND FLOODING		4180: SEVERE STORMS AND FLOODING		4204: SEVERE WINTER STORM, SNOWSTORM, AND FLOODING		4322: SEVERE WINTER STORM AND SNOWSTORM		4348: FLOODING		4397: SEVERE STORMS AND FLOODING		4472: SEVERE STORMS, STRAIGHT-LINE WINDS, AND FLOODING		4567: TROPICAL STORM ISAIAS		4615: REMNANTS OF HURRICANE IDA		4625: REMNANTS OF TROPICAL STORM FRED
County Name	# of Climate Disasters 2011-2021	Total FEMA Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	
Statewide	16	\$3,081,003,424	\$16,838,245.11	\$344,763.00	\$2,112,278.68	\$257,411.00	\$179,876,483.84	\$4,331,769.00	\$67,310,063.45	\$2,378,524.00	\$2,633,611,095.34	\$91,750,583.94	\$14,584,443.45	\$163,456.00	\$28,288,126.78	\$421,889.00	\$3,457,491.63	\$0.00	\$9,314,204.20	\$0.00	\$10,316,747.35	\$0.00	\$6,385,770.97	\$0.00	\$3,544,900.26	\$0.00	\$4,614,901.78	\$0.00	\$1,044,574.12	\$0.00	\$55,700.60	\$0.00	
Albany County	2	\$10,170,304					\$8,470,690.80	\$0.00												\$1,399,613.40	\$300,000.00												
Allegany County	4	\$5,273,661			\$3,234,080.39	\$0.00									\$242,912.23	\$0.00	\$1,327,751.63	\$468,917.00												\$0.00	\$0.00		
Bronx County	4	\$15,292,744	\$52,914.37	\$0.00			\$371,327.17	\$0.00			\$8,493,502.41	\$6,375,000.00																\$0.00	\$0.00				
Broome County	5	\$116,763,314			\$1,692,066.35	\$203,379.00			\$105,594,592.07	\$77,912.16					\$1,208,838.86	\$0.00					\$1,176,320.20	\$0.00			\$4,648,159.48	\$2,162,046.00							
Cattaraugus County	2	\$10,474,413															\$10,316,084.35	\$0.00	\$158,328.80	\$0.00													
Cayuga County	2	\$95,964																					\$95,963.88	\$0.00						\$0.00	\$0.00		
Chautauqua County	4	\$2,280,657													\$349,992.94	\$0.00	\$818,114.52	\$0.00	\$370,524.28	\$0.00						\$682,024.91	\$60,000.00						
Chemung County	3	\$11,405,382			\$438,533.01	\$0.00			\$6,841,866.95	\$0.00															\$4,124,981.93	\$0.00							
Chenango County	6	\$10,445,165			\$2,152,720.63	\$0.00			\$4,203,918.36	\$302,743.00					\$1,028,934.53	\$0.00					\$385,781.83	\$0.00			\$1,756,975.50	\$0.00	\$614,091.63	\$0.00					
Clinton County	4	\$8,369,943			\$2,748,851.04	\$0.00	\$4,042,291.96	\$233,091.00							\$927,822.32	\$0.00					\$417,886.94	\$0.00											
Columbia County	3	\$2,953,496	\$444,893.17	\$0.00			\$1,894,744.41	\$46,120.50													\$567,738.04	\$0.00											
Cortland County	4	\$1,411,210													\$749,423.32	\$0.00					\$280,370.56	\$0.00					\$381,415.87	\$0.00		\$0.00	\$0.00		
Delaware County	7	\$28,498,006			\$421,077.42	\$0.00	\$9,747,497.11	\$7,205,403.00	\$4,427,314.37	\$3,264,005.00					\$186,937.33	\$0.00	\$347,950.85	\$0.00			\$529,008.62	\$0.00			\$2,368,812.11	\$0.00							
Dutchess County	4	\$7,107,707	\$1,060,631.78	\$0.00			\$4,202,395.41	\$166,591.00													\$1,678,088.68	\$0.00							\$0.00	\$0.00			
Erie County	2	\$22,307,942																	\$20,424,536.30	\$0.00							\$1,883,405.90	\$0.00					
Essex County	5	\$24,266,442			\$2,244,844.70	\$0.00	\$15,777,797.04	\$4,091,395.00							\$904,069.06	\$0.00					\$225,461.40	\$0.00					\$1,022,874.72	\$0.00					
Franklin County	4	\$7,429,081			\$5,247,340.36	\$0.00	\$403,934.93	\$750,261.00							\$767,123.54	\$0.00					\$260,421.31	\$0.00											
Fulton County	4	\$1,289,501					\$240,415.83	\$0.00	\$0.00	\$0.00											\$279,952.72	\$0.00					\$769,132.45	\$0.00			\$0.00	\$0.00	
Genesee County	1	\$415,404																	\$415,404.39	\$0.00													
Greene County	3	\$552,300,768					\$30,329,974.48	\$2,968,236.00			\$494,960.18	\$518,123,545.00									\$384,052.05	\$0.00											
Hamilton County	4	\$3,564,968			\$334,167.17	\$0.00	\$30,204.61	\$0.00													\$61,503.53	\$0.00					\$3,139,092.57	\$0.00					
Herkimer County	7	\$36,256,782			\$1,217,753.24	\$0.00	\$307,656.66	\$5,829,938.79	\$240,966.54	\$0.00					\$17,910,560.23	\$0.00	\$810,156.69	\$0.00			\$347,195.34	\$0.00					\$9,592,554.45	\$0.00					
Jefferson County	3	\$2,842,499																		\$327,590.40	\$0.00			\$2,430,253.36	\$0.00			\$84,655.30	\$0.00				
Kings County	4	\$190,788,711	\$155,578.24	\$0.00			\$3,595,257.28	\$0.00			\$175,897,939.47	\$11,139,936.00																\$0.00	\$0.00				
Lewis County	5	\$1,345,288			\$632,568.11	\$0.00											\$261,158.48	\$0.00	\$122,430.89	\$26,562.54							\$302,567.79	\$0.00			\$0.00	\$0.00	
Livingston County	2	\$3,002,268			\$873,263.69	\$0.00											\$2,129,004.01	\$0.00															
Madison County	4	\$5,795,137			\$761,673.78	\$0.00									\$3,717,632.71	\$0.00					\$396,479.89	\$0.00					\$859,350.24	\$60,000.00					
Monroe County	1	\$810,813																						\$810,813.05	\$0.00								
Montgomery County	5	\$9,581,890					\$3,402,391.93	\$1,799,361.00	\$408,002.37	\$543,162.73					\$2,986,849.62	\$0.00					\$230,494.07	\$0.00					\$151,628.21	\$60,000.00					
Nassau County	5	\$1,784,981,983	\$5,553,730.69	\$0.00			\$25,522,018.33	\$831,861.33			\$1,597,171,673.73	\$150,430,841.00																\$5,097,041.20	\$0.00	\$374,816.48	\$0.00		
New York County	3	\$8,950,902,274	\$14,438,702.72	\$0.00			\$57,507,438.47	\$0.00			\$8,799,402,203.30	\$79,306,365.38																\$247,563.90	\$0.00	\$0.00	\$0.00		
Niagara County	3	\$3,718,979			\$513,376.62	\$0.00									\$372,351.75	\$0.00							\$2,772,500.37	\$60,750.00									
Oneida County	6	\$17,886,606			\$1,510,132.31	\$0.00			\$1,405,119.60	\$1,400,946.59					\$5,065,933.88	\$0.00					\$2,724,829.10	\$106,514.00					\$5,673,130.43	\$0.00				\$0.00	\$0.00
Onondaga County	2	\$2,401,940			\$2,401,940.34	\$0.00																									\$0.00	\$0.00	
Ontario County	2	\$3,529,396			\$2,205,862.33	\$0.00											\$1,323,533.89	\$0.00															
Orange County	4	\$37,845,737					\$25,270,610.75	\$341,560.74	\$8,174,439.71	\$0.00	\$3,867,265.30	\$191,860.48																\$0.00	\$0.00				
Orleans County	3	\$307,744																	\$0.00	\$0.00	\$129,003.84	\$0.00	\$178,740.59	\$0.00									
Oswego County	2	\$11,170,592																			\$10,715,355.44	\$0.00					\$455,236.83	\$0.00					
Otsego County	6	\$9,728,574					\$1,070,566.28	\$0.00	\$4,362,695.95	\$0.00					\$530,046.76	\$0.00	\$716,813.80	\$0.00			\$438,076.19	\$0.00					\$2,610,374.96	\$0.00					
Putnam County	4	\$6,792,035					\$4,295,013.14	\$101,702.00			\$2,071,081.94	\$0.00																					
Queens County	5	\$1,095,831,127	\$18,569.04	\$0.00			\$3,347,384.69	\$0.00			\$1,057,939,053.76	\$34,526,119.52																\$308,552.50	\$0.00	\$15,685.31	\$0.00		
Rensselaer County	3	\$11,162,968	\$558,595.88	\$0.00			\$9,834,277.25	\$0.00													\$770,095.14	\$0.00											
Richmond County	5	\$69,390,714	\$328,549.85	\$0.00			\$634,847.10	\$654,463.00			\$5,412,576.67	\$62,360,277.59															\$0.00	\$0.00	\$0.00	\$0.00			
Rockland County	5	\$41,395,570	\$1,401,722.76	\$1,055,582.09			\$10,018,041.89	\$0.00			\$23,670,333.24	\$4,798,713.00															\$437,723.59	\$0.00	\$13,453.13	\$0.00			
St. Lawrence County	2	\$991,512																\$183,901.19	\$0.00			\$807,610.44	\$0.00										
Saratoga County	3	\$4,369,615					\$1,694,865.86	\$0.00													\$837,329.91	\$0.00					\$1,837,419.07	\$0.00					
Schenectady County	3	\$5,773,608					\$4,479,007.34	\$0.00	\$0.00	\$879,569.00											\$415,031.49	\$0.00											
Schoharie County	3	\$92,526,900					\$87,020,954.56	\$3,980,437.58	\$1,084,496.50	\$146,815.49											\$294,195.86	\$0.00											
Schuyler County	1	\$451,277																						\$451,277.26	\$0.00								
Seneca County	1	\$3,703,188																						\$3,703,188.27	\$0.00								
Steuben County	3	\$4,065,504			\$1,833,855.94	\$0.00											\$2,231,647.93	\$0.00												\$0.00	\$0.00		
Suffolk County	7	\$527,771,613																															

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