

# RESILIENCE TO COASTAL STORMS IN URBAN NEIGHBORHOODS

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# Research objectives

- Identify factors that contribute to vulnerability and resilience of populations in urban neighborhoods to coastal storms.
  - How is vulnerability to storms different from vulnerability to other climate risks?
  - What factors are important beyond the standard Census variables?
- Identify strategies that can help to build resilience to coastal storms in urban neighborhoods.
- Establish a baseline against which we can measure progress in building resilience.

# Comparative case study

- Experience with hurricane Sandy in the Rockaways and south-eastern Staten Island.
- The two neighborhoods had very similar exposures to the storm.
- The two neighborhoods have quite different socio-economic characteristics and institutions.

# Data collection

- In–depth interviews with community leaders, people involved in relief and recovery in the neighborhood, and some residents. Information from meetings of various recovery groups including the Long Term Recovery Organizations.
- Surveys of a random sample of 250 residents in the Rockaways and in Staten Island.
  - Permanent residents who stayed after the storm, and do not live in large apartment buildings.
- Collecting information about:
  - Impacts of the storm.
  - Progress of the recovery.
  - Resources that people used to cope with the impacts.
  - Household characteristics and social networks.
  - Attitudes toward green infrastructure.

# Vulnerability to coastal flooding

- Ability to recover depends on:
  - Own resources and types of assets owned
  - Access to information
  - Local organizations and social networks
  - Types of assistance
- Middle income homeowners seem to be the most vulnerable and the least recovered group.
  - Income does not play the “expected” role.
  - Nature of assets that are vulnerable to flooding.
  - Role of access to social programs.
  - Implications for creating social vulnerability indices.

# Information

- Information before the storm played a role in vulnerability.
  - People interpreted forecasts in a deterministic way.
  - People did not understand what a storm surge is.
  - People wanted to understand why they should evacuate.
- People are not well prepared to make the decision about evacuation.
- Access to information after the storm was difficult.
  - What to do about mold.
  - Where to find needed assistance.
  - Eligibility criteria and application procedures.
- Information was often misleading.
  - Insurance agencies telling people to wait for an assessor before mucking out.
  - Wrong masks and instructions for dealing with mold.
  - Changing eligibility criteria and application procedures.
- Sources of information that aided the recovery process were one-stop-shops like the disaster recovery centers.

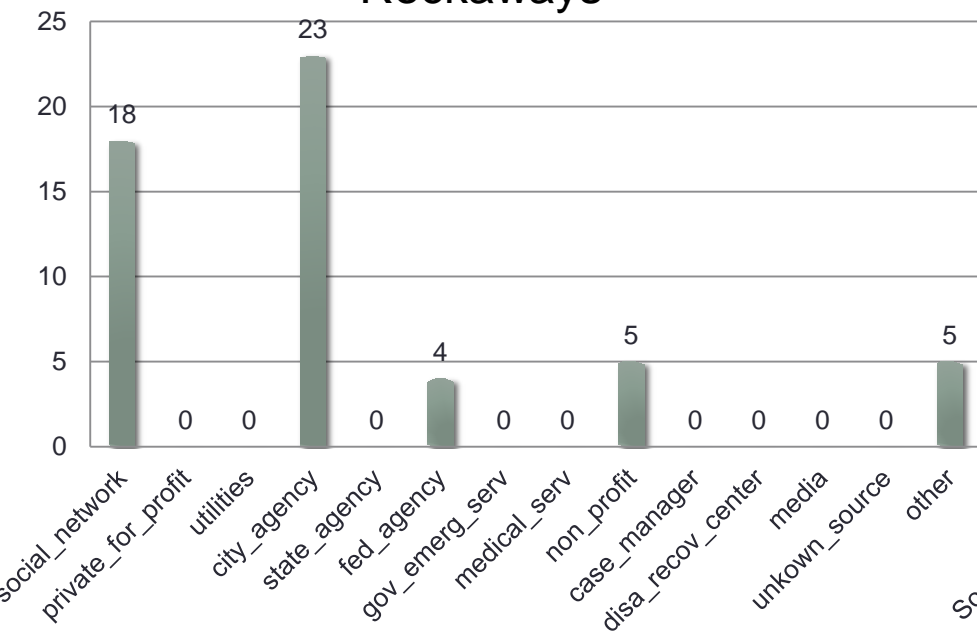
# Networks and organizations

- Social networks, local community groups, and non-profits played a huge role in relief and recovery.
  - Food and health care.
  - Cleaning out homes.
  - Rebuilding.
- More general point: Organizations that had a local presence and were informed about and responsive to local needs were perceived as more effective. These were not all local, small, or non-profit.
  - Example: Siller Foundation completing about 130 full rebuilding jobs.

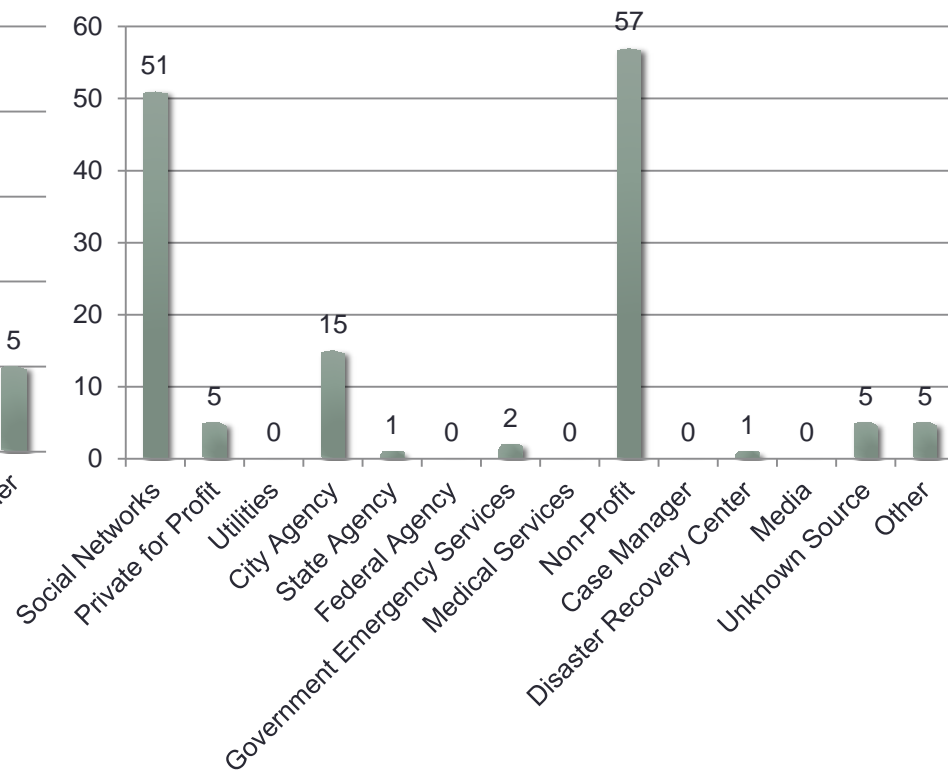
# Rebuilding

- 59% did not get help in the Rockaways. 38% did not get help on Staten Island.

## Rockaways



## Staten Island





# Building resilience

- Information at the local level: risk, ways to prepare, available resources.
  - Most people expect future flooding to be the same or less bad than in the past.
  - Most people are rebuilding “as was.”
- Integrate information into programs: Rapid Repair was replacing utilities where they were before.
- One-stop-shop information hubs.
- Partnerships that pair local knowledge and responsiveness with resources and regulatory ability.
- Need impact evaluations of initiatives.

# Thank you!

If you have questions or would like to learn more about this work, please contact Malgosia Madajewicz at [mm1174@columbia.edu](mailto:mm1174@columbia.edu).

The CCRUN website is [www.ccrun.org](http://www.ccrun.org).