



Capital in Community: Social Networks Shaping Health

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Ctrl+F

Continuum 2026 • June 22-24, 2026 • Puerto Rico

Baker-Cooper Memorial Lecture



MARIO COOPER

1954–2015

New York Times



A. CORNELIUS BAKER

1961–2024

New York Times

1. Capital in Community

MPOX outbreak 2022

PRELIMINARIES

How we define community

Shared identity

Common experiences
mutual recognition,
shared language

Shared location

Physical places people co-
inhabit

Social networks

Friendship,
acquaintanceship,
romantic/sexual
partnership

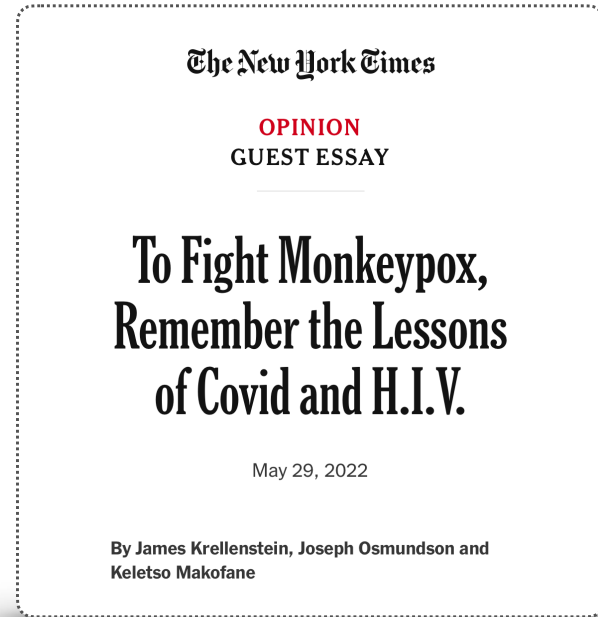
Solidarity

Desire to work together
for the good of the
community.

MPOX OUTBREAK 2022

A looming crisis

- ▶ Limited vaccine stock
- ▶ Novel infectious disease
- ▶ Limited testing platform
- ▶ Approaching summer



MPOX OUTBREAK 2022

April - Jun 2022: a new pandemic
in the making

528

Mpox infections

98%

gay or bisexual men

16

countries and 43 sites

MPOX OUTBREAK 2022

A community-led study called RESPND-MI

- ▶ Describe network and geographic patterning of sex, including group sex in the community
- ▶ Quantify extent of suspected MPOX infection in the community

MPOX OUTBREAK 2022

Principles for a sustainable effort

Abundance

Fun, not guilt
Overstaffed

Structure

Tight project management
Distributed leadership

Collaboration

Broad consultation
Consensus-building

MPOX OUTBREAK 2022

The community around RESPND-MI

Coordination and Admin

Keletso Makofane, PhD
James Krellenstein
Sudipta Saha, MS
Christian Urrutia

Outreach

Grant Roth, MPH
Martez Smith, MSW
Chris Wyman
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Lawrence C. Long, MCom, PhD
Ken Mayer, MD
Gregorio Millett, MPH
Eric J. Tchetgen Tchetgen, PhD

Marketing and Comms

Nick Diamond, MPH
Jennifer Barnes-Balenciaga

Fundraising

Nick Diamond, MPH
Keletso Makofane, PhD
Ken Nadolski, MPH
Joseph Osmundson, PhD

Questionnaire

Pedro Carneiro, MPH
Cody Nolan, MD
Robert Pitts, MD
Nguyen Tran, PhD

Tom Carpino, MPH
Elle Lett, PhD, MA, MBIostat
Cody Nolan, MD
Antón Castellanos Usigli, MPH

MPOX OUTBREAK 2022

Capital

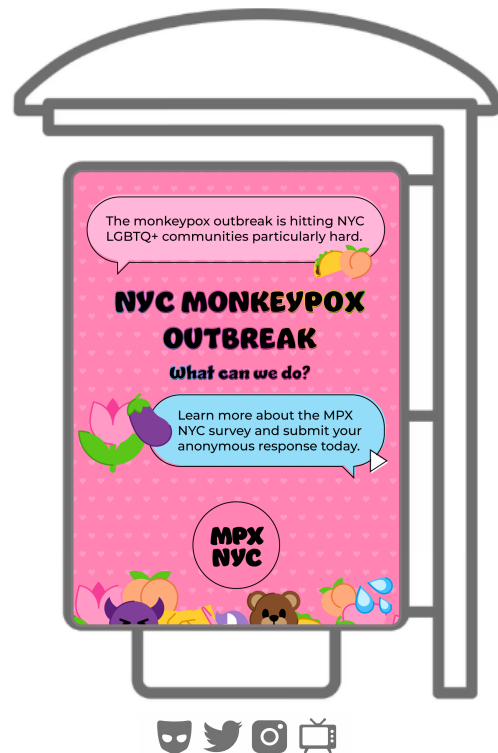
Over a few months, we created a bilingual, culturally competent communications campaign advertising the study and informing people about mpox.



MPOX OUTBREAK 2022

Capital

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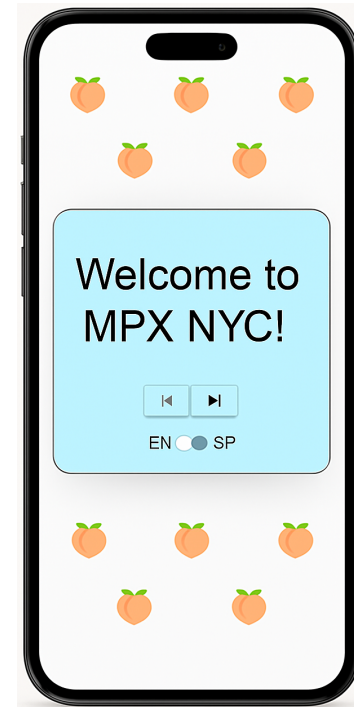
2. Mapping the community

MPX NYC study design

MPX NYC STUDY DESIGN

We built a single page web app.

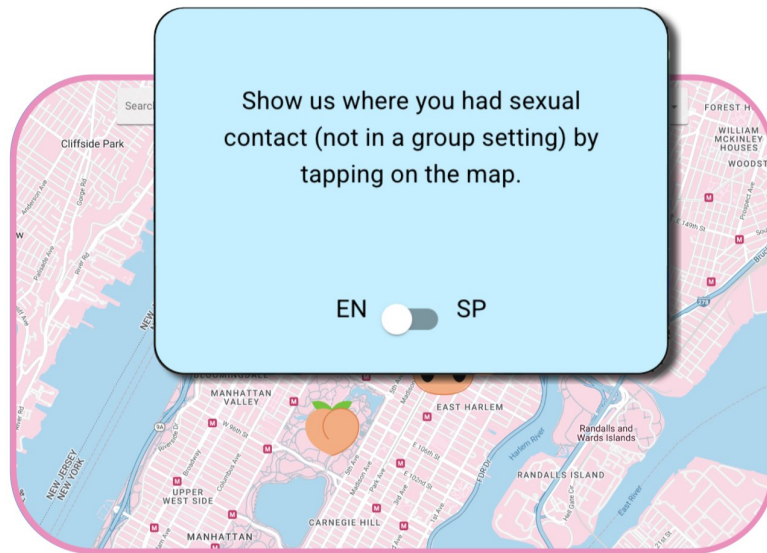
- Brief (< 5 minutes)
- Bilingual
- Anonymous
- Social & spatial network
- For mobile



MPX NYC STUDY DESIGN

The Person-Place Network Mapper

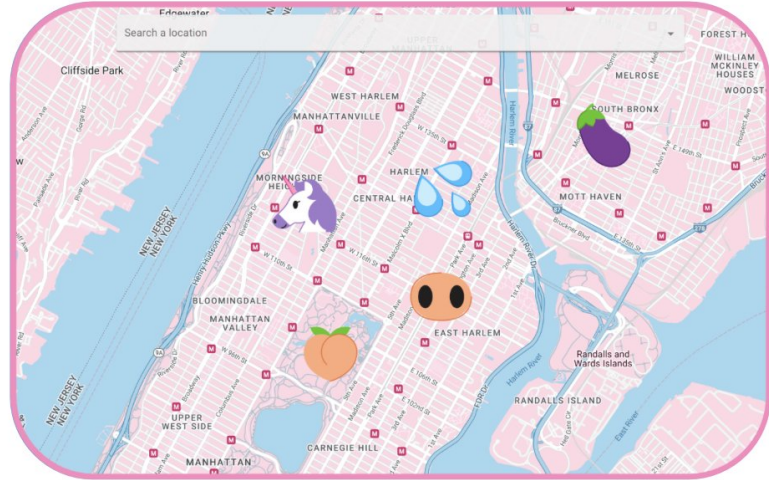
A web survey that elicits sensitive spatial and social data **anonymously**.



MPX NYC STUDY DESIGN

Tap a place
on the map

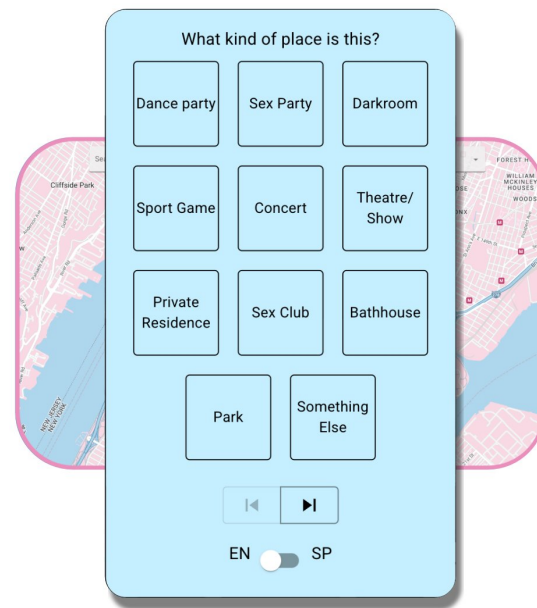
Participants mark a place they live in or
visited by tapping.



MPX NYC STUDY DESIGN

Answer a few
questions about it

A set of questions relating to the place pops.



What kind of place is this?

Dance party	Sex Party	Darkroom
Sport Game	Concert	Theatre/ Show
Private Residence	Sex Club	Bathhouse
Park	Something Else	

Navigation: Previous (left arrow), Next (right arrow)

Language: EN ☒ SP

MPX NYC STUDY DESIGN

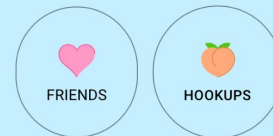
The Link Tracer

Share survey with friends and partners —
extending the map one connection at a time.

Contribute to the Queer and Trans Map of New York City

To learn how to stop new diseases quickly, we are building a community map of queer and trans people in New York City. This is a giant network connecting friends and hookups.

Contribute to this effort by sharing the survey with up to 10 friends or hookups (sexual partners) you have communicated with in the past 4 weeks using the button below.

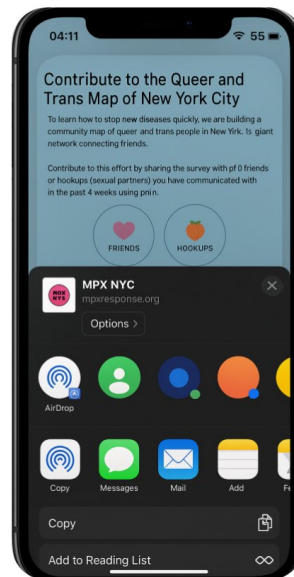


EN ☒ SP

MPX NYC STUDY DESIGN

Custom URL shared through modality of choice

Sharing happens through the device's native share sheet.



MPX NYC STUDY DESIGN

Safety first: data are de-identified by design

Measuring safely

- * Avoid specificity (e.g. age bands)
- * Save lat/long census tract

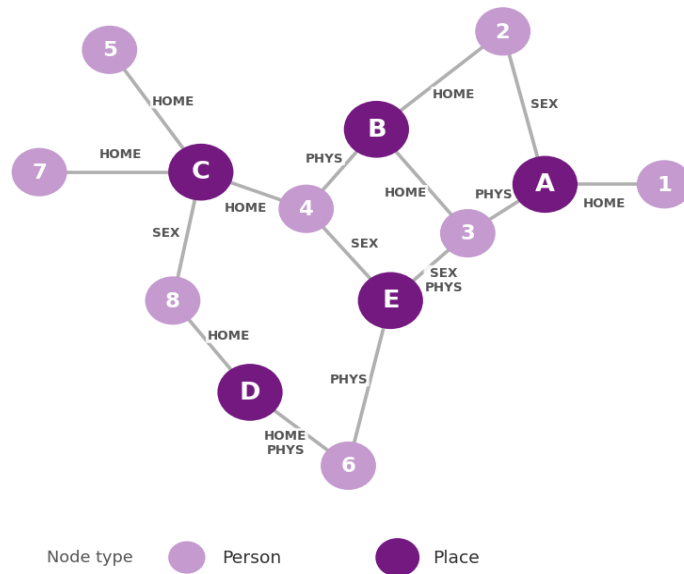
Managing identity

- * Assign identifiers to participants
- * Use url parameters to link records

MPX NYC STUDY DESIGN

Network data organized for fast query

Study data are saved in a graph database rather than a relational database. This allows fast queries.



3. What we learn from the data

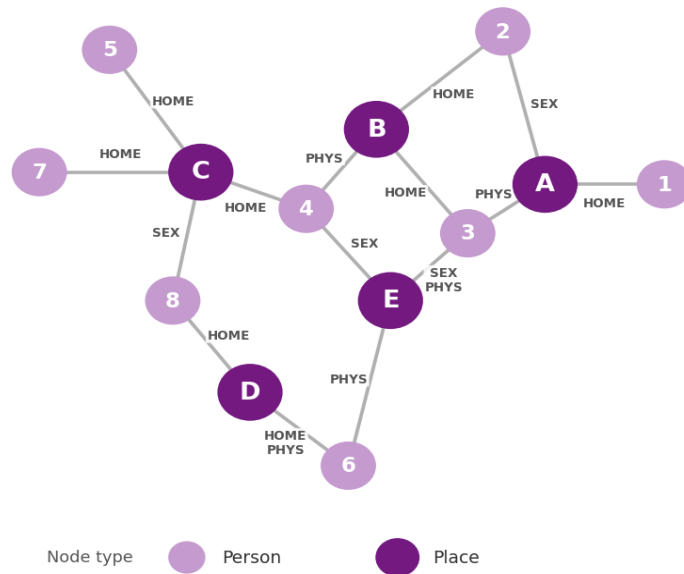
Community insights from the MPX NYC study

1300 participants
700 gatherings/places

COMMUNITY INSIGHTS

The community is an inter-connected network of people and places

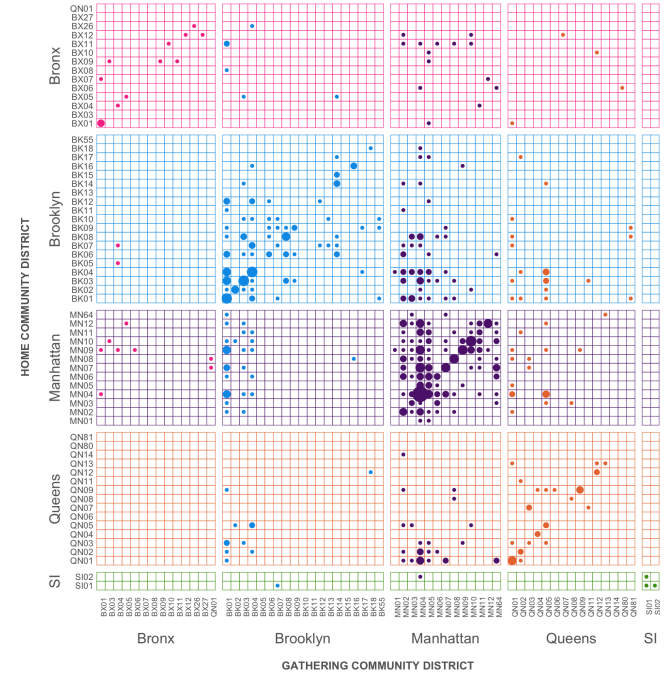
We built a city-scale person-place graph with community districts as places and survey participants as persons. The graph is connected.



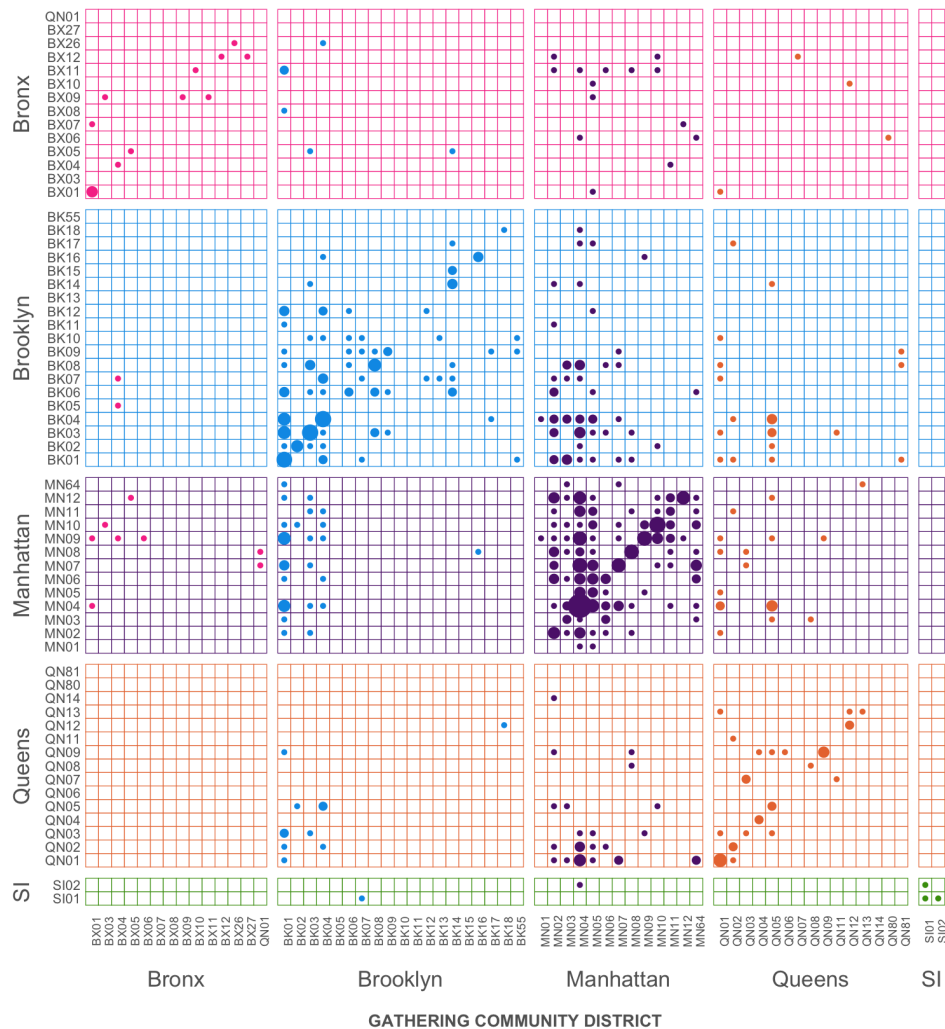
COMMUNITY INSIGHTS

There are a few central communities

Within and across boroughs, there are a few community districts which gather people from other districts



HOME COMMUNITY DISTRICT



Bronx

Brooklyn

Manhattan

Queens

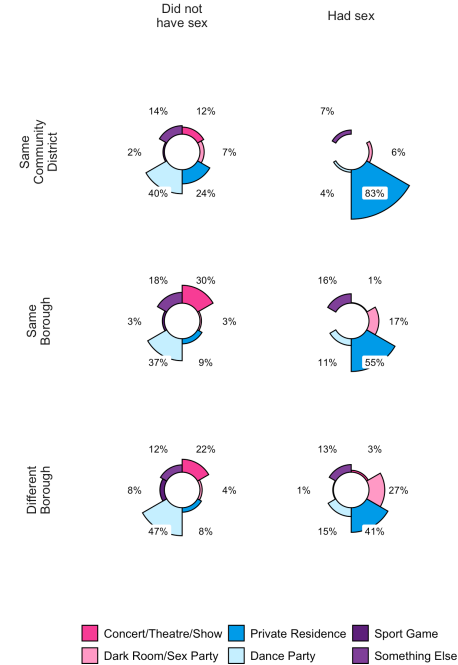
SI

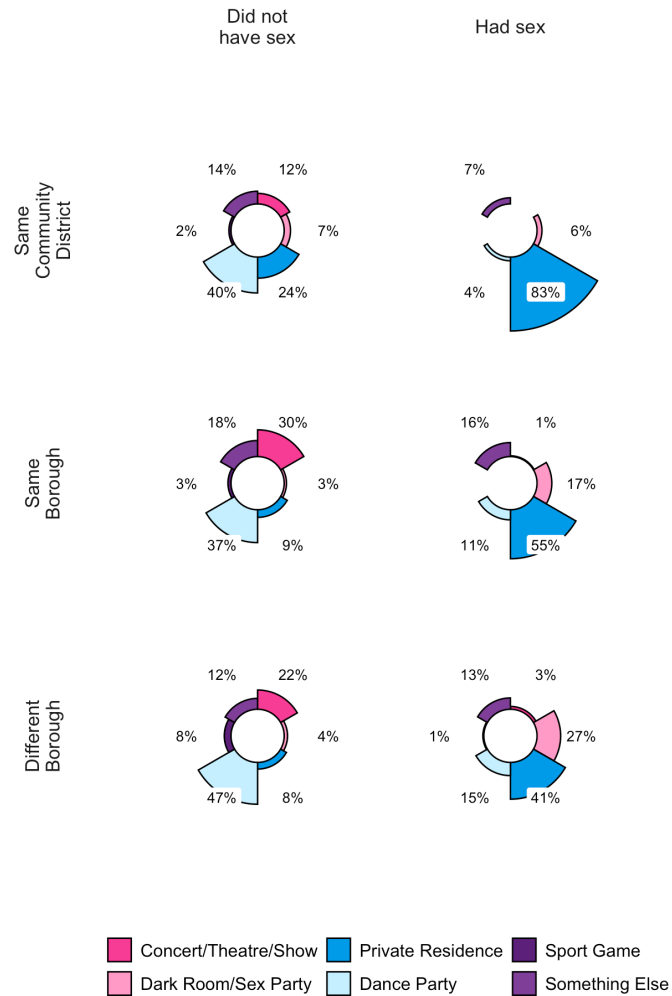
GATHERING COMMUNITY DISTRICT

COMMUNITY INSIGHTS

Most group sex happens in private residences

Dance parties is where physical non-sexual contact happens in congregate. Private residences is where sexual contact happens.





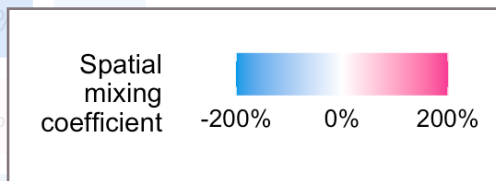
COMMUNITY INSIGHTS

There is spacial sorting
by age, race, sexual
orientation, gender

Using study data, the spatial mixing coefficient
tells us how much more/less likely the group
on the left is to meet the group on the bottom
compared to chance.

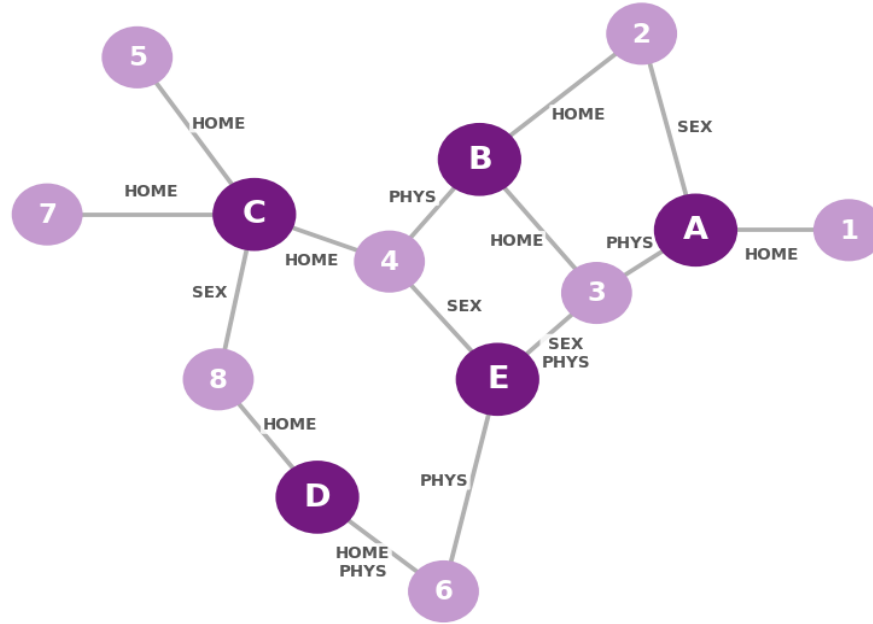
Other cisgender man	-8%	-4%	-3%	-2%	-19%	2%	-16%	30%
Cisgender woman	-3%	-5%	1%	-15%	-18%	-3%	89%	-18%
Non binary	-9%	-11%	-19%	50%	6%	77%	-10%	3%
Transgender woman	-10%	-8%	13%	-4%	117%	18%	-6%	-6%
Transgender man	-11%	7%	-17%	185%	-4%	56%	-34%	-15%
Black cisgender man	-24%	10%	99%	-27%	0%	-11%	5%	-5%
Latinx cisgender man	-16%	45%	6%	20%	-20%	-6%	-18%	-2%
White cisgender man	12%	-11%	-22%	4%	-15%	-5%	-10%	-5%
White cisgender man								
Latinx cisgender man								
Black cisgender man								
Transgender man								
Transgender woman								
Non binary								
Cisgender woman								
Cisgender man								
Other cisgender man								

Other cisgender man	-6%	-4%	-3%	-2%	-19%	2%	-16%	30%
Cisgender woman	-3%	-5%	1%	-15%	-18%	-3%	89%	-16%
Non binary	-9%	-11%	-19%	50%	6%	77%	-10%	3%
Transgender woman	-10%	-8%	13%	-4%	117%	18%	-6%	-5%
Transgender man	-11%	7%	-17%	185%	-4%	56%	-34%	-1%
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White cisgender man	12%	-11%	-22%	4%	-15%	-5%	-10%	-5%
	White cisgender man	Latinx cisgender man	Black cisgender man	Transgender man	Transgender woman	Non binary	Cisgender woman	Other cisgender man



COMMUNITY INSIGHTS

How do we vaccinate New York City
to contain the next outbreak?



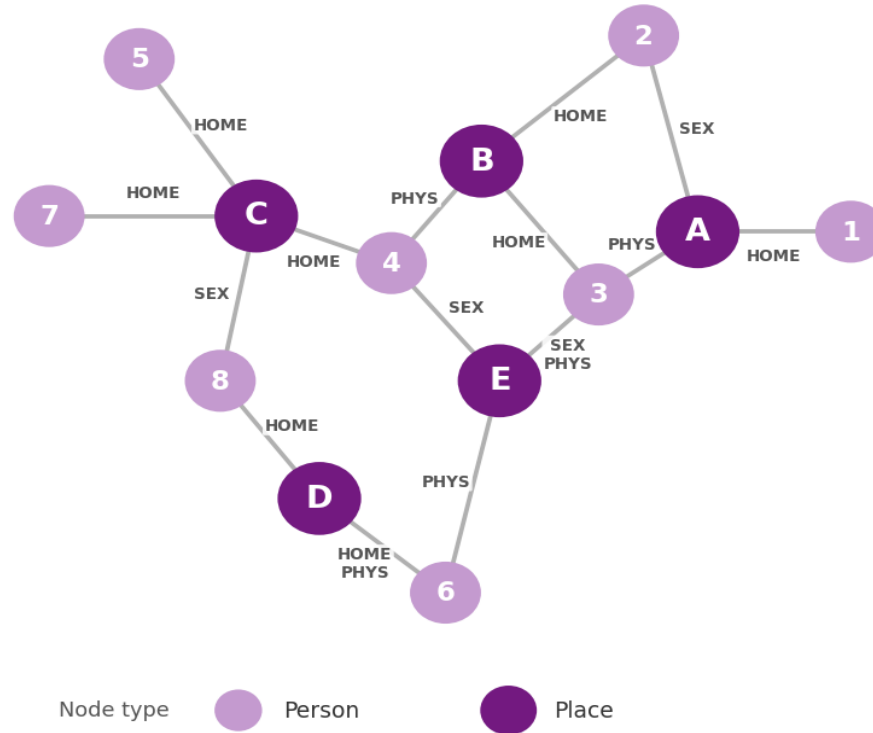
Node type



Person



Place



Strategy A: Contact neutralizing

Rank community districts according to how much contact happens in them

Strategy B: Movement neutralizing

Rank community districts according to how connected they are to other community districts

COMMUNITY INSIGHTS

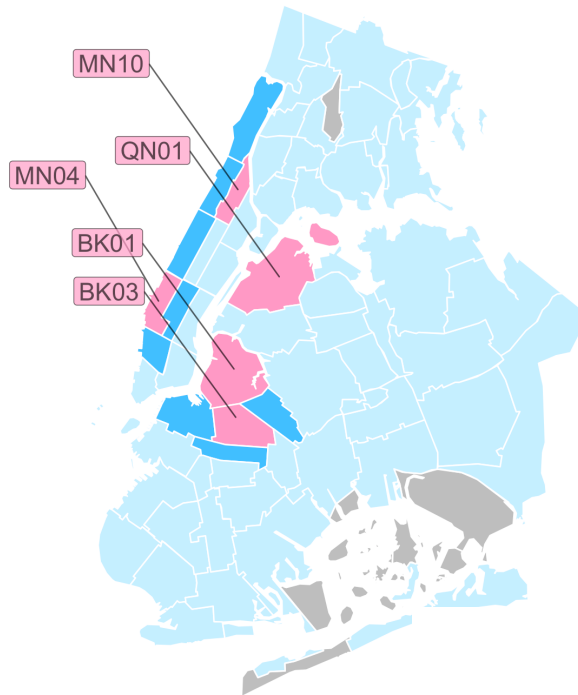
How do we vaccinate New York City
to contain the next outbreak?

Using MPX NYC data, we:

1. Rank community districts
2. Vaccinate every person associated with the highest ranked community district
3. Repeat 1-2 until vaccine runs out

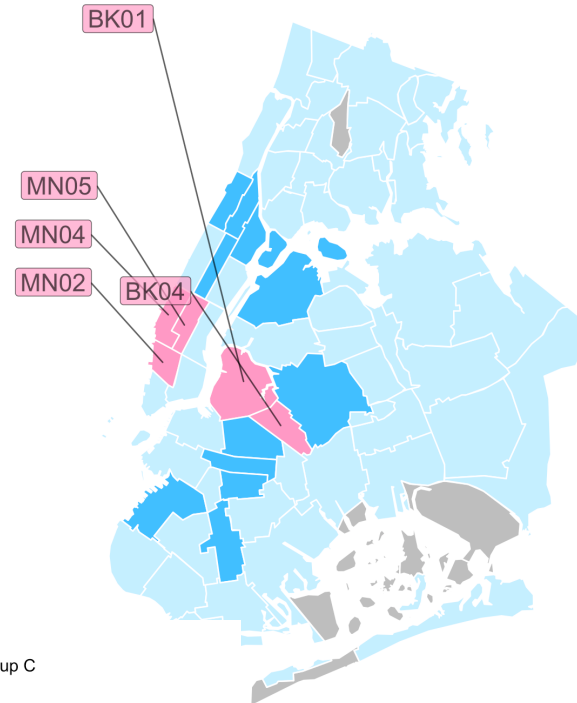
Strategy A: Contact neutralizing

Rank community districts according to how much contact happens in them



Strategy B: Movement neutralizing

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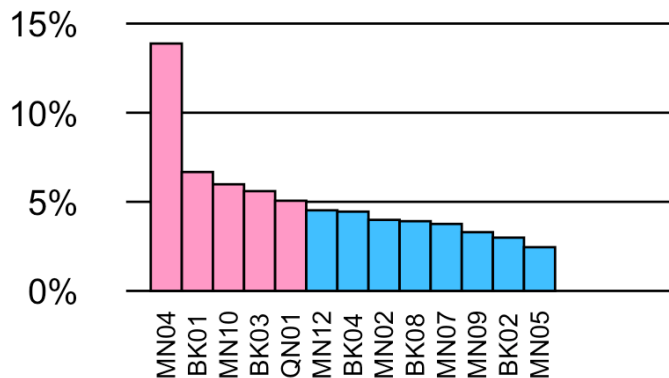
Group A Group B Group C

Strategy A: Contact neutralizing

Faster coverage

Contact neutralizing approach

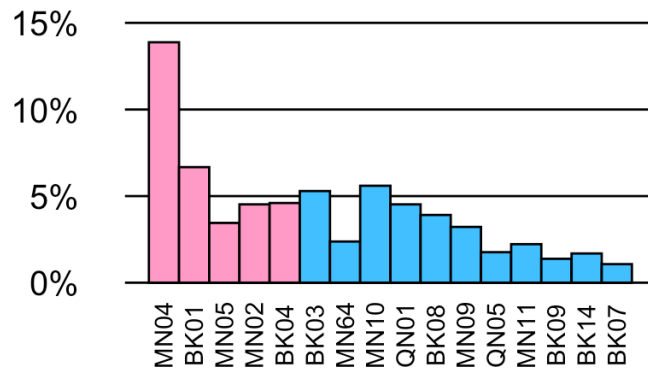
Proportion of MPX NYC sample



Strategy B: Movement neutralizing

Slower coverage

Movement neutralizing approach



Group A Group B Group C

Strategy A: Contact neutralizing

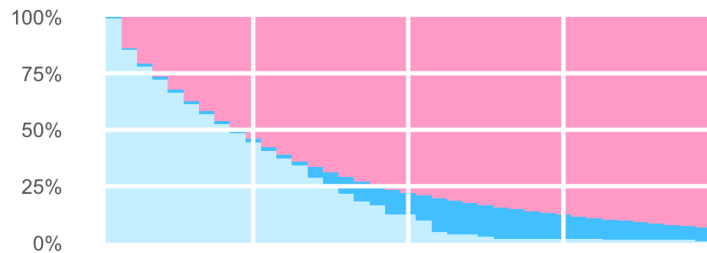
Slower network fragmentation

Strategy B: Movement neutralizing

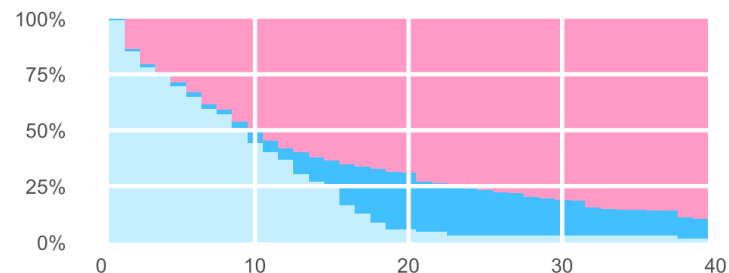
Faster network fragmentation

Contact neutralizing approach

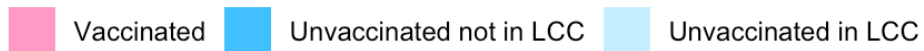
MPX NYC sample proportion



Movement neutralizing approach



Count of vaccinated community districts



STATISTICAL INSIGHTS

Social and Spatial Network Analysis with Causal Interpretation (SSNAC)

SSNAC is a framework to use when reasoning
about complex interconnected systems using
ideas from causal inference

4. Conclusions

Capital in community: social networks shaping health

CAPITAL IN COMMUNITY:

There is talent in the LGBTQ community, and it can be put to use in times of crisis.

NETWORKS SHAPING HEALTH:

We can learn about networks by studying the places people share. This information can help us design good interventions.

WITH THANKS

RESPND-MI Principal investigator: Keletso Makofane, MPH, PhD. Co-investigators: Jennifer Barnes-Balenciaga, Nicholas Diamond, MPH, Elle Lett, PhD, MA, MBiostat, Cody Nolan, MD, Martez Smith, LMSW, PhD, Nguyen Tran, MPH, PhD. Former investigators: Pedro Botti Careneiro, MPH, PhD, Seema Kara, MPH, James Krellenstein, Ken Nadolski, MPH, Joseph Osmundson, PhD, Robert Pitts, MD, Grant Roth, MPH, Sudipta Saha, MS, Christian Urrutia, MBA, Chris Wyman. Translator: Antón Castellanos Usigli, MPH, DrPH. Backend web developer: Imran Ansari. Reference group: Judith D. Auerbach, PhD (*University of California, San Francisco*), Lisa Berkman, PhD (*Harvard University*), Forrest W. Crawford, PhD (*Yale University*), William C. Goedel, PhD (*Brown University*), Gregg Gonsalves, PhD (*Yale University*), Ian W. Holloway, PhD, LCSW, MPH (*University of California, Los Angeles*), Louise Ivers, MB, BCh, MD, MPH, DTMH (*Massachusetts General Hospital*), Lawrence C. Long, MCom, PhD (*Boston University*), Kenneth Mayer, MD (*The Fenway Institute*), Gregorio Millett, MPH (*amfAR*), Eric J. Tchetgen Tchetgen, PhD (*University of Pennsylvania*). Research sponsors and funders: amfAR; Harvard Center for AIDS Research; National Institutes of Health; Neo4j; New York State Department of Health. Marketing sponsors and funders: Grindr; Hub for Health Intervention, UCLA Luskin School of Public Affairs. Marketing agency: Burness. Administration: Christian Urrutia, MBA (*PrEP4All*); James Krellenstein (*PrEP4All*).

MPX NYC

<https://mpxresponse.org/>

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<https://www.controlf.consulting/>