Association Between Mental Health-Related 911 Calls and the Mental Health Professional Shortage in New York City

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- The Center for Health Workforce Studies (CHWS) —established in 1996— is an academic research center based at the School of Public Health at the University at Albany, State University of New York (SUNY)

- Mission: To provide timely, accurate information and conduct policy-relevant research about the health workforce

- Goal: To assist health, professional, and educational organizations, policy makers, planners, and other stakeholders to understand issues related to the supply, demand, distribution, and the use of health workers

Mental Health-Related 911 Calls

- 911 emergency calls encompass a vast array of situations including those not typically associated with criminal incidents
- A specific type of non-crime emergency call is related to individuals experiencing mental health crises
- Mental health (MH) 911 calls have recently attracted attention
  - Inadequacy of police as the first-responder to mental health crises
  - In 2021, at least 104 fatalities resulted from police responses to mental health crises.

Mental Health-Related 911 Calls

- Studies have shown that MH 911 calls concentrate in a disproportionate number of geographical units (e.g., streets, census tracts)
- However, little is known how neighborhood-level factors influence the concentration of MH 911 calls
- Prevalence of mental health issues may not be the sole factor for MH 911 calls
- A more important factor could be the absence of public or private resources that people can use for mental health issues

Mental Health Professional Shortage Areas

- Health Professional Shortage Areas (HPSAs) are geographic areas identified by the Health Resources and Services Administration (HRSA) as having insufficient health care professionals in primary care, mental health, or dental health

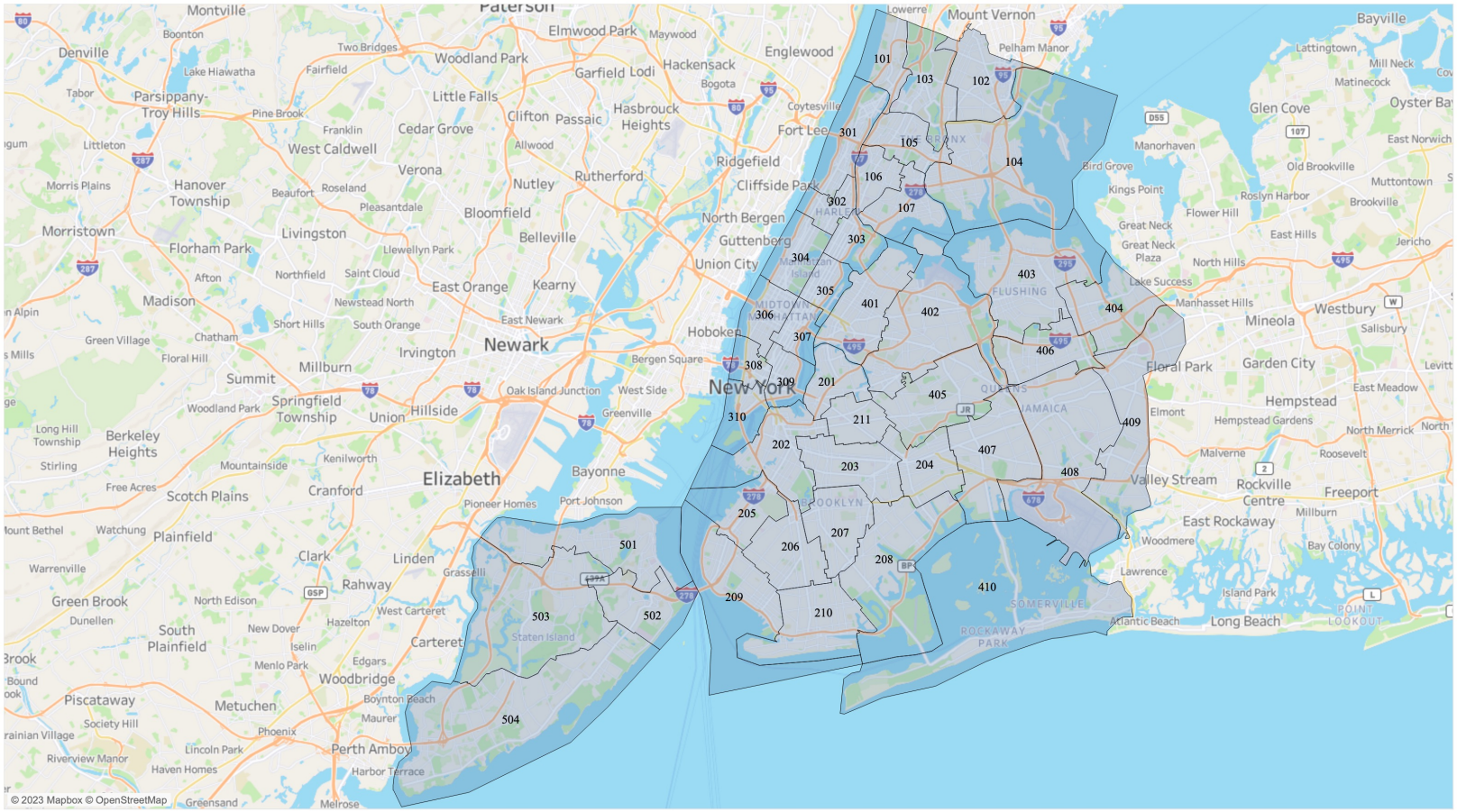
- Mental Health HPSAs (MH HPSAs) specifically represent areas that face a shortage of either psychiatrists or core mental health providers, such as psychologists and social workers, or both, indicating limited access to specialized mental health services
  - Factors used in need assessment: Population-to-provider ratio, travel time for health care services, alcohol/substance use prevalence, and socioeconomic factors

MH 911 Calls and MH HPSAs

- Hypothesis: MH HPSAs would have higher levels of MH 911 calls than Non HPSAs.

Methods: Sample

- New York City's (NYC) 42 United Hospital Fund (UHF) neighborhoods



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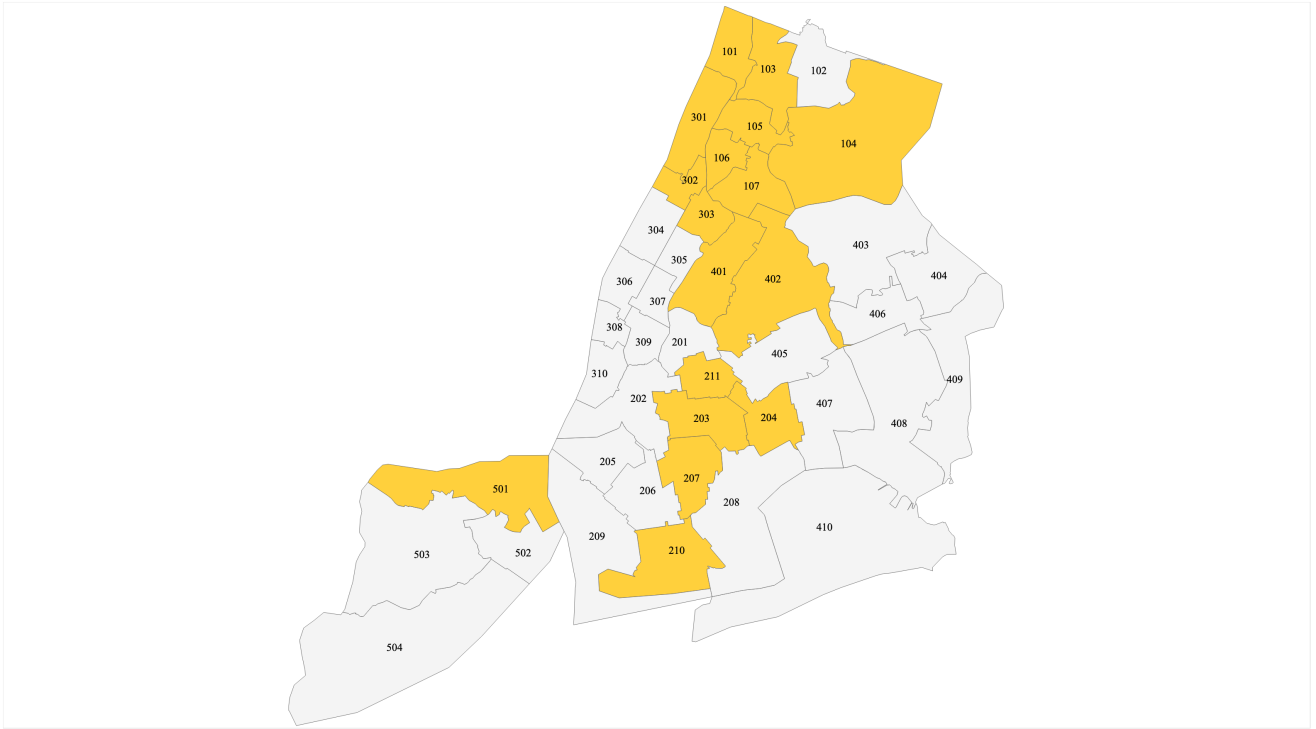
Methods: Data and Measures

- MH 911 Calls
  - Annual numbers of MH 911 calls in each neighborhood for a 3-year period (2019–2021)
  - New York Police Department (NYPD)'s 911 data were used
  - Code 54E-EDP (i.e., emotionally disturbed person), in the dataset were used to identify MH 911 calls

Year	54E-EDP calls	Total 911 Calls	%
2019	333,079	6,640,911	5.02%
2020	312,597	6,421,740	4.87%
2021	323,968	6,707,027	4.83%
Total	969,644	19,769,678	4.91%

Methods: Data and Measures

- MH HPSA (1 = shortage area, 0 = not a shortage area)
  - During the study period, 17 out of 42 neighborhoods in NYC were designated as Medicaid-eligible MH HPSAs by HRSA



Methods: Data and Measures

- 311 Complaints (2019 – 2021)
  - Homelessness-related complaint rates
    - 311 complaints related to assistance for homeless individuals and complaints about encampments and street conditions
  - Alcohol-related complaint rates
    - 311 complaints related to underage drinking, public drinking, and after-hours drinking
  - Drug-related complaint rates
    - 311 complaints associated with both indoor and outdoor drug use

Methods: Data and Measures

- American Community Survey (2017–2021)
  - Poverty Index
    - % of Population below Federal Poverty Level (FPL)
    - % Female-headed household
    - % Unemployed
    - % public health insurance alone
  - Percentage of non-White population

Analytical Strategy: Main Model

- Negative binomial regression model
  - Mental health-related 911 calls, is count data and displays over-dispersion.
  - To adjust for the population size differences across neighborhoods, the total population was included as an offset in the negative binomial models
  - Results are reported as incidence rate ratios (IRR) to identify the relative risk of annual MH 911 calls in areas with MH HPSAs compared to non-shortage areas

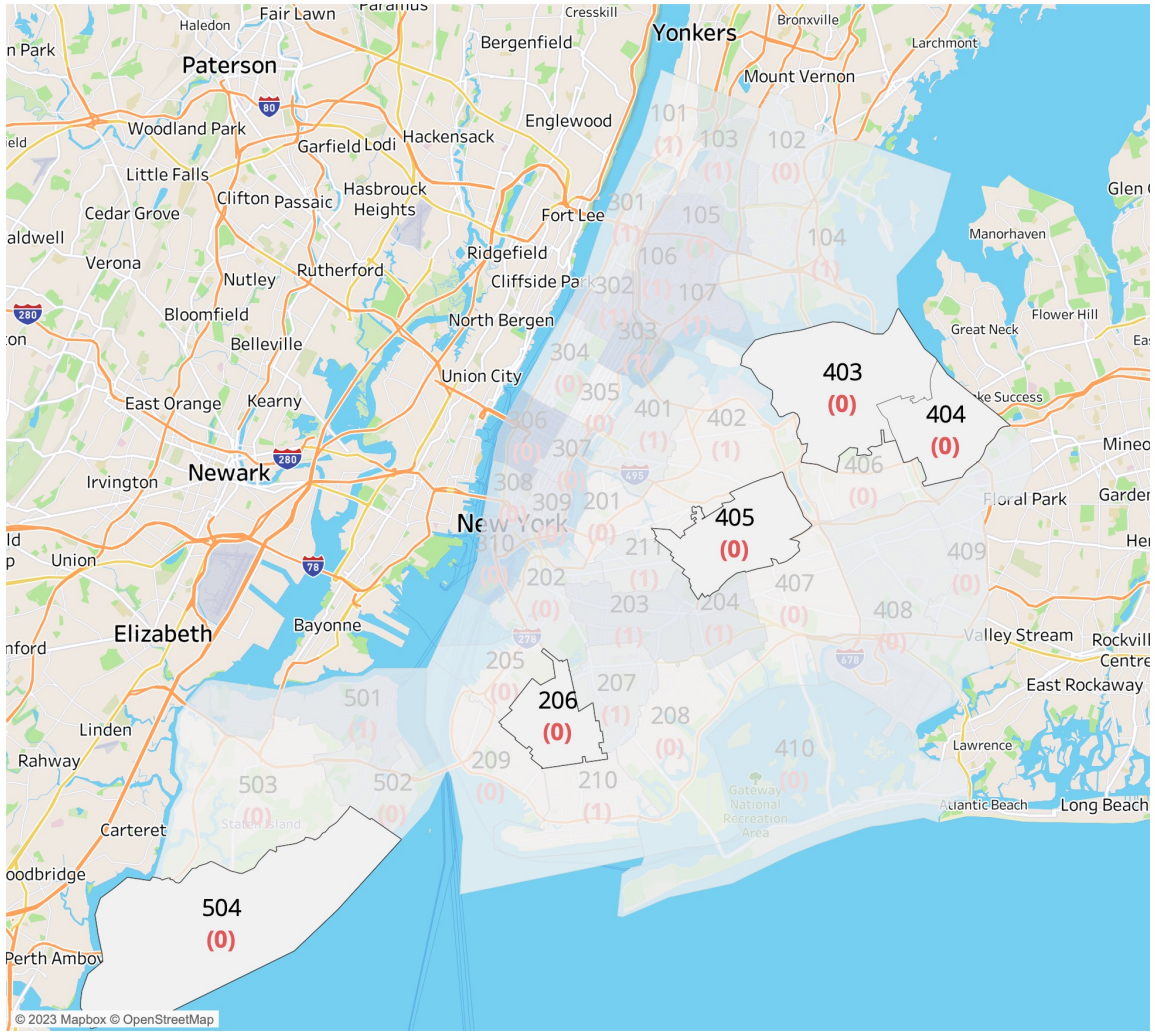
Analytical Strategy: Supplemental Analyses

- Supplemental Analysis 1
  - We replaced the dependent variable with all types of 911 calls to determine if the shortage of mental health providers specifically affects the MH 911 calls

- Supplemental Analysis 2
  - We replaced the MH HPSA variable with a tercile score based on the Population-to-Provider ratio for the Medicaid population
  - The Population-to-Provider ratio is calculated by dividing the total number of individuals reliant on Medicaid by the total number of Full-Time Equivalent (FTE) psychiatrists available
  - 3= Zero FTE, 2 = Moderate level of shortage, 1= Mild level of shortage

Results

Rates of MH 911 Calls in NYC (2019–2021)



UHF ID	UHF Name	MH HPSA	MH 911 Call Rates
306	Chelsea - Clinton	-	119.22
303	East Harlem	HPSA	90.37
107	Hunts Point	HPSA	72.04
106	High Bridge	HPSA	71.48
302	Central Harlem	HPSA	62.73

UHF ID	UHF Name	MH HPSA	MH 911 Call Rates
404	Bayside-Little Neck	-	12.82
206	Borough Park	-	14.54
405	Ridgewood - Forest Hills	-	15.78
403	Flushing - Clearview	-	16.28
504	South Beach	-	16.85

MH 911 Call Rates per 1,000

12.8 — 119.2

1= MH HPSA, 0= Not a MH HPSA.

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Results

- Negative binomial regression models estimating the association of MH 911 calls and mental health professional workforce shortages

	IRR	95% CI	p-value	Significance
MH HPSA (1= Designated)	1.27	1.03 – 1.56	.027	*
Homelessness-related complaint rates	1.05	1.04 – 1.06	<.001	***
Alcohol-related complaint rates	0.71	0.48 – 1.06	.092	
Drug-related complaint rates	1.06	0.98 – 1.16	.151	
Poverty Index	1.02	1.01 – 1.03	.001	***
% Minority	1.00	1.00 – 1.01	.177	
Logged (population size)	1	(Exposure)		
Intercept	0.01	0.01 – 0.01	<.001	***

Results

- Supplemental Model 1 (DV: MH 911 Calls => All 911 Calls)

	IRR	95% CI	p-value	Significance
MH HPSA (1= Designated)	1.16	0.96 – 1.40	.119	
Homelessness-related complaint rates	1.04	1.03 – 1.05	<.001	***
Alcohol-related complaint rates	0.83	0.58 – 1.19	.315	
Drug-related complaint rates	1.05	0.97 – 1.13	.250	
Poverty Index	1.02	1.01 – 1.03	.002	**
% Minority	1.00	1.00 – 1.01	.740	
Logged (population size)	1	(Exposure)		
Intercept	0.31	0.23 – 0.40	<.001	***

Results

- Supplemental Model 2 (IV: MH HPSA => Provider Ratio)

	IRR	95% CI	p-value	Significance
Population-to-Provider Ratio 1 (< 100,000:1)	1.00(ref)			
2 (>100,000:1)	1.31	1.08 – 1.60	.007	**
3 (FTE=0)	1.33	1.11 – 1.60	.002	**
Homelessness-related complaint rates	1.05	1.04 – 1.06	<.001	***
Alcohol-related complaint rates	0.76	0.52 – 1.09	.149	
Drug-related complaint rates	1.07	0.99 – 1.16	.105	
Poverty Index	1.02	1.01 – 1.03	<.001	***
% Minority	1.01	1.00 – 1.01	.022	*
Logged (population size)	1	(Exposure)		
Intercept	0.01	0.01 – 0.01	<.001	***

Study Limitations

- Cross-sectional design
- Sample size
- Mental health professional shortage measure

Discussion

- Our findings highlight the importance of addressing the shortage of mental health services in underserved areas as this shortage is significantly associated with an increase in MH 911 calls, to which police, by default, have to respond

- In recent years, many cities have introduced new emergency response teams (eg, B-HEARD in NYC) to provide a more effective and appropriate response to MH 911 calls

- Yet, the current effort should not be limited to improving the response to those calls

Discussion

- By addressing the shortage of mental health resources, we may be able to prevent mental health issues from turning into crises, reduce police workload, and improve the overall mental health of underserved populations

Questions?

- For more information, please email me at: bkang2@albany.edu

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