The Acute Effect of Exposure to Neighborhood Crime

on Mental Health of Older Individuals in Bogotá, Colombia

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Abstract

The global challenge of addressing high rates of mental health disorders is particularly evident in Latin America, due to high rates of violence, abuse, crime, poverty and trauma. In turn, contextual factors such as community violence are increasingly considered as important determinants of mental health in urban environments. Whereas most research on the determinants of mental health in low- and middle-income countries has focused on adolescents and adults, research on older age groups has received little attention. The aim of this study was to assess the effects of acute exposure to different forms of neighborhood violence on mental health of older individuals in Bogotá, Colombia, by using a quasi-experimental approach that exploits spatial as well as temporal variation in objectively recorded criminal incidents relative to individuals' residence and time of interview. The detailed and objective information on the occurrence of different violent crimes within neighborhoods makes it possible to assess the effects of those different crimes on mental health to assess what type of crimes are most detrimental for mental health of older individuals. Furthermore, the linkage between objective geo- and time-referenced crime data with rich individual and household data from the 2015 Demographic and Health Survey (DHS) in Colombia also allows us to test potential factors that may either exacerbate vulnerability to exposure to violent crimes, or make individuals more resilient to such shocks.

Table 1. Sample characteristics (*N=2,277*)

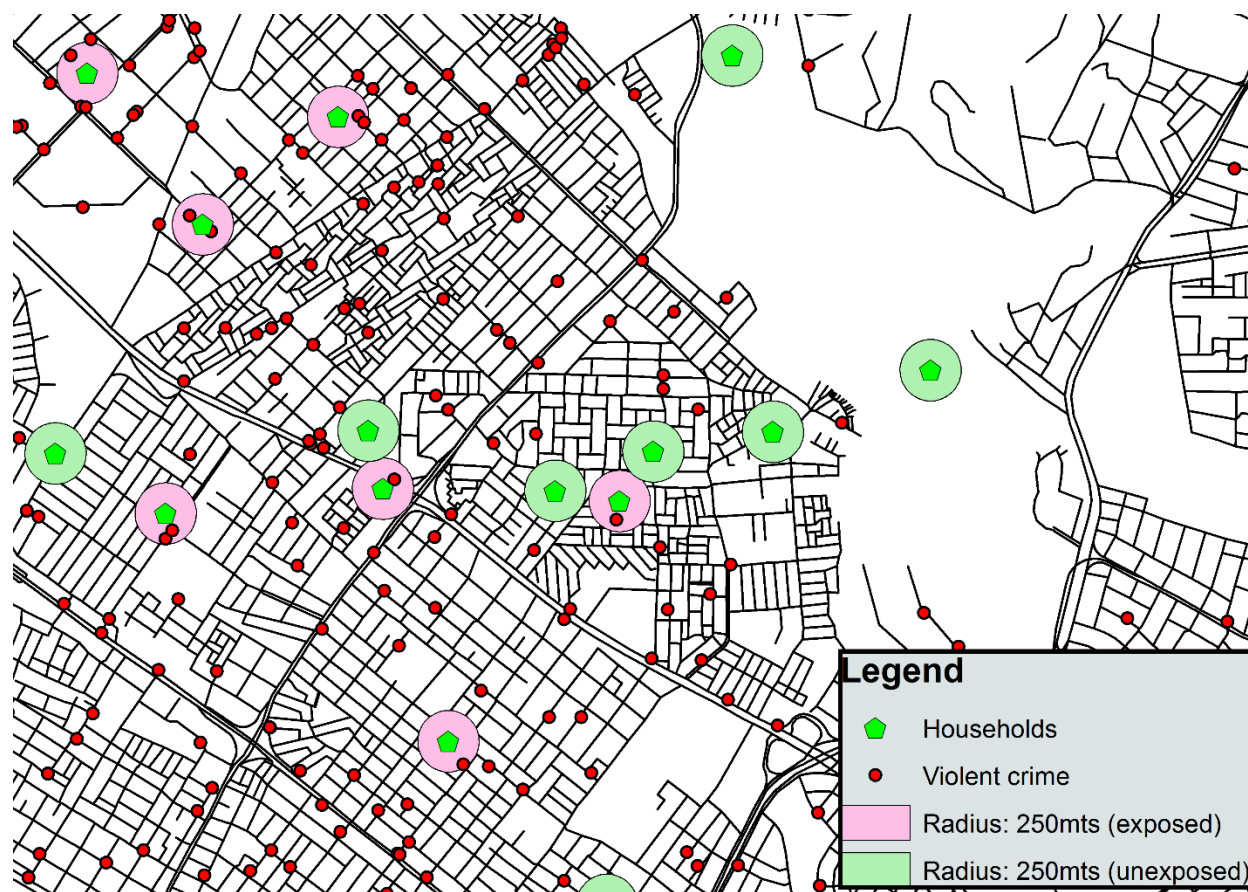|	*M*	*SD*	*Min*	*Max*
A. Mental health				
Index of mental health ($\alpha = 0.82$)	17.45	5.32	10	38
B. Crimes in 2010 (within a radius of 250 meters)				
Homicides	0.75	1.37	0	10
Personal injuries	1.96	2.63	0	16
Theft to people	3.59	5.60	0	60
Drug-related offenses	3.83	9.19	0	129
C. Individual				
Sex (=1 if male)	0.39	0.48	0	1
Age	70.27	8.04	60	96
Education level				
No education	0.09	0.27	0	1
Basic	0.55	0.49	0	1
Secondary	0.24	0.43	0	1
Higher	0.12	0.32	0	1
Has any income (=1)	0.70	0.46	0	1
Currently working	0.19	0.39	0	1
Pensioner (=1)	0.28	0.45	0	1
Has social security (=1)	0.94	0.23	0	1
Beneficiary of any social program (=1)	0.07	0.26	0	1
Index of disability ($\alpha = 0.92$)	16.63	7.98	11	55
Self-reported health status	2.76	0.85	1	5
Sickness in the past 30 days	0.20	0.40	0	1
D. Household				
Wealth index	88,813	30,435	-165,266	144,553
Overcrowded house (=1)	0.10	0.31	0	1
Index of family relationships ($\alpha = 0.90$)	21.12	4.70	5	25
Lives alone (=1)	0.10	0.30	0	1
Widow (=1)	0.27	0.44	0	1
E. Neighborhood				
Index of neighborhood resources ($\alpha = 0.56$)	3.77	5.18	0	40
Percentage of stratum 1	5.73	20.56	0	100

Table 2. The acute effect of being exposed to a recent violent community crime in a radius of 250 meters on mental health (standardized) using Ordinary Least Squares

	(1)	(2)	(3)	(4)	(5)
Acute exposure (=1)	0.17***	0.13**	0.15***	0.15***	0.12**
	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)
Homicides in 2010 (SD)	0.06**	0.05**	0.05**	0.05**	0.04*
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Injuries in 2010 (SD)	0.01	0.01	0.01	0.01	-0.01
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Theft to people in 2010 (SD)	0.03	0.03*	0.03*	0.03*	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Drug-trafficking in 2010 (SD)	0.03	-0.01	-0.03*	-0.03*	-0.02
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Sex (=1 if male)		-0.14***	-0.15***	-0.15***	-0.15***
		(0.04)	(0.04)	(0.04)	(0.04)
Age		-0.01***	-0.00*	-0.00*	-0.01**
		(0.00)	(0.00)	(0.00)	(0.00)
Basic education		-0.06	-0.07	-0.07	-0.07
		(0.07)	(0.06)	(0.06)	(0.06)
Secondary education		-0.16**	-0.14**	-0.14**	-0.15**
		(0.07)	(0.07)	(0.07)	(0.07)
Higher education		-0.28***	-0.22***	-0.22***	-0.23***
		(0.08)	(0.08)	(0.08)	(0.08)
Has any income		0.04	0.04	0.04	0.04
		(0.05)	(0.04)	(0.04)	(0.04)
Currently working		-0.00	-0.05	-0.05	-0.06
		(0.05)	(0.05)	(0.05)	(0.05)
Pensioner		0.02	-0.01	-0.01	-0.01
		(0.05)	(0.05)	(0.05)	(0.05)
Has social security		-0.05	0.01	0.01	0.03
		(0.08)	(0.08)	(0.08)	(0.08)
Index of disability		0.37***	0.33***	0.33***	0.34***
		(0.03)	(0.03)	(0.03)	(0.03)
Self-reported health		-0.31***	-0.28***	-0.28***	-0.28***
		(0.02)	(0.02)	(0.02)	(0.02)
Sickness in past 30 days		0.16***	0.11**	0.11**	0.12***
		(0.05)	(0.04)	(0.04)	(0.04)
Beneficiary of social program		0.04	-0.02	-0.02	0.00
		(0.07)	(0.07)	(0.07)	(0.07)
Index of family relationships			-0.24***	-0.24***	-0.24***
			(0.02)	(0.02)	(0.02)
Lives alone			-0.07	-0.07	-0.09
			(0.06)	(0.06)	(0.06)
Widow			0.01	0.01	0.01
			(0.04)	(0.04)	(0.04)
Wealth index			-0.04**	-0.04**	-0.04**
			(0.02)	(0.02)	(0.02)
Overcrowded			-0.04	-0.04	-0.00
			(0.06)	(0.06)	(0.06)

Neighborhood resources (SD)			0.00	0.00	0.02
			(0.02)	(0.02)	(0.02)
Neighborhood poverty (SD)			-0.01	-0.01	-0.01
			(0.02)	(0.02)	(0.02)
Constant	-0.03	1.51***	1.22***	1.22***	1.18***
	(0.02)	(0.22)	(0.22)	(0.22)	(0.22)
Municipality fixed effects	No	No	No	No	Yes
Observations	2,277	2,277	2,277	2,277	2,277
R-squared	0.01	0.33	0.39	0.39	0.40

Note: Robust standard errors

*** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Figure 1. Selection of "treatment" groups according to exposure to violent crimes
Note: for illustrative purposes, this map represents a particular sector of Bogotá. Location of households is approximate.