Effect of Racial and Ethnic Composition of Neighborhoods in San Francisco on Rates of Mental Health–Related 911 Calls

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Objective: **This study investigated the association between the racial and ethnic residential composition of San Francisco neighborhoods and the rate of mental health–related 911 calls.** ***Methods:*** **A total of 1,341,608 emergency calls (28,197 calls related to mental health) to San Francisco's 911 system were made from January 2001 through June 2003. Police sector data in the call records were overlaid onto U.S. census tracts to estimate sector demographic and socioeconomic characteristics. Negative binomial regression was used to estimate the association between the percentage of black, Asian, Latino, and white residents and rates of mental health–related calls.** ***Results:*** **A one-point increase in a sector's percentage of black residents was associated with a lower rate of mental health–related calls (incidence rate ratio=.99, p<.05). A sector's percentage of Asian and Latino residents had no significant effect.** ***Conclusions:*** **The observed relationship between the percentage of black residents and mental health–related calls is not consistent with known emergency mental health service utilization patterns. (*Psychiatric Services* 60: 1376–1378, 2009)**

The 911 emergency call system plays an important and frequently overlooked role in the provision of access to public mental health services. It can protect the community from violence by individuals in psychiatric crisis who are engaging in dangerous or threatening behavior (1). It is also a means through which individuals who are at risk of harming themselves can contact the public safety system and a means through which others can alert the system of danger and thus prevent suicide or other self-injurious behavior. Through 911 calls persons with severe mental illness who are in crisis receive acute psychiatric services that can subsequently connect them to other mental health care.

Well-established, persistent, and troubling racial and ethnic disparities exist in mental health services delivery and access in the United States (2). Black patients are disproportionately represented in psychiatric emergency rooms (3), Asian patients are underrepresented in outpatient mental health services and tend to access the mental health care system later and at more severe levels of illness than do whites (4), and Spanish-speaking Latinos with severe mental illness are less likely than English-speaking Latino and white patients to use psychiatric emergency services (5). The psychiatric emergency response systems of cities are potentially important settings in which to explore racial and ethnic differences in mental health service use.

Although the 911 system handles many types of emergencies, it is linked closely with law enforcement. Law enforcement officers' role in the disposition of calls makes them de facto gatekeepers to safety net services for persons with mental disorders (6). Distrust of law enforcement is common in communities of color (7). Police and ambulance workers have been found to bring black patients with psychoses to psychiatric emergency service more frequently than other patients with psychoses (8). Distrust and fear of law enforcement may lead some communities of color not to trust that mental health–related calls will be handled appropriately and therefore to be reluctant to use the 911 system for a mental health crisis. Furthermore, the way the racial or ethnic minority communities perceive persons with mental illness will affect the community's response to persons exhibiting symptoms of illness. Stigma concerns and the fear of hospitalization have both been identified as obstacles to mental health treatment in black, Asian, and Hispanic communities (9). Although prior work has examined racial disparities in emergency service use and the social context of help-seeking behaviors (10), differences between racial and ethnic groups in the perception of law enforcement and use of 911 services have not been previously explored.

We would expect distrust of law enforcement and stigma related to ob-

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taining mental health services to lead to a reduced tendency of persons from racial or ethnic minority groups to seek help for psychiatric crises through the 911 system. Calls to the 911 system regarding mental health–related crises generally originate in the physical location where the crises occur, so attitudes in those places toward public health and safety authorities, as well as toward mental illness, could affect the rate of mental health–related 911 calls. From this it follows that neighborhoods with higher proportions of residents from racial or ethnic minority groups would be expected to have a lower frequency of calls related to mental health crises than neighborhoods with a lower proportion of residents from racial or ethnic minority groups. Fewer 911 calls would then keep persons with severe mental illness at risk of harming themselves or others and delay needed mental health treatment during psychiatric crises.

This study investigated the hypothesis that the rate of mental health–related 911 calls is negatively associated with a higher percentage of residents from racial or ethnic minority groups, after controls for other sources of differences in propensity to call 911, such as crime (11), neighborhood socioeconomic status, and demographic composition. We tested this hypothesis using existing 911 call data and census 2000 data from San Francisco, a racially heterogeneous city with a population in 2005 of approximately 739,000, of which about 33.0% are Asian or Pacific Islander, 7.3% are black, and 14.0% are Latino (12).

Methods

Before the initiation of research, approval for the study was obtained from the institutional review board at the University of California, San Francisco.

We analyzed preexisting data on all 911 calls occurring in San Francisco from January 2001 through June 2003. The 911 dispatcher assigned a code to each call based on the caller's description of the nature of the emergency. Calls were included in this study if they were made by individuals from the community; calls were excluded from automated systems, such as burglar alarms and calls from police officers to the dispatch center. We identified three codes that indicated a mental health–related call: 800 ("mentally disordered person"), 801 ("person attempting suicide"), and 5150 ("mental health detention"). The 5150 code is generally used for calls from treatment providers; the 800 and 801 codes are used for calls made by either providers or citizens. Other community-initiated call codes (that is, for crimes and other complaints) were classified as non–mental health related. The 911 data set yielded a sample of 1,341,608 calls in the study's 30-month period, including 28,197 mental health–related calls.

San Francisco is divided into 50 police sectors that are roughly the area of several city blocks, and the sector from which a 911 call originates is routinely recorded. These sectors are large enough to ensure that a sufficient number of 911 calls could be analyzed from each sector. Sector boundaries are not necessarily coterminous with spatial units used by the U.S. census, so geographic information systems software (ArcGIS9) was used to overlay San Francisco's approximately 175 Census tracts onto the sectors. Sectors were then characterized in terms of median household income, percentage of population by racial or ethnic groups (Asian, black, Latino, white, and other, which includes Native American and self-identified "other" racial or ethnic groups) and by sex, percentage of persons living below the poverty level, percentage of households occupied by renters, and median resident age. Census tract–level data on these variables is generally collected only during decennial census years, so data were used from the most recent census in 2000.

Negative binomial regression was performed to estimate the association between the rate of mental health–related 911 calls and the independent variables. The exponentiated regression coefficients from these models are reported as incidence rate ratios, which can be interpreted as a measure of relative risk (13). To account for differences in the total number of 911 calls across sectors, the number of 911 calls per sector was included as an offset. Incidence rate ratios of the number of mental health–related calls were first estimated with a multivariate model that included all dependent variables. Nonsignificant variables were removed one at a time from the model (starting with variables with the highest p value) until all coefficients had t statistics of at least 2. Models were fit using the GENMOD procedure in SAS, version 9.2.

Results

The mean±SD number of 911 calls per sector was 26,832±11,899, and the mean number of mental health–related calls per sector was 564±454. Mental health–related calls averaged 2.0% of all calls across all sectors.

Our model indicated that the proportion of black residents was negatively related to the rate of mental health–related calls, with a 1% increase in black residents resulting in a 1.1% decrease in the rate of calls (Table 1). An increase of one standard deviation in the percentage of black residents (12.4%) was associated with a 13.3% decrease (95% confidence interval= 7.0%– 20.0%) in

Table 1

Negative binomial regression model of predictors of rates of mental health–related calls to 911 in San Francisco police sectors[a]

Sociodemographic characteristic	One-unit increase in variable			One-SD increase in variable	
	IRR[b]	p	95% CI	IRR[b]	95% CI
Percentage black	.99	<.001	.98–1.00	.87	.80–.93
Percentage other race or ethnicity	.80	<.001	.66–.98	.87	.77–.99
Percentage male	1.06	.029	1.04–1.08	1.38	1.23–1.54
Percentage renters	1.01	<.001	1.00–1.01	1.20	1.10–1.30
Resident age	1.05	<.001	1.03–1.07	1.21	1.12–1.31

[a] Dispersion=.062 (95% CI=.037–.087)
[b] IRR, incidence rate ratio

the rate of mental health–related calls. Contrary to our hypothesis, the proportion of Asian and Latino residents was not significantly related to the rate of calls. The racial and ethnic category "other," which represented less than 2% of the population, was significant in the final reduced multivariate model, where a one-point increase in the percentage of this group of residents led to a 12.7% decrease in the rate of calls. Three other neighborhood characteristics (higher percentage of male residents, higher percentage of renters, and higher median resident age) were also associated with higher rates of mental health–related calls.

Discussion and conclusions

The relationship between the observed proportion of black residents and mental health–related calls was not consistent with known patterns of emergency mental health service use. Black adults are overrepresented in psychiatric emergency services in San Francisco, relative to overall population size (12), a finding that has also been observed in other cities with high poverty rates (11). The finding that neighborhoods with higher proportions of black residents generate relatively fewer mental health–related 911 calls suggests that black patients enter the emergency mental health system through means other than the 911 system or that black patients who arrive through the 911 system come disproportionately from neighborhoods with smaller proportions of black residents. These different explanations cannot be tested with these data but are important topics for future investigations that link 911 calls and admissions to psychiatric emergency services to other potential factors on the pathway to mental health services use, such as beliefs about mental health treatment, the social context of psychiatric emergencies, and the role of social networks of persons with severe mental illness (10).

The data available to characterize neighborhoods are less than optimal in some respects. Although the Census Bureau updates citywide population estimates each year, information on the sociodemographic characteristics of areas comparable to the administrative boundaries of the police sectors is available only from decennial census data. Therefore, U.S. census 2000 data were used to estimate community characteristics. Some neighborhoods may have undergone changes between the collection of census 2000 data and the study period (2001–2003). However, because the end of the study period (June 2003) was less than four years after the census and most calls were in the two years immediately following the census, bias from migration after census data collection should be minimal. Another concern is that census tracts and other administrative boundaries may not represent meaningful geographic units, such as neighborhoods. However, the police sectors used in this study are functionally relevant to the systems that use them and could serve as targets for policy change.

The data examined here suggest that racial and ethnic composition is associated with the rate of mental health–related 911 calls in San Francisco neighborhoods, but only through the proportion of residents who are black or of "other" race or ethnicity. One important potential implication of underutilization of the 911 system by the black community is that needed treatment may be delayed, therefore posing greater risks to the health and safety of both affected individuals and their communities. However, this initial study provides few insights into the reasons for underutilization of the 911 system in neighborhoods with higher proportions of black residents. Investigation of the perceptions of black individuals regarding the 911 system and the role of police in handling psychiatric crises would be informative, as would a better understanding of the outcomes of mental health–related 911 calls (for example, whether black individuals calling 911 for a mental health crisis experience different outcomes than individuals of other races or ethnicities). This research could be accomplished by establishing systematic linkages between 911 calls, police incident reports, and mental health service records. In conclusion, this initial examination of mental health–related 911 calls suggests that the 911 system should not be overlooked as a component of the service system as we strive to better understand and address racial and ethnic differences and disparities in mental health care.

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