

Census-Based Sociodemographic Correlates of Spatially Aggregated Violent Crimes In California

BACKGROUND

The Federal Bureau of Investigation's (FBI) Uniform Crime Report defines violent crime as murder and non-negligent manslaughter, rape, robbery and aggravated assault (Federal Bureau of Investigations, 2019). Herein, the analyses focus on crimes in the Crimes and Clearances data reported by law enforcement agencies throughout the state of California to the California Department of Justice Criminal Justice Statistics Center. Alcohol is linked to violence because of its potential to impair the ability to control aggressive impulses or evaluate clues in the surrounding environment that help modulate behavior (Room and Collins, 1983).

OBJECTIVE

This research examines: a) trends in violent crime rates in California from 2005 to 2017; and b) the spatially aggregated correlates of such crimes, including alcohol outlet density, U.S. Census data on population structure and socioeconomic indicators, and distance between crime areas and the California-Mexico border.

The expectation is that there was a decline in violent crime rates in California from 2005 to 2017 (Friedman et al., 2017; Criminal Justice Statistics Center, 2018). It is also expected that outlet density and the percent of Hispanic and Black populations in law enforcement agency areas will be positively associated with crime rates (Gruenewald and Remer, 2006). Finally, the two California counties that have borders with Mexico, San Diego and Imperial, have violent crime rates lower than the state as a whole (Public Policy Institute of California, 2017). So, the expectation is that crime rates will increase as distance between police agencies reporting crimes and the border increases.

METHODS

- Violent crime data are from the Crimes and Clearances report to the California Department of Justice from 2005 to 2017 by law enforcement agencies throughout the state. If multiple crimes occur on the same occasion, only the most serious offense, based on the severity of possible punishment, is counted.
- Arrest data, sociodemographic variables from the Census 2010, and alcohol outlet data provided by the California Department of Alcoholic Beverage Control were aggregated to 503 spatial units consisting of areas covered by law enforcement reporting agencies (LERAs).
- Outlet density was estimated with number of outlets in the area covered by each LERA as the numerator and the LERA square miles as the denominator to generate an aggregate LERA level density measure for each type of outlet (all, bars/pubs, off premise).
- Distance to the California/Mexico border is the linear distance in miles from the centroid of each LERA to the closest border crossing.
- Data analyses were conducted using Bayesian Poisson space-time regression models.

RESULTS

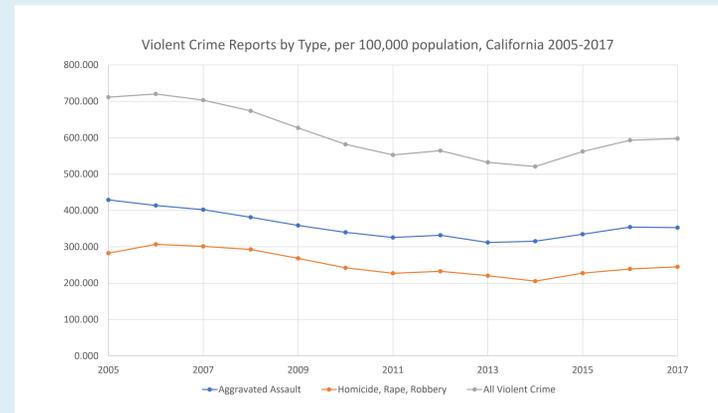


Table 1 Relative Rates and Credible Intervals for Violent Crime, by associated LERA characteristics

Fixed effect	Relative rate	95% CI
Study year	0.981*	(0.976, 0.986)
Distance to the border (100's miles)	1.077*	(1.074, 1.081)
Alcohol Outlets (ref: restaurants)		
Total outlet density, per square mile	1.006*	(1.006, 1.007)
Percent bars or pubs (5% change)	1.083*	(1.078, 1.089)
Percent off premise (5% change)	0.981*	(0.980, 0.983)
Gender (ref: female)		
Percent male (1% change)	0.955*	(0.954, 0.956)
Race/Ethnicity (ref: White)		
Percent Asian (5% change)	1.001	(0.999, 1.002)
Percent Black (5% change)	1.171*	(1.169, 1.172)
Percent Hispanic (5% change)	1.028*	(1.026, 1.029)
Age (ref: 50+)		
Percent under 18 (1% change)	1.007*	(1.006, 1.008)
Percent 18-29 (1% change)	0.991*	(0.990, 0.993)
Percent 30-39 (1% change)	1.011*	(1.009, 1.013)
Percent 40-49 (1% change)	1.022*	(1.020, 1.024)
Birthplace (ref: foreign born)		
Percent U.S. born (5% change)	1.012*	(1.010, 1.015)
Income		
Percent below 150% poverty (5% change)	1.098*	(1.096, 1.100)
Median adjusted income, per \$10,000	0.946*	(0.944, 0.948)
Education (ref: less than high school)		
Percent high school graduate (5% change)	1.069*	(1.067, 1.072)
Unemployment (ref: employed)		
Percent unemployed (5% change)	0.998*	(0.998, 0.999)
Housing (ref: renter)		
Percent vacant (5% change)	1.003*	(1.002, 1.004)
Percent owner occupied (5% change)	0.976*	(0.974, 0.977)
Population density, 100's per square mile	0.998*	(0.998, 0.998)
Property crimes per capita	1.137*	(1.134, 1.140)
Residual area	0.854*	(0.837, 0.871)
Distance to border X Percent Hispanic	1.004*	(1.004, 1.004)
Distance to border X Percent outlet bar/pub	0.988*	(0.987, 0.989)

*Well-supported findings (95% credible interval excludes 1.000)

Violent crime rates declined 27% from 2005 to 2014 (711,5/100,000 to 520,80), increasing by 13% from 2014 to 2017 ($p < .05$ for trend) (Graph 1). From 2015 to 2017, there was a decline of 16% in the violent crime rate. The trend for aggravated assaults and homicide/rape/robbery were similar to the overall crime rates, just with less variation in rate magnitude.

Distance to the California/Mexico was directly related to violent crime relative rates, which increased by about 8% for each 100 miles. Violent crimes relative rates are positively related to distance to the border, total alcohol outlet density, percent total outlets that are bars and pubs, percent population Black, percent population Hispanic, percent population 30-49 years of age, percent population U.S. born, percent 150% below federal poverty level, percent high school graduate, and percent houses vacant. Violent crimes are negatively related to percent total outlets that are off-premise, percent population male, percent with higher than 2017 adjusted median income, percent owner occupied houses, and lower population density.

CONCLUSION

Several population level characteristics including population indicators of age structure, ethnic composition, community socioeconomic stability, and alcohol availability are associated with violent crime rates. Contrary to public perceptions, violent crime rates increase as distance to the Mexico border increases.

REFERENCES

- Criminal Justice Statistics Center (2018). Crime in California. Sacramento, CA.
- Federal Bureau of Investigations (2019). Crime in the United States, 2018 Uniform Crime Report. Uniform Crime Report, Federal Bureau of Investigation Uniform Crime Report.
- Friedman, M., Grawert, A. C. and Cullen, J. (2017). Crime Trends: 1990-2016. New York, Brennan Center for Justice. New York School of Law.
- Gruenewald, P. J. and Remer, L. (2006). Changes in outlet densities affect violence rates. *Alcoholism: Clinical and Experimental Research* 30(7): 1184-1193.
- Room, R. and Collins, G. (1983). Alcohol and disinhibition: The nature and meaning of the link. Washington, DC.
- Public Policy Institute of California (2017). Crime Rates In California. Crime Rates by County, 2017. <https://www.ppic.org/data-set/crime-rates-in-california/> Accessed on February 19, 2020.

ACKNOWLEDGEMENTS

Work on this research was supported by grant P60-AA006282 from the National Institute on Alcohol Abuse and Alcoholism to the Prevention Research Center, Pacific Institute for Research and Evaluation.