



A GEOSPATIAL ANALYSIS OF EVICTION BURDEN AND DRUG OVERDOSE MORTALITY IN LOS ANGELES COUNTY: AN ECOLOGIC STUDY



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Background

- Over half of Los Angeles County (LAC) residents reporting being cost burdened (spending >30% of income) by high costs of housing
- Eviction is a marker of housing insecurity that is prevalent in metropolitan areas with expensive housing markets.
- Despite having low overdose deaths below the national average, evidence suggests existing disparities in overdose deaths across LAC by geography
- Little is known about the impact of housing insecurity on the burden of substance-use related mortality in LAC
- There is limited geospatial assessment of substance-use related mortality in LAC.

Objective

- To assess the relationship between evictions and drug overdose-related deaths by geographic unit in LAC.

Methods

- Retrospective ecologic study.
- Predictor variables:* eviction rates (Eviction Lab at Princeton), 2011; sociodemographic variables (ACS), 2011.
- Outcome variables:* drug overdose-related deaths (LAC Medical Examiner-Coroner), 2011-2017.
- Using QGIS, centroids for ZCTA and Census tract-level data were used to assign, re-aggregate, and average data into arbitrary geographic hexagonal units (hexbins), allowing for homogeneity of analysis by combining disparate data sets.
- There were 438 10-square kilometer hexbins across LAC, each with its associated predictor and outcome variables.
- Hexbins were excluded if containing less than 2000 inhabitants, leaving 203 hexbins for analyses.
- Analyses were performed using negative binomial regressions.
- Deemed non-human subjects research by UCLA IRB.

Results

Results of univariate and multivariate regression models																
	Total Overdose Deaths				Opioid Overdose Deaths				Methamphetamine Overdose Deaths				Cocaine Overdose Deaths			
	IRR	95% CI	IRR	95% CI	IRR	95% CI	IRR	95% CI	IRR	95% CI	IRR	95% CI	IRR	95% CI		
Evictions per 1,000 Renter Households[†]	0.918	(0.82, 1.03)	0.987	(0.88, 1.11)	0.859*	(0.76, 0.97)	0.953	(0.85, 1.07)	0.970	(0.85, 1.11)	0.973	(0.85, 1.11)	1.042	(0.90, 1.21)	1.020	(0.87, 1.19)
Median Household Income[†]			1.377*	(1.20, 1.59)			1.446*	(1.24, 1.68)			1.387*	(1.18, 1.63)			1.090	(0.91, 1.30)
Race/Ethnicity (reference = White predominant hexbins)																
Predominant Hispanic Hexbins			1.258	(0.94, 1.69)			1.132	(0.83, 1.45)			2.098*	(1.50, 2.94)			1.054	(0.70, 1.58)
Predominant African American Hexbins			1.617	(0.78, 3.37)			1.111	(0.51, 2.43)			1.444	(0.63, 3.32)			3.646[§]	(1.54, 8.65)

[†] Variable standardized to a mean of 0 and standard deviation of 1 for ease of estimate interpretation.
^{*} p<0.05 [§]p<0.01 ^{††}p<0.0001

Discussion & Conclusions

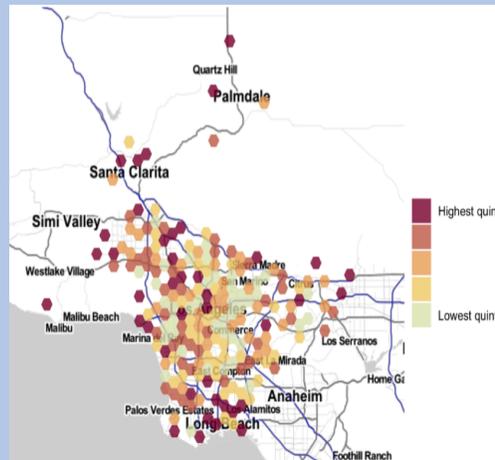
- Eviction rates was not an independent predictor of overdose deaths in LAC.
- There is an association between median household income of a geographic unit and the rate of total, opioid, and methamphetamine-related deaths.
- There is a racialized disparity of burden of methamphetamine and cocaine-related deaths in predominantly Latinx & Black communities, respectively.
- Limitations: ecologic fallacy; outcome variables are aggregated across 8 years while predictor variables are only from 2011; did not account for geography as independent predictor.

Future Implications

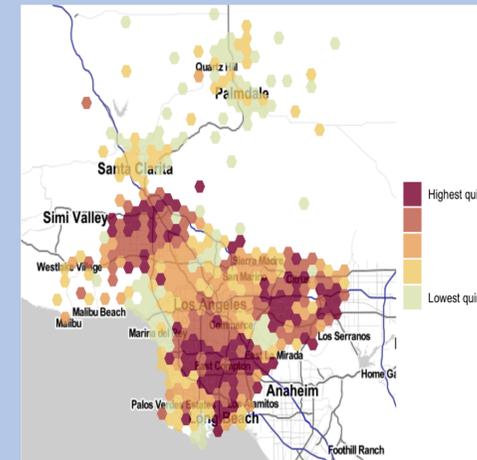
- More research is needed to elucidate the geographic distribution of overdose-related deaths in LAC, and the sociodemographic factors that contribute to this distribution.
- More research is needed to elucidate predictors of eviction in LAC and its impacts on public health.
- Ideally, research evaluating the geospatial relationship between housing insecurity and substance use related morbidity and mortality should include temporal trends that would account for fluctuations in either of these variables across time.

Bibliography

- Scholl, L, Seth P, Kariisa M, Wilson N, Baldwin G. Drug and Opioid-Involved Overdose Deaths – United States, 2013-2017. *MMWR Morb Mortal Wkly Rep.* 2019; 67:1419-1427.
- Housing and Health in Los Angeles County. Social Determinants of Health, Issue no.2. Los Angeles: Los Angeles County Department of Public Health; February 2015.
- Burgard, S.A., Seefeldt, K.S., Zelnor, S., 2012. Housing instability and health: findings from the Michigan recession and recovery study. *Soc. Sci. Med.* 75, 2215e2224.
- Ray, R. (2014). Impacts of the Widening Divide: Los Angeles at the Forefront of the Rent Burden Crisis. Retrieved from UCLA LUSKIN SCHOOL OF PUBLIC AFFAIRS CENTER FOR THE STUDY OF INEQUALITY.
- Stahre, M., VanEenwyk, J., Siegel, P., Njai, R., 2015. Housing insecurity and the association with health outcomes and unhealthy behaviors, Washington state, 2011. *Prev. Chronic Dis.* 12, E109



Total overdose deaths in LAC 2011-2017 grouped by quintile .



Burden of eviction rates in LAC 2011 grouped by quintile.