



2019 Oakland Stressors Index Methodology

Background

Community stress is the experience of chronic stress, violence, and trauma that has serious negative consequences on communities and individuals. It leads to lower social capital and decreased collective efficacy and impacts the psychological development, health, and well-being of individuals. As part of the City of Oakland’s mission to prevent and reduce violence across Oakland, the Human Services Department (HSD) contracted with Resource Development Associates (RDA) to update the Community Stressors Index, which was last updated in 2014. The Oakland Stressors Index will support data-driven decision making and strategic planning of place-based interventions and allocation of resources (e.g., funding for services, deployment of community resource officers).

The Oakland Stressors Index provides a snapshot of multiple risk factors on community stress. The index captures 21 stressor indicators across a range of domains, including 1) Health and Environment, 2) Housing, 3) Education, 4) Poverty, 5) and Criminal Justice System Involvement. RDA calculated a cumulative index score that summarizes the relative levels of community stress for each census tract across the City of Oakland.

Indicator Selection

The following indicator criteria were used to identify and prioritize indicators to include in the Oakland Stressors Index.

- **Impact:** Strong evidence that indicator has high impact on community stress
- **Usefulness:** Captures information that helps inform City of Oakland strategies, priorities, or programming
- **Feasibility:** Data can be obtained with reasonable effort and cost, and data is expected to be collected again in the future
- **Reliability:** Data accurately and reliably measures what it says it will measure
- **Credibility:** Data has been recommended or is being used by experts and organizations
- **Distinctiveness:** The indicator lacks redundancy and is not already captured in other indicators

Oakland HSA and RDA used the indicator criteria as well as stakeholder input to analyze data for the indicators outlined in the following table. RDA utilized data from the most recent and available data sources.



Table 1. Summary of Indicators Included in 2019 Oakland Stressors Index

Category	Indicator	Measure	Year	Original Unit of Analysis	Data Source
Health and Environment	Healthy Retail Food Environment	Modified retail food environment index (Percent of all food retailers that are healthy food retailers)	2017	Census Tract	<i>Healthy Communities Data and Indicators Project, California Department of Public Health. 2017. Modified Retail Food Environment Index.</i>
	Insurance Coverage	Percent of population without health insurance coverage	2017	Census Tract	<i>U.S. Census Bureau American Community Survey, 2017 American Community Survey 5 Year Estimates. Table B27001.</i>
Housing	Housing Cost Burden	Percent of households paying more than 30% of monthly household income towards housing costs	2016	Census Tract	<i>U.S. Department of Housing and Urban Development (HUD), Consolidated Planning Comprehensive Housing Affordability Strategy (CHAS). 2016.</i>
	Housing Affordability	Ratio of median income of census tract to median value of dwellings in census tract	2016	Census Tract	<i>U.S. Department of Housing and Urban Development (HUD), Consolidated Planning Comprehensive Housing Affordability Strategy (CHAS).</i>
	Homelessness	Number of unsheltered homeless individuals	2019	Census Tract	<i>EveryOne Home, 2019 Alameda County Homeless County Report.</i>
Education	Chronic Absenteeism	Percent of students with chronic absenteeism	2018-19 school year	Census Tract	<i>Oakland Unified School District, 2019.</i>
	Suspensions	Number of suspensions per 1,000 students		Census Tract	
	High School Graduation Rate	Percent of students who did not graduate from high school		Census Tract	
	Third Grade Reading Level	Percent of students below third grade reading level		Census Tract	
Poverty	Unemployment Rate	Percentage of the civilian labor force not employed	2017	Census Tract	<i>U.S. Census Bureau American Community Survey, 2017 American Community Survey 5 Year Estimates. Table S2301.</i>
	Use of Free and Reduced Meals	Percent of students eligible for free or reduced lunch	2018-19 school year	Census Tract	<i>Oakland Unified School District, 2019.</i>



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	Food stamp recipients	Percent of households receive food stamp/SNAP within past year	2017	Census Tract	<i>U.S. Census Bureau American Community Survey, 2017 American Community Survey 5 Year Estimates. Table S2201.</i>
Criminal Justice System Involvement	Youth Probation	Youth on probation per 1000 youth (ages 12 -17)	2018	Zip Code	<i>Probation Department, 2019</i>
	Adult Probation	Adults on probation per 1000 adults (ages 18 and older)		Zip Code	
Population Data	OPD Stops	Pedestrian, bicycle, and vehicle stops per 1,000 population	2017	Police Beats	<i>Oakland Police Department Stop Data, Source Data 2017.</i>
	Domestic Violence	Domestic violence incidents reported to OPD per 1,000 population	2018	Police Beats	<i>Oakland Police Department, 2019</i>
	Shootings	Shooting incidents reported to OPD per 1,000 population		Police Beats	
	Burglaries	Burglaries reported to OPD per 1,000 population		Police Beats	
	Homicides	Homicides reported to OPD per 1,000 population		Police Beats	
	Arrests among youth	Arrests per 1,000 youth (age 12-17)		Police Beats	
	Arrests among adults	Arrests per 1,000 adults (age 18 and older)		Police Beats	
	Census Tract Population	Total Population, by Race and Ethnicity		2018	





Index Methodology

For each census tract within City of Oakland, RDA calculated a z-score for each stressor indicator where data were available. A z-score measures how far away a data point is from the overall average. A positive z-score indicates that the census tract had an estimate that is higher (i.e., more stressed) than the average across all census tracts; and, vice versa, a negative z-score indicates that the census tract had an estimate that is lower (i.e., less stressed) than the overall average. In order to calculate the cumulative effect of all indicators, RDA averaged z-scores across all indicators to obtain a cumulative average z-score for each individual census tract. The cumulative average z-score was then used to rank the census tracts according to their cumulative level of stress. The highest rank (e.g., census tract with rank equal to one) indicates the highest level of community stress while the lower ranks (e.g., census tract with rank equal to 100) indicate lower community stress. This rank helps us understand the relative levels of community stress across the City of Oakland.

Limitations

The 2019 Oakland Stressors Index was designed to be rigorous with available data. The following data and methodological limitations should be considered when interpreting the results:

- **Comparability.** Due to the different methodology and the addition of extra indicators, the 2019 Oakland Stressors Index is not comparable to prior iterations of the Oakland Stressors Index.
- **Point in Time.** Some of the indicators (such as homeless population) are point-in-time enumerations. Thus, they are not as reliable as rates calculated over a period of time. However, they provide a proxy for the measure (e.g., homelessness) by geographic area.
- **Data Sources Have Staggered Years.** RDA utilized the most recently available data. However, some indicators only had data available as recently as 2016 and 2017. Older data may not reflect recent trends if indicators changed drastically in the past few years.
- **Geographic Transformation.** Certain indicators (i.e., Probation Rates, OPD Stops, Crime Rates) only had data available at a geographic scale that was larger than a census tract (i.e., zip code, police beat). Thus, several census tracts may fall within a larger zip code or police beat. RDA applied spatial smoothing methods to calculate an estimated indicator rate for each census tract. Since this technique assumes equal distribution of these data points across a large area (i.e., zip code or police beat), the census-tract level trends may not precisely capture neighborhood-level differences.