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 retailors) | 2017 | Census Tract | *Healthy Communities Data and Indicators Project, California Department of Public Health. 2017. Modified Retail Food Environment Index.* |
| **Insurance Coverage** | Percent of population without health insurance coverage | 2017 | Census Tract | *U.S. Census Bureau American Community Survey, 2017 American Community Survey 5 Year Estimates. Table B27001.* |
| **Housing** | **Housing Cost Burden** | Percent of households paying more than 30% of monthly household income towards housing costs | 2016 | Census Tract | *U.S. Department of Housing and Urban Development (HUD), Consolidated Planning Comprehensive Housing Affordability Strategy (CHAS). 2016.* |
| **Housing Affordability**  | Ratio of median income of census tract to median value of dwellings in census tract | 2016 | Census Tract | *U.S. Department of Housing and Urban Development (HUD), Consolidated Planning Comprehensive Housing Affordability Strategy (CHAS).* |
| **Homelessness** | Number of unsheltered homeless individuals | 2019 | Census Tract | *EveryOne Home, 2019 Alameda County Homeless County Report.* |
| **Education**  | **Chronic Absenteeism** | Percent of students with chronic absenteeism | 2018-19 school year | Census Tract | *Oakland Unified School District, 2019.* |
| **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 | *U.S. Census Bureau American Community Survey, 2017 American Community Survey 5 Year Estimates. Table S2301.* |
| **Use of Free and Reduced Meals** | Percent of students eligible for free or reduced lunch | 2018-19 school year | Census Tract | *Oakland Unified School District, 2019.* |
| **Food stamp recipients** | Percent of households receive food stamp/SNAP within past year | 2017 | Census Tract | *U.S. Census Bureau American Community Survey, 2017 American Community Survey 5 Year Estimates. Table S2201.* |
| **Criminal Justice System Involvement** | **Youth Probation** | Youth on probation per 1000 youth (ages 12 -17) | 2018 | Zip Code | *Probation Department, 2019* |
| **Adult Probation** | Adults on probation per 1000 adults (ages 18 and older) | Zip Code |
| **OPD Stops** | Pedestrian, bicycle, and vehicle stops per 1,000 population | 2017 | Police Beats | *Oakland Police Department Stop Data, Source Data 2017.* |
| **Domestic Violence** | Domestic violence incidents reported to OPD per 1,000 population  | 2018 | Police Beats | *Oakland Police Department, 2019* |
| **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 |
| **Population Data** | **Census Tract Population**  | Total Population, by Race and Ethnicity | 2018 | Census Tracts | *U.S. Census Bureau American Community Survey, 2017 American Community Survey 5 Year Estimates. Table DP05.* |

# 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.