Analysis of Race/Ethnicity and CalEnviroScreen 4.0 Scores

Office of Environmental Health Hazard Assessment
California Environmental Protection Agency

October 2021

Overview

CalEnviroScreen scores represent a combined measure of pollution and the potential vulnerability of a population to the effects of pollution. Like the previous versions, CalEnviroScreen 4.0 does not include indicators of race/ethnicity or age. However, the distribution of the CalEnviroScreen 4.0 cumulative impact scores by race or ethnicity is important. This information can be used to better understand issues related to environmental justice and racial equity in California.

This report provides an analysis of the relationship between CalEnviroScreen 4.0 results and race/ethnicity and shows clear disparities with respect to the racial makeup of the communities with the highest pollution burdens and vulnerabilities. People of color, especially Latino and Black people, disproportionately reside in highly impacted communities in California. The results using CalEnviroScreen 4.0 scores are consistent with earlier versions of the tool, and reflect racial disparities, with the highest percentages of people of color living in the most highly impacted communities. OEHHA plans to release a more extensive analysis of race/ethnicity and age using the CalEnviroScreen 4.0 results in the future.

Results of the Analysis of CalEnviroScreen 4.0 Scores and Race/Ethnicity

We evaluated potential associations between race/ethnicity and CalEnviroScreen 4.0 scores released in October 2021. We used race/ethnicity data from the 2015-2019 American Community Survey of the census and the results from CalEnviroScreen Version 4.0 available on OEHHA's webpage. For the purpose of analyzing racial demographics with CalEnviroScreen scores we follow the grouping of racial data provided by the Census datasets (see the Appendix for a more detailed explanation). In preparing this report, OEHHA staff used the same methods as our previous analysis of CalEnviroScreen 3.0 scores and race/ethnicity.

Figure 1 shows the range of CalEnviroScreen 4.0 scores as represented by percentiles experienced by Californians of different races and ethnicities. We assigned all Californians a CalEnviroScreen 4.0 percentile score based on the census tract they live in and then grouped them by race/ethnicity. The dark horizontal lines in each box and the numbers above them indicate the median (50th percentile) CalEnviroScreen 4.0 score for each group. The shaded boxes correspond to the "Interquartile Range" (IQR), or the range of values between the 25th to 75th percentile. The dashed vertical lines show the range of the extreme values experienced by the groups.
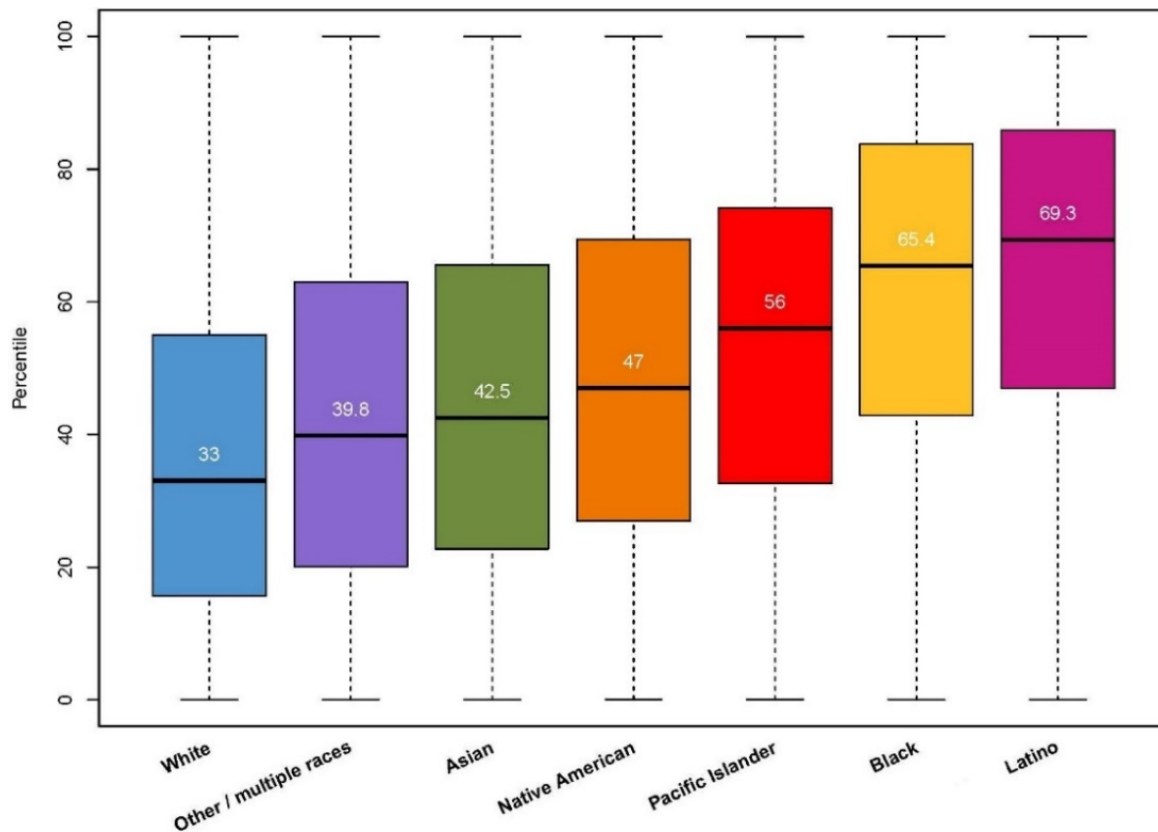

Figure 1. CalEnviroScreen 4.0 Score by Racial or Ethnic Group.

The dashed vertical lines show that all racial/ethnic groups have some members living in communities with the lowest and highest CalEnviroScreen scores. However, the chart also shows that the average CalEnviroScreen percentile score is lowest for whites and much higher for Latinos, Blacks and Pacific Islanders than for other groups. This indicates that Latinos, Blacks and Pacific Islanders tend to live in communities with higher pollution burdens and vulnerabilities than the other racial/ethnic groups analyzed.

33% People of Color
67% White

91% People of Color
9% White

■ People of Color
■ White

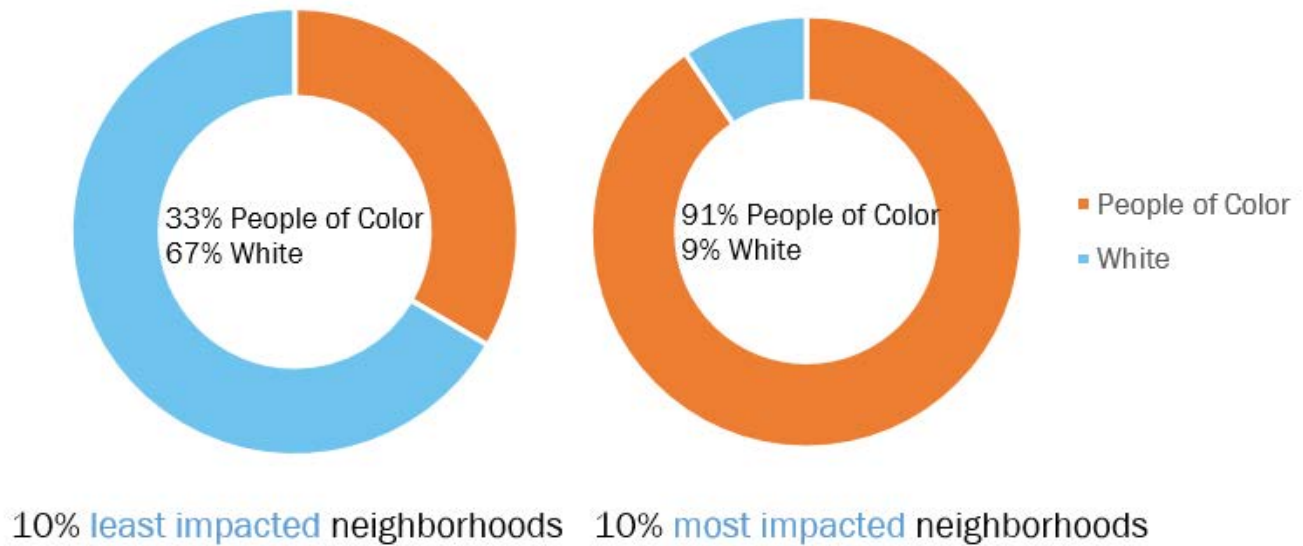10% least impacted neighborhoods   10% most impacted neighborhoods

Figure 2. Race in the Least and Most Impacted Census Tracts of CalEnviroScreen 4.0.

Figure 2 shows the percentage of people of color and white populations living in the least and most impacted communities identified in CalEnviroScreen 4.0. Census tracts across the state were ranked into ten categories (deciles) with equal numbers of census tracts in each. The circle chart on the left represents the least impacted 10% of census tracts (first decile) while the circle chart on the right represents the most impacted 10% of census tracts (10th decile) by percentage people of color and white. These figures demonstrate significant differences in the in racial makeup between the least and most impacted neighborhoods.

Figure 3 examines in greater detail how communities grouped by their CalEnviroScreen 4.0 score vary by race/ethnicity. The top-most horizontal bar (first decile) shows the race/ethnic makeup of the least impacted census tracts (1-10th percentile of CalEnviroScreen score), while 10th decile toward the bottom of the chart shows the race/ethnic makeup of the most impacted census tracts (91-100th percentile). The overall demographic makeup of the California population using the 2015-2019 ACS data is shown at the very bottom of the chart. (Note: Due to their small numbers relative to other racial/ethnic groups, Native Americans and Pacific Islanders were grouped into the "Other" category in this figure.)

If impacts were distributed equally across the California population, the proportion of each racial/ethnic group in each decile would be equal to its overall proportion in the California population. That is, an even distribution of pollution burden and population vulnerability across racial and ethnic groups would mean that all the bars would resemble the bottom bar

in Figure 3. However, it is clear from the chart that this is not the case. Instead, Latinos and African Americans disproportionately reside in highly impacted communities while other groups tend to reside disproportionately in less impacted communities. Previous versions of CalEnviroScreen data and race/ethnicity data have similar findings.
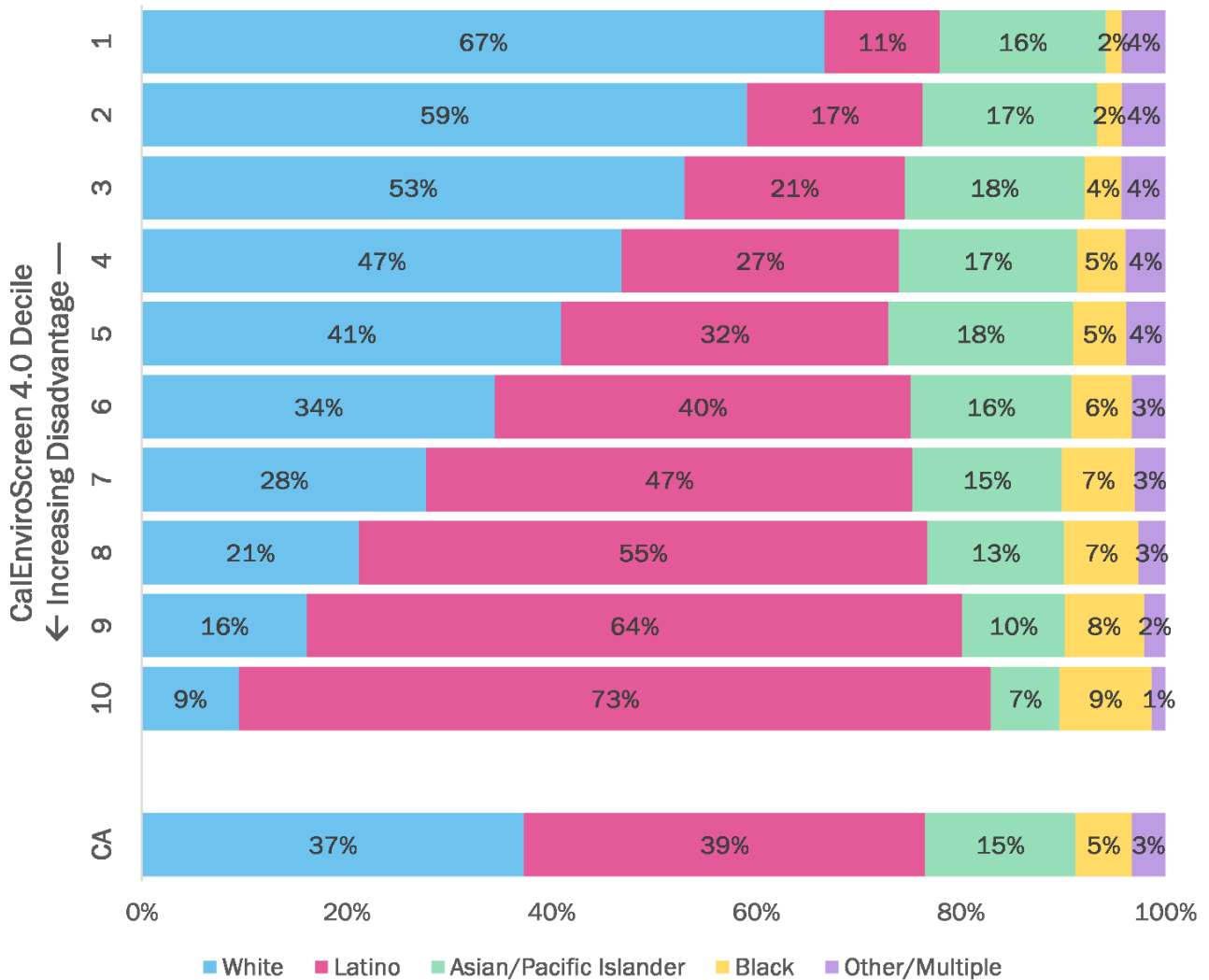

Figure 3 Racial Makeup of Each Decile of CalEnviroScreen 4.0 Score.

Analysis of CalEnviroScreen and Most Prevalent Race by Census Tract

Another way to visualize disproportionate impacts by race/ethnicity is through analyzing CalEnviroScreen scores with information on the most prevalent race/ethnicity by census tract. The most prevalent race or ethnicity for each census tract was determined by the race/ethnicity with the highest population in each census tract as reported in the 2015-2019 American Community Survey.

Figure 4 shows the breakdown of the most prevalent race within the 10% most impacted census tracts for four racial/ethnic groups. Similar to the findings shown in Figure 3, Latinos are over-represented in the 10% most impacted census tracts, representing 23% of the group's total tracts (in which Latinos are most prevalent). Although only 21 census tracts that are predominantly Black are in the 10% most impacted census tracts, this represents 18% of the group's total tracts. A map of the most prevalent race and CalEnviroScreen 4.0 scores will be made available on the CalEnviroScreen 4.0 webpage.

Percent of Each Racial/Ethnic Group's Most Prevalent Census Tracts That are in the Highest 10% Scoring Communities

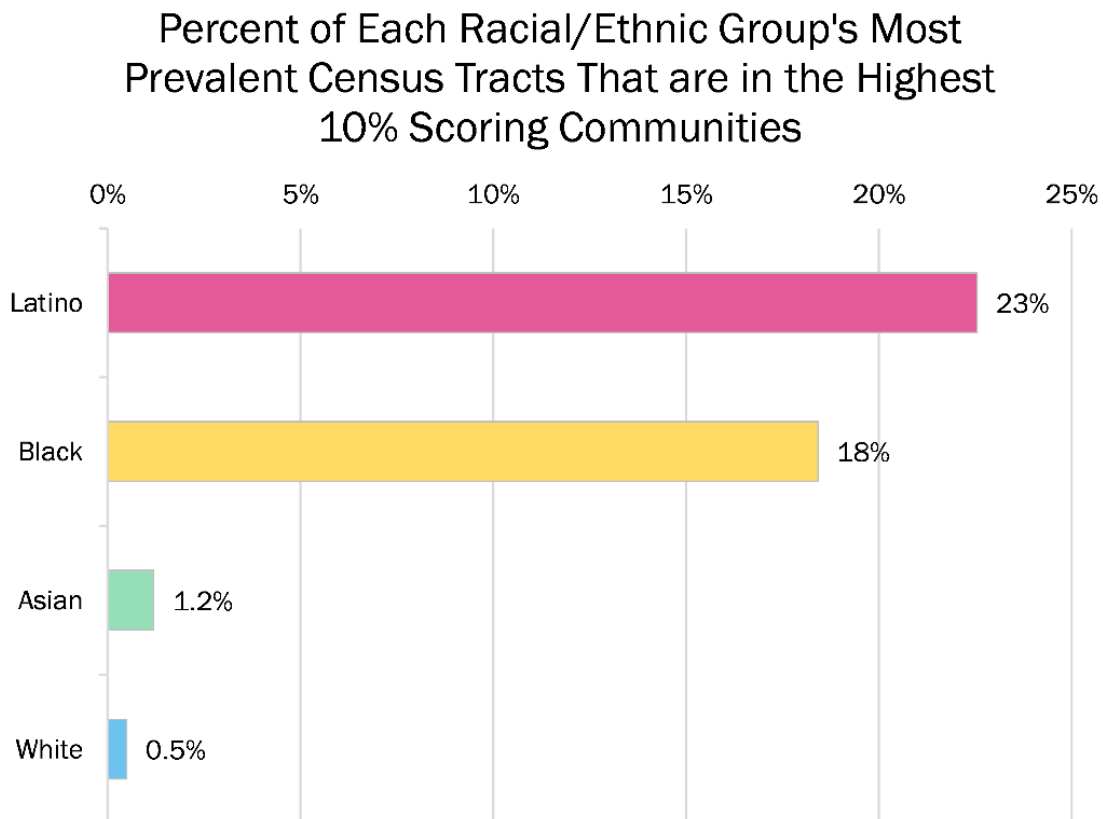| Group	Percentage
Latino	23%
Black	18%
Asian	1.2%
White	0.5%

Figure 4. Most prevalent race by census tracts were overlaid with most disadvantaged 10% CalEnviroScreen scores. For each most prevalent race group, this chart shows the percent of census tracts in the top 10% of CalEnviroScreen 4.0 scores among total tracts (Latino = 745 tracts out of 3304; Black = 21 tracts out of 114; Asian = 9 tracts out of 752; White = 19 tracts out of 3861).

Appendix

The U.S. Census Bureau groups populations based on survey results. For the purpose of analyzing racial demographics in the context of CalEnviroScreen we follow the grouping of racial data provided by the Census datasets. All census respondents who identified as Hispanic or Latino are collectively referred to as "Latino" in our analyses. The remainder of the population who identified as "Not Hispanic or Latino" was divided into racial groups used by the Census. People who identified as a single race and as Black or African American are referred to as "Black" in our analyses. Single race and White and single race and Asian are referred to as "White" and "Asian". Those who identified as a single race and Native Hawaiian and Other Pacific Islander are referred to as "Pacific Islander" and are grouped together with "Asian" in some analyses. Those who identified as a single race and American Indian and Alaska Native were referred to as "Native American". Those who identified as multiple races or "other" race are referred to as "multiple or other".