

# Preliminary Analysis of Race/Ethnicity and Draft CalEnviroScreen 4.0 Scores



*Office of Environmental Health Hazard Assessment  
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## Overview

CalEnviroScreen scores represent a combined measure of pollution and the potential vulnerability of a population to the effects of pollution. The draft version of CalEnviroScreen 4.0 was released for public comment in February 2021. Like the previous versions of CalEnviroScreen, this update to CalEnviroScreen 3.0 does not include indicators of race/ethnicity or age. However, the distribution of the burden of pollution by race or ethnicity remains important. This information can be used to better understand issues related to environmental justice and racial equity in California.

This report provides a preliminary analysis of the relationship between the draft CalEnviroScreen 4.0 results and race/ethnicity. During the public comment period, the Office of Environmental Health Hazard Assessment (OEHHA) welcomes feedback on the analysis presented here and other types of analysis of race/ethnicity data that would be informative. OEHHA plans to release a more extensive race/ethnicity and age analysis with the final CalEnviroScreen 4.0 results later this year.

This preliminary analysis 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 the draft 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.

## Results of the Preliminary Analysis of Draft CalEnviroScreen 4.0 Scores and Race/Ethnicity

We evaluated potential associations between race/ethnicity and draft CalEnviroScreen 4.0 scores released in February 2021. We used race/ethnicity data from the [2014-2018 American Community Survey](#) of the census and the results from the draft CalEnviroScreen Version 4.0 available [here](#) for public comment. 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 draft CalEnviroScreen 4.0 scores as represented by percentiles experienced by Californians of different races and ethnicities. We assigned all Californians a draft 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 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.

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

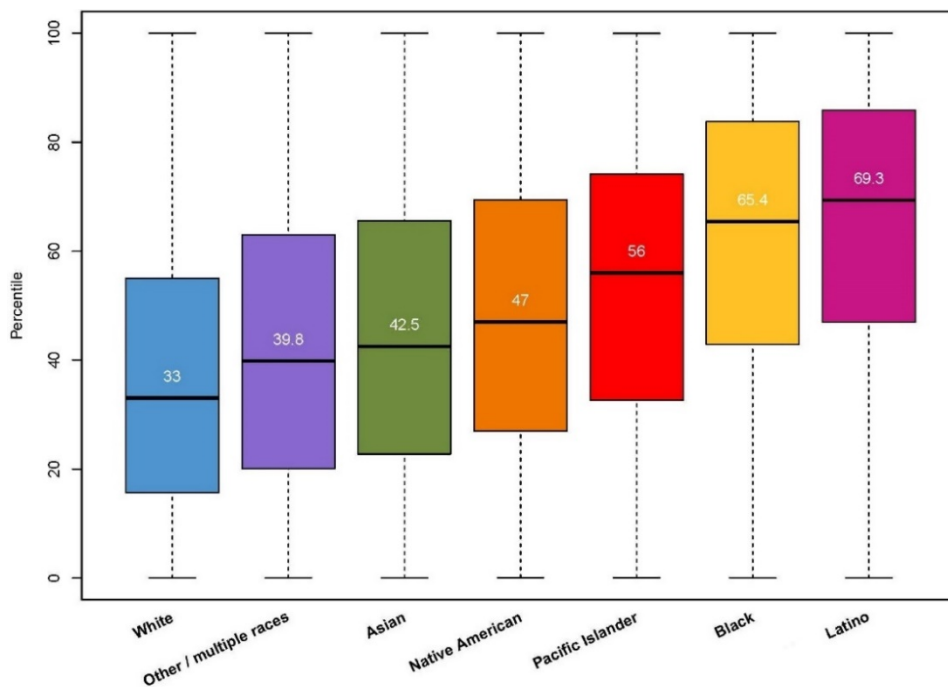
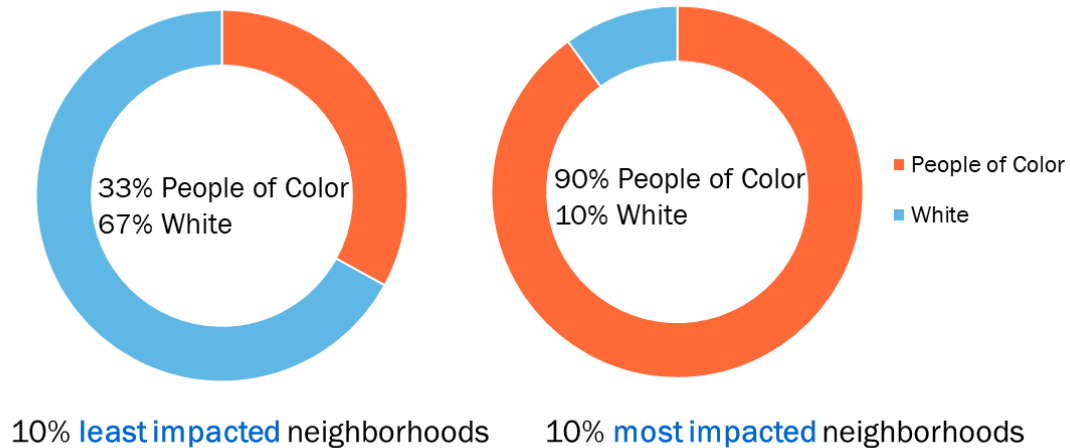


Figure 1. Draft CalEnviroScreen 4.0 Score by Racial or Ethnic Group.



**Figure 2. Race in the Least and Most Impacted Census Tracts by Draft CalEnviroScreen 4.0 Decile.**

Latinos, Blacks and Pacific Islanders tend to live in communities with higher pollution burdens and vulnerabilities than the other racial/ethnic groups analyzed.

Figure 2 below shows the percentage of people of color and white populations living in the least and most impacted communities identified in the draft 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 (10<sup>th</sup> decile) by percentage people of color and white. These figures demonstrate significant differences in the racial makeup between the least and most impacted neighborhoods.

Figure 3 examines in greater detail how communities grouped by their CalEnviroScreen score vary by race/ethnicity. The top-most horizontal bar (first decile) shows the race/ethnic makeup of the least impacted census tracts (1-10<sup>th</sup> percentile of CES score), while 10<sup>th</sup> decile toward the bottom of the chart shows the race/ethnic makeup of the most impacted census tracts (91-100<sup>th</sup> percentile). The overall demographic makeup of the California population using the 2014-2018 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.

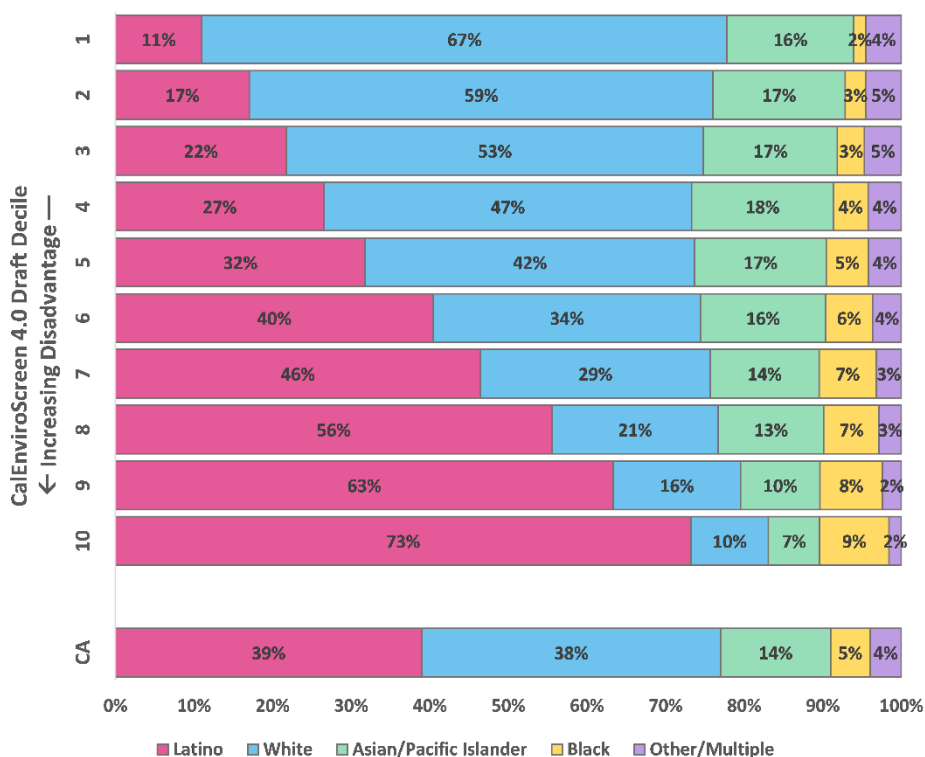
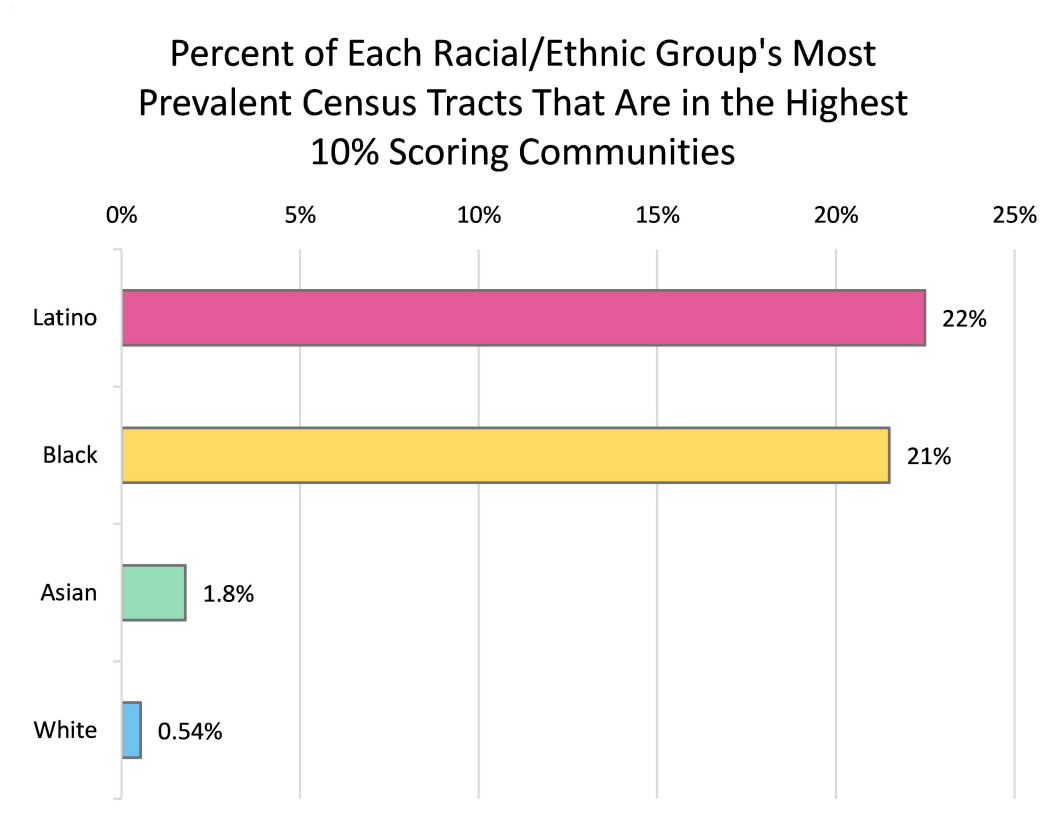


Figure 3. Racial Makeup of Each Decile of the Draft CalEnviroScreen 4.0 Score.

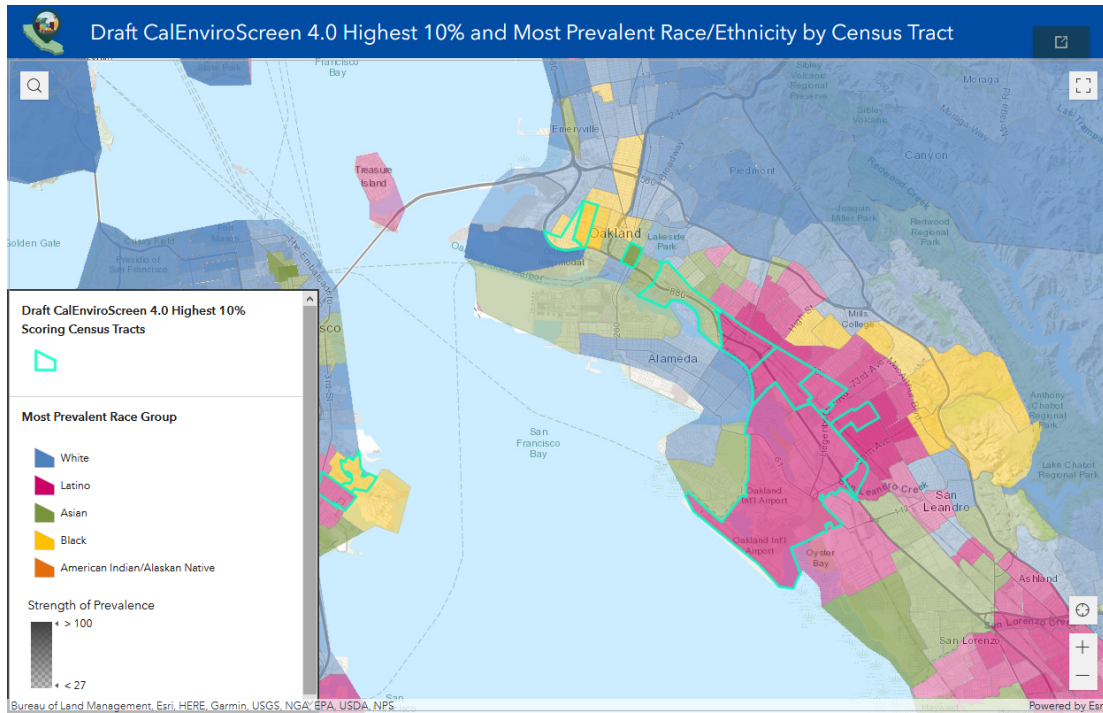
## Analysis of CalEnviroScreen and Most Prevalent Race by Census Tract

Another way to visualize disproportionate impacts by race/ethnicity is through mapping CalEnviroScreen scores with information on race/ethnicity by census tract. In a map available online, we show census tracts color-coded by the tract’s most prevalent race/ethnicity overlaid with an outline of the 10% most impacted census tracts (10<sup>th</sup> decile) in the draft CalEnviroScreen 4.0. The most prevalent race or ethnicity was determined by the race/ethnicity with the highest population in each census tract as reported in the [2014-2018 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 22% of the group’s total tracts (in which Latinos are most prevalent). Although only 23 census tracts that are predominantly Black are in the 10% most impacted census tracts, this represents 21% of the group’s total tracts. The map of the most prevalent race and the draft CalEnviroScreen 4.0 scores is available [here](#), with an example of the mapping tool shown on the next page (Figure 5). The strength of prevalence is also represented in the map using varying levels of shading to visualize how the most prevalent group compares to other groups in the census tract.



**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 the draft CalEnviroScreen 4.0 scores among total tracts (Latino = 737 tracts out of 3277; Black = 23 tracts out of 107; Asian = 13 tracts out of 728; White = 21 tracts out of 3919).**



**Figure 5. Map of the most prevalent race/ethnicity overlaid with outlines of the census tracts in the highest 10% of the draft CalEnviroScreen 4.0 scores. Web map available [here](#).**

## 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".