Technical Appendix:

Asian American Language Needs in LA Wildfires

Appendix: Data and Methods

This data brief utilizes multiple data sources to identify the language needs of Asian Americans, providing insights that can help government agencies and community organizations communicate effectively with those impacted by the wildfires. The analysis draws on five major data sources: the Decennial Census and American Community Survey (ACS) from the U.S. Census Bureau, California's Department of Education, California Department of Forestry and Fire Protection (Cal Fire), and the Los Angeles County Emergency Map. Geographic Information System (GIS) tools are used to estimate populations within the evacuation zones.

Decennial Census

The Decennial Census is a nationwide enumeration conducted by the U.S. Census Bureau every ten years. It provides comprehensive population and housing statistics at multiple geographic levels, including counties, census tracts, and census blocks. This data brief utilizes the 2020 Decennial Census to estimate the number of Asian Americans residing in the evacuation zones by analyzing population counts at the Census Block level (see discussion later).

American Community Survey

The American Community Survey, a product of the U.S. Census Bureau, is a continuous sampling and data collection program that provides annual demographic, housing, and economic statistics. ACS data is available in two forms: pre-tabulated data from the Census Bureau and microdata (individual-level data), also known as Public Use Microdata Sample (PUMS). We utilize both types for this data brief, specifically the 2019-2023 ACS 5-year estimates.

Tabulated statistics are available at various geographic levels, including counties, places, tracts, and block groups. However, statistics for smaller geographic units are only accessible through pooled five-year samples. PUMS allows users to generate custom tabulations that are not readily available from pre-tabulated Census data, though it is limited to larger geographic areas such as counties.

The ACS is particularly valuable because it collects information on limited English proficiency (LEP) and language spoken at home. While tabulated ACS data is available at the tract level, PUMS data allows for more detailed analysis at the county level but does not provide insights for smaller geographies. However, since ACS is a survey-based dataset, its estimates are subject to sampling error.

California Department of Education

We rely on the California Department of Education (DOE) for two publicly available datasets to estimate the number of elementary school students who are limited English proficient and speak an Asian language.

1. Public Schools Dataset – This dataset (as of January 23, 2025) provides geographic information about each public school, including its address, latitude, and longitude. These details are essential for identifying schools located within fire evacuation zones.
2. English Learners by Grade & Language Dataset (2023-24) – This dataset contains counts of English learner students by Asian language at the school level.

We merged both datasets to determine which Asian languages are spoken by students in schools located within the fire evacuation zones.

Cal Fire and the County of Los Angeles Emergency Map

We obtained fire evacuation geospatial files from the California Department of Forestry and Fire Protection and the Los Angeles County Emergency Map. Evacuation zones for the Palisades, Eaton, and Hurst fires are based on Cal Fire data as of January 8, 2025, while evacuation zones for the Hughes fire are based on Los Angeles County Emergency Map data as of January 23, 2025.

Defining Impacted Communities

Impacted communities are defined as those located within the mandatory evacuation zones and evacuation warning zones established by Cal Fire on January 8, 2025, for the Palisades, Eaton, and Hurst fires, and on January 23, 2025, for the Hughes fire.

According to Cal Fire, evacuation zones are classified as follows:

- **Evacuation Order Zones**: Areas facing an immediate threat to life where residents are legally required to leave immediately, and the area is closed to public access.
- **Evacuation Warning Zones**: Areas facing a potential threat to life and/or property where individuals requiring additional time to evacuate, as well as those with pets and livestock, are advised to leave immediately.

These classifications help identify the communities most at risk, ensuring targeted emergency response and communication strategies.

Estimating Asian Residents in Evacuation Zones

To estimate the number and proportion of Asian residents in the evacuation zones, we used 2020 Decennial Census Block data and GIS mapping.

A Census Block is the smallest geographic unit used by the U.S. Census Bureau for reporting population data. Due to their granularity, Census Blocks provide more precise population estimates, making them particularly useful for assessing evacuation zones and impacted communities.

Using GIS, we overlaid the evacuation zones with Census Block data. We then applied areal weighting, which accounts for the proportion of each Census Block that falls within the evacuation zones. Finally, we summed the adjusted population of each block to obtain total estimates for each fire evacuation zone.

Estimating LEP Asians and Asian Languages in Evacuation Zones

To estimate the number of Limited English Proficient Asians and the major Asian languages spoken in the evacuation zones, we used 2019-23 census tract-level data from the American Community Survey, using weights (also known as allocation factors) developed with 2020 decennial census block data for the number of Asians. We also adjusted the estimate to account for a slight time discrepancy between the 2020 decennial census and ACS. By incorporating Census Block data and accounting for temporal differences, we reduced potential bias and improved the accuracy of our estimates

Identifying Elementary Schools Within or Near Evacuation Zones

To identify elementary schools located within or near the evacuation zones, we spatially joined school location data with evacuation zone boundaries using GIS. We included schools that are physically inside the evacuation zone as well as those within a quarter-mile of its boundary, as they are likely to serve students from the evacuation area. Many of these borderline schools were located immediately adjacent to the outer perimeter of the evacuation zones.

Identifying Additional Asian Languages Through School Data

We use data on Asian limited English proficient students in elementary schools serving the four evacuation zones to identify additional Asian languages spoken in these areas beyond the four identified in the Census. Elementary school students are most likely to reside in their local neighborhoods. In this dataset, LEP is defined as students classified as "English learners." Although the number of Asian LEP students is relatively small, they represent only a fraction of all LEP Asians in the zones. (In Los Angeles County, children aged 5 to 10 comprise just 3% of the overall Asian LEP population.)

Alternative Estimate of the Number of Asian LEPs in Evacuation Zones

We estimate that 12,000 Asian LEPs (ages 5 and older) reside in the evacuation zones based on weighted ACS tract data. However, because the ACS is a survey, its estimates are subject to sampling error, meaning the true number could be higher or lower.

To provide an alternative estimate, we utilized school enrollment data, ACS data, and adjustments based on population characteristics and school service area. We also made an adjustment to the counts for schools along the perimeter of the evacuation zones to eliminate students outside of the evacuation zone. This approach yields a higher estimate of 14,000 Asian LEPs individuals (ages 5 and older). Based on these findings, we state that over 12,000 Asian LEPs (ages 5 and older) reside in the evacuation zones.