How CR Analyzed Amazon's Warehouse Locations

To analyze Amazon's U.S. delivery footprint, Consumer Reports combined commercially available information about the company's warehouses with data from the Census Bureau and the Environmental Protection Agency.

DATA

Amazon does not make public a detailed list of its warehouses and retail locations, and did not provide one to Consumer Reports when asked. Instead, CR licensed data from MWPVL International, a logistics consulting firm that has been compiling detailed information on Amazon facilities since 2007. The data CR used includes addresses and coordinates for Amazon facilities, the year each facility opened, its function, and estimates of its square footage, as of October 1, 2021. MWPVL's Amazon data has been used for peer-reviewed academic research as well as other journalistic reporting.

The information is compiled from official Amazon announcements, publicly available planning documents, job postings, and media reporting. CR considers this the best available source of this data, but it may include errors or omissions.

To develop this investigation's research methodology, CR partnered with Sacoby Wilson, director of the Center for Community Engagement, Environmental Justice, and Health (CEEJH) at the University of Maryland, College Park. Wilson serves on the EPA's Science Advisory Board and its Environmental Justice Science Committee.

Wilson helped CR select a list of variables to examine for each Amazon facility from among the indicators provided by EJSCREEN, an EPA tool commonly used for spatial analysis with a focus on environmental justice. EJSCREEN can provide estimates of demographic, health, and air quality variables for a given location and radius in the U.S.

The variables CEEJH and CR selected for analysis included demographic indicators such as the percentage of people of color and of low-income people who live in an area, and environmental indicators such as traffic proximity.

EJSCREEN defines *percent people of color* as the proportion of individuals who "list their racial status as a race other than white alone and/or list their ethnicity as Hispanic or Latino." It defines percent low income as the proportion of a population "in households where the household income is less than or equal to twice the federal 'poverty level.'"

Wilson, the CEEJH director, advised CR to analyze a 1 mile radius around each facility in order to capture the people most affected by the consequences of living near a warehouse, including increased traffic and noise, pedestrian and cyclist safety, and harmful air pollution. The radius also helps avoid data-quality issues that arise when analyzing small areas.

The demographic indicators are built on the American Community Survey five-year estimates covering 2014–2018, which are produced by the U.S. Census Bureau. The traffic proximity and volume indicator is built on traffic data from 2017. These are the most recent data available from EJSCREEN.

These data predate the construction of many Amazon warehouses included in our study. On the whole, the evidence reveals the demographic and environmental conditions prevailing in communities where Amazon opens new facilities.

Using the EJSCREEN API, which allows users to send EJSCREEN requests in bulk, CR gathered the above data for each location in the MWPVL database.

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METHODOLOGY

Once CR used EJSCREEN to gather demographic, health, and air quality indicators for every Amazon facility in the MWPVL database, we compared each facility with every census block group in the metropolitan statistical area or micropolitan statistical area that hosts that facility.

(A metropolitan statistical area is based around an urbanized area of at least 50,000 people, while the urban clusters at the center of micropolitan areas have between 10,000 and 50,000 residents.)

We expressed those comparisons in percentiles, which show the percentage of block groups that rank lower for the given indicator than the area around each Amazon facility.

For example, a warehouse in the 80th percentile for percent people of color has a greater share of people of color living within 1 mile than 80 percent of the census block groups in the same metropolitan or micropolitan area.

We also calculated the difference between the demographic makeup of the 1 mile radius around each warehouse and the median census block group in the metropolitan or micropolitan area that hosts that warehouse.

We compared indicators to each facility's host metropolitan or micropolitan area because we wanted to understand more about where Amazon locates facilities once the company has chosen an area to service. We wanted to understand what a facility's neighborhood looks like relative to Amazon's other options in the area—not relative to every neighborhood in the state or the country.

In consultation with Wilson at CEEJH, we excluded facilities that have fewer than 500 people living within 1 mile when analyzing demographics and traffic proximity. That is to ensure that we don't base demographic statements on an inappropriately small sample size. The cutoff results in the exclusion of about 150 warehouses (about 17 percent of the total) for these analyses.

We also separated warehouses from retail facilities in our analyses. In consultation with MWPVL International, we defined warehouses as facilities that consumers don't interact with in person. They include fulfillment centers, delivery stations, and other logistics facilities. Amazon retail stores, on the other hand, allow in-person shopping. They include Whole Foods Markets, Amazon "4-star" stores, and Amazon Books locations, as well as bookstore and pickup locations on or near university campuses.