

Climate and Housing, Social and Disease Vulnerability --Feature Dataset

This metadata page provides a brief summary of this featured map layer. A ‘feature’ map layer, for the purpose of this metadata record, contains a dataset included specifically for the state-interest or because data are related to a special Environmental Public Health Tracking project which is ongoing. These data (map layers) are being added to the [Louisiana Department of Health Data Explorer](#) because they supplement ongoing work in climate and climate change, which may impact Louisiana communities related to housing, in relation to social vulnerability, or have the potential to add to disease vulnerability. Please refer to the detailed metadata provided by the US Census Bureau (USCB) American Community Survey (ACS) for more information on data methods and limitations. Program contact information is listed on the last page under ‘Questions?’

Definition

Certain exposures or conditions may make individuals and communities more vulnerable to disease. As they relate to the climate, housing, social and/or disease vulnerability these may include background environmental conditions, in indoor (housing) or outdoor environments; a person’s everyday (social) interactions; or day-to-day activities which may place someone at an increased risk. The selected datasets have been included as map layers to highlight local (community) or regional factors which could affect vector-borne disease risk. Housing factors may also be related to disease risks. Specific diseases or conditions range from childhood blood lead poisoning, to asthma, to vector-borne disease (specifically, mosquito-borne, tick-borne or other) which may originate from the outdoor environment. Individuals may also be exposed indoors.

Data Source

- US Census Bureau (USCB) American Community Survey (ACS) — 2020
<https://www.census.gov/programs-surveys/acs>

The Louisiana Department of Health (LDH) Environmental Public Health Tracking Program download these data from the US Census Bureau, by census tract. The USCB ACS provide aggregate U.S. census variables at more local geographies to help local officials, community leaders, and businesses understand the changes taking place in their communities.

Vintage: This dataset features regional, census-tract level data from the USCB ACS: 5-year data **2020**. Updated data may be available from the Program.

Data Measure(s)

The Climate and Housing, Social and Disease Vulnerability Feature Dataset includes the following six (6) measures by census tract, which are provided as regionally-mapped 'feature layers'. The rationale for including each of these specific measures are added to the list below:

- **Poverty Status:** Percent population in poverty (B17001). Rationale: construction type, or ability to be protected from outdoor disease risks in the indoor environment (open screens, lack of air-conditioning); chipping or peeling paint, indoor allergens, low-income families are more vulnerable to changing climate conditions and have the least resources to protect against and recover from extreme weather events (Curr Environ Health Rep, 2022)
- Sex by Age (B01001):
 - a. **Percent population under 5**, and
 - b. **Percent female population ages 18-44**

Rationale: Examples: Specific to Zika, women of child-bearing age and children are at risk of birth defects and negative birth outcomes; specific to Dengue: Young children and particularly infants are at a higher risk of developing severe dengue illness and complications than healthy adults (UNICEF, 2023); children are more vulnerable to changing climate conditions and have the least resources to protect against and recover from extreme weather events (Curr Environ Health Rep, 2022)
- **Median Year Structure Built:** Year house (structure) built (B25035). Rationale: Older homes are more likely to contain lead-based indoor and outdoor paints. Lead paint was banned in the US in 1978.
- Language Spoken at Home: **Percent population English as a second language** (B16007). Rationale: Non-native English speakers may be harder for health officials to reach with immediate health information regarding disease risk; limited English proficiency adversely impacts people's ability to access health services (Health Equity 2020)
- Race: **Percent non-white population** (B02001). Rationale: Racial and ethnic disparities exist (related to environmental exposures, underlying health conditions, quality of care, others) increasing disease vulnerability; US communities of color and Indigenous peoples are more vulnerable to changing climate conditions and have the least resources to protect against and recover from extreme weather events (Curr Environ Health Rep, 2022)

This dataset contains the data measures for **six regional states: Texas, Louisiana, Mississippi, Alabama, Georgia, and Florida**. Map data are provided at the Census Tract geography, spanning the states along the southern US and Gulf of Mexico.

Explore Data

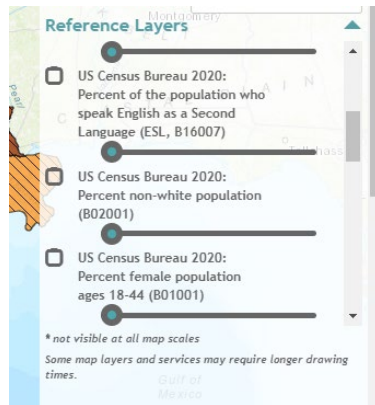
The LDH Health Data Explorer (healthdata.ldh.la.gov) is an online query tool which allows health, environmental hazard, exposure and population data to be explored and viewed side-by-side in tables, charts, and maps. These data can be viewed, printed, downloaded and further analyzed.

To Explore Data using the query tool:

Begin by querying 1-2 datasets on the LDH Health Data Explorer. As you view the map results,

select one of the featured Map Layers, now located under 'Reference Layers' in the map legend. Check each box to view Climate and Housing, Social and Disease Vulnerability --Feature Dataset Map Layers along with other health, environmental hazard, exposure or population health data.

Figure: Map Legend, LDH Health Data Explorer



Climate and Housing, Social and Disease Vulnerability and your Health

The purpose of the dataset is to compile supplemental environmental and social data which impact disease. Surveillance is ongoing within the Louisiana Health Department for mainly tropical mosquito-borne diseases (Zika, Chikungunya, Dengue, and others), the frequency of these events, and their impacts on Louisiana Parishes. Surveillance is ongoing as well as for asthma hospitalization and emergency department visits, and childhood blood lead poisoning.

Future climate effects of climate change are unpredictable. Increased vector-borne disease may result as temperatures increase or as an effect of extreme rainfall and/or drought conditions. Wildfire events impact habitat in turn impacting the biota, or living plants and animals. Social vulnerability (examples: poverty, race/ethnicity, population health specific to age groups or health care access) relate in various ways to disease risks such as housing in both indoor and outdoor environments.

One of the most prominent examples supporting a need for supplemental data such as these includes two southern US states along the Gulf of Mexico. From 2015-2017, Texas (n=13) and Florida (n=220) recorded locally-acquired cases of Zika virus (US CDC Arbonet). According to the World Health Organization, Zika virus is primarily transmitted by infected mosquitoes, mainly *Aedes aegypti*, in tropical and subtropical regions. This disease is a particular risk for women of child-bearing age. According to the Pan-American Health Organization (PAHO 2023), Zika virus infection during pregnancy can cause birth defects including 1) infants born with microcephaly and other congenital malformations, also known as congenital Zika syndrome 2) other complications of pregnancy including preterm birth and miscarriage and 3) an increased risk of neurologic complications.

To put the US data in perspective, in 2016, countries such as Mexico (n>8k) and in South America including Columbia (n>91k) and Brazil (n>200k) recorded cases of locally-acquired Zika virus in the

tens to hundreds of thousands of cases. No vaccine is yet available for the prevention or treatment of Zika virus infection (WHO, 2023). For more information on vector-borne disease, please refer to the LDH Bureau of Infectious Disease: <https://ldh.la.gov/page/2495>.

Climate and Housing, Social and Disease Vulnerability and the Environment

Weather and climate conditions, such as increasing temperature, flood, drought, and wildfire as a component of climate change may affect the frequency and distribution of the vectors that are capable of causing disease. Most notably to Louisiana, previously mainly tropical mosquito-borne diseases such as Dengue, Chikungunya, and Zika, may become risks for the first time, or find favorable conditions where there weren't before. Temperature and humid conditions may change the habitat to favorable for diseases vectors that weren't previous immediate local threats, such as mosquito-borne West Nile Virus, tick-borne Lyme disease, and others. In 2023, both Texas (n=1) and Florida (n=4) recorded locally-acquired cases of Malaria (CDC 2023). Prior to this, there hadn't been any locally-acquired cases of Malaria reported in the US since 2003. A single case of locally-acquired Malaria was recorded in Maryland in the summer of 2023 (CDC 2023), whereas not previously recorded for decades.

Data Methods, Limitations and Important Considerations

- a. ESL: used B16007 (specifically: sum of (_004, _005, _006, _007, _010, _011, _012, _013, _016, _017, _018 and _019) divided by _001
- b. Non-white: B02001 (specifically: sum of (_003, _004, _005, _006, _007, _008) divided by _001
- c. Female: B01001 (specifically: sum of (_031, 032, _033, _034, _035, _036, _037, _038) divided by _001
- d. There was a question in the Median Year by Structure Built data. The values of '0' and '18' in the data are an error was related to the Census API which returns '0' and '18' instead of '1939-' (1939 or earlier) and '2014+' (2014 or later). Error was reported to USCB.
- e. Processing notes: Blank cells downloaded from the USCB were populated with the text "No Data" for each value column.
- f. Childhood blood lead poisoning and asthma data are available on the LDH Health Data Explorer; regional vector-borne disease datasets are not currently included. These data are currently available from the CDC Arbonet website: <https://www.cdc.gov/mosquitoes/mosquito-control/professionals/ArboNET.html>

Data Re-release

This is a public dataset which can be freely shared. Personally identifiable health information has been removed.

Data Citations

Please cite the US CDC, LDH Environmental Public Health Tracking Program Cooperative Agreement NUE1EH001490, and any data source(s) listed on Page 1 when re-sharing or applying these data in analyses or publications.

Disclaimer

Data are intended to spur further research and should be used only as a starting point to understanding how the environment and other contributing factors may be connected to disease. Datasets presented on the LDH Health Data Explorer site are intended to answer some basic questions, but should ultimately lead to further inquiry and more detailed study.

Data limitations should be noted if conducting exploratory ecological studies with these data. Limitations may include data gaps, reporting discrepancies (for example, a disruption of reporting or instrument recording) and insufficient data on all potentially confounding factors. There are numerous additional factors which may contribute to disease onset. These include genetics, access to health care, existing health conditions, medicines, other chemical substances we come into contact with or ingest, nutrition, route and duration of exposure, level of activity, level of stress, and others.

Responsible use of this data therefore requires exercising caution when drawing conclusions based solely on views of the limited available data. Any perceived relationship, trend, or pattern apparent in the data should not be interpreted to imply causation; may in fact be unrelated; and should be regarded as preliminary, and potentially erroneous, until more in-depth study and if applicable, statistical evaluation, can be applied.

The Environmental Public Health Tracking Program and LDH Bureau of Health Informatics cannot guarantee the completeness of the information contained in these datasets and expressly disclaim liability for errors and omissions in their content.

References and Additional Information

Please visit the following links for more information:

- [Diseases Carried by Vectors](#) | US Centers for Disease Control and Prevention
- [Chagas Disease – American Trypanosomiasis](#): Louisiana Department of Health 2018
- [Dengue and chikungunya cases surge as climate change spreads arboviral diseases to new regions](#) | *BMJ* 2023
- [Locally Acquired Malaria Cases Identified in the United States](#) | US Centers for Disease Control and Prevention, via Health Alert Network 2023
- [The Role of Limited English Proficiency and Access to Health Insurance and Health Care in the Affordable Care Act Era](#) | *Health Equity* 2020
- [Racial Disparities in Climate Change-Related Health Effects in the United States](#) | *Curr Environ Health Rep*, 2022
- [Important Updates on Locally Acquired Malaria Cases Identified in Florida, Texas, and Maryland](#) | US Centers for Disease Control and Prevention, via Health Alert Network 2023

Questions?

- Email: healthdata@la.gov
- Website: <http://ldh.la.gov/tracking>
- Toll free Phone: 1-888-293-7020