# VEST LA 2016

---

State: Louisiana
Organization: Voting and Election Science Team (VEST)
Date Updated: Report Date: 03/17/2021, VEST File Date: 13/12/2019

1. Is all raw data available?

Yes

- Accessible files:
  - VEST Louisiana, 2016
    - Accessed, 03/01/2021
    - Source: VEST on the Harvard Dataverse
    - Direct link: https://dataverse.harvard.edu/file.xhtml?persistentId=doi:10.7910/DVN/NH5S2I/SPVAWI&version=54.0
    - Link to VEST 2016 Datasets: https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/NH5S2I
  - Election Results for General Election - President 2016
    - Accessed, 03/01/2021
    - Link to Louisiana Secretary of State downloads: https://voterportal.sos.la.gov/graphical
    - To download the data: Set "Election" in the upper left to "Tues Nov 8 2016", navtiage to "Statewide", scroll down and click "Download Results", set "Race" to "Presidential Electors" and "Type" to "Precinct" and click "Download Race". This is a different link from what is posted in the VEST documentation, but the same source (Louisiana Secretary of State). The downloaded file is titled "ByPrecinct_53898.csv".
  - Election Results for General Election - US Senate 2016
    - Accessed, 03/01/2021

        - Link to Louisiana Secretary of State downloads: https://voterportal.sos.la.gov/graphical
        - To download the data: Set “Election” in the upper left to “Tues Nov 8 2016”, navtiage to “Statewide”, scroll down and click “Download Results”, set “Race” to “U.S. Senator” and “Type” to “Precinct” and click “Download Race”. This is a different link from what is posted in the VEST documentation, but the same source (Louisiana Secretary of State). The downloaded file is titled “ByPrecinct_53905.csv”.
    - Election Results for Run-Off Election - US Senate 2016
        - Accessed, 03/01/2021
        - Link to Louisiana Secretary of State downloads: https://voterportal.sos.la.gov/graphical
        - To download the data: Set “Election” in the upper left to “Sat Dec 10 2016”, navtiage to “Statewide”, scroll down and click “Download Results”, set “Race” to “U.S. Senator” and “Type” to “Precinct” and click “Download Race”. This is a different link from what is posted in the VEST documentation, but the same source (Louisiana Secretary of State). The downloaded file is titled “ByPrecinct_54490.csv”.
    - Precinct Shapefile 2016
        - Accessed, 03/01/2021
        - Link to Louisiana House of Representatives Precinct Shapefiles page: https://house.louisiana.gov/H_Redistricting2011/default_LouisianaPrecinctShapefiles.htm
        - Direct download link for the 2016 Precinct shapefile: https://house.louisiana.gov/H_Redistricting2011/Shapefiles/2016_LouisianaPrecinctShapefile.zip
        - The precinct shapefile is title 2016_LA_Precincts.shp which is download in a ZIP folder named 2016_LouisianaPrecinctShapefile.zip

## 2. Processing steps available?

Yes, but not all

- Description of processing steps:
    - In ‘documentation.txt’ (accessed 03/01/2021, link: https://dataverse.harvard.edu/file.xhtml?fileId=4441609&version=54.0 ), from the Harvard Dataverse, VEST indicates that:
        - “Absentee votes and provisional ballots were reported at the parish level. These were distributed by candidate to precincts based on their share of the precinct-level reported vote.
        - Election results from the following parishes include "alpha" precincts in which voters within the same geographic boundaries are assigned to separate precincts

by the first letter of their surname: Ascension, Assumption, Bossier, Caddo, East Baton Rouge, Lafayette, Lafourche, Rapides, St. Charles, St. Landry, Terrebonne
        - The following precincts were modified to reflect alterations enacted prior to the 2016 election:
            - Avoyelles: Merge 2-5B/6-1A
            - Plaquemines: Merge 2-1/2-2, 4-1/4-2, 5-1/5-2
            - St. Charles: Merge 2-6/2-7, 3-1/3-6, 3-3/3-4, 6-2/6-3, 6-4/6-5
            - Vermilion: Split 49B-1/49B-2
            - West Baton Rouge: Split 2-A/2-B; 11-A/11-B"
- Information not in their processing steps:
    - In the documentation.txt file, VEST does not indicate how they created a unique identifier to join the election results and the precinct shapefile.
    - VEST does not indicate their rounding methods for early and provisional votes that are assigned to each precinct in a parish.
    - For precincts that are split (two in West Baton Rouge and one in Vermilion parishes), VEST does not indicate on what line they were split.

## 3. Able to replicate joining election data and shapefiles?

Yes

- In order to execute a join between the precinct shapefile and election results there were a number of processing steps that needed to be completed:
    - We created VESTs G16PREOOTH by combining all Presidential candidates in the election results, that were not given their own column in the VEST file, into one column.
    - We renamed the columns according to VEST naming conventions.
    - We verified that the election results, prior to any processing, had the same totals as the VEST file. All candidates in all races in the raw election results, matched those in the VEST file.
    - Per VESTs documentation, we grouped all alpha precincts with their respective non alpha precincts. After this process, we again checked the election totals and confirmed that they were indeed the same as all candidates in all races in the VEST file.
    - We then assigned the early vote and provisional votes to each precinct in a parish and rounded them using a largest remainder method. Early vote and provisional vote "precincts" in the election datasets were then removed. After this process, we again checked the election totals and confirmed that they were indeed the same as all candidates in all races in the VEST file.
    - We performed a pandas merge between all of the election result files to create one election dataset.
    - The precinct shapefile from the Louisiana House of Representatives does not have the parish name in the file, and likewise the election results do not have a parish FIPS in the file. Therefore, using the Census API we assigned parish names the precinct shapefile based on the corresponding parish FIPS code.

        - We renamed ‘La Salle’ to ‘Lasalle’ and ‘the’ to ‘The’ to fit the conventions in the election results
    - We performed some string manipulation on the election results to create a unique ‘Code’ field for joining the results to the shapefile. This involved removing leading zeros from the ‘Precinct’ and ‘Wards’ fields, concatenating the ‘Precinct’, ‘Ward’, and ‘Parish’ fields with a hyphen between ‘Precinct’ and ‘Ward’. There were several manipulations that were county specific:
        - Prior to adding ‘Parish’ to the ‘Code’ field, if the parish was Evangeline, we removed the left two characters.
        - After adding ‘Parish’ to the ‘Code’ field, we manually renamed two precincts: ‘Allen2-2A’ to ‘Allen2-2-A’ and ‘St. Bernard51’ to ‘St. Bernard58’
        - If the parish was Jefferson, and the ward started with a letter, the precincts were manipulated to match what was in the precinct shapefile.
        - If the parish was Rapides, if the character it at index 8 was a 0, the zero was removed to match what was in the precinct shapefile.
        - Tangipahoa4A and Tangipahoa7A were renamed to Tangipahoa40A and Tangipahoa70A, respectively.
        - To deal with the splits that VEST made that we don’t know how to replicate, we merge the precincts in the election results to match those in the shapefile. We renamed the codes to be the match the merged code in the precinct shapefile (e.g. both West Baton Rouge 2A and West Baton Rouge 2B in the election results will be West Baton Rouge2B for the ‘Code’ field). We then sorted the dataset on the ‘Code’ field and saved all unique entries to a list. We then grouped and summed the dataset by Code (this would merge the split precincts back together) and then assigned the ‘Code’ field back to the list that was saved to reattribute the unique ids to all of the precincts
        - We added precincts with null data in the precinct shapefile that are missing from the election dataset, to the election dataset: 'JeffersonZZZZZZ', 'St. TammanyZZZZZZ', 'St. John The BaptistZZZZZZ' ,'OrleansZZZZZZ', 'St. CharlesZZZZZZ'. We then assigned all null values to 0.0 in the dataset.
        - Prior to joining the data, we confirmed again that the election totals are the same for each candidate in each race in both the VEST file and the election file that we performed the string and groupby manipulations on.
    - We also performed several manipulations to the precinct shapefile:
        - We created the ‘Code’ field in the precincts shapefile by concatenating the ‘Parish’ (retrieved from the API) and ‘VTDST10’ fields. We also created a ‘Final Join’ field by concatenating the ‘COUNTYFP10’ and ‘VTDST10’ fields to be used when joining to the VEST data for validation.
        - We created functions to dissolve precincts together and assign the new merged geometries to the new precinct. We followed VESTs specifications by dissolving the precincts that they listed in their documentation (e.g. Avoyelles 2-5B and 6-1A.) and assigned them the corresponding names as they exist in the election results.

        - We concatenated the dissolved precincts together to make one geodataframe.
        - We removed all of the precincts that needed to be dissolved from the original precinct shapefile, and added the new geodataframe with the concatenated dissolved precincts.
        - The shapefile and the election dataset both then have 3701 entries and are successfully joined at 100% rate.

## 4. Able to replicate joining demographic data to block-level shapefiles?

N/A

- There are not any demographic data in the VEST file.

## 5. Able to replicate joining boundary data?

N/A

- There are not any boundary data in the VEST file.

## 6. Successfully validated election results?

Yes

- Geographies:
    - Per VEST's documentation, there were three splits that we could not execute because we did not know how they decided to split the precincts. To remedy this, we undid the split by merging the split precincts back together in the VEST file, and the election results, to ensure that we could validate the geometries and election results fully.
    - After making the manipulations specified above in the join section to the precinct shapefile, and the final shapefile (specified in bullet above), of the 3,701 precincts in the shapefiles, 3,698 had the same geometries (99.92%) and three precincts had differing geometries (0.08%). This rounded to 0.0% difference in area between the two files. When plotting the three that did not fully match, there do not appear to be any noticeable differences.

- Election results:
    - After making the changes specified in the 'Geographies' bullet above, and in the join section, we joined the precincts shapefile with merged election results, with the modified final VEST file (undoing the splits) on the 'Final Join' field we created to validate the data between the two files. In the VEST file, this was made in the same way as it was for the precinct shapefile: a concatenation of the COUNTYFP10 field and the VTDST10 field.
    - There are 3,701 precincts in both datasets (3,704 in the original VEST dataset with the three splits) and we successfully merged all 3,701 on the 'Final Join' field.

- The maximum difference between any one shared column in a row between the two datasets (e.g. G16PRERTRU for Parish X in Precinct A) was 3 votes, and the median was 1. The average difference was 1.00 votes. Only 25 precinct/candidate combinations have the exact same votes in both datasets, and 3,676 differ. However, given the very small difference between the shared columns in a precinct (median as 1, max as 3), it is very likely that these differences are due to slightly different rounding methods, which was not described in the documentation.
- Every election result column in the dataset we created and the VEST dataset have the exact same sums.