

VEST WI 2018

State: Wisconsin

Organization: Voting and Election Science Team (VEST)

Date Updated: Report Date: 03/10/2021, VEST File Date: 01/24/2020

1. Is all raw data available?

No

- Accessible files:
 - VEST Wisconsin, 2018
 - Accessed, 11/10/2020
 - Source: VEST on the Harvard Dataverse
 - Direct link:
<https://dataverse.harvard.edu/file.xhtml?persistentId=doi:10.7910/DVN/UBKYR/U/OYQOMS&version=33.0>
 - Link to VEST 2018 Datasets:
<https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/UBKYR>
 - US Census 2020 Redistricting Data Program Phase 2
 - Accessed: 03/09/2021
 - Source: US Census
 - Direct link to VTDs for Wisconsin:
https://www.census.gov/geo/partnerships/pvs/partnership19v2/st55_wi.html
 - Link to 2020 Redistricting Data Program Partnership Files (VTDs for state available from the second drop down menu):
<https://www.census.gov/geographies/mapping-files/time-series/geo/partnership.2020.html>
 - Note: One can download five county VTD shapefiles at a time. Each county's data is a zip file with a number of other files, in addition to the VTDs. The VTD filename follow this format: PVS_19_v2_vtd_55XXX.shp, where XXX is the three-digit county FIPS. All of the counties that required supplemental data from the Phase 2 release, per VEST documentation, are available.

- Inaccessible files:
 - Election Results and Wards Shapefile from the Wisconsin State Legislature Open Data Portal
 - This is the primary file used in the VEST processing. On the Wisconsin LTSB Open Data Portal (<https://data-ltsb.opendata.arcgis.com/>) , ward boundaries with election results are only available at 2020 and 2011 boundaries (with multiple election years), as of the time of this report. VEST confirmed that they used a 2018 ward boundary file (email on March 3, 2021 with Steven Gerontakis), which is not currently available on the website. We were able to retrieve what we believe to be a similar file from the University of Wisconsin: <https://geodata.wisc.edu/catalog/B41117FE-B7E9-423A-91C8-E0DF28ACA065> (retrieved on 03/08/2021). The University of Wisconsin notes that they retrieved this file from the Wisconsin LTSB and is intended to represent 2018 wards.

2. Processing steps available?

Yes, but not all

- Description of processing steps:
 - In ‘documentation.txt’ (accessed 03/09/2021, link: <https://dataverse.harvard.edu/file.xhtml?fileId=4366213&version=33.0>), from the Harvard Dataverse, VEST indicates that: “The following counties were revised with the voting district shapefiles from the U.S. Census Bureau's 2020 Redistricting Data Program Phase 2 release: Buffalo, Clark, Dunn, Grant, La Crosse, Marquette, Pepin, Trempealeau.” Through an email on March 3, 2021 with Steven Gerontakis, it was confirmed that “In the listed counties the revisions were minimal. I did not replace all the wards. The revisions mostly involved a few municipal boundaries that had changed between July and November 2018. In La Crosse and Trempealeau there were also a few associated ward adjustments in the adjoining townships. Beyond that I only revised some of the nearby waterlines that were then misaligned between the VTD file and the LTSB file.”
- Information not in their processing steps:
 - In the documentation.txt file, VEST does not indicate which ward geographies, within the specified counties, were modified or how.
 - VEST creates what appears to be write-in candidate columns (columns ending ‘OWRI’), but they do not explain how they created these columns (they are not in the file we used from the University of Wisconsin). We found that the total votes for all candidates for a race that were not given their own column in the VEST file (such as small third party candidates) equaled the write in columns in the VEST file for every ward.

3. Able to replicate joining election data and shapefiles?

N/A

- The election results were already in the shapefile retrieved from the University of Wisconsin, therefore no joining was necessary.

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

N/A

- The demographic data were already in the shapefile retrieved from the University of Wisconsin, therefore no joining was necessary.

5. Able to replicate joining boundary data?

N/A

- District attribute data (such as which state legislative or congressional districts a ward is in) are already included in the shapefile retrieved from the University of Wisconsin, therefore no joining was necessary.

6. Successfully validated election results?

Yes, election results match perfectly, but there are 116 wards where the geometries differed (0.01% of WI total area, and 1.66% of wards)

- Geographies:
 - Per VEST's documentation, there were several changes to the underlying geographies. None of these changes changed the number or name of wards in the file. These changes were made primarily to address ward changes between July (when the boundaries were collected) and November (when the election was held). Some changes were made to address compatibility with municipal boundaries and/or waterlines.
 - VEST did not note exactly where these changes were made. To address this, we combined the partnership files into one shapefile. We created a unique ID field using the county FIPS, MCD FIPS, county subdivision FIPS, and the ward name to sort and order the wards in the two files. We then compared the geometries for each unique ID in the two columns to see if they were equal. In the first iteration, there were 6,749 out of 6,975 (96.76%) wards that were the same geometries.
 - We then subset all of the data from the wards shapefile that did not have the same geometries as in the final file (226 wards). Using a unique ID field between the wards file and the combined VTD partnership file, we subset the VTD file for the same wards (if they were in the file -- apparently, there were slight changes made to wards outside of the counties listed by VEST). We then joined the subsetted data together and assigned the

partnership files geometry to the ward with election results and removed those wards from the original file and replaced them with the wards with the new geographies (all attribute data remaining the same)

- In the second iteration of testing the geometry similarities, 6,859 out of 6,975 wards were the same geometries (98.34%) this is an improvement of 124 wards that were fixed. There are 116 wards we ultimately did not fully replicate the geometries. However, this only represents 1.66% of all wards in the state and 0.01% area of Wisconsin that we could not fully replicate based on the processing steps provided.
- It is to be noted that the the discrepancies that remain could be slight alterations made by VEST, or could be due to slight differences between the file that we retrieved from the University of Wisconsin, and the file that VEST retrieved from the WI LTSB (which was not available at the time of this report).
- Election results:
 - When we compare the election results between the VEST file and the retrieved wards file that was modified with the partnership shapefiles, 100% of the wards have the exact same election results for every election. There are 6,975 wards in the shapefiles. Therefore, the election totals between the two files are also exactly the same.