VEST CO 2020

State: Colorado	

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Organization: Voting and Election Science Team (VEST)
Summary of Races included: Presidential, U.S. Senate [General]
Date File Updated: 06/28/2021
Date Report Updated: 09/15/2021
RDH Validation Code (Github): https://github.com/nonpartisan-redistricting-datahub/pdv-co

RDH Criteria	Explanation

Is all raw data available?
 	
Yes
	Accessible files:
	● VEST CO 20 data file
	   ○ Accessed 08/26/21, Source: VEST
	   ○ https://dataverse.harvard.edu/file.xhtml?fileId=4863166&version=17.0
	● VEST CO 20 documentation file
	   ○ Accessed: 08/26/21, Source: VEST
	   ○ https://dataverse.harvard.edu/file.xhtml?fileId=5007853&version=17.0
	● CO Precinct-Level Election Results
	   ○ Accessed: 08/26/21, Source: CO Secretary of State
	   ○ https://www.sos.state.co.us/pubs/elections/Results/Archives.html
	   ○ File names: 2020GEPrecinctLevelResultsPosted.xlsx
	● CO Voting Precincts 2020 Shapefile
	   ○ Accessed: 08/26/21, Source: U.S. Census Bureau's 2020 Redistricting Data Program Phase 2 release
	   ○ https://www.census.gov/geo/partnerships/pvs/partnership19v2/st08_co.html
	   ○ Note: Up to 5 downloaded at a time
	● Adams County Shapefile
	   ○ https://data-adcogov.opendata.arcgis.com/search?q=precinct
	● Arapahoe County Shapefile
	   ○ https://www.arapahoegov.com/1151/GIS-Data-Download
	● Boulder County Shapefile
	   ○ https://opendata-bouldercounty.hub.arcgis.com/datasets/precincts?geometry=-106.243%2C39.904%2C-104.503%2C40.272
	● Delta County Shapefile

- ○ Requested data from gis@deltacounty.com, shapefiles received via email from Carrie Derco, GIS coordinator at Delta county
- Denver County Shapefile
  - ○ https://www.denvergov.org/opendata/dataset/city-and-county-of-denver-election-precincts
- Douglas County Shapefile
  - ○ https://hub.arcgis.com/datasets/dougco::voter-precincts-1?geometry=-106.172%2C39.162%2C-103.814%2C39.533
- El Paso County Shapefile
  - ○ Received shapefiles directly from GIS director Dwayne Liller, DwayneLiller@elpasoco.com
- Fremont County Shapefile
  - ○ https://www.fremontco.com/clerk-and-recorder/elections
- Garfield County Shapefile
  - ○ Received shapefiles directly from GIS coordinator Andrea Grygo, agrygo@garfield-county.com
- Gilpin County Shapefile
  - ○ Received shapefiles directly from County Planner Tami Archer, tarcher@gilpincounty.org
- Jefferson County Shapefile
  - ○ https://data-jeffersoncounty.opendata.arcgis.com/datasets/county-precinct-1?geometry=-107.581%2C39.151%2C-102.865%2C39.893
- La Plata County Shapefile
  - ○ https://www.co.laplata.co.us/services/elections/index.php
- Larimer County Shapefile
  - ○ https://www.larimer.org/it/services/gis/digital-data
- Mesa County Shapefile
  - ○ https://opendata-mesacounty.hub.arcgis.com/datasets/7dd0dcebc31944ba8eea467c997c3829_15?geometry=-110.582%2C38.559%2C-105.866%2C39.307
- Pitkin County Shapefile
  - ○ https://pitkincounty.com/874/Base-Map
- Pueblo County Shapefile
  - ○ Data requested from edgis@pueblocounty.us, and shapefiles received directly from Robert Deherrera robde@pueblocounty.us
- Summit County Shapefile
  - ○ https://data-summitcountyco.opendata.arcgis.com/search?groupIds=548c92e5e1af41a09155d6ff7141fba0
- Weld County Shapefile
  - ○ https://gishub.weldgov.com/datasets/7205d33baa7d48d285bf08c5e9803213_0?geometry=-106.670%2C40.137%2C-101.954%2C40.867

Processing steps available? **Yes**	<u>Description of processing steps:</u> ● The full processing steps were short enough to be copied below: ● Election results from the Colorado Secretary of State (https://www.sos.state.co.us/pubs/elections/Results/Archives.html) ● Precinct shapefiles primarily from the U.S. Census Bureau's 2020 Redistricting Data Program. The following counties used shapefiles sourced from the respective county governments instead: Adams, Arapahoe, Boulder, Delta, Denver, Douglas, El Paso, Fremont, Garfield, Gilpin, Jefferson, La Plata, Larimer, Mesa, Pitkin, Pueblo, Summit, Weld. ● Las Animas County precinct assignments in the voter file differ markedly from both the Census VTD boundaries and from maps received from the county. All precincts were revised to match the geocoded voter file and the list of districts assigned to precinct splits. As appropriate, precinct boundaries were revised using Census blocks, the Trinidad municipal boundary shapefile, school district or fire district boundaries, and the parcel shapefile from the Las Animas County Assessor. ● The following additional revisions were made to match the 2020 precinct boundaries: ○ Logan: Align Sterling City precincts with city limits ○ Montezuma: Precincts renumbered to match county maps ○ Morgan: Split Precincts 1/18 to match county maps ○ Otero: Align La Junta City precincts with county maps ○ Prowers: All precincts adjusted to match county maps ○ Rio Grande: Adjust Precincts 2/3 to match county maps <u>Information not in their processing steps:</u> ● List of splits and merges of precincts.
Able to replicate joining election data and shapefiles? **No**	No, we were unable to replicate joining election data and shapefiles, as we did not have an exact list of merges and splits that VEST made. For the areas where we did have a shapefile, we were able to join 3092 precincts, with 113 precinct geometries and 11 precinct election results unjoined.
Able to replicate joining demographic data to	There is no demographic data on the file.

block-level shapefiles? N/A	
Able to replicate joining boundary data? N/A	There is no boundary data on the file.

Successfully ran validation? No	**Election results: Yes**
	- We validated election results at three different levels:
	    ○ Statewide candidate vote totals
	    ○ Countywide candidate vote totals
	    ○ Precinct-level candidate votes
	- At the statewide total level, the election results matched VEST's. The totals also matched those of CO's election summary report (https://results.enr.clarityelections.com/CO/105975/web.276603/#/summary), although Presidential and Senate write-in votes are not included in those totals, and need to be added to match VEST's "Other" columns for those two races (https://www.sos.state.co.us/pubs/elections/Results/2020/writeInResults.html).
	- At the County-level, the election results matched VEST's, as well as the county-level data the state has posted (https://www.sos.state.co.us/pubs/elections/Results/2020/StateAbstractResultsReport.xlsx).
	- At the Precinct-level, the election results matched VEST's.
	
	Geographies: No
	- We were not able to fully validate the geographies, as we did not have shapefile data for every county.
	- For the counties where we did have shapefile data, we were able to validate 3092 precincts (out of 3215 total VEST precincts)..
	- Out of the 3092 precincts:
	    ○ 0 precincts w/ a difference of 0 km^2
	    ○ 2883 precincts w/ a difference between 0 and 0.1 km^2

- 113 precincts w/ a difference between 0.1 and 0.5 km^2
- 27 precincts w/ a difference between 0.5 and 1 km^2
- 17 precincts w/ a difference between 1 and 2 km^2
- 11 precincts w/ a difference between 2 and 5 km^2
- 41 precincts w/ a difference greater than 5 km^2
- VEST talks about a number of shapefile changes that we did not carry out that could explain most of these differences. The notebook contains a print out of all differences larger than 5km^2.