MGGG MI

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State: MI
Organization: MGGG
Date Updated: Report: 3/2/21, File: 2/18/21

1. Is all raw data available?

Yes, all of the raw data is available.

- Accessible files:
    - MGGG MI File
        - Accessed: 2/18/21
        - https://github.com/mggg-states/MI-shapefiles
        - Source: mggg-states github repository
    - Precinct and Congressional District shapefiles
        - Accessed: 1/13/21
        - Working Link:
          http://gis-michigan.opendata.arcgis.com/datasets/2016-voting-precincts
        - Source: Michigan Department of State, through the State of Michigan GIS Open Data Portal
    - Shapefiles for State House and Senate Districts
        - Accessed: 1/13/21
        - Working Link: https://www.census.gov/cgi-bin/geo/shapefiles/index.php
        - Source: U.S. Census Bureau's TIGER/Line Program
    - '16 Precinct level election data
        - Accessed: 1/13/21
        - Working Link:
          https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/LYWX3D
        - Source: MIT Election Data and Science Lab (MEDSL)
    - Demographic data
        - Accessed: 1/11/21
        - Working Link: https://www.nhgis.org

- ■ Source: IPUMS National Historical Geographic Information System
- ■ Note: MGGG retrieved relevant census demographic data from the NHGIS. For this validation, we downloaded demographic data directly from the US Census API, using 2010 Census data.
- Inaccessible Files: N/A

2. Processing steps available?

Yes, MGGG has processing steps available.

- MGGG's processing steps (date accessed: 1/13/21):
  - Election data from the MIT Elections Data and Science Lab was cleaned by MGGG staff in order to join it to the 2016 precinct shapefile.
  - Demographic data were aggregated from the block level to precincts using MGGG's proration software. Congressional, house, and senate district IDs were assigned to precincts also using this package.
- Information not in their processing steps:
  - What changes were made to the precinct names in the election results and precinct shapefile in order to make them join.
  - How absent voter counting board (AVCB) votes were accounted for, especially in Detroit City.
  - What year the demographic data from IPUMS NHGIS is from.

3. Able to replicate joining election data and shapefiles?

No

- '16 presidential election data:
  - We were not able to replicate joining election data and shapefiles, and MGGG's processing steps do not outline the changes that were made in order to join the election results to the precinct shapefile.
  - The election results file from MEDSL has 5,021 precincts, after removing 'Statistical Adjustment' rows. The precinct shapefile from the MI DOS has 4,810 precincts. Between these files, we were able to join 4,625 precincts. In order to join 4,625 precincts, we made many precinct name manipulations, such as in the following examples:
    - ■ Remove 'Village Of': the precinct is 'Village Of Douglas City' in one file, and just 'Douglas City' in the other.
    - ■ Make 'Township' uniform: the precinct names could be 'Charter Township of Bloomfield', 'Township of Bloomfield', 'Bloomfield Township' or 'Township Bloomfield' depending on the file.

■ Make abbreviations uniform: standardizing 'Mt' and 'Mount', and 'St', 'St.', and 'Saint'.
■ Correct spelling inconsistencies: standardize names to be 'La Salle' instead of 'Lasalle' or 'Dewitt' instead of 'De Witt'.
■ Remove 'Ward' where the precinct number is unique across wards.
○ After correcting for the examples above, and others, there were still several hundred precincts left over that we were not able to match. This is due to the following discrepancies:
■ There are 210 precincts in the election results file which have AVCB votes. It is not clear how MGGG dealt with these votes, based on their processing.
■ There are many more unique spelling or naming inconsistencies that we did not fix.

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

Yes

● As in other MGGG states, we assume that the IPUMS NHGIS data that is downloaded is 2010 Census data. We access the same data using the Census API directly. We assign the 2010 Census demographic Block data to the precincts from the MI DOS using the MGGG *maup* library. We were able to replicate the demographic data at the Block level in the MGGG file with the 2010 Census Block data.

5. Able to replicate joining boundary data?

Yes

● We were able to assign the State Senate, State House, and Congressional District boundary files to the precinct shapefile.

6. Successfully ran validation?

Yes

● Election results:
○ We were able to join 4,625 precincts, out of 5,021 in the election results and 4,810 in the precinct shapefile.
○ It seems that MGGG did not account for the AVCB election results, and that these results were dropped. Especially in Detroit City where there are many AVCB results, when we drop all AVCB votes, we get the same result as MGGG.
○ Comparing the 4,625 precincts that we were able to match to the 4,809 precincts in MGGG's file, the vote totals match between the two files in all but 10 out of 4,625 precincts. These are likely due to small errors in joining as a result of string manipulation.
○ For example:

	VTD2016	Precinct_Label	RDH_votes_dem	RDH_votes_gop	MGGG_votes_dem	MGGG_votes_gop
2544	1215632003008	MUSKEGON CITY; WARD 3; PRECINCT 8	577.0	114.0	702.0	400.0
2545	1215632003009	MUSKEGON CITY; WARD 3; PRECINCT 9	740.0	136.0	577.0	114.0
2546	1215632003010	MUSKEGON CITY; WARD 3; PRECINCT 10	702.0	400.0	740.0	136.0

- ○ In this example, we are showing the votes that we have in our RDH file after joining to the precinct shapefile, compared to MGGG's votes in these precincts. We checked the raw election results file and the RDH votes are correct for precincts 8, 9, and 10 in Ward 3 of Muskegon City. However, it looks like MGGG has the results switched amongst these 3 precincts (they have precinct 10 votes for precinct 8, precinct 8 for precinct 9 and precinct 9 for precinct 10).
- Legislative boundaries:
  - ○ All of the legislative boundary assignments to the precinct shapefile matched MGGG's, , except MGGG was missing assignments for one precinct, with ID: '0492900005062', in the City of Flint.