COLORADO
Department of Education

Instructions for Using the Census Geocoder Tool to Identify Student Census Block Data

At-Risk Interchange Website

For questions, contact us at ARMeasure@cde.state.co.us

Effective July 1, 2025

Contents

Δ Introduction

Pursuant to HB25-1320, the Colorado State Board of Education has been granted the authority to determine annually whether Census block data will be collected and used as part of the At-Risk count for each student in the Student October data submission. **The purpose of this document is to provide instructions for identifying each student's Census block data using the Census Geocoder Tool.**

The Census Geocoder is a tool that allows users to submit a single address, a batch of up to 10,000 addresses, or location coordinates to geocode addresses. The Census Geocoder Tool releases updated geography and address ranges at least once per year as they continually improve addresses and address ranges.

The following resources provide more detailed information about the use of the Census Geocoder tool:

- Census Geocoder Documentation
- Census Geocoder User Guide
- Census Geocoder Frequently Asked Questions (FAQ)

Once the Census block data is obtained, districts will provide the data to the Colorado Department of Education through the At-Risk Interchange file for each student included in its Student October Snapshot. This student-level data may be used to calculate the district's Total Program funding as described in the school finance formula.

Throughout this Guide, the Delta symbol Δ is used to identify information that has been updated or clarified since the previous edition of this document.

Note: If a district has its own GIS system capable of obtaining Census block data for individual student addresses, use of the Census Geocoder Tool may not be needed.

Δ Step 1: Collect & Prep Student Residential Address Data

To obtain Census block data, districts must have **physical residential** addresses for each student included in their Student October Snapshot.

In most cases, districts already have residential address data for each student stored within their Student Information System (SIS). However, if physical residential addresses are missing for any of its students, a district should attempt to obtain this information from the parent/guardian. Note that Post Office Boxes (P.O. Boxes) will not return Census block data, so districts should flag these addresses as ones for which they need to obtain physical residential addresses.

When obtaining physical residential addresses, a district should review the addresses for correct spellings, formatting, etc. Below are some considerations to keep in mind when reviewing physical residential addresses:

- All addresses must be street addresses (e.g., address used for bus routing), not P.O. boxes.
- Districts should use a student's **primary** address in effect as of the pupil enrollment count date (October 1, 2025).
    - For districts that have two household addresses for students, use the student's primary physical household address.
- Address information can be all capitalized, all lowercase, or properly capitalized (title case).
- All addresses must include a zip code.
- Avoid misspellings when possible (e.g., 201 Calfax instead of 201 E. Colfax).
- Avoid abbreviations
- Apartment numbers will sometimes cause an error in geocoding.

Step 2: Create Excel Spreadsheet for Batch Upload to the Census Geocoder Tool

After a district has "clean" address data, create an Excel spreadsheet to upload to the Census Geocoder Tool.

If student addresses are stored within a district's SIS, the district will need to first export this information out of that system.

- If the SIS exports residential address data as a CSV, save the CSV as either an .xls or .xlsx file.
- If the district has residential address data in the SIS and needs support in exporting the data, please reach out to your SIS provider.

Format the Excel spreadsheet as follows:

1. Decide if your spreadsheet will have 2 or 5 columns as shown below:
   Option One

SASID	Address
999999999	201 E Colfax Ave, Denver, CO 80203

Option Two

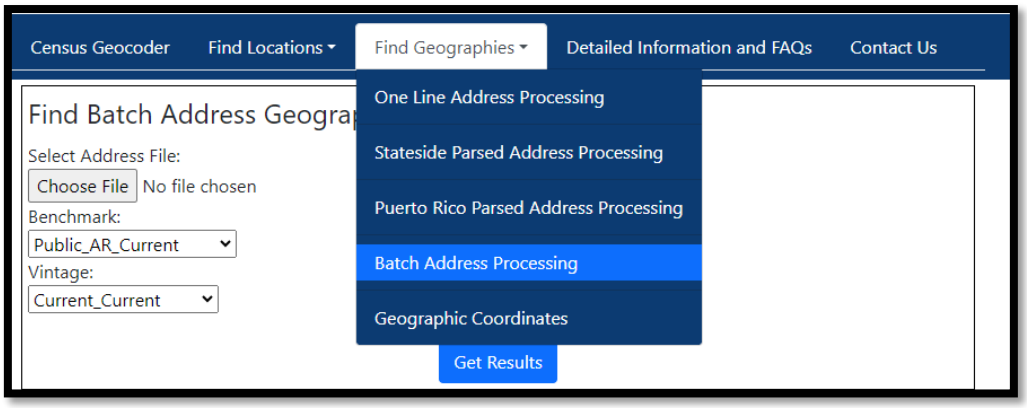
SASID	Street	City	State	ZIP
999999999	201 E Colfax Ave	Denver	CO	80203

2. Delete the header row (row 1).
3. Remove any blank cells
4. Remove any rows containing information for students in confidentiality programs.
    a. See the "Missing Census Block Data" section of the At-Risk Interchange file layout for more information regarding students in confidentiality programs.
5. Use more than one spreadsheet if your district has at least 9,000 enrolled students on the pupil enrollment count date (10/1).
    a. Ex: For 20,000 students, create three Excel spreadsheets: two with 9,000 students and one with 2,000 students.
    b. Save Excel spreadsheets separately. The Census Geocoder Tool cannot recognize workbook sheets/tabs.
6. Your file is ready to be uploaded to the Census Geocoder Tool.

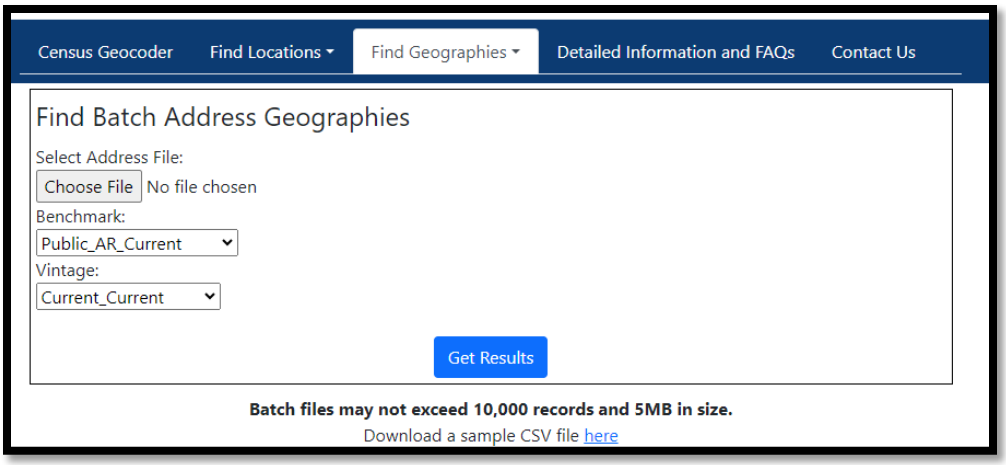
Step 3: Use the Census Geocoder Tool to Obtain Census Block Data by Batch Processing

Districts will use the Census Geocoder Tool to obtain the necessary Census data (i.e., state code, county code, tract code, and block code) required for the At-Risk Interchange file by batch processing the Excel file they created in Steps 1 and 2.

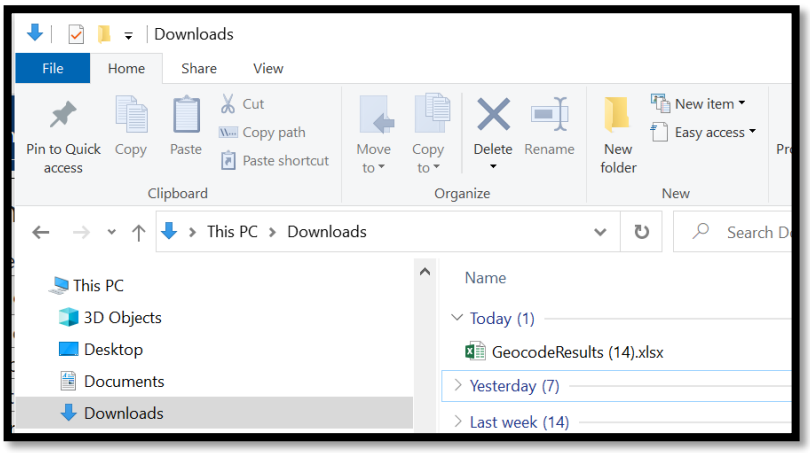
From the Census Geocoder Tool main website, click on "Find Geographies" and then click on "Batch Address Processing" in the dropdown menu.



Upload the Excel file from Steps 1 and 2. The "Benchmark" and "Vintage" fields will auto-populate. For districts with larger files, uploading and processing can take 30 or more minutes depending on the computer and internet speeds. After choosing a file, click "Get Results."



The results will download directly into your "Downloads" folder in File Explorer as an Excel file, and the file will be named "GeocodeResults."



Open the file to find something like the following:

	A	B	C	D	E	F	G	H	I	J	K
1	RECORD ID	INPUT ADDRESS	TIGER ADDRES	TIGER MATCH TYPE	TIGER OUTPUT ADDRESS	INTERPOLATED LONGITUDE	TIGERLINE	TIGERLIN	STATE C	COUNTY	TRACT CO
2											
3	11	1 CROWLEY RD, ENGLEWOOD, CO, 80101, , ,	No_Match								
4	1	7350 N. BROADWAY, DENVER, CO, 80221, , ,	Match	Non_Exact	7350 BROADWAY ST, DENVER, CO, 80221	-104.98730004899994,39.83	177302319	R	08	001	009307
5	2	1500 E 128TH AVENUE, THORNTON, CO, 80241, , ,	Match	Exact	1500 E 128TH AVE, THORNTON, CO, 80241	-104.96831284399997,39.92	639756465	R	08	001	008555
6	3	5291 EAST 60TH AVENUE, COMMERCE CITY, CO, 80022, , ,	Match	Exact	5291 E 60TH AVE, COMMERCE CITY, CO, 80022	-104.92654590699999,39.80	637916220	L	08	001	008709
7	4	18551 EAST 160TH AVENUE, BRIGHTON, CO, 80601, , ,	Match	Exact	18551 E 160TH AVE, BRIGHTON, CO, 80601	-104.76901697699998,39.98	644011064	L	08	001	008562
8	5	610 7TH STREET, BENNETT, CO, 80102, , ,	Match	Exact	610 7TH ST, BENNETT, CO, 80102	-104.42544997499999,39.76	177271010	R	08	001	008401
9	6	56729 EAST COLORADO AVENUE, STRASBURG, CO, 80136, , ,	Match	Non_Exact	56729 COLORADO AVE, STRASBURG, CO, 80136	-104.32336070699995,39.74	177272199	R	08	001	008402
10	7	6933 RALEIGH STREET, WESTMINSTER, CO, 80030, , ,	Match	Exact	6933 RALEIGH ST, WESTMINSTER, CO, 80030	-105.04145069999998,39.82	177297958	L	08	001	009607
11	8	209 VICTORIA AVENUE, ALAMOSA, CO, 81101, , ,	Match	Non_Exact	209 VICTORIA ST, ALAMOSA, CO, 81101	-105.88744007399998,37.47	104175141	L	08	003	960202
12	9	8751 LANE 7 N, MOSCA, CO, 81146, , ,	Match	Non_Exact	8751 LN 7 N, MOSCA, CO, 81146	-105.87875131899995,37.67	104173040	R	08	003	960000
13	10	4101 SOUTH BANNOCK STREET, ENGLEWOOD, CO, 80110, , ,	Match	Exact	4101 S BANNOCK ST, ENGLEWOOD, CO, 80110	-104.99014678299994,39.64	177333542	R	08	005	006200

For each student and address included in a GeocodedResults spreadsheet, one of three "Match Types" will be listed in column C ("Tiger Address Range Match Indicator"):

- **Match**: Student's residential address is successfully matched to a Census-block.
  - Within "Matches," column D ("Tiger Match Type") describes if it was an "Exact" or "Non_Exact" match. Non-Exact matches may be due to discrepancies in unit numbers or zip codes. Both "Exact" and "Non_Exact" are acceptable matches.
- **Tie:** A tie occurs when there is a tie between two or more Census address ranges and indicates multiple possible results for that address.

- **No_Match**: In some instances, an address will fail to geocode. This often happens if:
  - "Address is non-residential or commercial
  - Housing unit has been recently constructed and is not in the Census database yet
  - Local Addressing Authority changed the address, and changes are not yet reflected in the Census database
  - Address may be in a location where there is missing address range information
  - Housing unit may have been destroyed/demolished" (Census_Geocoder_FAQ)

For students with a "Match" type in Column C,the data in the "State Code," "County Code," "Tract Code," and "Block Code" columns should be reported in your At-Risk Interchange file.

For students with "Tie" and "No_Match" types in Column C, districts and schools can either:

- Refer to the "Missing Census Block Data" section of the At-Risk Interchange file layout to identify the most appropriate standard coding pattern for use in the Interchange file, or
- Proceed to *optional* Step 4 to try to troubleshoot and validate addresses

A reasonable expectation of districts is to attempt to correct "No_Match" and "Tie" results at least once before using standard coding patterns listed under "Missing Census Block Data" in the At-Risk Interchange file.

Δ Step 4: Optional Address Validation

For students with a Match Type of "Tie" or "No_Match," a district should take additional steps to confirm student addresses within a district's SIS are valid. These additional steps could include:

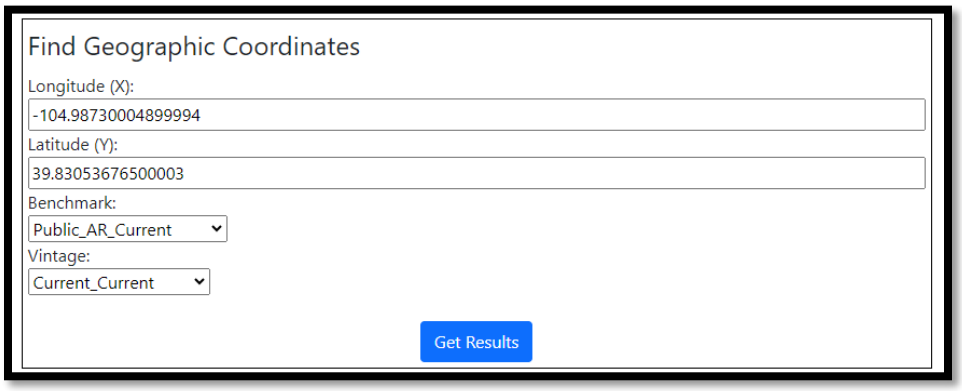
- Googling an address to verify its validity and/or obtain longitude and latitude coordinates
  - The Census Geocoder Tool is setup to process "city style" addresses. Rural addresses, including those with county road locations, will likely need to rely on latitude and longitude coordinates to obtain Census block data.
- Processing the longitude and latitude coordinates of an individual address through the Census Geocoder Tool
  - This is the recommended option for a short list of addresses and addresses within new development communities.
  - Note: Longitude and latitude coordinates will always return a geocode; however, currently there is not an option to run a batch of coordinates through the Census Geocoder Tool.
- Using an external tool (e.g. Geoapify) to "clean" addresses and then re-upload them to the Census Geocoder Tool
  - This is the recommended option for longer lists of addresses to validate.

To process longitude and latitude coordinates, see the Individual Addresses with Latitude and Longitude Information section below.

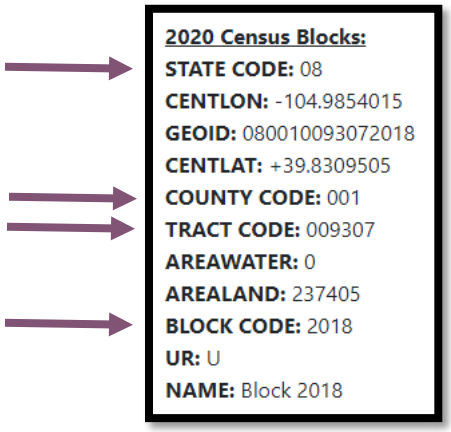
To use an external tool (e.g. Geoapify) to clean addresses and re-upload them to the Census Geocoder Tool, see the Geoapify Batches of No-Match and Tie Addresses below.

Individual Addresses with Latitude and Longitude Information

Some Student Information Systems (e.g., Infinite Campus) may include the latitude and longitude of a student's residential address, or districts can Google a student's address to obtain latitude and longitude coordinates. When coordinates are available, use the Geographic Coordinates option within the Census Geocoder Tool to obtain geocodes.



Click "Get Results" and navigate to the "2020 Census Blocks" section.



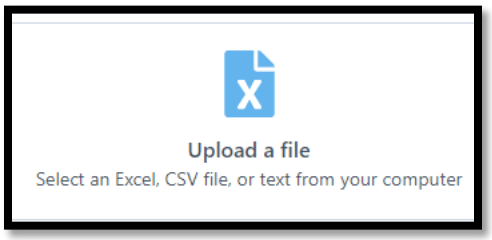
Use the results in the "Sate Code," "Count Code," "Tract Code," and "Block Code" fields for your At-Risk Interchange file.

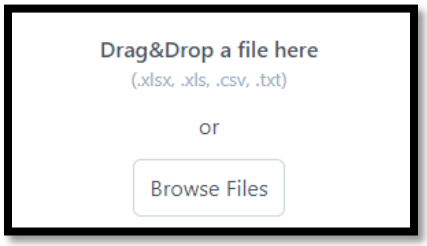
Geoapify with Batches of "No_Match" and/or "Tie" Addresses

Invalid or improperly formatted addresses will return "Tie" and/or "No_Match" results from the Census Geocoder Tool. To verify the formatting of addresses, use the free Geoapify tool.

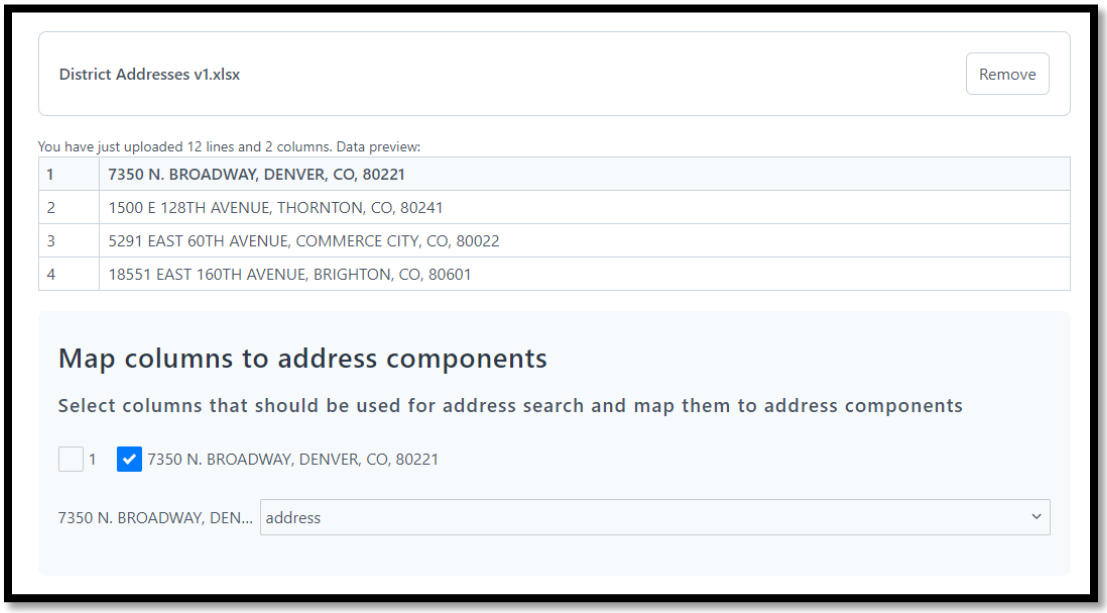
Save a separate Excel spreadsheet with up to 500 "Tie" and/or "No_Match" addresses using the formatting from Step 1.

Navigate to the Geoapify website and click “Upload a file.” Drag and drop your Excel spreadsheet OR “Browse” to find the file using File Explorer.

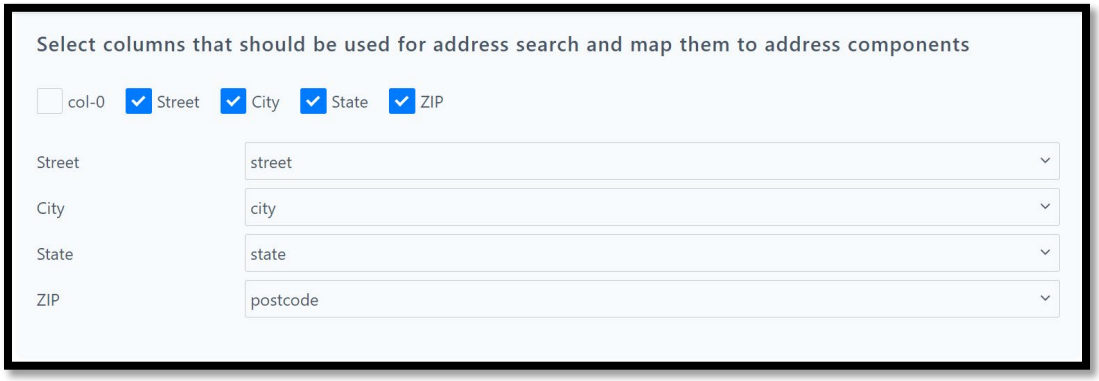




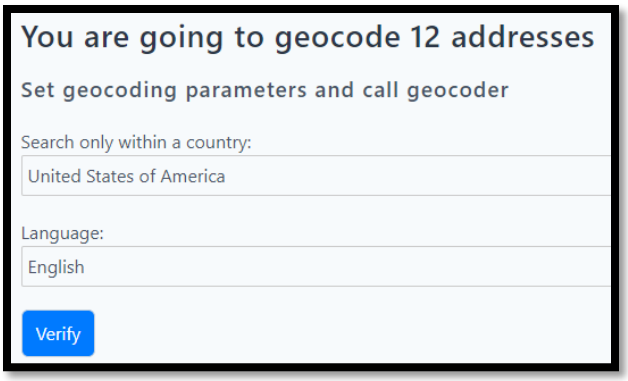
If your spreadsheet has two columns, select the dropdown that corresponds to the checked column.



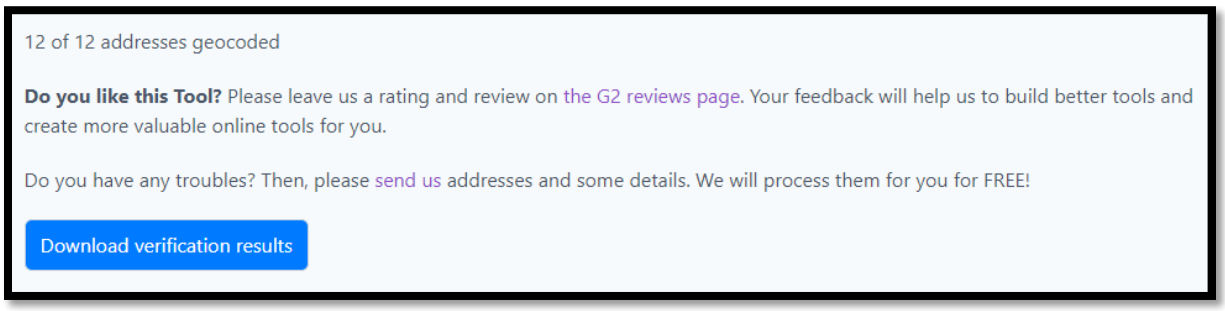
If your spreadsheet has five columns, check the boxes that correspond with columns on your spreadsheet, and select the dropdown that corresponds to each column.

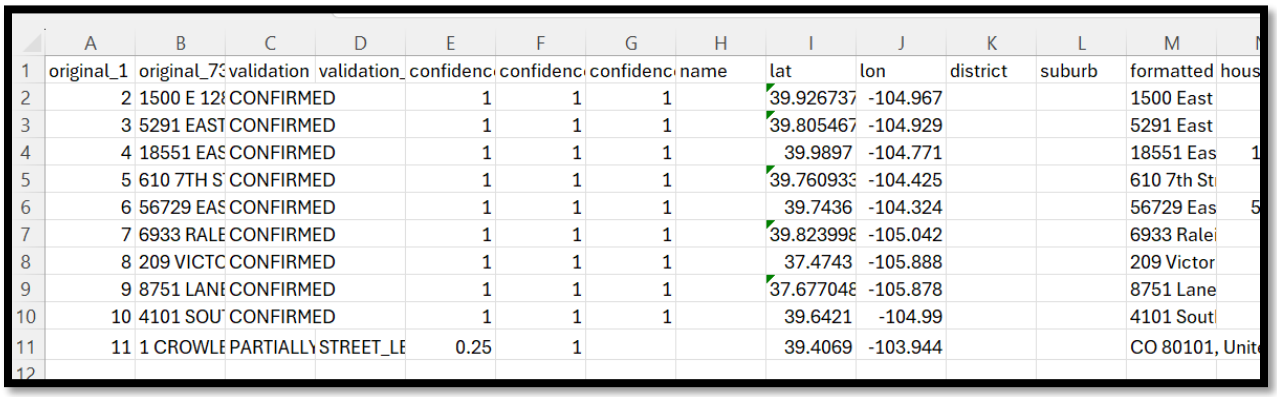


Next, select “United States” and “English,” then click “Verify.”



Click the "Download verification results" button. The results will download directly into your "Downloads" folder in File Explorer as an Excel file.





	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	original_1	original_7	validation	validation_	confidenc	confidenc	confidenc	name	lat	lon	district	suburb	formatted	hous
2	2	1500 E 12	CONFIRMED		1	1	1		39.926737	-104.967			1500 East	
3	3	5291 EAST	CONFIRMED		1	1	1		39.805467	-104.929			5291 East	
4	4	18551 EAS	CONFIRMED		1	1	1		39.9897	-104.771			18551 Eas	1
5	5	610 7TH S	CONFIRMED		1	1	1		39.760933	-104.425			610 7th St	
6	6	56729 EAS	CONFIRMED		1	1	1		39.7436	-104.324			56729 Eas	5
7	7	6933 RALE	CONFIRMED		1	1	1		39.823998	-105.042			6933 Ralei	
8	8	209 VICTC	CONFIRMED		1	1	1		37.4743	-105.888			209 Victor	
9	9	8751 LANE	CONFIRMED		1	1	1		37.677048	-105.878			8751 Lane	
10	10	4101 SOU	CONFIRMED		1	1	1		39.6421	-104.99			4101 Sout	
11	11	1 CROWLE	PARTIALLY	STREET_LE	0.25	1			39.4069	-103.944			CO 80101, Unit	
12														

The generated report will identify any validated address by showing "CONFIRMED" or "PARTIALLY CONFIRMED" in Column C **AND** a value of .9 or greater in Column E. These results provide an alternate format in Column M that can be uploaded to the Census Geocode tool.

To prepare the report for uploading to the Census Geocoder Tool:

1. Delete rows for addresses that do not show as "CONFIRMED" or "PARTIALLTY CONFIRMED" in Column C **AND** a CONFIDENCE value of .9 or greater in Column E.
2. Delete all columns except A ("original_1") and M (formatted).
3. Delete first row/header row.
4. Save the Excel document.
5. Upload to Geocoder for additional matching information.
6. Add additionally matched geocodes to your At-Risk Interchange file.

Step 5: Compile Complete List of Census Block Data

Once Census block data is obtained for as many student addresses as possible following steps 1-4, the district uses this data to create the At-Risk Interchange file that will be uploaded through the Data Pipeline. When possible, districts are encouraged to store Census block data for specific addresses for future use and reference. In the event a district is unable to obtain or verify Census block data for a given address, districts should refer to the "Missing Census Block Data" section of the At-Risk Interchange File Layout located on the Interchange website.

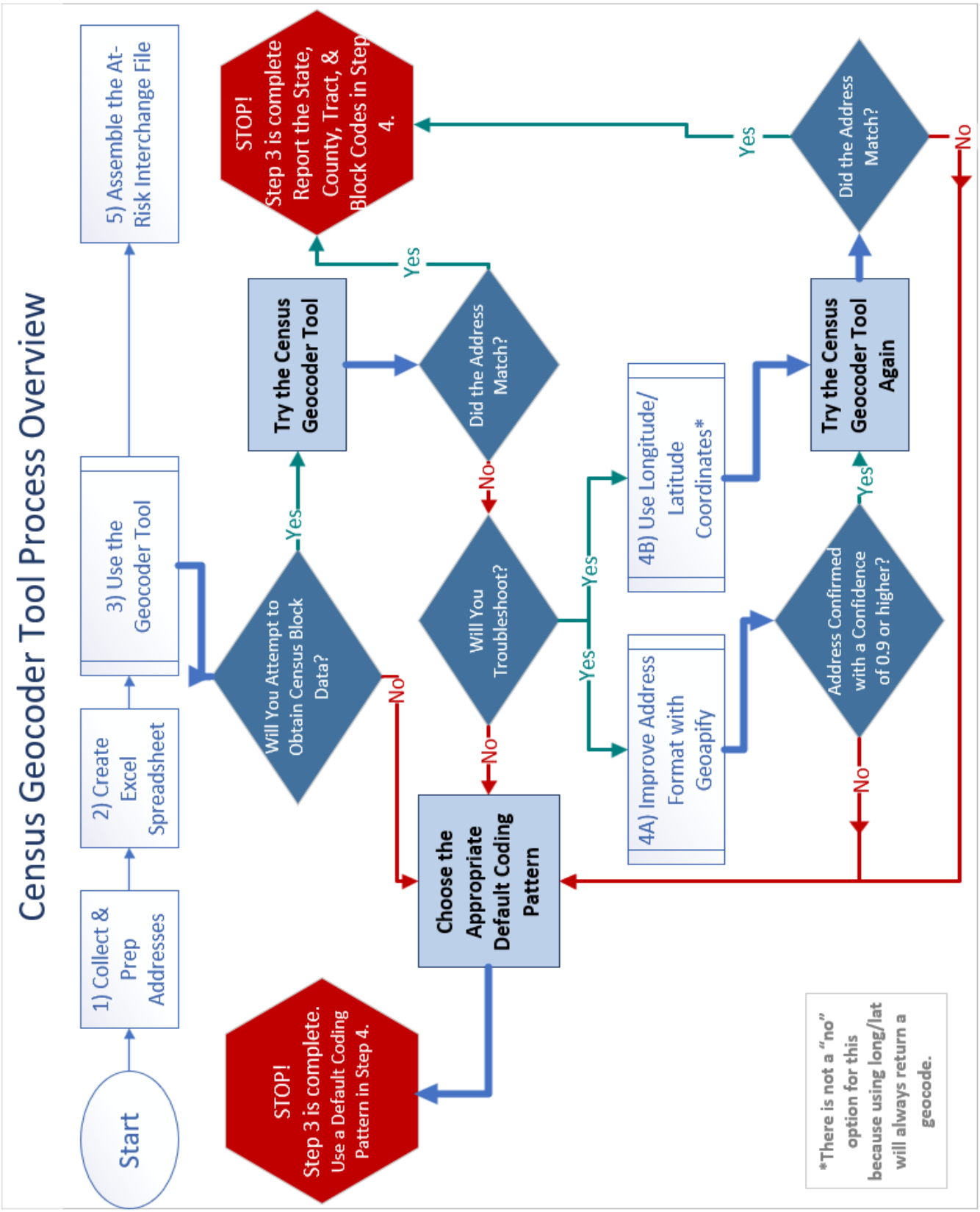
Appendix A: Geographic Information System (GIS) Information

Overview
This page is intended for districts who plan to use their own geographic information systems (GIS) to obtain state, county, tract, and block information using students' physical residential addresses.

Census Data Used in GIS
Similar to districts that are using the Census Geocoder Tool, districts using their own GIS should use the most recent Census data available (2020 Decennial Census Geographies Data). Census geographies are only updated every 10 years after each decennial Census. Districts using their own GIS likely already maintain the necessary Census data, but in some cases, it may be necessary to directly download the most recent Census data. For example, the Census Geocoder Tool uses a current "Benchmark" and "Vintage." The Benchmark is the time period when the Census data snapshot was created (typically twice a year), and the Vintage is a set of data that each Census or survey is linked to. Refer to the Census Geocoder User Guide for detailed information.

Data Needed for the At-Risk Interchange File
Districts will need to obtain state, county, tract, and block code information associated with a student's primary physical residential address in their own GIS. Some districts may have a few or all of these fields as part of their current systems. Refer to the At-Risk Interchange File Layout for more information.

Δ Appendix B: High-Level Process Flow



This is a text rendering of the flowchart above describing the high-level process to obtain student-level census block data. Step III is expanded to help districts determine when it is appropriate to choose a default coding pattern and when to report the state, county, tract and block codes. At a high level, the process has four steps:

I. Collect & Prep Addresses
II. Create Excel Spreadsheet
III. Use the Geocoder Tool
IV. Will you troubleshoot?
    A) improve Address Format with Geoapify
    B) Use Longitude/Latitude Coordinates
V. Assemble the At-Risk Interchange File

To complete Step III:

1. Will you attempt to obtain Census block data?
    a. If yes, go to **2**
    b. If no, go to **7**
2. Try the Geocoder Tool. Did the address match?
    a. If yes, go to **6**
    b. If no, go to **3**
3. Will you troubleshoot?
    a. If yes, go to **4A** or **4B**
    b. If not, go to **7**
4. A. Try to improve the address format with Geoapify. Was the address confirmed with a confidence of 0.9 or higher?
    a. If yes, go to **6**
    b. If not, go to **7**

    B. Use longitude/latitude coordinates?
    a. If yes, go to **5**
    b. There is not a “no” option for this because using longitude/latitude coordinates will always return a gecode.
5. Try the Census Geocoder Tool again. Did the address match?
    a. If yes, go to **6**
    b. If not, go to **7**
6. **STOP! Step III is complete.** Report the state, county, tract, and block codes in Step V.
7. **STOP! Step III is complete.** Choose the appropriate default coding pattern to report in Step V.

Δ Appendix C: FAQ

How often will the Census Geocoder Tool data be updated?

Answer: The Census Geocoder Tool releases updated geography and address ranges at least once per year as they continually improve addresses and address range. Each update will potentially match previously unmatched or new development addresses.

I've been testing out the Census Geocoder Tool, and none of my results files have headers in the columns?

Answer: If your results files are missing headers in the columns, try submitting the file as an .xlsx instead of a .csv. Submitting a .csv file may result in the tool not recognizing the header row but saving the .csv as an .xlsx and submitting it has resolved this issue previously.

I am having issues with the Census Geocoder Tool recognizing addresses with "county road" in them.

Answer: The Geocoder Tool is designed to work with “city style” addresses and may have difficulty returning Census block data for county road addresses. You can use the longitude/latitude lookup process to geocode these addresses.

Can I use whatever unique number I want in column A of the file that we upload to the Census batch address upload?

Answer: You can, however you will need a process by which to tie those records back to the individual and their address so that you can create the At-Risk Interchange File, which includes individual student SASID.

What is a reasonable expectation for the number of attempts districts should geocode addresses that keep returning “Tie” and/or “No_Match”?

Answer: A reasonable expectation is the following sequence:

A. Obtain “clean” household addresses
B. Geocode “clean” household addresses
C. Correct errors (“No_Match”, “Tie”)
D. Geocode again
E. Use coding patterns to fill in gaps
F. Create and submit the At-Risk Interchange file

For more information, you can find more detailed FAQ and a User Guide on the Census Geocoder Documentation webpage.