



COLORADO
Department of Education

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

[Data Pipeline Interchanges - At-Risk website](https://www.cde.state.co.us/datapipeline/inter_atrisk)

https://www.cde.state.co.us/datapipeline/inter_atrisk

For questions, [contact us](mailto:ARMeasure@cde.state.co.us) at ARMeasure@cde.state.co.us

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Introduction

In order to implement the [new at-risk measure](#) (as created in HB22-1202 and pursuant to SB24-188), districts must submit Census block data for each student as part of the district's 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, batch of up to 10,000 addresses, or location coordinates in order to look up addresses. The Census Geocoder tool releases updated geography and address ranges [at least once per year](#) as they continually improve addresses and address ranges. For example, the geocoder will update address ranges in September 2024, potentially matching previously unmatched, new development addresses.

The following resources provide 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 will then be used to calculate the district's Total Program funding as described in the school finance formula.

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

Step 1: Collect Student Residential Address Data

In order to obtain census block data, districts must have **physical residential** addresses for each student included in its 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, the district should attempt to obtain this information from the parent/guardian.

Step 2: Prep Address Data for Use

Once the district has physical residential addresses, it should review the addresses for correct spellings, formatting, etc.

Below are some considerations when preparing your student address data for upload to the Census Geocoder tool:

- 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, 2024).
 - For districts that have two primary household addresses for students, use the student’s primary physical household address.
- Note: Address information can be all capitalized, all lowercase, or properly capitalized.
- All addresses must include a zip code.
- Avoid misspellings when possible (e.g., 201 Calfax instead of 201 E. Colfax).
- Use the entire word “County” for County Road, as opposed to abbreviations (i.e., Cnty, Co)

Step 3: Create Excel Spreadsheet for Upload to the Census Geocoder Tool

Once a district has clean address data, it will need to create an Excel Spreadsheet that includes all student addresses that will be uploaded to the Census Geocode tool. If this information is stored within its student information system (SIS), it is likely the district will first export the address data out of that system. If the district has residential address data in its SIS but needs support in exporting the data, the district should work with the SIS provider directly.

The Excel spreadsheet that will be uploaded to the Census Geocoder tool should contain 2 data columns (see Option One) or 5 data columns (see Option Two), and should look like one of the following formats:

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

Modifying the Spreadsheet

Once the spreadsheet is created, the header row (row 1) will need to be deleted. The result will look something like this:

	A	B
1	1 7350 N. BROADWAY, DENVER, CO, 80221	
2	2 1500 E 128TH AVENUE, THORNTON, CO, 80241	
3	3 5291 EAST 60TH AVENUE, COMMERCE CITY, CO, 80022	
4	4 18551 EAST 160TH AVENUE, BRIGHTON, CO, 80601	
5	5 610 7TH STREET, BENNETT, CO, 80102	
6	6 56729 EAST COLORADO AVENUE, STRASBURG, CO, 80136	
7	7 6933 RALEIGH STREET, WESTMINSTER, CO, 80030	
8	8 209 VICTORIA AVENUE, ALAMOSA, CO, 81101	
9	9 8751 LANE 7 N, MOSCA, CO, 81146	
10	10 4101 SOUTH BANNOCK STREET, ENGLEWOOD, CO, 80110	
11	11 1 CROWLEY RD, ENGLEWOOD, CO, 80101	

OR

	A	B	C	D	E
1	1 7350 N. BROADWAY	DENVER	CO		80221
2	2 1500 E 128TH AVENUE	THORNTON	CO		80241
3	3 5291 EAST 60TH AVENUE	COMMERCE CITY	CO		80022
4	4 18551 EAST 160TH AVENUE	BRIGHTON	CO		80601
5	5 610 7TH STREET	BENNETT	CO		80102
6	6 56729 EAST COLORADO AVENUE	STRASBURG	CO		80136
7	7 6933 RALEIGH STREET	WESTMINSTER	CO		80030
8	8 209 VICTORIA AVENUE	ALAMOSA	CO		81101
9	9 8751 LANE 7 N	MOSCA	CO		81146
10	10 4101 SOUTH BANNOCK STREET	ENGLEWOOD	CO		80110
11	11 1 CROWLEY RD	ENGLEWOOD	CO		80101

Removing students that are part of a confidentiality program

If there are any students included in the spreadsheet that are part of a confidentiality program, remove their data rows, as these students' residential addresses will not be geocoded.

Guidance found in the [At-Risk Interchange](#) "File Layout" describes how to report census block data for students in a confidentiality program.

Saving Excel Spreadsheet(s)

The Census Geocoder tool can only process spreadsheets with less than 10,000 entries.

Districts with **fewer than 9,000 enrolled students:**

- Save the Excel spreadsheet.

Districts with **at least 9,000 enrolled students:**

- Create separate Excel spreadsheets for each set of 9,000 students.
 - For example, if a school district enrolls 26,000 students, that district will need a total of four Excel spreadsheets: three separately saved Excel spreadsheets of 9,000 students and an additional Excel spreadsheet of 1,000 students.
- Save Excel spreadsheets separately.

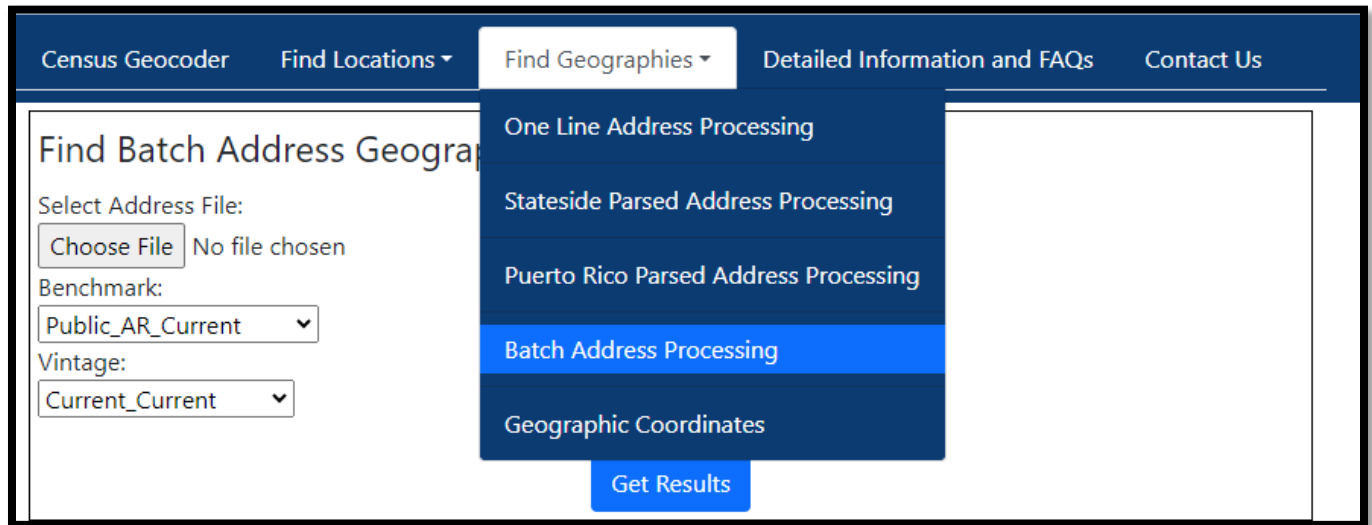
Step 4: Use the Census Geocoder Tool to Obtain Census Block Data

Districts will use the Census Geocoder tool to obtain the necessary census data (i.e., state code, county code, track code, and block code) required for the [At-Risk Interchange](#) file (https://www.cde.state.co.us/datapipeline/inter_atrisk).

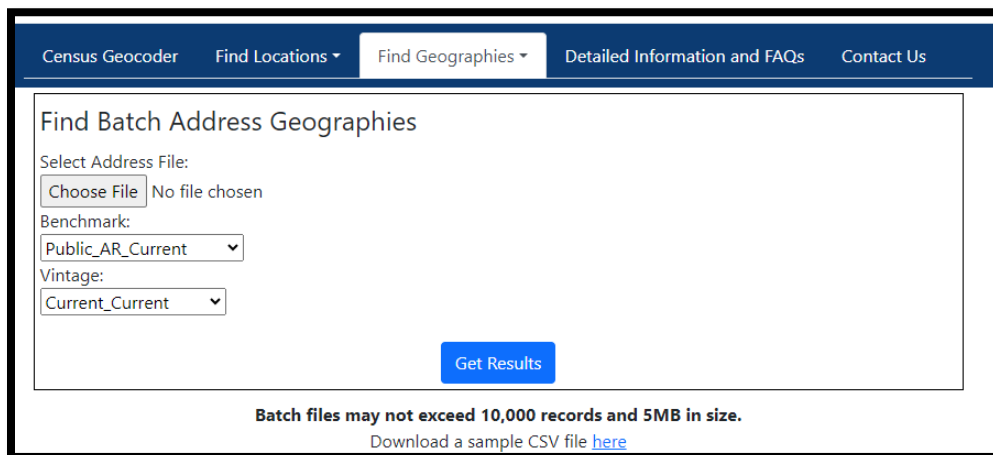
Uploading Excel Spreadsheet using the “Batch Address Processing” Option

Using the Census Geocoder tool website

From the [Census Geocoder tool main](https://geocoding.geo.census.gov/geocoder/) website (https://geocoding.geo.census.gov/geocoder/), click on the “Batch Address Processing” option found under the “Find Geographies” tab dropdown menu.

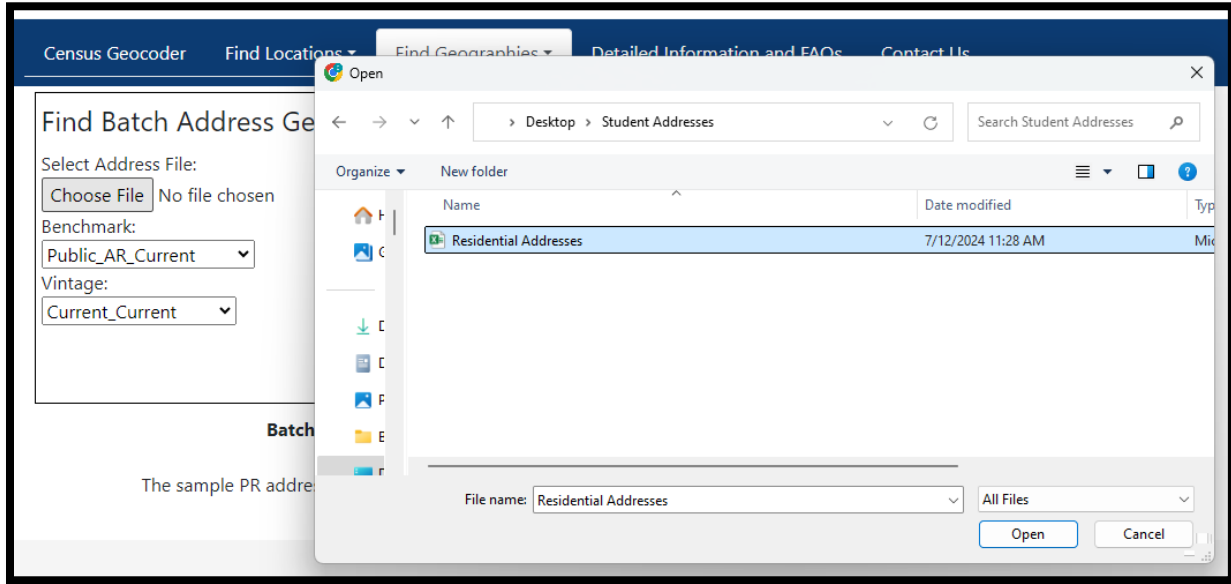


Once the “Batch Address Processing” option is selected, the following screen will appear.



Uploading Excel Documents

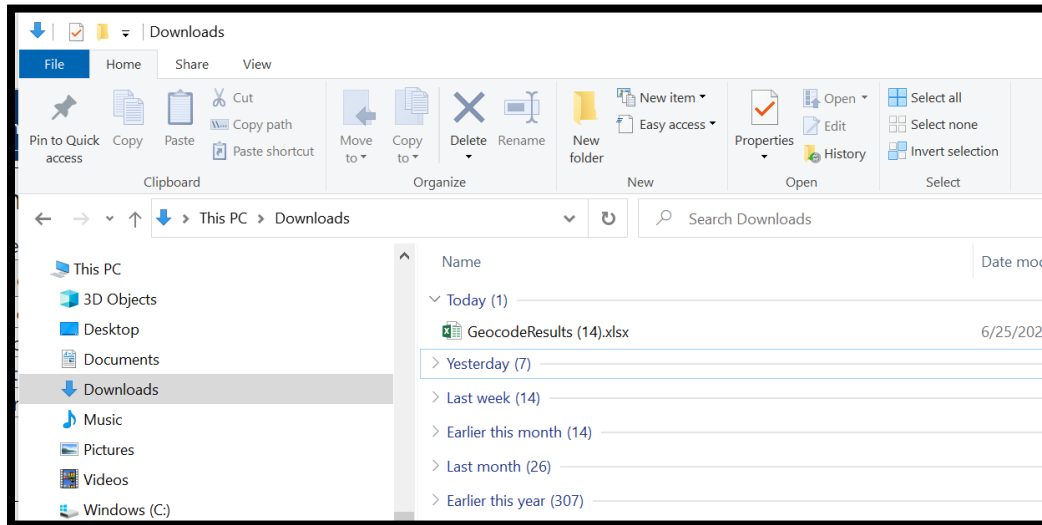
- 1) Under “Select Address File,” click “Choose File” to upload your first Excel document.
- 2) You will see a pop-up window.
- 3) Browse to the location of the saved Excel files.
- 4) Click Open.



Getting Results

Once the correct Excel file is selected, click “Get Results.”

- For districts with **larger files**, it can take 30 minutes or more to process, depending on the computer and internet speeds.
- Results will be downloaded directly into your “Downloads” folder.



Instructions for Using the Census Geocoder Tool



Open the downloaded Excel file, “GeocodedResults,” to find something similar to the following:

A	B	C	D	E	F	G	H	I	J	K		
RECORD ID	INPUT ADDRESS	TIGER ADDRESS	TIGER MATCH TYPE	TIGER OUTPUT ADDRESS	INTERPOLATED LONGITUDE	TIGERLINE	TIGERLIN	STATE	C	COUNTY	TRACT	CO
1	1 CROWLEY RD, ENGLEWOOD, CO, 80101,,	No_Match										
4	7350 N. BROADWAY, DENVER, CO, 80221,,	Match	Non_Exact	7350 BROADWAY ST, DENVER, CO, 80221	-104.98730004899994,39.83177302319	R	08	001	009307			
5	1500 E 128TH AVENUE, THORNTON, CO, 80241,,	Match	Exact	1500 E 128TH AVE, THORNTON, CO, 80241	-104.96831284399997,39.92639756465	R	08	001	008555			
6	5291 EAST 60TH AVENUE, COMMERCE CITY, CO, 80022,,	Match	Exact	5291 E 60TH AVE, COMMERCE CITY, CO, 80022	-104.92654590699999,39.80637916220	L	08	001	008709			
7	18551 EAST 160TH AVENUE, BRIGHTON, CO, 80601,,	Match	Exact	18551 E 160TH AVE, BRIGHTON, CO, 80601	-104.76901697699998,39.98644011064	L	08	001	008562			
8	610 7TH STREET, BENNETT, CO, 80102,,	Match	Exact	610 7TH ST, BENNETT, CO, 80102	-104.42544997499999,39.76177271010	R	08	001	008401			
9	56729 EAST COLORADO AVENUE, STRASBURG, CO, 80136,,	Match	Non_Exact	56729 COLORADO AVE, STRASBURG, CO, 80136	-104.32336070699995,39.74177272199	R	08	001	008402			
10	6933 RALEIGH STREET, WESTMINSTER, CO, 80030,,	Match	Exact	6933 RALEIGH ST, WESTMINSTER, CO, 80030	-105.04145069999998,39.82177297958	L	08	001	009607			
11	209 VICTORIA AVENUE, ALAMOSA, CO, 81101,,	Match	Non_Exact	209 VICTORIA ST, ALAMOSA, CO, 81101	-105.88744007399998,37.47104175141	L	08	003	960202			
12	8751 LANE 7 N, MOSCA, CO, 81146,,	Match	Non_Exact	8751 LN 7 N, MOSCA, CO, 81146	-105.87875131899995,37.67104173040	R	08	003	960000			
13	4101 SOUTH BANNOCK STREET, ENGLEWOOD, CO, 80110,,	Match	Exact	4101 S BANNOCK ST, ENGLEWOOD, CO, 80110	-104.99014678299994,39.64177333542	R	08	005	006200			

Match Types and Sorting

Match Type Definitions

For each student and address included in a GeocodedResults spreadsheet, one of three “Match Types” will be identified in column C:

- **Match:** Student’s residential address is successfully matched to a Census-block.
 - Within “Matches,” column D 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” or “Non_Exact” are acceptable.
- **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

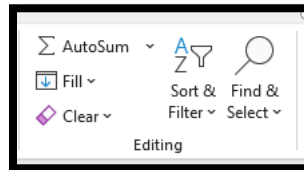
Sorting by Match Type

To better understand how many “Ties,” “No_Match,” and “Match” results there are, the list should be sorted by Match Type. To do this:

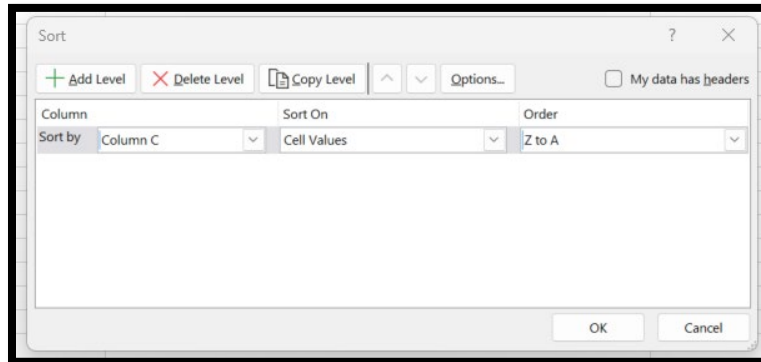
1. Highlight all of the results cells

RECORD ID	INPUT ADDRESS	TIGER ADDRESS	TIGER MATCH TYPE	TIGER OUTPUT ADDRESS	INTERPOLATED LONGITUDE	TIGERLINE	TIGER
11	1 CROWLEY RD, ENGLEWOOD, CO, 80101,,,	No_Match					
1	7350 N. BROADWAY, DENVER, CO, 80221,,,	Match	Non_Exact	7350 BROADWAY ST, DENVER, CO, 80221	-104.98730004899994,39.8	177302319	R
2	1500 E 128TH AVENUE, THORNTON, CO, 80241,,,	Match	Exact	1500 E 128TH AVE, THORNTON, CO, 80241	-104.96831284399997,39.9	639756465	R
3	5291 EAST 60TH AVENUE, COMMERCE CITY, CO, 80022,,,	Match	Exact	5291 E 60TH AVE, COMMERCE CITY, CO, 80022	-104.92654590699999,39.8	637916220	L
4	18551 EAST 160TH AVENUE, BRIGHTON, CO, 80601,,,	Match	Exact	18551 E 160TH AVE, BRIGHTON, CO, 80601	-104.76901697699998,39.9	644011064	L
5	610 7TH STREET, BENNETT, CO, 80102,,,	Match	Exact	610 7TH ST, BENNETT, CO, 80102	-104.42544997499999,39.7	177271010	R
6	56729 EAST COLORADO AVENUE, STRASBURG, CO, 80136,,,	Match	Non_Exact	56729 COLORADO AVE, STRASBURG, CO, 80136	-104.32336070699995,39.7	177272199	R
7	6933 RALEIGH STREET, WESTMINSTER, CO, 80030,,,	Match	Exact	6933 RALEIGH ST, WESTMINSTER, CO, 80030	-105.04145069999998,39.8	177297958	L
8	209 VICTORIA AVENUE, ALAMOSA, CO, 81101,,,	Match	Non_Exact	209 VICTORIA ST, ALAMOSA, CO, 81101	-105.88744007399998,37.4	104175141	L
9	8751 LANE 7 N, MOSCA, CO, 81146,,,	Match	Non_Exact	8751 LN 7 N, MOSCA, CO, 81146	-105.87875131899995,37.6	104173040	R
10	4101 SOUTH BANNOCK STREET, ENGLEWOOD, CO, 80110,,,	Match	Exact	4101 S BANNOCK ST, ENGLEWOOD, CO, 80110	-104.99014678299994,39.6	177333542	R

2. Select “Custom Sort” from Excel’s “Sort & Filter” options



3. Sort the selection by “Column C” to order “Z to A”



Once the results in the GeocodedResults spreadsheet have been sorted by Match Type, students with a Match Type of “Match” may be considered complete and ready to be included in the district’s At-Risk Interchange file. For students with a Match Type of “Tie” or “No_Match,” additional processing to determine the student’s Census block data will be necessary before including in the interchange file.

Note: If “Ties” or “No_Matches” are apartment buildings or trailer communities, try removing the unit numbers from the address and resubmit to the Geocoder tool to improve match rates.

Step 5: Manually Processing “Ties” and “No_Match” Students

Students with a Match Type of “Tie” or “No_Match” in the GeocodedResults spreadsheet must be processed manually (where possible).

If Latitude and Longitude coordinates are available for an individual address, this information can be used to determine the Census block data associated with that address (see “[Individual Addresses with Latitude and Longitude Information](#)” below).

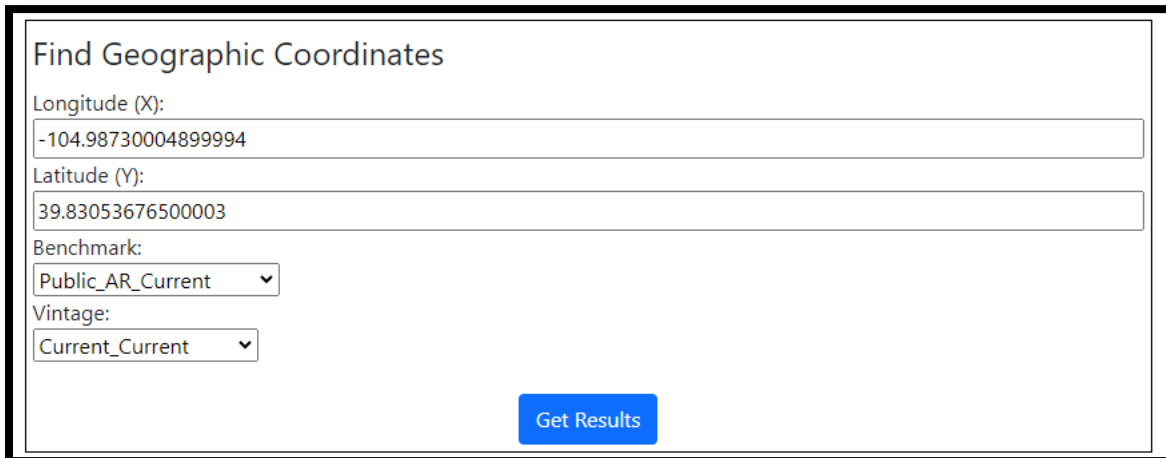
The Match Type for some addresses may be “Tie” or “No Match” because the address was not properly formatted or exact enough for the Census Geocoder tool. To “clean” these addresses, an external tool can be used to try to format the addresses before reuploading to the Census Geocoder tool (see “[Batches 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. When this information is available, these coordinates can be used to identify a student’s Census block data using the Census [Geographic Coordinates](#) option.

(<https://geocoding.geo.census.gov/geocoder/geographies/coordinates?form>)

Entering the student’s latitude and longitude.



The screenshot shows a web form titled "Find Geographic Coordinates". It contains four input fields: "Longitude (X)" with the value "-104.98730004899994", "Latitude (Y)" with the value "39.83053676500003", "Benchmark" with a dropdown menu showing "Public_AR_Current", and "Vintage" with a dropdown menu showing "Current_Current". A blue "Get Results" button is located at the bottom right of the form.

- Census block information can be found under “2020 Census Blocks”

2020 Census Blocks:
STATE CODE: 08
CENTLON: -104.9854015
GEOID: 080010093072018
CENTLAT: +39.8309505
COUNTY CODE: 001
TRACT CODE: 009307
AREAWATER: 0
AREALAND: 237405
BLOCK CODE: 2018
UR: U
NAME: Block 2018

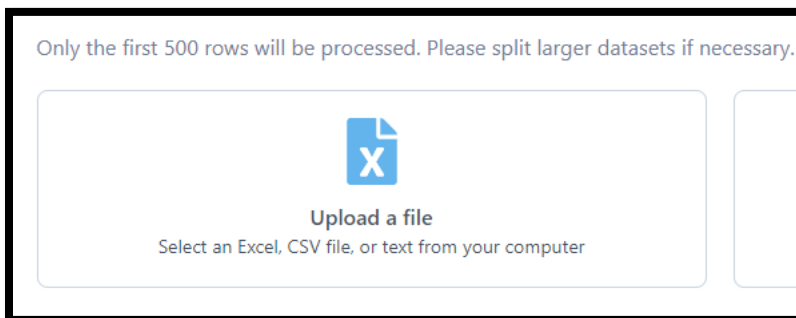
Enter the information in the appropriate columns in the GeocodedResults document.

Batches of “No_Match” and/or “Tie” Addresses

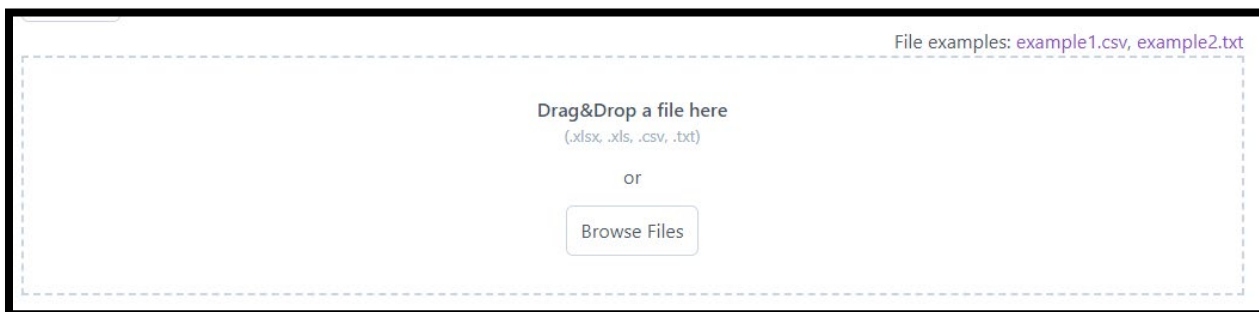
In the event an address returns a Match Type of “No_Match” or “Tie” it is possible that the address is invalid or otherwise improperly formatted for the search. To verify the formatting of addresses (so that they can be processed using the Geocode website), the free [Geoapify](https://www.geoapify.com/tools/address-validation/) (<https://www.geoapify.com/tools/address-validation/>) tool can be used.

Save a separate Excel document with up to 500 “Tie” and/or “No_Match” addresses.

Click the “Upload a File” option.



Drag and drop your Excel document or Browse in Geoapify’s upload area.



Instructions for Using the Census Geocoder Tool

If submitting an Excel spreadsheet with 2 columns:

Check the box that corresponds to the address column, and select the dropdown that corresponds to the checked column.

District Addresses v1.xlsx Remove

You have just uploaded 12 lines and 2 columns. Data preview:

1	7350 N. BROADWAY, DENVER, CO, 80221
2	1500 E 128TH AVENUE, THORNTON, CO, 80241
3	5291 EAST 60TH AVENUE, COMMERCE CITY, CO, 80022
4	18551 EAST 160TH AVENUE, BRIGHTON, CO, 80601

Map columns to address components

Select columns that should be used for address search and map them to address components

1 7350 N. BROADWAY, DENVER, CO, 80221

7350 N. BROADWAY, DEN...

If submitting an Excel spreadsheet with 5 columns:

Check the box that corresponds to the address columns, and select the dropdown for each that corresponds to each column.

Select columns that should be used for address search and map them to address components

col-0 Street City State ZIP

Street

City

State

ZIP

Instructions for Using the Census Geocoder Tool

Select United States and English, then click Verify.

You are going to geocode 12 addresses

Set geocoding parameters and call geocoder

Search only within a country:

United States of America x v

Language:

English v

[Verify](#)

Click “Download verification results.”

12 of 12 addresses geocoded

Do you like this Tool? Please leave us a rating and review on [the G2 reviews page](#). Your feedback will help us to build better tools and create more valuable online tools for you.

Do you have any troubles? Then, please [send us](#) addresses and some details. We will process them for you for FREE!

[Download verification results](#)

Go to the Downloads folder and open the generated report.

	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” in Column C **AND** a “1” in Column E. These results will provide an alternate format in Column M that can be uploaded to the Census Geocode tool. The district should attempt to re-upload the results from column M to the Census Geocoder tool:

- 1) Delete rows for addresses that do not show as “CONFIRMED” with a confidence of “1.”
- 2) Delete all columns except A and M.
- 3) Delete first row/header row.
- 4) Save the Excel document.
- 5) Upload to Geocoder for additional matching information.

For remaining addresses that were not able to be validated/formatted using the above method, see Step 6 below.

Step 6: Compile Complete List of Census Block Data

Once census block data is obtained for as many student addresses as possible following steps 1-5, the district will use this data to create the [At-Risk Interchange](https://www.cde.state.co.us/datapipeline/inter_atrisk) file (https://www.cde.state.co.us/datapipeline/inter_atrisk) 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.

For At-Risk Interchange reporting purposes, in the event a district is unable to obtain or verify census block data for a given address, districts should refer to the At-Risk Interchange File Layout located on the Interchange website for coding combination guidance on "[Missing Census Block Data](#)".