

Overview of the Census Geocoder Tool

August 13, 2024

Our Role





Emily Gutierrez



THE URBAN INSTITUTE IS A NONPROFIT,
NONPARTISAN ORGANIZATION DEDICATED TO
ELEVATING THE DEBATE ON SOCIAL AND
ECONOMIC POLICY.



Fanny Terrones

HB 22-1202 created a new at-risk measure in the school finance formula to identify students who are at risk of below-average academic outcomes due to socioeconomic disadvantage or poverty.



Ariella Meltzer

Our role is to provide support and technical assistance to CDE, School Districts and Local Education Agencies in implementing the new At-Risk Measure.





At the end of today's webinar, you should be able to:

- Prepare and clean student residential address data
- Navigate to the Census Geocoder Tool
- Obtain census block data using the tool
- Process non-match addresses





Introduction





At-Risk Measure

- Beginning with the 2025-2026 school year, the new at-risk measure will be implemented within the school finance formula.
- The New At-Risk Measure will take into consideration the following:
 - Percentage of Students certified as eligible for free lunch based on receipt of public benefits (SNAP, TANF, Food Distribution Program on Indian Reservation) or categorical eligibility (foster, homeless, migrant, runaway or Head Start); and
 - Supplemented by the direct certification of students participating in Medicaid or Children's Basic Health Plan; and
 - A neighborhood socioeconomic status index that weighs students' needs on 5+ socioeconomic status neighborhood factors, linked to each student's census block group.
- In preparation for implementation, districts will be **required** to submit all necessary data beginning in the 2024-2025 school year.



New: Student Census Block Data

Starting in 2024-25 school year... Districts will be required to:

- Use student physical residential addresses to determine corresponding census block data, then...
- Submit individual student-level census block data to the Colorado Department of Education through the Data Pipeline At-Risk Interchange file which will be included in the Student October Snapshot. Required fields include:
 - State Code
 - County Code (*note: this is NOT the same county code reported in the Student School Association Interchange file... this county code is unique to the student's physical residential address)
 - Track Code
 - Block Code
- Note: Actual student addresses will not be submitted



Data Pipeline- At-Risk Interchange



Data Pipeline Interchanges - At-Risk

Overview

The purpose of the At-Risk Interchange is to obtain student-level census block information needed to implement the new at-risk measure as described in HB22-1202. As provided for under SB24-188, data needed for the implementation of this measure will be collected beginning with the 2024-25 school year. In the 2025-26 school year, the new at-risk measure will be fully implemented and included in the Total Program funding calculation as described in the Public-School Finance Act which will continue to utilize student-level data reported through the Student October Count data collection. As part of this legislation, the new at-risk measure will take into consideration the following:

- Percentage of students certified as eligible for free lunch based on receipt of public benefits (SNAP, TANF, Food Distribution Program on Indian Reservation) or categorical eligibility (foster, homeless, migrant, runaway or Head Start); and
- · Supplemented by the direct certification of students participating in Medicaid or Children's Basic Health Plan; and
- A neighborhood socioeconomic status index that weighs students' needs on 5+ socioeconomic status neighborhood factors, linked to each student's census block group.

Deadlines

The At-Risk Interchange will open July 15th, 2024 (tentative) and close on November 8th, 2024. This interchange will only be available during the Student October Collection.

File Layout and Definitions

• 2024-2025 At-Risk Interchange File Layout (PDF) (posted 3/22/2024)

Business Rules

• 2024-2025 At-Risk Interchange Business Rules (XLSX) (updated 7/15/2024)

Templates

2024-2025 At-Risk Interchange File Template (XLSX) (posted 4/5/2024)

Training

Where to Meet for Live Webinars

Meeting links will appear here approximately 15 minutes before the scheduled meeting start time
Join by phone: 1 (929)-341-4269 Meeting ID: TBD

- Overview of the Geocode Tool July 24, 2024 (1PM)
- Overview of the Geocode Tool August 13, 2024 (10AM)
- . Overview of the Data Pipeline At-Risk Interchange File August 20, 2024 (1PM)

Additional Resources

- Instructions for Using the Census Geocoder Tool (PDF) Posted July 15, 2024
- Valid Census Block Data Combinations (ALS) Posted July 15, 2024
- At-Risk Interchange Instructions Coming Soon!

Internal CDE Resources

School Auditing Office At-Risk Count Webpage

Contact: At-Risk Measure

Obtaining Census Block Data



While some districts will be able to use their own geographic information system (GIS) technology (such as ArcGIS) to obtain student level census block data, the majority of districts will use the Census Geocoder Tool.



The Census Geocoder Tool

- Geocoding is the process of taking an address and returning an actual or calculated latitude/longitude coordinate. Depending on the parts of the address that are provided, determines to what granularity it is possible to geocode.
- The <u>Census Geocoder</u> 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 and obtain their corresponding census block data.
- The Census tool releases updated geography and address ranges at least once per year as they continually improve addresses and address range.
 - The geocoder will update address ranges in September 2024, potentially matching previously unmatched, new development addresses.



Step 1: Collect Student Residential Address Data

- Districts must have **physical residential addresses** for each student included in its Student October Snapshot.
- Most districts already store residential address data within their Student Information System (SIS).
- If physical residential addresses are missing, districts should obtain this information from the parent/guardian.



Step 2: Prep Address Data For Use

- Use street addresses, not P.O. boxes.
- Use a student's primary physical residential address as of October 1, 2024.
 - For dual households, use student's primary physical address.
- Note: Address can be all capitalized, all lowercase, or properly capitalized.
- Include zip codes.
- Avoid misspellings (e.g., 201 Calfax instead of 201 E. Colfax).
- Use entire words instead of abbreviations (e.g., "County" not "Cnty" or "Co")





- Ensure address data is clean
- Create an excel sheet with all student addresses for upload
- Export address data from the Student Information System (SIS) if needed
 - Contact your SIS provider for export support
- The excel spreadsheet can contain two or five data columns
- Remove any blank excel cells





The excel spreadsheet 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
99999999	201 E Colfax Ave, Denver, CO 80203

Option Two

SASID	Street	City	State	ZIP
99999999	9999999 201 E Colfax		СО	80203
	Ave			





Modify the Spreadsheet

The header row (row 1) will need to be deleted. The result should look something like this:

	А	В
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

	А	В	С	D	Е
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	СО	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	СО	80101

or





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.
 - Ex: For 26,000 students, create four Excel spreadsheets: three with 9,000 students, and one with 1,000 students
- Save Excel spreadsheets separately.





Districts will use the <u>Census Geocoder tool</u> to obtain the necessary census data (i.e., state code, county code, track code, and block code) required for the <u>At-Risk</u> <u>Interchange</u> file.



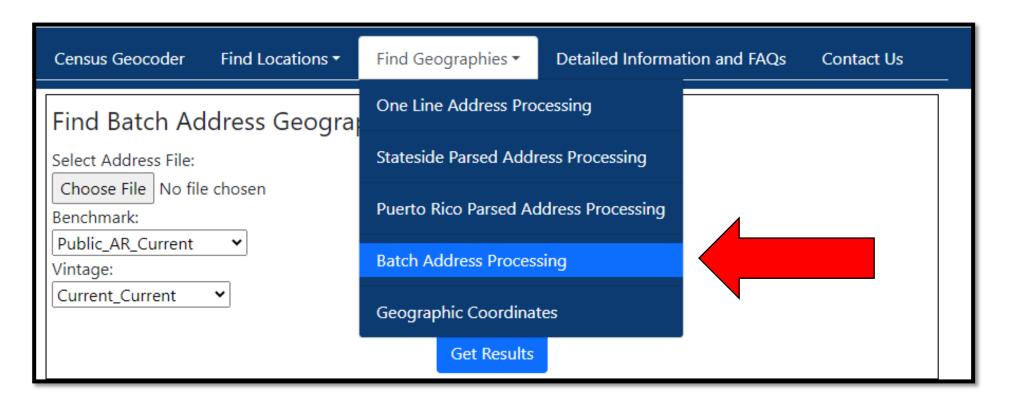






Uploading Excel Spreadsheet using the "Batch Address Processing" Option

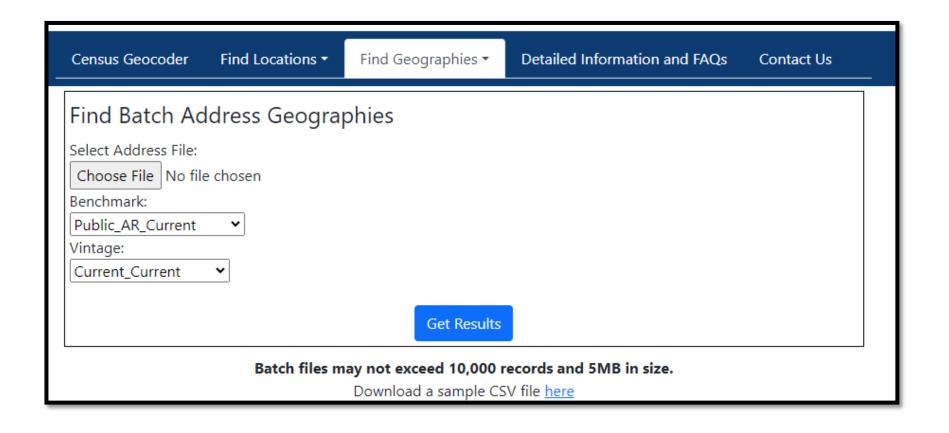
(https://geocoding.geo.census.gov/geocoder/geographies/addressbatch?form)







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

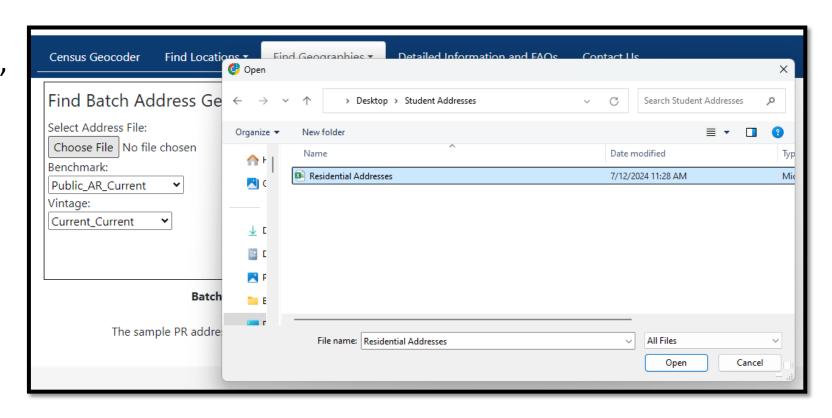






Uploading Excel data

- 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.



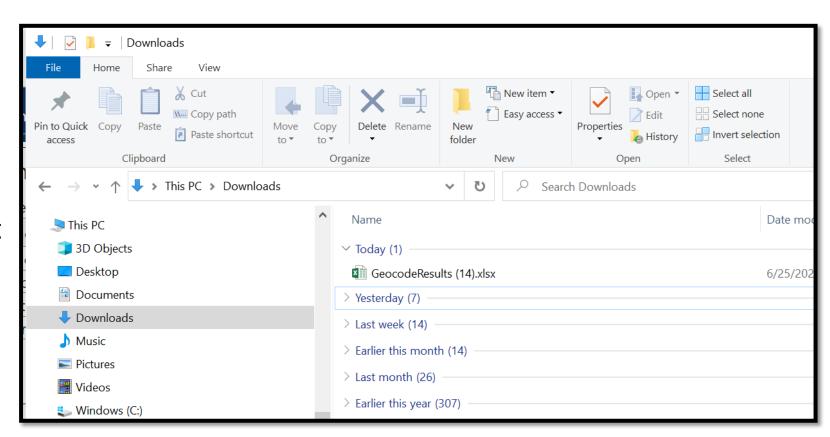




Getting Results

Click "Get Results."

- Large files can take 30+ minutes to process, depending on computer and internet speeds.
- Results are downloaded directly to your "Downloads" folder.







Getting Results

Open the downloaded Excel file, "GeocodedResults."

Α	В	С	D	E	F	G	Н	1	J	K
RECORD ID	INPUT ADDRESS	TIGER ADDRES	TIGER MATCH TYPE	TIGER OUTPUT ADDRESS	INTERPOLATED LONGITUDE	TIGERLINE	TIGERLIN	STATE C	COUNTY	TRACT
L										
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	-104.98730004899994,39.83	177302319	R	08	001	009307
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
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
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
5	610 7TH STREET, BENNETT, CO, 80102, , ,	Match	Exact	610 7TH ST, BENNETT, CO, 80102	-104.42544997499999,39.76	177271010	R	08	001	008401
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
7	6933 RALEIGH STREET, WESTMINSTER, CO, 80030, , ,	Match	Exact	6933 RALEIGH ST, WESTMINSTER, CO, 80030	-105.04145069999998,39.82	177297958	L	08	001	009607
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
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
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





Matching Types and Sorting





Match Type Definitions



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.

- 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

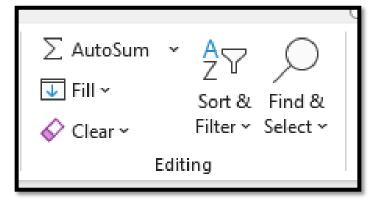
Α	В	С	D	E	F	G	Н
RECORD ID	INPUT ADDRESS	TIGER ADDRES	TIGER MATCH TYPE	TIGER OUTPUT ADDRESS	INTERPOLATED LONGITUDE	TIGERLINE	TIGER
11	1 CROWLEY RD, ENGLEWOOD, CO, 80101, , ,	No_Match					
1	7350 N. BROADWAY, DENVER, CO, 80221, , ,	Match	Non_Exact	7350 BROADWAY ST, DENVER, CO, 80221	-104.98730004899994,39.8	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



Sorting by Match Type



2. Select "Custom Sort" from Excel's "Sort & Filter" options





Sorting by Match Type



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





Sorting by Match Type Next Steps

Once the results in the GeocodedResults spreadsheet have been sorted by Match Type:

- Match Type: Ready to be included in the district's At-Risk Interchange file.
- "Tie" or "No_Match," Types: Will require additional processing to determine the student's Census block

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.





Manual Processing: Required for "Tie" or "No-Match" Types

Use Coordinates: If Latitude and Longitude coordinates are available, use them to determine census block data

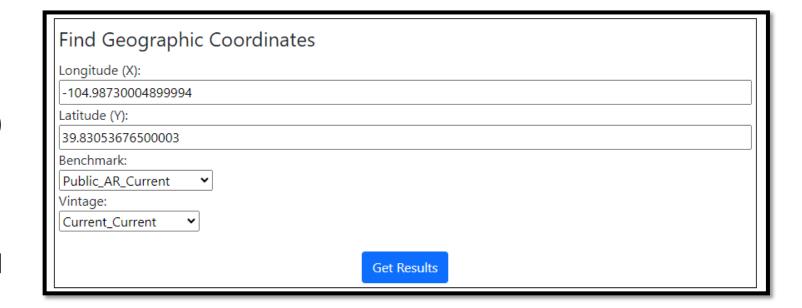
Address Cleaning: For improperly formatted addresses, use external tool to clean addresses before uploading them to the Census Geocoder tool





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.
- These coordinates can be used to identify a student's Census block data using the Census Geographic Coordinates option.







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

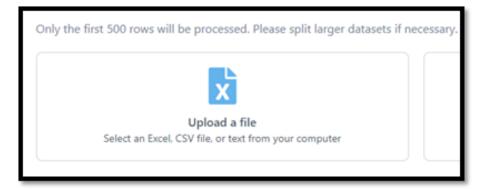
Enter the information in the appropriate columns in the GeocodedResults document.

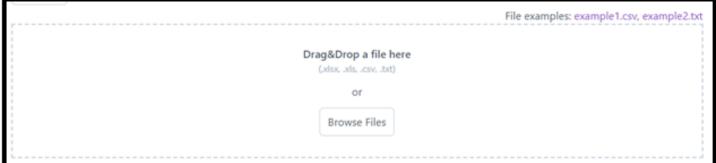






- To verify the formatting of addresses, use the free online tool Geoapify.
- Save a separate excel document with (up to) 500 "Tie" and/or "No Match" addresses.
- Click the "Upload a file" option, then drag and drop your Excel document or click "Browse" in Geoapify's upload area.









Batches of "No_Match" or "Ties":

If submitting an excel sheet with **two column**s:

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



If submitting an excel sheet with **five columns**:

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







Batches of "No_Match" or "Ties":

- 1. Select "United States" and "English"
- 2. Click "Verify."



3. Click "Download verification results."

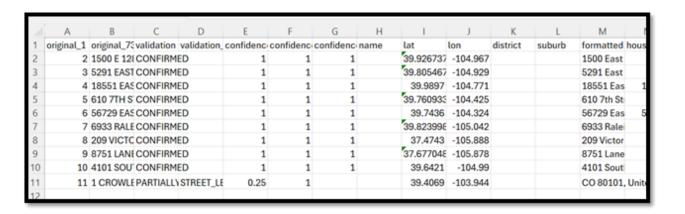
12 of 12 addresses geocoded
Do you like this Tool? Please leave us a rating and review on the G2 reviews page. Your feedback will help us to build better tools and create more valuable online tools for you.
Do you have any troubles? Then, please send us addresses and some details. We will process them for you for FREE!
Download verification results





Batches of "No_Match" or "Ties":

Go to the Downloads folder and open the generated report.



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. To prepare the upload:

- Delete rows for addresses that do not show as "CONFIRMED" or "PARTIALLY CONFIRMED"
 with a confidence of ".9" or higher.
- Delete all columns except A and M.
- Delete first row/header row.
- Save the Excel document.
- Upload to Geocoder for additional matching information.



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 file that will be uploaded through the Data Pipeline.



Step 6: Compile Complete List of Census Block Data

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".

Description	State Code	County Code	Track Code	Block Code
Address on File- Did Not Attempt to Obtain Census Block Data: The district has a primary physical address on file but did NOT attempt to obtain census block data using the geocode tool.	08	000	000001	0001
Address on File- No Census Block Data Returned : The district confirmed that the primary physical address is valid using USPS but the geocode tool did not return census block data.	08	000	000002	0002
Confidentiality Program : No census block data was provided because the district has confirmed the student is participating in a confidentiality program.	08	000	000003	0003
No Physical Primary Address on File- Identified Group : The district does not have a primary physical address on file and the student is confirmed homeless, migrant, foster child, or attending a detention center	08	000	000004	0004
No Physical Primary Address on File- No Identified Group : The district does not have a primary physical address on file and the student is not confirmed homeless, migrant, foster child, or attending a detention center.	08	000	000005	0005
Out of State codes: The district has a primary physical address on file that is not in Colorado	08	000	000006	0006

Upcoming Trainings & Resources

- We will be releasing two one-pagers in the coming weeks:
 - Helpful tips/hints for districts using their own GIS
 - Helpful tips/hints for districts using IC, Power School, and other common SIS
- Overview of the Data Pipeline At-Risk Interchange File August 20, 2024 (1PM)
 - <u>Data Pipeline Interchange</u> At-Risk webpage
 - This page includes other helpful resources, as well as training recordings and slides.



Contact



At-Risk Measure

- Email: <u>ARMeasure@cde.state.co.us</u>
- At-Risk Interchange website: https://www.cde.state.co.us/datapipeline/inter_atrisk





Questions?



