

Introduction to Census Geocoder

Anastasia Clark, Geospatial Data Lab, Baruch College CUNY

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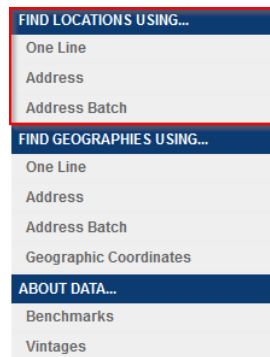
Abstract

This document briefly explains how to geocode addresses using Census Geocoder from US Census Bureau. It uses an example of geocoding in a batch with the detailed steps for creating batch files from an Excel spreadsheet.

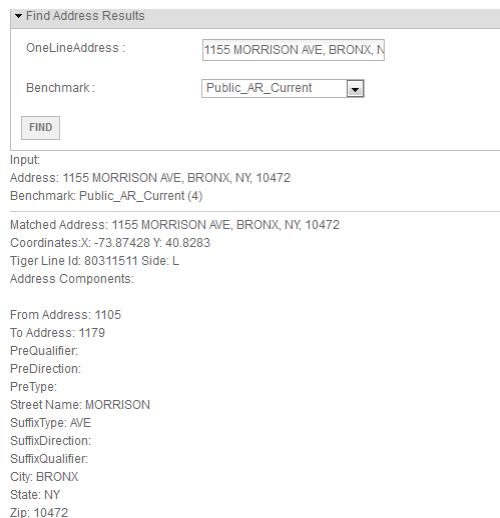
1 Methods for geocoding addresses

Geocoding a single address

Census Geocoder allows you to obtain latitude and longitude coordinates for a single address or multiple addresses at a time, with a limit of 1000 addresses per batch. It's very easy to use and you don't need to create an account for it. To access Census Geocoder, go to <http://geocoding.geo.census.gov/geocoder/>. To find the geographic location of your address, choose find location option for your search. Find geographies option will return different geographies, like census tract or census block along with coordinates for the searched address.



There are three options for an address input: single line, address, or address batch. To use single line option, simply type-in the address in the format: HOUSE NUMBER AND STREET NAME, CITY, STATE, ZIP CODE. Displayed successful result will look like this:

A screenshot of the Census Geocoder search results. The search input is '1155 MORRISON AVE, BRONX, N'. The benchmark is 'Public_AR_Current'. The search results show the input address, the matched address, coordinates, tiger line id, and address components. The address components are: From Address: 1105, To Address: 1179, PreQualifier: PreDirection: PreType: Street Name: MORRISON, SuffixType: AVE, SuffixDirection: SuffixQualifier: City: BRONX, State: NY, Zip: 10472.

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Find Address Results
OneLineAddress : 1155 MORRISON AVE, BRONX, N
Benchmark : Public_AR_Current
FIND
Input:
Address: 1155 MORRISON AVE, BRONX, NY, 10472
Benchmark: Public_AR_Current (4)
Matched Address: 1155 MORRISON AVE, BRONX, NY, 10472
Coordinates:X: -73.87428 Y: 40.8283
Tiger Line Id: 80311511 Side: L
Address Components:
From Address: 1105
To Address: 1179
PreQualifier:
PreDirection:
PreType:
Street Name: MORRISON
SuffixType: AVE
SuffixDirection:
SuffixQualifier:
City: BRONX
State: NY
Zip: 10472
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To use address option, type-in the address component into the appropriate address boxes. For a single line/address option, city or state can be omitted (if unknown), but the commas will still have to be inserted in their places. Ex: HOUSE NUMBER AND STREET NAME,,,ZIP CODE

Geocoding multiple addresses in a batch

To use the Address Batch option, upload a comma separated text/csv file by browsing to the location of the file on your computer. The uploaded file has to follow the same as above-mentioned formatting rules for addresses, but it also has to contain a unique ID number for each of the addresses in a batch. Below is an example of how to properly prep and format a batch file. In my example, I am using an Excel spreadsheet containing the addresses of non-profit organizations in New York City.

A	B	C	D	E	F	G
EIN	NAME	ICO	STREET	CITY	STATE	ZIP
132690309	1332 FULTON AVENUE DAY CARE CENTER INC		421 E 161ST ST	BRONX	NY	10451-
273930149	A NEW BEGINNING FOR IMMIGRANTS RIGHTS INC	CARLOS DAVILA	305 EAST 149TH STREET	BRONX	NY	10451-
582665479	ABOUNDING GRACE CHRISTIAN MINISTRIES INC	WALTER B MEDLOCK	1000 GRAND CONCOURSE APT 4E	BRONX	NY	10451-
461689772	AFRICAN COMMUNITIES TOGETHER		381 CANAL PL	BRONX	NY	10451-
133684578	AFRICAN COMMUNITY BAPTIST CHURCH OF NEW YORK INC	CHARLES P MCWHALES	773 CONCOURSE VLG E APT 7E	BRONX	NY	10451-
311680986	AFRICAN REDEMPTION ALLIANCE INC	EMMANUEL ADEKUNLE	PO BOX 1418	BRONX	NY	10451-
274686596	ASSEMBLY OF GOD HOLY GHOST MISSIONARY TEMPLE INC	NA	535 COURTLANDT AVE	BRONX	NY	10451-
133967944	ASSOCIATION OF TOGOLESE IN THE U S A INC	BABA D BAH-TRAORE	PO BOX 1629	BRONX	NY	10451-
260579140	BRONX CHILDRENS MUSEUM	OFFICE OF THE BRONX BOROUGH	PO BOX 1381	BRONX	NY	10451-
131699417	BRONX COUNTY BAR ASSOCIATION		851 GRAND CONCOURSE RM 124	BRONX	NY	10451-
136138186	BRONX COUNTY BAR ENDOWMENT INC		851 GRAND CONCOURSE RM 124	BRONX	NY	10451-
133931074	BRONX DEFENDERS		360 E 161ST ST	BRONX	NY	10451-

Here are the steps to create a batch address file from it:

If the records in your data contain a unique identifier, you can use it as your ID number in a batch file. If not, you need to create one. Insert a new column at the beginning of your spreadsheet. This will be the ID number. To create a unique ID for each address in a batch, type-in 0 and 1 in the first two cells of the newly-created ID column, then select both cells and expand the ID numbers down the column by either dragging the little green dot in the lower-right corner of the selection or by double-clicking on it.

0	421 E 161ST ST	BRONX	NY	10451-4110
1	305 EAST 149TH STREET	BRONX	NY	10451-5623
2	1000 GRAND CONCOURSE APT 4E	BRONX	NY	10451-2600
3	381 CANAL PL	BRONX	NY	10451-5913

Now you have a unique ID number for each of the address records.

0	421 E 161ST ST	BRONX	NY	10451-4110
1	305 EAST 149TH STREET	BRONX	NY	10451-5623
2	1000 GRAND CONCOURSE APT 4E	BRONX	NY	10451-2600
3	381 CANAL PL	BRONX	NY	10451-5913
4	773 CONCOURSE VLG E APT 7E	BRONX	NY	10451-3913
5	PO BOX 1418	BRONX	NY	10451-1418
6	535 COURTLANDT AVE	BRONX	NY	10451-5011
7	PO BOX 1629	BRONX	NY	10451-1629
8	PO BOX 1381	BRONX	NY	10451-1381
9	851 GRAND CONCOURSE RM 124	BRONX	NY	10451-2937
10	851 GRAND CONCOURSE RM 124	BRONX	NY	10451-2937
11	360 E 161ST ST	BRONX	NY	10451-4142
12	360 E 161ST ST	BRONX	NY	10451-4142
13	899 TELLER AVE	BRONX	NY	10451-3402
14	851 GRAND CONCOURSE	BRONX	NY	10451-2937
15	865A WALTON AVENUE 1ST FLOOR	BRONX	NY	10451-2243

Select and copy the ID number and address columns only and paste them into a new Excel spreadsheet. This is necessary, because the Geocoder will reject the file if it contains any additional columns. Make sure the ID number is in the first column and the address columns are in the right order. That is, they follow the format: HOUSE NUMBER AND STREET NAME, CITY, STATE, ZIP CODE. Delete the header, and any other rows that precede the header.

If your dataset is large like mine and contains more than 1,000 records, break it into smaller sets and save them in a .CSV format. An attempt to execute geocoding on a batch file with more than 1,000 records in it will be rejected by Geocoder. Upload your CSV batch file to Census Geocoder and click Get Results button. The output of your geocoding will be a GeocodeResult.CSV file with the following columns:

Column 1: ID from original address list

Column 2: Address from original address list

Column 3: Results indicating whether or not there was a match for the address (Match, tie, no match)

Column 4: Results indicating if the match is exact or not (Exact, non-exact)

Column 5: Address the original address matches to

Column 6: Interpolated latitude and longitude for the address in the NAD83 coordinate system

Column 7: Unique ID for the edge the address falls on in the MAF/TIGER database

Column 8: Side of the street address in on (L for left and R for right)

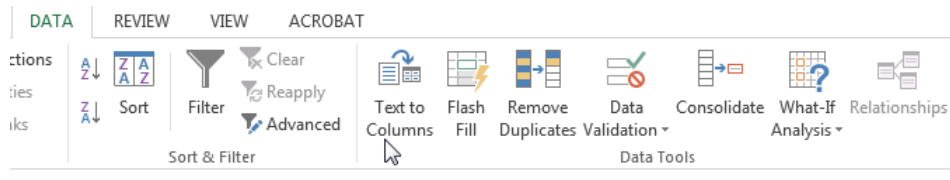
See example below:

	A	B	C	D	E	F	G	H
1	338 2155	UNIVERSITY AVENUE, BRONX, NY, 10453-2804	Match	Exact	2155 UNIVERSITY AVE, BRONX, NY, 10453	-73.90988,40.856915	80311685	L
2	339	1513 POPHAM AVE, BRONX, NY, 10453-7214	Match	Exact	1513 POPHAM AVE, BRONX, NY, 10453	-73.921906,40.847893	80312584	L
3	332	127 WEST 183 STREET, BRONX, NY, 10453-1158	Match	Exact	127 W 183RD ST, BRONX, NY, 10453	-73.9102,40.860107	80298507	R
4	333	2256 WALTON AVE APT 2B, BRONX, NY, 10453-1911	Match	Exact	2256 WALTON AVE, BRONX, NY, 10453	-73.90333,40.857483	80298669	R
5	330	1646 MONTGOMERY AVE, BRONX, NY, 10453-7302	Match	Exact	1646 MONTGOMERY AVE, BRONX, NY, 10453	-73.91995,40.848907	80299555	R
6	159	1495 GRAND CONCOURSE APT 2C, BRONX, NY, 10452-6	Match	Exact	1495 GRAND CONCOURSE, BRONX, NY, 10452	-73.912926,40.840843	640810244	R
7	331	2011 GRAND CONCOURSE, BRONX, NY, 10453-4303	Match	Exact	2011 GRAND CONCOURSE, BRONX, NY, 10453	-73.90437,40.851486	80300975	L
8	158	923 WALTON AVE APT 3B, BRONX, NY, 10452-9598	Match	Exact	923 WALTON AVE, BRONX, NY, 10452	-73.92349,40.828205	640809521	L
9	336	1590 UNDERCLIFF AVENUE, BRONX, NY, 10453-7115	Match	Exact	1590 UNDERCLIFF AVE, BRONX, NY, 10453	-73.92243,40.848526	80312613	R
10	157	1060 ANDERSON AVE APT 5C, BRONX, NY, 10452-4745	Match	Exact	1060 ANDERSON AVE, BRONX, NY, 10452	-73.92606,40.833725	80299462	R
11	337	1647 MACOMBS ROAD GROUND FLOOR, BRONX, NY, 10453	Match	Exact	1647 MACOMBS RD, BRONX, NY, 10453	-73.91623,40.84762	80299605	L
12	156	105 ROCKWOOD ST, BRONX, NY, 10452-6304	Match	Exact	105 ROCKWOOD ST, BRONX, NY, 10452	-73.9138,40.842167	634255278	L
13	155	PO BOX 1772, BRONX, NY, 10452-0077	No Match					

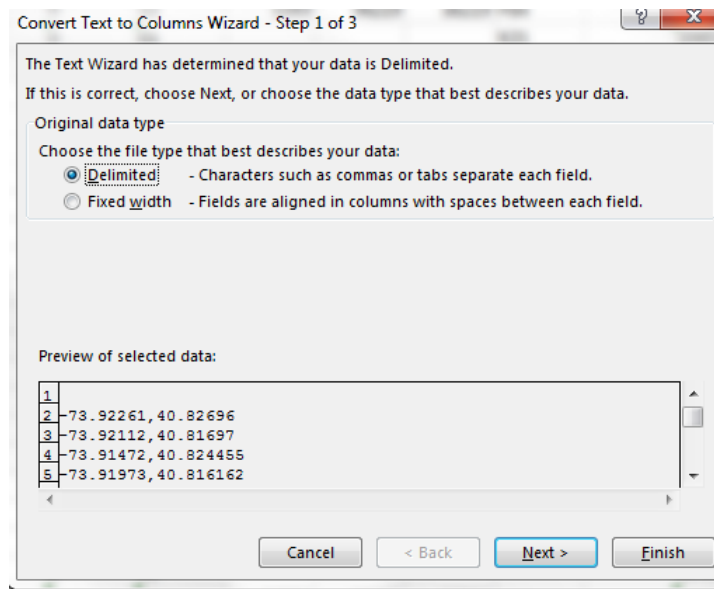
Results of the geocoding are unordered. Use the ID numbers to stitch separate batches together and sort the final set by ID number. Now, if the latitude and longitude are the only data that you needed, copy the column containing the coordinates and add it to your original data file. If you haven't sorted your original file in-between your geocoding activities, the coordinates should be on the proper lines.

Alternatively, you can use VLOOKUP formula in Excel to automate the process of bringing data from different tables together. You would need to use the same unique ID in your original table to add data from batch file.

If you noticed, your latitude and longitude coordinates are both located in the same column. Before using the table in in any mapping application, you would need to split them into two separate columns. Click on the column containing the coordinates to highlight it. Then, click DATA on the Excel menu bar. Select Text To Columns option from the Data Tools.



In the Convert Text To Columns Wizard window, select Delimited for the data type and Comma for the separator.



Click Next and Finish. Now your longitude and latitude coordinates are in separate columns. You now can create a header for the coordinate columns and use your table to plot the coordinates and create maps.