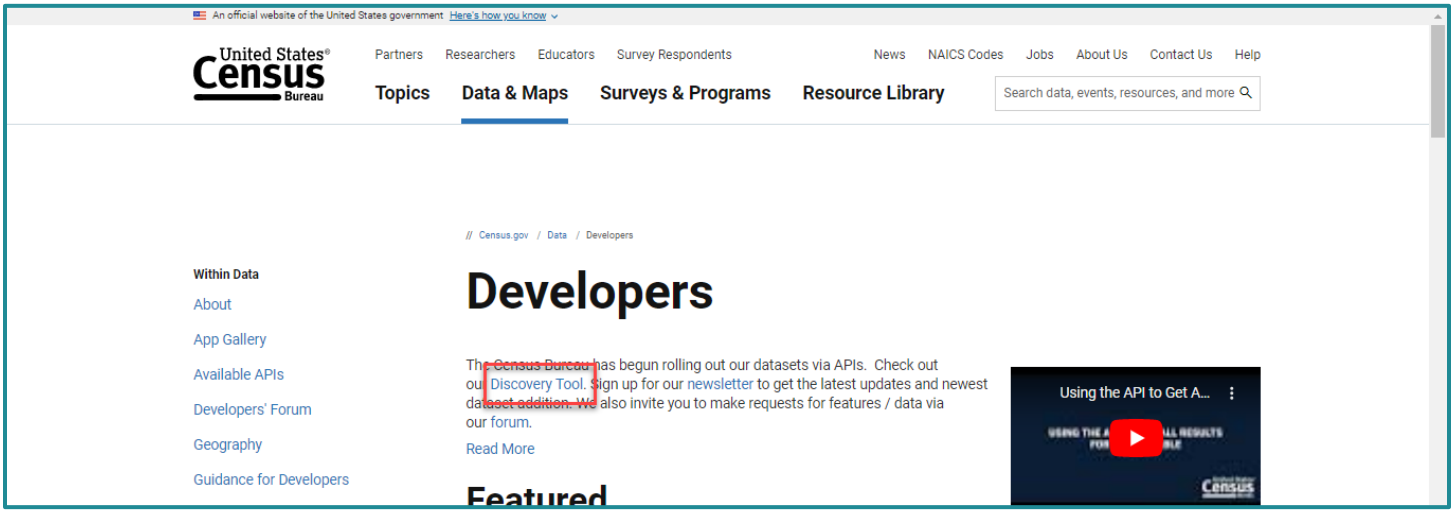
Using the Census Data API to Make a Group Call from the 2020 Demographic and Housing Characteristics File

Step by step instructions for accessing the data in the Census Data API

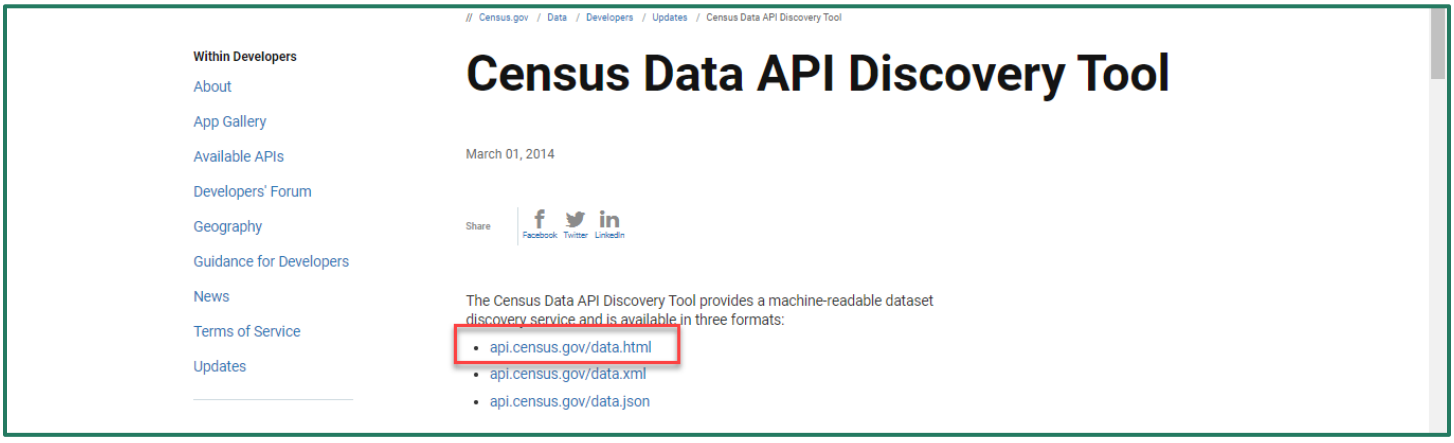
The 2020 Demographic and Housing Characteristics File, or DHC, provides demographic and housing characteristics data for a range of geographies found in the United States and Puerto Rico, including age, sex, race, Hispanic or Latino origin, household type, family type, relationship to householder, group quarters population, housing occupancy, and housing tenure.

The goal with this example is to use the Census Data API to find table H4, Tenure, using the DHC, for both Texas and all the Places (e.g., cities, towns, villages, and Census-designated places) in Texas.

Step 1. Using your web browser, go to the census.gov Developers page at https://www.census.gov/data/developers.html. Under the Developers heading, click on the link to the Discovery Tool.



Step 2. Then click on the format that you'd like to view the Discovery Tool in. For this example, click on the html version.



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Step 3. The Discovery Tool houses all the different datasets found in the Census Data API. To locate the 2020 DHC File, click on Ctrl + F and type "Demographic and Housing Characteristics" into the search bar that appears. You want the dataset labeled "Decennial Census: Demographic and Housing Characteristics."

Decennial Census: Demographic and Housing Characteristics	This product will include topics such as age, sex, race, Hispanic or Latino origin, household type, family type, relationship to householder, group quarters population, housing occupancy and housing tenure. Some tables will be iterated by race and ethnicity.	2020	dec› dhc	Aggregate	geographies	variables	groups	sorts	examples	docum

To isolate the information for this dataset so you do not have to worry about the other 1,500+ datasets found on this page, click on the API Base URL found in the last column and add '.html' to the end of it. The resulting URL should be https://api.census.gov/data/2020/dec/dhc.html.

Census API: Datasets in /data/2020/dec/dhc and its descendants

Title	Description	Vintage	Dataset Name	Dataset Type	Geography List	Variable List	Group List	SortList	Examples	Developer Documentation	API Base URL
Decennial Census: Demographic and Housing Characteristics	This product will include topics such as age, sex, race, Hispanic or Latino origin, household type, family type, relationship to householder, group quarters population, housing occupancy and housing tenure. Some tables will be iterated by race and ethnicity.	2020	dec› dhc	Aggregate	geographies	variables	groups	sorts	examples	documentation	http://api.census.gov/data/2020/dec/dhc
1 dataset											

Step 4. You first want to confirm that you will be able to pull data from the table in its entirety. When you pull data for an entire table, it is referred to as "making a group call." To confirm that the table needed, H4, Tenure, is available for group calls, right-click on the Groups link and choose 'Open link in new tab.'

Census API: Datasets in /data/2020/dec/dhc and its descendants

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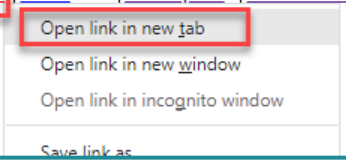
Decennial Census: Demographic and Housing Characteristics	This product will include topics such as age, sex, race, Hispanic or Latino origin, household type, family type, relationship to householder, group quarters population, housing occupancy and housing tenure.	2020	dec› dhc	Aggregate	geographies	variables	groups	sorts	examples	documentatio



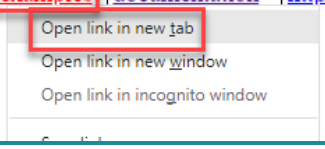
You can observe that the table needed, H4, is available for group calls. Now that we have confirmed that, close the tab, as it is no longer necessary to keep it open.

H2	URBAN AND RURAL	variables
H3	OCCUPANCY STATUS	selected variables
H4	TENURE	selected variables
		selected

Step 5. The next thing you will want to look at is the list of example queries. To find this, return to the information page where you initially selected the Groups link and right-click on the Examples link. Choose 'Open link in new tab.'

Census API: Datasets in /data/2020/dec/dhc and its descendants

Title	Description	Vintage	Dataset Name	Dataset Type	Geography List	Variable List	Group List	SortList	Examples	Developer Documentation	API
Decennial Census: Demographic and Housing Characteristics	This product will include topics such as age, sex, race, Hispanic or Latino origin, household type, family type, relationship to householder, group quarters population, housing occupancy and housing tenure	2020	dec› dhc	Aggregate	geographies	variables	groups	sorts	examples	documentation	http:/



Here you can find example links for all the geographies that are available with the 2020 DHC in the API. For the first part of this example, you are looking at Texas, so you'll want to focus on the queries found for Geography Level (or Summary Level) 040.

state	040	https://api.census.gov/data/2020/dec/dhc?get=NAME&for=state:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=state:06&key=YOUR_KEY_GOES_HERE

The &for **portion of the query dictates the geography. The first query is going to give you data for all states in the US. You can tell that it is going to give data for all states because it uses the wildcard (represented by an asterisk).**

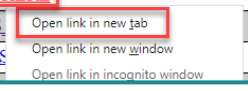
state	040	https://api.census.gov/data/2020/dec/dhc?get=NAME&for=state:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=state:06&key=YOUR_KEY_GOES_HERE

The second one allows you to look at data for a single state. The 2-digit code used in this example query, '06', is the Federal Information Processing System (FIPS) code for California. Each state has its own unique FIPS code.

state	040	https://api.census.gov/data/2020/dec/dhc?get=NAME&for=state:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=state:06&key=YOUR_KEY_GOES_HERE

Step 6. Since you want data for Texas, but there is a good chance that you may not know the FIPS code for it, you can use the first query to find out. Right-click on the first query and choose 'Open link in new tab.'

state	040	https://api.census.gov/data/2020/dec/dhc?get=NAME&for=state:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=state:06&key=YOUR_KEY_GOES
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=county:*&key=YOUR_KEY_GOES



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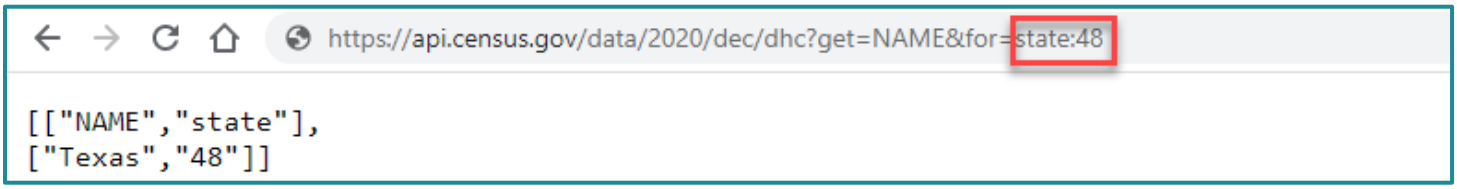
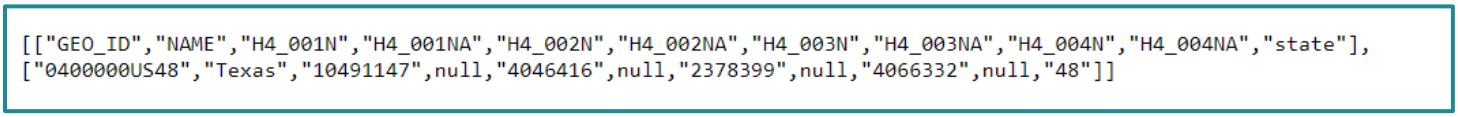
When it opens, you will notice that it is listing out all the states in the US. The first portion, labeled as 'NAME,' is the written name of the state. This is followed by the unique 2-digit FIPS code for each state, labeled as 'state.' In the example highlighted below, '09' is the 2-digit FIPS code for Connecticut.

Since you want data for Texas, you need to first determine what the FIPS code is for it. Scroll down the list until you find Texas. When you locate the line for it, you will find that the FIPS code is '48.'

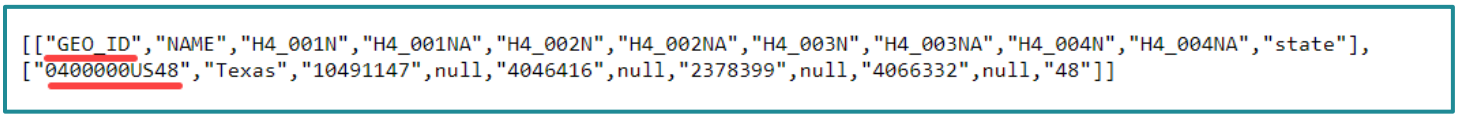
Step 7. There is no need to switch to the other state query just to get data for Texas. Navigate to the top of the query and replace the asterisk after state: **with** 48. **Then hit Enter. The query should now be https://api.census.gov/data/2020/dec/dhc?get=NAME&for=state:48. This isolates the geography so that you only view Texas.**



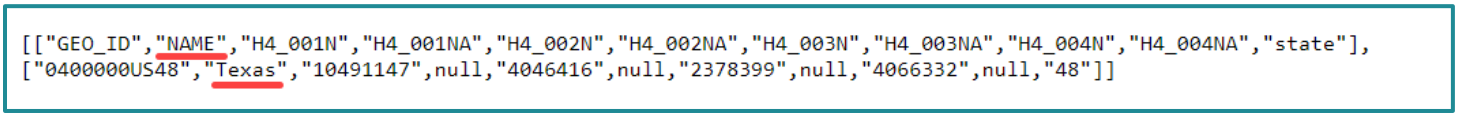
Step 8. Now you can add in table H4. Delete the portion of the URL that says NAME **and type in** group(H4). **Once you do this, the query is https://api.census.gov/data/2020/dec/dhc?get=group(H4)&for=state:48. Once you hit Enter, you will receive data back for the requested table for Texas.**



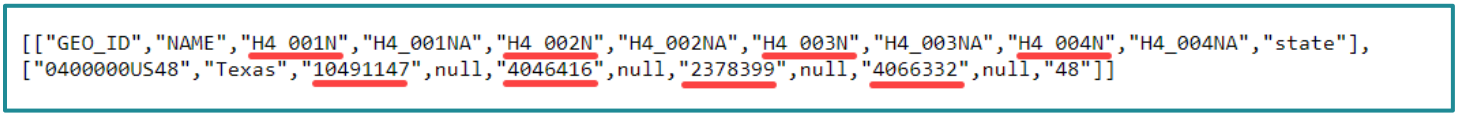
Let's review the output. The first portion is the GEO_ID. This is the unique geographic identifier for the given geography.



Next is NAME, which is the written name of the geography.



The next portions that are underlined are the counts of occupied housing units for variable H4_001N, those owned with a mortgage or loan for variable H4_002N, those owned free and clear for variable H4_003N, and those that are renter-occupied for variable H4_004N.



Each of these are followed by their respective annotation. In this example, all of them are null.

```
[["GEO_ID","NAME","H4_001N","H4_001NA","H4_002N","H4_002NA","H4_003N","H4_003NA","H4_004N","H4_004NA","state"],
["0400000US48","Texas","10491147",null,"4046416",null,"2378399",null,"4066332",null,"48"]]
```

Then the last portion is the 2-digit FIPS code that represents the state.

```
[["GEO_ID","NAME","H4_001N","H4_001NA","H4_002N","H4_002NA","H4_003N","H4_003NA","H4_004N","H4_004NA","state"],
["0400000US48","Texas","10491147",null,"4046416",null,"2378399",null,"4066332",null,"48"]]
```

Step 9. Now that we have the data from table H4 for Texas, we need to find the same data for the Places in the state. To do this, you just need to modify the geography portion of the query. Go back to the page with the example queries. This time we're interested in the queries for Places, or Geography/Summary Level 160. There are three different place queries to choose from.

state› place	160	https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:*&in=state:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:51000&in=state:36&key=YOUR_KEY_GOES_HERE

The first query is going to give you data for all places in the US; you can tell that it is going to give data for all places because it uses the wildcard.

state› place	160	https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:*&in=state:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:51000&in=state:36&key=YOUR_KEY_GOES_HERE

The second one also allows you to look at data for all places in the US. The difference is that this one spells out the state that the place is found in. While this may seem redundant, it is actually quite handy, because you can replace the asterisks with codes, such as one for a specific state.

state› place	160	https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:*&in=state:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:51000&in=state:36&key=YOUR_KEY_GOES_HERE

The last one allows you to look at data for a single place within a given state. Each place is designated by its own unique 5-digit code. In this example, if we were to run the query, we would observe that '51000' is the code for New York city and '36' is the FIPS code for New York.

state› place	160	https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:*&in=state:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:51000&in=state:36&key=YOUR_KEY_GOES_HERE

It was mentioned that the second query is especially handy because it spells out the state and we can replace the asterisk with a state FIPS code. Since we are looking for data on all the places in Texas, this query is the best one to use. Right-click on the second query and choose 'Open link in new tab.'

state› place	160	https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:*&in=state:*&key=YOUR_KEY_GOES_HERE
		https://api.census.gov/data/2020/dec/dhc?get=NAME&for=place:51000&in=state:36&key

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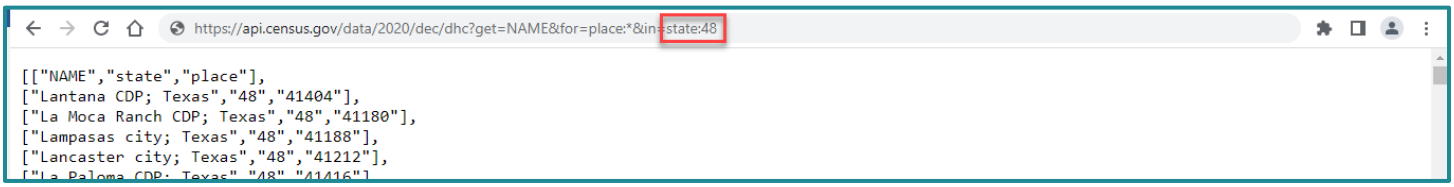
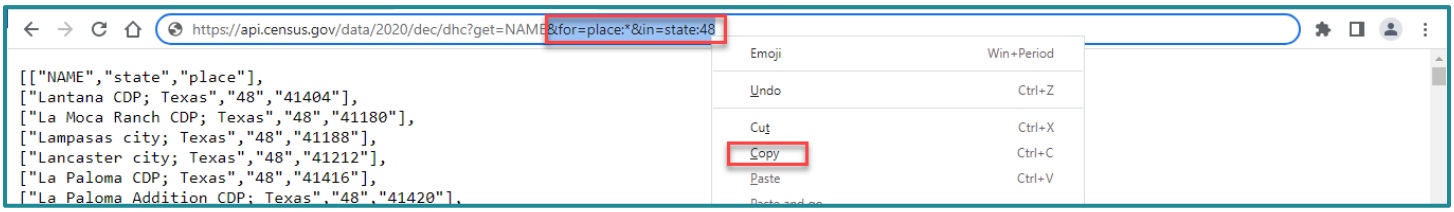
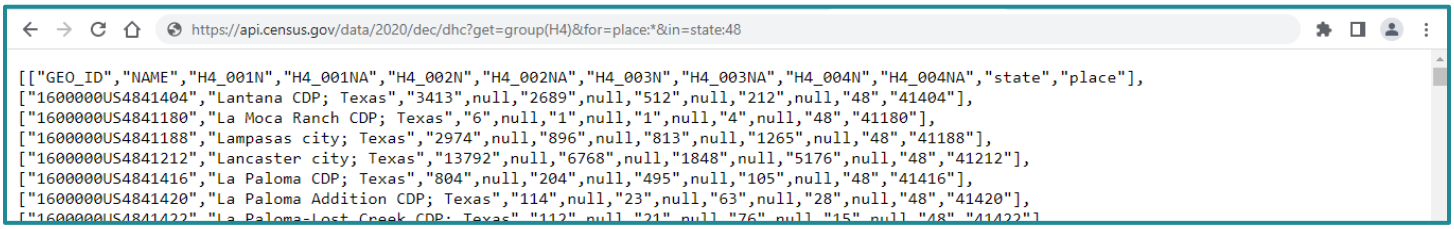
Step 10. This query provides you with a list of all the places in the US and their respective state. We can modify the geography portion of this query to just get data for the places in Texas, copy that geography portion, and then paste it into the query we did for Texas. Navigate to the query and replace the asterisk after state: **with** 48 **and hit Enter. This narrows the list down to all the places in Texas.**



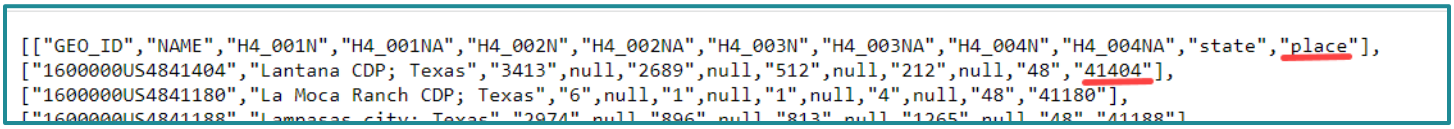
Step 11. Now copy the entire geography portion, starting with &for=**, by right-clicking on it and selecting Copy.**



Then go back to the query that we did earlier for Texas and paste the new geography portion over the old portion, which was &for=state:48**. Once that's done, hit Enter. You should now have a line of data for each place in Texas that includes all the variables found in table H4.**



The output is the same for this as it was for Texas. The only difference is that the 5-digit place code is found at the end. In the example below, we find that '41404' is the unique code for Lantana CDP.



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