Using the American Community Survey Equal Employment Opportunity (EEO) Application Programming Interface (API)

This step-by-step guide shows how to get data from the American Community Survey (ACS) 5-Year Equal Employment Opportunity (EEO) Tabulation from the application programming interface (API). The API allows you to view data in your web browser and with a few easy steps, you can also convert the results into an Excel file.

Explore the following API examples to learn how to:

- Get data for multiple EEO estimates
- Get data for all estimates in an EEO data table
- Save API results as a .csv file and format in Excel

Getting Data for Multiple EEO Estimates:
Percent of Top Executives by Sex for All States based on Worksite Geography

Step 1: Find Example API Queries
Navigate to the list of example API data queries for the EEO dataset:

- Using Google Chrome, visit the Census Bureau’s Developers webpage
- On the left side of the screen click Available APIs

Figure 1: Developers Page https://www.census.gov/data/developers.html

1 https://www.census.gov/data/developers.html
• Click **American Community Survey (ACS)** and choose **American Community Survey 5-Year Data**

**Available APIs**

We plan on adding more of our publicly available datasets. Here you'll find which of our many data sets are currently available via API. To make specific requests for the release of datasets, please sign up and submit your requests on our **Developer Forum**.

NEW: We now have a machine-readable dataset discovery service available in beta release. Visit our **Discovery Tool page** to learn more.

**American Community Survey (ACS)**

November 06, 2017

**American Community Survey 1-Year Data (2005-2020)**

Areas with populations of 65,000+ Covers a broad range of topics about social, economic, demographic, and housing characteristics of the U.S. population.

October 15, 2020

**American Community Survey 1-Year Supplemental Data (2014 - 2019)**

High level detailed tabulations of the 1-year microdata for geographies with populations of 20,000 or more.

September 15, 2016

**American Community Survey 3-Year Data (2007-2013)**

Areas with populations of 20,000+ Covers a broad range of topics about social, economic, demographic, and housing characteristics of the U.S. population.

December 18, 2020

**American Community Survey 5-Year Data (2009-2019)**

Data available down to the block group level. Covers a range of topics about social, economic, demographic, and housing characteristics of the U.S. population.

September 02, 2017

**American Community Survey Migration Flows**

Migration flows between counties, minor civil divisions, and metropolitan areas using ACS 5-year data. Flows are cross by selected characteristics.

Figure 2: Available APIs Page [https://www.census.gov/data/developers/data-sets.html](https://www.census.gov/data/developers/data-sets.html)

• Scroll down and click the tab for 2018. This will provide a list of all available types of 2018 ACS 5-year datasets in the API.

Figure 3: 2018 ACS 5-Year Available APIs [https://www.census.gov/data/developers/data-sets/acs-5year.2018.html](https://www.census.gov/data/developers/data-sets/acs-5year.2018.html)
• Scroll down to the EEO section and click the **Examples** link

![Figure 4: Link to Example API Queries for the 2018 ACS 5-Year EEO Dataset](https://api.census.gov/data/2018/acs/acs5/eeo/examples.html)

• This opens a list of supported geographic summary levels for this dataset, with a few example API calls for each type of geography

![Figure 5: Example API Queries for 2018 ACS 5-Year EEO Dataset](https://api.census.gov/data/2018/acs/acs5/eeo/examples.html)

**Step 2: Specify Geographies**

Choose an example URL that best matches your desired geographies. In this case, we want data for all states.

• You will see two example API queries at the state level:
  - `&for=state*` provides data for all states (wildcards indicated by * provide all available values)
  - `&for=state:06` provides data for California

![Figure 6: Example API Queries for 2018 ACS 5-Year EEO at the State Level](https://api.census.gov/data/2018/acs/acs5/eeo/examples.html)
• Copy the first state example API query that provides data for all states (&for=state:*)

<table>
<thead>
<tr>
<th>Geography Hierarchy</th>
<th>Geography Level</th>
<th>Example URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>us</td>
<td>010</td>
<td>[Link]</td>
</tr>
<tr>
<td>state</td>
<td>040</td>
<td>[Link]</td>
</tr>
</tbody>
</table>

*Figure 7: The First Example API Query for 2018 ACS 5-Year EEO at the State Level*

• Paste the URL in a new tab in Google Chrome.
• Delete &key=YOUR_KEY GOES HERE if it appears in your copied URL, and then press enter. API keys are only needed if you are making more than 500 queries per IP address in a day.

```
[["NAME","state"],
 ["District of Columbia","11"],
 ["Kentucky","21"],
 ["Alabama","01"],
 ["Indiana","18"],
 ["Pennsylvania","42"],
 ["Georgia","13"],
 ["New Jersey","24"]]
```

*Figure 8: API Results for https://api.census.gov/data/2018/acs/acs5/eeo?get=NAME&for=state:* This provides results for all states. The next step is to add your desired data variables.*

**Step 3: Add Variables**

• You can add up to 50 variables in one API query. To find a list of all available EEO variables, click the [html link for the 2018 ACS Equal Employment Opportunity Variables](https://www.census.gov/data/developers/data-sets/acs-5year.2018.html) from the EEO section of the ACS 5-Year Available APIs page we navigated to in Step 1.

*Figure 9: Link to Variables for the 2018 ACS 5-Year EEO Dataset*

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• View the list of variables for this dataset. They are sorted in alphanumeric order by variable name in the first column.

<table>
<thead>
<tr>
<th>Name</th>
<th>Label</th>
<th>Concept</th>
<th>Required</th>
<th>Attributes</th>
<th>Limit</th>
<th>Predicate Type</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEO</td>
<td>EEO Tabulation: Occupation Code</td>
<td></td>
<td>not required</td>
<td></td>
<td>0</td>
<td>not a probability</td>
<td>N/A</td>
</tr>
<tr>
<td>EEOALL1R</td>
<td>Estimate: Total, race and ethnicity: Total, both sexes: Number</td>
<td></td>
<td>not required</td>
<td></td>
<td>0</td>
<td>int</td>
<td>EEOALL1R</td>
</tr>
</tbody>
</table>

Figure 10: Variables for 2018 ACS 5-Year EEO Dataset [https://api.census.gov/data/2018/acs/acs5/eeo/variables.html](https://api.census.gov/data/2018/acs/acs5/eeo/variables.html)

• The variables for this dataset use a code-based naming convention. The codes tell you the table, column, row, and type of variable.

<table>
<thead>
<tr>
<th>Name</th>
<th>Label</th>
<th>Concept</th>
<th>Required</th>
<th>Attributes</th>
<th>Limit</th>
<th>Predicate Type</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEOALL1R_C01_001E</td>
<td>Estimate: Total, race and ethnicity: Total, both sexes: Number</td>
<td>EEO IR. DETAILED CENSUS OCCUPATION BY SEX AND RACE/ETHNICITY FOR RESIDENCE GEOGRAPHY</td>
<td>not required</td>
<td>EEOALL1R_C01_001E, EEOALL1R_C01_001M, EEOALL1R_C01_001MA</td>
<td>0</td>
<td>int</td>
<td>EEOALL1R</td>
</tr>
</tbody>
</table>

Figure 11: Variable EEOALL1R_C01_001E from the 2018 ACS 5-Year EEO Dataset

For example, variable EEOALL1R_C01_001E
- EEOALL1R = Table ID
- C01 = column 1 of the table
- 001 = row 1 of the table
- E = estimate

This means the variable provides data for the estimate that appears in the first column and first row of table EEOALL1R. You can explore the layout of EEO data tables by visiting the EEO table shells[^3].

The letters near the end of EEO Table IDs are meaningful:
- Table IDs with an R provide data based on where people live (residence tables)
- Table IDs with a W primarily provide data based on where people work (worksite tables). A few W tables provide data on worksite flows, showing where people work (worksite) and where people commute from (place of residence).

Gather a list of the data variables you need. In this case, we want the values for the total percent of workers by sex based on the worksite geography. Data for these two variables are contained in the first column of table EEOALL1W, in rows 4 and 6. See the corresponding API variable names below.

API Variable Names:
EEOALL1W_C01_004E, Total Percent Male
EEOALL1W_C01_006E, Total Percent Female

NOTE: Each estimate in this dataset also has attributes that end in EA, M, or MA. Attributes are additional variables you can include in your API call that give more information for the primary variable. In this case, the attribute that ends in M provide the margin of error and the attributes that end in A provide annotations for the corresponding data if applicable. You can learn more about the meaning of annotations on the notes on ACS estimate and annotation values page.

Navigate back to the tab with your API query. Enter a comma after NAME and then add both API variable names, separated by a comma: EEOALL1W_C01_004E,EEOALL1W_C01_006E

Press enter to run the updated query and view your results

Figure 13: API Results for
https://api.census.gov/data/2018/acs/acs5/eeo?get=NAME,EEOALL1W_C01_004E,EEOALL1W_C01_006E&for=state:*
The first row of data tell us that out of the people who work in the District of Columbia:

- 51.6% were male
- 48.4% were female

These results represent data for the estimated number of workers because we have not entered a detailed occupation code into the API query. You may get data by EEO occupation codes for any table that has “Detailed Census Occupation” in the table title, such as EEOALL1W.

**Step 4: Add EEO Occupation Code (Optional)**

If you are using data variables from a table with “Detailed Census Occupation” in the table title, you may add EEO occupation code variables and predicates to your API query. This will provide data that represent workers by detailed occupation categories, rather than getting results that represent all workers.

- The variables page for the EEO dataset shows us that the variable name for EEO occupation codes is **EEO** and name for their labels is **EEO_LABEL**. You will likely want to include both variable names in your API calls anytime you want data for detailed occupation codes.

![Figure 14: Variables EEO and EEO_LABEL in the 2018 ACS 5-Year EEO Dataset](image)

- Click **EEO** from the variables page to see a list of the available EEO occupation codes for the dataset. Notice the EEO occupation code for Top Executives is 0010.

![Figure 15: Click the EEO Variable to Get a List of Detailed EEO Occupation Codes](image)
• Add **EEO** and **EEO_LABEL** with the other API variables in your query separated by a comma and press enter to run the query. This provides data for all detailed occupation codes across all states.

```plaintext
https://api.census.gov/data/2018/acs/acs5/eeo?get=NAME,EEO,EEO_LABEL,EEOALL1W_C01_004E,EEOALL1W_C01_006E&for=state:*" 

["NAME","EEO","EEO_LABEL","EEOALL1W_C01_004E","EEOALL1W_C01_006E","state"],
["District of Columbia","010","Computer and information systems managers","68.9","31.1","11"],
["District of Columbia","0140","Industrial production managers","51.5","48.5","11"],
["District of Columbia","0300","Architectural and engineering managers","87.8","12.2","11"],
["District of Columbia","0440","Other managers","55.7","44.3","11"],
["District of Columbia","0520","Wholesale and retail buyers, except farm products","59.6","40.4","11"],
["District of Columbia","0710","Management analysts","49.9","50.1","11"],
["District of Columbia","1065","Database and network administrators and architects","71.9","28.1","11"],
["District of Columbia","1305","Architects, surveyors, and cartographers","72.4","27.6","11"],
["District of Columbia","1360","Civil engineers","83.1","16.9","11"],
["District of Columbia","1410","Electrical and electronics engineers","71.2","28.2","11"],
```

**Figure 16: API Results for**

https://api.census.gov/data/2018/acs/acs5/eeo?get=NAME,EEO,EEO_LABEL,EEOALL1W_C01_004E,EEOALL1W_C01_006E&for=state:*" 

• Add the predicate **&EEO=0010** at the end of the API query and press enter. This narrows your results to provide data for the Top Executives occupation code only.

```plaintext
https://api.census.gov/data/2018/acs/acs5/eeo?get=NAME,EEO,EEO_LABEL,EEOALL1W_C01_004E,EEOALL1W_C01_006E&for=state:*&EEO=0010

["NAME","EEO","EEO_LABEL","EEOALL1W_C01_004E","EEOALL1W_C01_006E","state"],
["District of Columbia","0010","Top executives","61.7","38.3","0010","11"],
["Kentucky","0010","Top executives","72.7","27.3","0010","21"],
["Alabama","0010","Top executives","76.4","23.6","0010","01"],
["Louisiana","0010","Top executives","72.7","27.3","0010","22"],
["Delaware","0010","Top executives","69.8","30.2","0010","10"],
[Hawaii","0010","Top executives","67.3","32.7","0010","15"],
["Colorado","0010","Top executives","72.3","27.7","0010","08"],
["Indiana","0010","Top executives","74.8","25.2","0010","18"],
["Pennsylvania","0010","Top executives","74.6","25.4","0010","42"],
["Georgia","0010","Top executives","73.4","26.6","0010","13"]
```

**Figure 17: API Results for**

https://api.census.gov/data/2018/acs/acs5/eeo?get=NAME,EEO,EEO_LABEL,EEOALL1W_C01_004E,EEOALL1W_C01_006E&for=state:*&EEO=0010

The first row of data tell us that out of the people who work in the Top Executives occupation in the District of Columbia:

- 61.7% were male
- 38.3% were female

This provides the information for our data request. You can view the results as-is in your web browser or follow the steps to **save API results as a .csv file and format in Excel** shown later this in this guide.
Getting Data for All Estimates in an EEO Data Table:
Table EEOALL1W for All Detailed Occupation Codes

The API group function allows you to get results for an entire table in one easy command, for example `group(EEOALL1W)`. It provides results for all variables without having to individually specify them in the API group call. Follow the steps below to learn how to make this type of API data call. Many of the steps are similar to process in the first example, but there are key differences.

**Step 1: Find Example API Queries**

Navigate to the list of API examples for the EEO dataset:

- Using Google Chrome, visit the Census Bureau’s Developers webpage

[Figure 18: Developers Page](https://www.census.gov/data/developers.html)

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5 [https://www.census.gov/data/developers.html](https://www.census.gov/data/developers.html)
• Click **American Community Survey (ACS)** and choose **American Community Survey 5-Year Data**

![Available APIs](https://www.census.gov/data/developers/data-sets.html)

**American Community Survey (ACS)**

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- **American Community Survey 1-Year Data (2005-2020)**
  - Areas with populations of 65,000+ - Covers a broad range of topics about social, economic, demographic, and housing characteristics of the U.S. population.
  - October 15, 2020

- **American Community Survey 1-Year Supplemental Data (2014 - 2019)**
  - High-level detailed tables tabulated on the 1-year microdata for geographies with populations of 20,000 or more.
  - September 13, 2019

- **American Community Survey 3-Year Data (2007-2013)**
  - Areas with populations of 50,000+ - Covers a broad range of topics about social, economic, demographic, and housing characteristics of the U.S. population.
  - December 16, 2013

- **American Community Survey 5-Year Data (2009-2019)**
  - Data available down to the block group level. Covers a range of topics about social, economic, demographic, and housing characteristics of the U.S. population.
  - December 03, 2020

- **American Community Survey Migration Flows**
  - Migration flows between counties, minor civil divisions, and metropolitan areas using ACS 5-year data. Flows are cross by selected characteristics.

**Figure 19: Available APIs Page** [https://www.census.gov/data/developers/data-sets.html](https://www.census.gov/data/developers/data-sets.html)

• Scroll down and click the tab for 2018. This provides a list of all available types of 2018 ACS 5-year datasets in the API.

![2018 ACS 5-Year Available APIs](https://www.census.gov/data/developers/data-sets/acs-5year.2018.html)

**2018**

**Variable Changes**

Variables, and the values they represent, may change over time. If you have used variables in prior year releases, check the [ACS product changes webpage](https://www.census.gov/data/developers/data-sets/acs-5year.2018.html) for source table changes. If the variable you have been using

**Figure 20: 2018 ACS 5-Year Available APIs** [https://www.census.gov/data/developers/data-sets/acs-5year.2018.html](https://www.census.gov/data/developers/data-sets/acs-5year.2018.html)
• Scroll down to the EEO section and click the Examples link

Figure 21: Link to Example API Queries for the 2018 ACS 5-Year EEO Dataset

• This opens a list of supported geographic summary levels for this dataset, with a few example API calls for each type of geography.

<table>
<thead>
<tr>
<th>Geography Hierarchy</th>
<th>Geography Level</th>
<th>Example URL</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>us</td>
<td>010</td>
<td><a href="https://api.census.gov/data/2018/acs/acs5/eeo?get=NAME&amp;for=us:*&amp;key=YOUR_KEY_Goes_HERE">https://api.census.gov/data/2018/acs/acs5/eeo?get=NAME&amp;for=us:*&amp;key=YOUR_KEY_Goes_HERE</a></td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 22: Example API Queries for 2018 ACS 5-Year EEO Dataset https://api.census.gov/data/2018/acs/acs5/eeo/examples.html

Step 2: Specify Geographies
Choose and edit an example URL for your desired geographies (all counties in California).

• You will see three examples at the county level:
  o &for=county:* provides data for all counties.
  o &for=county:*&in=state:* provides data for all counties across all states. This is a more formal way to specify the full geography hierarchy.
  o &for=county:037&in=state:06 provides data for Los Angeles County, CA. (A wildcard, indicated by an asterisk * provides data for all values of a variable or geography)
• Copy the second URL that provides data for all counties across all states (&for=county:*&in=state:*).
  This option allows you to easily explore the relevant geography codes in your web browser and edit the
  URL for your specific data needs.

<table>
<thead>
<tr>
<th>Geography</th>
<th>Geography</th>
<th>Example URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>Level</td>
<td></td>
</tr>
</tbody>
</table>

Figure 24: The Second Example API Query for 2018 ACS 5-Year EEO at the County Level Provides Data for All Counties in All States

• Paste the URL in a new tab in Google Chrome.
• Delete &key=YOUR_KEY_GOES_HERE if it appears in your copied URL and press enter.

![URL Example](https://api.census.gov/data/2018/acs/acs5/eeo?get=NAME&for-county:*&in-state:*&key=YOUR_KEY_GOES_HERE)

This provides results for all counties.

• Press Ctrl + F and type California in the search box. Notice the state code for California is 06.

![URL Example](https://api.census.gov/data/2018/acs/acs5/eeo?get=NAME&for-county:*&in-state:*&key=YOUR_KEY_GOES_HERE)

Figure 26: The State Code for California is 06
• Replace the state wildcard with 06 so that geography portion of your API query reads  
&for=county:*&in=state:06 and press enter to update your results.

Figure 27: API Results for https://api.census.gov/data/2018/acs/acs5/eeo?get=NAME&for=county:*&in=state:06

This provides results for all counties in California. The next step is to add the group function and specify the table ID we need.

Step 3: Add Table ID
Add the group function and table ID

• Replace the variable for NAME with the group function containing your desired table ID in parenthesis:  
group(EEOALL1W). Check out the groups section of the API Discovery Tool for the EEO dataset6 to get a list of all available table IDs with a description of each table’s variables.

• Press enter to update your results

Figure 28: API Results for https://api.census.gov/data/2018/acs/acs5/eeo?get=group(EEOALL1W)&for=county:*&in=state:06

6 https://api.census.gov/data/2018/acs/acs5/eeo/groups.html
The API group call provides data for all 192 data variables in table EEOALL1W, as well as the geography ID, geography name, state code, and county code. Large API data requests like this will be difficult for you to read in a web browser, but you can convert it to an Excel file following a few easy steps in the next example.

Please be aware:
- If the table is available for detailed census occupation codes, you will get data for all possible EEO codes by default when using the API group function. You may add a predicate such as &EEO=0010 to the end of your API query if you would like to get the data for a single occupation code. For example, this query with &EEO=0010 provides data for all variables from table EEOALL1W for all counties in California for workers with an occupation of Top Executives.

- Data are only provided for counties that have populations of 50,000 or more. This is due to population thresholds for this table set. See the EEO technical documentation for more details.

Saving API Results as .csv file and Formatting in Excel

After getting results for an API query in your web browser, you may be interested in saving the results as a .csv file. This is helpful if you want to work with the data or view it in Excel. Follow the easy steps below to learn how to save and reformat the data into Excel.

Step 1: Save API Results as a .csv File
- Run an API query in Google Chrome. Here we will be working with the API call that gives results for all data variables from table EEOALL1W for all counties in California.
- Right click the page and choose Save As

Figure 29: Save API Result for https://api.census.gov/data/2018/acs/acs5/eeo?get=group(EEOALL1W)&for=county:*&in=state:06

• Title the file and add .csv to the end the file name
• Click the Save as type drop-down menu and choose All Files
• Click Save

Figure 30: Save As Pop-Up Window

• Click the file in the lower left of Google Chrome to open it in Excel

Figure 31: Saved File Shown in Lower Left of Google Chrome

• View file

Figure 32: Initial View of .csv File of API Results
Step 2: Remove Special Characters

The file contains special characters for the open bracket, closed bracket, and double quotation marks. You can remove them using Excel’s “Find and Replace” functionality.

- Press Ctrl + F and click the Replace tab
- Enter a double quotation mark in the Find what box: "
- Leave the “Replace with” box blank
- Click Replace All

![Find and Replace to Remove Double Quotation Marks](image1)

- Repeat this for the open bracket: [

![Find and Replace to Remove Open Brackets](image2)

- Repeat this again for the closed bracket: ]

![Find and Replace to Remove Closed Brackets](image3)
Step 3: Move NAME and Geography ID

When you make a request for data with API group queries, we provide the data to you by variable name in alphanumeric order. This means the fields for geography name and geography ID will appear near the end of your results.

You may move these columns to the front of your table by following these steps:

- Scroll to last few columns with data
- Select the columns for GEOID and NAME
- Right-click the selected area and choose Cut
• Right-click column A and select insert cut cells

![Figure 38: Insert GEO_ID and NAME into the First Columns](image)

• View results. The table is now in a readable format with the geography names at the beginning of the file.

![Figure 39: API Results After Formatting](image)
Step 4: Save as Excel Workbook to Keep Changes
Save the file as an Excel Workbook in order to save all of your formatting improvements:

- Click **File** in the upper left
- Select **Save As**
- Choose **Excel Workbook** from the drop-down menu on the right
- Select **Save**

![Save As Excel Workbook](image)

**Figure 40: Save As Excel Workbook**

Step 5: Understanding Annotation columns
If you used an API group call to get results for an entire table, you will notice that each variable and margin of error has a corresponding column with a similar label that ends in A, shown in the screenshot below. These columns that end in A are annotation columns that are used to denote special characters rather than numerical values. Oftentimes, they are not applicable and will contain null values, but in some cases, they will contain special values such as (X), +, or *. For a detailed listing of annotation values and descriptions, see the [notes on ACS estimate and annotation values](https://www.census.gov/data/developers/data-sets/acs-1year/notes-on-acs-estimate-and-annotation-values.html) webpage.

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Figure 41: Examples of Annotation Variables from the API Group Call for Table EEOALL1W

If you would like to remove the annotation columns from your results in Excel, please see the Removing ACS Annotation Columns from API Group Call Results in Excel[9] flyer.

Learn More and Contact Us


To get answers to your API questions, please email census.data@census.gov.

Issued April 2022