



# Census Data API User Guide

Version 1.5

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The purpose of this user guide is to instruct developers and researchers on how to use the Census Data Application Programming Interface (API) to request data from U.S. Census Bureau datasets.

## DOCUMENT REVISION HISTORY

[illegible]

## 1. OVERVIEW

Applications built on Census data typically take advantage of three underlying services: Census Data API, TigerWeb REST Services and the Geocoder REST Services:

### **Census Data API**

[The Census Data Application Programming Interface \(API\)](https://www.census.gov/data/developers/updates/new-discovery-tool.html)

(<https://www.census.gov/data/developers/updates/new-discovery-tool.html>) is an API that gives the public access to raw statistical data from various Census Bureau data programs. In terms of space, we aggregate the data and usually associate them with a certain Census geographic boundary/area defined by a FIPS code. In terms of time, we associate the data with a specific vintage (reference year).

### **TigerWeb**

TigerWeb REST Services is an API serving Census area boundaries/shapes referenced by FIPS codes. This service can take two types of parameters to return one or more Census boundaries: a FIPS code or a latitude/longitude pair. FIPS codes are 12-digit codes that are hierarchical in code so that the higher numbers define higher-level geographies and lower numbers define lower-level geographies.

### **Geocoder**

Our publicly available geocoder is an API that translates addresses and other location formats into lat/lng parameters, which are then fed into the TigerWeb REST services to request a Census boundary.

### **Focus: Census Data API**

The primary purpose of this guide is to cover the Census Data API. For further instructions for using TigerWeb or Geocoder, visit:

<https://www.census.gov/data/developers/data-sets/TIGERweb-map-service.html>

<https://www.census.gov/data/developers/data-sets/Geocoding-services.html>

## 2. WHAT IS THE CENSUS DATA API?

[The Census Data Application Programming Interface \(API\)](#) is a data service that enables software developers to access and use Census Bureau data within their applications.

Researchers and software developers both inside and outside the Census Bureau use this API. Its simple raw format provides greater ease and accessibility for inputting data to whatever format you need for presenting and manipulating these data.

The Census Data API is an efficient way to query data directly from Census Bureau servers with many advantages:

- No complex interface
- Continual accessibility eliminates need to host data on own server
- Easily downloads target variables and geographies
- Connects to statistical software like R and SAS
- Provides immediate access to most current data
- Facilitates building new mobile and Web applications
- Drives interactive data visualizations

## 3. WHAT DATA ARE AVAILABLE IN THE CENSUS DATA API?

Determine the dataset that holds the information for which you are searching. Then decide what information you want from this dataset. The Census Bureau has already made available many datasets and is adding more almost monthly for querying with the API tool. Currently, the most popular aggregate datasets to query for variables using the API are as follows:

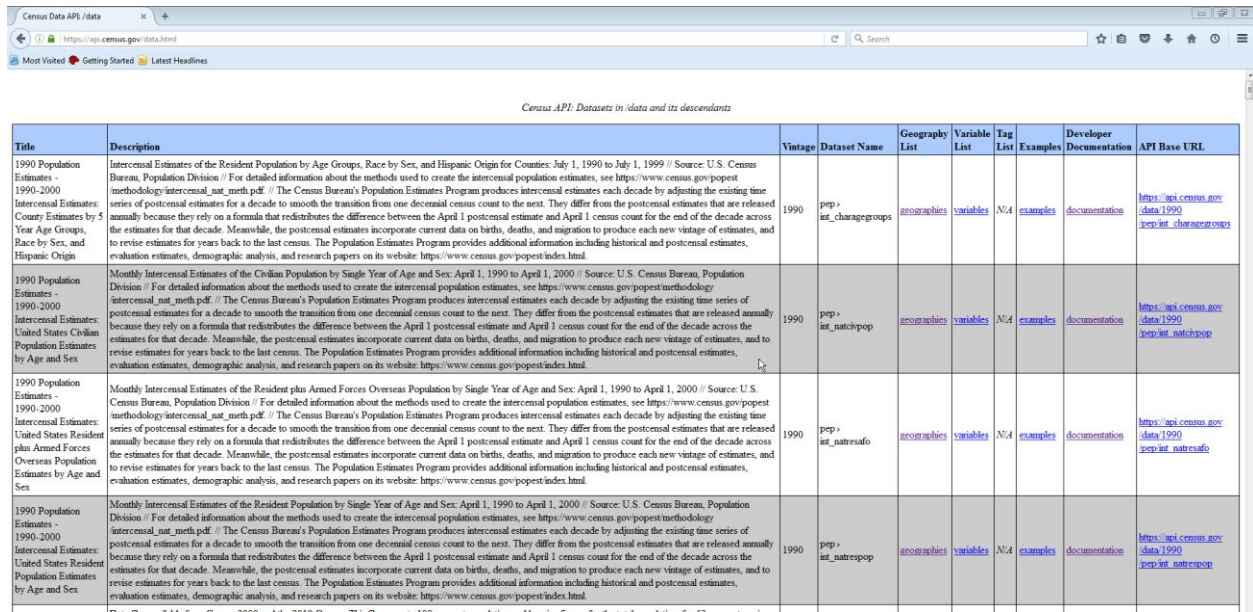
- American Community Survey (ACS) 1 Year (*2015, 2014, 2013, 2012, 2011*), 3 Year (*2013, 2012*), 5 Year (*2005-2009 and 2010-2014*), American Community Survey Supplemental (*2014 -2015*)
- Economic Indicators Time Series
- Decennial Census (SF1/SF3) *2010, 2000, 1990*
- Economic Census *2012, 2007, 2002*

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- County Business Patterns and Nonemployer Statistics 2008-2014
- Population Estimates and Projections 2015, 2014, 2013, 2012
- Business Dynamics Statistics 1976-2014

The complete list of all available datasets for the API is located here:

<https://api.census.gov/data.html>



The screenshot shows a web browser displaying the Census Data API website. The page title is "Census Data API / data". The main content is a table titled "Census API: Datasets in (data and its descendants)". The table has 10 columns: Title, Description, Vintage, Dataset Name, Geography List, Variable List, Tag List, Examples, Developer Documentation, and API Base URL. There are four rows of data, each representing a different dataset. The first row is for "1990 Population Estimates - 1990-2000 Interdecennial Estimates: County Estimates by 5 Year Age Groups, Race by Sex, and Hispanic Origin". The second row is for "1990 Population Estimates - 1990-2000 Interdecennial Estimates: United States Civilian Population Estimates by Age and Sex". The third row is for "1990 Population Estimates - 1990-2000 Interdecennial Estimates: United States Resident plus Armed Forces Overseas Population Estimates by Age and Sex". The fourth row is for "1990 Population Estimates - 1990-2000 Interdecennial Estimates: United States Resident Population Estimates by Age and Sex".

Title	Description	Vintage	Dataset Name	Geography List	Variable List	Tag List	Examples	Developer Documentation	API Base URL
1990 Population Estimates - 1990-2000 Interdecennial Estimates: County Estimates by 5 Year Age Groups, Race by Sex, and Hispanic Origin	Interdecennial Estimates of the Resident Population by Age Groups, Race by Sex, and Hispanic Origin for Counties: July 1, 1990 to July 1, 1999 // Source: U.S. Census Bureau, Population Division // For detailed information about the methods used to create the interdecennial population estimates, see <a href="https://www.census.gov/popest/methodology/intercensal_nat_meth.pdf">https://www.census.gov/popest/methodology/intercensal_nat_meth.pdf</a> // The Census Bureau's Population Estimates Program produces interdecennial estimates each decade by adjusting the existing time series of postcensal estimates for a decade to smooth the transition from one decennial census count to the next. They differ from the postcensal estimates that are released annually because they rely on a formula that redistributes the difference between the April 1 postcensal estimate and April 1 census count for the end of the decade across the estimates for that decade. Meanwhile, the postcensal estimates incorporate current data on births, deaths, and migration to produce each new vintage of estimates, and to revise estimates for years back to the last census. The Population Estimates Program provides additional information including historical and postcensal estimates, evaluation estimates, demographic analysis, and research papers on its website: <a href="https://www.census.gov/popest/index.html">https://www.census.gov/popest/index.html</a>	1990	pep+int_chargecgroups	geographies	variables	N/A	examples	documentation	<a href="https://api.census.gov/data/1990/pep+int_chargecgroups">https://api.census.gov/data/1990/pep+int_chargecgroups</a>
1990 Population Estimates - 1990-2000 Interdecennial Estimates: United States Civilian Population Estimates by Age and Sex	Monthly Interdecennial Estimates of the Civilian Population by Single Year of Age and Sex: April 1, 1990 to April 1, 2000 // Source: U.S. Census Bureau, Population Division // For detailed information about the methods used to create the interdecennial population estimates, see <a href="https://www.census.gov/popest/methodology/intercensal_nat_meth.pdf">https://www.census.gov/popest/methodology/intercensal_nat_meth.pdf</a> // The Census Bureau's Population Estimates Program produces interdecennial estimates each decade by adjusting the existing time series of postcensal estimates for a decade to smooth the transition from one decennial census count to the next. They differ from the postcensal estimates that are released annually because they rely on a formula that redistributes the difference between the April 1 postcensal estimate and April 1 census count for the end of the decade across the estimates for that decade. Meanwhile, the postcensal estimates incorporate current data on births, deaths, and migration to produce each new vintage of estimates, and to revise estimates for years back to the last census. The Population Estimates Program provides additional information including historical and postcensal estimates, evaluation estimates, demographic analysis, and research papers on its website: <a href="https://www.census.gov/popest/index.html">https://www.census.gov/popest/index.html</a>	1990	pep+int_natcivpop	geographies	variables	N/A	examples	documentation	<a href="https://api.census.gov/data/1990/pep+int_natcivpop">https://api.census.gov/data/1990/pep+int_natcivpop</a>
1990 Population Estimates - 1990-2000 Interdecennial Estimates: United States Resident plus Armed Forces Overseas Population Estimates by Age and Sex	Monthly Interdecennial Estimates of the Resident plus Armed Forces Overseas Population by Single Year of Age and Sex: April 1, 1990 to April 1, 2000 // Source: U.S. Census Bureau, Population Division // For detailed information about the methods used to create the interdecennial population estimates, see <a href="https://www.census.gov/popest/methodology/intercensal_nat_meth.pdf">https://www.census.gov/popest/methodology/intercensal_nat_meth.pdf</a> // The Census Bureau's Population Estimates Program produces interdecennial estimates each decade by adjusting the existing time series of postcensal estimates for a decade to smooth the transition from one decennial census count to the next. They differ from the postcensal estimates that are released annually because they rely on a formula that redistributes the difference between the April 1 postcensal estimate and April 1 census count for the end of the decade across the estimates for that decade. Meanwhile, the postcensal estimates incorporate current data on births, deaths, and migration to produce each new vintage of estimates, and to revise estimates for years back to the last census. The Population Estimates Program provides additional information including historical and postcensal estimates, evaluation estimates, demographic analysis, and research papers on its website: <a href="https://www.census.gov/popest/index.html">https://www.census.gov/popest/index.html</a>	1990	pep+int_natresaf	geographies	variables	N/A	examples	documentation	<a href="https://api.census.gov/data/1990/pep+int_natresaf">https://api.census.gov/data/1990/pep+int_natresaf</a>
1990 Population Estimates - 1990-2000 Interdecennial Estimates: United States Resident Population Estimates by Age and Sex	Monthly Interdecennial Estimates of the Resident Population by Single Year of Age and Sex: April 1, 1990 to April 1, 2000 // Source: U.S. Census Bureau, Population Division // For detailed information about the methods used to create the interdecennial population estimates, see <a href="https://www.census.gov/popest/methodology/intercensal_nat_meth.pdf">https://www.census.gov/popest/methodology/intercensal_nat_meth.pdf</a> // The Census Bureau's Population Estimates Program produces interdecennial estimates each decade by adjusting the existing time series of postcensal estimates for a decade to smooth the transition from one decennial census count to the next. They differ from the postcensal estimates that are released annually because they rely on a formula that redistributes the difference between the April 1 postcensal estimate and April 1 census count for the end of the decade across the estimates for that decade. Meanwhile, the postcensal estimates incorporate current data on births, deaths, and migration to produce each new vintage of estimates, and to revise estimates for years back to the last census. The Population Estimates Program provides additional information including historical and postcensal estimates, evaluation estimates, demographic analysis, and research papers on its website: <a href="https://www.census.gov/popest/index.html">https://www.census.gov/popest/index.html</a>	1990	pep+int_natresp	geographies	variables	N/A	examples	documentation	<a href="https://api.census.gov/data/1990/pep+int_natresp">https://api.census.gov/data/1990/pep+int_natresp</a>

Figure 1: Datasets in the Census Data API: <https://api.census.gov/data.html>

## 4. WHAT ARE THE COMPONENTS OF A QUERY?

### 4.1 THE TERMS YOU WILL NEED

Below are the terms you will need to be familiar with when running an API query, like this one for the dataset, *Vintage 2014 Population Estimates: US, State, and PR Total Population and Components of Change* (Use Mozilla Firefox):

[https://api.census.gov/data/2014/pep/natstprc?get=STNAME,POP&DATE=7&for=state:\\*](https://api.census.gov/data/2014/pep/natstprc?get=STNAME,POP&DATE=7&for=state:*)



We recommend that you use Firefox when building and running API queries.

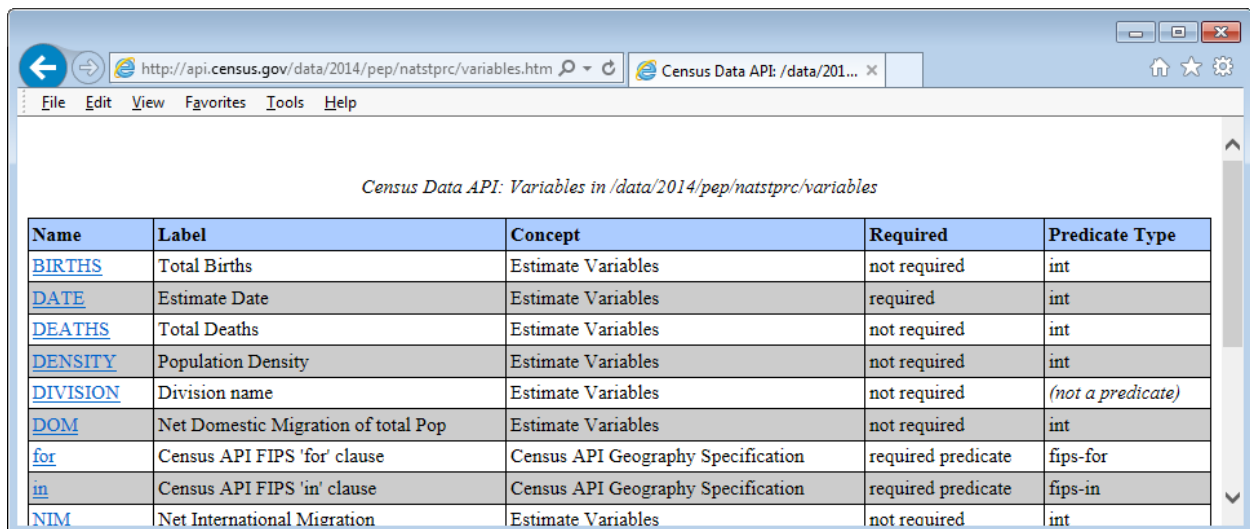
#### 4.1.1 Variable

A variable is each unit of data you are searching for in a dataset. Each variable that you can search for in a dataset has a name, which may be an acronym or meaningful on its own; e.g., STNAME, POP, DATE.

In larger datasets, such as the American Community Survey, many of these names are a less intuitive alphabetical and numerical designation; e.g., B02001\_001E (Unweighted Sample Count of the Population).

You can find the list of variables for the dataset, *Vintage 2014 Population Estimates: US, State, and PR Total Population and Components of Change* here:

<https://api.census.gov/data/2014/pep/natstprc/variables.html>



Census Data API: Variables in /data/2014/pep/natstprc/variables

Name	Label	Concept	Required	Predicate Type
<a href="#">BIRTHS</a>	Total Births	Estimate Variables	not required	int
<a href="#">DATE</a>	Estimate Date	Estimate Variables	required	int
<a href="#">DEATHS</a>	Total Deaths	Estimate Variables	not required	int
<a href="#">DENSITY</a>	Population Density	Estimate Variables	not required	int
<a href="#">DIVISION</a>	Division name	Estimate Variables	not required	(not a predicate)
<a href="#">DOM</a>	Net Domestic Migration of total Pop	Estimate Variables	not required	int
<a href="#">for</a>	Census API FIPS 'for' clause	Census API Geography Specification	required predicate	fips-for
<a href="#">in</a>	Census API FIPS 'in' clause	Census API Geography Specification	required predicate	fips-in
<a href="#">NIM</a>	Net International Migration	Estimate Variables	not required	int

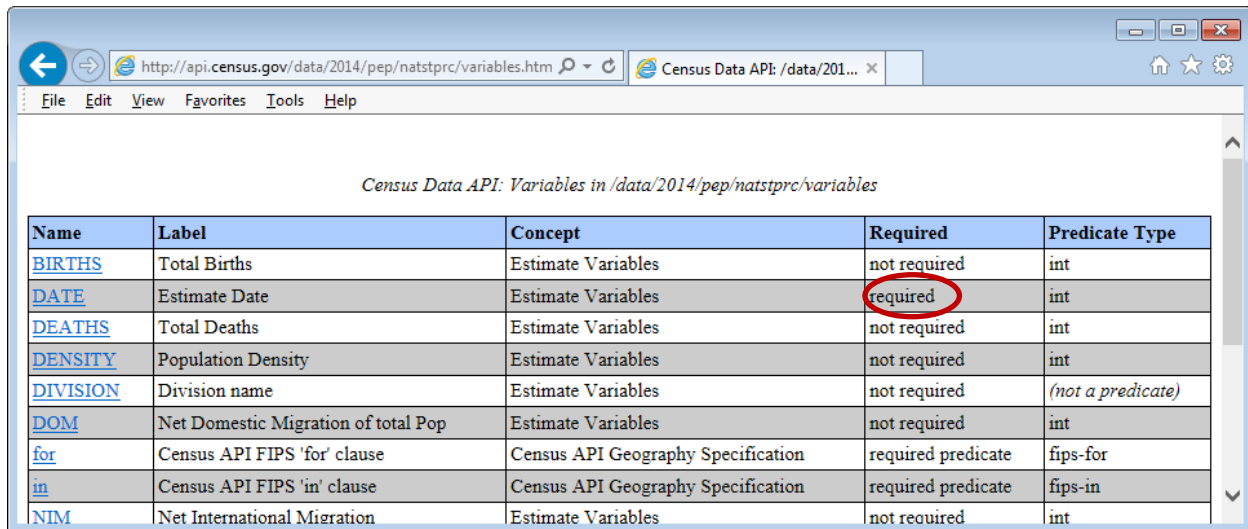
Figure 2: Variable Table for 2014 Population Estimates: US, State, and PR Total Population and Components of Change

#### 4.1.2 Required Variables

Required variables are the parameters that you need to include in your search; otherwise, your search will produce no data and an error message. The variable table for each dataset lists which variables are required, as shown below in the variable table for one of the 2014 Population Estimates datasets found here:

<https://api.census.gov/data/2014/pep/natstprc/variables.html>





*Census Data API: Variables in /data/2014/pep/natstprc/variables*

Name	Label	Concept	Required	Predicate Type
<a href="#">BIRTHS</a>	Total Births	Estimate Variables	not required	int
<a href="#">DATE</a>	Estimate Date	Estimate Variables	required	int
<a href="#">DEATHS</a>	Total Deaths	Estimate Variables	not required	int
<a href="#">DENSITY</a>	Population Density	Estimate Variables	not required	int
<a href="#">DIVISION</a>	Division name	Estimate Variables	not required	(not a predicate)
<a href="#">DOM</a>	Net Domestic Migration of total Pop	Estimate Variables	not required	int
<a href="#">for</a>	Census API FIPS 'for' clause	Census API Geography Specification	required predicate	fips-for
<a href="#">in</a>	Census API FIPS 'in' clause	Census API Geography Specification	required predicate	fips-in
<a href="#">NIM</a>	Net International Migration	Estimate Variables	not required	int

Figure 3: Variable Table for 2014 Population Estimates: US, State, and PR Total Population and Components of Change

#### 4.1.3 Get Function

The get function (**get=**) specifies the required and selected variables you are requesting the API to give you. For example (Use Firefox.):

[https://api.census.gov/data/2014/pep/natstprc?get=STNAME,POP&DATE=7&for=state:\\*](https://api.census.gov/data/2014/pep/natstprc?get=STNAME,POP&DATE=7&for=state:*)

#### 4.1.4 Predicate

The predicate specifies how variables should be filtered or limited, and you can create predicates of geography, string variables, numeric variables, and time (in time series datasets). In this example, the predicate limits the search on the July 1, 2014 (&DATE=7) population or housing unit estimate and for all states (&for=state:\*):

[https://api.census.gov/data/2014/pep/natstprc?get=STNAME,POP&DATE=7&for=state:\\*](https://api.census.gov/data/2014/pep/natstprc?get=STNAME,POP&DATE=7&for=state:*)

Please note:

- Predicates always start with an ampersand (&).
- A wildcard (:\*) can be included to search for all the values of a variable. Wildcards work for geographies and string variables only.
- A variable should appear only once in a query—either in the get statement or as a predicate. In the example above, DATE is a predicate (&DATE7), so you do not need to include it in the get statement (?get=STATENAME,POP).

Below are some examples of predicates that you can use as a guide when building your queries.

### **Geography**

The predicate **&for** restricts the variables by geography at various levels, while **&in** and **+** restricts to geographic areas smaller than state level. You can include wildcards (:\*) along with **&for** and **&in**.

Examples:

- **&for=state:01** – restricts the result to include only Alabama
- **&for=county:001&in=state:01** – restricts the result to include only Autauga County, Alabama
- **&for=county:073&in=state:01+place:07000** – restricts the result to include the portion of Jefferson County (county:073), Alabama that is within Birmingham city (place:07000)

Examples with wildcards:

- **&for=state:\*** – retrieves the result for all states
- **&for=county:\*&in=state:01** – restricts the result to include all counties in Alabama
- **&for=county:\*&in=state:01+place:62328** – restricts the result to include all counties within Prattville city (place: 62328), Alabama

For more information on Census Bureau geography, click here:

<https://www.census.gov/geo/>

### **Variables – String**

You can create a predicate of string variables with various restrictions and can include wildcards (:\*).

Examples with PORT (code) and PORT\_NAME from the *Monthly International Trade Time Series – U.S. Exports by Port and Harmonized System (HS) Code* dataset:

- **&PORT\_NAME=NEWPORT, RI** – restricts the result to include only the port of Newport, RI
- **&PORT\_NAME= NEWPORT, RI &PORT\_NAME=BANGOR, ME** – restricts the result to include only the ports of Newport, RI and Bangor, ME

- `&PORT=0101` – restricts the result to include only the port with PORT code 0101
- `&PORT=0101&PORT=0102` – restricts the result to include only ports with PORT codes 0101 and 0102

Examples with wildcards:

- `&PORT_NAME=B*` – restricts the result to include data for port names starting with the letter “B”
- `&PORT=21*` – restricts the result to include data for PORT codes starting with 21 which may include but is not limited to 2101, 2102, 2103, and 2104, etc.



You can use wildcards (:\*) in predicates with string variables and geographies only. You cannot use wildcards in time predicates or predicates with numeric variables.

### ***Variables - Numeric***

You can create a predicate of a range of values for a numeric (int) variable. Please note that you *cannot* build a predicate with wildcards for numeric variables.

Examples from *County Business Patterns*:

- `&PAYANN=100000` – restricts the result to include data where annual payroll is equal to 100,000
- `&PAYANN=200000&PAYANN=300000` – restricts the result to include data where annual payroll is equal to 200,000 or 300,000
- `&PAYANN=0:399999` – restricts the result to include data with annual payroll less than 400,000
- `&PAYANN=400000:500000` – restricts the result to include data where annual payroll is from 400,000 to 500,000.

### ***Time (Time Series Datasets Only)***

For some datasets available on the Census Data API, data are stored for multiple points of time in one dataset, rather than across several datasets for individual points of time. When this occurs, we refer to the dataset as a time series dataset. You can find the list of time series datasets on the Census Data API here: <https://api.census.gov/data/timeseries.html>

You can limit by time in time series datasets by using the predicate **&time**. Please note that you *cannot* build a predicate with wildcards (:\*) for time in a time series dataset. Note that + is needed for time ranges, such as the time range from 1997 to 2012 (below).

Examples:

- **&time=2015** – restricts the result to include data for 2015
- **&time=from+1997+to+2012** – restricts the result to include data from 1997 to 2012
- **&time=2015-01** – restricts the result to include data for January, 2015
- **&time=2015-Q1** – restricts the result to include data for the first quarter of 2015
- **&time=from+2015-01** – restricts the result to include data from January, 2015 to the present
- **&time=to+2015-01** – restricts the result to include data *up to* January, 2015
- **&time=from+2015-01+to+2015-06** – restricts the result to include data from January, 2015 to June, 2015

For more information about time series datasets, see [Section 5.3. Example: A Time Series Dataset – International Trade Monthly Exports](#) in this users guide.

### 4.1.5 **Response Format –JSON**

The results from your Census Data API data queries will return in JavaScript Object Notation (JSON) format, and you can easily plug those data into the formatting file or graphic of your choice. JSON is an easy format for exchanging data between platforms using human-readable language, rivaling the popularity of XML. The Census uses a nonstandard version of JSON that is streamlined:

- Data are represented in a two-dimensional array
- Square brackets [ ] hold arrays
- Values are separated by a , (comma).

```
[["STNAME","POP","DATE","state"],  
["Alabama","4849377","7","01"],  
["Alaska","736732","7","02"],  
["Arizona","6731484","7","04"],  
["Arkansas","2966369","7","05"],
```

```
["California","38802500","7","06"],  
.....
```

## 4.2 WHAT ARE THE QUERY LIMITS?

You can include up to 50 variables in a single API query and can make up to 500 queries per IP address per day. More than 500 queries per IP address per day requires that you register for a Census key. That key will be part of your data request URL string.

Please keep in mind that all queries from a business or organization having multiple employees might employ a proxy service or firewall. This will make all of the users of that business or organization appear to have the same IP address. If multiple employees were making queries, the 500-query limit would be for the proxy server/firewall, not the individual user.

## 4.3 HOW DO YOU REGISTER FOR A KEY?

1. Go to <https://www.census.gov/developers/>
2. Click on the **Request a KEY** box on the left side of the page.
3. Fill out the pop-up window form.
4. You will receive an email with your key code in the message.

## 5. PROCEDURES: HOW DO YOU BUILD A QUERY?

Following are some examples that give a detailed breakdown of the components of the URL needed for building a query on a dataset.

### 5.1 EXAMPLE: POPULATION ESTIMATES

Let's begin with a query for the resident population totals per state in the dataset, *Vintage 2014 Population Estimates: US, State, and PR Total Population and Components of Change*. You will find this dataset listed on the Census Data API Datasets page:

<https://api.census.gov/data.html>

Format queries as a URL, as follows (Use Firefox.):

`https://api.census.gov/data/2014/pep/natstprc?get=STNAME,POP&DATE=7&for=state:*`

Assemble components of this query by following these steps:

1. Start your query with the host name: **<https://api.census.gov/data>**
2. Add the data year to the URL. This is the year the data were estimated;; e.g., **2014**  
**<https://api.census.gov/data/2014>**
3. Add the dataset name's acronym, which is listed in the "Dataset Name" column on the Census Data API Datasets page (<https://api.census.gov/data.html>); e.g., **pep/natstprc**.  
**<https://api.census.gov/data/2014/pep/natstprc>**  
This is the base URL for this dataset.
4. Follow the base URL with the query character ? (question mark). Add variables starting with a *get* clause **get=** followed by the name of the variable for which you are searching. The link for the list of variables is in the "Variable List" column on the Census Data API Datasets page ( <https://api.census.gov/data.html>) and will lead you to this Variables page:  
<https://api.census.gov/data/2014/pep/natstprc/variables.html>.  
Because there is more than one variable in this query, use a comma to separate each variable: **<https://api.census.gov/data/2014/pep/natstprc?get=STNAME,POP>**  
In this dataset, **STNAME** will provide the state name to clarify the output reading for state code.
5. Add geography using a predicate clause starting with an ampersand (&) to separate it from your get clause, and then a *for* followed by *in* clause, if needed; e.g., **&for=state**. Because we are looking for information for all the states, add a wildcard (:\*) to indicate all values; e.g., **state:\***  
**[https://api.census.gov/data/2014/pep/natstprc?get=STNAME,POP&DATE=7](https://api.census.gov/data/2014/pep/natstprc?get=STNAME,POP&DATE=7&for=state:)**  
**&for=state:\***  
A full list is available at the geography page linked next to this dataset on the Census Data API Datasets page:  
<https://api.census.gov/data/2014/pep/natstprc/geography.html>. As you can see, you can only search on the state or national level for this dataset. Other datasets present

many more geographical subdivisions. Sometimes datasets change the number of geographies they publish from year to year.

6. When you finish practicing and are ready to publish your data and use a key, insert **&key=** followed by your key code into the search URL. You can place this anywhere in the URL after the question mark; e.g., **&key=your key here**

[https://api.census.gov/data/2014/pep/natstprc?get=STNAME,POP&DATE=7&for=state:  
\\*&key=your key here](https://api.census.gov/data/2014/pep/natstprc?get=STNAME,POP&DATE=7&for=state:*&key=your key here)

7. You can copy your query results into a spreadsheet to clean it up and analyze it, or you can save it as a file and consume it as JSON. The response for all queries is formatted as a two dimensional JSON array where the first row provides column names and the subsequent rows provide data values. The first rows of output of the query are configured as follows:

```
[["STNAME","POP","DATE","state"],  
["Alabama","4849377","7","01"],  
["Alaska","736732","7","02"],  
["Arizona","6731484","7","04"],  
["Arkansas","2966369","7","05"],  
["California","38802500","7","06"],  
["Colorado","5355866","7","08"],  
["Connecticut","3596677","7","09"],  
["Delaware","935614","7","10"],  
["District of Columbia","658893","7","11"],  
.....
```

You can find examples of other queries for this dataset by clicking the link in the Examples column on the API datasets page, which takes you to this Example page:

<https://api.census.gov/data/2014/pep/natstprc/examples.html>



As you begin to build queries, start with examples and expand upon them. This is a great way to learn how to use the Census Data API.

## 5.2 EXAMPLE: THE AMERICAN COMMUNITY SURVEY (ACS)

The ACS has many datasets in the Census Data API with a large amount of variables and special naming conventions. In our example, we will focus on the American Community Survey 1-Year Data.

### 5.2.1 American Community Survey Variable Names

#### *E and M*

At the end of a variable's name in all ACS datasets, E and M are characters for estimates and margins of error. E indicates the estimated number from the sample surveyed, while M at the end of a variable number indicates the margin of error. The smaller the sample size the greater the margin of error.

#### *PE and PM*

At the end of a variable's name in the ACS datasets, **PE** stands for percentage estimate, and **PM** stands for percentage margin of error.

### 5.2.2 ACS1 Query

This query concerns how many Hmong people are living in each US state as determined by the 2013 American Community Survey 1-Year Data. Format the search query URL as follows:

[https://api.census.gov/data/2013/acs1?get=NAME,B02015\\_009E,B02015\\_009M&for=state:\\*](https://api.census.gov/data/2013/acs1?get=NAME,B02015_009E,B02015_009M&for=state:*)

Assemble components of this query by following these steps:

1. Start your query with the host name: **<https://api.census.gov/data>**
2. Add the data year to the URL; e.g., **2013**  
**<https://api.census.gov/data/2013>**
3. Add the dataset name acronym, which is available here: <https://api.census.gov/data.html>;  
e.g., **acs1**  
**<https://api.census.gov/data/2013/acs1>**  
This is the base URL for this dataset.
4. Start your query with a **?** and add variables starting with a *get clause* **get=**. In this dataset, the variable called **NAME** will provide the geographic name you are using to limit your search, along with your numerical data. Use a comma to separate this variable



from the variable designating the Hmong population; e.g.,

**?get=NAME,B02015\_009E,B02015\_009M.** (A full list of ACS 1-Year geographies and variables is available here: <https://api.census.gov/data/2013/acs1/variables.html>)

[https://api.census.gov/data/2013/acs1?get=NAME,B02015\\_009E,B02015\\_009M](https://api.census.gov/data/2013/acs1?get=NAME,B02015_009E,B02015_009M)

5. Add geography using a predicate clause starting with an ampersand (&) to separate it from your get clause and then a *for* followed by an *in* clause, if needed; e.g., **&for=state**. Because we are looking for information in all the states, add a wildcard (:\*) to indicate all values; e.g., **state:\*** (A full list is available here:

<https://api.census.gov/data/2013/acs1/geography.html>)

[https://api.census.gov/data/2013/acs1?get=NAME,B02015\\_009E,B02015\\_009M&for=state:\\*](https://api.census.gov/data/2013/acs1?get=NAME,B02015_009E,B02015_009M&for=state:*)

6. If you are using a key, insert **&key=** followed by your key code at the end of your search URL: **&key=your key here**  
[https://api.census.gov/data/2013/acs1?get=NAME,B02015\\_009E,B02015\\_009M&for=state:\\*&key=your key here](https://api.census.gov/data/2013/acs1?get=NAME,B02015_009E,B02015_009M&for=state:*&key=your key here)

The query configures the first rows of output as follows:

```
[["NAME","B02015_009E","B02015_009M","state"],  
 ["Alabama",null,null,"01"],  
 ["Alaska",null,null,"02"],  
 ["Arizona","125","131","04"],  
 ["Arkansas",null,null,"05"],  
 ["California","96207","9900","06"],  
 ["Colorado","5640","2528","08"],  
 ["Connecticut","39","63","09"],  
 ["Delaware",null,null,"10"],  
 ["District of Columbia",null,null,"11"],  
 ["Florida","544","474","12"],  
 .....
```

“Null” occurs as a result when there is no data entered for that answer. You can find other examples of searches in this dataset by clicking the link in the “Examples” column on the API datasets page, which will take you to the examples page here:

<https://api.census.gov/data/2013/acs1/examples.html>



If your query returns an error message with no data, check your spelling, capitalization, and spacing. Correct it, and run it again.

### 5.3 EXAMPLE: A TIME SERIES DATASET - INTERNATIONAL TRADE MONTHLY EXPORTS

For some datasets available on the Census Data API, data are stored for multiple points of time in one dataset, rather than across several datasets for individual points of time. When this occurs, we refer to the dataset as a time series dataset. In this example, we will build a query for one of the time series datasets in the API, *International Trade: Monthly U.S. Exports by End-Use Code* for the total export value (monthly and year-to-date) for all Customs districts for June 2016:

[https://api.census.gov/data/timeseries/intltrade/exports/enduse?get=DISTRICT,DIST\\_NAME,ALL\\_VAL\\_MO,ALL\\_VAL\\_YR&YEAR=2016&MONTH=06](https://api.census.gov/data/timeseries/intltrade/exports/enduse?get=DISTRICT,DIST_NAME,ALL_VAL_MO,ALL_VAL_YR&YEAR=2016&MONTH=06).

For more information on time series datasets, See [Section 4.1.4 Predicate: Time \(Time Series Dataset Only\)](#) in this user guide. You can find the list of time series datasets on the Census Data API here: <https://api.census.gov/data/timeseries.html>

Assemble components of this query following these steps:

1. Start your query with the host name: **<https://api.census.gov/data>**
2. Add **timeseries** to the URL: **<https://api.census.gov/data/timeseries>**
3. Add the dataset name acronym, **intltrade/exports/enduse** (International Trade: Monthly U.S. Exports by End-use Code):

**<https://api.census.gov/data/timeseries/intltrade/exports/enduse>**

Start your query with a **?** (question mark). Add variables starting with a *get* clause, **get =** followed by the names of the variables. (A full list of variables is available here: <https://api.census.gov/data/timeseries/intltrade/exports/enduse/variables.html>).

Use a comma to separate the variables:

**[https://api.census.gov/data/timeseries/intltrade/exports/enduse?get=DISTRICT,DIST\\_NAME,ALL\\_VAL\\_MO,ALL\\_VAL\\_YR](https://api.census.gov/data/timeseries/intltrade/exports/enduse?get=DISTRICT,DIST_NAME,ALL_VAL_MO,ALL_VAL_YR)**

4. Add the time period (REQUIRED for time series) using a predicate clause; e.g.,

**&YEAR=2016&MONTH=06:**

`https://api.census.gov/data/timeseries/intltrade/exports/enduse?get=DISTRICT,DIST_NAME,ALL_VAL_MO,ALL_VAL_YR&YEAR=2016&MONTH=06`



You can also specify this required time range as **&time=2016-06**. See [Section 4.1.4 Predicate: Time \(Time Series Dataset Only\)](#) in this user guide for building predicates for time series.

5. If you are using a key, insert **&key=** followed by your key code at the end of your search:

`https://api.census.gov/data/timeseries/intltrade/exports/enduse?get=DISTRICT,DIST_NAME,`

`ALL_VAL_MO,ALL_VAL_YR&YEAR=2016&MONTH=06&key=your key here`

The query configures the first rows of output of the query as follows:

```
[["DISTRICT","DIST_NAME","ALL_VAL_MO","ALL_VAL_YR","YEAR","MONTH"],
["","TOTAL FOR ALL DISTRICTS","125024387876","711355944093","2016","06"],
["01","PORTLAND, ME","331269702","2082731222","2016","06"],
["02","ST. ALBANS, VT","184995129","1144444553","2016","06"],
["04","BOSTON, MA","727085911","3808920861","2016","06"],
["05","PROVIDENCE, RI","16926100","77856036","2016","06"],
["07","OGDENSBURG, NY","1440920883","8137120100","2016","06"],
["09","BUFFALO, NY","4343113148","23189188640","2016","06"],
["10","NEW YORK CITY, NY","11703487744","67797106022","2016","06"],
["11","PHILADELPHIA, PA","1401964078","7895311695","2016","06"],
["13","BALTIMORE, MD","1218070977","7354545603","2016","06"],
["14","NORFOLK, VA","1999192268","13011038202","2016","06"],
["15","WILMINGTON, NC","452856985","2828815661","2016","06"],
["16","CHARLESTON, SC","2950121172","16716095334","2016","06"],
["17","SAVANNAH, GA","4150832886","22986303931","2016","06"],
.....]
```

Now you are ready to write your API query (or queries) for a dataset. You can open and save your search to a text-editing program as a json file. You can save your search directly in Firefox and Chrome, but in Internet Explorer and Safari, you need to save your search to a text file program. You can only search for variables that the variable table specifically lists with the API.

## **6. WHAT RESOURCES WILL HELP YOU USE THE CENSUS DATA API?**

### **6.1 DATASET DISCOVERY TOOL:**

- <https://api.census.gov/data.html> List of Census API Datasets
- <https://api.census.gov/data.xml> List of Census API Datasets in XML
- <https://api.census.gov/data.json> List of Census API Datasets in JSON

### **6.2 CENSUS DATA API DEVELOPERS PAGE:**

- <https://www.census.gov/developers/>

### **6.3 CONVERT JSON TO CSV DATA:**

- <https://www.convertcsv.com/json-to-csv.htm>

### **6.4 GUIDE TO ACCESSING CENSUS DATA API VIA PYTHON**

- <https://pypi.python.org/pypi/census/0.5>

### **6.5 CENSUS BUREAU GEOGRAPHY**

- <https://www.census.gov/geo/>

## **7. WHOM DO I CONTACT IF I HAVE QUESTIONS?**

If you have additional questions about the Census Data API, contact us at (866) 437-0171 or by email, [dsd.ferrett@census.gov](mailto:dsd.ferrett@census.gov).