Basic USAspending API Training

Agenda

- Introduction to APIs
- State profile GET request
- Advanced Search POST Request
- Additional challenges and resources
- Questions

Introduction to APIs

- When to use the API?
- What is an API?
- GET vs POST requests

When to use the API?

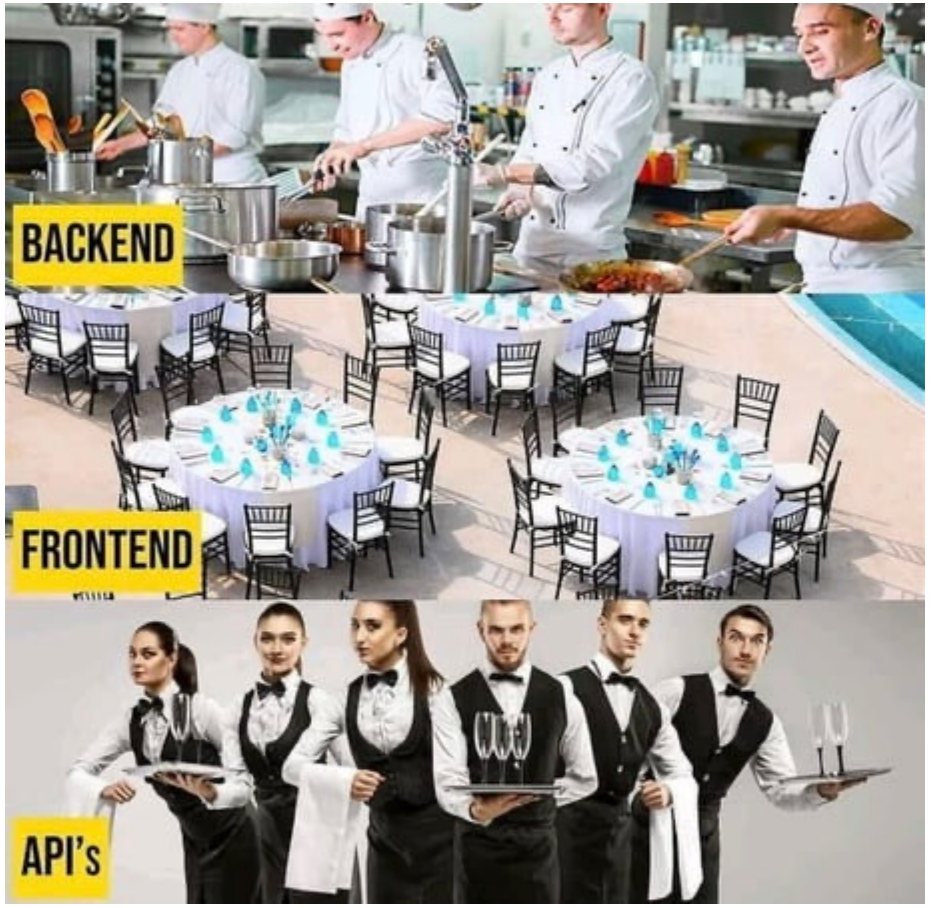
The USAspending API powers all functionality on the website. Anything you can do on the site, you can do in the API.

The API has some functionality not available on the site.

For many simple and one-off tasks it’s often easier to use the website.

- Consider using the USAspending API if…
  - You need functionality which is only available through the API.
  - You want to automate a report you need to run periodically.
  - You want to automate repetitive tasks which would otherwise require manual work on the website.
  - You want to build a workflow that allows you to do more of your tasks in tools like Excel.

What is an API?



What is an API?

The backend team transforms the raw ingredients (data) into more simple and digestible formats.

The frontend team designs beautiful ways to present the data to help humans consume it and gain insights.

APIs bridge this gap by providing the data curated by the backend team in a standard format for presentation on the website, or other tools.

What is an API?

USAspending uses REST API endpoints to transfer formatted data from the server to client browsers.

A REST API endpoint uses a set of defined rules to share or access this formatted data through an HTTP request.

USAspending endpoints each present different data elements with different levels of aggregation and enable different sets of filters.

For example, the set of endpoints used to power state profile pages is different from the set of endpoints used to power advanced search.

Notes: https://stackoverflow.com/a/18768849

GET vs POST Requests

- GET and POST are two different types of REST API requests.
- Certain endpoints require you to use either a GET or POST request.
    - This is included in the documentation for each endpoint.
- GET requests are used to get data on a specific record with a known numerical identifier.
- GET requests also support simple filtering.
    - A count of new awards for an agency in a single fiscal year
- POST requests are used in USAspending to support more advanced filtering.
    - All grants that were awarded to a specific congressional district in a specific fiscal year from a specific agency

State profile GET Requests

How much money went to my state in a FY?

Steps:

1. Navigate to a state profile page on USAspending to see the total award amount in a period.
2. Inspect the page to identify which endpoint is used to display this number.
3. Review the endpoint documentation.
4. Adjust the GET request URL for a different state or time period.
5. Replicate this GET request in Excel.

NOTE: The images and values in the following screenshots may appear different on your system.

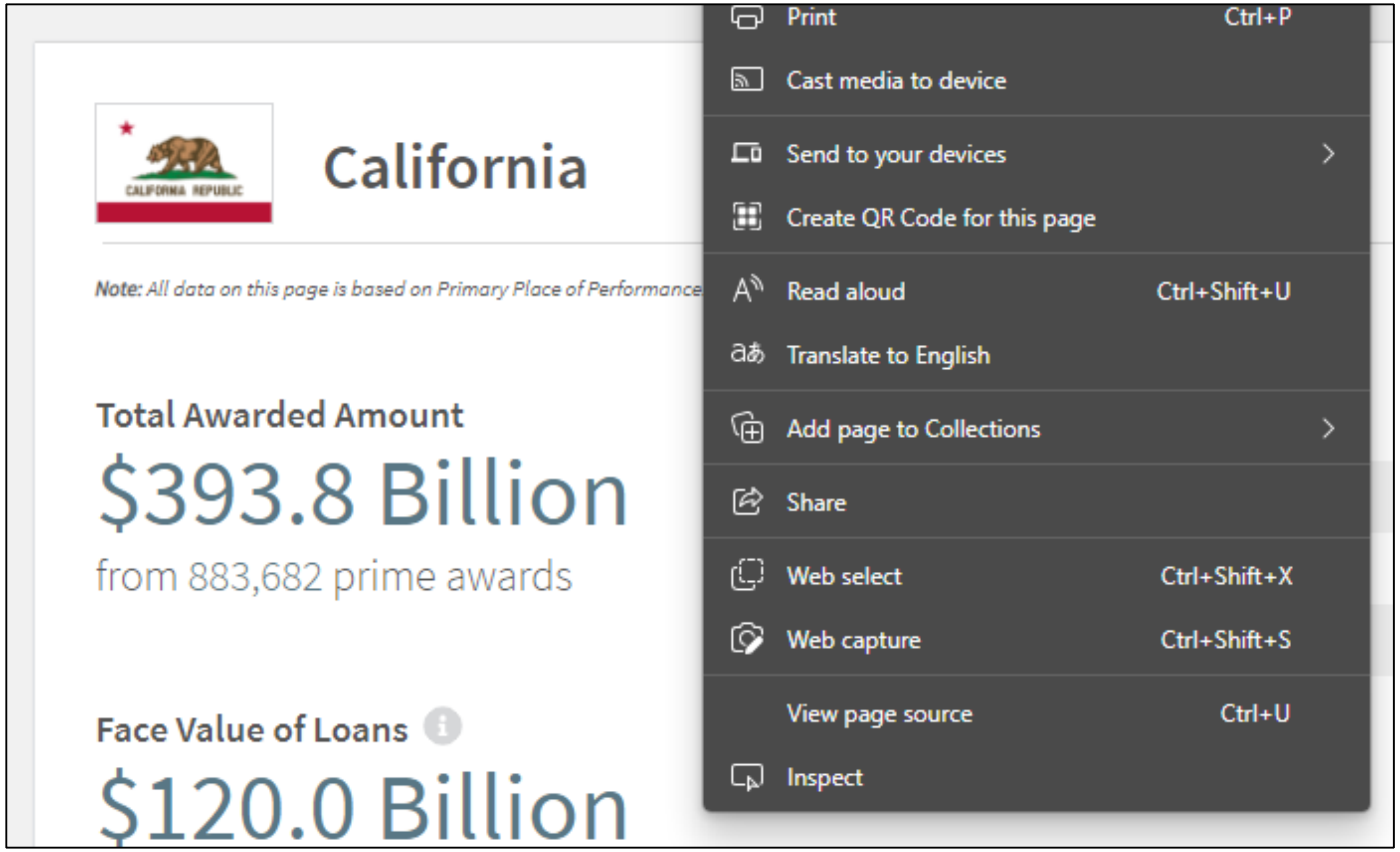
GET Request - Demo

Navigate to the CA state profile page on USAspending:

https://www.usaspending.gov/state/california/latest

Observe the Total Award Amount value.

Right click the CA profile page and click Inspect. (or use hotkey Command + Control + c on mac or Control + Shift + c on PC)



California

Note: All data on this page is based on Primary Place of Performance

Total Awarded Amount

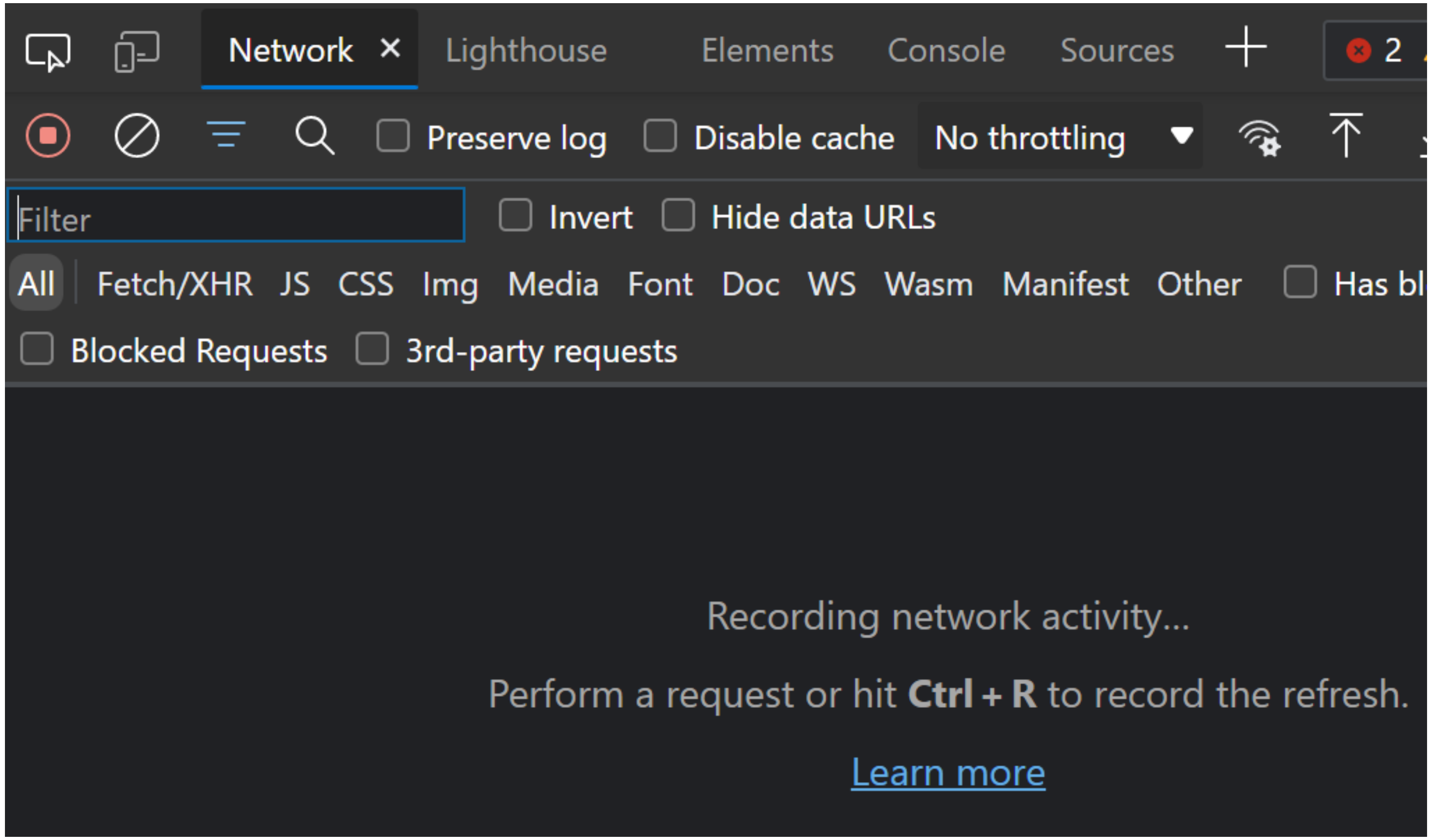
$393.8 Billion

from 883,682 prime awards

Face Value of Loans

$120.0 Billion

Demo continued



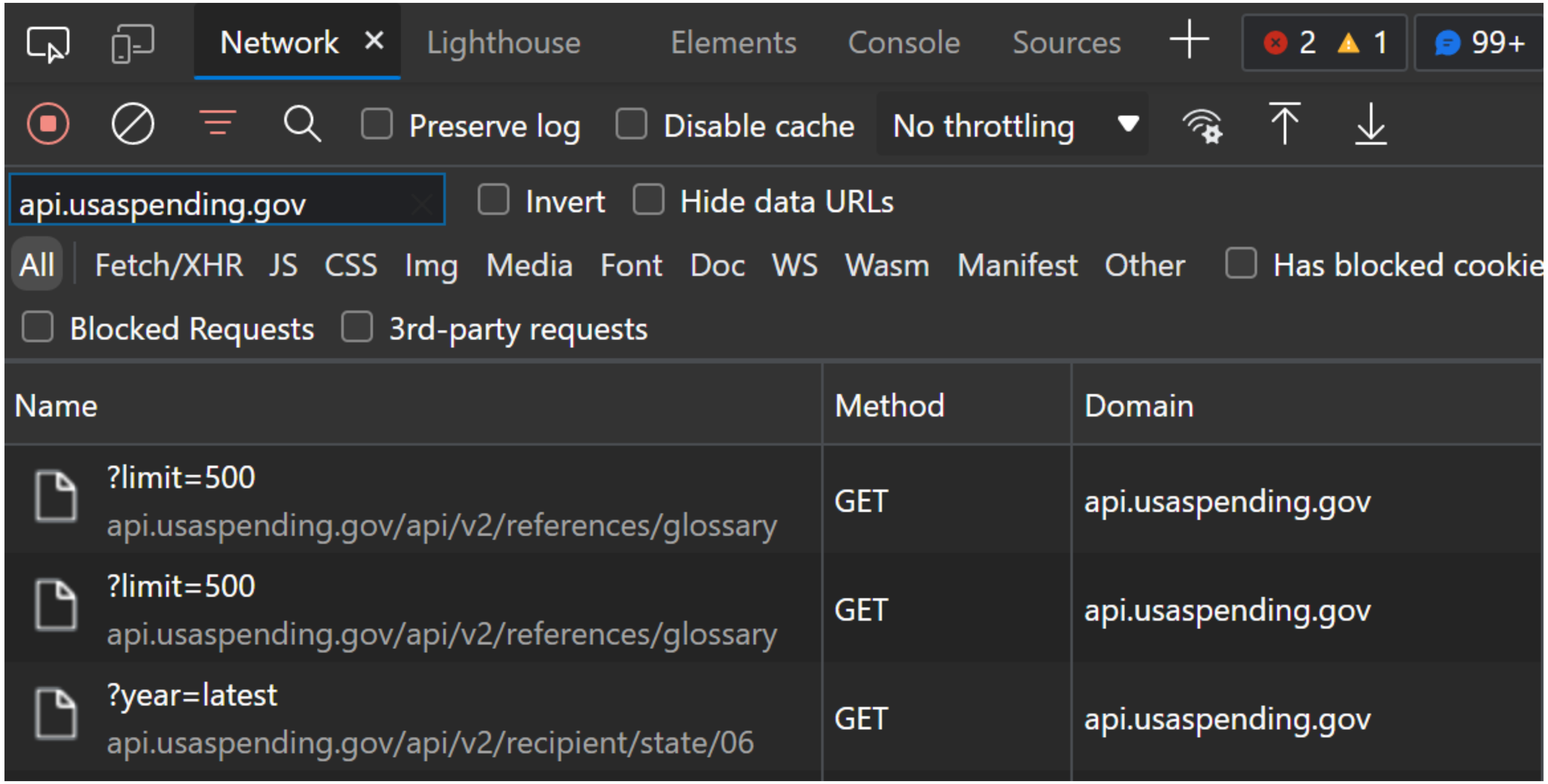
Recording network activity…

Perform a request or hit **Ctrl + R** to record the refresh.

Learn more

Select the Network tab and **refresh the page**.

Demo continued



Network × Lighthouse Elements Console Sources + 2 1 99+

Preserve log | Disable cache | No throttling

api.usaspending.gov | Invert | Hide data URLs

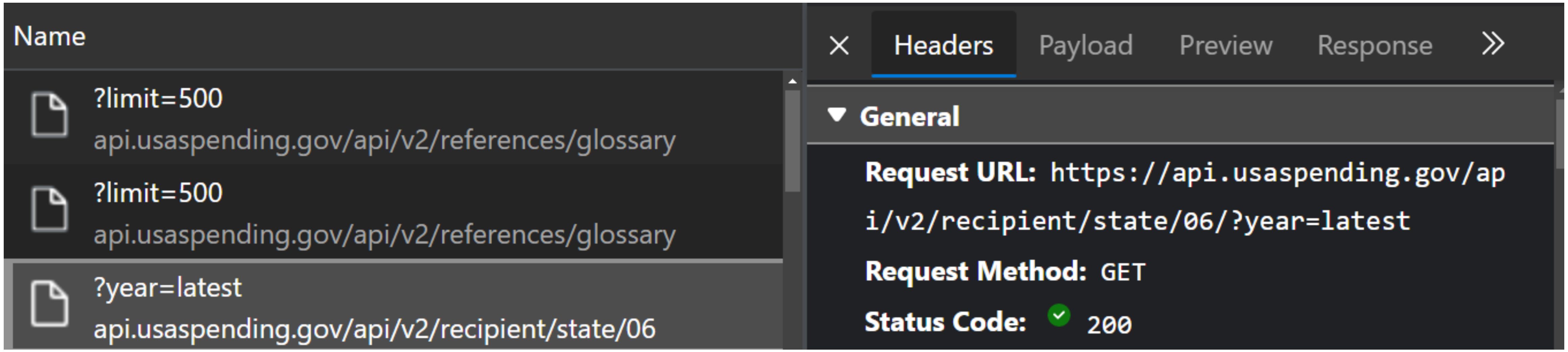
All | Fetch/XHR | JS | CSS | Img | Media | Font | Doc | WS | Wasm | Manifest | Other | Has blocked cookie

Blocked Requests | 3rd-party requests

Name	Method	Domain
?limit=500 api.usaspending.gov/api/v2/references/glossary	GET	api.usaspending.gov
?limit=500 api.usaspending.gov/api/v2/references/glossary	GET	api.usaspending.gov
?year=latest api.usaspending.gov/api/v2/recipient/state/06	GET	api.usaspending.gov

Use the filter box to only show API calls to api.usaspending.gov

Demo continued

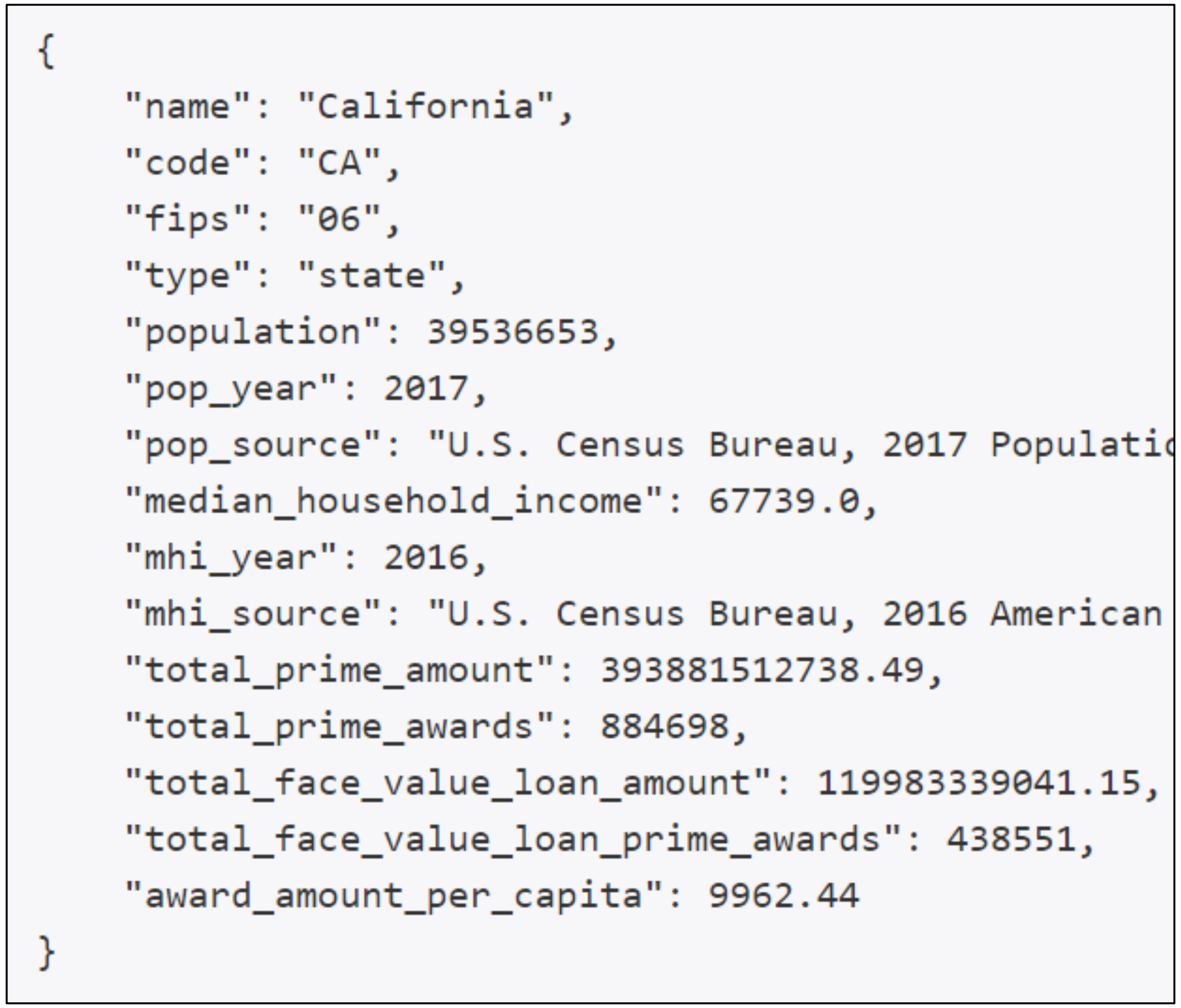


```
?limit=500
api.usaspending.gov/api/v2/references/glossary
?limit=500
api.usaspending.gov/api/v2/references/glossary
?year=latest
api.usaspending.gov/api/v2/recipient/state/06
```

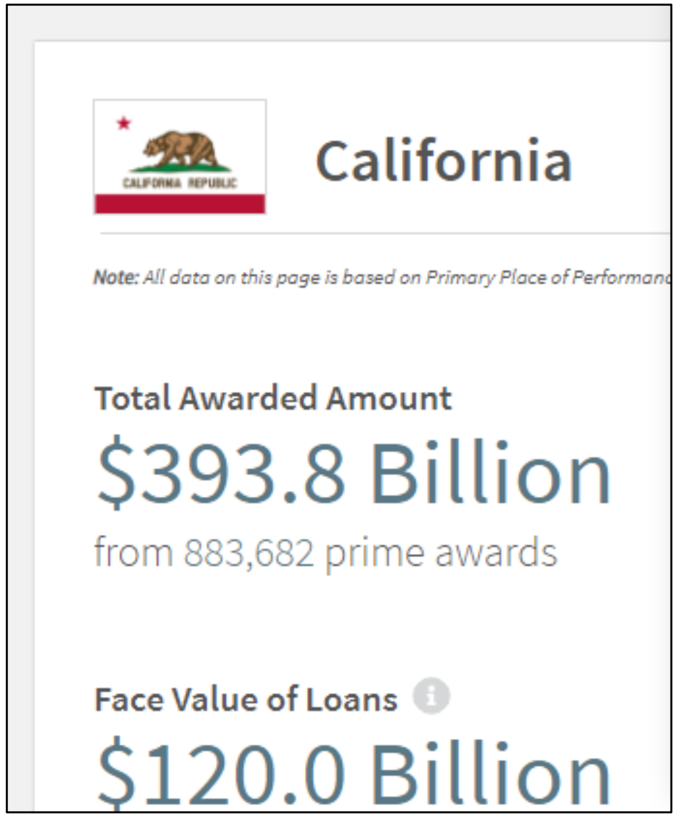
```
Request URL: https://api.usaspending.gov/api/v2/recipient/state/06/?year=latest
Request Method: GET
Status Code: 200
```

Select the api/v2/recipient/state/06 API request.
Observe the Request URL and Request Method.

Demo continued



```
{
    "name": "California",
    "code": "CA",
    "fips": "06",
    "type": "state",
    "population": 39536653,
    "pop_year": 2017,
    "pop_source": "U.S. Census Bureau, 2017 Populati
    "median_household_income": 67739.0,
    "mhi_year": 2016,
    "mhi_source": "U.S. Census Bureau, 2016 American
    "total_prime_amount": 393881512738.49,
    "total_prime_awards": 884698,
    "total_face_value_loan_amount": 119983339041.15,
    "total_face_value_loan_prime_awards": 438551,
    "award_amount_per_capita": 9962.44
}
```



California

Note: *All data on this page is based on Primary Place of Performan*

Total Awarded Amount

$393.8 Billion

from 883,682 prime awards

Face Value of Loans

$120.0 Billion

Open the Request URL in your browser.

Compare the total_prime_amount and the Total Awarded Amount.

GET Request – Demo

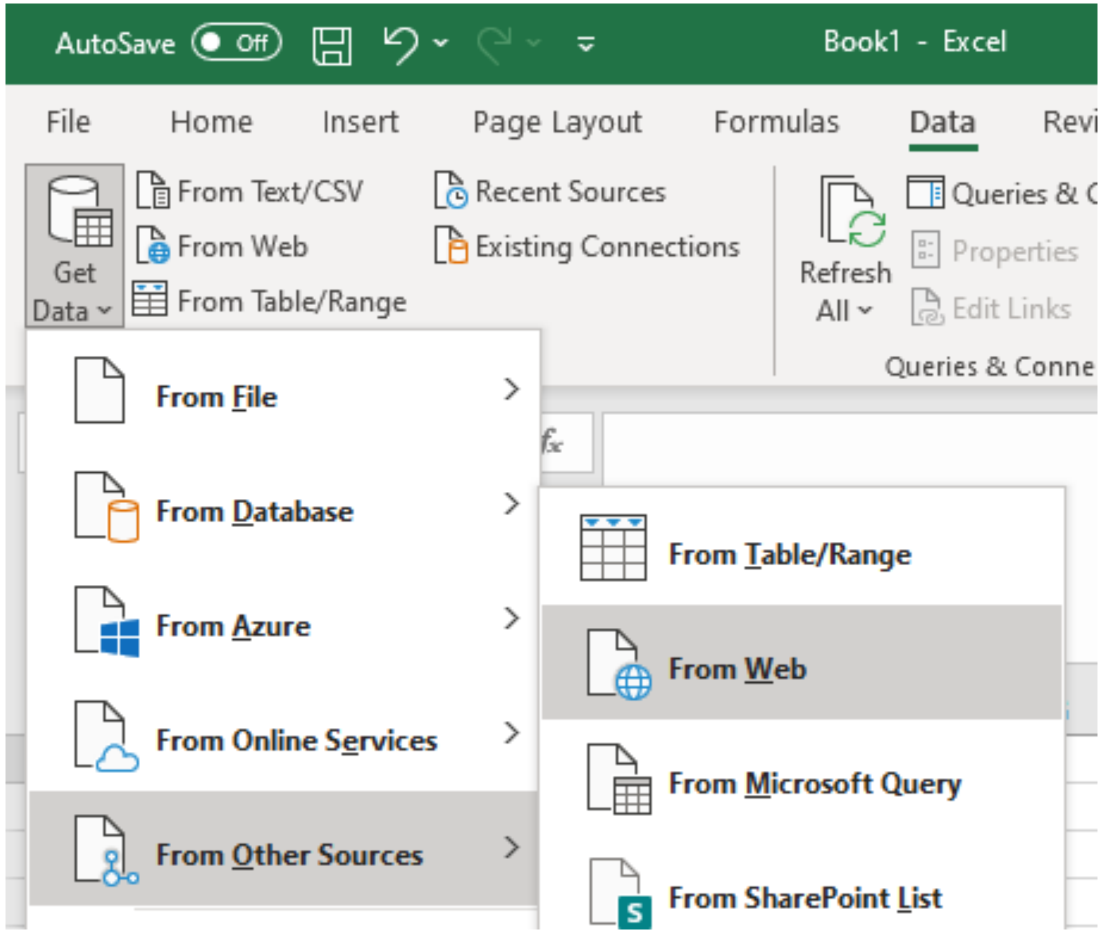
https://api.usaspending.gov/api/v2/recipient/state/06/?year=latest

- The “/06/” in the URL specifies a state by FIPS code (CA in this case)
- The “?year=latest” filters the data filters the data to the trailing 12 months

Try changing the “06” to a different FIPS code.

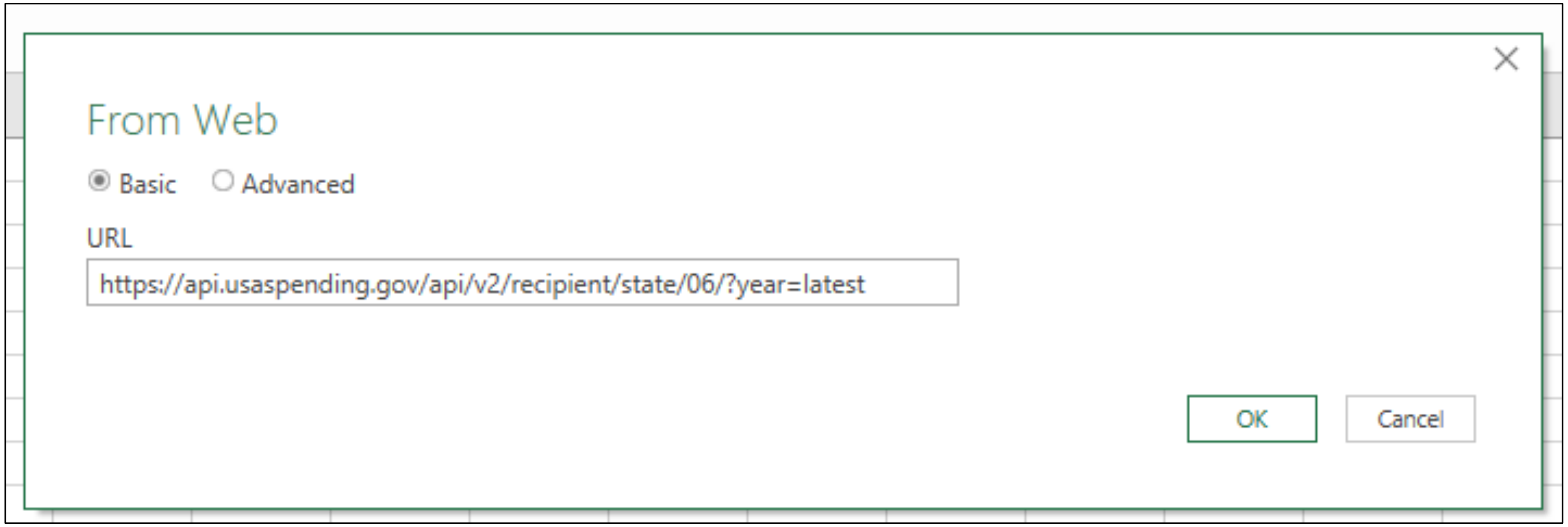
Try changing the year filter to 2022.

Demo continued



In Excel, select Data > Get Data > From Other Sources > From Web

Demo continued



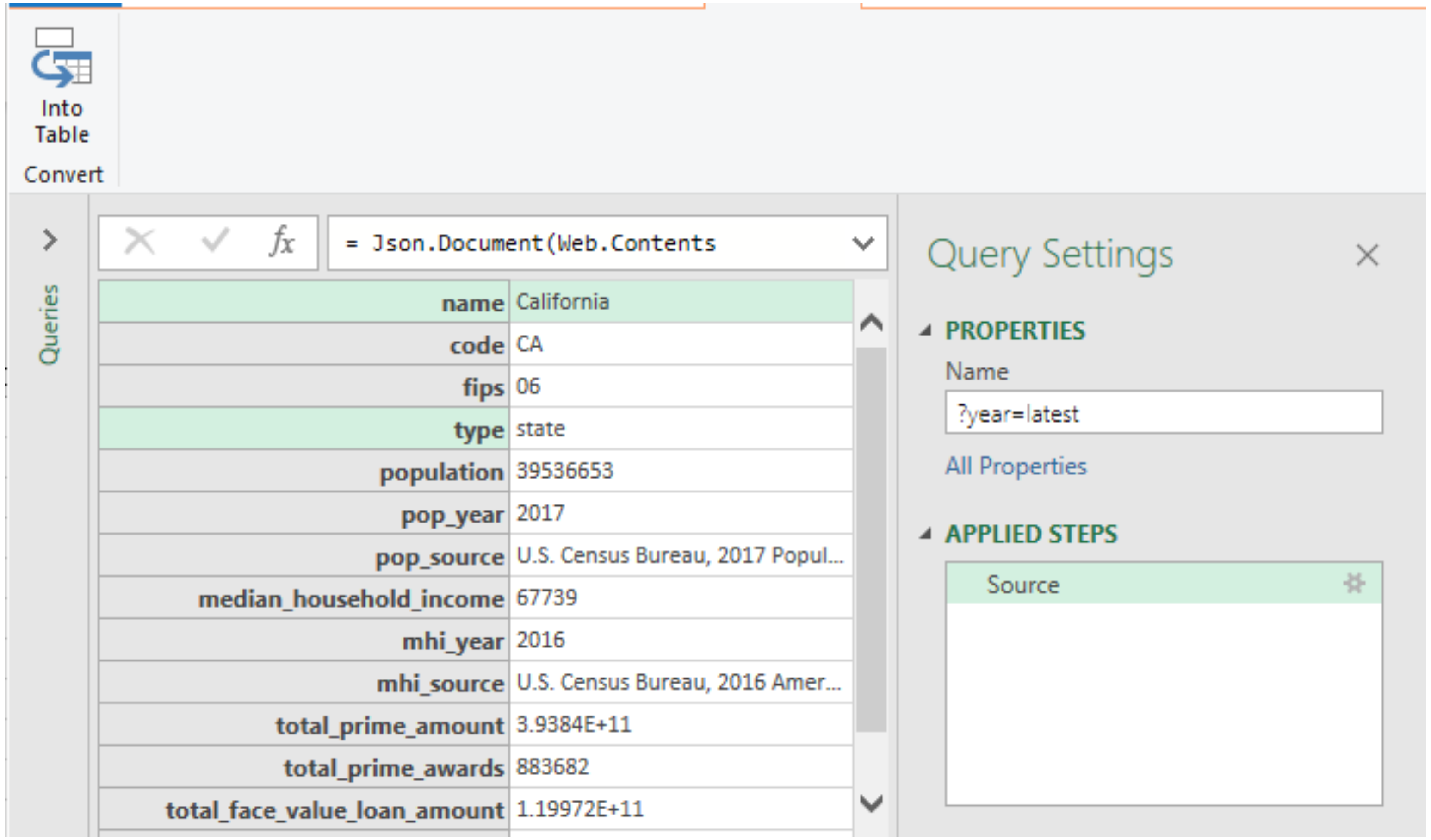
Basic [✓]

URL

https://api.usaspending.gov/api/v2/recipient/state/06/?year=latest

Paste your GET request URL into the URL box and click OK.

Demo continued



```
= Json.Document(Web.Contents
```

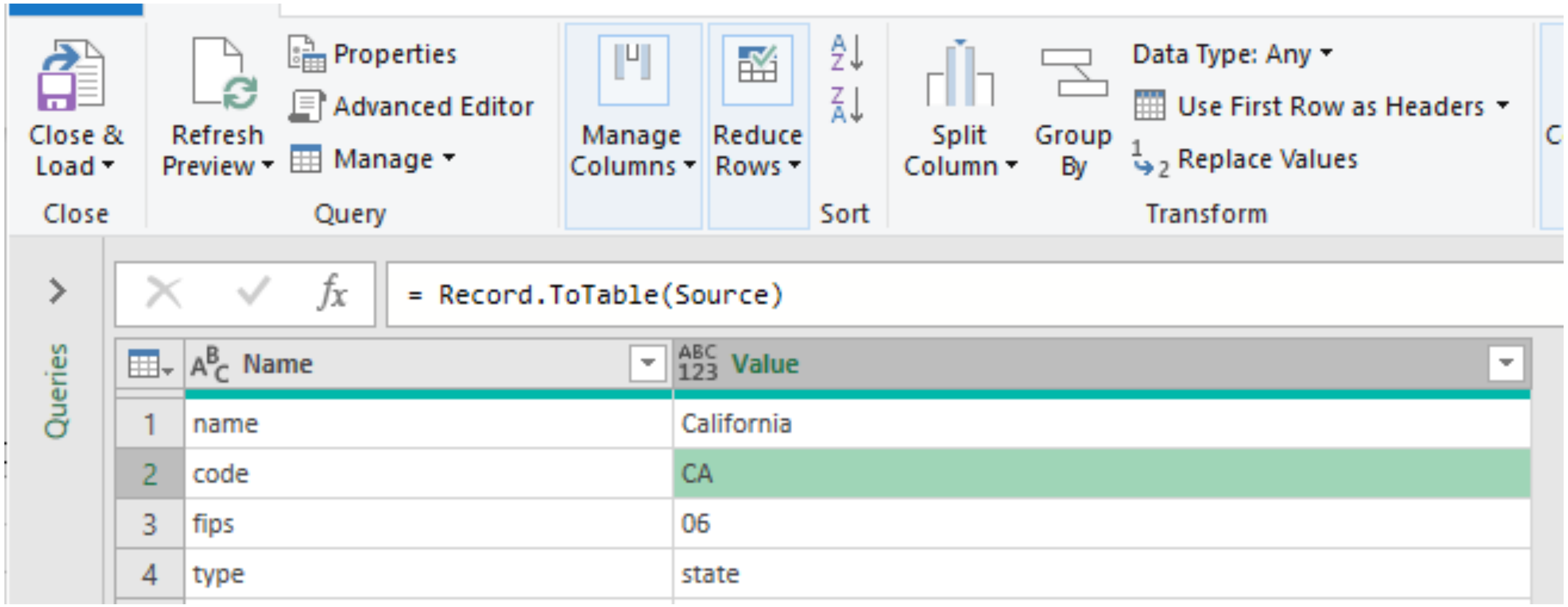
Name: ?year=latest

Applied steps: Source

name	California
code	CA
fips	06
type	state
population	39536653
pop_year	2017
pop_source	U.S. Census Bureau, 2017 Popul...
median_household_income	67739
mhi_year	2016
mhi_source	U.S. Census Bureau, 2016 Amer...
total_prime_amount	3.9384E+11
total_prime_awards	883682
total_face_value_loan_amount	1.19972E+11

Compare the request results table to the CA profile page on USAspending. Click 'Into Table'

Demo continued

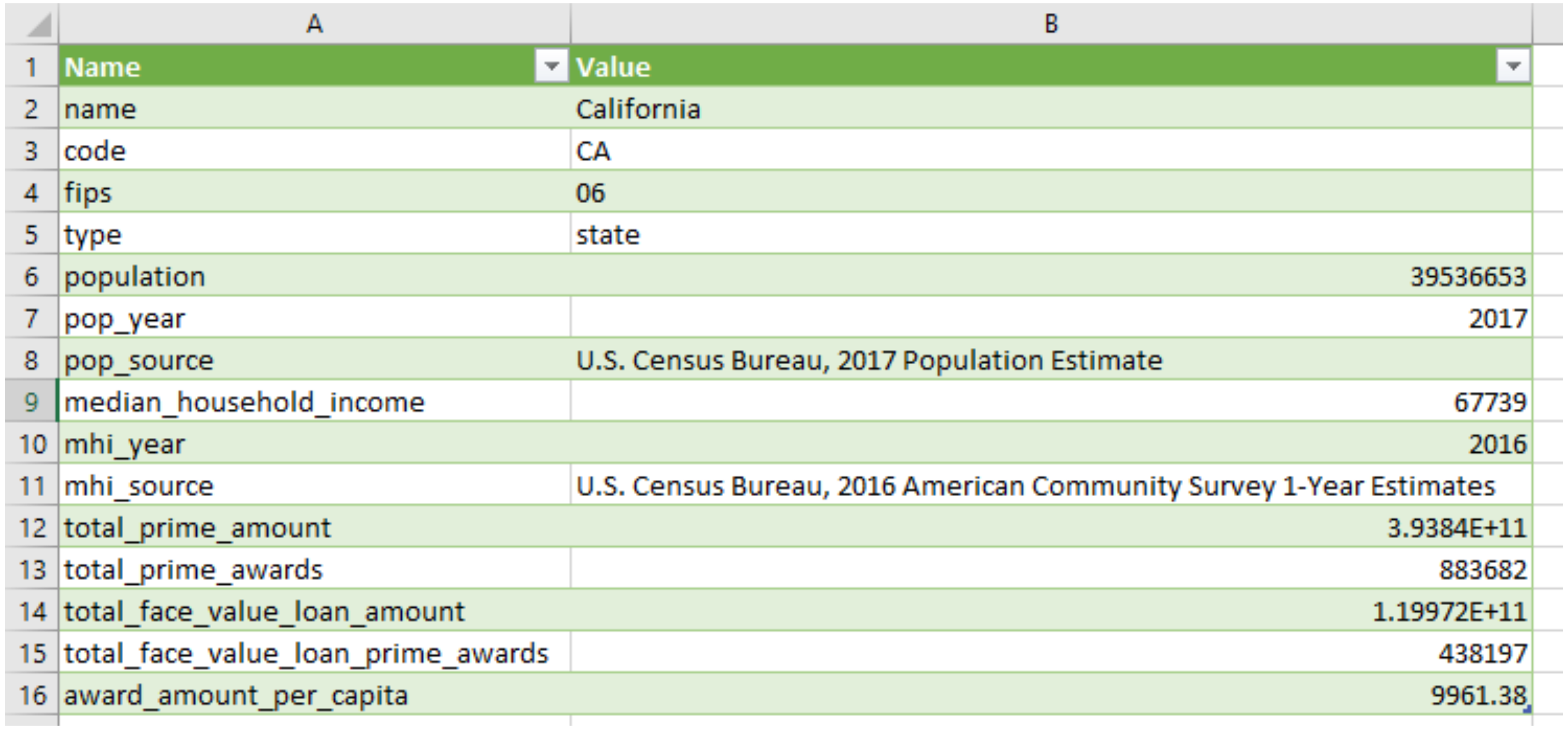


```
= Record.ToTable(Source)
```

	Name	Value
1	name	California
2	code	CA
3	fips	06
4	type	state

Select 'Close and Load'

Demo continued



Name	Value
name	California
code	CA
fips	06
type	state
population	39536653
pop_year	2017
pop_source	U.S. Census Bureau, 2017 Population Estimate
median_household_income	67739
mhi_year	2016
mhi_source	U.S. Census Bureau, 2016 American Community Survey 1-Year Estimates
total_prime_amount	3.9384E+11
total_prime_awards	883682
total_face_value_loan_amount	1.19972E+11
total_face_value_loan_prime_awards	438197
award_amount_per_capita	9961.38

Your data is now populated in an Excel spreadsheet!

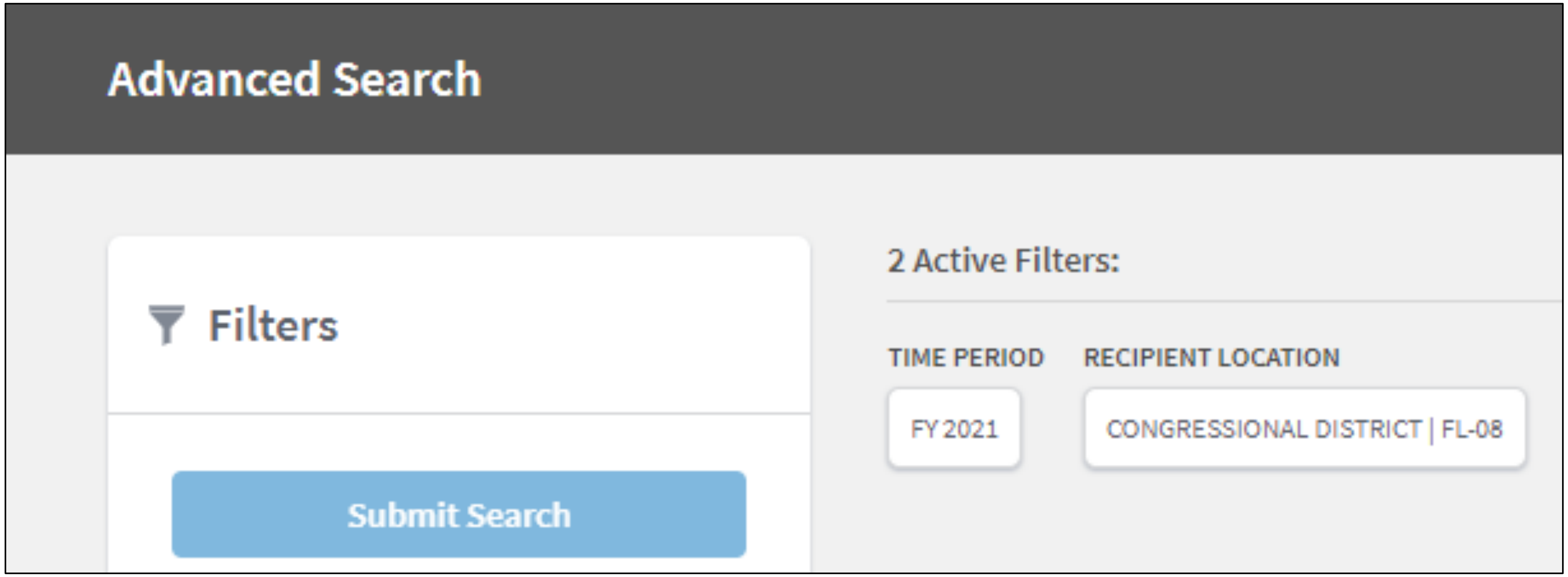
Advanced Search POST Request

How much did my Congressional District receive in a FY?

Steps:

1. Find this number using USAspending Advanced Search.
2. Inspect the page to identify which endpoints are used to display this number on the webpage.
3. Review the documentation for this endpoint.
4. Use PowerQuery to reproduce this API request in Excel.

Demo continued

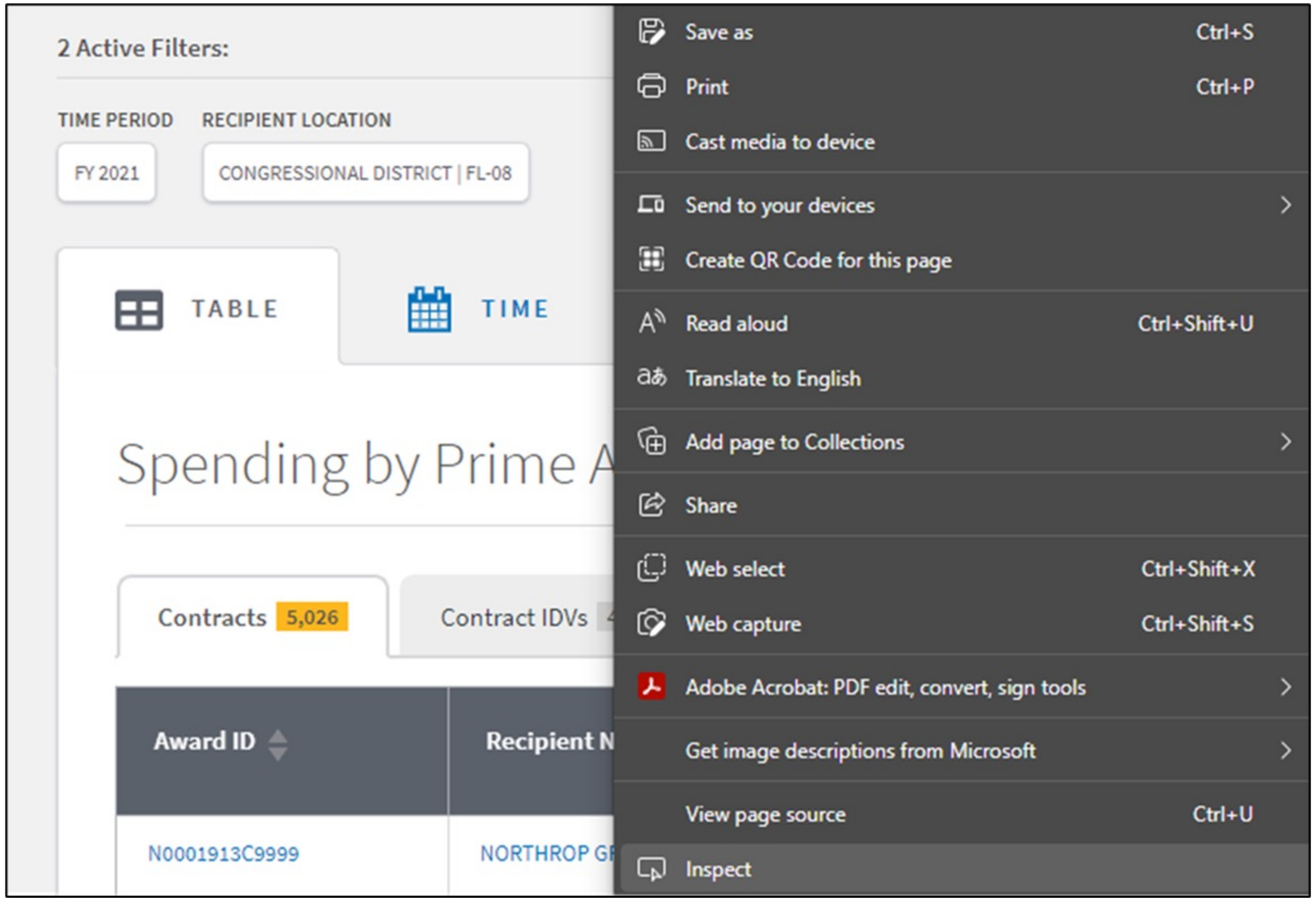


2 Active Filters:

TIME PERIOD	RECIPIENT LOCATION
FY 2021	CONGRESSIONAL DISTRICT | FL-08

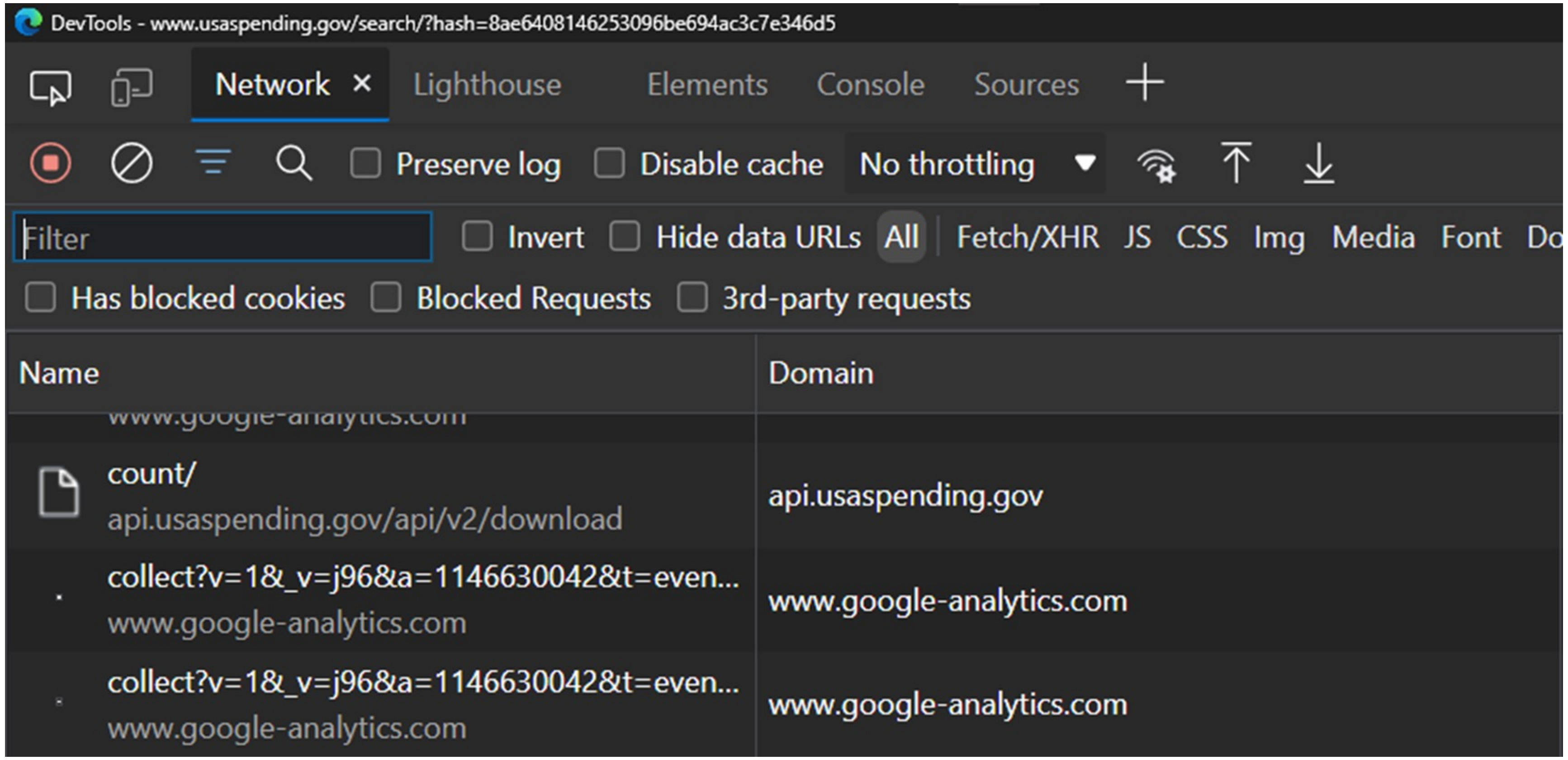
Create an advanced search with a time period and recipient location filter.

Demo continued



Right click the page and select Inspect.

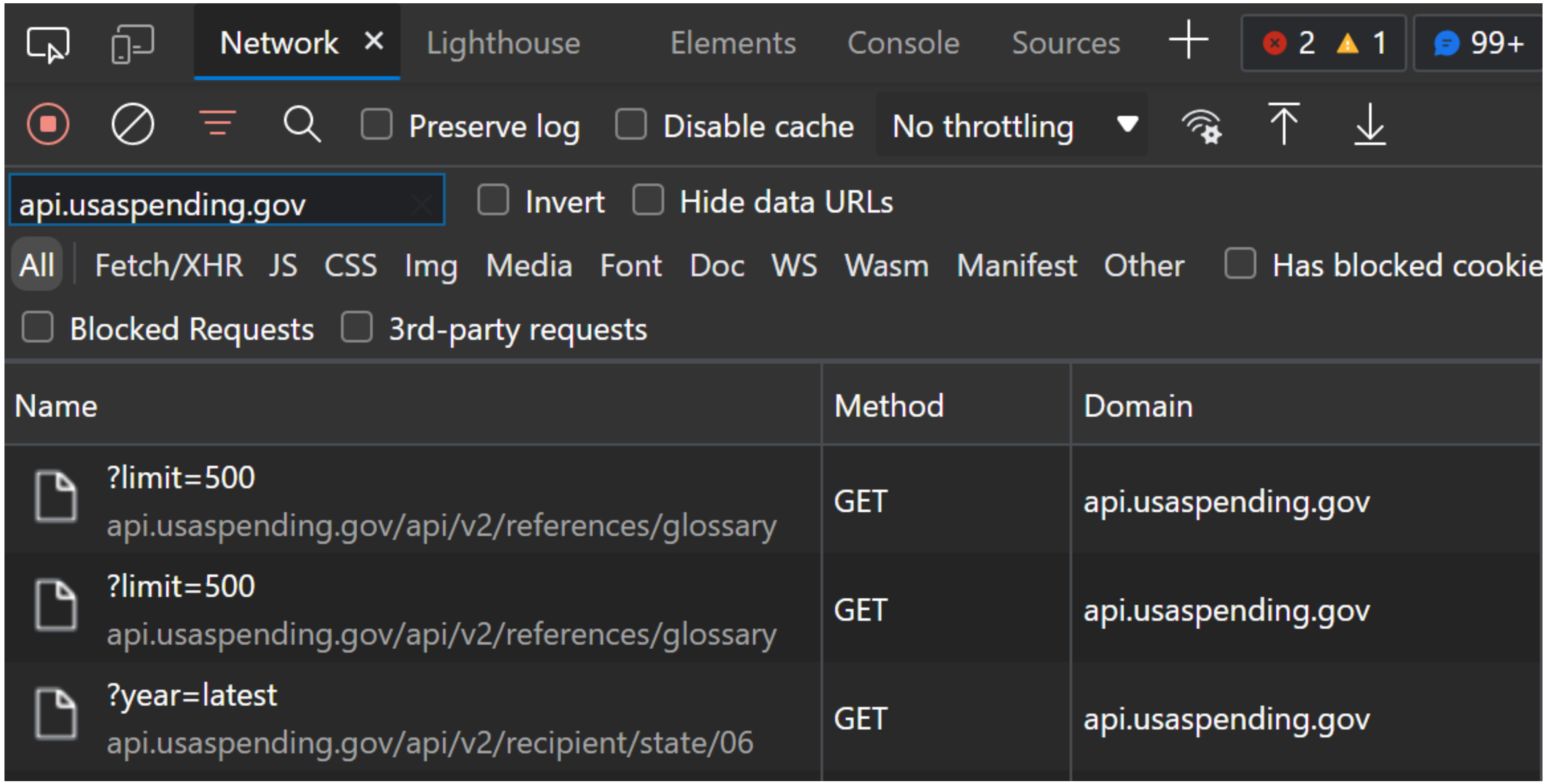
Demo continued


DevTools - www.usaspending.gov/search/?hash=8ae6408146253096be694ac3c7e346d5

Name	Domain
www.google-analytics.com	
count/ api.usaspending.gov/api/v2/download	api.usaspending.gov
collect?v=1&_v=j96&a=1146630042&t=even... www.google-analytics.com	www.google-analytics.com
collect?v=1&_v=j96&a=1146630042&t=even... www.google-analytics.com	www.google-analytics.com

Observe the network resources the browser is using to power the page.

Demo continued

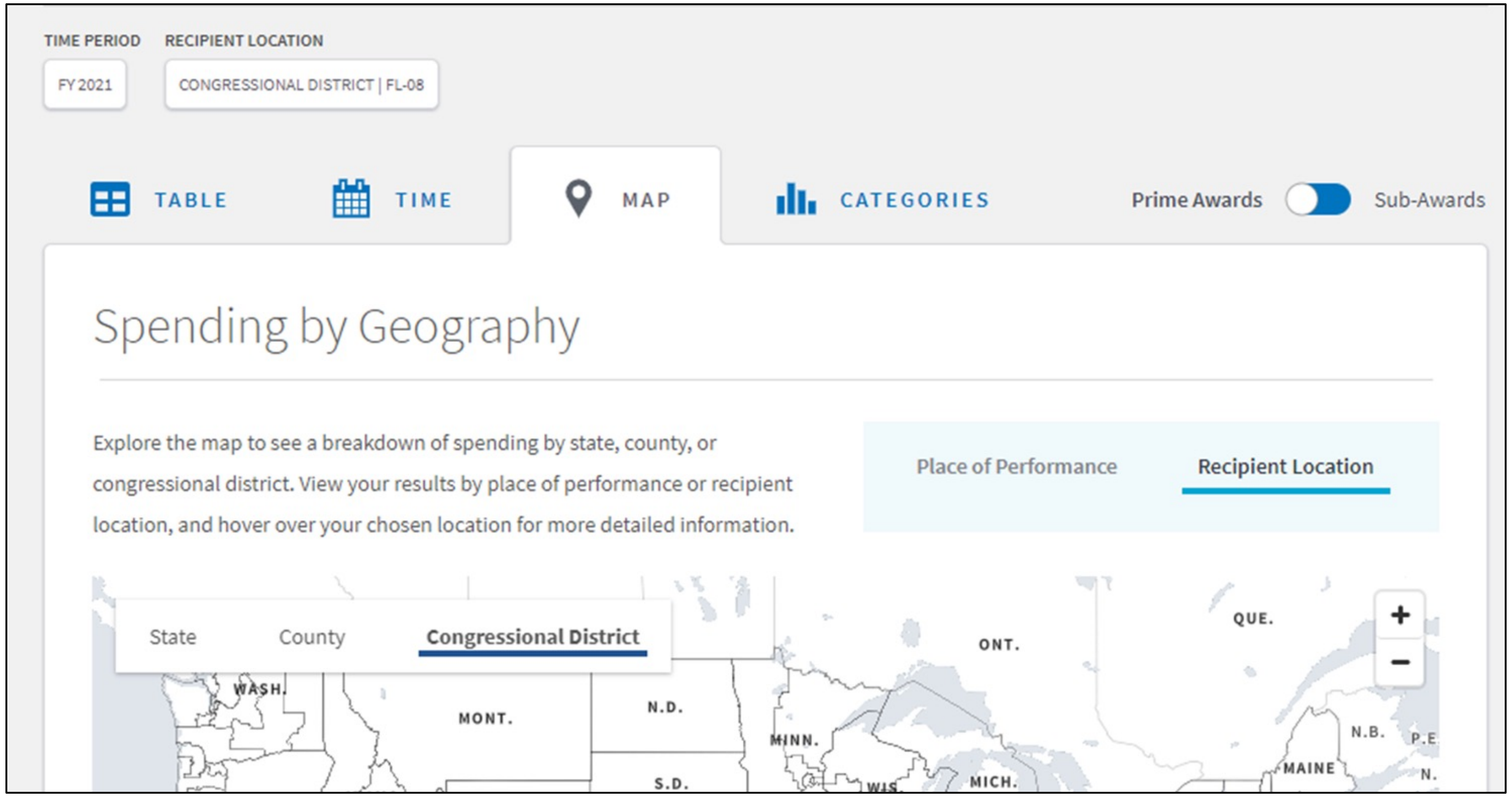


Filter: api.usaspending.gov

Name	Method	Domain
?limit=500 api.usaspending.gov/api/v2/references/glossary	GET	api.usaspending.gov
?limit=500 api.usaspending.gov/api/v2/references/glossary	GET	api.usaspending.gov
?year=latest api.usaspending.gov/api/v2/recipient/state/06	GET	api.usaspending.gov

Use the filter box to only show API calls to api.usaspending.gov

Demo continued

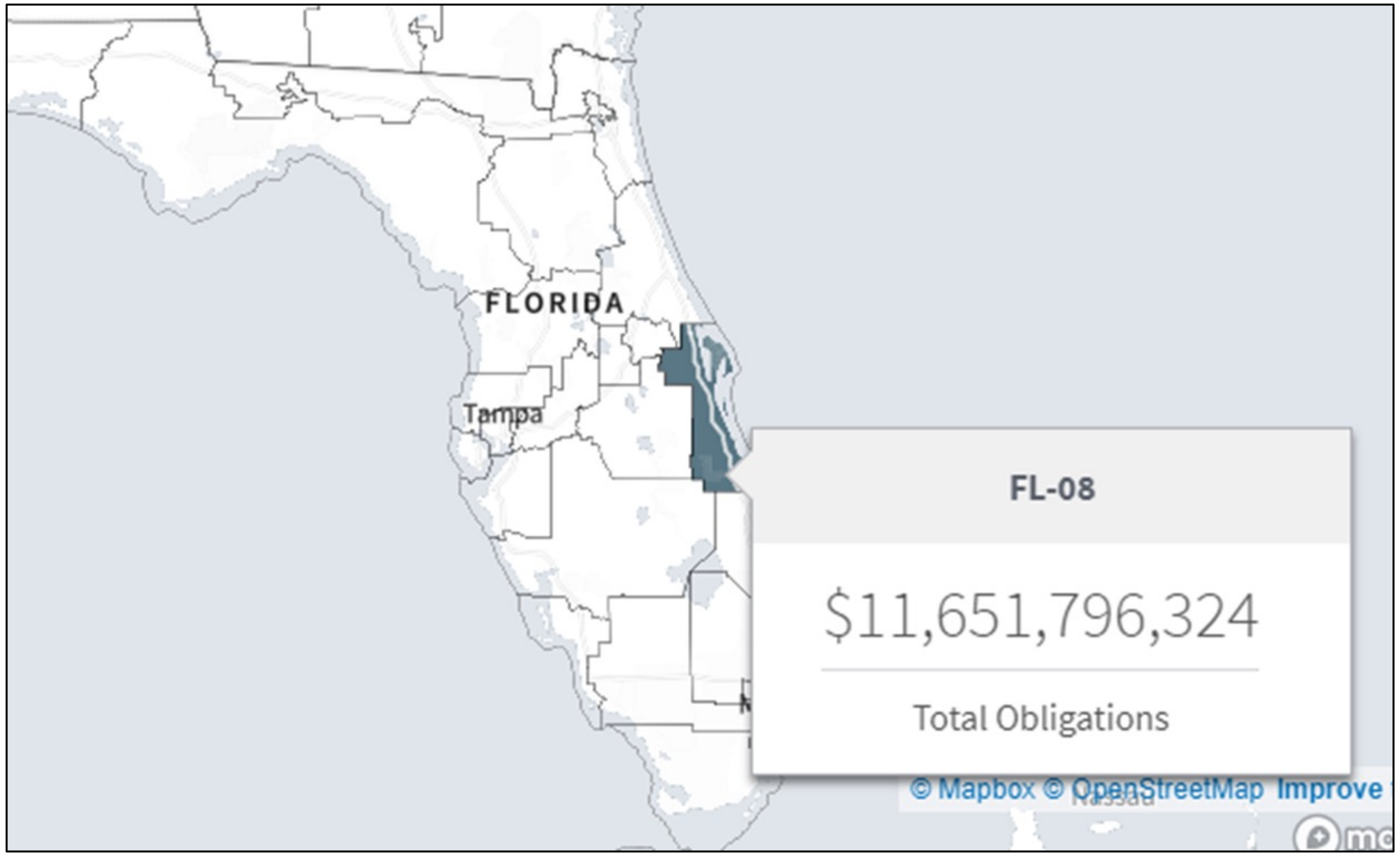

TIME PERIOD: FY 2021
RECIPIENT LOCATION: CONGRESSIONAL DISTRICT | FL-08

Spending by Geography

Explore the map to see a breakdown of spending by state, county, or congressional district. View your results by place of performance or recipient location, and hover over your chosen location for more detailed information.

Select the map tab in USAspending Advanced Search and select Recipient Location and Congressional District

Demo continued



FL-08

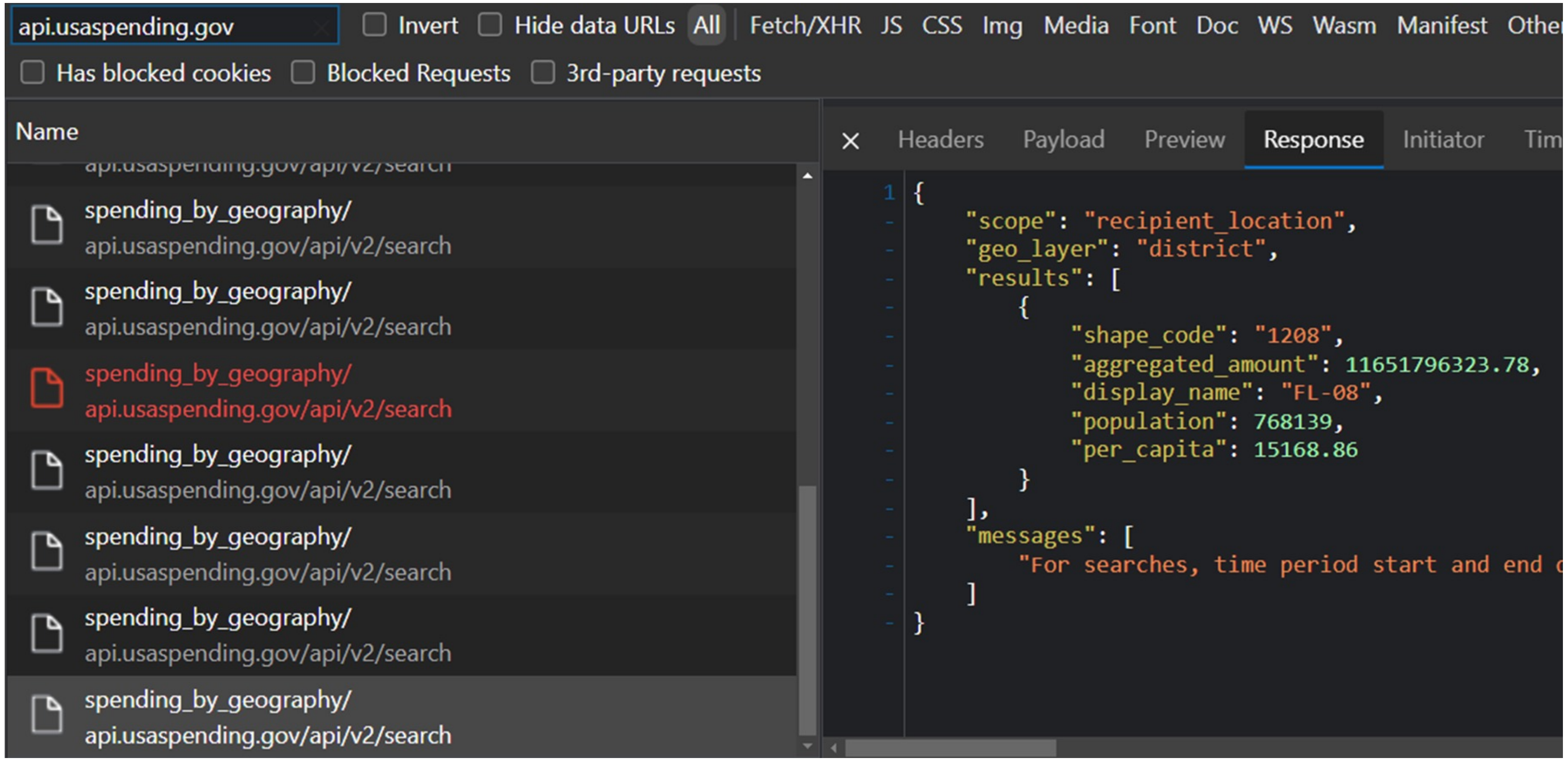
$11,651,796,324

Total Obligations

Zoom in and hover over the appropriate congressional district.

Notice the total obligations value.

Demo continued

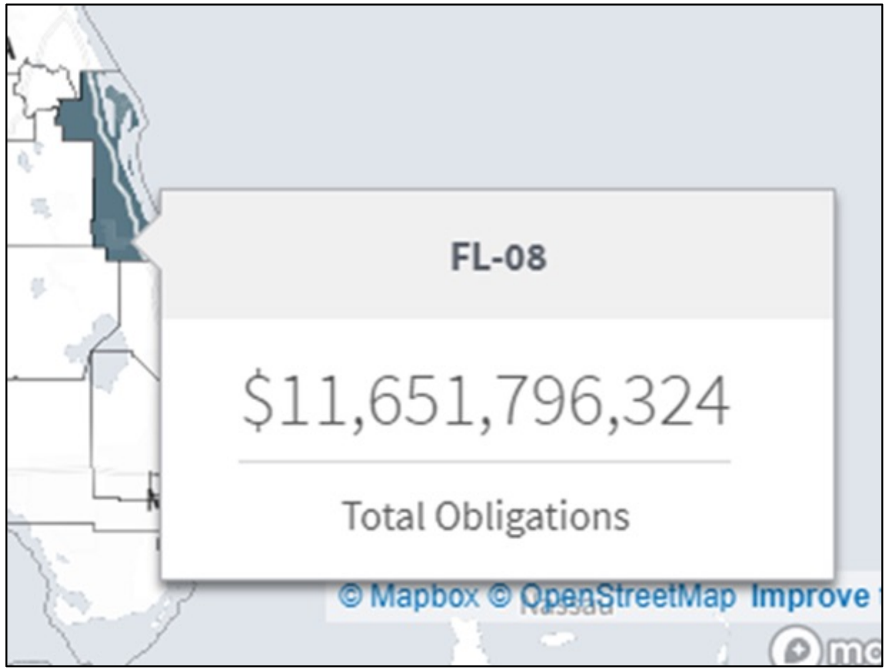


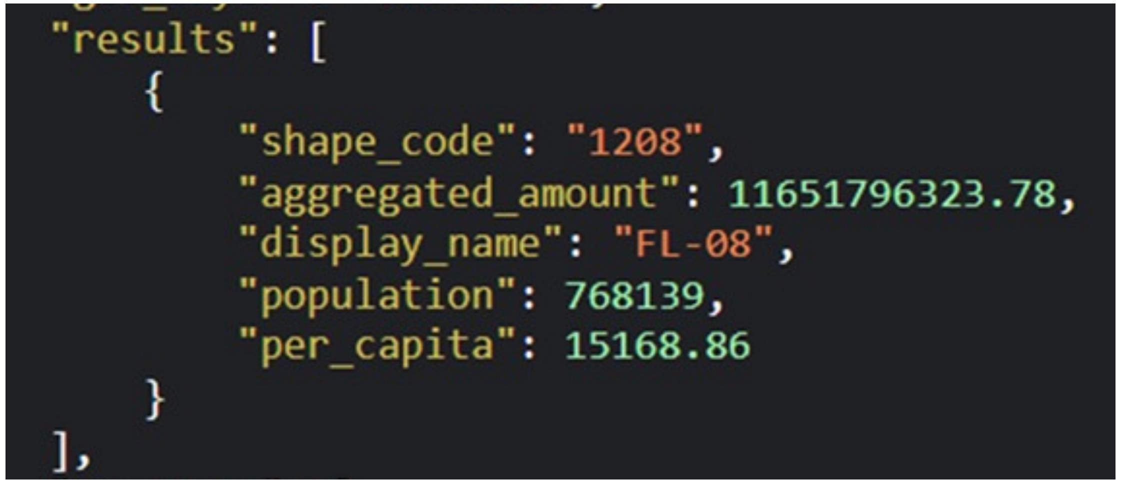
```
api.usaspending.gov/api/v2/search
spending_by_geography/
api.usaspending.gov/api/v2/search
spending_by_geography/
api.usaspending.gov/api/v2/search
spending_by_geography/
api.usaspending.gov/api/v2/search
spending_by_geography/
api.usaspending.gov/api/v2/search
spending_by_geography/
api.usaspending.gov/api/v2/search
spending_by_geography/
api.usaspending.gov/api/v2/search
spending_by_geography/
api.usaspending.gov/api/v2/search
```

```
{
    "scope": "recipient_location",
    "geo_layer": "district",
    "results": [
        {
            "shape_code": "1208",
            "aggregated_amount": 11651796323.78,
            "display_name": "FL-08",
            "population": 768139,
            "per_capita": 15168.86
        }
    ],
    "messages": [
        "For searches, time period start and end 
    ]
}
```

Review the Response tab for the most recent spending_by_geography API call.
Observe that the aggregated_amount value matches the map.
*Note that the API responses on USAspending are returned in JSON

Demo continued

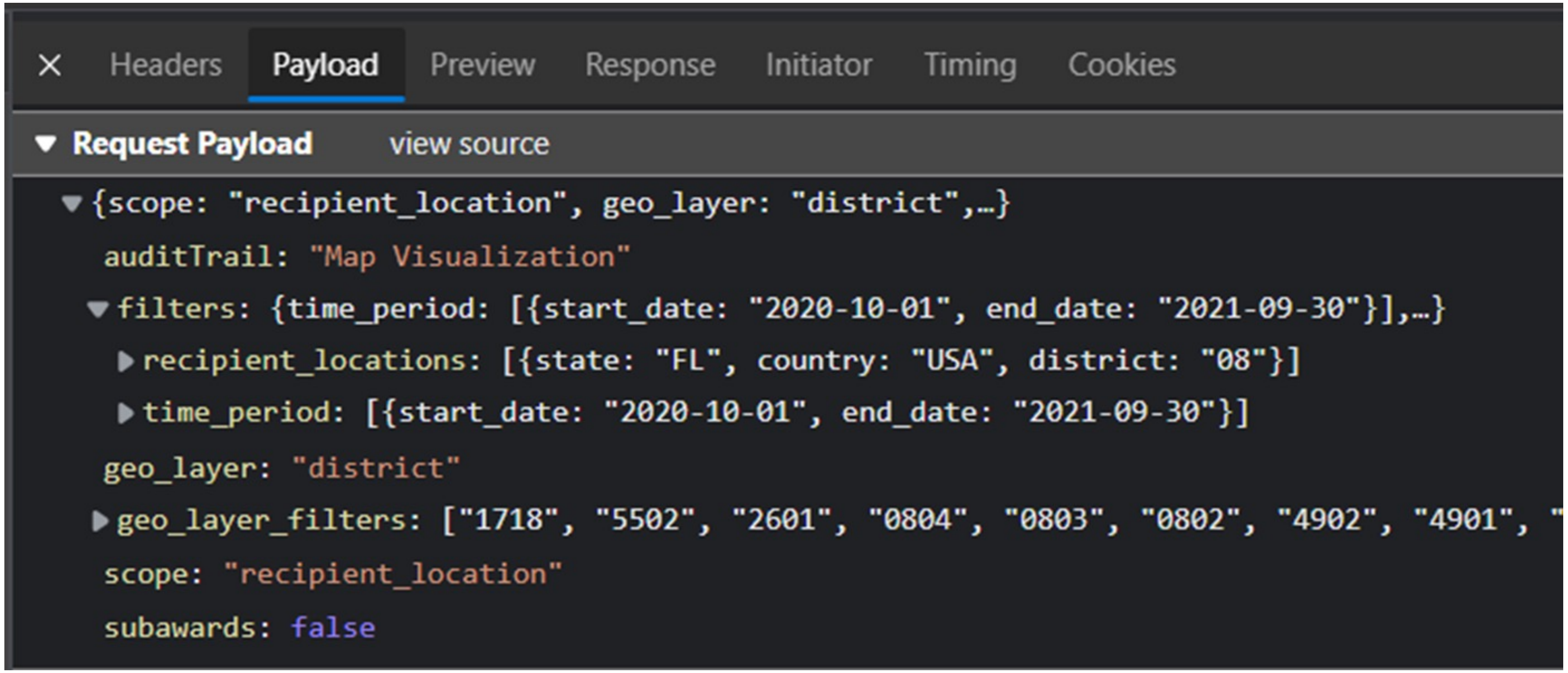




```
"results": [
    {
        "shape_code": "1208",
        "aggregated_amount": 11651796323.78,
        "display_name": "FL-08",
        "population": 768139,
        "per_capita": 15168.86
    }
],
```

Review the Response tab for the most recent spending_by_geography API call. Observe that the aggregated_amount value matches the map.

Demo continued


Headers Payload Preview Response Initiator Timing Cookies

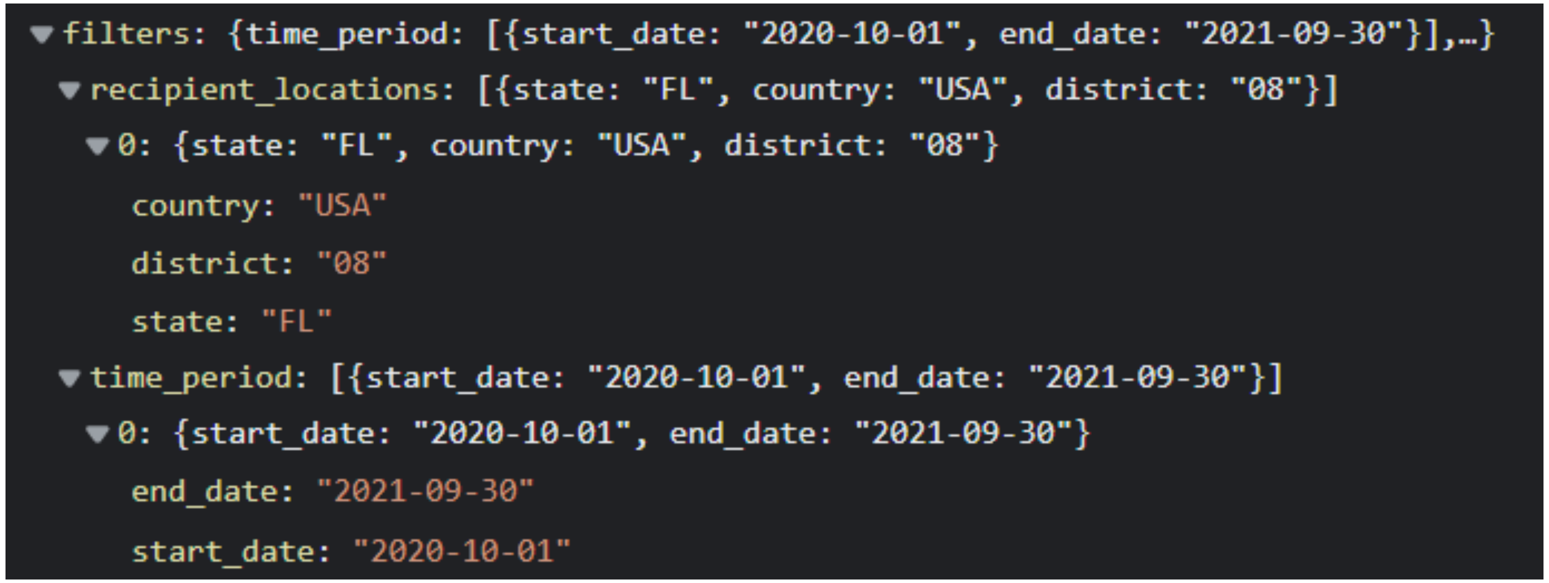
Request Payload view source

```
▼{scope: "recipient_location", geo_layer: "district",…}
  auditTrail: "Map Visualization"
 ▼filters: {time_period: [{start_date: "2020-10-01", end_date: "2021-09-30"}],…}
   ▶recipient_locations: [{state: "FL", country: "USA", district: "08"}]
   ▶time_period: [{start_date: "2020-10-01", end_date: "2021-09-30"}]
  geo_layer: "district"
 ▶geo_layer_filters: ["1718", "5502", "2601", "0804", "0803", "0802", "4902", "4901", "
  scope: "recipient_location"
  subawards: false
```

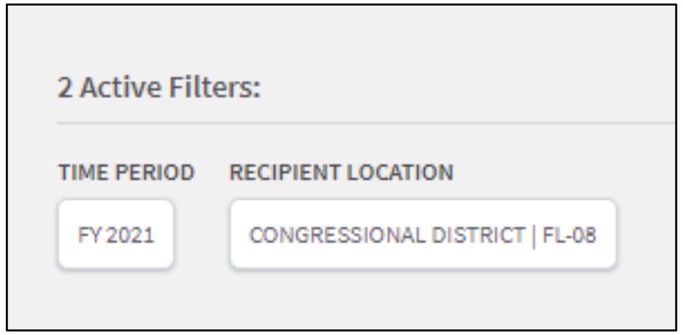
Review the Payload tab for the most recent spending_by_geography API call.

Observe that the filters value matches the search filters.

Demo continued



```
▼ filters: {time_period: [{start_date: "2020-10-01", end_date: "2021-09-30"}],…}
  ▼ recipient_locations: [{state: "FL", country: "USA", district: "08"}]
    ▼ 0: {state: "FL", country: "USA", district: "08"}
        country: "USA"
        district: "08"
        state: "FL"
  ▼ time_period: [{start_date: "2020-10-01", end_date: "2021-09-30"}]
    ▼ 0: {start_date: "2020-10-01", end_date: "2021-09-30"}
        end_date: "2021-09-30"
        start_date: "2020-10-01"
```

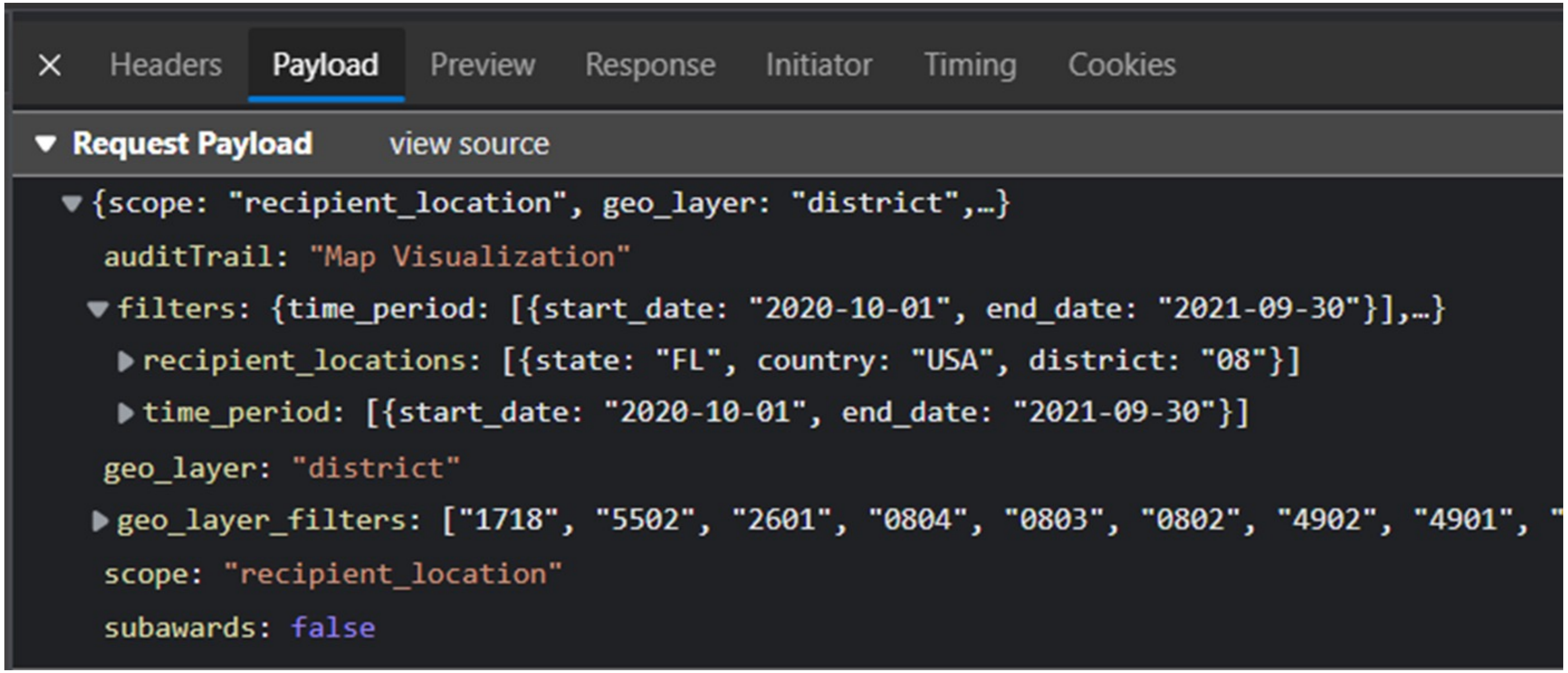


2 Active Filters:

TIME PERIOD	RECIPIENT LOCATION
FY 2021	CONGRESSIONAL DISTRICT | FL-08

Review the Payload tab for the most recent spending_by_geography API call.
Observe that the filters value matches the search filters.

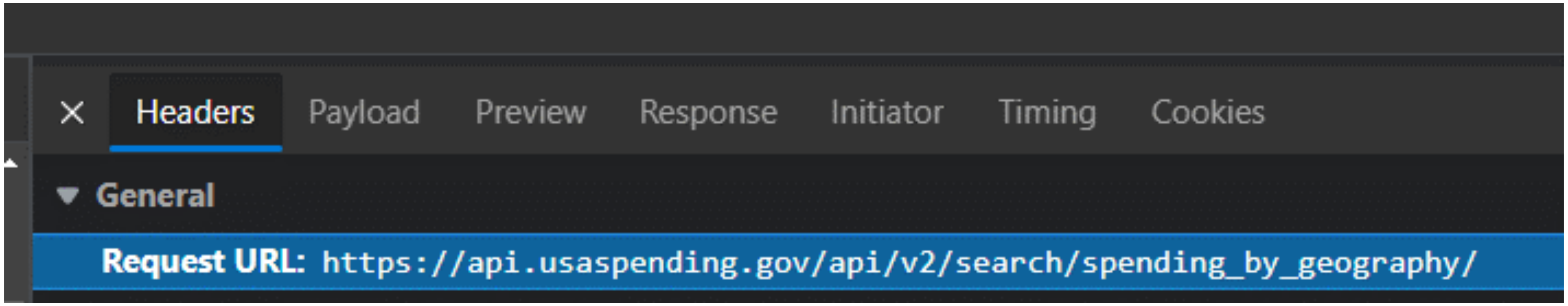
Demo continued



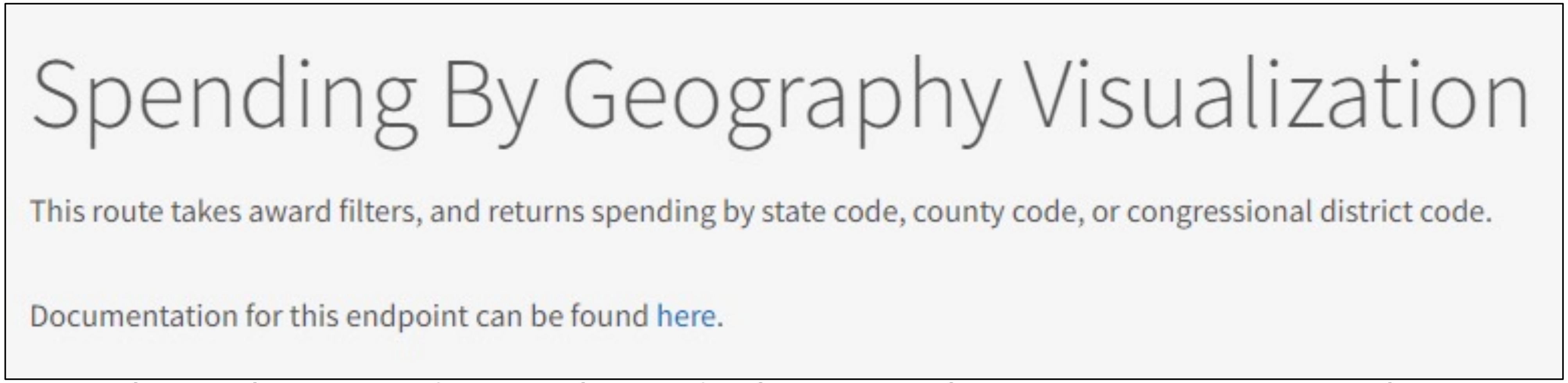
```
▼{scope: "recipient_location", geo_layer: "district",…}
  auditTrail: "Map Visualization"
 ▼filters: {time_period: [{start_date: "2020-10-01", end_date: "2021-09-30"}],…}
   ▶recipient_locations: [{state: "FL", country: "USA", district: "08"}]
   ▶time_period: [{start_date: "2020-10-01", end_date: "2021-09-30"}]
  geo_layer: "district"
 ▶geo_layer_filters: ["1718", "5502", "2601", "0804", "0803", "0802", "4902", "4901", "
  scope: "recipient_location"
  subawards: false
```

Review the Payload tab for the most recent spending_by_geography API call.
Observe that the filters value matches the search filters.

Demo continued



Request URL: https://api.usaspending.gov/api/v2/search/spending_by_geography/



Spending By Geography Visualization

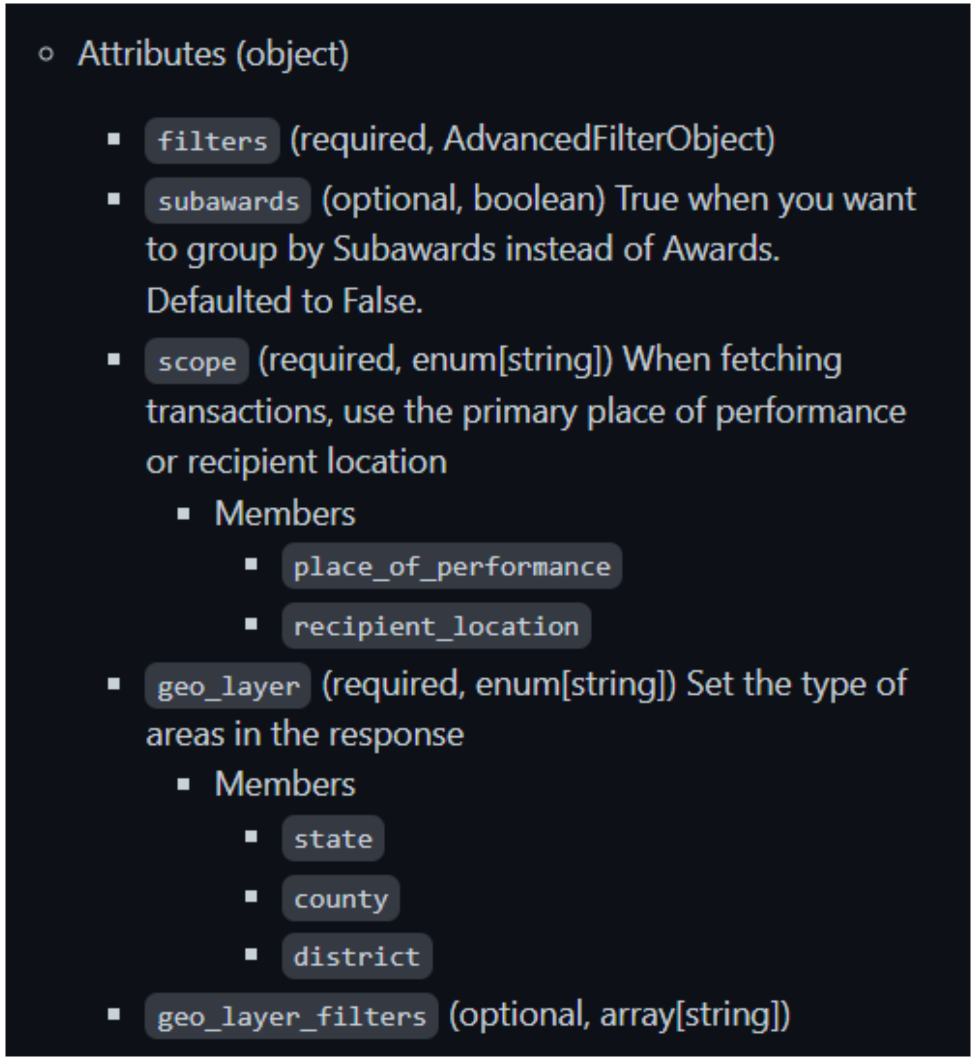
This route takes award filters, and returns spending by state code, county code, or congressional district code.

Documentation for this endpoint can be found here.

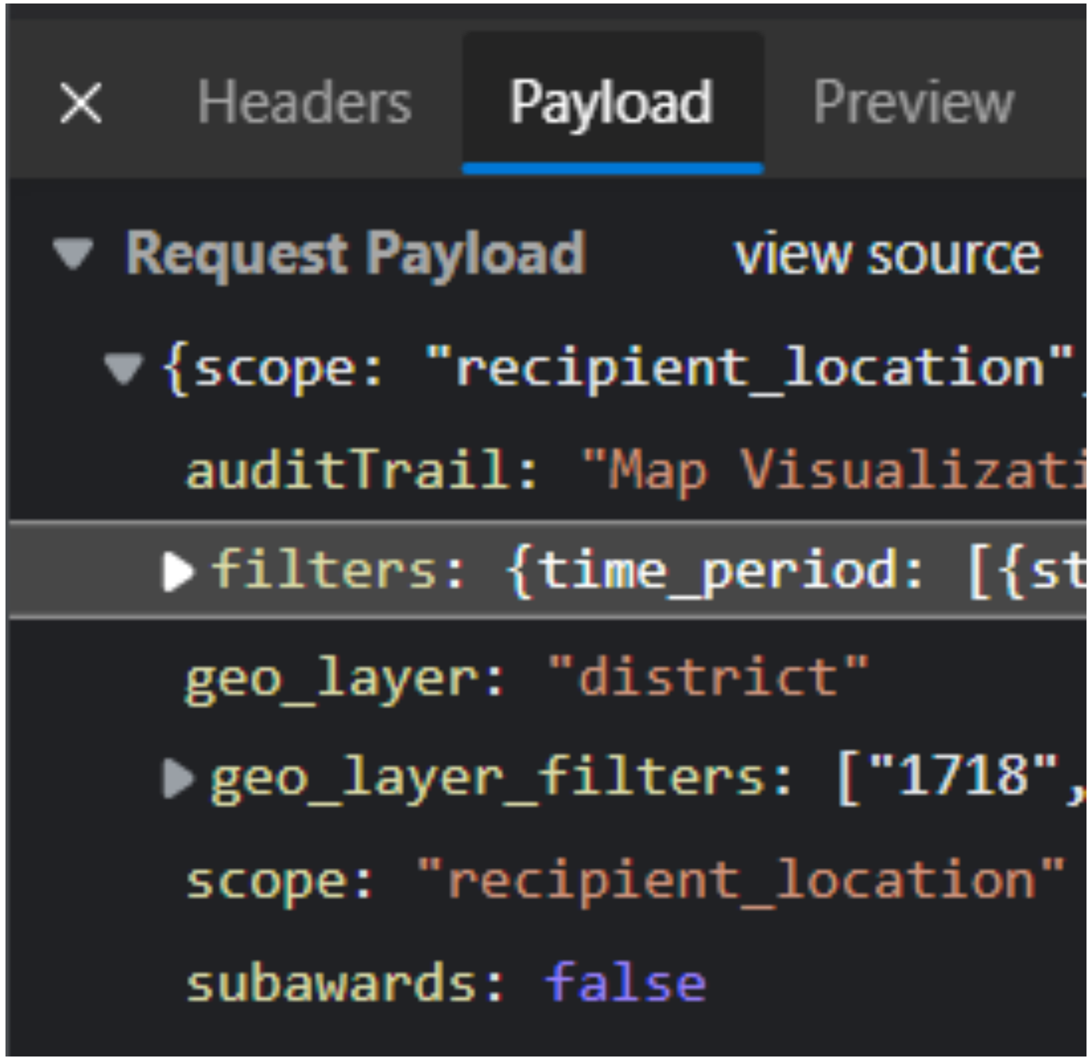
Select the Headers tab and observe the Request URL value.

Navigate to the URL and click “Documentation for this endpoint can be found here.”

Demo continued



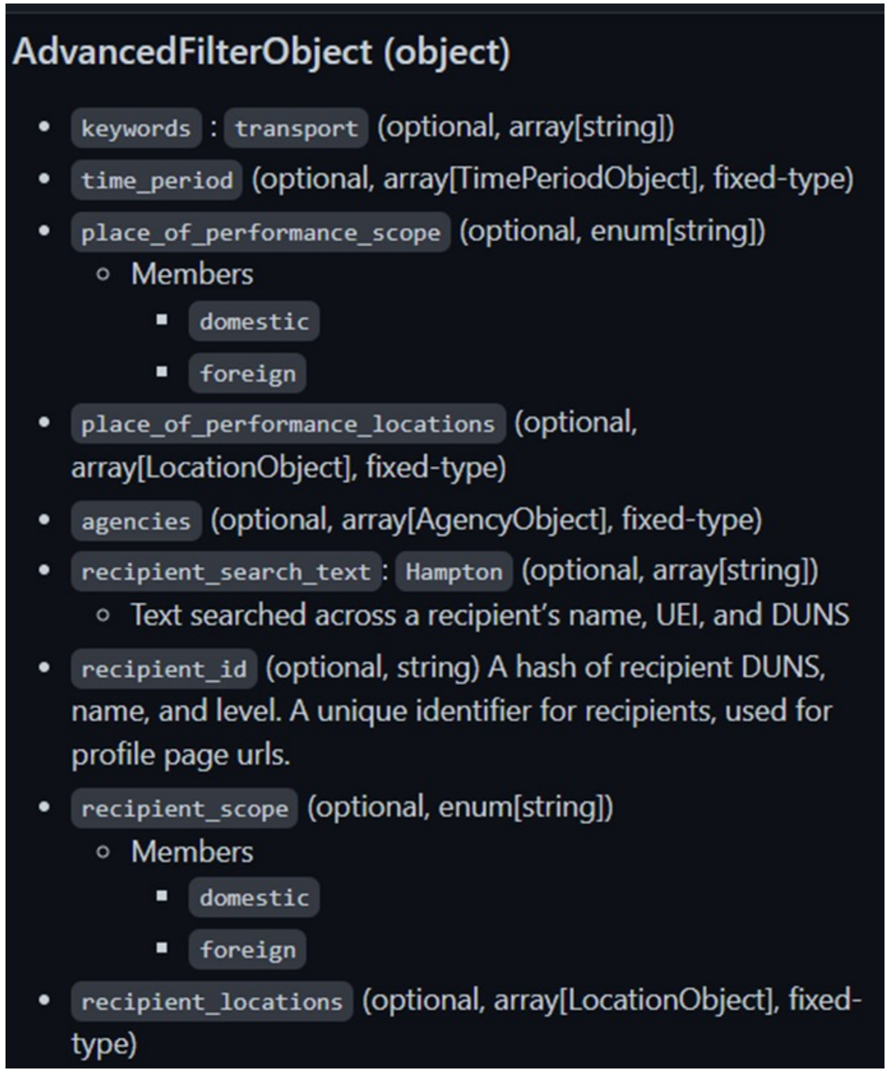
- Attributes (object)
  - `filters` (required, AdvancedFilterObject)
  - `subawards` (optional, boolean) True when you want to group by Subawards instead of Awards. Defaulted to False.
  - `scope` (required, enum[string]) When fetching transactions, use the primary place of performance or recipient location
    - Members
      - `place_of_performance`
      - `recipient_location`
  - `geo_layer` (required, enum[string]) Set the type of areas in the response
    - Members
      - `state`
      - `county`
      - `district`
  - `geo_layer_filters` (optional, array[string])



```
▼ {scope: "recipient_location"
    auditTrail: "Map Visualizati
  ▶ filters: {time_period: [{st
    geo_layer: "district"
  ▶ geo_layer_filters: ["1718",
    scope: "recipient_location"
    subawards: false
```

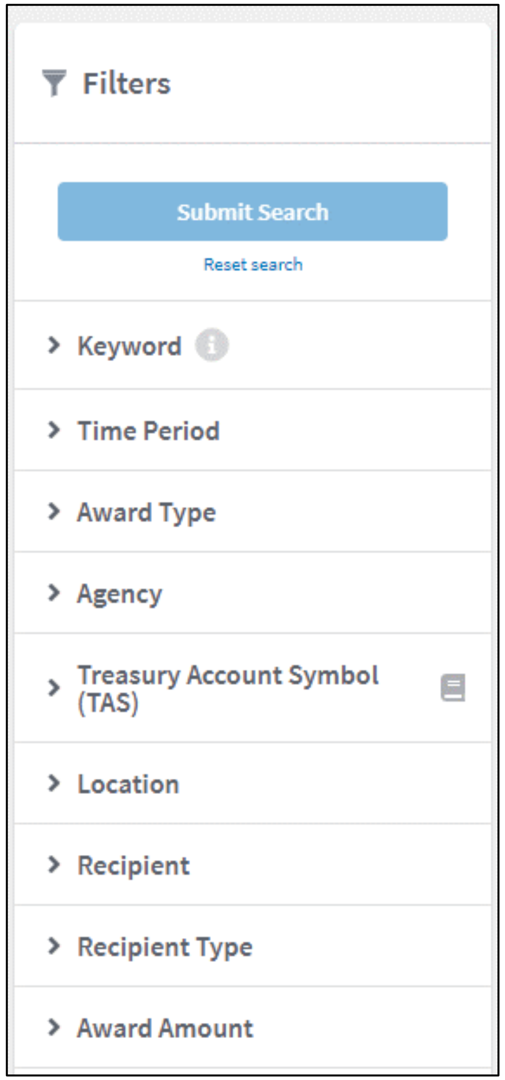
Compare the documentation attributes section and the Payload tab.
Observe the keys in the payload match the attribute bullets (filters, subawards, scope, etc.).
Notice the filters attribute takes an AdvancedFiterObject

Demo continued



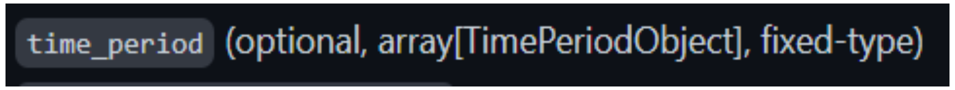
AdvancedFilterObject (object)

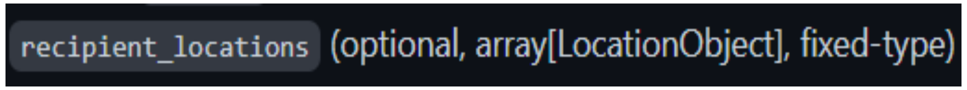
- `keywords` : `transport` (optional, array[string])
- `time_period` (optional, array[TimePeriodObject], fixed-type)
- `place_of_performance_scope` (optional, enum[string])
  - Members
    - `domestic`
    - `foreign`
- `place_of_performance_locations` (optional, array[LocationObject], fixed-type)
- `agencies` (optional, array[AgencyObject], fixed-type)
- `recipient_search_text` : `Hampton` (optional, array[string])
  - Text searched across a recipient's name, UEI, and DUNS
- `recipient_id` (optional, string) A hash of recipient DUNS, name, and level. A unique identifier for recipients, used for profile page urls.
- `recipient_scope` (optional, enum[string])
  - Members
    - `domestic`
    - `foreign`
- `recipient_locations` (optional, array[LocationObject], fixed-type)

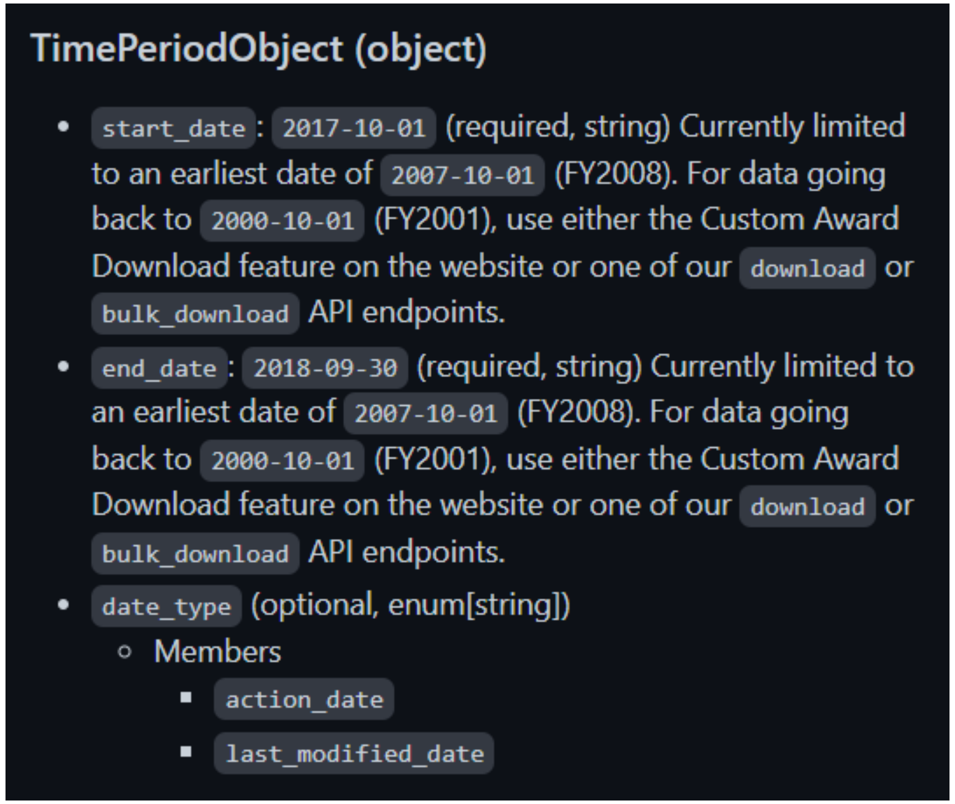


Compare the AdvancedFilterObject documentation and the Advanced Search filter options. AdvancedFilterObject powers advanced search, it is very useful!

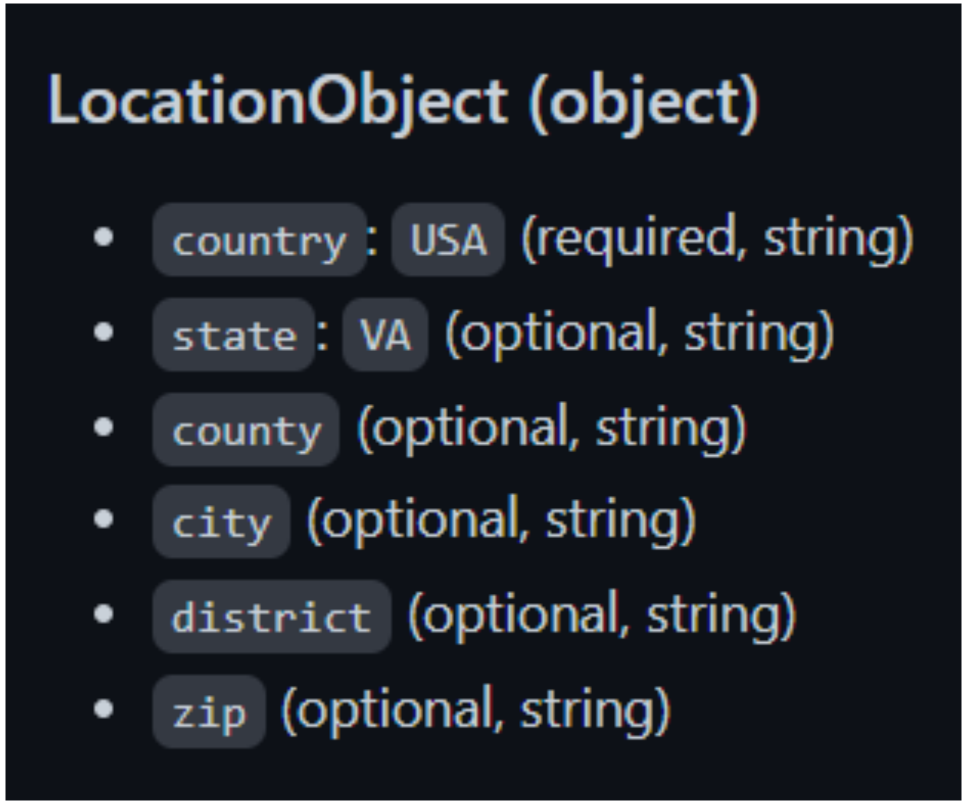
Demo continued


time_period (optional, array[TimePeriodObject], fixed-type)


recipient_locations (optional, array[LocationObject], fixed-type)


TimePeriodObject (object)

- `start_date`: `2017-10-01` (required, string) Currently limited to an earliest date of `2007-10-01` (FY2008). For data going back to `2000-10-01` (FY2001), use either the Custom Award Download feature on the website or one of our `download` or `bulk_download` API endpoints.
- `end_date`: `2018-09-30` (required, string) Currently limited to an earliest date of `2007-10-01` (FY2008). For data going back to `2000-10-01` (FY2001), use either the Custom Award Download feature on the website or one of our `download` or `bulk_download` API endpoints.
- `date_type` (optional, enum[string])
  - Members
    - `action_date`
    - `last_modified_date`


LocationObject (object)

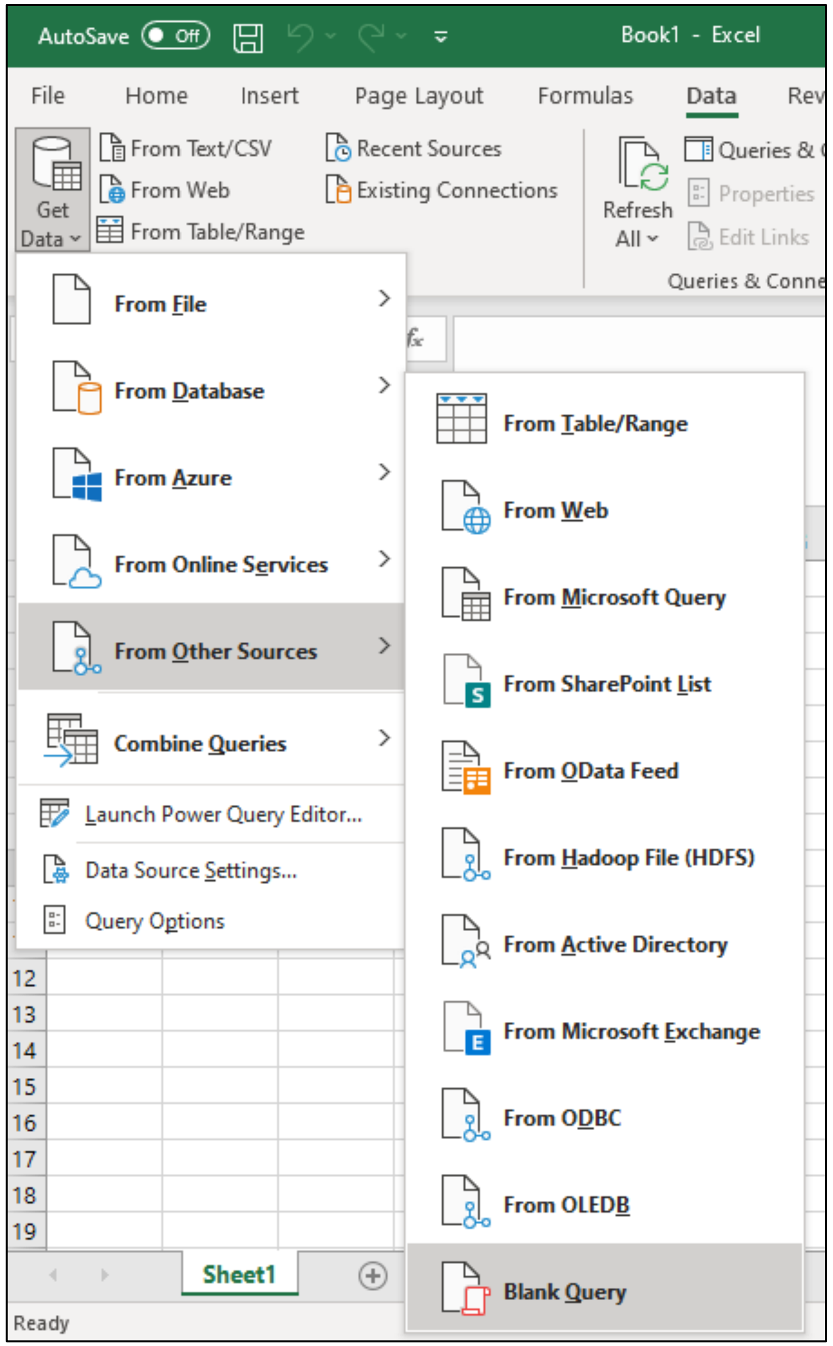
- `country`: `USA` (required, string)
- `state`: `VA` (optional, string)
- `county` (optional, string)
- `city` (optional, string)
- `district` (optional, string)
- `zip` (optional, string)

Observe that the time_period filter takes a TimePeriodObject and the recipient_locations filter takes a LocationObject.

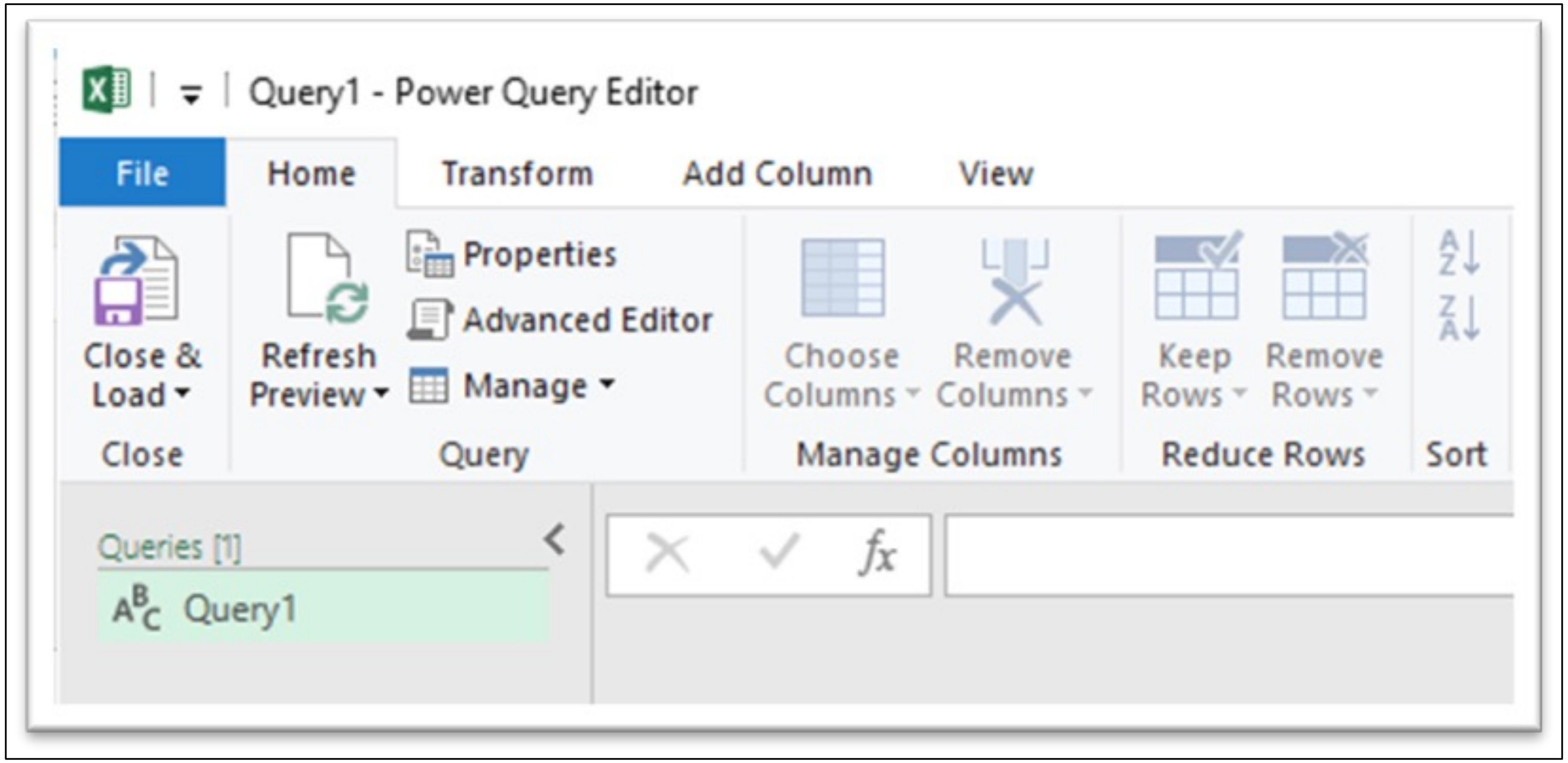
Demo continued

You can use PowerQuery in Excel to import data using POST API requests.

In a new Excel workbook select Data > Get Data > From Other Sources > Blank Query

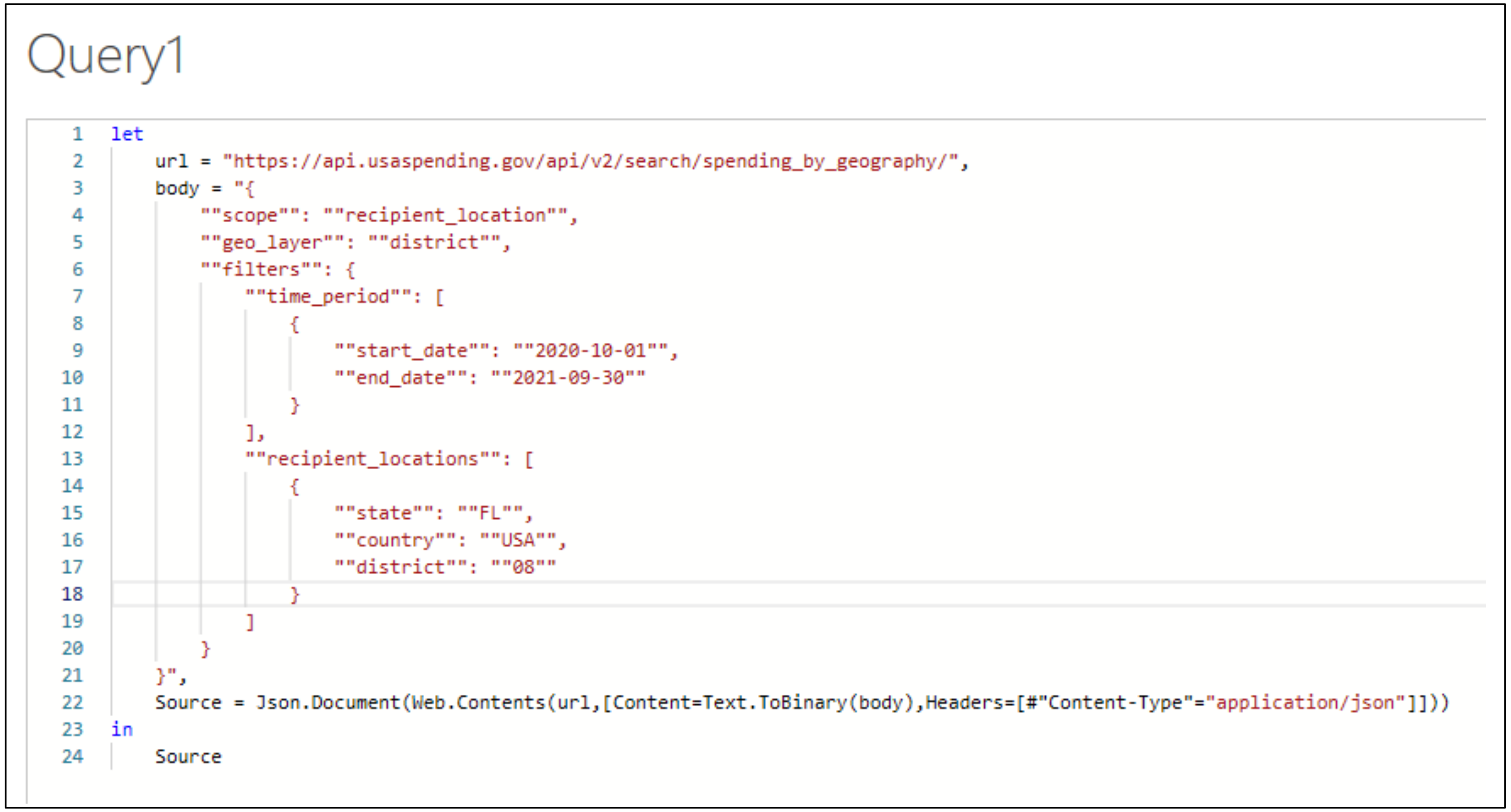


Demo continued



In the PowerQuery Editor window, select 'Advanced Editor'

Demo continued



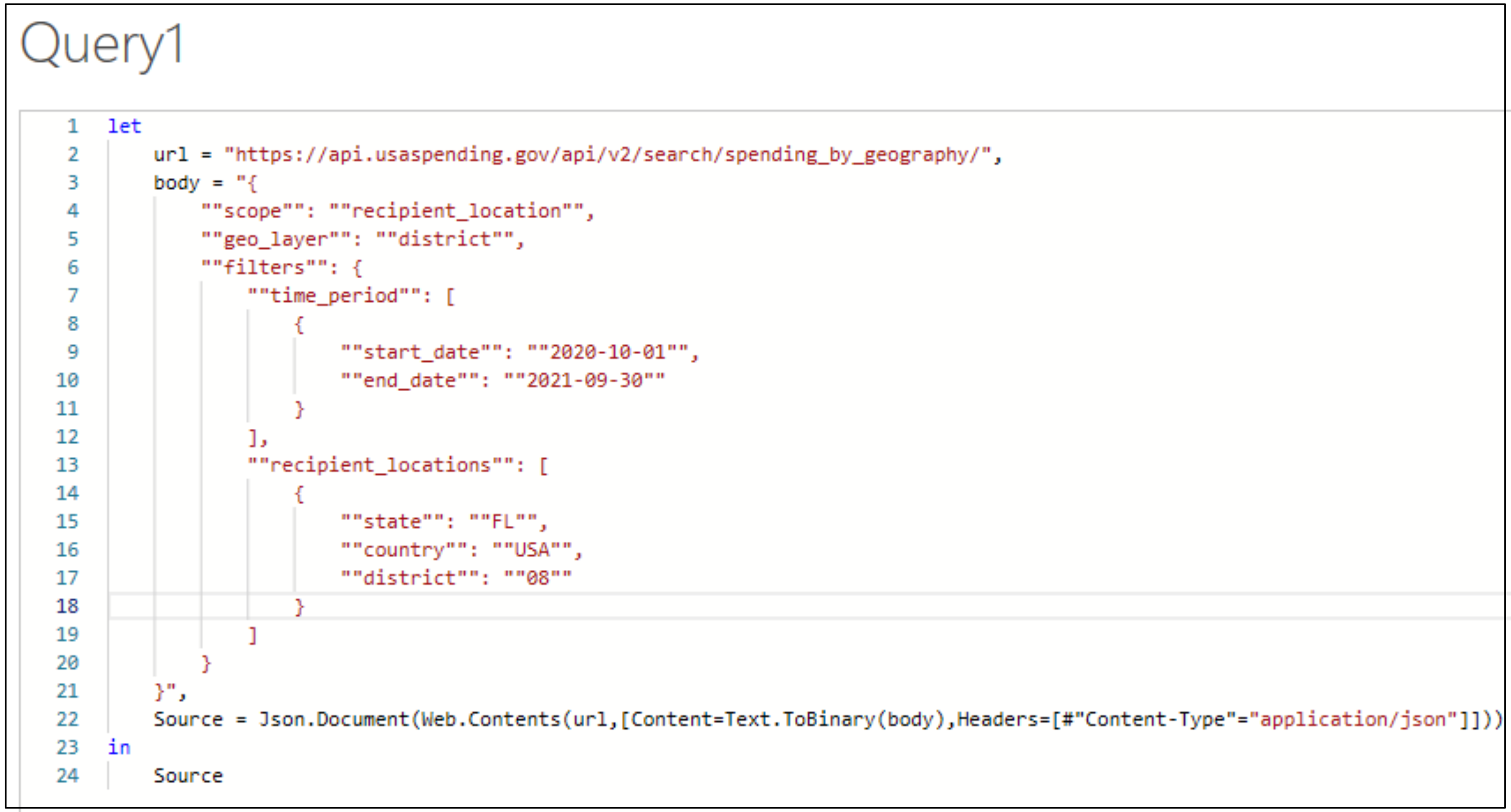
Query1

```
let
    url = "https://api.usaspending.gov/api/v2/search/spending_by_geography/",
    body = "{
        ""scope"": ""recipient_location"",
        ""geo_layer"": ""district"",
        ""filters"": {
            ""time_period"": [
                {
                    ""start_date"": ""2020-10-01"",
                    ""end_date"": ""2021-09-30""
                }
            ],
            ""recipient_locations"": [
                {
                    ""state"": ""FL"",
                    ""country"": ""USA"",
                    ""district"": ""08""
                }
            ]
        }
    }",
    Source = Json.Document(Web.Contents(url,[Content=Text.ToBinary(body),Headers=[#"Content-Type"="application/json"]]))
in
    Source
```

Replace the default code with the code displayed above also available on the link below)

Notes: https://github.com/fedspendingtransparency/usaspending-api/wiki/API-Usage---Power-Query-Example

Demo continued

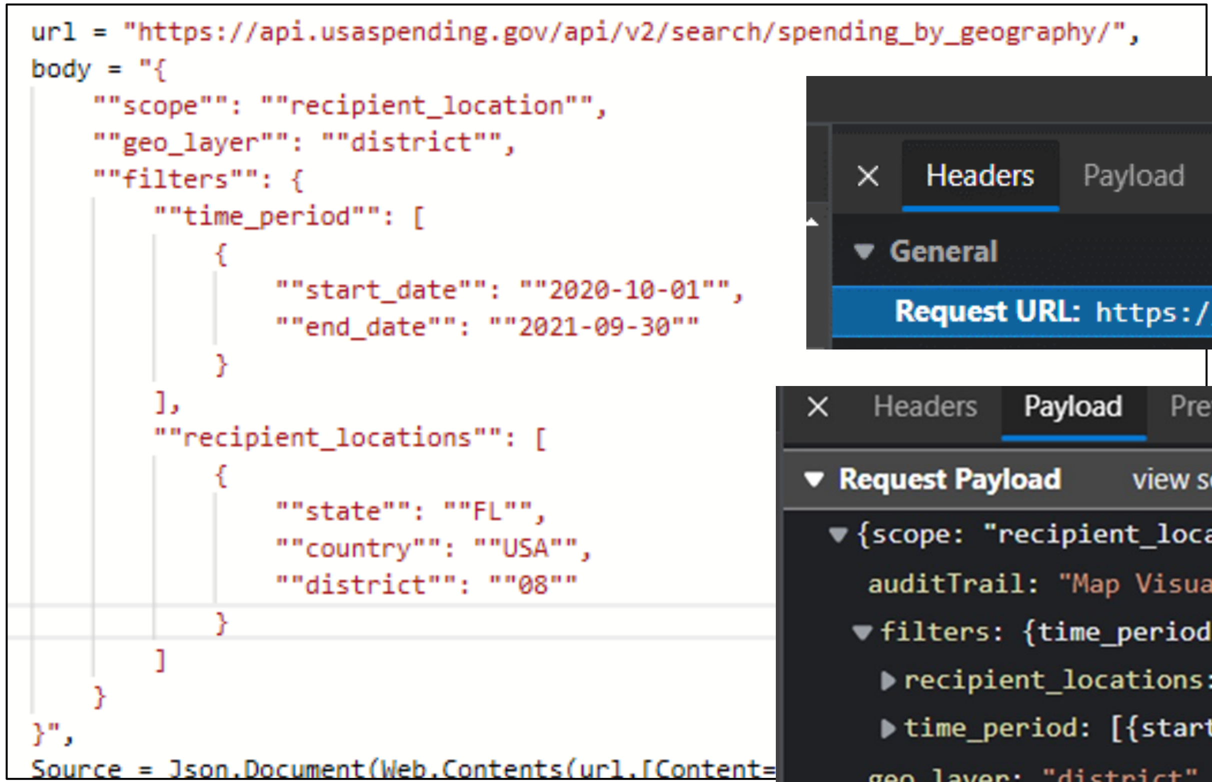

Query1

```
1  let
2      url = "https://api.usaspending.gov/api/v2/search/spending_by_geography/",
3      body = "{
4          ""scope"": ""recipient_location"",
5          ""geo_layer"": ""district"",
6          ""filters"": {
7              ""time_period"": [
8                  {
9                      ""start_date"": ""2020-10-01"",
10                     ""end_date"": ""2021-09-30""
11                 }
12             ],
13             ""recipient_locations"": [
14                 {
15                     ""state"": ""FL"",
16                     ""country"": ""USA"",
17                     ""district"": ""08""
18                 }
19             ]
20         }
21     }",
22     Source = Json.Document(Web.Contents(url,[Content=Text.ToBinary(body),Headers=[#"Content-Type"="application/json"]]))
23 in
24     Source
```

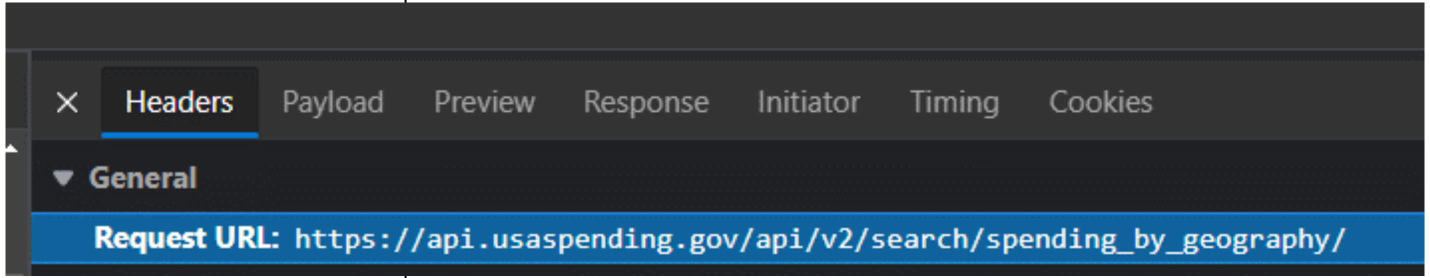
PowerQuery handles POST requests in a particular way. For example, lines 1, and 22-24 as well as the double double-quotes.

Notes: https://github.com/fedspendingtransparency/usaspending-api/wiki/API-Usage---Power-Query-Example

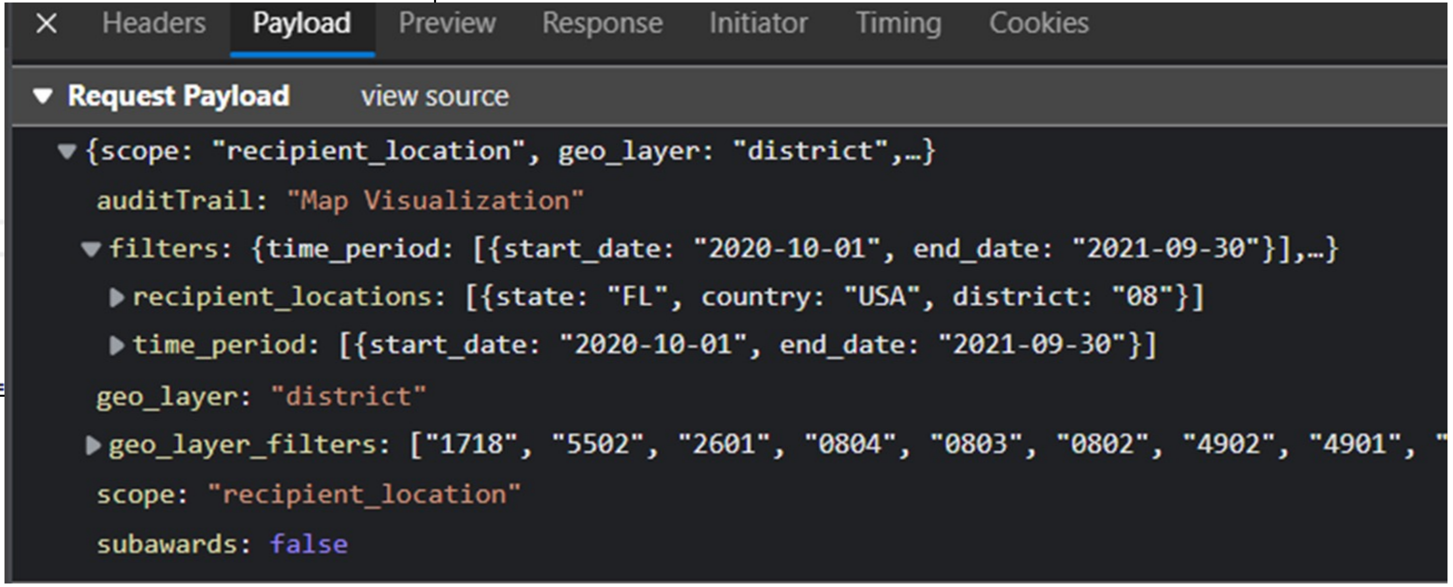
Demo continued



```
url = "https://api.usaspending.gov/api/v2/search/spending_by_geography/",
body = "{
    ""scope"": ""recipient_location"",
    ""geo_layer"": ""district"",
    ""filters"": {
        ""time_period"": [
            {
                ""start_date"": ""2020-10-01"",
                ""end_date"": ""2021-09-30""
            }
        ],
        ""recipient_locations"": [
            {
                ""state"": ""FL"",
                ""country"": ""USA"",
                ""district"": ""08""
            }
        ]
    }
}",
Source = Json.Document(Web.Contents(url,[Content=
```



Request URL: https://api.usaspending.gov/api/v2/search/spending_by_geography/

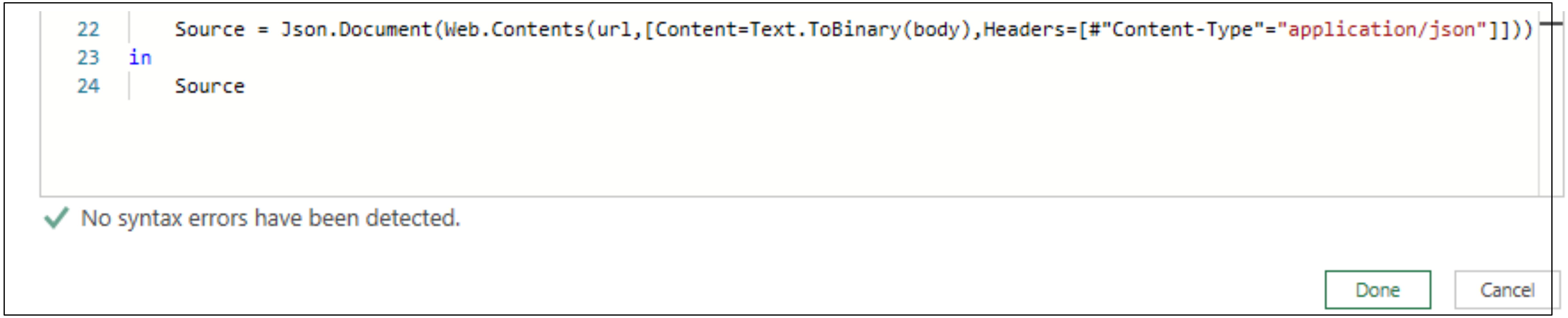


```
▼{scope: "recipient_location", geo_layer: "district",…}
   auditTrail: "Map Visualization"
  ▼filters: {time_period: [{start_date: "2020-10-01", end_date: "2021-09-30"}],…}
    ▶recipient_locations: [{state: "FL", country: "USA", district: "08"}]
    ▶time_period: [{start_date: "2020-10-01", end_date: "2021-09-30"}]
   geo_layer: "district"
  ▶geo_layer_filters: ["1718", "5502", "2601", "0804", "0803", "0802", "4902", "4901", "
   scope: "recipient_location"
   subawards: false
```

Compare the code url variable value and the Headers tab Request URL value. Compare the code body variable value and the Payload tab Request Payload value.

Notes: https://github.com/fedspendingtransparency/usaspending-api/wiki/API-Usage---Power-Query-Example

Demo continued



```
22      Source = Json.Document(Web.Contents(url,[Content=Text.ToBinary(body),Headers=[#"Content-Type"="application/json"]]))
23  in
24      Source
```

No syntax errors have been detected.

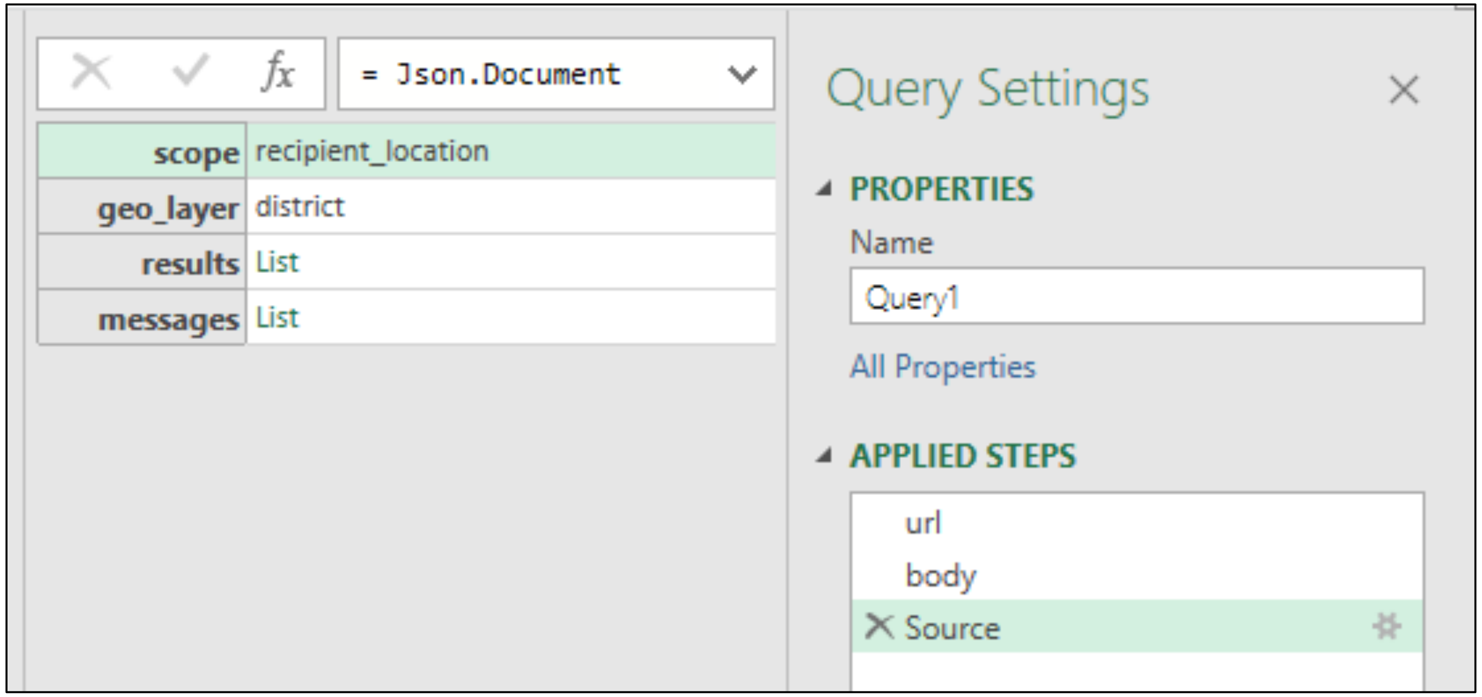
Lines 22 – 24 are required to make POST API requests in PowerQuery.

Notice the code has no syntax errors.

Click Done.

Notes: https://github.com/fedspendingtransparency/usaspending-api/wiki/API-Usage---Power-Query-Example

Demo continued

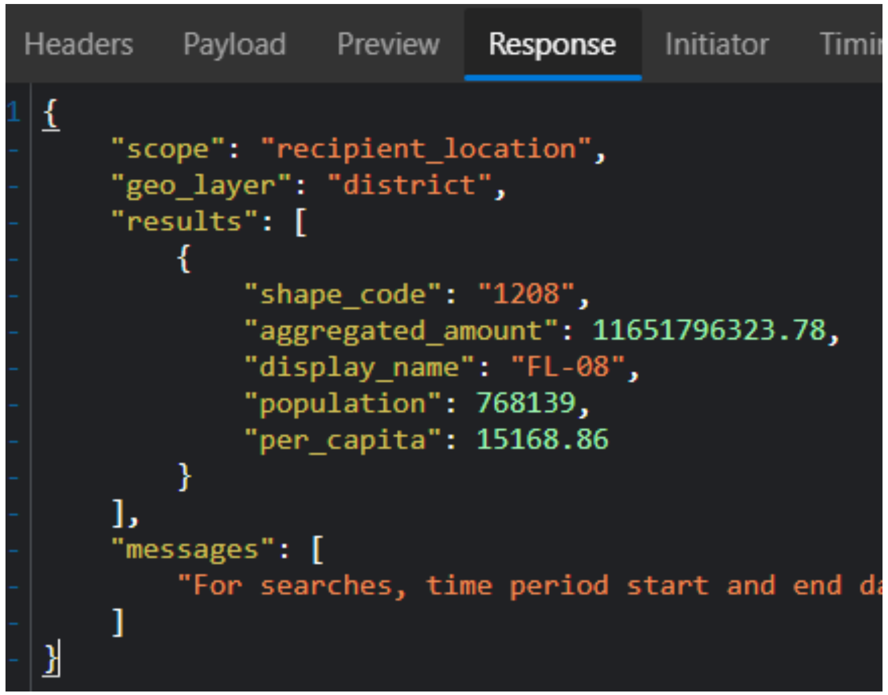


```
= Json.Document
```

scope	recipient_location
geo_layer	district
results	List
messages	List

Query1

url
body
Source



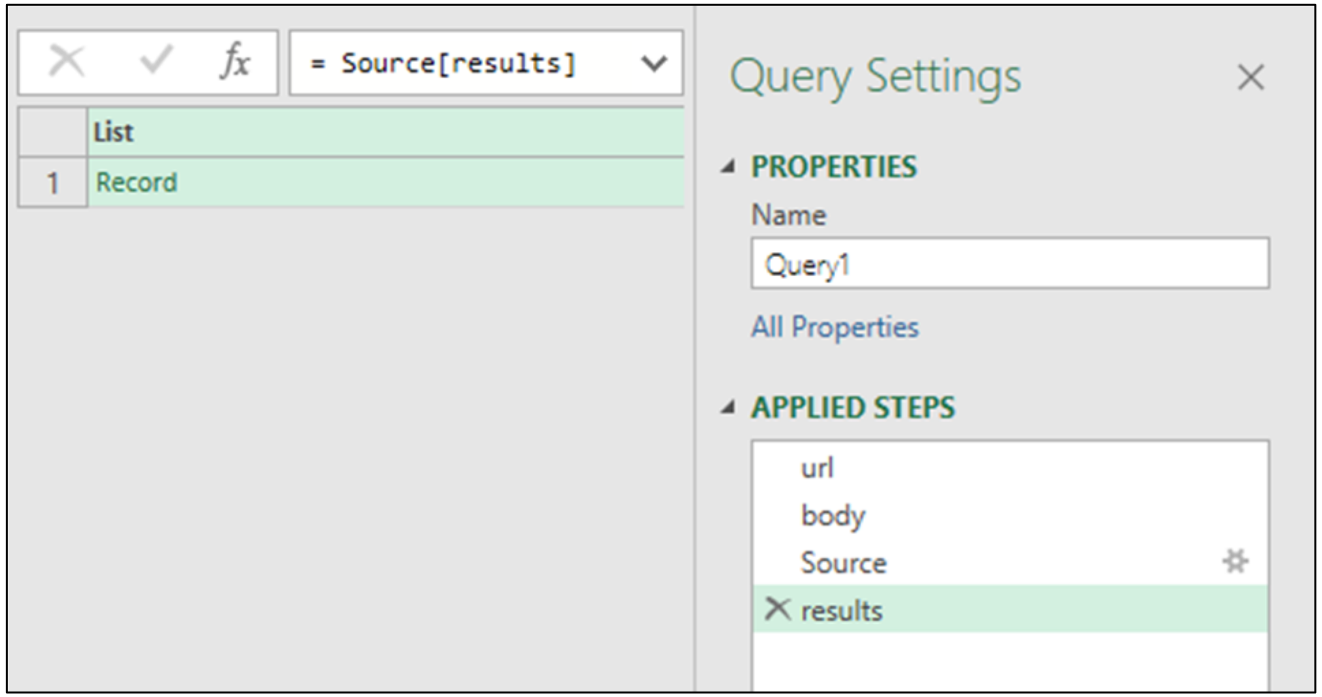
```
{
    "scope": "recipient_location",
    "geo_layer": "district",
    "results": [
        {
            "shape_code": "1208",
            "aggregated_amount": 11651796323.78,
            "display_name": "FL-08",
            "population": 768139,
            "per_capita": 15168.86
        }
    ],
    "messages": [
        "For searches, time period start and end da
    ]
}
```

Observe the query results table and Query Settings panel.

Compare the table with the Response tab.

Notice that the results record is a List. Click on the List to drill down.

Demo continued



= Source[results]

	List
1	Record

Query Settings

PROPERTIES

Name: Query1

All Properties

APPLIED STEPS

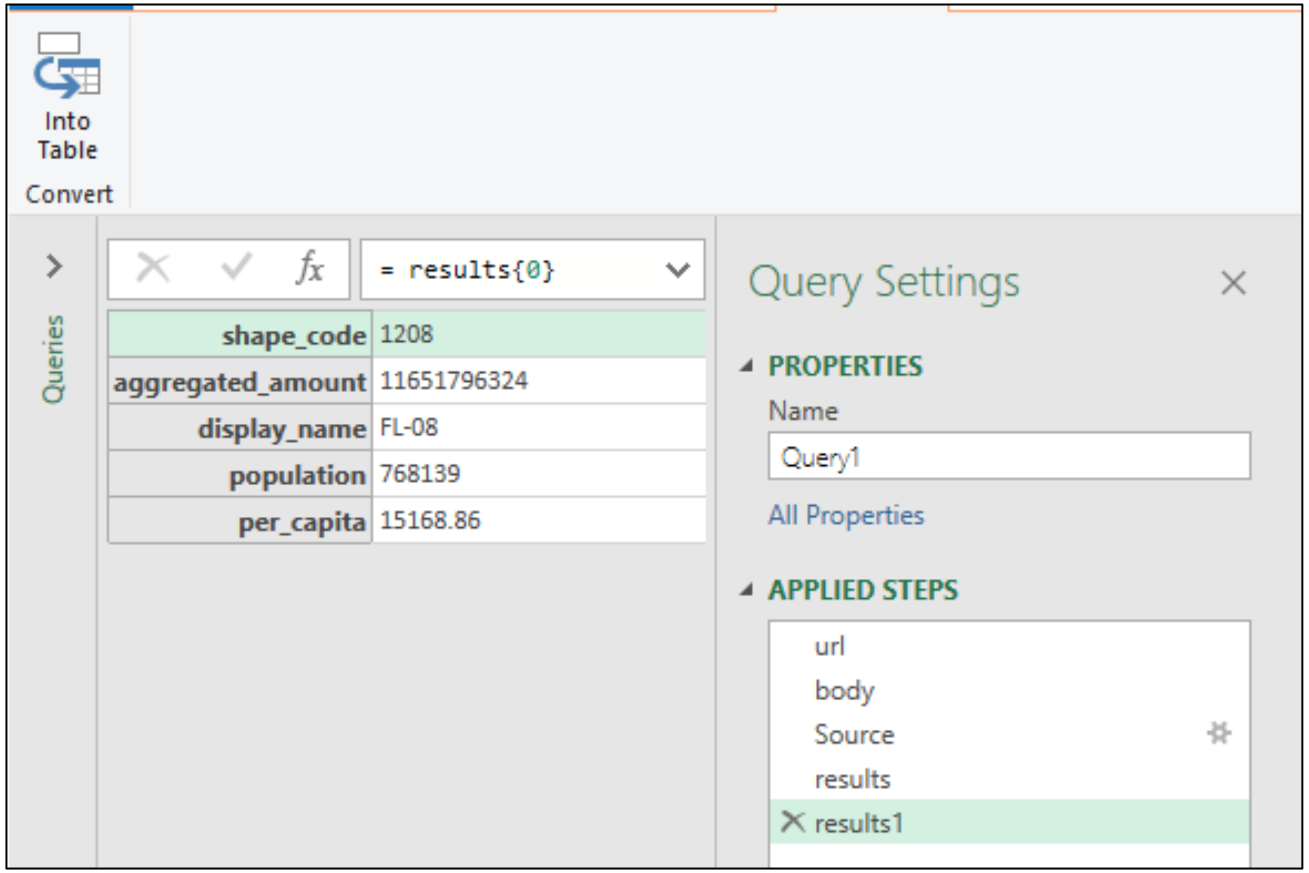
- url
- body
- Source
- results

The List has one item, a Record.

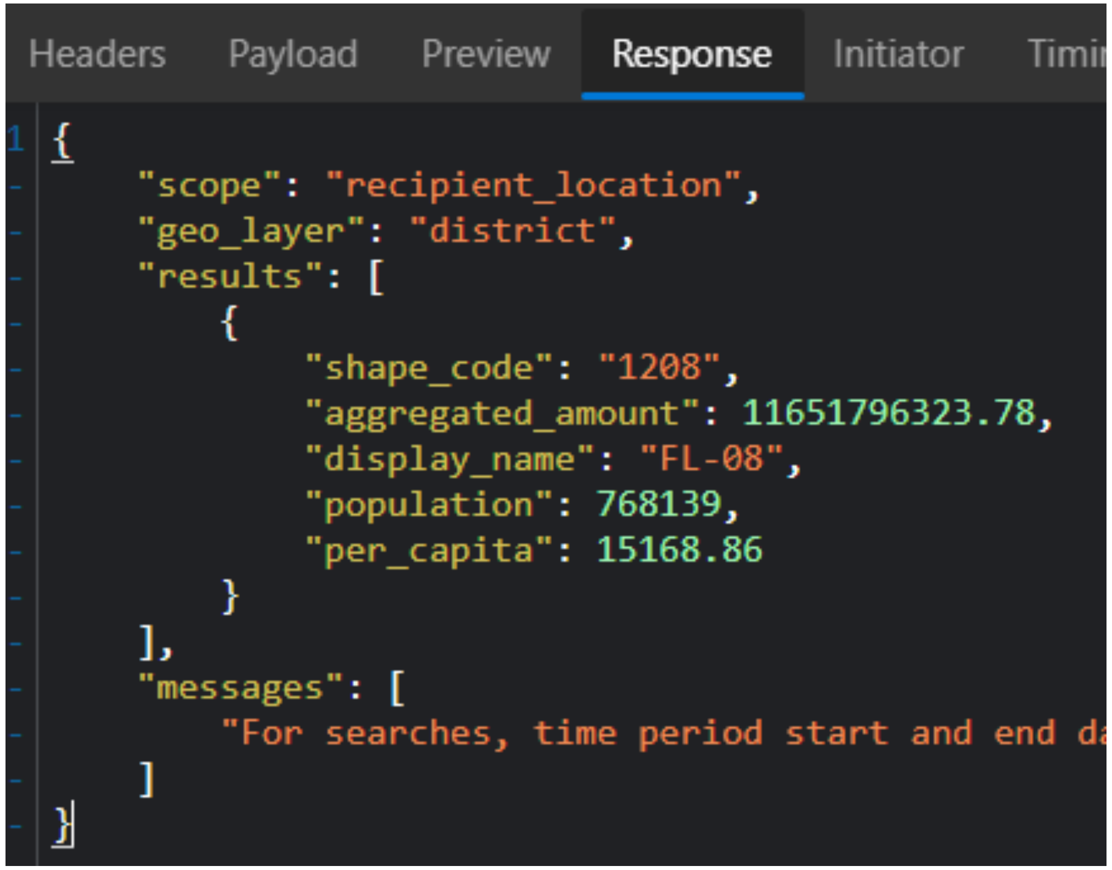
Notice the updated APPLIED STEPS in the Query Settings panel.

Click the Record to drill down.

Demo continued



shape_code	1208
aggregated_amount	11651796324
display_name	FL-08
population	768139
per_capita	15168.86



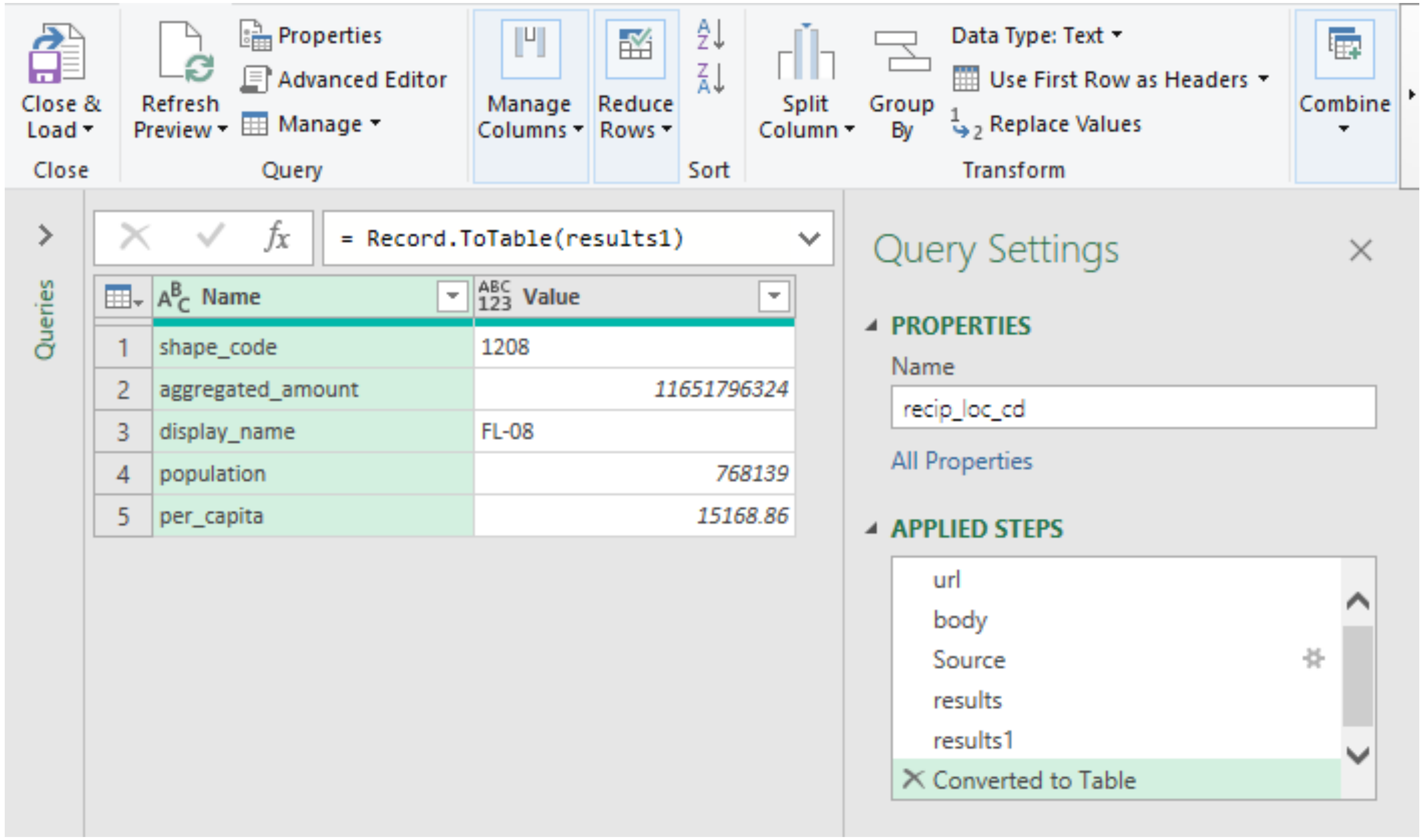
```
{
    "scope": "recipient_location",
    "geo_layer": "district",
    "results": [
        {
            "shape_code": "1208",
            "aggregated_amount": 11651796323.78,
            "display_name": "FL-08",
            "population": 768139,
            "per_capita": 15168.86
        }
    ],
    "messages": [
        "For searches, time period start and end da
    ]
}
```

Finally, our data! It should match the Response tab and the map view.

Notice the updated applied steps.

Click 'Into Table'.

Demo continued



```
= Record.ToTable(results1)
```

	Name	Value
1	shape_code	1208
2	aggregated_amount	11651796324
3	display_name	FL-08
4	population	768139
5	per_capita	15168.86

Query Settings

PROPERTIES

Name: recip_loc_cd

All Properties

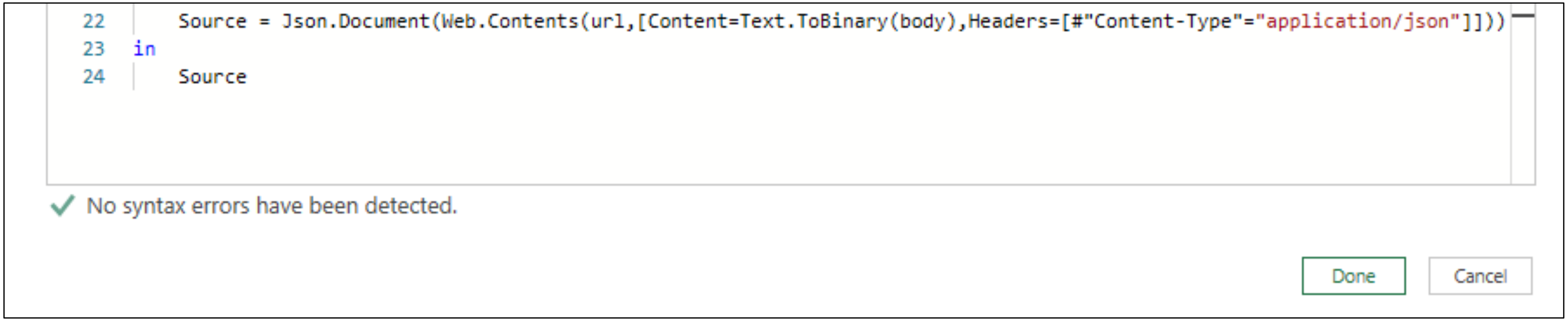
APPLIED STEPS

- url
- body
- Source
- results
- results1
- Converted to Table

Once again, notice the updated applied steps.

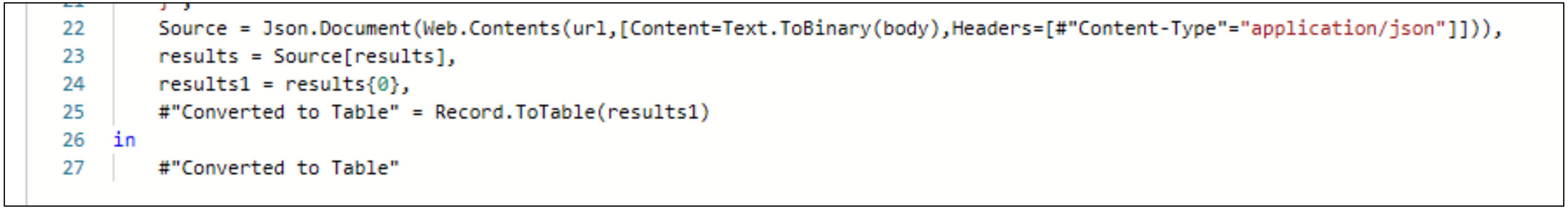
Click 'Advanced Editor' again.

Demo continued



```
    Source = Json.Document(Web.Contents(url,[Content=Text.ToBinary(body),Headers=[#"Content-Type"="application/json"]]))
in
    Source
```

No syntax errors have been detected.



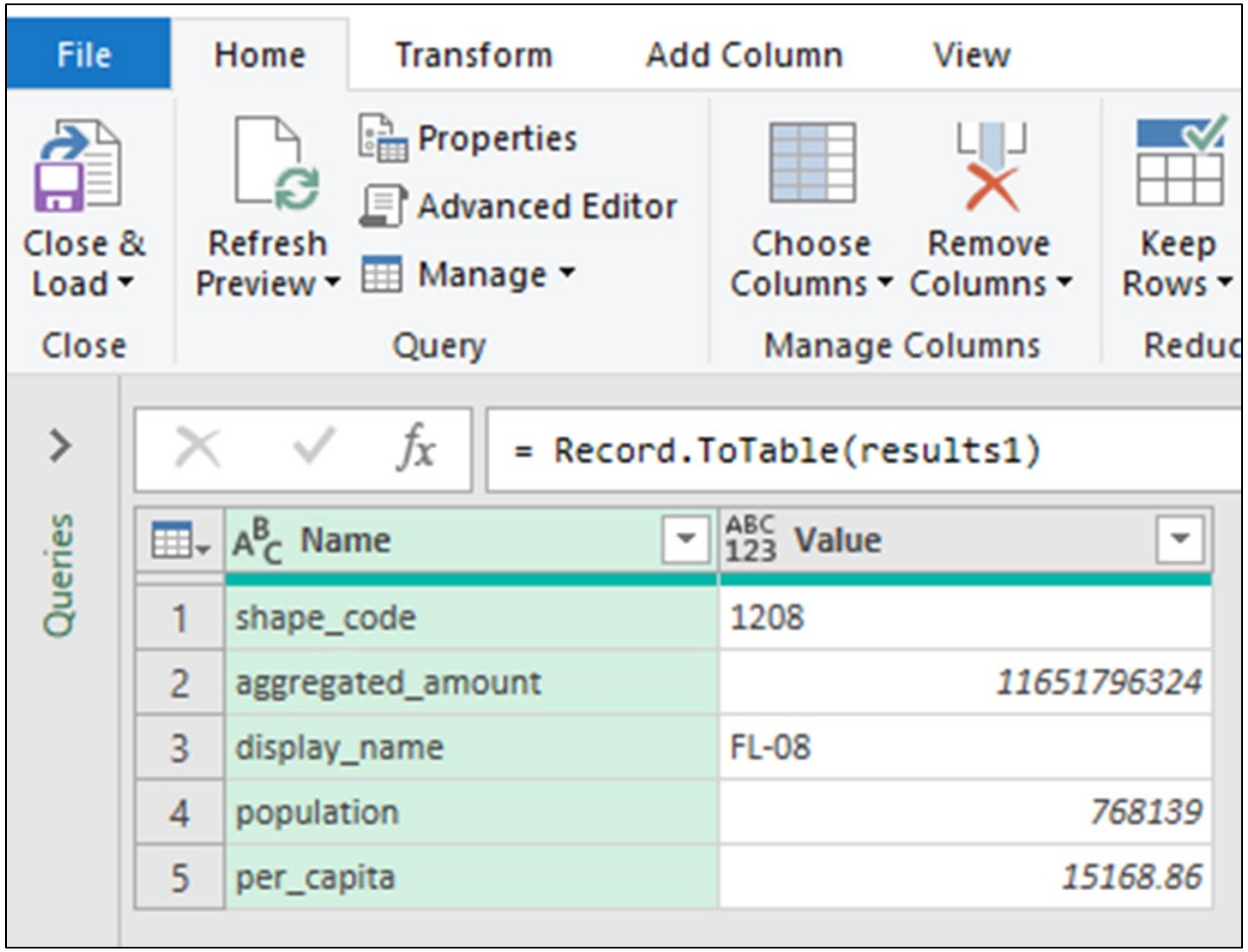
```
    Source = Json.Document(Web.Contents(url,[Content=Text.ToBinary(body),Headers=[#"Content-Type"="application/json"]])),
    results = Source[results],
    results1 = results{0},
    #"Converted to Table" = Record.ToTable(results1)
in
    #"Converted to Table"
```

Notice that the code has been updated to reflect the additional steps.

Use this code to automate those steps in the future.

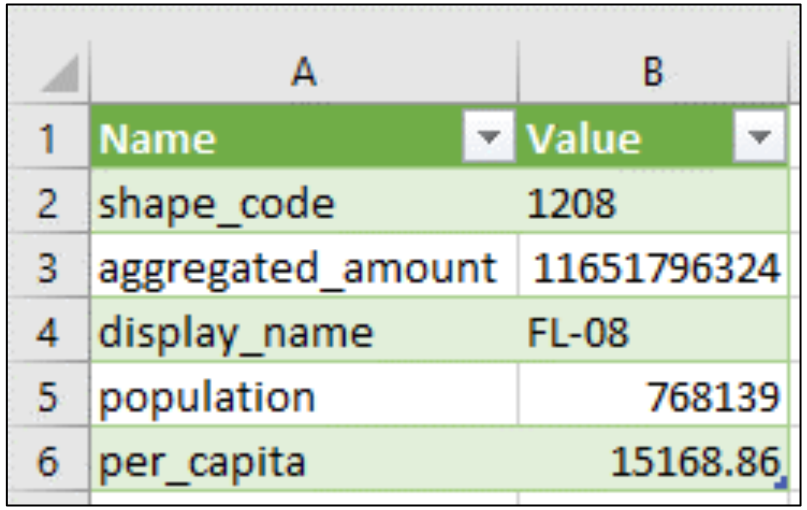
Don’t change the added code. Click 'Done'.

Demo continued



```
= Record.ToTable(results1)
```

	Name	Value
1	shape_code	1208
2	aggregated_amount	*11651796324*
3	display_name	FL-08
4	population	*768139*
5	per_capita	*15168.86*



	A	B
1	Name	Value
2	shape_code	1208
3	aggregated_amount	11651796324
4	display_name	FL-08
5	population	768139
6	per_capita	15168.86

Click 'Close & Load' to load results into a spreadsheet.

Additional Exercises

COVID-19 Exercise With Steps

How much did my Congressional District receive in COVID-19 funding?

Steps:

1. Find this number using the USAspending COVID profile page.
2. Inspect the page to identify which endpoint is used to display this number on the webpage.
3. Review the documentation for this endpoint.
4. Use PowerQuery to reproduce this API request in Excel.

COVID Profile Page vs Advanced Search DEFC

Agencies report transaction-level award data and COVID-19 DEFC award spending data through different systems.

USAspending links the award data reported through these different systems to create a more comprehensive picture of government spending.

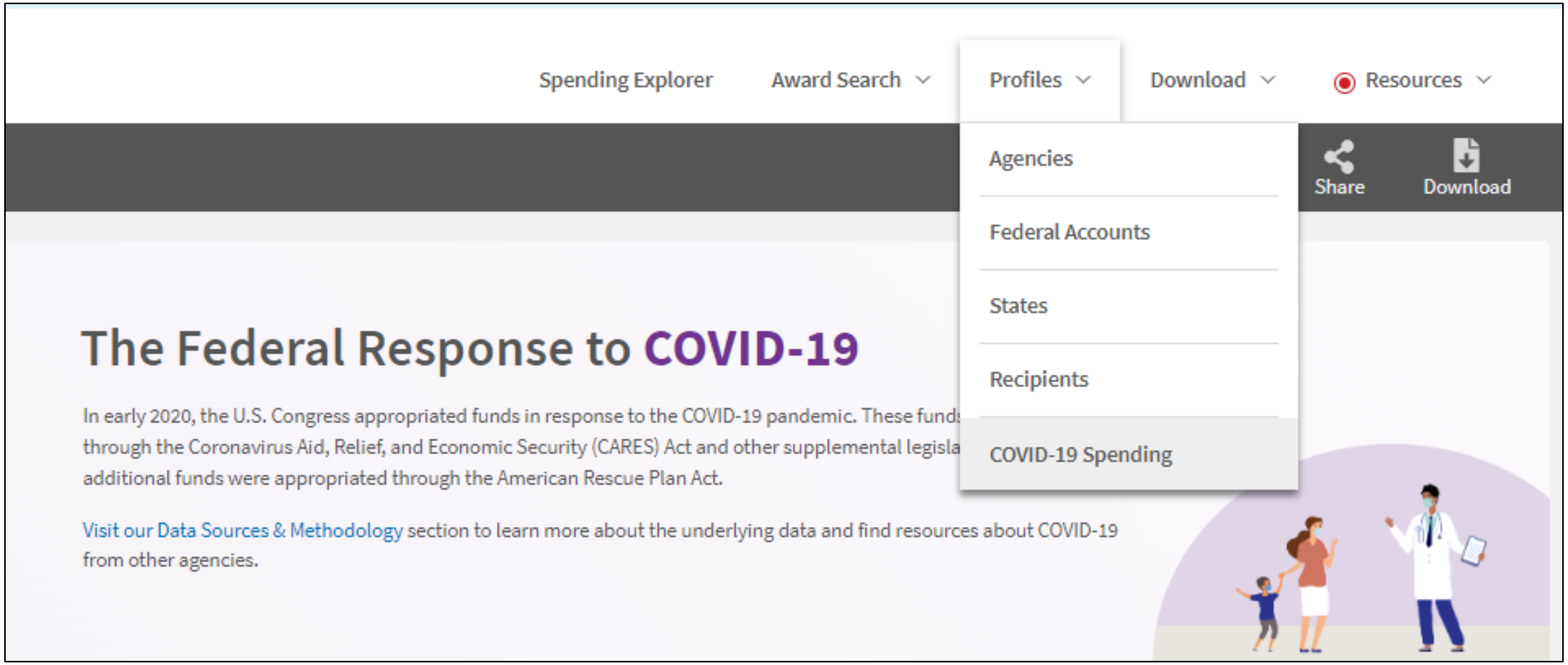
The USAspending Advanced Search tool primarily uses transaction-level award data to filter and present search results. However, since DEFC information is not available at the transaction level, summary stats (in the Time tab, Map tab, and Categories tab) for Advanced Search results with a DEFC filter are an approximation.

We built the COVID-19 Spending profile page to present up to date and detailed information on COVID spending.

The COVID-19 Spending profile page uses a different set of endpoints compared to Advanced Search.

For more information on COVID spending data sources and methodology, please see: https://www.usaspending.gov/disaster/covid-19/data-sources

Demo continued



The Federal Response to **COVID-19**

In early 2020, the U.S. Congress appropriated funds in response to the COVID-19 pandemic. These fund
through the Coronavirus Aid, Relief, and Economic Security (CARES) Act and other supplemental legisla
additional funds were appropriated through the American Rescue Plan Act.

Visit our Data Sources & Methodology section to learn more about the underlying data and find resources about COVID-19 from other agencies.

Navigate to the USAspending COVID-19 Spending profile page.

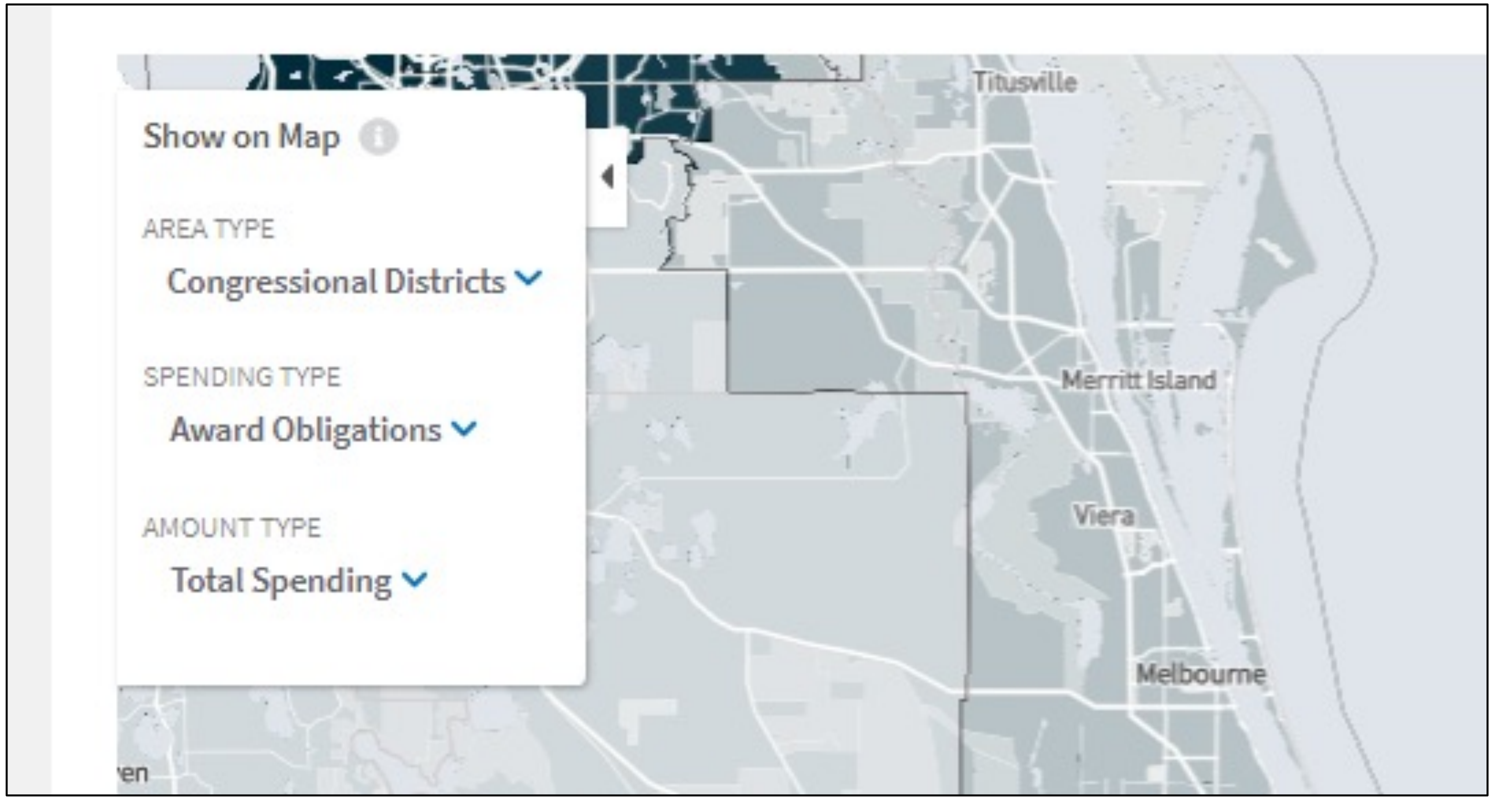
Demo continued

Scroll down to the Award Spending by Recipient Map.

Inspect the page

Configure the map:

- Area Type: Congressional District
- Spending Type: Award Obligations
- Amount Type: Total Spending



Show on Map

AREA TYPE
Congressional Districts

SPENDING TYPE
Award Obligations

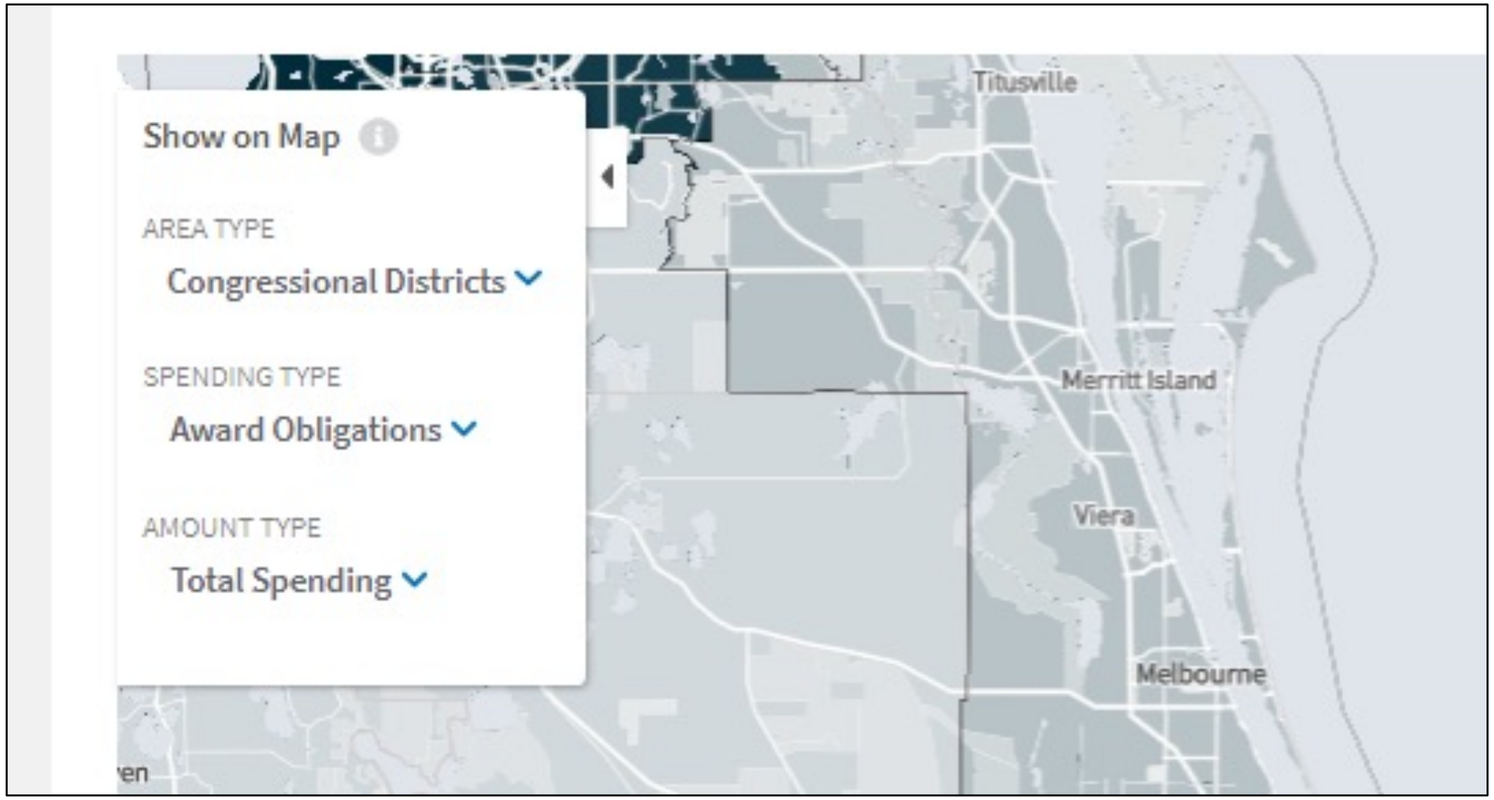
AMOUNT TYPE
Total Spending

Demo continued

The network inspector will only list API requests since you began inspecting the page.

Each time you update the map (including zooming) a new API request is made.

If you wait to inspect the page until just before you configure the map, it will be easier to find the correct API call.

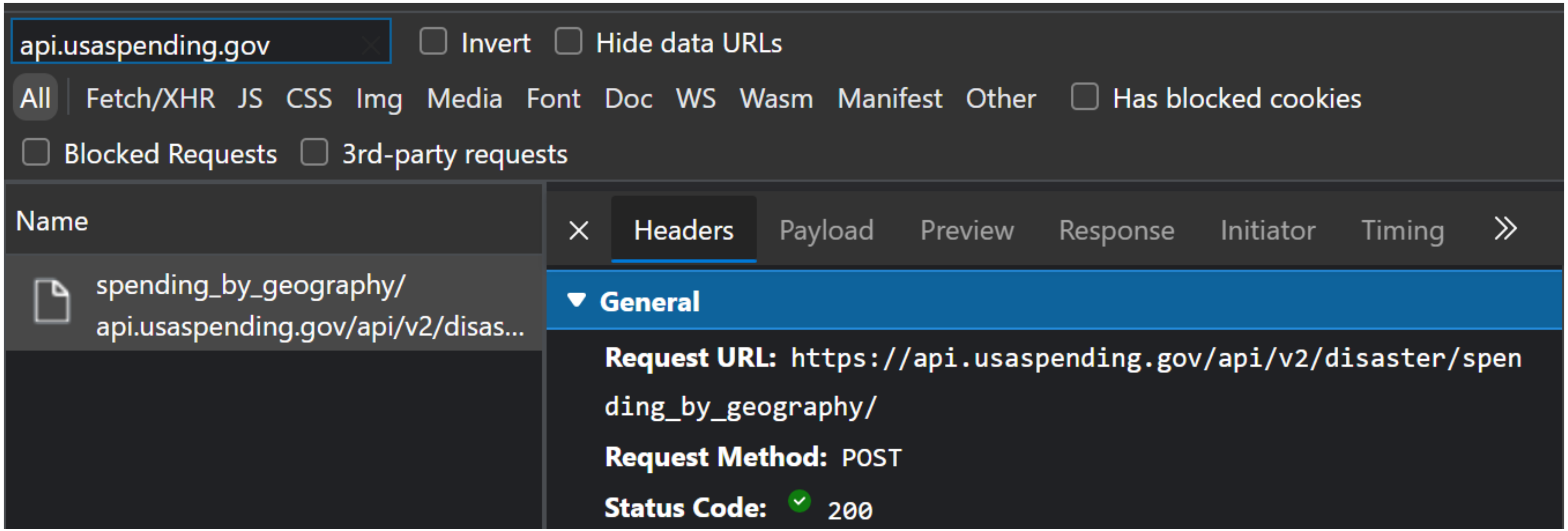

Show on Map

AREA TYPE
Congressional Districts

SPENDING TYPE
Award Obligations

AMOUNT TYPE
Total Spending

Demo continued



api.usaspending.gov

Invert

Hide data URLs

All Fetch/XHR JS CSS Img Media Font Doc WS Wasm Manifest Other

Has blocked cookies

Blocked Requests

3rd-party requests

Name

spending_by_geography/
api.usaspending.gov/api/v2/disas...

Headers Payload Preview Response Initiator Timing

General

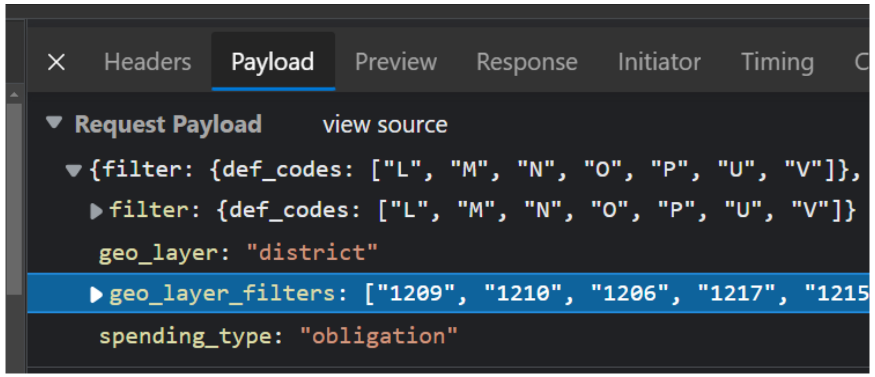
Request URL: `https://api.usaspending.gov/api/v2/disaster/spending_by_geography/`

Request Method: POST

Status Code: ✓ 200

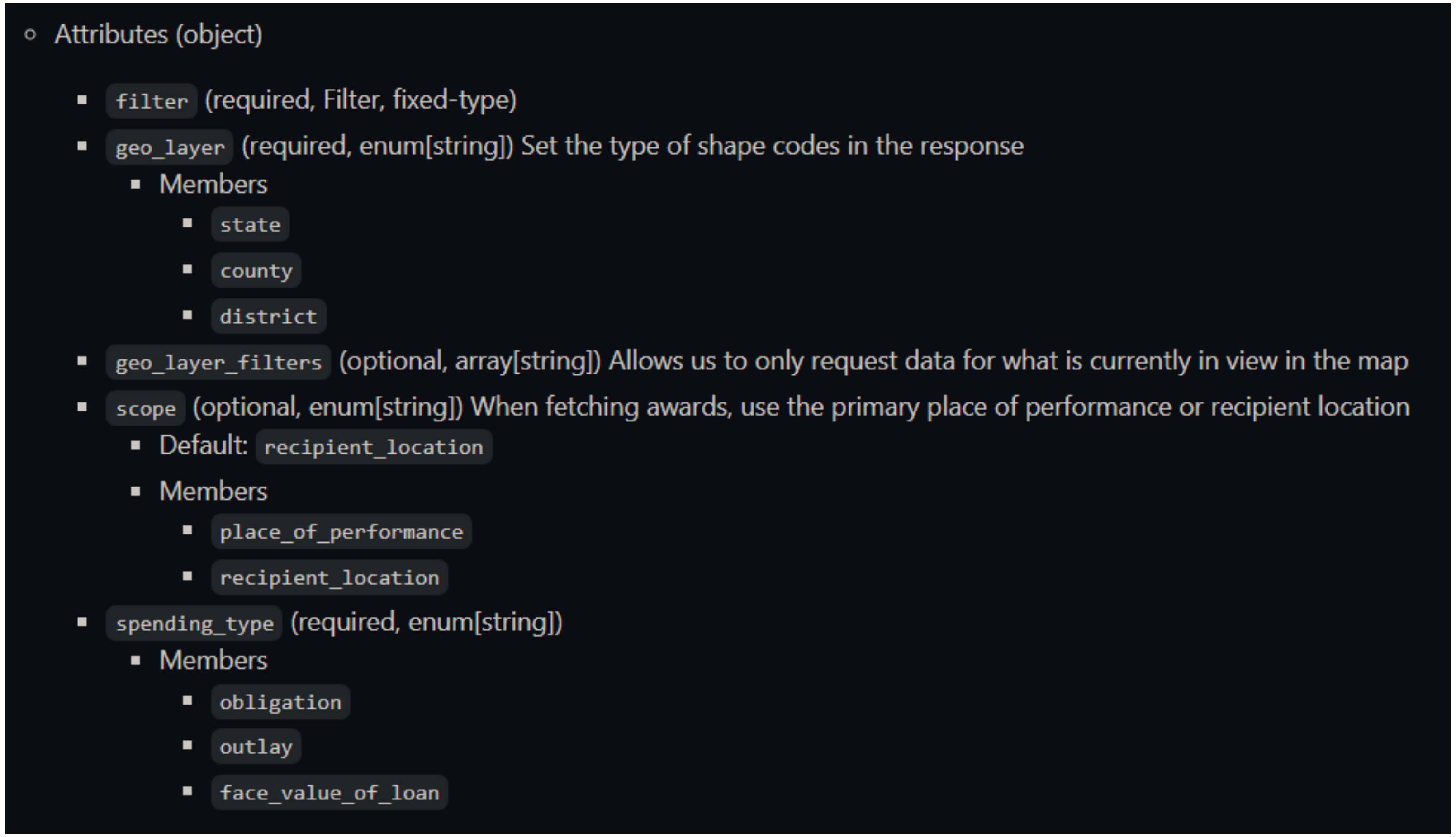
Select the most recent spending_by_geography request and open the Request URL in your browser to study the documentation.

Demo continued



Headers Payload Preview Response Initiator Timing

```
▼ Request Payload      view source
  ▼{filter: {def_codes: ["L", "M", "N", "O", "P", "U", "V"]},
    ▶filter: {def_codes: ["L", "M", "N", "O", "P", "U", "V"]}
    geo_layer: "district"
    ▶geo_layer_filters: ["1209", "1210", "1206", "1217", "1215
    spending_type: "obligation"
```



- Attributes (object)
  - `filter` (required, Filter, fixed-type)
  - `geo_layer` (required, enum[string]) Set the type of shape codes in the response
    - Members
      - `state`
      - `county`
      - `district`
  - `geo_layer_filters` (optional, array[string]) Allows us to only request data for what is currently in view in the map
  - `scope` (optional, enum[string]) When fetching awards, use the primary place of performance or recipient location
    - Default: `recipient_location`
    - Members
      - `place_of_performance`
      - `recipient_location`
  - `spending_type` (required, enum[string])
    - Members
      - `obligation`
      - `outlay`
      - `face_value_of_loan`

Compare the request payload and documentation attributes.

Disaster Spending by Geography

Documentation: https://github.com/fedspendingtransparency/usaspending-api/blob/master/usaspending_api/api_contracts/contracts/v2/disaster/spending_by_geography.md

The geo_layer_filters attribute takes a list of 4 digit CD FIPS codes.

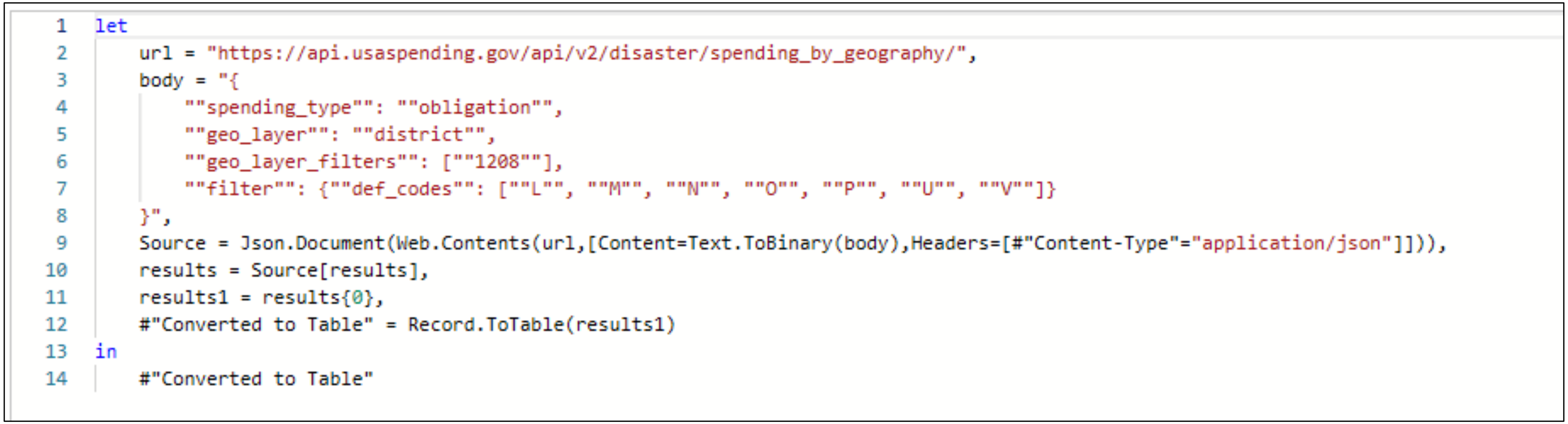
The filter attribute does not take an AdvancedFilterObject, this is different from the Advanced Search endpoints.

The filter attribute allows you to filter by DEFC or award type.

- You cannot filter by DEFC using the website alone.
- The API allows you to accurately answer questions about how much an area received by a particular COVID supplemental appropriation bill.

See: https://www.usaspending.gov/disaster/covid-19/data-sources

Demo continued



```
let
    url = "https://api.usaspending.gov/api/v2/disaster/spending_by_geography/",
    body = "{
        ""spending_type"": ""obligation"",
        ""geo_layer"": ""district"",
        ""geo_layer_filters"": [""1208""],
        ""filter"": {""def_codes"": [""L"", ""M"", ""N"", ""O"", ""P"", ""U"", ""V""]}
    }",
    Source = Json.Document(Web.Contents(url,[Content=Text.ToBinary(body),Headers=[#"Content-Type"="application/json"]])),
    results = Source[results],
    results1 = results{0},
    #"Converted to Table" = Record.ToTable(results1)
in
    #"Converted to Table"
```

Use this code in PowerQuery to replicate the API call in Excel.
This code is available for copy/paste in the link below.

Notes: https://github.com/fedspendingtransparency/usaspending-api/wiki/API-Usage---Power-Query-Example

Advanced Search Exercise (On your own!)

Use Excel to create an API request to replicate an advanced search in USAspending.

Keep learning!

Study the list of available endpoints: https://api.usaspending.gov/docs/endpoints

Learn more about REST APIs: https://www.redhat.com/en/topics/api/what-is-a-rest-api

Learn more about API requests in Python: https://realpython.com/python-requests/