



This quick start guide is for those who are good with excel but need help exploring the data in visualization environments. For more visual tools some suggestions are plotly and carto and PowerBI. All three have data limits in different scenarios.

PowerBI limit is 1gb, and is best used as an explorative tool for creating multiple visualizations at once. The basic limit to Carto is 250mb, but a quick subset of a larger dataset can get

## Tableau

Tableau you to connect to data from various sources and explore that data through charts, dashboards, and analytics. Tableau [desktop](#) can be downloaded, be sure to look at the limitations of the free trial as compared to the premium tiers. For most visualization needs, [instructions](#) for using tableau to visualize Socrata data (which powers the Colorado Information Marketplace) are easy and straightforward to follow.



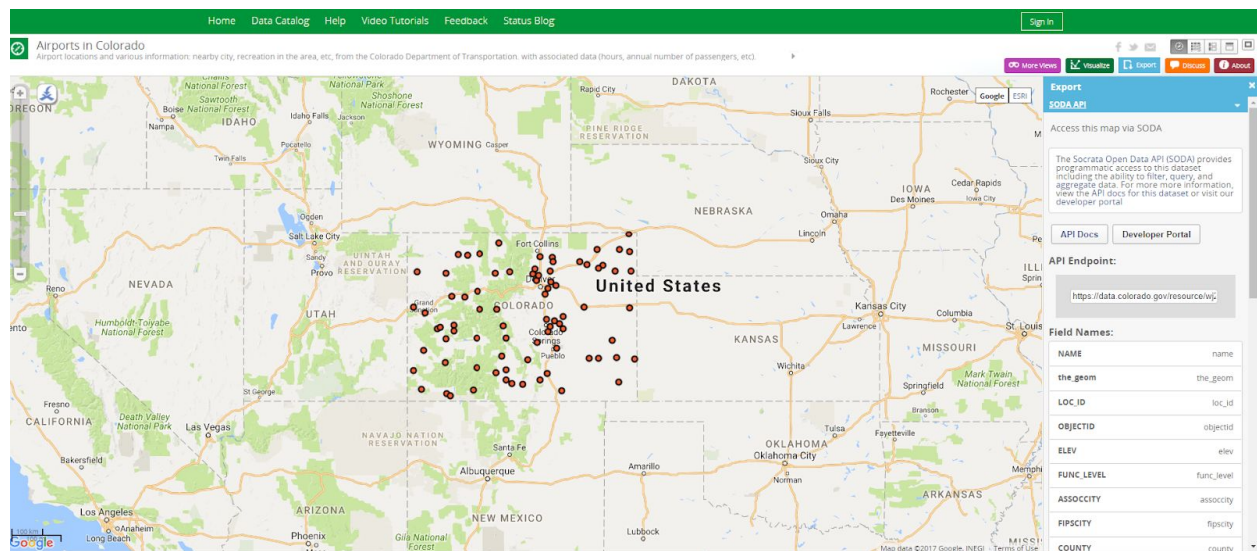
## Plot.ly

Plot.ly has statistical and more options to explore the data at a deeper level descriptive statistics. The nice thing here is that Carto and Plotly have buttons to click. But careful the file limit is only 5MB. For things like correlation and statistical analysis, it is easy to get a quick reference.

# Visualize Data, Together

Plotly is *the* modern platform for agile business intelligence and data science.

## Carto



Carto is a great Software as a Service (SaaS) for geospatial data. There is a free account tier, which contains 250mb of space. This is enough for a lot of datasets, and it will allow for exploration of geospatial datasets in a variety of ways. For more info, check out their tutorials at <https://carto.com/learn/guides/>

without an app token, but they are subject to much lower throttling limits than requests that do include one. With an app token, your application is guaranteed access to its own pool of requests. If you don't have an app token yet, click the button to the right to sign up for one.

Once you have an app token, you can include it with your request either by using the `X-App-Token` HTTP header, or by passing it via the `$$app_token` parameter on your URL.

[Sign up for an app token!](#)

[Learn more about App Tokens & Throttling.](#)

#### Discuss This Dataset

There are currently 0 open community-supported discussion threads about this dataset.

[Start a new discussion »](#)

## Fields

Each column in the dataset is represented by a single `field` in its SODA API. Using `filters` and `SoQL queries`, you can search for records, limit your results, and change the way the data is output. For example, you could filter this dataset by its `name` field using a query like the following:

For richer filtering, you can combine filters together by stacking parameters on your URL or by using `SoQL queries`. Learn more about each of the fields in this dataset by clicking the headers below, or read more about the SODA API using the navigation at the top of the page.

#### External Integrations




Explore this dataset using other tools:

[Open with Plot.ly](#)  
Collaborative data science

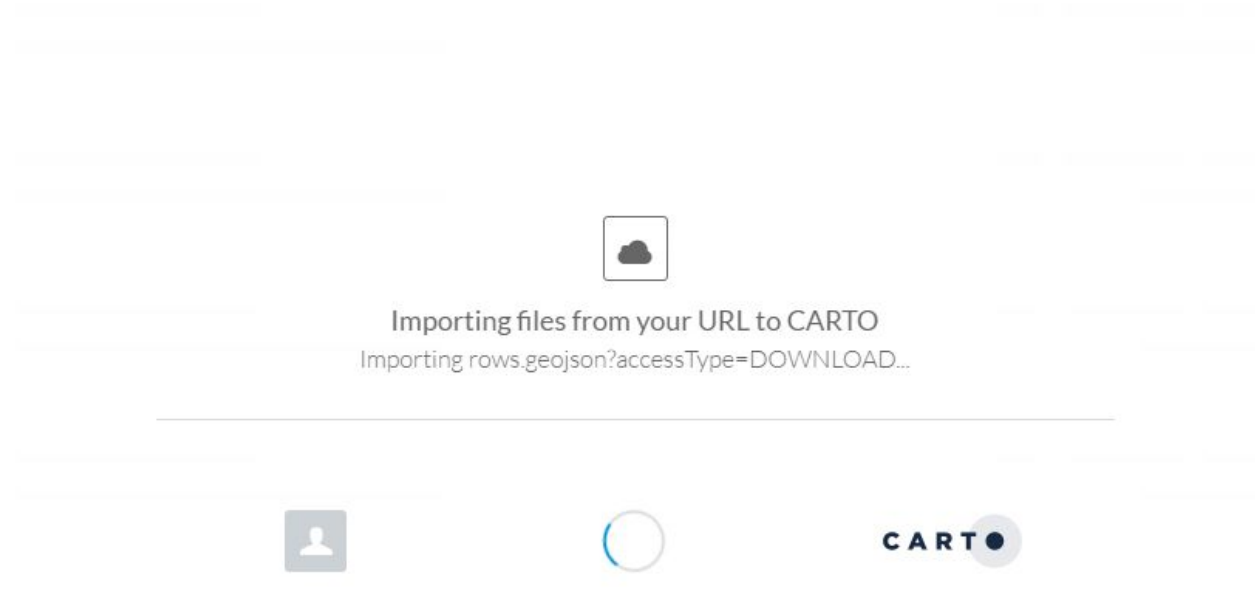
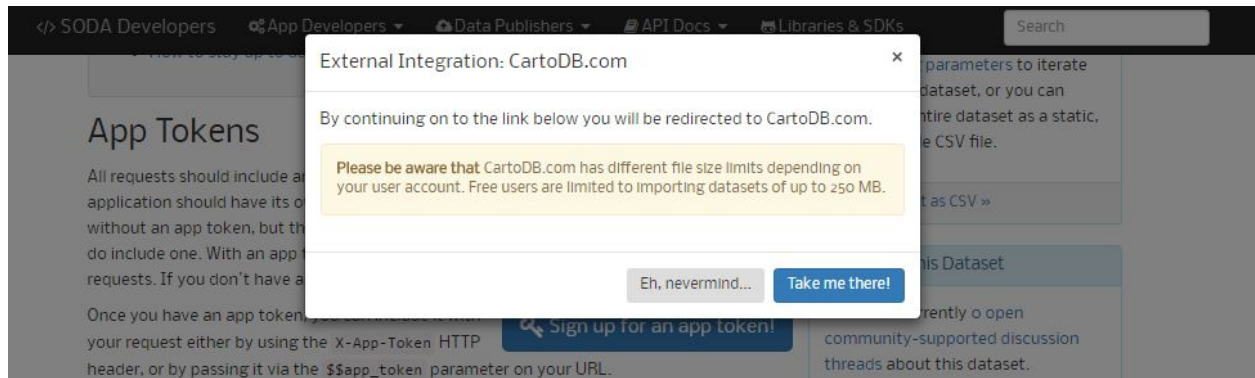
[Open with CartoDB.com](#)  
Maps for the web, made easy

Learn more about:

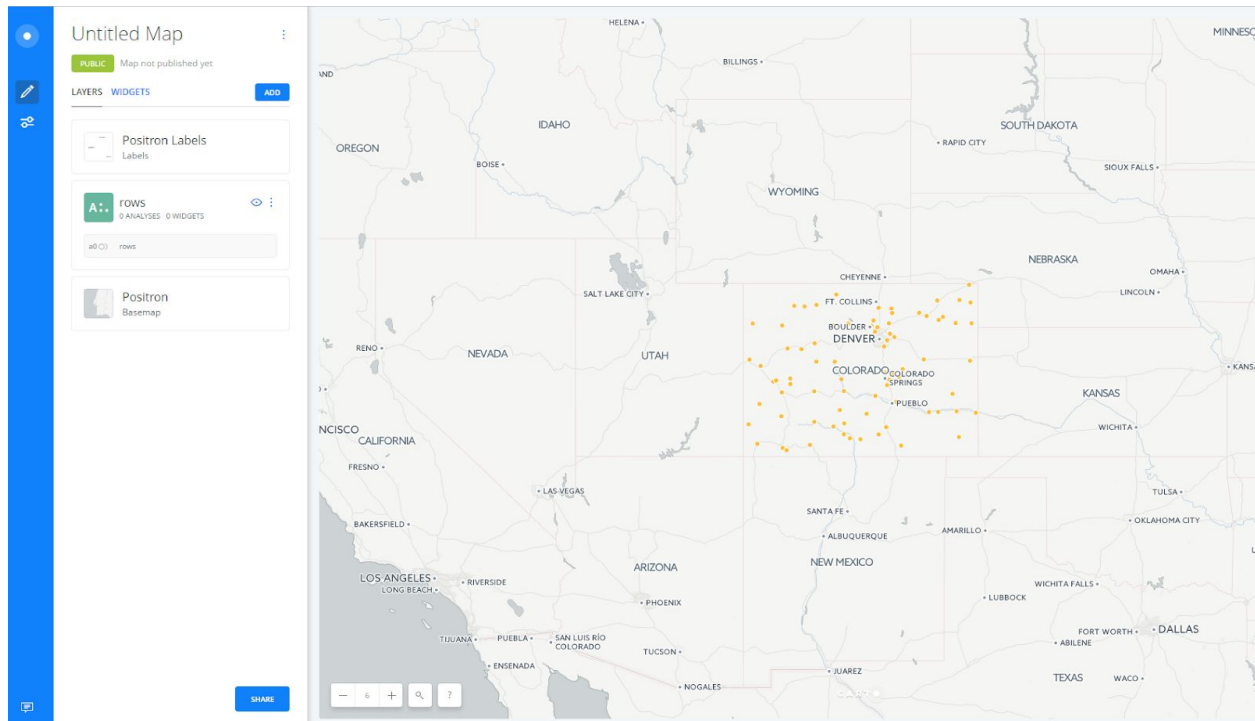
- [Simple Filters](#)
- [SoQL Queries](#)
- [Available SoQL Functions](#)
- [Paging Through Data](#)

	<b>name</b>	text	NAME
	<b>the_geom</b>	point	the_geom
	<b>loc_id</b>	text	LOC_ID

One option is to download and then upload data into carto, but there is also a one-click option! The first step is to log into a personal Carto account, and then navigate to the api docs (see image). Halfway down that page there is a button on the right side that says “Open in Carto”. There is always a warning message about the limited amount of space on Carto, regardless of the size of the data being opened so ignore it, and hit “Take me there!”. This will load the dataset from the [Colorado Information Marketplace](#) (CIM) into the personal Carto account logged into the browser, from that point the Carto documentation will provide examples of ways to play with different visualizations.



Carto is different because it can be used as a production system, whereas the other data exploration tools on here may not be as useful for a production system.



## PowerBI

PowerBI is a desktop application

There is not a data size limit for loading data into a desktop environment, however there is a limit of 1GB to publish a visualization to the web.

To work with PowerBI from the CIM, use the “OData” feed. OData is a REST-based protocol for querying and updating data and is built on standardized technologies such as HTTP, Atom/XML, and JSON. It is different from other REST-based web services in that it provides a uniform way to describe both the data and the data model.

Access the feed url in 2 ways.

1. Go to the metadata landing page, click on the menu (next to the share button), click on “Access Data via OData”, and copy the link



## District Student Mobility/Stability Statistics for 2011-2012 by Gender & Race/Ethnicity K-12

View Data ↗ Download API Share ...

Visualize and Explore  
Contact Dataset Owner  
Comment on this Dataset  
**Access Data via OData**

The 2011-12 school year marked the sixth year in which the Colorado Department of Education calculated and reported student mobility and stability rates. The stability rate represents the percentage of students who remained at a school/district without interruption through the school year.

Updated  
December 19, 2014

Data Provided by  
Colorado Department of Education

Featured Content Using this Data

Choose to promote up to 3 Socrata assets that use this data, or choose to feature any relevant external resources. If left blank this section will be invisible.

Manage Featured Content

2. Go to the old view (hit the “View Data” tab), to the blue export tab, then go to the OData endpoint and copy the link

District Student Mobility/Stability Statistics for 2011-2012 by Gender & Race/Ethnicity  
The 2011-12 school year marked the sixth year in which the Colorado Department of Education calculated and reported student mobility and stability rates. The stability rate represents the percentage of students who remained at a school/district without interruption through the school year.

Export

SODA API  
OData

Access this dataset via OData

Create a spreadsheet in Microsoft Excel to analyze or visualize this dataset. By using an OData link, the data will be refreshable.

Use Microsoft Excel 2010, Microsoft Excel 2013 or Microsoft Power Query. Follow the instructions here, using Socrata's OData documentation.

OData Endpoint:

<https://data.colorado.gov/OData.svc/rq8>

School Year	Org. Code	Organization Name	Category
1	2011-2012	9,999 STATE TOTAL	1STATE TOTALS (INCL
2	2011-2012	10 MAPLETON 1	1DISTRICT TOTALS (INCL
3	2011-2012	20 ADAMS 12 FIVE STAR SCHOOLS	1DISTRICT TOTALS (INCL
4	2011-2012	30 ADAMS COUNTY 14	1DISTRICT TOTALS (INCL
5	2011-2012	40 BRIGHTON 27J	1DISTRICT TOTALS (INCL
6	2011-2012	50 BENNETT 29J	1DISTRICT TOTALS (INCL
7	2011-2012	60 STRASBURG 31J	1DISTRICT TOTALS (INCL
8	2011-2012	70 WESTMINSTER 50	1DISTRICT TOTALS (INCL
9	2011-2012	100 ALAMOSA RE-11J	1DISTRICT TOTALS (INCL
10	2011-2012	110 SANGRE DE CRISTO RE-22J	1DISTRICT TOTALS (INCL
11	2011-2012	120 ENGLEWOOD 1	1DISTRICT TOTALS (INCL
12	2011-2012	123 SHERIDAN 2	1DISTRICT TOTALS (INCL
13	2011-2012	130 CHERRY CREEK 5	1DISTRICT TOTALS (INCL
14	2011-2012	140 LITTLETON 6	1DISTRICT TOTALS (INCL

3. Open up the PowerBI application, hit get data, and then select OData feed.

File Home Modeling

Get Data Recent Sources Enter Data Edit Queries Refresh New View New Visual Text Box Image Shapes Page View Manage Relationships New Measure Publish

Clipboard

Excel  
SQL Server  
Analysis Services  
CSV  
Web  
OData Feed  
Blank Query  
More...

Visualizations

Fields

Values  
Drag data fields here

Filters  
Page level filters  
Drag data fields here  
Report level filters

If for some reason this doesn't work, download an excel or csv version of the data, and then load it into PowerBI that way. The advantage of OData is that a soft link is retained to the, so if the data needs to be refreshed it can easily be done by clicking a link.

4. Under visualizations there are all sorts of options. Click on one, or drag & drop to create multiple visualizations that interact with each other, all on one page!

Every visualization has different ways to combine the data, feel free to explore different ways and combinations. Keep dragging and dropping to get a feel for what the different values mean!

5. Next is filtering to look at only specific subsets of the data. There are page level filters and visual filters, to remove outliers, look at only a subset of the data, and do a number of different things!
6. Click off of the graphic to 'start over' and make a new graphic with new fields, and there is no limit to fields that can be added to the canvas.

Also, link multiple visualizations on one page together to see relationships. Once 2 visualizations are created, click on a visualization, and then hit the Format button at the top of the application, then Edit Interactions. Notice there are two or more items on every other visualization on the page. This provides an example what happens when clicking an item on the first visualization: to filter the second visualization, highlight the differences, or do nothing. This allows visibility of the see relationships between items that otherwise would be difficult to see.

7. Next, on each of the graphs just created, hover and select from the menu in the upper right "filter" "highlight" "remove". Clicking on one feature initiates its interaction with everything else.

Another option is to set up "drill down" visualizations, typically this works best with data organized by date values. A good example is of the business entities dataset on our [data explorations page](#).

8. Multiple datasets can be joined or "mashed", as long as they have a field with a common column that can be joined on. This tool allows people to explore the data and see patterns that would not be readily apparent by typical filters and browsing.
9. To publish the visualization, embed it as an iframe.

For questions about PowerBI or other data tools, please reach out on the #tech-support channel in the Go Code Colorado slack team.

Also remember the goal isn't to display information, CIM already does that. The goal is to help business and to answer questions for business decision makers, not display raw data in pretty colors. These tools work well to explore and visualize data, but the analysis involved in the

extraction of information from the data still requires the work of dedicated data scientists, mappers and entrepreneurs!