Brief Documentation

1. Use QGIS-PostGIS to make SQL:

SELECT ct_philly.id as ct, ct_philly.geom as geom,ct_philly.namelsad10 as name, count(ppd_crime.id) as crimenumber, CAST(LEFT("ppd_crime"."dispatch date", 4) AS INT) as crimedate
  FROM ppd_crime, ct_philly
  WHERE ST_Within(ppd_crime.geom, ct_philly.geom) AND CAST(LEFT("ppd_crime"."dispatch date", 4) AS INT)> 2008 AND CAST(LEFT("ppd_crime"."dispatch date", 4) AS INT) < 2017
  GROUP BY ct_philly.id, CAST(LEFT("ppd_crime"."dispatch date", 4) AS INT)

2. Upload to Gist (query by year)/CartoDB(query by month by year)

Because I want to make a web map, so to avoid CORS problem, I chose to upload the files. And for the map by month, I uploaded the dataset to Carto, and made the SQL API(only download the part of the specific years) because GIST can't handle the data size, and the browser would easily crash when downloading that.

3. Use G2 (developed on D3) to visualize it.

All codes are in 'main.js' file. (Hit the 'begin' button to start the animation, and 'stop' to stop it.)

The chart below is a bubble chart. The chart reflects the relationship between the tract and crime number. The size of the bubble stands for the number of the crime. It might be more meaningful to add the number in the middle of the bubble, however, due to the range of the data, the number inside the small bubble would be ambiguous, so I just made the bubble chart which will animate in sync with the map and add tooltip to it (may need to stop the animation and hover on the bubble).

Additional Plot

The first idea is to finish it also by HTML and JS ('serialmap.js'), however, the browser crashed again and again if I tried to plot more than three columns, so instead of making all maps, I wrote a function to plot two columns at a time. Then I exported it to PS, and added a finish touch to it. (Legend, title, north arrow…)

I add a grid pattern as background (an alternative to add gridlines) to quickly find the map of the exact month and year.