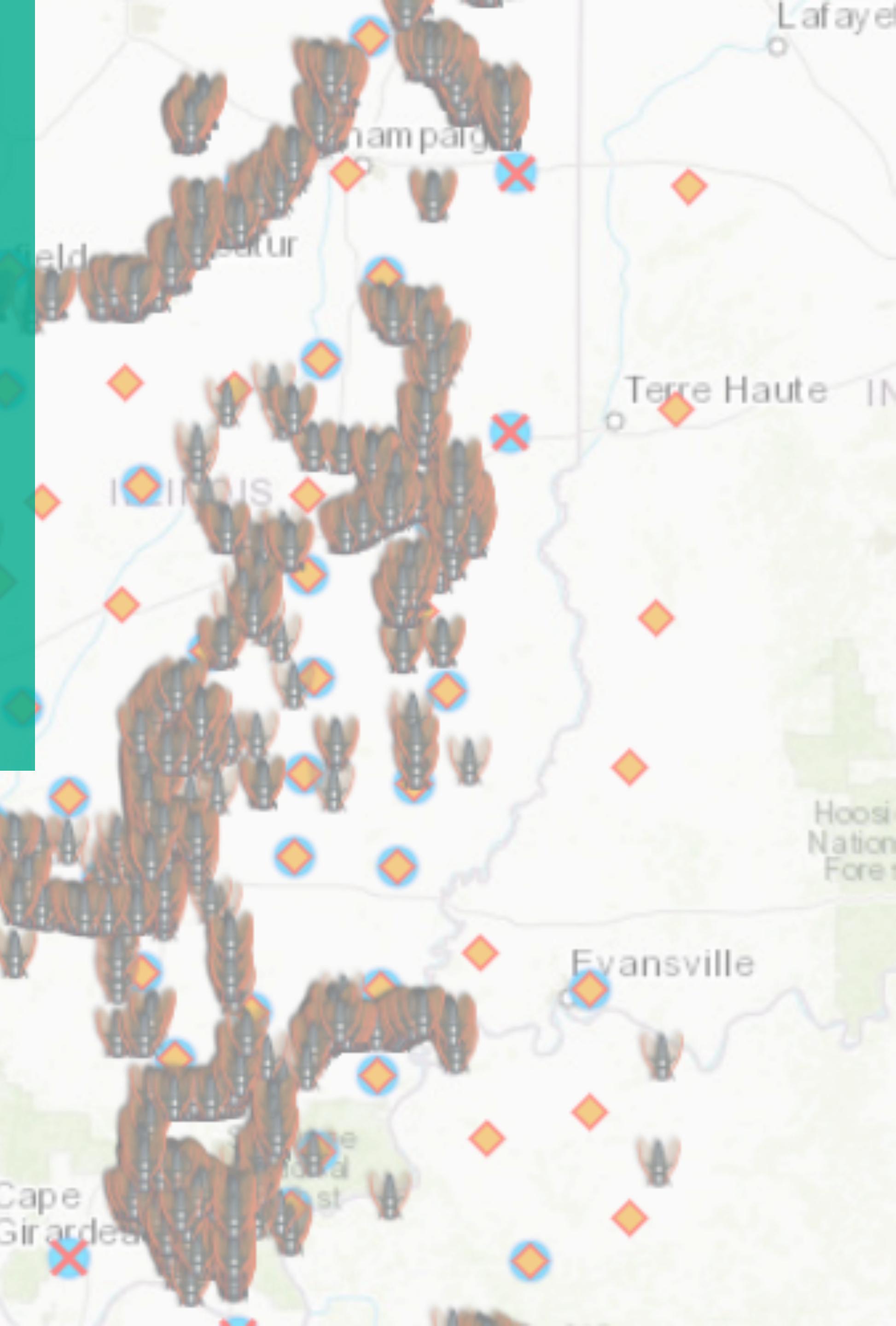


Periodical Cicada Emergence

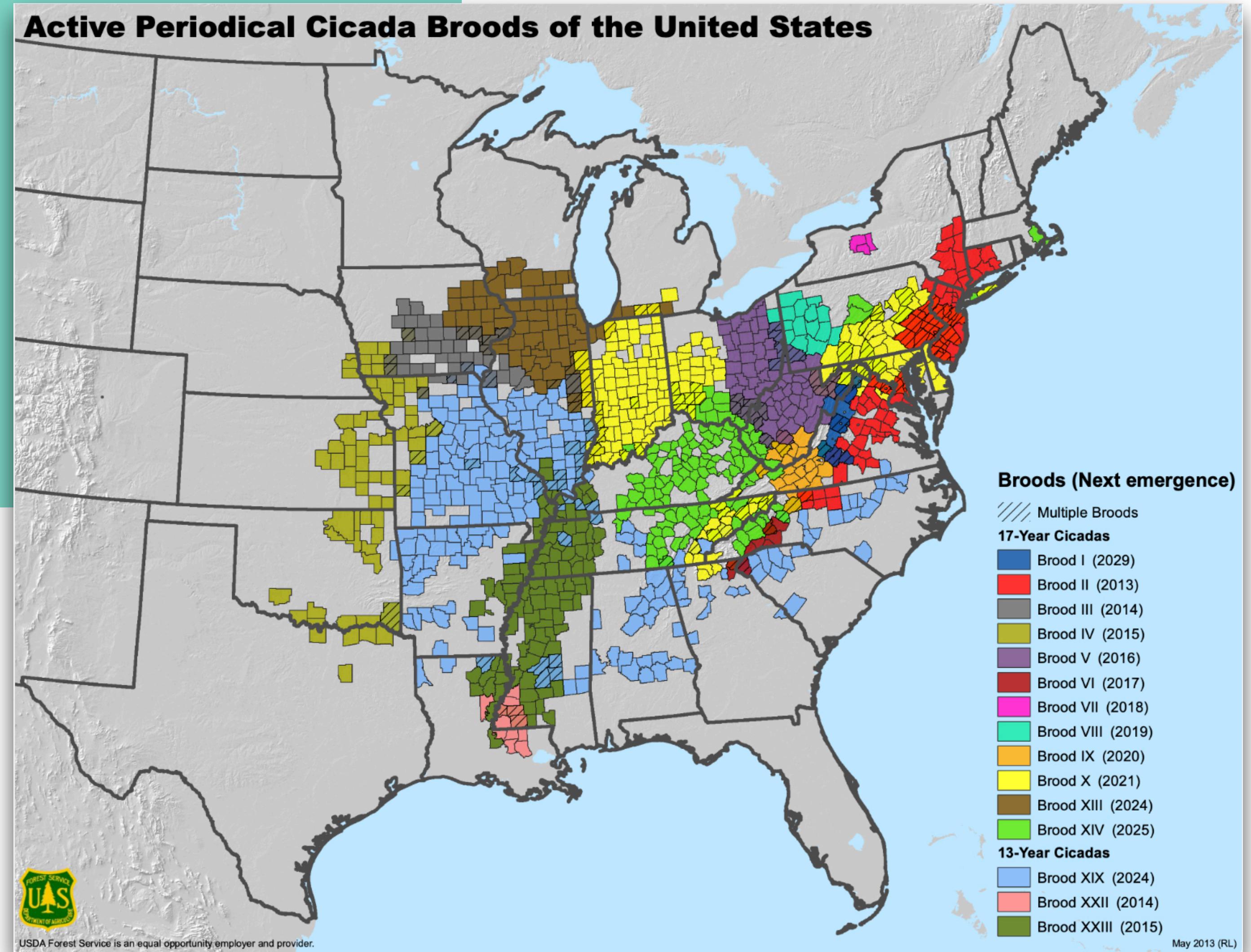
and Impact to Human Behavior

Megan Amaral
June 2021
Nashville Software School



Biological Context

- Periodical cicada cycles are location-specific



USDA map

Biological Context



Photo by Katja Schulz, creative commons



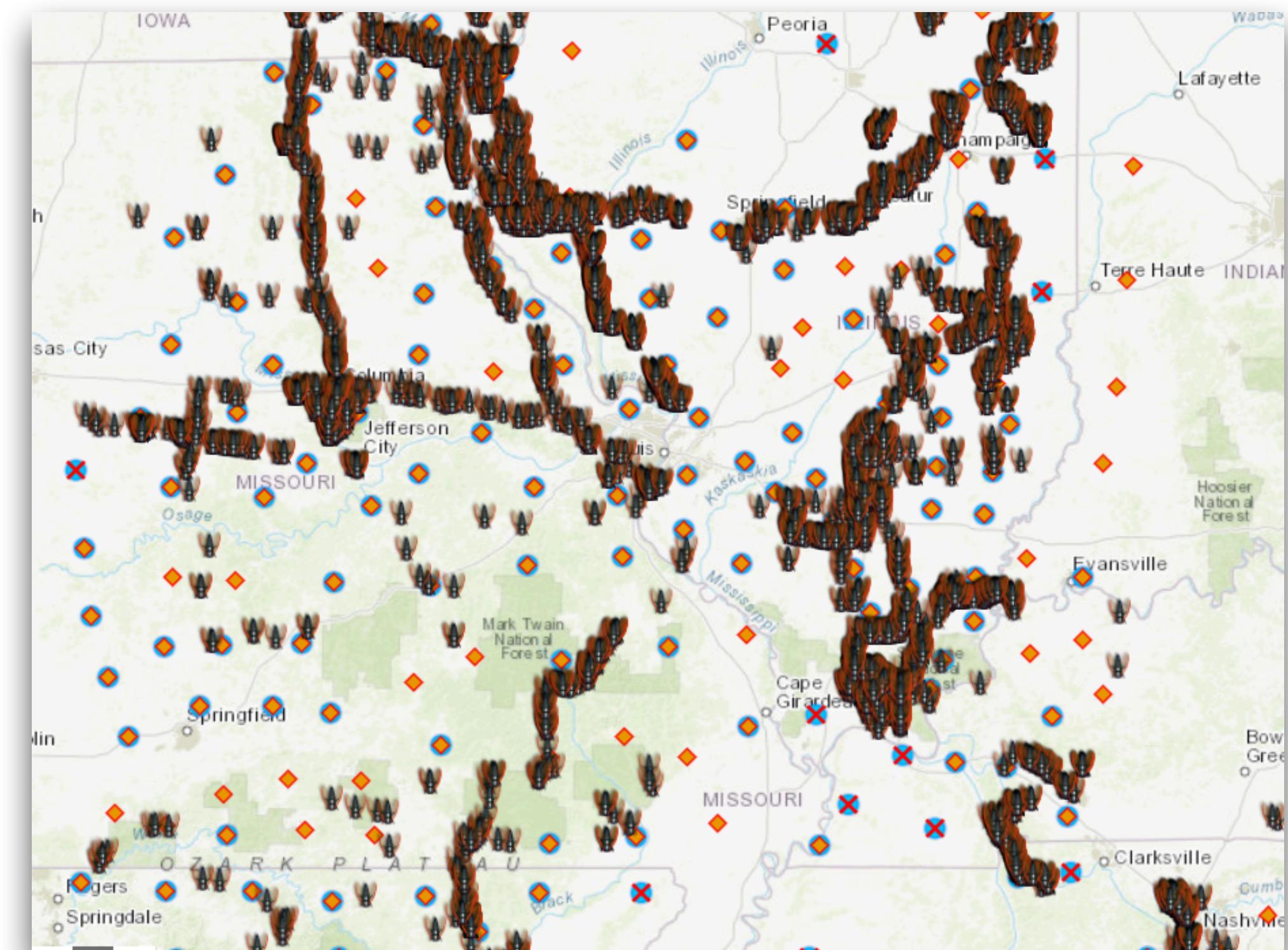
Photo by Ken Gibson, creative commons

Periodical Cicada

Annual Cicada

Methodology

- Varying brood years + locations **supported data collection** for years during and around emergences
 - Cicada locations gathered from UCONN maps on the county level
- Data cleansed to ‘**cicada months**’ of May and June



<https://cicadas.uconn.edu/>

Questions for the Data

During a periodical brood emergence...

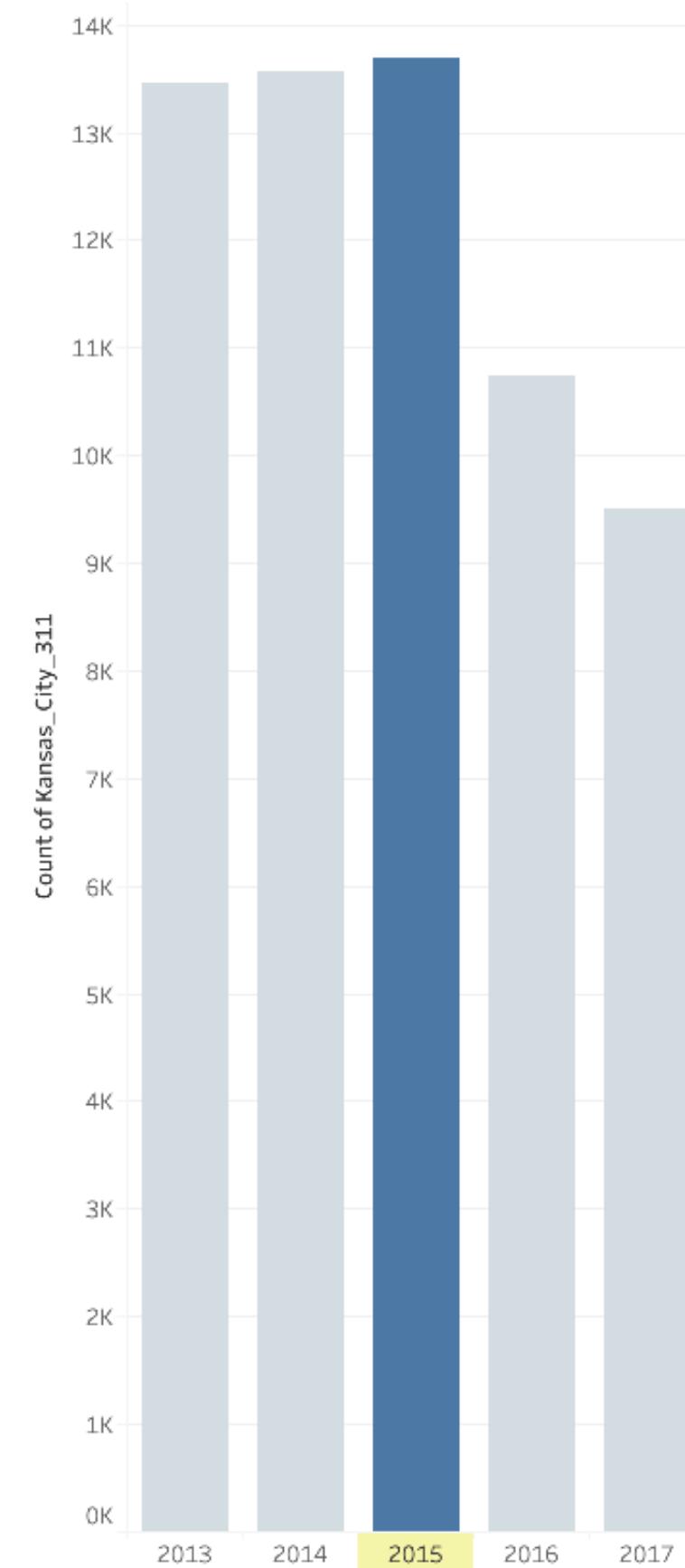
- Do people have more complaints, expressed via contacts to city services?
- Are people driven to bad behavior, conveyed via citations and crime?
- Is there an increase in traffic accidents?

311 city service requests

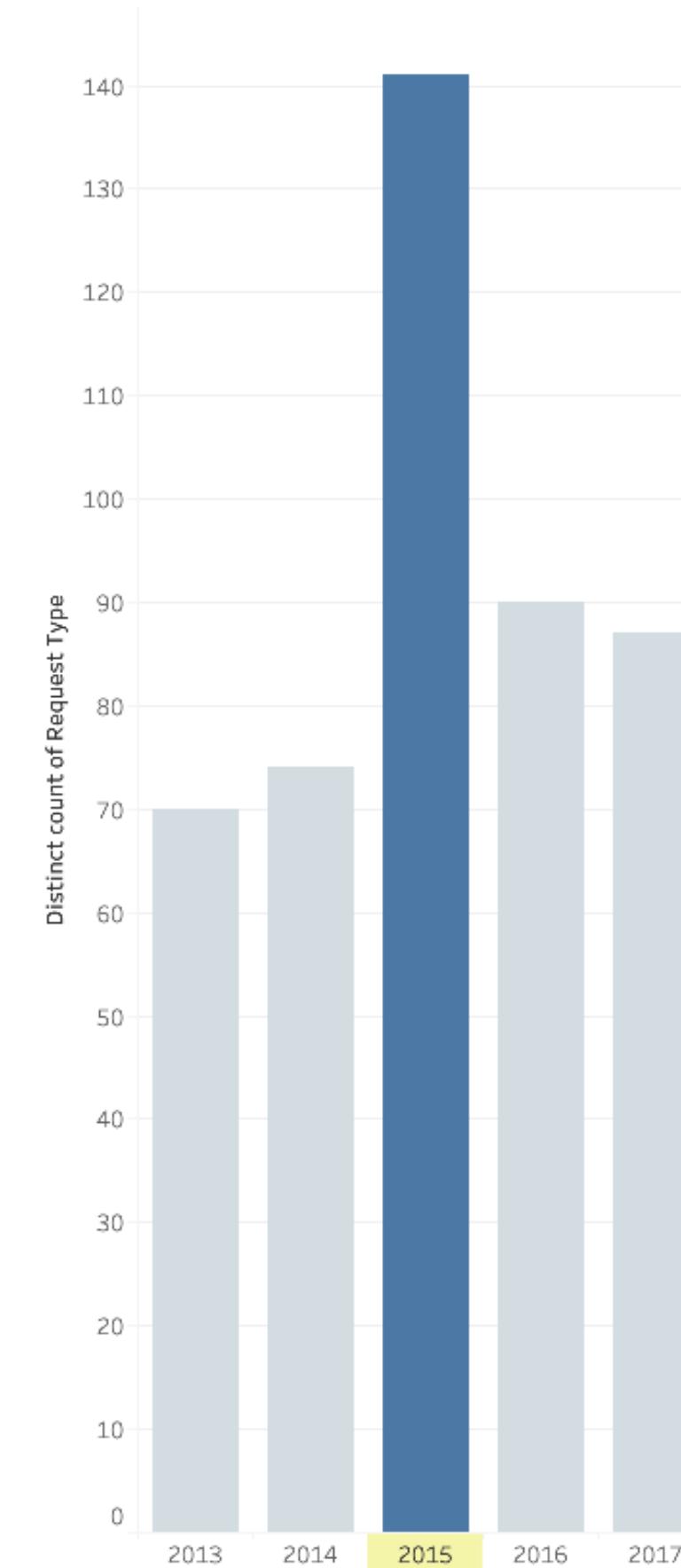
- Non-emergency requests for city services
- Request types curated for indicating potential bad behavior or annoyance
- Limited to months of May and June

Kansas City, Missouri

Brood IV 2015



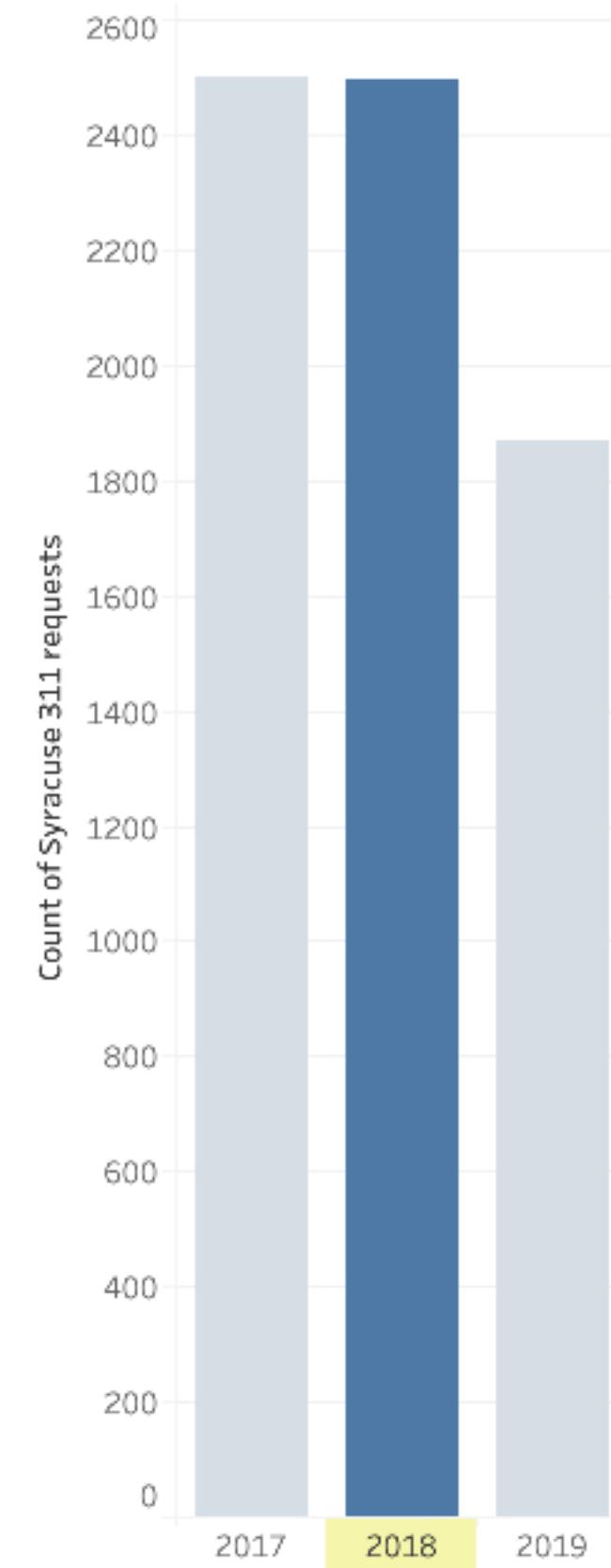
Total requests
(May and June)



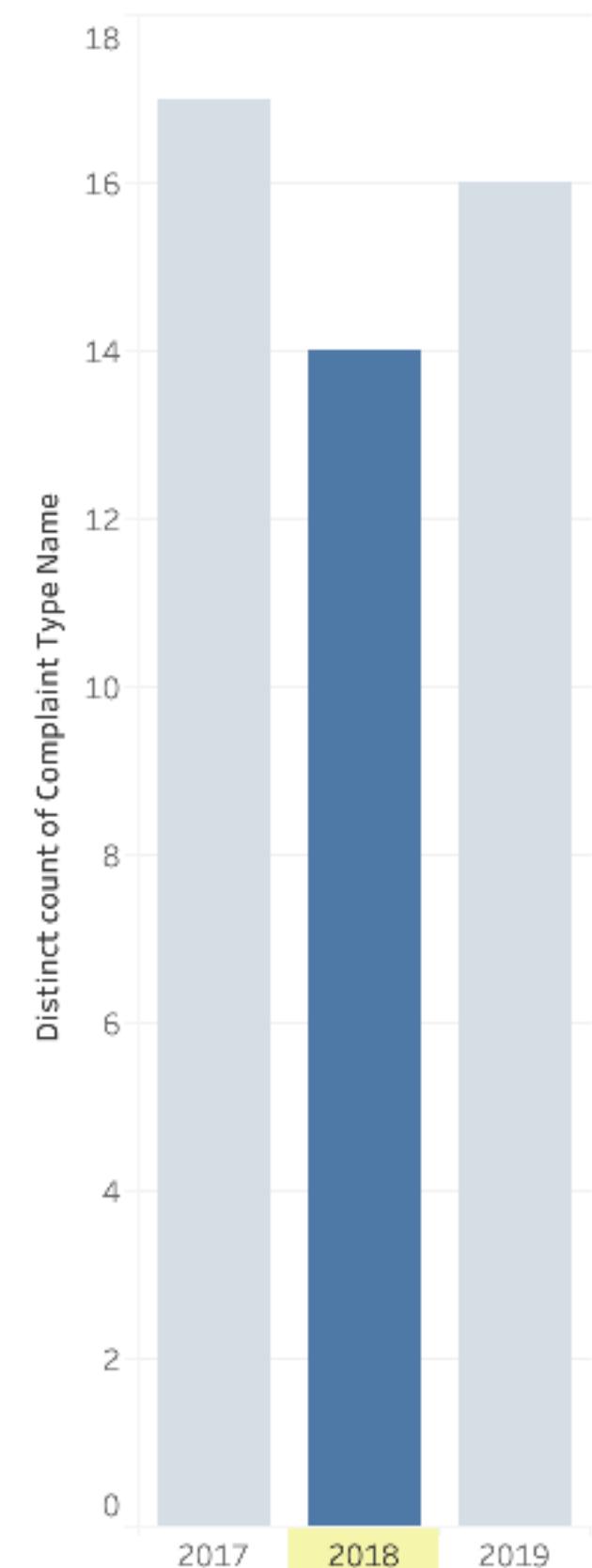
Request types
(May and June)

Syracuse, New York

Brood VII 2018



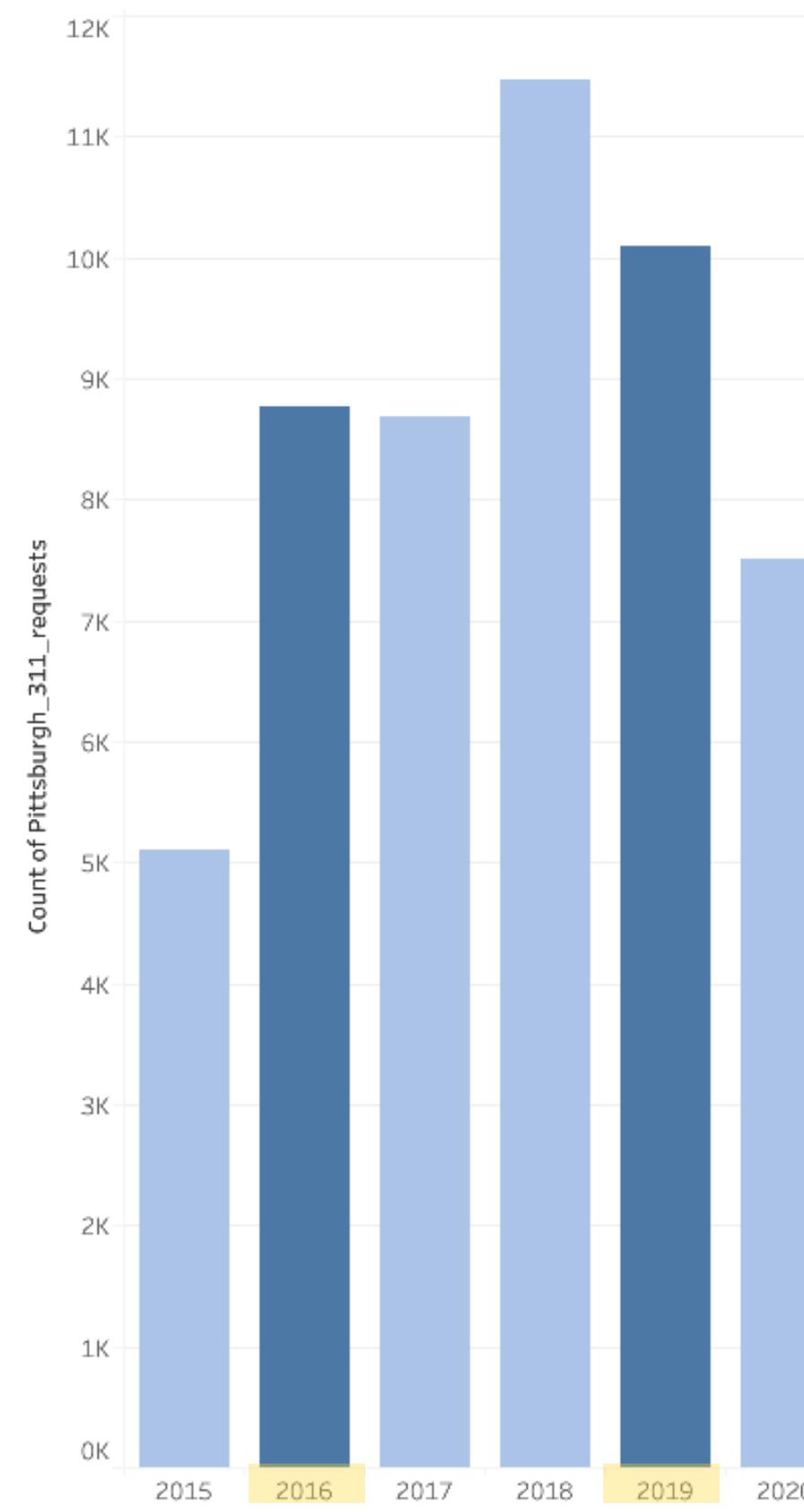
Total requests
(May and June)



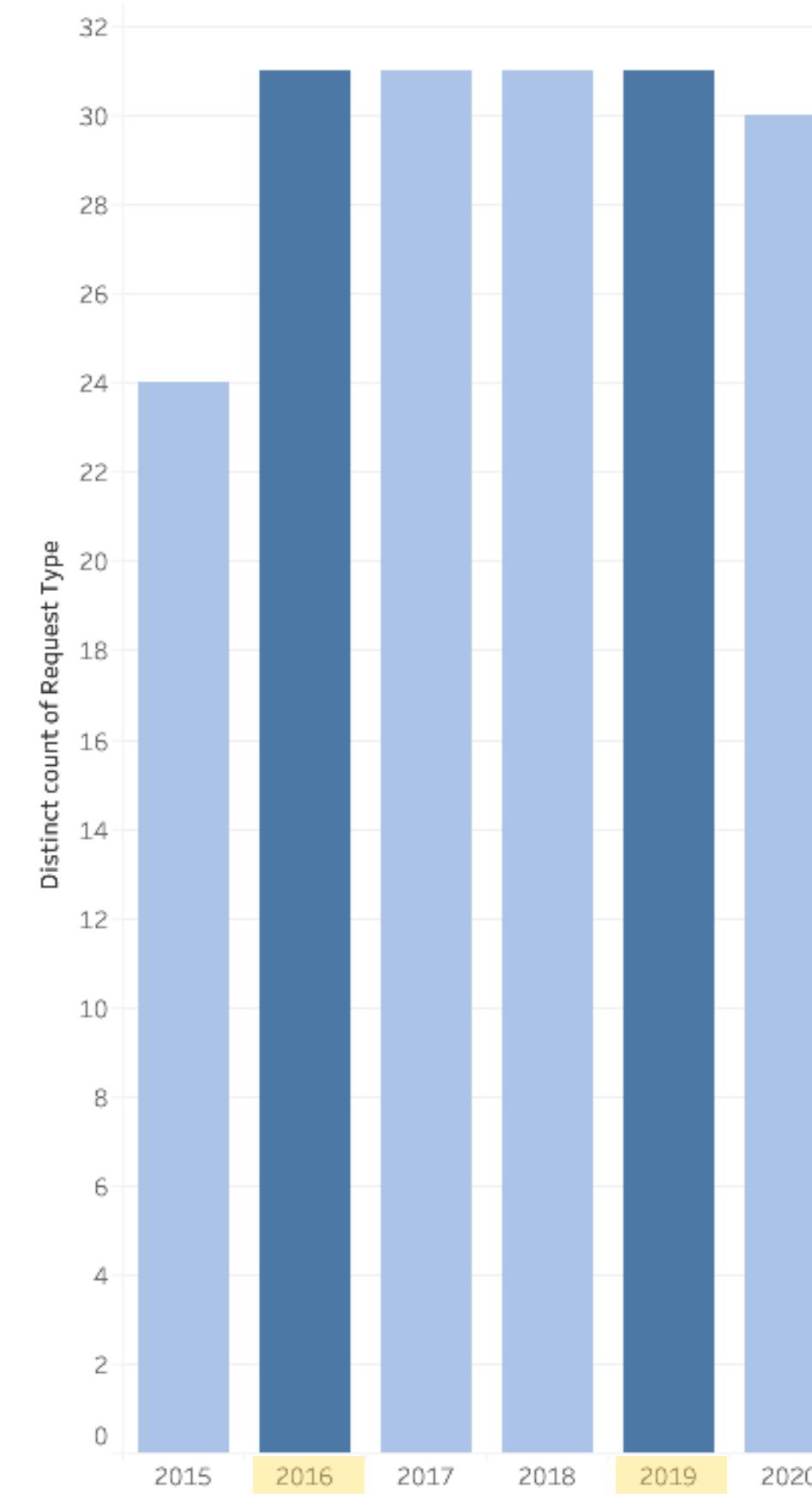
Request types
(May and June)

Pittsburgh, Pennsylvania

Brood V 2016 & Brood VIII 2019



Total requests (May and June)

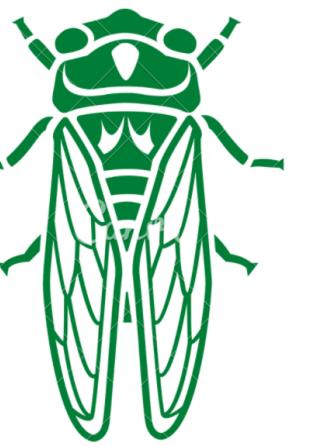


Request types (May and June)

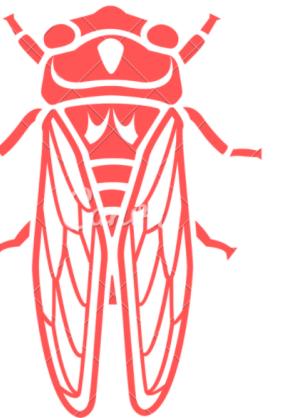
311

cicada correlation scorecard

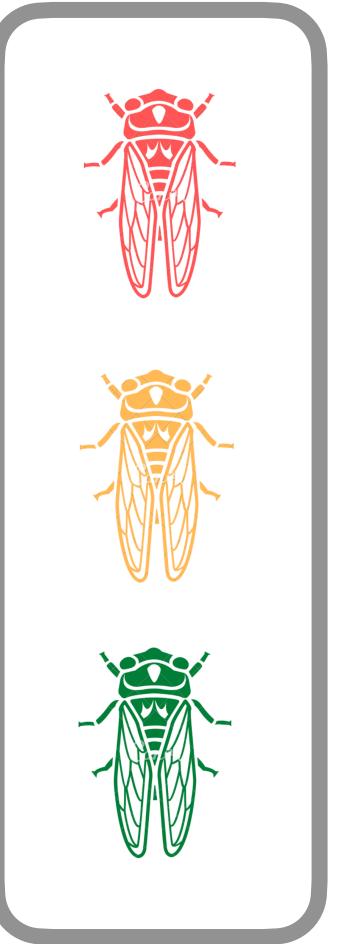
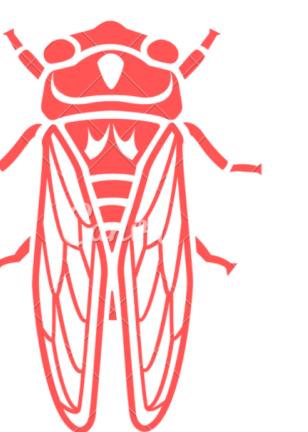
Kansas City
Brood IV 2015



Syracuse
Brood VII 2018



Pittsburgh
Brood V 2016

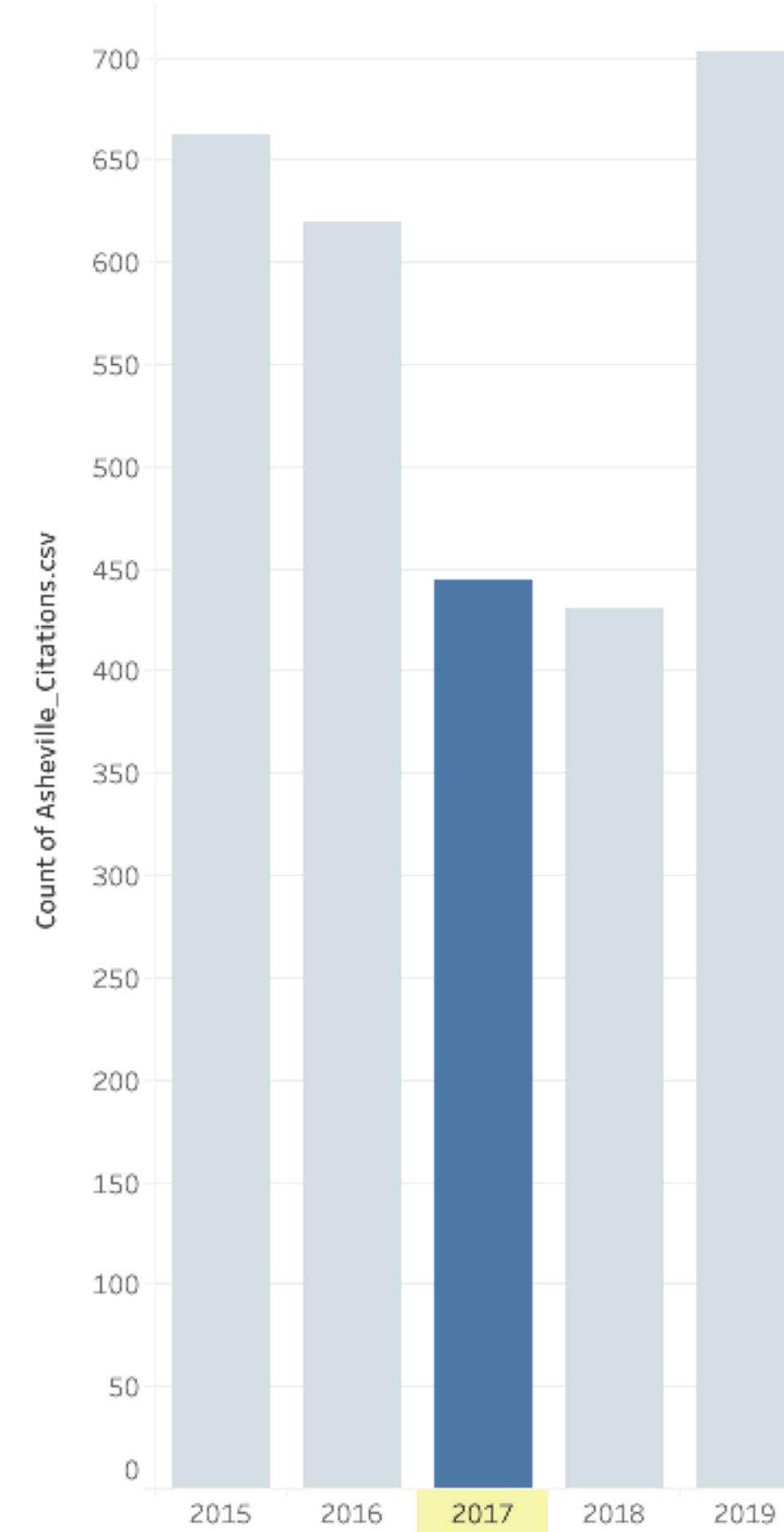


Crime And non-traffic citations

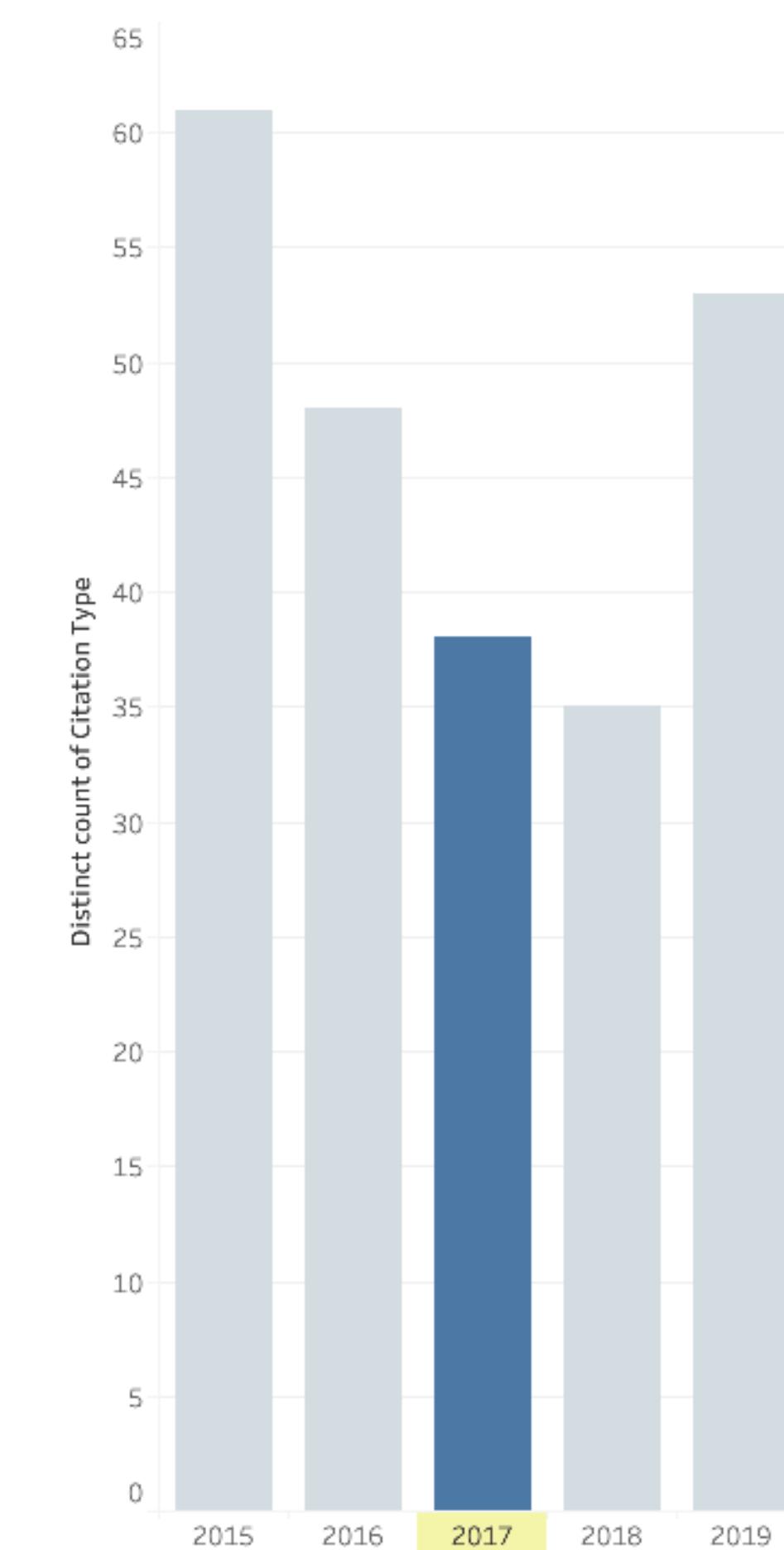
- City or County level data
- Limited to months of May and June

Asheville, North Carolina

Brood VI 2017

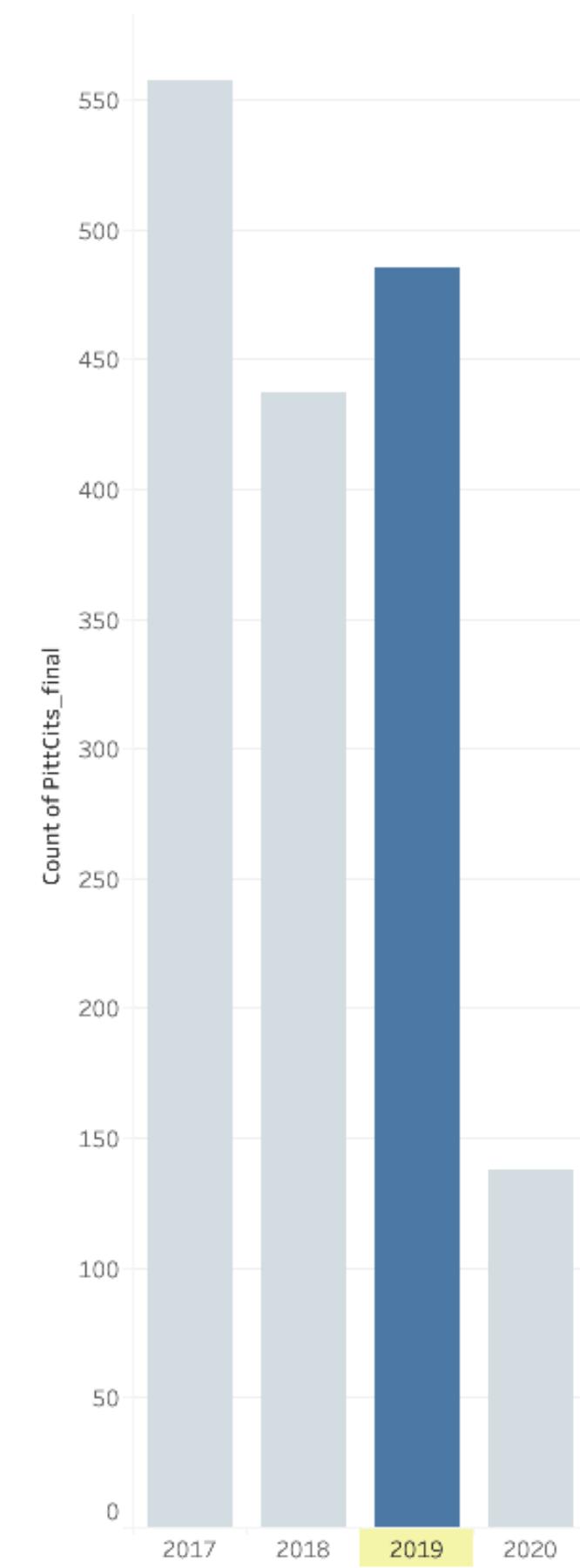


Total citations issued
(May and June)

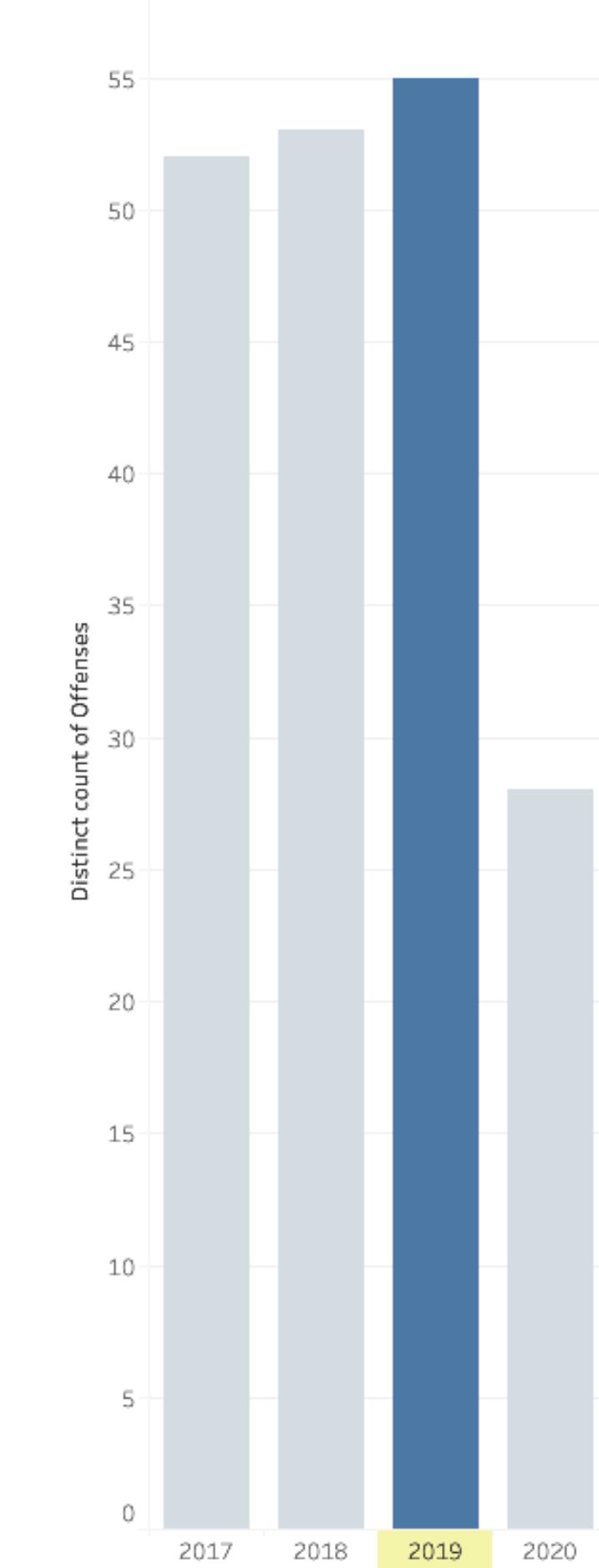


Types of citations issued
(May and June)

Pittsburgh Brood VIII 2019



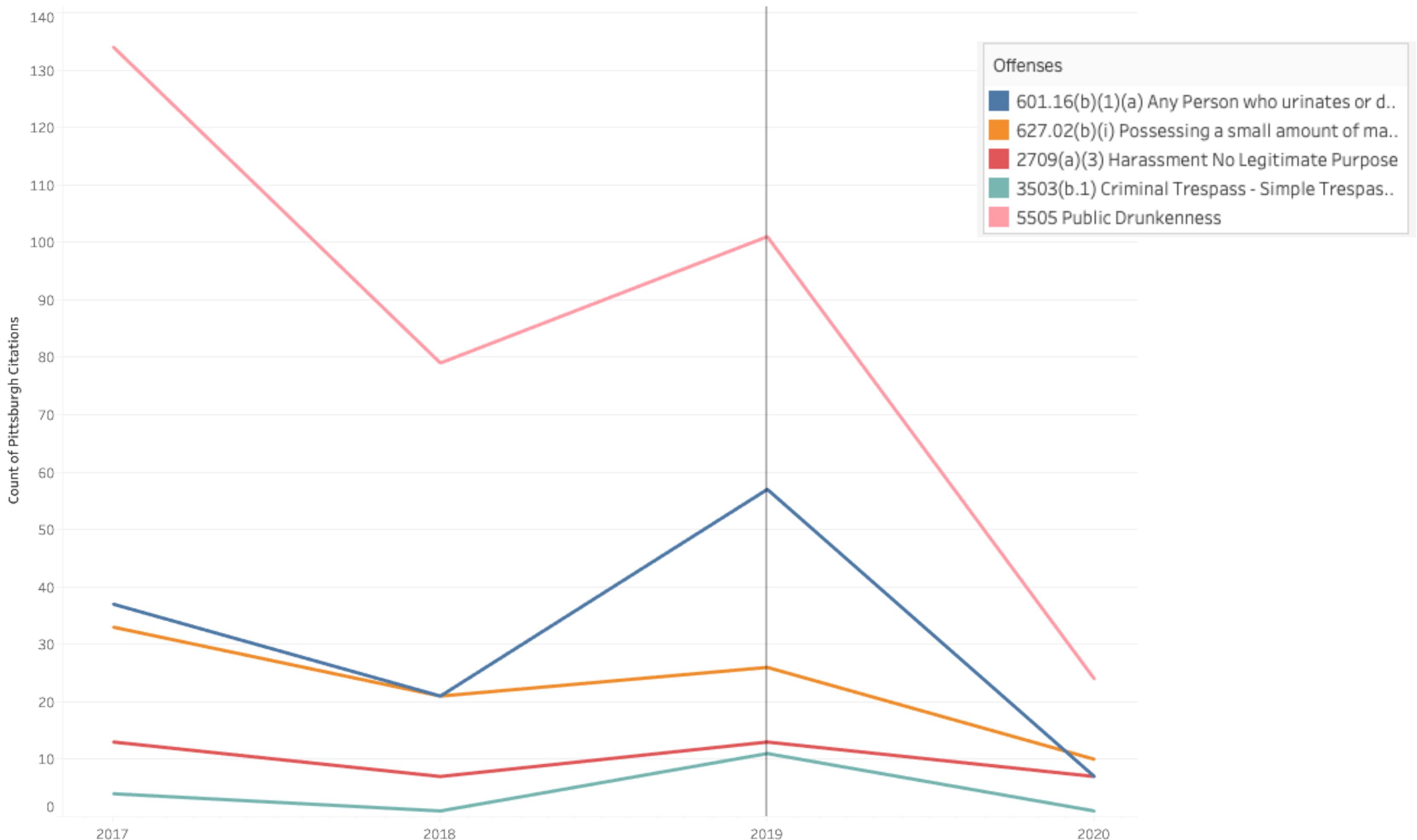
Total citations issued
(May and June)



Types of citations issued
(May and June)

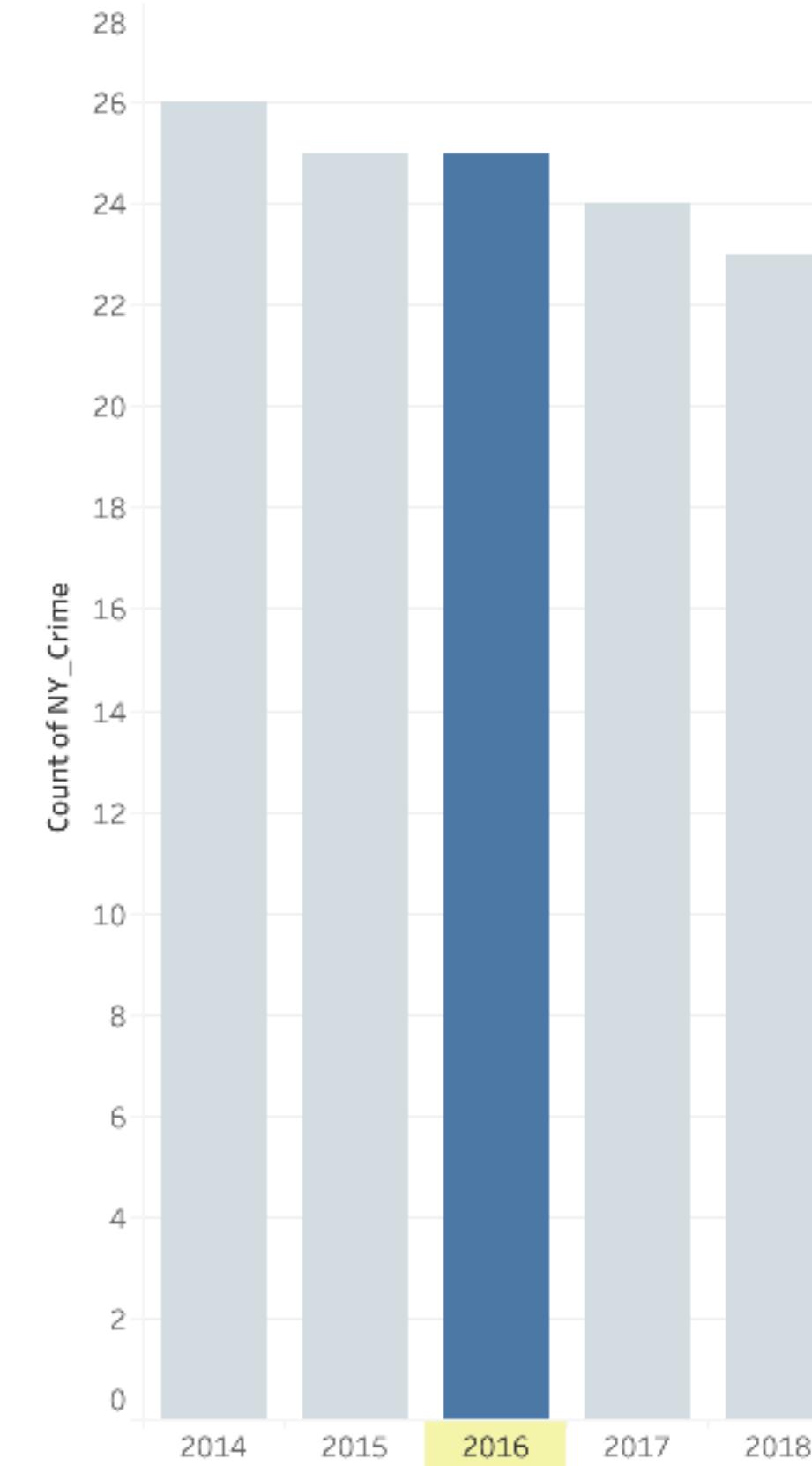
Pittsburgh

Brood VIII 2019

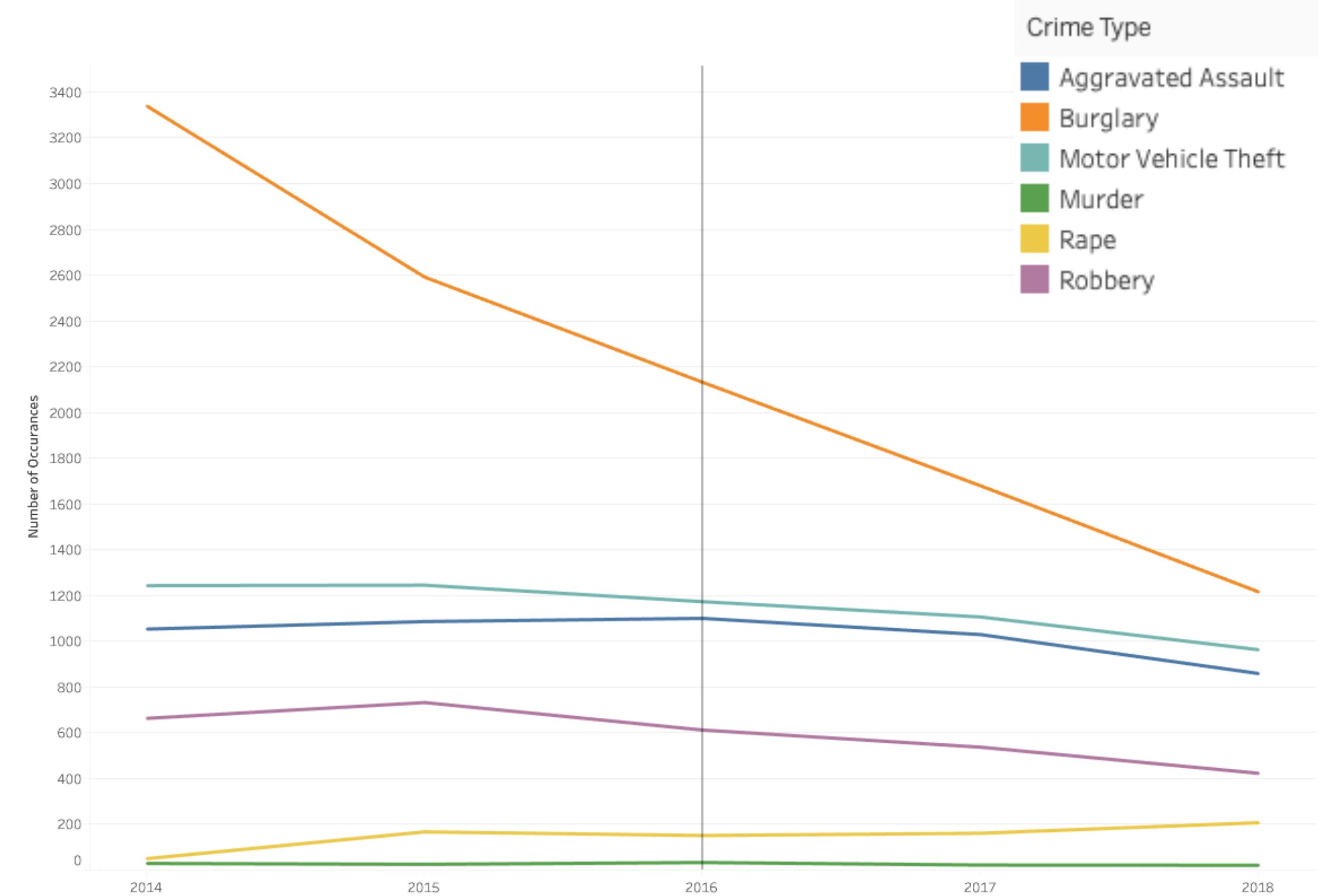


Suffolk County, New York

Brood V 2016



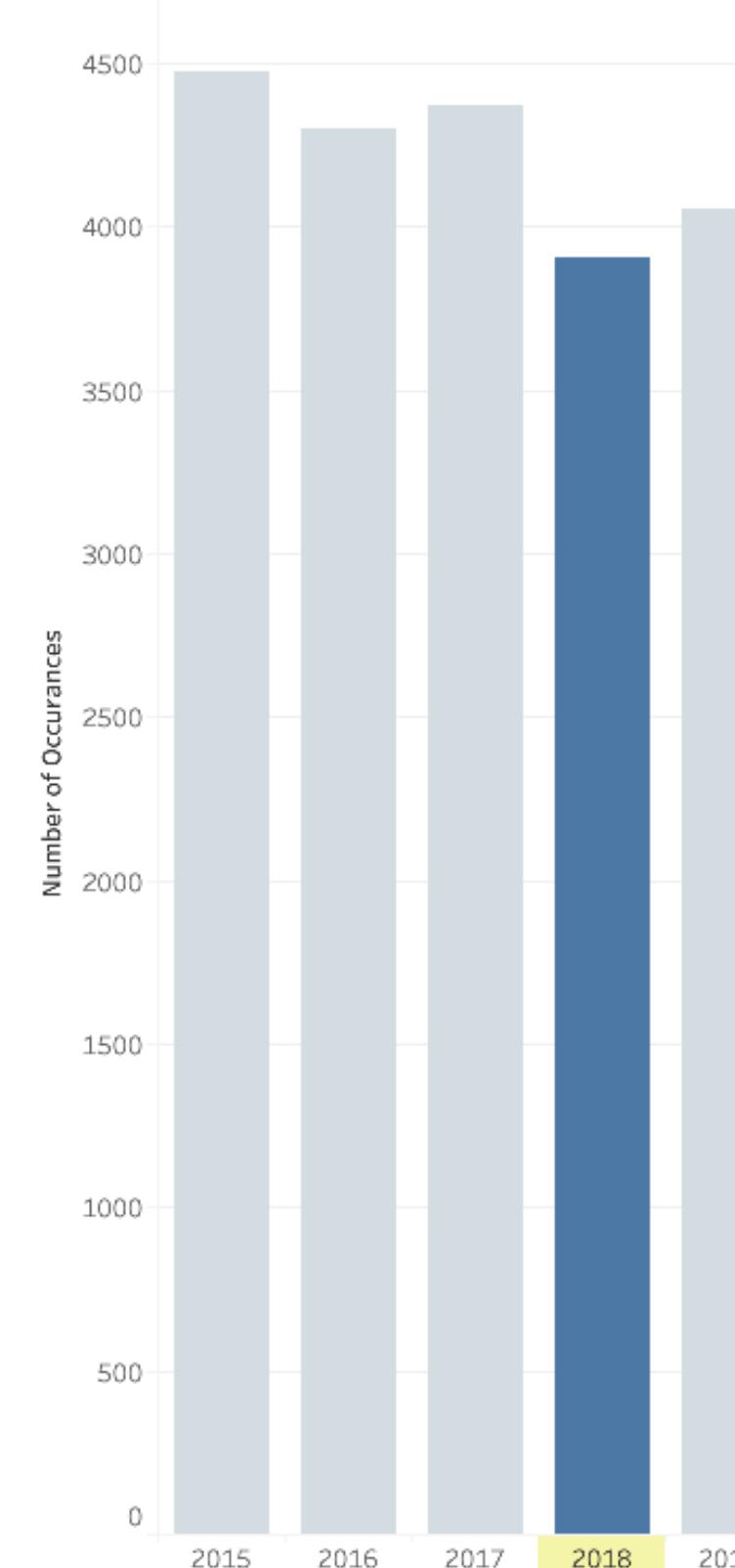
Total crime
(May and June)



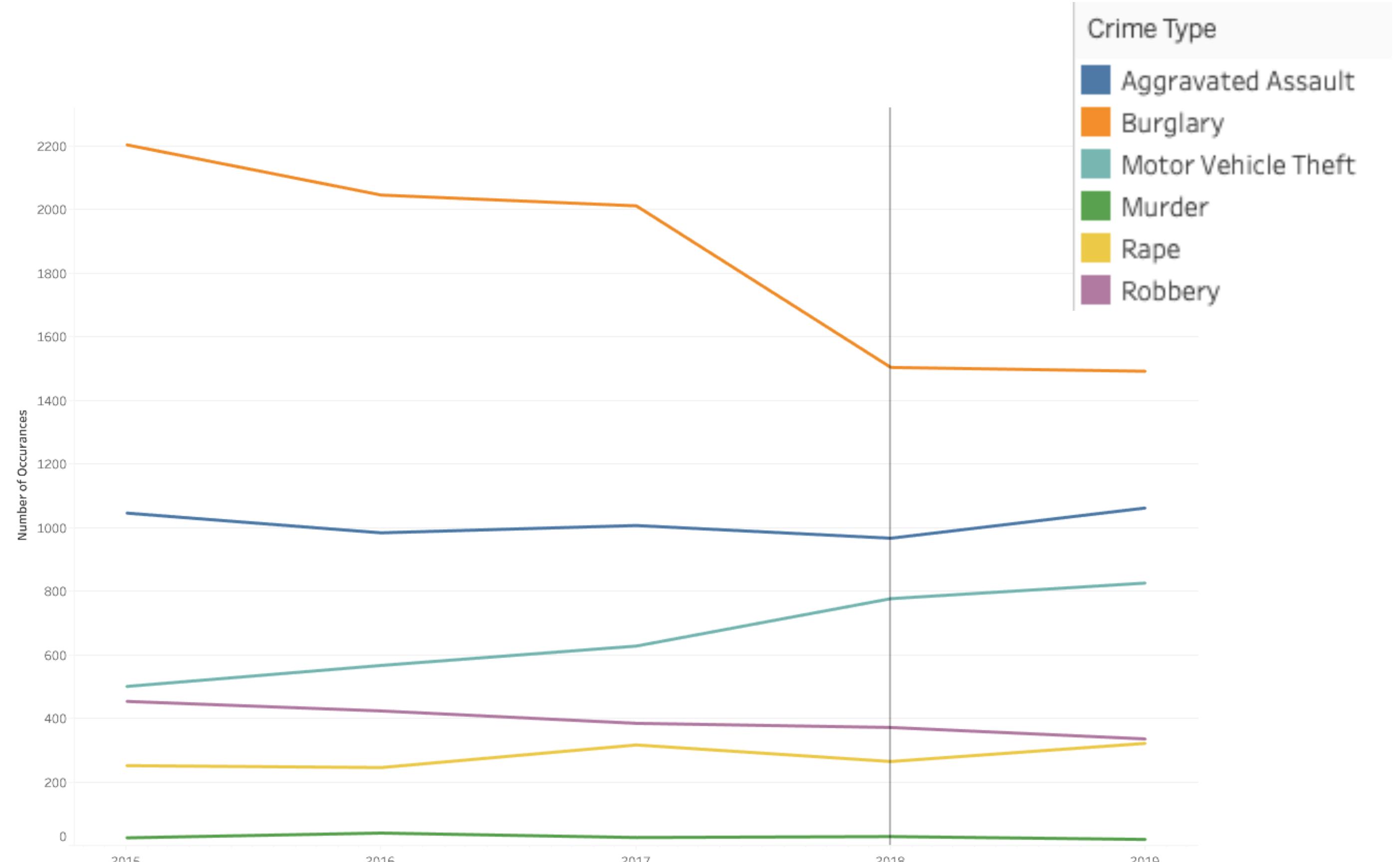
Snapshot of crime variation
(May and June)

Western New York Counties

Brood VII 2018



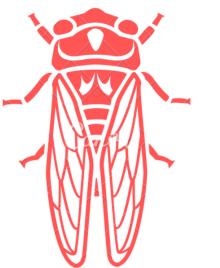
Total crime
(May and June)



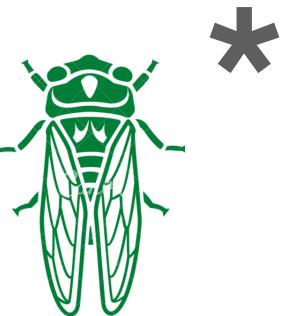
Snapshot of crime variation
(May and June)

Crime and non-traffic citations cicada correlation scorecard

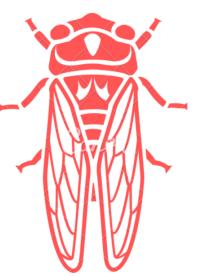
Asheville, NC
Brood VI 2017



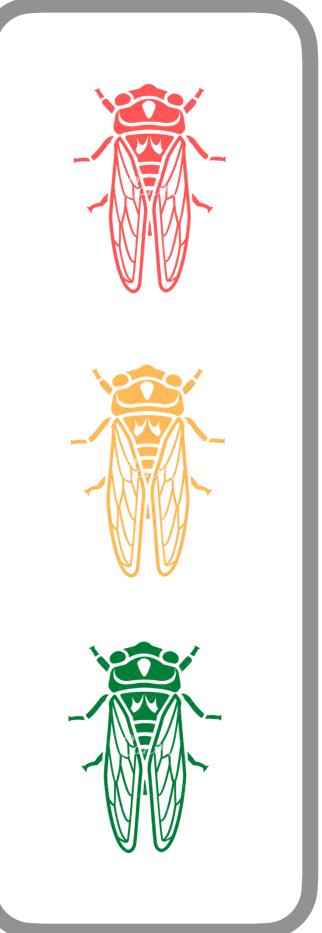
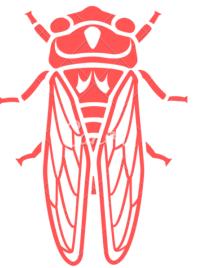
Pittsburgh
Brood VII 2019



Suffolk County, NY
Brood V 2016



Western New York Counties
Brood VII 2018



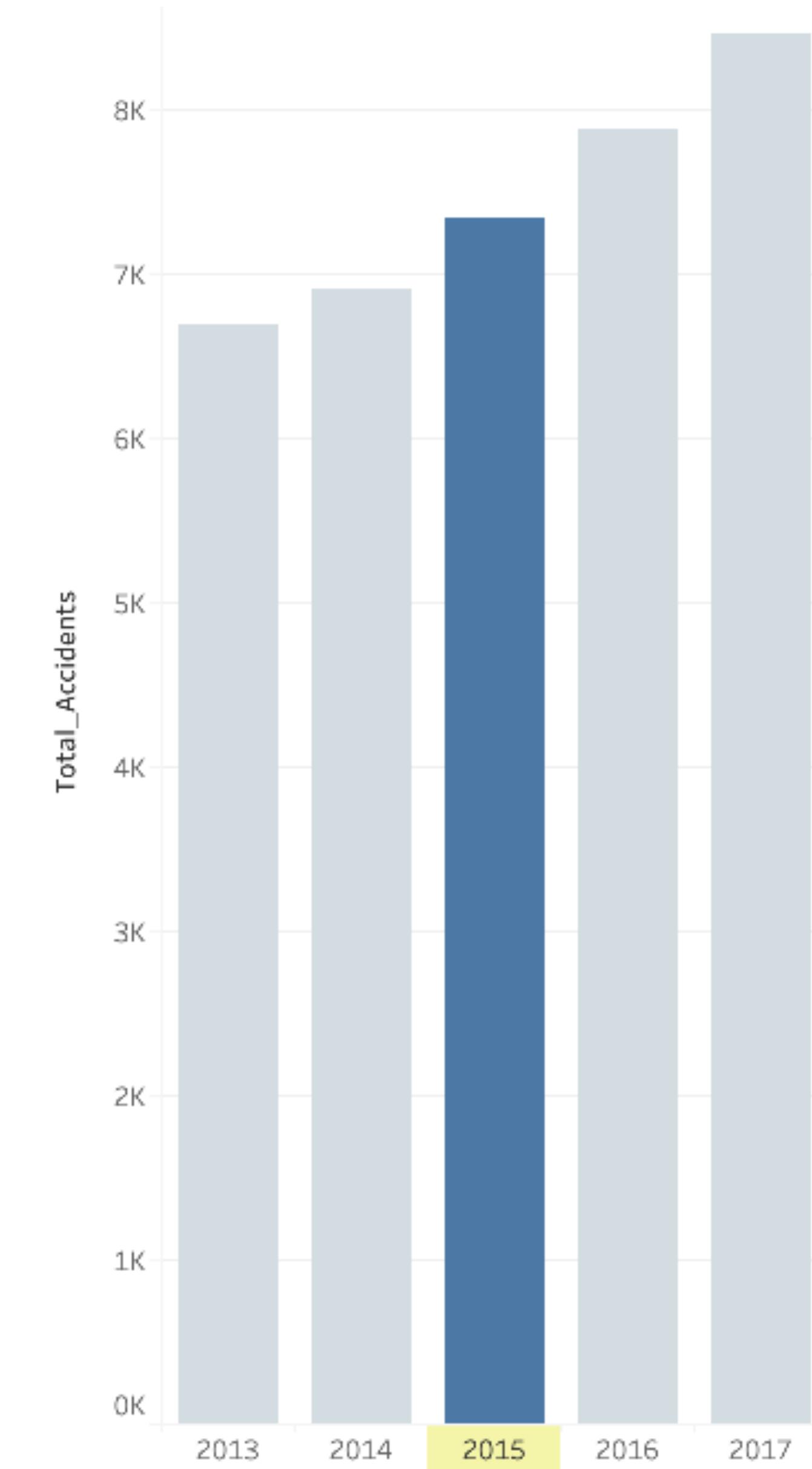
Traffic Accidents and 511 unplanned events

- City or County level
- 511 data curated for unplanned incidents
- Limited to months of May and June

Tennessee Counties

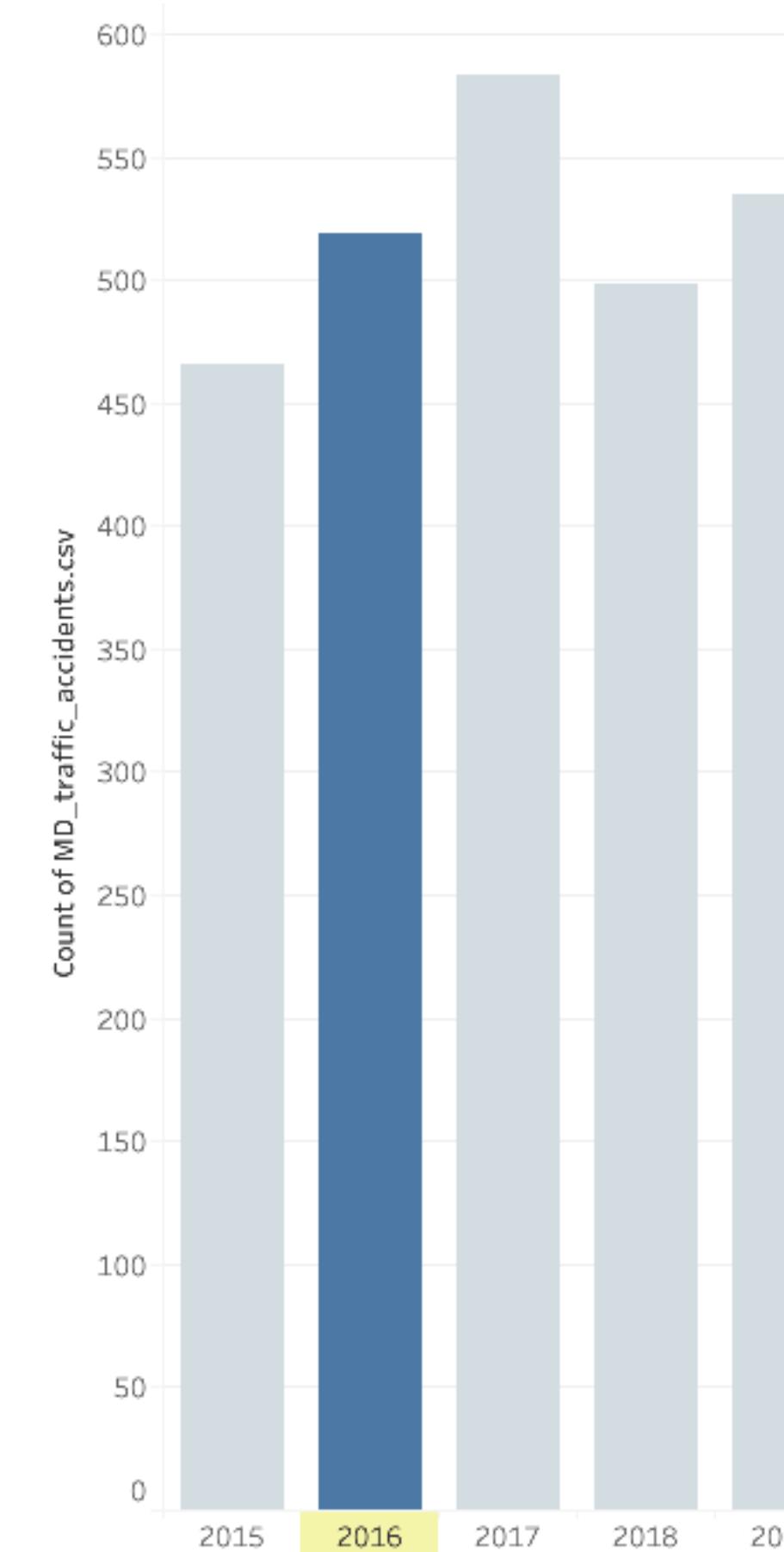
Brood XXIII 2015

Total Accidents
(May and June)

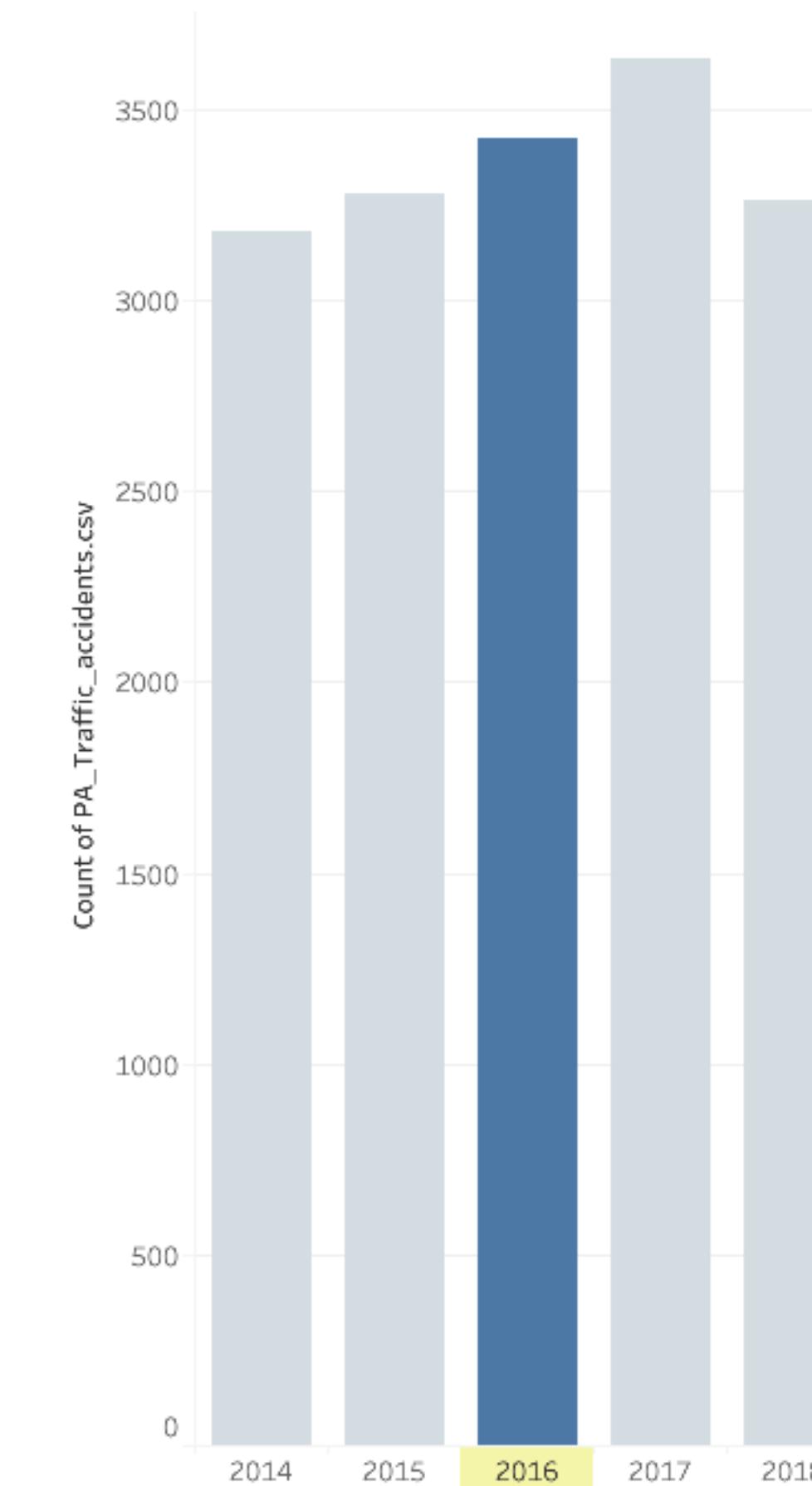


Counties in Maryland and PA

Brood V 2016



Garrett County, MD



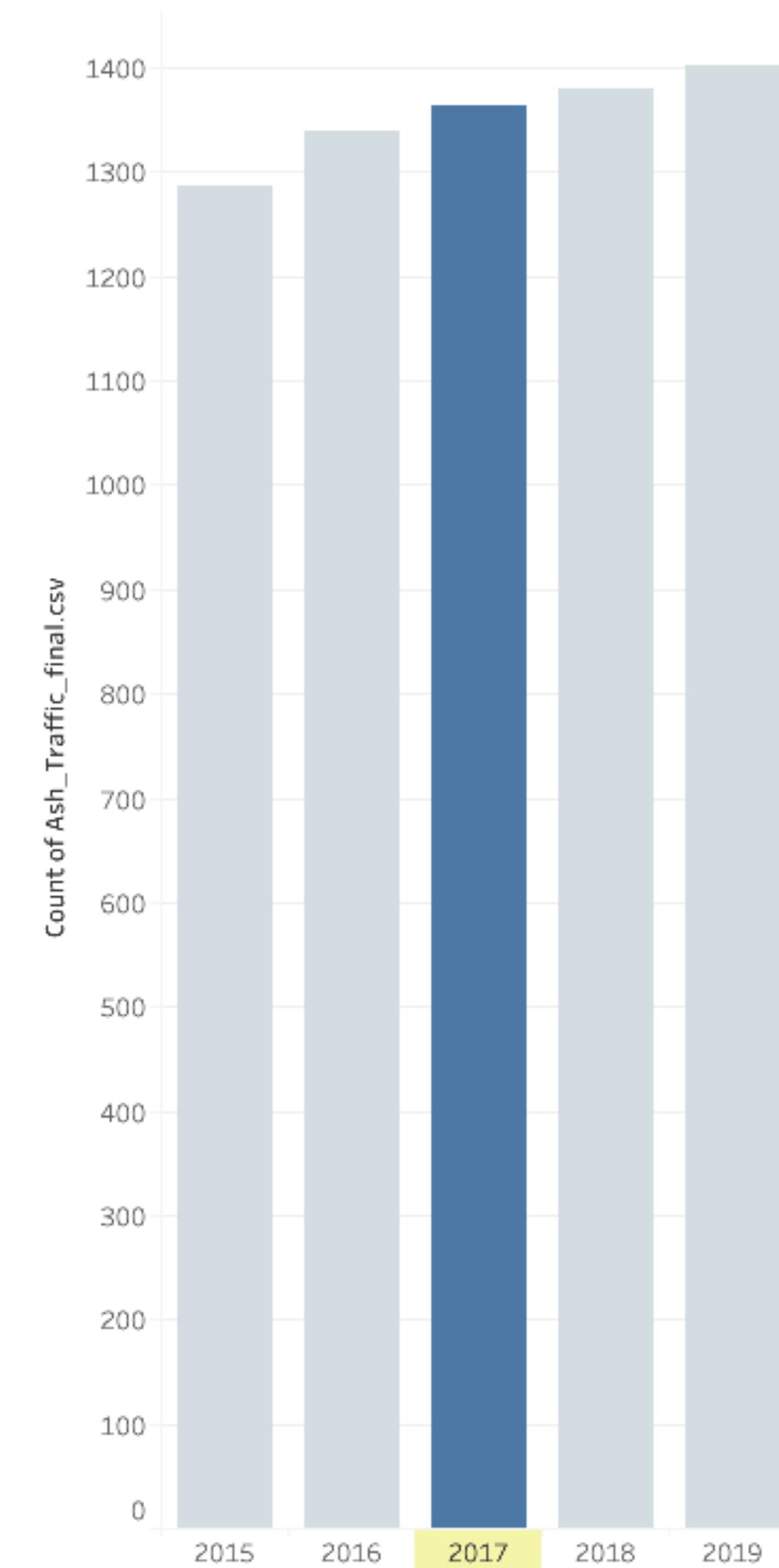
Pennsylvania Counties

Total Accidents (May and June)

Asheville, North Carolina

Brood VII 2017

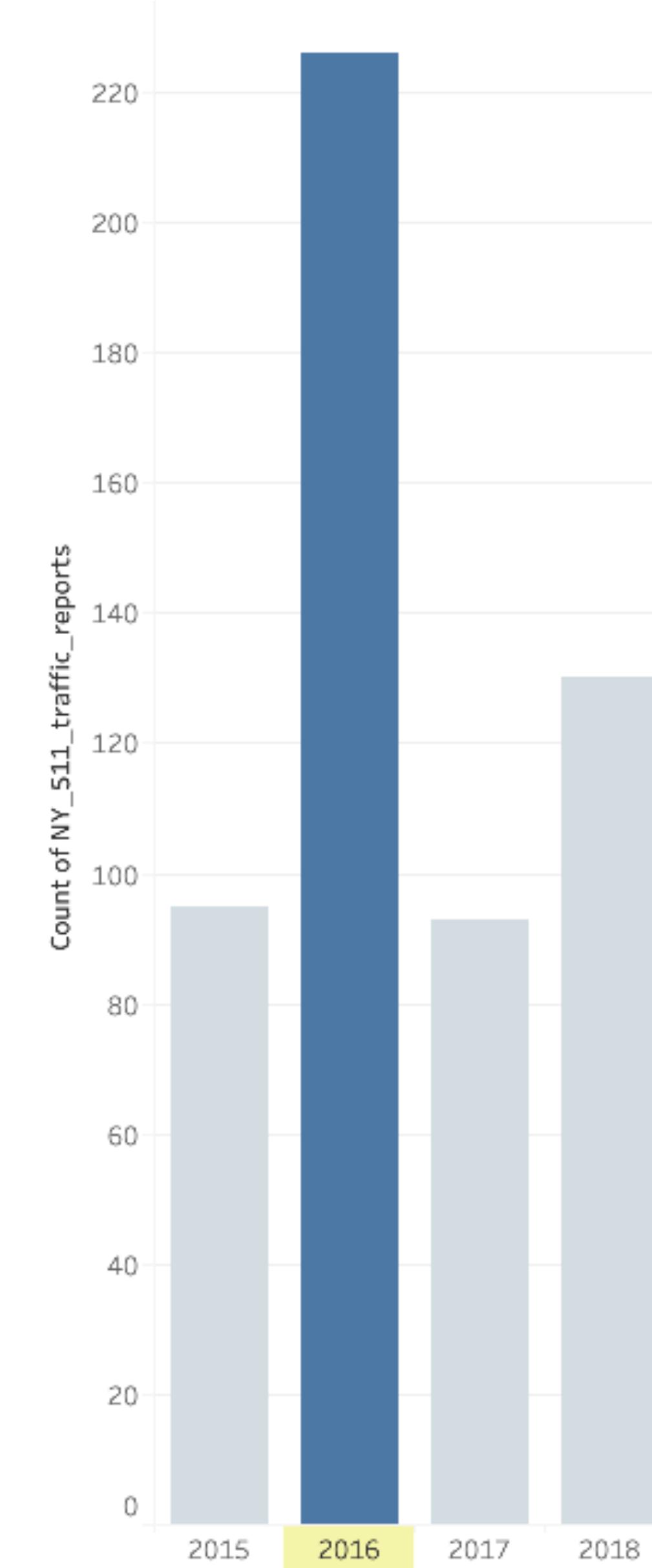
Total Accidents
(May and June)



Suffolk County, NY (511)

Brood V 2016

Total Incidents
(May and June)



Traffic Accidents + 511 cicada correlation scorecard

Tennessee Counties
Brood XXIII 2015



Pennsylvania Counties
Brood V 2016



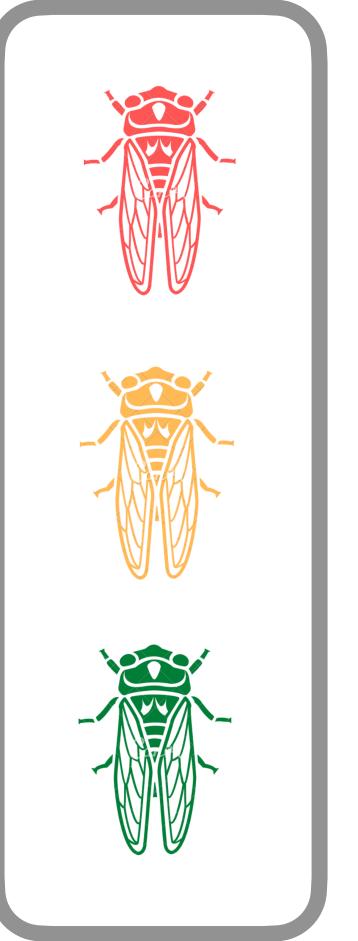
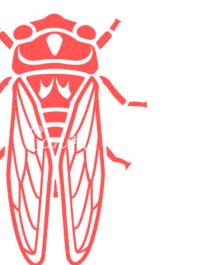
Garrett County, MD
Brood V 2016



Suffolk County, NY (511)
Brood V 2016

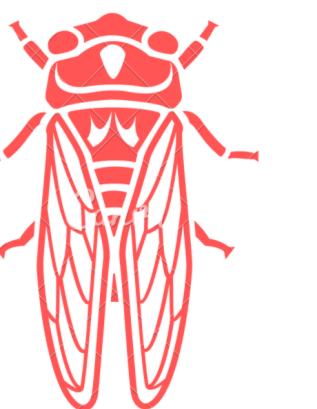


Asheville, NC
Brood VI 2017



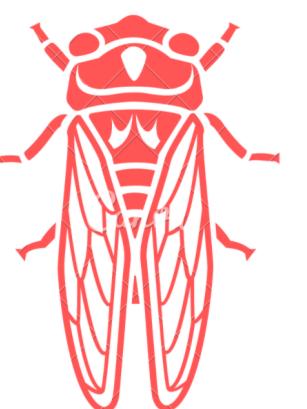
Findings and further research

- No obvious suggestion of changes in human behavior, based on the data I collected



Findings and further research

- No obvious suggestion of changes in human behavior, based on the data I collected
- Look at more 511 data
- Normalize crime, citations, and 311 request types across locales in order to view on a larger scale
- Consider variations in brood density in different counties



References + Data Sources

Maps

1. Liebold, A. M., Bohne, M. J., and R. L. Lilja. 2013. Active Periodical Cicada Broods of the United States. USDA Forest Service Northern Research Station, Northeastern Area State and Private Forestry.
2. cicadas.uconn.edu

311 and City Service requests

1. Kansas City: <https://data.kcmo.org/311/311-Call-Center-Service-Requests-2007-March-2021/7at3-sxhp>
2. Pittsburgh: <https://data.wprdc.org/dataset/311-data>
3. https://data.syrgov.net/datasets/0aa5fcd76dbd4f2cabf2aeb1ddd0179e_0/about

Citations and Crime

1. Asheville: https://data-avl.opendata.arcgis.com/datasets/05af48ba4caf43499a37f348abb98a66_0/explore
2. New York Counties: <https://data.ny.gov/Public-Safety/Index-Crimes-by-County-and-Agency-Beginning-1990/ca8h-8gjq>
3. Pittsburgh: <https://data.wprdc.org/dataset/non-traffic-citations>

Traffic Accidents and 511

1. Asheville: https://data-avl.opendata.arcgis.com/datasets/05af48ba4caf43499a37f348abb98a66_0/explore
2. Maryland Counties: <https://opendata.maryland.gov/Public-Safety/Maryland-Statewide-Vehicle-Crashes/65du-s3qu>
3. New York Counties: <https://catalog.data.gov/nl/dataset/511-ny-events-beginning-2010>
4. Tennessee Counties: https://www.tn.gov/content/dam/tn/safety/documents/crash_stats/month_04132021.pdf