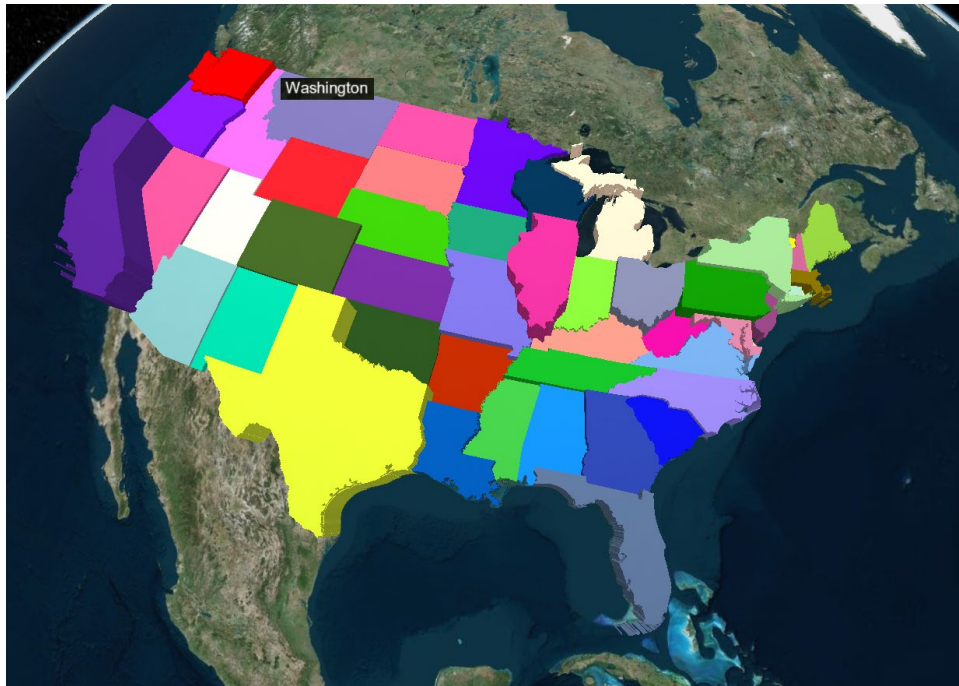# Project 2 - US Gun Violence Data Visualizations
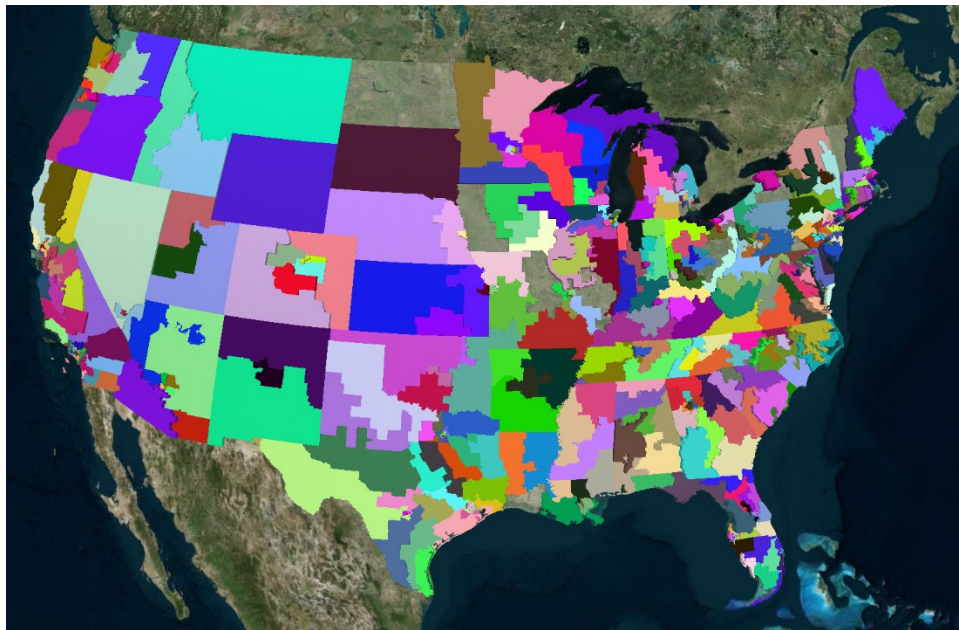# Design Process Documentation

Maps

First iteration of state level view of the Cesium map. States were separated using random colors.
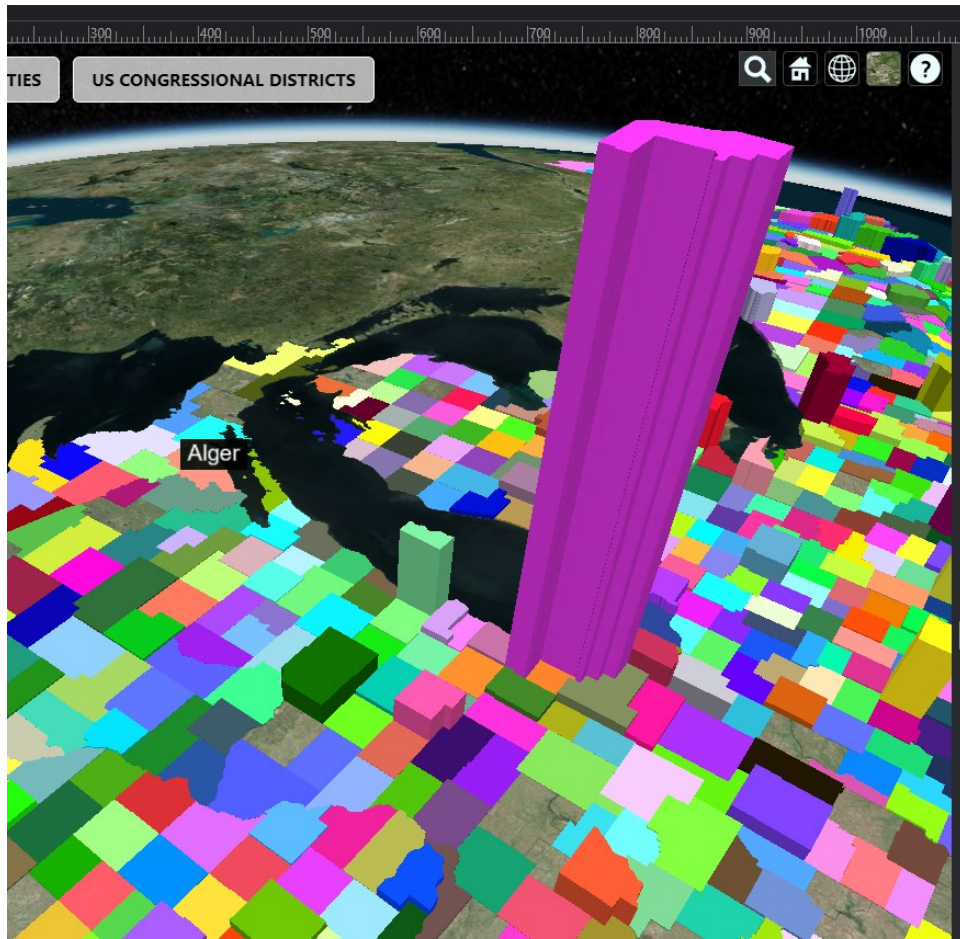
First iteration county level view. Counties were separated using random colors.
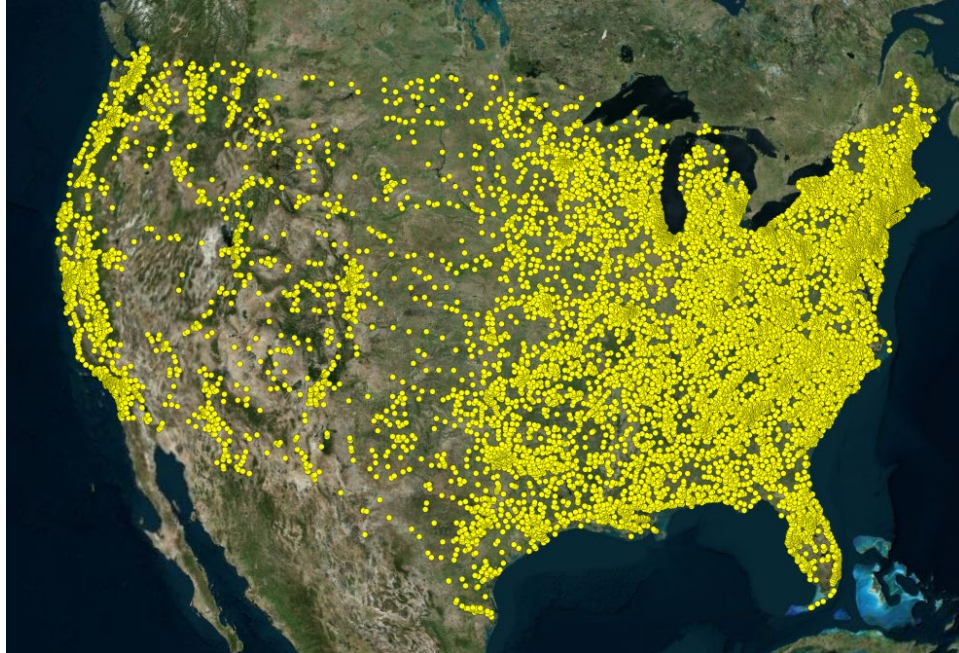

First iteration congressional district level view. CDs were separated using random colors.
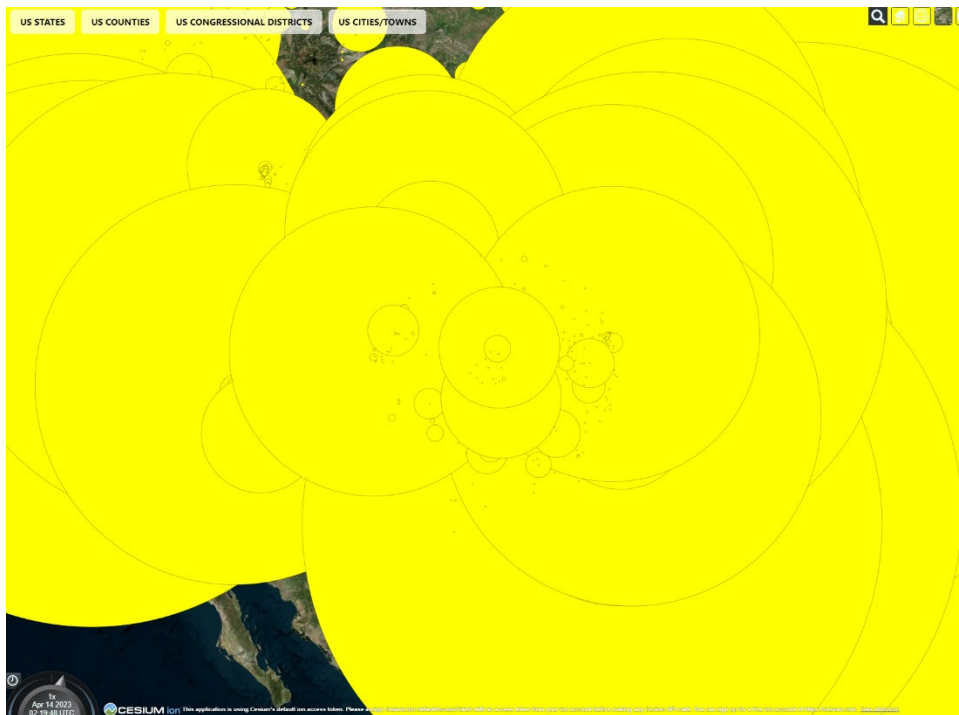
Close up view of the Congressional Districts. Utilizing the Cesium's 3D
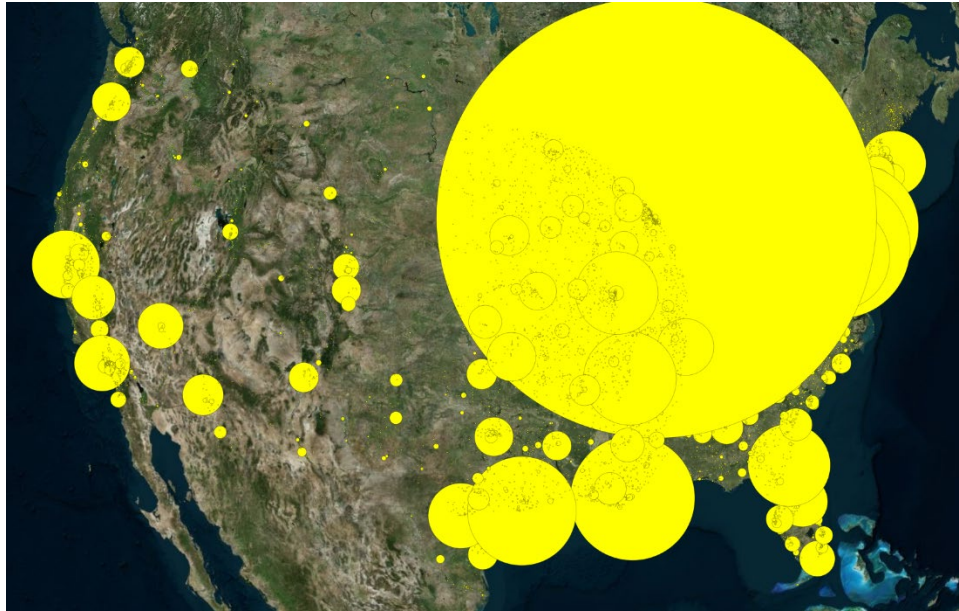capabilities to show incident counts per CD.
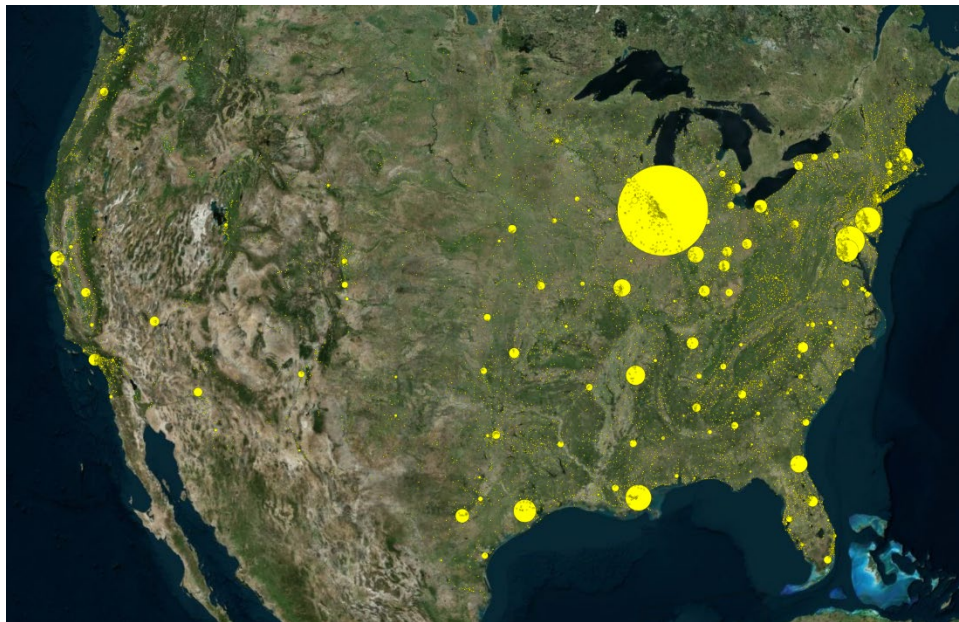
Close up view of Cook County.

All individual incidents plotted on the map using yellow markers.

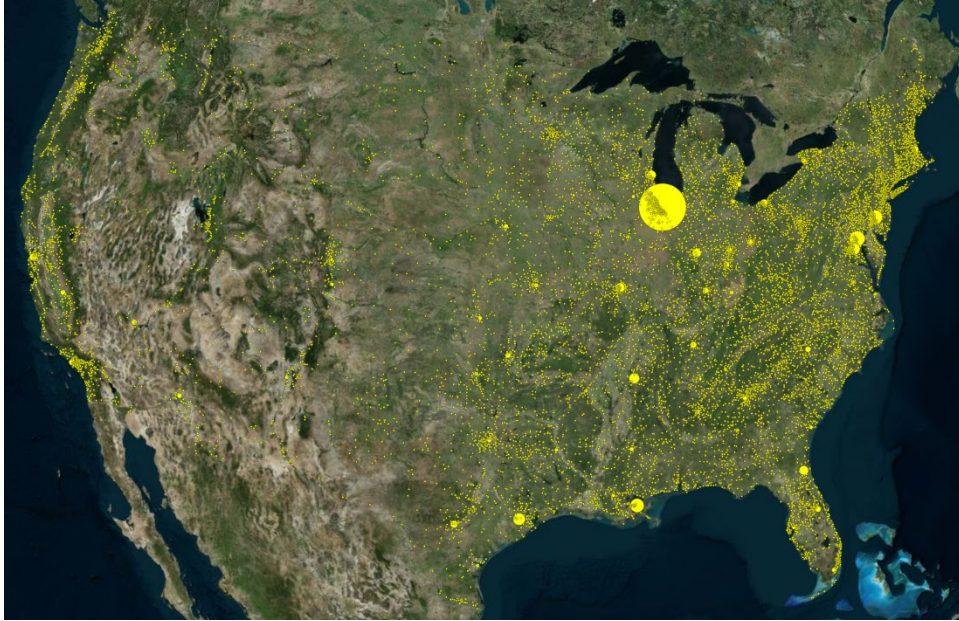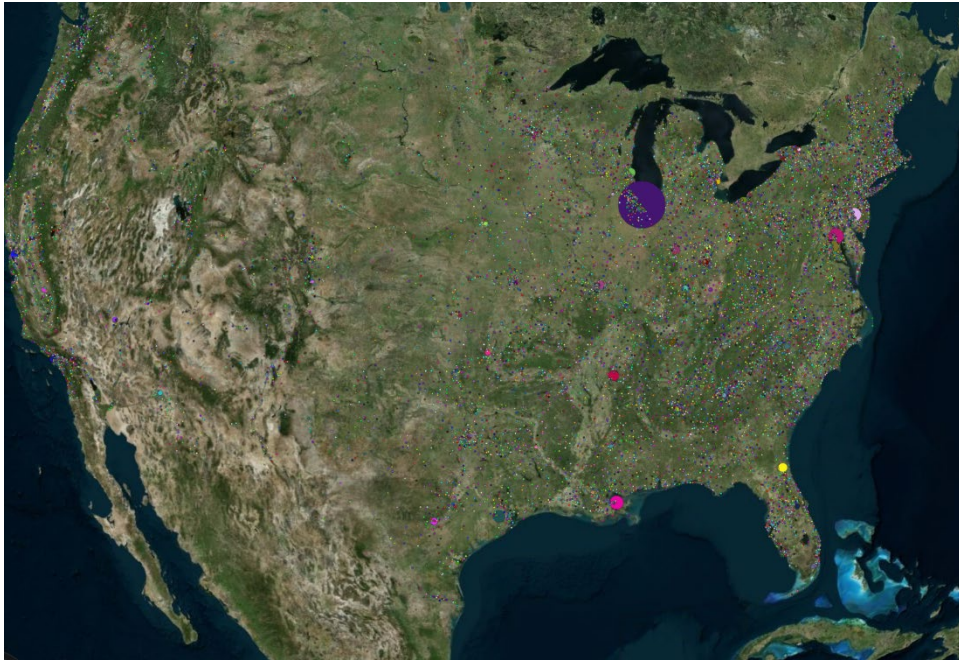Whoops. Yellow markers were changed to be based on the number of incidents clustered together.

Adjusted multiplier for each county. The circles were still a bit too big. We can thank Cook County for this one.

Adjusted multiplier even more. This was much better but could still be improved.

Probably the best version so far. Cook County is still very noticeable.

Adjust colors but used same multipliers.
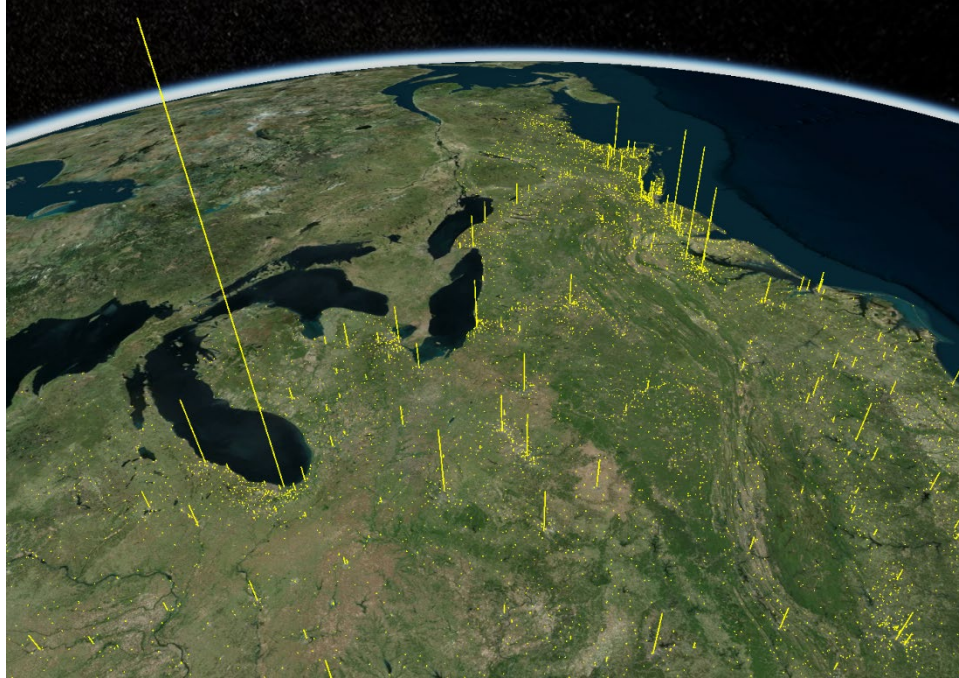
Tried a stacked bar approach that protrudes in the 3D space instead of a circle that just gets a wider radius to represent incidents clustered close together.
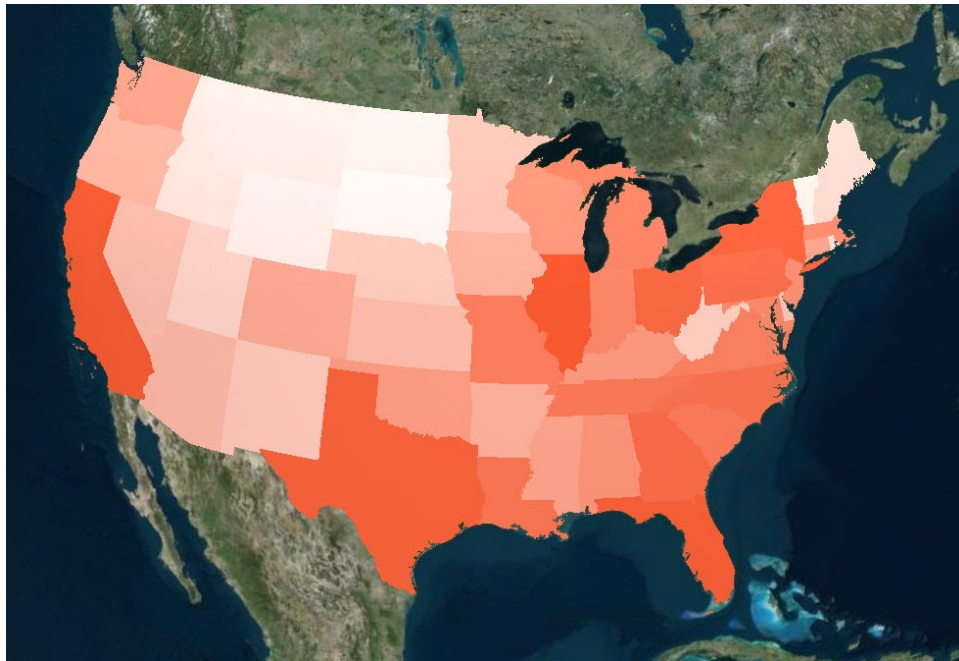
Used a gradient color scale to show incident heat map. Shown is the state level.
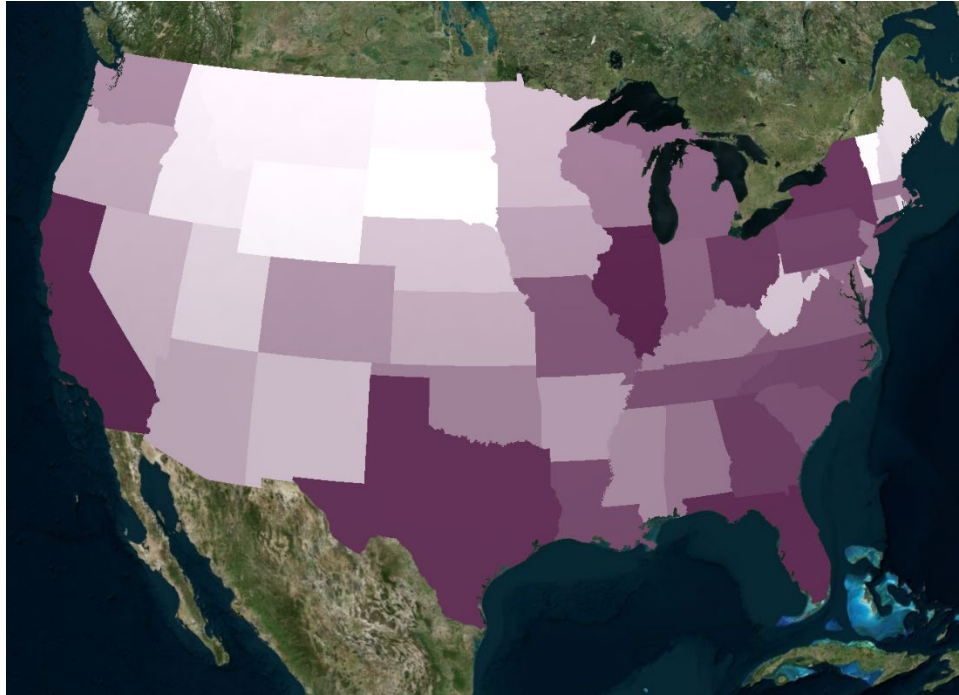
Tried a different color this time.
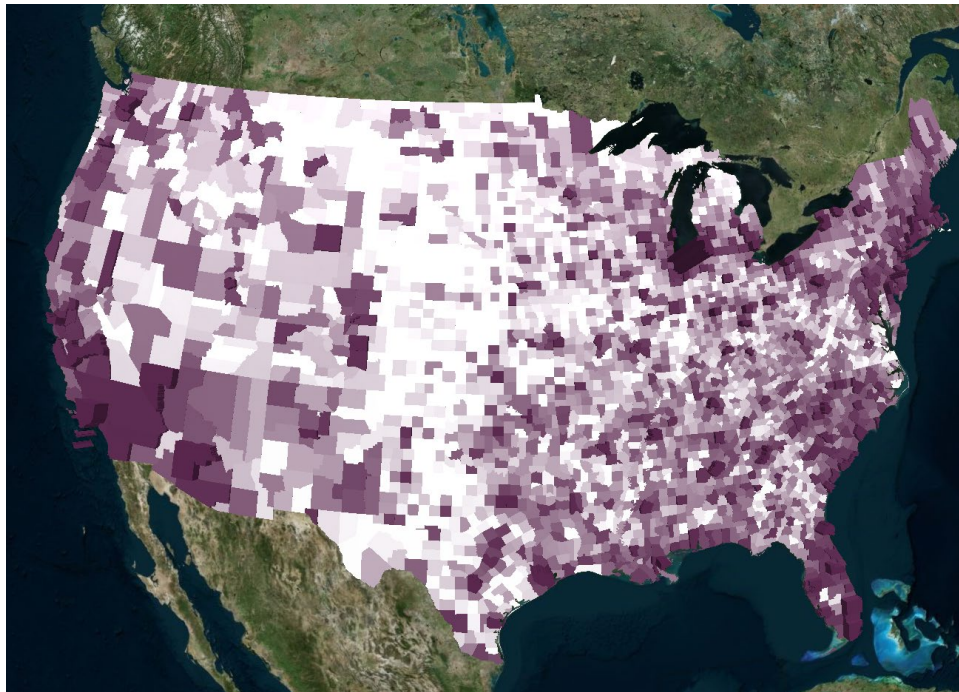
3D protruding heat map at the county level. Also used the same color gradient scale.
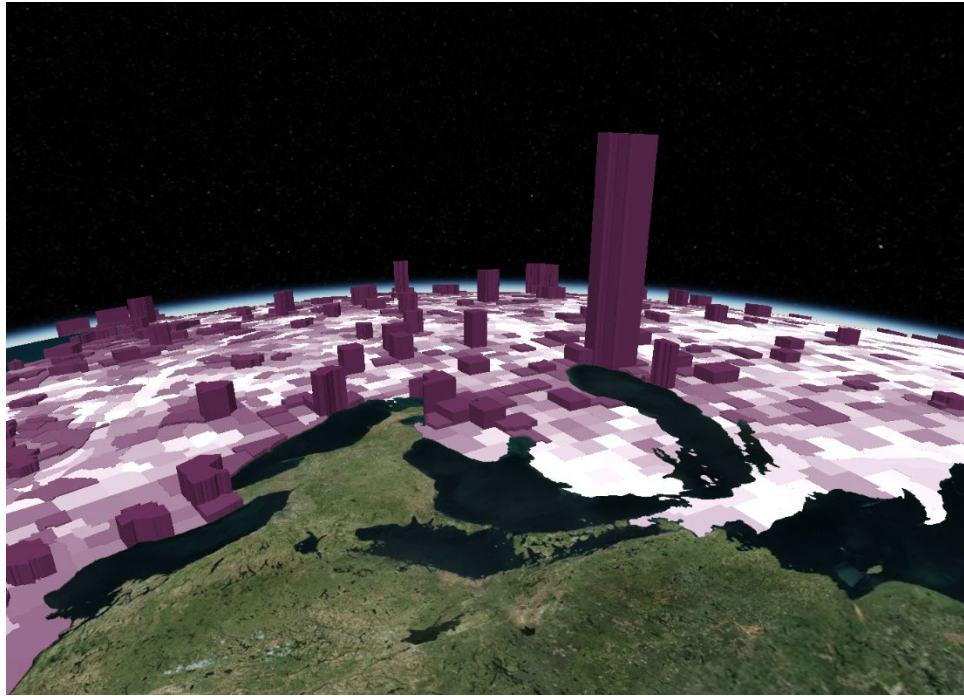
Different angle of the same view to showcase 3D nature of Cesium.
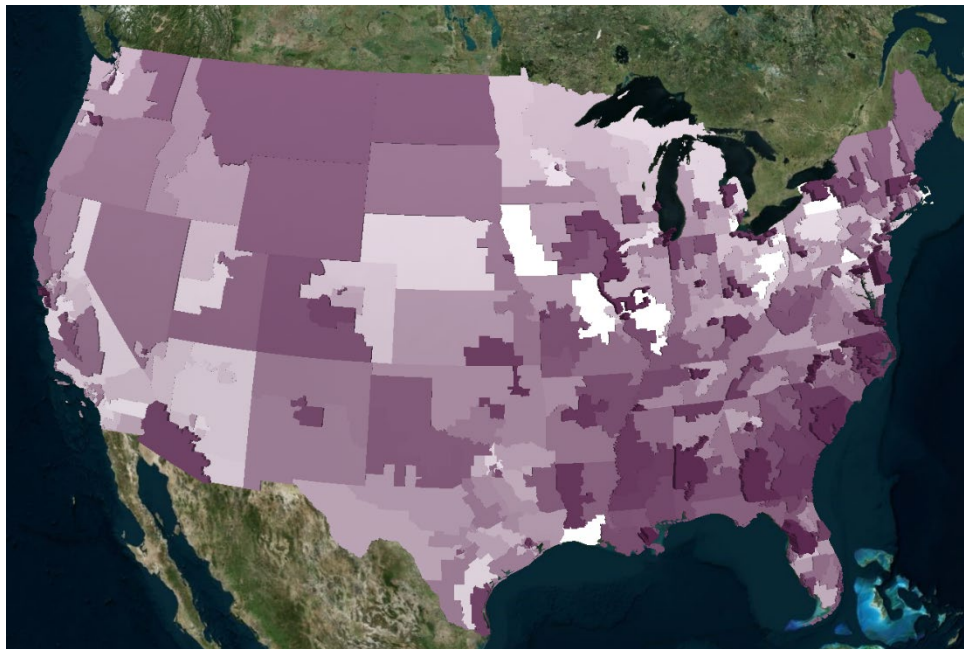
View for congressional districts
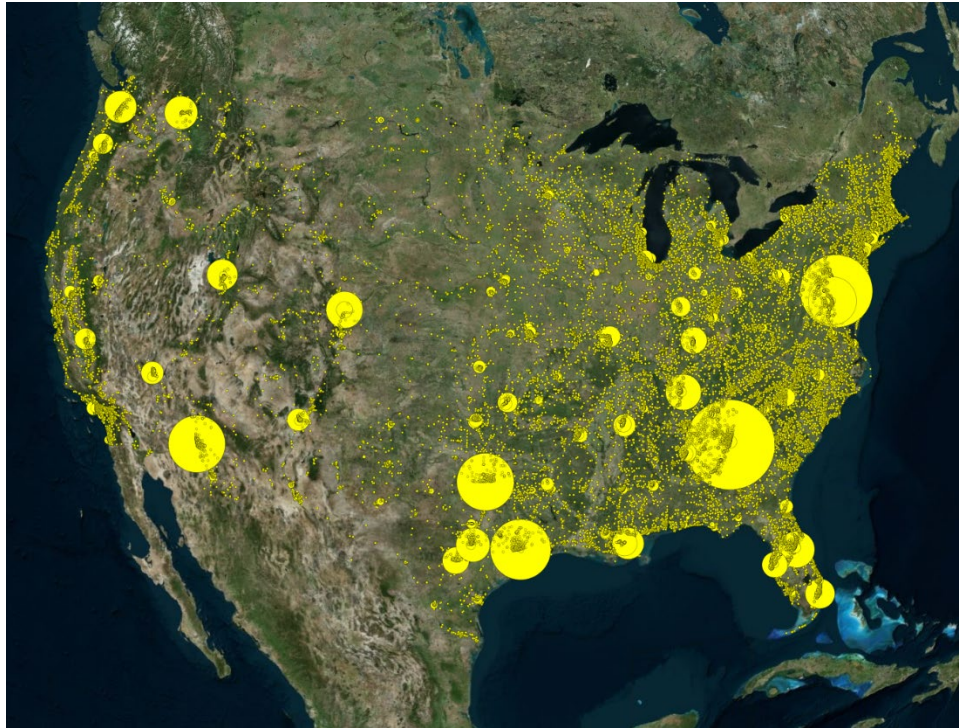
Individual incident locations. We noticed that the airport in Atlanta had an unusual amount of incidents tied to one single location which was an airport.

-84.4333,33.6356, undefined - 252 incidents
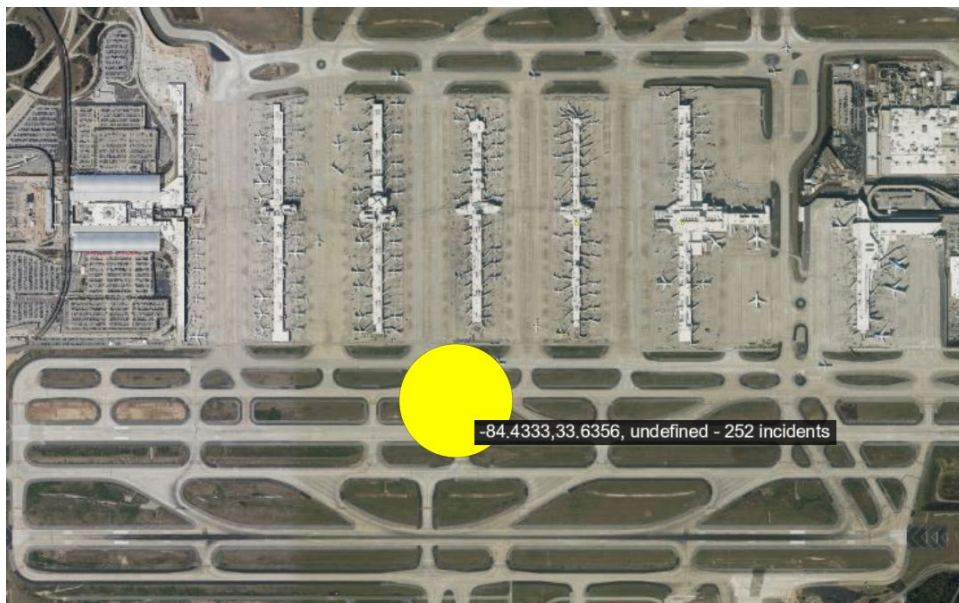
Close up view of the airport by Atlanta
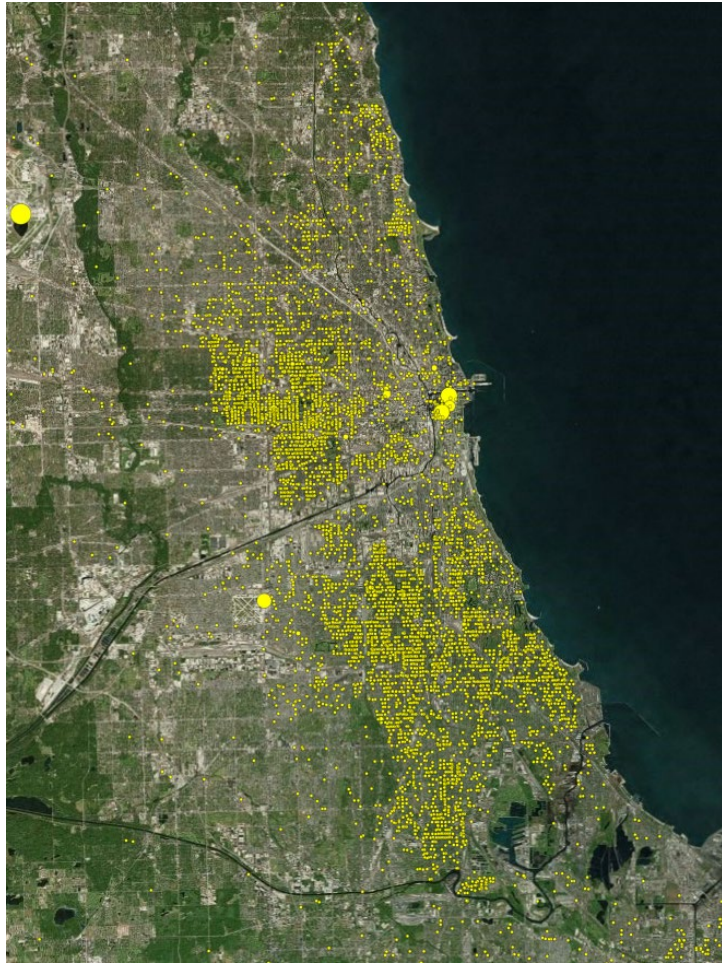
Close up view of Chicago. There were incidents at almost every block.
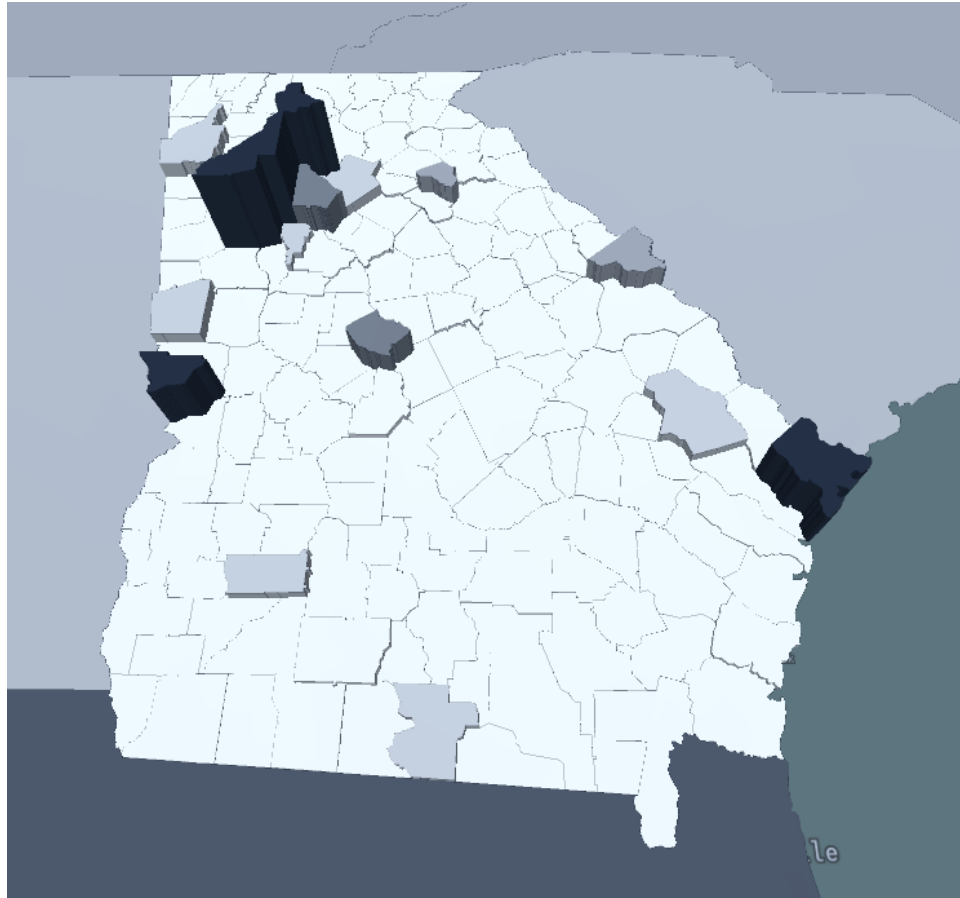
This version leaned towards a more neutral color scheme for the map. This is the county view.

Another county view.
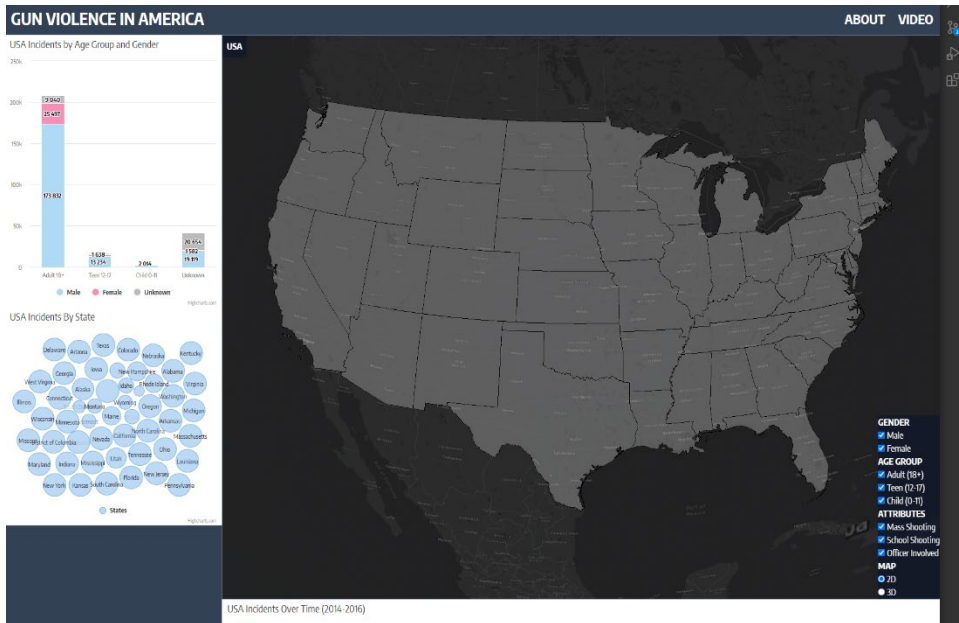
A default Mapbox skin applied to the map. We removed the 3D layer to test the map
layer in the meantime. We still needed to add our own customizations to it.
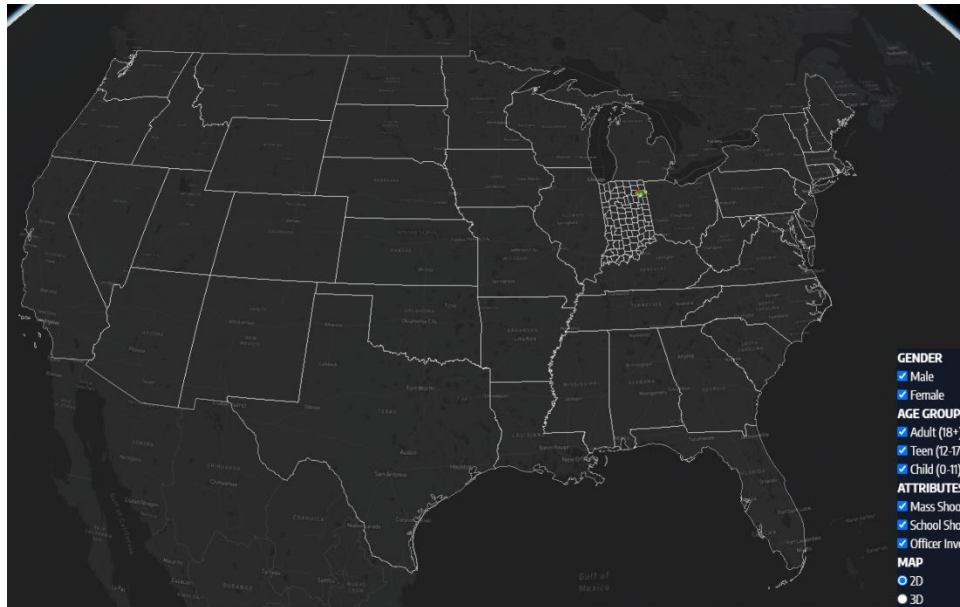
A close-up view of another map layer skin, and also shows us experimenting with the borders.
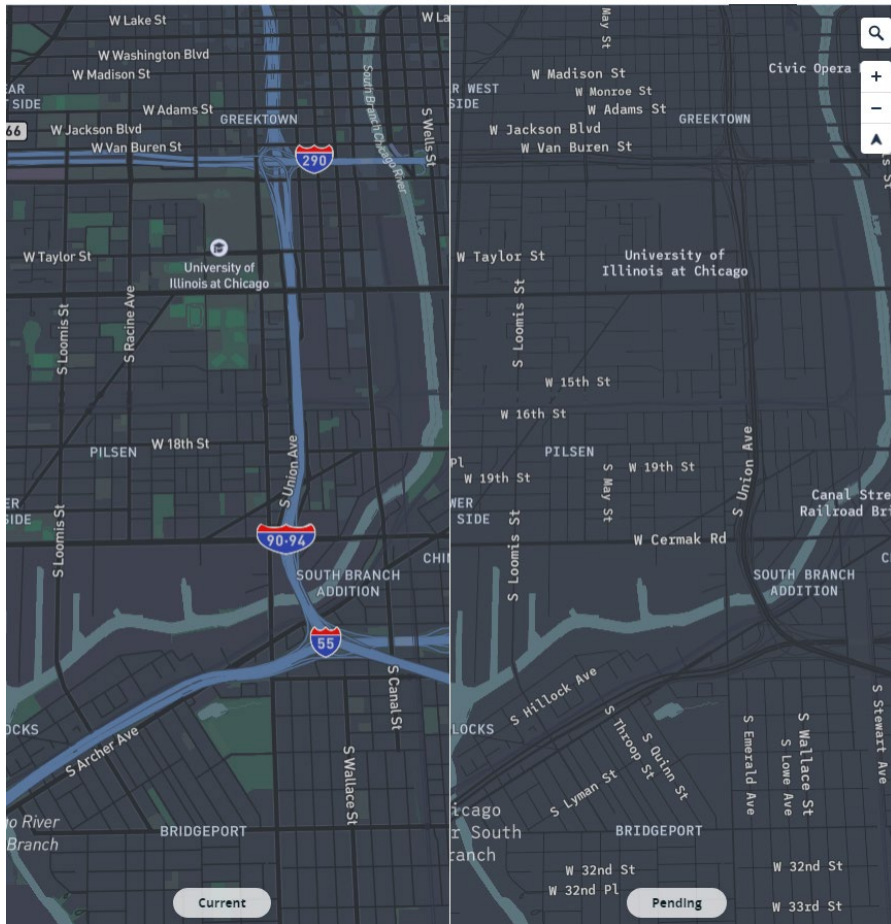
On the left was our first pass at a Mapbox map layer skin. It was the closest to the default navigation skin. On the right are some of our changes. We wanted less of the signs and icons shown. We also wanted to tone down the amount of streets shown.
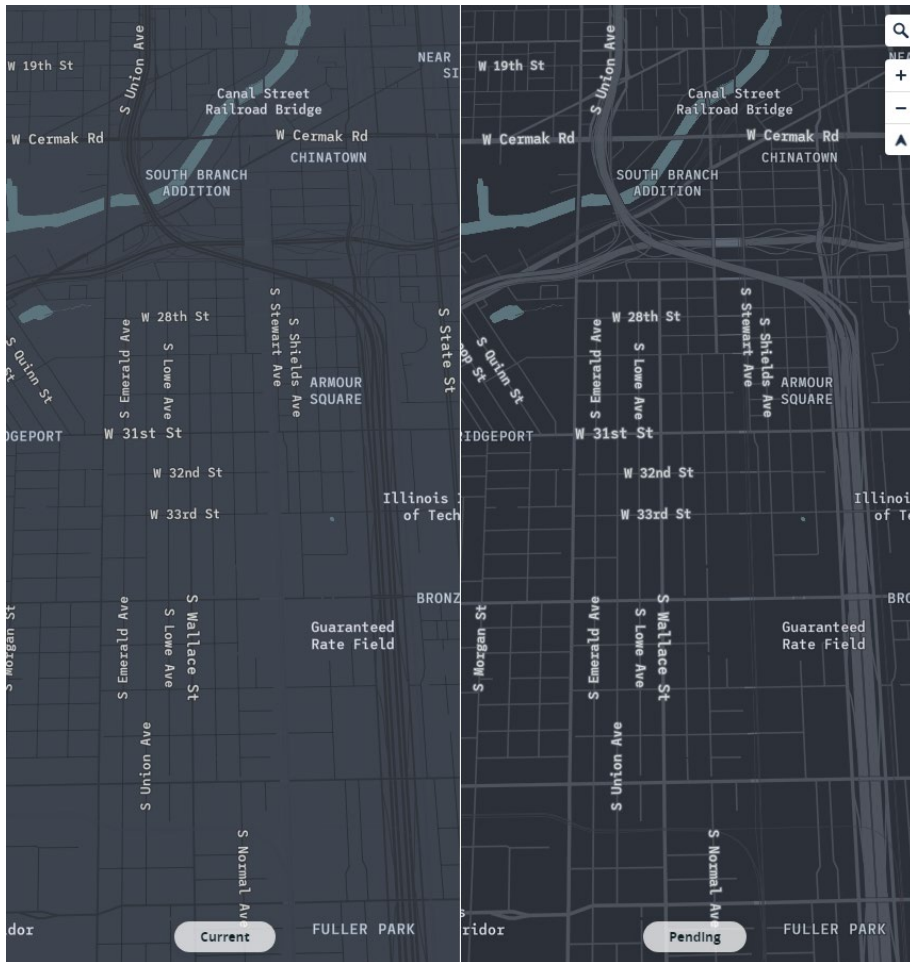
More changes to the custom map layer skin. Started using a darker background to better match the theme.
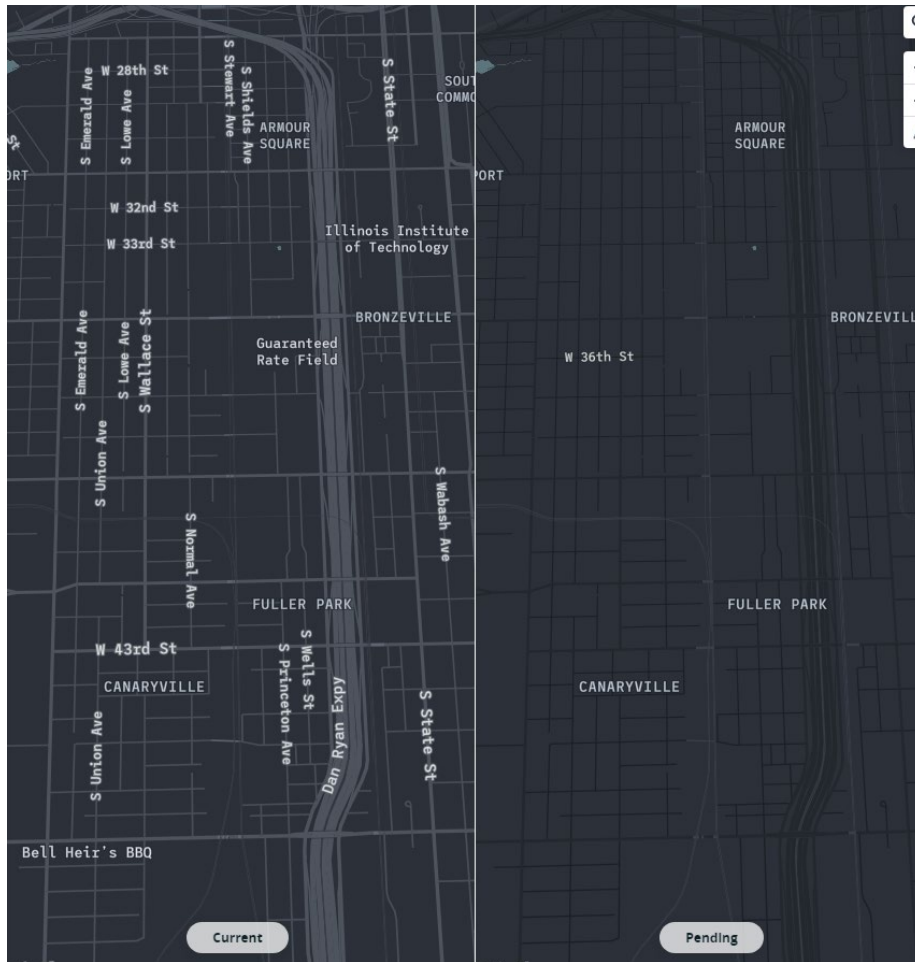
Darkened and reduced the frequency of roads showing up. The incidents were going to be highlights of the map, so other information was not as important.
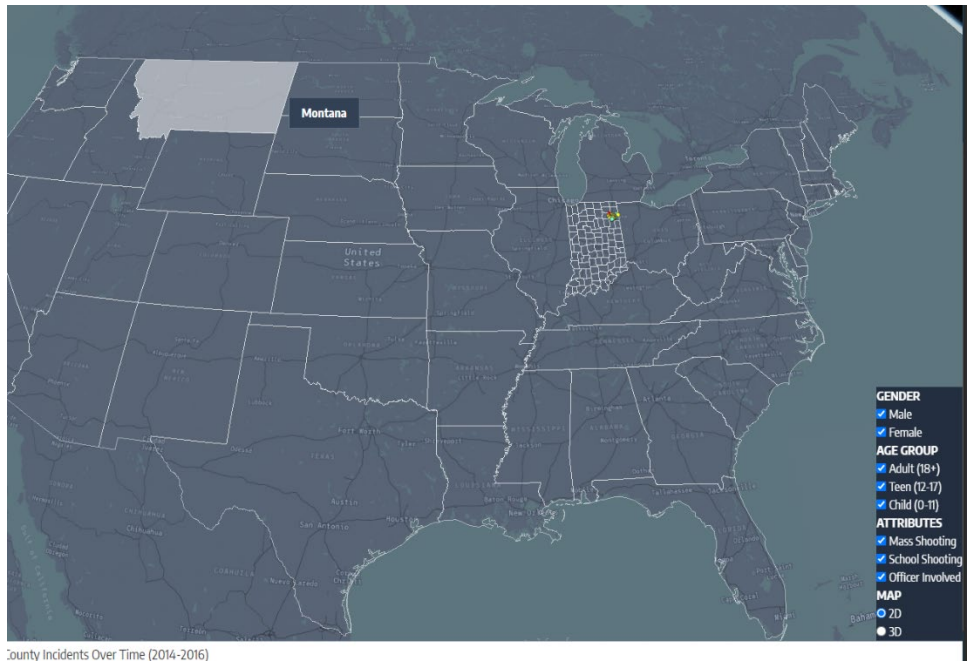
More map layer skin updates.

Charts
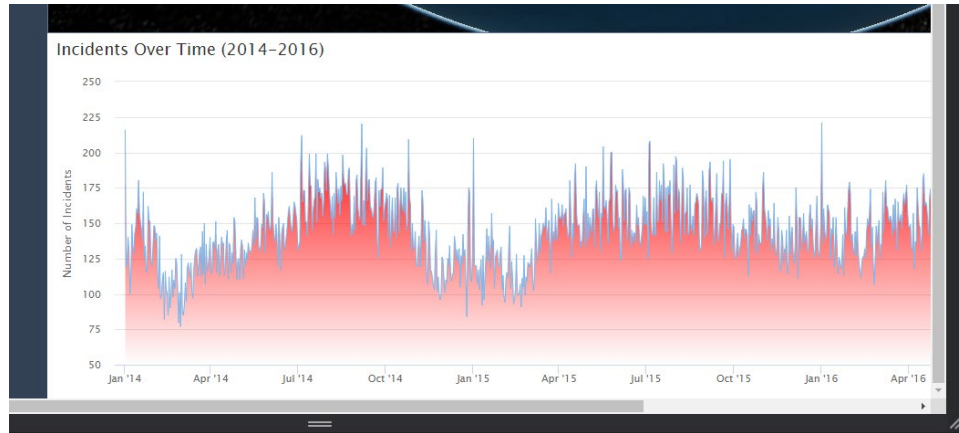
First pass at a time series graph showing all incidents over 3 years. We were still working out the colors.
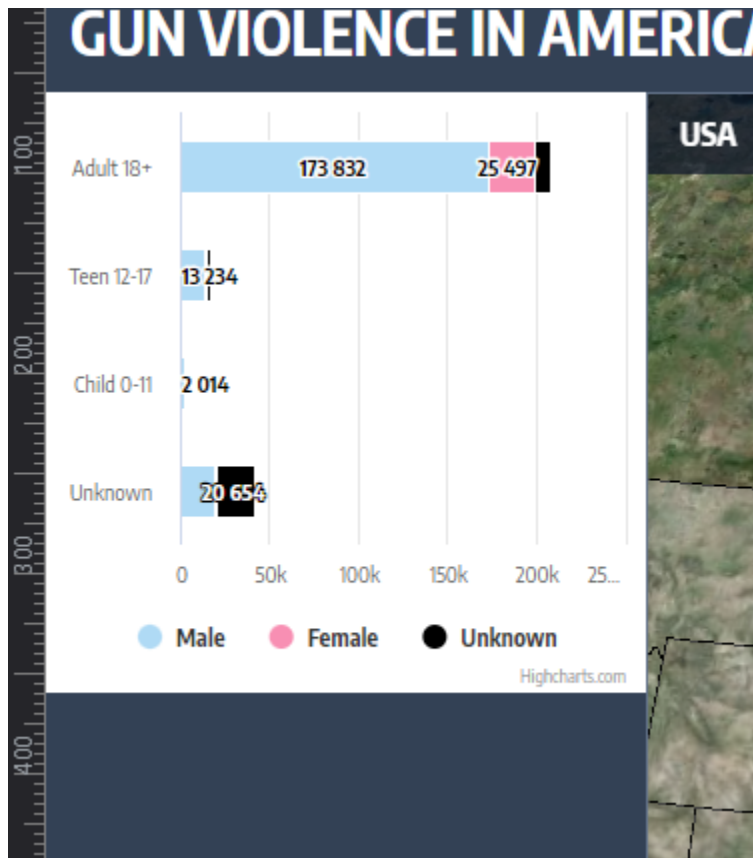
One of the first versions of the gender and age breakdown chart.

First version of a bubble chart to display incident numbers for all 50 states. The scaling was not properly representing the numbers.
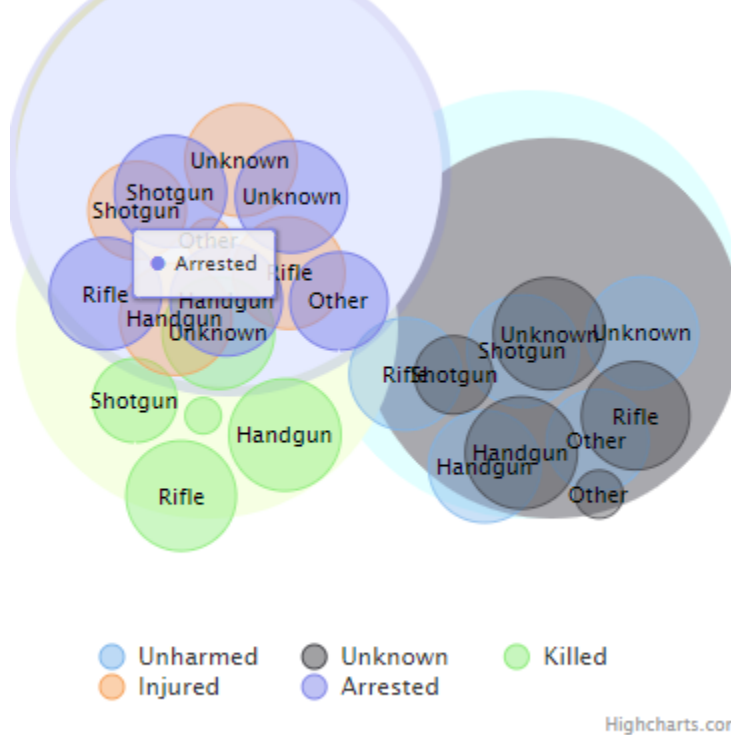
We tried using a split bubble chart to group gun types used into victim statuses.
This was not working properly.

States with the most incidents and the most common incident type

Legend:
- Illinois
- New York
- Florida
- California
- Maryland

We attempted creating a split bubble breakdown for the top incidents for states. This again wasn't scaling properly, and Highcharts had an issue with gravity interaction for physics-based bubbles.

Legend:
- Illinois
- New York
- Florida
- California
- Maryland
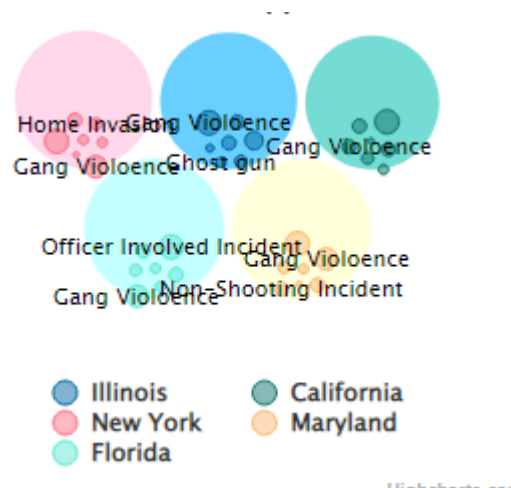
Messed with the scaling even more.
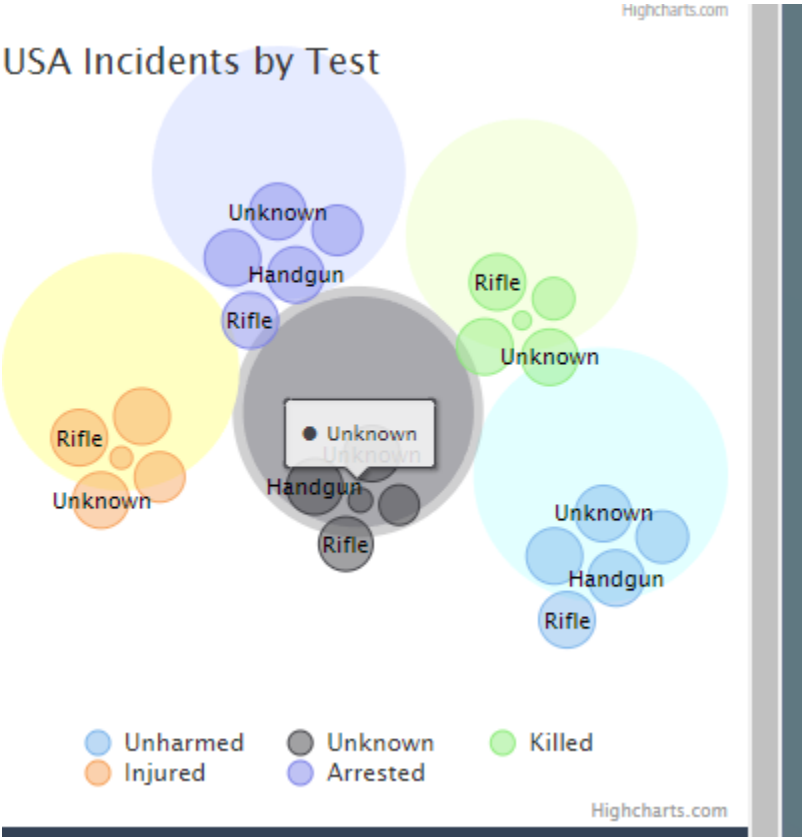
The same gravity property was giving us issues when using bubble charts.

One of our first attempts at breaking down the gun types by caliber using bubble charts.
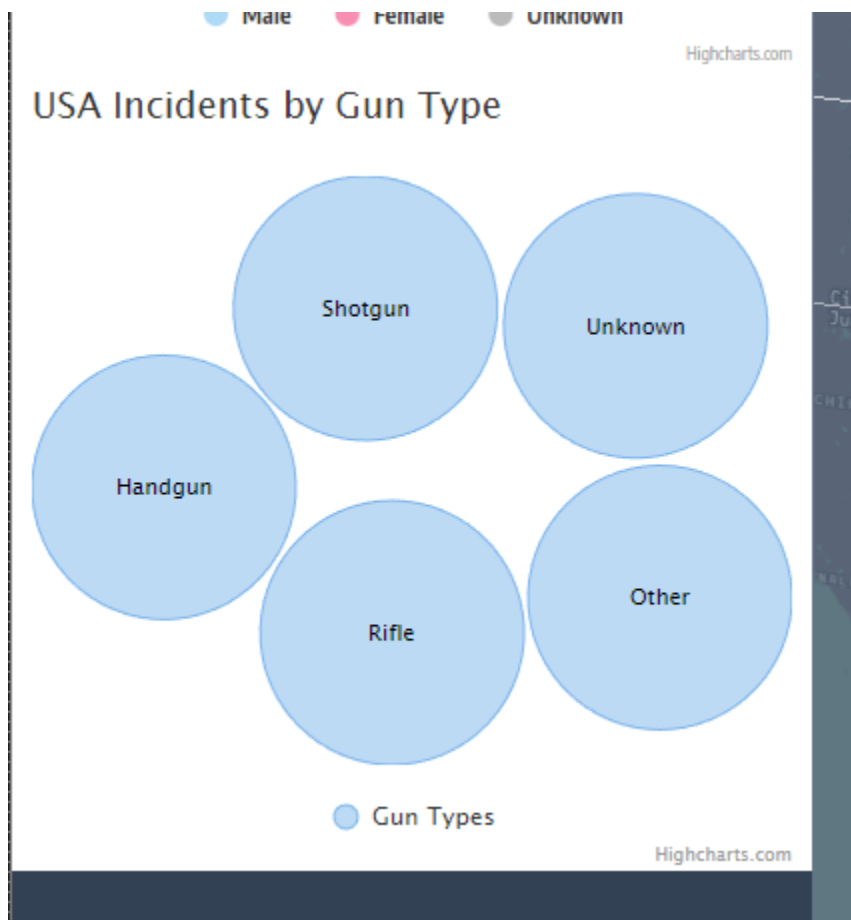
Gun types broken down into the larger gun type categories. Scaling was again an issue.
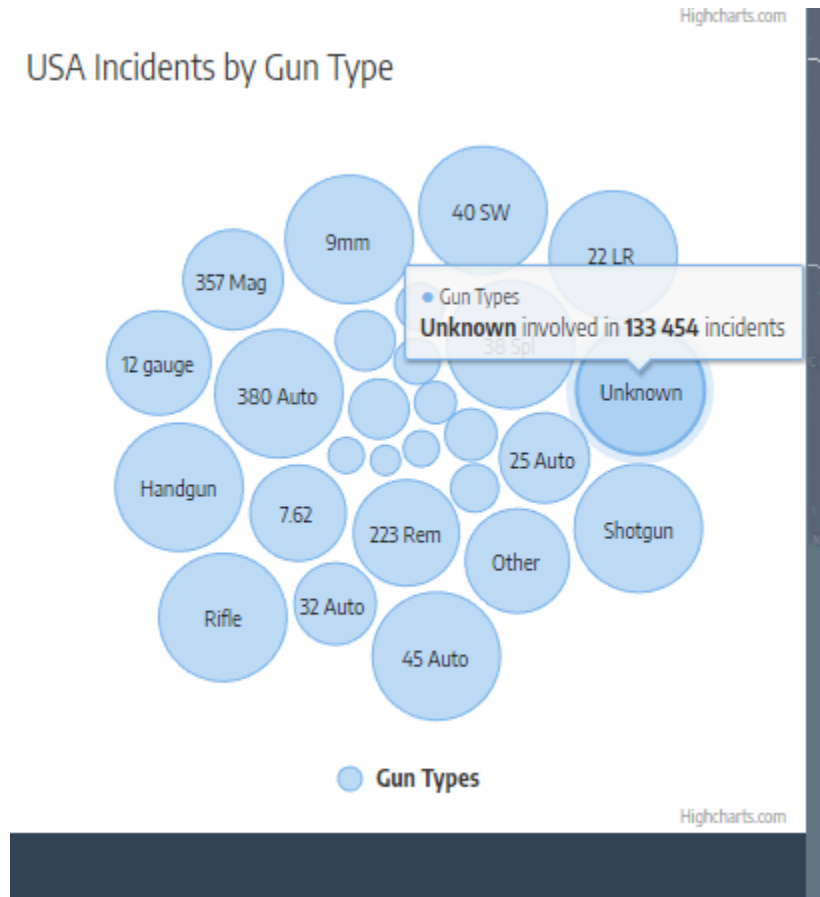
Another example of the scaling issue persistent throughout our use of the bubble charts.
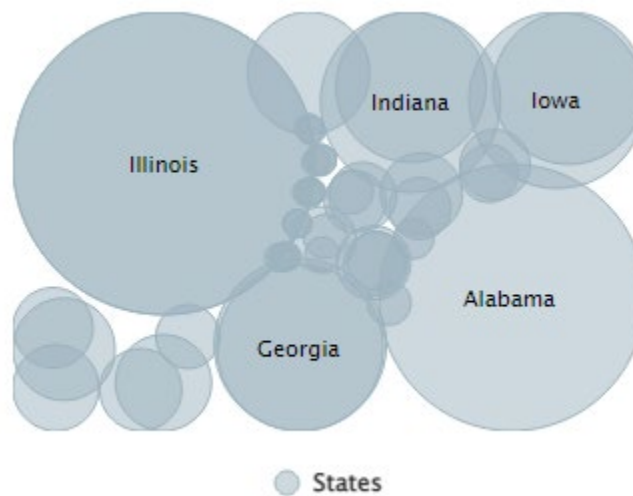
In an attempt to fix the scaling, we then ran into the issue of alloted screen space for the bubbles. While more accurate, this was clearly not going to work.
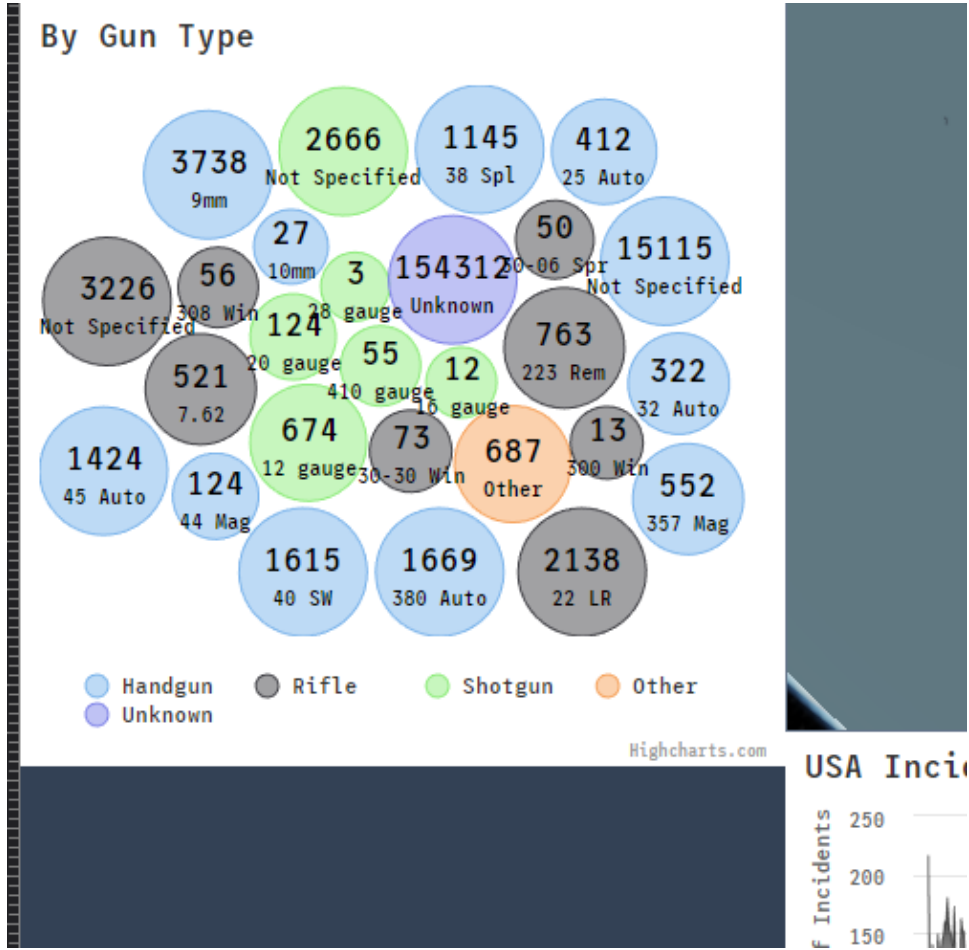
We used colored bubble charts to group calibers into their respective gun type categories.

By Gun Type

3738
9mm

1145
38 Spl

412
25 Auto

15115
Not Specified

56
308 Win

50
30-06 Spr

3226
Not Specified

521
7.62

763
223 Rem

322
32 Auto

124
44 Mag

27
10mm

13
300 Win

552
357 Mag

73
30-30 Win

1424
45 Auto

1615
40 SW

1669
380 Auto

2138
22 LR

● Handgun   ● Rifle   ○ Shotgun   ○ Other
○ Unknown
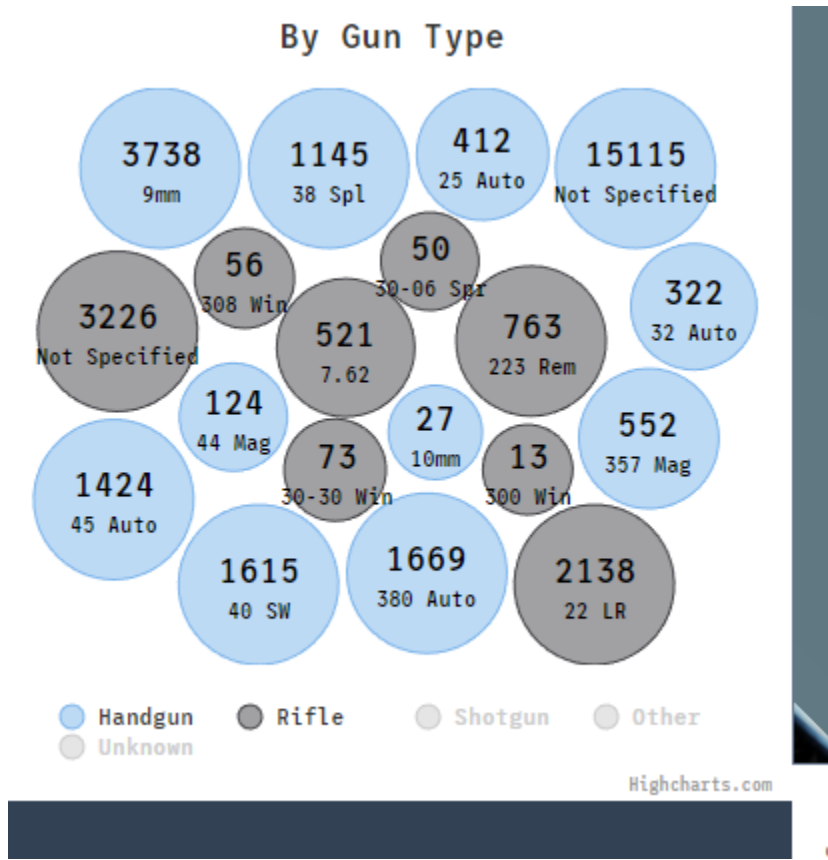
Highcharts.com

We also the ability to turn off certain categories from the chart by clicking on the legends at the bottom. This was a Highcharts feature.

Incident Attributes

Other: 10.0%

Gang Violence: 23.0%

Shots Fired: 16.0%

Home Invasion: 10.0%

Defensive Use: 7.0%

Non-Shooting Incident: 24.0%

Highcharts.com
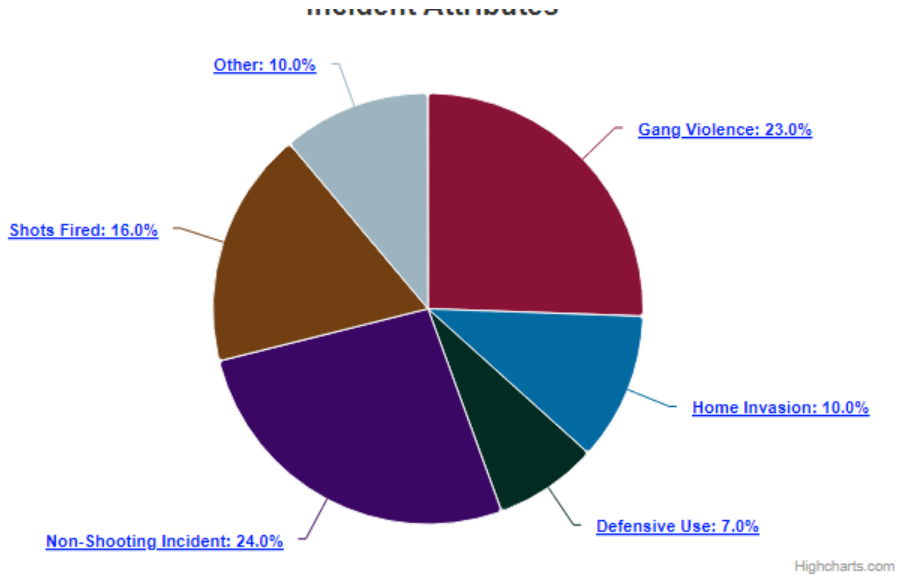
One of our first passes at attribute breakdown chart. We used a pie chart initially.
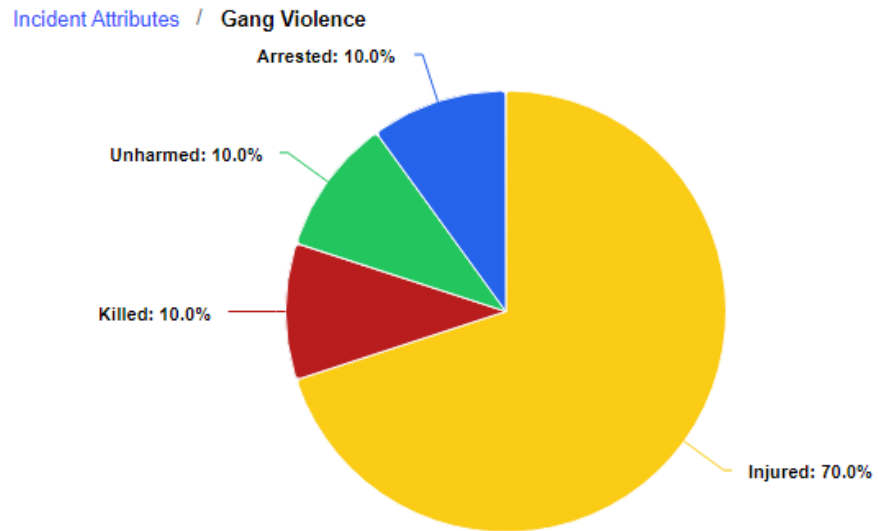
When a specific attribute was clicked, it opened another breakdown of the statuses for all individuals in that category. This breakdown feature was also native to Highcharts.

GUN VIOLENCE IN AMERICA

USA

Adult 18+   Teen 12-17   Child 0-11   Unknown

2 423
18 334

2 553

29 013
2 049
26 614

0

● Male   ● Female   ● Unknown

Highcharts.com

By Incident Attribute
Click the slices to view attribute breakdown

Other: 10.0%

Gang Violence: 23.0%

Shots Fired: 16.0%

Home Invasio...

Non-Shooting Incident: 24.0%

Defensive Use: 7.0%

Highcharts.com

By Gun Type

4709 Not Specified

5721 9mm

1642 38 Spl

1280 223 Rem

564 25 Auto

2147 45 Auto

3868 Not Specified

210887 Unknown

79 30-06 Spr

22453 Not Specified

47 10mm

6 28 gauge

31 16 gauge

970 Other

177 44 Mag

828 7.62

80 308 Win

88 410 gauge

457 32 Auto

2474 40 SW

188 20 gauge

98 30-30 Win

16 300 Win

750 357 Mag

1025 12 gauge

2224 380 Auto

3047 22 LR

● Handgun   ● Rifle   ● Shotgun
● Other   ● Unknown

Highcharts.com

400

200

0

Jan '14   May '14   Sep '14

One of our first attempts at showing all the charts on the page. The colors were still being adjusted at this point.

Other: 10.0%

Shots Fired: 16.0%

Gang Violence: 23.0%

Home Invasion: 10.0%

Defensive Use: 7.0%

Non-Shooting Incident: 24.0%

By Gun Type

4709 Not Specified
5721 9mm
1642 38 Spl
1280 223 Rem
564 25 Auto
3868 Not Specified
210887 Unknown
79 30-06 Spr
22453 Not Specified
2147 45 Auto
47 10mm
6
80 308 Win
28 gauge
31
970 Other
177 44 Mag
828 7.62
88
457 32 Auto
188 410 gauge
98 20 gauge
16 30-30 Win 300 Win
2474 40 SW
1025 12 gauge
2224 380 Auto
3047 22 LR
750 357 Mag

○ Handgun ● Rifle ● Shotgun ● Other
○ Unknown

Highcharts.co

Adjusted the colors further to better complement the rest of the page. We weren't sure at this point if we were keeping the white background for the charts either.
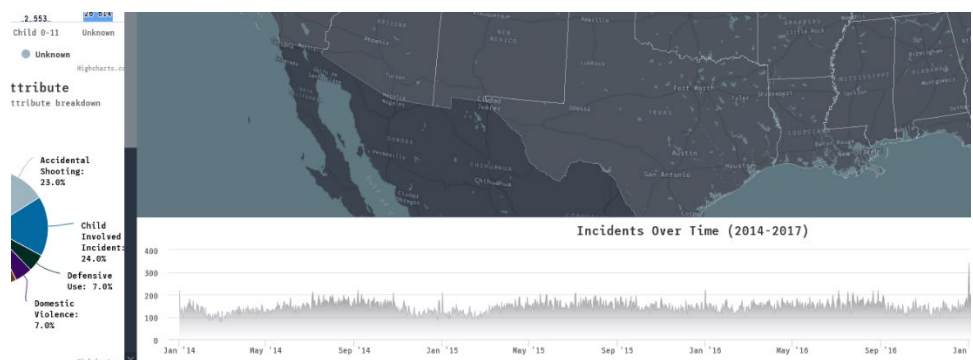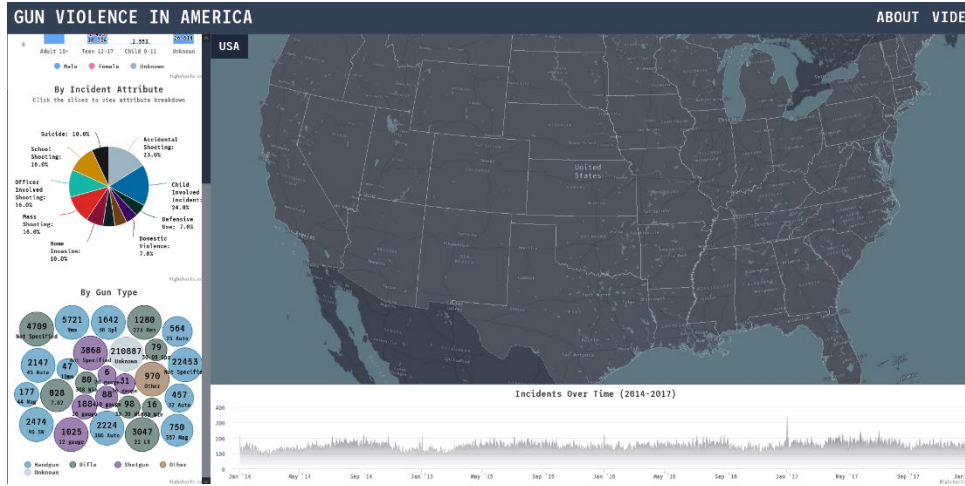

2.553
Child 0-11
Unknown

● Unknown

ttribute
ttribute breakdown

Accidental Shooting: 23.0%

Child Involved Incident: 24.0%

Defensive Use: 7.0%

Domestic Violence: 7.0%

Incidents Over Time (2014-2017)

Some more gradient adjustments were made to the time series graph.

Another view of the page so far.
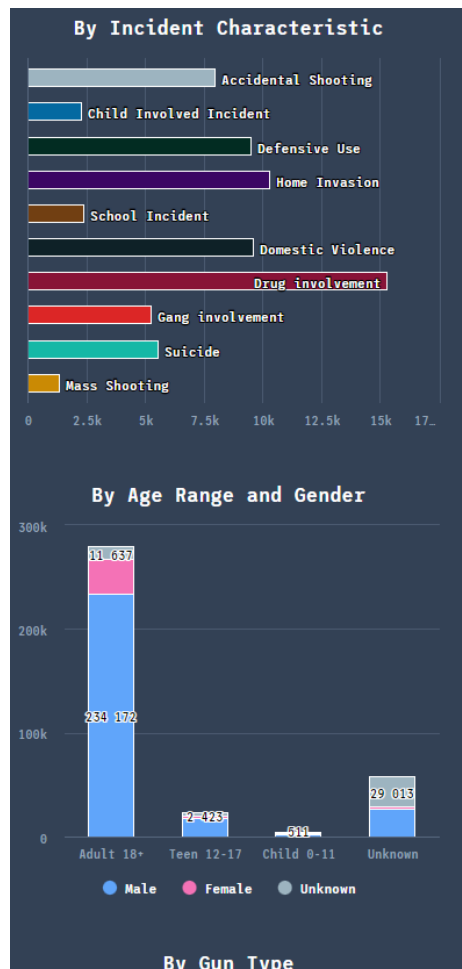
Adjusted background to a darker color closer to the map layer skin color.

By Incident Characteristic
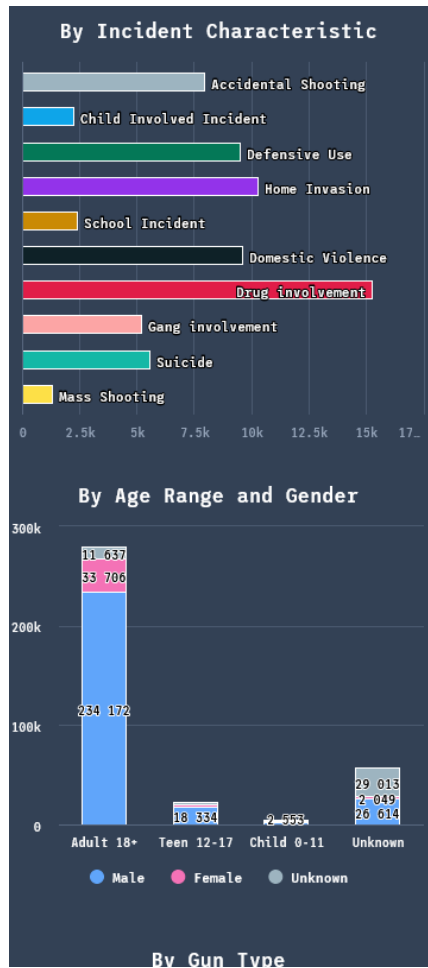
Accidental Shooting
Child Involved Incident
Defensive Use
Home Invasion
School Incident
Domestic Violence
Drug involvement
Gang involvement
Suicide
Mass Shooting

0   2.5k   5k   7.5k   10k   12.5k   15k   17_

By Age Range and Gender

300k

200k

100k

0

11 637
33 706

234 172

18 334

2 553

29 013
2 049
26 614

Adult 18+   Teen 12-17   Child 0-11   Unknown

● Male   ● Female   ● Unknown

By Gun Type

Adjusted all of the chart colors to be brighter and pop out better. Also changed
the labels to white.
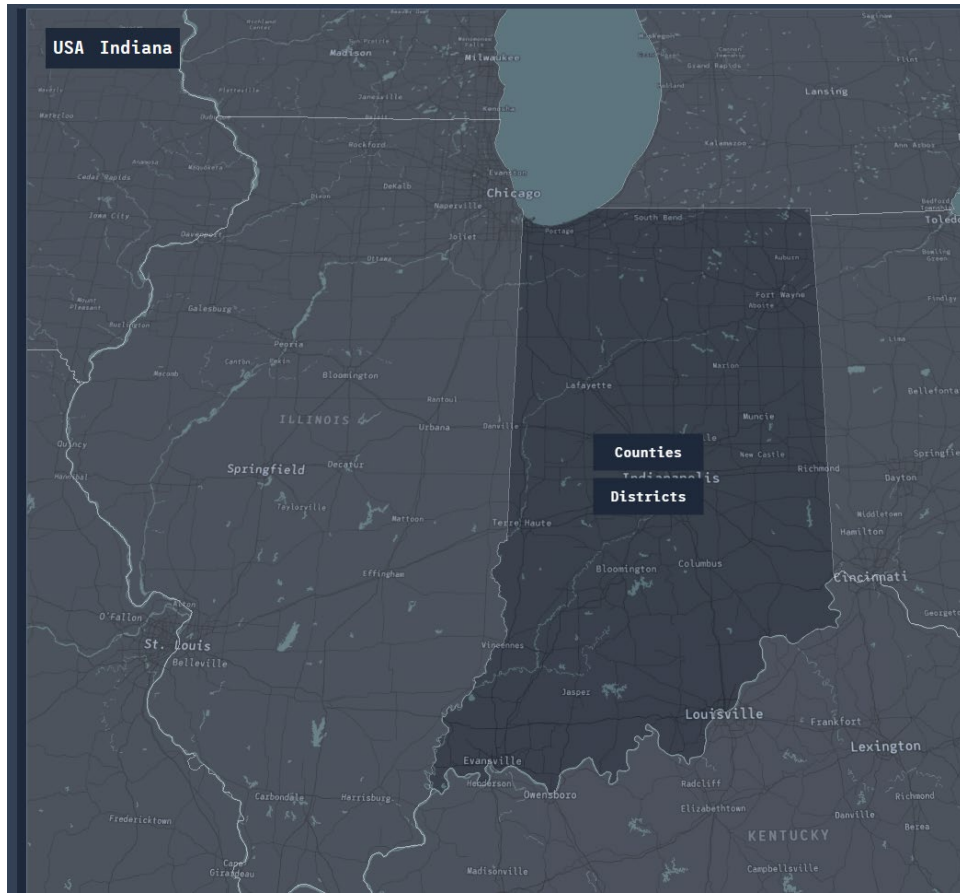
At one point in the process, we also explored giving the user the option between a county or congressional district view.
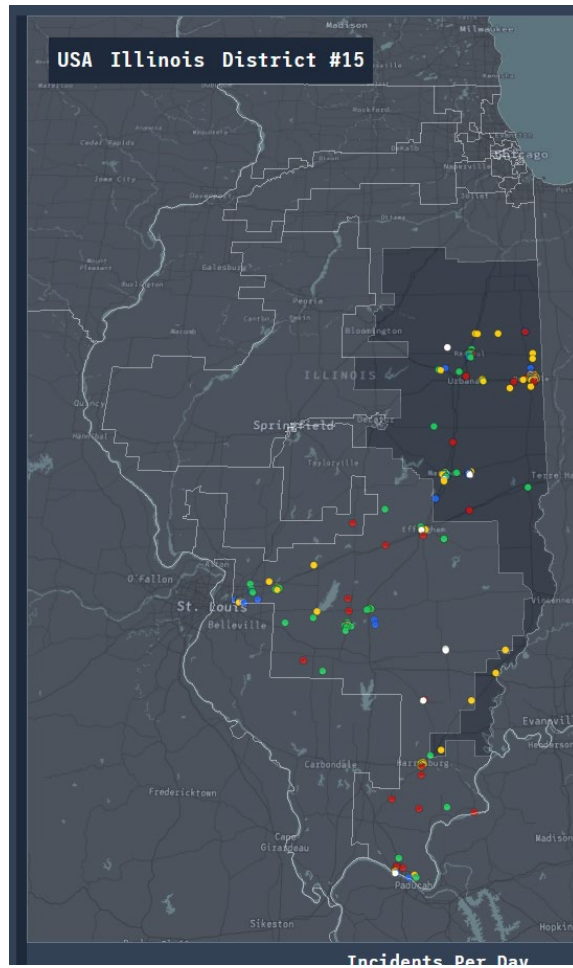
However, as you can see here, Cesium has updated congressional district borders that have long since changed and are not representative of the points from out data.