Narrative

Kevin Sun (kws8de)

**You may want to make it a full screen to see all the elements**

I wanted to explore when, what, and risk insights of crime for Virginia Beach. Data came from the City of Virginia Beach website and can be downloaded from: <https://data.vbgov.com/Public-Safety/Police-Incident-Reports/iqkq-gr5p>

In the initial layout, there are checkboxes that can filter the total crimes in 2016. There are also toggle buttons that can change the heatmap to satisfy the user’s visual needs. For example if the user wants to see the street names better, the user can click *Change Opacity* or *Toggle Heatmap*. If the user wants to see a broader heatmap (which increases the bias of the heatmap data, but reduces the variance of the heatmap data) then the user can click *Change Radius*. If the user is green-red color blind, then the user can click on *Change Gradient*. The user can also zoom in and out on the heatmap to see finer details, and can change the map type for further insights that can be provided from satellite view or map.

User’s can click on the heatmap to see the riskiness level. A marker shows up with two concentric circles. The inner circle is the area of interest while the bigger circle is the comparative area of crime. Crime density is calculated of each circle and the *Riskiness* level is calculated by the density of the small circle divided by the density of the larger circle.

As the user filters the crime with the checkboxes, the heatmap and the donut chart will change. The inspiration of this project is that I wanted to assess the risk level of crime. I didn’t want to do Washington D.C., Chicago, or California, because a lot of people have done it already. I chose Virginia Beach because a good portion of UVA students come from that area, and I have childhood memories of going to Virginia Beach.

I data wrangled in R and had to label my own season and time.

Techniques I use includes using the heatmap layer in google maps and also using google map’s donut chart. Challenges include getting all the data to connect with each other. Formatting the *divs* was also a challenge.

A few key insights is that more crimes happen in the summer than in the winter. During the summer, a highly concentrated area of crime happens at the beach, north of the Virginia Aquarium & Marine Science Center. During the winter, there actually isn’t as much crime at the beach, but there’s a highly concentrated area of crime at the Pembroke Mall. During winter, there is more hit and run crimes at Pembroke Mall than at the Beach. But during the summer, there is more hit and run crimes at the beach than at Pembroke Mall. Most crimes happen at night, making up 31% of the total crimes, while the safest time is during the evening, making up 17.63% of the crimes. In most areas, *larceny* makes up the plurality of crimes at 30-40%. *Fraud* crimes make up the smallest portion of crimes at around 10%. However, at north of King’s Grant area, Fraud makes up almost 30% of the crimes. North of King’s Grant at the peninsula is a residential area, that has high Fraud, but not a lot of other crimes. The housing area is relatively the same as other housing areas, but other housing areas have high crime. Thus, King’s grant is a pretty safe area and it has mostly people calling police for maybe credit card fraud. At the Virginia beach area, in the morning, there is a higher report of Fraud (at 26.7%), compared to only 4.2% at night. But at night, there are more aggressive crimes (26% assault 20% Destruction of Property), compared to morning (13.4% Assault, 14.1% destruction of property).

One insight action from this is the police department can place older police forces (those about to retire) or brand new police officers in the morning shift to take care of those that might report fraud, and place more experienced police officers at night to take care more of the aggressive crimes.