

Executive Summary

In August 2019, the City of Buffalo announced that it would install speed enforcement cameras in 20 school zones under an effort called the "School Zone Safety Program." The school cameras were activated in January of 2020. The School Zone Safety Program was suspended in March 2020 due to COVID-19 related school closures.

Recently, concerns that the program targets low income, minority communities have arisen. Using data provided by the City of Buffalo on vehicle and traffic summons issued over the six-year period from 2015 through 2020, this analysis explored if the school zone speed camera program changed any existing patterns associated with vehicle and traffic summons.

Summons issued for school speed violations DO NOT indicate a change in the overall pattern of traffic violations with respect to which communities have the highest number of violations. Specifically, two zip codes (14215 and 14211) received the most non-speeding summons, the most speeding summons, and the most school zone speeding summons during these 6 years.

The only noticeable changes related to school zone summons are:

- A higher proportion of women received summons than normal. Typically, for every two or more summons issued to men, one is issued to a woman. With respect to the school zone speeding summons the ratio is closer to 1-1.
- More school zone speeding summons were issued in the morning than the afternoon. In general, a large proportion of speeding tickets are issued in the afternoon and evening rather than in the morning.

Detailed Analysis

For all six years, the same set of zip codes received the most frequent number of summons, whether tallied by

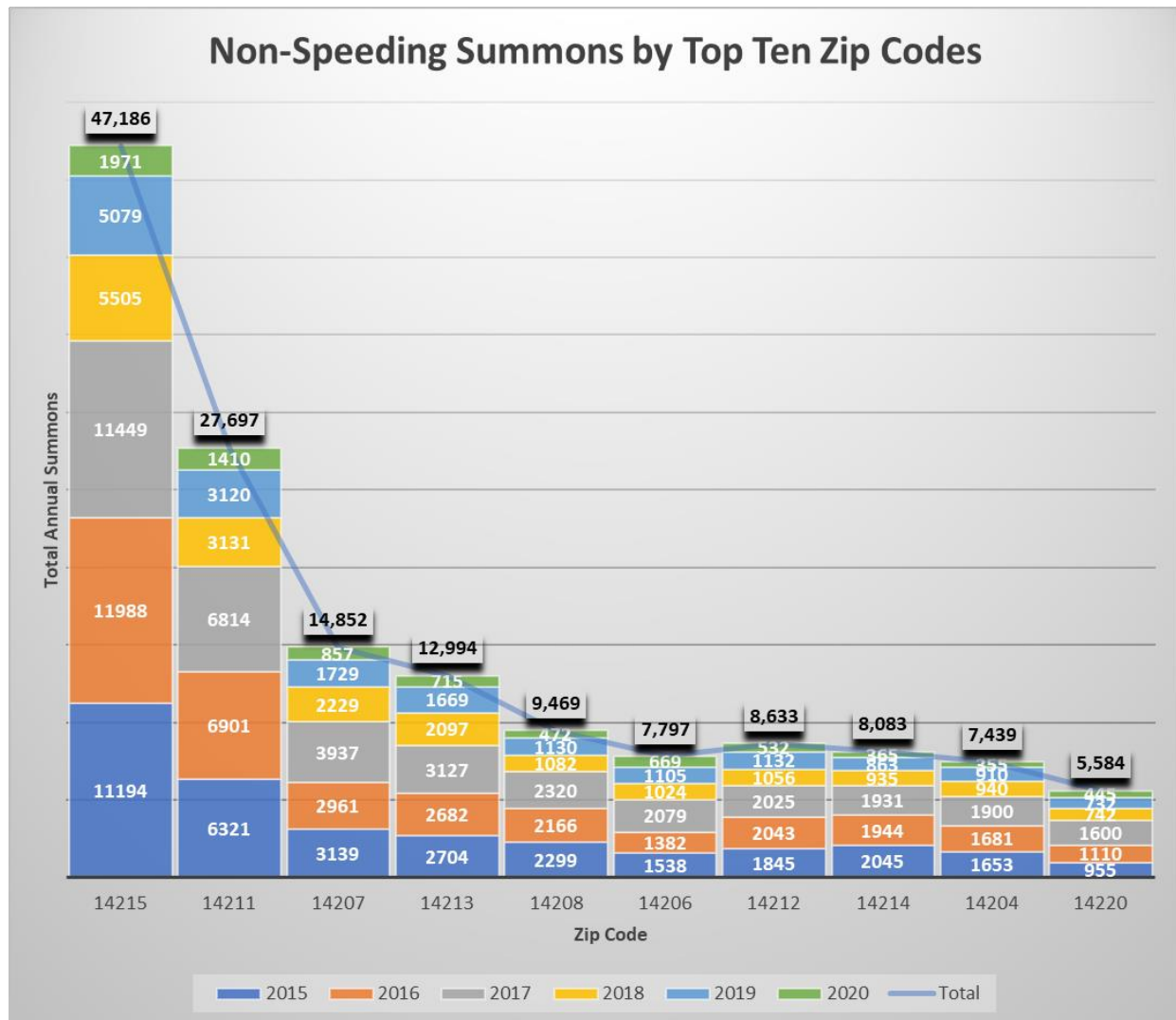
- all code violations types excluding speeding,
- just speeding violations (V&TL §1180) and
- in 2020, just school speed zone violations (VAT §1180 Subsection C).

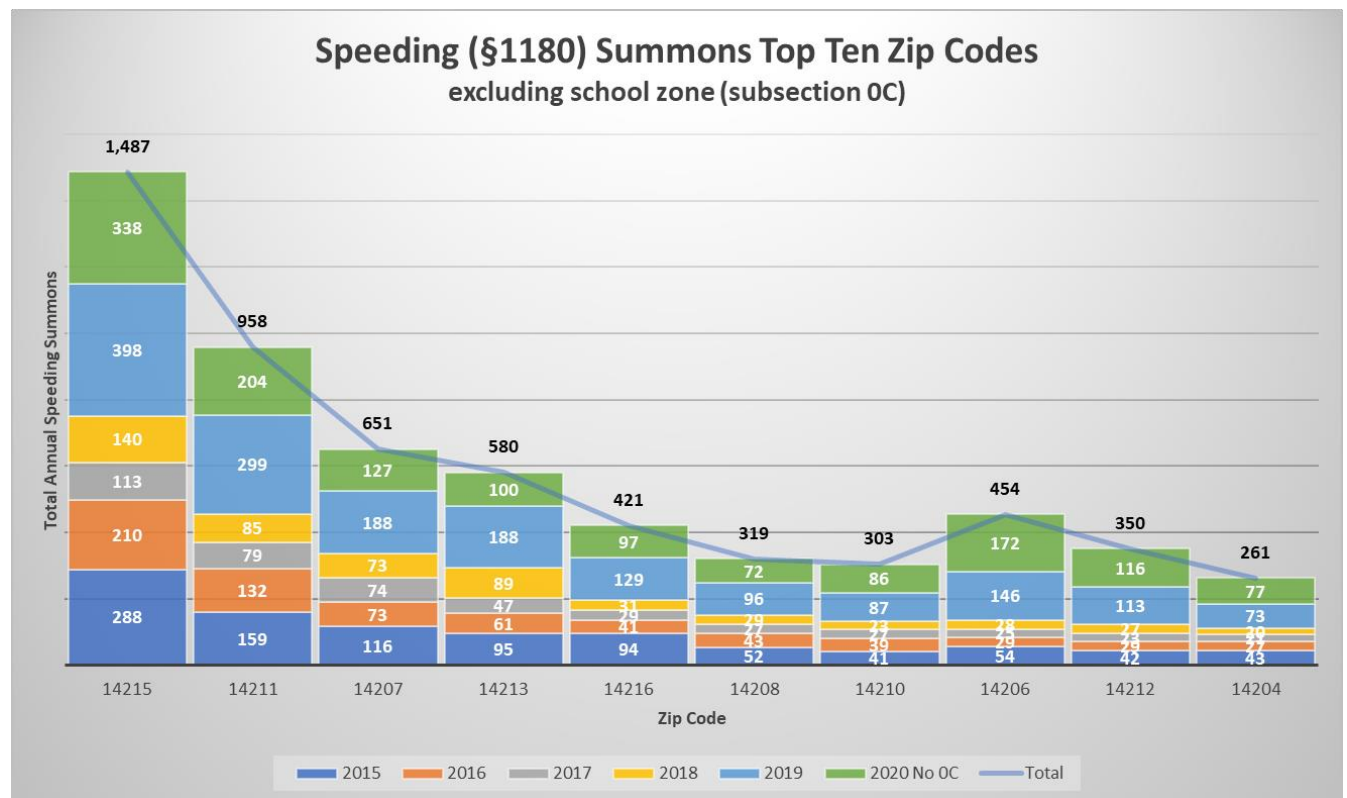
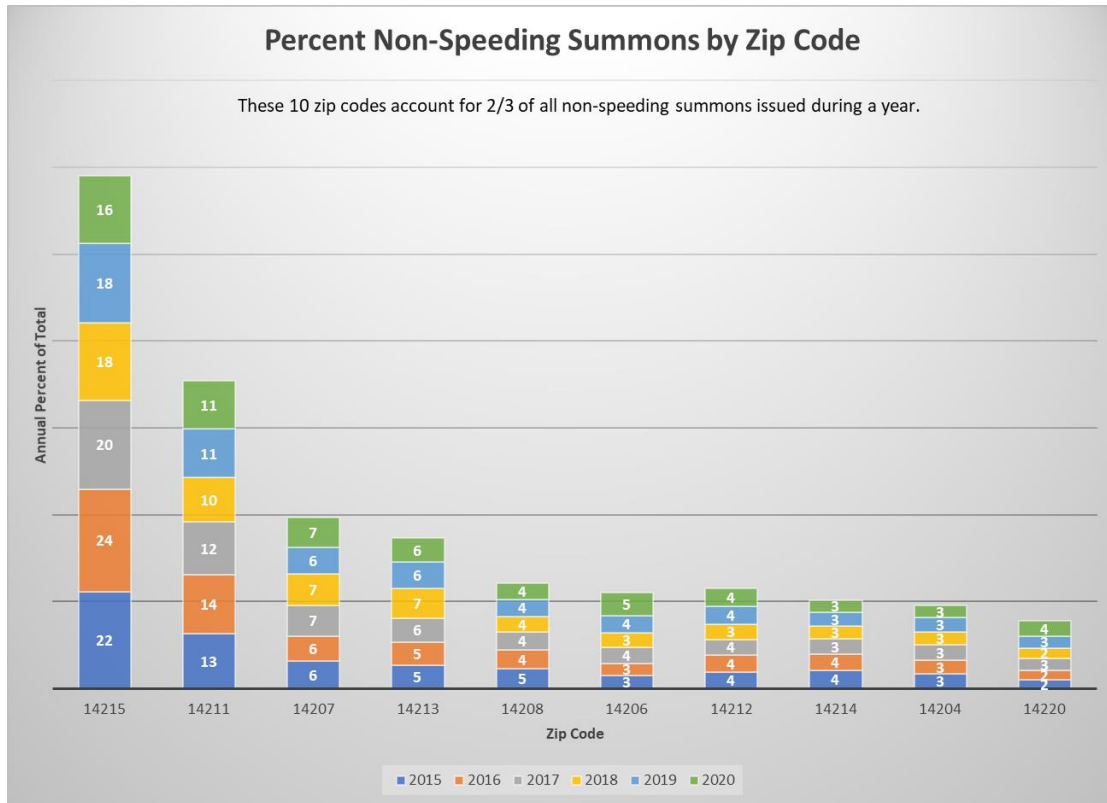
Specific zip codes are the focus of this analysis.

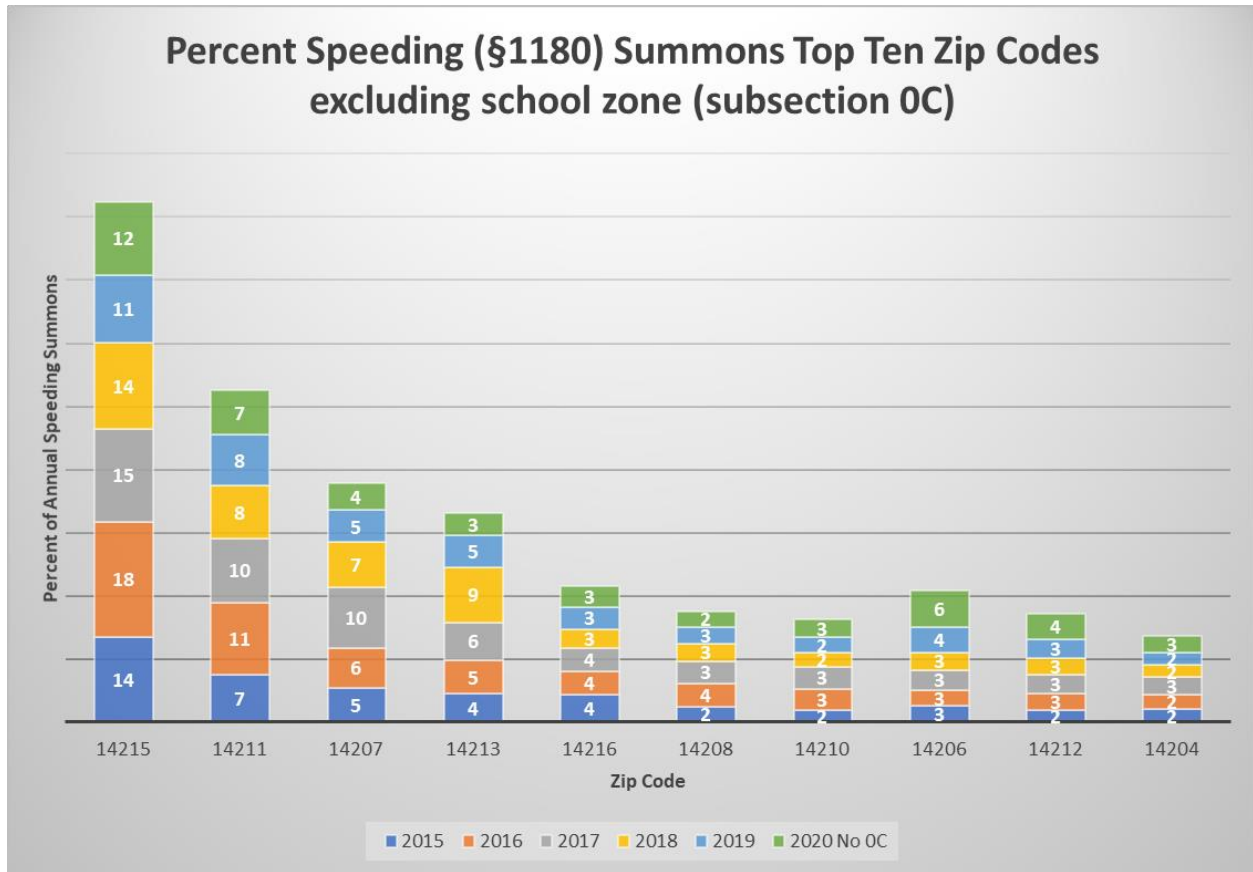
- 14215 – has the highest number of summons for all years, all categories of analysis
- 14211 – has the 2nd highest number of summons for all years, all categories of analysis
- 14207 - has the 3rd highest number of summons for all years, all categories of analysis EXCEPT school zone speeding summons
- 14213 - - has the 4th highest number of summons for all years, all categories of analysis EXCEPT school zone speeding summons,
- 14206 - in the top 10 for the first 2 categories and ousts 14207 from 3rd place in the school zone speeding summons 2020,

- 14220 in the top 10 for all code violations excluding speeding and ousts 14213 from 4th place in the school zone speeding summons 2020.

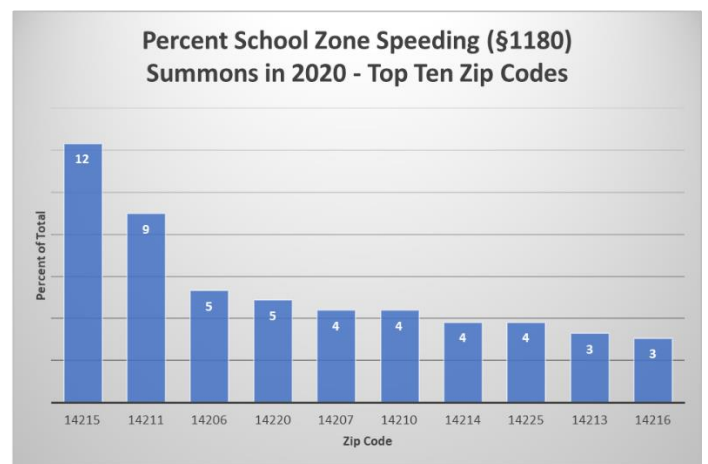
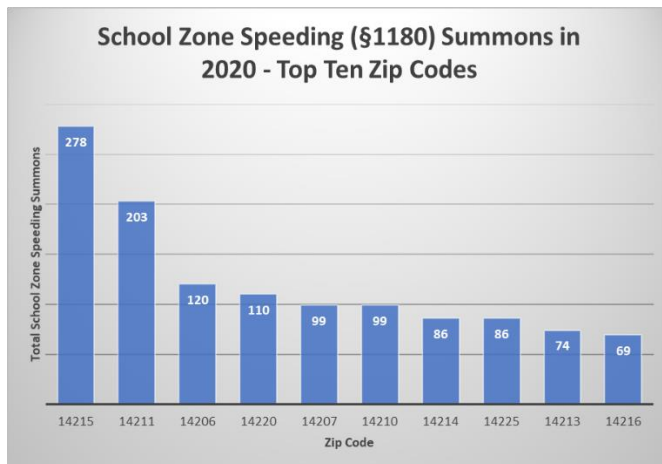
On the surface, it appears that people with vehicles registered in 14220 were most impacted by the school speed zone cameras followed by those in 14206. The pattern of summons frequency does not change for 14215 or 14211.





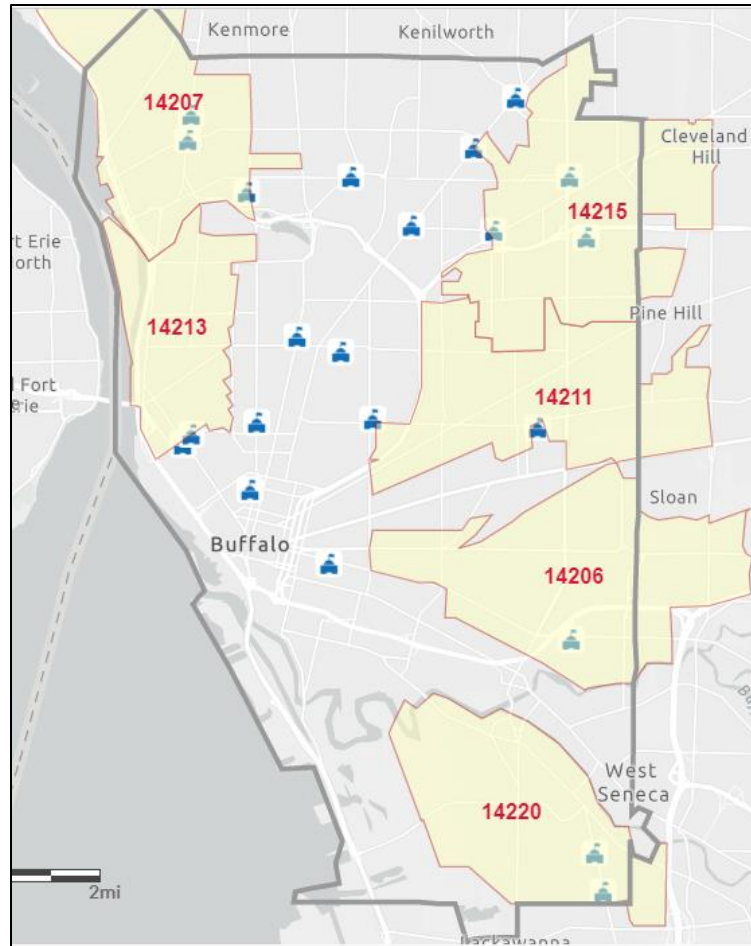


In 2016, 2017, and 2018 these ten zip codes account for more than 50% of all speeding summons issued. In 2015, 2019, and 2020 these ten zip codes account for just under 50% of all speeding summons issued.



These ten zip codes account for nearly 55% of all school zone speeding summons issued.

The map below shows the location of these zip codes as well as the locations of school speed zone cameras. About half of the cameras are not inside the zip codes with the most summons.

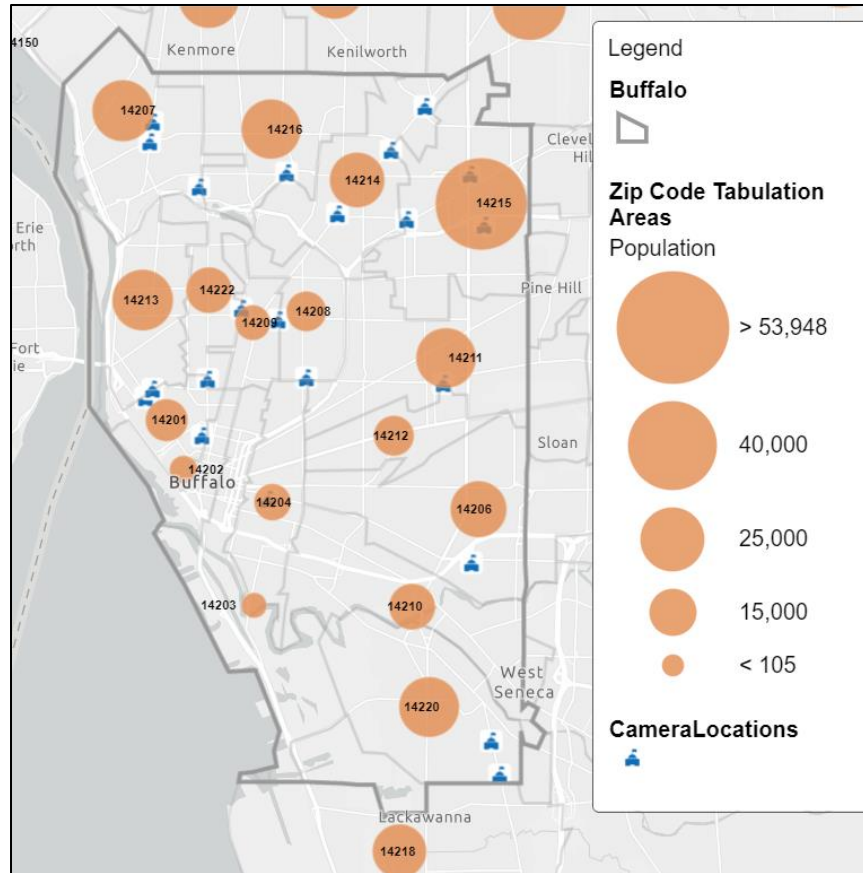


Zip Code Characteristics

This section provides a look at the income and racial characteristics of these six zip codes. The analysis uses data from the 2019 American Community Survey, 5-year estimates. Detailed tables on race/ethnicity, median household income, and poverty status for both the City of Buffalo and zip codes within Buffalo are compared. Information about these zip codes includes the number of potential drivers, those 16 years and over. Statistical significance has been evaluated at the 90% confidence level.

Total Population:

Zip code 14215 has more people than all other zip codes in Buffalo.

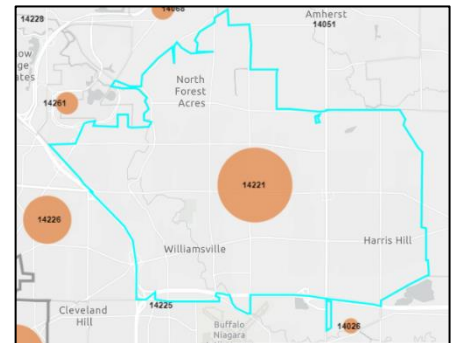


The zip code in Erie County with the largest population is 14221 (in Amherst) with nearly 55,000 people. Drivers from this zip code receive less than 1% of non-speeding summons in Buffalo for all 6 years. Drivers from this zip code receive on average 1.5% of speeding summons in Buffalo for all 6 years and 2% of school zone speeding summons in 2020.

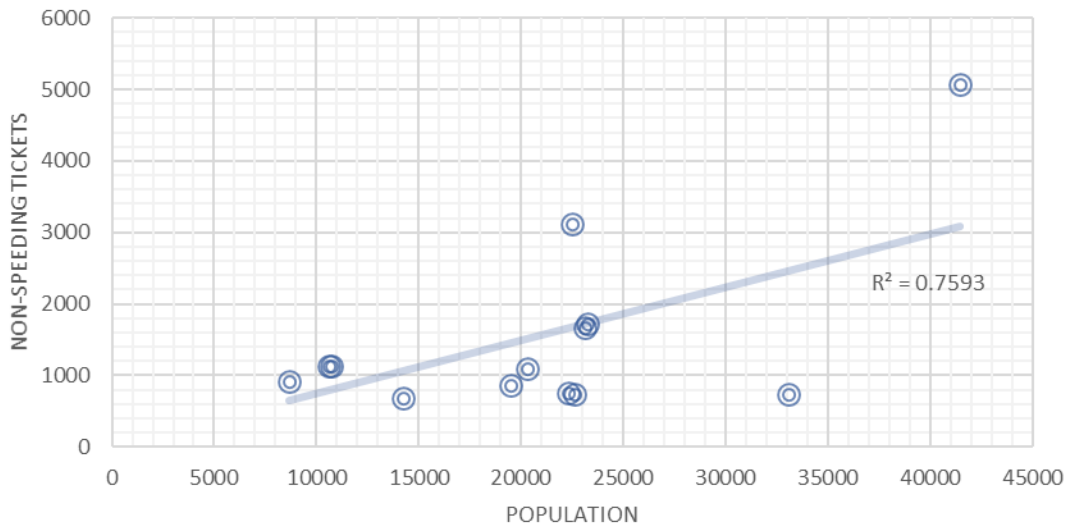
In the City of Buffalo, zip code 14215 has the most people. In fact, all but one of the six zip codes with the most summons has between 20,000 to 23,000 people. 14215 population is nearly double the population of each of the other five zip codes. All 6 zip codes with high frequency of summons are among the most populated in the city.

Of the six recurring zip codes. 14215 is the stand-out with respect to population.

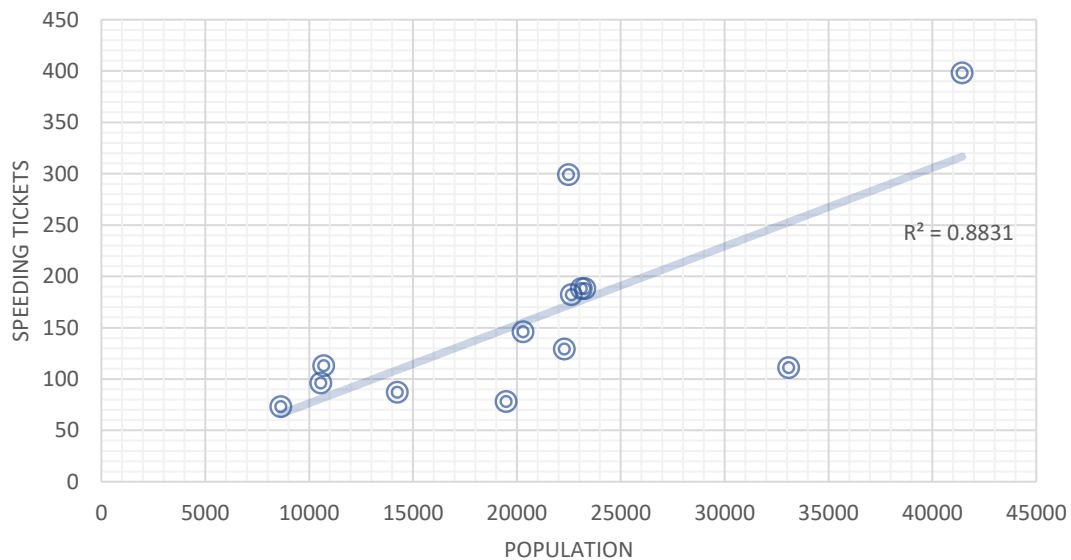
The charts below show the strong positive relationship between population and summons for the three categories studied.

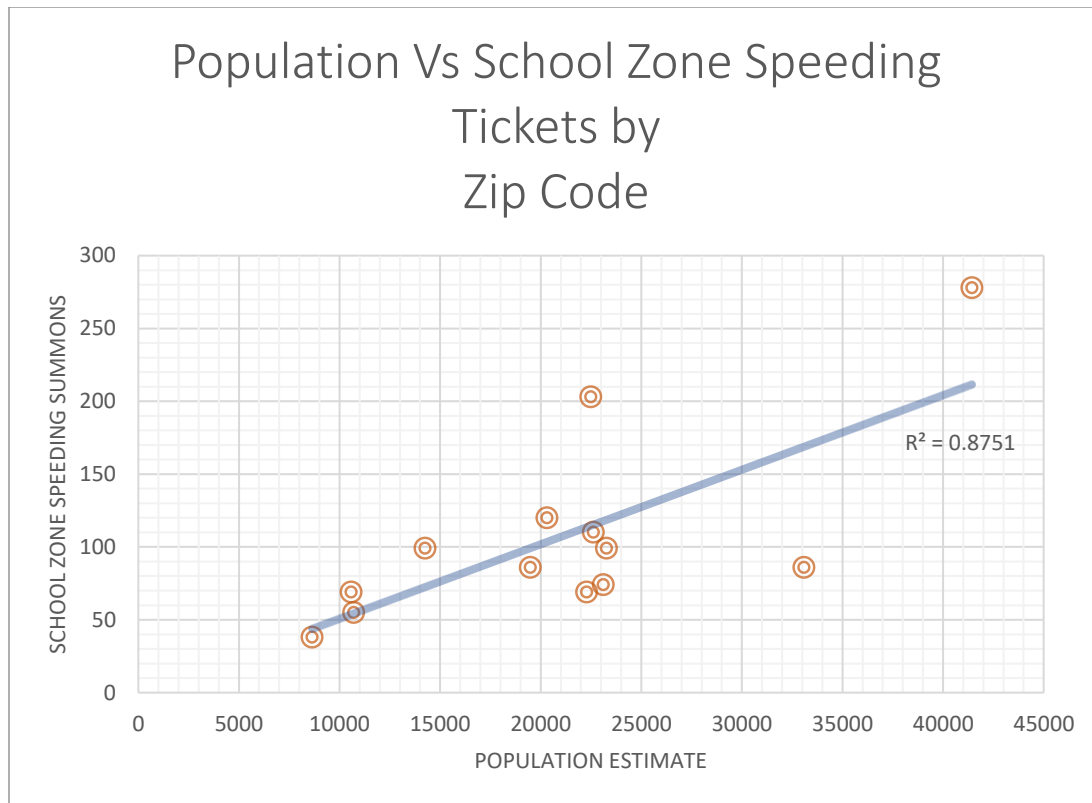


Population Vs Non-Speeding Tickets (2019) by Zip Code

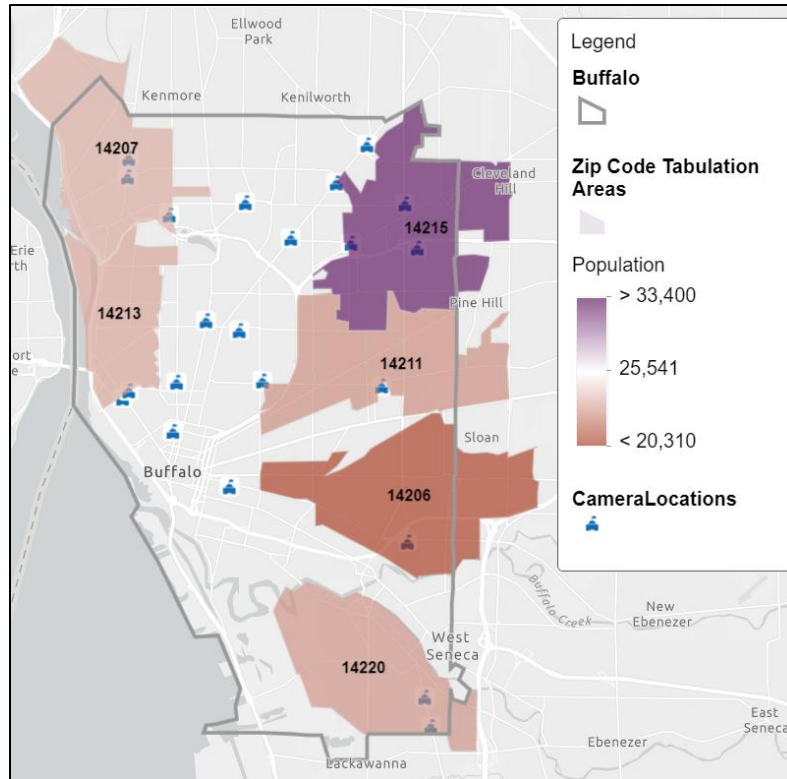


Population Vs Speeding Tickets (2019) by Zip Code

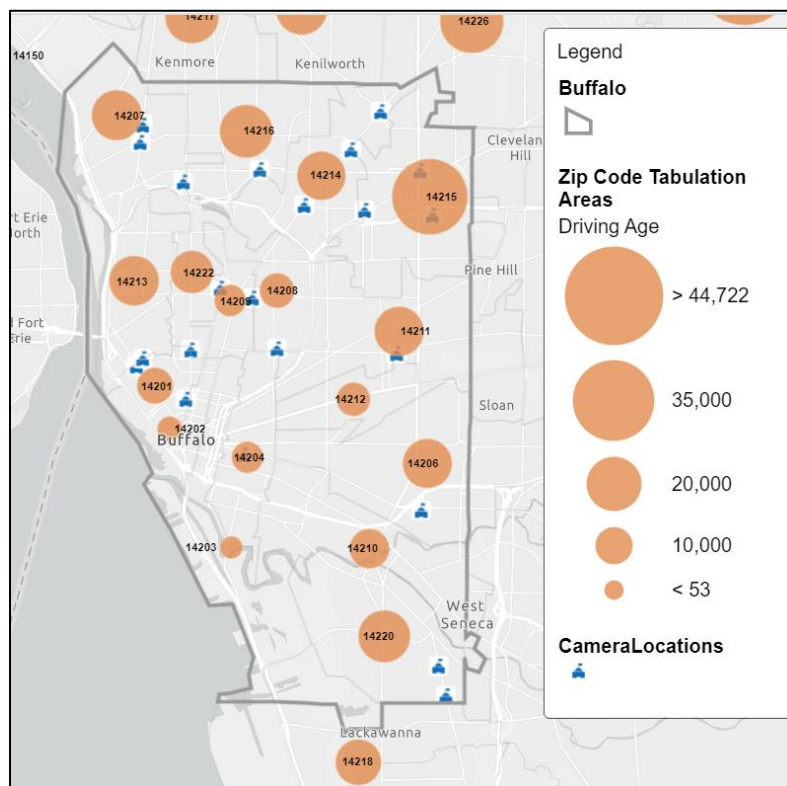




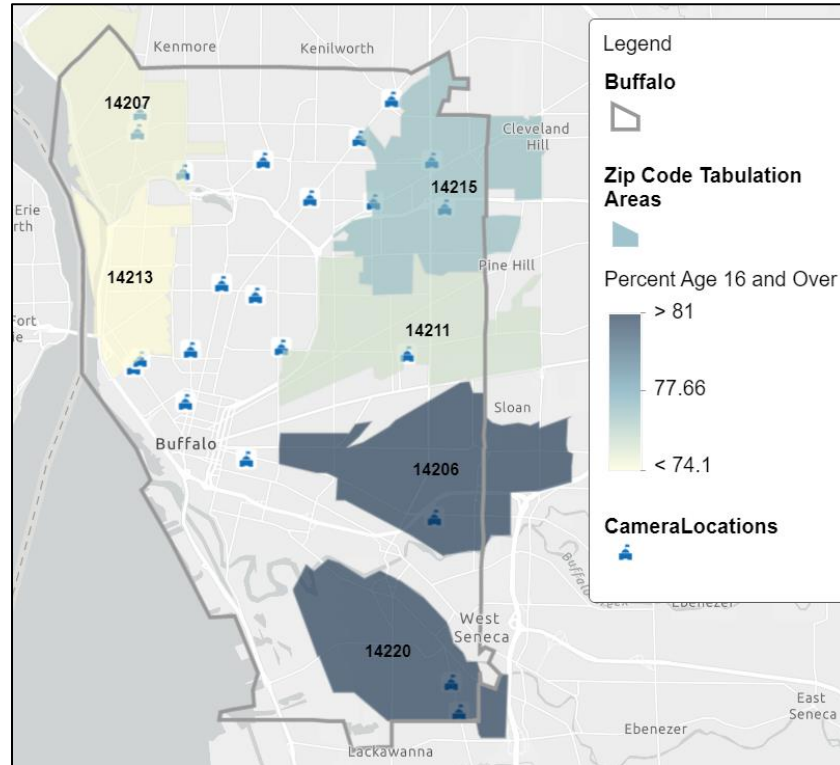
The map below shows the relationship in population for the six zip codes analyzed. The color of the zip code indicates if the population is above or below the average population for this group. 14215 is the biggest and 14206 is the smallest. The other four are average, and thus similar in size.



Potential drivers in New York are persons aged 16 and older. In the City of Buffalo, 14215 has the most potential drivers.

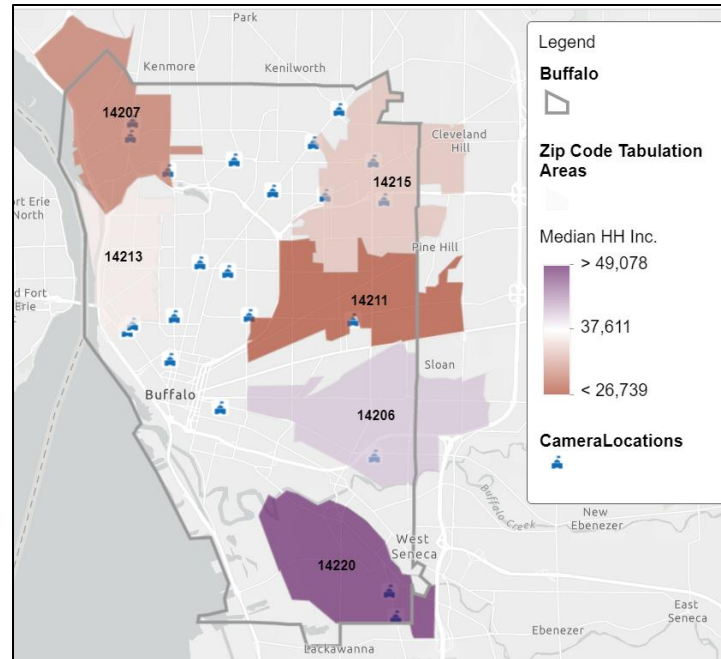


For the 6 zip codes with a lot of summons, zip codes 14206 and 14220 have the highest proportion of their population age 16 plus. However, the number of potential drivers in zip code 14215 outnumbers those in 14206 by about 15,000.



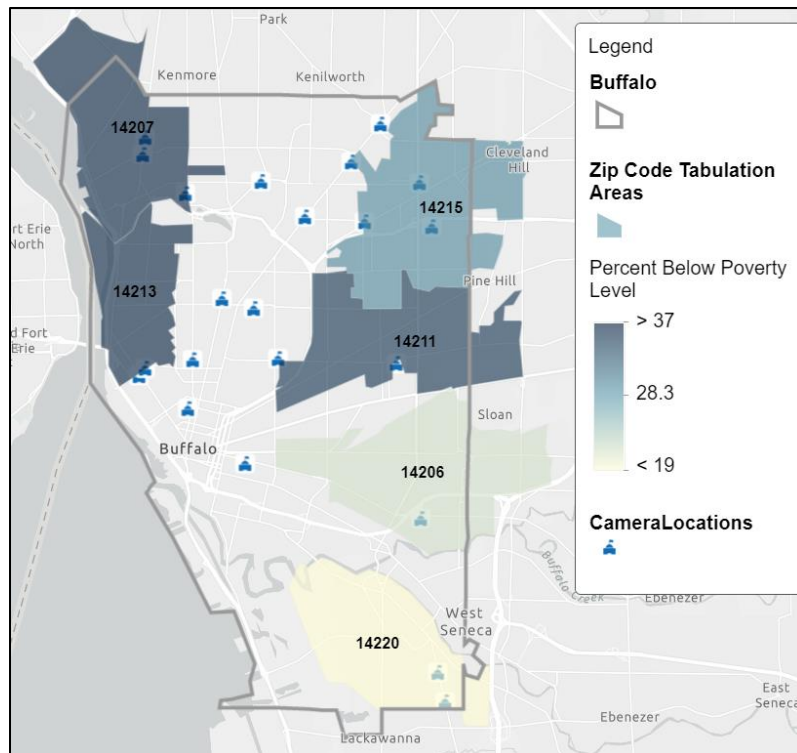
Median Household Income

The zip code with the lowest median income is 14211. The median household income for the entire City of Buffalo is \$37,345 (\pm \$1,145). The median income in 14206 and 14220 is statistically significantly higher than the median income of the City of Buffalo. The median income in 14207 and 14211 is statistically significantly lower than the median income of the City of Buffalo. The median income in 14213 and 14215 is statistically significantly equal to the median income of the City of Buffalo.

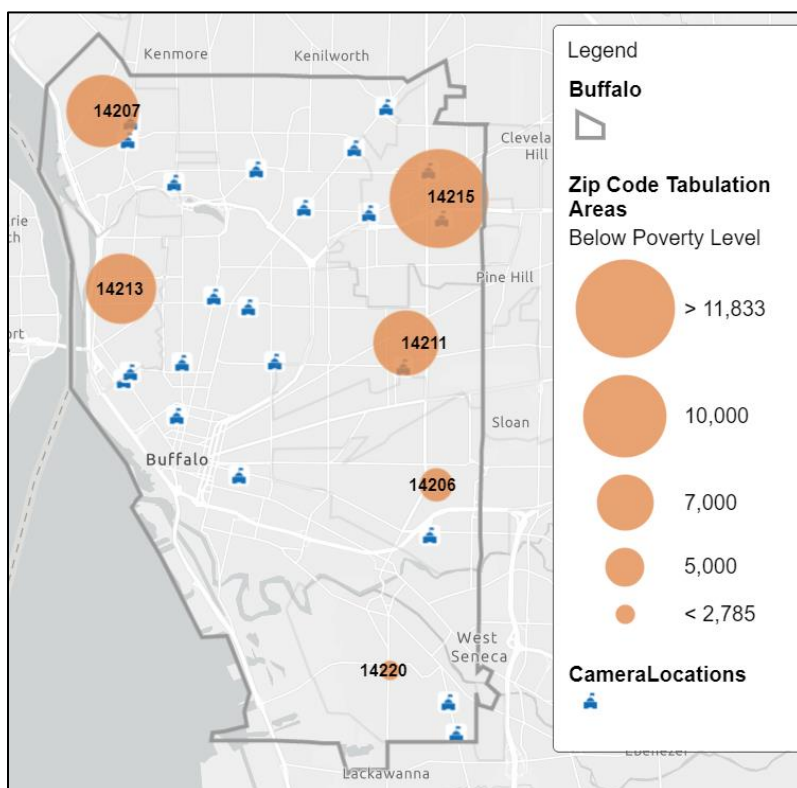


Poverty

30% ($\pm 1.3\%$) of individuals in the City of Buffalo fall below the poverty level. Zip codes 14207, 14211, and 14213 have a higher proportion of people below the poverty level than the city. The poverty rate for 14215 is not significantly different from the city's poverty rate. The poverty rate for 14206 and 14220 is lower than the city's rate.

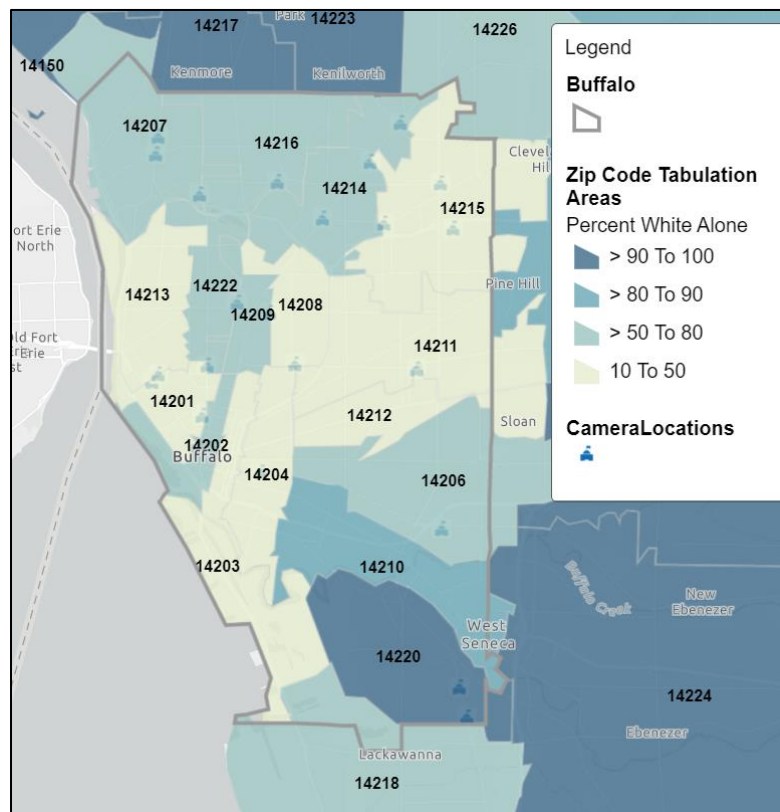


Zip code 14215 has the greatest number of people below the poverty level than the other five zip codes. There is no statistically significant difference between the number of people below the poverty level in zip codes 14207, 14211, and 14213.

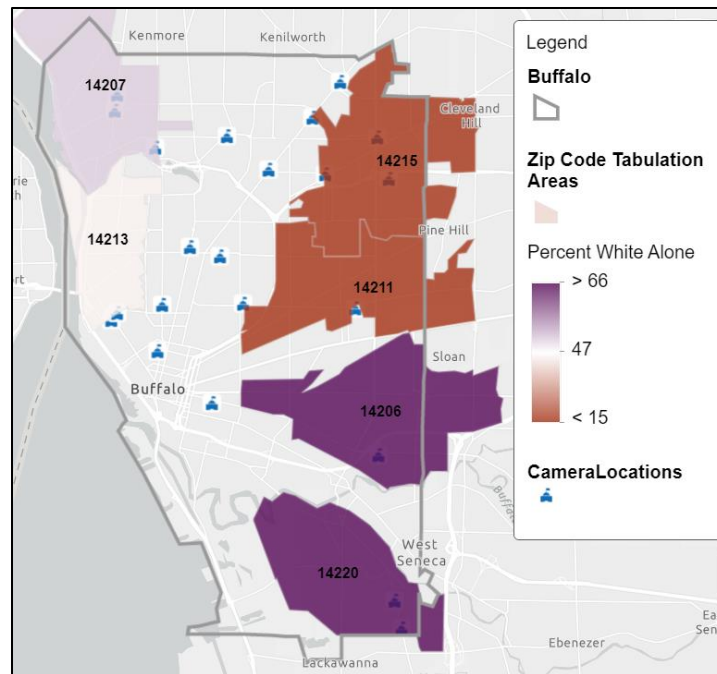


Race/Ethnicity

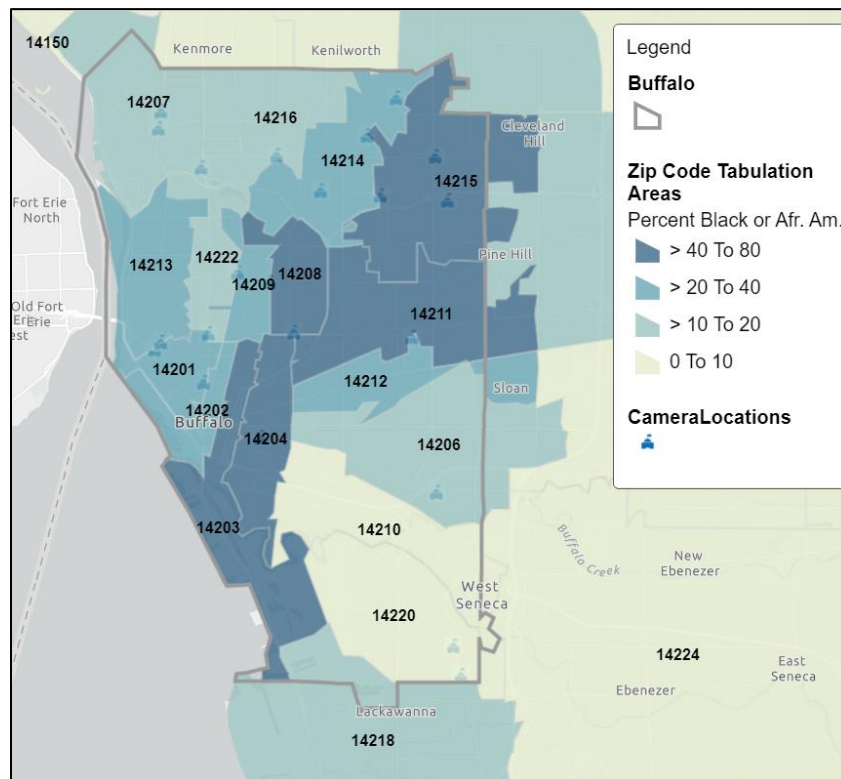
The proportion of people who are White (alone) in the City of Buffalo is just over 47% ($\pm 0.77\%$).



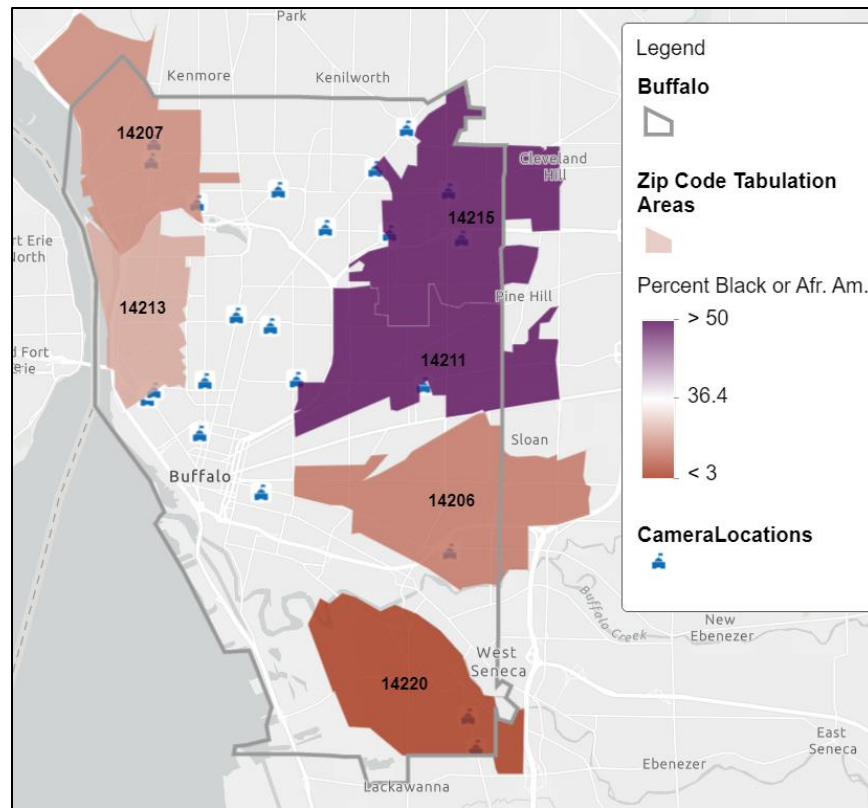
14206 and 14220 have greater than average percent White population. 14211 and 14215 have lower than average percent White population. The other 2 zip codes are not different from the city's percent white alone.



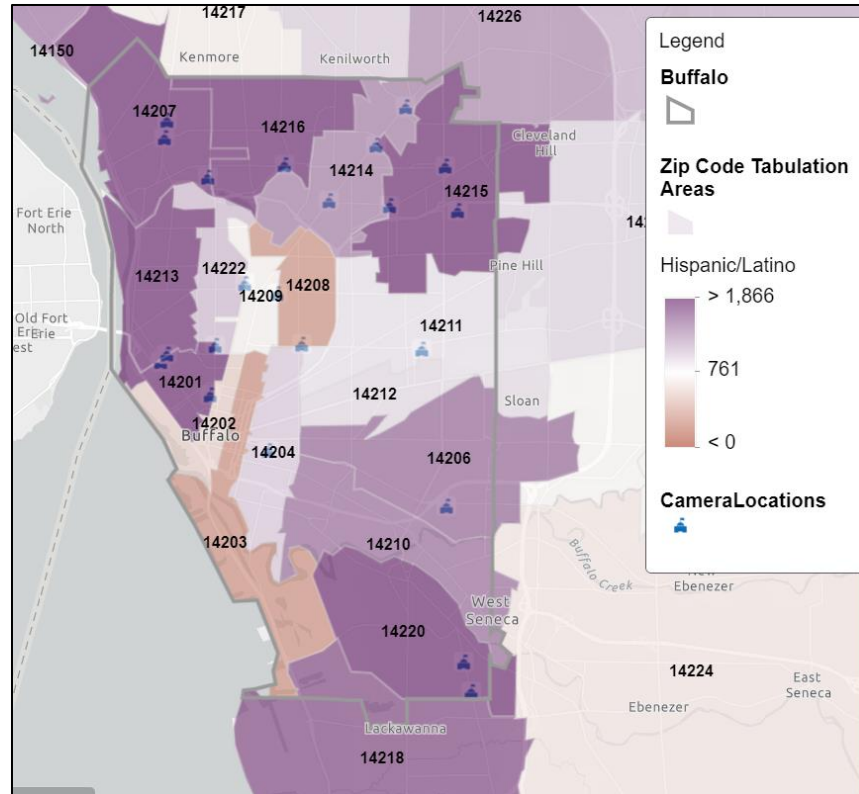
The proportion of people who are Black or African American in the City of Buffalo is 36.5% ($\pm 0.72\%$).



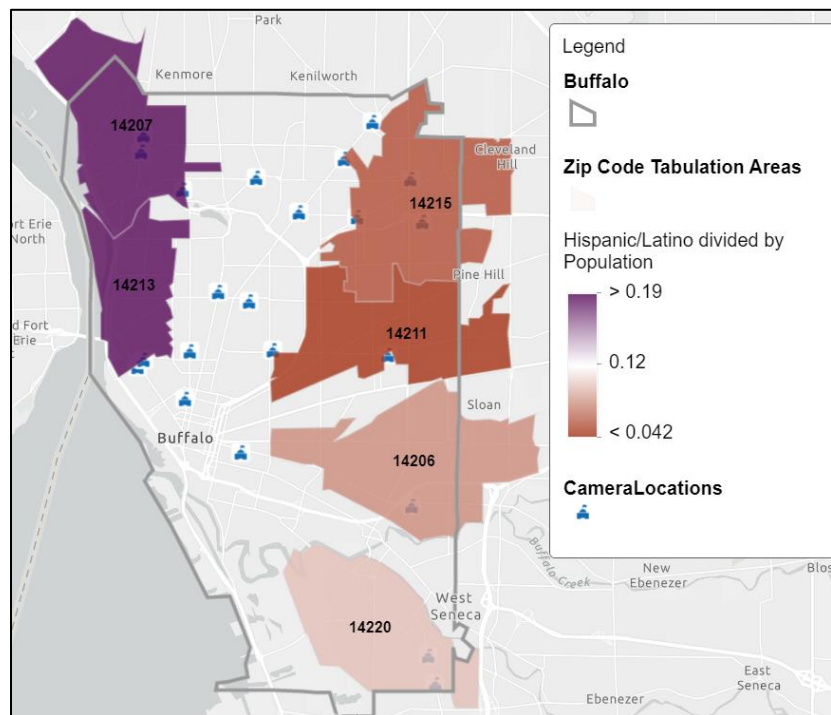
14211 and 14215 have larger than average percent Black or African American population. The other four zip codes have significantly lower proportions of their populations who are Black or African American.



Although fairly low in number, the Hispanic/Latino population is concentrated on the West side, upper West side, and North Buffalo.



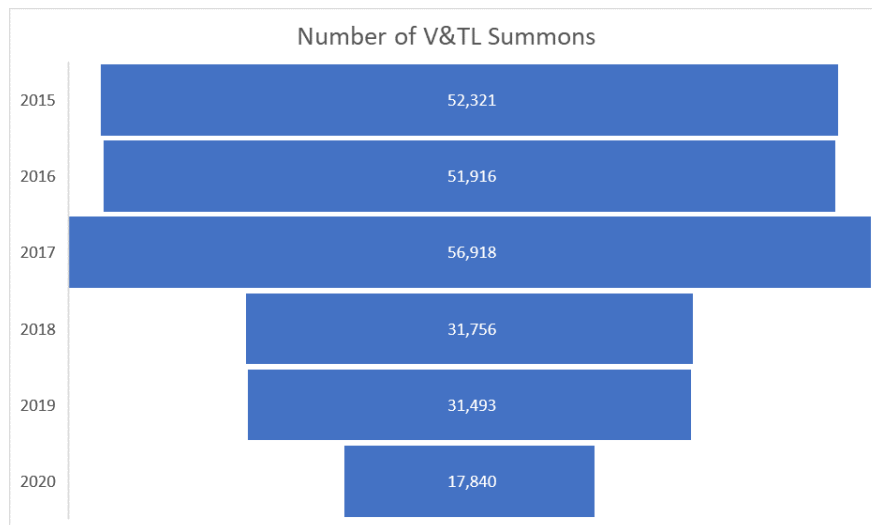
12% of the City of Buffalo's population is Hispanic or Latino. Zip codes 14207 and 14213 exceed the citywide average. The reliability of the statistics for the other zip codes is low.



ABOUT THE DATA

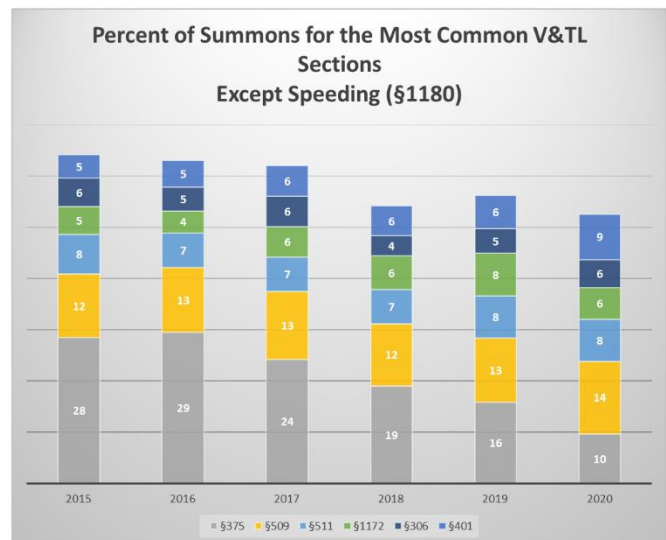
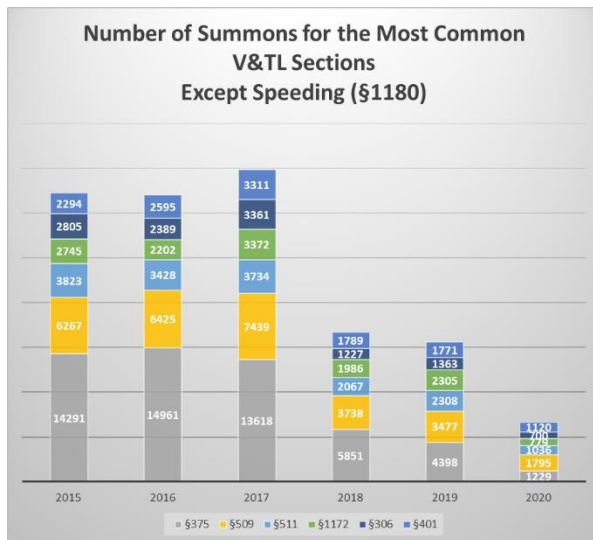
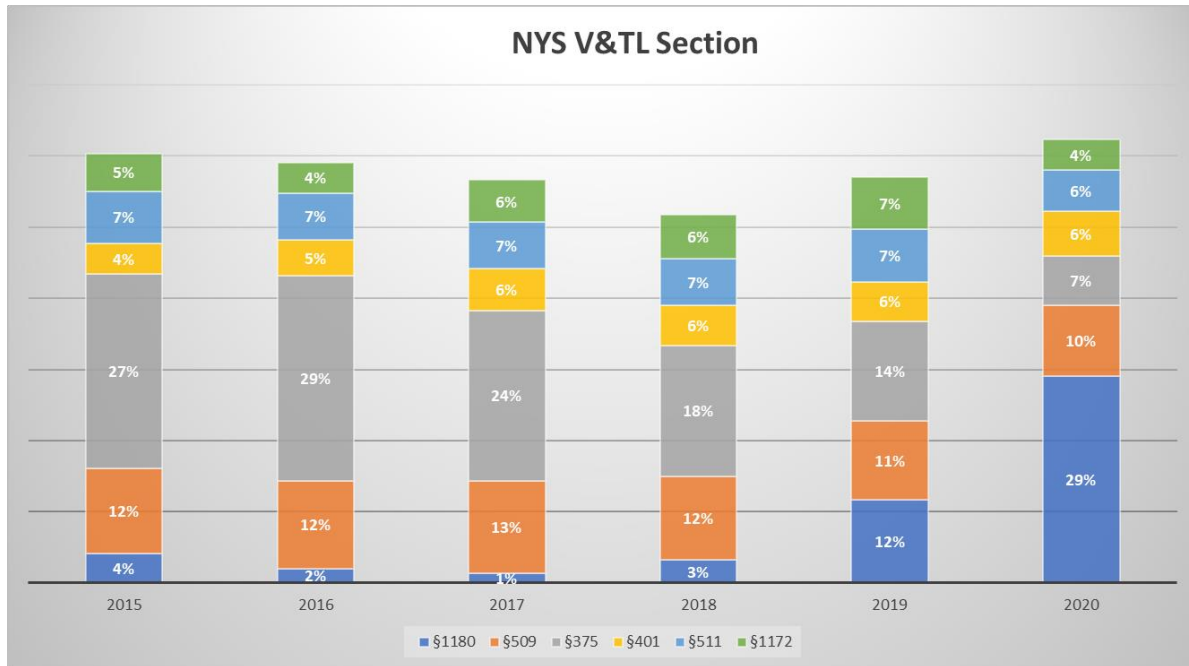
The six data files provided by the city presumably included information on all V&TL summons issued during a year. 2015 through 2017 had similar number of summons issued, with 2017 having the most. 2018 and 2019 also had a similar number of summons issued, however, roughly 40% fewer summons were issued during these years from the previous three years.

The impact of COVID-19 on the number of summons issued in 2020, is apparent. Prior to the quarantine, January through March, there were 10,447 (nearly 60%) summons issued. This high number reflects the addition of the school speed zone camera program which ran from January through March. During this period, 2,259 summons are §1180, subsection 0C, which is speeding in school zones. No §1180, subsection 0C, occur after March 31, 2020. Excluding presumed school speed zone summons, the police issued an average of 2,730 summons per month from January 1 to March 31. This rate dropped to 821 per month over the next 9 months.



Another unusual aspect of the 2020 summons data is the rise in speed violations as a share of all summons issued. Prior to 2020, V&TL §375, which concerns vehicle equipment issues, were the largest share of summons. The second largest share, until 2019, were V&TL §509 violations - unlicensed operation of a motor vehicle. In 2020, speeding violations accounted for 29% of all summons issued. Removing the school zone speeding summons, this share drops to 19%, which is a significant increase from previous years.

Other violations that occur in the top 10 every year are V&TL §401 – which deals with vehicle registration issues, V&TL §511 - operation while license or privilege is suspended or revoked; aggravated unlicensed operation, and V&TL §1172- stop sign / yield sign violations.



Summons Data Analysis

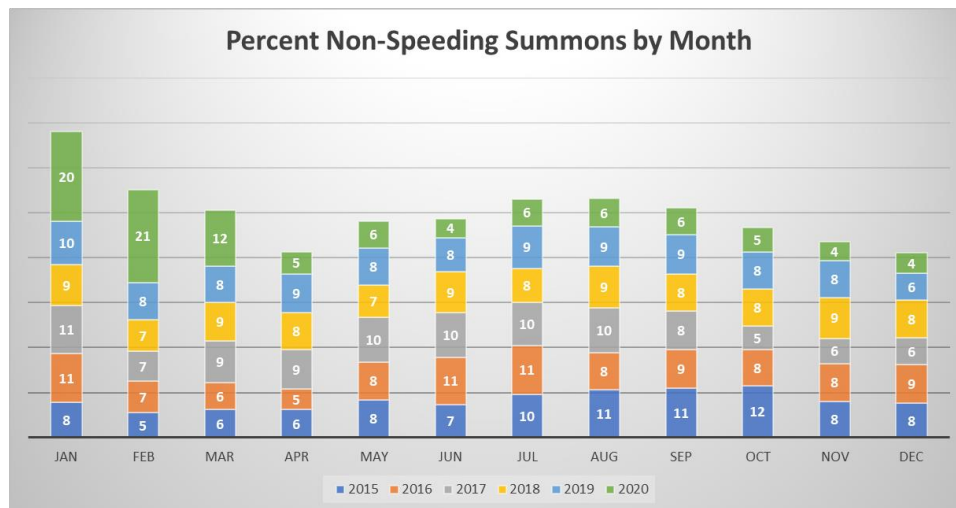
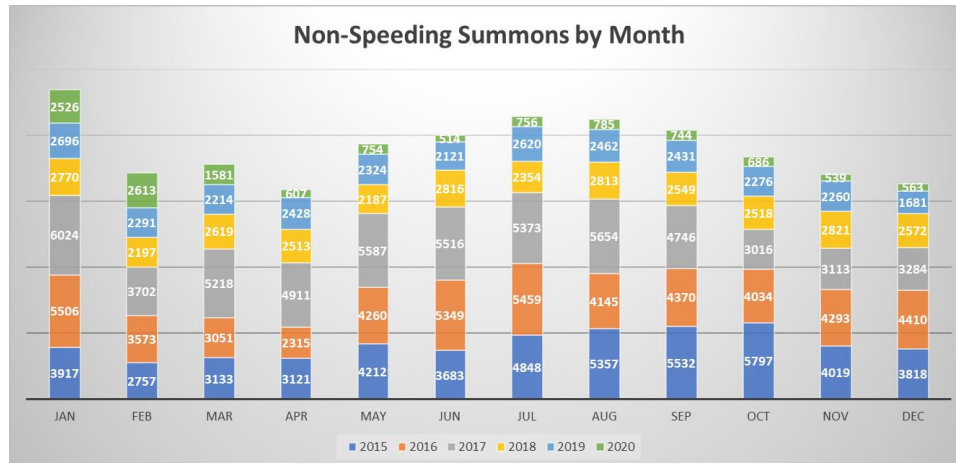
The summons data for all six years was investigated (sliced and diced) into several categories for comparison. These categories are:

- By month,
- By day of week,
- By time of day,
- By zip code where violating vehicle is registered,
- By race, and
- By gender.

The results are for all non-speeding summons and speeding summons only for all years. School zone speeding summons are included separately for 2020.

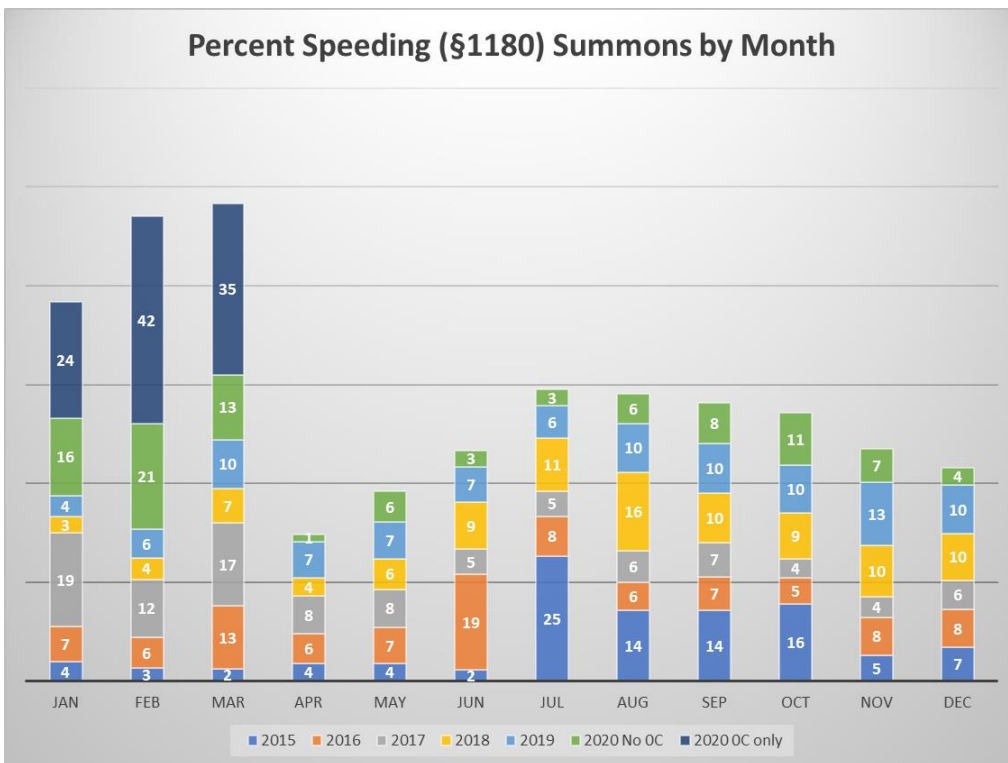
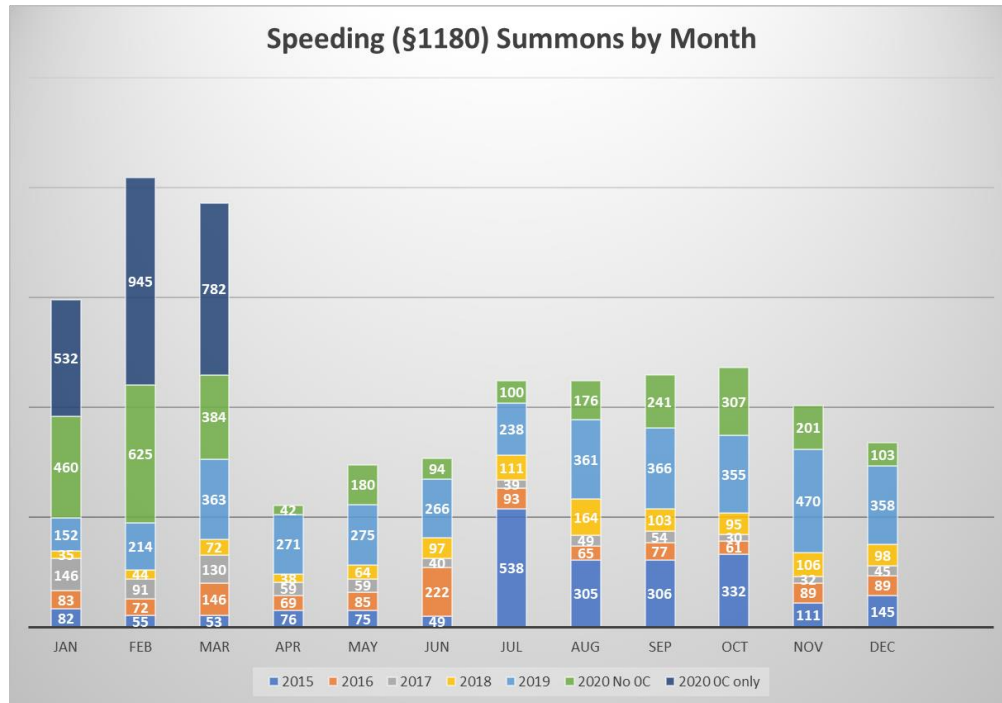
By Month

Over the past six years, the most non-speeding summons were issued in January. The summer months of July and August are the next most likely times to get a non-speeding summons.



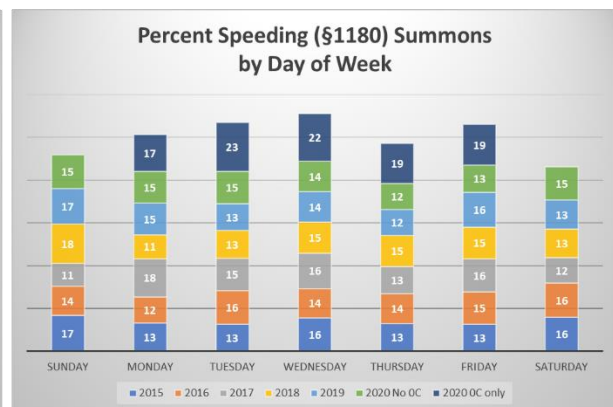
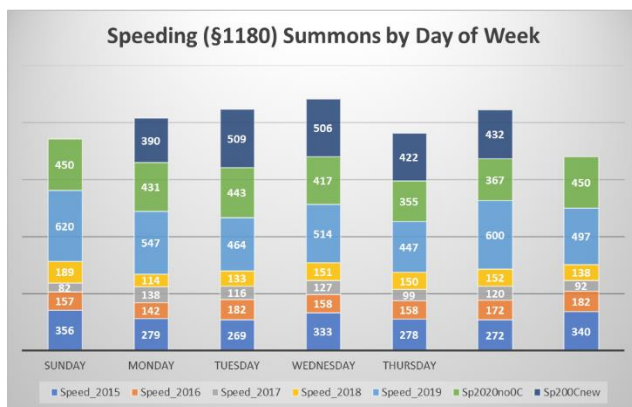
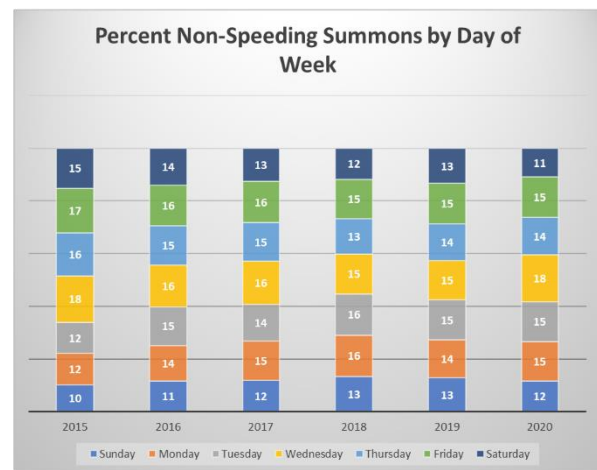
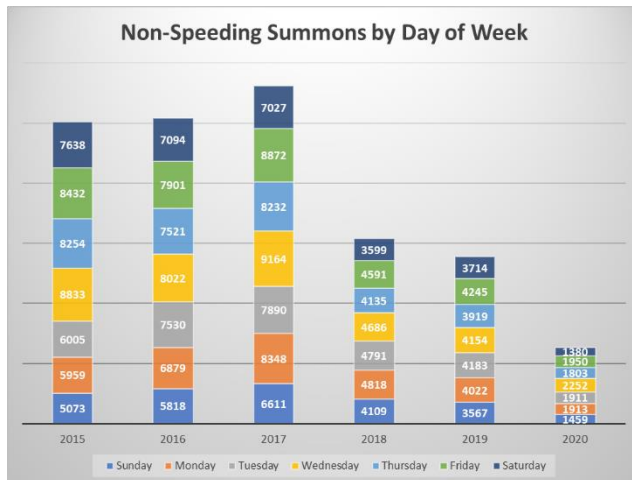
In terms of the annual variation, the largest share on non-speeding summons in 2020 occurred in the first three months, reflecting the Covid-19 pandemic. For every other year, the share of summons is nearly equally distributed across the months. One exception is in 2015 where 12% on the non-speeding summons were issued in October compared to only 5% issued in February. In 2016, 11% of non-speeding summons were issued in January, June, and July, whereas April had only 5%. October is the lowest share in 2017. In 2018 and 2019, the pattern is very evenly distributed over all months.

School zone speeding summons occurred in the first three months of 2020. These three months also had a large share of other types of speeding violations. In the previous 5 years, the late summer and early Fall months had more speeding summons than the rest of the year.



By Day of Week

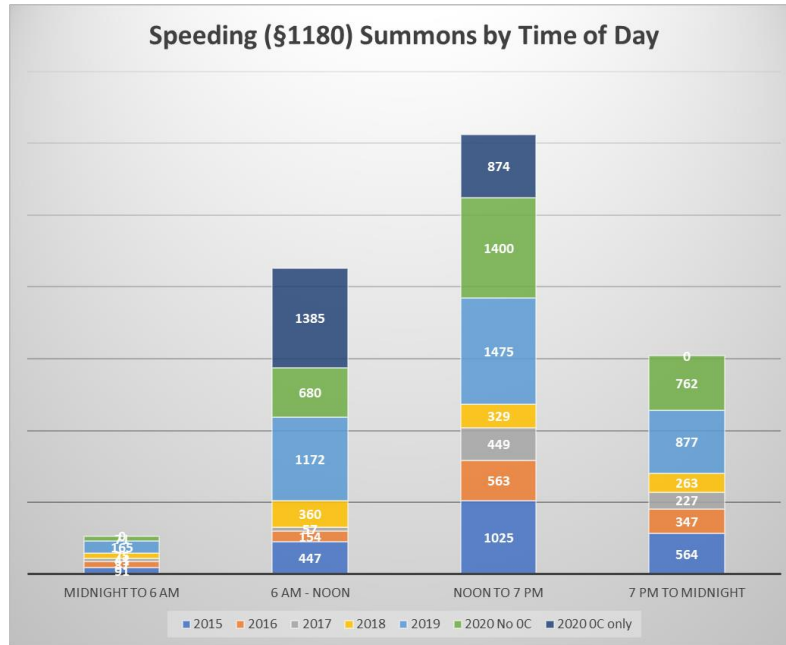
Non-speeding summons are evenly distributed over the days of the week. For example, Sundays have between 10 to 13% of non-speeding summons for all six years. Wednesdays and Fridays contain the highest shares over the six-year period.



School-zone speeding summons in 2020 were issued on Monday through Friday only, with Tuesday and Wednesday having the highest share. Like non-speeding summons, other speeding summons are fairly evenly distributed throughout the week.

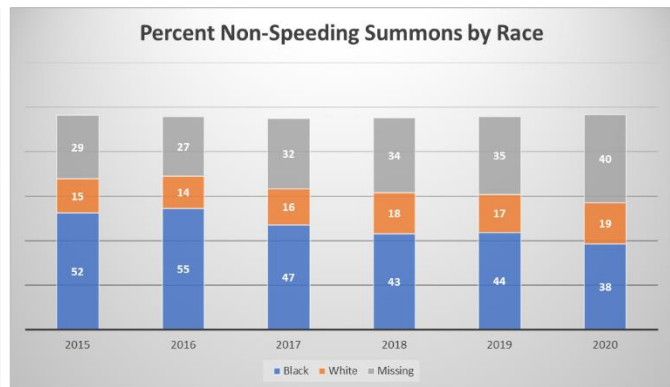
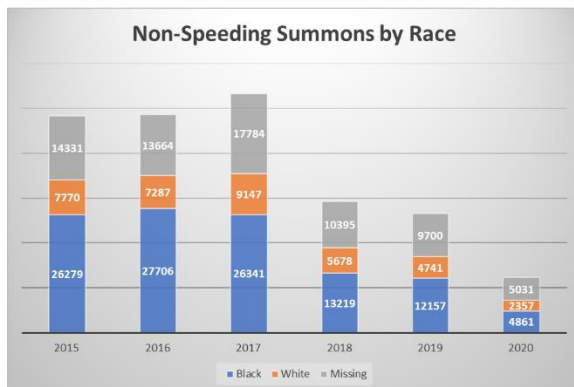
Speeding by Time of Day

More school-zone speeding summons were issued in the morning than in the afternoon. None were issued before 6 AM or after 7 PM. In general, the afternoon has the most speeding tickets issued over the six-year period. In 2015 – 2017, and 2020 excluding school-zones more than twice as many speeding tickets were issued in the afternoon than the morning.

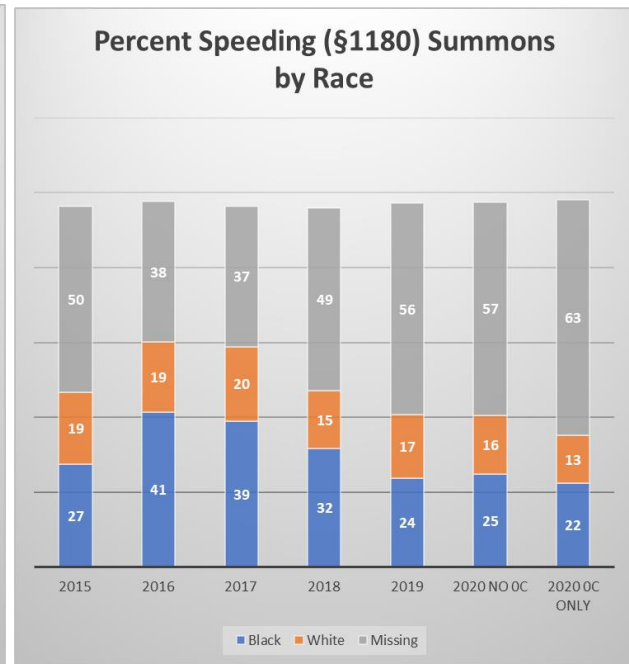
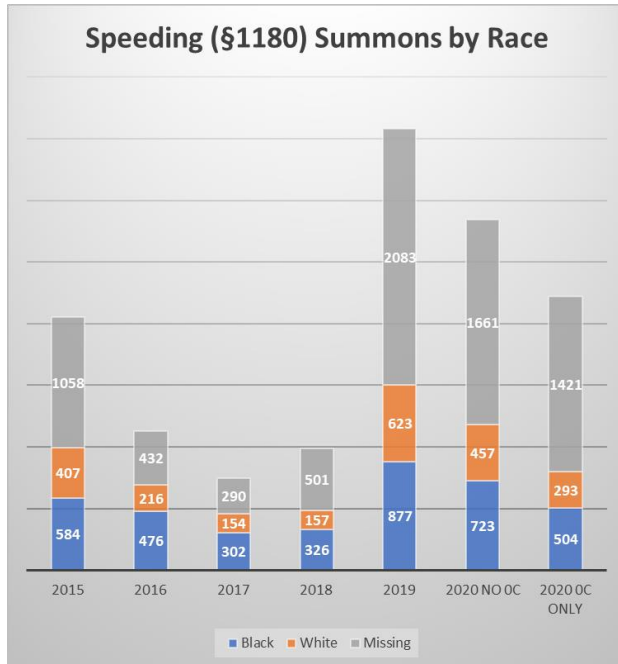


By Race

Because of the large number of records missing race data, **no reliable conclusions may be reached**. For non-speeding offenses, if the missing data was assigned to White, then the proportion of tickets issued to Blacks would still be higher only in 2015 and 2016.

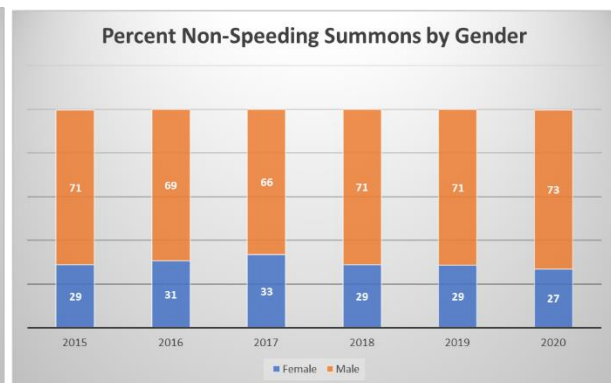
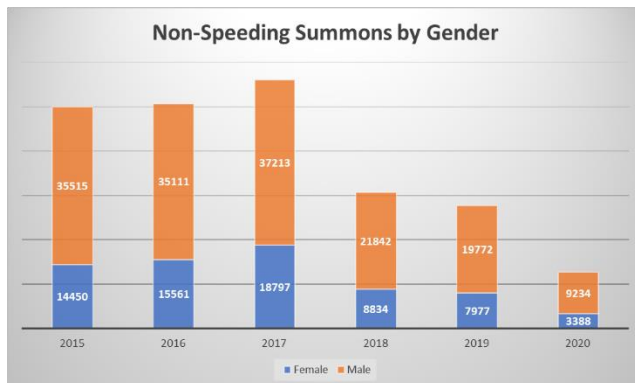


For speeding tickets there are just too many missing values to draw any conclusions especially for the school zone speeding summons.

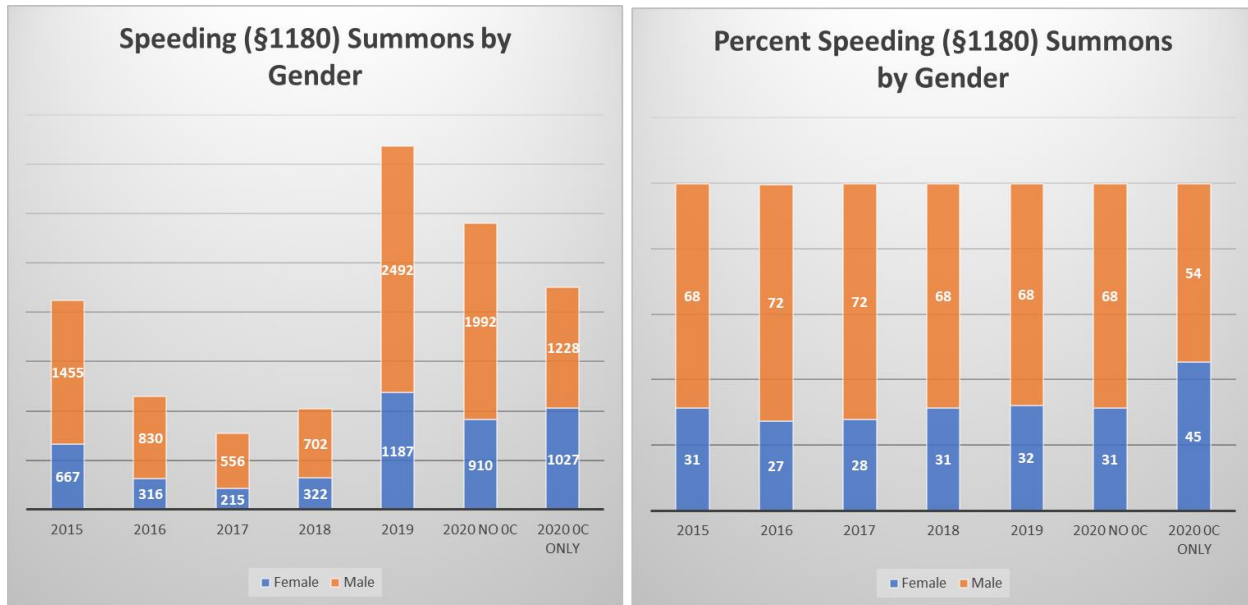


By Gender

Very few records are missing gender data. For non-speeding summons, male drivers receive more than twice as many summons as female drivers.



The same holds true for speeding summons **EXCEPT** those that occur in school-zones. The ratio of females receiving tickets is almost equal to males receiving tickets in school-zones.



Analysis of Location for School-zone Speeding Summons

Location:

The following information is for summons dated between January 1, 2020 and April 1, 2020 with Section 1180, subsection C speeding violations in school zones. The actual first violation in this subset occurs on Jan 10, 2020 (8:06 AM) and the last one on Mar 9, 2020 (9:50 AM). A list of dates with violations is in the Appendix.

Fields that help to identify location where the speeding violation happened:

- Street Number – STRNUMBER
- Street Prefix – STRPREFIX
- Street Name – STRNAME
- Street Suffix – STRSUFFIX
- Cross street Prefix – CSTRPREFIX
- Cross street Name – CSTRNAME
- Cross street Suffix – CSTRSUFFIX

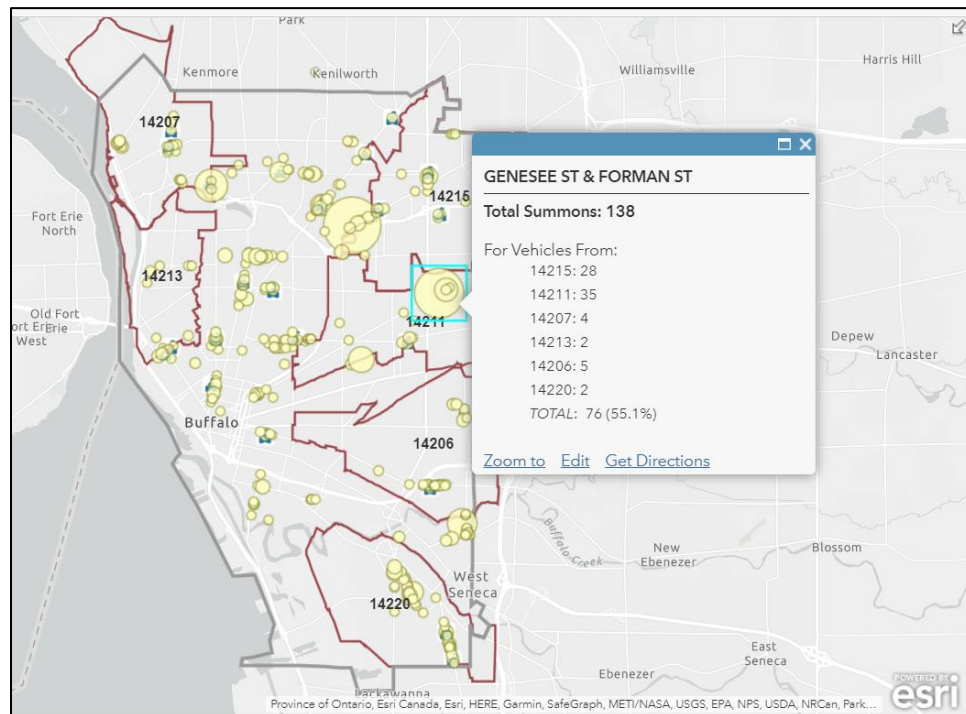
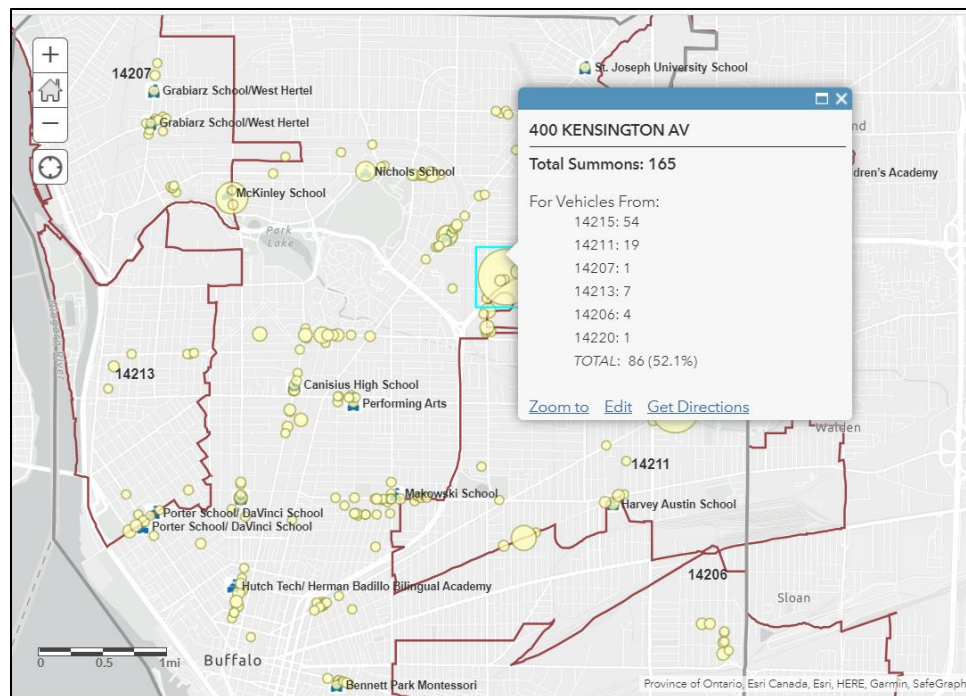
Presumably, if a street number is provided then cross street information is not necessary.

1,123 of 2,259 have a street number (50%). All of the cross-street information is null.

1,053 of the 1,136 with no street number (93%) have some cross street information.

Cleaned incident locations resulted in 394 unique location descriptions. 2,125 of the 2,259 (94%) school speed zone violations were assigned geographic coordinates.

Maps show the unique locations where school zone speed summons were issued.

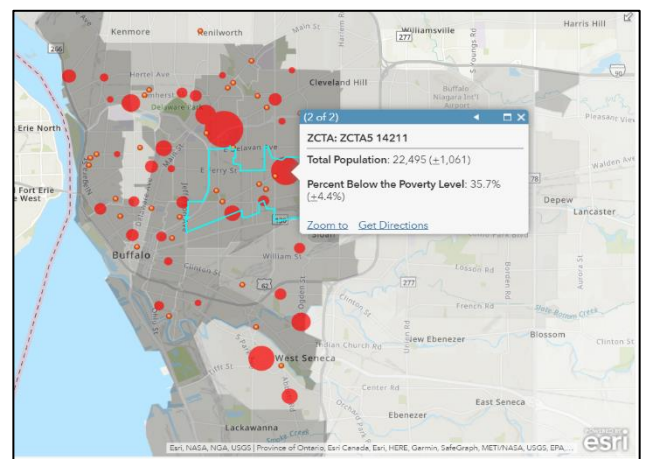
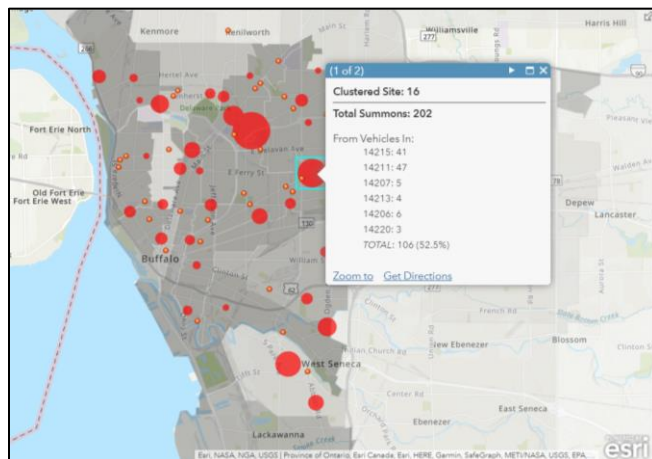


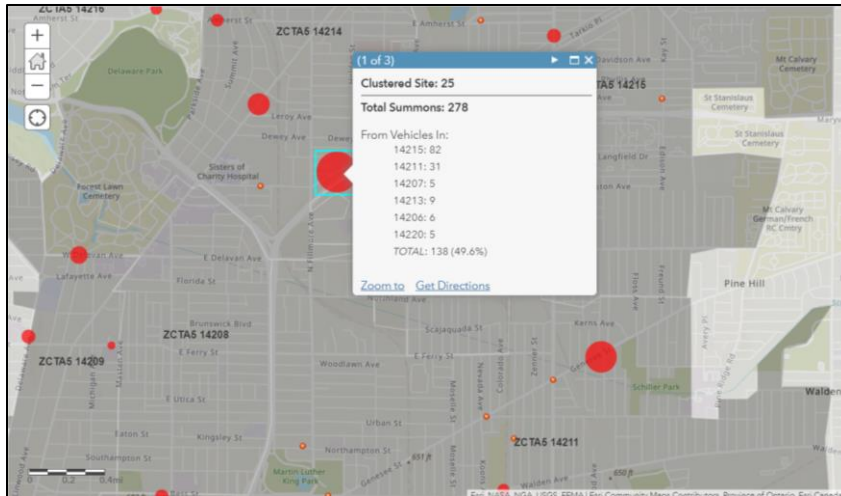
The summary statistics for the six zip codes of interest represent only 40% of the geocoded locations. For the six zip codes of interest, 14220 had the most non-geocodable location information.

Zip Code of Vehicle Receiving a Summons	Geocoded Records	Non-Geocodable Records
14215	272	6
14211	195	8
14207	94	5
14213	66	8
14206	115	5
14220	100	10
TOTAL	842	42

In addition, the maps above indicate the proportion of summons at those locations that come from those 6 zip codes. So, at 400 Kensington Ave, 48% of the summons issued at that location were for vehicles from other zip codes and at Genesee ST & Forman ST, 45% of the summons were for vehicles from other zip codes.

Since many of the locations are clustered near each other, additional maps were created showing a centralized location for nearby streets.





Links to all interactive maps will be provided in the final document.