ALEXANDRIA POLICE DEPARTMENT

Basic Analysis of Traffic Citation Data for 2018

Influenced by the basic analysis completed by Dr. Cynthia Lum and Mr. Xiaoyun Wu of George Mason University in April 2017.

Dr. Lum's study is published on the Alexandria Police Department's website at www.alexandriava.gov/police under Community Advisory Team & Traffic Citation Analysis.

Updated: April 2019

APD/CAS/AC

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Introduction and Data for Analysis

The traffic citation data used in this analysis includes all records for 2017-2018 and select data from 2011-2016, except for one charge category which was removed prior to this analysis, "Criminal C--" as it is a misdemeanor criminal arrest. In the 2018 dataset 545 "Criminal C—" entries were removed. Unlike in past years, there were no "No Charge" entries to remove from the dataset, which is used to denote voided citations. The number of traffic citations does not directly reflect the number of traffic stops made by the officers as an individual may be stopped and issued multiple citations. This will result in two separate entries in the traffic stop dataset, one for each violation committed.

The traffic citation draws influence from the April 2017 traffic citation analysis for the Alexandria Police Department conducted by Dr. Cynthia Lum of George Mason University's Center for Evidence-Based Crime Policy and the Department of Criminology, Law & Society, with the help of Mr. Xiaoyun Wu. This report modifies Dr. Lum's initial basic analysis, which focused on 2011-2015, and has been streamlined over the past two years with the addition of 2016 through 2018 data. Although there are similarities in the methods used to analyze the data, the following analysis looks less at the limited details of ethnicity and adds a brief temporal analysis of the data. Traffic Warnings are also briefly examined in the 2018 analysis. The form used to capture this data was adopted midway through 2017 so prior year data is not currently available for a comparison.

Following the methodology of the April 2017 study completed by Dr. Lum and Mr. Wu, the traffic citation data used eleven fields collected in the traffic citation database.

1. The Incident Number (INCINMBR) which identifies each unique traffic stop. If more than one citation is given during the traffic stop, this number will be repeated.
2. The date (DTCITA) the citation(s) was/were issued.
3. The time (TMCITA) the citation(s) was/were issued.
4. The address of the location (LOCATION) at which the traffic stop was made.
5. The method used to observe the violation (METHODUSEDLIT).
6. The description of the violation (CHARGELIT) in which the citation(s) was/were issued.
7. The specific Local or State Code (CODE) under which the citation(s) was/were issued.
8. The race of the individual (RACELIT). Options in this column will include the following: American Indian/Alaskan, Asian/Pacific Islander, Black, Unknown, White, or not filled out.
9. The gender of the individual (SEXLIT). Options in this column will include the following: Female, Male, Unknown or not filled out.
10. The ethnicity of the individual (ETHNICLIT). Options in this column will include the following: Hispanic, Non-Hispanic, Unknown, or entries that were not filled out.
11. The individual's age, which was calculated using the individuals date of birth and the date of the citation.

It should be noted that race and ethnicity (#8 and #10 above) are not required fields. This information is either offered voluntarily by the individual stopped or is a guess on the part of the officer issuing the citation. The officer does not directly ask for this information, and ethnicity is not listed on Virginia, Maryland, or Washington, D.C. issued driver's licenses.

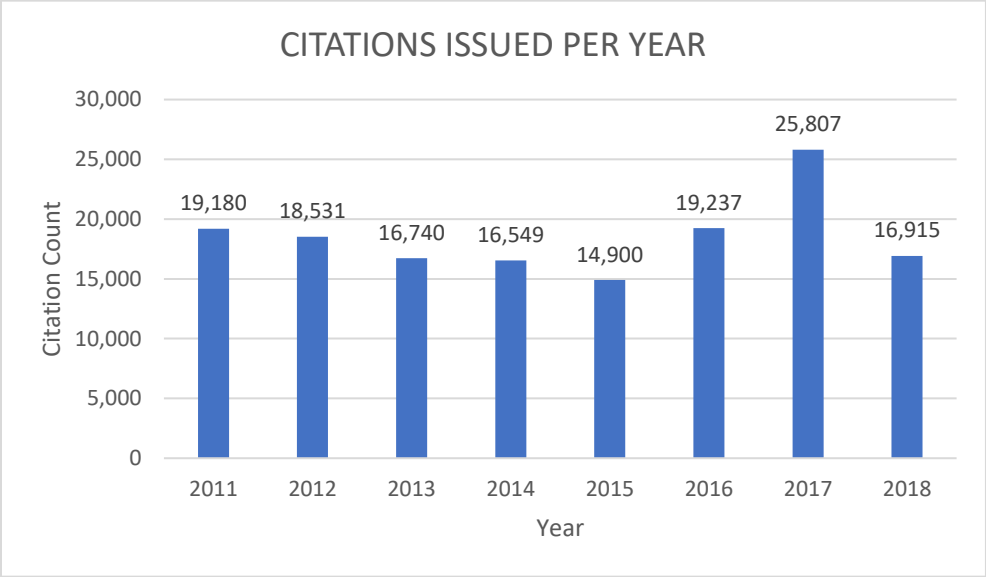
As noted previously, there is a difference between traffic citations and traffic stops. In 2018, there were 16,915 citations issued and 15,288 unique traffic stops completed that resulted in at least one citation. This analysis looks at traffic citations and traffic stops separately, noting that the traffic stop leads to at least one citation. It also includes information about traffic stops that lead to warnings only. It should be noted that the GMU study also examined traffic citations and traffic stops separately; however, the GMU study referenced the sequence value ("SEQ=1" or the person who received the first citation). This dataset was queried by the primary individual in the stop. The overall values

obtained in the GMU study with the use of the sequence value matched with past versions of this analysis where the data was queried by the primary individual. Therefore, the sequence value was not included in this or prior analysis of citation data.

In previous iterations of this analysis, an extensive effort was given towards cleaning the charge data. Citations may be issued referencing the local municipal traffic code or the state traffic code at the discretion of the issuing officer. In the dataset used for this report, the same charge description (CHARGELIT) was used for both municipal and state violations. In order to distinguish the difference in the code, the specific code (CODE) is listed in a separate column. For example, a "Cross Double Yellow Line" in the charge description column can be associated with either Municipal Code 10-3-804.6 or State Code 46.2-804.6. In some instances, a letter was placed at the end of a charge code to help identify the method used to aid the officer in determining the violation (METHODUSEDLIT). This letter designator was not used in every or most instances.

Results for All Citations

Figure 1: Total Traffic Citations Issued from 2011-2018 (N= 147,859)



The 8-year average of citations issued per year between 2011-2018 was 18,482. 2018 citations declined by 34.6% from 2017, though 2017's total citations were well above the 8-year average. Comparing 2016 to 2018 shows a decline of 12.1% in 2018.

The dataset includes 214 different charge descriptions. These charge descriptions combine the Municipal Code (MC) or the State Code (SC) for the same charge type, as mentioned in the methodology section. 90% (15,224) if the citations were issued using 34 different charges (Table 1).

Table 1: Most common violations cited in Alexandria in 2018 (90% of the citations issued)

Charge Description	Count	% of Total	Cumulative %
OFFICIAL SIGNS	3,245	19.18%	19.18%
SPEEDING 25 ZONE RADAR	2,998	17.72%	36.91%
FAIL TO PAY FULL TIME/ATTN	1,907	11.27%	48.18%
REG./LIC/TITLE/NAME/ADDR.	1,043	6.17%	54.35%
SPEEDING 35 ZONE RADAR	973	5.75%	60.10%
EXPIRED/NO INSPECTION STICKER	727	4.30%	64.40%
OFF. SIGN - RED/YELLOW/FLASHING LIGHT	450	2.66%	67.06%
NO OPERATORS LICENSE	313	1.85%	68.91%
FAIL TO SUBMIT TO INSPECTION	300	1.77%	70.68%
SPEEDING 25 ZONE PACE	275	1.63%	72.31%
RECKLESS/SPEED LIMIT	246	1.45%	73.76%
NO OPERATOR LICENSE	242	1.43%	75.19%
SUSPENDED/REVOKED LICENSE	227	1.34%	76.54%
SUSPENDED/REVOKED LICENSE	203	1.20%	77.74%
DEFECTIVE EQUIPMENT	200	1.18%	78.92%
RECKLESS/EXCEEDING SPEED LIMIT	185	1.09%	80.01%

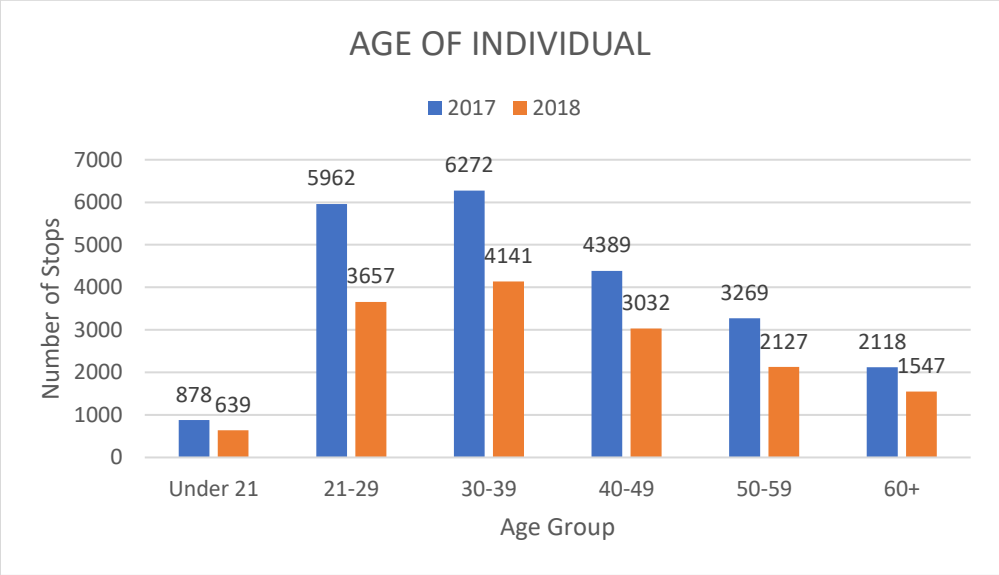
HOV	170	1.01%	81.02%
NO OPERATORS LICENSE IN POSSESSION	137	0.81%	81.83%
SPEEDING 35 ZONE PACE	130	0.77%	82.60%
SPEEDING 25 ZONE (RADAR)	112	0.66%	83.26%
FAIL STOP/YIELD RT OF WAY	111	0.66%	83.91%
YEILD RT OF WAY/ ENTERING ROADWAY	111	0.66%	84.57%
FOLLOWING TOO CLOSE	110	0.65%	85.22%
OFF. SIGN - STOP SIGN	106	0.63%	85.85%
OFFICIAL SIGN	98	0.58%	86.43%
IMPROPER LANE VIOLATION	97	0.57%	87.00%
LEFT-TURN / YIELD RIGHT OF WAY	92	0.54%	87.54%
DUI/DWI OF DRUGS/ALCOHOL	84	0.50%	88.04%
HEADLIGHTS NOT TURNED ON	72	0.43%	88.47%
SIGNS ON VEHICLE GLASS	69	0.41%	88.87%
HOV - HIGH OCCUPANCY TOLL LANE VIOLATION	68	0.40%	89.28%
DEFECT. BRK. LIGHT VEH	65	0.38%	89.66%
DEFECTIVE EQUIPMENT	58	0.34%	90.00%

The top five charges in 2018 were consistent with 2017 data for Official Signs, Speeding 25 Zone (Radar), Failure to Pay Full Time/Attention, and Registration/License/Title/Name/Address. Official Sign – Red/Yellow/Flashing Light dropped down into the top ten charges and was replaced by Speeding 35 Zone (Radar). In 2011-2016 Official Signs, Speeding 25 Zone (Radar), Speeding 35 Zone (Radar), Official Sign – Stop Sign, and Registration/License/Title/Name/Address were the top five charges. In 2018, Official Sign – Stop Sign is the 19th most cited charge.

Demographic Results for Traffic Stops

There were 16,915 citations (w/o Criminal C-- charge) in 2018, 15,288 of which were during unique stops. In 90.4% of the traffic stops made by the Alexandria Police Department, the individual is cited for only one charge. Only 9.6% of the traffic stops made resulted in multiple citations. In 2017 10.25% of traffic stops involved the individual being cited for multiple charges, while the average for 2011-2016 was 11.5% with multiple charges.

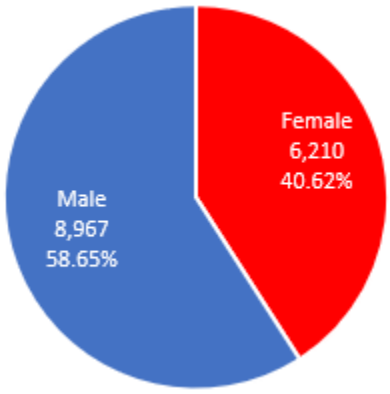
Figure 2: Age of the individuals at the time of the traffic stop 2017 vs 2018 (N=15,143)



Note: The sample size in this chart is 15,143 versus the traffic stop volume of 15,288 due to 146 entries missing the individual's age. Blanks/Unknown values are not included.

Figure 3: Gender of the individual in table and pie chart from 2017 vs. 2018

% of Total	2017 Total	Gender	2018 Total	% of Total
38.78%	8,983	**Female**	6,210	40.62%
60.47%	14,006	**Male**	8,967	58.65%
0.75%	173	**Unknown**	111	0.73%
100.00%	**23,162**	**Total**	**15,288**	**100.00%**

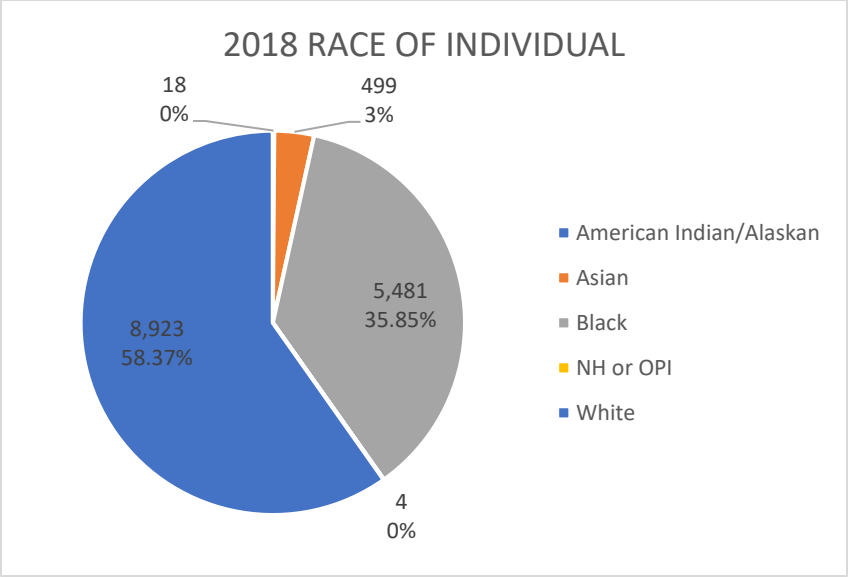


Note: The sample size of the 2018 pie chart and table are 15,177 versus the traffic stop value of 15,288 due to 111 entries missing the individual's gender. 2017's sample size is 22,989 versus the traffic stop value of 23,162 due to 162 entries missing the individual's gender. Blanks/Unknowns are not included in the pie chart but are captured in the table.

As indicated in Figure 2, the majority of traffic stops are performed on those between the age of 21-39 (53.45% in 2017 and 51.5% in 2018). The age group 30-39 was the group with the highest percentage of traffic stops in both 2017 and 2018 with 27.74% and 27.35% respectively. Figure 3 indicates that subjects in a traffic stop were more likely to present as male in gender (58.65% in 2018 and 60.9% in 2017). This data is consistent with previous year findings.

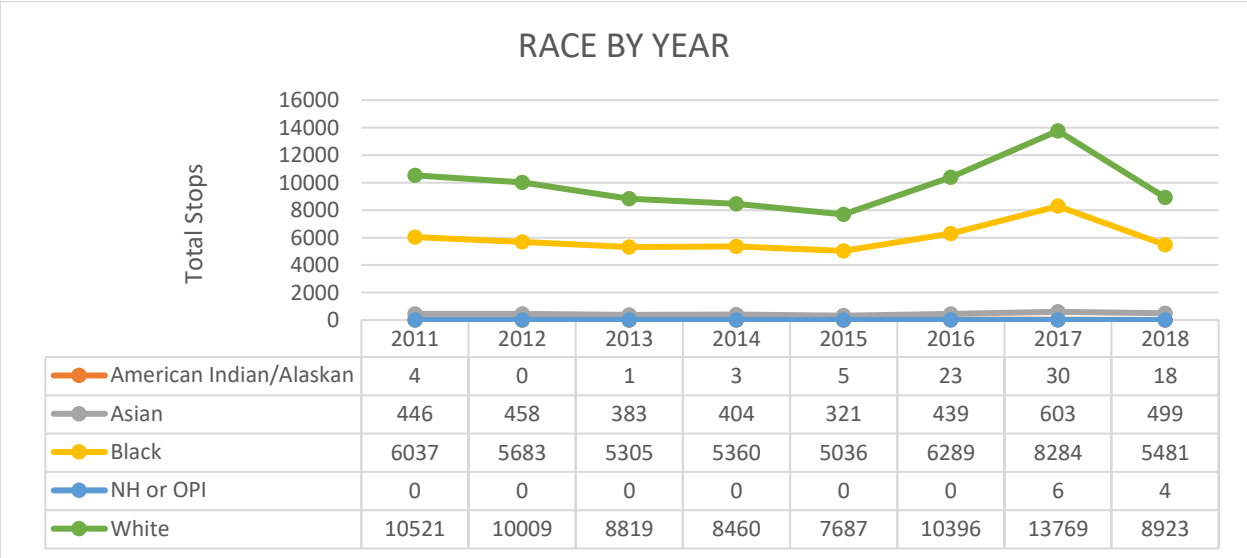
Figure 4A: Race of the individual in table and pie chart (N=15,288)

% of Total	2017 Total	Race	2018 Total	% of Total
2.03%	470	Blank/Unknown	363	2.37%
0.13%	30	American Indian/Alaskan	18	0.12%
2.60%	603	Asian	499	3.26%
35.77%	8,284	Black	5,481	35.85%
0.03%	6	NH or OPI	4	0.03%
59.45%	13,769	White	8,923	58.37%
100.00%	**23,162**	**Total**	**15,288**	**100.00%**



Note: The sample size in the pie chart is 14,925 versus the traffic stop value of 15,288 due to 363 entries not capturing the stopped individual's race. Blanks/Unknowns are not included in the pie chart but are in the table.

Figure 4B: Race by Year

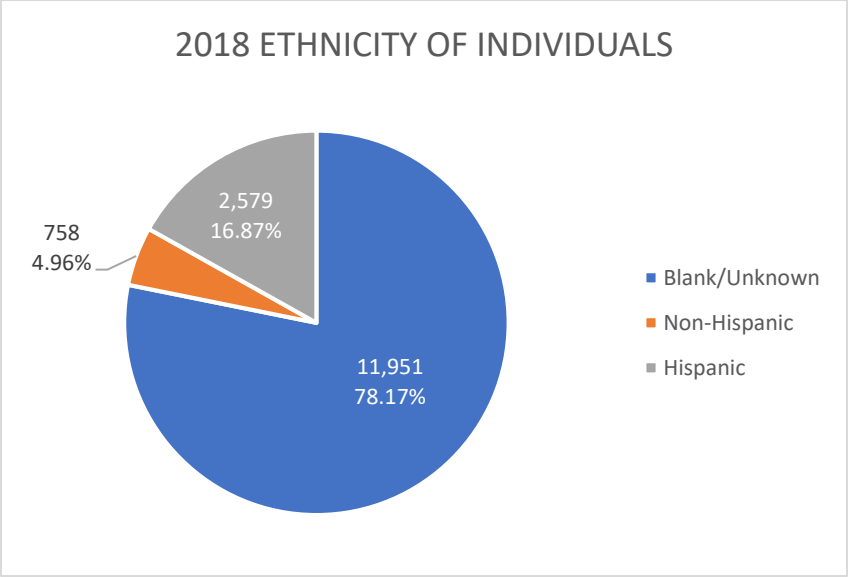


	2011	2012	2013	2014	2015	2016	2017	2018
American Indian/Alaskan	4	0	1	3	5	23	30	18
Asian	446	458	383	404	321	439	603	499
Black	6037	5683	5305	5360	5036	6289	8284	5481
NH or OPI	0	0	0	0	0	0	6	4
White	10521	10009	8819	8460	7687	10396	13769	8923

Figure 4A indicates that the majority of individuals involved in traffic stops with the Alexandria Police Department are White (58.37%), followed by Black (35.85%). 2018 data is consistent with prior year findings.

Figure 4B shows that citations issued to White and Black individuals decreased between 2011-2015, reaching a 5-year low in 2015, before increasing in 2016-2017. Though the numbers of individuals cited changed considerably, the percentage of the total number of stops for White and Black individuals remained consistent throughout the 8 years captured. Of those cited, White individuals make up 58.37-61.22% and Black individuals account for 34.76-38.38% of the total. The percentage of Asian individuals who were cited was at an 8-year high in 2018, though they accounted for only 3.26% of those cited.

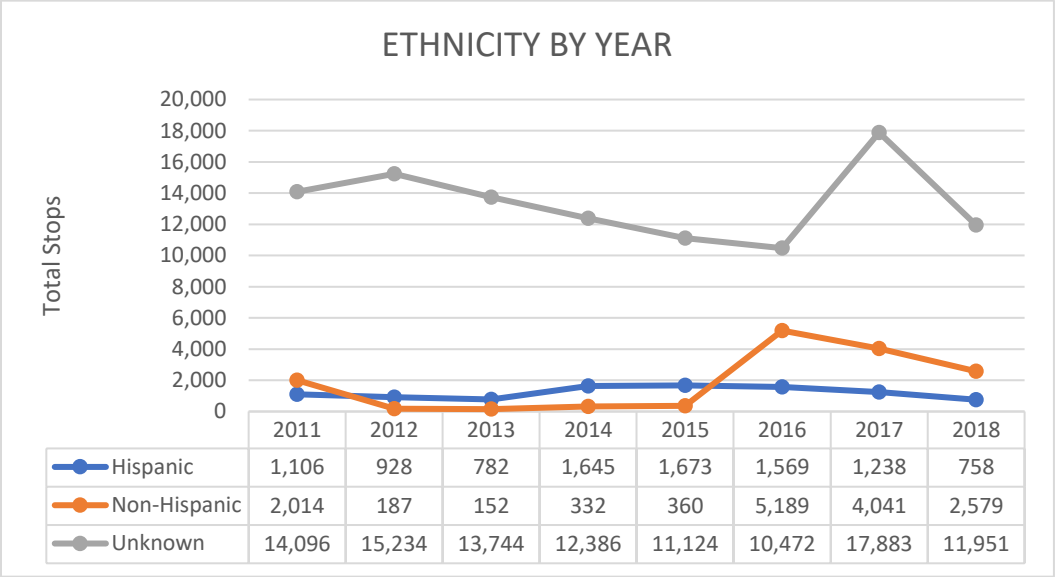
Figure 5A: Ethnicity of the individuals in the table and pie chart (N=15,288)



% of Total	2017 Total	Ethnicity	2018 Total	% of Total
77.21%	17,883	Blank/Unknown	11,951	78.17%
5.34%	1,238	Non-Hispanic	758	4.96%
17.45%	4,041	Hispanic	2,579	16.87%
100.00%	**23,162**	**Total**	**15,288**	**100.00%**

Note: The sample size in the pie chart is 3,337 versus the traffic stop value of 15,288 due to 11,951 entries not capturing the individual's ethnicity. Blanks/Unknowns are not included in the pie chart, though they account for over 78% of the data in this set. Blanks/Unknowns are in the table.

Figure 5B: Ethnicity by Year and Percentage Table



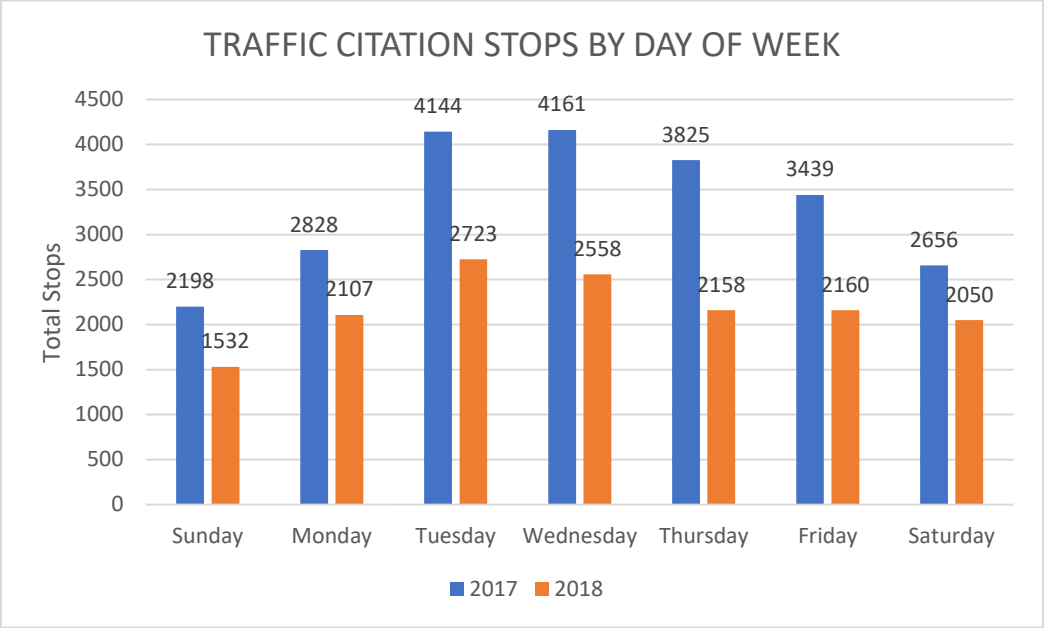
	2011	2012	2013	2014	2015	2016	2017	2018
Hispanic	6.42%	5.68%	5.33%	11.45%	12.72%	9.11%	5.34%	4.96%
Non-Hispanic	11.70%	1.14%	1.04%	2.31%	2.74%	30.12%	17.45%	16.87%
Unknown	81.88%	93.18%	93.64%	86.24%	84.55%	60.78%	77.21%	78.17%

The percentage of individuals listed as having 'Unknown' ethnicity has decreased since 2017; however, it still accounts for 78.17% of the data set. Cited individuals identified as Hispanic is at an 8-year low in 2018 with 4.96%. Due to the large percentage of 'Unknowns' present in the Ethnicity data, the validity of this field cannot be determined. Since ethnicity has been captured in past citation analyses, it is being included in the 2018 product, but will not be including in future Traffic Citation Data reports. This field is not required by the State of Virginia when issuing citations and is not captured on licenses in Virginia, Maryland, or Washington, D.C. Moreover, the officer may not directly ask for this information; this information is either offered voluntarily by the individual stopped or is a guess on the part of the officer issuing the citation.

Temporal Results for Traffic Stops

In this last section of the citation analysis, temporal elements will be examined as they pertain to unique traffic stops that lead to citations.

Figure 6A: Traffic Citation Stops by Day of Week 2017-2018 (N=15,288)



Over 75% of traffic stops that led to citations were completed on weekdays, with Tuesday (17.81%) and Wednesday (16.73%) being the highest for 2017 and 2018. In 2018, Saturday and Sunday accounted for 23.43% of all the traffic stops that led to citations. This is a slight increase from 2017's 20.96% and 2011-2016's 17.8% of stops during the weekend.

Figure 6B: Traffic Citation Stops by Day of Week and Hour of Day in 2018

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Unk	Total
Sunday	69	55	48	34	23	20	15	33	49	126	144	122	114	80	83	87	88	55	37	51	29	50	68	47	5	**1,532**
Monday	47	26	17	19	24	24	32	101	157	142	139	140	143	142	134	103	181	151	69	42	47	63	85	71	8	**2,107**
Tuesday	47	46	29	25	28	35	47	178	236	205	210	164	138	182	145	129	264	215	73	66	43	75	61	72	10	**2,723**
Wednesday	53	40	20	23	38	26	60	212	297	170	142	139	115	167	138	138	199	162	89	67	70	59	73	51	10	**2,558**
Thursday	51	25	19	24	28	23	38	169	210	106	94	155	130	115	147	124	167	141	79	58	40	61	78	71	5	**2,158**
Friday	38	21	24	16	23	20	31	123	152	153	124	122	124	114	114	122	189	131	60	71	88	107	91	93	9	**2,160**
Saturday	60	45	30	22	12	18	18	35	66	177	200	194	142	111	119	145	121	53	38	56	81	99	106	97	5	**2,050**
Total	**365**	**258**	**187**	**163**	**176**	**166**	**241**	**851**	**1167**	**1079**	**1053**	**1036**	**906**	**911**	**880**	**848**	**1209**	**908**	**445**	**411**	**398**	**514**	**562**	**502**	**52**	**15,288**

Note: The sample size of this chart is 15,236 versus the unique citation stops total of 15,288 as 52 citation stops did not include the time of the traffic stop. These are listed as 'Blank' in the above chart but are not captured in conditional formatting for the Day of Week, Time of Day heat map. The heat map took the entire week's citation stops broken down by hour and formatted this data so that the highest volume of citation stops would be represented by red down through gradients of pink and the lowest numbers are indicated by darker shades of blue.

The majority of traffic stops leading to citations in 2018 were between 0700-1759 hrs on weekdays, which is consistent with 2017 data. 2011-2016 data indicated that the majority of these stops were between 0700-1659 hrs. The most prominent Hour of Day for traffic citations is 1600-1659 hrs followed by 0800-0859 hrs. In 2017 the most prominent

Hour of Day for traffic citations was 1600-1659 hrs followed by 0700-0759 hrs. Between 2011-2012 and 2014-2016 the highest number of traffic citations were during the 0800 hour.

Figure 7: Traffic Citation Stops by Hour of Day 2017-2018

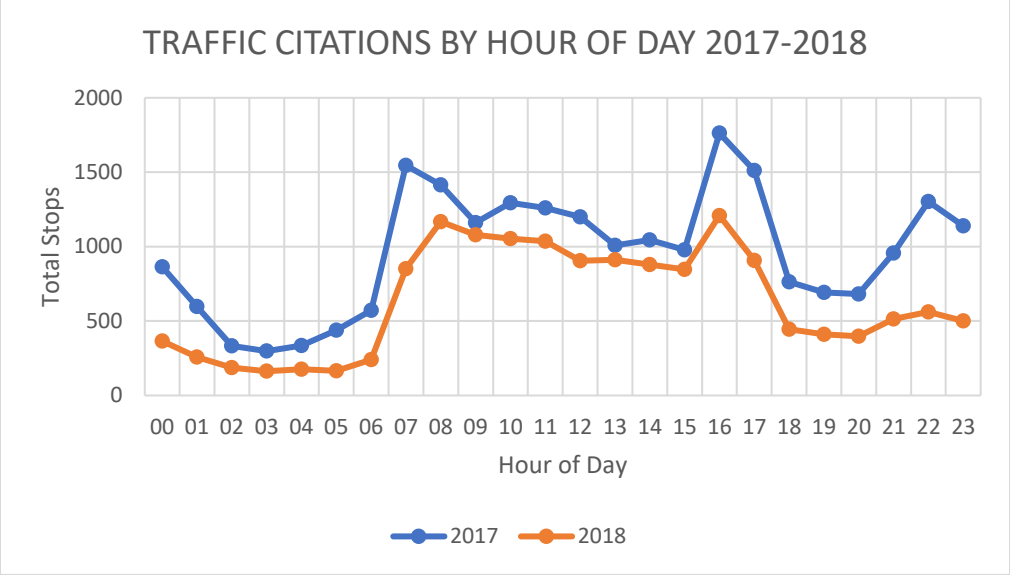


Table 2: Most Prominent Hour of Day by Year (2011-2018)

Year	Prominent Hour	TS Count for Hour	TS Total for Year	% for Hour of Total TS
2011	08:00-08:59	1,683	17,216	9.78%
2012	08:00-08:59	1,500	16,349	9.17%
2013	11:00-11:59	1,037	14,678	7.06%
2014	08:00-08:59	1,019	14,363	7.09%
2015	08:00-08:59	1,197	13,157	9.10%
2016	08:00-08:59	1,533	17,230	8.90%
2017	16:00-16:59	1,762	23,162	7.61%
2018	16:00-16:59	1,209	15,288	7.91%

Figure 8A: 2018 Traffic Citation Stops by Hour of Day (Weekdays) (N=11,664)

Weekday	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mon	47	26	17	19	24	24	32	101	157	142	139	140	143	142	134	103	181	151	69	42	47	63	85	71
Tues	47	46	29	25	28	35	47	178	236	205	210	164	138	182	145	129	264	215	73	66	43	75	61	72
Wed	53	40	20	23	38	26	60	212	297	170	142	139	115	167	138	138	199	162	89	67	70	59	73	51
Thurs	51	25	19	24	28	23	38	169	210	106	94	155	130	115	147	124	167	141	79	58	40	61	78	71
Fri	38	21	24	16	23	20	31	123	152	153	124	122	124	114	114	122	189	131	60	71	88	107	91	93

Note: The 42 unique weekday stops that led to traffic citations and did not have a time associated with them were removed from the data set along with any stops on Saturday and Sunday.

Figure 8B: 2018 Traffic Citation Stops by Hour of Day (Weekends) (N=3,572)

Weekend	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Sun	69	55	48	34	23	20	15	33	49	126	144	122	114	80	83	87	88	55	37	51	29	50	68	47
Sat	60	45	30	22	12	18	18	35	66	177	200	194	142	111	119	145	121	53	38	56	81	99	106	97

Note: The 10 unique weekend stops that led to traffic citations and did not have a time associated with them were removed from the data set along with any stops on weekdays.

In 2018, there was a different pattern of traffic stops seen on the weekend, Saturday and Sunday (Figure 8b), with the majority of traffic stops leading to citations happening between 0900-1659 hrs. This is a departure from 2011-2017 which saw the majority of citations issued between 1800-0200 hrs in 2011-2016 and 1600-0200 hrs in 2017.

Most Prominent Hour of Day by Day of Week in 2018:

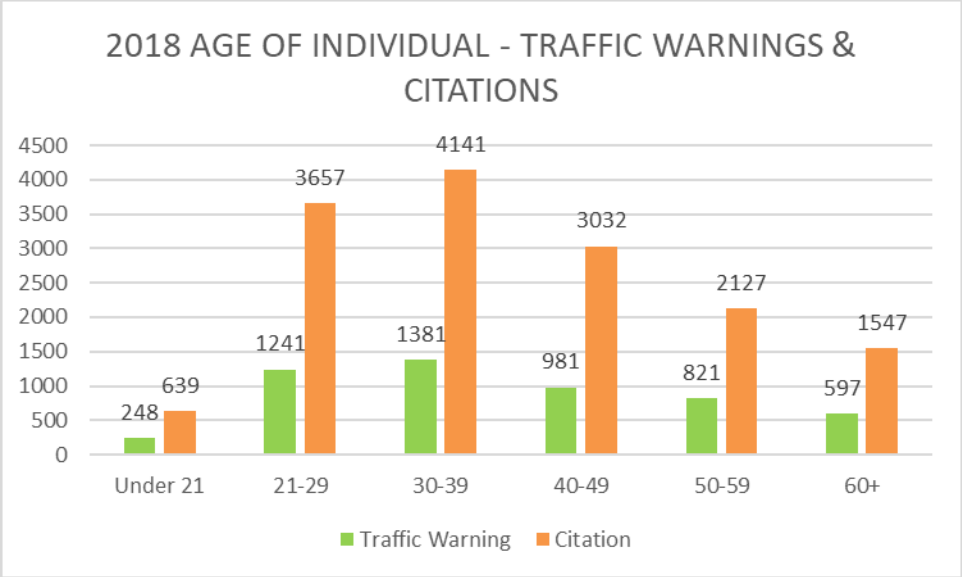
Sunday	1000-1059 hrs (144)
Monday	1600-1659 hrs (181)
Tuesday	1600-1659 hrs (264)
Wednesday	0800-0859 hrs (297)
Thursday	0800-0859 hrs (210)
Friday	1600-1659 hrs (189)
Saturday	1000-1059 hrs (200), 1100-1159 hrs (194)

- Sunday's peak hour shifted from the nighttime hours of 0000-0059 to late morning in 2018 with 1000-1059 hours.
- Tuesday's peak hour in 2018 shifted to the afternoon, to 1600-1659 hours. The peak in 2017 was 0700-0759 hours and between 2011-2016 it was 0800-0859 hours.
- Thursday's peak hour shifted back to 0800-0859 hours, which it was in 2011-2016. In 2017 it was 0700-0759 hours.
- Like Sunday, Saturday's peak hours shift dramatically from the nighttime in previous years (2100-2259 hours between 2011-2017) to late morning in 2018 with 1000-1159 hours.
- Saturday's 1100 hour was added due to the stop count being close together with a difference of 6 citations.

Traffic Warnings

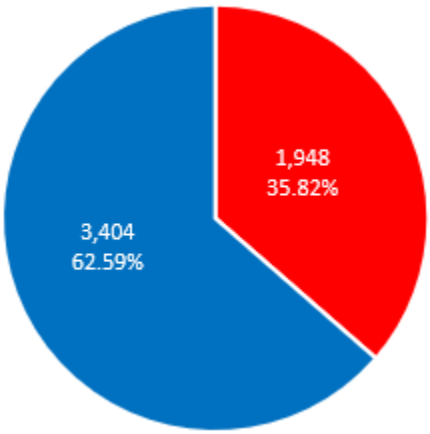
In 2018, there were 5,439 Traffic Warnings issued. Though Traffic Warnings were issued in previous years, the current form used to capture this information came into use midway through 2017 so prior year data is not available. The reason for the traffic stop that led to a warning only is available in the Field Interview narrative and not separated out by reason for each stop. A non-comprehensive review of 100 narratives showed that the majority of the reviewed warnings were given for speeding when 1) the driver thought the speed limit was 35 mph rather than 25 mph, or 2) when they indicated that they were unfamiliar with the area. The second highest reason for issuing a warning was if headlights or other vehicle lights were inoperable or off in conditions in which they were required such as at night when it was dark or in the rain.

Figure 9: Age of the individuals at the time of ***the 2018 traffic warning and citation***



Note: The sample size of the traffic warnings in this chart is 5,269 versus the total traffic warning volume of 5,439 due to 170 entries missing the individual's age. The sample size of the traffic citations in this chart is 15,143 versus the traffic stop volume of 15,288 due to 146 entries missing the individual's age. Blanks/Unknown values are not included.

Figure 10: Gender of the individual in table and pie chart from 2018 (N=5,439)

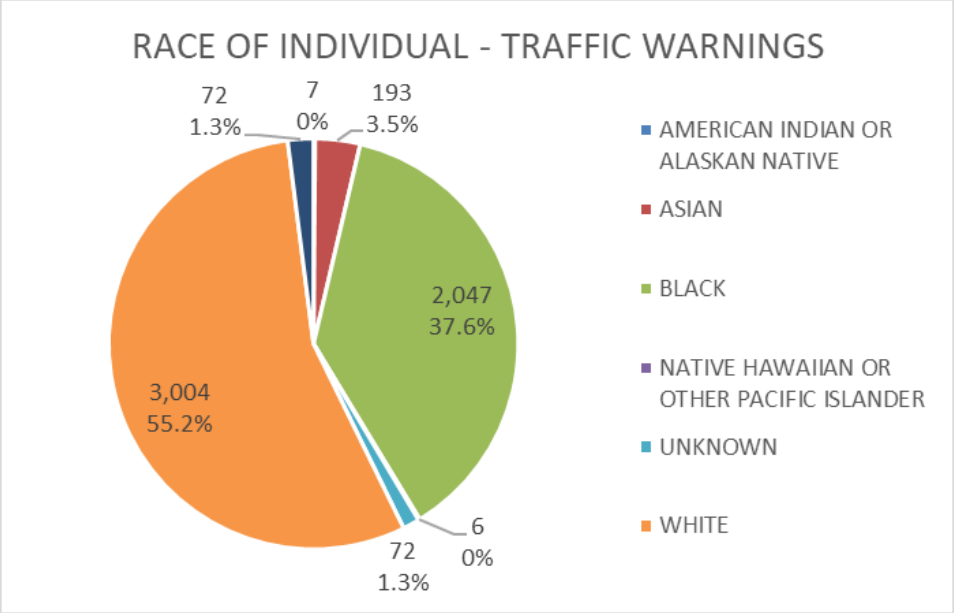


Gender	2018 Total	% of Total
Female	1,948	35.82%
Male	3,404	62.59%
Blank	87	1.60%
Total	**5,439**	**100.00%**

Note: The sample size of the pie chart is 5,352 versus the traffic warning value of 5,439 due to 87 entries missing the individual's gender. Blanks are not included in the pie chart but are in the table.

The traffic warnings are pictured with the unique citations to illustrate the ages of the primary individuals involved in each and the volume difference between the two. As with the citation data, the most warnings are issued for individuals between the age of 21-39 (48.21%), with the age group 30-39 having the highest percentage of traffic warnings with 25.39% of the total. Figure 10 indicates that individuals issued traffic warnings were more likely to present as male in gender (62.59%). This data lines up with the 2018 traffic citations in which 58.65% of those cited were identified as male.

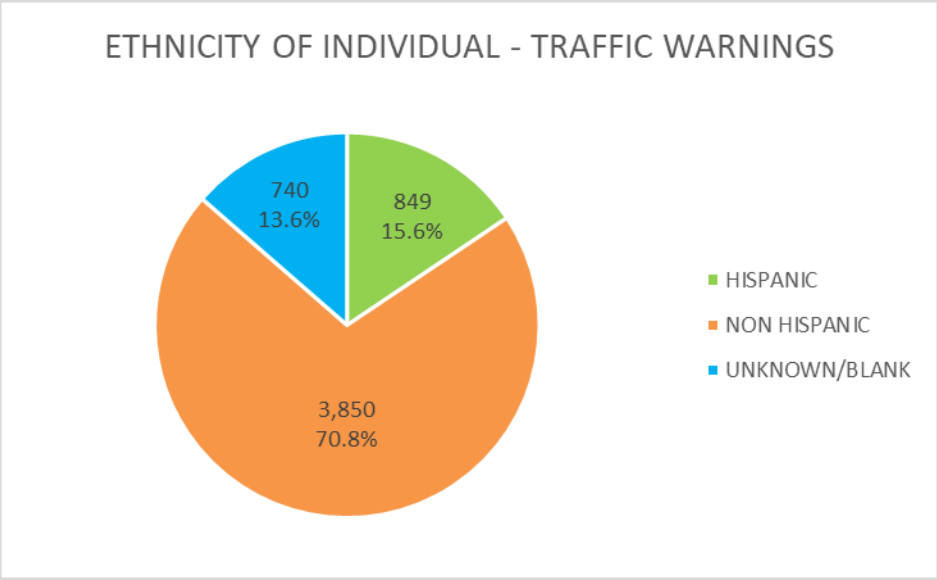
Figure 11: Race of the individual in Traffic Warnings in table and pie chart from 2018 (N=5,439)



Race	2018 Total	% of Total
Blank/Unknown	182	3.35%
American Indian/Alaskan	7	0.13%
Asian	193	3.55%
Black	2,047	37.64%
NH or OPI	6	0.11%
White	3,004	55.23%

Note: There were 110 records in which the driver's race was not listed. Blanks entries are not included in the pie chart but were combined with the 'Unknown' entries in the table.

Figure 11: Ethnicity of the individual in Traffic Warnings in table and pie chart from 2018 (N=5,439)



Ethnicity	2018 Total	% of Total
Hispanic	849	15.61%
Non-Hispanic	3,850	70.79%
Unknown/Blank	740	13.61%
Total	**5,439**	**100.00%**

Note: There were 321 records in which the driver's ethnicity was not listed. It was combined with the 'Unknown' entries in the pie chart and table.

Unlike the traffic citations fields, which do not have a field for ethnicity, the Field Interview form in which Traffic Warnings are captured include the 'ethnicity' field, though it is not required. A higher percentage of officers entered information in this field than for citations, though as noted earlier in the analysis, this information is voluntarily offered by the stopped individual or a guess on the part of the responding officer. This data will not be included in future analytic products related to traffic citations due to this field not being required by the state of Virginia and the subjective nature of the assessment.

*Figure 12: **Traffic Warnings by Day of Week and Hour of Day in 2018** (N=5,439)*

Day of Week	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
Sun	68	30	38	13	9	10	12	9	9	12	23	24	12	4	12	11	40	33	25	33	42	69	86	69	693
Mon	64	23	22	20	16	12	11	12	12	17	20	15	16	19	20	19	53	37	24	42	45	75	109	102	805
Tues	79	48	32	26	26	15	19	18	18	18	23	16	19	18	12	18	53	21	26	46	57	67	99	82	856
Wed	65	32	27	33	21	22	12	20	15	4	17	14	13	8	11	16	45	57	38	36	42	81	103	81	813
Thurs	82	35	24	19	20	10	13	19	18	17	22	20	21	17	10	17	65	37	28	30	29	62	72	69	756
Fri	44	30	21	11	13	7	11	12	23	15	18	18	19	17	8	16	46	40	38	37	34	69	84	80	711
Sat	51	31	28	11	19	10	7	11	11	19	17	29	16	11	16	15	45	26	32	36	71	88	117	88	805
Total	**453**	**229**	**192**	**133**	**124**	**86**	**85**	**101**	**106**	**102**	**140**	**136**	**116**	**94**	**89**	**112**	**347**	**251**	**211**	**260**	**320**	**511**	**670**	**571**	**5,439**

Figure 13: Traffic Warnings and Traffic Citations by Hour of Day in 2018

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Warnings	453	229	192	133	124	86	85	101	106	102	140	136	116	94	89	112	347	251	211	260	320	511	670	571
Citations	365	258	187	163	176	166	241	851	1,167	1,079	1,053	1,036	906	911	880	848	1,209	908	445	411	398	514	562	502

Note: The sample size of the Traffic Warning data is 5,439 and the Traffic Citations is 15,236 versus the unique citation stops total of 15,288 as 52 citation stops did not include the time of the traffic stop. Conditional formatting was applied to the Traffic Warnings and Citations to show the extremes of when citations and traffic warnings were individually issued by time of day. This is not meant to be a comparison of the counts in the two fields depicted above.

Figure 12 indicates that the majority of traffic warnings given in 2018 were between 1600-0059 hrs and the most prominent hours of the day were 2200-2359 hrs. This contrasts with the citations issued in 2018 as the majority of citations are issued during the morning rush through evening rush hour (0700-1759 hrs on weekdays). Both citations and warnings experienced peaks between 1600-1659 hrs, though this was to a lesser extent for the traffic warnings. The above chart indicates that citations and warnings are inversely proportional to each other.

Conclusion

This basic analysis of the Alexandria Police Department's traffic citations and traffic warnings was conducted on data from the years 2011-2018 with traffic warning data introduced in the 2018 analysis. The analysis in this report was influenced by the study completed by Dr. Cynthia Lum of George Mason University in April 2017, which used data from 2011-2015. Alexandria Police Department's Crime Analysis Section based the 2016-2018 analyses off of this initial study. This report is a continued analysis of Alexandria Police Department's issuance of traffic citations and introduces a brief look at traffic warnings and how they compare to citations.

Below are the summarizing points taken from the review of the data from the 8-year period.

- Year 2017 had the highest number of citations issued in the eight-year period with 25,807.
- Throughout the eight-year period, white individuals continue to be largest population of subjects given citations, followed by black individuals.
- The age group of 30-39 has been the largest group of individuals receiving traffic citations throughout the eight-year period. This is also reflected in the 2018 traffic warning data.
- The gender ratio remains very similar between the eight years reporting and with the 2018 traffic warnings, with males being more likely to receive citations or warnings.
- Over the eight-year period, mid-week (Tuesday through Thursday) had the highest number of traffic citations.
- In 2018 traffic citations were issued in greater numbers surrounding the workday (0700-1759 hrs), while traffic warnings were issued in greater numbers in the evening through early part of the night (1600-0059 hrs).