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# Alaska State Troopers C Detachment Patrol Staffing Study Final Report and Description of Police Incidents

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# C Detachment Patrol Staffing Study Final Report
# and
# Description of Police Incidents

Prepared for the Alaska Department of Public Safety
By
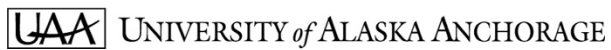Troy C. Payne, Ph.D.
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# Executive summary

This report provides a workload-based staffing estimate for the Alaska State Troopers C Detachment sworn staff, including troopers and court service officers.  The report begins by examining incidents serviced by C Detachment for meaningful changes over years, seasonal variation, and variation by incident type.  Next, we describe challenges of creating a workload-based model for staffing C Detachment, followed by summaries of interviews with sergeants in C Detachment and a description of C Detachment's stated goals.  The model is specified next, including a post-by-post staffing recommendation for C Detachment based on the 75th percentile of the number of reports, adjusted for leave and other factors.

We found that an apparent increase in reported incidents from 2015-2016 was due to a change in recording practices for non-criminal incidents.  Once this is corrected for, the trend in *total* incidents over the period 2013-2018 is flat, showing little change.  This flat trend in *total* incidents masks important compositional changes — *crimes against persons* reports have increased by 26% from 2013-2018, while other incident types have declined.

Incident types varied by region, but in all regions *non-criminal activity* was the most common reported incident type.   The daily total number of incidents in C Detachment was typically between 26 and 42, with the typical trooper servicing between one and two incidents per day.  We saw no seasonal trends in the daily incident counts.

Our analysis, in particular our interviews with line-level supervisors, found that most posts in C Detachment are understaffed to an extent that impacts the ability to proactively engage with communities served by C Detachment and perform core law enforcement functions.  Understaffing had impacts on morale and AST's ability to entice troopers to work in C Detachment.  Employee wellness is also impacted by understaffing, by limiting the ability to take leave and obtain specialized training.

We found that C Detachment would be well served by increasing the number of line-level sworn staff (troopers, sergeants, and CSOs) from the current 64 to 78.  This is a 22% increase from the currently authorized number of positions.  We have high confidence that this estimate is reasonable given the overall workload within C Detachment.

While we provide post-by-post recommendations in the *Recommended staffing* section, we have lower confidence in the post-specific estimates due to data limitations discussed in the *Challenges of building a workload-based staffing model* section.  We advise against a strict application of these post-specific recommendations.

Interviewed sergeants and AST HQ staff agreed that increasing sworn staffing at C Detachment along with improving community relations could lead to an increase in reported crimes.  We found that may well the be case, given the relatively low variation in the number of reports per trooper per day.  Readers are cautioned that there may be pent up demand for policing services in C Detachment; in this context higher reported crimes are likely an indicator of successful outreach efforts, not failed crime control measures.

C Detachment identified three goals it seeks to attain:

1. Engage with communities proactively and develop meaningful community relationships.
2. Conduct thorough, high-quality investigations in a timely manner.
3. Provide quality training and education to enhance the abilities and skills of troopers and staff.

While our analysis was focused on incidents documented in AST's records management system, the stated goals are generally not measurable with police report data. We therefore make five recommendations related to these goals and measuring attainment of them:

1. Increase staffing in C Detachment to 78 line-level sworn staff (troopers, sergeants, and CSOs) to enable attainment of other goals.
2. Develop practical and actionable measures of community engagement.
3. Partner with the Department of Law to measure prosecution and conviction rates.
4. Collect data on timeliness of investigations.
5. Develop a catalog of trooper specializations and skills.

The Alaska Justice Information Center looks forward to future opportunities to further public safety through partnership with the Alaska State Troopers, and we stand ready to answer questions and adjust our staffing recommendations as information on the ground changes.

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# Introduction

The Alaska State Troopers have statewide jurisdiction and are the primary law enforcement agency for much of the State of Alaska.  The Alaska State Troopers divide the state into five service areas called *detachments* (A, B, C, D, and E).  Management of these each detachment is largely decentralized.  Citizen demands for service, environmental conditions, and work style varies considerably among the detachments.  This report discusses C Detachment, which includes the western third of the state.  C Detachment is 216,077 square miles – an area the size of Rhode Island, Delaware, Connecticut, New Jersey, New Hampshire, Vermont, Massachusetts, Hawaii, Maryland, West Virginia, South Carolina, Maine, and Indiana combined.

*Figure 1: Alaska State Troopers C Detachment Regions and Posts*



The C Detachment service area spans coastal areas, tundra, permafrost, and islands, presenting transportation challenges not faced by any other law enforcement agency in the US. C Detachment is serviced by 41 line-level Troopers, nine sergeants, and three command staff, along with six CSOs and 17 civilian staff.  These Alaska State Trooper staff members work in partnership with local law enforcement and other public safety personnel to provide public safety services. C Detachment consists of five regions (Bethel, Dillingham, Kodiak, Kotzebue, and Nome), and 13 posts that provide primary law enforcement services to over 100 towns, cities, and villages, and a total population of more than 40,000 Alaskans as of 2017.

# Description of police incidents, 2013-2018

*C Detachment incident trends over time*

There were 12,665 incidents in C detachment in 2018, which is 6.6% higher than the 2017 total (11,872) and 14.4% higher than the 2013-2017 average of 11,067.  As Figure 2 shows, however,

most of the increase over this time period occurred between 2015 and 2016. Most of that change was in the *activity* category.

*Figure 2: Total Incidents by Year*

**Total Incidents by Year**
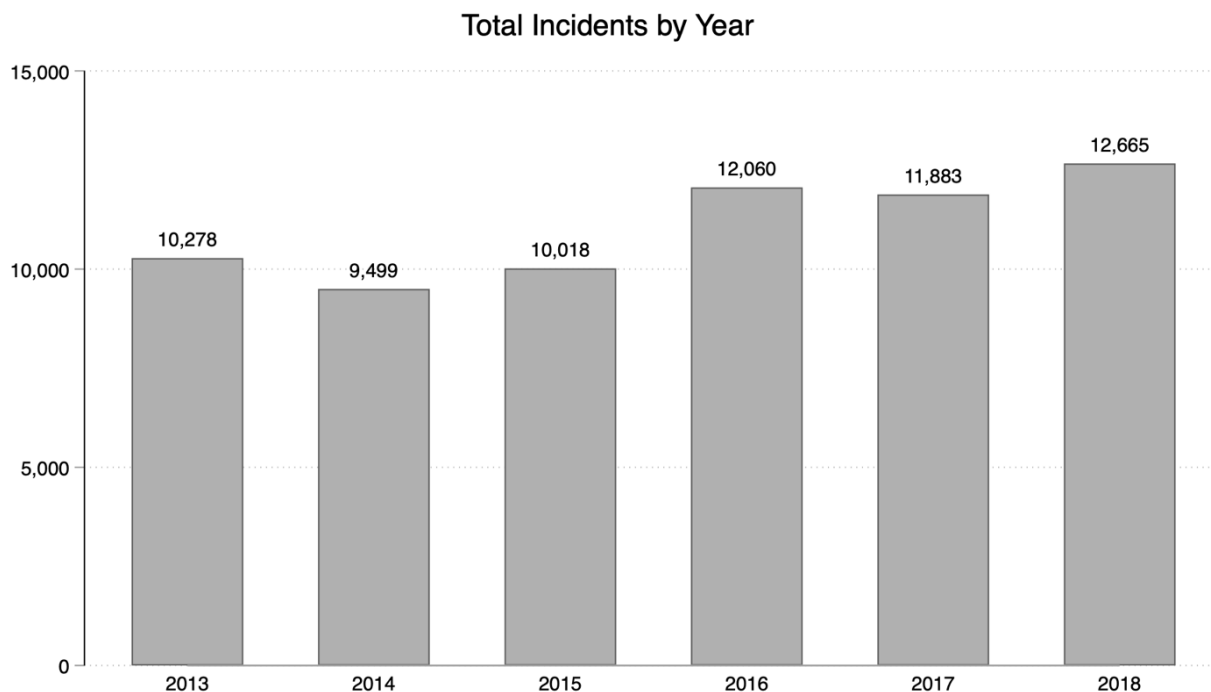


*Figure 3: Year-over-year change in activity*
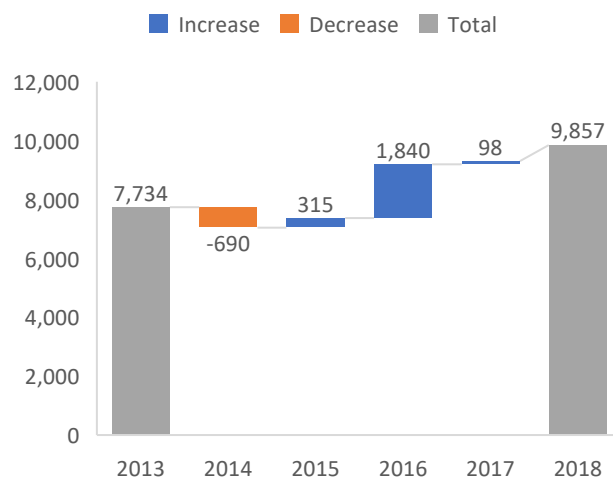


Figure 3 shows the year-over-year change in the *activity* category of incidents. This category includes the following subcategories: *deaths other than homicide, non-criminal*, and *provide information and education*. The *activity* category saw a large increase year-over-year 2015-2016; this increase accounts for 90% of the overall increase in incidents in C Detachment 2015-2016. Further analyses (not shown) found that the overwhelming majority of *activity* incidents were *non-criminal*. Within those incidents, the category with the largest increase were those related to serving court documents, warrants, and subpoenas — the increase in *activity* incidents therefore appears to be the result of an administrative change in how court document service was recorded in ARMS that began in mid-2015 and was fully implemented by the end of 2015.

*Crimes against person* incidents also increased over the study period. This category did not see a large single-year increase, but instead a relatively steady rise. *Crimes against persons* increased by 26%, from 1,007 in 2013 to 1,264 in 2018. In every year during the study period, *assaults* were the leading subcategory, comprising between two-thirds and three-quarters of all *crimes against person* incidents.

One other category bears mention: *Unspecified* increased by a factor of 10 over the study period, from 39 in 2013 to 416 in 2018. There is no subcategory information for *unspecified* incidents in the data provided to the research team. All we can say is that *unspecified* incidents increased in all C Detachment regions over the study period.

*Figure 4: Year-over-year change in person crimes*

Annual change in person crimes

The remaining categories of incidents changed less over the study period than those described above. See Table 5: AST C Detachment Incidents by Year on page 23 for a full enumeration of all incident categories and subcategories by year.

## Incidents by region and category

*Figure 5: Total incidents by AST Region, 2018*
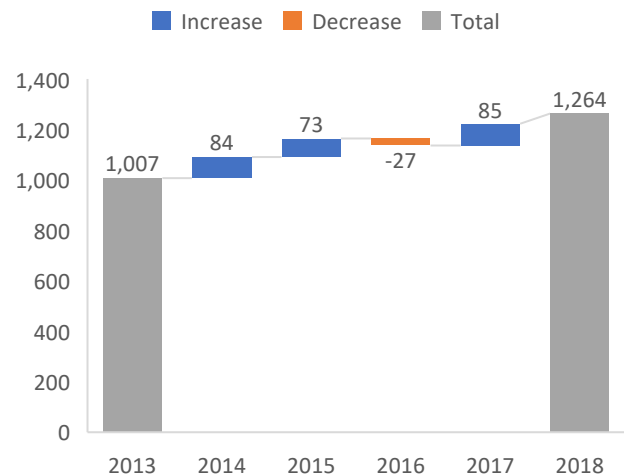
Figure 5 displays incident counts among the five regions of C detachment. The Bethel region contains more than half of all incidents (51.8%, 6,651 incidents). The other four regions have approximately equal amounts of the remainder – 1,325 (10.4%) in Dillingham, 1,804 (14.2%) in Kodiak, 1,298 10.2%) in Kotzebue, and 1,546 (12.2%) in Nome. These proportions were stable over the study period, with little change in the overall regional distribution by year (see Table 6: AST Incidents by Year and Region on page 25).

In all regions, a majority of incidents were in the *activity* category, as shown in Figure 6. There was regional variation in the proportion of *activity* incidents relative to other categories, however. In Bethel, Dillingham, and Kodiak, more than three-quarters of all incidents were in the *activity* category, while in Kotzebue and Nome this category accounted for about two-thirds of all incidents. In all regions except Kodiak, person crimes outnumbered property crimes. In the Nome region, person crime reports accounted for nearly one in five reports.

*Figure 6: AST C Detachment Incidents by region and category, 2018*

Incident types by region and post, 2018
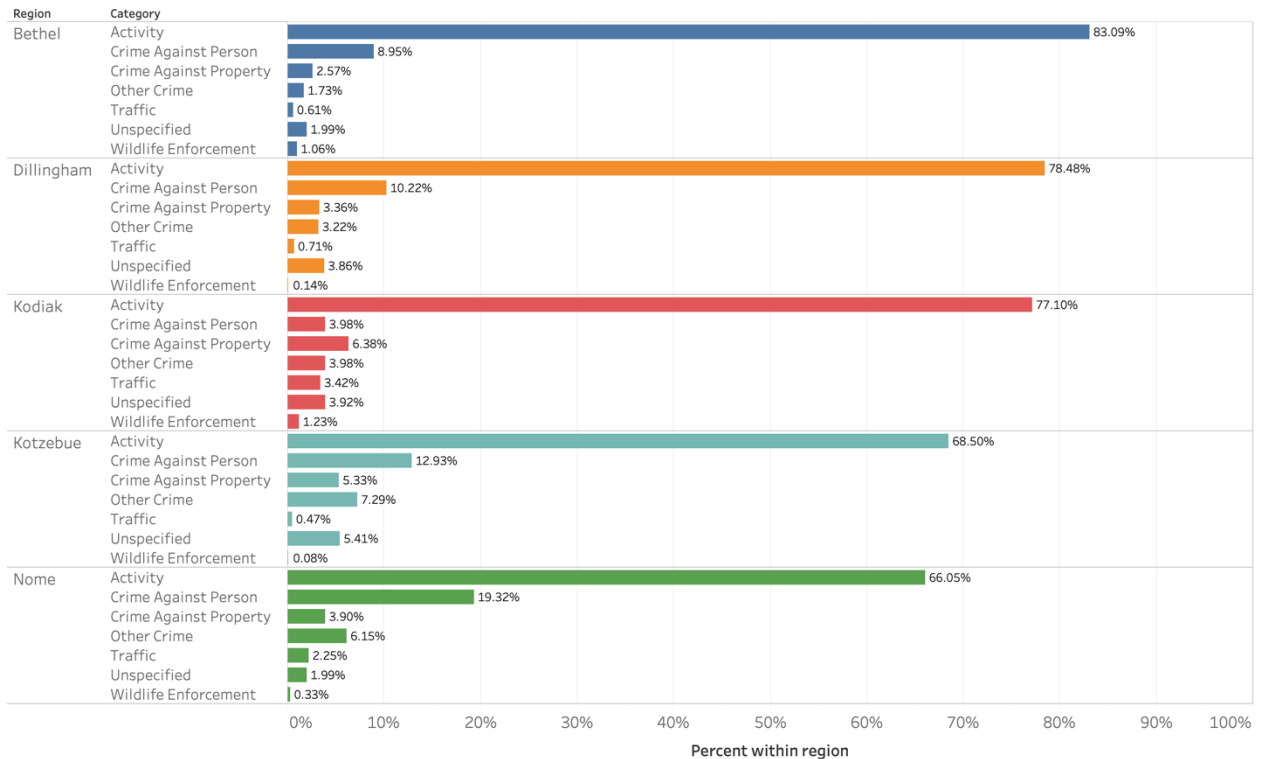


## Incidents by day of week and month

Figure 7 is a heat map showing the average number of incidents by day of week and month in 2018. This type of visualization allows for the identification of temporal trends. In C Detachment, there is a clear drop off in the number of incidents on the weekends. The overall average number of incidents is driven largely by *non-criminal, activity* incidents in Bethel. These incidents tend to dominate any overall analysis in the detachment.

*Figure 7: Average daily incidents in C Detachment by day of week and month, 2018*

Average number of all incidents incidents in 2018
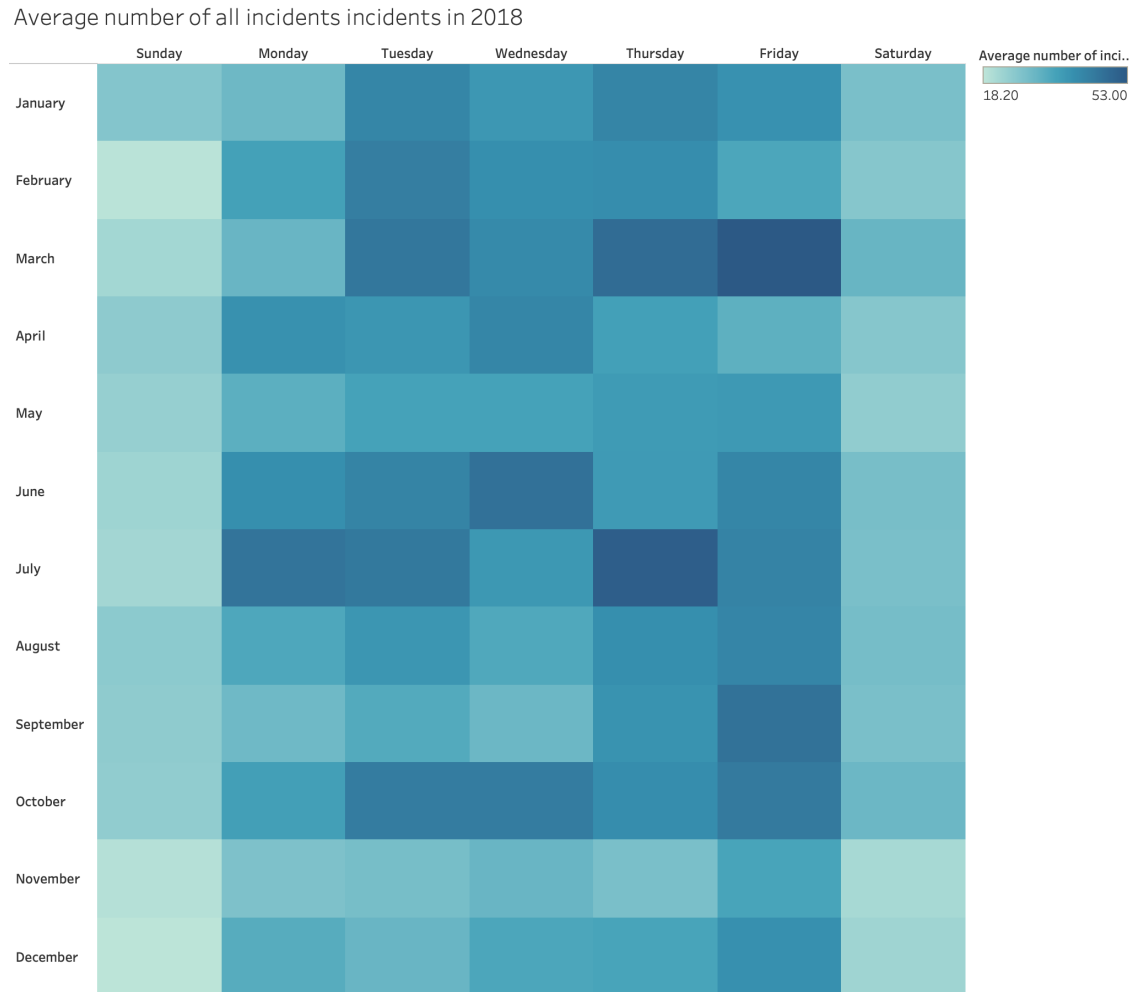


When incidents are limited by category to person crimes and property crimes (separately) as in Figure 8, this weekend effect disappears.  Few clear patterns emerge from this analysis.  In person crimes, there is a slight increase on Fridays and Saturdays in August through October.  In property crimes, there was an increase on Thursdays in July, but this appears to be random fluctuation. The workload, as measured by average daily number of person and property crime incidents, appears to be characterized by overall stability across both day of week and month.

*Figure 8: Average daily person and property crime incidents in 2018*

Average person crime incidents in 2018



Average property crime incidents in 2018
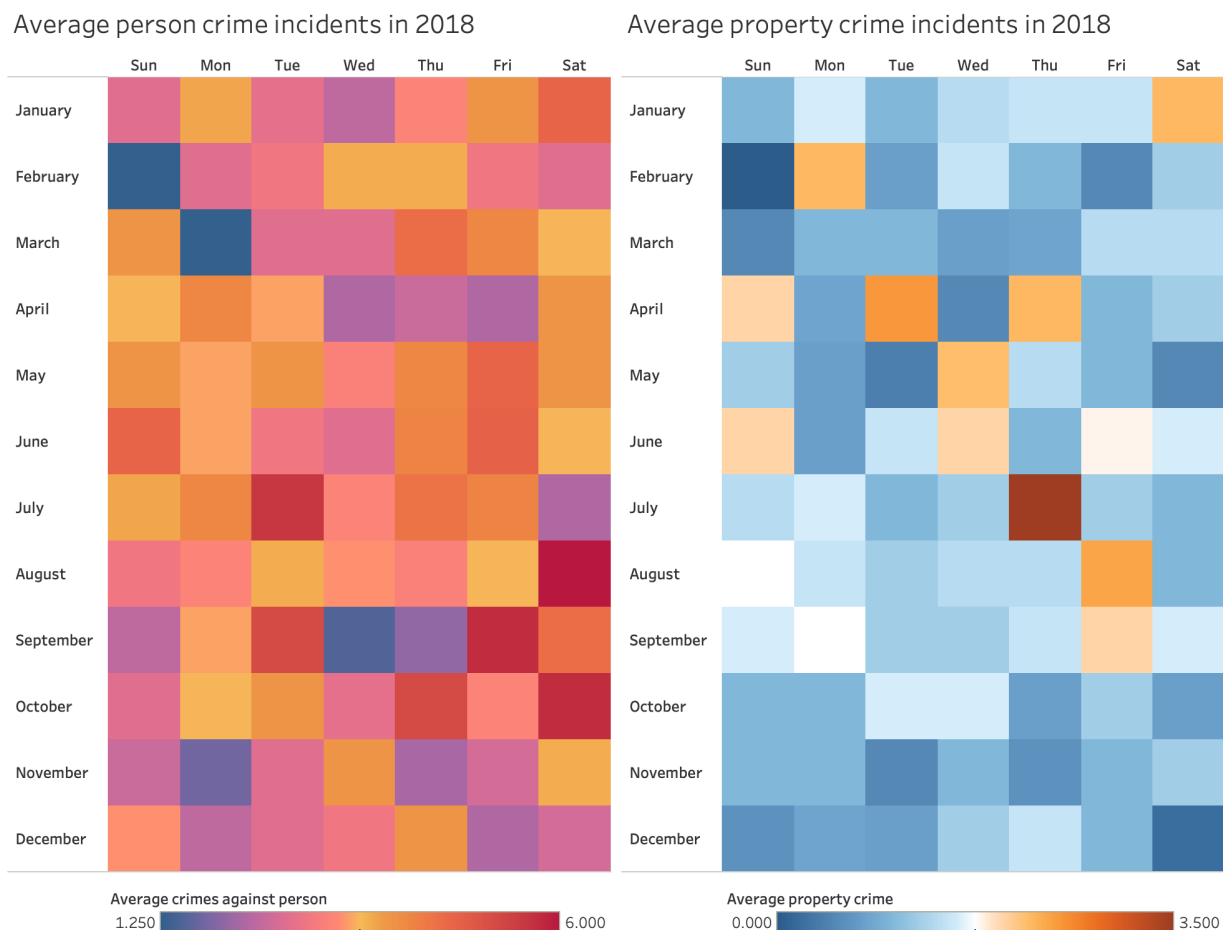


*Typical number of incidents per Trooper per day*

There were typically between 26 and 42 incidents reported in C Detachment each day in 2018, with an average of 35 incidents per day[1] throughout the entire detachment.  The typical number of incidents that any given Trooper serviced in 2018 was between one and two[2] and typically ranged between 1.4 and 1.8 incidents per Trooper per day throughout 2018.  Both the daily number of incidents and typical number of incidents served by each Trooper has remained stable over the study period[3].  Figure 9 shows the total number of incidents in the top pane and the average incidents per Trooper in the bottom pane for 2018.

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[1] Mean incidents per day across all of C Detachment 34.7, median 34, 25th percentile 26, 75th percentile 42.

[2] Mean incidents per Trooper including all incident types and Judicial Services 1.6, median 1.0, 25th percentile 1.4, 75th percentile 1.8.

[3] After adjusting for the apparent change in reporting practices for court document service in 2015-2016.

*Figure 9: Daily total incidents and average incidents per Trooper, 2018*

Daily total incidents and average incidents per Trooper, 2018
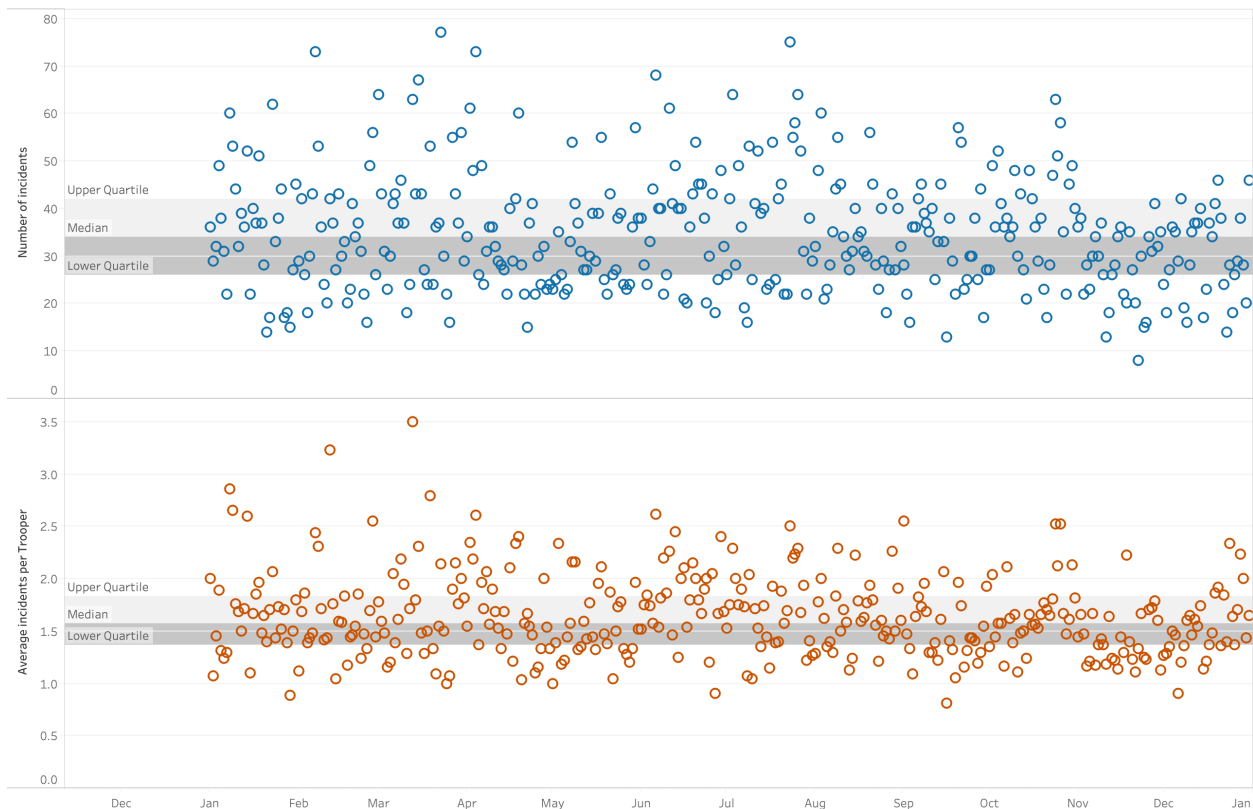


Similar to other analyses presented in this report, this shows little seasonal variation in the number of incidents.

## Town analysis

We identified 117 distinct towns with incidents reported in the data provided.  Of these towns, 91 have a recorded incident at least once a month on average.  Seventeen towns had an average time between Trooper reports of more than 60 days.  Given the number of towns, a full enumeration is omitted from this report.  Interested readers can go to http://bit.ly/CDetTown to view incident type and number of incidents per town.

## Incidents summary

Readers interested in finding more detail on selected analyses are directed to http://bit.ly/CDetRegion, which features a set of interactive graphics allowing readers to see the composition of incidents by region.  Additionally, http://bit.ly/CDetTown shows a set of interactive graphics allowing readers to see the composition of incidents by town.

Overall, these analyses provide useful context for a staffing model for C Detachment.  After correcting for an apparent change in the reporting practices of court document service, the number and nature of incidents reported in C Detachment shows little variation over years, seasonally, or by day of week.  Approximately 35 incidents are reported each day in C

Detachment, with considerable variation in the number of daily incidents. Troopers are generally able to handle one or two incidents per day.

In each region, the *activity* category of incidents is between 66% and 83% of incidents, with non-criminal incidents comprising the bulk of these incidents. Differences are present in the remaining categories. Specifically, in 2018, only in Kodiak are reports of crimes against property more common than reports of crimes against persons.

## Challenges of building a workload-based staffing model

We faced several challenges when creating a workload-based staffing model for C Detachment. Our analysis has certain limitations as a result of these challenges.

First, our primary data source are police reports from AST's records management system, ARMS. Workload-based staffing studies typically use computer-aided dispatch (CAD) data, not police report (also referred to as records management system or RMS) data, to create measures of time spent on incidents. Dispatch data typically includes timestamps for initiation of travel to the scene of an incident, arrival on-scene, and clearing the incident scene. CAD data therefore allows the calculation of relatively precise estimates of time spent travelling to an incident and time spent on-scene. C Detachment did not have centralized computer-aided dispatch during the study period[4] and as a result we lack such detailed data for C Detachment.

This lack of time data introduces limitations. Our analyses use reported dates for all date-based analyses, but the reported date and date troopers provide service regarding the incident can be days apart in C Detachment due to weather and prioritization of demands for service. This has an unknown impact on analyses that depend on specific dates. Our assumption is that the differences between reported and serviced dates average out over time in our estimates of troopers needed below. We cannot test this assumption with the available data.

Second, it is likely that there may be considerable work that is simply not recorded in ARMS. This is not unusual among US police departments; many requests for service are handled without the need for a report in the agency's RMS. This is not a threat to our analysis if the ratio of work that is in ARMS is similar across posts. But in AST's C Detachment, the volume of work that is not recorded in ARMS may vary by post due to varying work routines and resources available to provide services and document service provision at each post.

Our strategy for estimating time spent on such work included travelling to posts in C Detachment to conduct interviews with C Detachment personnel. These plans were altered by COVID-19 mitigation measures, including a ban on travel during March-June 2020 when travel to C Detachment locations had been scheduled to occur. We substituted in-person interviews with C Detachment troopers with telephonic interviews with sergeants, which we describe in detail below. In this section, we simply acknowledge that we executed a more limited interview schedule than we had planned. Even if we had been able to conduct our interviews

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[4] As of this writing, while there are plans for centralized dispatch, there remains no operational centralized dispatch for much of the AST coverage area, including C Detachment.

as originally planned, our conversations with sergeants in C Detachment suggested that we likely would not have been able to create accurate estimates of trooper workloads that do not appear in ARMS due to the large variety of conditions faced by troopers in C Detachment.

Finally, given the patterns of reported incidents, it is likely that C Detachment Troopers are consistently fully utilized.  That is, it likely that C Detachment Troopers have very little time when they are not servicing an incident relative to other modern police departments.  This can have the impact of providing a capacity ceiling:  The number of incidents documented in ARMS may be limited not by citizen demands for service, but by C Detachment's ability to provide service.  Over time, citizens learn of these limitations and simply request fewer services.  Relatively low variation in the number of incidents handled per trooper per day suggests that this may be the case, and our interviews with sergeants surfaced this as a common concern as well.

The ability of police to have unobligated time — time when they're not servicing an immediate incident — is of crucial importance to most evidence-based modern policing strategies.  Given low overall ARMS incident counts in many places throughout C Detachment, performance goals that are decoupled from incident-based workloads may be more effective at promoting public safety than goals that are based entirely on the number of incidents serviced.

The likely current over-utilization also suggests that *if C Detachment were to increase sworn staff, then reported crimes are likely to increase*, as residents in C Detachment became more confident in AST's ability to service their requests.  Crime increases subsequent to an increase in sworn staff in C Detachment could very well be a sign of AST success at improving community relations, not a sign of failure of crime control efforts.

## Interviews with C Detachment sergeants

Interviews with sergeants in C detachment provided worthwhile context to the quantitative analysis described previously and assisted with the development of goals and objectives for C Detachment. Interview questions were balanced between open-ended and closed-ended and focused around a few central themes while allowing respondents to add their own remarks and overview of their staffing situation.

### *Perceived degree of understaffing*

When directly asked if their unit was understaffed, four out of five sergeants we interviewed stated that their current level of staffing was lower than what was required to respond to all calls for service, fully investigate criminal activity, and proactively engage with the community. The sergeant who believed that sworn staffing was adequate had the benefit of a cooperating local law enforcement agency to handle cases in their coverage area, and even that respondent's answers to follow up questions suggested that staffing would need to increase to meet law enforcement goals.

One sergeant stated that they would need four more troopers in their area, court service officers to handle court-related incidents such as prisoner transports and document service,

and an investigative unit to handle follow-up investigations of complex cases.  In addition, this sergeant suggested their unit would benefit from a variety of non-sworn staff as well: a full-time administrative clerk, an evidence technician, and a telecommunications system to facilitate remote court activity. Similar themes were gleaned from other interviews, and the descriptions of the current level of understaffing can be characterized as ranging from moderate to severe.  In total, the five sergeants we interviewed stated they would like to have an additional 13 to 17 troopers, plus additional CSOs and admin staff.

## Consequences of Understaffing

Each of the five contacted sergeants described the consequences of understaffing.  These effects are not due to lack of care, interest, or will, but rather the inability to address issues due to lack of sworn staff time to service all demands from geographically and culturally diverse communities within C Detachment's service area.  Common themes from included inability to investigate certain incident categories perceived as less serious, poor community relations, low investigative time devoted for each individual case and poor case quality, low trooper morale, difficulties in taking leave, inconsistent incident reporting to ARMS, and the inability to engage in proactive activity.

Sergeants described entirely reactive models of policing.  In the words of one sergeant, troopers only had time for "putting out fires."  In a similar vein, another sergeant said some types of crimes are simply not being investigated by troopers due to a lack of staffing – most notably alcohol/drug-related crimes and property crimes.  Sergeants also commonly described delayed response times, or sometimes no response at all, to citizen calls for service as a consequence of not having enough staff to handle calls for service in the community and also handle court security, prisoner transport, and court document service.  This effect, they believe, led to declining call volume from some communities, potentially indicating a lack of belief from citizens in the ability of troopers to respond to their public safety needs.

Sergeants relayed concerns that investigations were not followed up adequately, leading to the District Attorney's office to drop at least some referred cases due to poor case quality.  One of the specific case quality concerns raised was a lack of cooperative witnesses stemming from long follow-up periods during investigations.  Training was also a nontrivial concern of sergeants we interviewed; C Detachment lacks sufficient sworn staff to allow troopers to develop specialized training and deep experience in any particular type of work.  One sergeant specifically noted that there is a lack of troopers with requisite training and experience to handle specialized cases such as sexual assaults or sexual assaults of minors. In addition to cases lost due to poor evidence collection or interviews, the response to sexual assaults are an area where lack of training may cause actual harm to victims when troopers lack the training and experience to conduct trauma-informed interviews.

Understandably, sergeants suggested that these issues caused general community relations problems in addition to issues specific to each case.  This was compounded by troopers not having the time to cultivate positive relationships with citizens through non-enforcement

village visits.  One sergeant described the state of community relations and outreach as "the only time villagers ever see a trooper is when we fly in to arrest someone."

While outside the scope of the current study, multiple sergeants spontaneously listed other issues related to staffing non-sworn positions.  Two sergeants spoke about issues with not being able to have their vehicles maintained by mechanics, which led to sergeants or troopers servicing the vehicles themselves.  Sergeants mentioned that administrative and logistical duties, such as organizing trooper travel, prisoner transports, and inputting events into ARMS, took up a disproportionate amount of time. One sergeant described that conditions in local jails and understaffing in key court positions created a perpetual bottleneck in the processing of cases and housing of prisoners, separate from staffing issues AST itself experiences.

Multiple sergeants expressed unsolicited skepticism regarding the possibility that their posts would ever be fully staffed.  All respondent sergeants described employee wellness challenges that were caused or exacerbated by low staffing.  Chief among these were low morale, high turnover, and inability to entice troopers to work at the post.  Several respondents described difficulties in taking leave, with some saying that they must get coverage from other posts or AST headquarters troopers to cover routine personal leave, military leave, and sick leave.

Despite the current lack of staffing and difficult work conditions, C detachment sergeants were all singularly devoted to their work, their colleagues, and the communities they serve. All sergeants demonstrated a remarkable level of ingenuity and resourcefulness in dealing with unique obstacles, many of which are not faced by any other law enforcement agency in the country. No sergeant shared feelings of cynicism or contempt, and all understood that despite the difficulties of their job, they simply must do what needs done.  All were willing to do so, and described their troopers as willing and able as well. The issues described in this section should not be seen as an indictment of line-level troopers but rather as a testament to their resilience, intelligence, and problem-solving in the face of such monumental challenges.

### *What if staffing were to increase?*
Every sergeant interviewed described two primary goals they would like to pursue if staffing were to increase: improve community relations and engage in proactive policing. These goals were described as important by every respondent, but without adequate staffing they were a lower priority than more immediate concerns such as responding to violent crime incidents.

Sergeants stated that more overnight stays in villages would improve the perceptions of rural residents towards the Alaska State Troopers and may lead citizens to be more cooperative through improved relationships with individual troopers and with AST generally. Given more troopers and CSOs, multiple sergeants stated that troopers would visit villages more frequently and without a time-constrained directive, such as transporting a prisoner, serving a court document, or making an arrest.

Proactive policing was mentioned as an important yet neglected goal. Such activities are time-consuming.  Given more resources and troopers, multiple sergeants stated they would be able to address issues they see as either neglected incident types or contributors to current crime

problems – namely drug and alcohol-related crimes and property crimes – and in a manner that either alleviates or prevents them in the first place.

# Workload-based staffing model

*Data source and limitations*

The primary data source for this analysis is ARMS, the records management system used by AST to record police reports.  Workload-based staffing studies typically use computer-aided dispatch data (CAD), which in municipal departments contains a detailed accounting of police officer time because officer locations are known at (nearly) all times by a centralized dispatching center.  Previous work for AST B Detachment used CAD data from MATCOM.  ARMS is not a CAD; it is a records management system for police reports.  Date/time stamps in ARMS are a coarser approximation of trooper time on the ground than date/time stamps in a CAD.  This does not make the data useless, but readers are should be aware of certain limitations.

For example, we were provided with the reported date/time, occurred start and end date/times, and completed date/time.  We were not provided with the date/time troopers arrived on-scene for an incident, nor were we provided with travel start/end times.  To our knowledge, this information is not retained by the Alaska State Troopers in ARMS.  This is typical of an RMS, which is not designed to store and retain such granular information.  It does, however, mean that when we use phrases such as *number of reports per week*, the measure is really the *number of incidents reported to AST per week*, which may or may not be the same as the *number of incidents serviced per week*.  There can be delays between reporting dates and service dates due to travel delays, incident prioritization, and other factors.

*Estimation method*

We estimate the number of Trooper positions required as the number of reports per post per week times the average number of Troopers per report divided by the average number of shifts worked per week times a leave allowance:

*Equation 1:*

$$N_{PCN} = \frac{\widetilde{RP}_W \bar{T}_c \Big/ \overline{RT}_d}{\bar{S}_w} \times L$$

Where:

| | | |
|---|---|---|
| $N_{PCN}$ | = | Number of PCNs |
| $\widetilde{RP}_W$ | = | Number of reports per post per week |
| $\bar{T}_c$ | = | Average Troopers per report, constant at 1.29 |
| $\overline{RT}_d$ | = | Average reports per Trooper per day, constant at 1.5 |
| $\bar{S}_w$ | = | Average shifts worked per week |
| $L$ | = | Leave allowance, constant at 1.20 |

## Estimating workload

In our initial analyses, we found little meaningful variation in the number of reports by month; we therefore do not consider season below.  We begin by estimating the typical (median or 50th percentile) number of reports per post per week[5] in the most recent year for which we have data, 2018.[6]  Next, we multiply by the average number of Troopers required to service a report, 1.29, and divide by the typical number of reports a Trooper handles per day, 1.50.[7]

This estimate yields the number of work shifts needed per week at each post to service the median demand in 2018, and it provides a clear method for estimating the impact of changing demand or work routines at each post.

## Estimating shifts worked

Troopers in C Detachment work two different shift schedules:  five eight-hour shifts per week, or two weeks on / two weeks off with 12 hour shifts per day.  The average number of shifts a Trooper works in each week therefore varies across posts.  Adding more complexity, Bethel Post has Troopers working both schedules; we calculated a weighted average based on the number of Troopers working each of the two shift options.[8]

## Leave allowance

Troopers are entitled to various types of leave in addition to their regular days off.  Table 1 lists personal leave that a mid-career trooper is entitled to as well as military leave.  Not all troopers are entitled to military leave; we estimate that a quarter of them are eligible.

We also include a training allowance, to explicitly allow for continuing education and backfill of Troopers at the post while others are receiving training.  Accurate measures of in-service training were difficult to obtain from existing data systems.  Forty hours is a minimum estimate; Troopers with additional assignments or specializations may spend considerably more time training.

The leave estimate in Table 1 is most likely a lower-bound estimate because that it does not consider light duty time resulting from injury or various types of administrative leave that are possible.  Because we use weeks above, Table 1 also shows leave and training in terms of weeks.

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[5] Weeks are 7-day periods, starting on the first day of the year.

[6] Multi-year averages were not used because of the reporting change in 2016 that caused the Activity report type to increase dramatically and because 2017 report counts were similar to 2018.

[7] As discussed in the Challenges of building a workload-based staffing model section, dates incidents were actually serviced were not available to the research team.  We use reported date as a proxy for date the incident was serviced, and we adjusted the mean number of incidents downward slightly from 1.6 to 1.5 to provide a more conservative daily estimate of a Trooper's ability to complete calls for service.

[8] In June 2020, there were four Troopers working five eight-hour shifts, and four working two weeks on / two weeks off (including sergeants).

*Table 1: Leave and training allowances*

|  | Hours per year | Weeks per year |
|---|---|---|
| Personal leave (5-10 years of service)<br>　21 hours accrued per month | 252 | 6.3 |
| Military leave<br>　132 hours per Trooper x 25% of Troopers | 33 | 0.8 |
| Training<br>　40 hours in-service training per year | 40 | 1.0 |
| **Total time** | **325** | **8.1** |

We can estimate a leave factor from Table 1. This leave factor is the number of Trooper positions required to be able to cover leave for each Trooper:

*Equation 2: Leave factor*

$$\text{Leave factor} = \frac{\text{Work weeks per year}}{\text{Work weeks per year - Leave weeks per year}} = \frac{52}{52 - 8.1}$$

$$\text{Leave factor} \cong 1.2$$

Approximately 1.2 Trooper positions are required to have one Trooper to cover shifts each week. Phrased slightly differently, for every five Troopers, one additional Trooper is required to cover leave.

## Checking the reasonableness of our estimation method

We combine the calculations above to estimate the *absolute minimum* number of positions needed per post to service median demand reported in ARMS in C Detachment, reported in Table 2. As we describe in the next section, the values for each post require adjustment, but the overall number of troopers is approximately equal to the 56 troopers currently stationed[9] in C Detachment. This confirms that our approximations are reasonable — if this number differed substantially from existing staffing, it would indicate one or more of our estimates was unreasonable.

This result also confirms the common theme heard during our interviews with line-level sergeants: C Detachment is often understaffed. Recall that our calculations so far are based on the *median* number of calls per week. By definition, this means that half of all weeks have higher numbers of reports to Troopers (and half have fewer).

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[9] As of June 5, 2020, there were 41 trooper, 9 sergeant, and 6 CSO positions staffed in C Detachment, for a total of 56.

*Table 2: Troopers required to service median demand*

| Region | Post | Median weekly reports, 2018 | Weekly number of workdays required to meet median demand | Number of shifts worked per Trooper per week | **Number of Troopers needed** |
|---|---|---|---|---|---|
| | Anchorage Service Unit | 2.0 | 1.7 | 5.0 | **0.4** |
| Bethel | Aniak Post | 28.0 | 24.2 | 3.5 | **8.3** |
| | Bethel JS | 24.5 | 21.2 | 5.0 | **5.1** |
| | Bethel Post | 21.5 | 18.6 | 4.2 | **5.3** |
| | Bethel Violent Offenders Unit | 5.0 | 4.3 | 5.0 | **1.0** |
| | Emmonak Post | 18.0 | 15.6 | 3.5 | **5.3** |
| | Hooper Bay Post | 9.0 | 7.8 | 3.5 | **2.7** |
| | Saint Mary's Post | 12.0 | 10.4 | 3.5 | **3.6** |
| Dillingham | Dillingham JS | 1.5 | 1.3 | 5.0 | **0.3** |
| | Dillingham Post | 15.0 | 13.0 | 5.0 | **3.1** |
| | King Salmon | 2.0 | 1.7 | 5.0 | **0.4** |
| | Togiak Post | 6.0 | 5.2 | 3.5 | **1.8** |
| Kodiak | Kodiak Post | 34.5 | 29.8 | 5.0 | **7.2** |
| Kotzebue | Kotzebue Post | 20.5 | 17.7 | 5.0 | **4.3** |
| | Selawik Post | 6.0 | 5.2 | 3.5 | **1.8** |
| Nome | Nome JS | 1.0 | 0.9 | 5.0 | **0.2** |
| | Nome Post | 17.0 | 14.7 | 5.0 | **3.5** |
| | Unalakleet Post | 11.0 | 9.5 | 5.0 | **2.3** |
| | | | **Minimum Troopers needed** | | **56.5** |

## *Estimating the optimal number of trooper positions*

We can adjust upward our estimate of the number of reports each week reduce the number of weeks with more reports than troopers to service them.  For example, we could staff C Detachment to meet the demand for service at the 75th percentile instead of at the median.  On average, this would cut the number of days with more service demand than available troopers in half.  This would provide C Detachment troopers more time to engage in thorough investigations and proactive community engagement, both of which are key C Detachment goals.

*Table 3: Troopers required to meet 75th percentile demand*

| Region | Post | 75th percentile weekly reports, 2018 | Weekly number of workdays required to meet 75th percentile demand | Number of shifts worked per Trooper per week | **Unadjusted number of Troopers needed** |
|---|---|---|---|---|---|
| | Anchorage Service Unit | 3.0 | 2.6 | 5.0 | **0.6** |
| Bethel | Aniak Post | 39.5 | 34.2 | 3.5 | **11.7** |
| | Bethel JS | 34.0 | 29.4 | 5.0 | **7.1** |
| | Bethel Post | 31.0 | 26.8 | 4.2 | **7.7** |
| | Bethel Violent Offenders Unit | 8.0 | 6.9 | 5.0 | **1.7** |
| | Emmonak Post | 23.0 | 19.9 | 3.5 | **6.8** |
| | Hooper Bay Post | 14.0 | 12.1 | 3.5 | **4.2** |
| | Saint Mary's Post | 15.0 | 13.0 | 3.5 | **4.4** |
| Dillingham | Dillingham JS | 2.0 | 1.7 | 5.0 | **0.4** |
| | Dillingham Post | 20.5 | 17.7 | 5.0 | **4.3** |
| | King Salmon | 3.0 | 2.6 | 5.0 | **0.6** |
| | Togiak Post | 10.0 | 8.6 | 3.5 | **3.0** |
| Kodiak | Kodiak Post | 39.0 | 33.7 | 5.0 | **8.1** |
| Kotzebue | Kotzebue Post | 26.5 | 22.9 | 5.0 | **5.5** |
| | Selawik Post | 7.0 | 6.1 | 3.5 | **2.1** |
| Nome | Nome JS | 2.0 | 1.7 | 5.0 | **0.4** |
| | Nome Post | 21.5 | 18.6 | 5.0 | **4.5** |
| | Unalakleet Post | 13.0 | 11.2 | 5.0 | **2.7** |
| | | | **Minimum Troopers needed** | | **75.8** |

# Recommended staffing

The unadjusted counts in Table 3 do not consider certain data limitations and practical requirements. Next, we explain these factors and make recommendations regarding staffing at each post.

Both Table 2 and Table 3 above depend on there being a reasonably tight coupling of post and geographic location of a particular report. This is more true for some posts than others. Aniak Post, for example, frequently responds to requests for service near the Saint Mary's Post in our data. We can think of two reasons for this. First, it could be an artifact of how the data are recorded and extracted. For example, it could be that troopers with a temporary assignment to another post are recorded as having worked their normal post. It could also be true that troopers assigned to Aniak Post frequently cover calls near Saint Mary's Post due to understaffing. We have adjusted the recommended number of troopers for Aniak downward

and redistributed those troopers to other posts in the Bethel region. Further adjustments may be necessary, particularly within the Bethel region.

We have also adjusted the recommended number of staff upward for the Anchorage Service Unit, to meet the currently authorized level. The Anchorage Service Unit consists of a CSO and two troopers (one trooper position is currently vacant). The Anchorage Service Unit provides services to C Detachment in Anchorage and provides services in the Aleutians, work that both tends to result in fewer entries in ARMS, our primary data source, and work that requires substantial travel.

At posts where staffing at the 75th percentile level described in Table 3 would more than double the number of assigned troopers, we have limited our recommendation to double the current authorized number of PCNs. We have generally reallocated those troopers to other nearby posts.

We recommend no fewer than three troopers per post. Fewer than three troopers per post creates practical difficulties in covering both regular days off and leave. The Bethel VOU is an exception, since it is an investigative unit that supports the Bethel region. We have also generally rounded up to the nearest whole trooper to avoid understaffing any post.

The number of recommended troopers below includes sergeants and CSOs. Sergeants were included in our previous calculations of average number of reports serviced because our interviews suggested that sergeants were the primary trooper on reports frequently enough to include them in our calculations. Some posts are small enough, however, that allocating a sergeant for every post may not be practical. Just like with troopers, to have one sergeant on shift at any given time requires having more than one sergeant PCN. C Detachment's current organizational chart recognizes this. We recommend that if AST is successful in expanding the number of troopers at C Detachment posts, the number of sergeants should also scale to ensure each supervisor has a manageable span of control.

Finally, AST is advised that while we have high confidence in our recommendation for the *total* number of troopers across all of C detachment, we have lower confidence in the accuracy of the recommended number of troopers and CSOs at each post due to measurement challenges and all of the adjustments described above. We encourage AST to make further adjustments to our recommendations to meet changing circumstances on the ground. The Alaska Justice Information Center is happy to continue our partnership with AST to make these and other minor adjustments.

*Table 4:  Current staffing and recommended staffing*

| Post | Positions (troopers, sergeants, and CSOs) | | | Percent change from currently authorized |
|---|---|---|---|---|
| | **Staffed** | **Authorized** | **Recommended** | |
| Anchorage Service Unit[*] | 2 | 3 | **3** | 0% |
| Bethel | | | | |
|   Aniak Post | 3 | 4 | **8** | 100% |
|   Bethel JS[†] | 3 | 3 | **4** | 33% |
|   Bethel Post | 9 | 11 | **8** | -27% |
|   Bethel Violent Offenders Unit[‡] | 2 | 2 | **2** | 0% |
|   Emmonak Post | 3 | 3 | **6** | 100% |
|   Hooper Bay Post | 2 | 2 | **4** | 100% |
|   Saint Mary's Post | 4 | 5 | **5** | 0% |
| Dillingham | | | | |
|   Dillingham Post | 4 | 4 | **5** | 25% |
|   King Salmon | 2 | 2 | **3** | 50% |
|   Togiak Post | 2 | 2 | **3** | 50% |
| Kodiak Post | 6 | 6 | **8** | 33% |
| Kotzebue | | | | |
|   Kotzebue Post | 5 | 5 | **6** | 20% |
|   Selawik Post | 1 | 2 | **3** | 50% |
| Nome | | | | |
|   Nome JS[†] | 2 | 2 | **2** | 0% |
|   Nome Post | 4 | 6 | **5** | -17% |
|   Unalakleet Post | 2 | 2 | **3** | 50% |
| Total | 56 | 64 | **78** | 22% |

Notes:

[*] Includes 2 troopers and 1 CSO

[†] All CSOs

[‡] Excludes 1 vacant long-term non-permanent trooper assigned to the District Attorney's office

# Recommendations for measuring progress toward goal attainment

In addition to increasing sworn staffing, C Detachment should collect data on the extent to which their efforts are successful.  Our analysis above was entirely dependent on reports in ARMS, and could be passively collected from information collected for operational purposes. ARMS data, however, is not well suited to measuring all goals AST has.

C detachment identified three goals around which their activities are centered:

1) Engage with communities proactively and develop meaningful community relationships.
2) Conduct thorough, high-quality investigations in a timely manner.
3) Provide quality training and education to enhance the abilities and skills of troopers and staff.

Measuring the extent to which any department is meeting these goals is a difficult but necessary task to implement evidence-based practice, and many agencies throughout the country are struggling with how to best measure success. The discussion below relies heavily on a recent report published by the National Institute of Justice (NIJ) titled "Evidence-Based Policing in 45 Small Bytes" which describes several ways success metrics can be developed for various aspects of policing.[10]

### Recommendation 1: Increase sworn staffing to recommended levels

As discussed in the prior section, the recommended staffing for C Detachment is approximately 22% higher than its currently authorized level. The staffing deficit in C Detachment makes it difficult to do anything other than reactively respond to the most serious reports. Our analysis suggests that C Detachment frequently does not have enough troopers to cover existing workloads and routine leave, a situation that is untenable in the long term.

### Recommendation 2: Develop practical and actionable measures of community engagement

During our structured interviews, every sergeant listed improved community relations as an important but unfulfilled goal. It is easy to see how the unique racial and cultural circumstances of rural Alaska require high-quality relationships between police and citizenry in order to further law enforcement and public safety goals. Sergeants stated that problems associated with poor community relations – such as uncooperative witnesses and unwillingness to call police to report even serious crimes – are endemic in their areas. Thus, improving and maintaining good relations with rural communities should be a high priority goal for C detachment.

NIJ's guide to evidence-based policing suggests that it is worthwhile to conceptualize the direct recipients of trooper services as clients that should be asked about their contact with police in order to gauge citizen satisfaction. There is also value in measuring public trust of police for those who do not have direct police-citizen contact as an important corollary of police-community relations.

Proactive efforts should be taken by either contract researchers, administrative staff, troopers, or command staff to collect survey and/or focus group data from citizens about both direct contacts with police and public trust. Such efforts need not meet the rigorous standards required for peer-review in the quantitative social science literature. For example, AST could develop a guided interview instrument or set of focus group prompts that sergeants or command staff use as part of conversations with community members. Responses can be

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[10] NCJ 254326, https://www.ncjrs.gov/pdffiles1/nij/254326.pdf

captured and reported out.  While a key aspect of these efforts is the ability to be responsive to perceived problems that arise, there is also value in simply having these conversations with community members.

Our findings suggest that current staffing levels make this level of proactive engagement impractical.  Increasing staffing across the board would free up troopers to both make proactive efforts to improve relations as well as enable data collection that AST can use to measure whether this goal is being met.

### Recommendation 3:  Partner with the Department of Law to measure prosecution and conviction rates

NIJ's suggestion is that, instead of the traditional metric of *clearance rate*, the outcome that police should be interested in is "the degree to which their cases contribute to prosecutions, convictions, and appropriate sentences" (p. 17). In the case of C detachment, this could take the form of a measurement of two related metrics – 1) the percentage of referred cases accepted for prosecution, and 2) conviction rate. While it is true that police do not have full control over these outcomes, it is important that police activity ultimately leads to prosecutions and convictions. Such measures are currently not available to the research team and we encourage AST to partner with the Department of Law to obtain these measures in the future.

### Recommendation 4:  Collect data on timeliness

The currently available data elements do not allow for any reliable measure of timeliness of investigations.  While we do have reported date/time and completed date/time, we lack the date/time troopers begin travel to an incident location, the date/time troopers arrive, and the date/time troopers clear the scene.

These data elements would typically be available in a computer-aided dispatch (CAD) system.  In the absence of centralized computer-aided dispatch, it is quite cumbersome to develop reliable measures of timeliness.  Lacking comprehensive timeliness measures provided by a CAD, an alternative may be to document how frequently delays impact investigations.

### Recommendation 5:  Develop a catalog of specializations and skills

The extent to which C detachment is meeting the goal of providing quality training and education to troopers and staff is currently unknown to the research team, as data on this was not available. Troopers often complete training on their on-duty days, with no centralized method for recording this time.  More important than the number of hours of training, however, is what troopers can *do* with that training.  NIJ's guide to evidence-based policing recommends that agencies implement a method for cataloging specializations and skills for each trooper for both operational reasons (who should handle a specific incident?) and strategic reasons (what skillsets do we need to enhance detachment-wide?).

## Summary

The Alaska State Troopers C Detachment covers a large land mass in western Alaska.  This report described police incidents documented in ARMS in C Detachment, estimated optimal

staffing for each post using a prior workloads, and provided recommendations for development of measures to determine whether progress is being made on C Detachment's goals.

We found that C Detachment incident counts have been stable over the study period (2013-2018) once increased documentation of specific types of court document service are taken into account.  We also found that while the overall incident count has been stable, the number of crimes against persons incidents documented in ARMS has been steadily increasing over the study period.

No matter how we examined C Detachment ARMS data, we found evidence pointing to a constant state of understaffing.  Our interviews with C Detachment sergeants found near universal agreement with a direct question about understaffing, and universal agreement with having to prioritize tasks and shift resources to compensate for routine leave.  Sergeants discussed the consequences of understaffing as affecting the ability to meet employee wellness, law enforcement, and community relations goals.

We estimated the number of trooper positions required as a function of workload, number of troopers per incident, number of shifts worked, and allowance for leave.  Our estimation method approximately reproduced current staffing at the median.  This suggested both that our parameters reasonably described existing staffing, and that existing staffing frequently leaves posts understaffed.

We recommend staffing C Detachment sworn staff (troopers, sergeants, and CSOs) at a level that is approximately 22% higher than the currently authorized 64, for a total of 78 sworn staff to meet the citizen demand for service and the goals articulated by C Detachment.  We also offered recommendations for developing alternative measures, outside of AST's records management system, to better monitor progress toward those goals.

The Alaska Justice Information Center looks forward to future opportunities to help AST further its mission, including making adjustments to our recommended staffing levels or other model parameters as the facts on the ground in C Detachment change.

# Methods Appendix

Data was extracted from ARMS by DPS personnel for 1 Jan 2009 through 30 Jun 2019.  Incident latitude and longitude fields begin to be populated in 2012, with reliable latitude/longitude from 2013 to 2019.  Data prior to 2013 showed many fewer incidents than earlier data; it is assumed there may be reporting differences in the older data.  Data from 2019 showed similar counts year-over-year to 2018.  Full calendar years are used for analysis to avoid confusion about partial-year data.  All analyses therefore used data from 2013-2018.

DPS provided data at the incident-Trooper-role unit of analysis (i.e., we received more than one record per incident).  The *IncidentID* field provided by DPS did not uniquely identify incidents due to a loss of precision when saved in Microsoft Excel file format. For this analysis, *incident* was defined as a unique combination of reported date, completed date, incident location, and violation code description.

Dates used throughout this document are the *reported dates* for each incident.

AST provided a map with hand-drawn AST regions within C Detachment.  This map was digitized by the research team to produce Figure 1.  Incidents with latitude/longitude information were projected against this map to validate other location-based fields.  C Detachment regions reported here are based on this projection; region did not exist in the original data.  Approximately 2 percent of the incidents with latitude/longitude information were located outside of C Detachment's boundaries, primarily in Anchorage.

Town data were matched from the Mapped_Beat_Desc field in the DPS-provided data where possible.  This field was adjusted for spelling variation and matched with the *populated places* GIS data layer at http://www.asgdc.state.ak.us/#14.  Where this was not possible, town information was manually extracted from addresses in the IncidentLocation field and matched to the *populated places* town names.  Nearly all incidents were matched to a town; 318 incidents (0.5% of the 66,403 total incidents) could not be matched to a town.  Many of these occurred in locations that cannot be reasonably attributed to a town, such as the name of a body of water and in rare instances, locations outside of Alaska.

# Data Tables Appendix

*Table 5: AST C Detachment Incidents by Year, category, and subcategory*

| | Year | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Total |
| **Activity** | | | | | | | |
| Deaths Other than Homicide | 116 | 131 | 155 | 149 | 157 | 133 | 841 |
| Non-Criminal | 7,478 | 6,736 | 7,093 | 8,945 | 9,058 | 9,605 | 48,915 |
| Provide Information and Education | 140 | 177 | 111 | 105 | 82 | 119 | 734 |
| Total | 7,734 | 7,044 | 7,359 | 9,199 | 9,297 | 9,857 | 50,490 |
| **Crime Against Person** | | | | | | | |
| Assaults | 690 | 761 | 820 | 821 | 988 | 912 | 4,992 |
| Harassment | 65 | 63 | 46 | 69 | 53 | 54 | 350 |
| Homicide | 7 | 7 | 11 | 11 | 14 | 11 | 61 |
| Offense Against Minors | 16 | 17 | 13 | 13 | 15 | 7 | 81 |
| Robbery | 1 | 4 | 9 | 2 | 3 | 10 | 29 |
| Sexual Assaults | 121 | 127 | 154 | 130 | 93 | 163 | 788 |
| Sexual Assaults of Minor | 107 | 112 | 111 | 91 | 56 | 107 | 584 |
| Total | 1,007 | 1,091 | 1,164 | 1,137 | 1,222 | 1,264 | 6,885 |
| **Crime Against Property** | | | | | | | |
| Burglary | 158 | 150 | 159 | 167 | 149 | 172 | 955 |
| Criminal Mischief (Vandalism) | 114 | 112 | 121 | 137 | 111 | 106 | 701 |
| Financial Crimes | 22 | 13 | 11 | 7 | 5 | 8 | 66 |
| Theft-Auto | 8 | 12 | 19 | 37 | 24 | 24 | 124 |
| Theft-Larceny | 169 | 140 | 164 | 168 | 129 | 151 | 921 |
| Total | 471 | 427 | 474 | 516 | 418 | 461 | 2,767 |
| **Other Crime** | | | | | | | |
| Alcohol | 100 | 136 | 98 | 95 | 73 | 88 | 590 |
| Drugs | 17 | 33 | 30 | 36 | 21 | 19 | 156 |
| Hacking | | | | | 1 | | 1 |
| Other Criminal | 307 | 265 | 303 | 231 | 179 | 189 | 1,474 |

| | Year | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Total |
| Public Administrative Order | 84 | 88 | 98 | 96 | 93 | 104 | 563 |
| Violation | 7 | 12 | | 1 | | | 20 |
| Weapons | 25 | 27 | 28 | 28 | 21 | 16 | 145 |
| | | | | | | | |
| Total | 540 | 561 | 557 | 487 | 388 | 416 | 2,949 |
| | | | | | | | |
| Traffic | | | | | | | |
| Driving Under the Influence | 89 | 75 | 71 | 70 | 69 | 66 | 440 |
| Driving with Suspended License | 20 | 15 | 18 | 25 | 5 | | 83 |
| Leaving Scene | 6 | 2 | 6 | 8 | 8 | 4 | 34 |
| Motor Vehicle Crash Non-Roadway | 10 | 15 | 4 | 9 | 11 | 11 | 60 |
| Motor Vehicle Crash Roadway | 66 | 81 | 60 | 75 | 93 | 61 | 436 |
| Other Traffic Infractions | 22 | 26 | 24 | 38 | 19 | 10 | 139 |
| | | | | | | | |
| Total | 213 | 214 | 183 | 225 | 205 | 152 | 1,192 |
| | | | | | | | |
| Unspecified | 39 | 25 | 203 | 391 | 311 | 416 | 1,385 |
| | | | | | | | |
| Wildlife Enforcement | | | | | | | |
| Big Game | 42 | 22 | 24 | 41 | 27 | 35 | 191 |
| Big Game Guiding | | | 2 | | | | 2 |
| Boating Safety | | 1 | | | 1 | | 2 |
| Commercial Fish | 1 | | 2 | | | 1 | 4 |
| Fish and Game | 230 | 112 | 49 | 63 | 13 | 61 | 528 |
| Personal Use Fishing | | 1 | | | | | 1 |
| Sport Fish | 1 | 1 | 1 | 1 | 1 | 2 | 7 |
| | | | | | | | |
| Total | 274 | 137 | 78 | 105 | 42 | 99 | 735 |

*Table 6: AST Incidents by Year and Region*

|  | Year | | | | | | |
|---|---|---|---|---|---|---|---|
|  | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Total |
| Bethel | 4,551 | 3,426 | 4,500 | 6,659 | 6,744 | 6,561 | 32,441 |
| Dillingham | 983 | 1,265 | 1,217 | 1,311 | 1,296 | 1,419 | 7,491 |
| Kodiak | 1,864 | 2,027 | 1,809 | 1,843 | 1,440 | 1,808 | 10,791 |
| Kotzebue | 1,418 | 1,305 | 980 | 750 | 901 | 1,299 | 6,653 |
| Nome | 1,433 | 1,407 | 1,405 | 1,459 | 1,447 | 1,547 | 8,698 |
| Elsewhere | 16 | 65 | 93 | 34 | 44 | 31 | 280 |
| Total | 10,265 | 9,495 | 10,004 | 12,056 | 11,872 | 12,665 | 66,354 |