



P.O. Box 1433, Montpelier, VT 05601  
Voice: 802.230.4768 Email: [info@crgvt.org](mailto:info@crgvt.org) Website: [www.crgvt.org](http://www.crgvt.org)

**To:** Chief William Humphries

**From:** Max Schlueter, Ph.D., Senior Research Associate

A handwritten signature in black ink, appearing to read "Max Schlueter", is written over the printed name.

**Re:** Staffing at the Fair Haven Police Department: Preliminary Report

**Date:** September 22, 2015

## **Introduction**

This memo is in response to your request for the Crime Research Group (CRG) to conduct a preliminary analysis of staffing levels at the Fair Haven Police Department. CRG is a non-profit research organization which conducts criminal justice research and policy analysis for the State of Vermont pursuant to a contract with the Department of Public Safety (DPS).

## **Staffing Analysis Based on Comparable Jurisdictions**

Unfortunately there are no national or local standards which specify the correct staffing strength for a police department. The International Association of Chiefs of Police (IACP) does have a recommended methodology for determining appropriate staff levels which involves detailed departmental workload studies. This methodology is beyond the scope of this technical assistance project. Another technique which is often used in a preliminary analysis of staffing issues is the "Per-Capita" method. This strategy compares the police officer per 1,000 residents ratio for a jurisdiction with national or local ratio from other comparable departments. The Per-Capita approach is a simplistic strategy and is not recommended by the IACP but it does serve as a starting point for discussions about whether or not the staffing at a police department is appropriate.

The basis for this preliminary staffing analysis involves calculating the police officer per 1000 rate for Fair Haven and then comparing that to the ratios of comparable police departments in Vermont and throughout the country. I attempted to find police departments (PDs) that were comparable to Fair Haven based on: 1) population; 2) average number of annual crimes; 3) the average crime rate; 4) the number of police officers; 5) the number of police officers per 1,000 residents, and 6) average annual

crimes per officer. Data from Vermont PDs were collected from 2010 – 2013<sup>1</sup> and averaged to ensure representative figures. All crime data were provided by the Vermont Crime Information Center – Vermont’s official repository for crime and law enforcement statistics.

Using this technique I identified 12 PDs which were comparable to Fair Haven on at least one of these four measures. PDs were considered comparable to Fair Haven if the measure (e.g., crime rate, population etc.,) was plus or minus 10% of the value for Fair Haven. Figure 1 below presents the results of the analysis. PDs which are highlighted in green are comparable on population, yellow highlights indicate PDs which are comparable on number of crimes, blue highlights indicate PDs which are comparable on crime rate, purple highlights are comparable on the number of full-time officers, tan highlights are comparable on the number of officers per 1,000 population, and gold highlights indicate PDs which are comparable on average crimes per officer.

**Figure 1**

**Police Departments Comparable to Fair Haven Police Department: 2010 -2013**

	<b>Average Estimated Population</b>	<b>Average # of Crimes</b>	<b>Average Crime Rate (per 1,000)</b>	<b># of Full-Time Officers (2011)</b>	<b># of Officers per 1,000 Population</b>	<b>Average Annual Crimes per Officer</b>
Bristol	3,881	167	44.27	3	0.8	56
Bennington	15,635	1,001	64.03	25	1.6	40
Berlin	2,874	205	71.30	6	2.1	34
Bradford	2,790	170	61.04	4	1.4	42
Brandon	3,932	145	36.78	7	1.8	25
Fair Haven	2,704	157	57.82	4	1.5	39
Montpelier	7,816	485	61.95	16	2.0	30
Pittsford	2,959	39	13.17	6	2.0	6
Springfield	9,322	589	63.25	15	1.6	39
Thetford	2,594	50	19.38	3	1.2	17
Vergennes	2,586	103	39.74	6	2.3	17
Windsor	3,522	160	45.45	7	2.0	21

Using the Per-Capita approach to estimate the appropriate size of the Fair Haven Police Department is complicated by the fact that the data in Figure 1 suggests that few jurisdictions are comparable to Fair Haven on more than one or two variables. Bradford is the most comparable jurisdiction to Fair Haven given that the two towns are comparable on all of the indicators. Both Fair Haven and Bradford have

<sup>1</sup> 2013 is the most current statewide crime data available from the Vermont Crime Information Center.

four full-time police officers with an officer to 1,000 residents ratio of 1.5. Based on the Per-Capita approach, we could conclude that the staffing level at the Fair Haven PD is about right since it is equal to the staffing in a comparable police department in the area. The problem with this approach, however, is the assumption that police staffing at the Bradford PD is appropriate and should be emulated by Fair Haven. However, if the Bradford PD is understaffed than the Fair Haven PD will end up being understaffed. On the other hand if Bradford PD is overstaffed than Fair Haven taxpayers will end up paying for unneeded officers.

To get a broader perspective on how Fair Haven's officer to resident ratio compares to other PDs, I consulted a report issued by the IACP<sup>2</sup>. The report indicated that the average officers per 1,000 residents ratio for jurisdictions from 2,500 – 9,999 was 2.2. Note that the rate for Fair Haven is 1.5 officers per 1,000 residents – nearly 50% lower than the national average for similar sized towns. Based solely on the Per-Capita approach using comparable agencies from across the country, the Fair Haven PD should have six police officers to be comparable to other PDs with similar sized populations. This conclusion, however, should only be viewed as a rough guideline given the amount of variation in the size of the jurisdictions which are being compared.

Given the limitations of the Per-Capita approach based exclusively on the size of a jurisdiction's police force and population, I went on to analyze the specific nature of the comparisons to Vermont PDs presented in Figure 1. The analysis of data from Figure 1 suggests the following:

1. Fair Haven's population is one of the smallest when compared to the other 12 towns analyzed.
2. Fair Haven's average of 145 reported crimes per year ranks in the middle (5<sup>th</sup>) among the 12 towns analyzed.
3. Fair Haven's crime rate of 57.82 crimes per 1,000 residents, is above average for the towns analyzed. Fair Haven's crime rate is more comparable to much larger jurisdictions such as Montpelier, Springfield, and Bennington than it is to other smaller jurisdictions.
4. In terms of number of full-time officers, Fair Haven has one of the smallest police forces among the towns analyzed. Only Bristol and Thetford have fewer officers.
5. The number of officers per 1,000 population for Fair Haven is lower than 66% of the towns in the study and slightly below the average -- 1.5 officers for Fair Haven compared to the average of 1.7 officers for all towns in the study. This finding suggests that the Fair Haven PD is understaffed by one officer.
6. Fair Haven's average annual crimes per officer is higher than average for the towns analyzed. Only Springfield, Bennington, and Bradford have higher annual crimes per officer.

This last finding regarding annual crimes per officer I think is the most significant in terms of staffing. The average number of crimes per officer per year for the 12 police departments is 30. The number of crimes per officer in Fair Haven is 39 – nearly 30% higher than the average. This is consistent

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<sup>2</sup> Police Officer to Population Ratios: Bureau of Justice Statistics Data (nd), International Association of Chiefs of Police. <http://www.theiacp.org/Portals/0/pdfs/Officer-to-Population-Ratios.pdf>

with the relatively higher crime rate in Fair Haven, the below average size of the department, and the lower than average number of officers per 1,000 population.

In summary, Fair Haven is a relatively small jurisdiction with a higher than expected crime rate. However, the size of the police department is more comparable to jurisdictions with low crime rates. Though it is not possible given this level of analysis to recommend a specific staffing level for the Fair Haven PD, the analysis to this point suggests that department is probably understaffed by one to two officers.

### Calls for Service Analysis

An analysis of reported crimes, though useful in understanding the public safety issues in a jurisdiction, constitutes on average only about 20% of the calls for service to which police officers respond. In order to obtain a more complete picture of the service demand on the police in Fair Haven an analysis of calls for service was conducted for Fair Haven PD using the Vermont Justice Information System (VJIS) managed by the Vermont Department of Public Safety.

Figure 2 presents information on the top calls for service for the Fair Haven PD during the past year. As suggested above, 18 of the top 20 calls for service were non-criminal in nature.

**Figure 2**  
**Fair Haven Top Calls For Service:**  
**October, 2014 - August, 2015**

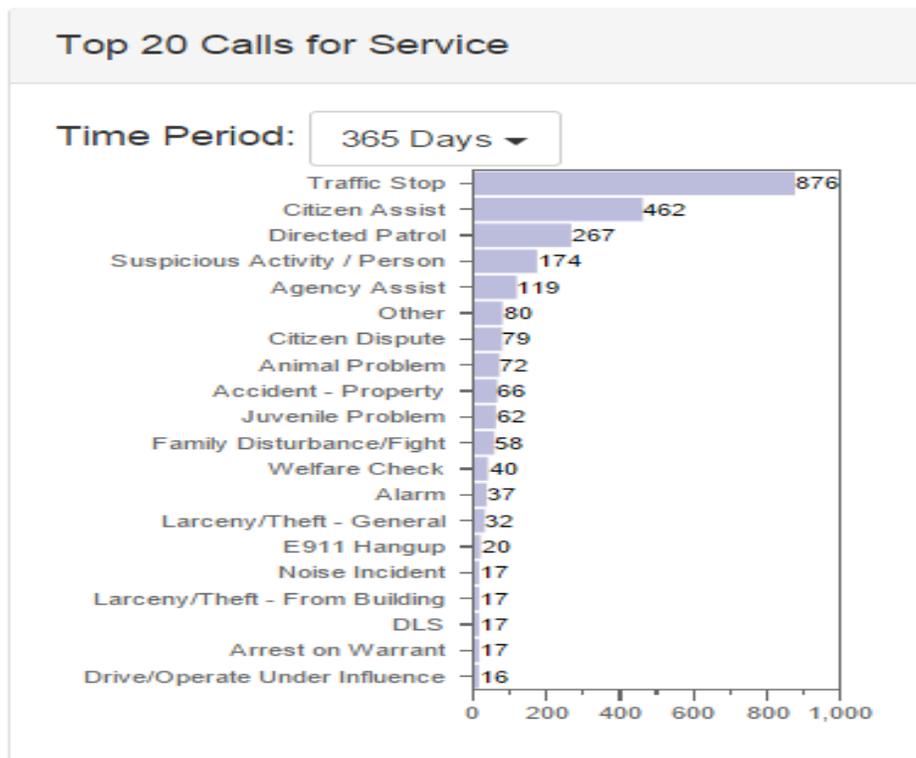


Figure 3 below presents information on quality of life calls for service (non-criminal cases) for the past year. The data suggest that quality of life calls for service, the bulk of calls handled by the Fair Haven PD, has substantially increased since April, 2015.

**Figure 3**  
**Fair Haven Quality of Life Call Index:**  
**October, 2014 - August, 2015**

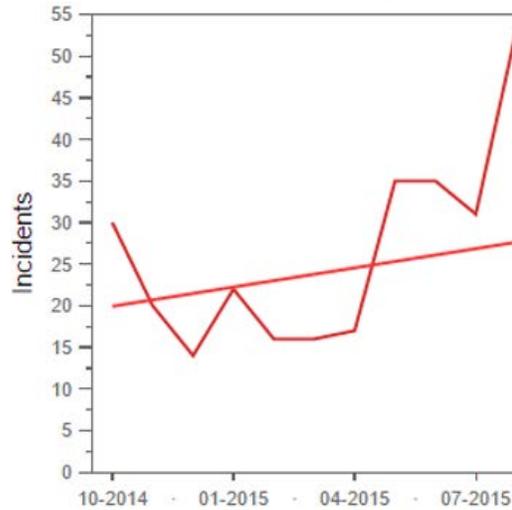


Figure 4 below presents data on property crimes in Fair Haven during the past year. The trend data suggest that the level of property crimes is generally increasing with a major spike for August, 2015.

**Figure 4**  
**Fair Haven Property Crime Index:**  
**October, 2014 - August, 2015**

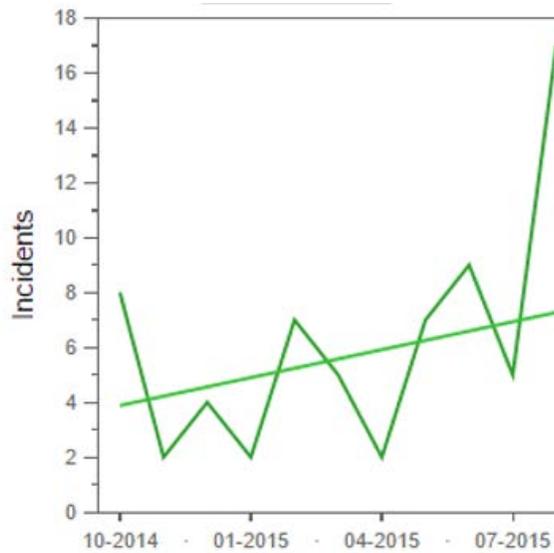


Figure 5 below depicts trends in violent crime in Fair Haven during the past year. The trend data suggest that the level of violent crimes has been variable during the past year but overall has tended to increase with a major spike for August, 2015.

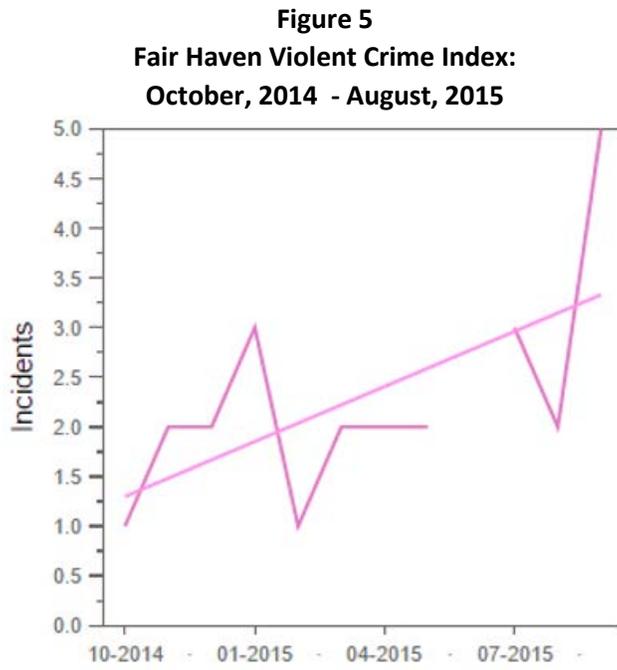
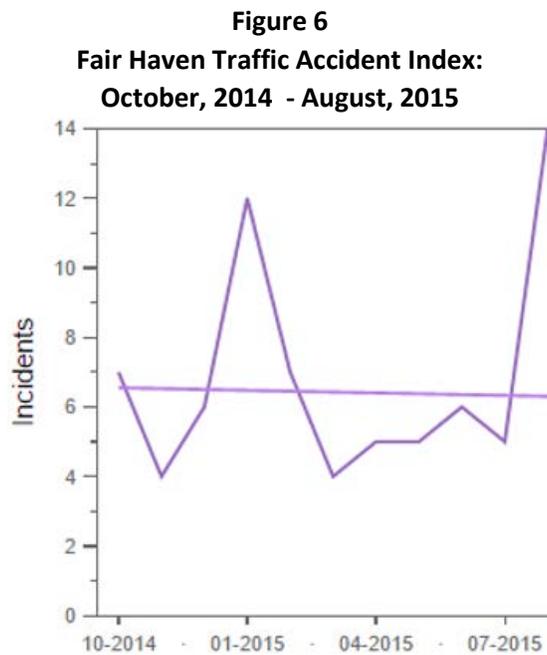


Figure 6 presents information regarding traffic accidents in Fair Haven during the past year. With the exception of a spike in August, the level of traffic accidents may be declining.



Based on the analysis of Quality of Life calls, Property Crime calls, and Violent Crime calls for service it is clear that the demand for services has increased for the Fair Haven PD over the past year.

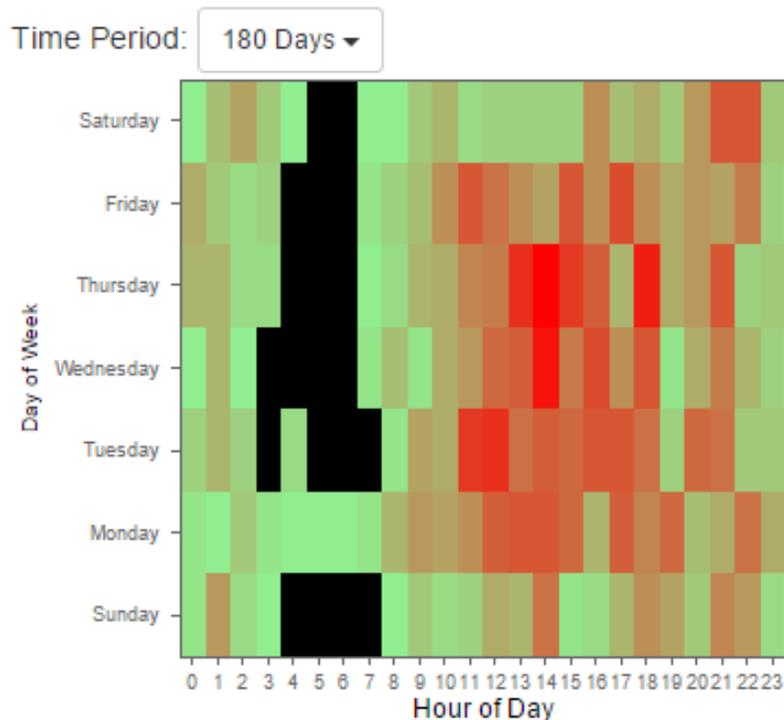
### Time of Day and Day of Week Analysis

Another method of looking at police staffing is to examine call patterns in a jurisdiction. “Time of day and day of week” analysis is a useful tool for determining the appropriate number of officers to be assigned to different shifts.

A heat chart is used to identify when calls for service occur. The heat chart is color coded – days and times where calls for service are low appear as black or green. Areas displayed in shades of red indicate days and times with higher calls for service – the darker the shade of red, the more number of incidents reported during that day and time period.

Figure 7 displays a heat chart for the Fair Haven PD for a six-month period.

**Figure 7**  
**Fair Haven Heat Chart:**  
**October, 2014 - August, 2015**



The time of day/day of week data presented in Figure 7 indicates that Fair Haven police officers are taking calls almost 24/7 – with the exception of the time period from 0300 to 0600. The majority of calls for service occur during the 1100 – 1800 time period most days. If the residents of Fair Haven are

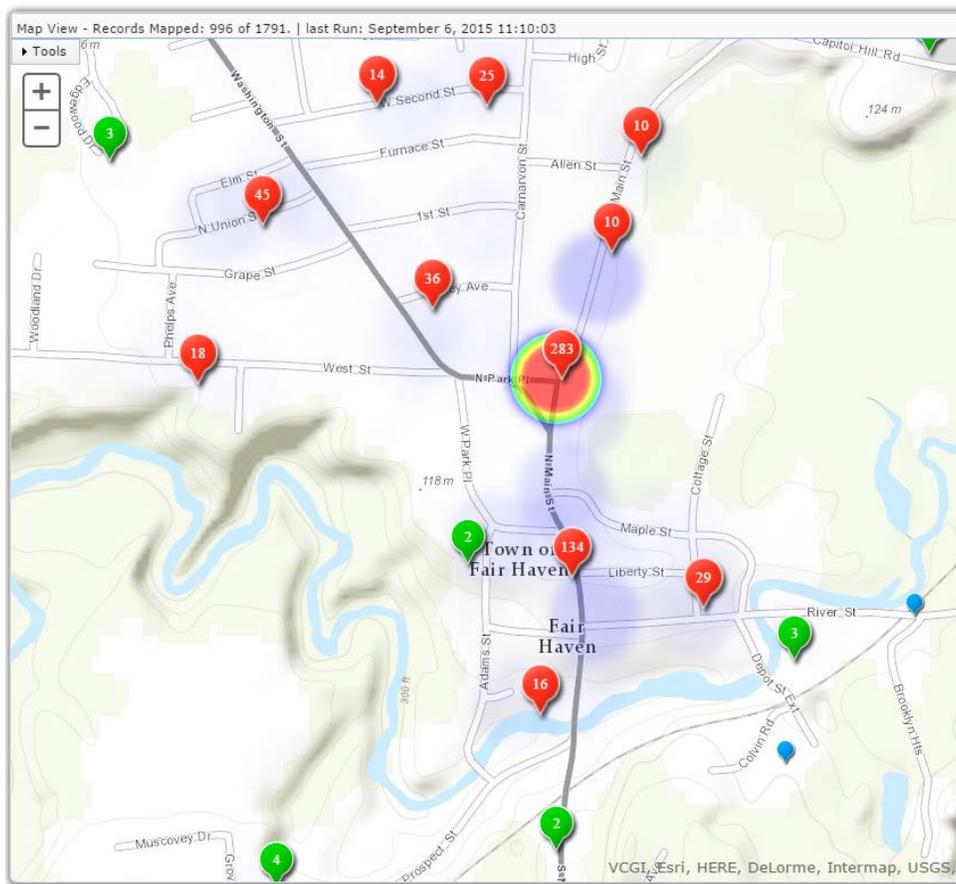
concerned about response times, this data would suggest that Fair Haven probably needs 24-hour police coverage by their PD.

### Mapping Analysis

Police staffing levels are driven in part by the geographical area which officers are required to serve. Jurisdictions with low levels of crime and limited geography need fewer officers than departments with higher levels of crime that are spread out over the jurisdiction. Hot spot analysis is a tool to spatially display what areas of the jurisdiction generate the highest number of calls for service.

Figure 8 is a Hot Spot map for Fair Haven for the period October, 2014 – July 1, 2015. This information was abstracted from the Vermont Crime Analysis and Mapping Program managed by the Department of Public Safety. Similar to a heat chart, the colors on the map indicate levels of calls – areas which are displayed in red are the areas which generate the highest number of calls for service. Other “pins” on the map indicate locations of calls that are in close proximity to one another.

**Figure 8**  
**Fair Haven Crime Mapping:**  
**October 1, 2014 - July 1, 2015**  
**1791 Incidents – 996 Mapped**



It is important to note that of the 1,791 incidents that occurred during this time period, only 966 (54%) had sufficiently accurate and complete mapping information associated with the call to be mapped. As such Figure 8 only displays slightly more than half of the actual call locations. Keeping in mind this limitation, the hot spot analysis indicates that the majority of calls for service were generated on North Park and North Main Street. However, it is clear that, in general, calls for service in Fair Haven are widely distributed throughout the jurisdiction.

### **Preliminary Conclusions**

1. Fair Haven is a relatively small jurisdiction with a higher than expected crime rate. However, the size of the police department is more comparable to jurisdictions with low crime rates.
2. The analysis from comparable jurisdictions in Vermont and the country suggests that the department is probably understaffed by as many as two officers.
3. All major indicators of calls for service suggest that demands for services has increased over the past year.
4. Time of day/day of week analysis suggests that Fair Haven is best served by a police department that provides coverage 24 hours a day.
5. Calls for service are likely to be distributed widely throughout the town of Fair Haven.

### **Preliminary Recommendations**

In light of the findings that the Fair Haven PD is likely to be understaffed due to the relatively high crime rate, increasing levels of calls for service, 24-hour service demand, and distributed call service area, I recommend:

- 1. The Town of Fair Haven should consider contacting a qualified research organization to conduct a workload study of the Fair Haven Police Department to provide an objective assessment of the number of officers which are required to provide the Town with public safety services.**
- 2. Chief Humphries should consider reviewing data entry policies/practices at the Fair Haven PD to ensure higher levels of accurate and complete data entry related to address information.**