



STAFFING ANALYSIS

PATROL DIVISION

CITY OF BLAINE
POLICE DEPARTMENT

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INTRODUCTION

- ▶ Data was extracted from our Records Management System (RMS) and Computer Aided Dispatch (CAD) for the years of study. Staff within the Police Department and Geographic Information Services contributed to the analysis.
- ▶ All CAD data is from the years 2017, 2018, and 2019. It is standard to analyze a minimum of three years to establish patterns. For the purposes of this study additional years were not included due to changes in RMS and CAD prior to 2017 that would have skewed comparison of incident classifications.
- ▶ The data that was provided consisted of Case numbers, Call Priority Classifications, Call Descriptions, Location, Created Times, Dispatched Times, Enroute Times, Arrival Times and Cleared Times. The data was provided in a format that required a significant amount of work to prepare it for analysis.



SOURCES FOR ANALYSIS

For our analysis we relied upon two main sources for direction in producing such a study:

- ▶ ***A Performance-Based Approach to Police Staffing and Allocation*** by Jeremy M. Wilson and Alexander Weiss of Michigan State University working with the US Department of Justice – Office of Community Oriented Policing Services, August, 2012.
- ▶ ***Budgeting and Staffing*** by Hugo McPhee of the Minnesota Bureau of Criminal Apprehension, Management and Staffing, April, 2019.



WORKLOAD-BASED APPROACH

We utilized the **Workload-Based Approach** for our analysis because it provides us with the broadest picture of our actual calls for service, how they are distributed by shift, time of day, day of week, month of year, and their geographic location with respect to our currently established patrol borders.

The 6 Steps to creating a workload-based assessment are:

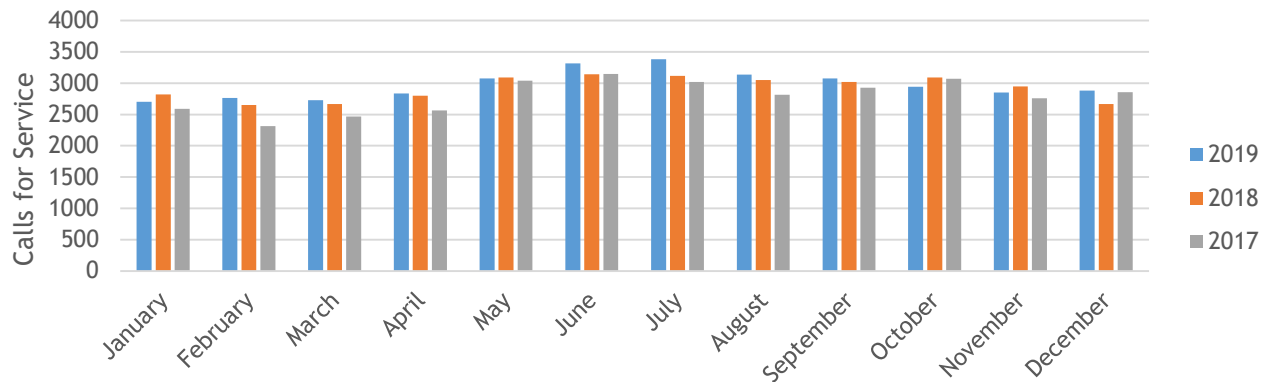
1. Examine the distribution of calls for service by hour of day, day of week and month
2. Examine the nature of calls for service
3. Estimate time consumed on calls for service
4. Calculate agency shift-relief factor
5. Establish performance objectives
6. Provide staffing estimates



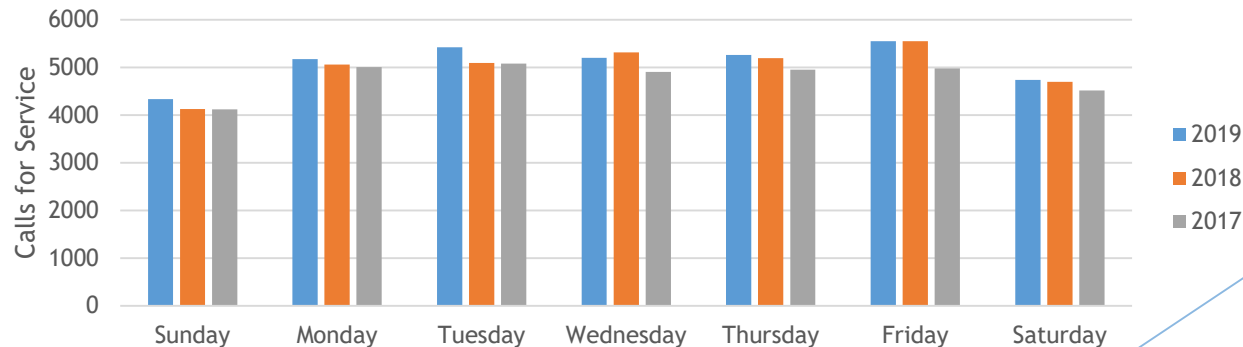
1. EXAMINE THE DISTRIBUTION OF CALLS FOR SERVICE BY HOUR/DAY/MONTH



Calls for Service by Month

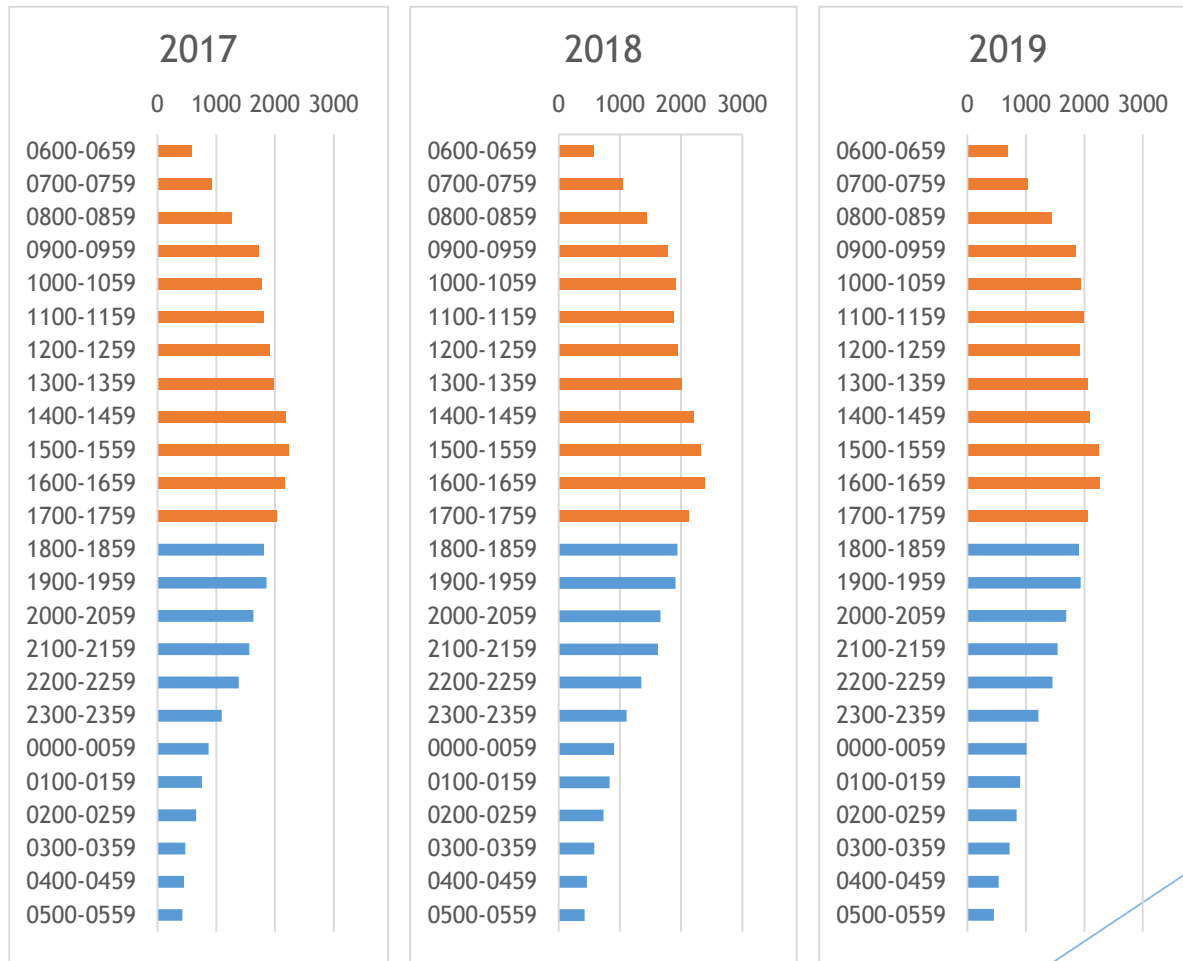


Calls for Service by Day of the Week



1. EXAMINE THE DISTRIBUTION OF CALLS FOR SERVICE BY HOUR/DAY/MONTH

Calls for Service by Time of Day

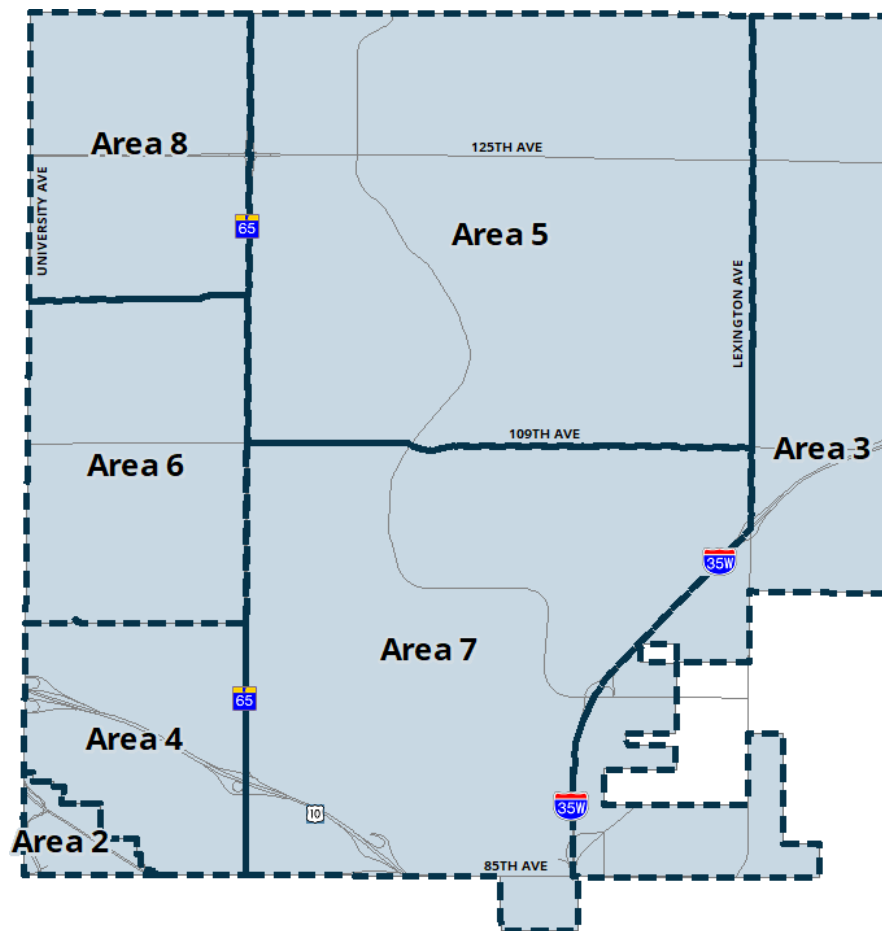


2. EXAMINE THE NATURE OF CALLS FOR SERVICE AND THEIR GEOGRAPHIC DISTRIBUTION



	Square Miles		2017 Calls	% of Total		2018 Calls	% of Total		2019 Calls	% of Total
Area 2	0.38		2251	6.70%		2229	6.36%		2414	6.76%
Area 3	5.75		3826	11.40%		4228	12.06%		4274	11.98%
Area 4	2.32		4038	12.03%		4256	12.14%		4342	12.17%
Area 5	10.55		5835	17.38%		6059	17.28%		6018	16.86%
Area 6	3.45		6505	19.38%		6412	18.29%		6701	18.78%
Area 7	8.56		6041	17.99%		6051	17.26%		6198	17.37%
Area 8	3.05		4254	12.67%		4110	11.72%		4125	11.56%
Out of Area	N/A		822	2.45%		1710	4.88%		1619	4.54%

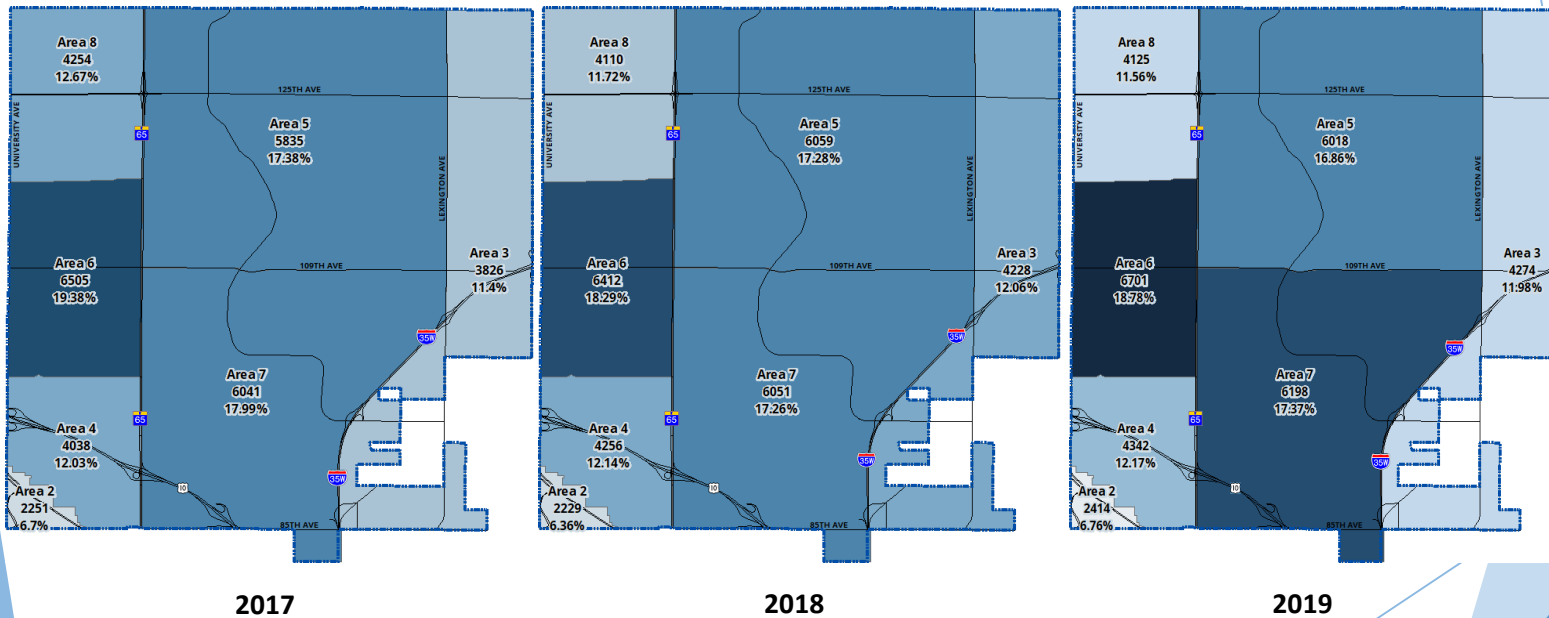
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Calls for Service Distribution



3. ESTIMATE TIME CONSUMED ON CALLS FOR SERVICE

2017 Top 20 Calls for Service

CALL TYPES	COUNT	AVERAGE # OFFICERS	TOTAL HOURS (HH:MM:SS)	AVERAGE TIME PER OFFICER (HH:MM:SS)
MEDICAL	3806	1.97	2279:49:07	0:18:14
PUBLIC ASSIST	3781	1.34	1412:57:34	0:16:49
FOLLOW UP	3013	1.22	980:58:12	0:16:08
SUSPICIOUS ACTIVITY	2643	1.86	1389:21:09	0:16:57
DOMESTIC	2198	2.10	1971:51:14	0:25:39
THEFT	1967	1.57	1340:07:23	0:26:00
PROPERTY DAMAGE CRASH	1964	1.69	1167:32:05	0:21:08
ALARM	1872	2.02	584:50:58	0:09:16
TRAFFIC	1538	1.27	642:35:10	0:19:59
AID TO OTHER AGENCY	1044	2.49	1142:27:59	0:27:14
WELFARE CHECK	1004	1.96	644:13:18	0:19:41
911 HANGUP/OPEN LINE	878	1.89	305:32:20	0:11:04
FRAUD	764	1.30	305:13:19	0:18:27
DWI	648	2.01	910:58:59	0:39:10
DAMAGE TO PROPERTY	436	1.40	281:25:29	0:27:44
DISORDERLY CONDUCT	401	2.13	286:53:41	0:20:11
DRUGS	377	1.63	223:21:43	0:21:52
SUICIDE	320	2.80	448:05:58	0:30:00
BURGLARY	319	2.41	428:07:45	5:54:56
THEFT FROM VEHICLE	308	1.46	150:09:37	0:20:12
ALL OTHER*	4304	2.20	N/A	N/A



3. ESTIMATE TIME CONSUMED ON CALLS FOR SERVICE

2018 Top 20 Calls for Service

CALL TYPES	COUNT	AVERAGE # OFFICERS	TOTAL HOURS (HH:MM:SS)	AVERAGE TIME PER OFFICER (HH:MM:SS)
MEDICAL	4106	1.87	2273:52:01	0:17:46
PUBLIC ASSIST	3958	1.35	1399:11:26	0:15:48
FOLLOW UP	3181	1.21	991:45:16	0:15:32
PROPERTY DAMAGE CRASH	2492	1.72	1533:18:38	0:21:31
SUSPICIOUS ACTIVITY	2345	1.88	1295:24:23	0:17:37
AID TO OTHER AGENCY	2193	2.90	3303:00:12	0:32:27
DOMESTIC	2031	2.19	2126:21:10	0:28:45
ALARM	1914	1.96	662:47:58	0:10:35
THEFT	1856	1.58	1238:16:37	0:25:19
WELFARE CHECK	1371	1.97	928:12:51	0:20:40
TRAFFIC	1190	1.34	477:04:08	0:17:57
FRAUD	773	1.33	327:45:24	0:19:11
THREAT	746	1.66	427:49:51	0:20:45
DWI	567	1.83	639:40:33	0:37:07
DISORDERLY CONDUCT	409	2.09	280:42:07	0:19:41
EXTRA PATROL	409	1.21	122:59:46	0:14:55
911 HANGUP/OPEN LINE	404	1.91	137:37:55	0:10:41
BURGLARY	320	1.97	328:20:52	0:31:16
SUICIDE	317	2.68	401:55:36	0:28:22
DRUGS	299	1.72	167:29:45	0:19:38
ALL OTHER*	4174	1.14	N/A	N/A



3. ESTIMATE TIME CONSUMED ON CALLS FOR SERVICE

2019 Top 20 Calls for Service

CALL TYPES	COUNT	AVERAGE # OFFICERS	TOTAL HOURS (HH:MM:SS)	AVERAGE TIME PER OFFICER (HH:MM:SS)
MEDICAL	3734	1.66	2427:59:43	0:23:27
PUBLIC ASSIST	3331	1.19	1280:18:32	0:18:24
FOLLOW UP	3185	1.14	1069:32:24	0:17:44
SUSPICIOUS ACTIVITY	2405	1.66	1505:34:58	0:22:48
AID TO OTHER AGENCY	2183	2.53	4603:08:42	0:52:12
PROPERTY DAMAGE CRASH	2051	1.48	1318:34:53	0:26:11
DOMESTIC	2031	1.95	2158:50:48	0:32:46
ALARM	1937	1.55	625:11:59	0:12:28
THEFT	1670	1.44	1260:10:38	0:31:25
WELFARE CHECK	1526	1.61	1033:26:01	0:25:14
TRAFFIC	1175	1.22	521:59:13	0:21:55
EXTRA PATROL	891	1.05	31:19:29	0:13:37
PARKING	870	1.08	288:22:33	0:18:29
MOTORIST ASSIST	815	1.31	347:00:03	0:19:36
FRAUD	688	1.23	350:13:59	0:25:01
DWI	625	2.19	1389:30:54	1:01:13
911 HANG UP/OPEN LINE	568	1.54	199:14:09	0:13:43
DISORDERLY CONDUCT	510	1.83	363:40:03	0:23:26
REPOSSESSION	332	1.06	19:59:28	0:03:25
DAMAGE TO PROPERTY	288	1.20	127:07:04	0:22:06
ALL OTHER*	4876	1.79	N/A	N/A



4. CALCULATING THE SHIFT-RELIEF FACTOR

The formula for the shift relief factor is:

$$\frac{365 \times \text{shift length}}{(365 \times \text{shift length} - \text{total time off})}$$

365 is the number of days in the year and shift length is the number of hours per shift.

Leave Time for BPD Patrol Staff	
Category	Time Off (Hours)
Holiday	80
Floating Holiday	8
Sick Time	104
Vacation	139
Training	100
Regular Days Off	2,288
Total	2,719

Using the data above our Shift-Relief Factor is:

$$\begin{aligned} & \frac{365 \times 12}{(365 \times 12 - 2719)} \\ & \frac{4380}{(4380 - 2719)} \\ & \frac{4380}{1661} \end{aligned}$$

Shift Relief Factor = 2.64



4. CALCULATING THE SHIFT-RELIEF FACTOR

Using our Current Patrol District Allocation and without taking into consideration actual calls for service (CFS) and the time spent on them we can offer a rough staffing estimate:

$$2.64 \times 6 \text{ districts} \times 2 \text{ shifts} = 31.7 \text{ (32 officers total)}$$



Current staffing:

- 28 Call-taking patrol officers on 12-hour, 0600-1800 / 1800-0600 schedule
- 2 Call-taking patrol officers assigned to Retail Unit
- 2 Call-taking patrol officers on 10-hour, 1700-0300 schedule assigned to K-9 Unit
- 2 Traffic Unit officers that **do not handle calls for service**

5. ESTABLISHING PERFORMANCE OBJECTIVES



Four components of on-duty time	Estimated Percentage of Officer's Day
Reactive: Time spent responding to calls for service	40%
Proactive: Time spent on self-initiated activities	20%
Administrative: Time spent on all other activities while on patrol	20%
Proactive (patrol): Time spent free or unobligated	20%

“The workload distribution (Performance Objective) shown above is from the Police Allocation Manual (PAM) developed by William Stenzel (Northwestern University Traffic Institute 1993; Stenzel 2007).”

6. PROVIDE STAFFING ESTIMATES

Based on our current 12-hour shifts we have constructed staffing models for two shifts:

- **Day Shift** – (0600 -1759 hours)
- **Night Shift** – (1800 – 0559 hours)

2019 CAD Data is used to determine total time spent handling calls for service (CFS) by shift:

Total Time Spent on CFS	# of Hours
Day Shift	13785
Night Shift	11686

An officer working 12 hours/day 365 days per year would work 4380 hours per year. To determine the number of officers required to handle the calls for service, we divide the total hours on calls for service by 4380.

Total Time Spent per Shift per Year (12*365) = 4380



6. PROVIDE STAFFING ESTIMATES

Next, we estimate the number of officers required to handle CFS by dividing the total number of hours consumed by handling CFS by the number of hours an officer could work each year assuming 365 12-hour shifts:

Hours Spent on CFS/4380	# of Officers
Day Shift	3.15
Night Shift	2.67

Next, we consider the Performance Objective. For this calculation we use the workload distribution model from the Police Allocation Manual to determine the multiplier (2.5), and that results in the minimum number of officers needed to fulfill CFS by shift:

Performance Objective Requirement (x2.5)	# of Officers
Day Shift	7.87
Night Shift	6.67



6. PROVIDE STAFFING ESTIMATES

Finally, this estimate assumes officers work 365 days per year. To adjust for the actual number of days that an officer is likely to work we multiply the minimum number of officers required to meet the **Performance Objective** by the **Shift Relief Factor (2.64)** determined in Step 4:

Officers Required x Shift Relief Factor of 2.64	# of Officers
Day Shift	20.8
Night Shift	17.6
TOTAL	38



6. PROVIDE STAFFING ESTIMATES

An analysis of overall time spent on CFS as a percentage of the work year:



Workload Breakdown	2017	2018	2019	2020 <i>Proposed</i>
Current number of patrol officers handling CFS	32	32	32	38
Number of Hours worked by each officer (2080-431 total leave time)	1,649	1,649	1,649	1,649
Officers x Hours worked	52,768	52,768	52,768	62,662
Hours spent on CFS	19,853	22,251	25,471	25,471
Add Administrative Time (report writing is estimated @ 30% of CFS)	5,956	6,675	7,641	7,641
Hours spent on CFS (plus 30% overhead for Administrative Duties)	25,809	28,926	33,112	33,112
Percentage of work hours spent handling CFS and Administrative Duties	49%	55%	63%	53%

QUESTIONS?



Thank you.

