University of CINCINNATI
DEPARTMENT OF PUBLIC SAFETY

Department of Public Safety
Emergency Services
Police Services
Support Services
Three Edwards Center
PO 210215
Cincinnati, OH 45221-0215

Patrol Deployment Allocation Analysis for the University of Cincinnati Police Division

October 2018

Prepared by:
Brandon Kyle
(Former) UCPD Crime Analyst

With

Nicholas Corsaro, PhD,
UC Criminal Justice Institute of Crime Science

University of CINCINNATI
DEPARTMENT OF PUBLIC SAFETY

Department of Public Safety
Emergency Services
Police Services
Support Services
Three Edwards Center
PO 210215
Cincinnati, OH 45221-0215

Executive Summary

- Consistent with ICMA and COPS national standards, the University of Cincinnati Police Department has committed at least 60% of its sworn law enforcement personnel to handling patrol, which is the cornerstone of police operations. In fact UCPD has committed over 70% of its personnel to patrol functions, illustrating its commitment to patrol services.
- Relying upon ICMA and COPS standards for patrol deployment, using the 60% rule, the number of police officers devoted specifically for patrol for each shift should likely be as follows: roughly 30 to 35 police officers are recommended to address patrol considerations in the agency. It is important to note that this recommendation accounts only for patrol deployment and does not account for additional workload considerations. The recommendation suggests that 1st shift should devote between 9 to 11 officers for patrol; 2nd shift should devote between 11 to 12 officers for patrol; and 3rd shift should devote between 9 to 11 officers for patrol deployment.
    - Currently, UCPD has 30 non-supervisory police officers devoted to patrol (11 in shift one, 9 in shift two, and 10 in shift three) with a plan to hire 7 additional police officers. The current and planned allocation of officers devoted to patrol is commensurate with citizen requests for assistance. These estimates do not include the 6 patrol sergeants at UCPD who do not regularly respond to citizen requests for assistance on a routine basis.
- Relying upon ICMA and COPS standards for patrol deployment, the UCPD should consider its **minimum standard** of patrol for each shift to be **two patrol officers per shift** for the first, second, and third shifts.

This recommendation accounts for actual deployment practices needed by UCPD from 2012-2016. The estimated calls for service in 2017 were excluded from this analysis because of the precipitous drop in measurement likely corresponding with the CAD change in 2017. Thus, the numbers here reflect the highest and most used estimates for calls for assistance, and thus are the most parsimonious and least conservative estimates.

- The allocation of the shifts (i.e., first shift being 06:00 to 16:00, second shift being 15:00 to 01:00, and third shift being 21:00 to 07:00) is very consistent with the call volume and time devoted to citizen generated requests for assistance. The overlap periods between the shifts are at peak intervals, and no changes are recommended relative to the current schedule. UCPD has been clearly analytical when devoting its resources in relation to patrol allocation.

Report Evolution and Overview

There are two key points related to the evolution and overview of this report. First, this assessment began in the summer 2018 as an internal report conducted by then UCPD Crime Analyst Brandon Kyle. All calculations, tables, and figures in this report are a direct product of Brandon Kyle's work; the report, summary and interpretation of the data are based on his original report. Throughout summer 2018, Mr. Kyle spoke with Dr. Nicholas Corsaro of the School of Criminal Justice in order to make this deployment assessment consistent with the previously conducted patrol staffing studies done by Dr. Corsaro and his colleagues in a number of urban police agencies. Dr. Corsaro reviewed all of the statistics presented in this report while Mr. Kyle was at UCPD and found them consistent with his prior work; additionally, Dr. Corsaro helped develop this report into a final report in the Fall 2018 (after Mr. Kyle left UCPD).

Second, it is important to note up front that this report is a deployment allocation analysis and not a patrol workload analysis. While the two terms appear to be similar, there are some inherent differences. For example, most law enforcement agencies devote the lion's share of their patrol resources to citizen requests for assistance; and, as a result the workload analyses for patrol for these agencies are based on that foundation. Comparatively, a campus police department must also consider the necessary resources needed for patrol deployment as well as (likely at a disproportionate rate) consider major events, crowd control, and critical responses beyond citizen requests. Thus, the interpretation of the numbers reflected in this report are in-line with a deployment allocation assessment rather than an agency-based patrol workload analysis.

Introduction

The University of Cincinnati Police Division (UCPD) performed a patrol deployment allocation analysis in the attempt to determine the minimum amount of police officers needed per shift, while still effectively responding to

citizen-generated calls-for-service (CFS), implementing problem-solving strategies and the successful completion of officer administrative duties. For the purpose of accuracy and diversity, different staffing models were re-created using UCPD data. This report utilizes the "Rule of 60" model recommended by the International City/County Management Association (ICMA) (Corsaro & Akbas, 2017), a hybrid model used by the Cincinnati Police Department (CPD), and a staffing analysis performed by Alexander Weiss Consulting, LLC for Louisville Metro Police Department (LMPD) in 2015.

Overview

In terms of patrol deployment and patrol oversight, the UCPD currently employs 36 sworn police officers that have direct or supervisory roles for patrol. This does not include sworn non-patrol personnel nor civilian employees. This report aims to evaluate the proper deployment of the 30 current non-supervisory officers currently assigned to patrol, and/or the 37 police officers that will be assigned to patrol if the seven additional police officer hires are successful. The primary method of evaluating an officer's deployment uses UCPD computer-aided dispatch (CAD) CFS data.

Table 1: Patrol Staffing Level of UCPD (Current and Proposed Levels as of October 2018)

Rank	Current Staffing Level	Planned Staffing Level
Chief	1	1
Assistant Chief	1	1
Captains	2	3
Lieutenants	3	3
Sergeants	6	6
Police Officers	30	37
Total	36	51

Rule of 60

The ICMA recommends police agencies follow the "Rule of 60" when determining how to properly staff their agencies (Corsaro & Akbas, 2017). There are three aspects to the "Rule of 60" to consider; at least 60 percent of the total number of sworn police officers should be assigned to patrol, officers should not spend more than 60 percent of

their shift responding to CFS, and the total amount of an officer's service time should not exceed a factor of 60 percent (Corsaro & Akbas, 2017).

When considering ICMA's first recommendation, UCPD currently has 30 of the 43, or 70 percent, of UCPD's sworn police officers assigned to patrol. Therefore, UCPD exceeds ICMA's recommendation of 60 percent assigned specifically to patrol functions.

The second ICMA recommendation states that an officer should not spend more than 60 percent of their shift on CFS activity. An analysis was performed to examine the number of CFS the UCPD typically expects in a given year. For the purpose of this staffing analysis, 2017 was not included in the study due to a changeover from an old CAD system to a new CAD system. This changeover occurred on Jan. 24, 2017. Due to the switch in CAD systems, 2017 UCPD CFS are approximately 40 percent below 2014-2016 numbers.[1]

The UCPD, from 2014-2016, averages 16,000 citizen-generated CFS each year. The table below illustrates the number of CFS by year UCPD has received from citizens by year.[2]

Table 2: Reactive Calls for Service Per Year for UCPD

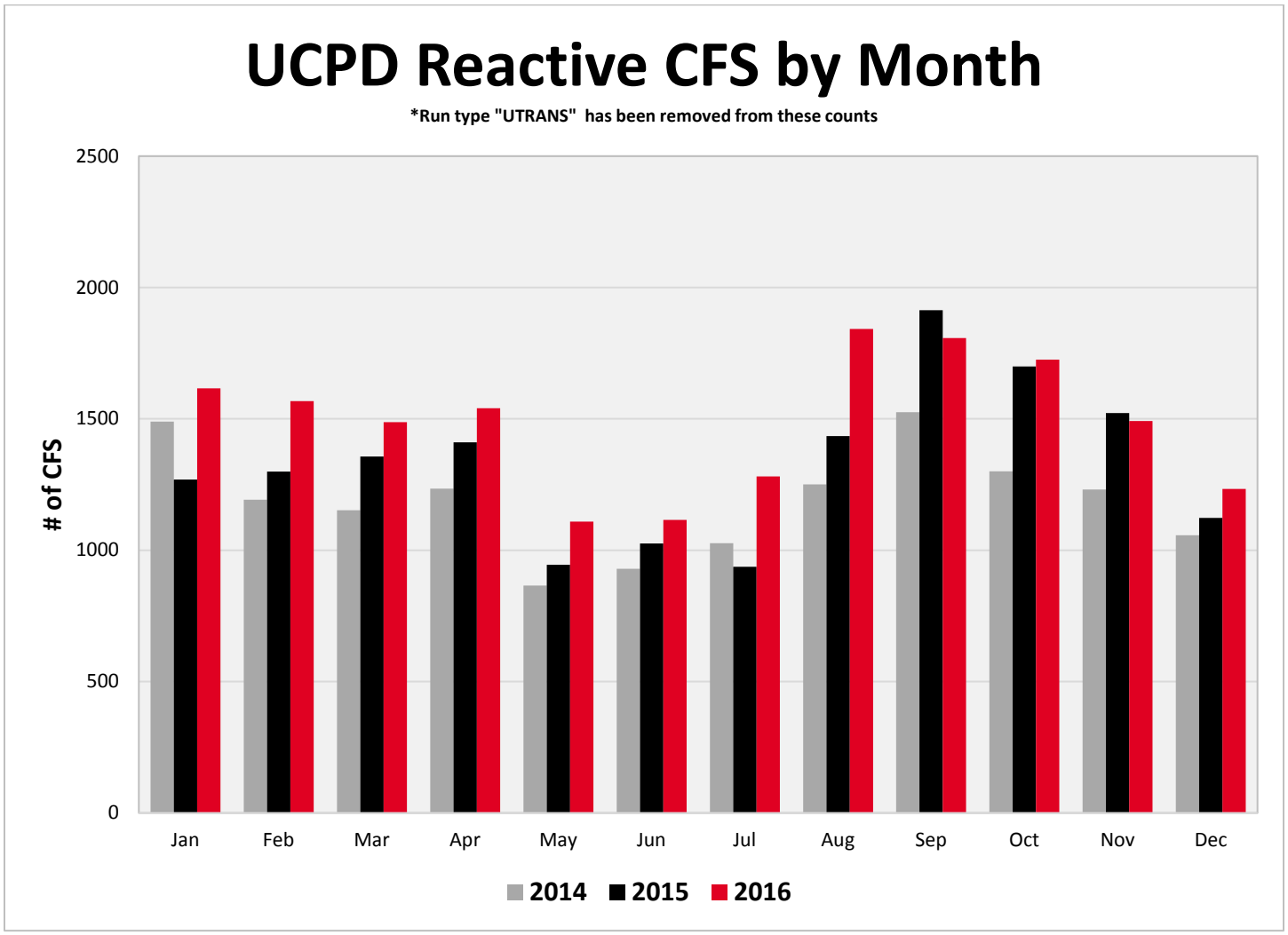
Year	# Reactive CFS
2014	14255
2015	15937
2016	17819

[1] The City of Cincinnati, who manages and operates both the old and new versions of the CAD system, is unable to provide an explanation for the sudden drop. The CPD reported they experienced a drop of approximately 30 percent of total CFS after the change in CAD systems. Since there is not a reasonable explanation for the drop, 2017 totals have been eliminated from this analysis and 2016 figures are used to determine staffing needs.

[2] Night Ride requests, handled by UC dispatchers, have been totally removed from these totals as this function operates outside of UCPD patrol responsibilities. The code from dispatch for these calls is "UTRANS." However, calls beyond Night Ride were classified under UTRANS.

The chart below provides a visual of how many CFS UCPD has received or generated from 2014-2016. As expected, the busier months occur when students are in school from August to April and drop off in the summer months when fewer students are on campus.

Figure 1: UCPD Reactive Calls for Service by Month



To gain an understanding of the most popular or busiest times for UCPD, the table below provides counts of CFS for each day of the week by the hour of the day. The busiest days of the week are Tuesday through Thursday. The

busiest time was midnight to 2 a.m. When breaking down the activity by hour for 2014-2016 the most popular run type was "UTRANS." This is expected as the students were utilizing the NightRide service provided to them. However, UTRANS also included calls for service beyond NightRide.[3] With NightRide removed, the next busiest times during the day are 8-9 a.m. and 4-5 p.m. during the weekdays, the times when students and employees are traveling to and from the university. Given the fact that NightRide runs are typically not handled by officers, the time periods of 8-9 a.m. and 4-5 p.m. during the weekdays became the focal point in this analysis.

Table 3: Calls for Service by Day of the Week and Hour of the Day

Reactive CFS 2014-2016: "UTRANS" Removed																								
2014-2016	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
Sun	170	156	186	95	69	44	68	140	231	288	298	271	307	309	289	285	364	375	337	355	376	292	327	202	5834
Mon	156	112	116	77	75	100	259	320	433	402	350	271	327	366	364	402	617	663	521	409	404	329	338	273	7684
Tue	187	131	103	80	63	113	232	368	426	455	390	340	378	413	335	498	681	741	580	441	494	347	376	291	8463
Wed	197	138	132	75	67	112	221	316	426	386	411	352	357	409	389	519	603	632	487	365	367	300	275	274	7810
Thu	197	106	121	85	85	154	200	274	355	448	341	366	344	424	326	476	622	690	534	392	464	409	359	299	8071
Fri	192	138	143	93	79	131	217	318	384	422	357	300	360	359	349	394	461	534	355	284	234	241	222	229	6796
Sat	208	160	198	92	68	73	151	304	443	430	384	305	350	320	245	261	257	305	240	274	248	281	232	184	6013
Total	1307	941	999	597	506	727	1348	2040	2698	2831	2531	2205	2423	2600	2297	2835	3605	3940	3054	2520	2587	2199	2129	1752	50671

Reactive CFS 2014-2016: "UTRANS" Included																								
2014-2016	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
Sun	362	477	1427	906	625	84	119	203	309	385	368	308	352	396	344	298	394	480	450	471	461	352	456	481	10508
Mon	1699	1020	759	609	510	137	392	522	713	652	608	419	494	581	539	444	674	783	662	535	540	433	457	604	14786
Tue	1683	1100	788	587	467	156	376	526	709	716	638	501	572	660	491	555	756	819	660	562	582	412	475	569	15360
Wed	2097	1355	971	760	558	162	368	490	697	652	686	531	577	682	597	645	791	839	659	571	583	475	471	631	16848
Thu	1872	1222	823	676	528	200	340	435	633	715	604	546	525	672	489	547	712	775	639	502	565	535	492	571	15618
Fri	411	372	1077	737	494	177	349	442	606	688	595	459	535	565	518	507	626	739	549	485	444	430	435	520	12760
Sat	437	503	1412	802	550	117	229	391	554	546	482	363	426	452	325	326	408	491	412	480	431	402	452	428	11419
Total	8561	6049	7257	5077	3732	1033	2173	3009	4221	4354	3981	3127	3481	4008	3303	3322	4361	4926	4031	3606	3606	3039	3238	3804	97299

The next important element of UCPD CFS to examine is the average amount of time spent on these runs. The table below provides the average time per run in minutes spent by officers for each day of the week by the time of the

[3] We conducted a series of analyses and found that NightRide calls for request were under the umbrella of the UTRANS designation; however, other calls for service (which resulted in arrests made) were also under the UTRANS classification. Therefore we could not disentangle which UTRANS calls were NightRide versus other requests for assistance. We include both sets of parameters here to address this methodological limitation.

day in 2016. Clearly, officers spend more time on CFS runs Monday through Friday between the hours of 7 a.m. to 3 p.m. Considering these periods are the daily operational times of the university, officers spend more time dealing with CFS when they have a higher population to account for.

Table 4: Time on Run (Average) for Calls for Service 2014-2016

Reactive CFS Time on Run 2014-2016: "UTRANS" Removed																								
2014-16	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Sun	23.5	29.0	21.2	24.3	34.7	23.7	43.9	28.6	16.3	18.3	26.4	25.4	22.5	21.2	16.7	20.0	19.8	20.6	19.4	18.9	19.9	19.6	23.3	19.4
Mon	18.4	19.6	40.0	18.7	24.4	15.3	19.1	13.9	17.8	19.8	19.1	21.4	22.3	21.3	20.2	23.4	20.2	20.7	22.0	21.8	22.7	22.6	22.1	16.5
Tue	19.8	19.9	19.4	19.8	24.0	12.6	17.4	16.4	19.4	17.0	20.8	22.3	23.3	23.4	21.9	21.3	21.4	19.9	21.1	20.7	21.4	20.2	18.8	15.6
Wed	18.4	16.4	17.1	17.9	22.3	14.9	19.6	15.4	14.4	19.4	28.6	26.2	22.8	23.7	21.7	23.4	19.6	17.0	20.8	21.9	21.1	21.8	25.1	16.4
Thu	13.4	18.9	22.7	17.3	21.6	14.5	16.8	16.4	18.0	17.3	22.0	23.1	23.0	21.5	25.7	22.3	20.8	19.5	19.6	19.2	19.8	19.4	19.4	17.8
Fri	19.9	17.7	17.4	16.4	20.2	17.9	18.6	14.3	16.7	21.0	21.7	25.5	25.8	24.2	27.2	26.0	22.9	22.9	22.1	25.1	23.0	29.4	21.2	18.3
Sat	21.3	26.0	21.3	22.4	32.1	23.9	17.9	16.9	14.7	17.4	18.9	23.1	24.0	18.9	20.7	25.0	22.0	25.7	29.0	24.2	19.9	27.7	25.9	23.3

Reactive CFS Time on Run 2014-2016: "UTRANS" Included																								
2014-16	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Sun	22.8	21.5	11.4	11.4	14.3	20.7	41.9	28.7	16.3	18.4	26.3	25.5	22.5	21.6	16.9	19.9	19.6	20.6	19.4	18.9	19.8	19.8	23.1	16.1
Mon	9.3	9.7	13.7	10.5	12.5	15.2	19.0	14.3	18.6	20.4	19.4	22.0	22.5	21.7	20.3	23.9	20.2	20.6	22.0	21.7	23.0	22.3	21.9	14.8
Tue	10.2	10.8	10.8	11.2	12.0	12.5	17.6	16.7	20.2	17.3	20.9	22.6	23.9	23.5	21.9	21.2	21.4	19.9	21.0	20.9	21.2	20.0	18.9	14.6
Wed	9.3	9.4	10.6	10.5	12.2	15.3	19.7	15.7	15.6	19.7	29.0	26.5	23.2	23.6	21.6	23.3	19.6	17.1	20.8	21.7	20.9	21.7	25.0	15.2
Thu	9.3	10.4	11.7	11.2	12.7	14.4	17.1	16.5	18.9	17.8	23.0	23.3	22.9	22.2	25.6	22.1	20.7	19.6	19.6	19.0	19.7	19.2	19.1	17.7
Fri	19.1	15.9	10.7	11.0	13.1	18.4	18.4	15.1	17.1	21.0	21.8	25.3	26.0	24.2	27.5	26.1	22.8	22.8	22.1	25.0	23.1	29.8	21.2	18.1
Sat	20.9	18.9	11.0	12.3	12.9	23.4	18.3	17.0	14.6	17.3	19.3	23.1	24.0	18.8	21.1	25.0	22.2	25.6	28.9	24.2	19.3	27.3	25.2	22.9

Finally, when examining CFS, the “Rule of 60” is applied to average amount of hours spend responding to CFS. To do this, the total minutes are added up for each day and the hour category it falls in, then the total is divided by 60 to convert it to hours. The total hours is then divided by 365 to get the average hours spent on CFS per day. The resulting number is then divided by length of the shift, in this case eight hours. From here, the “Rule of 60” is applied by dividing by a factor of 0.6. A shift relief factor was applied to account for the amount of personnel needed with officers taking sick and vacation time. A shift relief factor of 1.3 was used as a standard accepted shift relief factor is typically 130-135% of an agency’s CFS (Corsaro & Akbas, 2017). That resulting number is the multiplied by the eight hour shift to establish the number of officers needed for that hour.

Table 5: Police Officers Needed Per Shift for Deployment of Patrol Services

Rule of 60 Model 2014-2016: "UTRANS" Removed											
Time	# CFS	Total Time Minutes	Total Time Hours	Average Hours/CFS	100% Time Devoted to CFS	60% Time Devoted to CFS	# Needed with Vacation/Sick Time	# Officers Needed / Shift	40% Time Devoted to CFS	# Needed with Vacation/Sick Time	# Officers Needed / Shift
0	435.7	7899	131.65	0.36	0.04	0.06	0.08	0.78	0.09	0.12	1.17
1	313.7	6228	103.79	0.28	0.03	0.05	0.06	0.62	0.07	0.09	0.92
2	333.0	5259	87.65	0.24	0.02	0.04	0.05	0.52	0.06	0.08	0.78
3	199.0	3505	58.42	0.16	0.02	0.03	0.03	0.35	0.04	0.05	0.52
4	168.7	3818	63.64	0.17	0.02	0.03	0.04	0.38	0.04	0.06	0.57
5	242.3	3758	62.63	0.17	0.02	0.03	0.04	0.37	0.04	0.06	0.56
6	449.3	8227	137.12	0.38	0.04	0.06	0.08	0.81	0.09	0.12	1.22
7	680.0	10558	175.97	0.48	0.05	0.08	0.10	1.04	0.12	0.16	1.57
8	899.3	14078	234.64	0.64	0.06	0.11	0.14	1.39	0.16	0.21	2.09
9	943.7	16342	272.37	0.75	0.07	0.12	0.16	1.62	0.19	0.24	2.43
10	843.7	17721	295.34	0.81	0.08	0.13	0.18	1.75	0.20	0.26	2.63
11	735.0	16449	274.14	0.75	0.08	0.13	0.16	1.63	0.19	0.24	2.44
12	807.7	17618	293.63	0.80	0.08	0.13	0.17	1.74	0.20	0.26	2.61
13	866.7	17900	298.34	0.82	0.08	0.14	0.18	1.77	0.20	0.27	2.66
14	765.7	15564	259.40	0.71	0.07	0.12	0.15	1.54	0.18	0.23	2.31
15	945.0	20460	341.00	0.93	0.09	0.16	0.20	2.02	0.23	0.30	3.04
16	1201.7	23644	394.07	1.08	0.11	0.18	0.23	2.34	0.27	0.35	3.51
17	1313.3	25673	427.89	1.17	0.12	0.20	0.25	2.54	0.29	0.38	3.81
18	1018.0	20654	344.23	0.94	0.09	0.16	0.20	2.04	0.24	0.31	3.07
19	840.0	17091	284.86	0.78	0.08	0.13	0.17	1.69	0.20	0.25	2.54
20	862.3	16487	274.78	0.75	0.08	0.13	0.16	1.63	0.19	0.24	2.45
21	733.0	15591	259.85	0.71	0.07	0.12	0.15	1.54	0.18	0.23	2.31
22	709.7	14776	246.27	0.67	0.07	0.11	0.15	1.46	0.17	0.22	2.19
23	584.0	9916	165.27	0.45	0.05	0.08	0.10	0.98	0.11	0.15	1.47

Relying upon the standard rule of 60 and accounting for a shift relief factor, the total number of patrol officers needed to cover UCPD patrol deployment ranges between 25-30 patrol officers as per Table 5; this is calculated by summing the counts in 2-3 hour intervals throughout the 24 hour day. On average per shift, this would equate to the need for 9 officers for the first shift, 10 officers for the second shift, and 8 officers for the third shift (27 total officers needed). This accounts for officer time off, training, and shift relief and allows officers to have 40% of their time not devoted to reacting to citizen generated calls for assistance. Table 5 statistics do not account for any time devoted to UTRANS (this includes NightRide, which is almost universally student-run operation at the University of Cincinnati, and

other UTRANS calls, which UCPD does respond to – though distinguishing between UCPD calls responded to and NightRide calls is not readily available given current data constraints).

Table 6: Police Officers Needed Per Shift for Deployment of Patrol Services (NightRide CFS Included)

Rule of 60 Model 2014-2016: "UTRANS" Included											
Time	# CFS	Total Time Minutes	Total Time Hours	Average Hours/CFS	100% Time Devoted to CFS	60% Time Devoted to CFS	# Needed with Vacation/Sick Time	# Officers Needed / Shift	40% Time Devoted to CFS	# Needed with Vacation/Sick Time	# Officers Needed / Shift
0	2380.3	22661	377.68	1.03	0.10	0.17	0.22	2.24	0.26	0.34	3.36
1	1581.0	16763	279.38	0.77	0.08	0.13	0.17	1.66	0.19	0.25	2.49
2	2022.0	20503	341.71	0.94	0.09	0.16	0.20	2.03	0.23	0.30	3.04
3	1436.0	15288	254.80	0.70	0.07	0.12	0.15	1.51	0.17	0.23	2.27
4	1087.7	13404	223.41	0.61	0.06	0.10	0.13	1.33	0.15	0.20	1.99
5	263.0	4093	68.22	0.19	0.02	0.03	0.04	0.40	0.05	0.06	0.61
6	466.7	8611	143.52	0.39	0.04	0.07	0.09	0.85	0.10	0.13	1.28
7	719.0	11397	189.95	0.52	0.05	0.09	0.11	1.13	0.13	0.17	1.69
8	942.7	15337	255.62	0.70	0.07	0.12	0.15	1.52	0.18	0.23	2.28
9	981.7	17259	287.66	0.79	0.08	0.13	0.17	1.71	0.20	0.26	2.56
10	872.7	18589	309.82	0.85	0.08	0.14	0.18	1.84	0.21	0.28	2.76
11	759.7	17163	286.04	0.78	0.08	0.13	0.17	1.70	0.20	0.25	2.55
12	827.3	18218	303.63	0.83	0.08	0.14	0.18	1.80	0.21	0.27	2.70
13	886.0	18480	308.00	0.84	0.08	0.14	0.18	1.83	0.21	0.27	2.74
14	786.3	16107	268.44	0.74	0.07	0.12	0.16	1.59	0.18	0.24	2.39
15	977.7	21220	353.67	0.97	0.10	0.16	0.21	2.10	0.24	0.31	3.15
16	1232.0	24218	403.64	1.11	0.11	0.18	0.24	2.40	0.28	0.36	3.59
17	1329.3	25992	433.21	1.19	0.12	0.20	0.26	2.57	0.30	0.39	3.86
18	1031.3	20919	348.65	0.96	0.10	0.16	0.21	2.07	0.24	0.31	3.10
19	864.3	17561	292.68	0.80	0.08	0.13	0.17	1.74	0.20	0.26	2.61
20	883.7	16837	280.62	0.77	0.08	0.13	0.17	1.67	0.19	0.25	2.50
21	759.7	16085	268.08	0.73	0.07	0.12	0.16	1.59	0.18	0.24	2.39
22	731.3	15118	251.97	0.69	0.07	0.12	0.15	1.50	0.17	0.22	2.24
23	722.3	11331	188.86	0.52	0.05	0.09	0.11	1.12	0.13	0.17	1.68

Relying upon the same standard rule of 60 and likewise accounting for a shift relief factor, the total number of patrol officers needed to cover UCPD patrol deployment ranges between 30-35 patrol officers as per Table 6. Again, this is calculated by summing the counts in 2-3 hour intervals throughout the 24 hour day. The recommendation suggests that 1st shift should devote between 9 to 11 officers for patrol; 2nd shift should devote between 11 to 12 officers for patrol; and 3rd shift should devote between 9 to 11 officers for patrol deployment. This accounts for officer time off,

training, and shift relief and allows officers to have 40% of their time not devoted to reacting to citizen generated calls for assistance. Table 6 statistics likely over-account for time devoted since part of the UTRANS calls were NightRide calls.

Table 7 below outlines the average number of officers needed at a minimum threshold, per shift, to address patrol deployment, based on the hours of each shift. Using the standard 60 percent rule, the minimum number of patrol officers needed per shift that could devote adequate resources to calls for service equates two officers per shift (note: while the third shift suggests a single officer could cover the deployment level at a minimum level, it is necessary for the potential for backup in a real world situation – thus under two would place a single officer under potential risk and constraint).

Table 7: Minimum Officers Needed for Patrol Deployment

Reactive CFS: 2014-16 - "UTRANS" Included		First Shift	Second Shift	Third Shift
Rule of 60	40% CFS Response	2.4	2.8	2.1
	60% CFS Response	1.6	1.9	1.4
Alexander Weiss	40% CFS Response	1.9	1.8	1.0
	60% CFS Response	1.2	1.2	0.7

Weiss Consulting Illustration - LMPD, 2015

The last model recreated was the Louisville Metro Police Department staffing analysis performed by Alexander Weiss Consulting. This study attempts to answer how many officers are needed for an eight hour shift. Alexander Weiss Consulting calculated staffing figures for when an officer responds to 40 percent CFS, 50 percent CFS, and 60 percent CFS. In this analysis, the calculations are completed using 40 and 60 percent CFS per officer.

The table below provides a breakdown of the formula used by Alexander Weiss Consulting in the LMPD study. The first column is the average number of reactive CFS from 2014-2016. The second column multiplies the first by 3.1

and 3.2 percent respectively. This is to account for the fact that all CFS require a second officer to respond with the first responding officer 3.1 percent of the time for CFS counts without "UTRANS" and 3.2 percent for CFS counts including "UTRANS." The third column represents the adjusted number of CFS based from the previous assumption. The fourth column provides the average minutes each shift spent responding to CFS. The fifth column multiplies the adjusted CFS total by the average time spent on a single run to calculate the total time spent. The sixth column then divides the fifth column by 3,650. The number 3,650 is the number of hours an officer would work if they worked a 10 hour shift every day of the year (Alexander Weiss Consulting, 2015). The "Units" column represents the total number of officers needed per shift if they only responded to CFS throughout their day (Alexander Weiss Consulting, 2015). The last columns, "40 % CFS" and "60 % CFS," represents the total amount of officers needed when responding to 40 or 60 percent of CFS in any given day. Similar to the model in Table 7, the results from Table 8 below suggest that two officers per shift are adequate for a minimum threshold (again noting the third shift would require a second officer for the same safety and security reasons described earlier).

Table 8: Minimum Officers Needed for Patrol Deployment

Alexander Wiess Model: 2014-2016 - "UTRANS" Included								
2014-16	CFS	3.2% Adj	Adj CFS	Avg Time / Run	Time	Units	40% CFS	60% CFS
First	7502.7	240.1	7742.8	21.0	2714.4	0.7	1.9	1.2
Second	7171.6	229.5	7401.1	21.3	2624.6	0.7	1.8	1.2
Third	7251.4	232.0	7483.4	12.0	1501.2	0.4	1.0	0.7

Summary

This analysis utilizes two staffing models to attempt to answer how many officers are needed per shift at the University of Cincinnati Police Division to handle deployment to patrol operations. While both models differ in their own way, overall, the numbers they both provide are vastly similar.

The University of Cincinnati Police Department has committed well over 60% of its sworn law enforcement personnel to handling patrol, which is the cornerstone of police operations. In fact UCPD has committed over 70% of its personnel to patrol functions, illustrating its commitment to patrol services.

When using the 60% rule, the number of police officers devoted specifically for patrol for each shift should likely be as follows: **roughly 30 to 35 police officers are recommended to address patrol considerations in the agency**. This estimation is based on the largest numbers for calls for service for 2014-2016, and accounting for the influence of UTRANS (in part NightRide calls for service, though some additional calls fell under this category as well). It is also important to note that this recommendation accounts only for patrol deployment and does not account for additional workload considerations. The recommendation suggests that 1st shift should devote between 9 to 11 officers for patrol; 2nd shift should devote between 11 to 12 officers for patrol; and 3rd shift should devote between 9 to 11 officers for patrol deployment.

Currently, UCPD has 30 non-supervisory police officers devoted to patrol (11 in shift one, 9 in shift two, and 10 in shift three) with a plan to hire 7 additional police officers. The current and planned allocation of officers devoted to patrol is commensurate with citizen requests for assistance. These estimates do not include the 6 patrol sergeants at UCPD who do not regularly respond to citizen requests for assistance on a routine basis.

We also find that the UCPD should consider its **minimum standard** of patrol for each shift to be **two patrol officers per shift** for the first, second, and third shifts. This recommendation accounts for actual deployment practices needed by UCPD from 2012-2016.

Finally, the allocation of the shifts (i.e., first shift being 06:00 to 16:00, second shift being 15:00 to 01:00, and third shift being 21:00 to 07:00) is consistent with the call volume and time devoted to citizen generated requests for

assistance. The overlap periods between the shifts are at peak intervals, and no changes are recommended relative to the current schedule. UCPD has been clearly analytical when devoting its resources in relation to patrol allocation.

References

Corsaro, N. & Akbas, H. (2017). *Staffing Analysis for the Colerain Police Department.* Institute of Crime Science. University of Cincinnati.

Alexander Weiss Consulting, LLC (2015). *Louisville Metro Police Department Staffing Study.* 7/5/2018. https://louisvilleky.gov/sites/default/files/police/sop_searchable_and_reports/2015_lmpd_staffing_study.pdf