Draft Patrol Incident Analysis and Staffing Analysis

February 12, 2022

Final

Police Chief Maris Herold
Boulder Police Department

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This report was authored by Troy C. Payne under contract with the Boulder Police Department. Points of view in this publication are those of the author and do not necessarily represent the official position of the Boulder Police Department or the City of Boulder.

February 12, 2022

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Executive summary

This report describes an analysis of the Boulder Police Department's (BPD) workload over the years 2013-2020 and provides a workload-based staffing model based on that analysis. The report finds that BPD's workload has shifted substantially from 2013 to 2020, toward more property crime and violent crime and away from traffic stops. Property crime incidents have increased by 40% over this period, while violent crime incidents have increased by 60%. Nevertheless, the total number of incidents has declined. Despite an overall declining number of incidents, the change in the nature of the workload has increased the average officer time spent per incident and increased the average number of officers who are required to handle an incident. Friday, Saturday, and Sunday nights are the most busy times in terms of number of incidents, with substantial variation by incident type and District.

After examining BPD's current staffing and historical workload, the following recommendations were offered using a common best-practice framework for police staffing:

BPD should add between 8 and 14 patrol officers (total) to Watches II and III. Watch II (1400-0000 hours) is particularly understaffed; priority should be given to increasing patrol officers on Watch II. Citizen demand for reactive police services continues through the early hours of Watch III (2100-0700 hours) with a steep reduction in demand after 0300. Given current vacancies across all sworn positions, approximately 30 new officers are required to achieve the suggested patrol staffing. This requires hiring 18-19 new officers in each of the next five years assuming a 5% attrition rate due to normal retirement of officers and recruit attrition.

Vacant patrol positions should be filled, and BPD should focus on recruitment and retention of officers. This report focuses on the patrol function, but vacancies across all sworn positions in BPD impact the agency's ability to staff patrol positions. While recruitment and retention are national problems for police in 2022, BPD's current vacancy rate is concerning.

BPD may not be able to maintain its current specialized units and should consider disbanding some units if current sworn staffing cannot be increased. Like patrol, each specialized unit also has vacant positions. Some units have dwindled to an unsustainably low number of officers, especially after shift relief and scheduled leave are considered. The Boulder Police Department and City of Boulder may be facing difficult decisions regarding specialized units and the functions they perform if sworn staffing cannot be increased.

BPD should continue to enhance its problem-solving capabilities to address increasing crime. Findings from the historic incident analysis showed a steady increase in crime over the study period. BPD should continue to invest resources in sworn and civilian employees to enable the continued development of evidence-based policing practices such as problem-oriented policing that require advanced data analysis combined with engagement of relevant community stakeholders.

Introduction

This report describes Boulder, Colorado Police Department (BPD) patrol workloads and provides suggestions for police patrol staffing. This police patrol incident analysis and staffing analysis report describes trends in the dispatch data provided by the Boulder Police Department and provides police patrol staffing estimates based on that analysis. This report is meant to provide guidance to the City of Boulder and the Boulder Police Department when making police patrol staffing decisions. Determining optimal police patrol staffing is not a simple process, and the recommendations in this report should be taken into consideration with other departmental goals.

The report begins by examining trends in patrol workloads, finding large changes in the nature of BPD's workload from 2013-2020. This workload analysis informs a data-driven approach to staffing presented in the second half of the report. The report is meant to provide guidance to the City of Boulder and Boulder Police Department executives for medium-term planning.

The staffing recommendations are based on past workloads, which are generally a good measure of future workloads — but not always. As the first sections of the report show, BPD's workload is slowly changing over time. This report's recommended staffing levels should therefore be one input among many that BPD should consider when making decisions about how to allocate BPD sworn officers.

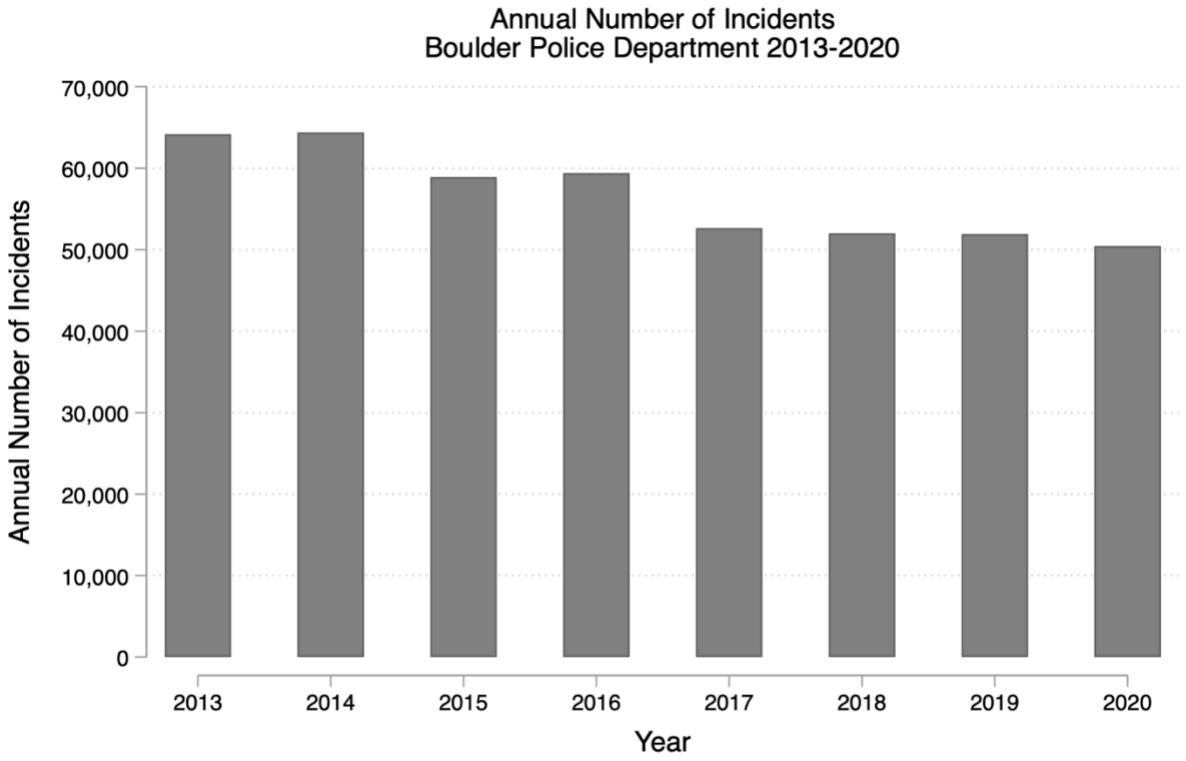
This report is limited to police patrol and BPD's Traffic Unit. BPD patrol officers are primarily tasked with responding to citizen requests for service. The Traffic Unit has a more proactive workload, but traffic officers also respond to traffic collisions and a small number of other reactive incidents. BPD has several other more specialized units, including the Neighborhood Impact Team, Mall Unit, Homeless Outreach Team, Detectives, and the Drug Task Force, among others. These units either have a largely proactive workload, or as in the case of Detectives, a workload that is not measurable using the same data considered for this report. Staffing for these units is not considered in this report, other than noting that the existing vacancies in nearly all of these units may impact BPD's ability to increase patrol officer staffing.

This report begins by examining historical patrol workloads for BPD officers using computer-aided dispatch data provided by BPD. The report then describes the Rule of 60 method for determining optimal police staffing, a best-practice method in common use throughout police departments in the United States.

Number of incidents per year

The Boulder Police Department serviced[1] an average of 56,738 incidents per year 2013-2020, including both proactive and reactive incidents. The total number of incidents was highest in 2014 with 64,399 incidents, and lowest in 2020 at 50,441 incidents in that year. Overall, there has been a 21.4% decrease in the annual number of incidents BPD responds to each year over the period 2013-2020. This overall decline masks increases in some categories of incidents while others decreased, as discussed below.

Figure 1: Annual number of incidents



Proactive and reactive incidents by year

From 2013 to 2020, there was a marked shift in activity from proactive incidents to reactive incidents. Proactive incidents include traffic stops, pedestrian contacts, foot patrol, and other officer-initiated activity. In 2013, nearly half of BPD's workload (46.8%) was proactive. By 2020, just 25.7% of BPD incidents were proactive. Reactive incidents, those in which citizens have requested service, increased from half (47.9%) to more than two-thirds (70.5%) of incidents over the same period. Traffic collisions and 911 hang ups have remained a relatively

[1] "Serviced" means at least one sworn unit was recorded by dispatch as having arrived at the incident.

stable proportion of BPD workload, except for reduced collisions in 2020, presumably from reduced vehicular traffic due to COVID-19 mitigation policies.

Table 1: Proactive and reactive incidents by year

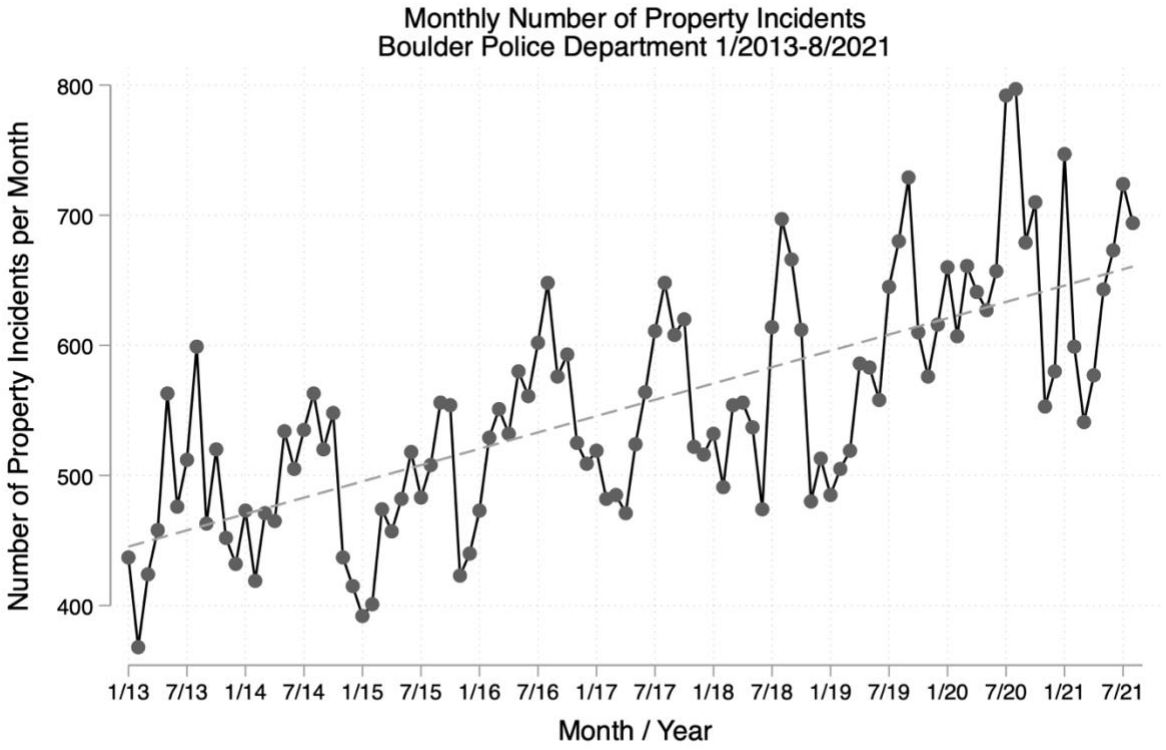
	2013	2014	2015	2016	2017	2018	2019	2020	Total
911 Hang up	1.6%	1.6%	1.6%	1.6%	1.6%	1.8%	1.8%	1.3%	1.6%
Proactive	46.8%	45.5%	41.7%	39.2%	31.8%	30.8%	27.8%	25.7%	36.5%
Reactive	47.9%	49.4%	52.6%	55.2%	62.2%	63.1%	66.6%	70.5%	58.2%
Traffic collision	3.7%	3.5%	4.0%	3.9%	4.4%	4.2%	3.8%	2.4%	3.7%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Number of incidents by type

The types of incidents that BPD responds to have changed over time. The data BPD provided included over 100 distinct incident types, which were categorized into 14 types for analysis. See page 32 for how each original call type was categorized for analysis.

From 2013 to 2020, there was a marked shift in activity from proactive incidents to reactive incidents. Proactive incidents include traffic stops, pedestrian contacts, foot patrol, and other officer-initiated activity. In 2013, nearly half of BPD's workload (46.8%) was proactive. By 2020, just 25.7% of BPD incidents were proactive. Reactive incidents, those in which citizens have requested service, increased from half (47.9%) to more than two-thirds (70.5%) of incidents over the same period. Traffic collisions and 911 hang ups have remained a relatively stable proportion of BPD workload, except for reduced collisions in 2020, presumably from reduced vehicular traffic due to COVID-19 mitigation policies.

Figure 2: Monthly Property Incidents



Violent incidents also increased from 2013-2020, from 1,700 to 2,750, an increase of 60%. This increase was broad-based, with a 16% increase in assaults[2], a 34% increase in domestic disturbances[3], a 100% increase in harassment incidents[4], a 525% increase in menacing[5] (from very small numbers in 2013), a 34% increase in shots heard[6], and a 98% increase in weapons incidents[7]. Like the increase in property incidents, this increase in violent incidents has been relatively smooth over the period 2013-2020. Also like property incidents, there is a strong seasonal component to the trend, and the general trend has continued into 2021.

[2] Summing in-progress, just occurred, and cold incidents, assaults increased to 398 in 2020 from 341 in 2013. There were 373 assault incidents in 2019.

[3] Summing in-progress, just occurred, and cold incidents, domestic disturbances increased to 706 in 2020 from 527 in 2013. There were 636 domestic disturbance incidents in 2019.

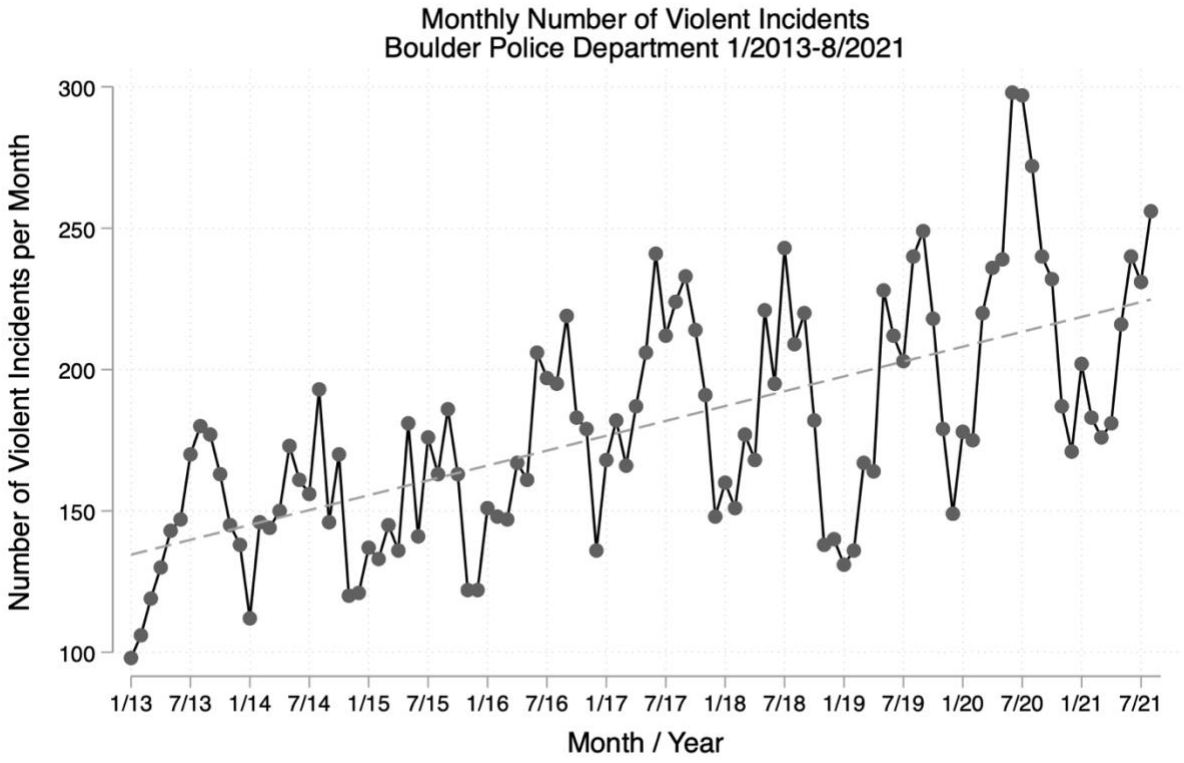
[4] Summing in-progress, just occurred, and cold incidents, harassment increased to 1,089 in 2020 from 544 in 2013. There were 804 harassment incidents in 2019.

[5] Summing in-progress, just occurred, and cold incidents, menacing increased to 100 in 2020 from 16 in 2013. There were 166 menacing incidents in 2019.

[6] Summing in-progress, just occurred, and cold incidents, shots heard increased to 129 in 2020 from 96 in 2013. There were 124 shots heard incidents in 2019.

[7] Summing in-progress, just occurred, and cold incidents, weapons increased to 131 in 2020 from 66 in 2013. There were 95 weapons incidents in 2019.

Figure 3: Monthly Violence Incidents



The police incident data examined here are more inclusive than what agencies report to the FBI's Uniform Crime Reporting (UCR) program that may be more familiar to some readers. Similar changes are seen in summary data reported to the FBI Uniform Crime Reports program[8] as well: NIBRS property crimes increased 36%[9] from 2013-2020. NIBRS violent crimes increased 57%[10] over the same period.

As these reactive incidents increased, proactive contacts with the public have declined. From 2013-2020, the number of non-traffic proactive incidents has dropped by more than 59%, from more than 8,000 in 2013 to 3,200 in 2020. Both officer-initiated events and pedestrian contacts have declined. Traffic incidents have also declined, with nearly all of the decline coming from traffic stops (from nearly 20,000 incidents in 2013 to 6,300 in 2020).

Like the changes in property and violent crime incidents, the change in traffic incidents is steady over the years 2013-2020. Figure 4 shows the monthly number of traffic stop incidents

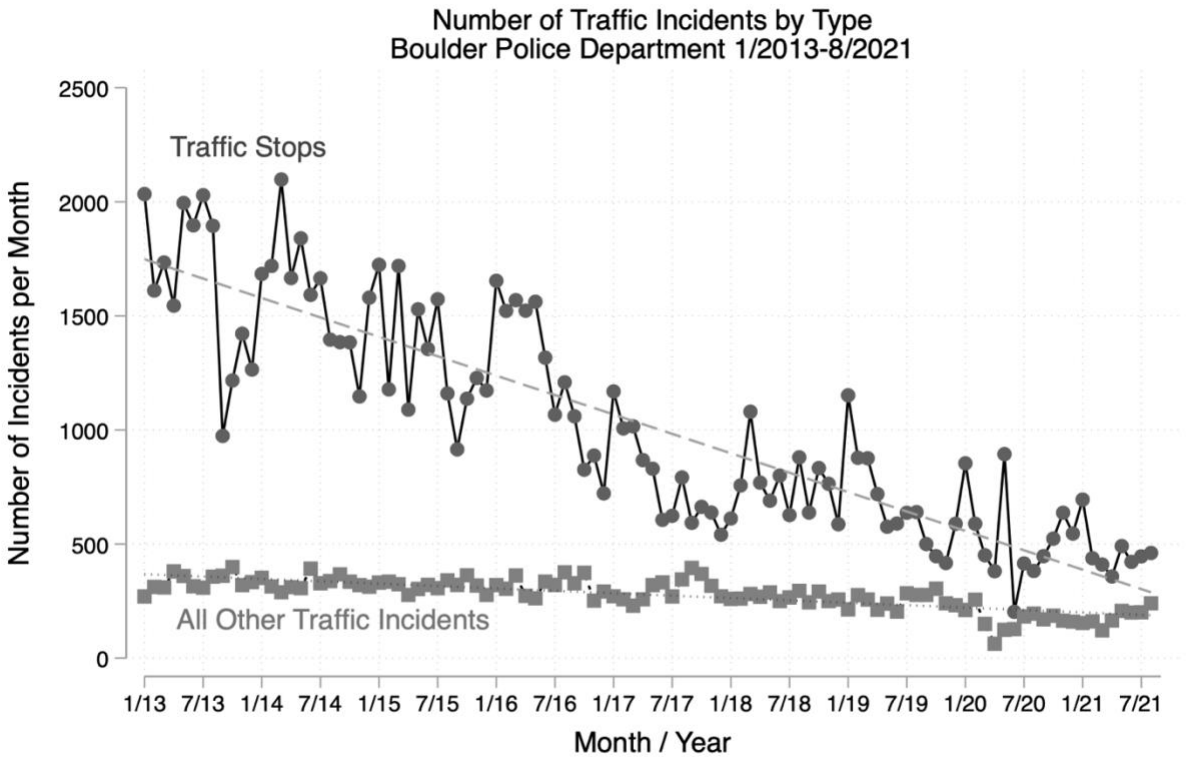
[8] UCR data provided by the FBI's Crime Data Explorer at https://crime-data-explorer.fr.cloud.gov/pages/explorer/crime/crime-trend, retrieved 23 Oct 2021.

[9] Property crimes (summarized NIBRS offenses) increased from 2,949 in 2013 to 4,019 in 2020. There were 3,316 property crimes reported to NIBRS in 2019.

[10] Violent crimes (summarized NIBRS offenses) increased from 218 in 2013 to 343 in 2020. There were 277 violent crimes reported to NIBRS in 2019.

and all other traffic incidents including collisions, DUI, and other incidents in which a sworn BPD unit responded.

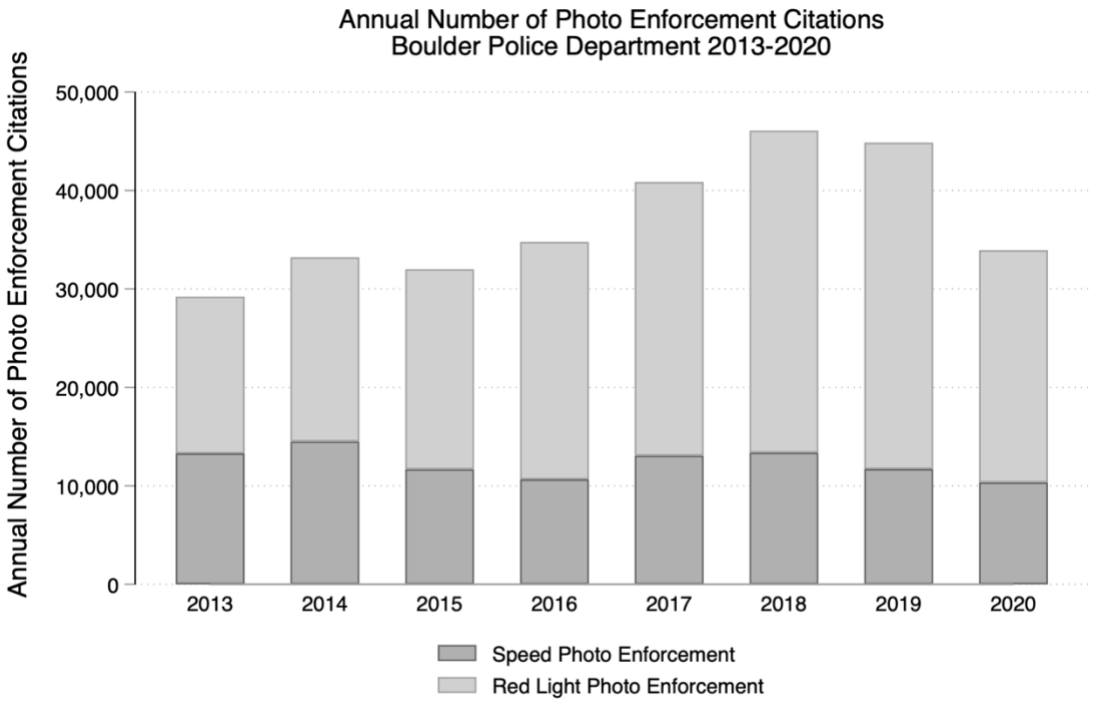
Figure 4: Monthly Traffic Incidents



Taken together, the increase in property and violence incidents while non-traffic proactive and traffic stops have declined suggests that BPD officers likely have less discretionary time in 2021 than they did in 2013.

The decline in traffic stops coincides with an increase in photo red light and photo radar citations from 2013-2021. Monthly data for these citations was not available at the time of this writing. Annual data were available, however, and show stable speed photo enforcement citations and increasing photo red light enforcement citations through 2019. Red light photo enforcement citations increased 108% (from 15,932 in 2013 to 33,145 in 2019).

Figure 5: Number of photo enforcement citations



Traffic enforcement by the traffic unit

The decrease in traffic enforcement, primarily through traffic stops, raised several questions during meetings with BPD command. One key question was to what extent the traffic unit was able to focus on traffic activities. Dispatch does not record BPD officer assignment to traffic versus patrol, so we are not able to provide a complete accounting of the traffic unit's workload over the entire study period. BPD was able to provide shift assignments from January and June 2019, however, and the remainder of this section describes the traffic unit's workload using just those two months. There was a total of 8,655 incidents during January 2019 and June 2019.

During hours when traffic units are active (0600-1900) in January and June of 2019, there were 5,792 incidents with one or more sworn units. The traffic unit's overall workload was 72% proactive. Most of this proactive work consisted of traffic stops (1,280 total), 70% of which (907) were performed solely by officers assigned to the traffic unit (i.e., only traffic unit officers arrived at the scene). Traffic unit officers also handled most traffic collisions: 65% of the 229 total collisions during these hours were handled exclusively by traffic unit officers.

Traffic unit officers were never the sole units on scene for violent incidents and were rarely present at violent incidents at all. Just eight violent incidents had a mix of patrol and traffic units responding in January and June 2019, all of which were in-progress or just occurred incidents. Traffic unit officers were the sole officers on-scene at two property crime incidents, a suspicious person in-progress and a trespassing in-progress. Another 14 incidents included

a mix of traffic unit and patrol units on-scene, all of which were either in-progress or just occurred.

While BPD officers assigned to traffic duty were generally able to focus on traffic in January and June of 2019, the traffic unit's size has decreased over time. The traffic unit is split in two shifts and as of December 2021 has one sworn vacancy on the 0630-1630 shift and three sworn vacancies on the 0900-1900 shift.

Average officer time per incident by year and type of incident

As the type of incidents in BPD's workload has changed over time, the average officer time spent at each incident has changed as well. The average number of officer-minutes per incident has increased from 37.8 minutes in 2013 to 46.5 minutes in 2020 and 45.2 minutes in 2021. The percentage of incidents with more than one officer on-scene increased from 26% in 2013 to 35% in 2020.

Table 2: Officer time per incident and percent of incidents with more than one officer by year (all incidents)

Year	Avg. Officer-minutes per incident	Percent incidents more than 1 officer
2013	37.8	26%
2014	38.9	28%
2015	43.2	28%
2016	44.8	28%
2017	47.4	30%
2018	49.5	32%
2019	47.5	33%
2020	46.5	35%
2021	45.2	34%
Overall average	**44.2**	**30%**

The changes in incident types over time discussed in the prior section help to explain why BPD officers are spending more time at each incident on average, and why incidents are more likely to have multiple officers arrive. In general, the incident types that have increased since 2013 are both more time-consuming on average and are more likely to involve multiple officers than the incident types that have decreased. A complete table with average officer-minutes, average number of officers, and percentage of incidents with more than one officer responding is shown in the Appendix in Table 13.

Average time between incidents

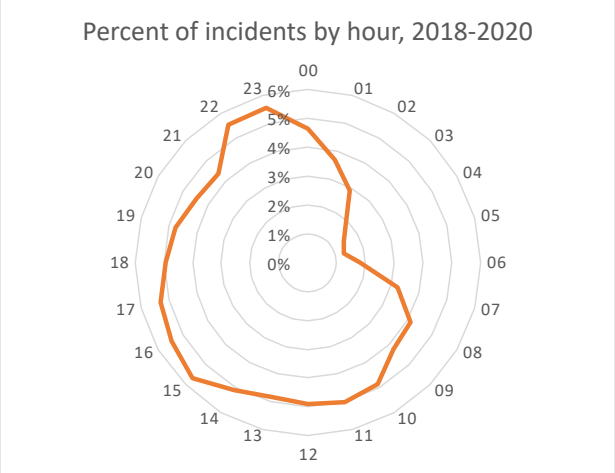
While the types of incidents were changing, the amount of time between incidents was also decreasing as shown in Table 3. On average, the number of minutes between calls (i.e., the elapsed time between clearing one incident and being assigned another) decreased from 42 minutes in 2013 to 36 minutes in 2020, but this average is driven by large outliers. Half of the durations to the next incident were 14 minutes or less in 2013, and this fell to 12 minutes or less in 2020.

Table 3: Average and median minutes between incidents by year

Year	Average	50th percentile
2013	42	14
2014	41	13
2015	40	12
2016	38	12
2017	38	11
2018	36	11
2019	37	12
2020	36	12
2021	38	13
Total	38	12

Number of incidents by hour of day and day of week[11]

Figure 6: Percent of all incidents by hour, 2018-2020



As is typical in most agencies, BPD incident volume was not constant throughout the day. The number of incidents increases from 0700 through 1100 hours, plateaus until 1400, increases from 1400 through 1600, gradually tapering off until 2200 before increasing again at 2300. This is shown in Figure 6 as a radar chart and in Table 4 as the annual average number of incidents within each hour.

[11] Due to the changes since 2013 discussed above and having partial-year data from 2021, this section will use a three-year average from 2018-2020.

Table 4: Average annual CFS by hour, 2018-2020

Hour	Percent of incidents, 2018-2020	Total number of incidents 2018-2020	Average annual incidents in hour	Average daily incidents starting in hour
06	2%	2,792	931	2.5
07	3%	5,019	1,673	4.6
08	4%	6,397	2,132	5.8
09	4%	6,534	2,178	6.0
10	5%	7,488	2,496	6.8
11	5%	7,726	2,575	7.1
12	5%	7,590	2,530	6.9
13	5%	7,447	2,482	6.8
14	5%	7,867	2,622	7.2
15	6%	8,719	2,906	8.0
16	5%	8,453	2,818	7.7
17	5%	8,174	2,725	7.5
18	5%	7,607	2,536	6.9
19	5%	7,332	2,444	6.7
20	4%	6,873	2,291	6.3
21	4%	6,779	2,260	6.2
22	6%	8,526	2,842	7.8
23	6%	8,582	2,861	7.8
00	5%	7,149	2,383	6.5
01	4%	5,726	1,909	5.2
02	3%	4,487	1,496	4.1
03	2%	2,883	961	2.6
04	1%	2,223	741	2.0
05	1%	1,992	664	1.8

Figure 7 shows a heatmap by hour of day and day of week. Call volumes tend to be higher Thursday through Saturday nights (2200-0100) relative to other days, as is typical for most municipal police departments in the US.

Figure 7: Average annual incidents 2018-2020 by hour of day and day of week

Hour	Day of week						
	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	123	136	142	128	138	123	140
07	225	245	264	250	252	245	192
08	295	350	388	362	316	220	201
09	305	359	363	369	318	242	222
10	341	403	421	409	365	309	247
11	327	386	462	428	381	330	260
12	323	379	416	435	391	307	279
13	321	379	408	416	354	327	278
14	380	396	422	410	358	352	305
15	393	445	426	473	429	420	319
16	387	416	404	434	425	426	326
17	378	384	387	436	399	416	325
18	333	336	368	382	398	420	299
19	312	315	356	369	396	404	292
20	285	278	337	360	364	391	276
21	280	272	311	352	370	396	278
22	307	311	382	451	518	521	352
23	294	311	339	484	572	552	309
00	268	234	245	301	403	459	473
01	230	183	198	224	308	386	380
02	172	156	156	182	226	306	297
03	122	107	107	113	140	187	185
04	98	89	86	86	116	134	132
05	86	92	87	83	101	106	109

The hour of day and day of week patterns vary by incident type. Figure 8 shows a similar heat map for select incident types. Violent incidents appear to be spread throughout the week during 1200 to 0000 hours. Property incidents are similarly spread out, with slight increases Friday and Saturday nights. Nuisance calls are far more common Thursday through Saturday from 2100 though 0200 hours than at other days/times. Medical and assist incidents are more frequently during weekdays in the middle of the day than at other times. Reactive traffic incidents (mostly collisions) are more common during rush hour throughout the workweek, while proactive traffic incidents (mostly traffic stops) are more common mid-day mid-week.

Figure 8: Average annual incidents 2018-2020 by hour of day and day of week by type

Violent

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	3	4	7	4	2	4	5
07	13	12	7	10	9	6	8
08	13	12	14	15	9	10	10
09	13	15	15	15	16	12	10
10	16	21	14	18	12	17	14
11	18	16	17	17	15	15	13
12	22	17	21	24	18	15	15
13	17	19	15	21	14	21	18
14	24	22	18	19	17	19	22
15	16	20	21	23	21	19	20
16	18	18	24	18	23	22	17
17	17	18	23	25	18	20	17
18	20	20	16	25	17	18	17
19	17	19	18	14	20	21	18
20	21	18	16	20	21	21	18
21	17	15	18	20	18	25	16
22	18	14	20	16	19	23	20
23	13	16	14	15	19	17	10
00	11	11	11	9	12	15	17
01	9	9	13	11	12	13	18
02	7	6	6	9	12	15	15
03	4	4	4	3	8	12	8
04	2	2	3	2	5	5	9
05	3	4	5	3	3	5	4

Property

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	22	26	35	26	25	18	18
07	34	39	37	38	47	31	20
08	45	48	55	54	48	36	37
09	51	57	48	59	61	39	39
10	50	51	55	51	55	46	41
11	52	42	55	57	53	48	49
12	54	58	58	61	64	50	44
13	57	51	57	54	60	53	50
14	59	59	65	62	56	49	48
15	55	63	58	63	57	58	51
16	60	61	60	56	58	55	49
17	60	63	54	58	55	50	46
18	60	51	53	49	50	61	46
19	51	56	49	48	46	52	50
20	45	51	52	49	53	54	38
21	47	49	50	46	42	44	46
22	42	51	50	45	55	55	49
23	40	47	37	45	46	45	35
00	32	39	31	35	35	36	38
01	30	26	31	25	34	34	33
02	23	20	28	29	23	37	33
03	25	21	22	22	27	29	25
04	16	18	16	13	21	23	19
05	17	22	21	20	17	16	15

Nuisance

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	14	19	18	21	27	16	16
07	21	26	30	27	26	28	20
08	31	34	36	40	35	28	26
09	39	38	30	33	41	31	24
10	33	31	33	38	36	34	30
11	35	36	43	37	40	43	37
12	39	35	34	40	46	44	36
13	42	43	42	40	38	51	36
14	43	45	44	47	49	57	42
15	38	43	47	47	50	62	43
16	53	57	48	45	55	75	51
17	51	59	58	62	62	81	58
18	60	61	58	60	69	80	54
19	56	58	62	66	67	76	54
20	62	58	62	68	73	76	58
21	62	70	78	91	93	106	61
22	86	84	105	115	126	132	85
23	72	94	96	144	181	179	63
00	51	47	67	75	107	147	162
01	40	37	42	40	79	98	98
02	23	22	23	32	56	69	68
03	14	13	19	15	31	41	47
04	9	12	12	9	15	20	21
05	13	8	12	16	17	19	15

Medical / assist

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	21	24	18	26	27	24	22
07	38	38	38	40	36	37	35
08	56	60	54	60	73	39	36
09	69	75	66	73	75	49	48
10	72	73	77	77	99	57	52
11	78	76	74	73	86	66	54
12	74	73	68	76	81	72	62
13	73	83	75	87	77	73	67
14	80	83	88	104	91	76	73
15	93	105	86	96	98	78	70
16	93	96	96	99	99	71	76
17	101	83	82	85	84	75	75
18	75	75	84	72	89	82	79
19	79	76	79	70	78	77	75
20	64	64	65	70	66	70	69
21	69	62	60	60	67	59	64
22	54	59	57	53	68	68	57
23	56	46	45	60	64	64	48
00	43	41	49	45	43	63	62
01	30	34	34	40	38	46	53
02	23	26	28	34	29	44	44
03	23	26	18	20	24	38	30
04	19	21	14	19	24	26	24
05	17	27	20	16	26	28	23

Traffic (reactive)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	5	6	4	5	5	4	3
07	21	23	13	21	15	6	8
08	36	39	27	23	21	9	10
09	18	22	19	21	15	12	10
10	21	18	17	21	17	16	11
11	19	19	20	25	23	21	17
12	24	24	24	23	23	14	18
13	24	19	17	19	20	17	16
14	26	26	23	19	22	18	21
15	31	35	26	30	29	29	22
16	31	30	27	34	43	26	22
17	36	41	32	46	40	25	25
18	30	31	32	36	32	26	21
19	29	25	24	24	33	22	20
20	18	18	22	25	24	21	13
21	11	15	14	18	21	19	13
22	7	13	14	13	21	16	12
23	6	8	7	8	14	16	7
00	4	4	4	5	9	11	9
01	2	4	5	3	4	10	9
02	3	3	2	2	2	6	7
03	1	1	1	3	1	3	3
04	2	1	0	2	2	2	3
05	2	4	4	2	4	2	3

Traffic (proactive)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	3	3	3	2	2	2	1
07	13	22	35	32	22	20	11
08	41	71	90	83	41	28	18
09	38	62	85	80	35	33	17
10	53	117	122	119	59	60	27
11	64	122	173	149	94	62	32
12	52	105	137	131	91	48	34
13	44	87	110	112	68	40	26
14	57	71	89	80	46	41	25
15	58	83	81	95	56	57	31
16	41	51	50	65	48	61	36
17	38	36	52	64	44	59	33
18	24	31	32	38	47	52	24
19	21	22	40	50	55	52	26
20	17	16	43	49	54	64	26
21	22	17	32	45	55	66	26
22	33	32	55	86	107	105	57
23	38	34	57	80	106	97	48
00	39	27	24	54	71	71	75
01	23	19	17	37	51	70	55
02	21	19	17	25	39	48	49
03	11	11	8	9	10	17	21
04	10	4	7	7	11	10	15
05	4	4	2	4	6	7	7

Incidents by district[12]

BPD's patrol area is split into five districts. As shown in Table 5, Districts 2 and 3 had more incidents than other districts in the years 2018-2020.

Table 5: Incidents by district

District	2018	2019	2020	Total
BP01	7,339	6,940	7,250	**21,529**
BP02	11,848	12,760	12,013	**36,621**
BP03	18,253	17,743	16,725	**52,721**
BP04	8,624	8,934	9,077	**26,635**
BP05	4,967	4,600	4,687	**14,254**
Other	973	943	689	**2,605**
Total	**52,004**	**51,920**	**50,441**	**154,365**

The pattern of incidents by hour of day and day of week was different across the five districts. District 3 had dramatically more incidents weekend nights than at other times. District 1 had more incidents during weekend nights than at other times, but the differences between weekend nights and weekday afternoons was less dramatic than in District 3. District 2's most busy time was around 1400 to 1700 hours through the week, with a higher number of incidents on Friday and Saturday nights than through the work week. District 4 and District 5 were most busy in the middle of the day, in the middle of the week.

[12] Response area, the field from which district was extracted, is more sparsely populated prior to 2018, and partial-year data were available for 2021. This section therefore uses data from 2018-2020.

Figure 9: Average annual incidents 2018-2020 by BPD District

District 1

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	14	15	13	17	23	13	12
07	26	35	39	33	38	26	23
08	43	54	59	59	51	32	29
09	46	43	49	46	48	33	29
10	43	43	50	53	50	40	32
11	38	45	51	54	62	43	36
12	43	43	42	43	51	36	43
13	47	51	47	55	46	42	37
14	57	44	50	53	45	43	38
15	55	56	55	57	59	54	54
16	58	63	53	65	68	67	50
17	56	66	60	65	68	64	53
18	54	56	60	60	64	61	53
19	56	56	59	59	60	63	56
20	43	52	50	58	55	61	46
21	50	50	53	54	63	60	44
22	45	53	59	68	83	85	68
23	42	41	44	52	72	70	51
00	36	36	29	33	40	49	53
01	39	24	24	21	31	43	39
02	20	21	18	23	25	40	38
03	14	14	15	17	22	28	25
04	14	14	10	11	16	19	14
05	12	11	9	9	15	14	14

District 2

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	37	38	43	41	36	36	33
07	55	61	68	65	64	53	46
08	72	78	90	78	77	49	50
09	83	99	88	99	92	54	46
10	82	116	99	97	101	71	60
11	78	99	104	101	100	73	69
12	89	98	99	105	110	77	75
13	89	96	104	91	96	79	69
14	112	104	111	113	98	94	82
15	115	126	125	127	114	105	87
16	108	110	109	115	116	101	78
17	99	101	95	114	102	102	77
18	92	91	97	99	97	103	74
19	86	86	86	93	92	94	68
20	86	67	89	77	93	87	72
21	76	65	70	75	85	89	78
22	75	66	84	85	102	105	85
23	58	57	60	79	88	87	66
00	56	46	42	50	53	62	62
01	51	41	37	44	46	58	44
02	43	30	32	33	39	46	44
03	32	30	23	28	31	35	33
04	24	22	22	24	30	30	31
05	25	31	26	29	28	29	27

District 3

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	50	58	60	45	50	54	74
07	92	89	96	89	85	104	77
08	92	100	113	111	93	78	70
09	93	101	101	103	88	88	86
10	104	103	112	108	115	103	87
11	102	94	119	113	95	110	84
12	93	101	106	121	103	108	92
13	96	109	107	120	105	120	100
14	106	123	126	117	115	130	110
15	110	119	112	140	133	152	94
16	113	117	117	120	132	149	110
17	106	107	119	126	122	150	106
18	96	98	115	126	135	155	94
19	93	94	124	116	137	141	101
20	79	82	113	123	132	136	88
21	75	84	107	131	136	141	80
22	112	111	139	181	205	196	102
23	110	127	146	238	276	255	106
00	99	89	106	140	219	235	243
01	76	68	80	96	168	194	194
02	61	57	60	75	108	150	138
03	41	34	43	40	55	72	71
04	32	32	29	30	41	49	46
05	27	25	28	25	32	42	38

District 4

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	14	16	17	13	18	14	13
07	33	38	35	39	42	39	30
08	50	69	63	70	57	32	34
09	44	61	74	74	50	38	37
10	61	79	89	97	62	55	39
11	67	85	114	98	74	63	45
12	61	82	106	110	79	50	44
13	52	72	102	101	69	49	40
14	66	76	87	79	61	48	48
15	70	93	92	92	77	67	50
16	70	77	77	88	72	65	53
17	76	64	62	90	64	56	49
18	61	55	57	61	62	64	51
19	45	46	46	64	67	62	42
20	45	41	52	67	49	63	42
21	44	45	50	60	50	56	41
22	47	51	64	69	73	76	55
23	56	62	56	76	84	79	49
00	51	41	42	52	62	67	69
01	39	33	42	42	42	58	63
02	27	38	31	36	37	45	48
03	22	21	19	21	22	36	33
04	17	15	18	16	19	20	22
05	14	15	14	10	13	18	18

District 5

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	8	7	7	11	9	5	6
07	17	18	25	21	19	20	11
08	34	46	56	39	30	26	15
09	36	49	44	41	35	26	21
10	45	56	65	48	31	36	26
11	35	55	65	53	40	38	21
12	33	47	54	45	36	32	21
13	32	41	37	38	30	31	27
14	34	41	38	40	31	31	24
15	38	42	33	44	38	35	28
16	33	39	37	34	30	36	30
17	34	41	39	31	35	37	35
18	27	31	33	30	33	31	25
19	29	29	36	31	37	38	21
20	28	30	28	31	28	37	25
21	29	26	27	27	31	43	31
22	24	26	30	38	45	50	36
23	23	21	26	30	45	53	30
00	24	20	22	21	25	37	39
01	19	15	14	16	15	24	34
02	18	9	13	12	14	19	25
03	12	6	6	7	10	12	20
04	8	6	5	5	9	16	18
05	7	8	7	9	12	2	10

Other

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
06	1	1	1	2	2	1	2
07	2	5	2	3	4	2	4
08	4	4	7	6	6	3	4
09	3	6	7	7	6	2	3
10	6	6	6	6	6	6	3
11	6	8	10	8	10	4	5
12	5	8	9	12	11	3	4
13	5	10	11	12	8	6	4
14	6	9	10	9	8	7	3
15	6	9	9	13	8	7	5
16	4	10	11	11	7	7	4
17	8	5	11	9	8	8	4
18	4	5	5	6	7	6	2
19	3	4	5	6	4	6	4
20	3	5	6	5	8	7	3
21	5	3	5	5	5	7	3
22	3	3	6	10	11	9	5
23	5	3	7	9	7	9	8
00	3	2	4	4	5	8	6
01	5	2	1	5	6	8	6
02	3	1	1	2	3	6	5
03	2	1	2	1	1	3	3
04	3	1	1	1	2	1	2
05	1	1	3	1	1	1	2

Summary of historic workload for the Boulder Police Department

The Boulder Police Department's workload has changed substantially since 2013. BPD officers are servicing fewer overall incidents in more recent years (2019-2020), with the overall number of incidents down 21.4% from 2013-2020. There do not appear to be strong 2020-only effects in this reduction. The reduction in incidents is primarily from a dramatic reduction in traffic stops, while property and violent crime incidents have both seen broad-based increases.

Overall incidents are down due to reductions in proactive incidents and traffic incidents, with both down more than 50% from 2013 to 2020. As with the overall number of incidents, these changes in workload are consistent over multiple years, and do not appear to be limited to 2020. This compositional change has impacts on the number of officers required and the nature of the work that officers do. Property and violent incidents take longer to clear than traffic and proactive incidents, on average. Both properly and violent incidents are far more likely than traffic incidents to involve more than one officer as well. The net effect has been to increase the average officer time per incident by nearly seven and a half officer-minutes from 2013 to 2020. The percentage of incidents with more than one officer responding has also increased from 26% to 35% over the same period.

Across all districts, BPD is most busy Thursday, Friday, and Saturday nights, from about 2100 to 0100. This increase in workload is not spread equally across all incident types; the increase on weekends is driven largely by nuisance incidents. The workload is also not spread equally across districts, with District 3 servicing more incidents than other districts followed by District 2. The hourly workload also varies by district. While District 3 and District 1 see an increase in workload on weekend evenings, mid-week and mid-day are busier in Districts 2, 4, and 5.

A workload-based method to estimating police patrol staffing and the Rule of 60 approach

There are several factors that impact the staffing level required by a police department. These factors include community preferences, legal and cultural context, and available resources, all of which vary across jurisdictions in the US. Simple estimates such as the ratio of police officers to residential population is generally inadvisable in the modern era, especially as the use of computer-aided dispatch and other advances in record keeping and data analysis have made accurate estimates or direct measurement of police workloads possible. The International City/Count Management Association (ICMA) and International Association of Chiefs of Police (IACP) therefore suggest that agencies estimate patrol staffing needs on past police patrol workloads.

Measuring past workload gives some indication of future workload; it is not exact. Also, while record keeping has improved among police departments in the past 20 years, there are many

aspects of policework that remain difficult or impossible to measure accurately. All modern workload-based approaches to police patrol staffing therefore provide guidance but are not meant to be read as rigid prescriptions for staffing.

Through its research across the country, the ICMA has developed guidelines for best practice, collectively known as the Rule of 60. Community or agency needs can justify different decisions, but in general the ICMA has found that the Rule of 60 guidance balances many concerns well. The Rule of 60 guidelines have two parts:

1. 60% of all sworn officers should be assigned to patrol and respond to routine incidents.
2. 60% of patrol officer time should be committed to responding to the service demands of the community.

The first element is straightforward: 60% of sworn officers (staff with a badge and arrest authority) should be assigned to patrol and respond to routine incidents. The remaining 40% should be assigned to detectives and other special assignments. While patrol is the backbone of American policing, it is not the only essential function. Departments with more than 60% of sworn officers engaged in routine patrol may lack specialized skills required for complex investigations; departments with less than 60% of sworn officers engaged in routine patrol may not have enough capacity to respond to emergencies.

The second element is that 60% of patrol officer time should be committed to responding to the service demands of the community. The remaining 40% is not downtime. This element of the Rule of 60 quantifies a basic fact of modern policing: Police officers do more than simply respond to requests for service. Community problem solving, proactive law enforcement, and administrative tasks are essential aspects of policing, and these tasks require time to complete.

On average, the Rule of 60 guidelines have been found to be effective at providing enough coverage to handle workloads while not needlessly overstaffing departments. The Rule of 60 is a benchmark that should be used to guide staffing decisions. These are general guidelines and deviations are expected. It is not the case that 60% of every shift for every officer will be limited to responding to citizen requests, even when staffing is based on that target. Sustained deviations from the targets across the agency, however, suggest that staffing changes could be needed.

Rule 1: 60% of sworn staff should be dedicated to routine patrol

The first Rule of 60 guideline is that 60% of a police department should be dedicated to routine response to incidents. BPD's current staffing is summarized in Table 6. Currently, 58 officers and 12 sergeants are dedicated to routine patrol out of 157 currently filled positions. This is just over a third (36.9%) of current sworn staff. Including the Traffic Unit brings the percentage up to 42.7% of sworn staff; including Police Training Officers, who conduct field

training for new police academy graduates, the total percentage of sworn staff dedicated to routine patrol services is 45.2%. Including patrol and traffic sergeants and all of the above brings the percentage of sworn staff dedicated to routine patrol services to 54.1%.

Table 6: Current staff summary

	Current	Authorized	Vacancies
Watch I	20	25	5
Watch II	22	25	3
Watch III	22	26	4
Patrol Sergeants	13	13	-
Traffic	9	13	4
Traffic Sergeants	1	2	1
Neighborhood Impact Team	5	12	7
Command **4 Commanders, 1 Deputy Chief**	5	5	-
DUI	-	2	2
Mall	4	6	2
Homeless Outreach Team	2	2	-
Homeless Outreach Team Sergeants	1	1	-
Detectives	16	22	6
Drug Task Force	2	3	1
Special Enforcement Unit	3	4	1
Detective Sergeants	4	5	-1
Community Services Officer	1	1	-
Alcohol / Marijuana	2	3	1
Camps	-	6	
Officers in Training	11	-	-
Chief	1	1	-
Deputy Chief Admin Staff Services	1	1	-
Personnel Commander	1	1	-
Special Service Commander	1	1	-
Training Sergeant	1	1	-
Training Officer	4	4	-
P/E Sergeant	1	1	-
Armorer	1	1	-
PSU (1 Sgt 1 Commander)	2	2	-
Boulder Police Officers Association	1	1	-
Total	**157**	**190**	**33**

The Boulder Police Department may therefore be slightly over-specialized given its current staffing. Specialized units within BPD were created for specific purposes and are meant to be relieved of responding to routine reactive incidents. Given the nature of these units and the problems they are meant to resolve, it is not recommended that these units be disbanded unless staffing shortages continue.

Rule 2: 60% of patrol officer time should be spent on citizen demands for service

The Rule of 60 suggests estimating officer staffing based on the service demands of the community, with 60% of officer time dedicated to responding to those demands. This analysis therefore excludes proactive activity such as traffic stops and other officer-initiated contacts, which should occupy part of the remaining 40% of time. We retain reactive incidents, 911 hang ups, and traffic collisions, as these incidents are initiated by citizen requests for service. Given the changes in workload over the entire 2013-2020 period, we further limit these analyses to 2018-2020, the most recent three-year period with full-year data available at the time of the analysis.

The starting point for a Rule of 60 estimate is the total number of incidents that began in each hour over some amount of time. Staffing for annual averages will leave an agency understaffed during some periods due to seasonality. The historic workload analysis above found that there are seasonal components to BPD's workload, with increased property and violent crime incidents in the summer months. From 2018 to 2020, more incidents per day occurred during the months of May through September than in other months. We base our calculations below on the workload during these most busy months to ensure adequate staffing during the summer.

The next step is to calculate the average time required to respond to an incident. This time includes travel time to the incident and officer activity at the incident. After the incident is handled, the officer is clear to respond to another call or resume other activity. The average officer time spent at citizen-initiated incidents was 56.3 minutes from 2018-2020.[13]

When all of an officer's time is spent servicing incidents, the saturation index, or SI is 100%: 100% of time is spent on incidents. The number of officers needed to service incidents with an SI of 100% in each hour can be estimated by multiplying the average number of incidents per hour by the average number of officer-minutes per incident, then dividing by 60 minutes per hour:

[13] The average officer-minutes for *all* incidents, shown in Table 2, includes proactive incidents. Proactive incidents consume an average of 26.2 officer-minutes each from 2018-2020. The overall increase in officer time per incident shown in Table 2 is due to the shift from proactive to reactive incidents over the study period; these average times while holding incident type constant are similar across the entire 2013-2020 period.

$$Ofc_{SI\ 100\%} = \frac{N_{incidents} \times \overline{M}_{incident}}{60}$$

where:
$Ofc_{SI\ 100\%}$ is the number of officers needed to meet citizen demand (SI of 100%);
$N_{incidents}$ is the number of incidents; and
$\overline{M}_{incident}$ is the average number of officer-minutes per incident.

This is not the number of officers needed on the street at any given hour. The officers have no time for anything else when the SI is 100%. The Rule of 60 suggests an SI of 60% to allow for a variety of other tasks. The target is that 60% of officer time be devoted to servicing citizen demands — the typical number of officer-minutes servicing incidents should therefore be only 60% of total officer-minutes. We can scale the number of officers needed accordingly:

$$60\% \times Ofc_{SI\ 100\%} = \frac{N_{incidents} \times \overline{M}_{incident}}{60}$$

$$Ofc_{SI\ 60\%} = \frac{N_{incidents} \times \overline{M}_{incident}}{60} \times 1/60\%$$

The result of this calculation is an estimate of the number of officers on shift and available to respond to citizen requests for service at that hour required to meet the Rule of 60 guideline. To arrive at the number of officers who should be scheduled to work in that hour, we must add a shift relief factor. Not all officers who are scheduled to work a particular shift are available for patrol service. Sick leave, light duty, training, court, and other happenstances can make officers who were scheduled to work patrol on a particular day and shift unable to do so. This must be included in the staffing estimate to ensure adequate staffing in the real world. The shift relief factor for BPD is 130%.

The Rule of 60 estimate for the number of officers who should be scheduled in each hour is:

$$Ofc_{scheduled\ per\ hour} = \frac{N_{incidents} \times \overline{M}_{incident}}{60} \times 1/60\% \times 130\%$$

The 130% shift relief factor accounts for officers who were scheduled but could not provide patrol service for unscheduled reasons. It requires still more officers to ensure 365-day per year coverage of a shift. Officers must have leave from routine work for training. BPD data shows that officers averaged 165 hours of training per year in 2019.[14]

Officers earn vacation leave, with mid-career officers earning 226 hours of vacation leave each year plus 10 hours of floating holiday leave per the most recent collective bargaining agreement. Officers can also take overtime compensation in the form of comp leave.[15] Combined, the average officer took 282 hours of these types of leave in 2019. This average

[14] This average includes SWAT trained officers, who train for 20 hours a month and are unavailable for routine incidents while training. Leave estimates were drawn from 2019 to avoid pandemic-related effects in 2020.
[15] There are a variety of circumstances where officers must work overtime, such as an arrest or critical incident late in their shift. BPD officers have the choice of receiving overtime pay or comp leave for overtime worked.

does not include parental leave. BPD employees are entitled to 12 weeks of parental leave; in 2019 seven employees took this leave. This was approximately 4% of the sworn workforce in 2019. The average number of parental leave taken per officer is therefore 4% of 480 hours, or approximately 19 hours per officer in 2019.

In addition to training, vacation leave, a floating holiday, and parental leave, officers have regular days off. In a 14-day pay period, officers will work eight days and have six days off when working 10-hour shifts, for a total of 1,560 hours of regular days off. Table 7 shows all categories of scheduled time when officers are not available for routine patrol service, which total to 2,026 hours per year.

Table 7: Time off (not available for patrol) each year for officers working 10-hour shifts

Leave type	Hours per year
Training	165
Vacation, floating holiday, comp leave Average per officer, 2019	282
Parental leave 4% of sworn workforce x 480 hours	19
6 regular days off in each 14-day pay period 26 14-day pay periods x 6 days per period x 10 hours per day	1,560
Total time off	**2,026**

A single 10-hour shift requires 3,652.5 hours of work per year, on average.[16] An average officer cannot work 2,026 of those hours due to training, vacation/holiday/comp leave, parental leave, and regular days off. The number of officers needed to staff a 10-hour shift in BPD year-round is therefore 225% of the number of officers needed to conduct the work:

$$Ofc_{payroll} = \frac{\text{shift-hours per year}}{\text{shift-hours per year} - \text{time off per year}} \times Ofc_{scheduled}$$

$$Ofc_{payroll} = \frac{3{,}652.5}{3{,}652.5 - 2{,}026} \times Ofc_{scheduled}$$

$$Ofc_{payroll} \cong 225\% \times Ofc_{scheduled}$$

For every officer needed on the shift schedule for any given day, about two and a quarter officers are required on the payroll to provide service every day of the year.

We can combine all the above to estimate the number of officers required on the payroll to ensure 60% of officer time is spent on citizen demands for service (on average) while accounting for both unscheduled and scheduled leave:

$$Ofc_{payroll\ per\ hour} = \frac{N_{incidents} \times \overline{M}_{incident}}{60} \times 1/60\% \times 130\% \times 225\%$$

[16] There are approximately 365.25 days in a year, including an adjustment for leap years.

Table 8 shows the total number of incidents and average daily incidents in the first two columns. The average daily incidents are multiplied by the average number of minutes (56.3) required to service the incident to find the total officer hours required to be worked per hour (not shown), then divided by the number of minutes in an hour (60) to arrive at the number of officers required on shift to meet citizen demand (SI 100%).

Table 8: Number of reactive, 911 hangup, and traffic collision incidents by hour

	Number of incidents, May-Sep 2018-2020		Officers required on shift		Officers required on payroll
Hour	Total	Avg daily	SI 100%	SI 60%	SI 60%
06	1,056	2.3	2.2	3.6	10.5
07	1,613	3.5	3.3	5.5	16.1
08	2,020	4.4	4.1	6.9	20.1
09	2,122	4.6	4.3	7.2	21.1
10	2,216	4.8	4.5	7.6	22.1
11	2,222	4.8	4.5	7.6	22.1
12	2,220	4.8	4.5	7.6	22.1
13	2,316	5.0	4.7	7.9	23.1
14	2,483	5.4	5.1	8.5	24.7
15	2,681	5.8	5.5	9.1	26.7
16	2,776	6.0	5.7	9.5	27.7
17	2,769	6.0	5.7	9.4	27.6
18	2,669	5.8	5.5	9.1	26.6
19	2,695	5.9	5.5	9.2	26.9
20	2,576	5.6	5.3	8.8	25.7
21	2,653	5.8	5.4	9.0	26.4
22	3,195	7.0	6.5	10.9	31.8
23	3,061	6.7	6.3	10.4	30.5
00	2,346	5.1	4.8	8.0	23.4
01	1,863	4.1	3.8	6.3	18.6
02	1,418	3.1	2.9	4.8	14.1
03	1,024	2.2	2.1	3.5	10.2
04	802	1.7	1.6	2.7	8.0
05	736	1.6	1.5	2.5	7.3

Notes: Excludes all proactive incidents. Includes all incidents in which one or more sworn officers respond, regardless of assignment.

The number of officers required on shift is divided by 60% to arrive at the number of officers on shift required to meet the Rule of 60 guideline of 60% of time spent servicing incidents (SI 60%). Finally, this SI 60% value is multiplied by the shift relief factor of 130% (not shown), and

that result is multiplied by 225% to arrive at the number of officers required on the payroll to meet the citizen demand for services, allowing for shift relief (unscheduled leave) and scheduled leave, while maintaining an overall average SI of 60% in the rightmost column.

Comparing current hourly patrol staffing to Rule of 60 estimates

Calculating the difference between the number of officers required to maintain a saturation index of 60% and the current staffing is straightforward. Table 9 shows the current number of officers by hour by watch. The three watches overlap but much of the overlapping time is consumed by writing reports (at the end of a shift) or training during briefings (at the beginning of a shift). This staffing model therefore considers each watch out of service as soon as the next watch begins. While this will not capture every administrative use of the overlapping time, it is a useful approximation of the number of officers available to service citizen demands in any given hour.

Table 9 also shows the number of officers required to meet the Rule of 60 guideline, and the difference between the actual and required number of officers.

On average, BPD has fewer routine patrol officers than would be required to service reactive calls for service, 911 hangups, and traffic collisions from 0800 to 0000 hours. It is only after 0100 that the number of officers on patrol exceeds the historic workload. In particular, the hours of 0300-0700 appear to be overstaffed. The data suggests, however, that officers on Watch III are frequently quite busy early in their shift. During discussions of this apparent overstaffing on Watch III, BPD staff said it was a common practice for Watch III officers to write reports and catch up on other tasks that are not routinely captured in the data used for this analysis during the less busy hours of their shift.

In addition to the three routine patrol watches, the Boulder Police Department has specialized units. These units include the Neighborhood Impact Team, Mall Unit, Community Services Officer, Drug Task Force, Special Enforcement Unit, Regulatory Enforcement Unit, and Detectives.[17] Except for Detectives, reactive workloads for these units cannot be separated from that of patrol with the available data. These units are intended to be relieved from responding to routine reactive incidents, however, and generally should not be included as available resources for reactive patrol services. These units were designed to solve specific categories of problems, provide investigative services, or to provide extra service to specific geographic areas.

[17] BPD also employs civilians for accident response, photo enforcement, code enforcement, animal protection, and other tasks. This report is limited to sworn patrol workloads; the workload for civilian units is outside of this report's scope.

Table 9: Difference between current patrol staffing and required staffing at SI 60%

Hour	Watch			Officers		
	I	II	III	Total Current Patrol	Required for SI 60%	Difference*
06	20		20	20	10.5	**+9.5**
07	20			20	16.1	**+3.9**
08	20			20	20.1	**-0.1**
09	20			20	21.1	**-1.1**
10	20			20	22.1	**-2.1**
11	20			20	22.1	**-2.1**
12	20			20	22.1	**-2.1**
13	20			20	23.1	**-3.1**
14	20	22		22	24.7	**-2.7**
15	20	22		22	26.7	**-4.7**
16		22		22	27.7	**-5.7**
17		22		22	27.6	**-5.6**
18		22		22	26.6	**-4.6**
19		22		22	26.9	**-4.9**
20		22		22	25.7	**-3.7**
21		22	22	22	26.4	**-4.4**
22		22	22	22	31.8	**-9.8**
23		22	22	22	30.5	**-8.5**
00			22	22	23.4	**-1.4**
01			22	22	18.6	**+3.4**
02			22	22	14.1	**+7.9**
03			22	22	10.2	**+11.8**
04			22	22	8.0	**+14.0**
05			22	22	7.3	**+14.7**

*Negative differences indicate there are fewer officers than needed, on average, in that hour. Positive differences indicate there are more officers than needed, on average.

The Traffic Unit, however, routinely responds to reactive incidents. While the Traffic Unit's work is 72% proactive, as previously discussed when analyzing incidents by type (on page 7 above), the Traffic Unit alone handles about 65% of traffic collisions. Because they are reactive incidents, traffic collisions are included in the number of officers required calculation, both in the number of incidents and in the average officer time per incident.

Traffic Unit officers should be included in our estimates, but they are not the same as patrol officers. The Rule of 60 suggests that 60% of a patrol officer's workload should be reactive (on average). The Traffic Unit's specialized workload is only 28% reactive.

As a conservative estimate, it is reasonable to assume that ¼ of Traffic Unit officer time is spent on reactive incidents such as traffic collisions, with the remaining time spent on

proactive activity. We therefore multiply the number of Traffic Unit officers by 25%, and add this to the number of patrol officers to arrive at the total number of officers available to respond to reactive incidents.

This calculation is shown in Table 10. Even after including 25% of the Traffic Unit officer's time, BPD is understaffed by between one and 10 officers from 1300 hours to 0000 hours.

Table 10: Difference between current patrol + traffic staffing and required staffing at SI 60%

Hour	Officers				Difference*
	Total Patrol	Traffic Unit Both Shifts†	Routine patrol + traffic	Required for SI 60%	
06	20	1.25	21.25	10.5	**+10.7**
07	20	1.25	21.25	16.1	**+5.2**
08	20	1.25	21.25	20.1	**+1.1**
09	20	2.25	22.25	21.1	**+1.1**
10	20	2.25	22.25	22.1	**+0.2**
11	20	2.25	22.25	22.1	**+0.1**
12	20	2.25	22.25	22.1	**+0.1**
13	20	2.25	22.25	23.1	**-0.8**
14	22	2.25	24.25	24.7	**-0.5**
15	22	2.25	24.25	26.7	**-2.5**
16	22	2.25	24.25	27.7	**-3.4**
17	22	1	23.00	27.6	**-4.6**
18	22	1	23.00	26.6	**-3.6**
19	22		22.00	26.9	**-4.9**
20	22		22.00	25.7	**-3.7**
21	22		22.00	26.4	**-4.4**
22	22		22.00	31.8	**-9.8**
23	22		22.00	30.5	**-8.5**
00	22		22.00	23.4	**-1.4**
01	22		22.00	18.6	**+3.4**
02	22		22.00	14.1	**+7.9**
03	22		22.00	10.2	**+11.8**
04	22		22.00	8.0	**+14.0**
05	22		22.00	7.3	**+14.7**

†The number of Traffic Unit officers has been multiplied by 25%, to account for their mostly proactive workload.

*Negative differences indicate there are fewer officers than needed, on average, in that hour. Positive differences indicate there are more officers than needed, on average.

Adding officers to Watch II and Watch III is likely required

As discussed in the prior section, even after including the Traffic Unit's time spent on reactive incidents, BPD remains understaffed from 1300 to 0000 hours. Fractional officers do not exist, of course, and officers are assigned by 10-hour shift, not each individual hour. We must therefore round up to the next officer, and account for the shift schedule.

One solution for BPD's understaffing during could be to add a fourth watch offset from the others that covers approximately the hours 1600-0100. To add a fourth shift, the existing Watch III would have to be split into two watches, each with approximately 11 officers. Recall that to have one officer on the street, 2.25 officers must be on payroll. A shift with 11 officers on payroll would result in just four or five officers on the street for several overnight hours. Such a small shift causes many practical difficulties. For example, scheduling leave is more difficult with fewer officers. Supervision and mentorship are also more difficult since each shift requires a sergeant and experienced officers to provide mentorship to less experienced officers. Officer safety is also a concern, especially in the event of a critical incident. Adding a fourth shift is therefore not operationally feasible for BPD at this time.

Changing the shift schedule is also unlikely to produce gains in the number of available officers. Increasing the number of patrol officers is therefore the best remaining option.

Readers are reminded that the number of officers needed in the tables in this discussion are based on averages – some days will require more officer-hours during any given hour, other days will require less. A department that staffs for average workloads will find itself short-staffed a good amount of the time. In general, the maximum average number of officers required in any hour during the shift is the suggested staffing level to ensure adequate coverage.

The current number of officers assigned, the average number of officers needed, and the maximum number of officers is shown in Table 11. The number of officers including the Traffic Unit varies, since the Traffic Unit's shift schedule is different from the three patrol watches; the minimum and maximum number of total officers during the each 10-hour watch are shown.

Table 11 makes it clear that without the partial time Traffic Unit officers spend on reactive calls, BPD is likely understaffed during an average shift on an average day. Even with these Traffic Unit officers, a typical shift has more work than officers during at least one hour.

Table 11: Current BPD patrol staffing, average and maximum officers needed during shift

	Hours	Patrol Officers	Officers including Traffic Unit	Hourly avg officers needed	Hourly max officers needed	Suggested number of patrol officers
Watch			min / max			
Watch I	0600-1600	20	21 / 24	21	27	21-24
Watch II	1400-0000	22	22 / 24	28	32	28-32
Watch III	2100-0700	22	22 / 22	19	32	22-26
	Total	**64**	**65 / 70**	**68**	**91**	**71-82**

No change is recommended for Watch I. The average reactive service demands for Watch I are close to the current number of officers after including Traffic Unit officer time. The peak demand during Watch I occurs after Watch II starts and can be addressed by Watch II or Traffic Unit officers.

Between six and 10 more officers should be added to Watch II. The reactive service demands for Watch II are largely stable throughout the entire shift. Even during times when Traffic Unit officers are working, Watch II is understaffed. Adding officers to Watch II is therefore recommended, with an addition of at least five more officers on this shift to ensure average demand can be met during hours when Traffic Unit officers are not scheduled. Planning for peak demand on Watch II would require adding 10 more officers during this shift. This demand peak occurs after Watch III starts, however, and can be partially addressed by Watch III officers.

Recommendations for staffing on Watch III are more difficult. Watch III has strong demand at the beginning of the shift, from 2100 hours to 0000 hours. Directly staffing Watch III for this peak demand would leave the remainder of Watch III overstaffed. Demand for reactive services drops off sharply after 0000, and by 0300 hours, 11 or fewer officers are needed to meet the demand for reactive service.[18] Adding a large number of officers to Watch III is therefore not recommended, but adding two to four officers to Watch III would help ease the workload on Watch II officers early in their shift.

Overall, BPD should add six to 10 officers to Watch II and two to four officers to Watch III, for a total of between eight and 14 additional officers above current staffing levels.

[18] Feedback from BPD command staff on earlier drafts of this report suggested that Watch III officers frequently write reports, take their lunch break, and catch up on other tasks that are not captured in the data available for this staffing model during the early morning hours with few reactive incidents. Given how busy these officers are early in their shift, this exp

Recommendations

Recommendation 1: BPD should add between 8 and 14 patrol officers (total) to Watches II and III

The Boulder Police Department currently staffs three patrol watches. BPD patrol is split into three overlapping 10-hour watches (shifts): Watch I is 0600 – 1600; Watch II is 1400 – 0000; Watch III is 2100 – 0700. Currently, there are 20 officers assigned to Watch I, 22 officers assigned to Watch II, and 22 officers assigned to Watch III.

Watch II is particularly understaffed. An additional six to 10 officers should be assigned to this watch. Citizen demand continues through the end of Watch II and through the beginning of Watch III; two to four officers should be added to Watch III. As discussed in the next recommendation, new officers are required. The suggested patrol staffing likely cannot be achieved through reassigning existing officers.

Recommendation 2: Vacant patrol positions should be filled, and BPD should focus on recruitment and retention of officers.

While this is perhaps an obvious recommendation, the vacancy rate at BPD is a concern that requires discussion. The lower bound of the suggested number of patrol officers on all three Watches is 71 total officers — the same as the currently-authorized number of patrol officers. No police department can maintain staffing at 100% of authorized levels due to retirements. It also takes time to train new officers, or to train existing officers for new positions.

A detailed treatment of officer recruitment and retention are beyond the scope of this report, but recent work[19] by the Police Executive Research Forum (PERF) suggests that recruitment and retention is a problem for police departments nationwide. Reductions in hiring combined with accelerating resignations and retirements are not unique to BPD. Still, PERF found that the nationwide average vacancy rate for authorized sworn positions for agencies with 50-249 sworn officers was 6.6%; BPD has a vacancy rate of 17.4%.

These are not abstract numbers without consequence. If BPD's vacancy rate were the nationwide average of 6.6%, it would have 20 more sworn officers than it does today across the entire agency. Particularly among the three patrol watches, there are currently 12 vacant positions. This is the more than half of the number of officers currently assigned to each of Watches I and II. Up to six of these vacancies may be filled by prospective officers currently in academy. Even if all of these trainees successfully complete their training[20] and all were

[19] See https://www.policeforum.org/workforcesurveyjune2021.

[20] Nationally, the average completion rate for police academies is approximately 86%. See https://bjs.ojp.gov/sites/g/files/xyckuh236/files/media/document/slleta18st.pdf.

assigned to patrol, BPD would still have six vacancies in patrol — one-third of a shift — assuming no further reassignment or attrition.[21]

This report is focused on patrol officers and cannot examine every specialized unit. Nevertheless, it bears mentioning that there are vacancies across nearly every unit. It is likely that hiring new patrol officers will result in existing patrol officers being reassigned to fill these vacancies outside of patrol.

Achieving a net increase in the number of patrol officers will therefore require hiring closer to 30 officers, assuming the vacancies within special units are filled with existing patrol officers. Assuming a 5% attrition rate (approximately 10 officers per year), and assuming that not all recruits complete both police academy and field training, a net increase of 30 officers requires hiring and training 18-19 new officers per year in each of the next five years.

Recommendation 3: BPD may not be able to maintain its current specialized units and should consider disbanding some units if current sworn staffing cannot be increased.

Like BPD patrol, each specialized unit has current vacancies. Disbanding some units may be necessary given the small number of officers available to staff specialized units. The Mall Unit, for example, currently has just four officers and one sergeant. Given shift relief and scheduled leave, fewer than two officers are available to work that unit on average each day. The Boulder Police Department may be facing difficult choices in the future regarding specialized units and the workloads they perform if sworn staffing cannot be increased. It may be necessary to disband one or more specialized units and return those officers to patrol service if the current staffing situation continues.

Recommendation 4: BPD should continue to enhance its problem-solving capability to address increasing crime

The Boulder Police Department's core workload has changed substantially over the study period (2013-2020). Every finding from the dispatch data provided to the research team, as well as standardized Uniform Crime Reports data from the FBI, shows an increase in property crime and violent crime incidents. These increases were steady over the period, suggesting a slowly changing context in the City of Boulder. Determining the nature of these crime problems is outside of the scope of this report, but research consistently shows that a purely reactive posture by a police department is unlikely to address crime problems. Solving crime problems requires technically sophisticated analysis grounded in the everyday experiences of line-level officers, combined with command staff and line-level officers willing to try new strategies and tactics to identify and solve public safety problems. Implementing long-term solutions in partnership with community stakeholders will require a combination of sworn and civilian employees dedicated to the task. Additional resources are likely required to do

[21] Precise measure of BPD's attrition rate were not available as of this writing, but it was estimated at 10-12 officers per year prior to the pandemic.

this. Implementing a problem-oriented approach also requires a political environment conducive to allowing innovation embedded in a cycle of continuous improvement that embraces taking risks on new approaches and learning from mistakes.

The Boulder Police Department has already made strides in this direction. After this report was commissioned but prior its completion, BPD hired a crime analyst who will soon receive a PhD in criminal justice and has a background in sophisticated, theory-informed and data-driven policy analysis. During discussions of drafts of this report, BPD command staff also clearly articulated a desire to not only implement problem-oriented policing approaches, but to become a national leader in problem solving.

Summary

Boulder Police Department's workload has changed from 2013 to 2021. Compared to years past, more recent years have seen far fewer traffic stops and an increasing number of property and violent crime incidents. These changes were relatively gradual over the period, with no large changes in any one year. In 2013, 46.8% of BPD incidents were proactive. By 2019, just 27.8% of incidents were proactive and 25.7% of incidents were proactive in 2020. The average time to clear an incident increased from 37.8 minutes in 2013 to 47.5 minutes in 2019 and 46.5 minutes in 2020. When controlling for incident type, the average officer-minutes per incident is constant — the workload has changed, not how long it takes to complete any given incident. At the same time, the average number of minutes between calls has changed as well, suggesting an increased pace of the work as well.

Four recommendations were offered. First, BPD should add between eight and 14 patrol officers (total) to Watches II and III. Watch II, in particular, was found to be understaffed. Second, BPD must fill vacant positions and must retain existing officers. This is admittedly a difficult task in the current national employment market. Third, BPD should consider disbanding one or more of its specialized units if it cannot increase the number of patrol officers. This may become an operational necessity. Finally, BPD should continue to invest in problem-solving capacity and be willing to engage in innovative crime prevention strategies to combat increasing crime in its service area.

Appendix

Data preparation

BPD extracted early years of data (2013-2017) from an archival system. Recent data (2018-2021) was extracted from data systems currently in use. In general, the data generating process appeared to be consistent across years with no obvious cause for concern. However, the data may not be directly comparable across years in every detail. Readers should view comparisons between the 2013-2017 data and 2018-2020 data with caution.

BPD provided two sets of files: 1) incident-level files, and 2) unit-level files. These files were linked by incident ID. Incident-level files were the primary files used. Unit-level files were used to calculate officer time spent on incidents, calculated as the time elapsed between each unit being assigned to the incident and the unit clearing the incident. Time spent on each incident was summed across all units.

Data removed from the analysis

Computer-aided dispatch (CAD) systems are designed to ensure orderly dispatch of police officers for public safety operational purposes. The requirements for such a system are not always the same as archival research requirements, such as this analysis. Some manipulation of raw CAD data is therefore necessary to accurately estimate both the number of incidents and officer time spent on those incidents.

925,158 incident records were provided. Incidents with a disposition of duplicate, call canceled, call handled / aired by dispatch, and employee error were dropped (n=91,804).

BPD dispatch records incident types for several types of civilian employees in addition to sworn staff (Brad Riggin, personal communication 11/9/2021). These civilian employees include CPC employees, accident report specialists, and building/planning enforcement. Sworn staff included BPD executive staff, BPD commanders, BPD sergeants, BPD detectives, and BPD patrol/traffic officers. Incidents that had one or more of these sworn staff respond were retained while all others were dropped (n = 342,565)

Dispatch records some information-only items as incidents (Brad Riggin, personal communication 10/7/2021). These incidents often have officers assigned, with no officer recorded as having arrived at any location. These incident types were dropped (n=1,158):

- PHONEB-Phone Message
- M1B-Message 1
- M1LIB-Message 1 Low Impact
- M1RFB-Message 1 Red Flag
- M2B-Message 2
- M2LIB-Message 2 Low Impact

- M3B-Message 3
- M4B-Message 4
- HOLDB - Held Incident
- INFORB-Information
- PAGEB-Page
- MEDIAB-Media Requests
- PWREQB-Public Works Request

The result was a data file with 489,631 incidents from January 2013 to September 29, 2021 (the date the data were extracted).

Incident type categorization

Table 12: Incident type categorization

Category	Problem Type
Admin	Attempt to Locate Directed Patrol Extra Patrol - Community Requested Follow-Up Foot Patrol
Alarm	Hold-up/Panic/Duress Intrusion Alarm Other Alarm
Court Orders	Restraining Order - Cold Incident Restraining Order - Just Occurred Restraining Order In-Progress Warrant Arrest
Drugs	Drug Task Force
Fire	Fire Alarm Fire Assist Non-Structure Fire Structure Fire Wildland Fire

Category	Problem Type
Medical / Assist	911 Hang-up AED Medical Call Assist Civil Assist Found Child Found Property Hazard Lost Child Lost Property Medical Call Minor Hazmat Missing Person Natural Gas Odor Indoors Odor Invest Open Door Other Agency Assist Rescue Smoke/Electric Smell Inside Vehicle Stalled in Traffic Water Rescues Welfare Check

Category	Problem Name Translation
Nuisance	Animal Complaint Code Enforcement Disturbance - Cold Incident Disturbance - Just Occurred Disturbance In-Progress Drunk Person Fire Works Complaints Liquor Law Littering Loitering Noise Complaint Nuisance Party Open Container Public Health Order Violation Runaway Smoking Violation
Other	Other Unknown Problem Walk-In Report
Non-traffic Proactive	Officer-Initiated Event Pedestrian Contact Self-Initiated Officer

Category	Problem Name Translation
Property	Burglary - Cold Incident Burglary - Just Occurred Burglary In-Progress Criminal Mischief - Cold Incident Criminal Mischief - Just Occurred Criminal Mischief In-Progress Fraud - Cold Incident Fraud - Just Occurred Fraud In-Progress Prowler Recovered Stolen Property Shoplifter Suspicious - Cold Incident Suspicious - Just Occurred Suspicious In-Progress Theft - Cold Incident Theft - Just Occurred Theft In-Progress Trespassing - Cold Incident Trespassing - Just Occurred Trespassing In-Progress Vehicle Trespass - Cold Incident Vehicle Trespass - Just Occurred Vehicle Trespass In-Progress
Sex Crimes	Indecent Exposure - Cold Incident Indecent Exposure - Just Occurred Indecent Exposure In-Progress Sex Assault - Cold Incident Sex Assault - Just Occurred Sex Assault In-Progress

Category	Problem Name Translation
Traffic / parking	Abandoned Vehicle DUI Hit/Run Accident - Cold Incident Hit/Run Accident - Just Occurred Injury Accident - Cold Incident Injury Accident - Just Occurred Major Accident Parking Complaint/Issue Photo Radar Property Damage - Vehicle Accident Scofflaw Impound Traffic Complaint Traffic Stop Vehicle Accident - Unknown Injury Vehicle Relocation

Category	Problem Name Translation
Violent	Assault - Cold Incident Assault - Just Occurred Assault In-Progress Bomb Threat Child Abuse - Cold Incident Child Abuse - Just Occurred Child Abuse In-Progress Domestic Disturbance - Cold Incident Domestic Disturbance - Just Occurred Domestic Disturbance In-Progress Harassment - Cold Incident Harassment - Just Occurred Harassment In-Progress Kidnapping - Cold Incident Kidnapping - Just Occurred Kidnapping In-Progress Menacing - Cold Incident Menacing - Just Occurred Menacing In-Progress Reckless Endangerment Robbery - Cold Incident Robbery - Just Occurred Robbery In-Progress Shooting Shots Heard - Cold Incident Shots Heard - Just Occurred Shots Heard In-Progress Stabbing Weapon - Cold Incident Weapon - Just Occurred Weapon In-Progress

Average officer time, number of officers, and percent of incidents with more than one officer by incident type and year

Table 13: Average officer time, number of officers, and percent of incidents with more than 1 officer arriving by year and incident type

	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Admin										
Avg. Officer-minutes	34.74	36.31	42.35	45.3	50.25	43.88	39.69	41.55	36.22	**41.06**
Avg. N officers	1.21	1.24	1.25	1.24	1.24	1.28	1.27	1.26	1.24	**1.25**
% incidents > 1 ofc	16%	19%	18%	18%	16%	20%	20%	18%	17%	**18%**
Alarm										
Avg. Officer-minutes	20.3	18.31	20.62	19.39	21.4	22.97	25.57	26.06	23.92	**21.49**
Avg. N officers	1.27	1.26	1.25	1.24	1.26	1.34	1.35	1.43	1.49	**1.3**
% incidents > 1 ofc	22%	21%	20%	18%	20%	27%	25%	28%	32%	**23%**
Court Orders										
Avg. Officer-minutes	114.3	115.9	124.64	135.4	133.12	155.25	129.54	175.22	158.13	**134.28**
Avg. N officers	1.74	1.86	1.77	1.81	1.82	2	2	2.31	2.04	**1.89**
% incidents > 1 ofc	52%	57%	64%	59%	60%	63%	68%	75%	67%	**62%**
Drugs										
Avg. Officer-minutes	47.18	50.24	66.97	67.26	55.98	65.41	48.1	49.75	52.01	**57.03**
Avg. N officers	1.41	1.38	1.47	1.42	1.36	1.51	1.38	1.33	1.37	**1.41**
% incidents > 1 ofc	33%	29%	32%	32%	29%	34%	31%	25%	28%	**31%**
Fire										
Avg. Officer-minutes	42.44	65.87	44.79	59.17	44.34	54.55	48.8	56.47	47.3	**52.01**
Avg. N officers	1.55	1.72	1.56	1.69	1.63	1.69	1.66	1.73	1.66	**1.65**
% incidents > 1 ofc	32%	35%	32%	33%	38%	38%	38%	43%	42%	**36%**

	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Medical / Assist										
Avg. Officer-minutes	47.1	47.9	53.44	52.03	52.22	52.45	49.7	50.31	47.95	**50.43**
Avg. N officers	1.46	1.49	1.51	1.5	1.51	1.51	1.49	1.54	1.52	**1.5**
% incidents > 1 ofc	33%	34%	36%	34%	36%	37%	36%	39%	38%	**36%**
Nuisance										
Avg. Officer-minutes	39.73	42.66	44.56	44.11	43.13	45.01	43.47	37.01	37.79	**41.9**
Avg. N officers	1.56	1.63	1.61	1.57	1.54	1.6	1.63	1.55	1.58	**1.58**
% incidents > 1 ofc	38%	42%	39%	38%	36%	41%	43%	37%	39%	**39%**
Other										
Avg. Officer-minutes	108.38	73	67.6	69.88	84.9	97.64	112.58	88.52	128.52	**92.53**
Avg. N officers	1.41	1.36	1.29	1.36	1.43	1.45	1.42	1.52	1.57	**1.42**
% incidents > 1 ofc	20%	22%	20%	21%	24%	24%	25%	30%	30%	**24%**
Non-traffic Proactive										
Avg. Officer-minutes	27.21	26.23	27.88	29.25	29.12	37.69	32.6	27.72	24.17	**28.95**
Avg. N officers	1.3	1.33	1.34	1.32	1.32	1.41	1.38	1.37	1.33	**1.34**
% incidents > 1 ofc	24%	26%	26%	25%	25%	30%	28%	27%	25%	**26%**
Property										
Avg. Officer-minutes	57.14	60.88	66.5	65.07	62.85	62.15	60.84	55.53	54	**60.5**
Avg. N officers	1.61	1.66	1.67	1.63	1.6	1.61	1.68	1.69	1.7	**1.65**
% incidents > 1 ofc	42%	43%	41%	42%	41%	42%	47%	48%	48%	**44%**
Sex Crimes										
Avg. Officer-minutes	161.42	142.32	131.77	149.82	120.05	122.68	98.31	76.98	92.43	**119.06**
Avg. N officers	1.92	2.01	2.01	2.04	1.76	1.85	1.8	1.75	1.89	**1.88**
% incidents > 1 ofc	52%	58%	58%	54%	49%	47%	50%	45%	48%	**51%**

	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Traffic										
Avg. Officer-minutes	23.57	23.95	26.62	27.94	29.95	30.78	29.96	29.67	31.39	**27.17**
Avg. N officers	1.19	1.22	1.21	1.2	1.23	1.23	1.23	1.25	1.3	**1.22**
% incidents > 1 ofc	16%	17%	17%	15%	17%	17%	17%	18%	21%	**17%**
Violent										
Avg. Officer-minutes	118.75	124.4	123.73	121.04	113.44	122.41	106.42	105.17	95.38	**113.99**
Avg. N officers	2.16	2.25	2.24	2.17	2.12	2.17	2.12	2.2	2.07	**2.17**
% incidents > 1 ofc	58%	61%	60%	60%	58%	63%	60%	63%	58%	**60%**
Total										
Avg. Officer-minutes	37.76	38.91	43.15	44.83	47.42	49.53	47.52	46.48	45.15	**44.18**
Avg. N officers	1.37	1.4	1.41	1.41	1.44	1.47	1.48	1.52	1.51	**1.44**
% incidents > 1 ofc	26%	28%	28%	28%	30%	32%	33%	35%	34%	**30%**

Table 14: Incidents by type and year

	2013	2014	2015	2016	2017	2018	2019	2020	Total
Admin	4,362	4,833	4,645	4,511	4,161	4,987	5,520	5,532	**38,551**
Alarm	1,906	2,277	2,097	2,307	1,983	1,353	1,299	1,463	**14,685**
Court Orders	458	548	484	561	465	454	304	294	**3,568**
Drugs	212	294	363	394	388	376	364	267	**2,658**
Fire	459	498	436	451	402	338	334	413	**3,331**
Medical / Assist	9,493	9,336	9,578	9,668	9,687	9,803	10,466	9,370	**77,401**
Nuisance	7,237	7,288	7,171	7,454	7,976	7,715	8,134	9,792	**62,767**
Other	773	840	702	656	698	780	1,012	750	**6,211**
Non-traffic proactive	8,035	7,498	6,166	5,713	4,755	4,773	3,825	3,284	**44,049**
Property	5,704	5,885	5,688	6,679	6,570	6,726	7,092	7,964	**52,308**
Sex Crimes	165	183	184	194	211	243	254	252	**1,686**
Traffic	23,644	23,122	19,598	18,718	12,983	12,251	11,037	8,312	**129,665**
Violent	1,716	1,792	1,805	2,089	2,372	2,204	2,276	2,745	**16,999**
Total	**64,164**	**64,394**	**58,917**	**59,395**	**52,651**	**52,003**	**51,917**	**50,438**	**453,879**

Notes:
1. Partial data were available for 2021; that year is therefore omitted.
2. Incident type was missing for 26 incidents.