CENTER FOR PUBLIC SAFETY MANAGEMENT, LLC

POLICE DATA ANALYSIS REPORT

COCOA, FLORIDA

DRAFT

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CONTENTS

Tables v
Figures vi
Introduction 1
Workload Analysis 2
Noncall Activities 24
Deployment 30
Response Times 40
All Calls 41
High-Priority Calls 46
Appendix A: Call Type Classification 48
Appendix B: Uniform Crime Report Information 50

TABLES

TABLE 1: Events per Day, by Initiator 4
TABLE 2: Events per Day, by Category 6
TABLE 3: Calls per Day, by Category 8
TABLE 4: Calls per Day, by Initiator and Months 9
TABLE 5: Calls per Day, by Category and Months 11
TABLE 6: Primary Unit's Average Occupied Times, by Category and Initiator 13
TABLE 7: Average Number of Responding Units, by Initiator and Category 15
TABLE 8: Number of Responding Units, by Category, Other-initiated Calls 17
TABLE 9: Calls and Work Hours by District, per Day 19
TABLE 10: Calls and Work Hours per Day, by Category, Summer 2016 21
TABLE 11: Calls and Work Hours per Day, by Category, Winter 2017 23
TABLE 12: Activities and Occupied Times by Type 25
TABLE 13: Activities per Day, by Month 26
TABLE 14: Activities per Day, by Day of Week 27
TABLE 15: Activities per Day, by Hour of Day 29
TABLE 16: Average Response Time Components, by Category 43
TABLE 17: 90th Percentiles for Response Time Components, by Category 44
TABLE 18: Average Response Time Components, by District 45
TABLE 19: Average Dispatch, Travel, and Response Times, by Priority 46
TABLE 20: Call Type, by Category 48
TABLE 21: Reported Crime Rates in 2015, by City 50
TABLE 22: Reported Municipal, State, and National Crime Rates, by Year 52
TABLE 23: Reported Municipal, State, and National Clearance Rates in 2015 52

FIGURES

FIGURE 1: Percentage Events per Day, by Initiator....4
FIGURE 2: Percentage Events per Day, by Category....5
FIGURE 3: Percentage Calls per Day, by Category....7
FIGURE 4: Calls per Day, by Initiator and Months....9
FIGURE 5: Calls per Day, by Category and Months....10
FIGURE 6: Primary Unit's Average Occupied Times, by Category and Initiator....12
FIGURE 7: Number of Responding Units, by Initiator and Category....14
FIGURE 8: Number of Responding Units, by Category, Other-initiated Calls....16
FIGURE 9: Percentage Calls and Work Hours, by District....18
FIGURE 10: Percentage Calls and Work Hours, by Category, Summer 2016....20
FIGURE 11: Percentage Calls and Work Hours, by Category, Winter 2017....22
FIGURE 12: Activities per Day, by Month....26
FIGURE 13: Activities per Day, by Day of Week....27
FIGURE 14: Activities per Day, by Hour of Day....28
FIGURE 15: Deployed Officers, Weekdays, Summer 2016....31
FIGURE 16: Deployed Officers, Weekends, Summer 2016....31
FIGURE 17: Deployed Officers, Weekdays, Winter 2017....32
FIGURE 18: Deployed Officers, Weekends, Winter 2017....32
FIGURE 19: Deployment and All Workload, Weekdays, Summer 2016....34
FIGURE 20: Deployment and All Workload, Weekends, Summer 2016....34
FIGURE 21: Deployment and All Workload, Weekdays, Winter 2017....35
FIGURE 22: Deployment and All Workload, Weekends, Winter 2017....35
FIGURE 23: Percentage of Workload, Weekdays, Summer 2016....37
FIGURE 24: Percentage of Workload, Weekends, Summer 2016....37
FIGURE 25: Percentage of Workload, Weekdays, Winter 2017....38
FIGURE 26: Percentage of Workload, Weekends, Winter 2017....38
FIGURE 27: Average Response Time and Dispatch Delays, by Hour of Day, Summer 2016 and Winter 2017....41
FIGURE 28: Average Response Time by Category, Summer 2016....42
FIGURE 29: Average Response Time by Category, Winter 2017....42
FIGURE 30: Average Response Time Components, by District....45
FIGURE 31: Average Response Times and Dispatch Delays for High-Priority Calls, by Hour....46
FIGURE 32: Reported Violent and Property Crime Rates, by Year....51
FIGURE 33: Reported City and State Crime Rates, by Year....51

INTRODUCTION

This is the preliminary data analysis report on police patrol operations for the Cocoa, Florida, Police Department, which was conducted by the Center for Public Safety Management, LLC (CPSM). This analysis focuses on three main areas: workload, deployment, and response times. These three areas are related almost exclusively to patrol operations, which constitute a significant portion of the police department's personnel and financial commitment.

All information in this preliminary report was developed using the data provided by the department from its computer-aided dispatch (CAD) system. The purposes of this report are to provide the city of Cocoa with CPSM's preliminary findings and to allow the police department to review and bring to our attention any dispatch information that may be inconsistent with other internal records of the agency.

CPSM collected data for the one-year period of May 1, 2016 through April 30, 2017. The majority of the first section of the report, concluding with Table 8, uses call data for this one-year period. For the detailed workload analysis, we use two eight-week sample periods. The first period is from July 7 through August 31, 2016, or summer, and the second period is from January 4 through February 28, 2017, or winter.

WORKLOAD ANALYSIS

When CPSM analyzes a set of dispatch records, we go through a series of steps:

1. We first process the data to improve accuracy. For example, we remove duplicate patrol units recorded on a single event as well as records that do not indicate an actual activity. We also remove incomplete data, as found in situations where there is not enough time information to evaluate the record.
2. At this point, we have a series of records that we call "events." We identify these events in three ways:
   - We distinguish between patrol and nonpatrol units.
   - We assign a category to each event based upon its description.
   - We indicate whether the call is "zero time on scene" (i.e., patrol units spent less than 30 seconds on scene), "police-initiated," or "other-initiated."
3. We then remove all records that do not involve a patrol unit to get a total number of patrol-related events.
4. At important points during our analysis, we focus on a smaller group of events designed to represent actual calls for service. This excludes events with no officer time spent on scene and directed patrol activities.

In this way, we first identify a total number of records, then limit ourselves to patrol events, and finally focus on calls for service.

As with similar cases around the country, we encountered a number of issues when analyzing the dispatch data from Cocoa. We made assumptions and decisions to address these issues.

- 2,108 events (about 4.7 percent) involved patrol units spending zero time on scene.
- Three calls lacked an accurate busy time. We excluded these calls when evaluating busy time and work hours.
- The computer-aided dispatch (CAD) system used approximately 50 different event descriptions, which we condensed to 14 categories for our tables and 7 categories for our figures (shown in Chart 1). Table 20 in the appendix shows how each call description was categorized.

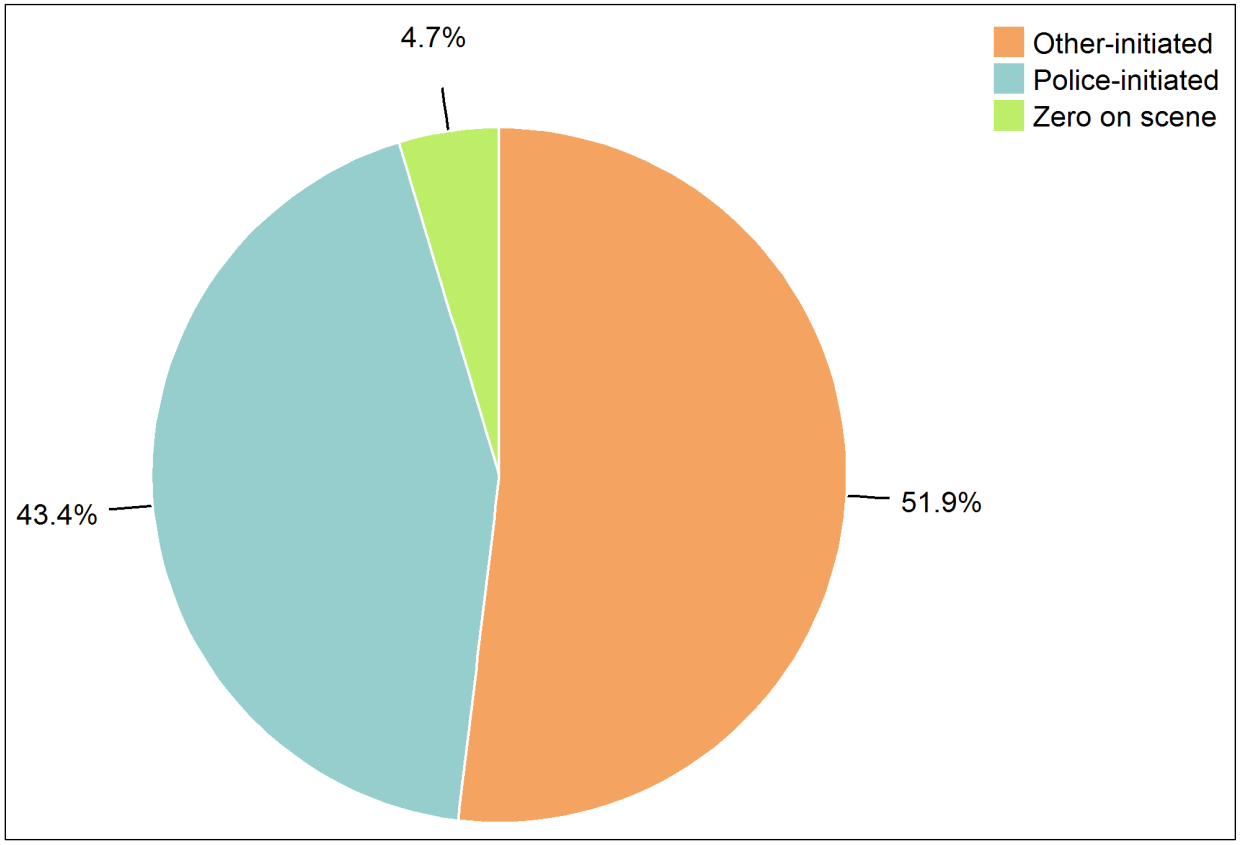
Between May 1, 2016 and April 30, 2017, the communications center recorded approximately 45,069 events that were assigned call numbers and which included an adequate record of a responding patrol unit as either the primary or secondary unit. When measured daily, the department reported an average of 123.5 patrol-related events per day, approximately 4.7 percent of which (5.8 per day) had fewer than 30 seconds spent on the call.

In the following pages, we show two types of data: activity and workload. The activity levels are measured by the average number of calls per day, broken down by the type and origin of the calls, and categorized by the nature of the calls (crime, traffic, etc.). Workloads are measured in average work hours per day.

CHART 1: Event Descriptions for Tables and Figures

Table Category	Figure Category
Assist other agency	Assist other agency
Crime–property	Crime
Crime–person	
Directed patrol	Directed patrol
Juvenile	General noncriminal
Miscellaneous	
Animal call	
Medical	
Check/investigation	Investigations
Alarm	
Suspicious person/vehicle	Suspicious incident
Disturbance	
Traffic enforcement	Traffic
Accidents	

FIGURE 1: Percentage Events per Day, by Initiator



Note: Percentages are based on a total of 45,069 events.

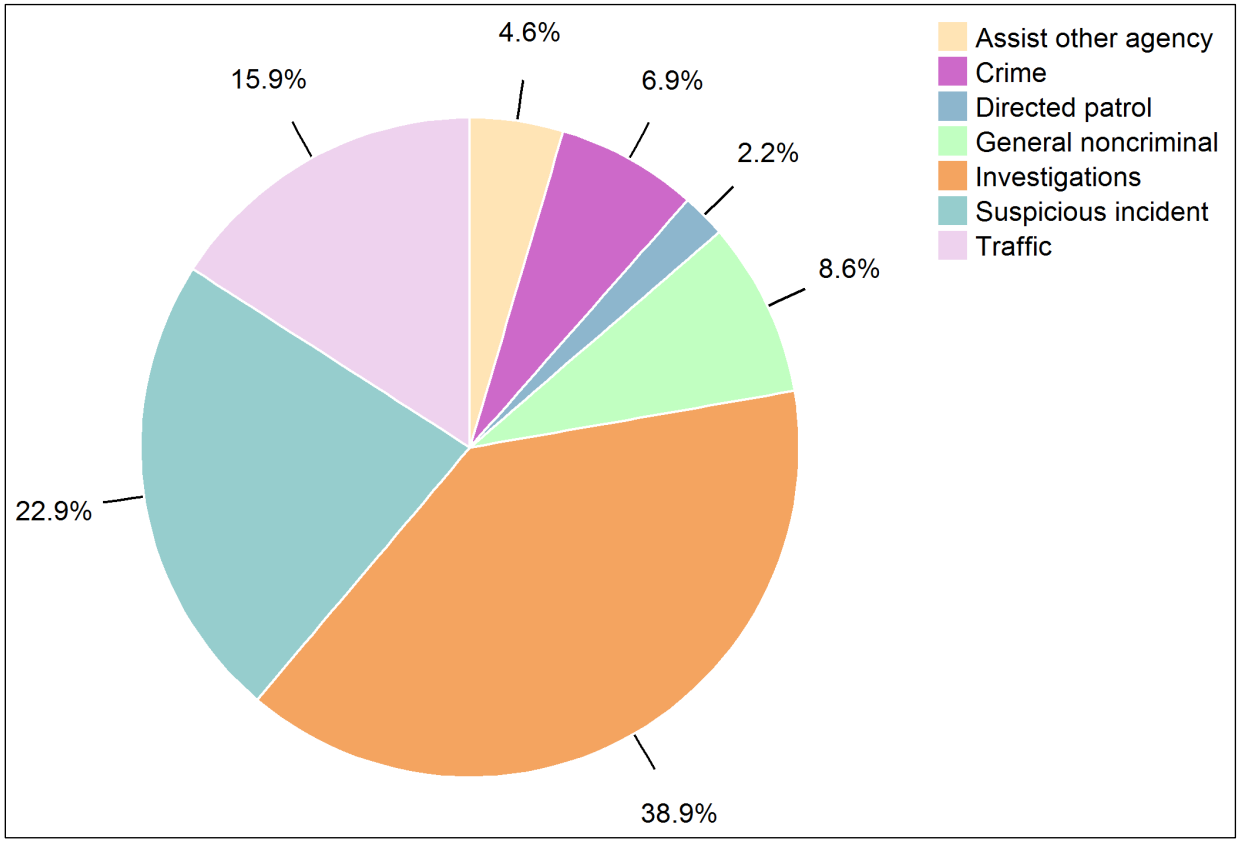
TABLE 1: Events per Day, by Initiator

Initiator	No. of Events	Events per Day
Other-initiated	23,389	64.1
Police-initiated	19,572	53.6
Zero on scene	2,108	5.8
Total	**45,069**	**123.5**

Observations:

- 52 percent of all events were other-initiated.
- 43 percent of all events were police-initiated.
- 5 percent of the events had zero time on scene.
- On average, there were 123 events per day, or 5.1 per hour.

FIGURE 2: Percentage Events per Day, by Category



Note: The figure combines categories in the following table according to the description in Chart 1.

TABLE 2: Events per Day, by Category

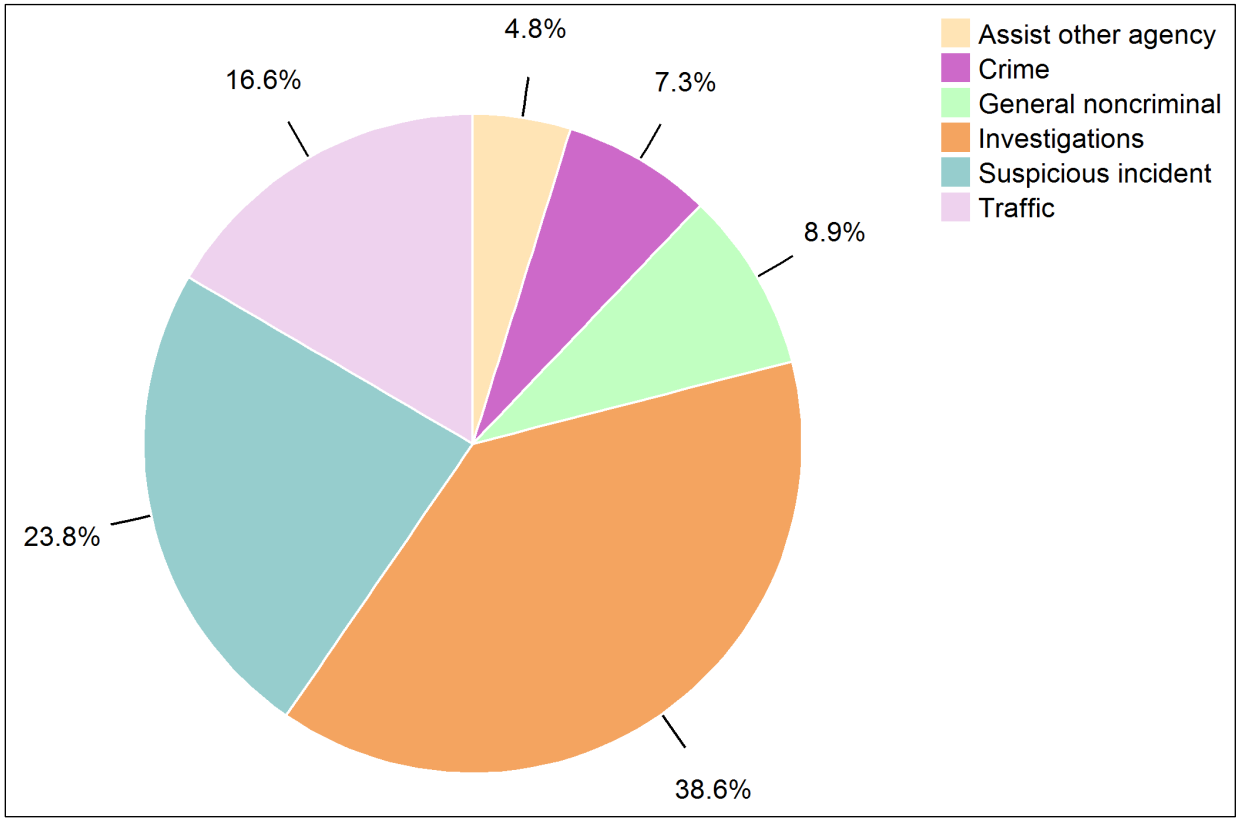
Category	No. of Calls	Calls per Day
Accidents	1,426	3.9
Alarm	1,004	2.8
Animal call	412	1.1
Assist other agency	2,062	5.6
Check/investigation	16,533	45.3
Crime–person	1,154	3.2
Crime–property	1,963	5.4
Directed patrol	983	2.7
Disturbance	3,880	10.6
Juvenile	613	1.7
Medical	27	0.1
Miscellaneous	2,812	7.7
Suspicious person/vehicle	6,461	17.7
Traffic enforcement	5,739	15.7
Total	**45,069**	**123.5**

Note: Observations below refer to events shown within the figure rather than the table.

Observations:

- The top three categories accounted for 78 percent of events:
  - 39 percent of events were investigations.
  - 23 percent of events were suspicious incident.
  - 16 percent of events were traffic.
- 7 percent of events were crimes.

FIGURE 3: Percentage Calls per Day, by Category



Note: The figure combines categories in the following table according to the description in Chart 1.

TABLE 3: Calls per Day, by Category

Category	No. of Calls	Calls per Day
Accidents	1,388	3.8
Alarm	995	2.7
Animal call	405	1.1
Assist other agency	2,017	5.5
Check/investigation	15,243	41.8
Crime–person	1,145	3.1
Crime–property	1,942	5.3
Disturbance	3,801	10.4
Juvenile	609	1.7
Medical	10	0.0
Miscellaneous	2,700	7.4
Suspicious person/vehicle	6,227	17.1
Traffic enforcement	5,584	15.3
Total	**42,066**	**115.2**

Note: The focus here is on recorded calls rather than recorded events. We removed 983 directed patrol events and 2,020 additional events with zero time on scene.

Observations:

- On average, there were 115.2 calls per day, or 4.8 per hour.
- The top three categories accounted for 79 percent of calls:
  - 39 percent of calls were investigations.
  - 24 percent of calls were suspicious incidents.
  - 17 percent of calls were traffic-related.
- 7 percent of calls were crimes.

FIGURE 4: Calls per Day, by Initiator and Months

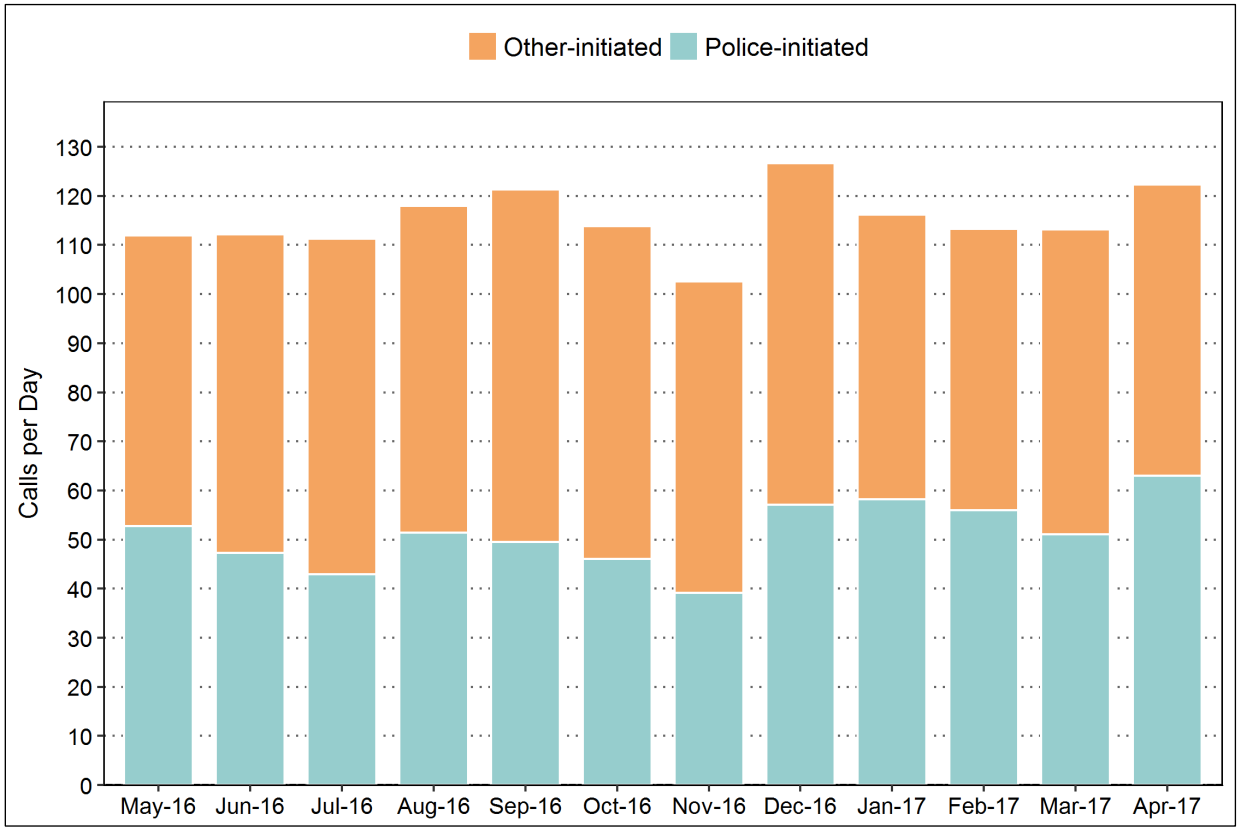


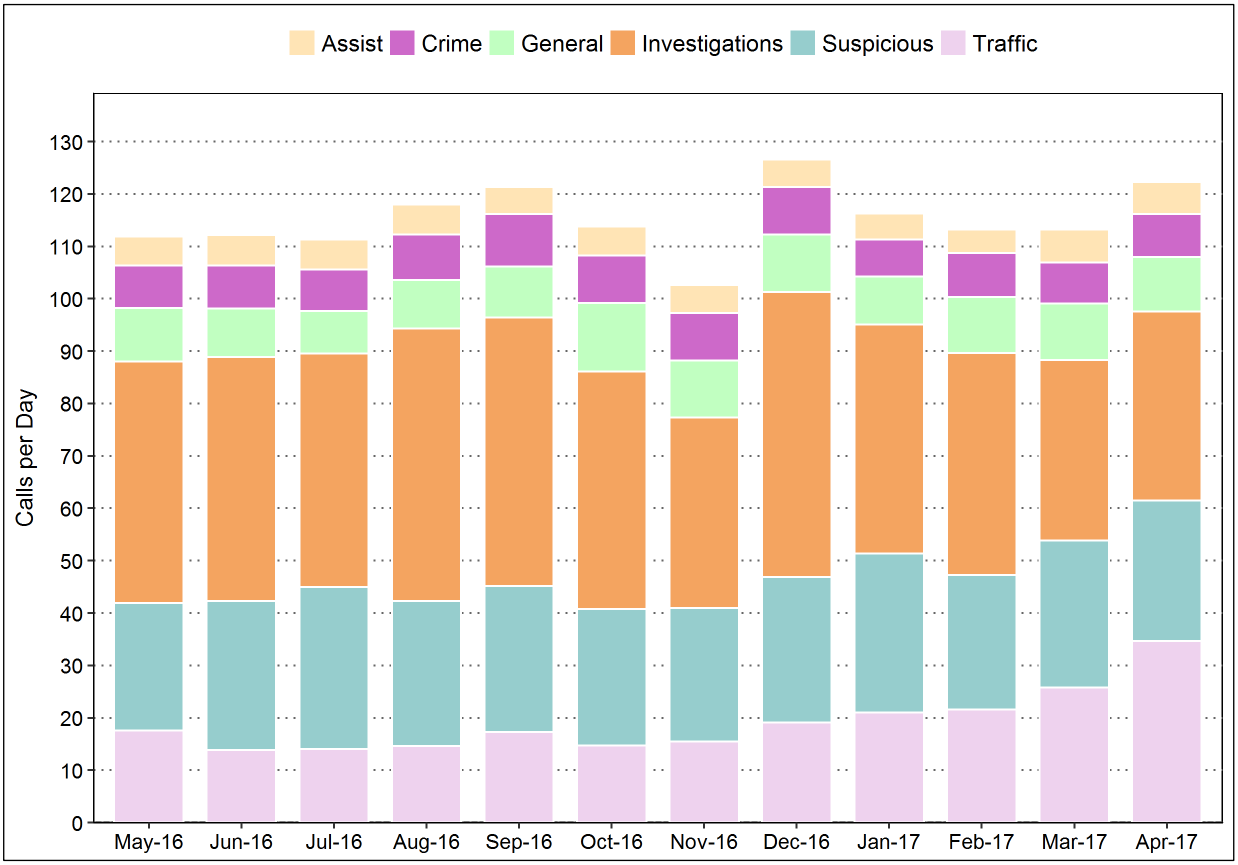
TABLE 4: Calls per Day, by Initiator and Months

Initiator	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Other-initiated	59.2	64.9	68.4	66.6	71.9	67.7	63.4	69.5	58.0	57.3	62.2	59.3
Police-initiated	52.7	47.3	43.0	51.4	49.5	46.1	39.2	57.1	58.3	55.9	51.0	63.0
Total	**111.9**	**112.2**	**111.3**	**118.0**	**121.3**	**113.8**	**102.6**	**126.6**	**116.2**	**113.2**	**113.2**	**122.3**

Observations:

- The number of calls per day was lowest in November.
- The number of calls per day was highest in December.
- The month with the most calls had 23 percent more calls than the month with the fewest calls.
- September had the most other-initiated calls, with 25 percent more than February, which had the fewest.
- April had the most police-initiated calls, with 61 percent more than November, which had the fewest.

FIGURE 5: Calls per Day, by Category and Months



Note: The figure combines categories in the following table according to the description in Chart 1.

TABLE 5: Calls per Day, by Category and Months

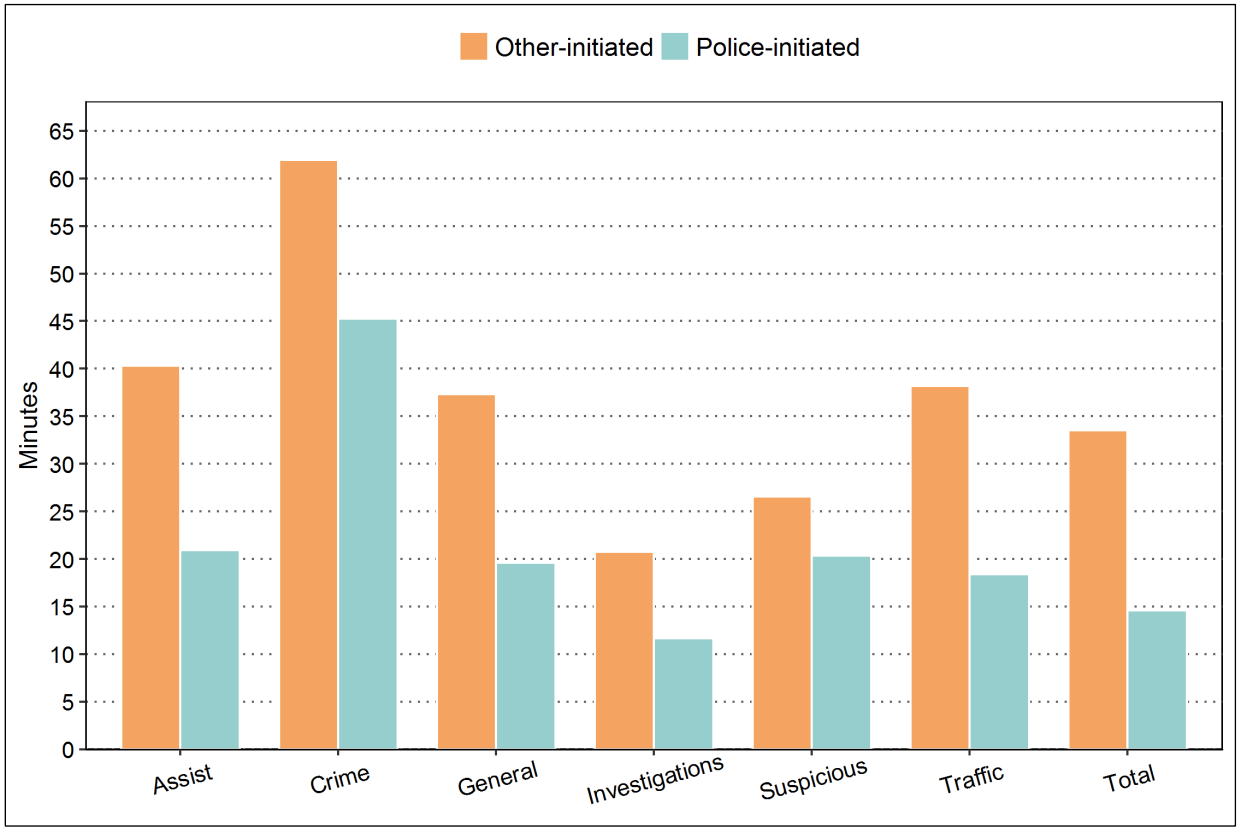
Category	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Accidents	3.4	3.7	4.5	4.1	4.3	4.7	3.2	3.0	3.7	3.4	4.3	3.4
Alarm	2.8	2.9	2.7	2.3	2.9	4.2	2.2	2.8	2.7	2.3	2.5	2.3
Animal call	1.2	1.0	0.9	0.7	1.3	1.2	1.2	1.0	1.1	1.3	1.3	1.1
Assist other agency	5.6	5.8	5.8	5.8	5.2	5.6	5.3	5.3	4.9	4.6	6.3	6.1
Check/investigation	43.2	43.7	42.0	49.8	48.3	41.2	34.2	51.7	41.0	40.1	31.9	33.8
Crime–person	3.6	3.1	3.3	3.1	4.0	3.0	3.0	3.1	2.8	2.8	2.8	3.1
Crime–property	4.5	5.1	4.6	5.6	6.0	6.1	6.1	5.9	4.3	5.5	5.0	5.1
Disturbance	10.4	11.1	12.6	9.8	11.0	10.7	10.0	9.9	9.9	9.8	9.5	10.1
Juvenile	1.2	1.0	0.7	1.2	1.9	1.7	2.0	2.9	1.7	2.5	1.3	1.9
Medical	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Miscellaneous	7.8	7.2	6.5	7.3	6.5	10.1	7.6	6.9	6.4	6.9	8.2	7.4
Suspicious person/vehicle	13.9	17.4	18.3	17.8	16.9	15.4	15.5	17.9	20.4	15.8	18.6	16.7
Traffic enforcement	14.1	10.2	9.6	10.5	13.0	10.0	12.3	16.1	17.3	18.2	21.5	31.3
Total	**111.9**	**112.2**	**111.3**	**118.0**	**121.3**	**113.8**	**102.6**	**126.6**	**116.2**	**113.2**	**113.2**	**122.3**

Note: Calculations were limited to calls rather than events.

Observations:

- The top three categories averaged between 75 and 82 percent of calls throughout the year:
  - Investigations averaged between 34.5 and 54.5 calls per day throughout the year.
  - Suspicious incidents averaged between 24.4 and 30.9 calls per day throughout the year.
  - Traffic calls averaged between 13.8 and 34.7 calls per day throughout the year.
- Crimes averaged between 7.1 and 10.0 calls per day throughout the year and accounted for from 6 to 9 percent of total calls by month.

FIGURE 6: Primary Unit's Average Occupied Times, by Category and Initiator



Note: The figure combines categories using weighted averages from the following table according to the description in Chart 1. For this graph and the following Table 6, we removed three calls with an inaccurate busy time.

TABLE 6: Primary Unit's Average Occupied Times, by Category and Initiator

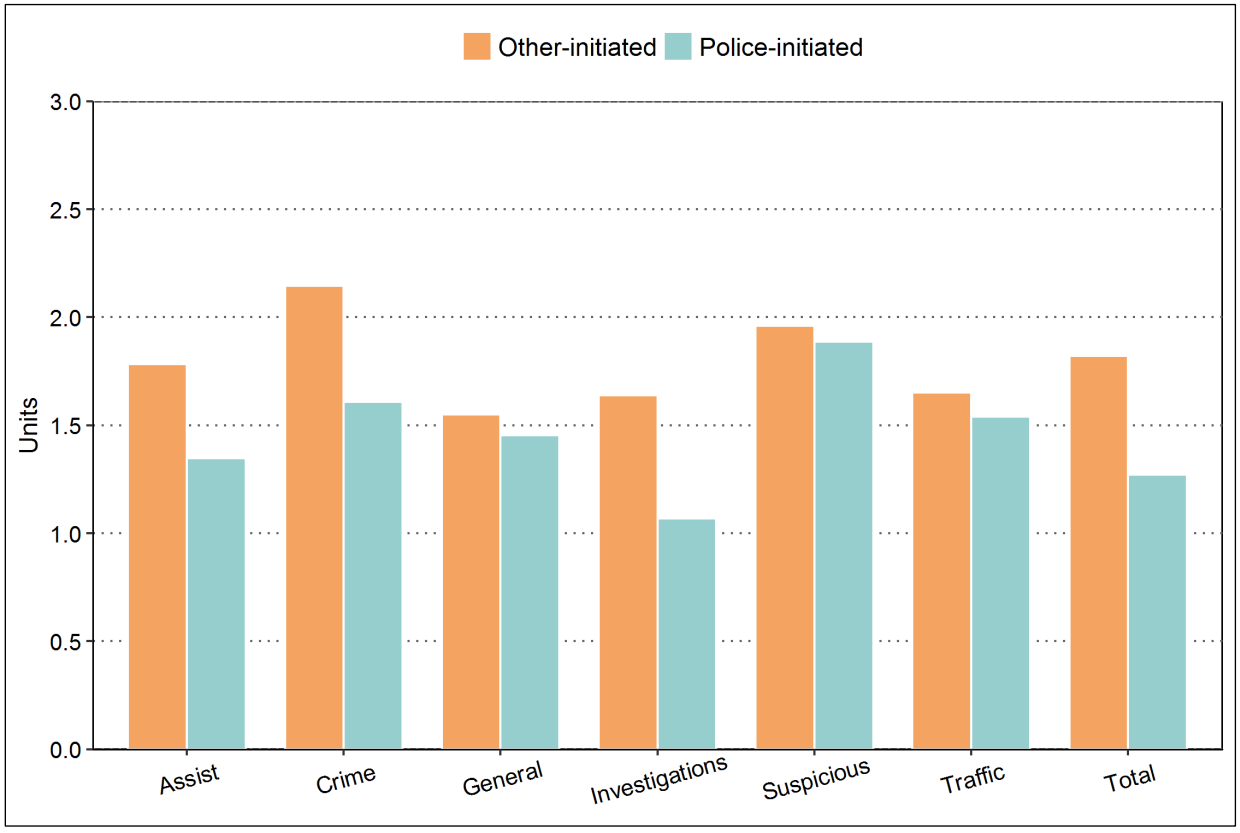
Category	Other-Initiated		Police-Initiated	
	Minutes	Calls	Minutes	Calls
Accidents	55.8	1,306	46.7	80
Alarm	17.6	978	14.3	17
Animal call	27.7	377	18.5	28
Assist other agency	40.3	1,731	20.9	286
Check/investigation	21.6	3,707	11.7	11,536
Crime–person	72.5	1,113	49.1	32
Crime–property	55.6	1,869	43.5	73
Disturbance	28.6	3,704	22.6	97
Juvenile	63.8	568	32.9	41
Medical	2.4	10	NA	0
Miscellaneous	32.1	2,104	18.7	595
Suspicious person/vehicle	25.0	4,786	20.2	1,441
Traffic enforcement	17.9	1,133	17.9	4,451
Weighted Average/Total Calls	**33.5**	**23,386**	**14.6**	**18,677**

Note: The information in Figure 6 and Table 6 is limited to calls and excludes all events that show zero time on scene. A unit's occupied time is measured as the time from when the unit was dispatched until the unit becomes available again. The times shown are the average occupied minutes per call for the primary unit, rather than the total occupied minutes for all units assigned to a call. Observations below refer to times shown within the figure rather than the table.

Observations:

- A unit's average time spent on a call ranged from 12 to 62 minutes overall.
- The longest average times were for other-initiated crime calls.
- The average time spent on crimes was 62 minutes for other-initiated calls and 45 minutes for police-initiated calls.

FIGURE 7: Number of Responding Units, by Initiator and Category



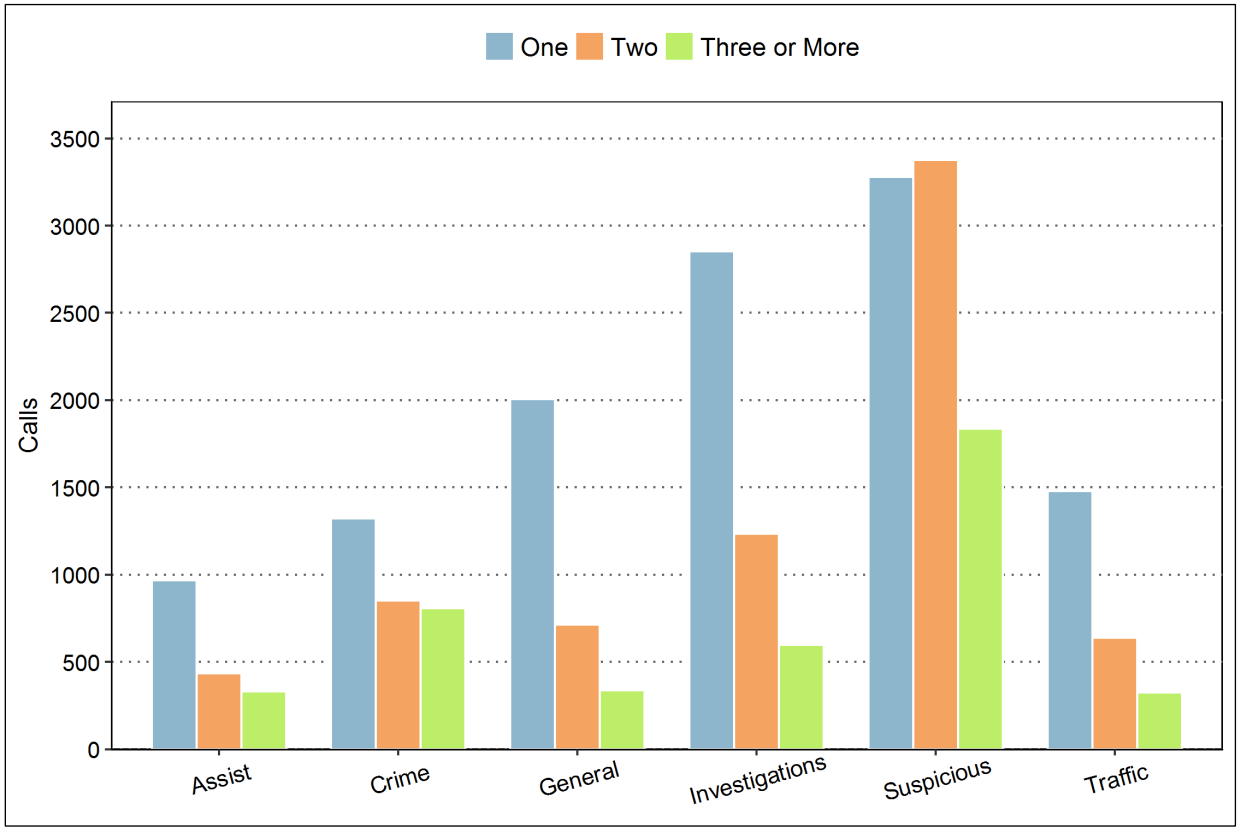
Note: The figure combines categories using weighted averages from the following table according to the description in Chart 1.

TABLE 7: Average Number of Responding Units, by Initiator and Category

Category	Other-Initiated		Police-Initiated	
	No. Units	Calls	No. Units	Calls
Accidents	1.8	1,308	2.0	80
Alarm	2.4	978	1.6	17
Animal call	1.4	377	1.1	28
Assist other agency	1.8	1,731	1.3	286
Check/investigation	1.5	3,707	1.1	11,536
Crime–person	2.7	1,113	1.8	32
Crime–property	1.8	1,869	1.5	73
Disturbance	2.1	3,704	2.0	97
Juvenile	2.1	568	1.5	41
Medical	1.2	10	NA	0
Miscellaneous	1.4	2,105	1.5	595
Suspicious person/vehicle	1.9	4,786	1.9	1,441
Traffic enforcement	1.4	1,133	1.5	4,451
Weighted Average/Total Calls	**1.8**	**23,389**	**1.3**	**18,677**

Note: The information in Figure 7 and Table 7 is limited to calls and excludes all events that show zero time on scene. Observations refer to number of responding units shown within the figure rather than the table.

FIGURE 8: Number of Responding Units, by Category, Other-initiated Calls



Note: The figure combines categories using weighted averages from the following table according to the description in Chart 1.

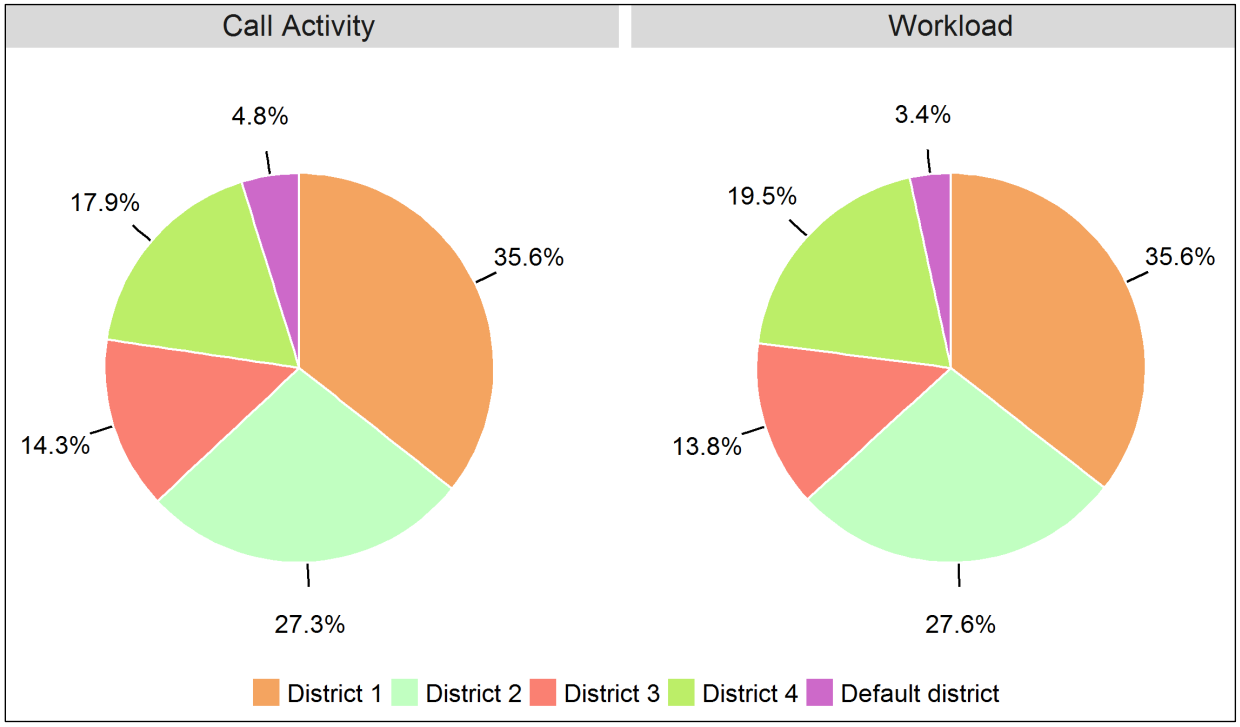
TABLE 8: Number of Responding Units, by Category, Other-initiated Calls

Category	Responding Units		
	One	Two	Three or More
Accidents	710	350	248
Alarm	129	547	302
Animal call	260	84	33
Assist other agency	967	434	330
Check/investigation	2,723	689	295
Crime–person	246	394	473
Crime–property	1,075	458	336
Disturbance	1,188	1,617	899
Juvenile	237	184	147
Medical	8	2	0
Miscellaneous	1,501	445	159
Suspicious person/vehicle	2,090	1,758	938
Traffic enforcement	768	288	77
Total	**11,902**	**7,250**	**4,237**

Observations:

- The overall mean number of responding units was 1.8 for other-initiated calls and 1.3 for police-initiated calls.
- The mean number of responding units was as high as 2.1 for crime calls that were other-initiated.
- 51 percent of other-initiated calls involved one responding unit.
- 31 percent of other-initiated calls involved two responding units.
- 18 percent of other-initiated calls involved three or more responding units.
- The largest group of calls with three or more responding units involved suspicious incidents.

FIGURE 9: Percentage Calls and Work Hours, by District



Note: Council district 1, 2, 3, 4, and default district correspond to areas ID 48, 47, 46, 45, and 23, respectively.

TABLE 9: Calls and Work Hours by District, per Day

District	Per Day		Population
	Calls	Work Hours	
District 1	41.1	26.7	3,769
District 2	31.5	20.7	4,287
District 3	16.5	10.4	4,625
District 4	20.6	14.7	4,477
Default district	5.5	2.6	NA
Total	**115.2**	**75.0**	**17,158**

Note: Population values were provided by the city's planning department and rely on data from the 2010 Census.

Observations:

- District 1 had the most calls and workload. It accounted for 35.7 percent of total calls and 35.6 percent of total workload.
- Excluding the default district, an even distribution among districts would allot 27.4 calls and 18.1 work hours per district.

FIGURE 10: Percentage Calls and Work Hours, by Category, Summer 2016

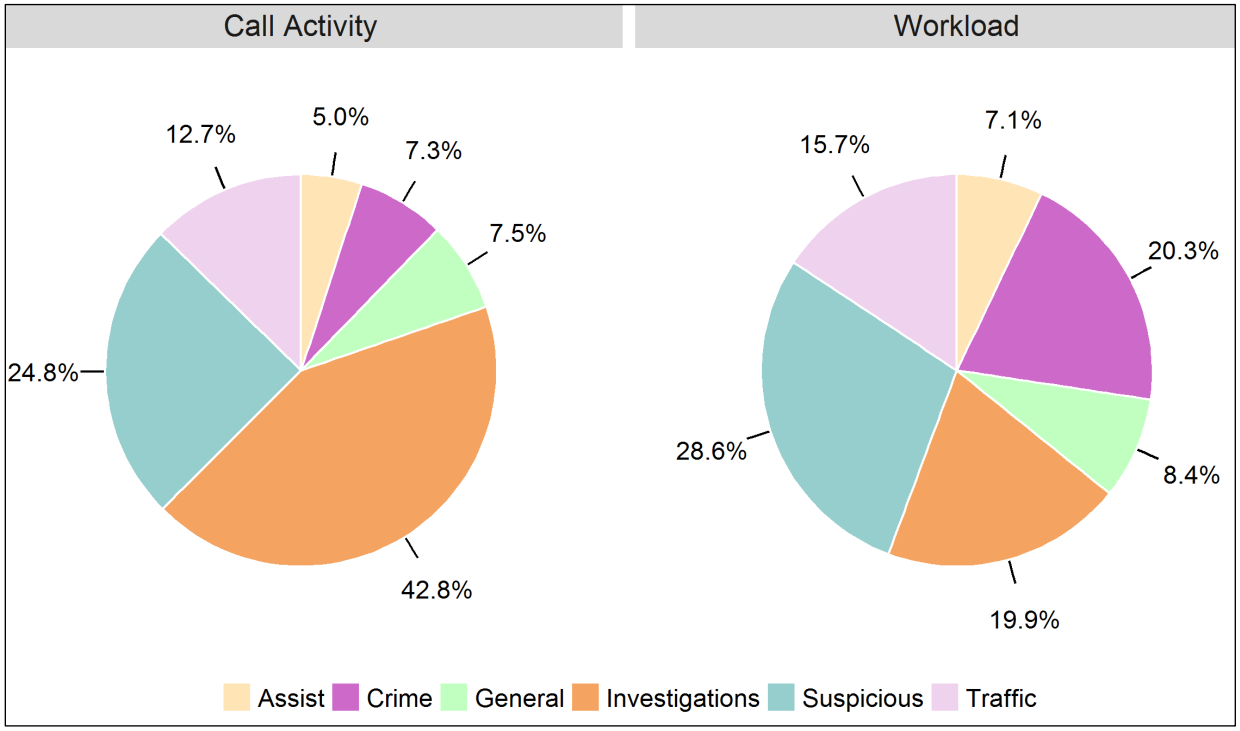


TABLE 10: Calls and Work Hours per Day, by Category, Summer 2016

Category	Per Day	
	Calls	Work Hours
Accidents	4.3	7.0
Alarm	2.6	1.6
Animal call	0.7	0.3
Assist other agency	5.8	5.3
Check/investigation	46.9	13.2
Crime–person	3.2	7.3
Crime–property	5.2	7.8
Disturbance	10.6	8.9
Juvenile	0.9	1.2
Medical	0.0	0.0
Miscellaneous	6.9	4.7
Suspicious person/vehicle	18.1	12.5
Traffic enforcement	10.4	4.7
Total	**115.6**	**74.7**

Note: Workload calculations focused on calls rather than events.

Observations, Summer:

- The average number of calls per day was higher in summer than in winter.
- The average daily workload was higher in summer than in winter.
- On average, there were 116 calls per day, or 4.8 per hour.
- Total workload averaged 75 hours per day, meaning that on average 3.1 officers per hour were busy responding to calls.
- Investigations constituted 43 percent of calls and 20 percent of workload.
- Suspicious incidents constituted 25 percent of calls and 29 percent of workload.
- Traffic calls constituted 13 percent of calls and 16 percent of workload.
- These top three categories constituted 80 percent of calls and 64 percent of workload.
- Crimes constituted 7 percent of calls and 20 percent of workload.

FIGURE 11: Percentage Calls and Work Hours, by Category, Winter 2017

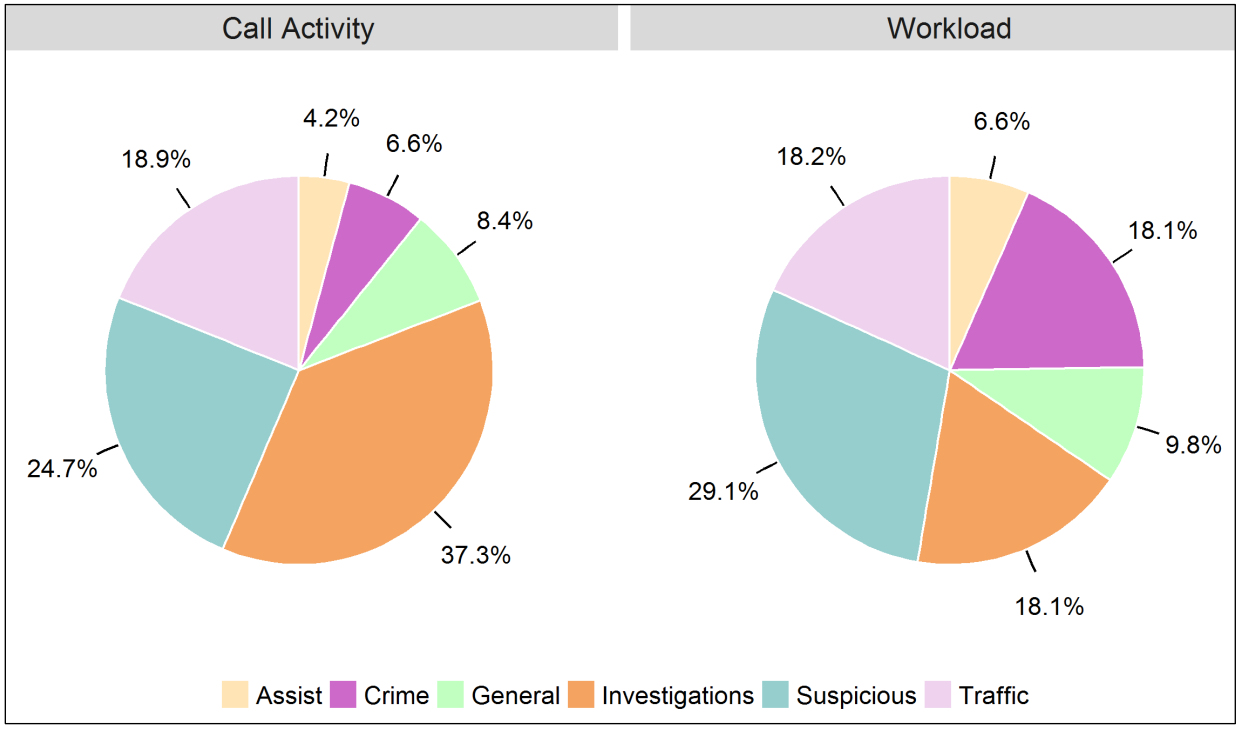


TABLE 11: Calls and Work Hours per Day, by Category, Winter 2017

Category	Per Day	
	Calls	Work Hours
Accidents	3.5	5.3
Alarm	2.6	1.7
Animal call	1.1	0.7
Assist other agency	4.8	4.8
Check/investigation	40.0	11.4
Crime–person	2.7	6.9
Crime–property	4.9	6.2
Disturbance	9.8	9.1
Juvenile	2.1	3.0
Medical	0.0	0.0
Miscellaneous	6.3	3.4
Suspicious person/vehicle	18.4	12.0
Traffic enforcement	18.1	7.9
Total	**114.4**	**72.4**

Note: Workload calculations focused on calls rather than events.

Observations, Winter:

- On average, there were 114 calls per day, or 4.8 per hour.
- Total workload averaged 72 hours per day, meaning that on average 3.0 officers per hour were busy responding to calls.
- Investigations constituted 37 percent of calls and 18 percent of workload.
- Suspicious incidents constituted 25 percent of calls and 29 percent of workload.
- Traffic calls constituted 19 percent of calls and 18 percent of workload.
- These top three categories constituted 81 percent of calls and 65 percent of workload.
- Crimes constituted 7 percent of calls and 18 percent of workload.

NONCALL ACTIVITIES

In the period from May 1, 2016 to April 30, 2017, the dispatch center recorded activities that were not assigned a call number. We focused on those activities that involved a patrol unit. We also limited our analysis to noncall activities that occurred during shifts where the same patrol unit was also responding to calls for service. Each record only indicates one unit per activity. There were a few problems with the data provided and we made assumptions and decisions to address these issues:

- We excluded activities that lasted less than 30 seconds. These are irrelevant and contribute little to the overall workload.
- Another portion of the recorded activities lasted more than eight hours. As an activity is unlikely to last more than eight hours, we assumed that these records were inaccurate.
- After these exclusions, 15,607 activities remained. These activities had an average duration of 37.8 minutes.

In this section, we report noncall activities and workload by type of activity. In the next section, we include these activities in the overall workload when comparing the total workload against available personnel in summer and winter.

TABLE 12: Activities and Occupied Times by Type

Description	Occupied Time	Count
Break	23.9	437
Lunch/dinner/breakfast	21.0	3,881
Personal - Weighted Average/Total Calls	**21.3**	**4,318**
Court	65.1	211
Out of service*	33.9	6,430
Repairs	19.6	226
Report writing	61.4	770
Special assignment	47.4	2,580
Training	113.0	787
Transport	13.1	285
Administrative - Weighted Average/Total Calls	**44.2**	**11,289**
Weighted Average/Total Calls	**37.8**	**15,607**

Note: 6,430 "Out of service" activities were recorded without any added detail. The majority of these activities occurred around shift changes and we categorized these as administrative activities.

Observations:

- The most common activity description was "out of service."
- The description with the longest average time was for "training."
- The average time spent on administrative activities was 44.2 minutes and for personal activities it was 21.3 minutes.

FIGURE 12: Activities per Day, by Month

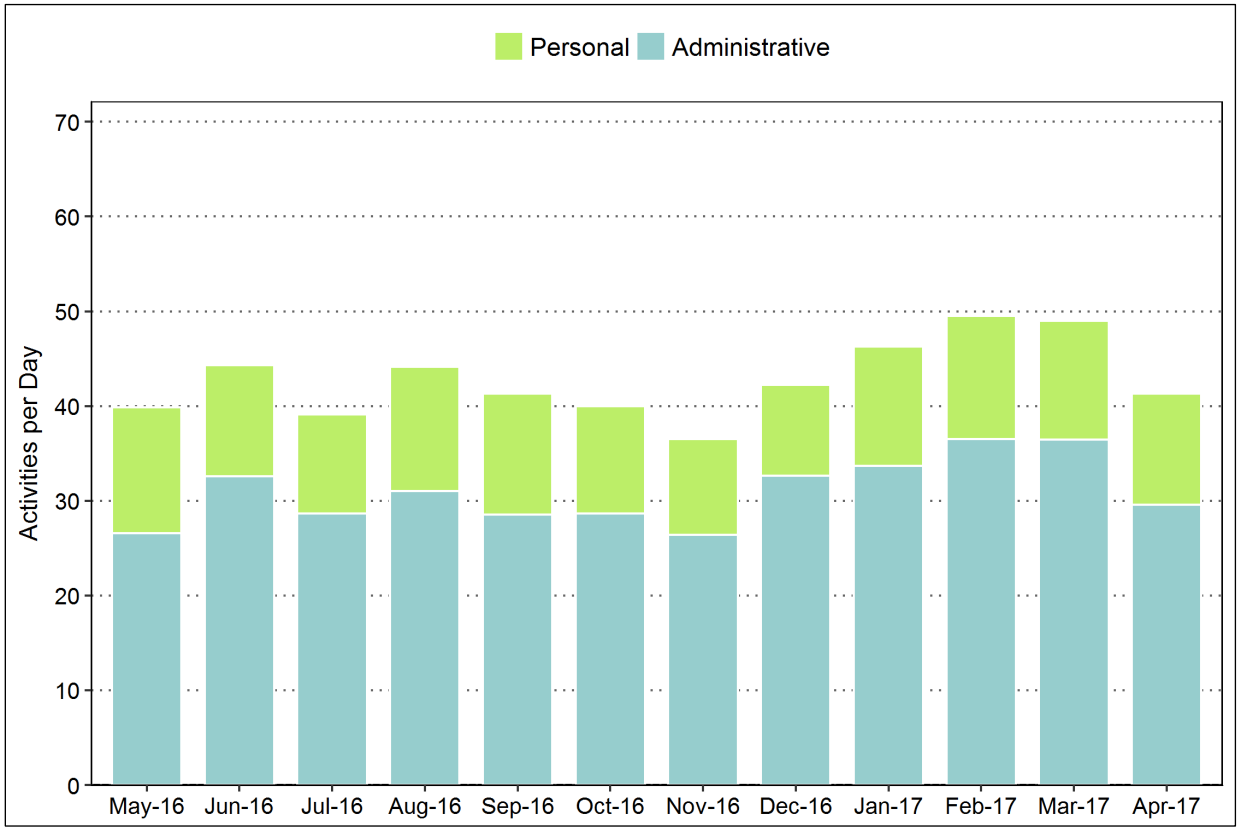


TABLE 13: Activities per Day, by Month

Activities	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Personal	13.3	11.7	10.5	13.1	12.7	11.3	10.1	9.6	12.6	13.0	12.5	11.7
Administrative	26.6	32.6	28.7	31.0	28.6	28.7	26.4	32.6	33.7	36.5	36.5	29.6
Total	**39.8**	**44.3**	**39.1**	**44.1**	**41.3**	**40.0**	**36.5**	**42.3**	**46.3**	**49.5**	**49.0**	**41.3**

Observations:

- The number of noncall activities per day was lowest in November.
- The number of noncall activities per day was highest in February.

FIGURE 13: Activities per Day, by Day of Week

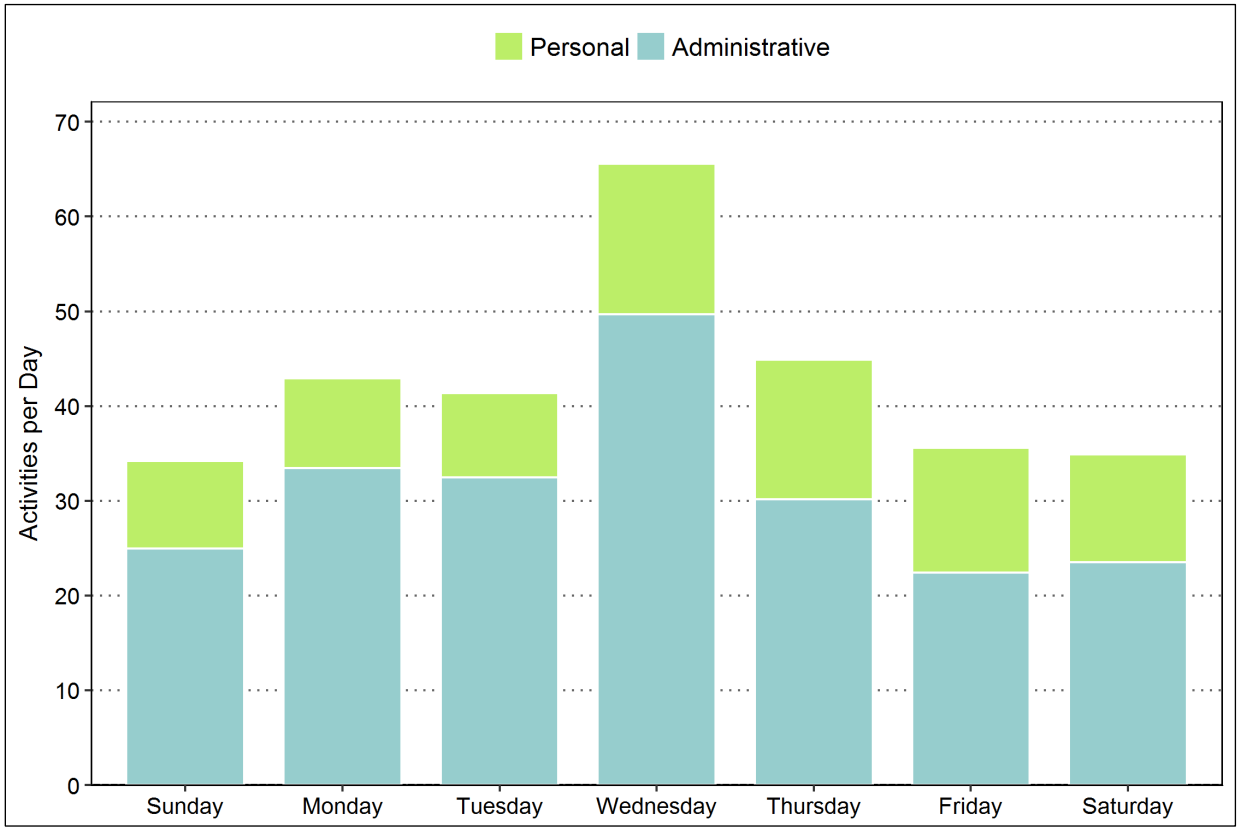


TABLE 14: Activities per Day, by Day of Week

Day of Week	Personal	Administrative	Activities per Day
Sunday	9.2	25.0	34.2
Monday	9.5	33.4	42.9
Tuesday	8.9	32.4	41.4
Wednesday	15.9	49.7	65.6
Thursday	14.8	30.2	44.9
Friday	13.2	22.4	35.6
Saturday	11.4	23.5	34.9
Weekly Average	**11.8**	**30.9**	**42.8**

Observations:

- The number of noncall activities per day was lowest on Sundays.
- The number of noncall activities per day was highest on Wednesdays.

FIGURE 14: Activities per Day, by Hour of Day

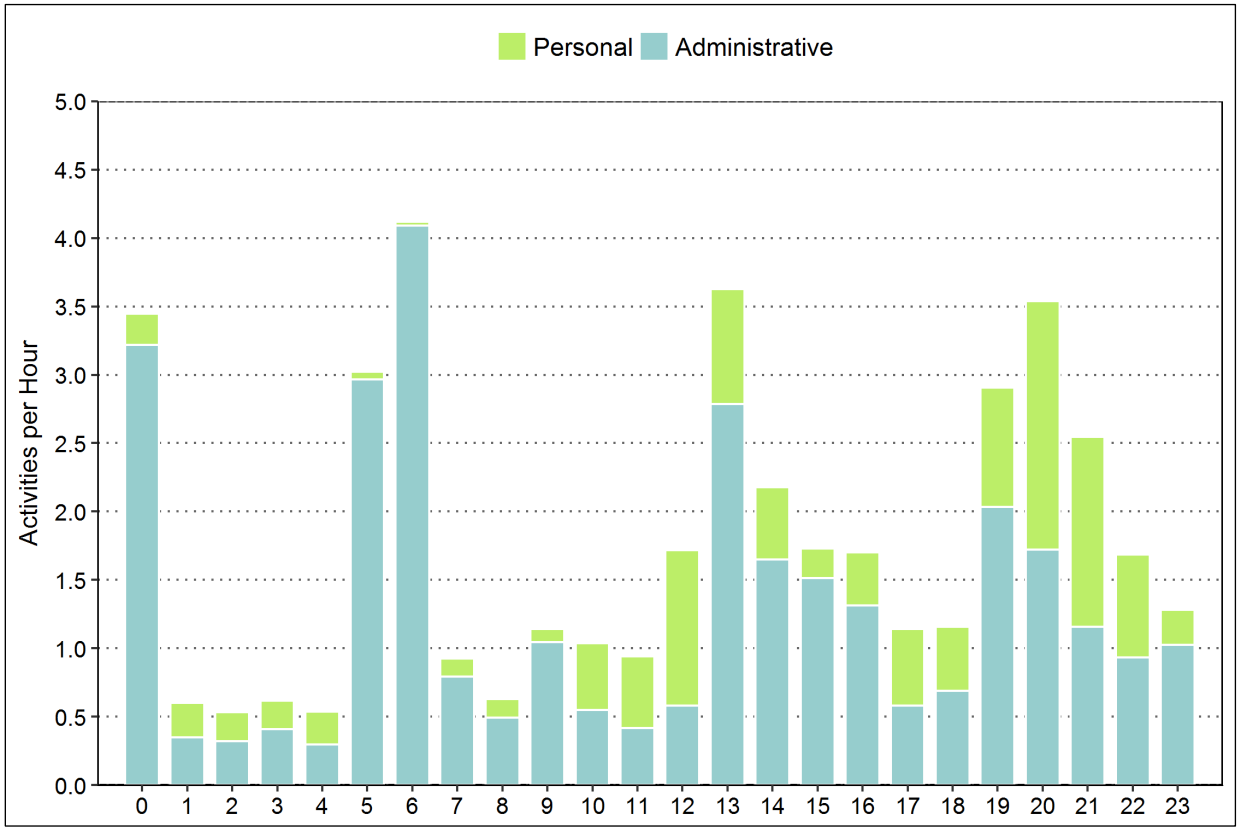


TABLE 15: Activities per Day, by Hour of Day

Hour	Personal	Administrative	Activities per Day
0	0.2	3.2	3.4
1	0.3	0.3	0.6
2	0.2	0.3	0.5
3	0.2	0.4	0.6
4	0.2	0.3	0.5
5	0.1	3.0	3.0
6	0.0	4.1	4.1
7	0.1	0.8	0.9
8	0.1	0.5	0.6
9	0.1	1.0	1.1
10	0.5	0.6	1.0
11	0.5	0.4	0.9
12	1.1	0.6	1.7
13	0.8	2.8	3.6
14	0.5	1.6	2.2
15	0.2	1.5	1.7
16	0.4	1.3	1.7
17	0.6	0.6	1.1
18	0.5	0.7	1.2
19	0.9	2.0	2.9
20	1.8	1.7	3.5
21	1.4	1.2	2.5
22	0.8	0.9	1.7
23	0.3	1.0	1.3
Hourly Average	**0.5**	**1.3**	**1.8**

Observations:

- The number of activities per hour was highest between 6:00 a.m. and 7:00 a.m.
- The number of activities per hour was lowest between 2:00 a.m. and 3:00 a.m. and between 4:00 a.m. and 5:00 a.m.

DEPLOYMENT

For this study, we examined deployment information for eight weeks in summer (July 7 through August 31, 2016) and eight weeks in winter (January 4 through February 28, 2017). The department's main patrol force consists of patrol officers, patrol sergeants, and corporal patrol officers operating on 10-hour shifts starting at 6:00 a.m., 2:00 p.m., and 8:00 p.m. This schedule leads to overlapping shifts from 2:00 p.m. to 4:00 p.m. and from 8:00 p.m. to midnight. The police department's main patrol force deployed an average of 7.8 officers per hour during the 24-hour day in summer 2016 and 8.4 officers per hour during the 24-hour day in winter 2017. When the added patrol motor officers and K9 patrol officers are included, the department averaged 8.9 officers per hour during the 24-hour day in summer 2016 and 9.4 officers per hour during the 24-hour day in winter 2017.

In this section, we describe the deployment and workload in distinct steps, distinguishing between summer and winter and between weekdays (Monday through Friday) and weekends (Saturday and Sunday):

- First, we focus on patrol deployment alone.
- Next, we compare "all" workload, which includes other-initiated calls, police-initiated calls, directed patrol work, and out-of-service activities.
- Finally, we compare workload against deployment by percentage.

Comments follow each set of four figures, with separate discussions for summer and winter.

FIGURE 15: Deployed Officers, Weekdays, Summer 2016

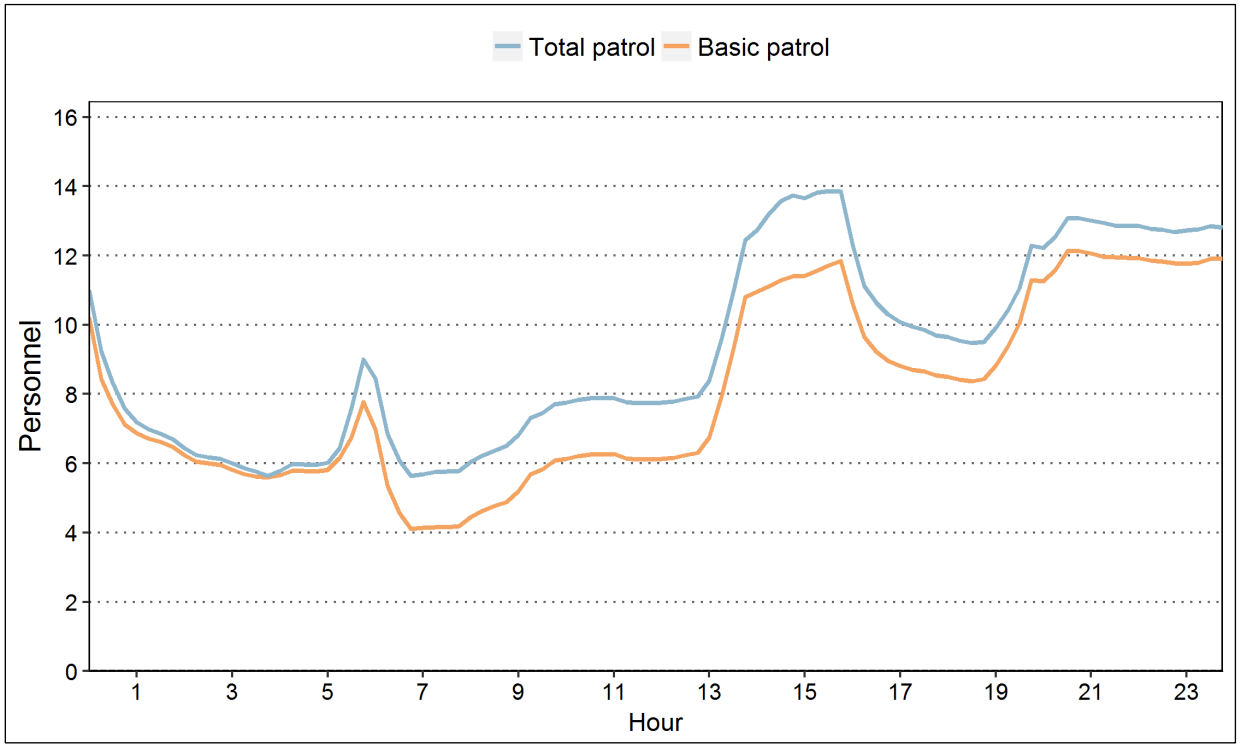


FIGURE 16: Deployed Officers, Weekends, Summer 2016

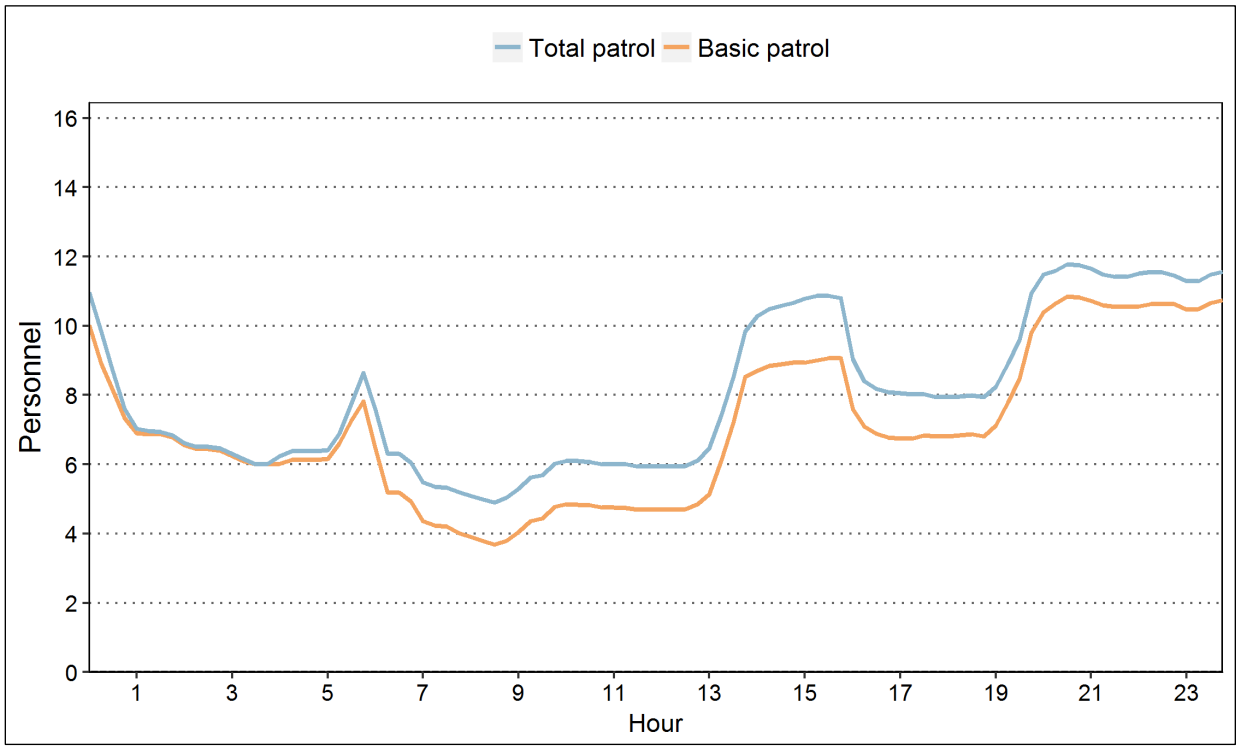


FIGURE 17: Deployed Officers, Weekdays, Winter 2017

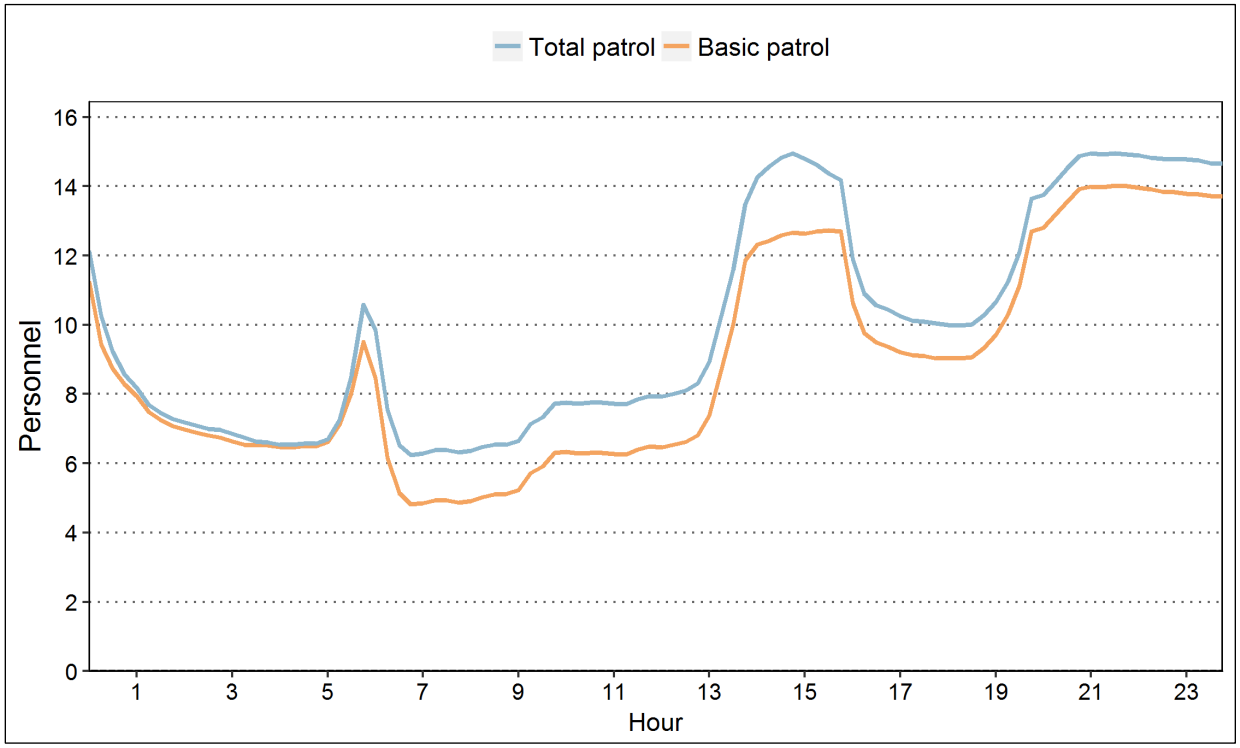
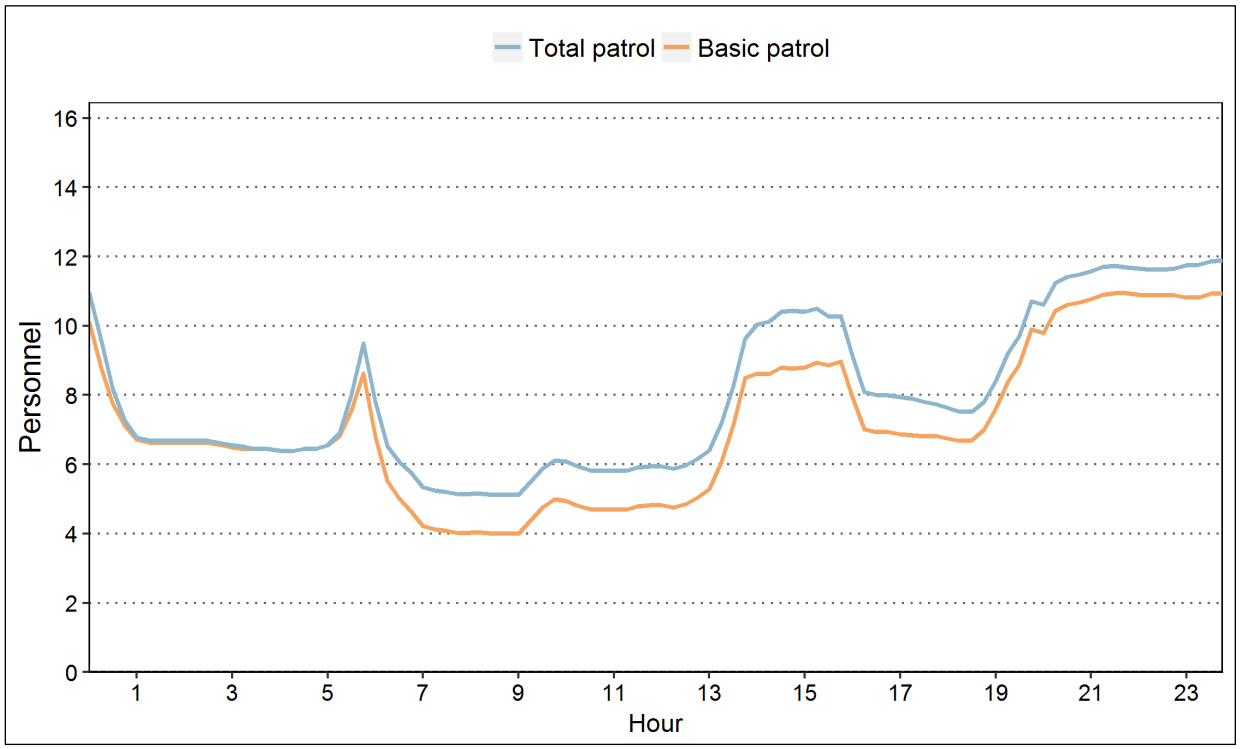


FIGURE 18: Deployed Officers, Weekends, Winter 2017



Observations:

- For summer (July 7 through August 31, 2016):
  - The average deployment was 9.2 officers per hour during the week and 8.0 officers per hour on the weekend.
  - Average deployment varied from 5.6 to 13.9 officers per hour on weekdays and 4.9 to 11.8 officers per hour on weekends.
- For winter (January 4 through February 28, 2017):
  - The average deployment was 10.0 officers per hour during the week and 8.0 officers per hour on the weekend.
  - Average deployment varied from 6.2 to 15.0 officers per hour on weekdays and 5.1 to 11.9 officers per hour on weekends.

FIGURE 19: Deployment and All Workload, Weekdays, Summer 2016

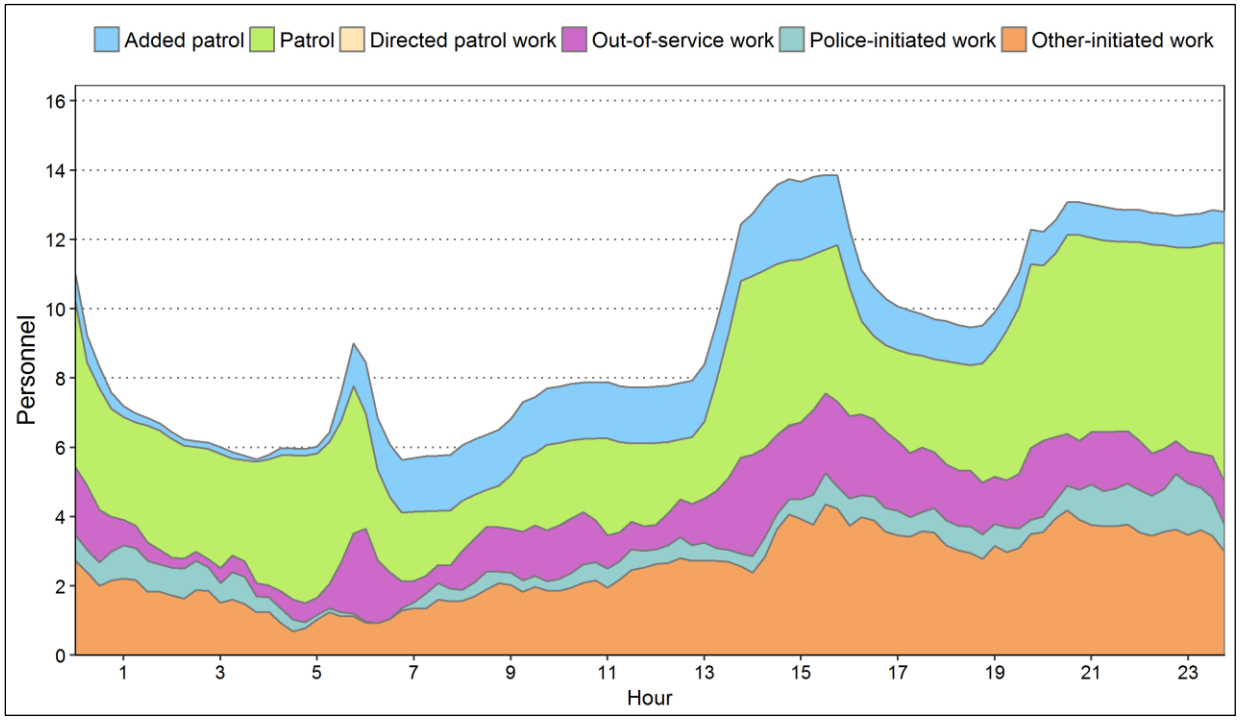


FIGURE 20: Deployment and All Workload, Weekends, Summer 2016

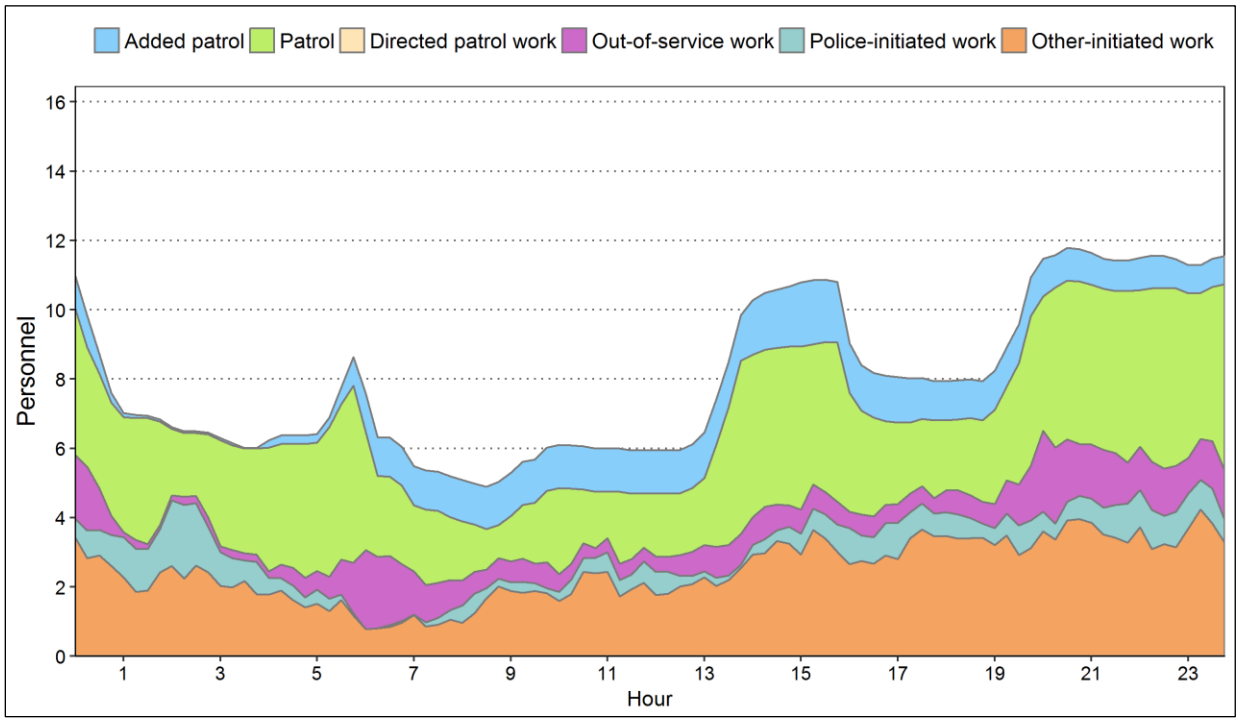


FIGURE 21: Deployment and All Workload, Weekdays, Winter 2017

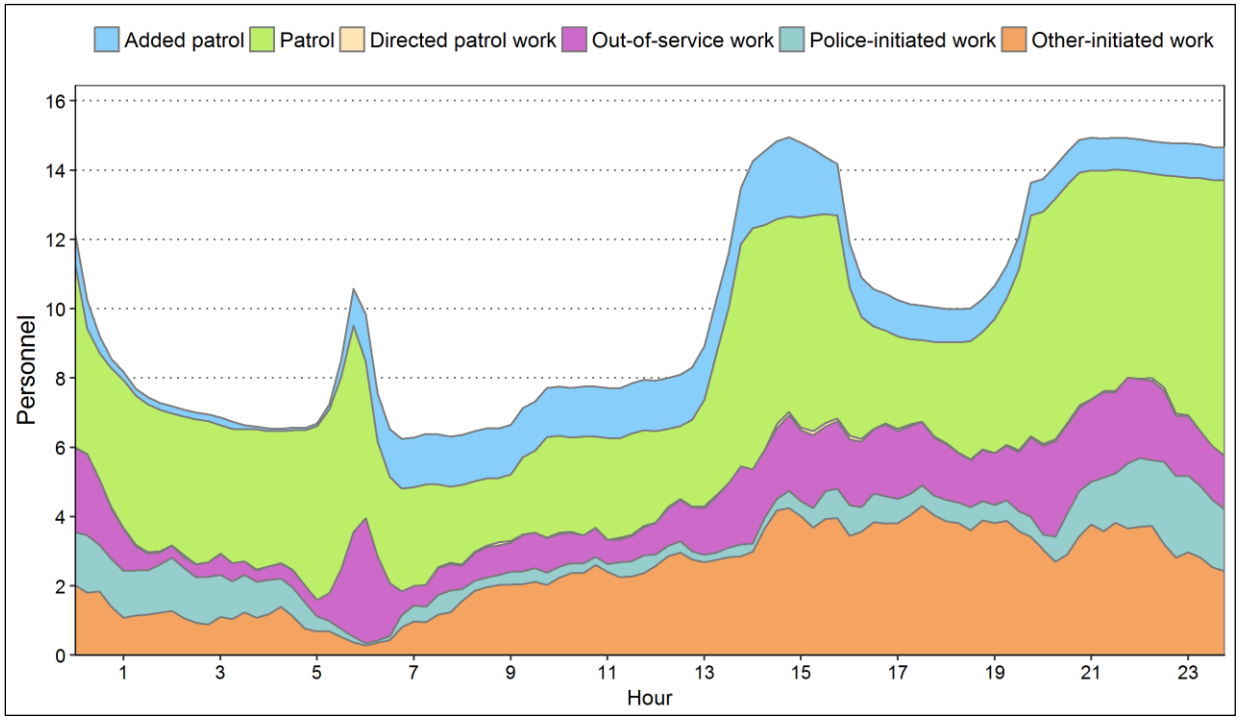
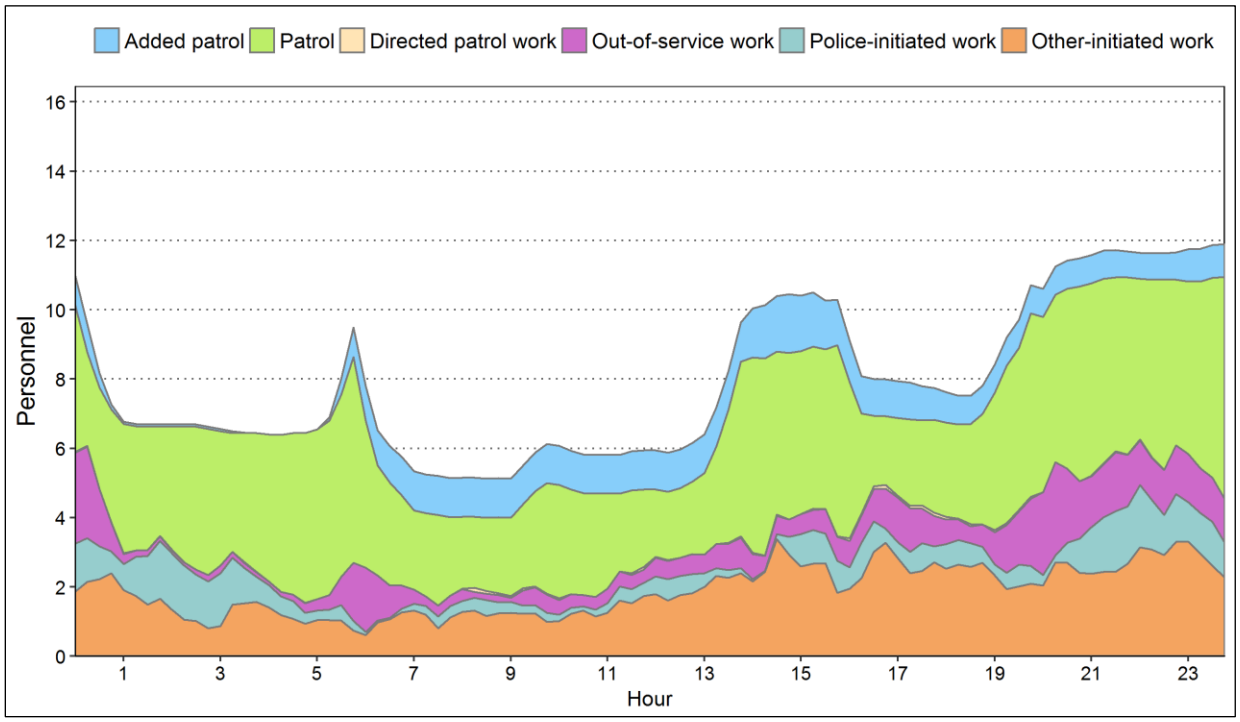


FIGURE 22: Deployment and All Workload, Weekends, Winter 2017



Note: Figures 19 to 22 show deployment along with all workload from other-initiated calls, police-initiated calls, directed patrol activities, and out-of-service activities.

Observations:

Summer:

- Other-initiated work:
  - Average other-initiated workload was 2.5 officers per hour during the week and 2.5 officers per hour on weekends.
  - This was approximately 28 percent of hourly deployment during the week and 31 percent of hourly deployment on weekends.
- All work:
  - Average total workload was 4.5 officers per hour during the week and 3.9 officers per hour on weekends.
  - This was approximately 49 percent of hourly deployment during the week and 49 percent of hourly deployment on weekends.

Winter:

- Other-initiated work:
  - Average other-initiated workload was 2.4 officers per hour during the week and 1.9 officers per hour on weekends.
  - This was approximately 24 percent of hourly deployment during the week and 24 percent of hourly deployment on weekends.
- All work:
  - Average total workload was 4.7 officers per hour during the week and 3.4 officers per hour on weekends.
  - This was approximately 47 percent of hourly deployment during the week and 43 percent of hourly deployment on weekends.

FIGURE 23: Percentage of Workload, Weekdays, Summer 2016

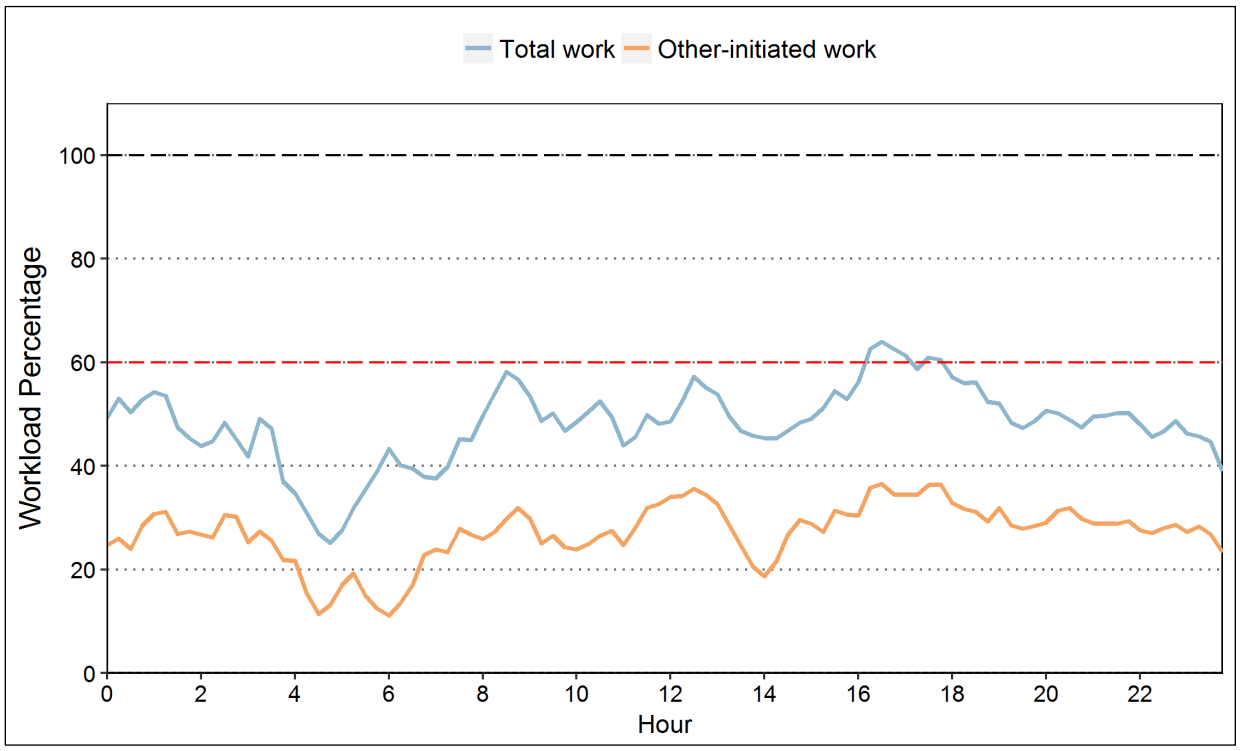


FIGURE 24: Percentage of Workload, Weekends, Summer 2016

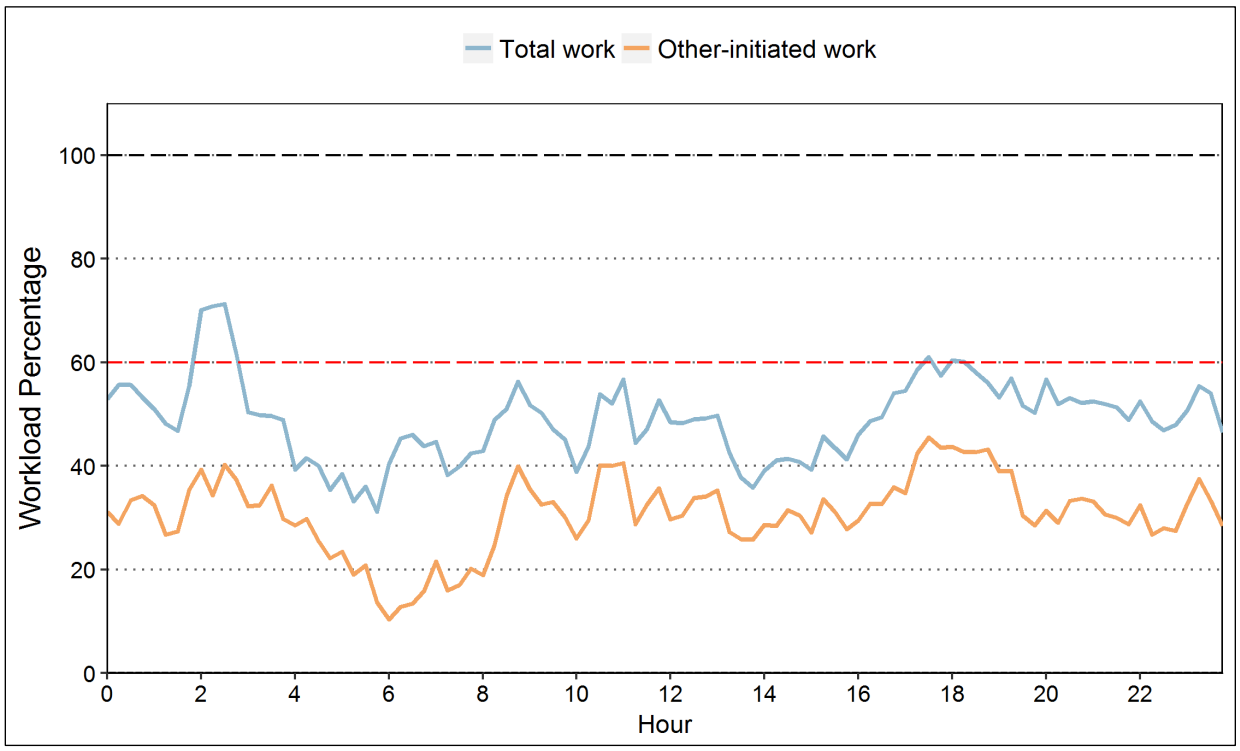


FIGURE 25: Percentage of Workload, Weekdays, Winter 2017

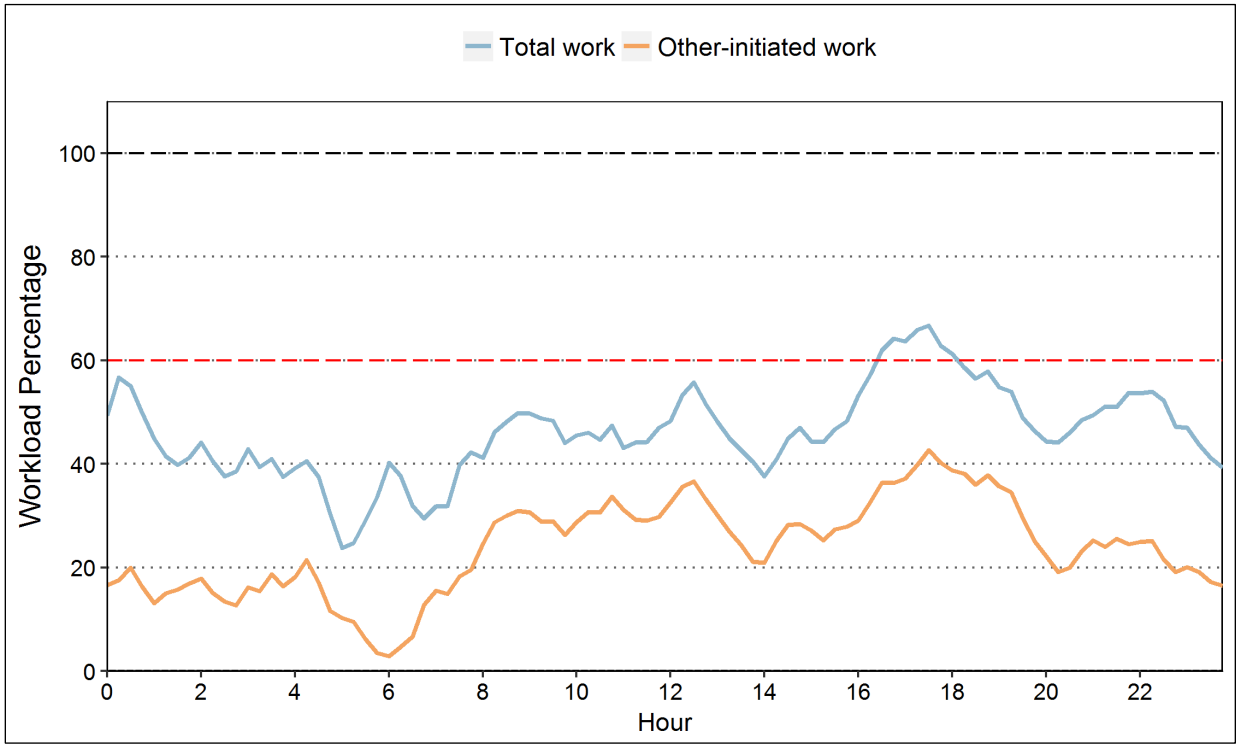
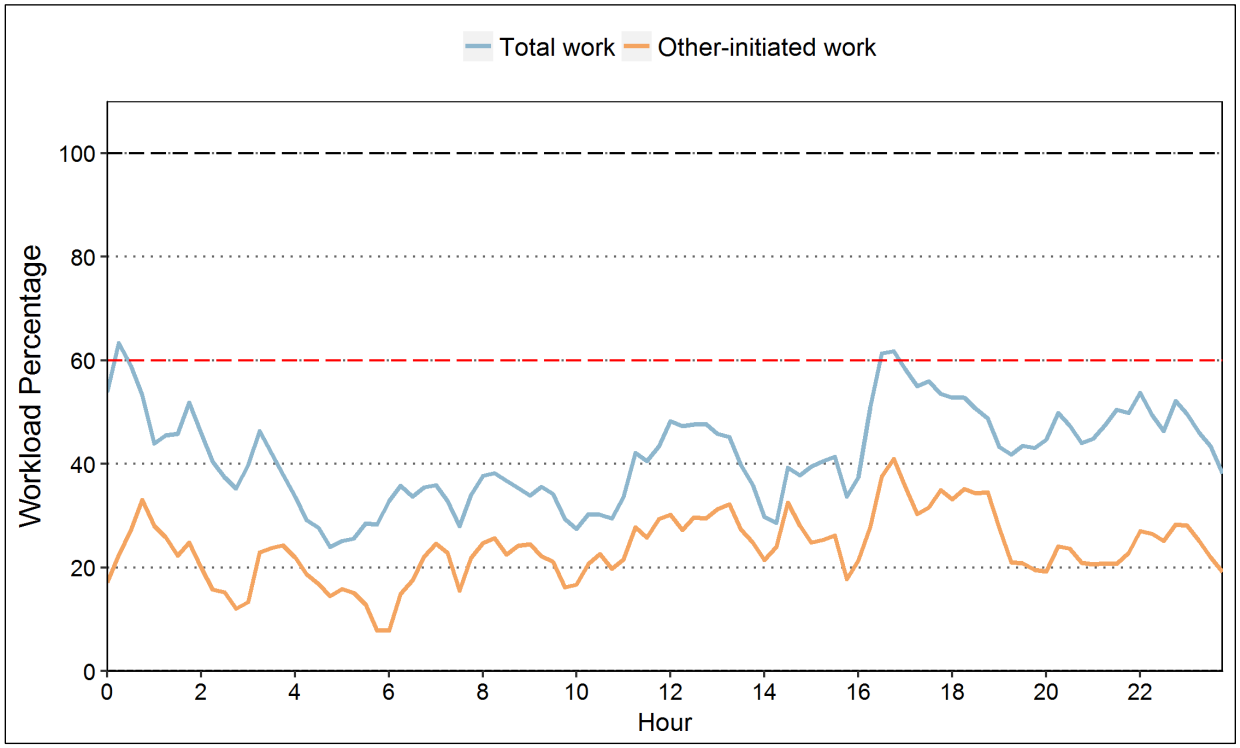


FIGURE 26: Percentage of Workload, Weekends, Winter 2017



Observations:

Summer:

- Other-initiated work:
  - During the week, workload reached a maximum of 37 percent of deployment between 4:30 p.m. and 4:45 p.m. and between 5:30 p.m. and 6:00 p.m.
  - On weekends, workload reached a maximum of 46 percent of deployment between 5:30 p.m. and 5:45 p.m.
- All work:
  - During the week, workload reached a maximum of 64 percent of deployment between 4:30 p.m. and 4:45 p.m.
  - On weekends, workload reached a maximum of 71 percent of deployment between 2:15 a.m. and 2:45 a.m.

Winter:

- Other-initiated work:
  - During the week, workload reached a maximum of 43 percent of deployment between 5:30 p.m. and 5:45 p.m.
  - On weekends, workload reached a maximum of 41 percent of deployment between 4:45 p.m. and 5:00 p.m.
- All work:
  - During the week, workload reached a maximum of 67 percent of deployment between 5:30 p.m. and 5:45 p.m.
  - On weekends, workload reached a maximum of 63 percent of deployment between 12:15 a.m. and 12:30 a.m.

RESPONSE TIMES

We analyzed the response times to various types of calls, separating the duration into dispatch and travel time, to determine whether response times varied by call type. Response time is measured as the difference between when a call is received and when the first unit arrives on scene. This is further divided into dispatch delay and travel time. Dispatch delay is the time between when a call is received and when the first unit is dispatched. Travel time is the remaining time until the first unit arrives on scene.

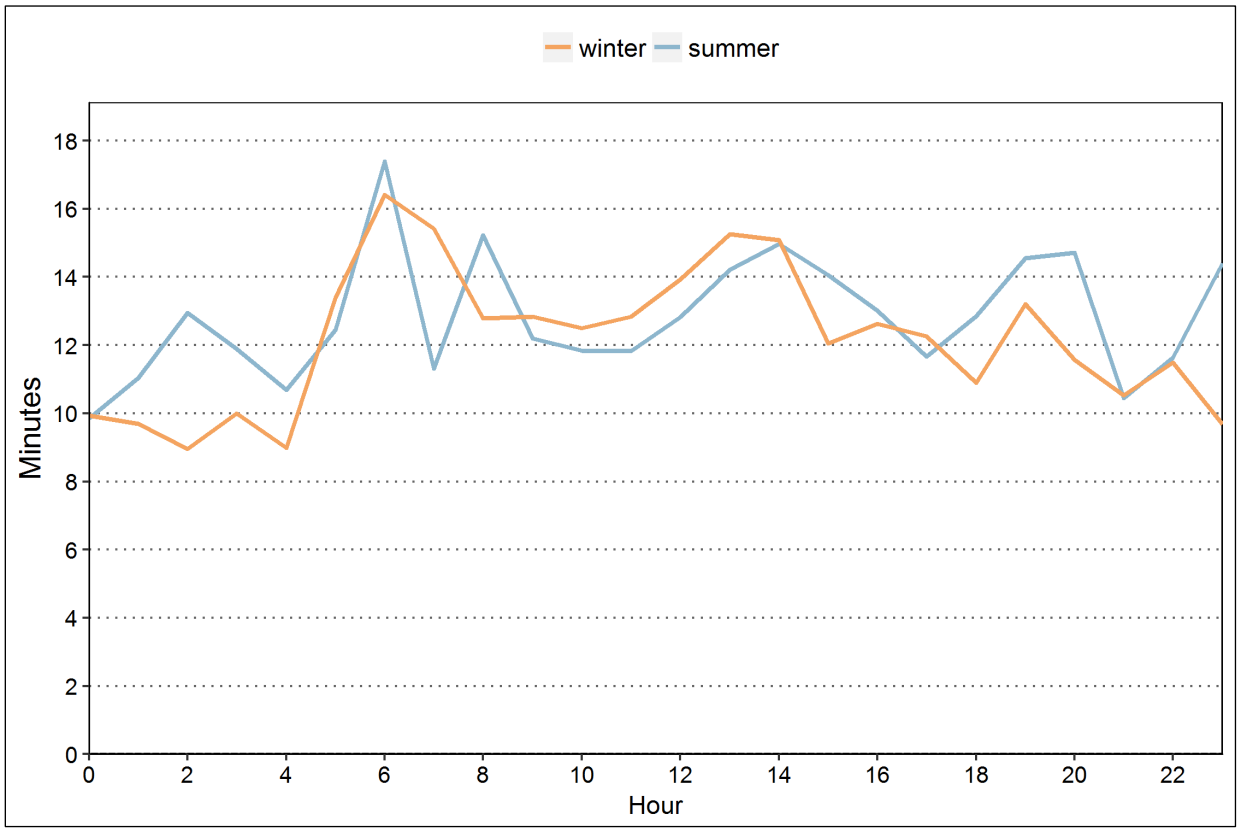
We begin the discussion with statistics that include all calls combined. We started with 6,474 calls for summer and 6,404 calls for winter. We limited our analysis to other-initiated calls, which included 3,748 calls for summer and 3,215 calls for winter. After excluding calls without valid arrival times and excluding calls located within the Cocoa Police Department's building, we were left with 3,432 calls in summer and 3,006 calls in winter for our analysis. For the entire year, we began with 42,066 calls, limited our analysis to 23,389 other-initiated calls, and further focused our analysis on 21,429 calls after excluding those lacking valid arrival times or those located at the Cocoa Police Department's headquarters.

Our initial analysis does not distinguish calls on the basis of their priority; instead, it examines the difference in response for all calls by time of day and compares summer and winter periods. We then present a brief analysis of response time for high-priority calls alone.

ALL CALLS

This section looks at all calls without considering their priorities. In addition to examining the differences in response times by both time of day and season (summer vs. winter), we show differences in response times by category.

FIGURE 27: Average Response Time and Dispatch Delays, by Hour of Day, Summer 2016 and Winter 2017



Observations:

- Average response times varied significantly by hour of day.
- In summer, the longest response times were between 6:00 a.m. and 7:00 a.m., with an average of 17.4 minutes.
- In summer, the shortest response times were between midnight and 1:00 a.m., with an average of 9.9 minutes.
- In winter, the longest response times were between 6:00 a.m. and 7:00 a.m., with an average of 16.4 minutes.
- In winter, the shortest response times were between 2:00 a.m. and 3:00 a.m. and between 4:00 a.m. and 5:00 a.m., with an average of 9.0 minutes.

FIGURE 28: Average Response Time by Category, Summer 2016

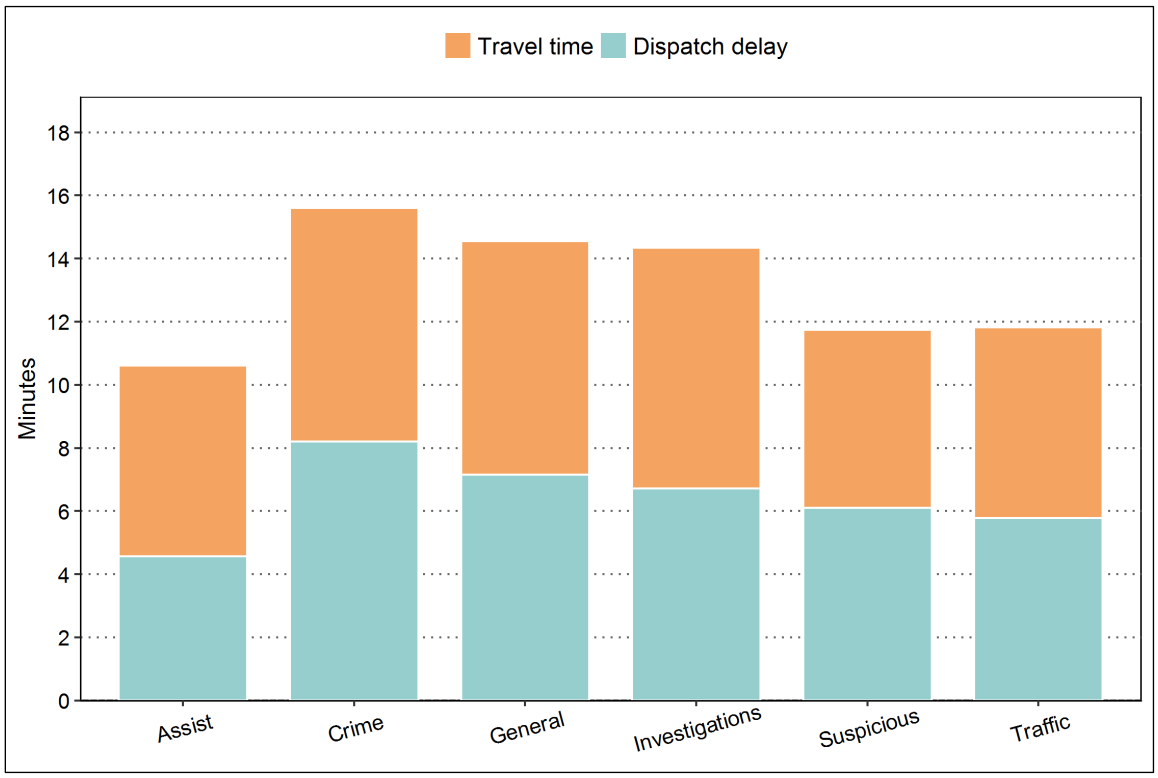


FIGURE 29: Average Response Time by Category, Winter 2017

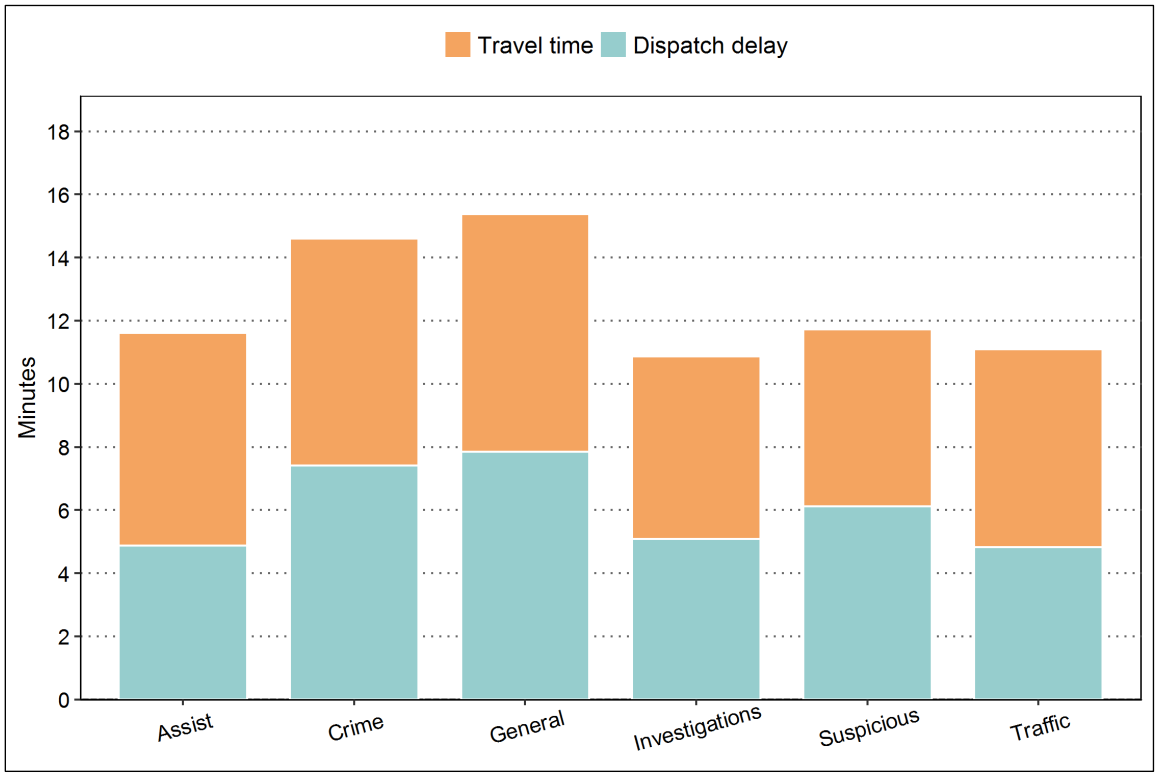


TABLE 16: Average Response Time Components, by Category

Category	Summer			Winter		
	Dispatch	Travel	Response	Dispatch	Travel	Response
Accidents	5.9	6.1	12.0	5.3	6.8	12.2
Alarm	3.0	5.1	8.1	2.4	4.7	7.1
Animal call	5.2	7.2	12.4	8.0	7.1	15.2
Assist other agency	4.6	6.0	10.6	4.9	6.8	11.6
Check/investigation	7.5	8.1	15.6	6.0	6.2	12.2
Crime–person	6.5	6.2	12.6	5.1	5.4	10.5
Crime–property	9.4	8.2	17.6	8.7	8.2	16.9
Disturbance	5.9	5.3	11.1	5.3	5.3	10.6
Juvenile	8.5	8.7	17.2	7.3	8.0	15.3
Miscellaneous	7.2	7.2	14.3	8.0	7.4	15.5
Suspicious person/vehicle	6.3	5.9	12.2	6.7	5.9	12.6
Traffic enforcement	5.6	5.9	11.6	4.2	5.5	9.7
Total Average	**6.5**	**6.5**	**13.0**	**6.1**	**6.2**	**12.4**

Note: The total average is weighted according to the number of calls per category.

Observations:

- In summer, the average response time for most categories was between 11 minutes and 15 minutes.
- In summer, the average response time was as short as 11 minutes (for assist other agency) and as long as 16 minutes (for crime).
- In winter, the average response time for most categories was between 11 minutes and 15 minutes.
- In winter, the average response time was as short as 11 minutes (for investigations) and as long as 15 minutes (for general noncriminal)
- The average response time for crime was 16 minutes in summer and 15 minutes in winter.

TABLE 17: 90th Percentiles for Response Time Components, by Category

Category	Summer			Winter		
	Dispatch	Travel	Response	Dispatch	Travel	Response
Accidents	14.9	11.7	24.3	13.1	13.5	24.7
Alarm	5.4	10.4	14.2	3.4	9.1	12.3
Animal call	11.1	12.4	20.9	22.1	13.1	25.9
Assist other agency	11.4	12.5	20.6	11.2	14.7	24.7
Check/investigation	20.9	17.5	34.5	12.7	12.8	24.2
Crime–person	18.5	13.9	30.6	12.9	10.6	20.7
Crime–property	29.0	17.7	40.9	22.4	18.8	39.8
Disturbance	13.6	10.2	22.4	10.4	10.7	19.7
Juvenile	26.0	29.7	47.7	14.7	18.6	37.4
Miscellaneous	16.4	14.1	28.9	21.1	16.4	30.1
Suspicious person/vehicle	15.1	11.6	24.8	16.7	12.4	27.2
Traffic enforcement	13.5	12.7	23.3	7.9	11.1	16.6
Total Average	**16.8**	**13.5**	**27.9**	**14.4**	**13.1**	**25.5**

Note: A 90th percentile value of 24.3 minutes means that 90 percent of all calls are responded to in fewer than 24.3 minutes. For this reason, the columns for dispatch delay and travel time may not be equal to the total response time.

Observations:

- In summer, the 90th percentile value for response time was as short as 21 minutes (for assist other agency) and as long as 39 minutes (for crime).
- In winter, the 90th percentile value for response time was as short as 21 minutes (for investigations) and as long as 32 minutes (for general noncriminal).

FIGURE 30: Average Response Time Components, by District

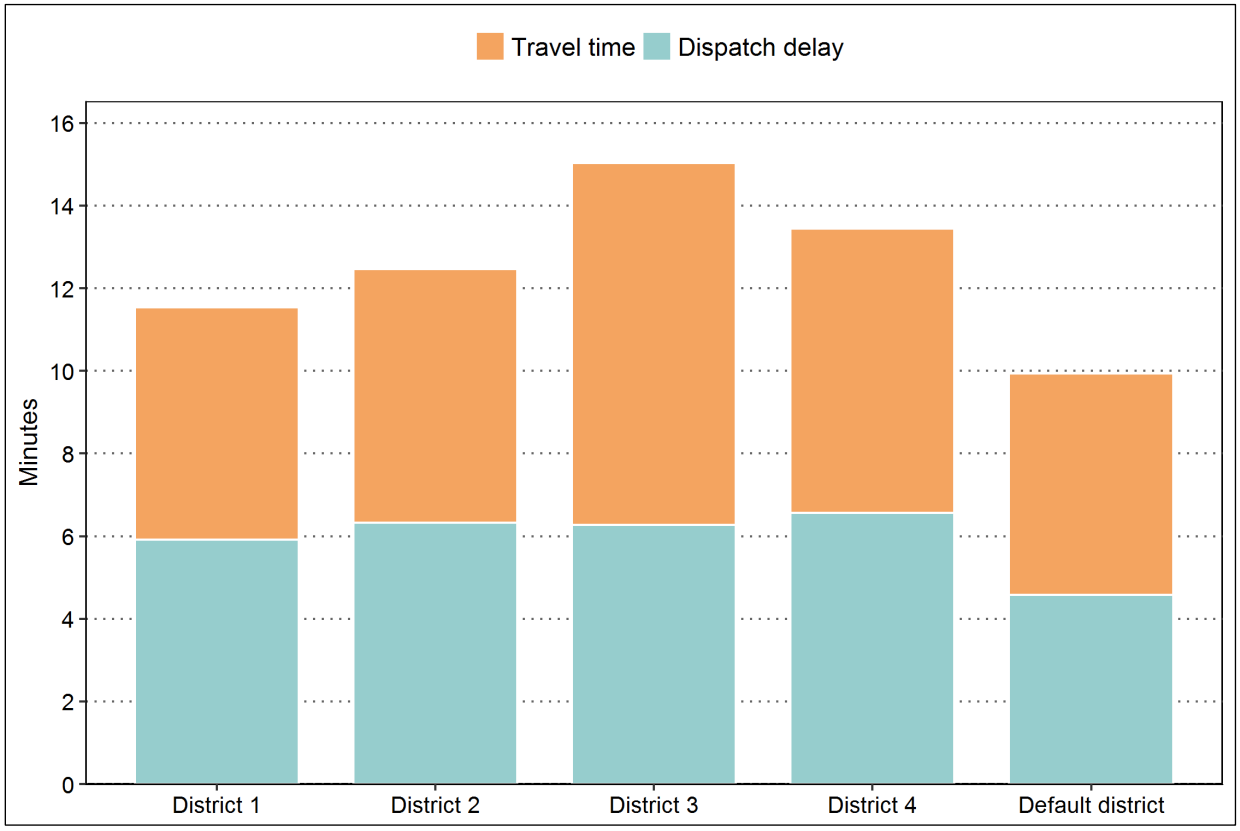


TABLE 18: Average Response Time Components, by District

District	Dispatch	Travel	Response	Calls	Population
District 1	5.9	5.6	11.5	7,523	3,769
District 2	6.3	6.1	12.5	6,362	4,287
District 3	6.3	8.8	15.0	2,835	4,625
District 4	6.6	6.9	13.4	4,294	4,477
Default district	4.6	5.4	9.9	415	NA
Weighted Average/ Total	**6.2**	**6.4**	**12.6**	**21,429**	**17,158**

Note: Population values were provided by the city's planning department and rely on data from the 2010 Census.

Observations:

- Ignoring the default district, District 1 had the shortest average response time and District 3 had the highest average response time.
- District 1 had the shortest dispatch delay and District 4 had the longest dispatch delay.

HIGH-PRIORITY CALLS

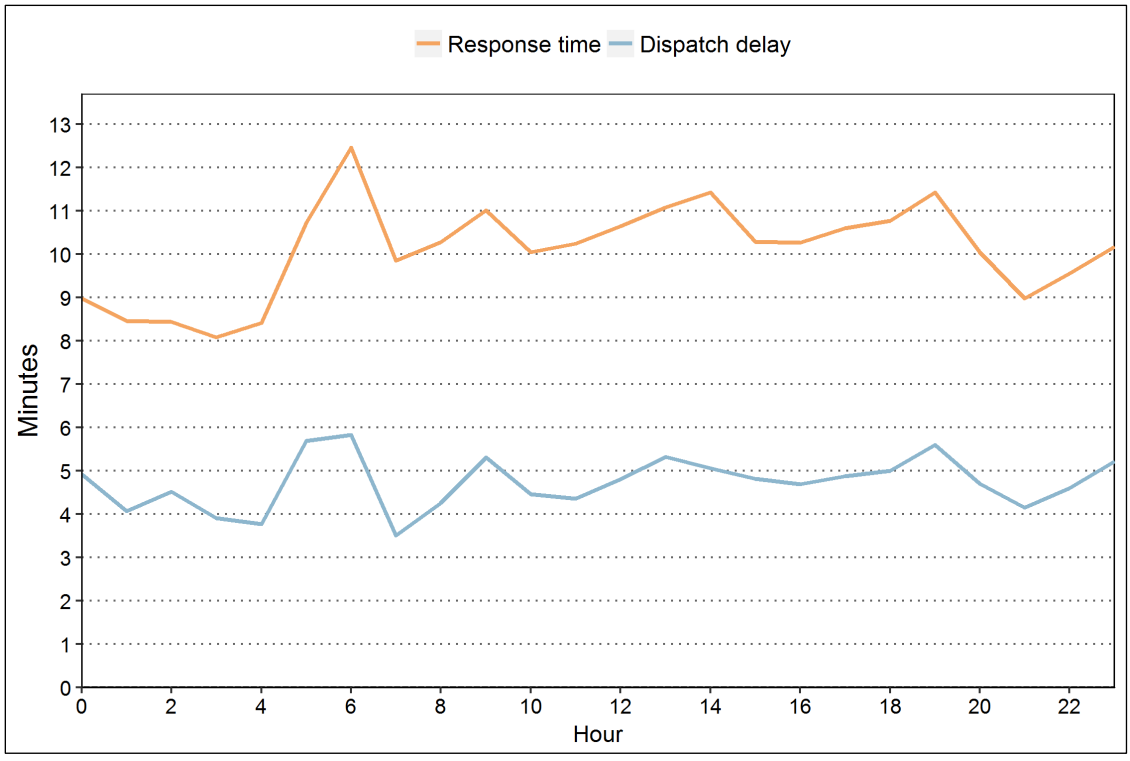
The department assigned priorities to calls with Priority 2 as the highest priority. Table 19 shows average response times by priority. Figure 31 focuses on Priority 2 calls only.

TABLE 19: Average Dispatch, Travel, and Response Times, by Priority

Priority	Dispatch Delay	Travel Time	Response Time	Calls
2	4.8	5.4	10.2	11,771
3	7.8	7.6	15.4	3,711
4	8.0	7.7	15.7	5,947
Weighted Average/Total	**6.2**	**6.4**	**12.6**	**21,429**
Injury accidents	2.9	3.6	6.5	301

Note: The total average is weighted according to the number of calls within each priority level.

FIGURE 31: Average Response Times and Dispatch Delays for High-Priority Calls, by Hour



Observations:

- High-priority calls had an average response time of 10.2 minutes, lower than the overall average of 12.6 minutes for all calls.
- Average dispatch delay was 4.8 minutes for high-priority calls, compared to 6.2 minutes overall.
- For high-priority calls, the longest response times were between 6:00 a.m. and 7:00 a.m., with an average of 12.5 minutes.
- For high-priority calls, the shortest response times were between midnight and 1:00 a.m. and 4:00 a.m., with an average of 8.4 minutes.
- Average dispatch delay for high-priority calls was consistently 5.7 minutes or less, except between 6:00 a.m. and 7:00 a.m.
- The average response time for injury accidents was 6.5, which was considerably lower than the overall average for high-priority calls.

APPENDIX A: CALL TYPE CLASSIFICATION

Call descriptions for the department's calls for service from May 1, 2016 to April 30, 2017, were classified within the following categories.

TABLE 20: Call Type, by Category

Call Type	Table Category	Figure Category
Agency Assist	Assist other agency	Assist other agency
Auto Aid-EMS		
Auto Aid-Fire		
Fire Brush		
Fire General		
Fire Public Assist		
Fire Structure		
Fire Vehicle		
Hazmat Investigation		
Smoke Investigation		
Water		
Agg Assault	Crime–person	Crime
Agg Battery		
Assault		
Battery		
Kidnapping/False Imp		
Robbery		
Sex Offense		
Burglary	Crime–property	
Criminal Mischief		
Forgery/Fraud		
Theft		
Night Hawk	Directed patrol	Directed patrol
PAL Function		
Pred Pol		
PWT		
Animal Complaint/Bite	Animal call	General noncriminal
Juvenile Probation Check	Juvenile	
Missing/Runaway		
Medical	Medical	
Police Services	Miscellaneous	
Probation & Parole		
Tow/Repo		

Call Type	Table Category	Figure Category
Alarm Activation	Alarm	Investigations
911 Investigation	Check/investigation	
Check on Welfare		
Follow Up Investigation		
Lost/Found Property		
Open Door/Window		
PC		
Predator/Offender Check		
Shots Fired		
Suicide Investigation		
Vacation Check		
Disturbance	Disturbance	Suspicious incident
Suspicious Activity	Suspicious person/vehicle	
Accident	Accidents	Traffic
Accident w/Injuries		
Reckless Driving	Traffic enforcement	
TE		
Traffic Obstruction		
Traffic/Parking Violation		
TS		

APPENDIX B: UNIFORM CRIME REPORT INFORMATION

This section presents information obtained from Uniform Crime Reports (UCR) collected by the Federal Bureau of Investigation (FBI). The tables and figures include the most recent information that is publicly available at the national level. This includes crime reports for 2006 through 2015, along with clearance rates for 2015. Crime rates are expressed as incidents per 100,000 population.

TABLE 21: Reported Crime Rates in 2015, by City

City	State	Population	Crime Rates		
			Violent	Property	Total
Auburndale	FL	14,775	311	3,716	4,027
Bartow	FL	18,706	593	4,924	5,517
Cocoa Beach	FL	11,441	586	6,040	6,625
Edgewater	FL	21,214	174	1,881	2,055
Eustis	FL	19,692	320	3,880	4,200
Groveland	FL	10,943	174	2,650	2,824
Haines City	FL	22,456	263	2,213	2,476
Holly Hill	FL	11,793	534	6,165	6,699
Lady Lake	FL	14,584	185	1,570	1,755
Lake Wales	FL	15,377	254	3,395	3,648
Leesburg	FL	21,797	775	5,487	6,262
Maitland	FL	17,097	222	2,661	2,884
Mount Dora	FL	13,435	618	3,186	3,803
Orange City	FL	11,082	496	6,921	7,417
Rockledge	FL	26,349	342	2,080	2,421
Sebastian	FL	23,706	236	2,126	2,362
Tavares	FL	15,173	633	2,340	2,972
Vero Beach	FL	16,215	500	3,417	3,916
Cocoa	**FL**	**17,486**	**1,910**	**7,658**	**9,568**
Florida		**20,388,277**	**459**	**2,791**	**3,249**
United States		**327,455,769**	**368**	**2,376**	**2,744**

FIGURE 32: Reported Violent and Property Crime Rates, by Year

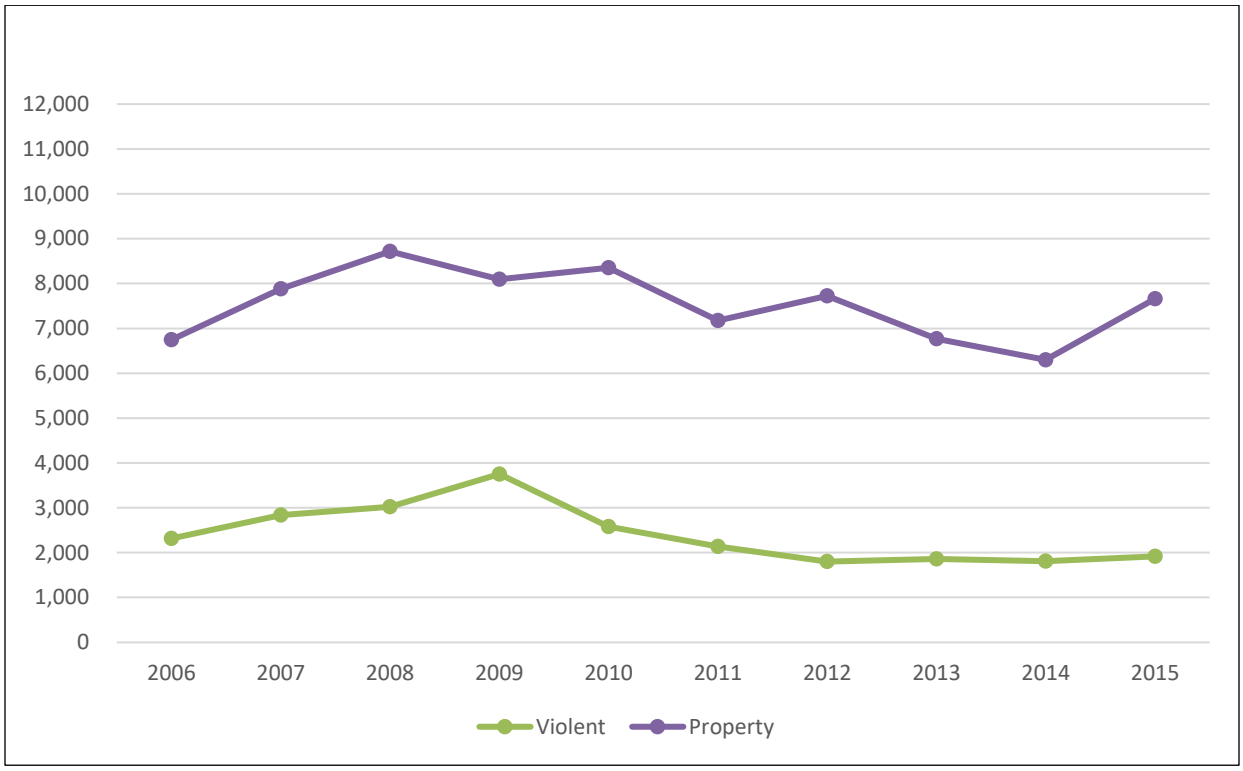


FIGURE 33: Reported City and State Crime Rates, by Year

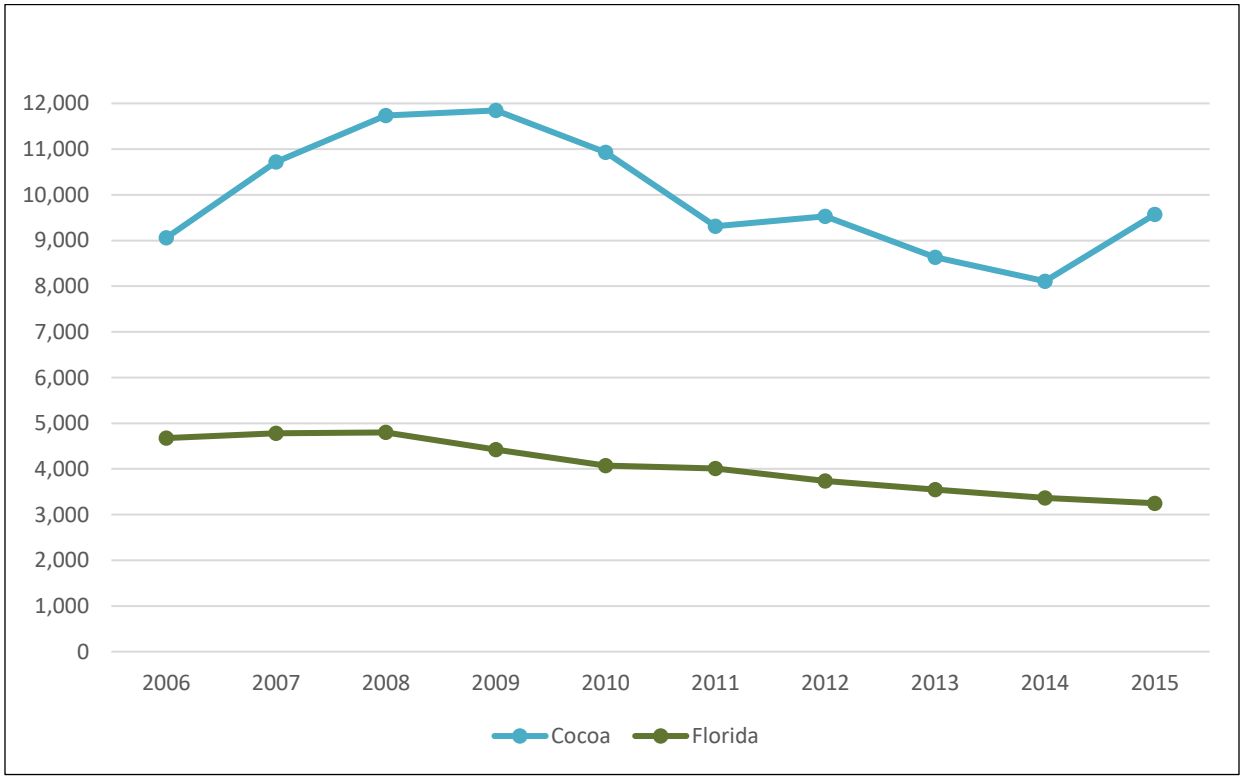


TABLE 22: Reported Municipal, State, and National Crime Rates, by Year

Year	Cocoa				Florida				National			
	Population	Violent	Property	Total	Population	Violent	Property	Total	Population	Violent	Property	Total
2006	17,183	2,316	6,745	9,061	18,186,529	713	3,960	4,673	304,567,337	448	3,103	3,551
2007	16,704	2,838	7,884	10,722	18,341,214	719	4,059	4,778	306,799,884	442	3,045	3,487
2008	16,327	3,020	8,716	11,735	18,427,925	685	4,113	4,798	309,327,055	438	3,055	3,493
2009	16,418	3,752	8,095	11,847	18,646,709	609	3,814	4,423	312,367,926	416	2,906	3,322
2010	17,140	2,579	8,349	10,928	18,910,325	540	3,536	4,075	314,170,775	393	2,833	3,225
2011	17,374	2,141	7,172	9,313	19,173,658	513	3,500	4,012	317,186,963	376	2,800	3,176
2012	17,381	1,801	7,727	9,528	19,434,305	484	3,252	3,736	319,697,368	377	2,758	3,135
2013	17,238	1,862	6,770	8,632	19,672,665	467	3,077	3,544	321,947,240	362	2,627	2,989
2014	17,289	1,810	6,299	8,109	20,007,473	456	2,909	3,365	324,699,246	357	2,464	2,821
2015	17,486	1,916	7,658	9,573	20,388,277	459	2,791	3,249	327,455,769	368	2,376	2,744

TABLE 23: Reported Municipal, State, and National Clearance Rates in 2015

Crime	Cocoa			Florida			National		
	Crimes	Clearances	Rate	Crimes	Clearances	Rate	Crimes	Clearances	Rate
Murder Manslaughter	5	5	100%	1184	709	60%	16,304	9,598	59%
Rape	36	2	6%	7,537	3,489	46%	119,732	42,962	36%
Robbery	64	19	30%	21,097	7,068	34%	321,519	90,010	28%
Aggravated Assault	230	127	55%	63,738	35,139	55%	749,010	390,068	52%
Burglary	269	39	14%	109,001	18,467	17%	1,535,314	194,795	13%
Larceny	990	223	23%	419,379	96,494	23%	5,545,667	1,191,030	21%
Vehicle Theft	80	9	11%	40,577	8,364	21%	698,558	88,593	13%