



2017 Patrol Staffing Report

In 2007, the Madison Police Department contracted with Etico Solutions, Inc., for the completion of a patrol staffing study. The Etico study was completed in mid-2008. Along with the final report, Etico provided the department with spreadsheets that captured the methodology used in the study, so that the department can replicate the process using updated data to analyze patrol workload and staffing needs. This process was repeated for a number of years (2009, 2010, 2011 and 2012); the results were used to estimate overall MPD patrol staffing needs and to allocate existing MPD patrol resources.

In 2012, MPD transitioned to a new records management system (LERMS). The following year the Dane County 911 Center transitioned to a new CAD (computer aided dispatch) system (Tri Tech). These transitions created some significant obstacles to performing this analysis, and the process was not completed for the years 2013 or 2014. The annual analysis resumed in 2016 (examining 2015 data), and this report examines 2016 data.

Methodology

As a review, the Etico methodology seeks to accurately estimate appropriate patrol staffing needs based on actual patrol workload and leave information. This provides a much more accurate reflection of patrol staffing needs than other methodologies, such as officer-to-population ratios, benchmarking, crime rates, etc. This methodology is consistent with the Police Personnel Allocation Manual, developed by the Northwestern University Center for Public Safety. It is also consistent with police staffing formulas recommended by the International Association of Chiefs of Police (IACP). In fact, the Etico methodology is more accurate (though also more labor-intensive) than the IACP process. The process does not directly address staffing for positions other than patrol officer. However, some positions – particularly patrol sergeant – have a direct relation to patrol staffing levels.

The first portion of the Etico analysis entails determining total patrol workload. Most of this data is obtained from the Dane County Public Safety Communications Center's Computer Aided Dispatch (CAD) records. This data is supplemented by dictated and field report data, so that an

average total officer time required for each CAD incident type can be calculated. Then, once the total number of incidents is determined (also from CAD data), the total officer workload is calculated. Time spent on administrative functions is also factored in to this calculation.

The second portion of the process is an analysis of officer leave time. Officers assigned to patrol do not work 365 days a year (they have regular days off as well as leave time days, such as vacation), and not all work days are assigned to the patrol function (training, special assignment, etc.). An analysis of leave time will determine the shift relief factor (SRF), a number indicating how many total officers in patrol are required to field one officer daily.

The final component to determining patrol staffing needs is finding the proper balance between reactive and proactive work. Most of the officer workload data captured through the CAD reflects reactive work (generally, officers responding to calls for police service). However, the community expects a certain amount of proactive work from officers. This proactive work can focus on problem solving, community engagement and building relationships. If too little time is allocated to proactive work, an adverse impact on reactive work will also be observed (reduced visibility, increased response times, etc.).

Analysis of 2016 MPD Patrol Workload

The changes to MPD's RMS and Dane County's CAD have created some challenges to performing this analysis. For example, MPD has historically utilized slightly more than 100 incident types to categorize the calls that officers respond to. The Tri Tech CAD has almost 800 law enforcement incident types. Converting these fields requires additional processing, and creates some limitations when comparing current data to historical data.

Analysis of MPD's 2016 patrol workload began with a data output from the CAD. The file contains more than **28 million** data fields. This database was then filtered to remove records not related to MPD patrol workload. This is done primarily by unit ID (radio call number). The 2016 analysis included **only** CAD records assigned to MPD patrol officers (as well as officers assigned to the Downtown and Southwest Safety Initiatives).

The 2016 analysis (like that of prior years) did not include any incidents handled through the self-reporting process. The self-reporting system was established to reduce patrol workload, by having citizens self-report certain types of minor incidents. Many of these incidents reflect events that MPD – and, certainly, the community – would like to have a patrol officer respond to. However, due to patrol workload officers are not able to respond to these incidents, and the self-reporting unit was created to provide some level of MPD service. Future consideration should be given to including at least a portion of incidents handled through the self-reporting system in the workload analysis. The purpose of inclusion would be to consider work currently handled through self-reporting when determining patrol staffing levels, as most citizens would likely prefer that this work be handled by an officer in person rather than through self-reporting.

In addition to CAD patrol workload data, a few additional sources are relevant. Time needed for report completion has a significant impact on patrol workload, and is often not captured in CAD workload. A combination of actual report data (from the system server), and survey results are used to determine average report times (for both field reports and dictated reports). The original Etico methodology added report times (based on field report and dictated report data) to the per-incident reactive workload. This did not account for the fact that some reports are completed while an officer is still assigned to the incident on the CAD. A survey was completed to obtain

estimates of how often officers complete reports (both field and dictated) while still assigned to the incident on the CAD. This was then accounted for in the calculations to avoid double counting any officer time in the reactive workload.

Also, officers spend time each day on a variety of administrative tasks. These include squad fueling, equipment maintenance, etc. These activities are generally not tracked on the CAD. During the initial Etico report, a sample of patrol officers completed daily logs to estimate daily administrative time. This survey process has been repeated since then, and a multi-year weighted average was used in the calculations. Because administrative time is not captured on the CAD and is estimated using surveys, and due to how the Etico formulas are set up, administrative time is not reflected in reactive time per hour. It is reflected in the overall needed patrol staffing calculation, but administrative time actually reflects additional required workload beyond reactive time.

The final portion of the workload analysis is distinguishing between reactive and proactive work. This is done primarily by incident type. Some call types (like foot patrol and traffic stops) are designed to capture proactive work and are excluded from reactive workload. Other call types are likely to capture both reactive and proactive work. These include traffic incidents, traffic arrests, check person and check property incidents. An estimated split between reactive and proactive incidents for these call types was determined (based on CAD data) and a portion was excluded from reactive workload:

Incident Type	Reactive/Proactive split
Traffic Arrest	50/50
Traffic incident	25/75
Check Person	90/10
Check Property	90/10

Note that the CAD workload analysis certainly understates the actual workload demands on the MPD patrol function. Two factors demonstrate this:

- Patrol officers engage in some work – both reactive and proactive – that they do not call out to dispatch (and is therefore not captured on the CAD). Most commonly, this occurs because officers want to be in service, and available for incoming calls. It can also be a result of radio traffic volume, and an inability to get on the air to notify dispatch.
- More significantly, some patrol work is unquestionably handled by non-patrol personnel on a regular basis. This includes operational personnel (CPT, neighborhood, etc.) but can include any unit types (command, detectives, etc.). However, CAD data provides no way to differentiate between patrol-related and non-patrol related activity engaged in by these units. Limiting the workload analysis to patrol officer workload only is an extremely conservative approach to assessing MPD patrol staffing needs.

Results of Workload Analysis

The data showed **132,368** patrol incidents in 2016 (meaning 132,368 CAD incidents that had a patrol officer assigned, or an officer assigned to the Downtown or Southwest Safety Initiative), and **138,869** hours of reactive patrol workload.

It is important to recognize that this data is based on incidents as tracked in the CAD, and not on IBR data. When a Public Safety Communications Center employee takes an initial call from a citizen on an incident, a CAD incident – with an incident type – is created. Often, investigation will show that a crime other than that initial incident type was committed. Sometimes the CAD is not changed to reflect this. So, the incident totals analyzed in this report will not match MPD's IBR data in all instances.

Patrol incidents declined from 136,049 in 2015 to 132,368 in 2016. However, reactive patrol workload increased from 136,161 hours to 138,862 hours. When looking at these figures, it is important to recognize that patrol incidents include all CAD incidents (proactive and reactive) that had a patrol officer assigned, while reactive workload excludes proactive work. This demonstrates that officers have less time to engage in proactive work. In fact, more than half of the decline in patrol incidents from 2015 to 2016 is attributable to a decrease in traffic stops by patrol officers (which declined from 6,043 in 2015 to 3,640 in 2016).

As indicated above, this certainly understates the actual amount of MPD patrol workload. It is very common for other operational MPD units (CPT, neighborhood officers, patrol sergeants, etc.) to assist with patrol work, and this workload is excluded from this analysis. However, if only 10% of the CAD workload of these unit types was considered to be patrol-related and included in this analysis, that would increase reactive workload by almost 3,000 hours.

Shift Relief Factor

The second component of the Etico methodology is to determine the shift relief factor (SRF). Officers do not work every day of the year, and on some days they work, they work in a non-patrol capacity (training, special assignments, etc.). Once calculated, the shift relief factor reflects the number of total officers required to staff one shift position every day of the year.

There are several components to the shift relief factor: regular days off; leave time; non-patrol time; and net-compensatory time. Leave time includes regular work days that an employee does not work (vacation, sick time, etc.). Non-patrol time includes work days where the employee works in a non-patrol capacity (training, special assignment, etc.). Net compensatory time is the net gain or loss in patrol work due to the amount of overtime worked (in patrol) and compensatory time off taken (by patrol staff).

The shift relief factor calculation also factors in the impact of the staffing contingency plan on patrol staffing. The staffing contingency plan has been utilized for several years, and requires sergeants and officers assigned to non-patrol positions to work up to four patrol shifts a year. The objective is twofold: to reduce overtime costs by filling patrol staffing shortages with non-patrol personnel, and to ensure the readiness of all MPD personnel to perform the patrol function if needed. For simplicity, staffing contingency was figured into the net comp time calculation.

Leave time in 2016 was analyzed for the pool of patrol personnel who were in patrol positions for the entire year. This was a pool of 168 officers. Leave time was then calculated as an average number of days per year per officer:

Leave/Benefit/Non-patrol Time:

Category	Days
Administrative Leave	1.42
Bereavement Leave	.29
Family Leave	5.29
Holiday Leave	2.19
Sick Leave	4.58
Jury Duty	
MPPOA Earned Time Off	1.01

Category	Days
Vacation Leave	15.44
Workers Comp Time Off	.90
Light Duty	10.48
Special Event	.49
Special Assignment	5.12
Training	7.75
Military Leave	1.6

Net Compensatory Time:

Comp Time Used	Days
Comp Time Off	14.203

Overtime Worked	Days
Patrol Overtime	9.77

[Net compensatory time also includes staffing contingency days worked and shift change RDO adjustments]

These figures compare with prior years as follows:

Time Off Category	2008	2009	2010	2011	2012	2014	2015	2016
Regularly Scheduled Days Off	121.67	121.67	121.67	121.67	121.67	121.67	121.67	122
Admin & Benefit Time	29.91	29.77	27.5	26.94	26.91	28.319	27.346	32.78
Non-Patrol Time	19.07	21.97	22.88	24.5	20.47	25.30	21.40	24.04
Net Comp Time Off	9.47	6.40	9.92	7.42	8.24	6.73	7.76	4.43
Totals	180.12	179.81	181.54	180.25	177.29	182.02	178.17	183.25

Most leave time is non-discretionary, being either contractual (vacation, compensatory time, etc.) or legally required (military leave, family leave, etc.). Some categories of non-patrol time are also non-discretionary (light duty, required training, etc.).

The average time away from patrol per officer in 2016 was higher than in 2015, and reflects the highest average since this process has been conducted. A few points relevant to this:

- There was a significant increase in average time missed due to Family Leave (124% increase) and Light Duty (50% increase) from 2015 to 2016. Note that this data reflects the pool of officers who spent the full year assigned to patrol, so it may not parallel overall MPD leave time.
- Net comp time off was the lowest seen since this process has been conducted. This reflects difficulty in getting time off and additional patrol shifts/work being covered by non-patrol personnel.

Utilizing the Etico shift relief formula, this data results in a shift relief factor of **2.0**. This means, generally, that MPD needs to have 2.0 officers assigned to patrol for each position to be staffed every day of the year. This figure has remained fairly consistent (generally in the 1.95 – 1.98 range) since 2008 (though 2.0 is the highest figure yet).

Note that the shift relief factor reflects the actual level of non-patrol and leave time, which is not necessarily the desired level of non-patrol and leave time. The Etico process does not include any mechanism to work any subjective variable into the shift relief factor calculation. So, any consideration of desired non-patrol/leave time must be factored into the desired proactive/reactive time breakdown.

Workload Balance

The final component of the Etico methodology is to determine the proper balance between officers' reactive work time and proactive work time. The analysis of patrol workload is used to determine officers' reactive time. Once the balance between reactive and proactive time is determined, total patrol staffing needs can be calculated. The Etico report articulated the reasons for balancing reactive and proactive time:

Including an appropriate amount of proactive time provides benefits for the agency, the officer, and the citizens of the jurisdiction. In fact, a lack of sufficient proactive time can negatively impact the ability of an agency to provide optimal police services to the community.

Among the arguments for including proactive time is the need to avoid having officers running from call to call. Agencies that operate in such an environment report several drawbacks. The most obvious is the inevitable officer burn-out that can occur. Less obvious is the loss of information that may help to solve a crime. It is conventional wisdom for police investigations that the solvability of a case begins to deteriorate from the moment the incident occurs. If the initial responding officer is rushed to move on to the next call, there is a greater chance that important follow-up opportunities and information will not be collected, diminishing the solvability of the case.

Another drawback is the loss of time for on-the-job training...when corrective action is needed by (a) supervisor, proactive time must be available. If officers are clearing calls and going directly to the next call throughout the shift, the supervisor will not have the training opportunities needed to help officers avoid future mistakes.

A lower level of reactive time per hour improves police service, professionalism, and responsiveness to the community. Ensuring adequate proactive time also has a direct effect on a number of patrol performance measures (such as visibility and response time), impacting the quality of police service delivered to the community. The original Etico report recommended that MPD strive have officers spend 28 to 30 minutes of each hour on reactive activity. Since then, the Mayor, Common Council members and MPD have generally recognized a 30/30 split between proactive and reactive time as being a reasonable goal for MPD patrol staffing. We believe this staffing is required to provide the level of service that the community expects.

While the difference between 30 and 32 minutes (as an example) of reactive time per hour seems minor, it is important to recognize that these figures are all based averages, across all hours of the day and all days of the year. Having a lower reactive time per hour outcome improves the ability

of officers to engage in community policing; officers have more time to engage in proactive activity and be responsive to community issues and concerns. In fact, if MPD patrol was staffed to allow that 30 minutes per hour be spent on reactive work (compared to 32 minutes per hour), more than twenty-three (23) officer hours each day would be freed to engage in proactive activity. Visibility, efficiency and response time would also improve.

196 MPD positions are assigned to patrol (officers; excluding sergeants), though actual patrol staffing at any given time will vary based on a variety of factors. Utilizing the Etico methodology, 2016 patrol workload and leave time data demonstrate that MPD patrol staffing should be **219 officers**. This is based on an even split of proactive and reactive time. Meeting this standard would require the addition of **twenty-three** officer positions to patrol. This increase would also require the addition of **three** sergeant position to patrol (based on span of control).

Patrol Incidents by Incident Type by Year

<u>Incident Type</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
911 Disconnect	27	7	10	267	7114	11012	8773
Accident - Hit & Run	1505	1570	1408	1385	1475	1563	1645
Accident - Private Property	755	863	669	781	377	704	778
Accident - Property Damage	5226	5179	5061	4886	5882	5558	5596
Accident w/ Injuries	1459	1469	1355	1201	864	960	916
Accident-Citizen Report	16	8	17	12	0	0	0
Accident-MV/Deer	64	52	49	39	31	58	44
Adult Arrest	785	794	835	692	331	521	487
Aggravated Battery	409	399	346	270	6	8	2
Alarm	2569	2837	2705	2802	3170	3402	3379
Animal Complaint - Bite	30	25	25	34	31	14	16
Animal Complaint – Dist.	735	762	500	626	656	718	659
Animal Complaint - Stray	410	471	339	463	289	320	433
Annoying/Obscene Phone Calls	706	679	521	461	108	123	95
Arrested Juvenile	33	92	93	82	50	31	42
Arson	68	54	62	30	11	5	9
Assist Citizen	6193	6495	5813	5933	4856	4566	5057
Assist Fire/Police	3436	3341	3250	3276	4339	3165	3320
ASSIST K9	153	186	213	178	17	12	18
Attempt to Locate Person	692	719	921	992	861	1254	1257
Attempted Murder	0	0	0	1	1	0	2
Attempted Suicide	96	82	151	177	454	77	34
Battery	1302	1221	1235	1166	613	610	559
Bicycle Accident	9	5	0	4	6	10	7
Bomb Threat	9	10	15	19	32	7	4
Check Parking Postings	9	9	2	2	1	2	1
Check Person	9342	9686	8754	9026	7873	10547	11239
Check Property	6421	6556	5238	5503	4525	5726	7292
Child Abuse	131	109	108	154	162	184	134
Child Neglect	54	45	64	69	97	79	57
Civil Dispute	717	752	795	817	660	863	770
Damaged Property Complaint	1584	1460	1315	1467	1033	1046	968
Death Inv/Suicide	180	212	238	243	142	130	200
Disturbance Call	6151	6297	6725	6731	6434	5826	5949
Domestic/Family Trouble	3346	3407	3164	3175	3171	3358	3096
Drug Incident	1199	1223	1631	1587	1163	1266	1280
Emergency	3	0	2	2	4	0	1
EMS Assist	1133	1607	1729	1855	2375	3587	3747
Enticement/Kidnapping	43	40	21	26	39	20	16
Escort Conveyance	400	446	410	432	350	720	650
Exposure	166	102	18	26	83	47	40
Extortion	2	1	2	0	0	8	8
Alarm - Broadcast & File	370	328	274	234	2	0	0
Fight Call	662	641	295	215	258	541	444
Fire Investigation	25	10	22	12	5	4	0
Forgery	34	59	58	71	425	6	5

<u>Incident Type</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
Found Person	52	84	127	119	129	124	118
Found Property	1145	1199	1337	1384	1266	1367	1411
Fraud	917	963	785	802	490	983	910
Graffiti Complaint	393	244	199	129	103	121	125
HANG UP OF 911 CALL	0	0	0	0	0	0	0
Homicide	3	3	6	3	1	4	10
ICE RESCUE	0	0	0	0	0	0	0
Information	6024	6275	6552	6370	4124	2645	3502
Injured Person	60	68	69	56	23	38	23
Intoxicated Person	413	426	290	297	343	556	395
Juvenile Complaint	1421	1258	835	646	341	510	523
Landlord Tennant Trouble	230	143	131	153	103	157	123
Liquor Law Investigation	661	757	685	745	152	217	157
LIQUOR LAW/BAR CHECK	394	164	156	177	89	73	66
Local Ordinance Violation	6	10	51	19	0	0	0
Lost Property	100	81	81	86	34	54	90
Miscellaneous Sex Offense	24	31	69	45	58	103	103
Missing Adult	276	288	305	273	468	309	267
Missing Juvenile/Runaway	771	760	640	621	460	681	664
Neighbor Trouble	605	526	470	486	313	429	460
Noise Complaint	4651	4366	4227	4189	2701	3331	3228
Non-Residential Burglary	379	432	277	219	218	257	212
NON-URGENT NOTIFICATIONS	106	53	65	66	49	15	32
Odor/Smoke Complaint	0	0	0	1	6	3	3
OMVWI/Intoxicated Driver	411	399	406	343	155	165	236
On Street Parking Complaint	667	573	579	519	391	454	510
Overdose Investigation	107	101	88	87	46	83	154
PARKING STREET STORAGE	17	29	27	21	0	0	0
Alcohol Conveyance (Detox)	1863	2138	1630	1404	123	150	104
Person Down	59	50	44	73	9	14	30
Person with a Gun	21	44	5	12	234	102	109
PHONE CALL	8754	7772	8148	8154	6566	5369	4812
PNB/AED Response	42	63	48	44	168	179	184
Preserve the Peace	1143	1238	1245	1249	1384	1229	1269
Private Prop. Parking Compl.	852	757	773	715	464	462	388
PROBLEM SOLVING-PERSON	9	12	8	12	12	5	5
PROBLEM SOLVING-PROPERTY	82	21	65	55	11	15	12
Prostitution/Soliciting	128	102	46	34	15	29	31
Prowler Complaint	84	31	19	14	15	20	26
Rec/Stolen Outside Agency	145	169	135	106	79	78	155
REPOSSESSION	25	12	8	6	3	4	5
Residential Burglary	1269	1474	1336	1506	1251	1210	912
Retail Theft	2265	2175	2001	1901	1244	1683	1649
Robbery-Armed	190	172	114	118	118	101	105
Robbery-Strong Armed	191	170	147	141	125	130	108
Safety Hazard	3373	3395	3757	3581	4224	4396	5029
Serving Legal Papers	452	537	528	441	308	462	406
Sexual Assault 1-2-3-4-/Rape	95	155	131	184	182	199	183
Sexual Assault of a Child	105	78	81	110	134	155	162

<u>Incident Type</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
SIGNIFICANT EXPOSURE	2	7	7	0	3	1	2
Silent Case Number	47	69	60	88	50	75	45
Solicitors Complaint	45	59	59	79	23	123	94
Special Event	22	51	89	111	59	114	142
Stalking Complaint	129	139	133	124	126	110	103
Stolen Auto	596	558	550	424	528	533	664
Stolen Bike	65	64	42	53	19	33	19
Stolen Other Vehicle/Cycle	72	89	83	67	1	0	0
Suspicious Person	1673	1713	2519	2750	2727	1892	1606
Suspicious Vehicle	1770	1823	1709	1617	1924	2131	2117
Theft	1697	1798	1849	1890	2486	2048	1797
Theft from Auto	525	628	532	488	320	398	476
Threats Complaint	1069	1094	1172	1204	1846	1791	1654
Towed Veh/Abandonment	5	9	9	5	38	20	25
Towed Vehicle	146	130	118	89	0	0	0
Traffic Arrest	1282	1140	1149	1051	17	15	17
TRAFFIC COMPLAINT	100	194	329	315	391	697	761
Traffic Incident	4023	3188	2402	2272	507	283	304
Traffic Incident/Road Rage	139	141	181	200	86	5	0
Trespassing Complaint	827	896	1655	1946	2031	775	802
UNKNOWN	14	26	15	9	299	38	32
Unwanted Person	1309	1262	825	801	1232	2421	2109
Violation of Court Order	882	948	824	828	280	511	464
Weapons Offense	279	254	292	340	343	522	433
Worthless Check	16	24	9	13	6	12	7
Assist/Community Policing	114	146	148	135	13	0	3
Language Translation	28	16	38	17	12	12	6
Follow Up	2489	2415	2330	2655	2452	3752	3982
On Duty Training	4	10	55	37	48	145	179
On Duty Court	60	45	51	40	57	146	138
911 Call Abandoned	5686	5075	4469	3403	2957	3599	3534
911 Call Disconnected	2158	1807	2274	2464	0	0	0
911 Call Misdial	2807	3041	2814	2427	2123	2383	1726
911 Call Silent	3472	3716	4925	4882	2485	0	0
911 Call Unintentional	824	1312	2136	2608	4685	6159	5296
911 Call Playing with Phone	86	388	446	417	506	602	454
911 Call Multiple/Nuisance	6	3	10	19	12	10	17
911 Call Question	39	39	61	46	44	23	23
911 Call Test	26	14	12	10	12	11	11
Voided Case/Incident Number	128	115	120	92	0	0	0
Explosives Investigation	1	0	0	0	9	0	0
Accident Unknown	207	216	240	249	565	557	554
Traffic Stop	9323	10521	9940	8797	7177	6043	3640
Check Property/Vacation	1	0	1	0	0	0	0
Assist State Patrol	1	0	3	0	0	0	0
Assist DCSO	3	5	8	6	0	0	0
Identity Theft	18	22	7	24	0	0	0
Escapee/Info	0	4	2	4	2	0	0
Check Person/Weapon	0	0	0	2	0	0	0

<u>Incident Type</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
CONVEYANCE	0	0	0	0	299	0	0
Foot Patrol	861	391	281	566	504	773	1097
TOTAL	144715	145713	142167	140804	128412	136092	132368

Detailed Leave Time Information – 2016 Patrol

Leave/Benefit/Non-Patrol Time:

Category	Days
Admin Leave - No Pay	0.04455
Admin Leave - With Pay	1.37526
Bereavement Leave	0.29241
Family Leave: AWOP	0.15104
Family Leave: Sick Used	2.52116
Family Leave: Vacation	1.26594
Family Leave: Comp	1.35979
Holiday: Request Off	1.04241
Holiday: Order Off	1.15476
Jury Duty	
MPPOA Earned	1.01149
Military Leave	
Military Paid	1.2619
Military Leave AWOP	0.33854
Sick Leave	4.57828

Category	Days
Vacation: 1st Pick	6.18527
Vacation: 2nd Pick	3.34449
Vacation: 3rd Pick	1.05952
Vacation: SP#1	0.06548
Exigent Leave Vacation	0.19618
Vacation: Standard	4.58692
Vacation: SP#2	0.00595
Workers Comp Time Off	0.90324
Light Duty: (LD-WC)	3.27604
Light Duty:(LD-ND)	7.2048
Light Duty: Admin	.19643
Spec. Event Assigned	0.49777
Spec. Assignment	5.06231
Exigent Leave MPPOA	0.03237
Training	7.63318
Training Partial	0.11682

Net Compensatory Time:

Comp Time Used	Days
COA+30 Days	2.4387723
Comp Time: Off	8.5738556
Comp Time: SP#1	0.0297619
CU/W-VU	1.5654762
Exigent Leave Comp	0.5058284
Shift Change RDO	1.0892857

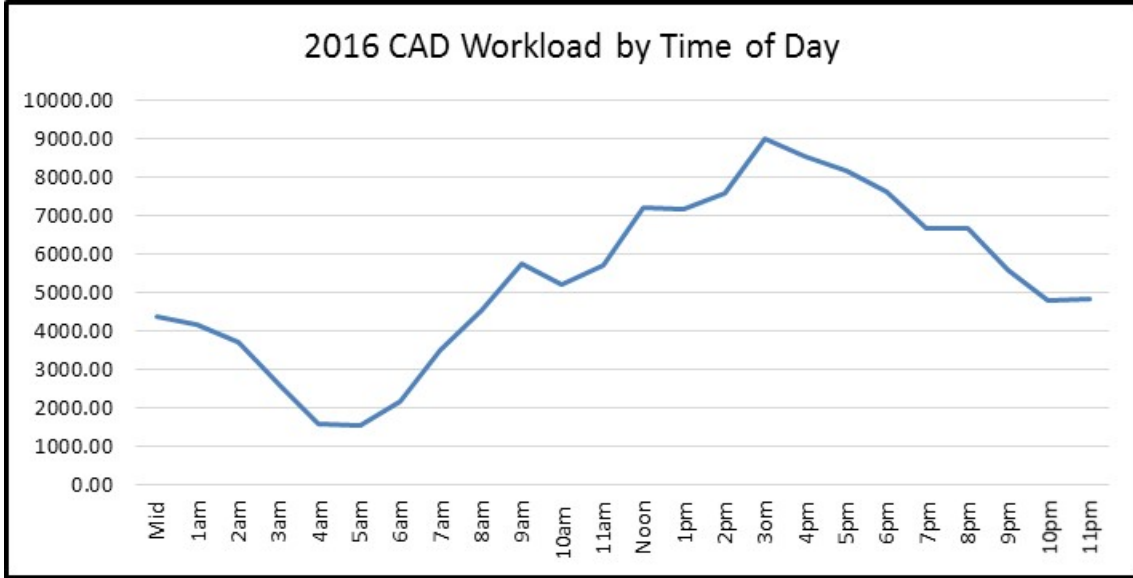
Overtime Worked	Days
General	3.6565
Call in Voluntary	0.5409
Call in Order	0.035
Holdover Voluntary	0.4192
Holdover Order	0.1968
Major Case	1.2091
Shift Change RDO Worked	0.9405

Non-patrol Personnel Patrol Work:

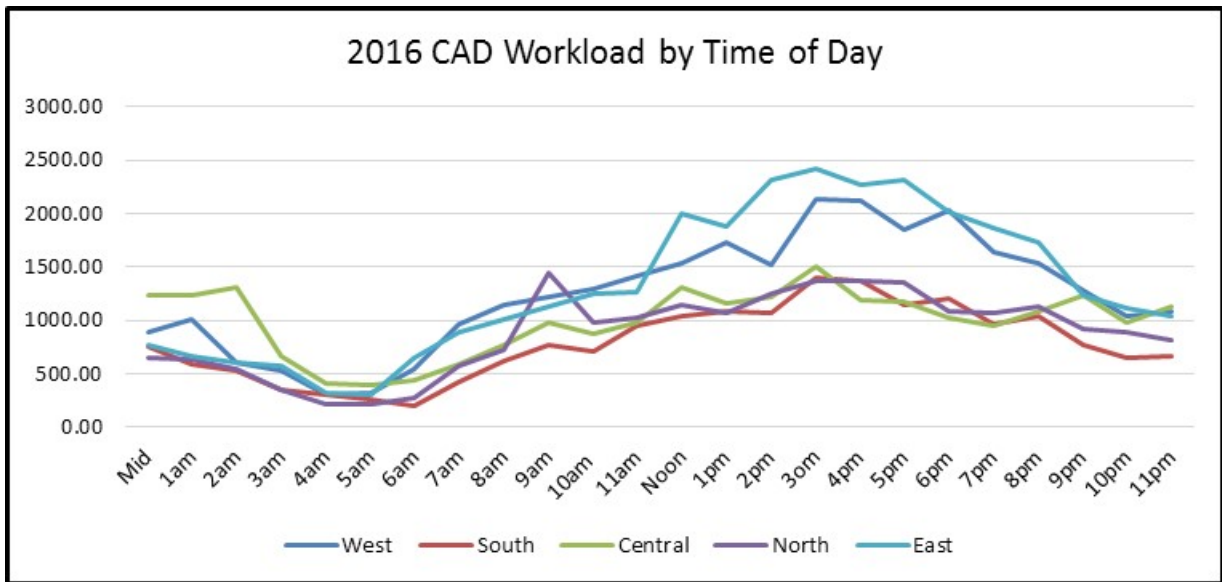
Overtime Worked	Days
Call in Voluntary	0.165588
Call in Order	0.010218
Holdover Voluntary	0.103237
Holdover Order	0.083606
Staffing Contingency	2.415005

Workload Overview

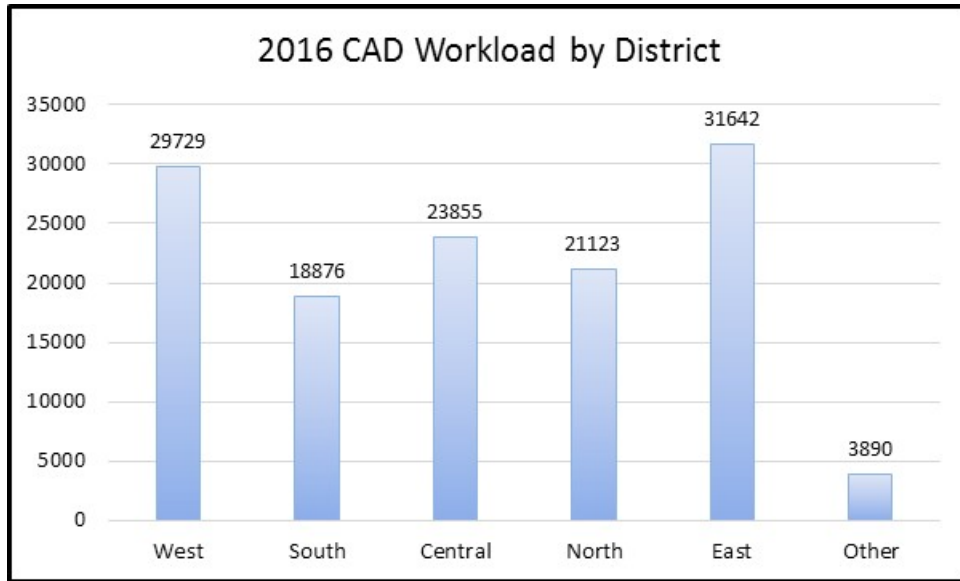
The following charts are based on CAD data only, and generally include all patrol CAD workload (reactive and proactive), including DSI and SWI.



This daily workload curve (workload by hour of the day throughout the year) has remained very consistent. The daily workload curve was also fairly consistent across all districts:

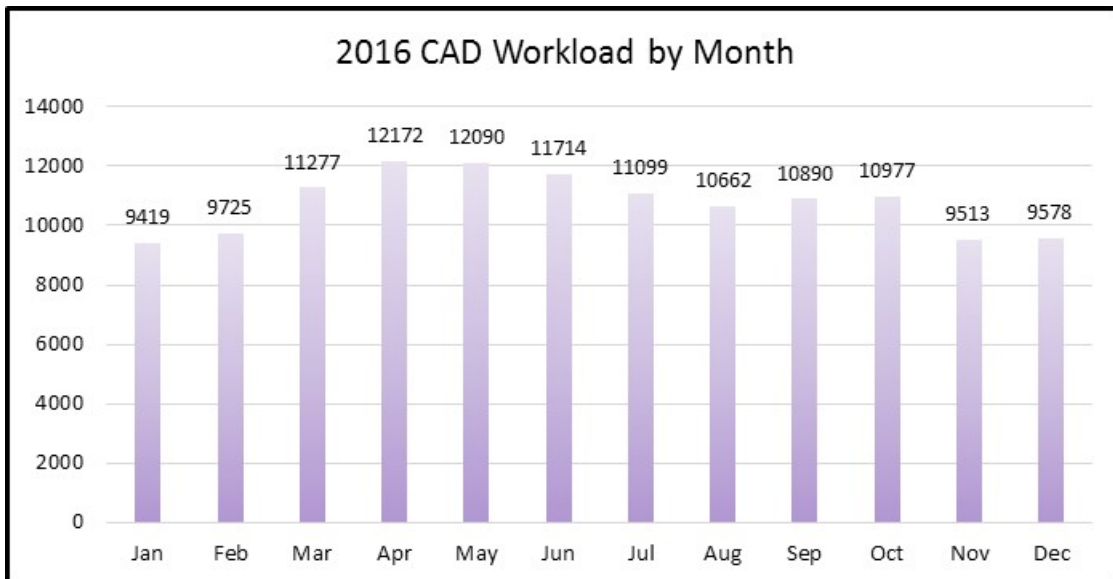


2016 hours of patrol work by district:

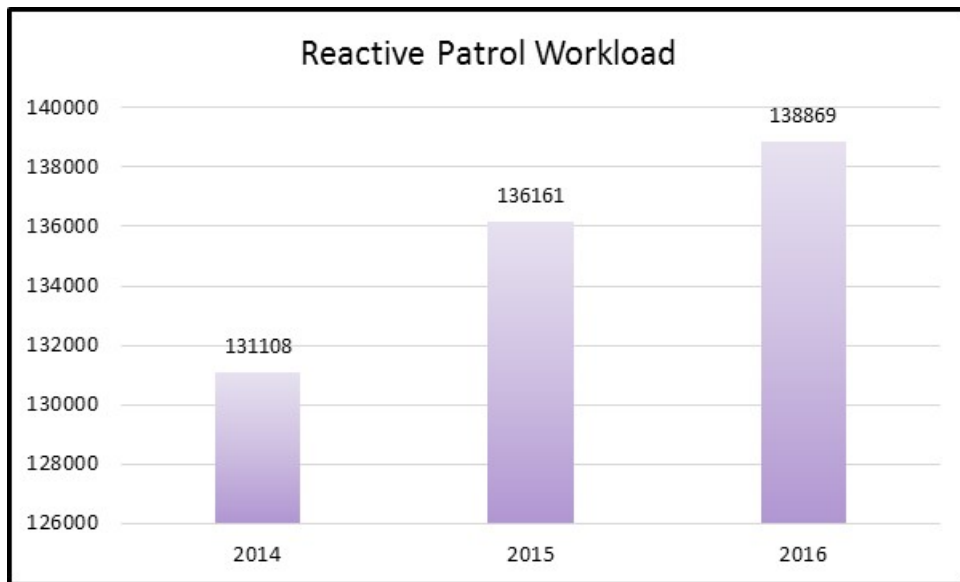
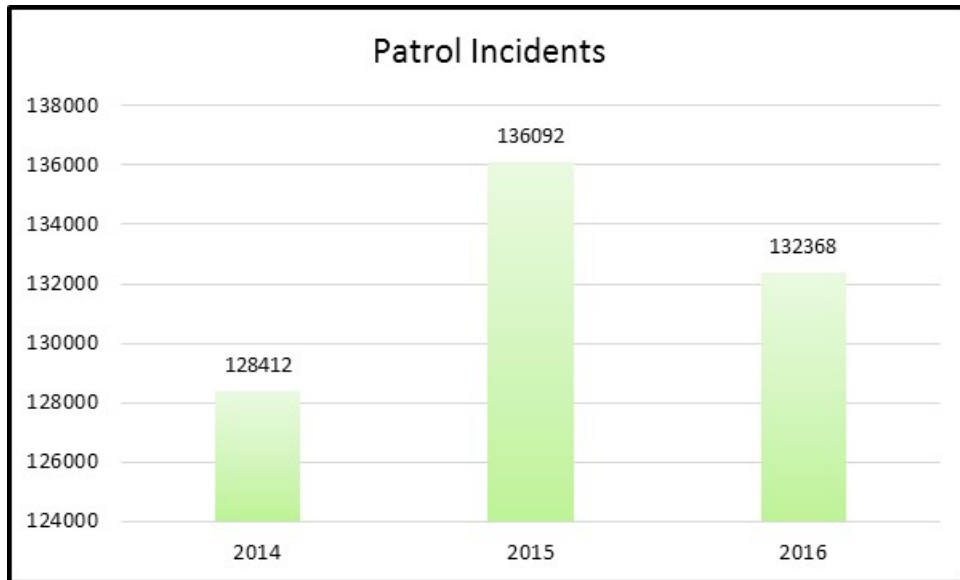


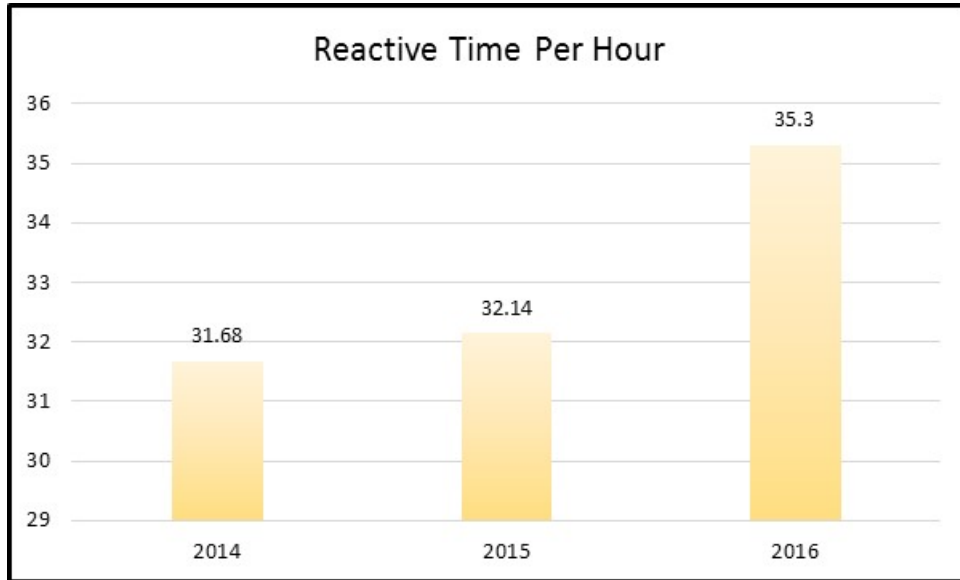
*excludes on duty court and training

CAD workload by month:



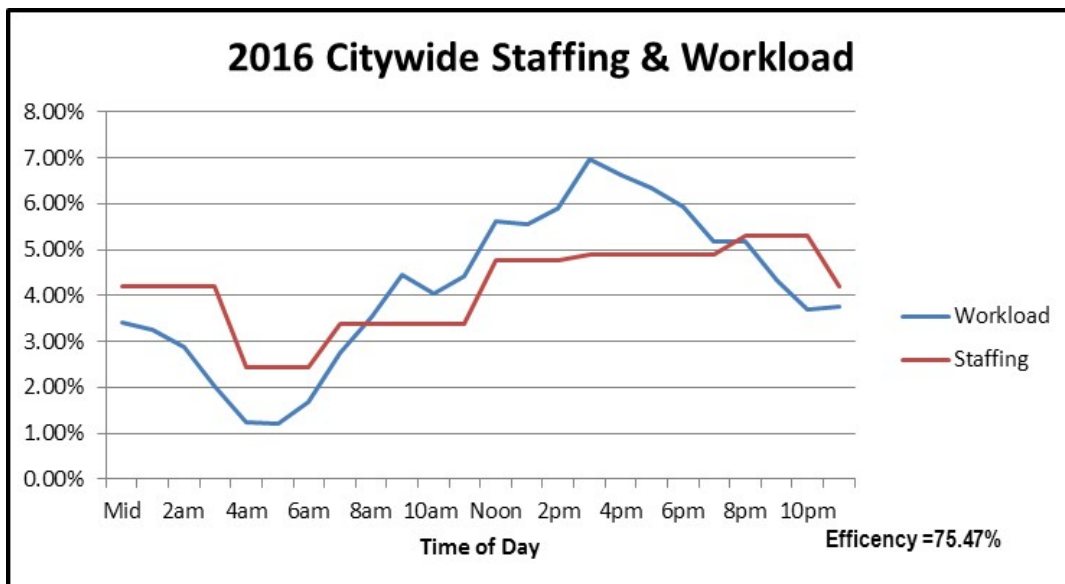
A historical overview of patrol incidents and workload:





Staffing Allocation Efficiency

With improved data collection and analysis, the department will seek to deploy patrol resources in a more efficient manner. Patrol staffing levels throughout the day can be matched to average patrol workload by time of day.



MPD instituted a five-shift patrol staffing model in early 2010, to increase efficiency. Staffing efficiency in 2012 was down slightly from 2011. However, analysis shows that efficiency under the five-shift model was better than would have been the case under the traditional three-shift model:

Year	Efficiency	Efficiency w/traditional staffing model
2009	76.11	76.11
2010	79.09	73.24
2011	77.88	73.35
2012	75.64	71.52
2015	74.23	70.68
2016	75.47	71.92

Note that the original Etico patrol study used slightly different methodology to measure efficiency, matching average workload by time of day to total patrol staffing by district (rather than to daily staffing citywide). The department feels that using citywide daily staffing is the more relevant measure. The tables above reflect this methodology.