Hospital Systems Security

Final Report
Client: Cliff Arnott
December 19, 1997

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Executive Summary

The purpose of this project was to determine the optimal level of staffing necessary during the day to accomplish routine security activities. The team studied the following routine tasks in order to determine time standards: foot patrol, escorts, funds transport, and physical management. The team studied foot patrol for three of the individual post, University Hospital, Taubman, and Mott. The Cancer and Geriatrics center could not be analyzed because the data used in this study is from the year 1996; the Cancer and Geriatrics center was not established during this time.

The team began this study by observing the officers doing routine work in order to thoroughly understand the routine task. The main source of data and analysis for the project came from the CAD entries for the entire 1996 year. All the recommendations, findings, and conclusions are based on this data. Some important factors affecting the findings are:

- Original data contained over 246,000 multiple entry CADs, for accuracy the data was reduced to a little over 61,000 single entry CADs.
- Time standards do not include all CAD entries that begin on one day and ended the next day (i.e. Start time: 11:57pm, Completion Time: 12:01am)
- Data pertaining to escorts will not be representative of that task in the future, new escort policies have been implemented.
- Data for physical management does not account for multiple dispatching of officers. The department prefers that four officers to respond to a physical management call.

The findings of the study are as follows:

1. No trends in the routine task data with the exception of escorts. As mentioned above, the policy has changed so this is not representative of escort task in the future.
2. Non-peak call time occurs from 4am – 2pm.
3. Peak call times occur from 5pm – 12am.
4. The current shift change times are satisfactory.
5. The winter season is busiest.
6. On average, the number of officers responding to a call is no more than 1.2.

The team found recommendations based on the data provided to optimize number of officers per shift and shift change times. The recommended shift times are:

- **Morning:** 4am – 12pm
- **Afternoon:** 12pm – 8pm
- **Nights:** 8pm – 4am

The recommended breakdown of officers per shift follows:

**Morning:**
- Dispatch Officer (1)
- Emergency Room Officer (2)
- Outside Patrol Officer (1)
- FCC Officer/Guard (1)
  - William 2 (4am-7am)
  - William 1 (7am-12pm)
- University Hospital Officer (1)
- Mott, Taubman, Cancer and Geriatrics Center Officer (1)

**Afternoon:**
- Dispatch Officer (1)
- Emergency Room Officer (2)
- Outside Patrol Officer (1)
- FCC Officer/Guard (1)
  - William 1 (12pm-6pm)
- University Hospital Officer (1)
- Mott Officer (1)
- Taubman Officer (1)
- Cancer and Geriatrics Center Officer (1)
Midnights:

Dispatch Officer (1)
Emergency Room Officer (2)
Outside Patrol Officer (1)
FCC Officer/Guard (1)

-William 2 (9pm – 4am)

University Hospital Officer (1)
Mott, Taubman, Cancer and Geriatrics Center Officer (1)
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Introduction and Background

Purpose
The client needs to determine the level of staffing necessary at any period during the day to accomplish routine security tasks. Routine tasks that will be studied include general patrol, escorts, transporting money, unlocking vehicles, jump starting vehicles, and responding to calls for physical management.

Goals and Objectives
Obtain all information needed to perform a thorough analysis of the patrol security officer and routine tasks.

To present data obtained from the study in statistical form to be used in presenting results of study to upper management.

To use data from study to make recommendations that will improve quality of service provided by Hospital Security, which ensure a more secure environment.

To determine the optimal number of officers required for the three shifts during a 24-hour workday.

Background
Hospital Systems Security territory consists of the medical campus and Medical satellite centers. Currently the department operates with 44 security employees. The department has two classifications of security workers. The first is a security officer. A security officer classification can assist in any incident, that is an officer assignment or a guard assignment. Guards are limited to their responsibility. Guards generally perform escorts, unlocking of vehicles, vehicle jump-starts, property control (i.e. lost and found), static post assignments, and motor patrol of structures. Guards are not dispatched, do not conduct investigations, fund transports, or respond to combative patient calls. Currently, Hospital Systems Security only has two security guards. Due to the shortage of guards the department depends on officers to do most assignments. The primary duty of one of the guards is Lost and Found. The other guard handles Lost and Found, access control points after hours, motorist assist and structure patrol. The remainder 42 security employees are of the security officer classification.

Project Plan
Hospital Systems Security is an integral part of The University of Michigan Medical Center day to day operations. It is important that Hospital Security operate in the most efficient and effective manner in order to ensure a secure Medical Center environment.

The security officers are unionized. The union has identified an interest in evaluating staffing allocation issues; therefore we anticipate cooperation from the union.

Scope of Project
The team will be studying general patrol, escorts, transporting money, unlocking vehicles, jump starting vehicles, and responding to calls to restrain combative patients. The study will include observing each of these tasks as a time study of work procedures. The project will include a statistical analysis of data found in security logs, this information will be used to make recommendations. The team will use a random sample of officers to study. This will complement the data obtained from the logs. The team will only study logs from January 1, 1996 through December 31, 1996.
The following items listed below will be excluded from the project.

1. The Program and Operations Analysis team will only study the routine duties of the officers and guards as defined in the purpose of this document.

2. The time studies of routine task will not include every officer or every shift.

3. The team will not study logs dated before January 1, 1996.

4. The study will not include Satellite Centers.

Expected Impact or Outcomes

The outcomes of the study will include the time required for each of the routine task. This information will be in statistical form (average and standard deviation). The time distribution of calls will be determined from the study. Optimal shift changes will also be determined from the study.

The results of the study will be used to determine the staffing needs of patrol officers during the 24-hour workday.

The study may decrease or increase the number of patrol officers on a particular shift. The study will increase quality; the department will be able to better meet the needs of the Medical Center. Providing a safer environment to workers, patients, and visitors.

Approach and Methodology

The team’s findings and recommendations are based on the CAD data for the year of 1996 provided through Cliff Arnott. The team’s approach was to observe officers preform their tasks and interview with them in order to get a better understanding of the data that was provided to us. The team used a statistical package called SFSS to analyze over 264,000 CAD entries made in 1996.

Current Situation

University Of Michigan Hospital Systems Security operates 24 hours a day with three work shifts. Presently the department operates with 11 officers on the midnight shift, 14 officers and one guard on the day shift, and 14 officers and one guard on the afternoon shift. There are three officers in field training at this time. These officers rotate shifts but upon completion of training the shift breakdown will be 12 officers during the midnight shift, 15 officers and one guard during day shift, and 15 officers and 1 guard on the afternoon shift.

Currently, there is one officer assigned to dispatch, one at University Hospital, one at Taubmen, one at Mott Hospital, One on outside car patrol, Two at the E.R., one at the Cancer Center and one in the East Ann Arbor Clinic on day shift. Officers do money transports in the early morning, in the afternoon from 3:30 PM to 5:00 PM, then at night when the cafeteria closes. During this time officers doing money transports cannot attend other calls.

The working shifts are: day shift, 7:00 AM to 3:00PM; afternoon shift, 3:00 PM to 11:00 PM; and midnight shift, 11:00 PM to 7:00 AM. Some officers are assigned to come in one hour early and leave an hour early to facilitate shift change.

Alternatives to be Considered

The current situation seems to be satisfactory, however the team will try to present a situation where the minimal amount of labor force is necessary to conduct normal security operations. Some of the alternative
situations that we considered involved the use of part-time workers. An alternate situation includes making the guard a part-time position that works peak times from 1:00 PM to 5:30 PM. The full-time officers replace guards after money transport duty. However, the team had to consider the fact that the officer’s unions frowned upon the use of part-time employees, therefore, the alternative mentioned above was not recommended.

Findings and Conclusions

The main findings of the team are as follows:

There were no trends in the key tasks data with the exception of escorts. The team found that there was an increase in the number of escorts during the winter, however, the escort policy changed in 1997; therefore, the data analyzed is not representative for the basis of future recommendations for the mentioned task.

Non-peak call times occur between 4:00 AM and 2:00 PM. This finding is important because the lack of activity during these times make them feasible candidate hours for shift changes and staff reduction.

Peak call times occur between 5:00 PM and 12:00 AM. This finding is important because it indicates a greater need for staff at these times. This finding also shows that a shift change between these hours is not feasible.

The current shift changes seem to be feasible because of overlapping shift (for example a few officers come in at 6am-2pm while the rest come at normal shift change times 7am-3pm) only one of the shift changes happen in peak times. This finding is also important because if the recommended shift changes prove to be difficult to implement, the state of hospital security will remain healthy.

The winter season seems to be the busiest. This is due to the large number of request for escorts and jump starts. However, because of the change in the escort policy, the number of calls for escorts will be reduced in the future.

The average number of officers responding to calls at any given call is no more than 1.2. This indicates that only two officers are needed to do foot patrol (see Appendix 13).

Time standards for arrival, completion, and dispatch times of key tasks are in appendices 1-3.

Recommendations

We recommend that the morning shift have one dispatch officer, two emergency room officers, one outside patrolling officer, one officer or guard in the FCC, one officer in the University Hospital, and one officer to patrol the Mott, Taubman, and Cancer and Geriatrics Clinic. This will greatly reduce the number of officers needed to respond to calls. According to the data provided us, on average only 1.2 officers (see Appendix 13) are needed at any given time during the day. The reason we grouped Mott, Taubman, and the Cancer and Geriatrics Hospitals together was because on average they receive the lowest amount of calls when compared to the University Hospital.

We recommend that all other shifts have one dispatch officer, two emergency room officers, one outside patrolling officer or guard, one officer in the FCC, one officer patrolling the University Hospital, one officer patrolling the Taubman Center, one officer patrolling the Mott Hospital, and one officer patrolling the Cancer and Geriatrics Center. This will also greatly reduce the number of officers needed to respond to calls. Same as the morning shift, the data shows that on average no more than two officers are needed to complete routine tasks at any given time of the day or day of the week. It’s important to note that from 3:30 PM to 5:00 PM, three officers are required to perform funds transports. This will leave one patrolling officer to respond to calls which according to the data is all that is needed on average.
Based on the data for the 1996 year, we have developed an optimal shift change schedule. Two of the three shift changes (see Appendix 9-12) occur at non-peak hours which is the optimal time to have shift changes. The shift changes are as follows:

Morning: 4:00 AM – 12:00 PM
Afternoon: 12:00 PM – 8:00 PM
Midnight: 8:00 PM – 4:00 AM

Though these shift changes may be greatly different from the current shift change schedule, the data shows that two of the three current shift changes occur at peak hours. By implementing our schedule, the number of shift changes during peak times are reduced which will aid in providing better security to the patrons, visitors, and employees of the University Of Michigan Hospital.

Action Plan

The implementation of the recommended shift times can be done with a short period of time. We recommend gradually implementing the new shift changes by adding an hour to the start time of each shift on a weekly, or monthly bases until the new shift change schedule is met. Another way of easing this transition would be to implement a trial period in which officer can test the new schedule before implementation of the new schedule is induced full time.

The transition to the recommended scheduling situation can be accomplished by reducing the number of new employees. Over time, current employees may retire, or leave their positions. Instead of hiring new employees and training them to become officers, hiring practices should cease until staff has been reduced to the optimal number of employees needed. Depending on the rate of turn-over the Hospital Security Systems experiences on a yearly bases, will determine how long it will take to decrease staff to the optimal number of employees needed. Reducing staff in this fashion will alleviate the discharging of officers and help ease union concerns.
# Time Standards

*(in minutes, calculated using mean and std. deviation)*

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<th>Motorist Asst</th>
<th>Physical Mgmt</th>
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<th>All Tasks</th>
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<td>0:00-9:00</td>
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### Funds Transport

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### Descriptive Statistics

- **Motorist Assist - Jumpstarts**

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- **Descriptive Statistics**

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Descriptives of Arrival, Completion, and Dispatch Times for 1996

### Descriptive Statistics

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Average Number of Calls for Motorist Assistance (Jump Starts and Unlocks) for 1996

Day of Week

Spring/Summer
Winter
Season

Average Calls
Average Number of Calls for Physical Management for 1996
Graph - Average Number of Actual Calls

Average # of actual calls

Hour

Average # of actual calls:

0: 2
2: 6
4: 6
6: 6
8: 7
10: 6
12: 5
14: 4
16: 5
18: 7
20: 7
22: 6
Graph - Average Number of Calls/hr to Taubman

Average # of calls

HOUR

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

0 2 4 6 8 10 12 14 16 18 20 22
Graph - Average number of calls/hr. to U Hosp

Average number of calls

HOUR

0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0