

Using Data To Right-Size Police and Fire

Tom Wieczorek, Rick Dale and Dov Chelst
ICMA Conference Presenters



Introduction

- Welcome
- Presenters
- Goal of this session
- Format of today's presentation
 - Where it begins – The Communications Center
 - Where it goes – Operations
 - Q & A
- Applies to other disciplines as well – EMS, etc.

Introduction

- Rick Dale, Chairman & CEO, iXP Corporation
 - 28+ years in Public Safety
 - 26+ years in 9-1-1 Emergency Communications
 - Tacoma, WA Police Department (LESA)
 - PRC, McLean VA (acquired by Northrop Grumman)
 - MCI, New York NY (acquired by EDS)
 - EDS, Plano TX (acquired by HP)
 - iXP, Cranbury NJ (management buyout from EDS)

Introduction

- Rick Dale – Some Career Highlights
 - One of three original authors of the PRC COBOL CAD (Computer Aided Dispatch) System installed throughout the United States and Canada – covered 25% of the US & Canadian Population
 - Executive responsible for the Design and Delivery of the NYPD 9-1-1 Public Safety Answering Center
 - September 11, 2001
 - Led the management buyout that created iXP
 - First Managed Services Public Safety Answering Point in the United States

Introduction

- Rick Dale – About iXP Corporation
 - Public Safety Consulting, Technology and Managed Services Company
 - Comprised of former Public Safety professionals
 - Diverse backgrounds in Public Safety
 - Project/Program Managers
 - Experts in Public Safety components of:
Governance, Operations, Technology and Facilities
 - Not a product company, vendor independent
 - Best-Fit Solutions



Introduction

- iXP – Representative Clients:
 - NE: NYPD, FDNY, NYSD, Nassau County
 - MA: New Castle County, St. Marys County
 - SE: Johns Creek, Sandy Springs, Dunwoody
 - MW: Sweetwater County, Jefferson County
 - NW: Seattle, Portland, Tacoma
 - SW: Navajo County, Paradise Valley, Cottonwood
 - UV: Johns Hopkins, MIT, Penn, Harvard, ASU, UCSF, Chicago, UCONN, Columbia, NAU, GWU
 - MD: Emory, Hopkins Medicine, Lancaster



Right-Sizing Your Department(s)

- The Question
 - How do we know if we have the “Right” amount of resources to respond to my community needs on a 24/7/365 basis
 - “The Question” can originate from Local Government Executives, Council and/or Command
 - Especially given today’s revenue challenges
- The Analysis Begins
 - Whether internal or external, most governments head straight to Field Operations – STOP!

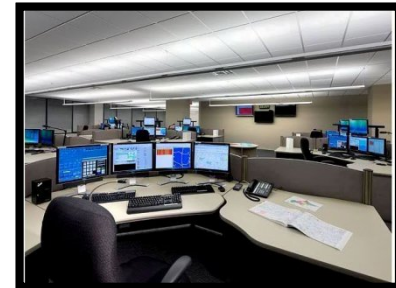
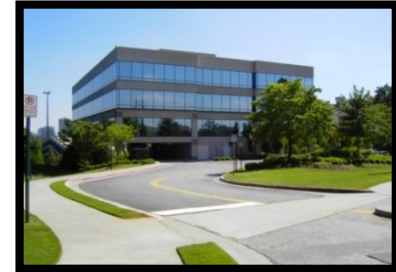
Start Here – The Comm Center



New Castle County
Delaware



FDNY - Operations Center



Right-Sizing Your Department(s)

- The Communications Center
 - This is Where it “Usually” begins
 - Usually because many believe everything begins with a 9-1-1 call to your PSAP
 - “Usually”, Not Always
 - Many ignore self-initiated field incidents, traffic stops, inspections, etc. These numbers can be large and impact Right-Sizing
 - As many activities must be captured to ensure proper sizing
 - Operationally, assure capture where possible

Right-Sizing Your Department(s)

- What to look for by Time of Day & Day of Week for a Specific Period (a sampling)
 - 9-1-1 Call Volume (landline, cell, solar call boxes, inter-agency transfers, etc.)
 - Administrative Call Volume
 - Call Processing Times for High Priority, Routine and Emergency Medical Protocol (EMD)
 - Dispatched Incidents
 - Etcetera

Right-Sizing Your Department(s)

- Typical Tools available to Report Activity
 - (a note about WWVB Time Sync)
 - Automatic Call Distributor (ACD)
 - Call Volume, Ring Time, Off Hook, etc.
 - Computer Aided Dispatch (CAD)
 - Incident Received Time, Entered Time, Dispatched Time, Enroute Time, Arrival Time, Onscene Processing Time, Resources Utilized, Closure Time, etc.
 - Records Management System (RMS)
 - Similar information as CAD, but includes any written report, administrative processing activities, etc.

Right-Sizing Your Department(s)

- What these metrics state thus far
 - Initial load analysis of the Communications Center, more information is required
 - Initial load analysis of Field Operations, more information is required
 - Initial load analysis of Operational Administrative and “back office” functions, more information is required

Right-Sizing Your Department(s)

- What Hasn't Been Captured (Comm Center)
 - Many Administrative Functions
 - Technology Maintenance and Support (both H/W and S/W), Liaison with vendors, FOIA Requests, Internal Requests for Information and QA on Staff Performance
 - to name a few
 - Staff Training and Refreshment
 - Accreditation Fulfillment
 - Etcetera – the list is long
- How to Account for these items and others

Communications Center Savings

- Increase Efficiency and Quality - Savings shouldn't be the only Goal
- Today's Trends
 - Co-Location
 - Virtual Consolidation
 - Consolidation
 - Managed Services
- Either way, Comprehensive Planning is the Key to Success

Comprehensive Planning

- First Phase Evaluation
 - Examine the existing legacy environment
 - Determine true cost of operations
 - Evaluate potential budgetary savings and revenue streams
 - Evaluate service metrics
 - Examine existing data and growth metrics to allow staffing models and technology plans to be built ensuring service levels are met
 - Assess the impact of the technology and facility on operations in the Comm Center
 - Identify Findings & Risks and provide recommendations

Comprehensive Planning

- First Phase Production
 - Potential 9-1-1 revenue streams
 - Budgetary cost estimates
 - Impact of the service metrics for each department
 - Capital Outlay
 - Operating Outlay
 - Implementation timelines
 - Number of procurements needed
 - Identified staffing requirements

Evaluating The Options

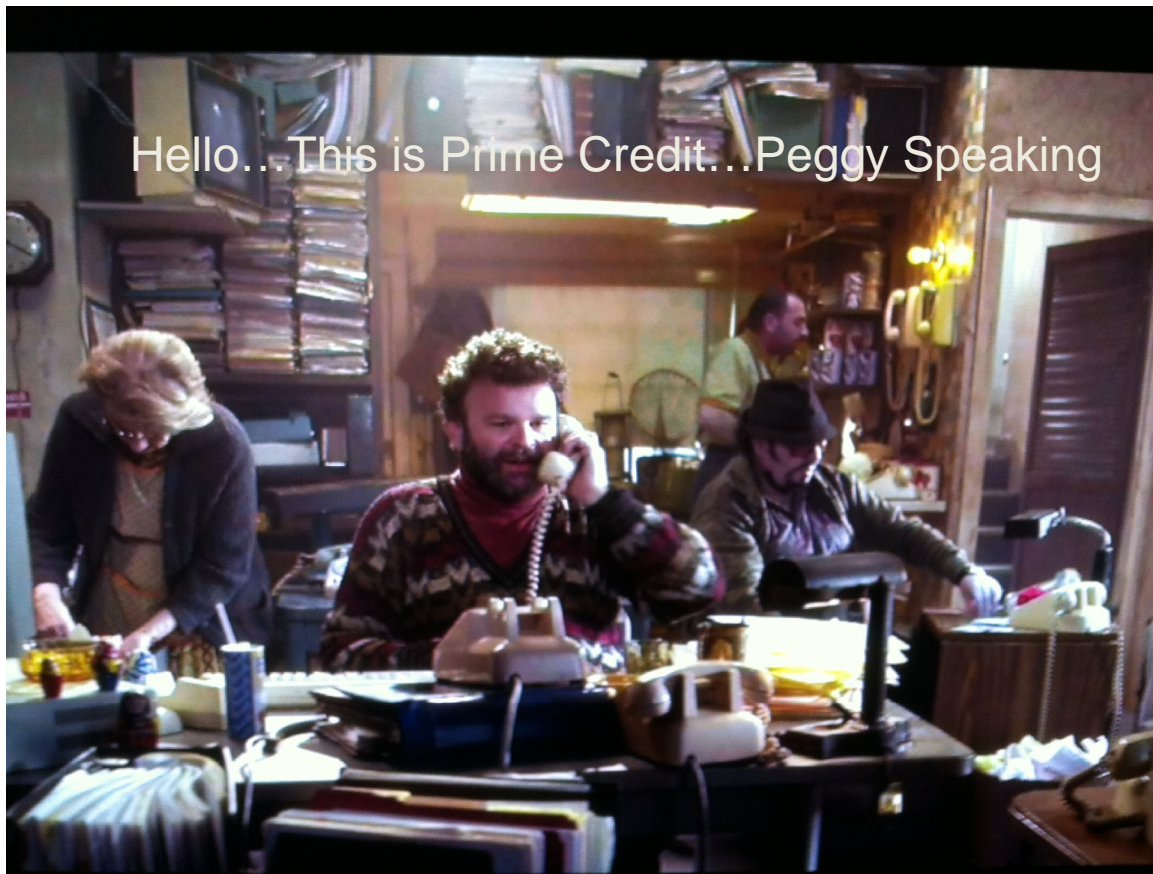
- After the Comprehensive Review
 - Assessment, Master Plan, Options Business Case
- Co-Location
 - Savings usually relative to a shared facility
 - Doesn't always take advantage of infrastructure
 - Can create significant HR issues
- Virtual Consolidation
 - Savings via shared infrastructure – Radio, CAD, etc.
 - Duplication of “back office” support

Evaluating The Options

- Consolidation - Benefits Can Include:
 - Improved response times
 - Ability to provide a better level of service
 - Ability to provide cost savings
 - Ability to take advantage of economies of scale plus buying power
 - Improved technology for the Comm Center
 - Technology standardization and interoperability
 - Combining of budgets
 - Increased accountability and flexibility to implement policies and procedures via a standardized and public safety certified training program

Evaluating The Options

- Managed Services - Did Someone just say Outsourcing?



- No!

Evaluating The Options

- Managed Services Benefits Include:
 - All that Consolidation can bring, plus
 - Increased levels of service & reduced cost
 - Performance & Financial predictability with Lifecycle management over a multi-year agreement (5 – 10 years)
 - Service level delivery requirements (SLA) – Your Life, now simplified
 - Speed of Implementation – months vs. years
 - Facility and location build-out/hardening
 - Technology design, procurement and implementation

Our Colleague From IMCA

I, now, pass the baton to Tom Wieczorek,
Director of ICMA's Center for Public Safety
Management

and

Dr. Dov Chelst, Director of Quantitative
Analysis for the Center

Questions/Comments?

Contact Rick Dale

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Using Data to Right-size Police and Fire

Dr. Dov Chelst

Director, Quantitative Analysis for ICMA Center for
Public Safety Management
ICMA Conference Presenter



Dr. Dov Chelst

- Quantitative Analysis Director for ICMA Center for Public Safety Management
- Importance of providing accurate and useful data to determine public safety staffing
- Decisions are often based on emotion, intuition, and tradition rather than fact.

ICMA Center for Public Safety Analysis

- Quantitative analysis using Operations Research methodology
- The Center completed 37 projects in 2011 bringing to 96 the number completed to date across 28 states
- Data collection and analysis is often most time-consuming task.

Focusing on Police Patrol Force

- Our presentation's time is as limited as any resource
- Illustrate the nature of our analysis
- Only police (law enforcement) – still a significant portion of a municipal budget
- Only patrol – often the bulk of a police department
- Only a portion of our overall analysis – critical issues

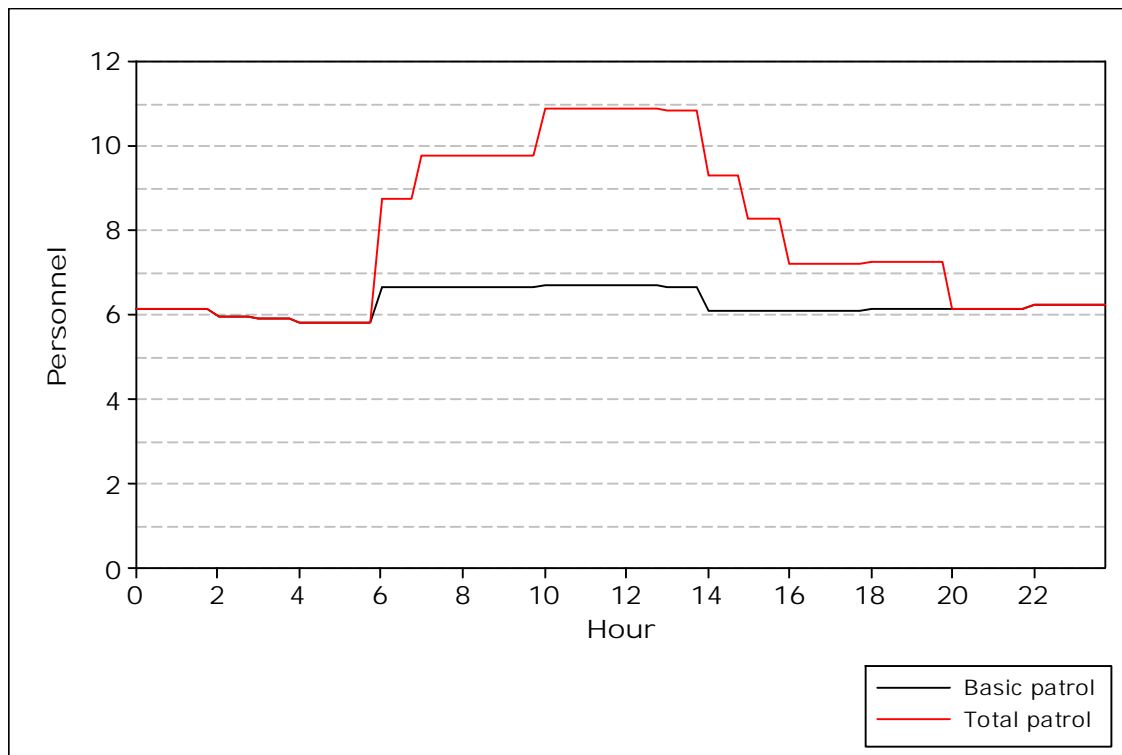
Discussion Overview

- Comparing “apples to apples” – available staffing and call workload
- Both vary by season, day of week, and hour.
- Distinguish major work types: other-initiated, self-initiated, administrative, and directed patrol
- Discuss potential improvements

Data Collection

- Computer-aided dispatch (CAD)
 - Detailed information about every call for a year
 - Or any activity reliably captured electronically
 - Focus on 4-week periods in summer and winter to match...
- Patrol deployment data
 - Officers on duty for entire patrol force throughout 4 weeks in summer and 4 in winter
 - Every patrol shift including supervisors and special call takers
 - Actual timesheets rather than planned schedules

Average Deployment Example

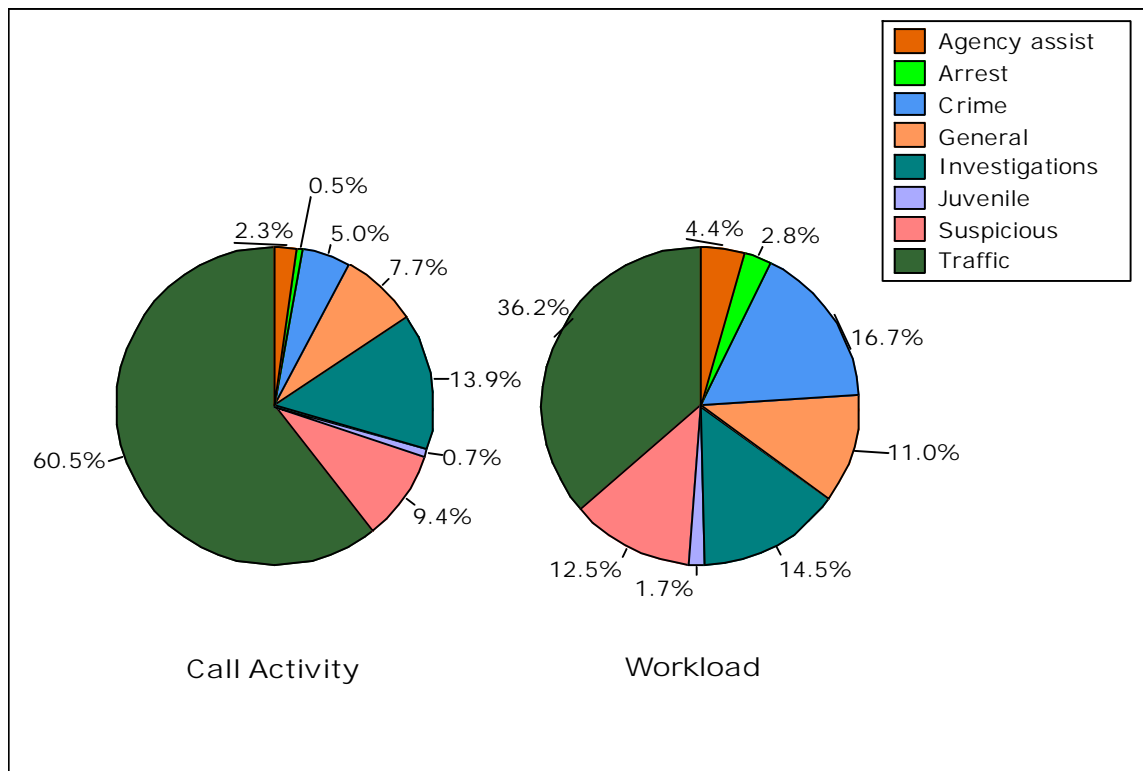


- Small Texas city
- February 2010
- Weekdays (20)
- Basic – patrol and supervisors
- Extra – traffic, etc.

Alchemy: Converting Calls to Work

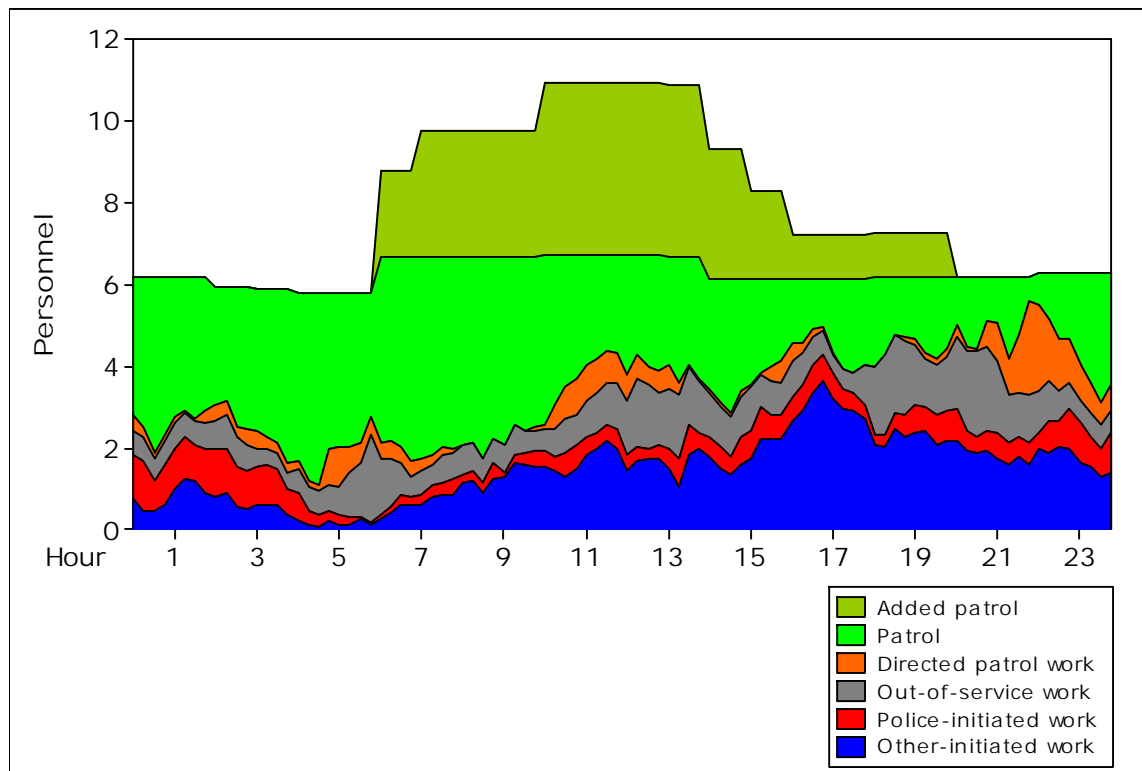
- Calls can involve multiple units.
- Each unit spends a different amount of time at the call.
- A call's total workload requires adding all units and all time spent.
- Total workload combines workloads for all calls.
- Different pictures emerge when examining total workload rather than call volume.

Contrasting Calls and Workload



- Same city
- July 2010
- Traffic
- Crime

Workload and Deployment – Example 1

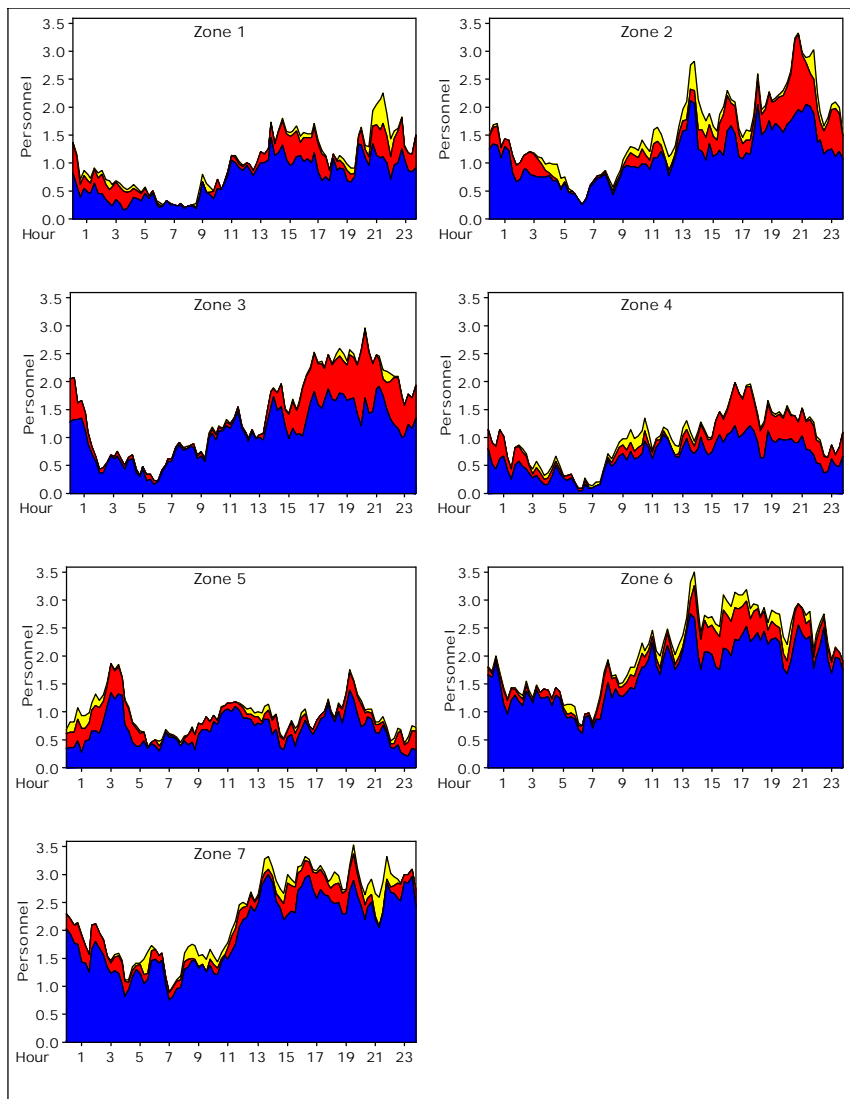


- Same deployment
- Four types of work
- Constant work is not the goal.
- Reasonably matched overall
- Not synchronized by hour of day

Comparison Measures

- Average basic deployment: 6.3 officers
- Average total deployment: 7.9 officers
- Minimum and maximum: 5.8 and 10.9
- Average workload : 3.3 officers
- 42 percent of deployment
- Reaches a maximum of 91 percent of deployment

Workload – Example 2



- Large city
- Multiple zones in a single district
- Nearly evenly staffed
- Highest overall workloads – Zones 6 and 7
- Note 3 a.m. – Zone 5

Data Analysis as Diagnostic Tool

- Possible good diagnosis: well-balanced patrol force
- Tool can identify different potential problems.
 - Poorly managed patrol force; e.g., constant deployment
 - Highly variable workload; e.g., peaks in administrative activity
 - Fundamental mismatch between staffing and workload

“Simple” Solutions

- Modifying officer habits; e.g., varying break times
- Reallocating officers between shifts; e.g., from low to high workload times
- Modifications to shift structure:
 - Staggered starting times
 - Added “power” shift
 - Optimal reorganization of all shift lengths and start times (operations research)

Limited Resources: Presentation Time

- We focused on a law enforcement agency's core patrol function and its need to match workload and staffing.
- We did not discuss:
 - Fire/EMS analysis,
 - Response time analysis – “minimum staffing,”
 - Data collection difficulties
 - Implementation hurdles

Conclusion

- Do you have the right size patrol force?
- Gather accurate data.
- Compare against workload rather than calls.
- Optimize your current force to match calls by season, day, and hour (and possibly zone).
- Then, consider modifying its overall size.

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Thomas J. Wieczorek

Director, ICMA Center for Public Safety
Management

ICMA Conference Presenter



Thomas J. Wieczorek

- Director for ICMA Center for Public Safety Management
- Importance of data and dispatch for deciding on deployment
- Decisions are too often based on emotion, myths, and tradition rather than fact

Overview

- Goals and Measures
- Total System Perspective
 - Service Focus
 - Reactive
 - Proactive
 - Integrated Perspective
- Data Driven Decision Making
 - Data Validity
 - Strategic and Tactical Decision
 - Continuous Improvement Philosophy

Goals and Measures

- Never ending requests for more resources
 - What does more money buy besides more resources?
 - More and More and More is Not a Goal
 - Nor is Safer, Safer and Safer
- Reactive Measures
- Proactive

System Perspective -- Service

- Understand Community Needs
 - Citizen and Business
 - Value and Costs including of Compliance
 - False Alarms
- Understand Transient Responsibility and Impact on Community
 - Traffic bad? or Visitors good? → Traffic Enforcement
- Responders, 1st Line Supervisors, Dispatch, Information, Inspectors

System Perspective -- Reactive

- Response time (Tactical Operations)
 - To different call types and priorities
 - Manage Expectations → Satisfaction
 - Include citizen delays in reporting?
- Call handling – citizen satisfaction
- Filing reports
- Outputs →
 - Arrest → conviction → gone
 - Property damage from fire & water
 - Citizen on scene roles

System Perspective -- Proactive

- Prevention
- Citizen Sense of Security
 - All times of day
 - Home and shopping
 - Businesses
 - Visitors
- Actions Taken
- Outcomes

System Perspective -- Integrated

- Dispatch and Response Resources
- Police and Fire – overcrowded and dilapidated housing
- Inspections – fire hazards, EMS hazards, crime prevention
- Repeat calls from same location including social services
- Education and Cross-training

Decision Making – Data Validity

- Data not used on regular basis → errors
 - Missing data
 - Zero values
 - Very large numbers
 - Categories not meaningful
 - Communications & Dispatch responsibility
 - 1st line supervisors
- Important data not even
 - Recorded (Proactive actions, actions at fire scene)
 - Integrated (Crimes, fires & housing data)

Data Decision Making -- Types

- Strategic
 - Size of patrol force
 - Proactive Strategies
 - Number of fire stations and equipment
 - Number of dispatchers
- Tactical
 - Where: locations
 - When: time of day and season
 - How many
 - Do what?

Continuous Improvement

- Review Data daily
 - Extreme values: verify and talk
 - Individual activities
- Review Weekly and bi-Weekly
 - Team Systems review
 - Patterns of Poor Average Performance
 - Root cause of problems
- Actions – address root cause
 - Monitor implementation
 - Document Improvement

Additional Information...

Thomas J. Wieczorek

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