Performance Audit
Emergency Medical Services System

January 2000

City Auditor's Office

City of Kansas City, Missouri

989-040

January 24, 2000

Honorable Mayor and Members of the City Council:

We conducted this performance audit of the city's emergency medical services (EMS) system at the direction of the Mayor and City Council.

The city's EMS system is designed to provide a high level of care quickly. Most roles are well-defined and accountability mechanisms are mostly in place. The system would be strengthened, however, by integrating the Fire Department's first responders into the system and by developing mechanisms for more system-wide evaluation, communication and coordination. We recommend:

- Strengthening and clarifying the health director's role as the lead responsible party for the system, including medical direction and oversight of first responders, and system-wide evaluation and coordination.

- Investing in technology to link the Police, MAST, and Fire dispatch systems, and synchronize their clocks to speed emergency medical dispatch and provide for better tracking of system performance.

While most roles are well-defined, the role of the first responder needs clarification. References to the "ambulance service" in the code and in the Health Department's rules and regulations could allow ambiguous interpretation of the extent to which first responders are subject to medical control and oversight. In practice, the Health Department's oversight of first response has been limited to cases in which an automatic external defibrillator was used, which comprise a very small percentage of responses. First responders should be part of an integrated system and should be medically supervised by a single system medical director.

The Fire Department's first response could also be strengthened through changes in shift scheduling. About 55 percent of the fire fighting force are state and city certified as emergency medical technicians (EMTs), but scheduling methods do not ensure that at least one EMT is assigned to each station on every shift. Outlying areas of the city are under served, as six stations have at least one shift without an EMT assigned.

The 911 system is sometimes a bottleneck. Police Department reports show that the average delay in answering calls is increasing. The Police Department attributes the increase to turnover and difficulty in filling vacant positions. When all call takers are on a line, additional 911 callers hear a recording, telling them to stay on the line or if they have a medical emergency to call MAST directly. We recommend the police chief take steps to reduce turnover and fill call taker positions.

Technology could speed emergency medical dispatch. When 911 call takers believe a police response is also necessary, they enter information into the Police computer aided dispatch (CAD) system to initiate a police response and call MAST directly. MAST dispatchers then enter the information into their own CAD. If a first response is required, information is electronically transmitted to a terminal at the Fire Department and then manually entered into the Fire CAD. In this case, information about one call is manually entered into three different CAD systems. Improved technology could link the separate systems, allowing efficient data transfer and quicker dispatching; and capture information that is currently not recorded.

Response time reporting is reliable, although not all components of response time are currently measured. Response time is the primary measure of system performance established in the city code and in the operations contract. MAST's response time standard of 8 minutes 30 seconds for life-threatening emergencies is more stringent than city code requires and is strict compared to other systems. Ambulance response times improved, but did not achieve the standard for life-threatening calls for most of the period that we reviewed. About one-third of the Fire Department's EMS response times did not meet the four minute goal established in city code.

Appendix C summarizes the criteria we used to evaluate whether the system addresses important EMS functions and our findings. We shared the criteria with system participants and stakeholders while planning our audit work.

The audit team for this project was Vivien Zhi, Joan Pu, Martin Tennant, and Amanda Noble. We provided drafts of the audit to the city manager, health director, fire chief, police chief, MAST executive director, and EPI CEO on December 13, 1999. Their written responses are appended. We appreciate the courtesy and cooperation of city, MAST and EPI staff throughout the audit.

Mark Funkhouser
City Auditor

Performance Audit: Emergency Medical Services System

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Introduction

Objectives

This audit of the city's emergency medical services (EMS) system was conducted pursuant to Article II, Section 13 of the Charter of Kansas City, Missouri, which establishes the Office of the City Auditor and outlines the city auditor's primary duties.

A performance audit is an objective, systematic examination of evidence to independently assess the performance of a government organization, program, activity, or function. A performance audit is intended to provide information to improve public accountability and facilitate decision-making.[1]

The Mayor and City Council requested this audit through Resolution 990592. They were concerned about whether roles and responsibilities of the organizations involved in the city's EMS system are clearly defined and represent the best use of personnel, equipment, and organizational capacity to provide service. The city's Memorandum of Understanding with the fire union established an EMS committee to study the feasibility of a Fire Department based EMS system. This evaluation of the current system is intended to aid the committee's work. The audit was designed to answer the following questions:

- What are the roles and responsibilities of the various players in the city's EMS system?
- Are those roles and responsibilities well-defined and are all of the important functions of the system appropriately addressed?
- Are there appropriate mechanisms to assure accountability for each organization and the system as a whole in providing good patient care?

[1] Comptroller General of the United States, *Government Auditing Standards* (Washington, DC: U.S. Government Printing Office, 1994), p. 14.

- Are there opportunities to substantially improve service delivery without increasing the overall costs of the system?

This audit of the current system is intended to provide information to the Mayor, Council, EMS committee and others interested in the delivery of emergency medical services.

Scope and Methodology

This audit focuses on the EMS system rather than the performance of individual agencies. We conducted this audit in accordance with generally accepted government auditing standards, except the office has not undergone an external quality control review within the last three years.[2] Our audit methods included:

- Reviewing professional literature and talking to experts to compile criteria for evaluating an EMS system.
- Reviewing legal and regulatory requirements.
- Interviewing stakeholders in the system including staff of the Fire, Health and Police departments, EPI, MAST, EPAB and emergency room doctors.
- Observing call taking operations at the Police Department and dispatch operations at the Fire Department and MAST.
- Riding along with an ambulance for a 12-hour shift and with a fire company for 8 hours.
- Reviewing Health Department, Fire Department and EPI policies and procedures, job descriptions, labor agreements, and other documents.
- Assessing the reliability of response time measurements reported by the Fire Department and MAST by reviewing the computer programs used to generate the reports and listening to tapes of 200 randomly selected ambulance dispatches and 112 corresponding fire dispatches to check the accuracy of times recorded in the dispatch systems.

[2] The last review was in April 1995, and a peer review is planned for the current year.

- Calculating system-wide response time and analyzing components of response time for a random sample of 200 incidents occurring between June 1 and August 31, 1999.

- Analyzing MAST and Fire dispatch data for February 1 through August 31, 1999.

- Attending EMS committee meetings.

No information was omitted from this report because it was deemed privileged or confidential.

Appendix C provides a summary of the criteria we used to evaluate whether the system addresses the important EMS functions and our findings. We shared the criteria with system participants and stakeholders while planning our audit work.

Background

History of Kansas City's EMS System

Until the early 1970s, Kansas City operated a public ambulance system through its General Hospital and, later, through the Fire Department. In the early 1970s the city contracted for emergency ambulance services with five private companies. Calls were alternated among the various companies as they were received. In 1973, the dispatch center, operated by the Mid-America Regional Council's Emergency Rescue (MARCER), adopted a policy of dispatching the closest available ambulance to the scene of an emergency rather than continue rotating among contractors.

Private ambulance service under-served the city. MARCER dispatchers voiced requests for emergency ambulance services over the radio system with the intent that the closest available ambulance would respond. However, ambulance crews were required to call their own dispatch centers for permission prior to responding. Private ambulances did not necessarily respond to emergency requests over the radio and continued to respond to direct citizen requests, regardless of location. This system resulted in long response times and under-served areas of the city.

Committee recommended the public utility model. The newspaper did an expose following a couple of well-publicized cases of slow

response times, which resulted in formation of a committee to study alternatives for improving emergency medical service. In March 1979, the committee recommended to the City Council a series of policies centered around the idea of a publicly controlled single private provider to be used for emergency and non-emergency ambulance service. In April 1979, the city hired a consultant, Jack Stout, to study the feasibility of implementing the public utility model in Kansas City.

The public utility model splits business operations from medical quality assurance to eliminate incentive to over- or under-serve patients. Exclusive market rights for a single provider prevent cream-skimming and promote economies of scale. Equipment is publicly owned and maintained to prevent disruptions in service in case of change in service provider. Jack Stout developed the public utility model, which was first implemented in Tulsa, Oklahoma. Kansas City was the second city to implement the system.

The City Council implemented the public utility model (PUM). In August 1979, the Council adopted Resolution 50702, describing its intent to contract with a single public trust rather than private companies for ambulance service. The trust would provide service, subject to various standards to be developed by the city. These standards, as well as other rules and regulations, were promulgated in September 1979 by Ordinance 50775, which established the Metropolitan Ambulance Service Trust (MAST), and delineated the relationship between MAST, the city, and an emergency physician advisory board (EPAB). The ordinance was partially repealed, however, in November 1979 through Ordinance 50983, because of difficulty in meeting state ambulance service licensing requirements on time. MAST contracted with Ambulance Service, Inc. (ASI), a licensed provider, for ambulance service.

In September 1981, MAST purchased ASI's ambulances, communications equipment, State Operator's License, and other assets. The City Council passed Ordinance 53539 in December 1981 to fully implement the public utility model, giving MAST responsibility for overseeing all aspects of the ambulance service, handling billings and collections, and securing an operator through competitive bidding. In July 1982, MAST selected MEDEVAC, Inc. to operate the system.

The PUM withstood legal challenge. In 1982, two ambulance companies, Gold Cross Ambulance and Transfer & Standby Services Inc., sued the city, MAST, the owners of ASI, Jack Stout and his company Fourth Party Inc., in Jackson County circuit court. The

plaintiffs alleged antitrust violations (restraining trade and operating an illegal monopoly); civil rights violations (citizens were deprived of rights to choose which ambulance companies they wish to have serve them); and the defendants deprived the plaintiffs due process rights under the Fourteenth Amendment. The case was removed to federal court where the claims were dismissed against all the defendants on motions for summary judgement. The plaintiffs appealed to the 8th Circuit Court of Appeals, which affirmed the trial court's decision. The plaintiffs unsuccessfully sought review by the U.S. Supreme Court. There has been no legal challenge since 1985 regarding the city's right to establish and regulate a sole source ambulance system.

Employee-owned company formed. The relationship between MAST and the contractor became strained in 1987 as MAST was preparing to place the system for competitive bid. Negotiations between another contractor and the union were unsuccessful and MAST requested Jack Stout to conduct a system analysis. As a result of this analysis, the MAST Board of Trustees formed a subsidiary company called Emergency Providers, Inc. (EPI). EPI took over operations as the contractor on July 1, 1988. EPI employees purchased the company through an employee stock ownership plan in 1989.

Operations contract may be negotiated. Ordinance 920769, passed July 1992, amended the ambulance code to permit MAST to negotiate rather than engage in competitive bidding when contracting for an ambulance operations contractor. The rationale was that bidding for an ambulance contractor could be detrimental to the public interest because the incumbent has an advantage due to their knowledge of the system. The risk of bidding is that the city will pay more because the incumbent knows they have an advantage and can increase the price while still being the low bidder. The code requires MAST to conduct a market study of other metropolitan governments that use the public utility model to provide and regulate ambulance service. Competitive bidding or negotiations to secure a new operations contract is required at least every five years.

Legislative Authority/Regulations

State Statute. Chapter 190 RSMo requires ambulance services to hold a valid state license. Requirements for licensure include medical direction, records and forms, and a uniform data collection system.

State Regulation. Regulations specify the details of the statutory requirements. Under 19 CSR 30-40, a medical director is required for

all ambulance services. The medical director must be a licensed medical doctor, be board certified, and have an active practice in emergency medicine. Each ambulance service must have a medical control plan, policies and procedures, an ongoing quality improvement program, and must maintain accurate records and forms. Each ambulance must have the capability to communicate by voice with local hospitals, trauma centers, and the service's dispatching agency. When transporting a patient, at least one licensed EMT shall be in attendance with the patient. The city requirement is stricter; a 1991 legal opinion states that the city code requires a paramedic to attend to the patient during transport.

Code of Ordinances. Chapter 34, Article IX of the Code of Ordinances defines and implements the public utility model for ambulance service. The code requires advanced life support capabilities on all ambulances and establishes response time standards. The code outlines specific responsibilities of "the major components of the model, the director of health, the Metropolitan Ambulance Services Trust (MAST) and the Emergency Physicians Advisory Board (EPAB)."[3] The health director has the authority to establish rules and standards to meet the intent of the article. These are contained in the Health Department's Rules and Regulations For Ambulance Service.

EMS Response

An emergency medical incident begins when a person or bystander recognizes that emergency medical care is needed. Public education is sometimes referred to as the first phase in an EMS response because the public must have some idea what the system is for, how to access the system and what to do before help arrives.[4] To access the EMS system, people may call 911 or MAST directly.

911. Police Department call takers answer telephone calls to 911. The call taker determines what type of emergency service is needed – police, fire or medical – and either takes information from the caller to initiate a police response or transfers the caller to MAST for medical emergencies, or to the Fire Department for fire emergencies.

Once MAST receives the call, a paramedic confirms the address to dispatch an ambulance, asks a series of questions set by medical protocol to determine the nature and severity of the problem, and may provide

[3] Code of Ordinances, Kansas City, Missouri, Sec. 34-361.
[4] Alexander E. Kuehl, *Prehospital Systems & Medical Oversight*, 2nd Edition (National Association of EMS Physicians), 1994, p. 28.

instructions to the caller on what to do before help arrives. For life-threatening incidents or incidents where special equipment or expertise is required, MAST notifies the Fire Department to respond as first responders.

EMS Definitions

Advanced life support (ALS): an imprecise term traditionally used to describe the capability of a medical response team to render sophisticated life support procedures. Traditionally has required medical oversight.

Basic life support (BLS): an imprecise term traditionally used to describe the EMS procedures (airway positioning, external cardiac compression, and ventilation) to sustain viability of brain and heart in the absence of pulse and/or breathing; and basic first aid such as splinting and dressing. Traditionally has not required medical oversight.

Emergency Medical Technician (EMT): the generic term for any prehospital provider trained to a certain level. Missouri requires EMTs to be certified with the National Registry of EMTs, have current basic cardiac life support training, and complete 100 hours of continuing education. Relicensure is required every five years. The city imposes additional requirements.

First responder: the first individual designated to provide medical assistance in an emergency. The degree of training varies by jurisdiction but includes minimum first aid instructions on airway management, cervical spine control, breathing assistance, circulation assistance, hemorrhage control, and basic patient movement skills.

Paramedic: the generic term for a prehospital care provider with an adequate number of training hours and procedural experience to be certified by local, state, and/or national authorities as capable of providing advanced cardiac life support and other medically sophisticated skills. Missouri requires paramedics to hold current certification with the National Registry of EMTs as an EMT-P, current advanced cardiac life support training, and completion of 144 hours of continuing education. Relicensure is required every five years. The city imposes additional requirements.

Protocols: written procedures providing prehospital personnel with a standardized approach to commonly encountered patient problems, thus ensuring consistent care – usually relating to assessment, diagnosis, triage, treatment, transfer, and destination of patients.

Source: Kuehl, *Prehospital Systems & Medical Oversight*, 2nd Edition (National Association of EMS Physicians), 1994.

On-Scene. First responders provide basic service and automatic external defibrillation (AED) before the ambulance arrives and assist the ambulance crew once they are on the scene. The ambulance crew treats and stabilizes the patient according to established medical protocols and transports the patient to the nearest appropriate emergency department. If necessary, the ambulance crew can talk to base station physicians regarding appropriate patient care or destination. Once the patient is transported to the emergency department, the ambulance crews provide information to the hospital staff and may assist in patient care during transition.

Ambulance deployment. Ambulance crews are on duty for 8 to 14-hour shifts. Two crewmembers, a paramedic and an EMT, staff each ambulance. Crewmembers must be certified by the city and the state. Medical protocols establish that ambulance staff cannot work longer than a 14-hour shift and that there must be at least 10 hours between shifts.

Ambulances are stationed at various locations throughout the city. The number of ambulances on duty varies by time of day and day of week and the post locations also vary; 32 ambulances are on-duty during peak deployment. This practice is referred to as system status management. Ambulance dispatchers are called system status controllers (SSCs). SSCs must be certified by the city. They are all certified as paramedics and emergency medical dispatchers.

Ambulance crews responded 44,636 times between February and August 1999. About 75 percent of the calls were for emergencies; 25 percent of the calls were considered potentially life threatening. (See Exhibit 1.) Traffic accidents were the most frequent type of call (12 percent).

Exhibit 1. Ambulance Responses by Priority (Kansas City)

Call Priority	Number of Calls	Percent
Non-Life Threatening Emergency	21,732	49%
Life Threatening Emergency	11,082	25%
Unscheduled Non-Emergency Transport	7,732	17%
Scheduled Non-Emergency Transport	3,052	7%
Other	1,038	2%
Total	44,636	100%

Source: MAST CAD data (2/1/99-8/31/99).

Ambulance incident reporting. For each incident, the ambulance crew completes a run ticket, a copy of which is submitted to the state. The report includes fields for patient information, billing information, type and location of incident, vital signs, trauma or illness assessment, type of

treatment and how authorized, destination determination, mileage, patient consent, and patient medical history. Additional information about the response is maintained in the computer aided dispatch (CAD) system.

Fire company deployment. Fire companies work 24-hour shifts. They are on duty for 24 hours and off duty for 48 hours; every ninth shift they have an N-day (non-scheduled), which is to keep the average workweek to 49.5 hours. Firefighters are scheduled 14 N-days per year. Companies are assigned to stations, which is referred to as static deployment. The department has 53 companies on duty at 33 stations, excluding a station at KCI and battalion chiefs. A company, paid for through airport fees, is assigned full-time to KCI to provide crash, fire, and rescue services. All firefighters hired since 1991 are required to be certified as EMTs. Training is provided at the fire academy.

Fire companies respond to emergency medical calls that are considered potentially life threatening and some types of calls that may require special equipment or expertise, such as injuries due to car accidents or hazardous materials. About 58 percent of Fire Department calls are for emergency medical services. Fire companies responded to 17,538 emergency medical incidents between February and August 1999. (See Exhibit 2.)

Exhibit 2. Fire Department Calls by Type

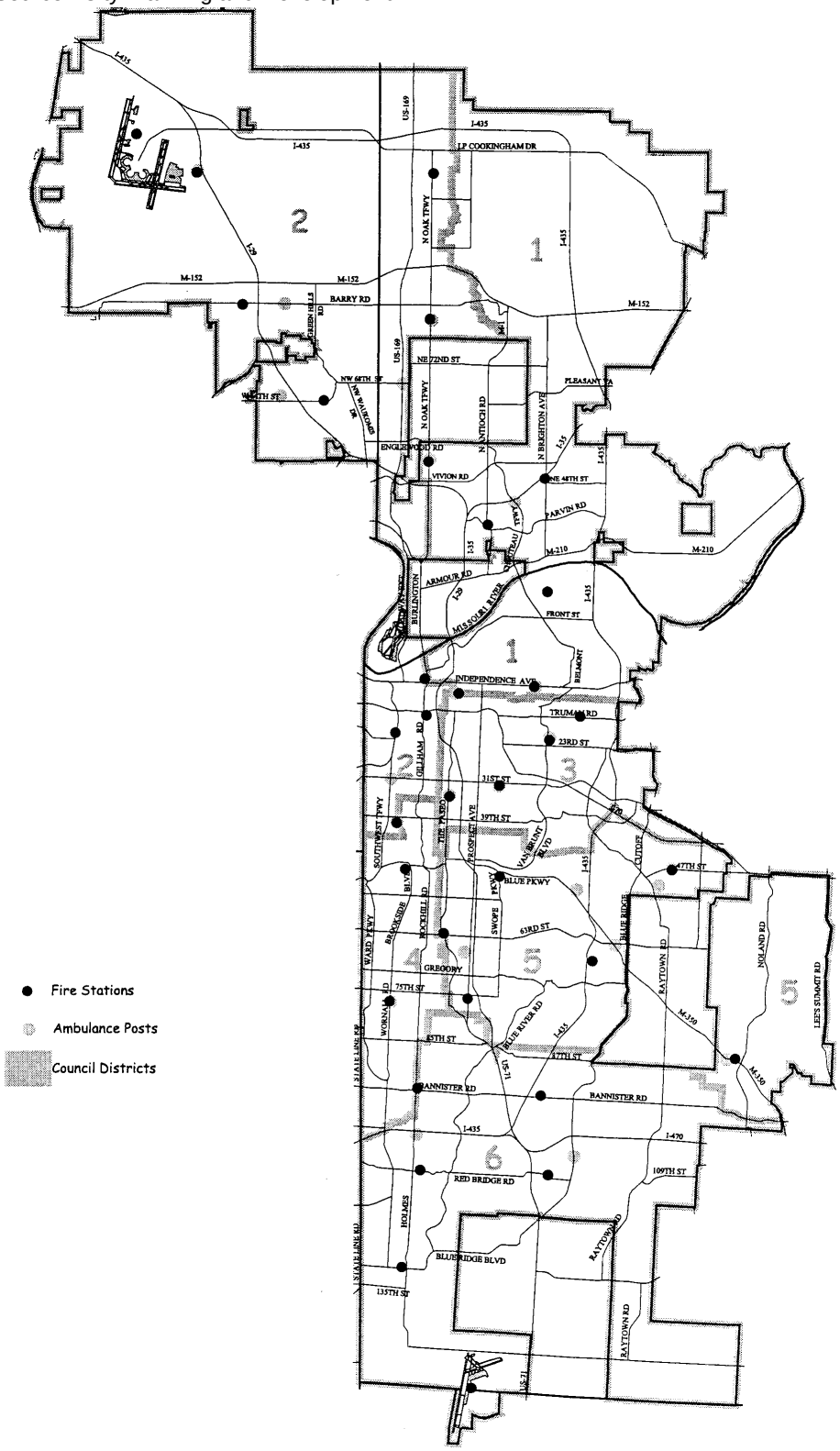
Type of Call	Number of Calls	Percent
EMS	17,538	58%
Service Calls	5,956	20%
Fire	4,378	14%
Hazardous Condition	1,532	5%
Public Education	512	2%
Rescue	177	1%
Good Intent	94	0%
Overpressure Rupture	11	0%
Total	30,198	100%

Source: Fire CAD data (2/1/99 – 8/31/99).

Fire incident reporting. Fire companies complete a computerized incident report and company resource report for each incident to which they respond. Selected fields are uploaded from the fire dispatch server into the fire reporting system on the city's mainframe computer, creating a report template with times, incident number, address, etc., already filled out. The captain or the battalion chief in charge of the entire incident completes the incident report, which shows type of incident, action taken, whether or not an ambulance was on the scene when the

Fire Department arrived, and additional descriptive fields for EMS incidents, e.g., vital signs, level of alertness, etc.

Exhibit 3. Ambulance Post Locations and Fire Stations
Source: City Planning and Development.



Findings and Recommendations

Summary

The EMS system is designed to be accessible, provide a high level of care quickly, and be financially stable. Most of the important functions of an EMS system are in place. Response time reporting for individual agencies is basically reliable, although not all components of system response time are currently measured and system wide response time is not measured and reported. We identified opportunities for improvement in first response and overall system evaluation and coordination. Technological improvements to link the Police, MAST, and Fire dispatch systems and synchronize their clocks could speed emergency medical dispatch and provide for better tracking of system performance. Appendix C summarizes the criteria we used to evaluate whether the system addresses the important functions of an EMS system and our findings.

First responder role should be integrated and clarified. While most roles are well-defined, the role of first response needs clarification. The city code does not specifically define the first responder role. References in the code and in the Health Department's rules and regulations to the "ambulance system" could allow for ambiguous interpretation regarding the extent to which first responders are subject to medical control and oversight. First responders should be part of an integrated system and should be medically supervised by a single system medical director. The Health Department currently focuses medical oversight of first response on cases where an automatic external defibrillator was used – these comprise a very small percentage of first response calls.

Changes in Fire Department staffing could improve EMT coverage. The Fire Department's first response could also be strengthened through changes in shift scheduling. The Fire Department's shift assignments are based on seniority. About 55 percent of the fire fighting force are state and city certified as emergency medical technicians (EMTs), but scheduling methods do not ensure that at least one EMT is assigned to each station on every shift. The purpose of first response is not just to respond quickly to potentially life-threatening emergencies, but to respond with the necessary skills.

Technology could speed dispatch. The Fire Department is concerned about a perceived delay in dispatching first responders. The largest portion of this time, however, is within fire dispatch. We found no evidence that MAST deliberately delays notifying the Fire Department of emergency medical incidents. However, dispatch time could be reduced. The median time to dispatch a fire company was 1 minute 48 seconds after MAST received an emergency call. Technological improvements and routinely measuring and reporting fire dispatch time could speed dispatch of first responders.

The 911 system is sometimes a bottleneck. Police Department reports show that about 77 percent of calls are picked up within 12 seconds, but the average delay in answering calls is increasing. The Police Department attributes the increase to turnover and difficulty in filling vacant positions. When all call takers on duty are on a line, additional callers hear a recording telling them to stay on the line or if they have a medical emergency to call MAST directly. Increased use of cellular phones has increased call takers' workload and reduced the usefulness of enhanced 911 service, which automatically provides the location and telephone number of the caller.

Police Department procedures may also slow emergency medical response. When 911 call takers believe a police response is also necessary, they enter information into the Police computer aided dispatch (CAD) system to initiate a police response and call MAST directly. MAST dispatchers then enter the information into their own CAD. If a first response is required, information is electronically transmitted to a terminal at the Fire Department and then manually entered into the Fire CAD. Information about one call is manually entered into three different CAD systems. Improved technology could link the separate systems, allowing efficient data transfer and quicker dispatching, and capture information that is currently not recorded.

Response time reporting is reliable, but system wide response time should be measured. Because the information systems are not linked and system clocks are not synchronized, it is difficult to measure system-wide response time. A process to evaluate the performance of the system as a whole would strengthen the system. Currently accountability mechanisms are in place, but these focus on individual agencies, particularly the ambulance service. Clarifying the health director's role as the lead responsible party for the system, improving coordination between all agencies including the Fire Department and Police Department, and measuring and reporting system response time could improve system performance.

Opportunity to improve cost-effectiveness. Economies of scale and flexible production allow for greater efficiency. MAST has exclusive

responsibility to provide emergency and non-emergency transport service. A consultant has identified special events coverage as another service that is not currently included in the ordinances. Allowing MAST exclusive responsibility to provide paramedic service for special events could improve the overall cost-effectiveness of the system.

System Designed to Provide Quality Care

The EMS system was designed to provide a high level of care quickly. Most roles are well-defined and accountability mechanisms are mostly in place. City code establishes response time standards and certification requirements for personnel and ambulances. Response times are publicly reported. Medical oversight and performance-based contracting align business interest with public interest.

While most roles are defined, the role of the first responder needs clarification. City code does not specify the first responder role and references to the "ambulance service" in the code and in the Health Department's rules and regulations could allow ambiguous interpretation of the extent to which first responders are subject to medical control and oversight. As the Fire Department's involvement in EMS has increased - over half of their calls for service are medical - the city needs to clarify how the department fits into the EMS system and how first responders should be held accountable. The Health Department has been reluctant to exercise authority over the Fire Department, and the culture of the Fire Department has resisted outside oversight.

Most Roles Are Well-Defined

Under city code, three elements comprise the public utility model in Kansas City: the city government through its health director, medical director, and the Emergency Physicians Advisory Board (EPAB); the Metropolitan Ambulance Services Trust (MAST); and the operations contractor. Their roles and responsibilities are described in the code and contractual agreements.

Health Director. Under city code, the health director is responsible for setting up regulations and standards to ensure high-quality medical care. These include protocols for type of care given, drugs and equipment to be stocked, certifying paramedics, emergency medical technicians, drivers, and dispatchers; approving the dispatch communication system, medical control communication system, and rate schedule; and disaster planning. The health director has delegated exercise of most of these

duties to the EMS medical director, whose responsibilities are described in a professional services agreement. The health director serves as an ex officio member of the MAST board of trustees and appoints EPAB members.

Emergency Physicians Advisory Board. EPAB assists the health director and the EMS medical director as the quality control arm of the system. EPAB is an advisory board composed of nine licensed physicians engaged in full-time emergency medical practice. EPAB makes recommendations to the health director on all medical elements of the system, including medical protocols and procedures and criteria for issuance, renewal, suspension, and revocation of permits and certifications. EPAB and the EMS medical director perform medical audits and studies or research projects related to EMS.

Metropolitan Ambulance Services Trust. MAST operates the business portion of the EMS system, and is responsible for billing and collections and establishing fees. MAST contracts with a private company for personnel to staff the ambulances and dispatch center, but owns or leases all of the equipment used in the system.

MAST was created in 1979 by a trust indenture, which was accepted by the City Council in Ordinance 50800. The city is the beneficiary of the trust. The indenture defines the purposes of the trust, the composition of the board of trustees, their powers, duties, terms in office, and appointment of successors. The trustees are composed of seven members: two elected council members; two licensed physicians with full-time practice in emergency medicine; a person with experience in health care or public administration; a representative of the business community with background in finance and banking; and a licensed lawyer with background in legal aspects of the health care industry. Trustees, except for the council members, serve three-year terms, but may be reappointed. The initial terms were staggered so all terms would not expire at the same time. Additionally, the city's finance director and health director serve as ex officio members.

Operations contractor. The operations contractor operates and staffs the ambulance dispatch center and ambulances. The contractor is paid a set price, eliminating the incentive to pad bills with unnecessary treatment or under-serve some areas of the city. The contract also includes performance incentives and penalties for not meeting response time standards.

The current contract between MAST and EPI runs from July 1, 1998, to June 30, 2001. The contract covers roles and responsibilities, operations management, scope and quality of work, financial provisions, provisions for expansion, general provisions, disaster assistance, data collection and reporting, administrative provisions, equipment and facilities furnished by MAST, personnel, insurance and indemnification, performance security, major default and takeover provisions, and reports.

Under the contract, EPI is to provide and manage delivery of ground ambulance services meeting or exceeding requirements of the System Standard of Care (code and protocols). Throughout the term of the contract, EPI has agreed to answer every request for ambulance service from within the contract service area to be answered by a certified paramedic-level EMD/SSC; dispatch a paramedic ambulance to each such request without call screening; transport every patient requesting transport to a medical facility by paramedic ambulance; and shall not accept or attempt to collect a fee from any patient.[5]

According to the contract, everything that might affect EPI's ability to perform is either made known to them prior to the award of the contract (e.g., equipment, facilities, Communications System, CAD System, etc.), or is under EPI's control (e.g., personnel hiring, fleet maintenance, in-service training, system status management, coverage levels, etc.).

The base monthly amount for Missouri operations is about $1,178,500, with add-on charges for extra work and incentives, and deductions from the base payment for penalties or noncompliance.

Annual contracts with MAST. Ordinance 990541, passed May 13, 1999, renewed the city's annual contractual agreement with MAST and authorized payment of about $1.7 million for the current fiscal year. The agreement requires MAST to submit a monthly financial report, quarterly evidence that tax obligations are current, a quarterly performance report comparing activities to program goals, reports required by the health director, and monthly in-service training reports to demonstrate compliance with the code.

Ordinance 990537, passed May 13, 1999, authorized a one-year $440,422 agreement with MAST to provide dedicated ambulance service to the Kansas City International Airport for the current fiscal year. Most

[5] *Contract for Paramedic Ambulance Services*, February 3, 1999, Sect. 5, Para. A.

of the funding is appropriated from the KCI airport safety fund; $131,362 is appropriated from the general fund.

Accountability Mechanisms Focus on Ambulance Service

Accountability mechanisms are described in the city code, the Health Department's Rules and Regulations for Ambulance Service, and in MAST's contract for paramedic ambulance service. The city code establishes response time standards and certification requirements for personnel and ambulances. The Health Department certifies personnel and conducts skills laboratories. Medical oversight is provided through protocols, medical audits, chart reviews, and case reviews.

Accountability mechanisms, however, focus on the ambulance service. Medical oversight of first response focuses on only a small portion of their role. The Health Department's enforcement to ensure that first responders remain certified and meet continuing education requirements has been weak.

Certification required. The code requires city permits and certificates for ambulance drivers and attendants, ambulance dispatchers, ambulances, and helicopter rescue units. The director of health is authorized to revoke or suspend any permit or certification issued pursuant to the provisions of the article if the person or unit fails to maintain the basic qualifications for issuance or otherwise constitutes a danger to the safety and health of patients. First responders and first responder units are not addressed.

The Health Department's Rules and Regulations for Ambulance Service states the certification and continuing education requirements for ambulance personnel, ambulance dispatchers, first responders, and base station physicians. The Health Department regulations distinguish between EMT-Basic/drivers and EMT-Basic/first responders. While the code requires certification to be renewed every two years, the Health Department recently changed its rules to require renewal every five years to be consistent with changes in state regulations.

City certification requirements are more stringent than state requirements. The city requires more in-service training, experience, and demonstration of field skills for EMS certification than the state. The Health Department issues probationary certificates to EMTs, paramedics, SSCs, and first responders after satisfactory performance on

a written test. Probationary certificate holders must successfully complete specified hours of duty and six hours of continuing education before they may be fully certified. The Health Department also conducts skills laboratories in which the medical director observes each EMT-driver and paramedic to assess patient care skills and compliance with medical protocols.

Exhibit 4. State and City Certification Requirements

Missouri	City of Kansas City
EMT-Basic Certification: • Current National Registry of EMTs as an EMT-Basic, EMT-Intermediate or EMT-Paramedic Certification Renewal: • Current National Registry, or • 100 hours of continuing education in a period of 5 years; and current Basic Cardiac Life Support training	**EMT-Basic/Driver** Probation Certification: • Current Missouri certification as at least an EMT-Basic • Current National Registry EMT-Basic certification • Current Basic Cardiac Life Support training • Ambulance driver certification • Written test Full Certification: • 6 months and 800 hours of duty • 6 hours of in-service training Certification Renewal: • 120 hours (24 hours/year) in-service training • Recertification test • Current certifications and training same as those required at probation certification
EMT-Paramedic Certification: • Current National Registry of EMTs as an EMT-paramedic Certification Renewal: • Current National Registry, or • 144 hours of continuing education in a period of 5 years; and current Advanced Cardiac Life Support training	**EMT-Paramedic or EMT-Paramedic/Driver** Probation Certification: • Current Missouri EMT-Paramedic certification • Current National Registry EMT-Paramedic certification • Current Basic Cardiac Life Support training • Current Advanced Cardiac Life Support training • Written test • Ambulance driver certification (for EMT-P/Driver) Full Certification: • 6 months and 800 hours of duty • 6 hours in-service training Certification Renewal: • 60 hours (12 hours/year) in-service training • Recertification test • Current certifications and training same as those required at probation certification
Ambulance Dispatcher No state certification requirements	**System Status Controller** Probation Certification:

	• Current Missouri certification of EMT-Paramedic • Current National Registry EMT-Paramedic certification • Advanced Cardiac Life Support – Provider • Successful completion of the KCMO EMS System Status Controller course • 2 year non-probationary, city certified EMT-Paramedic or EMT-Paramedic/Driver • Written test Full Certification: • 3 months and 500 hours of duty • 6 hours of in-service training Certification Renewal: • 60 hours (12 hours/year) in-service training • Recertification test • Current certifications and training same as those required at probation certification
First Responder The state requires that AED users receive training in defibrillator use and cardiopulmonary resuscitation.	**EMT-Basic/First Responder** Probationary certification: • Current Mo. EMT-Basic certification (including defibrillation upgrade) • Basic cardiac life support certification • Written test • AED skills assessment examination Full certification: • 6 months and 800 hours of duty • 6 hours of in-service training • 2 quarterly “demonstrations of skill proficiency” Certification Renewal: • 100 hours continuing education (20 hours/year) • Recertification test • Current certifications and training same as those required at probation certification

Sources: Missouri Revised Statutes, Section 190.092; Codes of State Regulations, 19 CSR 30-40.342; and Health Department’s Rules and Regulations for Ambulance Service.

Enforcement of first responders’ certification and renewal is weak. While the Health Department has requirements for first responder certification, enforcement to ensure that first responders remain certified and meet continuing education requirements is weak. The medical director recently reviewed files of the first 99 fire fighters in the EMS Division database and found that 71 of the 99 fire fighters had one or more outdated certificates. The Fire Department’s records showed that most of these fire fighters had up-to-date certificates, but apparently

paperwork had not been turned into the medical director. The medical director and Fire Department management have developed procedures to ensure that paperwork is completed and properly received. Unlike ambulance personnel, the Health Department does not require listing of

in-service hours, but accepts state EMT-Basic certification as proof of continuing education. We were told that the Health Department does not document instances of lapsed certifications or lack of continuing education for Fire Department EMTs.

Medical direction and oversight provide accountability. The EMS system provides medical oversight and direction of ambulance crews. The medical director and EPAB provide medical direction by developing protocols for the ambulance service. Base station physicians provide instructions to ambulance crews in the field. The Health Department tests and certifies base station physicians. Medical oversight is provided by chart reviews, case reviews and medical audits. The medical director conducts case reviews and chart reviews. EPAB conducts medical audits. Physicians have opportunity to provide input through EPAB or meetings of the Emergency Physicians Foundation.

Medical Oversight

Chart Review: A review of documents of cardiac arrest, intubation, and chest pain cases, such as run tickets, dispatching data, intubation datasheet, incident reports, or AED reports. It is a process of protocol compliance review by the EMS medical director.

Case Review: A review of an individual case where the EMS medical director discusses a problem identified during chart review with the individual ambulance staff and makes recommendation for improvement.

Medical Audit: An official inquiry into the circumstances involving an ambulance run or request for service. Medical audits are performed by EPAB on a diagnosis-specific basis to determine whether there are areas for improvement.

Source: Health Department.

EPI has quality improvement process. EPI has internal quality management policies and reports quality improvement activities to the medical director and EPAB. EPI's standard operating procedures (SOP) contains quality management policies, including proactive quality

management activities (i.e., quality planning, quality control, and quality improvement) and reactive measures (i.e., incident investigation). EPI submits a monthly quality improvement report to the medical director and EPAB on endotracheal intubation and nasotracheal intubation success rates, protocol compliance, and time studies.[6] The report tracks protocol compliance, time until patient contact, and how fast emergency treatment was given. EPAB and EPI managers use the report to identify training needs and areas for potential improvement within the ambulance service and individual ambulance staff who need additional training in specific skills.

Oversight of first response is limited to AED use. The Health Department only reviews Fire Department performance in cases where an automatic external defibrillator (AED) was used. These comprise a very small percentage of Fire Department responses. The certification and skills assessment processes are also focused on AED use. No one in the Health Department or Fire Department provides quality assurance over the majority of first responses.

First Response Role Is Unclear

The role and accountability of first responder needs clarification. City code does not specify the first responder role and references to the "ambulance service" in the code and in the Health Department's rules and regulations could allow ambiguous interpretation of the extent to which first responders are subject to medical control and oversight. The city should clarify how the Fire Department fits into the EMS system and how first responders should be held accountable.

First responder certification not specified in code. City code does not specify the first responder role. The health director has the authority to establish rules and standards to meet the intent of the article and is to establish a first responder program, but the model is not detailed in the code. The code defines first responder as "any person, fire department vehicle, volunteer unit or non-transporting ambulance unit capable of providing the appropriate emergency care, as evidenced by current certification in cardiopulmonary resuscitation, and such other evidence of training as may be required for first-responder designation by the director of health."[7] Although the definition implies certification requirements, these are not specified as they are for ambulance

[6] Endotracheal and nasotracheal intubation are invasive airway management techniques in which a tube is inserted into the trachea through the mouth or nose, respectively, to facilitate airflow (oxygen) into the lungs.
[7] Sec. 34-362.

personnel.

Health director oversight of Fire first responders implied, but not explicit. The code provides for the health director to oversee and develop standards for prehospital emergency care, which seems to include first response. However, much of the language in the article refers specifically to advanced life support and ambulance personnel, which could allow for ambiguous interpretation of how much authority the health director has over the Fire Department in provision of EMS. The Health Department's Rules and Regulations for Ambulance Service also refer to "ambulance service" rather than the EMS system as a whole.

In practice, the Health Department has been reluctant to exercise authority. The Health Department's medical oversight of first response has been limited to instances where an AED was used. While the Rules and Regulations for Ambulance Service state that EPAB develops medical and dispatch protocols for both ambulance and first responder organizations, the Fire Department's medical protocols do not indicate that they were developed by EPAB or approved by the health director. The medical director's position is partially funded through the Fire Department. Literature suggests that fire departments have been wary of outside oversight. System participants and stakeholders we talked to raised the issue of the Fire Department's cohesive culture and questioned how willing it would be to accept oversight.

Fire Department managers have expressed frustration at not being integrated into the system and agree that the health director should take a stronger oversight role. They have also raised questions about the Fire Department's role in assisting MAST in routine transports and the types of calls to which the Fire Department should respond.

First responders should be part of an integrated system and should be medically supervised by a single system medical director. The medical director should be independent of the organizations for which he has oversight responsibility. We recommend the city manager prepare an ordinance for council consideration that would amend the code to clarify and strengthen the health director's role as lead responsible party for the EMS system, including medical direction and oversight of first response. We also recommend that the health director ask EPAB to review medical protocols for first response and the types of incidents that require a first responder and make recommendations for the health director's approval.

Fire fighters not prohibited from using paramedic skills, but practical issues need consideration. Representatives of the fire union have said that it is illegal for fire fighters that are trained as paramedics to practice their skills when they are on duty as fire fighters. There is no provision in the code prohibiting fire fighters from practicing paramedic skills, however, there are operational issues to consider. For trained paramedics to use their skills when on duty as fire fighters, they would need medical protocols and equipment. There are currently no medical protocols governing paramedic first responders and fire fighters do not carry drugs or equipment necessary to implement advanced life support skills.

The number of paramedics the system can support is also an issue. Paramedics need to perform advanced life support skills to maintain an adequate skill level. Most EMS calls do not require advanced life support skills. Increasing the number of paramedics working in the system could result in some paramedics not having enough opportunities to practice their skills and to maintain skill level.

From a system perspective, it makes more sense to strengthen overall first response capability and ensure that first response is fully integrated into the system before expanding the first responder role. According to the Health Department, only one fire fighter currently holds city paramedic certification. Fire fighters may face barriers to meeting the city's certification requirements if they do not have an opportunity to work in the field.

Fire fighters' use of advanced life support skills should be integrated in the whole EMS system. Deciding whether and how to incorporate first response paramedics into the system should be a medical decision made in the context of resource allocation. Such a decision should be made when overall first response capability, medical direction and oversight, and the qualification process have been strengthened.

Response Time Reporting Provides Accountability

Response time is the primary measure of system performance written in the city code and in the operations contract. Response times are publicly reported. We found that response time reporting is reliable, but not all components of response time are measured.

Both MAST and the Fire Department report fractile response time to the MAST Board and EPAB. Fractile response time is the industry term used to describe response times reported as a frequency distribution

rather than an average. The distribution of response times provides a more accurate picture of reliability, because a lower average could be achieved by under-serving areas of the city with fewer calls.

City code establishes response time standards. For presumptively life-threatening emergencies, the code establishes a response time goal for ambulances of 90 percent under 9 minutes. The code requires MAST to contractually establish financial penalties for the operation contractor's failure to meet the established response times. MAST may not excuse the failure to meet response times, but the health director may, if the operations contractor establishes "extraordinary circumstances."[8]

The code also establishes a response time goal of 4 minutes for first responders. However, the language is less restrictive stating, "For all presumptively designated life-threatening emergencies through notification of the fire or police department, best efforts will be made to place a first-responder unit on the scene within four minutes."[9]

Ambulance Response Time Standards

Priority 1 (life-threatening emergency): <= 8 minutes and 30 seconds on not less than 90% of all response requests on a citywide basis, measured monthly, and not less than 89% in each Response District, measured for a three-month running calendar period.

Priority 2 (non life-threatening emergency): <= 10 minutes and 59 seconds on not less than 90% of all response requests on a citywide basis, measured monthly, and not less than 89% in each Response District, measured for a three-month running calendar period.

Priority 4 (unscheduled routine transfer, not scheduled at least 8 hours in advance of scheduled time): <= 60 minutes and 0 seconds from the receipt of the request, or the scheduled time, whichever is the later in time, on not less than 90% of all response requests on a citywide basis, measured monthly.

Priority 7 (scheduled routine transfer, scheduled at least 8 hours in advance of scheduled time): <= 15 minutes and 0 seconds from the scheduled time on not less than 90% of all requests on a citywide basis, measured monthly.

Source: Contract for Paramedic Ambulance Services.

[8] Sec. 34-368.

The contractual standard is stringent. MAST requires a more stringent standard for response time than the city code. MAST designates four response time priorities with which the contractor must comply. Emergency calls are presumptively designated as priority 1 or 2 in accordance with protocols. The response time standard for priority 1 calls is to respond within 8 minutes 30 seconds at least 90 percent of the time. For priority 2 calls, an ambulance is to respond within 10 minutes 59 seconds at least 90 percent of the time.

MAST's standard is comparatively strict. The 1998 market study compared measurement criteria for response time and penalties among public utility model systems. MAST starts the clock sooner than most of the agencies and, unlike most of the agencies, MAST does not cap per minute penalties. Several of the systems had a code 1 standard longer than 8 minutes 30 seconds, or only imposed a citywide standard.[10]

Ambulance Late Run Response Time Penalties

Life-Threatening Emergency	
Each minute over response time standard	$20/minute
Non-Life-Threatening Emergency	
Each minute over response time standard	$15/minute
Scheduled Routine Transport	
Each minute >15 minutes after the scheduled time	$10/minute
Unscheduled Routine Transport	
Each minute >60 minutes after the scheduled time	$8/minute

District Response Time Penalties

If response times for life-threatening emergencies do not meet 89 percent per ambulance response district over the most recent three calendar months, per minute penalties are increased by the following amounts:

85 to <89 percent compliance	$3/minute
80 to <85 percent compliance	$5/minute
75 to <80 percent compliance	$7/minute
<75 percent compliance	$10/minute

Citywide Response Time Penalties

If citywide response time compliance is below 89 percent for any month, the following monthly penalties apply in addition to the penalties assessed per run:

88 to <89 percent compliance	$10,000
87 to <88 percent compliance	$20,000
86 to <87 percent compliance	$30,000
85 to <86 percent compliance	$40,000
<85 percent compliance	$50,000

Source: Contract for Paramedic Ambulance Services.

[9] Sec. 34-368 (a)

[10] National Association of Public U
Trust, January 1998, pp. 11-15.

The contractor is penalized for each minute late on a call and for not meeting the monthly response time standard. The contract imposes penalties for not meeting the standard citywide and for not meeting the standard within response districts. The current contract establishes four response districts. (See Exhibit 14 in Appendix A.) Previous contracts used councilmanic districts to measure compliance. The city code currently requires MAST to report response times by councilmanic district.[11]

The Health Department and MAST audit response times each month by listening to 35 randomly selected code 1 and code 2 calls. They began conducting the audits after it was discovered that an EPI employee had falsified response time data. The Fire Department's response times are not routinely checked.

Response times reports are basically reliable. MAST and Fire Department dispatch records are reliable for measuring response times. We tested the reliability of response time measurement by listening to tapes of randomly selected ambulance and fire dispatches to test the accuracy of dispatch records and reviewing the computer programs used to generate MAST's and the Fire Department's reports.

We randomly selected 200 emergency (code 1 and code 2) ambulance responses occurring between June 1 and August 31, 1999. We listened to tapes of these calls and 112 corresponding fire dispatches. For MAST, we recorded the time the address was confirmed and the time the ambulance notified the dispatcher that they had arrived at the scene. For Fire, we recorded the times units were dispatched and the times they notified the dispatcher that they were on the scene. We calculated response time based on what we heard on tape and compared our calculations to response times computed from the dispatch records.

[11] Sec. 34-366(h).

Response Time Definitions

MAST measures response times from the moment of receipt of the 911 data transmission (i.e., location and callback number), or in the case of a 7-digit access, the receipt of location, callback number and chief complaint, to the time an ambulance reports arrival at the scene.

The Fire Department measures response times from the time a unit is dispatched to the time the first unit reports arrival on the scene.

Sources: Contract for Paramedic Ambulance Services and Fire Department.

On average, MAST's response times that we calculated based on listening to tapes was 16 seconds greater than those calculated based on CAD. We identified one code 2 call in which the response was greater than the standard but was not identified as such by the CAD. We were unable to listen to one incident in our sample because it was not taped. MAST uses a Microsoft Access interface to generate response time reports. We reviewed the queries and found that calculations are consistent with the contract requirements.

On average, the Fire Department's response times that we calculated based on listening to tapes was 8 seconds less than those calculated based on CAD. We identified one call in which the response was greater than the standard but was not identified as such by the CAD. We were unable to listen to two incidents in our sample because the Fire Department was unable to locate the tape.

Fire program over-counts long response times. The Fire Department reported a smaller percentage of incidents that reached their response time goal than they actually achieved. We reviewed the programs used to generate the Fire Department's monthly response time reports. We noted a problem that over counts responses greater than 11 minutes. We also found about 500 EMS calls missing from the Fire Department's May report, which probably resulted from an error in specifying the time range when running the report. In each case, the problem resulted in the Fire Department over-counting the proportion of calls not meeting their response time goal.

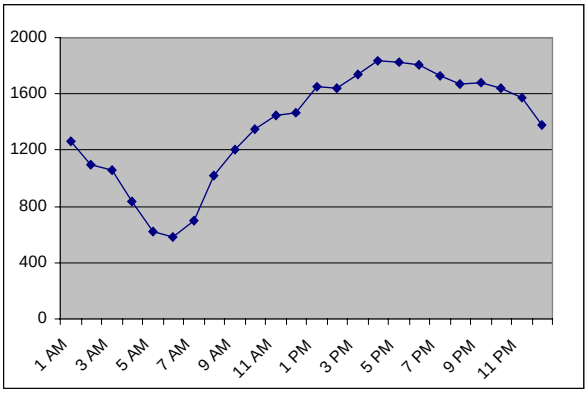
Ambulance response times have improved, but are below standard. Ambulance response time compliance has improved significantly over the seven months we reviewed, increasing from 79 percent in February

1999 to 87 percent in July and August 1999.[12] District compliance was short of 90 percent in three of four ambulance response districts in July and August 1999. The lowest compliance was in ambulance districts 1 (north) and 4 (south). The contractor achieved citywide compliance for code 2 calls in each of the seven months. (See Appendix A.)

The Fire Department's response times are also below standard. The Fire Department achieved its response time goal of four minutes after dispatch about two-thirds of the time. The percentage decreased over the seven months from 69 percent in February to 66 percent in August. Response times also varied geographically; about 40 to 50 percent of calls in battalion districts 105 (east) and 108 (north) had responses greater than 4 minutes. (See Appendix A.)

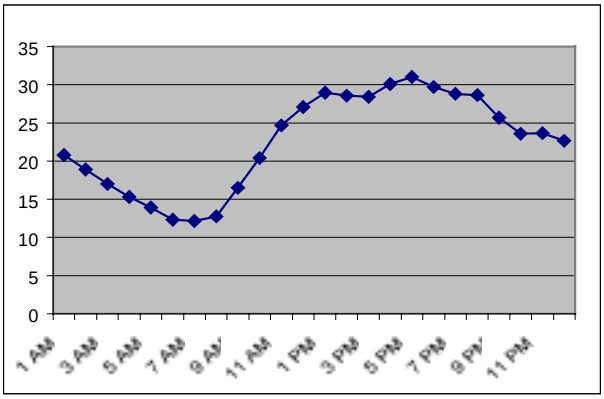
Variable staffing matches workload. Based on our analysis, the pattern of ambulance deployment matches the pattern of call volume. MAST operates under system status management, which varies staffing and post locations based on predicted demand. In theory, system status management ensures that enough units are in service to meet demand and reduces unit hours when demand is low. Call volume was highest between 2:00 PM and 7:00 PM. MAST deployed most ambulances from 1:00 PM to 9:00 PM. (See Exhibits 5 and 6.)

Exhibit 5. Calls Received by Hour of Day



Source: MAST CAD data (2/1/99–8/31/99).

Exhibit 6. Ambulance Deployment



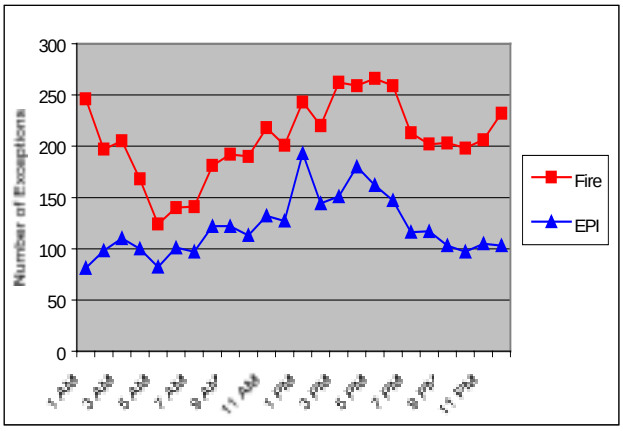
Source: MAST CAD data (2/1/99–8/31/99).

[12] MAST reported 90 percent compliance in July and 89 percent compliance in August, based on contractually approved adjustments. We considered upgrade and downgrade adjustments in calculating ambulance response times, but did not consider other contractually-approved adjustments such as overload, multiple ambulance responses, or adjustments made based on tape audits.

Although MAST and the Fire Department use different staffing and deployment strategies, the pattern of exceptions by hour of day was similar.[13] The Fire Department deploys a fixed number of companies based from fire stations, while MAST operates under system status management. Exceptions for both agencies peaked from 12:00 PM to 8:00 PM, when there were more calls for service. (See Exhibit 7.) The pattern suggests that external factors, such as traffic, may be driving exceptions.

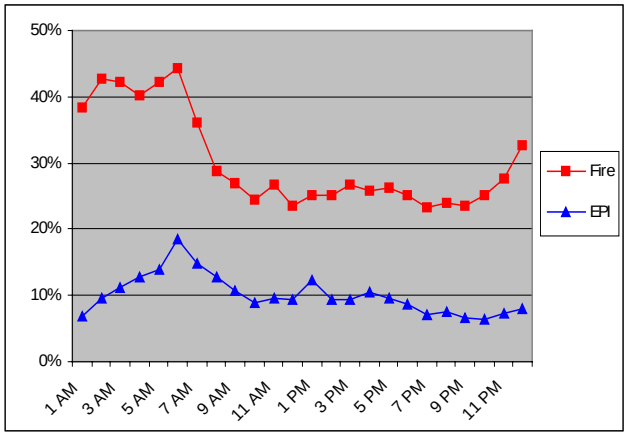
When compared to call volume, the Fire Department's exceptions show more variation. Fire Department exceptions ranged from about 45 percent in the hour between 6:00-7:00 AM to less than 25 percent in the hour between 6:00-7: 00 PM. The rates are highest from 12:00 AM to 7:00 AM, when call volume is lowest. (See Exhibit 8.)

Exhibit 7. Number of Exceptions by Hour of Day



Sources: MAST and Fire CAD data (2/1/99-8/31/99).

Exhibit 8. Rate of Exceptions by Hour of Day



Sources: MAST and Fire CAD data (2/1/99-8/31/99).

The Fire Department arrived first about half of the time. Both MAST and Fire responded to 92 of the incidents for which we reviewed tapes. Of these 92, the Fire Department arrived first 52 percent of the time. A first response was not required on 95 of the calls we sampled.

MAST owns an adequate number of ambulances. According to an industry expert, there should be 133 percent of peak time number of ambulances deployed in order to have enough ambulances to allow for backup and maintenance.[14] MAST has 45 ambulances dedicated to

[13] Exceptions are Fire EMS calls with a response time over 4 minutes, MAST code 1 calls with a response time over 8 minutes and 30 seconds, and Code 2 calls with a response time over 10 minutes and 59 seconds.

[14] Telephone interview with Jerry Overton, president of the National Association of Public Utility Models

Kansas City, Missouri, operations (excluding one public education unit). Based on our analysis, the number of ambulances deployed during peak hours is 32. The ratio is about 140 percent.

Improvements in First Response Would Strengthen System

Besides clarifying the role and accountability of first responders, we identified additional improvements to first response that would strengthen the EMS system. Changes in dispatching and shift scheduling could speed first response and ensure that first responders have necessary skills to deal with medical incidents.

Dispatch of first response has been controversial. The Fire Department is concerned about a perceived delay in dispatching first responders. Managers, fire fighters and fire dispatchers each told us that as the first responders they should not be the last notified. Questions about dispatching have generated numerous complaints, including allegations that MAST is deliberately withholding information. Fire dispatchers have complained about MAST's practice of paging ambulance crews prior to dispatch. Some members of the Fire Department have suggested that Fire should respond to more types of calls to reduce the amount of time it takes to determine that a first response is needed.

MAST link automatically transmits calls to Fire. We found no evidence that MAST deliberately delays notifying the Fire Department of emergency medical incidents. The Fire Department is the last agency notified, but they are notified automatically as soon as the MAST CAD determines that the incident is code 1 or one of the code 2 calls to which Fire responds. Once the system determines a first response is required, information is electronically transmitted from the MAST dispatch center to a terminal in the fire dispatch center. This interface is called the MAST link. We confirmed that the MAST link coding matches the memo describing which calls require a first response.

Fire dispatch slows first response. We calculated the median time to dispatch a fire unit as 1 minute and 48 seconds after MAST received the call. The largest portion of this time, however, was in fire dispatch. The median time for fire dispatchers to dispatch a call was 1 minute and 2 seconds once they were notified. The clocks of the MAST and Fire CAD systems are not synchronized. To calculate fire dispatch time, we

(NAPUM), July 9, 1999. Jerry Overton served as MAST's executive director from 1988 to 1991.

listened to the Fire Department channel on the MAST tapes and recorded the time of fire dispatch for a random sample of 103 incidents occurring between June 1 and August 31, 1999.

Improved technology and reporting could speed dispatch. Technological improvements and routinely measuring and reporting fire dispatch time could speed dispatch of first responders. The current system requires fire dispatchers to manually enter information received over the MAST link into the fire CAD. An interface that transmitted data directly into the fire CAD could reduce the amount of time necessary to dispatch a fire company. Also, the Fire Department does not measure dispatch time as part of its response time. Routinely measuring and reporting dispatch time could also speed fire dispatch.

Technological improvements should speed dispatch of first response, but additional work will be needed to combat the distrust centered around dispatch. The agencies need to collaborate rather than compete.

Shift assignments are based on seniority. Because not all fire fighters are required to be certified EMTs, assigning company members by seniority results in varying levels of qualifications among fire companies. Fire fighters hired since 1991 are required to be state and city certified as EMTs. However, the city's memorandum of understanding (MOU) with the fire fighter's union provides for seniority-based assignments. According to the MOU, the permanent member with the most seniority bidding on any vacancy shall be transferred to that vacancy. Vacancies are posted six times per year. Members are ineligible to bid for another assignment for one year after their transfer. A proposal was discussed but not adopted in the 1991 MOU negotiations that would have required assignment of at least two licensed EMTs per shift to designated companies.

Not all fire companies have EMTs assigned. Six of the department's 34 fire stations have at least one shift without an EMT, although about 55 percent of the fire fighting force are now state and city certified as EMTs. Station 1 (Richards Gebaur) has two shifts without an EMT. The other stations without at least one EMT on each shift are located north and east: 9205 NW 112th St., 7511 NW Barry Rd; 8100 N Oak Trafficway; 7504 E 67$^{th;}$ and 12900 E 350 Highway.

The number of Fire Department EMTs increased, but the outlying areas of the city do not have enough EMTs assigned. We reported in 1993

that about 26 percent of the fire fighting force were EMTs[15]. At the time only 20 companies had at least one EMT assigned per shift and companies that responded to more medical calls had relatively fewer EMTs. We recommended targeting EMT training to companies that most frequently responded to EMS calls and negotiating changes in the MOU provisions to make it easier to assign people with special skills where they were most needed. These recommendations were not implemented, but the distribution of EMTs has improved by default as the number of EMTs on the fire fighting force increased. While the busiest companies now have an EMT assigned, the outlying areas of the city are underserved.

The current deployment of AEDs could increase time to defibrillation in outlying areas of the city. Health Department regulations currently require first responders to be certified as EMTs in order to use an AED. Therefore the assignment of EMTs affects the distribution of AEDs. The Fire Department has 40 AEDs, with one in reserve. While the department has enough AEDs and certified staff to deploy an AED on at least one unit per station, current shift assignments do not provide for this deployment. Studies have shown that early defibrillation is a key to surviving a cardiac arrest.

The city's requirements for AED certification are more stringent than the state. State law changed in 1998 to allow non-EMTs to use defibrillators. EPAB voted unanimously October 13, 1999, to retain the tougher standard. However, the decision was not based on medical criteria. EPAB cited the need for personnel acting as first responders to have EMT skills as the primary reason for their decision. A point paper regarding the decision states, "There are only relatively few calls that result in the use of an AED, but many where EMT skills can be used."[16] The paper also notes that deployment could be achieved now and EPAB is reluctant to recommend changes while this audit of the EMS system and the special EMS committee review are underway. The American Heart Association has supported expanded access to AEDs.

We recommend the fire chief ensure that EMTs are deployed on all fire companies to ensure that all areas of the city are adequately served. We also recommend that the health director ask EPAB to review current restrictions on use of AEDs based on medical criteria and consider allowing non-EMTs to use them.

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[15] Office of the City Auditor, City of Kansas City, Missouri, *Performance Audit Fire Fighting Force: Resource Allocation*, April, 1993, pp. 42-43.

[16] Point paper from October 13, 1999, EPAB meeting.

Overall System Evaluation and Coordination Would Strengthen System

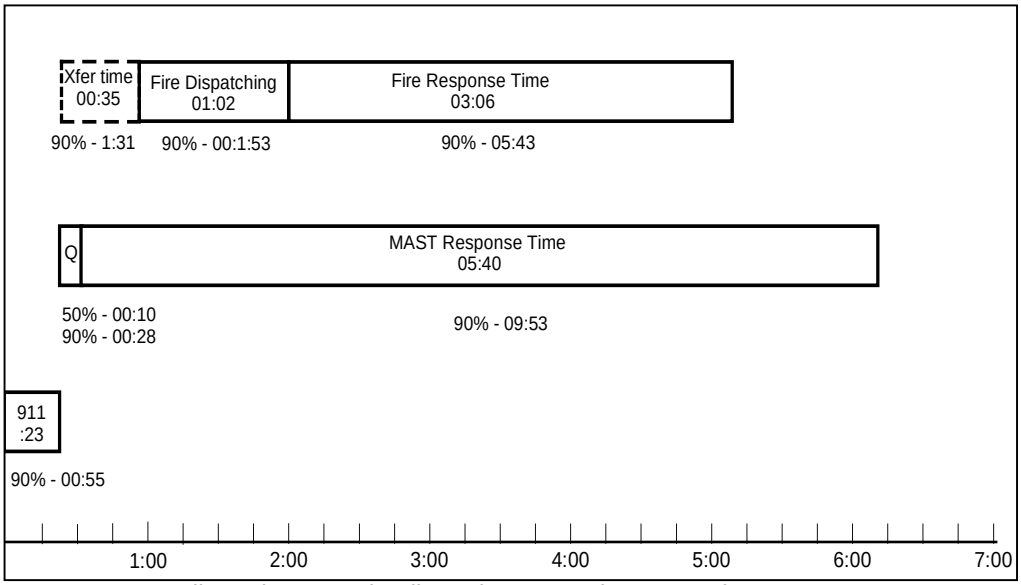
We identified improvements in overall system evaluation and coordination that would strengthen the EMS system. Evaluation methods currently focus on individuals or agencies rather than the system as a whole. Additional system-wide evaluation, communication, and coordination would strengthen the system.

Not all components of response time are measured. The information systems are not set up to facilitate analysis of system performance. It is time-consuming and difficult to piece together an entire EMS event from the point it enters the EMS system. Information about a call may be recorded in four different systems: the 911 telephone system, the Police Department's CAD, the Fire Department's CAD, and MAST's CAD. There is no identifying number common to all systems and the clocks of the four systems are not synchronized.

Response time is the primary measure of system performance, but not all components of response times are measured and reported. We used our sample data to calculate system-wide response time and compare response time components. Total response time from the caller's perspective includes 911 and dispatch time.

Exhibit 9. Median Response Time Components[17]

[17] The total response time is not necessarily equal to the sum of the components. The number of calls used to calculate statistics for each component varied, depending on the call. MAST response time includes both Code 1 and Code 2 calls.



Sources: MAST dispatch tapes, Fire dispatch tapes and 911 records.

Based on our sample, the median amount of time between when a caller dialed 911 and MAST received the call was 23 seconds. (See Exhibit 9.) It took MAST an additional 10 seconds to confirm the address where an ambulance was needed (indicated by Q in the exhibit). The median time for MAST to transfer information to the Fire Department when a first response was needed was 35 seconds after they received the call. The information is transmitted automatically once the priority is established, while MAST is still talking to the caller. The median time for the Fire Department to dispatch a unit once they received the information was 1 minute 2 seconds. The bars labeled fire response time and MAST response time show the median response times as they are measured based on the agencies' definitions.

We were only able to match 91 of our sample of 200 calls to 911 records. These were calls that were transferred directly to MAST. We were unable to match calls in which the Police Department called MAST directly, or some calls that originated from cellular phones. While the calls that we matched took about 23 seconds to process, it is likely that the calls we could not match took longer because data were not transferred automatically. Depending on the type of call and how many agencies needed to respond, information could have been manually entered into three separate computer aided dispatch (CAD) systems.

Improved technology could link currently separate public safety systems, allowing efficient data transfer and quicker dispatching; and capture information that is currently not recorded. When 911 call takers believe a police response is also necessary, they enter information into the

Police CAD system to initiate a police response and then call MAST directly. MAST dispatchers then enter the information into their own CAD. If a first response is required, information is electronically transmitted to a terminal at the Fire Department and then manually entered into the Fire CAD. Sometimes information about one call is manually entered into three different CAD systems.

Coordination needed. System coordination and collaboration is one of the key functions of an EMS system. A lead agency should coordinate system activities, including integration of fire, law enforcement, and EMS response. Many of the stakeholders we talked to expressed concern about lack of communication among agencies. The Ad Hoc EMS committee seems to provide a forum for inter-agency communication and coordination. However, it has not met regularly. Meetings were cancelled seven times over eleven months (July 1998 to June 1999), due to lack of an agenda. This was a period of considerable stress to the system, including discovery that a former EPI employee had falsified response time data and publicity regarding Fire Fighter Local 42's efforts to commence a study on the feasibility of a fire-based system.

The health director should take a stronger role in coordination and collaboration of agencies, including regular meetings of public safety agencies. In addition, the health director should report system wide response times. The city should invest in technological improvements to link the Police, MAST and Fire dispatch systems and synchronize their clocks to speed emergency medical dispatch and provide for better tracking of system performance.

EMS System Is Designed to Be Accessible; but Delays Increasing

The EMS system is designed to be accessible. It provides for access through a single, universally recognized emergency number. The system is designed to provide access regardless of economic status or special need. The 911 system is sometimes a bottleneck, however. Police Department reports show that about 77 percent of calls are picked up within 12 seconds, but the average delay in answering calls is increasing. In February 1999, 82 percent of calls were picked up within 12 seconds, the percentage decreased to 65 percent in August. When all call takers on duty are on a line, additional callers hear a recording telling them to stay on the line or if they have a medical emergency to call MAST directly. The recording has generated complaints about the system.

Public education efforts are currently targeted toward children. The health director and executive director of MAST think adult public education is a weakness. Coordinating public education provided by the different agencies would provide for better targeting of efforts to at-risk populations.

Public access to the EMS system is through enhanced 911. The enhanced 911 system provides call takers with the phone number and billing address associated with the number from which the call originates. This feature allows timely responses to callers who are unable to communicate their needs and eliminates some data entry. The system is accessible to callers with special needs. 911 call takers and MAST and Fire dispatchers have access to language lines, which can provide translation services for non-English speaking callers. Callers with hearing impairment can access 911 through TDD functions.

The system provides geographic equity. The city code and operations contract provide for geographic equity. The ambulance contractor is penalized for not meeting response time standards in different areas of the city. The contractor has an incentive not to underserve less populous areas of the city. However, not every fire station has EMTs assigned to each shift, which results in the outlying areas of the city being underserved.

The system provides financial access. The city code and operations contract also provide for financial access. The operations contractor is required to respond to all calls for service and is not involved with billing. Thus the contractor has no incentive to underserve less affluent areas of the city. In addition, MAST has a program to cover costs of persons with no assets.

Time to answer 911 calls is increasing. While the system is designed to be accessible, 911 call taking is sometimes a bottleneck. The Police Department's 911 system reports show the average time to answer 911 calls has doubled over the past several months, from 9 seconds in February 1999, to 19 seconds in August 1999. The percentage of calls answered within 12 seconds decreased steadily over the seven months we reviewed, from 82 percent in February to 65 percent in August. The Police Department attributes this increased delay to turnover and difficulty in filling vacant call taker positions. The report shows that callers abandoned 14 percent of 911 calls between February and August 1999. Call takers are expected to call back the abandoned calls when they are not on a line. Thus more abandoned calls contribute to tying up the phone lines.

When all call takers are on a line, callers hear a recording telling them to stay on the line or call MAST or Fire directly at their respective seven-digit numbers. People experiencing a medical emergency may not have a pencil handy and may have difficulty remembering a seven-digit number to dial. The Police Department does not track how often callers get the recording – but call takers are aware of the queue and length of time that the earliest call has been in queue. According to a communications unit supervisor, current technology does not allow giving callers the option of connecting directly because Fire and MAST are separate numbers. They are not "extensions" of 911.

911 workload has increased over the past few years with increased use of cellular phones. Call takers often get more than one call for incidents such as car accidents. Cellular phones do not allow for the automatic location and telephone number of the caller, requiring call takers to manually enter information into the dispatch system. A recent state ballot initiative would have funded 911 improvements by assessing a charge on cellular phones. This initiative was defeated.

The chief of police should take steps to reduce turnover among call takers and increase the proportion of filled positions. The city should support future efforts to improve the 911 system.

Coordination Could Improve Public Education

Public education is considered the first phase in an EMS response. The public must have some idea what EMS is, what it is for, how to access it, and what to do before it arrives. Both MAST and the Fire Department offer public education programs primarily targeted toward children. MAST's primary targets are kindergarten and elementary school kids. MAST's programs "Caring for Kids" and "MASTMAN's 9-1-1 Awareness Coloring Contest" are intended to teach children about 911 and what to do in an emergency. The Caring for Kids program earned a national award from the American Ambulance Association in 1996. The Fire Department's primary targets are high school students. The department teaches CPR and first aid in the health classes for freshmen at several school districts. MAST and the Fire Department also provide presentations or demonstrations to groups on request, such as neighborhood groups, social gatherings, and some conferences. According to the medical director, the Health Department does not provide any programs for EMS public education.

Systematic coordination of EMS public education among agencies

would provide for better targeting of at-risk groups. The health director and executive director of MAST have identified adult public education as a weakness. The system does not target education efforts to at-risk adults.

EMS System Is Designed to Be Financially Stable

Most of the EMS system's funding is through stable and viable sources – city taxes, and public and private insurance. The system is designed to provide, on balance, a specific level of service with incentives to control costs. About 87 percent of MAST's revenue is from patient billing. Proposed changes in Health Care Financing Administration reimbursement will have some effect on system revenues.

Economies of scale and flexible production allow for greater efficiency. MAST has exclusive responsibility to provide emergency and non-emergency ambulance service. A consultant has identified special events coverage as another service that is not currently included in the ordinances. Allowing MAST exclusive responsibility to provide paramedic service for special events could improve the overall cost-effectiveness of the system.

Performance contracts control costs. Ambulance service is provided through a performance-based contract that includes response time goals and penalties for failure to meet those goals. Performance contracts are a method to improve service, control costs, and increase accountability. The contractor has incentives to operate efficiently to meet the performance goals. For example, the contractor is able to match ambulance deployment and staffing to workload patterns as a way to reduce costs.

Competition provides incentive to control costs. The code allows for ambulance service to be provided through competitive bid or a negotiated process following a study of market conditions. This allows for some flexibility to take advantage of a market should there be a likelihood of competition or to negotiate if that appears to be the best approach. Negotiating the contract avoids the costs of going out for bid, while the market study provides competitive pressure. The city obtains

the benefits of competition while owning the equipment, and can therefore minimize the impact of service disruption.

Public funding is stable. First response is provided as a regular city

service of the Fire Department. The Police Department provides 911 call taking and the Health Department provides medical direction and oversight. The normal city budget and oversight processes help control the costs of these services.

Total system cost includes public health and safety. It is difficult to assess how much the EMS system costs, because cost information is incomplete, and for the Police and Fire departments, EMS is only a portion of what they do. The marginal costs of the Fire and Police department services may be low to the extent that existing infrastructure and personnel can be used to provide EMS services. However, additional training, wear and tear on equipment, and opportunity costs should be considered.

Public safety costs most directly related to EMS are about $56 million this fiscal year. This includes the budgets for the Health Department's EMS Division; the Fire Department's EMS, Fire Fighting Force and Communications divisions; and the Police Department's Communications Unit.[18] MAST has budgeted about $25 million this year for ambulance service in Missouri. About 87 percent of MAST's revenue is from patient billing. While the direct city subsidy for the ambulance service is about $3.75 per capita, the public cost of the EMS system is much higher. The Health Care Financing Administration has proposed changes in Medicare reimbursement for ambulance services, which would reduce revenue, but the full impact on revenue is unknown.

The system is designed to take advantage of economies of scale and flexible production to decrease overall costs. Costs are reduced if economies of scale can be realized because fixed costs can be spread over a greater population. Fixed costs include the cost of equipment and facilities. Because MAST has exclusive market rights under the city code to provide emergency and non-emergency medical transport services, it serves a greater population and can keep costs lower. With flexible production, every unit is staffed and equipped at the ALS level – a fully-equipped paramedic responds to every call for service. Equipping

every unit to be capable of handling all types of calls allows for greater flexibility in handling peak demands, while allowing surplus capacity to be used in non-emergency situations.

[18] The Police Department budget only includes personnel salaries and does not include the costs of benefits such as health insurance or pensions, or equipment costs. The Fire Department budget does not include depreciation. The $56 million also includes a $1.7 million city subsidy and $440,00 funding for dedicated ambulance service at KCI Airport.

Geographic coverage is expensive. Most of the cost of EMS is maintaining the ability to respond. Kansas City's relatively low population density and stringent response time standards increase the cost of EMS.

The Polaris Group, retained by the Health Department to aid the city's EMS committee, identified special events coverage as another opportunity to increase economies of scale. The code does not currently provide MAST an exclusive market to provide paramedic service at special events. Amending the code to allow MAST exclusive responsibility to provide such service would improve the cost-effectiveness of the EMS system.

Market study should be redone. The last market study, conducted in January 1998, found that EPI provided good value, but the study was done when response time data had been falsified. The study calculated a total cost per unit hour of $92.67 and unit hour utilization of 0.34 (both of which were a little lower than the mean and median of the other agencies included in the study).[19] MAST has added three ambulances and EPI has increased the number of shifts to try to meet response time goals. The market study should be redone to determine whether the contractor has provided good value and remains competitive. After completing the study, the MAST Board should determine whether the system should be competitively bid.

Except for the market study, the MAST Board does not routinely track efficiency measures such as the cost per transport, cost per unit hour and unit hour utilization. These are the industry's primary measures of economic efficiency. The MAST Board should routinely track measures of economic efficiency because it is in MAST's interest to have a viable contractor. The MAST Board should take an active role in monitoring the continued financial viability of the contractor to ensure it can remain in operation over the term of the contract.

According to MAST's executive director, the National Association of Public Utility Models (NAPUM) is planning to conduct an annual study to collect benchmark data from members. He said that MAST will participate in the studies and thus will monitor efficiency measures. The MAST Board currently tracks and reports collection rates, composition of payors, cash flow and investment activity. The Board has recently

[19] Unit hour utilization measures the amount of time devoted to revenue-producing activity. It is calculated by the sum of hours a staffed, equipped ambulance is on duty divided by the number of transports.

established a financial subcommittee to more closely monitor financial position.

Recommendations

1. The city manager should draft an ordinance for Council consideration that would clarify and strengthen the role of the health director as lead responsible party for the EMS system, including medical direction and oversight of first response.

2. The city manager should include in the draft ordinance a provision to allow the Health Department to require recertification up to every five years, rather than every two years.

3. The city manager should include in the draft ordinance a provision to recognize the proper reporting of response time by districts established by MAST, rather than reporting of response times by council districts.

4. The city attorney should investigate the feasibility of allowing MAST exclusive responsibility to provide paramedic service for special events.

5. The city manager should work with the Police Department, the Fire Department, and MAST to develop a plan to link the CAD systems and synchronize system clocks to facilitate system wide performance reporting.

6. The health director should publicly report system wide response time.

7. The health director, based on the recommendations of EPAB, should reconsider whether non-EMTs should be allowed to be certified to use AEDs.

8. The health director should review and approve medical protocols for first response, including the types of calls that require a first response.

9. The health director should coordinate regular meetings with the agencies involved with EMS, including Police and Fire.

10. The fire chief should ensure that at least one EMT is deployed on each company on each shift.

11. The health director should coordinate public education activities to better target at-risk groups.

12. The MAST executive director should recommend that the MAST Board conduct another market study to determine whether the contractor provides a good value and whether the ambulance service should be put out for bid.

13. The MAST executive director should develop procedures for the MAST Board to take an active role in monitoring the continued financial viability of the contractor to ensure it can remain in operation over the term of the contract.

14. The police chief should take steps to reduce turnover among 911 call takers and increase the proportion of filled positions.

Appendix A

Response Time Compliance Frequency Distributions

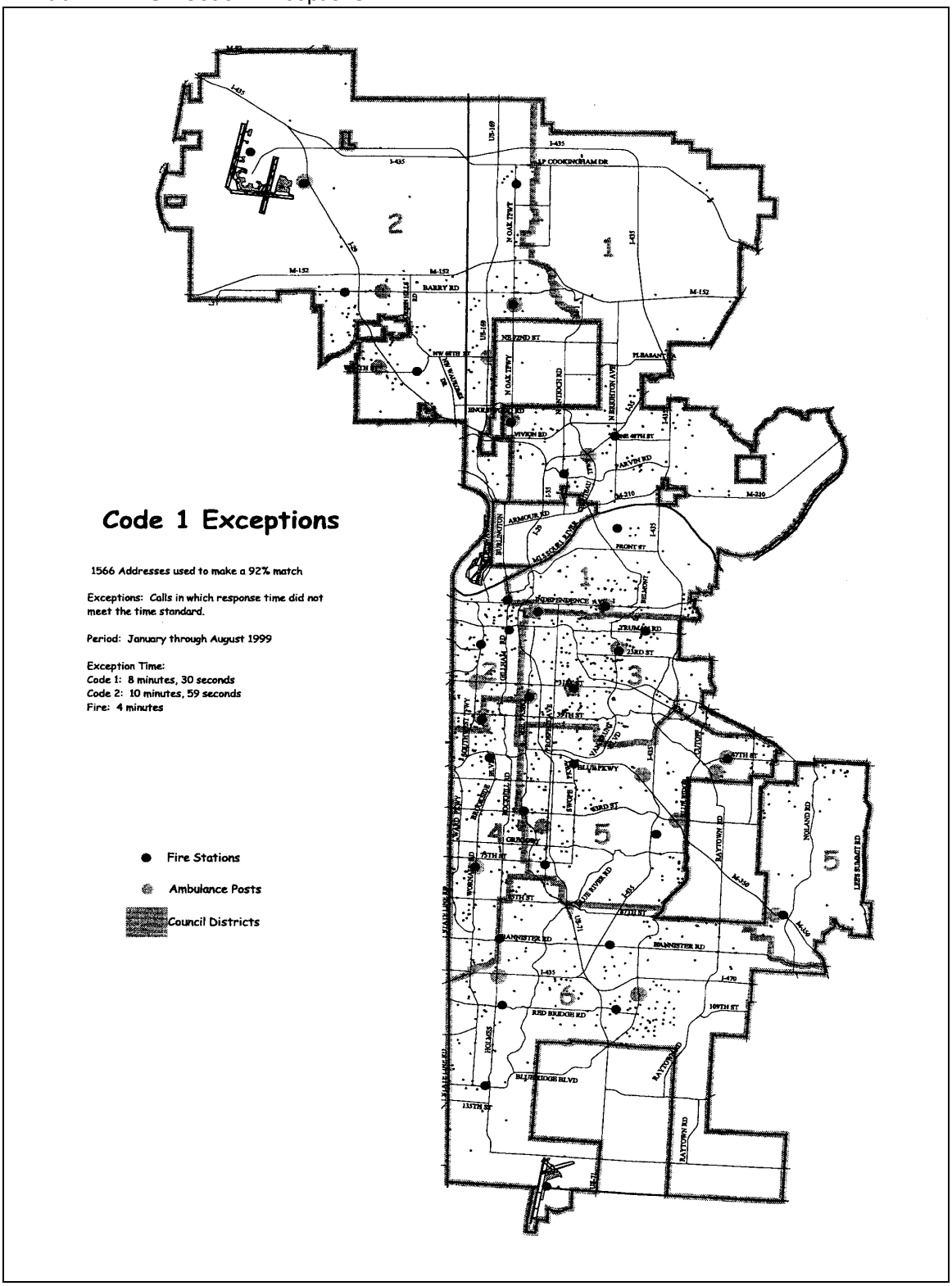
Exhibit 10. Ambulance Response Time Compliance Code 1[20]

Response Time	February	March	April	May	June	July	August
0:00:30	0%	0%	0%	0%	0%	0%	0%
0:01:00	0%	0%	0%	1%	1%	1%	1%
0:01:30	1%	1%	1%	2%	1%	2%	2%
0:02:00	2%	2%	2%	3%	3%	4%	3%
0:02:30	3%	4%	5%	6%	6%	7%	5%
0:03:00	6%	7%	9%	11%	10%	11%	11%
0:03:30	11%	11%	15%	17%	16%	18%	17%
0:04:00	18%	17%	21%	24%	24%	26%	25%
0:04:30	24%	25%	29%	33%	33%	35%	33%
0:05:00	32%	32%	38%	42%	41%	43%	44%
0:05:30	39%	41%	46%	51%	49%	51%	52%
0:06:00	48%	48%	54%	61%	57%	60%	60%
0:06:30	56%	55%	61%	67%	63%	67%	68%
0:07:00	63%	61%	69%	74%	71%	74%	74%
0:07:30	68%	67%	74%	80%	76%	79%	79%
0:08:00	74%	73%	79%	83%	81%	84%	84%
0:08:30	79%	78%	84%	86%	85%	87%	87%
0:09:00	83%	82%	87%	89%	88%	90%	90%
0:09:30	86%	85%	90%	92%	91%	93%	92%
0:10:00	89%	88%	92%	94%	92%	94%	94%
0:10:30	92%	91%	94%	95%	94%	95%	95%
0:11:00	93%	93%	95%	96%	95%	97%	96%
0:11:30	95%	94%	96%	97%	96%	97%	97%
0:12:00	96%	95%	97%	97%	97%	98%	97%
0:12:30	96%	96%	98%	98%	97%	98%	98%
0:13:00	97%	97%	98%	98%	98%	98%	98%
0:13:30	98%	97%	98%	98%	98%	99%	98%
0:14:00	98%	98%	99%	99%	99%	99%	99%
0:14:30	98%	98%	99%	99%	99%	99%	99%
0:15:00	98%	99%	99%	99%	99%	99%	99%

Source: MAST CAD data (2/1/99 – 8/31/99).

[20] Code 1 calls are life-threatening emergencies. MAST's Contract for Paramedic Ambulance Service sets the response time standard of at least 90 percent of responses within 8 minutes 30 seconds for code 1 calls.

Exhibit 11. MAST Code 1 Exceptions



Source: City Planning and Development.

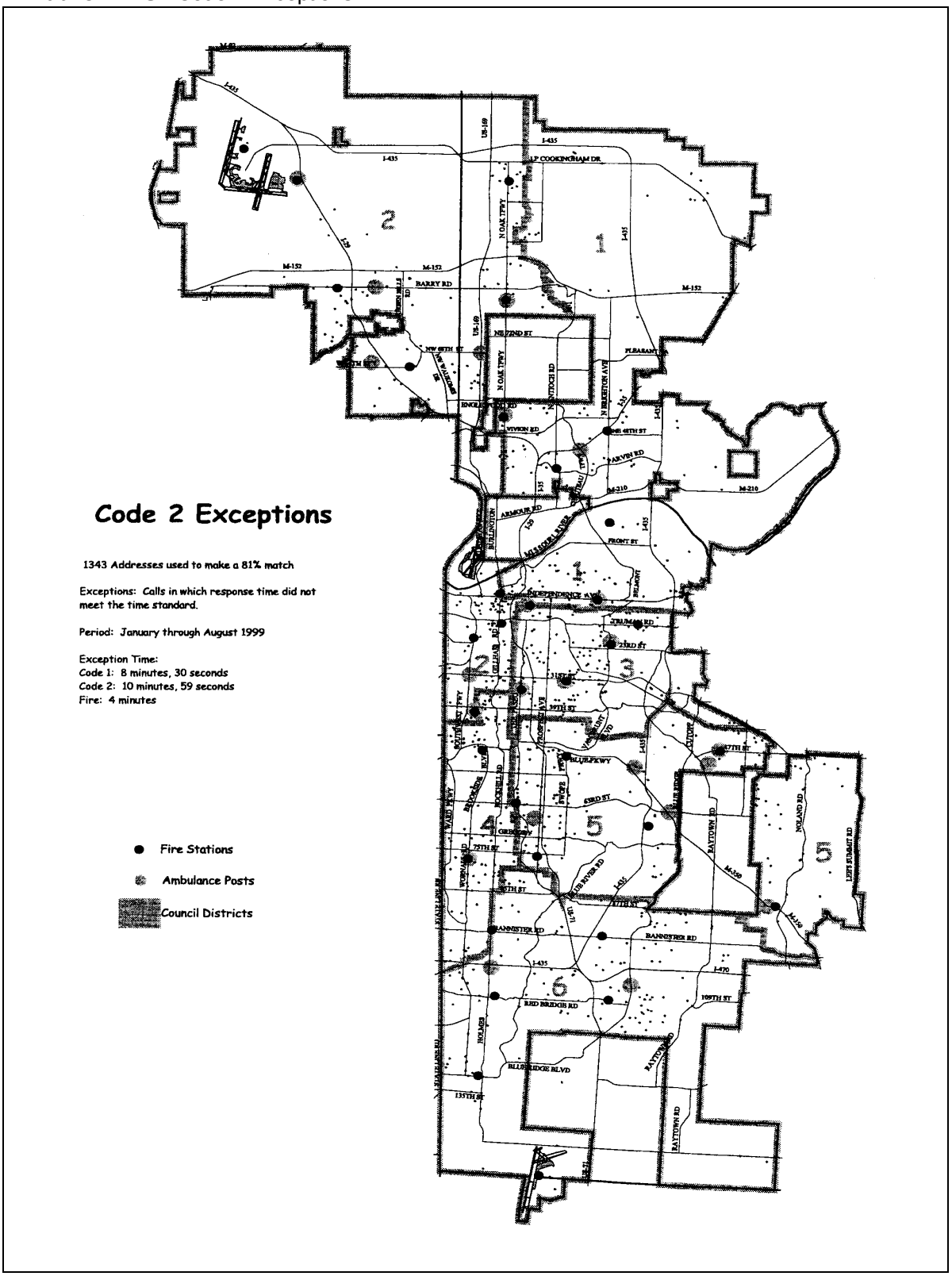
Exhibit 12. Ambulance Response Time Compliance Code 2[21]

Response Time	February	March	April	May	June	July	August
0:00:30	1%	1%	1%	1%	1%	1%	1%
0:01:00	2%	2%	2%	2%	2%	2%	3%
0:01:30	2%	3%	3%	3%	3%	4%	4%
0:02:00	4%	4%	4%	5%	5%	6%	6%
0:02:30	6%	7%	7%	9%	9%	10%	9%
0:03:00	9%	10%	12%	14%	13%	15%	14%
0:03:30	14%	14%	18%	20%	19%	21%	21%
0:04:00	19%	19%	25%	27%	26%	28%	28%
0:04:30	26%	26%	32%	34%	34%	36%	35%
0:05:00	32%	33%	41%	43%	42%	44%	42%
0:05:30	40%	40%	48%	49%	50%	51%	50%
0:06:00	46%	46%	55%	57%	57%	58%	58%
0:06:30	52%	53%	62%	63%	63%	66%	65%
0:07:00	59%	59%	68%	69%	70%	72%	71%
0:07:30	65%	65%	73%	74%	75%	77%	77%
0:08:00	70%	71%	77%	78%	80%	81%	82%
0:08:30	75%	76%	81%	82%	83%	85%	86%
0:09:00	79%	80%	85%	86%	87%	88%	88%
0:09:30	83%	83%	88%	89%	89%	90%	90%
0:10:00	86%	86%	90%	90%	91%	92%	92%
0:10:30	89%	89%	91%	92%	92%	93%	94%
0:10:59	91%	90%	93%	94%	94%	95%	95%
0:11:00	91%	90%	93%	94%	94%	95%	95%
0:11:30	92%	92%	94%	96%	95%	96%	96%
0:12:00	93%	94%	95%	96%	96%	96%	96%
0:12:30	94%	95%	96%	97%	97%	97%	97%
0:13:00	95%	96%	97%	98%	97%	97%	98%
0:13:30	96%	97%	97%	98%	98%	98%	98%
0:14:00	97%	97%	98%	99%	98%	98%	98%
0:14:30	97%	98%	98%	99%	98%	98%	99%
0:15:00	98%	98%	98%	99%	98%	99%	99%
0:15:30	98%	99%	99%	99%	99%	99%	99%
0:16:00	99%	99%	99%	99%	99%	99%	99%
0:16:30	99%	99%	99%	99%	99%	99%	99%
0:17:00	99%	99%	99%	99%	99%	99%	100%
0:17:30	99%	99%	99%	99%	99%	99%	100%
0:18:00	99%	99%	100%	99%	99%	99%	100%
0:18:30	99%	99%	100%	100%	99%	99%	100%
0:19:00	99%	99%	100%	100%	99%	99%	100%
0:19:30	99%	100%	100%	100%	99%	100%	100%

Source: MAST CAD data (2/1/99 – 8/31/99).

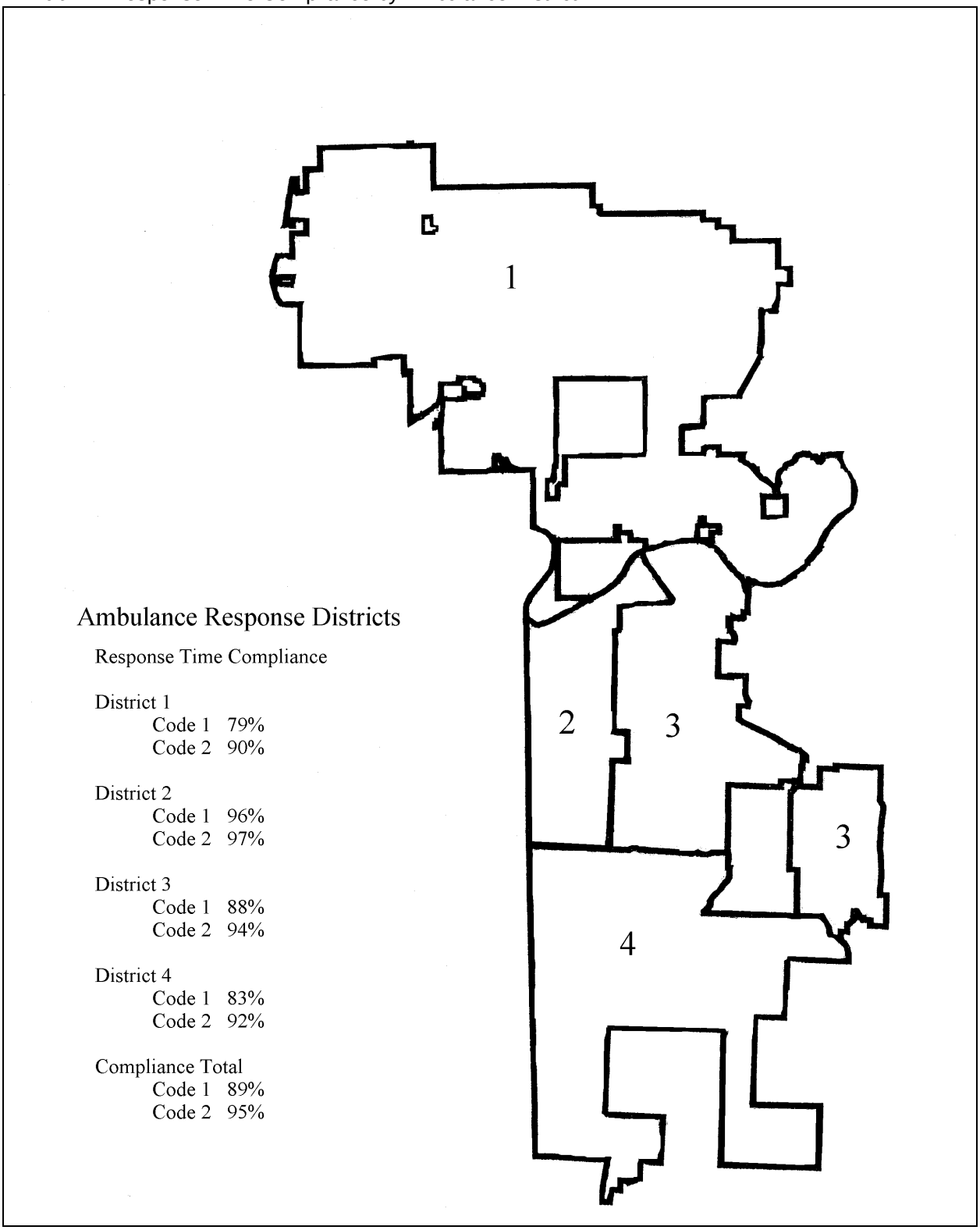
[21] Code 2 calls are non-life-threatening emergencies. MAST's Contract for Paramedic Ambulance Service sets the response time standard of at least 90 percent of responses within 10 minutes 59 seconds for code 2 calls.

Exhibit 13. MAST Code 2 Exceptions



Source: City Planning and Development.

Exhibit 14. Response Time Compliance by Ambulance District



Source: MAST CAD data (7/1/99 – 8/31/99).

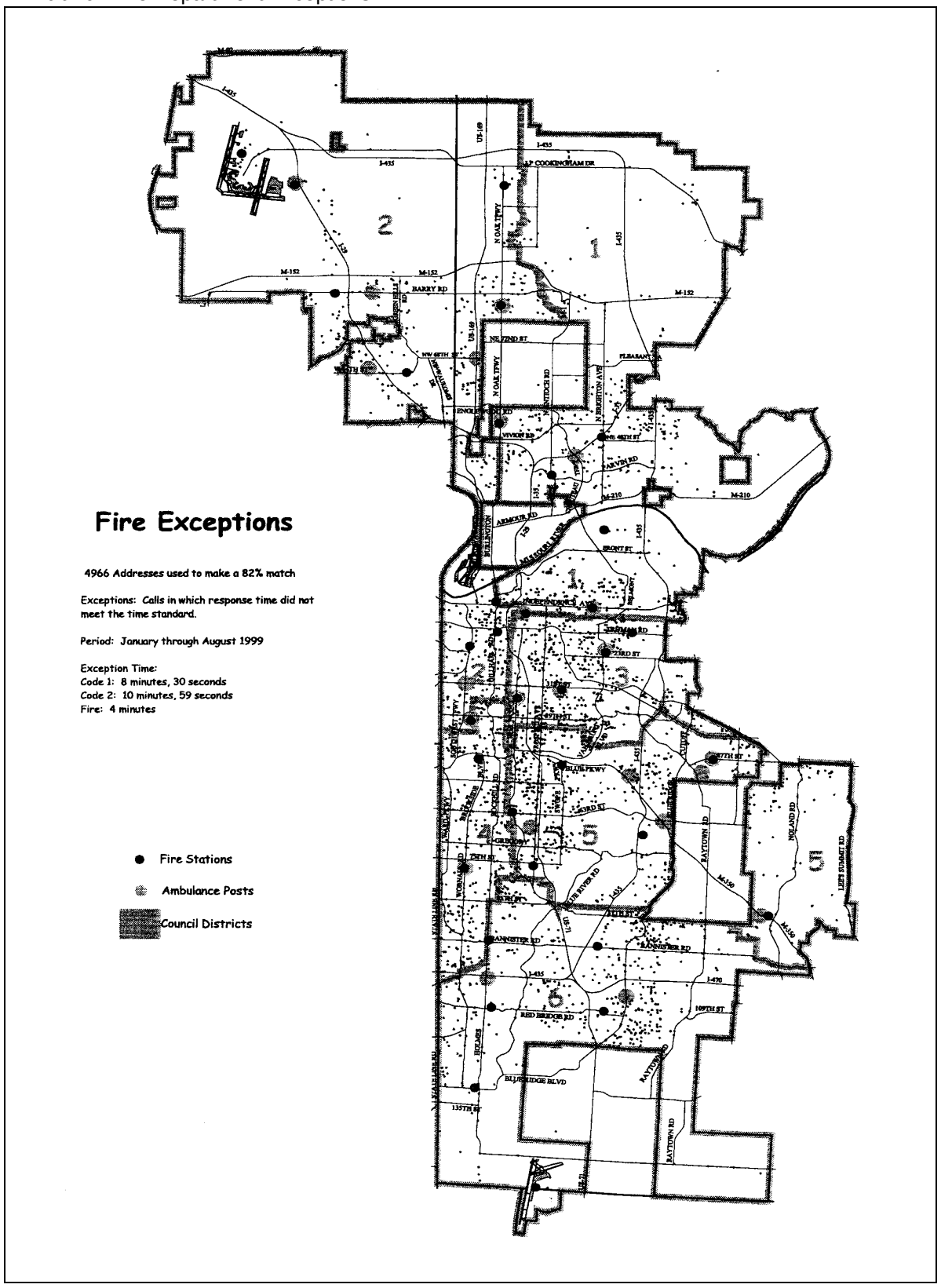
Exhibit 15. Fire EMS Response Time Compliance[22]

Response Time	February	March	April	May	June	July	August
0:00:30	3%	2%	3%	3%	3%	2%	3%
0:01:00	4%	3%	4%	4%	4%	3%	4%
0:01:30	7%	6%	7%	7%	7%	7%	8%
0:02:00	14%	15%	15%	15%	15%	15%	15%
0:02:30	27%	29%	28%	27%	27%	27%	27%
0:03:00	43%	43%	42%	42%	42%	42%	41%
0:03:30	57%	58%	56%	57%	56%	56%	54%
0:04:00	69%	69%	69%	68%	68%	67%	66%
0:04:30	79%	77%	77%	76%	76%	75%	74%
0:05:00	85%	82%	82%	82%	81%	81%	80%
0:05:30	89%	87%	86%	85%	85%	85%	85%
0:06:00	91%	90%	90%	89%	89%	88%	89%
0:06:30	93%	92%	92%	91%	91%	91%	92%
0:07:00	94%	94%	94%	93%	93%	93%	93%
0:07:30	96%	94%	95%	94%	95%	94%	94%
0:08:00	97%	96%	96%	96%	96%	95%	95%
0:08:30	98%	97%	96%	96%	97%	96%	96%
0:09:00	98%	97%	97%	97%	98%	97%	97%
0:09:30	98%	98%	98%	98%	98%	97%	97%
0:10:00	99%	98%	98%	98%	99%	98%	97%
0:10:30	99%	98%	98%	98%	99%	98%	98%
0:11:00	99%	99%	99%	99%	99%	98%	98%
0:11:30	99%	99%	99%	99%	99%	99%	98%
0:12:00	99%	99%	99%	99%	99%	99%	98%
0:12:30	99%	99%	99%	99%	99%	99%	99%
0:13:00	100%	99%	99%	99%	99%	99%	99%
0:13:30	100%	99%	99%	99%	99%	99%	99%
0:14:00	100%	99%	99%	99%	100%	99%	99%
0:14:30	100%	99%	99%	100%	100%	99%	99%
0:15:00	100%	100%	99%	100%	100%	99%	99%

Source: Fire CAD data (2/1/99 – 8/31/99).

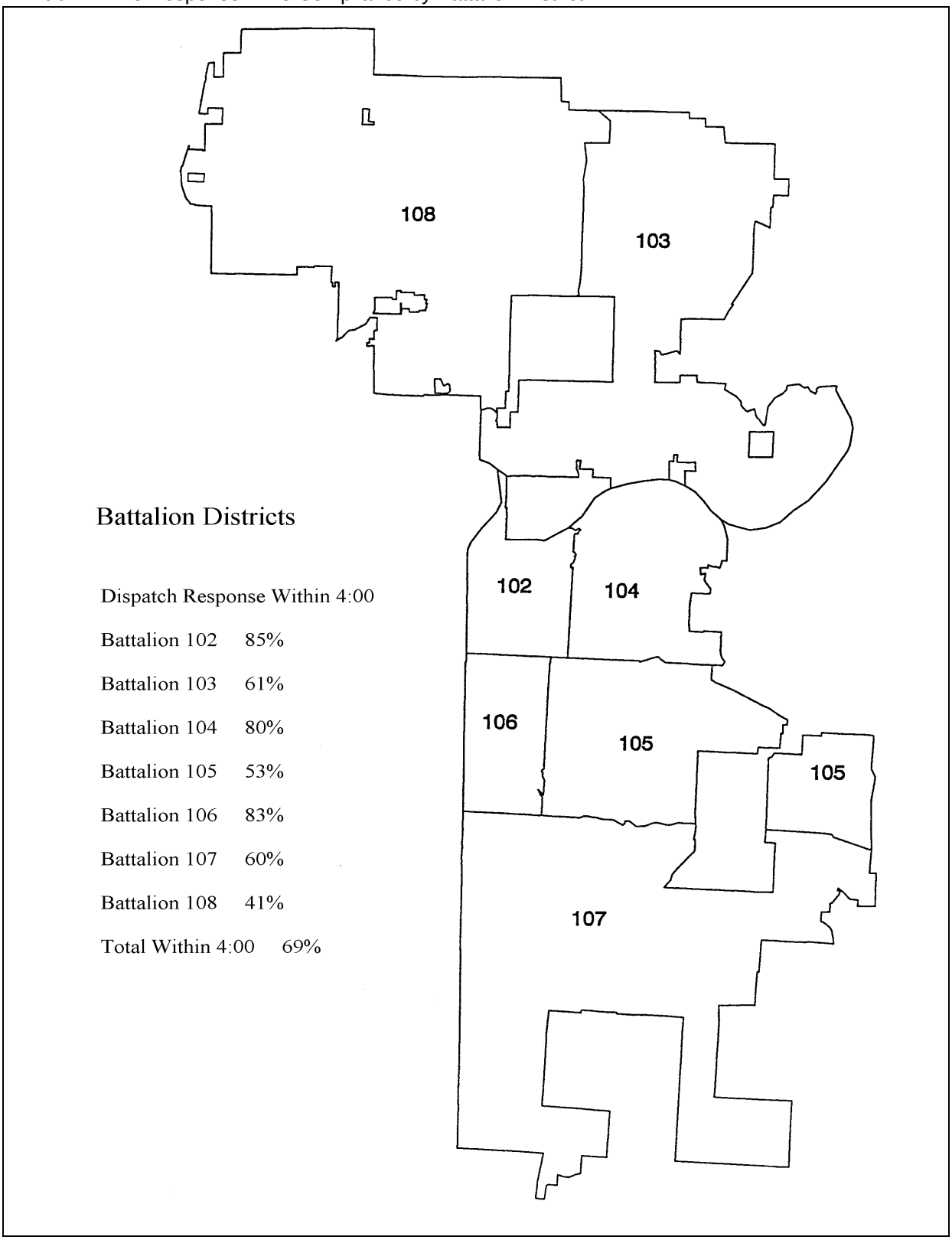
[22] The Fire Department responds as first responders to all code 1 and some code 2 calls. The code establishes a response time goal of 4 minutes for first responders.

Exhibit 16. Fire Department Exceptions



Source: City Planning and Development.

Exhibit 17. Fire Response Time Compliance by Battalion District



Source: Fire CAD data (2/1/99 – 8/31/99).

Appendix B

MAST Financial Information

Patient billing is the major portion of MAST revenue; net patient billing accounted for about 90 percent of total revenue. The city's subsidy is about 5.5 percent of total revenue. MAST revenues increased 13.5 percent between fiscal years 1996 and 1999. The largest percentage increase was in service and membership subscription revenue, while the largest percentage decrease was in other (miscellaneous) revenue.

Exhibit 18. MAST Revenues

Revenue	1996	1997	1998	1999
Net ambulance service revenue	$22,689,167	$23,847,877	$25,846,054	$27,566,185
Membership subscription revenue	649,010	661,816	730,682	709,185
Indigent care funding - city subsidy	1,575,555	1,601,343	1,633,196	1,665,547
KCI Airport - city subsidy	390,000	390,000	384,132	384,132
Other	1,474,832	277,528	180,121	79,935
TOTAL	$26,778,564	$26,778,564	$28,774,185	$30,404,984

Source: MAST Financial Statement Audits, 1996-1999.

MAST's largest expense is the ambulance operator fee, which accounts for about 61 percent of the total. MAST expenses increased 18 percent between fiscal years 1996 and 1999. The largest percentage increase was in interest expense, as MAST started to pay interest in fiscal year 1997 on the bonds issued for their new facility. The interest expense on the bond issue for the new facility is over $400,000 a year. Depreciation and amortization expenses also increased since MAST acquired a new communications system in 1997. Bad debt and collection accounted for about one quarter of total expenses. Bad debt and collection expenses decreased as the collection rate improved. (See Exhibit 19.)

Exhibit 19. MAST Expenses

Expenses	1996	1997	1998	1999
Professional and operating fees	$14,128,365	$14,406,875	$15,697,945	$17,179,679
Salaries and Benefits	939,597	1,378,255	1,679,060	1,908,081
General and administrative costs	1,380,820	1,292,116	1,300,143	1,402,443
Depreciation and amortization	913,201	1,136,332	1,966,542	2,076,474
Provision for bad debts and collection expense	8,153,624	8,118,801	7,416,376	7,133,255
Interest	69,136	551,540	595,179	571,145
TOTAL	$25,584,743	$26,883,919	$28,655,245	$30,271,077

Source: MAST Financial Statement Audits, 1996-1999.

Public and private insurance accounted for about two thirds of total billings and about 79 percent of total collections. Medicare accounted for about 36 percent of billings and about 48 percent of collections. Private insurance accounted for about 18 percent of billings and 25 percent of collections. Medicaid accounted for about 14 percent of billings but only 6 percent of collections. A high percentage of

Medicare and Medicaid patients indicates that it may not be feasible to increase rates or significantly improve collections. Amounts owed by individuals made up about one-third of billings and about one-fifth of collections. The collection rate improved from about 28 percent in fiscal year 1996 to 38 percent in fiscal year 1998. (See Exhibit 20.)

Exhibit 20. MAST Billing and Collection Comparison

Fiscal Year	1996	1997	1998
Total Billings	$ 28,604,289	$ 33,038,784	$ 34,803,266
Private Insurance (Billing)	18.09%	19.18%	17.87%
Medicare (Billing)	36.26%	36.90%	35.81%
Medicaid (Billing)	14.55%	14.16%	13.83%
Individual (Billing)	31.11%	29.76%	32.49%
Total	100%	100%	100%
In-house Collection	$ 8,146,043	$ 10,973,203	$ 13,231,336
Private Insurance (Collection)	37.09%	29.61%	24.59%
Medicare (Collection)	44.20%	50.96%	47.94%
Medicaid (Collection)	2.52%	2.28%	6.02%
Individual (Collection)	16.18%	17.16%	21.45%
Total	100%	100%	100%
Inhouse Collection Rate	28.48%	33.21%	38.02%

Source: Health Department EMS Annual Reports, 1996-1998.

Exhibit 21. MAST Ambulance Service Charges

Service Charges	1996	1997	1998
Ambulance Base Rate for Priority 1 & 2	$435	$453	$473
Base Rate for Priority 3	245	257	268
Base Rate for Priority 4	220	232	242
Base Rate for Treatment w/o Transportation	125	130	150
Mileage Charge for Local Transports	$4.75/Mile	$4.90/Mile	$5.10/Mile
Mileage Charge for Long Distance Transports	$4.25/Mile	$4.35/Mile	$4.60/Mile

Source: Health Department EMS Annual Reports, 1996-1998.

Appendix C

Evaluation of Key Components and Major Functions of the EMS System

Exhibit 22. Summary of System Components and Criteria

Key Components and Major Functions	Criteria	Does EMS System Meet the Criteria?
System coordination and collaboration: Communication, coordination and collaboration between EMS and with other community resources (i.e., other public safety agencies, public health departments, social service agencies, health care provider networks, community health educators)	• Integrating fire, law enforcement, and EMS response	• No. Coordination mechanisms are weak. Lack of communication has been cited as a problem by the agencies.
	• A lead agency is identified and coordinates system activities	• Partial. Health Director is the lead agency, but systemic coordination is needed.
	• Organization structure and relationships are well-defined	• Partial. "Ambulance system" referred in the ordinance and Health Department's rules and regulations allows ambiguous interpretation.
	• Regular meeting with emergency response agencies	• No. The Ad Hoc Committee has not met regularly.
	• Legislative authority to provide service and written service agreements are in place	• Yes. The city code provides legislative authority and contractual agreements are in place.
	• Mutual aid relationships with other EMS organizations in its immediate or neighboring service areas	• N/A (We did not evaluate this component.)
	• Active role in regional disaster plan and response	• N/A (We did not evaluate this component.)
Public education and prevention: Providing information and advocacy regarding prevention of injuries and illness, EMS access and appropriate utilization, and care provided by bystanders	• Programs are targeted to "at risk" populations	• Partial. Elementary and high school students are primary targets. Adult education is weak.
	• Formal and effective programs with defined goals exist	• Partial. MAST and Fire have programs, but there is lack of system-wide coordination.
	• Targeted objectives are measured and met (e.g., number of nuisance calls, rates of preventable injury and acute illness in all age groups)	• Partial. The system does not have targeted objectives, though each agency has objectives and measures them.

Workforce/Personnel: Supporting a trained and qualified work force	• Training, Continuing education, and Certification/credentials: Orientation and in-service training (e.g., dispatcher training) Meeting specific continuing education and practice requirements within a designated time period Programs of continuing medical education 100% patient care employees are currently certified by the applicable authority Recertification compliance	• Partial. Although the system ensures that ambulance crews are qualified, oversight of first responder qualifications is weak. Yes. Agencies provide orientation and in-service training. Partial. MAST/EPI reports continuing education to Health Department, but Fire does not. Yes. Agencies have continuing medical education programs. Partial. Job descriptions of fire fighters hired after 1991 and ambulance staff require certifications; certification is not required for fire fighters hired earlier. Partial. Health Department checks recertification compliance, but does not document lapsed certifications or lack of continuing education.
	• Staff diversity and turnover (e.g., gender and ethnic makeup of the staff, turnover rate) • Relationship with the labor force (e.g., union agreements exist and are periodically reviewed)	• Yes. KCPD, Fire and EPI track and report on workforce diversity and turnover. • Yes. Labor agreements are in place.
Medical Direction/Oversight: Ensuring quality EMS	• Single point of physician medical direction for entire system	• Partial. There is a single point of medical direction, but medical direction and oversight of first response is limited.
	• Written agreement (job description) for medical direction exists	• Yes. Professional services contract exists (but currently unsigned).
	• Physician is involved in establishing local care standards that reflect current national standards of practice	• Yes. Physicians provide input through EPAB or meetings of the Emergency Physicians Foundation.

	• Proactive, interactive and retroactive medical direction is facilitated by the activities of the medical director: Protocol development and timely revision, including response time, care, equipment selection, etc. Medical supervision/control (i.e., prospective, interactive/online, retrospective) Quality assessment	• Partial. Medical director facilitates medical direction of ambulance services. Medical direction of the first responder program is limited. Partial. The health director, medical director and EPAB develop and approve protocols for the ambulance service. First response medical protocols do not indicate approval. Partial. Base station physicians are certified and provide interactive instructions to ambulance crews in the field. Medical control of first response is limited. Partial. EPAB, Medical director and Health Department staff conduct case reviews, chart reviews, or medical audits for ambulance service. First response is reviewed only when an AED is used.
	• A physician advisory board provides oversight and management contributions	• Partial. As an integral part of the health director's quality control efforts, the EPAB is actively involved – but control over first response is weak.
System Evaluation and Review: Evaluating EMS system and processes that assess and improve the quality of EMS	• Reliable measurement and reporting of system performance are utilized	• Partial. Response times reporting for EPI and Fire are basically reliable, but they measure response times differently and system-wide response times are not tracked.
	• A structured system of quality assessment and quality improvement exists Research supports quality improvement process	• Partial. Current evaluation and quality improvement efforts focus on ambulance and excludes 911 and first response. Yes. Health Department compiles a cardiac arrest system audit and collects survival rates from hospitals.

	• Unit hour utilization is measured and hours are deployed in a manner to achieve efficiency and effectiveness	• Partial. Unit hour utilization is measured, but not regularly reported. Ambulance deployment matches call volume, but response time compliance is not consistent.
	• Costs per unit hour, transport, and response document good value	• Partial. MAST conducted a market study, but data used were inaccurate.
	• Formal mechanisms exist to address community concerns and customer satisfaction	• Partial. EPI and MAST have formal mechanisms to assess customer satisfaction, but Fire does not.
Information System: Data collection and information management	• The information system is able to describe an entire EMS event	• No. The system is fragmented and difficult to describe an event.
	• Data collection allows for key service elements to be analyzed	• No. Data are collected in four different systems and difficult to analyze key service elements.
	Types of data available include dispatch records, records of communications between the EMS provider and medical direction, run records, and data from emergency department (ED) and hospital records	Partial. Data from hospital medical records are not always timely.
	Uniform data elements and definitions	No. Different systems do not have common identifying numbers. The clocks are not synchronized.
	All times are accurately documented	Partial. Not all times are recorded.
	• Meaningful linkages between EMS agencies, emergency departments, hospital medical records, other public safety agencies	• No. Linkage between agencies is not adequate.
	• Technology supports interface between 911, dispatching and administrative process	• Partial. There are interfaces between 911, EPI dispatch and MAST billing. There is not a direct interface between MAST link and Fire CAD.

EMS Response: Meeting immediate needs of the acutely ill and injured		
• **System access:** Appropriate EMS care regardless of socio-economic status, age, or special need	• Public access through a universal access telephone number, preferably enhanced 911 • Single public safety answering point (PSAP) exists for the system • Geographic access (e.g., Are there response time differences between different areas?) • Addressing financial barriers to access	• Yes. Public access is through enhanced 911. • Yes. A single PSAP exists. • Partial. City code and MAST performance contract provide for equal geographic access. Fire does not have an EMT on each shift at each station. • Yes. Mechanisms exist to ensure equal access regardless of financial ability.
• **Communication system:** Transfer of information that enables decision to be made	• An effective communication system provides: Access to the EMS system Dispatch of EMS and other public safety agencies Coordination among EMS and other public safety agencies ➢ Integrating routine and reliable communication among EMS, fire, law enforcement, and other public safety agencies ➢ Radio linkages between dispatch, field units and medical facilities provide adequate coverage and facilitate communications	Partial. 911 call taking is sometimes a bottleneck. Partial. Dispatch delay is embedded in the system. Partial: ➢ Agencies have backup facilities and plans in case of communications failure (EPI could not find written disaster plan). MAST link is the primary source of communication between MAST and Fire. ➢ Agencies can communicate by radio, but do so infrequently. There are adequate linkages between dispatch, ambulance crews, and medical facilities.

	Access to medical direction ➢ Communications to and between emergency health care facilities	Yes. System allows direct communication between base station physicians and field crews. ➢ Yes. Ambulance crews can communicate with health care facilities. Facilities can also communicate with each other.
• **Dispatching:** Efficient call reception, appropriate resources dispatching, and pre-arrival instructions	• Effective connection between PSAP and dispatch points, with minimal handoffs required • Certified personnel provide pre-arrival instructions and priority dispatching (EMD) and this function is medically supervised Existence of written dispatch procedures/protocols (including how to deal with certain problems, questions to ask to determine the nature of the emergency, and how to give pre-arrival instructions if indicated, etc.) Protocol compliance	• Partial. Dispatch delay is embedded in the system. • Partial. SSC are certified, but no systematic check of SSC protocol compliance. Yes. Procedures and protocols exist. No. No systematic check of SSC protocol compliance.
• **Medical first response:** Arriving at the scene of an emergency before or at the same time as the ambulance, and providing medical assistance	• First responders are part of an integrated response system and medically supervised by a single system medical director • Defined response time standards exist for first responders • First response agencies report fractile response times • AED capabilities on first line apparatus • Smooth transition of care is achieved	• Partial. First responders' role is not well defined. Medical supervision is limited to AED use. • Yes. There is a defined response time standard. • Yes. Fire reports to EPAB and MAST board (though response time does not include time to dispatch). • Partial. AED capability is not always at all stations. • N/A (We did not evaluate this component.)

• **Medical treatment:** Stabilizing acute illness and injury	• Existence of protocols and standards (e.g., standards of scene times indicated in the protocol)	• Partial. The health director, medical director and EPAB develop and approve protocols for the ambulance service. First response medical protocols do not indicate approval.
	• Protocols and standards compliance	• Partial. EPAB, medical director and Health Department staff conduct case reviews, chart reviews, or medical audits for ambulance service. First response is reviewed only when an AED is used.
	• Proper medical supervision/oversight	• Partial. Medical direction over first response is weak.
	• Survival rate (i.e., survival rates of cardiac arrest, trauma, etc., comparing to survival probability)	• Yes. Medical director reports on cardiac arrest survival rate.
• **Transportation:** Providing transportation of EM response team to the scene and transportation of patients to medical facilities if needed	• Defined response time standards exist	• Yes. Defined response time exists.
	• Agencies report fractile response times	• Yes. EPI reports fractile response times to MAST Board.
	• Units meet staffing and equipment requirements	• Yes. Accountability mechanisms are in place to ensure ambulance staffing and equipment meet requirements.
	Equipment replacement policy exists	Yes. Ambulance replacement policy exists.
	Ratio of ambulance in inventory to those on the street	Yes. The system ensures adequate ambulances.
	• Efficiency measure of transfer (e.g., drop time)	• Partial. EPI tracks efficiency measures but MAST board does not routinely track.
	• A smooth integration of first response, air, ground, and hospital services	• N/A (We did not evaluate this component.)
Cost and funding sources: Fiscal viability and stability	• Financial systems accurately reflect system revenues and both direct and indirect costs	• Partial. MAST's annual financial audit reports on accuracy of accounting statements, but total public costs are not considered.
	• Cost per patient served	• Partial. MAST conducted a market study, but data used were inaccurate.
	• Amount of public subsidy	

	• Compositions of funding sources	• Yes. The amount of public subsidy is reported in MAST's budget and annual financial audit.
	• Compositions of payers	• Yes. Composition of funding sources is reported in MAST's budget and annual report.
	• Bill collection rate	• Yes. MAST board tracks compositions of payers.
	• Risk management The system manages its liability risks	• Yes. MAST board tracks bill collection rate. • Yes. Contract between MAST and EPI requires risk management. The city's agreement with MAST also requires indemnification.

References of Key Components, Major Functions, and Criteria:

Commission on Accreditation of Ambulance Services, *CAAS Standards*
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National Highway Traffic and Safety Administration, *Emergency Medical Services, Agenda for the Future*
Office of the Legislative Auditor, State of Minnesota, *911 Dispatching, A Best Practices Review Summary*, March 1998
Roush, William R., *Principles of EMS Systems,* 2nd Ed., American College of Emergency Physicians

Appendix D

City Manager's Response

Office of the City Manager

DATE: January 7, 2000

TO: Mark Funkhouser, City Auditor

FROM: Robert L. Collins, City Manager

SUBJECT: Emergency Medical Services (EMS) System Audit

We reviewed your audit of the Kansas City EMS system and concur with your recommendations. Our current EMS system is a complex relationship between City public safety departments (Health, Fire, and Police), a quasi-governmental trust and a private contractor. We feel you and your staff had a clear understanding of this complex relationship and that the audit exhibits a concern for the safety and welfare of the citizens of Kansas City. Following are our comments and responses to the recommendations to that affect the City Manager's Office.

Recommendation 1: The city manager should draft an ordinance for Council consideration that would clarify and strengthen the role of the health director as lead responsible party for the EMS system, including medical direction and oversight of first response.

We agree the EMS role of the health director should be clarified and strengthened. The EMS Special Study Committee is also looking into this issue. After the EMS Special Study Committee releases it final report, we will use its recommendations and this audit's recommendations to further clarify the role of the health director. At that time we will submit an ordinance request with the appropriate changes.

Recommendation 2: The city manager should include in the draft ordinance a provision to allow the Health Department to require recertification up to every five years rather than every two years.

Recommendation 3: The city manager should include in the draft ordinance a provision to recognize the proper reporting of response time by districts established by MAST rather than reporting of response times by council districts.

Recommendations 2 and 3 reflect recent EMS policy changes and simply change the ordinance language to match the current policy. The Health Department and Law Department are preparing an ordinance request for Council consideration.

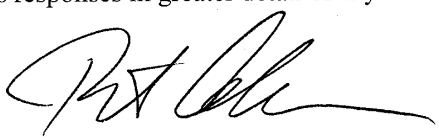
Mark Funkhouser
January 7, 2000
Page #2

Recommendation 5: The city manager should work with the Police Department, the Fire Department and MAST to develop a plan to link the CAD systems and synchronize system clocks to facilitate system wide performance reporting.

We agree with this recommendation. In addition, MAST has a performance-based contract with the private operator. MAST and EPI, Inc., will be invited to participate in a CAD joint venture. The health director will work with the agencies involved to determine the best way to implement this recommendation. If technical or policy barriers are encountered, the health director will periodically revisit this issue each time an agency upgrades its CAD.

I have an active CAD Review Team in place and will request MAST and EPI participate in that process. I will also assure that the director of Infoirmation Technology places a specific emphasis on the coordination between public safety procedures in the design of any CAD system.

Please contact me if you wish to discuss responses in greater detail or if you have any questions.



Robert L. Collins

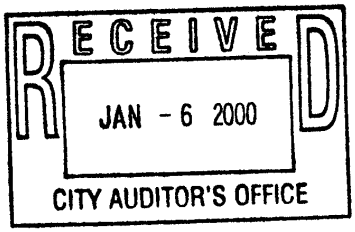
RLC:emm
cc: Dr. Rex Archer, Health Department
Gail Roper, Information Technology

EM/CityMgrr/EMS/EMS Audit

Appendix E

Health Director's Response

Inter-Departmental Communication



DATE: December 27, 1999

TO: Mark Funkhouser, City Auditor

FROM: Rex Archer, M.D., M.P.H., Director of Health

SUBJECT: Emergency Medical Services (EMS) System Audit

Thank you for the opportunity to review your recent audit of the Kansas City EMS System. We concur with your recommendations. We also respectfully submit the following comments and responses to those recommendations that affect the Health Department.

Recommendation 6: The health director should publicly report system wide response time.

We agree with this recommendation but there are some problem areas. MAST has response time compliance standards in place and publicly reports response times. MAST also has disincentives in place for poor operator/contractor response time performance. The Fire Department also publicly reports fractile response times, but has no compliance standards. Its standards are best effort. In addition the Fire Department's response times are defined differently than the MAST response times. Reporting current response times "as is" will be misleading. In addition, data from the 911 center is difficult to match with EMS calls. There is poor clock synchronization.

Coordinating data between 911, MAST, and the Fire Department will be difficult. Currently, the only way to do it is with a full time person to audit tapes and track a representative percentage for reporting purposes each month. The long-term solution is to have all three CAD systems share data or to have a single CAD for all three systems. This may not be technically nor financially feasible.

Recommendation 7: The health director, based on the recommendations of EPAB, should reconsider whether non-EMTs should be allowed to be certified to use AEDs.

While we agree with this recommendation in principle, the bigger issue is having an EMT trained first responder available for each company on each shift. The implementation of recommendation 10 "...Fire Chief ensure ...one EMT is deployed on each company on each shift." would make this recommendation a moot point. Because most of the EMS responses that are life threatening are not treatable by AEDs, but could benefit from the presence of an EMT, it is imperative that we implement recommendation 10 as soon as possible.

Recommendation 8: The health director should review and approve medical protocols for first response, including the types of calls that require a first responder.

We are in complete agreement with this recommendation. Current misunderstandings regarding medical direction of first responders can be cleared up by revising the Ambulance Ordinance and with a MOU between the Fire Department and the Health Department.

Recommendation 9: The health director should coordinate regular meetings with the agencies involved with EMS, including Police and Fire.

An ad hoc EMS Committee (Health, Fire, MAST, and Police), under the direction of the Health Department's EMS Medical Director, has been meeting on a regular basis since 1994. This committee has been primarily used as a problem solver, rather than a proactive, decision-making committee. In addition, current agency representatives may not be high enough to make decisions or recommend policy. This committee could be changed and become the basis to implement this recommendation.

Recommendation 11: The health director should coordinate public education activities to better target at-risk groups.

We are in complete agreement with this recommendation. The earlier citizens recognize the need for emergency services and the earlier they access the EMS system, the quicker they get treatment and increase the likelihood of better outcomes. Public education about EMS, when to access the EMS system, how to access the EMS system, and what to do before the EMS unit arrives, is very important. We also think the long term goal should be institutionalizing EMS public education activities, e.g. requiring CPR training as a condition of high school graduation. Improving our public education activities would save more lives than any other system improvement.

Appendix F

Interim Fire Chief/Director's Response

CITY OF FOUNTAINS
HEART OF THE NATION
KANSAS CITY
MISSOURI

Fire Department

Fire Headquarters

22nd Floor, City Hall
414 East 12th Street
Kansas City, Missouri 64106

(816) 513-1700

DATE: January 18, 1999

TO: Mark Funkhouser, City Auditor

FROM: Ed Weixeldorfer, Interim Fire Chief/Director

SUBJECT: Audit Report of the Emergency Medical Services System

The Fire Department expresses its appreciation for the diligent work of the Auditor's staff in researching and preparing this performance audit. We find ourselves in strong agreement with the vast majority of the report's observations and conclusions, and concur that the major issues facing the system at this juncture will require specific measures to strengthen the coordination and oversight of its components in order to achieve the optimum service product in each service episode. We are anxious to be proactively involved in all efforts to accomplish that end.

We see the most immediate points raised for the Fire Department to include the following:

- Lags between receipt of data regarding EMS incidents in Fire Communications and the actual dispatch of fire response.
- Incomplete records regarding certification and continuing education of Fire Department EMTs.
- Lack of integration of quality assurance and system monitoring functions between all system elements (Fire, MAST, and Health).

We have taken immediate measures to address these key findings. Those steps include:

1. The Deputy Chief for Support Services and the Superintendent of Communications have been assigned to make an immediate determination of all factor contributing to delays in the handling of information regarding all calls, including and especially EMS related responses. They are to provide a synopsis of those and to craft and begin implementation of a plan to rectify these matters. Progress will be tracked and reported until an acceptable median from receipt to dispatch is reliably maintained.

2. The Principal Assistant to the Director has been assigned to conduct an immediate examination of all educational and training aspects, especially and specifically to include documentation and reporting of all training and activities relevant to the provision of emergency medical services. Working with the Deputy Chief for Operations Support and the Division heads for Training and EMS, he is to provide a synopsis of those issues and to craft and begin implementation of a plan to rectify these matters. Progress will be tracked and reported until acceptable compliance of all certifications documented as current is reliably maintained.

Regarding specifically Recommendation 10, Fire Management concurs that the deployment of at least one EMT on each company on each shift is the optimum configuration and we fully endorse that objective. The Fire Chief cannot, however, implement by unilateral directive, and it creates a disingenuous impression to state the recommendation as if this were the case. There are steps which must be taken to effect that end, many of which have been in progress for some time but some of which will require more time still to fully accomplish:

- Specifically, the systematic increase in KCFD EMTs since 1992 has raised this saturation from less than 20% to more than 60%; that figure will continue to increase as pre-1992 employees retire and are replaced by EMT-trained employees who must, as a condition of employment, maintain that licensure and the City certifications that accompany it. This will ultimately render the matter moot.

- Currently, we are unable to utilize AEDs—the most significant cardiac intervention we hold—on the few non-EMT companies due to restrictions imposed arbitrarily by EPAB and the Health Director that are not in accord with standards of practice for the device in other quarters. (Recommendation 7 recognizes and attempts to address this.) This is critical as an interim solution.

- Our capacity to offer training and incentives to pre-1992 employees to attain EMT licensure has been limited by budget and personnel constraints. Proposals to approach this objective have been developed and will be offered again, but must receive adequate funding to prove feasible.

- Indeed, the rapid growth of EMT and paramedic personnel has overtaxed our current capacity to provide both inservice training and ongoing supervision. We fully endorse the intent of this report to open paths to more fully integrate training and quality assurance functions, and are exploring avenues to integrate our training and QA practices with those of the MAST system to achieve both strengthening of system practice and economy for both. It will still be critical, though, to provide additional dedicated personnel in the KCFD EMS Division to fully meet needs for certification monitoring, performance reporting, inservice training, and employee development that an expanded EMT workforce will increasing require.

While the report notes that ordinances and codes related to the system reference "ambulance service" specifically rather than EMS and recommends a language change to correct this, we feel that a simple language change may fail to recognize all the implications of the original phrasing.

The current system was conceived at a time when EMS was seen principally as the emergency transport of the ill or injured to definitive hospital care, when the professions and specialties surrounding emergency care were in very early stages of their development, when firefighters were viewed primarily as physical laborers whose activities were centered around hoses and axes, and when labor unrest in the Fire Department was seen by many as a palpable risk to the system. Twenty years of evolution and growth have brought significant changes in all quarters and demand that such assumptions, whether explicit or unspoken, be reassessed and realigned.

EMS today is concerned first with the delivery of appropriate assessment and care to the patient at the patient's immediate location—then, *where indicated*, it becomes concerned with the transportation of the patient to definitive care. Website data published by EPI suggest that barely half of MAST's annual calls result in such transport. The delivery of assessment and care skills need not be coupled, either physically or conceptually, to the vehicle designed for patient transport (an ambulance).

Many of the best systems have long realized this in practice, reporting in some cases substantial both improvement in skill delivery and enhanced economy. Moreover, today's firefighters enter their career with the expectation that they will be providers of medical care and human services as a principal part of their duties—with the graduation of the current class, more than 60% of all current firefighters will be EMTs or paramedics. Today's labor climate has been characterized by virtually all observers as positive and cooperative. The change to "EMS system" must be in concept as well as wording, and we welcome all opportunities to assume a progressively fuller and more responsible role in the provision of treatment, care, and concern to every citizen in need.

Appendix G

Law Department's Response

Office of the City Attorney

TO: Mark Funkhouser, City Auditor
FROM: William D. Geary, Assistant City Attorney
SUBJECT: Performance Audit - Emergency Medical Services System
DATE: January 6, 2000

You made the following recommendation in your draft Performance Audit of the Emergency Medical Services System:

> The City Attorney should investigate the feasibility of allowing MAST exclusive responsibility to provide paramedic service for special events.

The basis for this recommendation is generally found in this statement:

> Economies of scale and flexible production allow for greater efficiency. MAST has exclusive responsibility to provide emergency and non-emergency transport service. A consultant has identified special events coverage as another service that is not currently included in the ordinances. Allowing MAST exclusive responsibility to provide paramedic service for special events could improve the overall cost-effectiveness of the system.[1]

It is my opinion the City lacks the authority to monopolize first aid coverage of special events. However, the authority to require the use of MAST at events held at Bartle Hall, Kemper Arena, Municipal Auditorium, and other facilities where the City acts as landlord may exist.

The City is authorized to monopolize *ambulance service*. The General Assembly has provided that

> Any county, city, town or village may provide a general ambulance service for the purpose of transporting sick or injured persons to a hospital, clinic, sanatorium or other place for treatment of the illness or injury, and for that purpose may...contract with one or more individuals, municipalities, counties, associations or other organizations for the operation, maintenance and repair of such vehicles and for the furnishing of emergency treatment.[2]

Because the State has authorized the City to contract with a single provider, the City does not violate the federal or State antitrust laws. To be immune from the operation of the antitrust laws the City

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[1] Draft Performance Audit, pp. 12-13, 36.

[2] §67.300.1(2), RSMo.

Mark Funkhouser
January 6, 2000
Page 2

must have state authorization for the anticompetitive act.[3] This authority from the State of Missouri is sufficient to allow Kansas City to monopolize ambulance service through the Metropolitan Ambulance Services Trust.[4]

An ambulance service is an entity "that provides emergency or nonemergency ambulance transportation or services, or both, in compliance with" State law and regulations of the Missouri Department of Health.[5] An ambulance is

> any privately or publicly owned vehicle or craft that is specially designed, constructed or modified, staffed or equipped for, and is intended or used, maintained or operated for the transportation of persons who are sick, injured, wounded or otherwise incapacitated or helpless, or who require the presence of medical equipment being used on such individuals, but the term does not include any motor vehicle specially designed, constructed or converted for the regular transportation of persons who are disabled, handicapped, normally using a wheelchair, or otherwise not acutely ill, or emergency vehicles used within airports.[6]

An emergency medical response agency is not an ambulance service, nor can an ambulance service also be licensed as an emergency medical response agency.[7] An ambulance license is required when patients are transported.[8] An emergency medical response agency "provides a level of care that includes first response, basic life support or advanced life support, *exclusive of patient transportation*."[9] To obtain an emergency medical response agency license a memorandum of understanding with the ambulance service serving the area must be negotiated.[10]

This distinction shows that the authority to monopolize ambulance service is the authority to monopolize the prehospital emergency medical care taken to a patient, *with the expectation that the*

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[3] *Town of Hallie v. City of Eau Claire*, 471 U.S. 34, 105 S.Ct. 1713, 85 L.Ed.2d 24 (1985).

[4] *Gold Cross Ambulance v. City of Kansas City*, 538 F.Supp. 956 (W.D.Mo. 1982), *aff'd*, 705 F.2d 1005 (8th Cir. 1983), *cert. denied*, 471 U.S. 1003, 105 S.Ct. 1864, 85 L.Ed.2d 158 (1985).

[5] §190.100(3), RSMo.

[6] §190.100(2), RSMo.

[7] 19 C.S.R. §30-40.333(2)(B).

[8] §190.105.1, RSMo.

[9] §190.100(12), RSMo. [emphasis added].

[10] 19 C.S.R. §30-40.333(1)(D).

ambulance service will transport the patient to a hospital, absent the patient's refusal of service. I am aware of no statute that permits a city to monopolize the services provided by emergency medical response agencies.

The monopolization of scheduled transport services does not provide support that the City's authority to regulate prehospital emergency services extends beyond emergency transports. The United States District Court in the Kansas City litigation recognized that

> for the public utility model to be economically feasible it is necessary that the municipally licensed company be the only ambulance service allowed to do business in the City. If other, privately-run companies are allowed to operate freely, they will "skim the cream" by taking virtually all the high profit, nonemergency calls and leaving the emergency business to the municipal system.[11]

The role of transport services is still being recognized by courts to justify monopolization of emergency and nonemergency ambulance transport business. Rejecting a claim by a competitor to a municipal system that prohibited any providers but the sanctioned provider to provide any transport service, a federal court of appeals has said:

> [T]he EMS Act contemplates a regulatory "deal" in which an exclusive operator receives protection from competition in profitable, populous areas of a county in exchange for the obligation to serve unprofitable, sparsely populated areas. . . . As part of this deal, the EMS Act permits exclusive operators to perform non-emergency services that provide a stable source of income to offset the less predictable income derived from 911 responses. "If interfacility transfers were deemed nonemergency ambulance services, outside providers could invade an exclusive operating area and 'cherry-pick' this income."[12]

Furthermore, the definition of ambulance service now includes emergency *and* nonemergency ambulance calls.[13]

Although it can be argued that if MAST provides all stand-by first aid services, it may increase its cash and ability to operate to meet its primary function – prehospital emergency medical care, there is no connection in the statutes between transport services and stand-by first aid services. The lack of state authority, in my opinion, condemns an effort by the City to monopolize first aid services through MAST.

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[11] *Gold Cross Ambulance v. City of Kansas City*, 538 F.Supp. 956, 961 (W.D.Mo. 1982), *aff'd*, 705 F.2d 1005 (8th Cir. 1983), *cert. denied*, 471 U.S. 1003, 105 S.Ct. 1864, 85 L.Ed.2d 158 (1985).

[12] *Redwood Empire Life Support v. County of Sonoma*, 190 F.3d 949, 954 (9th Cir. 1999).

[13] §190.100(3), RSMo.

Mark Funkhouser
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I will address an issue that may be raised by this conclusion. Why should private sports and entertainment businesses hire MAST to provide stand-by *ambulance* service at their events if any first aid provider may treat someone. First is the practical answer. The need for quick ambulance response when a private business invites thousands of people to an event calls for standby service. Although MAST would be responsible to appear at, for example, a Chiefs game within 8 minutes 30 seconds to meet its contractual obligations for a life-threatening emergency, that wait would be interminable to those people watching the medical emergency.

Furthermore, it is arguable that the City could require standby ambulance service when large crowds gather at sporting or entertainment events. The City may require fire fighters be hired by private business before it may operate when essential for public safety. The Fire Prevention Code states:

> Sec. 26-2501.18. Whenever, in the opinion of the chief, it is essential for public safety in any place of public assembly or other place where people congregate, due to the number of persons, or the nature of the performance, exhibition, display, contest or activity, the owner, agent, or lessee shall employ one or more experienced firefighters, as required and approved by the chief, to be on duty at such place. The firefighter in performance of his fire guard duties shall be subject to the supervision of the owner, agent or lessee of the premises being protected. He shall be in proper uniform and remain on duty during the times such places are open to the public, or when such activity is being conducted. Before each performance or the start of such place activity, said firefighter shall inspect for compliance with the fire prevention code, and shall keep diligent watch for fires during the time such activity is being conducted and take prompt measures for extinguishment of fires that may occur. Firefighters shall not be required or permitted, while on duty, to perform any other activity than that of fire guard.
>
> > Sec. 26-2501.18.1. When on-duty firefighters are not available, the person in charge of the assembly shall hire an off-duty firefighter approved by the chief for guard duties. The person in charge of the assembly shall pay the fire guard at the equivalent of the prevailing fire guard wage rate.
> >
> > Sec. 26-2501.18.2. Firefighter's working at any public gathering shall be paid by the employer a minimum of four hours, and should this duty fall on a legal holiday they shall be paid at double time rate.[14]

Although I am unaware of any cities that require by law promoters of entertainment or sporting events hire stand-by ambulances, the theory of public safety is the same for protection from fire and protection from injury or accident.

---

[14] §26-2501.18., Code of Ordinances

However, in Kansas City such a law may not be necessary since MAST is the only ambulance service that may lawfully operate and it is an exception when stand-by service is not provided. Even if stand-by service was required, a promoter could still make available a first aid room staffed by non-MAST personnel.

It may be possible for the City to increase the use of MAST as the first aid provider / ambulance service by requiring people who lease City facilities for large gatherings to provide this service. Alternatively, the City could provide that service as part of the lease and recover the cost through increased lease payment requirements. The standard Convention and Entertainment Centers Facilities Use Agreement currently includes these provisions for security:

> Personnel & Security
>
> a) Lessee shall pay for all necessary personnel required for Lessee's use of the facilities, including, if applicable, but not limited to stagehands, ticket sellers, ticket takers, ushers, freight handlers, crowd directors and off-duty Kansas City, Missouri police officers. The City may eject from the facilities any of Lessee's personnel who do not meet the City's approval. The City reserves the exclusive right to provide, at Lessee's expense, crowd management and security services. Required personnel will be arranged for and supervised by the City at Lessee's expense.
>
> b) Lessee agrees that security procedures and coverages are subject to approval by the Director. The City reserves the right to approve and/or require a minimum level of security for the event. Personnel shall be subject to City approval as necessary to preserve public safety and welfare. *Off-duty police officers shall be officers of the Kansas City, Missouri police department and shall be experienced in working events at the facilities.*
>
> c) *The City has an exclusive contract for crowd management. Event staff will be obtained from the City's exclusive concessionaire and such personnel shall be obtained by the City for the convenience of Lessee but shall be paid for by Lessee and shall not be deemed agents or employees of the City.* Two (2) weeks prior to the event, Lessee agrees to the level of such staffing required for the event and the duties and obligations of the parties thereto. Required personnel shall be arranged for and supervised by the City at Lessee's expense.

In other areas of the agreement the City requires use of exclusive service providers arranged by the City. For example:

> Concessions: "Lessee shall have the right to seel through the City's contracted concessionaire propriety programs and novelties approved in advance by the Director."

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January 6, 2000
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> Catering: "All catering must be performed by a caterer duly authorized by the City to cater in its Convention Facilities through an annual Catering Contract."
>
> Construction: "Unless otherwise authorized by the Director, all telephone installation, plumbing, electrical or carpentry work required to be done on the Leased premises in connection with Lessee's use thereof, and all electrical current or domestic gas required for Lessee's use (excepting that required for heating and lighting) shall be done or furnished by City, or approved representative for which Lessee shall pay City on the basis of the rates set forth in the schedule of rates on file in the Office of the Director."
>
> Ticket Sales: "All ticket sales, including outlet ticket sales must be provided through the City's exclusive agreement with Ticketmaster."

I have not researched the use of ambulance personnel as first aid room attendants and the required use of stand-by ambulance service at other municipal facilities. I am not familiar with the economics of the convention business to know whether such requirement would damage the City's convention business. The decision whether required first aid and stand-by ambulance services should be done through MAST will include policy issues beyond the scope of this memorandum. It is, however, my belief that the City could lawfully impose this requirement if it can be shown that the public health and safety at large gatherings would be appropriately protected.

William Geary
Assistant City Attorney

cc: Walter O'Toole, City Attorney

Appendix H

Metropolitan Ambulance Services Trust's Response

METROPOLITAN AMBULANCE SERVICES TRUST
6750 Eastwood Trafficway, Kansas City, Missouri 64129-1940
Telephone (816) 924-1700 • Administration Fax (816) 924-1011
Billing Fax (816) 924-1110 • Medical Records Fax (816) 924-1112

January 7, 2000

Mr. Mark Funkhouser
City Auditor
21st Floor, City Hall
414 East 12th Street
Kansas City, MO 64106

Dear Mr. Funkhouser:

MAST management has reviewed the draft Performance Audit of the Emergency Medical Services System.

You and your staff are to be commended for the thoroughness and objectivity of your audit. If its recommendations are implemented, patient care in medical emergencies will be significantly improved in Kansas City.

We are particularly pleased with its recommendations that the role of the director of health in overseeing and governing the entire EMS system should be clarified and strengthened. We believe this is a basic reform that will facilitate additional improvements in the EMS system.

MAST management agrees with Recommendation 12 that the MAST executive director should recommend to the MAST Board of Trustees that a new market study should be conducted. This recommendation has already been implemented. The executive director made this recommendation to the Board at its December 16, 1999, meeting and the Board authorized such a study which is already underway.

MAST management agrees with Recommendation 13 that the MAST executive director should develop procedures for the MAST Board of Trustees to take a more active role in monitoring the financial viability of its ambulance operations contractor. This recommendation also has already been implemented. Although the contract for paramedic ambulance services between MAST and EPI only requires EPI to furnish its annual audited financial statements to MAST, EPI and MAST have now agreed that EPI also will supply MAST management with its unaudited financial statements and other financial and efficiency data quarterly which will be forwarded to the Board. MAST's financial officer will report to the Board if he feels any of this data indicates EPI's financial viability is in jeopardy.

Mr. Mark Funkhouser
January 7, 2000
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MAST management's responses to other issues addressed in the audit are as follows:

* When reporting EPI's response times, the following two categories of responses should be counted as responses but not exceptions:

    1. Responses when additional units respond to the same scene after a unit is already on scene. (This methodology is consistent with Section 34-368a of the city code and MAST's contract with EPI.

    2. Responses when tape audits approved by the EMS medical director and MAST management fully document that the unit arrived on scene within the applicable response time standard.

* The present role in EMS of Police Department officers and Kansas City International Airport police officers should be mentioned. The audit also should recommend that the Police Department work with other EMS agencies to improve the initial and continuing emergency medical training of its officers. The audit should recommend that serious consideration be given to training and equipping officers in difficult to serve portions of the city with automatic external defibrillators.

* The clocks used by the CAD systems of the Police Department, Fire Department and MAST should be synchronized and all agencies should use the same methodology for measuring response times --- starting when the call is actually received and ending when the appropriate unit arrives on scene.

* The city code should be amended so that the current four-minute response time "goal" for first responders (which actually isn't measured until the unit is dispatched) is replaced with a firm response time standard. This response time standard should require first responders to respond to life-threatening emergencies within no more than three minutes and fifty-nine seconds 90% of the time citywide measured monthly, with response time measurement beginning when the call is received by the Fire Department. First responders also should be required to meet this response time standard 89% of the time in each ambulance response district, measured for a three-month running calendar period.

* EMS and public safety agencies considering the acquisition of new CAD systems should be encouraged to seriously consider using the same vendor MAST used for its new CAD system to facilitate linking these systems. If the agencies continue to use different CAD vendors, linking the systems may be extremely difficult.

* The director of health should require that all personnel in the EMS system in the EMT-Basic classification generally meet the same levels of training for certification and re-certification.

* The city code should be amended to require that all standby ambulance coverage and all standby medical coverage by paramedics and EMTs in the city be provided only by MAST. At the very least, the city code should be amended to require that only MAST can provide standby ambulance coverage and that paramedics and EMTs providing standby medical coverage be certified by the city and meet the same training standards as similar EMS system personnel.

* The independent role of the EMS medical director should be strengthened by funding the expenses of his office through the Health Department budget rather than continuing to fund a significant portion of these expenses through the Fire Department budget.

* The director of health should approve uniform regulations governing the emergency driving procedures of MAST and the Fire Department and appropriate mechanisms for their enforcement.

We appreciate the courtesy and cooperation extended by you and your staff and pledge our full cooperation to assist in the implementation of your recommendations.

Sincerely,

John A. Sharp
Executive Director

James L. Jones
Associate Director

Tom Schweitzer
Financial Officer

METROPOLITAN AMBULANCE SERVICES TRUST
6750 Eastwood Trafficway, Kansas City, Missouri 64129-1940
Telephone (816) 924-1700 • Administration Fax (816) 924-1011
Billing Fax (816) 924-1110 • Medical Records Fax (816) 924-1112

January 7, 2000

Judson Palmer, President
EPI
6740 Eastwood Trafficway
Kansas City, Missouri 64129

Dear Mr. Palmer:

The Kansas City Auditor's Office has made a recommendation that the MAST Board take an active role in monitoring the continued financial viability of its ambulance operations contractor (EPI) to ensure that it can remain in operation over the term of the Contract for Paramedic Ambulance Services between MAST and EPI.

Section VIII. C. of the Contract specifies EPI is required to provide reasonable assurance of its financial stability throughout the term of the Contact. The contractor may provide proof sufficient to meet this requirement by furnishing annual audited financial statements to MAST.

In order to comply with the recommendation of the Auditor's Office it is hereby agreed that in addition to the requirements of Section VIII.C. of the Contract, EPI will provide its unaudited financial statements and the attached financial and efficiency data to MAST's Financial Officer on a quarterly basis, beginning with the calendar quarter starting on January 1, 2000. MAST's Financial Officer will mail this information to members of the MAST Board of Trustees and will report to the Board if he feels this data indicates EPI's stability throughout the term of the Contract is in jeopardy.

Sincerely,

John A. Sharp
Executive Director

The above additional reporting requirements are hereby agreed to.

Judson Palmer, President, EPI

Date Jan 7, 2000

John A. Sharp, Executive Director, MAST

Date 1-7-2000

Attachment:

EPI - Financial and Efficiency Data

Solvency Ratios		
Quick Ratio	Cash + Accounts Rec / Total Current Liabilities	Dollars of liquid assets available to cover each dollar of current debt.
Current Ratio	Total Current Assets / Total Current Liabilities	Measures the margin of safety present to cover any possible reduction of current assets.
Efficiency Ratios		
Days in Accounts Receivable	Accounts Receivable X 360 / Revenue	Reflects the average number of days to collect receivables.
Assets to Revenue	Total Assets / Revenue	This rate ties revenue to the total investment in assets that is used to generate this revenue.
Revenue to Net Working Capital	Revenue / Net Working Capital	Measures the efficiency of management to use its short term assets and liabilities to generate revenue.
Profitability Ratios		
Return on Revenue(Profit Margin)	Net Profit after Taxes / Revenue	Reveals profits earned per dollar of revenue and measures the efficiency of the operation.
Return on Assets	Net Profit after Taxes / Total Assets	This is the key indicator of profitability for a firm. It matches net profits with the assets available to earn a return.
Return on Net Worth	Net Profit after Taxes / Net Worth	Reflects the ability to generate an adequate return on the capital invested by the owners of the firm.
Additional Data		
Scheduled Unit Hours Produced Unit Hours		

Appendix I

Police Chief's Response

Police
KC/MO

Headquarters Building
1125 Locust Street
Kansas City, Missouri 64106
(816) 234-5000

Richard D. Easley
Chief of Police

January 14, 2000

Mr. Mark Funkhouser
City Auditor
414 E. 12th Street
Kansas City, MO 64106

Dear Mr. Funkhouser:

I have reviewed your Emergency Medical Services Audit in which you recommended the Chief of Police should take steps to attract and retain 911 Calltakers. We agree. The following is a summary of those activities the department has undertaken to address personnel shortages in the Communications Unit.

Currently, the department employs 31 Calltakers with 47 Calltaker positions allocated in the 1999/2000 budget. Sixteen of those Calltakers have been hired within the last 4 months and an additional 6 are approved for the next Calltaker class in January of 2000. We continue to advertise for, recruit, and process Calltaker applicants for remaining vacancies.

A report given to the Board of Police Commissioners in November outlined steps taken to increase the number of Calltaker applicants. Those include increased advertising and personal recruiting through HR and other department members, articles in the newspaper about EMS Calltaker positions, use of the Internet and participation on the MARC 911 Committee task force. The report indicates that we are able to attract a large number of applicants (approximately 500 in 1999), however, many are not qualified for employment.

The department is participating in the Mid-America Regional Council's 911 Human Resources Task Force. The committee reports the need to recruit and retain Calltakers is a significant problem for the entire region. A comparison of our pay for Calltakers and Dispatchers with the metropolitan area shows the department is highly competitive in pay for both positions. On October 31,1999 the department implemented a new pay scale further enhancing our competitive position.

Forty-five members of the Communications Unit resigned in 1998. Only 17 resigned in 1999. We had no Calltaker resignations from October through December. In addition, the Communications Unit is using members from other elements to serve as part-time Calltakers on an overtime basis. Two of those members have put in transfer requests for Calltaker on a full-time basis. We are also exploring the use of outside part-time employees in this position.

Thank you for the opportunity to provide this information about this important topic. If you have any questions please call me or Nick Nichols, Manager of Human Resources, at 234-5411.

Sincerely,

Richard D. Easley

Richard D. Easley
Chief of Police

Appendix J

Emergency Providers Inc.'s Response

EPI **EMERGENCY PROVIDERS INC.**
6740 EASTWOOD TRAFFICWAY • KANSAS CITY, MO 64129-1935 • (816) 924-2500 • FAX (816) 923-7314

January 5, 2000

Mr. Mark Funkhouser
City Auditor
City of Kansas City, Missouri
21st Floor, City Hall
Kansas City, Missouri 64106

Re: Performance Audit
EMS System

Dear Mr. Funkhouser:

We have reviewed the draft of the Performance Audit of the Emergency Medical Services System prepared by your office. We agree with your findings in the audit - we do believe that it is important to strengthen and clarify the role of the health director in the system, implement medical direction of first responders, and increase system-wide evaluation, coordination and performance monitoring, including better technology linking Police, MAST and Fire.

Since none of the recommendations in the report are specifically addressed to us, we offer only the following comments:

1. Since August, 1999 (the conclusion of your data gathering), our response times have continued to improve each month. Although we continue to have problems meeting an 89% reliance standard at 8 min 30 sec. in Ambulance District 1, we have exceeded city-wide requirements and the requirements in Districts 2, 3 and 4 on a contractual basis each month. As pointed out in your report, the contractual requirements exceed the requirements established in the city code. We are continuing to fix the problems in District 1.

2. During the month of September, 1999, we changed our schedule of shifts, increasing the number of ambulances deployed during peak hours to 37. We are currently negotiating with MAST concerning the addition of ambulances to the fleet.

3. Our Unit Hour Utilization ratio, for the month of December, 1999, was .40.

4. Since August, we have added seven additional ambulance posting locations, three of which are north of the river, in order to better locate our ambulances for quick responses at certain times of the day.

We enjoyed working with you and your staff, and hope that most, if not all, of the recommendations made in your report can be implemented.

If you have any questions concerning this letter, please let us know.

Very truly yours,

Emergency Providers, Inc.

By _____
Judson L. Palmer, Jr.,
President

JLP:rw