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To: Josh Davies
County Executive, Emergency Services

From: David Jungerman, CIA
Chief Assistant County Auditor I, Risk Evaluation and Consulting

Date: May 7, 2018

Subject: Management letter concerning A/TC EMS ILA cost and performance

The Risk Evaluation and Consulting Division of the Travis County Auditor's Office recently completed a review of the City of Austin's Austin-Travis County Emergency Medical Services (A/TC EMS) Ground Transport Billings and Collections functions. The report for this review was issued February 16, 2018.

During our examination of the billing function, we noted a number of issues outside of the specific scope of our review that were not germane to our report. We believe these items may be important for you to consider, particularly in relation to the ongoing negotiations on the FY19 EMS interlocal agreement (ILA) with the City and are therefore detailing them in this management letter. Specifically, we noted the following four cost and efficiency issues (See Attachment A for details):

1. The City did not consistently meet the response time goals for County transports denoted in the ILA for the most at-risk patients.

2. Since FY13, total costs paid by the County to the City under the EMS ILA have consistently risen at a rate exceeding both the increases in the County's population and the Consumer Price Index.

3. Many units stationed outside the city limits are either underutilized or have below-average utilization, a potentially inefficient use of these resources.

4. The County's cost per transport exceeded the City's by almost $300 in FY16.

A number of factors have a significant influence on the financial performance of an EMS function. Current challenges facing A/TC EMS include the additional units added by the Pflugerville Fire Department, the use of a "station-centric" dispatch method versus the "dynamic deployment"

method, and the costs associated with an "all-advanced life support" (ALS) ambulance system versus utilizing the Emergency Services Districts in a tiered-response system.

We understand that cost is one of many facets of the decision-making process for EMS, and that balancing costs and quality of service is a significant challenge. We would be happy to discuss any of the noted issues in more detail going forward. Please let me know if you have any questions.

cc: Sarah Eckhardt, Travis County Judge
Jeff Travillion, Commissioner, Precinct 1
Brigid Shea, Commissioner, Precinct 2
Gerald Daugherty, Commissioner, Precinct 3
Margaret Gomez, Commissioner, Precinct 4
Jessica Rio, County Executive, Planning and Budget Office

Attachment A – Cost and Efficiency Issues

1. Response Time Goals and Compliance Goals

"Response Time" is generally defined as the elapsed time beginning the moment an ambulance is dispatched on a call until the ambulance has arrived at the dispatched location. In Attachment B in the ILA, the City and Travis County adopted the following standard response times for ambulance service transports, which include differing response times for each priority and locality:

County Response Time Goals:		COA Response Time Goals:	
Priority One	11:59	Priority One	9:59
Priority Two	13:59	Priority Two	11:59
Priority Three	15:59	Priority Three	13:59
Priority Four	17:59	Priority Four	15:59
Priority Five	19:59	Priority Five	17:59

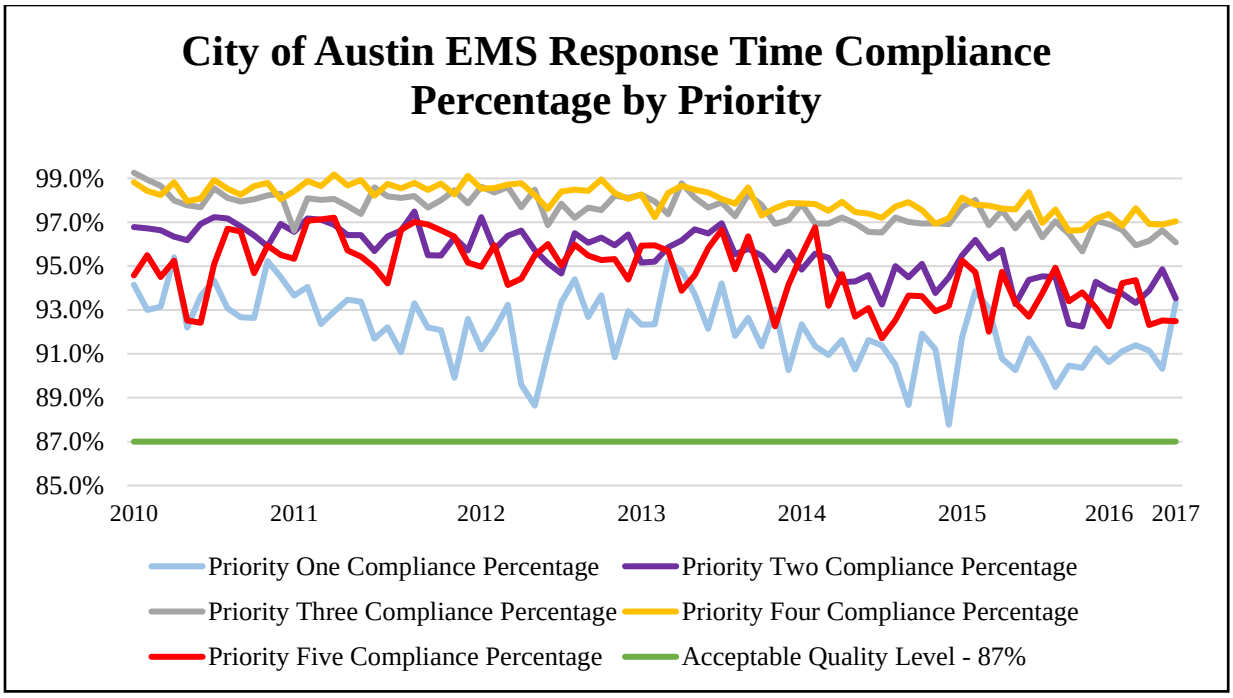
"Priority 1 Response" is a response to a situation which would likely result in the loss of life without immediate intervention, as determined by the dispatcher.

"Priority 2 Response" is a situation which requires immediate medical attention but would not likely result in the loss of life without immediate intervention, as determined by the dispatcher.

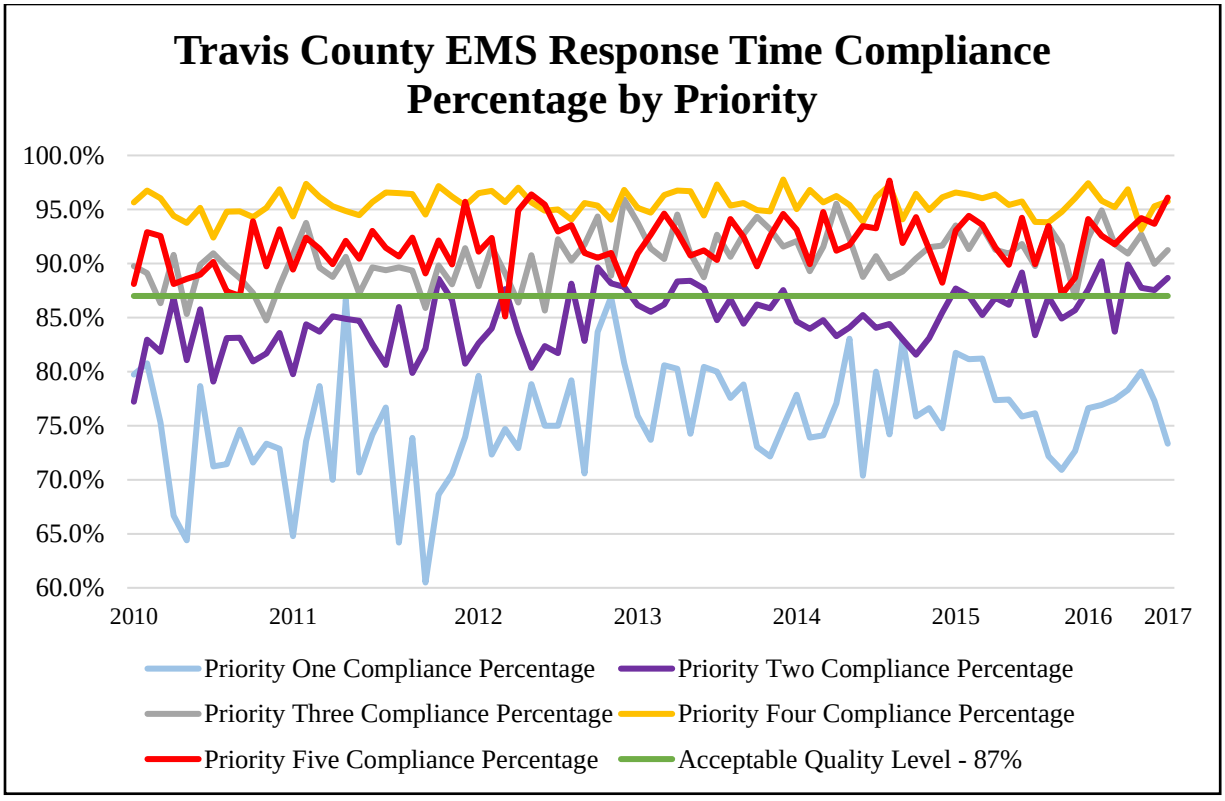
"Priority 3 Response" is a situation in which there is no emergency or danger that would result in the loss or quality of life without immediate medical intervention, as determined by the dispatcher; however, a notable medical issue is evident.

"Priority 4 or 5 Response" is a situation in which the patient is in a stable state of illness and is not acutely ill, requiring medical observation, monitoring and/or treatment during inter-facility transport, as determined by the dispatcher.

Under the ILA, average monthly response times should be at least 90% compliant with the stated goals. The ILA also sets a floor for average monthly compliance for these goals at 87%. Average response times below 87% occurring in consecutive months or three individual months in a calendar year result in noncompliance with the ILA. When this occurs, the City is required to prepare and act upon an improvement plan. The chart on the following page details the City's compliance with these response-time goals (within city limits) for the period October 1, 2010 through April 30, 2017:



Based on the chart above, average response time goals are being met within city limits, and they rarely fall below the desired 90% compliance percentage. The following chart details response-time goal compliance within the County for the same period:



Based on the preceding chart related to Travis County, we noted the following:

1. Average response times for Priority 1 calls (unconscious patients) were at or below the 87% floor for average compliance in every month of the period.

2. Average response times for Priority 2 calls (chest pains and respiratory conditions) were at or below the 87% floor for average compliance for the majority of the period, and they exceeded the 90% compliance goal for three of the 79 months reviewed.

3. Average response times for Priority 3 calls (non-life threatening) periodically fell below the 87% floor for response times, but were typically above the 90% compliance goal.

4. Average response times for Priority 4 calls (not acutely ill or injured) consistently exceeded the 90% compliance goal.

5. Average response times for Priority 5 calls (not acutely ill or injured) were below the 87% floor for response times for one month, but were often over the 90% compliance goal.

National Fire Protection Association (NFPA) is an international nonprofit organization that provides and advocates for codes and standards, research, training, and education related to public safety. NFPA Standard 1710 states that when advanced life support (ALS) services are dispatched, an ALS unit should respond to the patient within eight minutes at least 90% of the time. This NFPA standard is not being met for dispatches into the County. In addition, the ILA's stated average response-time goals for Priority 1 and 2 dispatches (which typically require ALS-level services) do not meet this standard by four and six minutes respectively.

Time from notification to definitive care

It is also important to analyze the time spent with the patient on the scene and in transport to a medical facility. The following chart details the combined average time spent on scene and in transit to the patient's destination for the more populous Texas counties, obtained from the Texas Department of State Health Services for 2016:

County	Average Minutes
El Paso County	25
Dallas County	28
Tarrant County	29
Bexar County	30
Harris County	30
Travis County	34

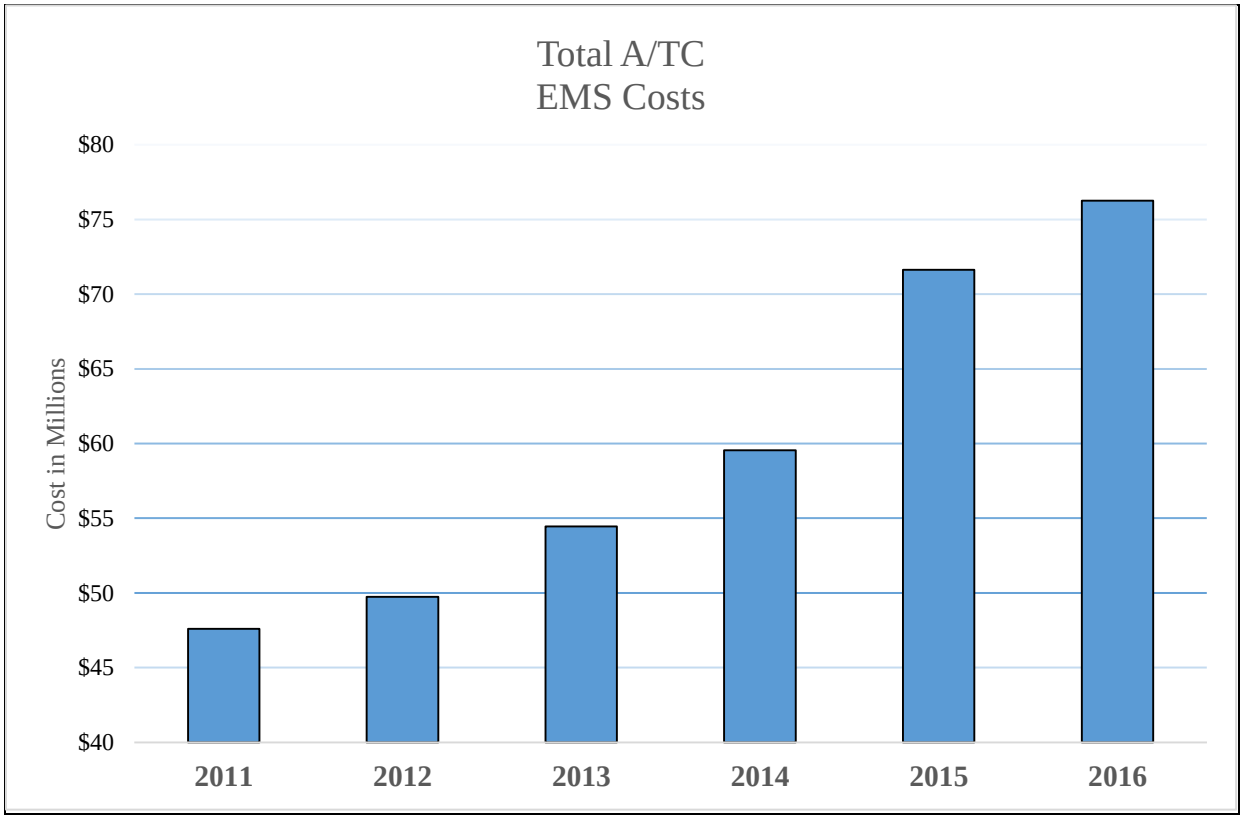
Note: This information includes all responses reported by both urban and rural areas throughout an entire County. Rural and suburban areas may have significantly higher transportation times.

While average response times for Priority 1 and 2 calls in the County were consistently below the 87% compliance floor, no ILA-required improvement plans were filed by A/TC EMS during the

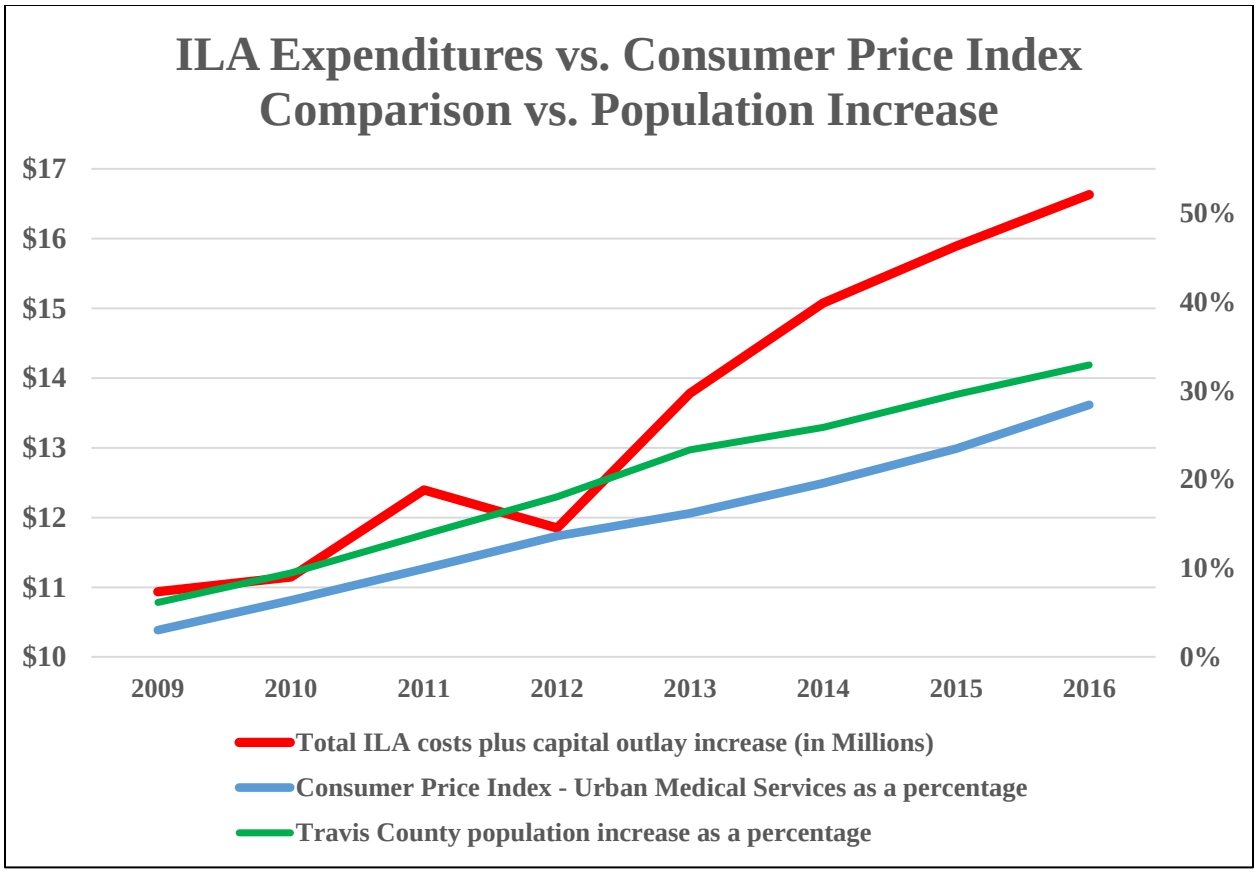
period in order to respond to this issue. In addition, the minutes of the Austin-Travis County EMS Advisory Board did not note that this issue was discussed.

2. Interlocal Agreement Costs

The following chart represents the total expenditures related to A/TC EMS combined for both Travis County and the City of Austin. These total expenditures have increased from $47.6 million in 2011 to $76.3 million in 2016, a 60% increase in five years.



The chart on the following page represents Travis County's total costs associated with the A/TC EMS ILA, including all labor, administrative costs, maintenance costs, fuel costs, equipment costs and capital outlays. Annual billings for this ILA have increased from $10.9 million in 2009 to $16.6 million in 2016, a 52% increase. During the same time, the specific Consumer Price Index (CPI) for urban consumers of medical care services increased 28%.



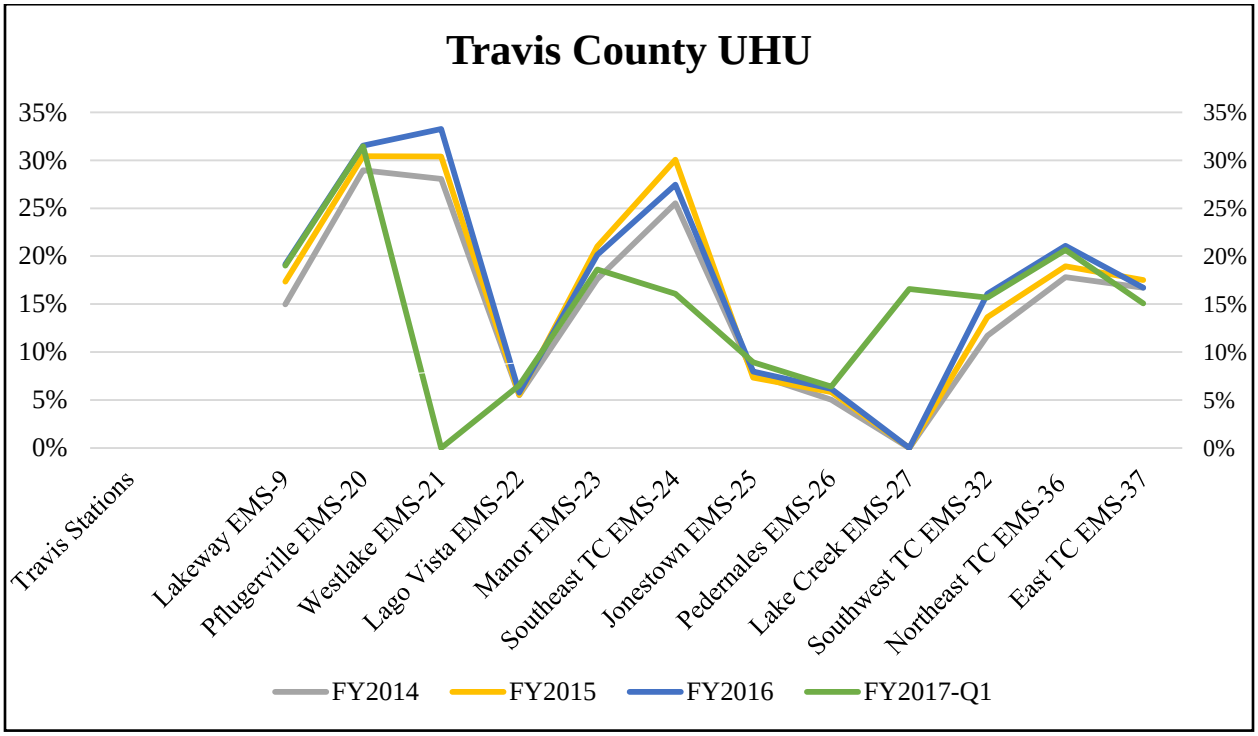
3. Utilization of County Ambulances

Urban EMS systems require a higher ratio of ambulances per population than rural areas. The primary drivers for estimating the required number of ambulances is generally based on call volume and response times. In order to determine how effectively an EMS system is working, many EMS managers employ the unit hour utilization (UHU) calculation, which is an overall measure of the EMS system productivity. Utilization rates are often dependent on response time goals, shift length, transport times and various other operational and administrative issues. A range of generally accepted utilization rates are as follows:

Unit Hour Utilization Range

45% and above	High Utilization
35% - 44%	Above-average Utilization
25% - 34%	Average Utilization
15% - 24%	Below-average Utilization
1% - 14%	Low Utilization

Units based in the County responded to an average of 3.8 calls per day in 2017, for a combined average UHU of 16%. Units based in the City responded to 11.3 calls per day, for a combined average UHU of 47%. The chart below details the UHU for County-based stations by fiscal year:

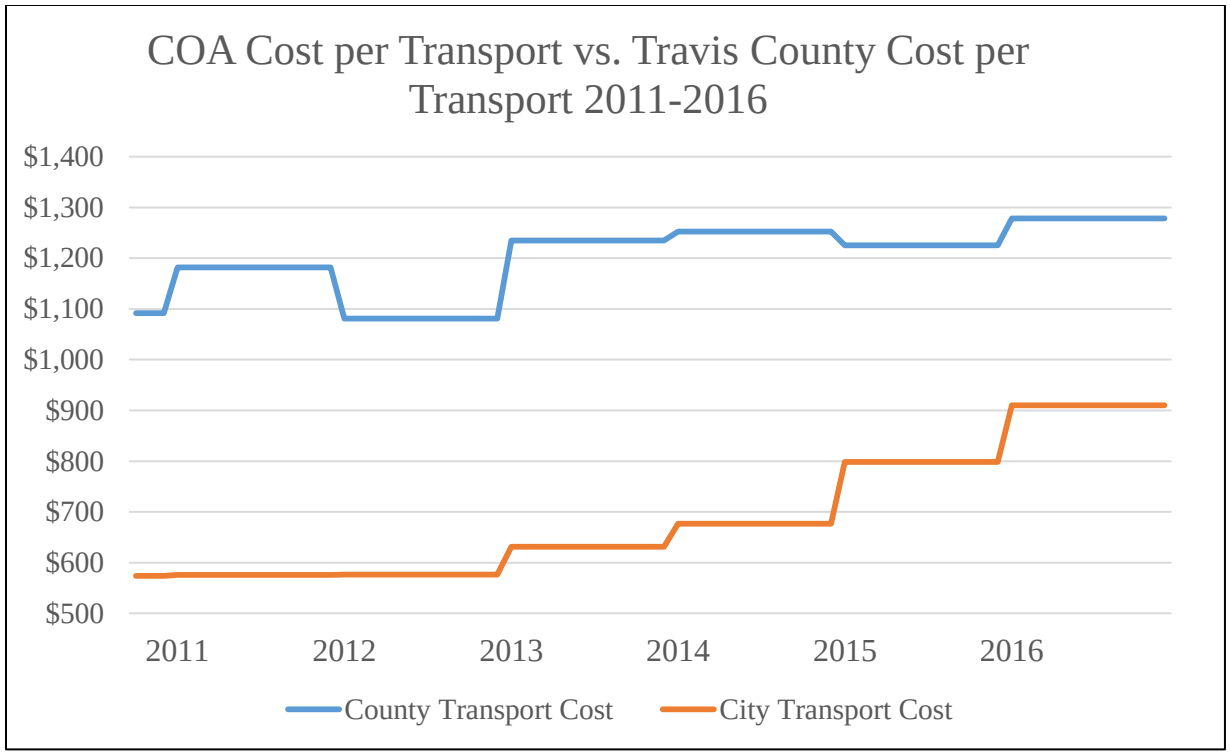


A/TC EMS utilizes a "Station Centric Model" as a basis for distributing and basing its units. Under this model, when units are not responding to a trip or other activity, they are housed at stations scattered across the City and County. Denoting a limitation of this model, the chart above shows that units in stations outside the city limits tend to be under-utilized, with material amounts of down time. Conversely, many units stationed inside the city limits are over-utilized.

A number of EMS systems have moved away from the station centric model in recent years in order to improve efficiency and response times; the new model being employed is typically referred to as "Dynamic Deployment". Under this system, computer modeling is used to position inactive units in geographic areas that are statistically most likely to need them, either due to lack of other units in the area or potentially high volume.

4. COST COMPARISON PER TRANSPORT

In order to properly assess the economic drivers associated with response time compliance, we prepared the analysis at the top of the following page, which compares the cost per transport for the City and County for 2011 through 2016. The cost per transport is calculated by dividing the total EMS costs for each entity by the number of transports performed for each entity. Given the additional time and mileage often associated with Travis County trips, it would be reasonable for County trips to cost slightly more than City trips. However, as shown on the following page, the County's cost per trip is from $400 to $500 greater than the City's.



WHAT FACTORS AFFECT THE FINANCIAL PERFORMANCE OF THE A/TC EMS SYSTEM?

Factors which can significantly impact EMS models include underutilization of ambulances, slow response times, multiple layers of taxation for emergency services to county residents, and high overtime usage due to improper crew scheduling. In addition, the type of ambulance system significantly affects the cost structure of the emergency care system.

There are two basic types of ambulance systems: 1) an all-advanced life support system in which the entire ambulance fleet is staffed with paramedics and special equipment and 2) the Tiered-Response System, where the fleet is dispatched with either emergency medical technicians or paramedics as the situation dictates. In order to qualify for an ALS transport, the ambulance must be equipped with cardiac monitors, defibrillators, medications, and advanced airway equipment. In addition, state-certified paramedics capable of providing advanced treatment must staff these ambulances. Basic life support (BLS) transports do not require advanced life support equipment or paramedics. Austin-Travis County EMS is an all-ALS ambulance system.

Over the audit period, we noted that approximately 54% of all trips were billed as basic life support calls, yet all calls were dispatched as advanced life support trips, incurring additional costs associated with units being dispatched ALS. An "all-ALS" ambulance system may be optimal in urban settings, because the high costs can be spread over units that are highly utilized; however, the opposite is true in rural/suburban settings since high costs are allocated to relatively underutilized units.

Pflugerville

A/TC EMS has long provided ambulance services for the Pflugerville Fire Department (PFD), also known as Travis County Emergency Services District (ESD) #2. However, PFD approved a strategic plan in August 2015 to implement advanced life support and in-house ambulance services. This strategic plan allows PFD to increase tax levy's and double the number of ambulances immediately available within the district in comparison to the old agreement with A/TC EMS. Two ambulances were placed in service in 2017, with two additional ambulances coming online in 2018, and two ALS squads in 2019 or 2020.

The addition of these units in Pflugerville is a significant change to the A/TC EMS service model, particularly for the County. County Unit M21, typically the County's most-utilized unit had a one percent utilization rate in the first quarter of FY17, down from its usual 25 to 35% utilization rate. The loss of trips in Pflugerville will significantly reduce County EMS billings and collections going forward – a potential loss of $1.5M per year in County revenue.

SUMMARY

Due to Pflugerville placing EMS units in service, the County has lost a major revenue source and a valuable portion of its ambulance service network, reducing utilization for the County's already under-utilized units. Compounding this reduction in revenue, the County's annual payments to the City under the ILA have increased from $10.9 million in 2009 to $16.6 million in 2016, a 52% increase, 24% greater than the increase in the consumer price index over that period. Operationally, the City has been unable to meet its response time goals for County transports for the most life-threatened parties, and the City has the slowest average transportation times when compared to other large Texas Counties. Significant changes to the structure and operation of Travis County EMS may be necessary in the coming years to meet these challenges.