Executive Summary

The City of Fort Worth retained Fitch & Associates, (FITCH) to complete a comprehensive study of the Emergency Medical Services (EMS) system. The completed study will evaluate all aspects of the EMS system including governance, organizational structure, operations, response times, billing and revenue, and all costs and expenditures of the current system.

In addition, alternative models will be developed with the pros/cons of system design changes, implementation strategies, and timelines, as well as the costs associated with each model. Principally, findings and recommendations based on our analysis will provide insight into how the City of Fort Worth can most effectively approach the provision of emergency medical services (EMS), now and into the future. A comprehensive assessment of the community demand was completed so that the city can consider and adopt policies with the utmost confidence to meet community expectations with a high degree of transparency.

This DRAFT Final Report is a briefing on the contextual evaluation of the system opportunities, costs, and performance capabilities.

Overall, there are eight key takeaways that were utilized to frame opportunities for improvement and a pathway forward. The peer agency comparisons found that Fort Worth and MedStar are experiencing similar challenges as the other communities and there was nothing in the data that would suggest that the MedStar service area was experiencing anything unique or aberrant that would explain the recent fiscal challenges.

The recent fiscal constraints within the MedStar system have been challenging and have impacted the ability to deploy the optimal number of resources. The less than optimal deployment causes longer response times and increases the system and employee workload considerably.

If the EMS system was optimally resourced to control for system workload, the system could have an opportunity to improve response times by up to 5.5 minutes. In addition, the reprioritization efforts should be revisited to better align with, and support, operational efficiency and cost reductions.

Efficiencies were found in separating the IFT and 911 work and relaxing the exclusivity for interfacility transfers. Finally, it is recommended that the City of Fort Worth should serve as the EMS Authority.

Key Takeaways

1. In 2023, the EMS system did not deploy sufficient resources to meet the desired response time objectives.
2. The system workload significantly exceeded the recommended upper threshold for best practice.
3. It is recommended that the governance of the system reside with the City of Fort Worth as the EMS Authority.
4. If the system was resourced appropriately to control for workload, an opportunity exists to improve response time performance by 5.5 minutes.
5. The reprioritization efforts should be reevaluated to better align the distribution of ALS and BLS incidents so the system can reduce costs through the utilization of BLS resources.
6. It is recommended that the IFTs are segmented out to the free market and eliminate the exclusivity of MedStar.
7. Consolidation of the Fort Worth Fire 911 Communications Center and the MedStar Communications Center will provide operational and fiscal efficiencies.
8. The “system” should operate more seamlessly as an integrated system for elements such as interoperability, coordination of special events, MIH, and public information.

Primer on Public Utility Models (PUM)

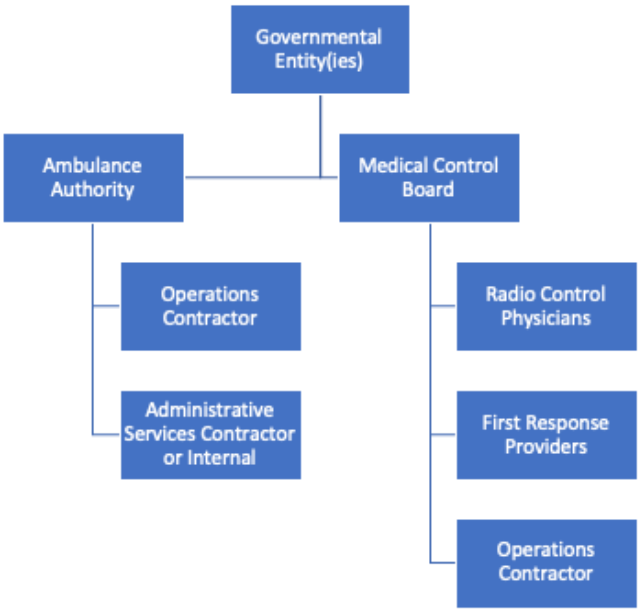
The Metropolitan Area EMS Authority ("MedStar") was created by the City of Fort Worth in 1986 to manage and regulate the provision of emergency medical services, including first responders and emergency and non-emergency ambulance transport services. At that time, a public utility model (PUM) was selected, which employed a third-party ambulance contractor to provide the ambulance transport component. The PUM model, originally conceived in 1976 by a team of economists and behavioral scientists from the University of Oklahoma[1], outlined a number of key characteristics, reflected in the figure below. However, two are relevant to the current discussion. First, governance responsibilities reside with local government entities. The overarching requirement is that local government:

> *Represent the customers, taxpayers and the general public, serving their interest by enacting a well-defined set of "rules" for the operation of the system, empowering the physicians to govern clinical aspects, and establishing a separate mechanism for governing the business affairs of the system. Local government also annually decides next year's rate/subsidy. (Stout, March 1985, p. 73).*

This structure makes the "Authority" under the control of, and responsible to, an actively engaged local government, as reflected in the graphic below[2]. Prior to its assumption of directly providing ambulance transportation services, the Authority's role was, as a business manager, to actively monitor and report on the contractor's performance.

Second, the primary role of local government under the public utility model as originally defined[3] is to establish the funding framework, including establishing rates and providing – to achieve a desired level of performance - the degree of public support that may be desired. During these early years, the system received varying levels of public support from member communities[4]. These PUM design elements are included in the criteria originally defined by Stout.

- Establishing clinical standards of production
- Establishing response time standards of production
- Rate-setting
- Establishing level of subsidy
- Enforcing regulations governing these production standards
- Establishing a public authority, and selecting the "directors"



Of course, these original design considerations of a PUM are not mandatory to any degree. Yet, some of the anticipated pitfalls contemplated by Stout and colleagues may be seen throughout this report.

[1] The background on public utility models is derived from a series of articles by Jack Stout published in 1980 and then revisited again in 1985. All were published in the Journal of Emergency Medical Services, accessed at https://emsmuseum.org/collections/archives/people/jack_stout/ on December 11, 2023
[2] Ibid.
[3] Ibid
[4] Stout reported that in 1978-1979, Fort Worth provided public funding of $713,743.

High-Level Summary of Stakeholder Input

The MAEMSA Board Members were interviewed between November 16th and December 19th as part of the stakeholder input phase. All interviews were prefaced with information about the scope of work and the intended qualitative value is provided by stakeholder input to complement the strong data-driven approach to all other analyses.

Interviews were not prescriptive and addressed very high-level questions such as:

- What is working?
- What needs improvement?
- Is the board make up fair and representative?
- Is there accountability to the board?
- Who is the board accountable to?
- Is there transparency between MedStar staff and the board?

High-Level Themes

- Governance
- Accountability
- Transparency
- Board function and representation
- Fiscal sustainability

Interviews were allowed to take their own path as the board members were provided latitude to answer the questions and discuss related perspectives.

Finally, interviewees were provided with an opportunity to ask any questions about the project team, the study process, and the scope of work.

The results of the interviews were then arranged following a SWOT analysis that provides high-level themes while maintaining anonymity for the board members interviewed.

High-Level Summary of Hospital Stakeholders

The City of Fort Worth management, and select elected officials, have had the opportunity to meet with the hospital CEO stakeholders during the ongoing discussions regarding emergency medical services. During these sessions, the city reported that specific feedback was received regarding the interfacility transfers and other hospital-based non-emergency patient transfers. As part of the study process, the hospital CEO stakeholder group provided more detailed feedback on the strengths and weaknesses of the interfacility patient transfers (IFTs) with the Fitch team and city management. The Fitch team met with the hospital CEO stakeholders, in a group setting, on two occasions.

Interviews were not prescriptive and addressed very high-level questions such as:

- What is working?
- What needs improvement?
- What are your greatest challenges?
- What solutions would provide value?

High-Level Themes

- Excellent clinical sophistication
- Patient transports are delayed
- Greater response time performance transparency is desired
- Patient billing is delayed
- Would like to see market competition for IFTs

Interviews were allowed to take their own paths as the board members were provided latitude to answer the questions and other items related to their perspectives. Finally, interviewees were provided with an opportunity to ask any questions about the project team, the study process, and the scope of work.

The results of the interviews were then arranged following a SWOT analysis that provides high-level themes while maintaining anonymity.

Recommendations for System Governance

Stakeholder input, which included MAEMSA Board Members, provided some general context for challenges and opportunities with the current governance model for the MedStar system. These were previously presented within the SWOT analyses of the stakeholder input, but are replicated here for the reader's convenience:

- Governance
- Accountability
- Transparency
- Board Function and Representation
- Fiscal Sustainability

The following recommendations are offered to establish a framework for overcoming these challenges and navigate future opportunities without any necessity to attempt to prove or validate stakeholder perceptions. In other words, the perceived environment is already influencing oversight and should be addressed.

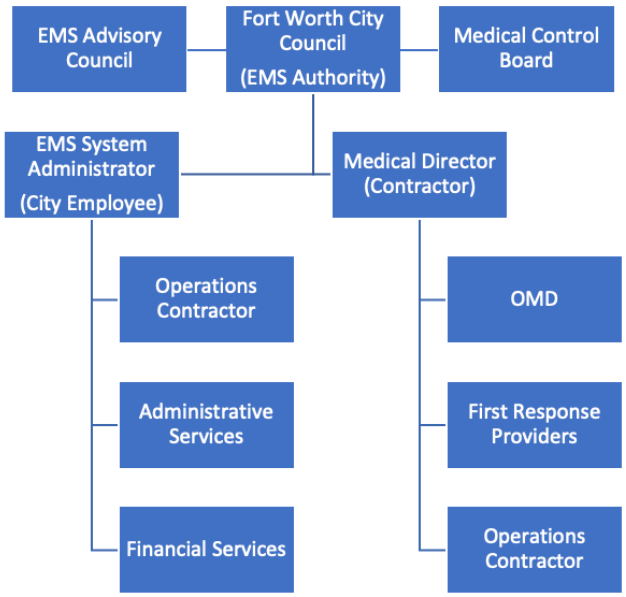
Governance - Under the assumption that the city and stakeholders view EMS as an essential service, then local government must address two essential questions: 1) system governance and 2) funding the services. As presented in the "Primer on Public Utility Models", the original design and intent of public utility models were to have the authority under the control of, and responsible to, an actively engaged local government. Therefore, the recommendation is that the governance return to the City of Fort Worth. There are multiple configurations that could be employed and the finer details will be customized to the ultimate policy choice on the system design alternatives that best align with the governance.

Recommendations

It is recommended that the Fort Worth City Council assumes a dual role as the EMS Authority and has direct fiscal oversight and budget authority and oversees the city's EMS System Administrator.

The city should reduce administrative redundancies between the city infrastructure and MedStar.

OMD should be an independent contractor to the EMS Authority.



However, at a high level, it is recommended that the City Council assumes a dual role as the EMS Authority and has direct fiscal oversight and budget authority, annually approves the billing rates, oversees billing, and oversees the city's EMS System Administrator. In addition, it would be recommended that OMD and medical direction is a direct report or independent contract to the EMS Authority and is independent of the ambulance provider.

Finally, it is recommended that administrative duplication is reduced between the City of Fort Worth and MedStar as many functions could be provided by the city such as payroll, human resources, worker's compensation, IT, billing, performance/compliance, and legal. This will provide greater oversight and control of system costs that may be predominantly funded by the city.

Recommendations for System Governance

Accountability
Accountability can be viewed through multiple lenses such as board accountability to the public, to the system performance, and organizational accountability to the board and member cities. The recommended governance changes will make EMS operations accountable to the public in the same manner that all City of Fort Worth functions. The organizational accountability to the board and member cities would be adequately addressed through the direct oversight and budgetary authority of the City Council.

It is envisioned that the current member cities would transfer to a contractual relationship with the City of Fort Worth for continuation of ambulance services. Of course, this would be voluntary and a local policy decision for each community. In addition, member cities would have appointed positions on the EMS Advisory Council.

The accountability to meet desired performance objectives would be much improved through City Council oversight, the power of the purse, and the City of Fort Worth's EMS System Administrator that would independently measure performance and hold the system provider accountable through contract administration.

Recommendations

Under the assumption that public funding is a necessary solution, it is recommended that the city assume control and responsibility of all operations, oversight, revenues, and expenditures to ensure long-term fiscal sustainability that is publicly accountable.

Transparency
Any issues of transparency that may exist within the current MedStar governance model would be addressed through direct oversight by the City Council, the city's EMS System Administrator, the budget process, and independent performance measurement.

Board Function and Representation
Any perceived board issues with representation and self-interest bias would largely be solved by the representative form of government and the City Council serving in a dual role as the EMS Authority. All activities would be fully transparent and accountable through elected city council members that answer directly to their constituents.

Fiscal Sustainability
The fiscal instability facing MedStar is not unique in the national patient transportation industry. Unfortunately, costs have been rising at a much faster rate than the revenue systems available to fund EMS. Therefore, public funding has been the predominant solution when the prospect of reducing services are not tenable. Under these circumstances, the system's cost for "readiness" is best publicly funded as an essential service and the marginal costs are funded through user fees at the individual level*.

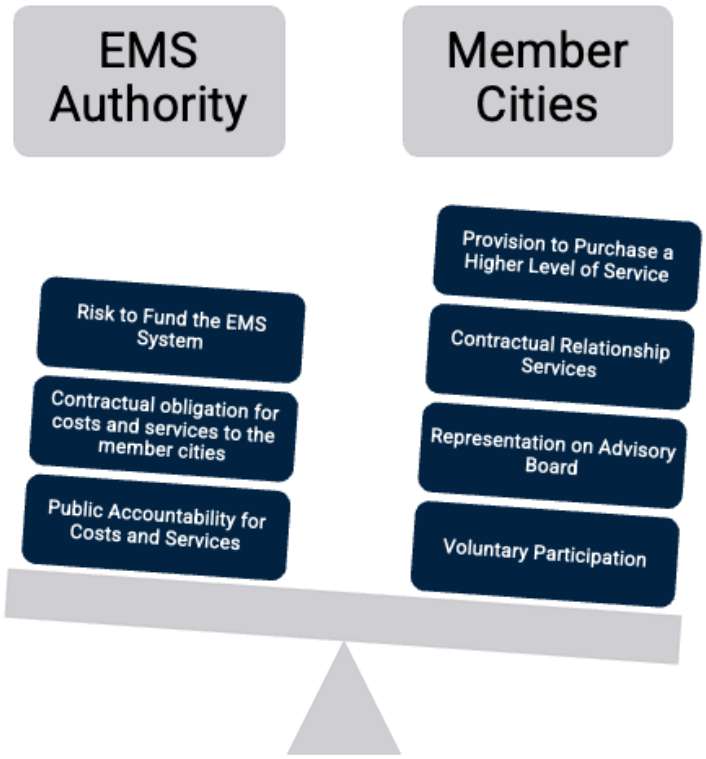
Overall, the municipal oversight and budget process will ensure sustainability with respect to the policy balance between public need and the ability to purchase services, just like all other essential services that lack a viable market.

*__An Analysis of Prehospital Emergency Medical Services as an Essential Service And as a Public Good in Economic Theory.__ M. I. J. Van Milligan M, Tucker J, Arkedis J, Caravalho D. Institution: National Academy of Public Administration 2014 Washington DC: National Academy of Public Administration. p. 20

Member City Considerations

MedStar is created by an interlocal agreement (ILA) between the member cities. Therefore, as owners and creators of the MedStar system, *FITCH* was invited to attended the periodic meetings that the member cities had scheduled. The member city group meetings were intended for the city managers and/or their designees to maintain an open and transparent dialogue regarding the EMS system.

FITCH was able to attend a total of three member city manager meetings during the study period. At the conclusion of the first member city manager meeting, the group was advised to reach out directly to either the City of Fort Worth or the *FITCH* team if they wanted to provide any additional feedback or seek additional clarification outside of the group setting. In total, four agencies requested time to meet individually.



Stakeholder feedback was consistent from the MAEMSA member cities, who wanted greater representation and transparency in the EMS system operations. It is also recognized that the member cities may have some hesitancy with changes if those needs are not met.

Observation

Currently, excluding Fort Worth, all of the member cities collectively share a single minority vote on the MAEMSA Board.

The governance change will provide a more robust member city representation for system concerns on the advisory board and direct control through the contractual relationship.

Recommendations

It is recommended that the City of Fort Worth enter into a contractual relationship with each member city that delineates performance expectations and costs that are both transparent and accountable.

Therefore, multiple strategies are included in this governance model to improve accountability and transparency. As proposed, member cities would have the following mechanisms at their disposal.

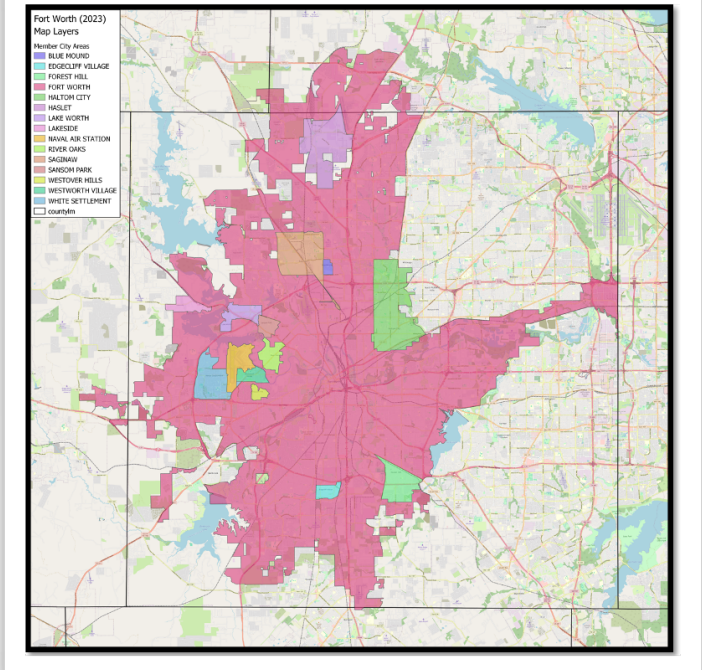
- Participation is voluntary.
- Representation on the Advisory Board that provides representation to the EMS Authority.
- Contractual relationship that defines both costs and services.
- Elect to purchase a higher level of service if desired.

Comparison of Peer Communities

Following the direction of the project steering committee, agencies were selected that included the five more populous and the 5 less populous communities with respect to the City of Fort Worth, TX. In addition, agencies that are like PUM/AimHI agencies to MedStar were included as well to ensure that both population-based and system-design based comparators were chosen.

Variables Considered

- Total population
- Population density
- Population growth
- Square mileage of each jurisdiction
- Median age of residents
- Median household income
- Unemployment rate
- Population without health insurance
- Percent of population 65 and over without medicare
- Percent of population with medicaid or means-tested public coverage
- Median household income
- Per capita income
- Income inequality
- Percent of population below poverty
- Isolation - seniors living alone
- Various health outcomes
- Motor vehicle crash fatalities



Blue Mound
Edgecliff Village
Forest Hill
Fort Worth
Haltom City
Haslet
Lake Worth
Lakeside
River Oaks
Saginaw
Sansom Park
Westover Hill
Westworth Village
White Settlement

In addition, similar analyses were completed for the MAEMSA Member Jurisdictions to the extent that data was evaluated.

Detailed comparisons are provided as supporting appendixes.

The following pages identify the more substantive takeaways for policy understanding and consideration.

Comparisons - Population and Age

The **Total Population** and **Population Density** were evaluated to provide context for the assumed surrogate measure that population is a driver of community requests for service (right). Overall, the City of Fort Worth has a total population and density that was 12 and 11, respectively, out of 20 comparison communities.

Population Growth was provided through 2031 utilizing census estimates (below). The City of Fort Worth is anticipated to be one of the fastest growing populations within the comparison communities at 3.92%. Only Travis County, TX and Wake and Mecklenburg Counties, NC would have higher growth projections through 2031. Therefore, it is reasonable to assume that the overall demand for EMS services will continue to rise into the coming decade.

Rank	Location	Number of People[1]
1	Houston, TX	2,293,288
2	San Antonio, TX	1,434,540
3	San Diego, CA	1,385,398
4	Dallas, TX	1,300,239
5	Travis County, TX	1,267,795
6	Wake County, NC	1,112,883
7	Mecklenburg County, NC	1,100,984
8	San Jose, CA	1,013,337
9	Pinellas County, FL	957,989
10	Austin, TX	944,658
11	Jacksonville, FL	937,690
12	Fort Worth, TX	908,469
13	Columbus, OH	898,143
14	Indianapolis, IN	880,104
15	Seattle, WA	726,054
16	Oklahoma City, OK	673,183
17	Tulsa, OK	410,652
18	Arlington, TX	392,304
19	Reno, NV	259,913
20	Richmond, VA	225,676
Tarrant County, TX		2,091,953
State of Texas		28,862,581
United States of America		329,725,481

[1]US Census Bureau ACS 2017-2021

Rank	Location	Population Density[1]
1	San Jose, CA	5,585.2
2	Seattle, WA	5,110.5
3	Columbus, OH	3,974.5
4	Arlington, TX	3,945.0
5	San Diego, CA	3,720.0
6	Richmond, VA	3,606.8
7	Houston, TX	3,414.3
8	Dallas, TX	3,390.8
9	Austin, TX	2,893.2
10	San Antonio, TX	2,845.0
11	Fort Worth, TX	2,545.8
12	Indianapolis, IN	2,392.0
13	Reno, NV	2,326.9
14	Tulsa, OK	2,034.5
15	Mecklenburg County, NC	2,016.2
16	Wake County, NC	1,298.6
17	Travis County, TX	1,236.8
18	Pinellas County, FL	1,110.7
19	Oklahoma City, OK	1,084.4
20	Jacksonville, FL	1,072.3
Tarrant County, TX		2,314.6
State of Texas		107.5
United States of America		89.0

[1]Calculated using US Census Bureau data; total population ACS 2017-2021, and area in square miles 2021

Rank	Location	Percent Change[1]
1	Wake County, NC	4.73
2	Travis County, TX	4.13
3	Mecklenburg County, NC	4.12
4	Fort Worth, TX	3.92
5	Reno, NV	3.49
6	Austin, TX	3.47
7	Oklahoma City, OK	2.62
8	Arlington, TX	2.56
9	Jacksonville, FL	2.53
10	San Antonio, TX	2.46
11	Seattle, WA	2.19
12	Columbus, OH	2.09
13	Houston, TX	2.04
14	Dallas, TX	1.69
15	San Jose, CA	1.62
16	San Diego, CA	1.51
17	Indianapolis, IN	1.32
18	Tulsa, OK	0.80
19	Richmond, VA	0.79
20	Pinellas County, FL	0.78
Tarrant County, TX		3.44
State of Texas		3.20
United States of America		1.96

[1]Calculated using US Census Bureau data; represents average annual rate of population change (%) from 2017-2021 to 2031

Median Age was evaluated to determine the extent to which age demographic affects the utilization rates of EMS systems (right). A significant body of research indicates that there is a correlation between higher ages and the utilization of EMS systems that increases exponentially across age distributions such as 65-74, 75-84, and 85 and above.

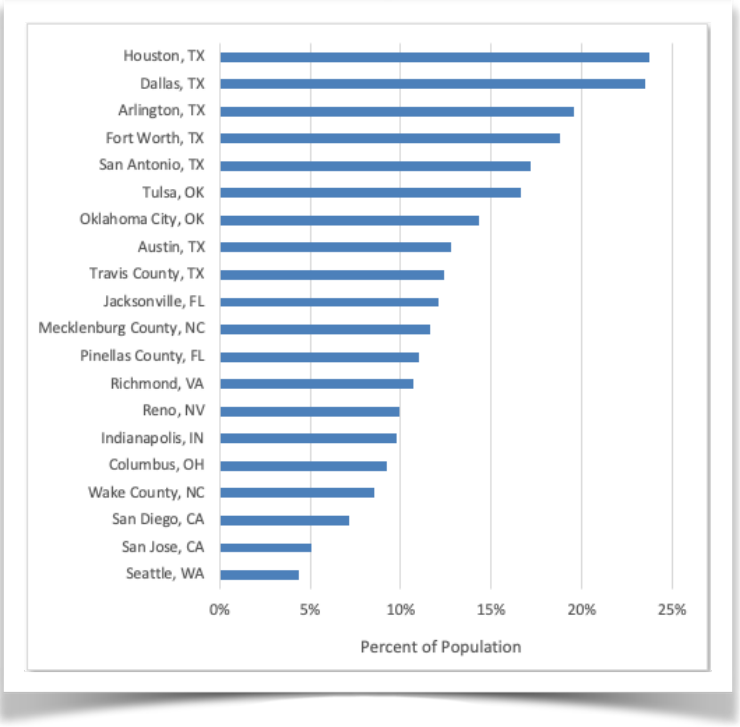
Overall, the City of Fort Worth has one of the lowest age demographics of the comparison group and only 9.9% of the total population is 65 and above. Therefore, the impact of aging in the community will be more stable than most of the comparison communities.

Rank	Location	Median Age (Years)[1]
1	Pinellas County, FL	48.5
2	San Jose, CA	37.5
3	Wake County, NC	36.7
4	Reno, NV	36.4
5	Jacksonville, FL	36.2
6	Tulsa, OK	35.6
7 (T)	Mecklenburg County, NC	35.4
7 (T)	San Diego, CA	35.4
9	Seattle, WA	35.3
10 (T)	Oklahoma City, OK	34.9
10 (T)	Travis County, TX	34.9
12	Richmond, VA	34.4
13	Indianapolis, IN	34.3
14 (T)	Austin, TX	33.9
14 (T)	San Antonio, TX	33.9
16	Houston, TX	33.7
17 (T)	Arlington, TX	33.1
17 (T)	Dallas, TX	33.1
19	Fort Worth, TX	33.0
20	Columbus, OH	32.5
Tarrant County, TX		34.8
State of Texas		35.0
United States of America		38.4

[1]US Census Bureau ACS 2017-2021

Comparisons - Social Determinants of Health

The **Percentage of Population without Health Insurance** was evaluated to provide context for the proclivity of population with limited access to healthcare to utilize EMS as the first access to care as well as provide an indication as to the fiscal implications of the populations ability to pay for services (right). Overall, the City of Fort Worth is reported to have 18.8% of the population without health insurance coverage.



The **Percent of Population Age 65 Years and Over without Medicare** was provided, 2017-2021, utilizing census estimates (below). The City of Fort Worth has a higher percentage of population (7.1%) without medicare than the majority of the comparison communities. Understanding that Fort Worth had one of the lowest median ages and has less than 10% of the community is in the 65 and over bracket, these findings suggest that a high percentage of the 65+ age demographic does not have medicare.

Rank	Location	Percent of Population[1]
1	Houston, TX	8.7
2	Austin, TX	8.5
3	Dallas, TX	8.4
4	Arlington, TX	8.3
5	San Jose, CA	7.3
6	Travis County, TX	7.3
7	Fort Worth, TX	7.1
8	Columbus, OH	6.3
9	San Diego, CA	6.2
10	Seattle, WA	5.5
11	Mecklenburg County, NC	5.2
12	San Antonio, TX	5.0
13	Oklahoma City, OK	4.9
14	Tulsa, OK	4.8
15	Jacksonville, FL	4.8
16	Wake County, NC	4.6
17	Indianapolis, IN	4.5
18	Reno, NV	4.3
19	Pinellas County, FL	4.0
20	Richmond, VA	3.3
Tarrant County, TX		**6.7**
State of Texas		**5.9**
United States of America		**4.4**

[1]US Census Bureau ACS 2017-2021

The **Percent of Population with Medicaid or Means-Tested Public Coverage** was evaluated and found similar results with a lower rank order of the population with medicaid compared to peer communities (right).

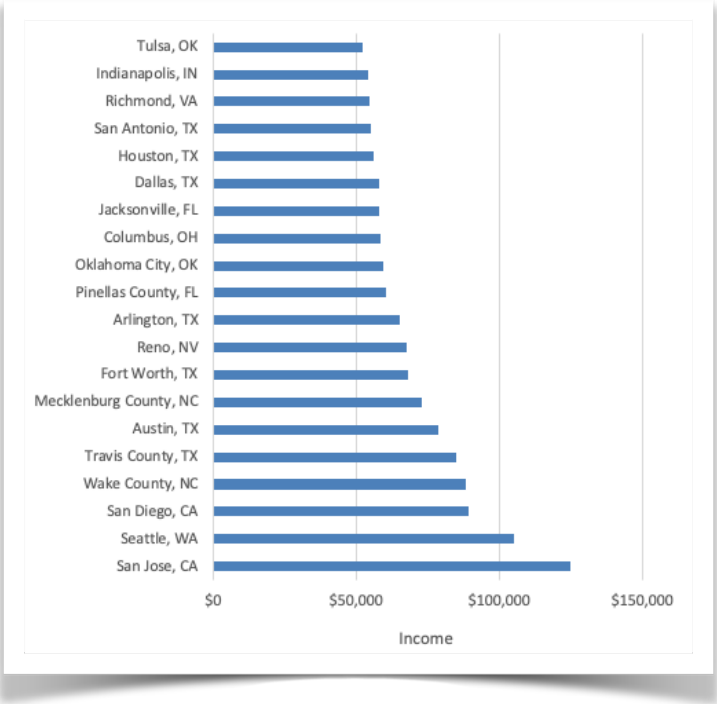
Overall, the City of Fort Worth is reported to have 17.1% of the population without medicaid. The State of Texas is at 16.4%. The overall impact of access to healthcare and public insurance may be better answered in subsequent revenue assessments by payors.

Rank	Location	Percent of Population[1]
1	Indianapolis, IN	25.1
2	Columbus, OH	24.6
3	Richmond, VA	21.7
4	Houston, TX	20.9
5	Tulsa, OK	20.8
6	San Antonio, TX	20.7
7	San Jose, CA	20.1
8	Jacksonville, FL	19.9
9	Dallas, TX	19.2
10	San Diego, CA	18.9
11	Oklahoma City, OK	18.3
12	Fort Worth, TX	17.1
13	Arlington, TX	16.5
14	Reno, NV	15.1
15	Mecklenburg County, NC	14.9
16	Pinellas County, FL	14.5
17	Seattle, WA	12.7
18	Austin, TX	11.4
19	Travis County, TX	11.4
20	Wake County, NC	11.2
Tarrant County, TX		**14.8**
State of Texas		**16.4**
United States of America		**20.2**

[1]US Census Bureau ACS 2017-2021

Comparisons - Economic Stability

The **Median Household Income** was evaluated to provide context for the relationship that socioeconomic factors have with the utilization of emergency services (right). Overall, the City of Fort Worth is reported to have a median household income of $67,927 which is the 7th highest value across the peer communities and nearly identical to the State of Texas' value of $67,321.



The **Per Capita Income** was provided, 2017-2021, utilizing census estimates (below). The City of Fort Worth has a per capita income of $32,569 which is the 5th lowest across the peer comparison communities and lower than the per capita income of Tarrant County, the State of Texas, and the United States.

Rank	Location	Income[1]
1	San Antonio, TX	$28,579
2	Arlington, TX	$30,659
3	Indianapolis, IN	$31,538
4	Columbus, OH	$32,481
5	Fort Worth, TX	$32,569
6	Jacksonville, FL	$32,654
7	Oklahoma City, OK	$33,162
8	Tulsa, OK	$33,492
9	Houston, TX	$35,578
10	Dallas, TX	$37,719
11	Richmond, VA	$38,132
12	Reno, NV	$39,104
13	Pinellas County, FL	$39,539
14	Mecklenburg County, NC	$43,919
15	Wake County, NC	$45,425
16	San Diego, CA	$46,460
17	Austin, TX	$48,550
18	Travis County, TX	$49,191
19	San Jose, CA	$53,574
20	Seattle, WA	$68,836
Tarrant County, TX		**$36,170**
State of Texas		**$34,255**
United States of America		**$37,638**

[1]US Census Bureau ACS 2017-2021

The **Percent of Population Below Poverty Level** was evaluated and found that Fort Worth is one position lower than the median of the comparison communities (right).

Overall, the City of Fort Worth is reported to have 13.4% of the population below poverty level. The State of Texas is at 14%. Income has various confounding relationships related to the utilization of emergency services.

Rank	Location	Percent of Population[1]
1	Richmond, VA	19.8
2	Houston, TX	19.5
3	Columbus, OH	18.4
4	Tulsa, OK	18.0
5	Dallas, TX	17.7
6	San Antonio, TX	17.6
7	Indianapolis, IN	16.4
8	Oklahoma City, OK	14.9
9	Jacksonville, FL	14.9
10	Arlington, TX	14.0
11	Fort Worth, TX	13.4
12	Reno, NV	12.6
13	Austin, TX	12.5
14	San Diego, CA	11.6
15	Pinellas County, FL	11.5
16	Travis County, TX	11.2
17	Mecklenburg County, NC	10.6
18	Seattle, WA	10.0
19	Wake County, NC	8.5
20	San Jose, CA	7.7
Tarrant County, TX		**11.3**
State of Texas		**14.0**
United States of America		**12.6**

[1]US Census Bureau ACS 2017-2021; values represent number of people with income in the past 12 months below poverty level divided by number of people with poverty status determined, expressed as percentages

AimHi Self-Reported Survey Data

The AimHI consortium is a group of high-performance EMS systems that provide self-reported survey data in an effort to benchmark across the participating agencies. Generally, there is quarterly reporting internally across the AimHi group, but not all agencies participate fully on all survey requests and/or specific survey questions. In addition, it is understood that these results are limited in the same manner that exists with all self-reported survey data and no independent validation was completed. However, there is contextual value in reviewing the cross agency reporting. All results are self-reported in calendar year 2022.

High Acuity Response Times

The response times standards for high-acuity incidents were reported below. The times are the agency standards to meet, but the results may not be reflective of actual performance as that value was not reported.

Comparison Agency	System Type	High Acuity Response Time Standard	
		Response Time	Percentage
REMSA, NV	Tiered ALS/BLS	8:59	90%
Richmond Ambulance Authority, VA	Tiered ALS/BLS	8:59	90%
Pinellas County, FL	Tiered ALS/BLS	9:59	91%
ESD 11 – Harris County, TX	Tiered ALS/BLS[1]	10:00	85%
MedStar, TX	Tiered ALS/BLS[2]	10:59	85%[3]
Charlotte-Mecklenburg, NC	Tiered ALS/BLS	10:59	90%
EMSA OKC/Tulsa, OK	Tiered ALS/BLS	10:59	90%

Comparison Agency	Patient Service Revenue per Transport	Cost per Transport	Earnings/(Loss) per Transport
MedStar	$ 408.05	$ 424.27	$ (16.21)
EMSA OKC / Tulsa, OK (Combined)	$ 413.71	$ 513.92	$ (100.21)
REMSA, NV	$ 486.62	$ 614.76	$ (128.13)
Richmond Ambulance Authority, VA	$ 297.57	$ 517.41	$ (219.85)
Charlotte-Mecklenburg, NC	$ 479.61	$ 750.69	$ (271.08)
Harris County, TX ESD 11	$ 447.36	$ 949.51	$ (502.14)
AimHI Average	**$422.15**	**$628.42**	**$(206.27)**

Service Costs

While multiple versions of costs and revenues were reported by the AimHi participants, this table summarizes the relationship between costs and revenues per transport. The table was sorted by “loss per transport”.

Overall, each reporting agency self-identifies as loss per transport.

Self-Reported Public Funding

Understanding that each agency reports a per transport loss, it is not surprising that the fiscal sustainability of the systems may be supported by some form of public funding.

Of the reporting agencies, MedStar and REMSA are two agencies that did not receive public funding in 2022.

Comparison Agency	Public Funding	Per Capita Public Funding[4]
Pinellas County, FL	Not Reported	Not Reported
MedStar, TX	$0	$0
REMSA, NV	$0	$0
EMSA OKC/Tulsa, OK	$11,095,397	$6.20
Charlotte-Mecklenburg, NC	$16,984,381	$15.16
Richmond Ambulance Authority, VA	$4,593,979	$20.27
ESD 11 – Harris County, TX	$18,544,086	$26.49
AimHi Average	**$8,536,307[5]**	**$11.36**
AimHi Average	**$12,804,461[6]**	**$17.03**

Peer Agency Descriptions

In addition to the socioeconomic and demographic information previously presented for the peer agencies, structured interviews followed an electronic survey in an attempt to gain a more granular understanding of the peer agencies that were asked to be compared to the Fort Worth and the MedStar systems. All agencies graciously participated in the survey and subsequent interviews with the exceptions of Wake County, NC; San Antonio, TX; and Jacksonville, FL.

Agency Number[1]	Agency Name	Service Area Size (Square Miles)	Service Area Population	Primary Agency Mission	Primary EMS Mission	Annual EMS Call Volume – 9-1-1	Annual EMS Call Volume - IFT
1	Indianapolis EMS (IN)	275	950,000	EMS Only	Transport	130,000	0
2	San Diego Fire and Rescue (CA)	372	1,400,000	Fire and EMS	First Response and Transport	150,000	0
3	Austin-Travis County EMS (TX)	1,100	1,400,000	EMS Only	Transport	152,200	0
4	Arlington Fire Department (TX)	100	386,000	Fire and EMS	First Response	36,000	0
5	San Jose Fire Department (CA)	210	983,000	Fire and EMS	First Response	63,132	0
6	Harris County Emergency Services District 11 (TX)	177	700,000	EMS Only	Transport	57,000	0
7	REMSA Health (NV)	6,542	506,016	EMS Only	Transport	86,064	12,120
8	Richmond Ambulance Authority (VA)	62	226,604	EMS Only	Transport	48,736	8,074
9	Mecklenburg EMS Agency – MEDIC (NC)	546	1,100,000	EMS Only	Transport	156,480	0
10	City of Houston Fire Department (TX)	665	2,288,000	Fire and EMS	First Response and Transport	331,995	0
11	Columbus Division of Fire (OH)	225	920,000	Fire and EMS	First Response and Transport	135,000	0
12	Seattle Fire (WA)	84	700,000	Fire and EMS	First Response and Transport	78,842	0
13	Pinellas County Emergency Medical Services Authority (FL)	273	959,103	Fire and EMS	First Response and Transport	185,735	54,099
14	Emergency Medical Services Authority – EMSA (Tulsa and Oklahoma City, OK)	960	1,100,000	EMS Only	First Response and Transport	250,000	30,000
15	Dallas Fire Rescue (TX)	385	1,300,000	Fire and EMS	First Response and Transport	256,000	0
16	MedStar (TX)	433	1,139,326	EMS Only	Transport	151,433	29,827

Agency Number	Agency Name	System Design	Level of First Response	Level of Transport	Deployment Strategy
1	Indianapolis EMS (IN)	Hospital Based	ALS and BLS Tiered	ALS and BLS Tiered	Station Based
2	San Diego Fire and Rescue (CA)	Alliance Model/Purchased Hours	ALS	ALS and BLS Tiered	Dynamic/System Status
3	Austin-Travis County EMS (TX)	3rd Service	BLS	ALS	Station Based
4	Arlington Fire Department (TX)	Private	ALS	N/A	Station Based
5	San Jose Fire Department (CA)	Fire Based	ALS	ALS	Station Based
6	Harris County Emergency Services District 11 (TX)	3rd Service	ALS and BLS Tiered	ALS and BLS Tiered	Hybrid[2]
7	REMSA Health (NV)	Private	ALS and BLS Tiered	ALS and BLS Tiered	Dynamic/System Status
8	Richmond Ambulance Authority (VA)	Public Utility Model	ALS and BLS Tiered	ALS and BLS Tiered	Dynamic/System Status
9	Mecklenburg EMS Agency – MEDIC (NC)	Public Utility Model	ALS and BLS Tiered	ALS and BLS Tiered	Dynamic System Status
10	City of Houston Fire Department (TX)	Fire Based	ALS and BLS Tiered	ALS and BLS Tiered	Station Based
11	Columbus Division of Fire (OH)	Fire Based	ALS and BLS Tiered	ALS and BLS Tiered	Station Based
12	Seattle Fire (WA)	Fire Based	ALS	ALS and BLS Tiered	Other[3]
13	Pinellas County Emergency Medical Services Authority (FL)	Public Utility Model	ALS	ALS and BLS Tiered	Dynamic/System Status
14	Emergency Medical Services Authority – EMSA (Tulsa and Oklahoma City, OK)	Public Utility Model	ALS and BLS Tiered	ALS and BLS Tiered	Dynamic System Status
15	Dallas Fire Rescue (TX)	Fire Based	ALS	ALS	Station Based
16	MedStar (TX)	Public Utility Model	ALS and BLS	ALS and BLS Tiered	Dynamic/System Status

Results found that all agencies provide emergency medical services, with greater than 50% of the agencies providing both fire and EMS. Both Arlington and San Jose contract for ambulance transport services. Across the peer agencies, a number of system designs are presented.

A comparison of the different service designs and levels of service provided across the peer agencies is provided below. The majority of agencies provide some form of an Advanced Life Support (ALS) and Basic Life Support (BLS) tiered response. Approximately half of the agencies reported utilizing a station-based deployment plan and the other half of the agencies using some form of a dynamic deployment such as system status.

Peer Agency Governance and Accountability

While evaluating the peer agencies, it is clear that the vast majority of agencies have the primary administration or governance within the local government. Therefore, the accountability for the system performance is more closely aligned with the public's expectations through the representativeness of local government.

Agency Number	Agency Name	Primary Administration or Governance	Owned by Governance or Contractor	Who Sets Response Time Standards
1	Indianapolis	County Government	Contractor[4]	Internally Adopted
2	San Diego	City Government	Owned/Contractor[5]	Internally Adopted
3	Austin-Travis County	City Government	Owned	Internally Adopted
4	Arlington FD	City Government	Owned	Contract Language
5	San Jose FD	City Government	Owned	Contract Language
6	Harris County ESD11	Emergency Response District	Owned	Internally Adopted
7	REMSA	Not For Profit	Contractor	Contract Language
8	RAA (Richmond)	For Profit	Contractor[6]	Internally Adopted
9	MEDIC Charlotte	Other[7]	Contractor[8]	Contract Language
10	Houston FD	City Government	Owned	Internally Adopted
11	Columbus Fire	City Government	Owned	Ordinance
12	Seattle Fire	City Government	Owned	Internally Adopted
13	Pinellas County	County Government	Contractor	Contract Language
14	EMSA (Tulsa and OKC)	Other[9]	Owned	Ordinance
15	Dallas FR	City Government	Owned	Internally Adopted
16	MedStar	Not for Profit	Owned	Internally Adopted

Agency Number	Agency Name	Does First Response Stop the Clock?	Who is Responsible for Response Time Oversight?	Average Wall/Wait Time at Hospitals?[19]
1	Indianapolis EMS (IN)	No	Internal Accountability	0:08:27
2	San Diego Fire and Rescue (CA)	No	Internal Accountability	
3	Austin-Travis County EMS (TX)	No	State/Local Government	
4	Arlington Fire Department (TX)	No	State/Local Government	
5	San Jose Fire Department (CA)	Yes	State/Local Government	
6	Harris County Emergency Services District 11 (TX)	No	Internal Accountability	0:39:56
7	REMSA Health (NV)	No	Contract Performance Oversight	0:20:41
8	Richmond Ambulance Authority (VA)	No	Internal Accountability	0:36:00
9	Mecklenburg EMS Agency – MEDIC (NC)	Yes	State/Local Government	0:31:33
10	City of Houston Fire Department (TX)	No	Internal Accountability	0:24:32
11	Columbus Division of Fire (OH)	No	Internal Accountability	0:20:00
12	Seattle Fire (WA)	No	Internal Accountability	
13	Pinellas County Emergency Medical Services Authority (FL)	No	Contract Performance Oversight	
14	Emergency Medical Services Authority – EMSA (Tulsa and Oklahoma City, OK)	No	State/Local Government	0:30:00
15	Dallas Fire Rescue (TX)	No	Internal Accountability	
16	MedStar (TX)	No	Internal Accountability	0:26:36

A second lens of ensuring that accountability and governance has direct oversight to the system's desired performance was completed during the survey and interviews.

In this manner, the question asked was who is responsible for establishing desired response times and the accountability and transparency for ensuring that the system performance was meeting desired outcomes.

Peer Agency - OMD and MIH

Office of the Medical Director (OMD)

Peer agencies were asked to describe the total costs and general services provided within the cost allocation of medical direction. Considerable variability exists for the costs of services.

This supports the observation that the structure, depth and breadth of function, and the ultimate costs are largely a policy choice.

				What Services Are Included in the Cost of Medical Direction						
Agency Number	Agency Name	Internal (Employed) or External	Annual Cost	Protocol Devel.	Protocol Admin.	Credentialing	QA	CQI	Training	Research
1	Indianapolis	External		X	X	X	X	X	X	X
2	San Diego	External	$480,000	X	X	X	X	X	X	X
3	Austin-Travis County	Internal	$3,000,000	X	X	X	X	X	X	X
4	Arlington FD	External	$110,000	X	X	X	X	X		
5	San Jose FD	External	$165,000				X	X	X	X
6	Harris County ESD11	Internal	$315,000	X	X	X	X	X	X	X
7	REMSA	External	$250,000	X	X	X	X	X	X	
8	RAA (Richmond)	External	$42,500	X	X	X	X			X
9	MEDIC Charlotte	External	$273,000	X	X	X	X	X		X
10	Houston FD	Internal	$4,361,946	X	X	X	X	X	X	X
11	Columbus Fire	Internal	$300,000	X	X	X	X	X	X	X
12	Seattle Fire	External		X	X	X	X	X	X	X
13	Pinellas County	External	$1,537,085	X	X	X	X	X	X	X
14	EMSA (Tulsa and OKC)	External	$1,300,000	X	X	X	X	X		X
15	Dallas FR	External	$3,100,000	X	X	X	X	X	X	X
16	MedStar (TX)	Internal	$2,244,974	X	X	X	X	X	X	X

The reader is cautioned that the OMD information is self-reported and a direct apples-to-apples comparison may be misleading due to the potential variability in each agency's approach while answering the questions.

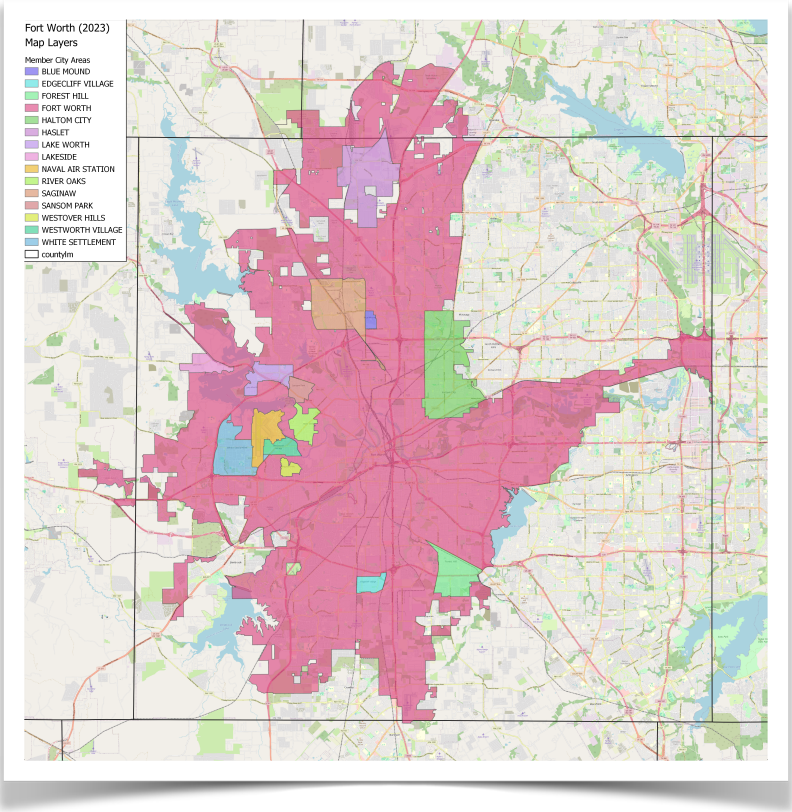
Agency Number	Agency Name	How Many FTE associated with MIH?	Does MIH Program Pay for Itself?	Has MIH Program Reduced 9-1-1 Calls
1	Indianapolis EMS (IN)	2	No	Yes
2	San Diego Fire and Rescue (CA)	7	No	Yes
3	Austin-Travis County EMS (TX)	58	No	Yes
4	Arlington Fire Department (TX)	0	No	No
5	San Jose Fire Department (CA)	0	No	No
6	Harris County Emergency Services District 11 (TX)	0	No	No
7	REMSA Health (NV)	0	No	No
8	Richmond Ambulance Authority (VA)	0	No	No
9	Mecklenburg EMS Agency – MEDIC (NC)	0	No	No
10	City of Houston Fire Department (TX)	0	No	No
11	Columbus Division of Fire (OH)	20	No	Yes
12	Seattle Fire (WA)	15	No	Yes
13	Pinellas County Emergency Medical Services Authority (FL)	0	No	No
14	Emergency Medical Services Authority – EMSA (Tulsa and Oklahoma City, OK)	0	No	No
15	Dallas Fire Rescue (TX)	38	No	Yes
16	MedStar	10	Yes	Yes

Mobile Integrated Health (MIH) The dedication to MIH practices is not universally held across the peer agencies surveyed.

Of the agencies that provide MIH services, none of the agencies reported a cost neutral position for providing MIH services.

All of the agencies that reported providing MIH also reported a reduction in 911 utilization.

Distribution Study

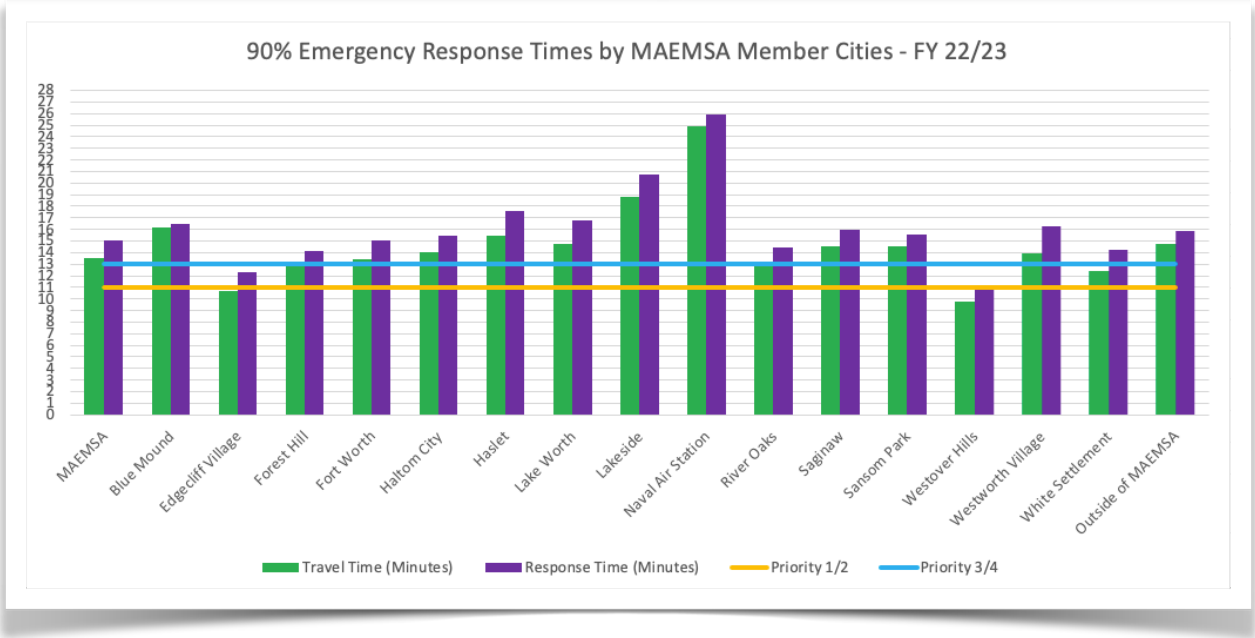


Response-time elements were evaluated by MAEMSA member city jurisdictions. Considering the total response time measure that is utilized by the MedStar system for compliance, it is clear that the system is challenged to meet the most restrictive time frame of 11 minutes for Priority 1 and 2 incidents. The system-level total response time for emergency responses was 15:06 at the 90th percentile.

Observation

Overall, the MedStar system was challenged to meet emergency response time goals at both the system level and the individual MAEMSA member jurisdictions.

Overall, for emergency responses, only Edgecliff Village and Westover Hills were below the 13-minute threshold for emergency responses equating to Priority 3 and 4 incidents thresholds.



Concentration Study and System Resiliency

The concentration of resources sufficient to respond to the frequency and duration of the community demand is utilized to evaluate the efficacy of the deployment strategy for the identified risk. Analyses reveal that the system has an average hourly demand of approximately 31.5 requests for service per hour during peak periods. MedStar made 218,641 responses to 151,433 911 EMS incidents at an average of 1.4 responses per call. This is reflective of assigning and reassigning multiple units on a single incident, incidents with multiple patients, and other multiple-unit responses such as a BLS unit and an ALS fly car. Overall, it is a reasonable average resource commitment given the dynamic nature of the deployment model.

Observation

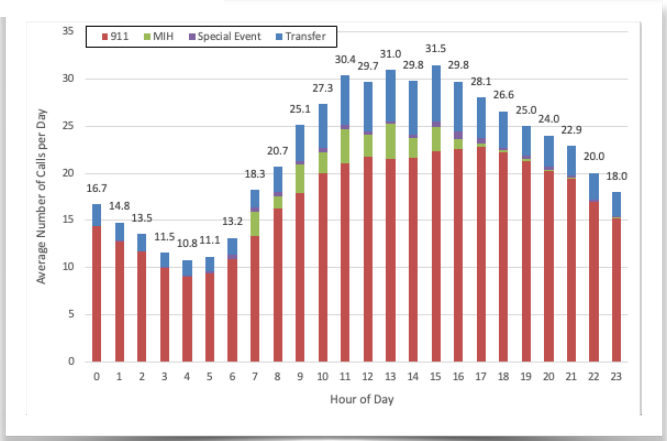
Analyses have been consistent in finding that MedStar was challenged to deploy sufficient resources to meet response time expectations.

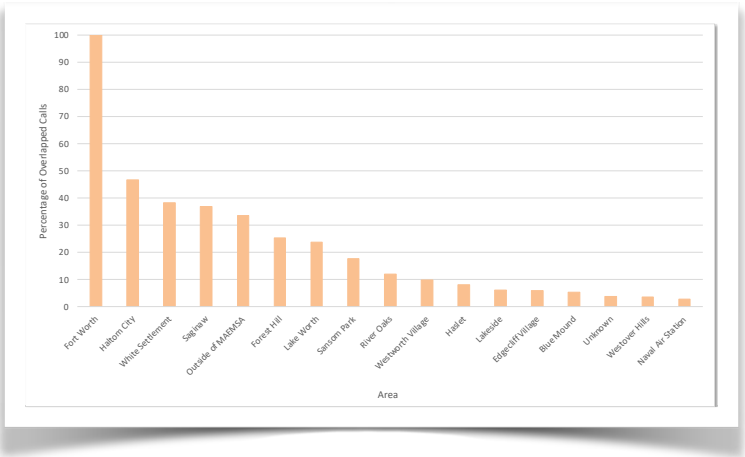
Call Type	Number of Calls	Average Calls per Day	Calls with Time Data[1]	Total Busy Hours	Average Busy Minutes per Call	Number of Responses[2]	Average Responses per Day	Average Responses per Call
911	151,433	414.9	149,958	141,746.3	56.7	218,641	599.0	1.4
MIH	9,468	25.9	9,417	13,130.4	83.7	10,130	27.8	1.1
Transfer	29,827	81.7	29,808	44,845.6	90.3	39,270	107.6	1.3
Special Event	2,688	7.4	2,601	9,424.5	217.4	2,679	7.3	1.0
Total	**193,416**	**529.9**	**191,784**	**209,146.8**	**65.4**	**270,720**	**741.7**	**1.4**

[1]"Calls with Time Data" reflects the number of unique calls in the data file with calculated busy time not otherwise missing or excluded.
[2]"Number of Responses" reflects the total number of unique MedStar unit dispatches.

However, it is also reasonable to assume that the resource commitment per incident will reduce closer to 1.0 if the deployment is fully resourced.

Fort Worth had the highest rate of call concurrency, or simultaneity of EMS incidents, at 99.9%. In other words, nearly 100% of the time, when a unit responded to the first incident, a second or greater incident occurred at the same time before the unit could mitigate the first incident and return to available status. Haltom City has the next highest rate of call concurrency at 46.7%. White Settlement and Saginaw had call concurrency rates of 38.3% and 36.8%, respectively.

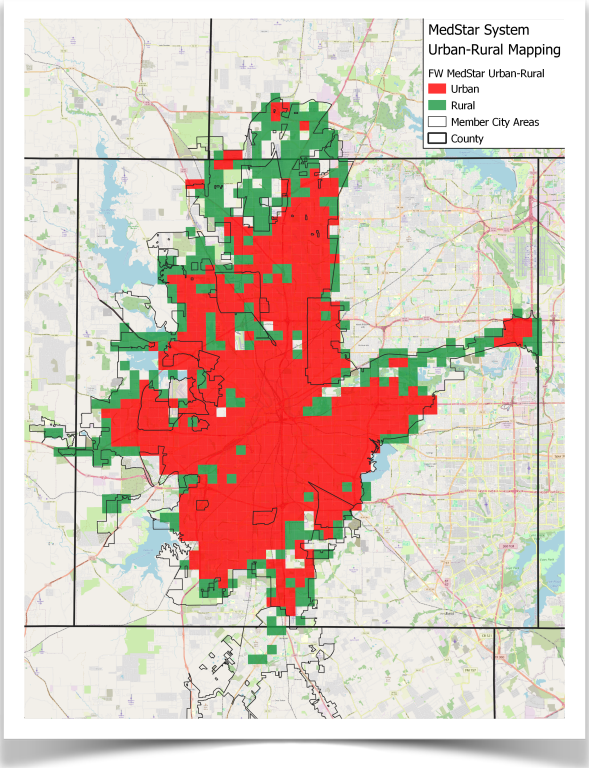




The remaining MAEMSA member cities were under 30% call concurrency. Seven of the communities were under 10% call concurrency.

The call concurrency rate is a good indicator for prioritizing the post plan to ensure that ambulances are located by both geographic demand as well as the probability of an incident occurring.

Commensurate Risk Model and Projected Growth

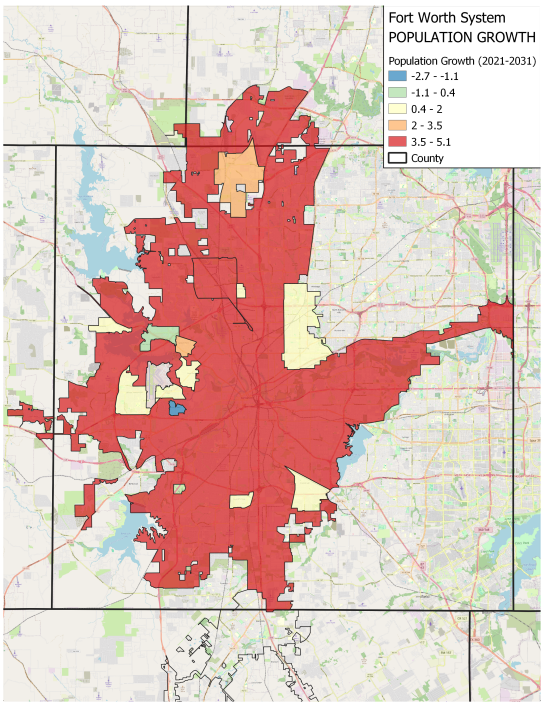


The call density analysis calculates the relative concentration of incidents based on approximately 0.5 geographic areas and at least half of the adjacent 0.5 grids. This assessment is based on call density and not population. The red areas are designated as urban-level service areas and green areas are designated as rural.

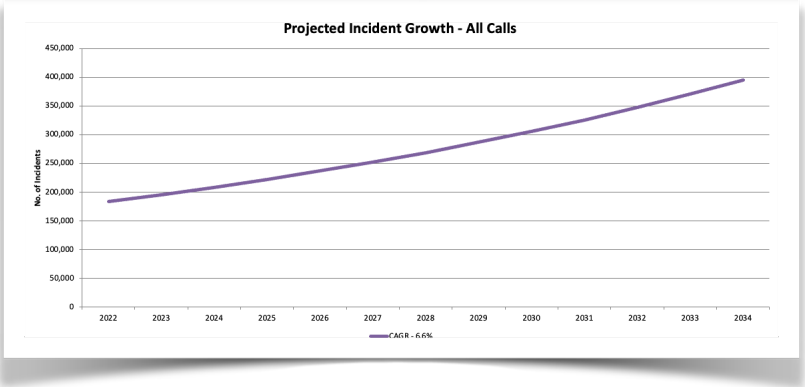
Recommendation

The department should continue to monitor changes in the environment related to population growth and increased community demand.

Population growth projections through 2031 were evaluated by member cities.The City of Fort Worth had the great projected increase in population at a rate of nearly 4%. Growth was variable across the member cities.



From FY 2021/2022 to FY 2022/23, calls for EMS services increased from 183,320 to 195,506 with a compound annual growth rate (CAGR) of 6.6% per year. The figure below depicts observed call volume during the two-year reporting periods and extended to 2034. Caution should be used in interpreting growth data with a small sample size. It is recommended that the system maintain a 5-year rolling average growth rate to assist in action planning and decision making.



Assessment of Patient Transports

The transport rates and call durations were evaluated to articulate the overall demand for services and the call durations utilized for all of the subsequent deployment modeling.

Observation

The data would support the presumption that the decision to transport patients is remarkably consistent throughout the day.

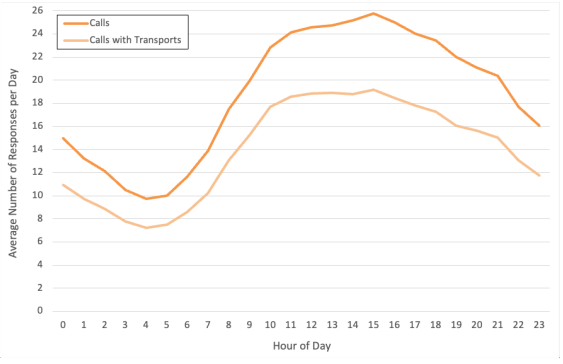
Transports Rates by Service Type and Response Mode

The 2023 data found that 911 related activity had a net transport rate of 69.9% that includes 64.5% or emergency responses and 73.5% for non-emergency responses. As expected, the transport rate for transfers was over 96%. The average duration for 911 incidents that resulted in a transport was 74.8 minutes and transfers were 108.5 minutes.

Call Type and Response Protocol	Non-Transport Average Call Duration (Minutes)	Non-Transport Number of Calls	Transport Average Call Duration (Minutes)	Transport Number of Calls	Total Number of Calls	Transport Rate (%)
911	**34.1**	**40,581**	**74.8**	**94,306**	**134,887**	**69.9**
Emergency, Lights and Sirens	30.8	19,003	75.9	34,453	53,456	64.5
Non-Emergency, No Lights and Sirens	37.1	21,566	74.3	59,850	81,416	73.5
Unknown	65.8	12	96.8	3	15	20.0
Transfer	**62.8**	**1,105**	**108.5**	**28,425**	**29,530**	**96.3**
Emergency, Lights and Sirens	50.1	446	82.1	6,367	6,813	93.5
Non-Emergency, No Lights and Sirens	71.6	659	116.2	22,058	22,717	97.1
Total	**34.9**	**41,686**	**82.6**	**122,731**	**164,417**	**74.6**

The transport rate was evaluated across the course of the 24-hour period. The intent of the evaluation is to look for consistency. In other words, the assumption is that a consistent transport rate is indicative of clinically based decision making. Conversely, if the transport rate dropped during peak periods or overnight, then clinician focused decision might be impacting the system's performance.

The figure below is illustrative of the most consistent application of the transport rate identified by *FITCH*.



Transports Rates by MPDS Determinant

The transport rates were evaluated by MPDS determinants. The determinant with the highest transport rate were Charlie incidents that are predominantly non-emergent ALS incidents at 82.3%. The second highest rate of transports were for Alpha incidents that are predominantly non-emergency BLS incidents. The IFT frequency likely is influencing the distribution as compared to 911 related activity. Bravo incidents transported the least at 56.1%.

Severity	Non-Transport Average Call Duration (Minutes)	Non-Transport Number of Calls	Transport Average Call Duration (Minutes)	Transport Number of Calls	Total Number of Calls	Transport Rate (%)
Alpha	37.2	8,600	85.3	31,900	40,500	78.8
Bravo	30.5	11,468	86.1	14,631	26,099	56.1
Charlie	39.4	7,163	78.8	33,379	40,542	82.3
Delta	32.7	10,817	78.3	29,622	40,439	73.3
Echo	46.2	797	80.4	1,447	2,244	64.5
Omega	36.7	1,720	69.8	3,749	5,469	68.6
Not Reported	42.9	1,121	104.4	8,003	9,124	87.7
Total	**34.9**	**41,686**	**82.6**	**122,731**	**164,417**	**74.6**

Efficacy of Response Time Objectives

A sensitivity to response time has long been a primary driver of EMS system design and resourcing. The prevailing result is an institutional belief that faster is better, where patient outcomes are positively correlated with response times. A 1979 study out of King County, Washington became a foundational piece for the development of NFPA 1710 and the CFAI Accreditation Standards. The study concluded that BLS delivered in 4 minutes and ALS delivered within 8 minutes, which positively correlated with patient outcomes. Thus, this set the bar for the standards still influencing system design today. However, the King County study only focused on non-traumatic sudden cardiac arrest (SCA), yet its standards were extrapolated out to all call types. A follow-up study by Weaver et al (1984) became the foundation for the 90th percentile standard of 8 minutes 59 seconds adopted by the American Ambulance Association (AAA). Again, this study focused on witnessed SCA presenting with V-Fib, yet the standard was extrapolated out to all call types.

Observations

Evidenced-based clinical research coalesces around a response time of 5-minutes or less to have a statistically significant impact on the risk of mortality for the small proportion of high-acuity incidents .

Response time changes above 11-minutes have limited clinical return on investment and are largely a policy decision.

Much has changed in EMS since these studies, including an expanded body of research regarding the influence of response time on patient outcomes. Empirical research has expanded the scope to include a much wider representation of call types and responses while still considering response times in comparison to patient outcomes. The culmination of the research indicates that the threshold for response time to influence patient outcome resides around the 5-minute mark. In other words, if a system cannot respond in less than 5 minutes, then they are unlikely to positively influence patient outcomes purchasing any level of performance that cannot meet 5 minutes. However, it is important to recognize that the 5-minute threshold is associated with high-acuity incidents that account for a small proportion of the total calls. A summary of the relevant research is provided below.

Author	Density	Sample Size	Response Time Threshold	Does Response Time Impact Patient Outcome
Blackwell (2002)	ALS Urban	5,424	5 minutes	Yes < 5 minutes; No > 5 minutes
Pons (2005)	ALS Urban	9,559	4 minutes & 8 minutes	No < 8 minutes; Yes < 4 minutes in intermediate/high risk of mortality
Blackwell (2009)	ALS Urban; BLS MFR	746	10:59	No > or < 10:59
Blanchard (2012)	ALS Urban	7,760	8 minutes	No > or < 8 minutes
Weiss (2013)	Metro/Urban and Rural	559	N/A Continuous Variable	No relationship between time and clinical outcomes
Pons (2002)	ALS Urban	3,490	8 minutes	No > or < 8 minutes after controlling for severity of injury
Newgard (2010)	ALS Urban	3,656	4 minutes & 8 minutes and Golden Hour	No time intervals were statistically related to mortality including response time, on-scene time, transport time, or total EMS time
Band (2014)	ALS Urban; BLS MFR	4,122	N/A Continuous Variable	Adjusted for severity of injury, no significant difference between PD and EMS. In patients with severe injuries, gunshot, or stabbing more likely to survive if transported by POLICE.

Additional research has been conducted to examine the efficacy of emergency, or lights and sirens, responses. While emergency responses do produce statistically quicker responses and transports, very few have clinical implications to patient outcome. Studies also found that emergency responses were warranted in less than 10% of ambulance transports, and hospitals didn't utilize the time savings created upon arrival to the emergency department. At the same time, community risk increases with emergency responses as units navigate against the established traffic practices. Research has shown that most accidents involving emergency vehicles occur while they are responding lights and sirens. MedStar currently responds emergency to 30.3% of 911 EMS incidents.

Efficacy of Response Time Objectives

Considering the research, the MedStar system's current 15.1-minute overall performance for the emergency responses within the EMS program leaves a high degree of flexibility in establishing response time. Although a range of performance would not necessarily negatively impact patient outcomes, the system must still establish a desired level of service. An adopted performance standard helps ensure that the system is adequately resourced so that it can provide a highly reliable level of performance. Furthermore, it provides a benchmark by which to monitor the health of the system's deployment model. While it would be cost prohibitive to purchase a better than 5-minute performance with associated workload controls, the system can improve response times.

An appropriate allocation of resources to meet an 11-minute travel time (13-minute goal), while simultaneously controlling for workload, would require a commensurate number of resources and deployment to meet an 8-minute travel time at the 90th percentile. Therefore, it is recommended that the MedStar system employs the best response time standard available within the same expenditure levels. Detailed analyses of this scenario and deployment are provided under the section of "*FITCH's* Assessment of the 911 EMS System".

The reprioritization efforts were intended to increase the systems capability to respond to the highest clinical severity patients (Priority 1) at approximately a 9-minute travel time. The system has reported some early success in inching closer to the desired timeframe, but has not met the response time goal to date. However, following MedStar's reporting, an unintended consequence of this policy change is that the Priority 2 incidents have elongated and the distribution of calls for lower-priority BLS incidents has been significantly reduced to where the full administrative capacity for innovation in deployment has been significantly reduced. Therefore, it is recommended that MedStar reevaluates the reprioritization efforts and return to the full capacity available in the MPDS system currently utilized by MedStar.

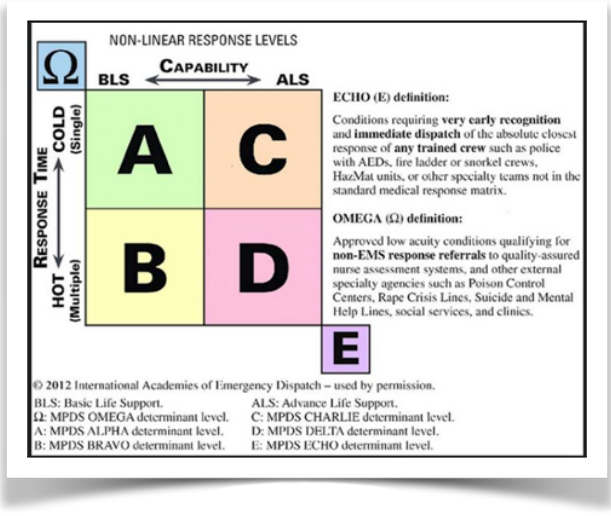
Observation

The system can improve response time from the current 13.5 minutes to 8-minutes travel time for all emergency 911 responses with an appropriately resourced deployment model.

Recommendations

It is recommended that the EMS System adopt an 8-minute travel time standard to all 911 related emergency responses.

It is recommended that the 2023 reprioritization is reevaluated to provide the greatest opportunity for innovation in deployment.



An example of the non-linear call categorization and prioritization for MPDS is provided (left). The full utilization of the program currently in use will afford a robust distribution of BLS calls, recommendations for non-emergency responses, and the full capability to triage calls. The system governance would have sufficient flexibility to establish response time goals within the approximate 1300 call determinants. In other words, the MPDS system that is currently utilized by MedStar has all of the capabilities to achieve the intended results, without the unintended consequences associated with the reprioritization of 2023.

Historical Performance by 2023 Reprioritization

Analyses were completed that evaluated the retrospective modeling of the December 2023 reprioritization to the response data provided. The FY 22/23 year was utilized. There are two distinctions with these analyses that are important to understand. First, response time data was evaluated at the incident level in order to best describe the callers experience for the incident. In other words, irrespective of how many times MedStar units may have been assigned, cancelled, or reassigned the totality of the response time is anchored to the incident beginning with when MedStar received the call at their dispatch center. Second, the data is a pure measure of the performance and does not include the myriad of exceptions that may exist in the MedStar reporting today. Therefore, it is not intended for the reader to make direct comparisons with past reporting on MedStar's performance, but rather posit the true capabilities within the system in an effort to discuss what values should be expected and/or adopted for the future.

Priority Level and Priority	Dispatch Time (Minutes)	Turnout Time (Minutes)	Travel Time (Minutes)	Response Time (Minutes)	Sample Size[1]
1	**1.9**	**0.4**	**11.4**	**13.0**	**2,955**
1A	1.9	0.4	11.4	13.0	2,955
1/2	**6.0**	**2.8**	**14.3**	**19.0**	**133**
1A/2A	6.0	2.8	14.3	19.0	133
2	**2.3**	**0.4**	**13.3**	**15.0**	**34,590**
2A	2.3	0.4	13.3	15.0	34,590
3	**2.5**	**0.4**	**14.0**	**15.9**	**13,842**
3A	2.5	0.4	14.0	15.8	13,786
3A/3A+C	5.4	0.5	21.3	22.6	36
3A+C	5.4	1.9	14.5	17.0	20
3/4	**6.9**	**1.4**	**16.0**	**20.0**	**447**
3A/3A+C/4B	6.9	1.4	16.0	20.0	447
4	**1.9**	**0.3**	**13.5**	**14.6**	**7,030**
4B	1.9	0.3	13.5	14.6	7,030

For these analyses, Dispatch Time is defined as the time from when the MedStar dispatch center receives a request for service until the unit is notified to respond. Turnout Time is defined as the time between the ambulance being notified of a call (dispatched) and when they are actually driving to the incident. Travel Time is measured from when the ambulance is driving to the incident until they notify that they are on-scene. Response Time is the total time from receipt at MedStar to arrival. All values are measured at the 90th percentile.

Response Standard, Priority Definition, and Priority	90th Percentile Response Time	Number of Calls with Response Times	Number of Calls with Response Times Meeting or Exceeding Standard	Percent Compliance
11 Minutes	**14.8**	**37,649**	**27,140**	**72.1**
ALS Hot 11	**14.8**	**37,649**	**27,140**	72.1
1A	13.0	2,950	2,365	80.2
1A/2A	19.0	133	73	54.9
2A	15.0	34,566	24,702	71.5
13 Minutes	**15.6**	**21,298**	**17,396**	**81.7**
ALS Hot 13	**15.9**	**13,830**	**11,123**	80.4
3A	15.8	13,775	11,086	80.5
3A/3A+C	22.6	35	25	71.4
3A+C	17.0	20	12	60.0
ALS/BLS Hot 13	**20.0**	**444**	**284**	64.0
3A/3A+C/4B	20.0	444	284	64.0
BLS Hot 13	**14.6**	**7,024**	**5,989**	85.3
4B	14.6	7,024	5,989	85.3
17 Minutes	**20.4**	**85,472**	**70,778**	**82.8**
ALS Cold 17	**19.5**	**73,083**	**61,705**	84.4
5A	18.8	59,022	50,668	85.8
7A	22.6	14,061	11,037	78.5
ALS/BLS Cold 17	**21.5**	**803**	**665**	82.8
5A/7A/8B	21.5	803	665	82.8
BLS Cold 17	**26.2**	**11,586**	**8,408**	72.6
8B	26.2	11,586	8,408	72.6

Overall, the modeling of the current prioritization on the FY 22/23 calls confirmed that expectations for total response time goals are not well-aligned with the system capability within the context of the FY22/23 staffing and deployment. Therefore, recommendations include rightsizing deployment to meet current expectations and/or adopting achievable response time objectives.

Recommendations

Expectations for system performance should be reevaluated and better aligned with system capabilities.

The system staffing and deployment should be optimized to meet the adopted system performance standards.

The process for measuring compliance should be clear, concise, and managed externally to MedStar.

Efficacy of Call Prioritization Efforts

MedStar went through a call reprioritization process that was finalized in December 2023. It is reported that the desired outcome of the reprioritization efforts was to be "patient centric" and provide the greatest opportunity for the MedStar system to deliver a timely response to the calls with the highest clinical severity. Secondarily, the prioritization was intended to employ a more risk-averse policy for emergency (lights and sirens) responses that will reduce risk to both the employees and the citizens and visitors that traverse the roadways by reducing the opportunity for accidents.

Recommendation

The system is encouraged to reevaluate the reprioritization strategy and consider utilizing MPDS programming that allows for the greatest flexibility for the allocation of resources.

MedStar administration and OMD worked to reclassify calls and expanded the call priorities up to 9 broad categories and additional sub-categories. Early reporting by MedStar would indicate that the call prioritization has had some positive benefits for the highest acuity patients (Priority 1) and the response times are getting closer to, but not meeting, the stated response time goals. However, the second highest priority (Priority 2) has the same stated response time objective but the performance has elongated after the reprioritization. In other words, the patients categorized in the two highest priorities has shown improvement in Priority 1, 1.5% of all calls, and a longer response time to Priority 2 incidents, the second highest acuity patients, that account for 17.8% of calls. Therefore, an argument could be made that in the early reporting, the net benefit to the highest acuity patients as defined as Priorities 1 and 2 have actually degraded, as approximately 16% of those highest acuity patients received a longer response time after the reprioritization effort. Finally, as previously discussed, the most restrictive time of 11 minutes is well outside of the evidence-based research for having an impact to the risk of mortality.

Call Type, Response Protocol, and Priority	Jurisdiction: MAEMSA Number of Calls	MAEMSA Average Calls per Day	MAEMSA Call Percentage	Other Number of Calls	Other Average Calls per Day	Other Call Percentage	All Number of Calls	All Average Calls per Day	All Call Percentage
911	151,433	414.9	78.3	1,387	3.8	66.4	152,820	418.7	78.2
Emergency, Lights and Sirens	58,788	161.1	30.4	473	1.3	22.6	59,261	162.4	30.3
1A	3,007	8.2	1.6	21	0.1	1.0	3,028	8.3	1.5
1A/2A	188	0.5	0.1	0	0.0	0.0	188	0.5	0.1
2A	34,569	94.7	17.9	249	0.7	11.9	34,818	95.4	17.8
3A	11,439	31.3	5.9	90	0.2	4.3	11,529	31.6	5.9
3A/3A+C	174	0.5	0.1	4	< 0.1	0.2	178	0.5	0.1
3A/3A+C/4B	535	1.5	0.3	2	< 0.1	0.1	537	1.5	0.3
4B	8,876	24.3	4.6	107	0.3	5.1	8,983	24.6	4.6

Agency	N	Dispatch priority levels: n (%) OMEGA	ALPHA	BRAVO	CHARLIE	DELTA	ECHO
ATCEMS	354,929	3,992 (1.1)	65,822 (18.6)	77,801 (21.9)	62,724 (17.7)	128,676 (36.3)	15,914 (4.5)
EMSA	1,514,033	78,041 (5.2)	236,153 (15.6)	446,747 (29.5)	310,374 (20.5)	418,080 (27.6)	24,638 (1.6)
LMEMS	472,343	24,061 (5.1)	85,092 (18.0)	81,855 (17.3)	115,739 (24.5)	160,519 (34.0)	5,076 (1.1)
MEDIC	156,063	2,101 (1.4)	23,748 (15.2)	28,959 (18.6)	40,911 (26.2)	57,624 (36.9)	2,720 (1.7)
MedStar	617,396	12,603 (2.0)	135,111 (21.9)	161,815 (26.2)	153,777 (24.9)	146,043 (23.7)	8,047 (1.3)
SLCFD	47,526	530 (1.1)	9,881 (20.8)	8,809 (18.5)	8,628 (18.2)	18,623 (39.2)	1,051 (2.2)
Overall	3,162,290	121,328 (3.8)	555,807 (17.6)	805,986 (25.5)	692,153 (21.9)	929,565 (29.4)	57,446 (1.8)

ATCEMS = Austin-Travis County EMS, Austin, Texas, USA. *EMSA* = Emergency Medical Services Authority, Tulsa, Oklahoma, USA. *LMEMS* = Louisville Metro EMS, Louisville, Kentucky, USA. *MEDIC* = Mecklenburg EMS Agency, Charlotte, North Carolina, USA. *MedStar* = MedStar-Mobile Healthcare, Ft. Worth, Texas, USA. *SLCFD*

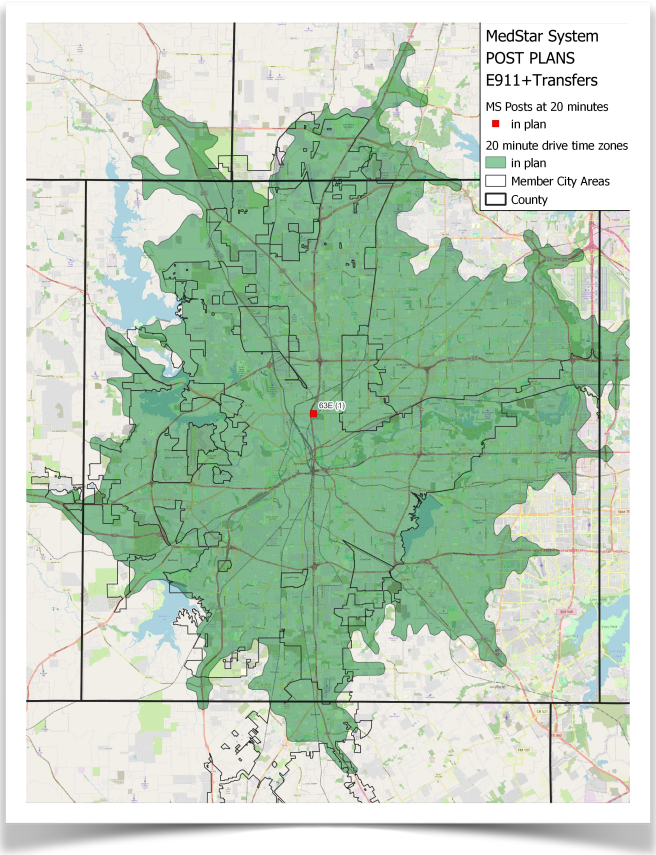
To effectively align resource allocation decisions with risk, innovative strategies such as tiered-response models and other opportunities require an efficient call prioritization or triage system. The more sophisticated the pre-incident call stratification, the greater flexibility the system has to best assign resources. The following is provided as an example of a call triage system, Medical Priority Dispatch System (MPDS), which is currently utilized, for the purpose of explaining the downstream potentialities for the system. The distribution of BLS versus ALS incidents is provided from a national research study of millions of records that MedStar was a contributor. Results found that systems using MPDS had a distribution of 47% BLS (Alpha, Bravo, Omega) and 53.1% ALS (Charlie, Delta, Echo). Unfortunately, the reprioritization efforts of 2023 reduced 911 related BLS activity (Priorities 4B/8B) to 12.8% greatly reducing the organizational agility to deploy a tiered response model that may be fully embraced at the original 50%.

Scott, G., Et. Al. (2016). Characteristics of call prioritization time in a Medical Priority Dispatch System. *Annals of Emergency Dispatch & Response.* 2016; 4(1): pp.27-33.

Alternative Response Times to Reduce Costs

Community demand for emergency medical services for all 911 and IFT requests were evaluated. These analyses excluded MIH and special events. Analyses were completed to assess the proposed 2024 deployment provided by MedStar. This assessment utilized the actual daily scheduled hours deployed. The proposed 2024 schedule had two phases that included the minimum deployment and then the optimum deployment based on a number of factors such as personnel availability.

This analysis tested the upper limits to the response time in an attempt to find a level of service that was fiscally neutral. In other words, was there a response time that was sufficiently long that reduce the required resource allocation to an expenditure limit that was cost neutral.



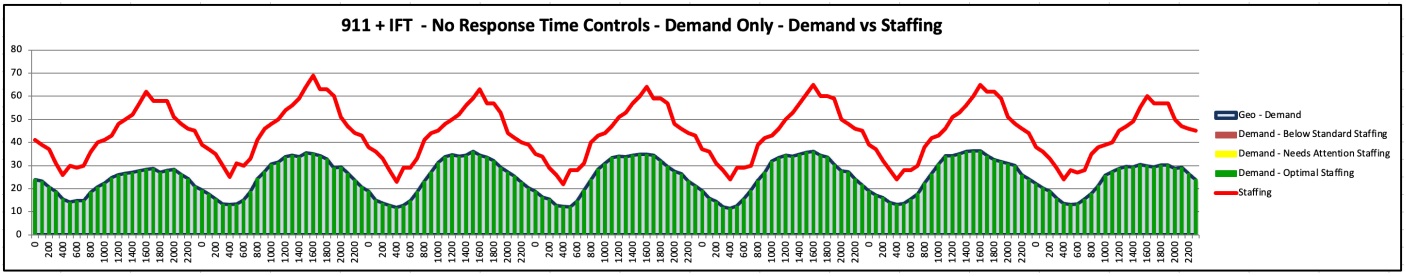
Observations

Analyses demonstrate that there is no response time option that will provide fiscal neutrality for the system.

The system could have no response time objectives and just respond to the demand, and it would require the same number of ambulances and unit hours just to control for workload.

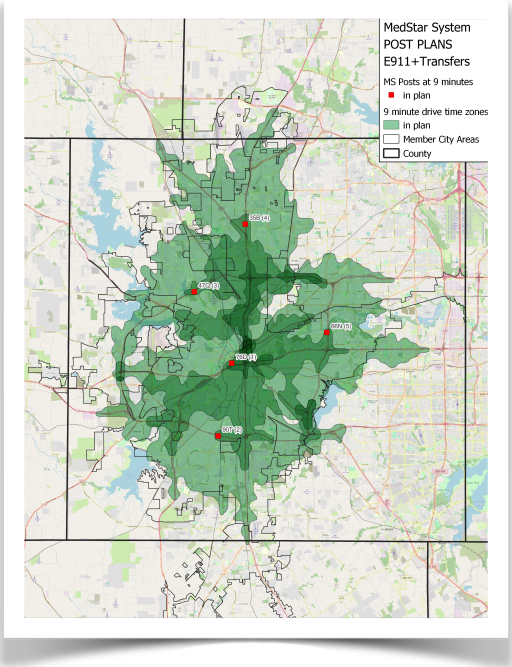
Consistent with previous analyses, the workload is the overwhelming limiting factor on the resource allocation needs. In MedStar's case, to such a degree that if there was no response time requirement at all, the resource allocation for the proposed 2024 schedule would still be required in its entirety. Therefore, there is no fiscal advantage to elongating response time beyond 8 minutes.

If MedStar were to deploy the entirety of the proposed schedules each day the system performance would be at 0.563 UHUs, or 56.3%. This is still higher than recommended, but closer to a reasonable threshold if MedStar could sustain it. *FITCH's* recommendation would be to add additional resources to reduce workload to at or below 0.50 UHUs.

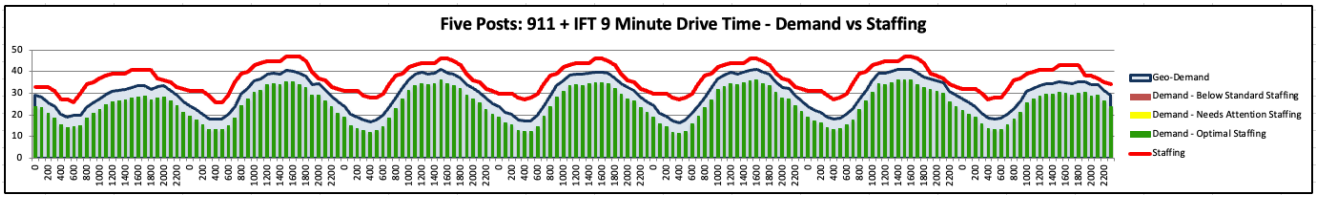


Assessment of MedStar's Historical Deployment

Community demand for emergency medical services for all 911 and IFT requests were evaluated. These analyses excluded MIH and special events. Analyses were completed to assess the historical deployment provided and accounting for the unique conditions within the MedStar system. This assessment utilized the actual daily hours deployed that were provided by MedStar in combination with an evaluation of their current posting plan. While there may be some operational subtleties in the actual historic performance, there is a high degree of confidence in the modeling.

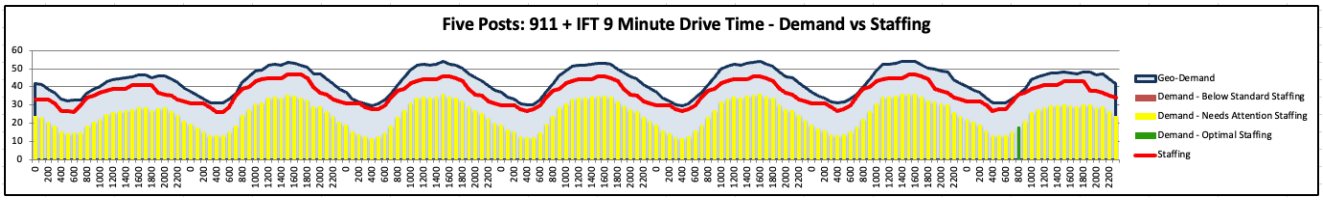


A 9-minute travel time was utilized to simulate the travel time plus 2 minutes for dispatch and turnout time for the desired Priority 1/2 response time of 11 minutes. MedStar's available posting locations were well-located and were validated. The first staffing to demand assessment below demonstrates that MedStar utilized a very lean approach to their staffing strategy and theoretically should have had better compliance to their response-time goals than was realized. It is recognized that if units are exceedingly busy, then they may not be immediately available for other calls and/or not be in the best location of when the next call occurs. In other words, this lean of an approach may benefit the fiscal needs but it comes at the cost of response time and availability.



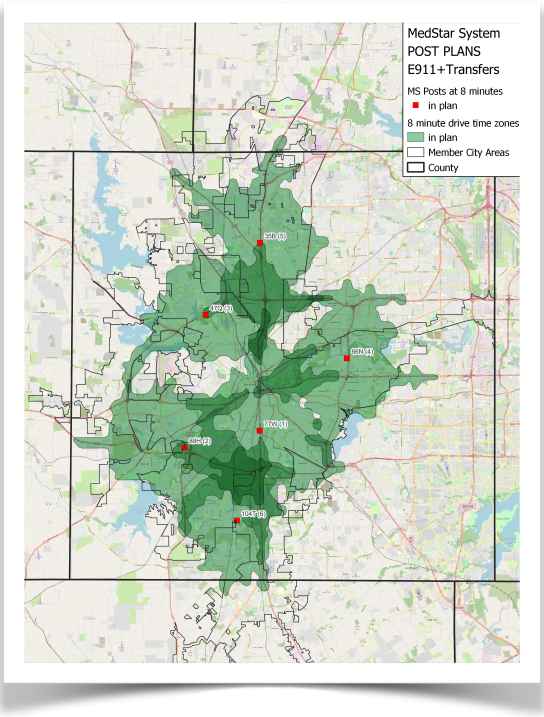
However, utilizing this deployment would require the system UHU (workload) to perform at an average of 0.675, or 67.5% time on task. This is well above *FITCH's* recommendations of not exceeding 0.50 UHUs. Generally, the industry impact of such high workload result in increased absenteeism, lower recruitment and retention of qualified employees, higher potential for clinical errors, higher incidences of on the job injuries, and a greater potential for driving errors.

When reviewing the figure below, it is evident that the historic deployment utilized by MedStar in 2022/2023 is insufficient to meet desired response times and to control for workload. The gap between the dark blue line and the red line is indicative of insufficient resourcing. Therefore, the model below provides a corrective value of additional resources to manage workload to 49.9% while maintaining all response time capabilities.

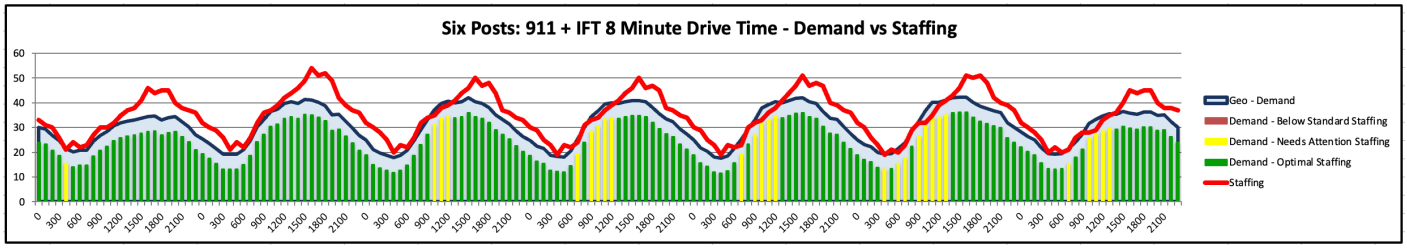


Assessment of MedStar's 2024 Deployment

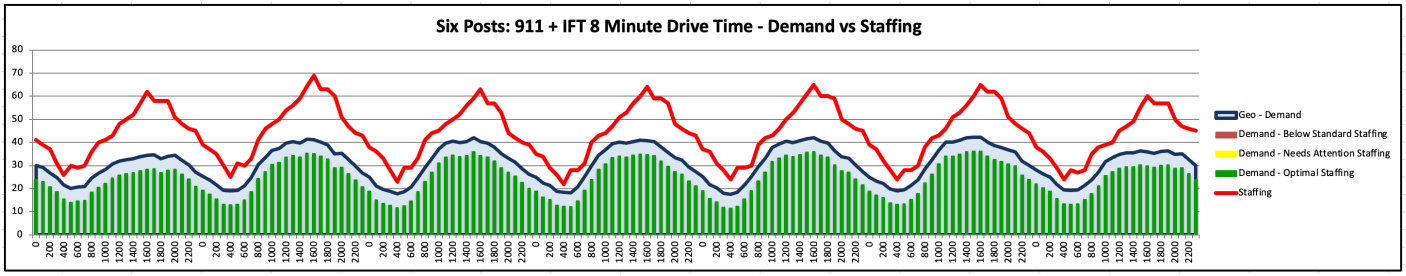
Community demand for emergency medical services for all 911 and IFT requests were evaluated. These analyses excluded MIH and special events. Analyses were completed to assess the proposed 2024 deployment provided by MedStar. This assessment utilized the actual daily scheduled hours deployed in combination with an evaluation of their current posting plan. The proposed 2024 schedule had two phases that included the minimum deployment and then the optimum deployment based on a number of factors such as personnel availability. Analyses utilized an 8-minute travel time because this is the level of service that should be available to the system once workload controls are implemented.



MedStar's available posting locations were well-located and were validated. The first staffing to demand assessment below demonstrates that MedStar proposes a very lean approach to their staffing strategy. It is recognized that if units are exceedingly busy, then they may not be immediately available for other calls and/or not be in the best location when the next call occurs. In other words, this lean of an approach may benefit the fiscal needs but it comes at the cost of response time and availability. This minimum deployment would have a system UHU at an untenable value of 0.712, or 71.2%. All of the same implications of this high of a workload would remain.



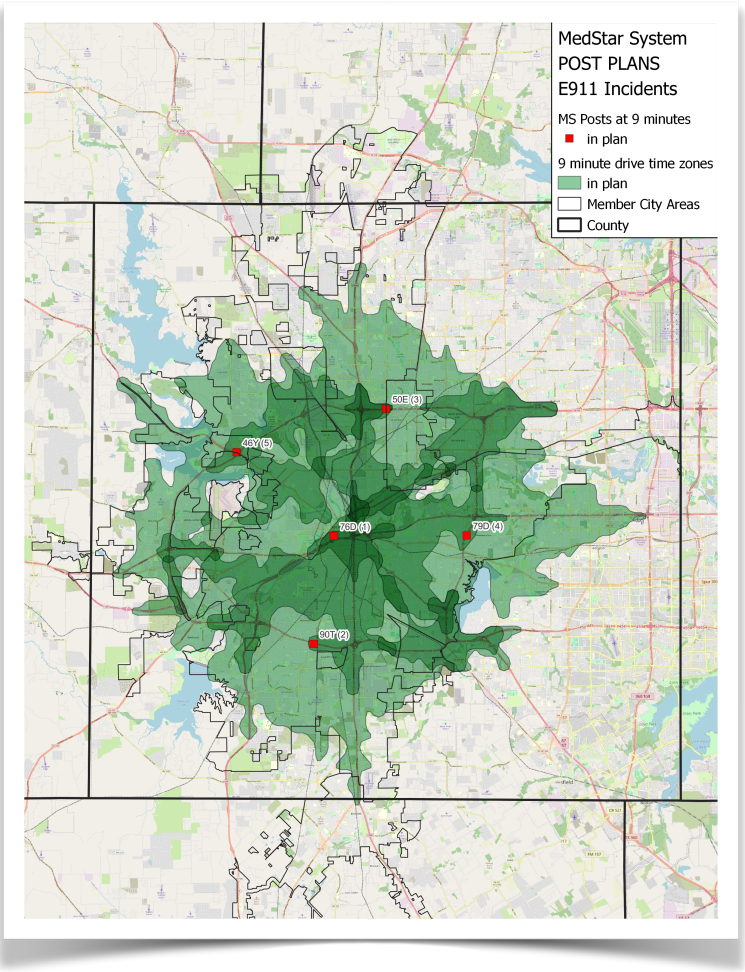
However, if MedStar were to deploy the entirety of the proposed schedules each day the system performance would be at 0.563 UHUs, or 56.3%. This is still higher than recommended, but closer to a reasonable threshold if MedStar could sustain it.



Recommendations for Current 911 EMS Deployment

Community demand for emergency medical services for 911 requests were evaluated. These analyses excluded IFT, MIH, and special events. Analyses were completed to posit an optimized deployment strategy for EMS while accounting for the unique conditions within the MedStar system. The current travel time for all emergency (lights and sirens) EMS incidents is 13.5 minutes at the 90th percentile. Therefore, alternatives were created that would either optimize the current desired performance or improve response time.

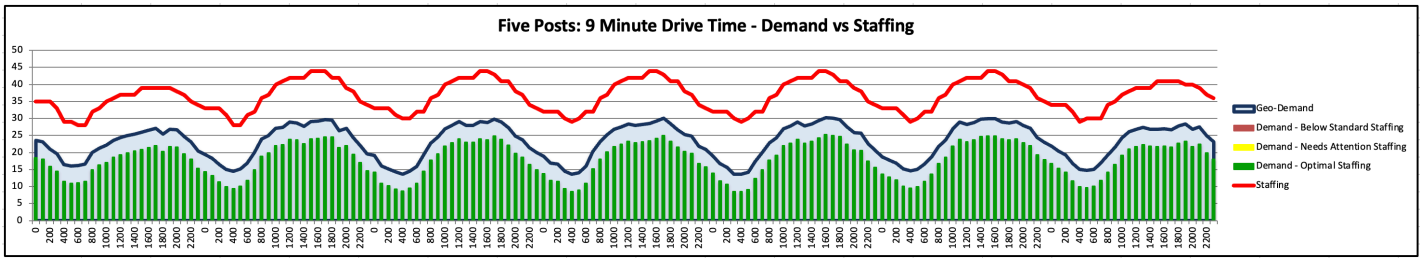
In all of the alternative response time configurations, workload was the limiting factor rather than geography. In other words, significant reinvestment in the system is required to control for workload while meeting the desired response time as opposed to purchasing geographic coverage with limited call activity.



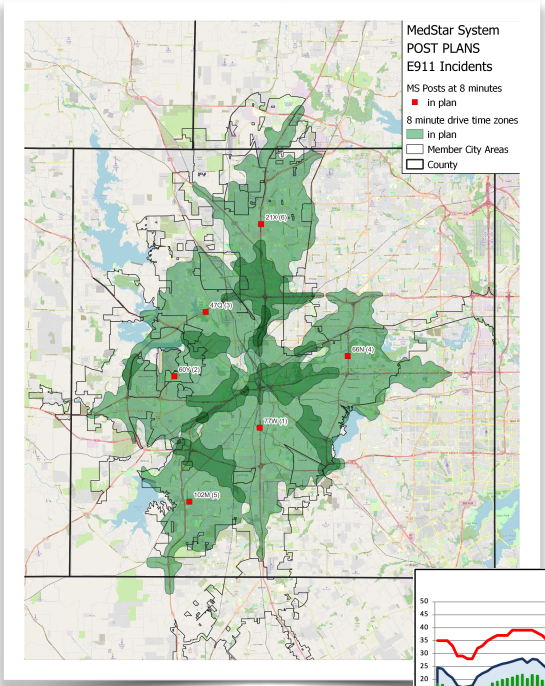
Current Desired Performance - 11:00

9-Minute Travel Time to 911 EMS Workload

A 9-minute travel time was utilized to simulate the travel time plus 2 minutes for dispatch and turnout time for the desired Priority 1/2 response time of 11 minutes. If the system was to deliver this response time, and control for workload at 0.50 UHUs, it would require up to 44 12-hour resources during the peak periods of the day to cover the 911 related activity. The system UHU would be 0.495%.



Recommendations for Current 911 EMS Deployment

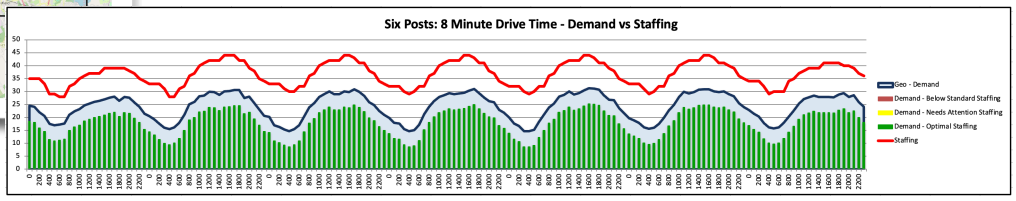


8-Minute Travel Time to Current 911 EMS Workload

An 8-minute travel time was utilized for this analysis. If the system was to deliver this response time, and control for workload at 0.50 UHUs, it would require up to 44 12-hour resources during the peak periods of the day to cover the 911 related activity. The system UHU would be 0.495%.

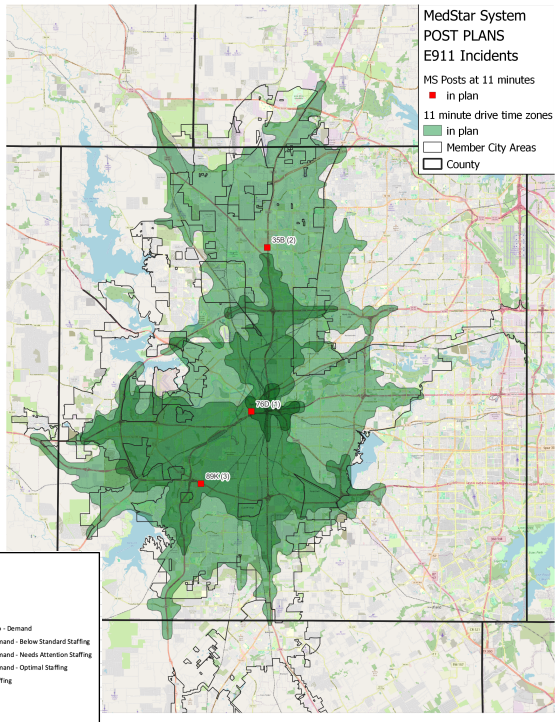
Recommendation

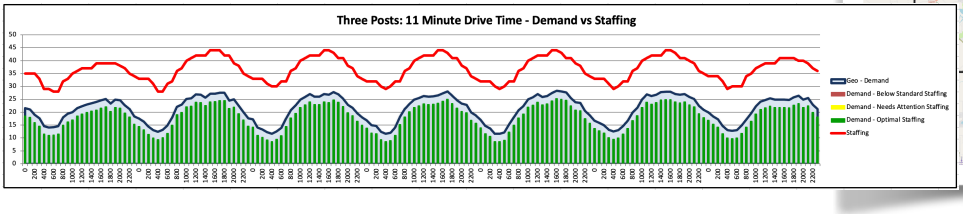
It is recommended that the system establish an 8-minute travel time for all incidents or emergency light & sirens responses.



11-Minute Travel Time to Current 911 - 13:00

An 11-minute travel time was utilized to simulate the travel time plus 2 minutes for dispatch and turnout time for the desired Priority 3/4 response time of 13-minutes. If the system was to deliver this response time, and control for workload at 0.50 UHUs, it would require up to 44 12-hour resources during the peak periods of the day to cover the 911 related activity. The system UHU would be 0.495%.





Recommendations for IFT Deployment

Community demand for IFTs were evaluated. These analyses excluded 911, MIH, and special events. Analyses were completed to posit an optimized deployment strategy for all IFT activity as well as bifurcated between ALS and BLS requests. For these analyses, no response time was required and consideration for emergency or non-emergency responses was not included.

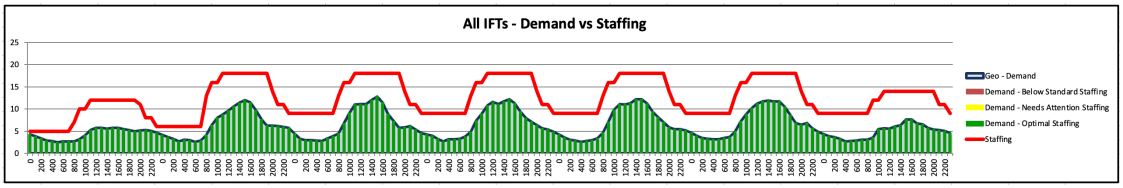
Observations

The distribution of ALS to BLS IFT requests should be evaluated as it is not well-aligned with the national experience.

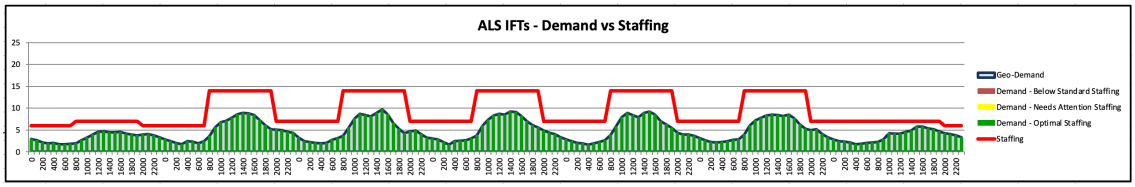
The IFT program could be independently staffed and deployed.

All IFT Activity Combined

All IFT activity had an average of approximately 81 transfers per day in 2022/2023. The peak deployment would require up to 18 dedicated resources during the peak of the day. This deployment strategy would have an IFT system UHU of 0.495. Similar to the 911 assessment, workload is the limiting factor as significant resources have been dedicated to control workload to at or below 0.50 UHUs.



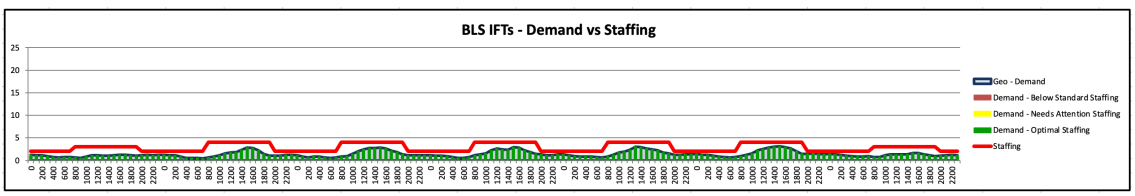
ALS IFT Activity



ALS IFT occupied the majority of the overall IFT requests for service. The peak deployment would require up to 14 dedicated resources during the peak of the day. This deployment strategy would have an IFT system UHU of 0.497. Similar to the 911 assessment, workload is the limiting factor as significant resources have been dedicated to control workload to at or below 0.50 UHUs.

BLS IFT Activity

BLS IFT activity had the lowest proportion of the overall IFTs. The peak deployment would require up to 4 dedicated resources during the peak periods with a UHU of 0.485.



Recommendations for IFT Deployment

Once controlling for workload, an accurate resource allocation strategy can be defined and measured. Analyses reveal that of the approximate upper limit of $10.5m public funding option for an optimized system, $6.8m would be partitioned to fund expenses associated with hospital transfers.

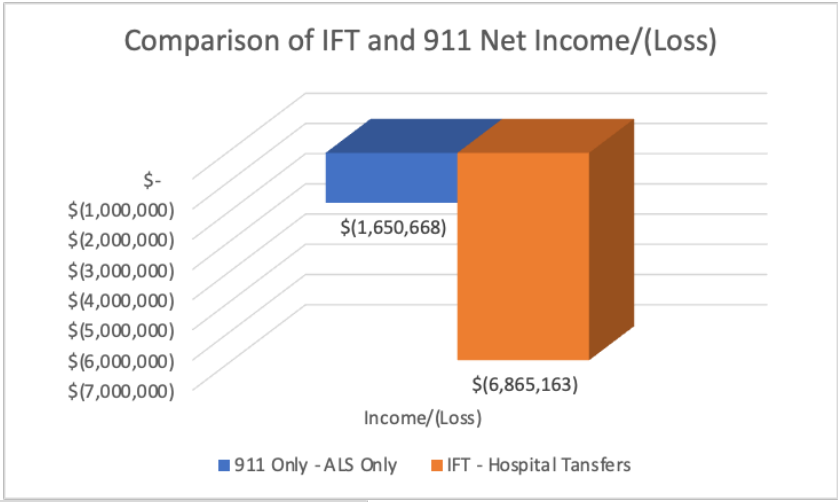
Therefore, a policy consideration would include whether public funding should be used for non-911 activities. If the options for public funding were restricted to 911 incidents, then the need for public funding could be reduced to approximately $1.6m. These analyses confirm a financial benefit to the operational requests to separate IFT from the hospital stakeholders.

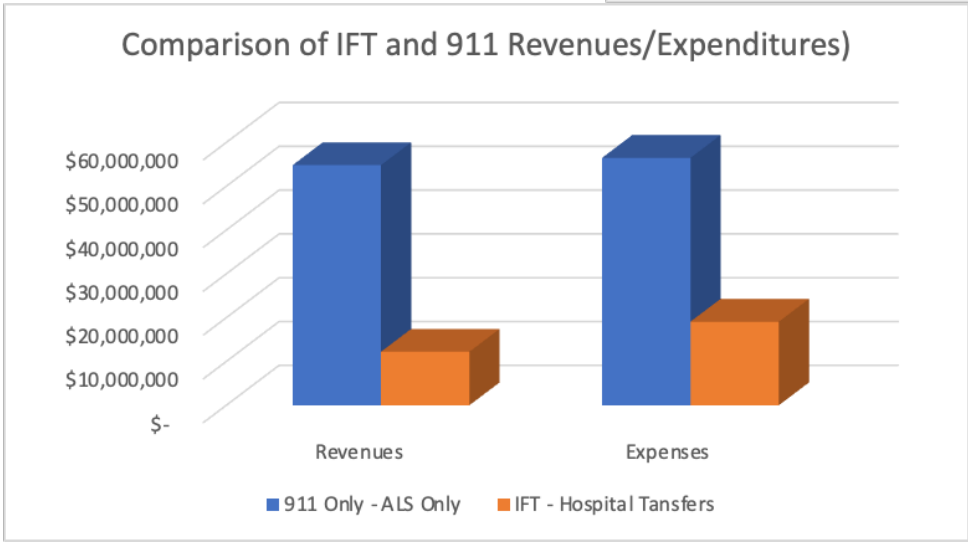
Observations

The distribution of ALS to BLS IFT requests should be evaluated as it is not well-aligned with the national experience.

The IFT program could be independently staffed and deployed.

Comparison of IFT and 911 Net Income





Comparison of IFT and 911 Revenues and Expenses

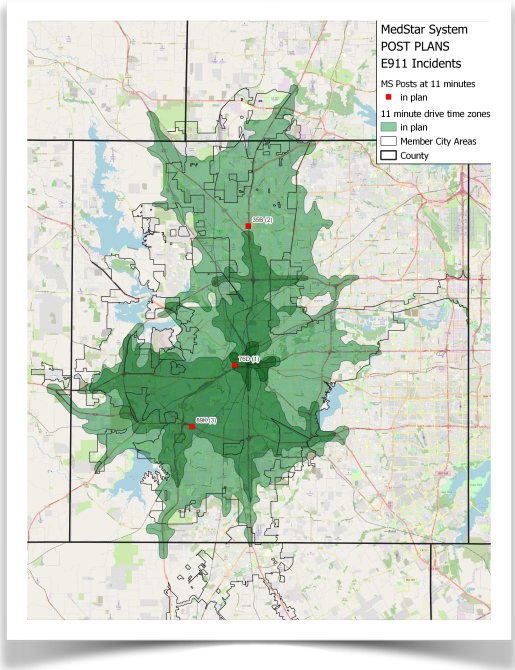
Efficacy of a BLS Tiered Delivery Model

11-Minute Travel Time to Current 911 BLS Workload

Evidenced-based research has found that there is considerable efficacy in providing high-quality Basic Life Support (BLS) services within the EMS deployment modeling. Various studies have found that BLS services can provide commensurate levels of care, and in some instances better care, than Advanced Life Support (ALS) services in urban environments when there is a robust access to hospitals. Therefore, there is little argument about the clinical efficacy of BLS deployment considerations.

Recommendation

The system is encouraged to either discontinue 911 related BLS deployment or utilize the MPDS call prioritization process.



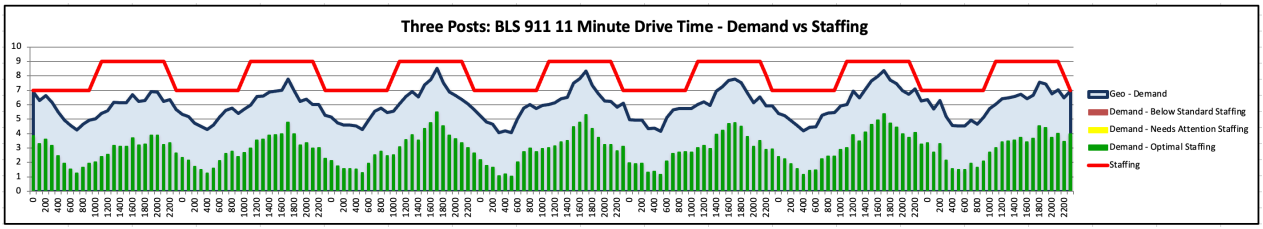
The conversation typically resonates on the community expectations for service, the confidence in medical call triage capabilities, staffing challenges, and the fiscal reality of a tiered response model with differentiated response time objectives.

In the case of MedStar, an opportunity exists for greater congruency in organizational decision making. For example, like most EMS systems, ALS level staffing has become increasing more difficult to recruit and retain. Therefore, it is a natural policy necessity to consider deploying BLS resources as a substitute to an all ALS system. The previous evaluation discussed the efficacy of the reprioritization efforts and how the current prioritization has restricted 911 BLS incidents from the national experience of nearly 50% to approximately 12.8% of the total call volume.

In other words, MedStar simultaneously desired to initiate and expand a BLS program while reconfiguring the 911 call prioritization and volume to such a low level that any such deployment would be inefficient. Because workload is the limiting factor in the overall deployment of 911 incidents, a BLS deployment necessary to meet the most restrictive BLS incident (Priority 4B) of 13 minutes (11-minute travel time), would require a minimum of three units to overcome the geographic demands for an 11-minute travel time. An all ALS system would be more operationally efficient with a net reduction of 4 12-hour resources per day. Finally, BLS UHU values (0.372) cannot be maximized yielding a lower return on investment on the deployed resources.

Observation:

The unintended consequence of restricting BLS 911 demand to 12.8%, renders an ALS/BLS tiered response model less efficient.



The Office of the Medical Director

EMS Physician Medical Direction & Oversight

The American College of Emergency Physicians (ACEP) considers Emergency Medical Services (EMS) a practice of medicine requiring physician oversight and the medical director an integral position. ACEP details responsibilities, authority, and reporting hierarchies, which should be formally established in writing in contractual agreements between EMS physician medical directors and EMS systems and/or applicable legal parties. EMS systems have ethical responsibilities to provide EMS physician medical directors with tangible resources and remuneration commensurate with the responsibilities and authorities fulfilled by EMS physician medical directors.

The Metropolitan Area EMS Authority (MAEMSA) EMS System Medical Director is Jeffrey L. Jarvis, MD, MS, FACEP, FAEMS, who is an employee of MAEMSA. Dr. Jarvis has a written job description in place and is compensated for the time, energy, and effort he invests in the EMS System. Dr. Jarvis serves on the board of directors of the National EMS Quality Alliance (NEMSQA) where he chairs the measure development committee and is the associate medical director for the National Association of EMTs (NAEMT). Dr. Jarvis remains clinically active in the practice of emergency medicine at local hospitals in the system and maintains his paramedic certification. He has extensive knowledge of EMS garnered over a nearly forty-year career in the industry. Dr. Jarvis is faculty for the National Association of EMS Physicians (NAEMSP) National EMS Medical Director Course. The medical director and both associate medical directors are Fellows of the Academy of EMS, an honor is limited to those board-certified EMS physicians who have demonstrated meaningful contributions to the specialty.

Observation

A local EMS Ordinance and Interlocal Agreements establish MAEMSA and the Office of the Medical Director (OMD) Dr. Jarvis has a written job description in place and is compensated for the time, energy, and effort he invests in the EMS System.

Recommendation

As described previously OMD should be an independent contractor to the EMS Authority.

The Medical Director should be effective in establishing local care standards that reflect national standards. ACEP weighs in on the importance of frequent and active clinical review, stating: “Each EMS system should ensure that the medical director has authority over patient care, authority to limit immediately the patient care activities of those who deviate from established standards or do not meet training standards and the responsibility and authority to develop and implement medical policies and procedures.” Dr. Jarvis is responsible for all credentialed clinicians in the system, and there is a robust EMS clinician credentialing process in place. Dr. Jarvis is directly involved with and responsible for the quality assurance and quality improvement processes at MAEMSA. He is involved in an ongoing review of protocols and takes input from field personnel, hospital partners, and the local medical community.

Patient Care Protocols

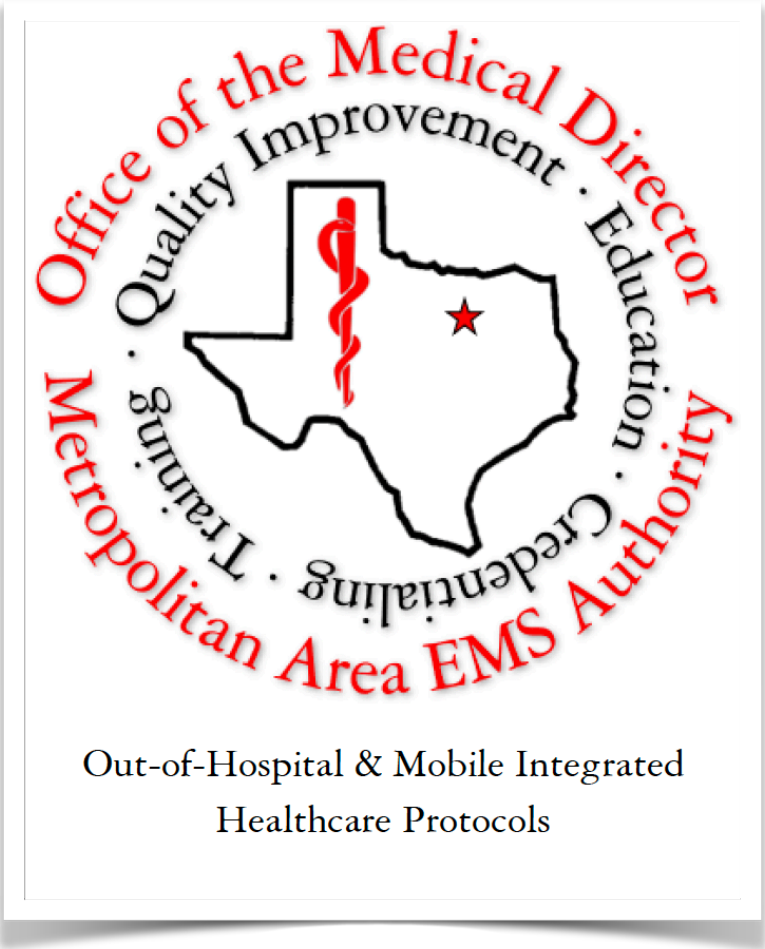
Patient Care Protocols

Patient care protocols are vital components of an Emergency Medical Services (EMS) System, serving as the backbone for delivering standardized and high-quality emergency medical care to patients in critical situations. These protocols offer a structured framework for EMS providers, ensuring that patient care decisions are made based on the latest medical research and consensus guidelines, thus minimizing variations in treatment and improving overall patient outcomes. By adhering to these carefully designed protocols, EMS personnel can rapidly identify and address life-threatening conditions, provide appropriate interventions en route to healthcare facilities, and ensure a seamless transition of care.

Observation

The patient care protocols are consistent with national model clinical guidelines, and there is a two-year cycle in place for protocol review and revision.

Additionally, patient care protocols support ongoing education and training for EMS providers, fostering a culture of continuous improvement and readiness to handle the complex and dynamic nature of emergency medical situations.



Ultimately, the implementation of robust patient care protocols within an EMS system enhances the efficiency, effectiveness, and quality of emergency medical services, leading to better patient survival rates and recovery outcomes.

The patient care protocols are consistent with national model clinical guidelines, and there is a two-year cycle in place for protocol review and revision.

However, there is flexibility in the workflow to address specific protocols off-cycle should there be a pressing or urgent need - a best practice for EMS agencies.

There is a commitment to using PDSA cycle to evaluate equipment requests, protocol changes, and need for updated clinician education.

Medical Devices & Clinical Integration

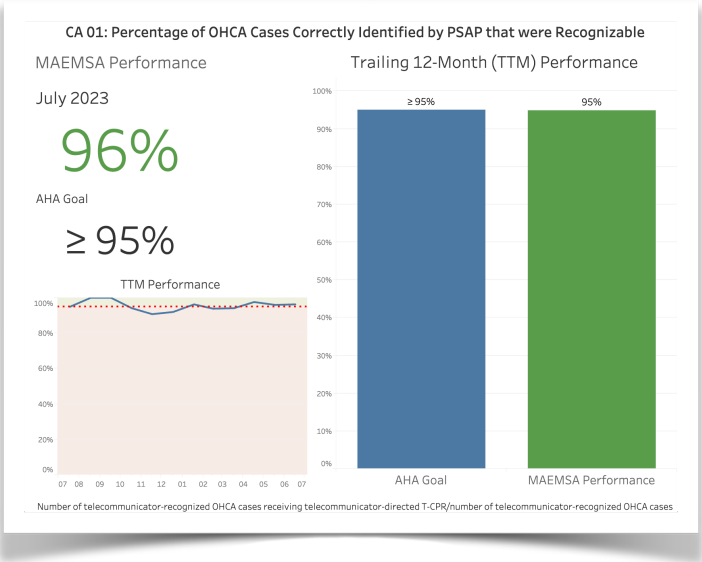
Medical Devices & Clinical Integration

EMS Systems should be committed to utilizing clinical performance data from technology and information systems to improve pre-hospital care and patient outcomes. An electronic patient care reporting (ePCR) system is a documentation and database management software that all modern EMS agencies should use. These systems establish a standardized approach to document response and treatment information; are designed to excel in storing, reviewing, and retrieving information; and serve as the repository for an agency's clinical and operational data. Manual data entry is time-consuming, creates opportunities for errors, and is sometimes impractical in the field.

Observation

OMD staff abstracts data from Image Trend™, MedStar's ePCR, to fuel their quality assurance and quality improvement (QA/QI) process. The medical devices used by MAEMSA providers are equipped with the ability to send patient vitals, ECGs, and ETCO2 waveform data directly to the computers used for charting.

The ePCR system should automatically import patient vitals, EKGs, and ETCO2 waveforms directly from commonly used medical devices. EMS agencies must have the ability to fully utilize clinical performance data from technology and information systems to improve prehospital care and patient outcomes. A Health Information Exchange (HIE) is a system that connects EMS service providers to the broader healthcare ecosystem allowing EMS providers to search for patients' medical history, allergies, prescribed medications, etc., and bridges the data gap between EMS and receiving facilities with bidirectional data sharing to support operational and clinical quality improvement.



OMD staff abstracts data from Image Trend™, MedStar's ePCR, to fuel their quality assurance and quality improvement (QA/QI) process. The medical devices used by MAEMSA providers are equipped with the ability to send patient vitals, ECGs, and ETCO2 waveform data directly to the computers used for charting.

The system's ECG transmission rates are tracked and available via Pulsara™, and a formal reporting process is being developed. There is a formalized clinical outcomes request process that utilizes Epic CareConnect and ESO's Health Data Exchange to provide the OMD and system clinicians with accurate follow-up on cases.

Additionally, MedStar has a Health Information Exchange, with a process that enables closing the QA/QI process with individual clinicians.

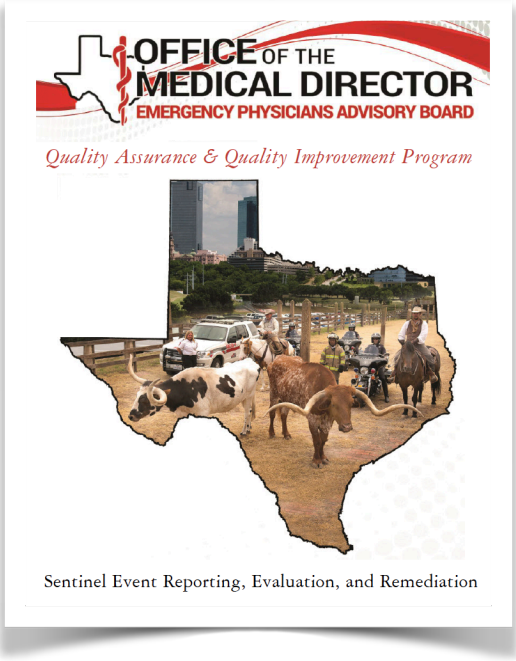
Continuous Quality Improvement (CQI) Program

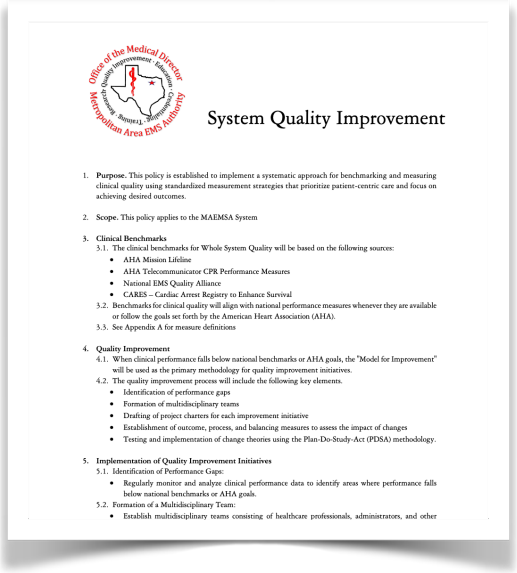
Continuous Quality Improvement (CQI) Program

> **Observation**
>
> The Metropolitan Area EMS Authority, dba MedStar Mobile Healthcare, has a robust QA/QI process in place that is operating at a high level.

The importance of a Continuous Quality Improvement (CQI) Program in an Emergency Medical Services (EMS) system cannot be overstated, as it directly impacts the effectiveness, efficiency, and quality of prehospital care. A CQI program aims to systematically review operations, clinical practices, and patient outcomes to identify areas for improvement and implement strategies that enhance service delivery. This ongoing process ensures that EMS providers meet or exceed established standards of care, adapt to evolving medical guidelines, and respond to changing community needs. A CQI program helps to reduce medical errors, improve patient satisfaction, and support professional development and morale among EMS personnel by encouraging feedback, innovation, and a commitment to best practices. A robust CQI program is foundational to maintaining a high-performing EMS system that consistently delivers high-quality emergency medical services to those in need.

The Metropolitan Area EMS Authority, DBA MedStar Mobile Healthcare, has a robust QA/QI process in place that is operating at a high level. Nearly all the staff involved in the QA/QI process have attended NAEMSP's two-day EMS Quality Course, and several have successfully completed NAEMSP's Year-Long Quality Improvement and Safety Course – an admirable level of commitment to EMS quality.





Multiple operational performance metrics are tracked and routinely reported by MedStar Operations, while OMD focuses primarily on benchmarking against CARES and NEMSQA measures. The system operates under a Just Culture framework – a best practice. There is a formal process for error reporting, and it is notable that there has been a shift over time with approximately 60 - 70% of all current QA referrals being self-reported. These collective efforts ensure that EMS providers deliver clinically sophisticated, evidence-based, quality clinical care to each patient.

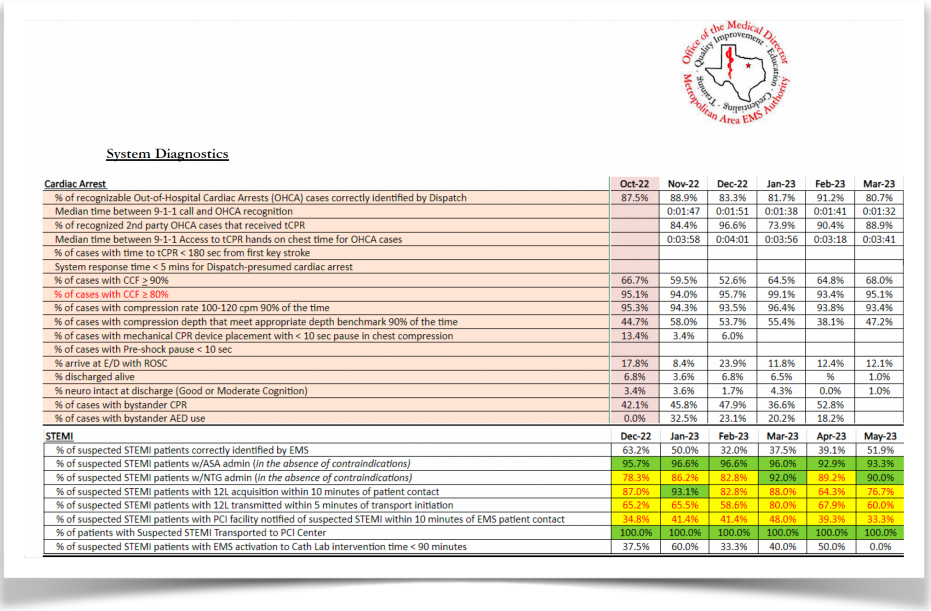
Clinical Performance Measurement

Clinical Performance Measurement

> **Observation**
>
> The MAEMSA has established operational and clinical performance measures and a Performance Standards Committee that includes area First Responders, MedStar and the Office of the Medical Director.

Clinical performance measurement in an Emergency Medical Services (EMS) System is crucial for ensuring the highest standards of patient care. EMS Systems should be committed to utilizing clinical performance data from technology and information systems to improve pre-hospital care and patient outcomes. These metrics enable EMS system quality assurance and quality improvement staff to systematically assess the quality and effectiveness of the prehospital emergency care delivered to patients. Through the systematic analysis of established clinical performance standards, EMS systems can identify areas for improvement, benchmark against best practices, implement evidence-based strategies to enhance patient experience and improve patient outcomes. Additionally, clinical performance measurement supports the continuous professional development of EMS personnel by highlighting training needs and fostering a culture of high-quality care delivery. Ultimately, by prioritizing clinical performance measurement, EMS systems can better fulfill their mission of providing timely and high-quality emergency medical services to the communities they serve, thereby strengthening public trust and safety.

The MAEMSA has established operational and clinical performance measures and a Performance Standards Committee that includes area First Responders, MedStar and the Office of the Medical Director. The clinical impact of MedStar's services is measured in a robust manner, and the service follows many national clinical performance indicators and metrics at the individual and organization level. Dr. Jarvis is involved in selecting the clinical quality measures and standards that he feels are best suited for emphasis by the system's QA/QI process. These include an evaluation of patient assessments, medical analysis, provider skill performance benchmarking, documentation quality evaluation, and reported patient outcome data. OMD staff routinely prepare and disseminate reports concerning system performance against standard national EMS clinical quality measures, including the Cardiac Arrest Registry to Enhance Survival (CARES), Mission Lifeline, and National EMS Quality Alliance (NAMESQA).



System Diagnostics

Cardiac Arrest	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
% of recognizable Out-of-Hospital Cardiac Arrests (OHCA) cases correctly identified by Dispatch	87.5%	88.9%	83.3%	81.7%	91.2%	80.7%
Median time between 9-1-1 call and OHCA recognition		0:01:47	0:01:51	0:01:38	0:01:41	0:01:32
% of recognized 2nd party OHCA cases that received tCPR		84.4%	96.6%	73.9%	90.4%	88.9%
Median time between 9-1-1 Access to tCPR hands on chest time for OHCA cases		0:03:58	0:04:01	0:03:56	0:03:18	0:03:41
% of cases with time to tCPR < 180 sec from first key stroke						
System response time < 5 mins for Dispatch-presumed cardiac arrest						
% of cases with CCF ≥ 90%	66.7%	59.5%	52.6%	64.5%	64.8%	68.0%
% of cases with CCF ≥ 80%	95.1%	94.0%	95.7%	99.1%	93.4%	95.1%
% of cases with compression rate 100-120 cpm 90% of the time	95.3%	94.3%	93.5%	96.4%	93.8%	93.4%
% of cases with compression depth that meet appropriate depth benchmark 90% of the time	44.7%	58.0%	53.7%	55.4%	38.1%	47.2%
% of cases with mechanical CPR device placement with < 10 sec pause in chest compression	13.4%	3.4%	6.0%			
% of cases with Pre-shock pause < 10 sec						
% arrive at E/D with ROSC	17.8%	8.4%	23.9%	11.8%	12.4%	12.1%
% discharged alive	6.8%	3.6%	6.8%	6.5%	%	1.0%
% neuro intact at discharge (Good or Moderate Cognition)	3.4%	3.6%	1.7%	4.3%	0.0%	1.0%
% of cases with bystander CPR	42.1%	45.8%	47.9%	36.6%	52.8%	
% of cases with bystander AED use	0.0%	32.5%	23.1%	20.2%	18.2%	

STEMI	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23
% of suspected STEMI patients correctly identified by EMS	63.2%	50.0%	32.0%	37.5%	39.1%	51.9%
% of suspected STEMI patients w/ASA admin (*in the absence of contraindications*)	95.7%	96.6%	96.6%	96.0%	92.9%	93.3%
% of suspected STEMI patients w/NTG admin (*in the absence of contraindications*)	78.3%	86.2%	82.8%	92.0%	89.2%	90.0%
% of suspected STEMI patients with 12L acquisition within 10 minutes of patient contact	87.0%	93.1%	82.8%	88.0%	64.3%	76.7%
% of suspected STEMI patients with 12L transmitted within 5 minutes of transport initiation	65.2%	65.5%	58.6%	80.0%	67.9%	60.0%
% of suspected STEMI patients with PCI facility notified of suspected STEMI within 10 minutes of EMS patient contact	34.8%	41.4%	41.4%	48.0%	39.3%	33.3%
% of patients with Suspected STEMI Transported to PCI Center	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of suspected STEMI patients with EMS activation to Cath Lab intervention time < 90 minutes	37.5%	60.0%	33.3%	40.0%	50.0%	0.0%

Continuing Medical Education (CME) Program

Continuing Medical Education (CME) Program

The EMS Agenda 2050 stresses that education and training for EMS professionals cover all aspects of clinician and patient safety with a focus on evidence-based methods of harm reduction. The goal is for paramedics to receive a comprehensive orientation to public health, social services, mental health, and social determinants of health in a way that empowers them to provide integrated care.

It is essential to require that all personnel have the highest standard of education, training, and medical knowledge. This is accomplished via a comprehensive continuing medical education program. Because prehospital medicine is continually evolving, ambulance transport services should provide timely, challenging, EMS-specific continuing education to enhance and improve the knowledge and skills of staff and meet their recertification needs for licensure.

Observation

There is a formal CME process utilizing distributed learning. The production value of the CME is high and packaged as Protocol Review Modules (PRMs).

The service has knowledgeable, experienced, full-time educators and provides education that advances prehospital care through evolving evidence-based medicine.

There is a formal CME process utilizing distributed learning. The production value of the CME is high and packaged as Protocol Review Modules (PRMs). The service has knowledgeable, experienced, full-time educators and provides education that advances prehospital care through evolving evidence-based medicine. In addition to PRMs, the OMD offers a comprehensive range of educational opportunities, including BLS, ACLS, PHTLS, AMLS, and ABLS, in conjunction with the local burn center.

Continuing education activities are facilitated using the TalentLMS™ learning management system. Should there be a specific need, there is a mechanism for the medical director to assign remedial training that is administered directly by OMD staff.

An Integrated System Approach to the "System"

Consolidating Fort Worth Fire 911 and MedStar Communication Centers

At the 90th percentile, there are 4.4 minutes (Fort Worth) and 2.3 minutes (MedStar) of call processing time lost in the transferring of callers and duplicating efforts such as address confirmation. From the citizen's perspective, the time from when they call 911 until EMS arrives to help with the emergency is what they care about. Therefore, it is a best practice to focus efforts on the call processing segment as this will provide the greatest return on investment. For example, since there is such duplication in the call processing ecosystem, it is anticipated that there will be fiscal and operational efficiencies if the FWFD and the MedStar Communications Centers are consolidated. For illustrative purposes, if the system were to purchase a 3-minute improvement in response capability the conversation would begin at $28m. In other words, by consolidating dispatch functions, the system will save money and improve service, while simultaneously provide a cost avoidance of a minimum of $28m.

Interoperability – interoperability refers to the seamlessness that the system can operate and communicate across providers and agencies. Today, there are limitations in radio communications and unit activity. For example, stakeholder interviews revealed that MedStar units and FD units cannot communicate effortlessly on the radio network nor can they know where their respective resources are located, the route taken, or the staging location. Communications and interoperability are items that have been best practices for decades.

The current operations have access to a state mutual aid channel that all agencies can access to communicate. However, each agency would have to communication with their respective communications center and request contact with the corresponding agency and ask them to "meet" on the state mutual aid channel. This is cumbersome at best and only as effective as the crews participation.

Recommendations

- Consolidation of the Fort Worth Fire 911 Communications Center and the MedStar Communications Center will provide operational and fiscal efficiencies.
- In other words, by consolidating dispatch functions, the system will save money and improve service, while simultaneously provide a cost avoidance of a minimum of $28M.
- It is recommended that all agencies within the current "MedStar System" have 100% interoperability to communicate directly on the same responding radio channels.

If there were a major event such as an active shooter, the FD and MedStar crews couldn't have the appropriate level of situational awareness to function as a unified system in a timely manner. In other words, one agency may have critical knowledge that the other agency may benefit from but cannot directly communicate. Breakdowns in command and control, communications, risk assessment, and situational awareness are all common findings in after-action reports from emergency service fatalities.

Therefore, it is recommended that all agencies within the current "MedStar System" have 100% interoperability to communicate directly on the same responding radio channels.

An Integrated System Approach to the "System"

Utilizing a System Lens – Stakeholder interviews revealed that there is an opportunity to improve system integration and cooperation. There is a perceived competition between first responder agencies and MedStar with respect to special events, pricing, mobile integrated health, and public information. For example, special events within the City of Fort Worth have the opportunity to shop between MedStar and FWFD for services. In most large and sophisticated systems, this example would be viewed as the "city's" risk and it would be the city's decision as to whether they wanted to subcontract with another provider for some of the work and/or establish an integrated pricing strategy for the vendor for transport services.

It is recommended that the City of Fort Worth, and any other member cities, codify a special event ordinance that delineates the type of occupancy or event and the relative attendance to prescribe the number of fire inspectors, police officers, fire engines, ambulances, etc to meet the identified level of risk. In this manner, vendors know the relative costs and the process eliminates competition between agencies.

Public Information Officer (PIO) - Continuing with the theme of improving operating as an integrated system, the duties of an operational incident PIO should be a single point of contact. Within the National Incident Management System (NIMS) the role of the PIO "interfaces with the public, media, various agencies, and the private sector to meet incident-related information needs….the PIO gathers, verifies, coordinates, and disseminates accessible, meaningful, and timely information about the incident for internal and external audiences." (FEMA.gov)

Therefore, there may be an opportunity for better coordination from the transport provider to the incident PIO rather than having a PIO for both the overall incident commander and the transport agency separately. Best practice would suggest that all information should flow to one point of contact and PIO for public consumption unless there is some specific expertise needed that exceeds the ability of the PIO to articulate.

Nurse Navigator – The largest national nurse navigation system is the GMR Nurse Navigation system. Currently, the nurse navigator can divert approximately 16% of the low acuity calls that will no longer need a response. This would provide an approximate equivalent value of 2 to 3 years of growth at the current rate. Therefore, the cost avoidance would be substantive in a system as large as the Fort Worth system… approximately 5 ambulances at a cost of up to $5m.

The program goals of the MIH program should be coordinated with the benefits of the Nurse Navigation system to maximize the available synergies.

Recommendations

- Overall, the level of system integration and cooperation should be improved.
- It is recommended that the City of Fort Worth, and any other member cities, codify a special event ordinance that delineates the type of occupancy or event and the relative attendance to prescribe the number of fire inspectors, police officers, fire engines, ambulances, etc to meet the identified level of risk. In this manner, vendors know the relative costs and the process eliminates competition between agencies.
- Best practice would suggest that all information should flow to one point of contact and PIO for public consumption unless there is some specific expertise needed that exceeds the ability of the PIO to articulate.
- The city is encouraged to adopt the utilization of the GMR Nurse Navigator line (or equivalent.

A Primer on Unit Hour Utilization

Unit Hour Utilization (UHU) is a measure of the utilization of the resources deployed within the system. It is measured as the total Time on Task (ToT) from the time that the units are dispatched to an incident until they are available. Non-incident activity is not included but still must be accomplished such as report writing, restocking, relocating to a new post, and any other management-directed activity. The industry's best practice is to keep the UHU values below 0.50 or 50% utilization for crew schedules less than 24-hours. Some peer agencies are resetting UHUs to 0.42, or 42%.

Controlling for UHU has two primary benefits: First, it balances unit work and unit availability so that the desired response times can be achieved. Second, and maybe more importantly, it controls the employee work threshold to a level that the research would support to reduce clinical errors, driving accidents, absenteeism, etc.

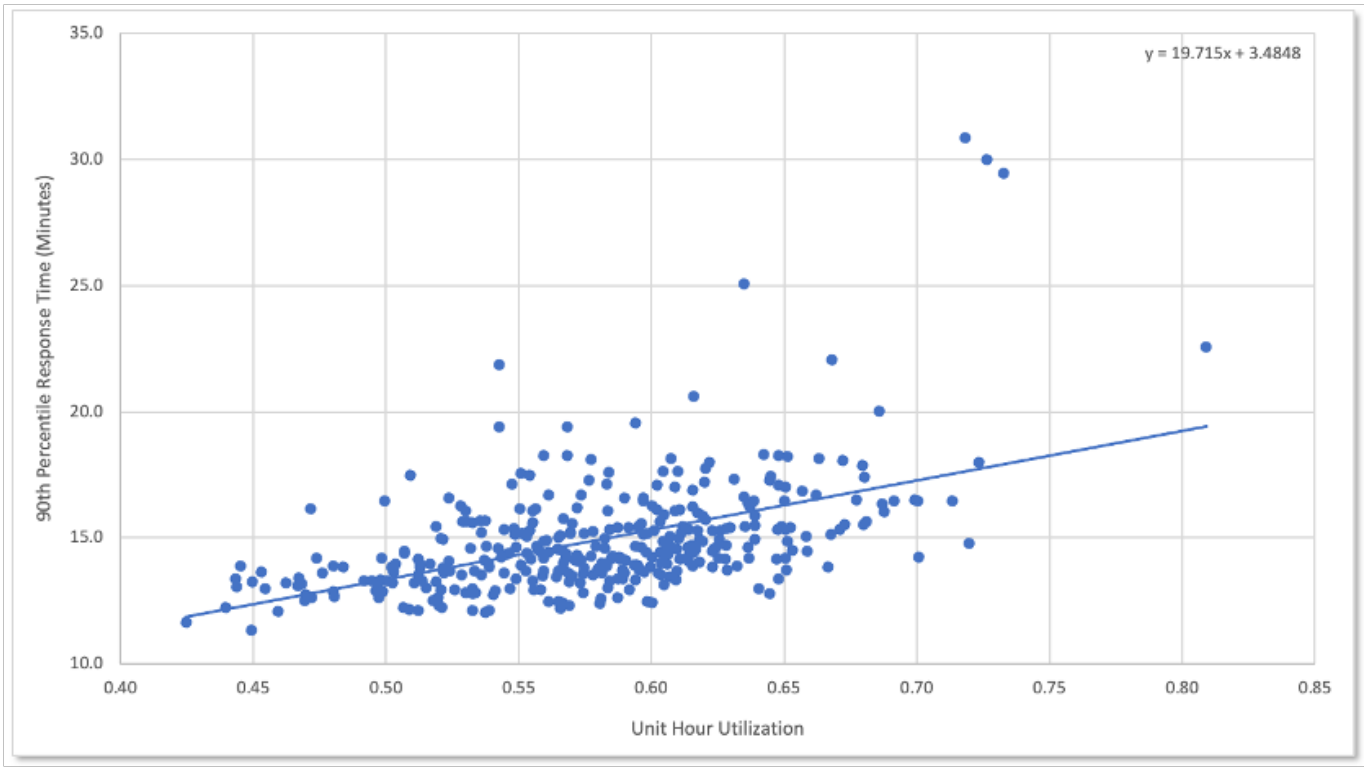
Recommendation

It is recommended that in any of the alternative deployment models developed, the system UHU should not exceed 0.50, or 50% UHU.

Any configuration that would include 24-hour shifts should not exceed a UHU of 0.30, or 30%.

The analysis below utilized MedStar's 2023 deployed hours to statistically demonstrate the ability of the UHU to predict response times within the system.

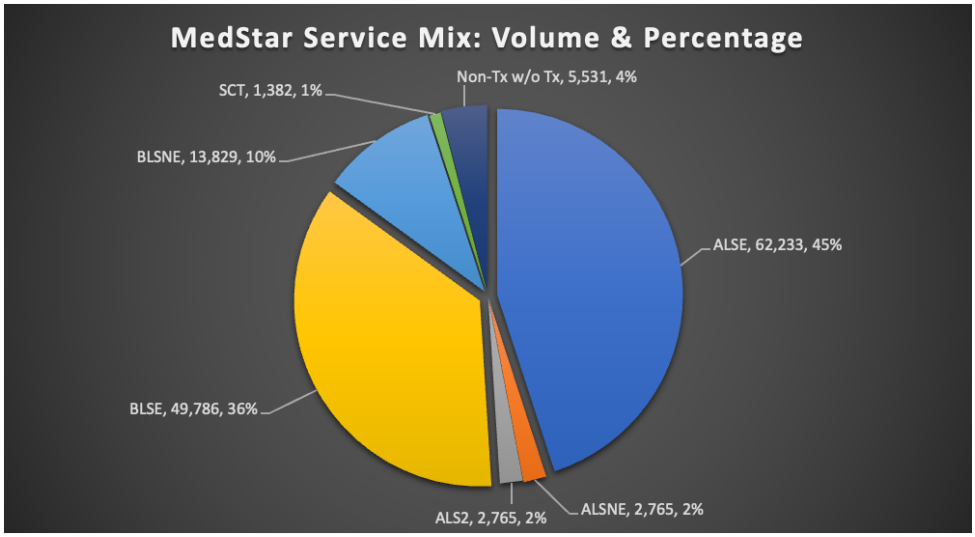
Results demonstrate that for MedStar to have achieved the 13-minute response time for emergency incidents, the UHU value would have to have been 0.48, or 48%. To meet an 11-minute response time, the system would have to have a UHU of 0.38, or 38% to maintain sufficient availability.



Evaluation of EMS System Revenues

MedStar System Service Mix

Service mix refers to the specific types (Emergent and Non-Emergent) and levels (Advanced Life Support, Basic Life Support, and Special Care Transport) of service billed to payors for ambulance services.



The MedStar system's service mix is 45% ALS emergent and 2% each for ALS non-emergent and ALS 2, respectively. BLS emergent was 36% and BLS non-emergent was 10%. Treat and release was 4% of the service mix.

MedStar System Service Area Payor Mix

Payor type data is beneficial, as it indicates the sources of actual net revenues collected for transports from various payor classes. The payor mix, defined as the percentage of billed and collected revenue based on payer source, significantly affects the collection rate and ambulance transport revenue. Medicare and Medicaid pay a set fee for ambulance transports regardless of what is charged. However, commercial insurance tends to pay a higher portion of ambulance claims. Unfortunately, there are usually fewer commercially insured patients transported than Medicare and Medicaid patients, so although each transport generates more revenue, there are fewer of them. Finally, there are self-pay patients, those who lack insurance or have insurance but still need to meet their deductible or coinsurance for the insurance to pay.

This payor class has increased nationwide in the most recent decade as people increasingly select high-deductible health plans to keep their monthly premium costs low. These patients generally don't pay at all or pay a minimal amount of the charge. The balance then must be written off as bad debt.

Observations

- This service mix is within what *FITCH* has observed in similarly-sized EMS systems and nationwide average service mix data provided by CMS.
- ALS and special care transports accounts for 50% of the charges.
- BLS services accounted for the 46% of the services.
- 83% of the transports were classified as emergent.
- The Private Pay value of 22.8% is high compared to the national experience and may be indicative of lack of insured patients.

Evaluation of the Payor Mix

MedStar System Service Area Payor Mix

The number of transports for each payor class was compared to the actual net revenue from each payor class. Transport revenues are a product of the volume of transports within the service area, the rates charged for these transports, and the revenues received for these services.

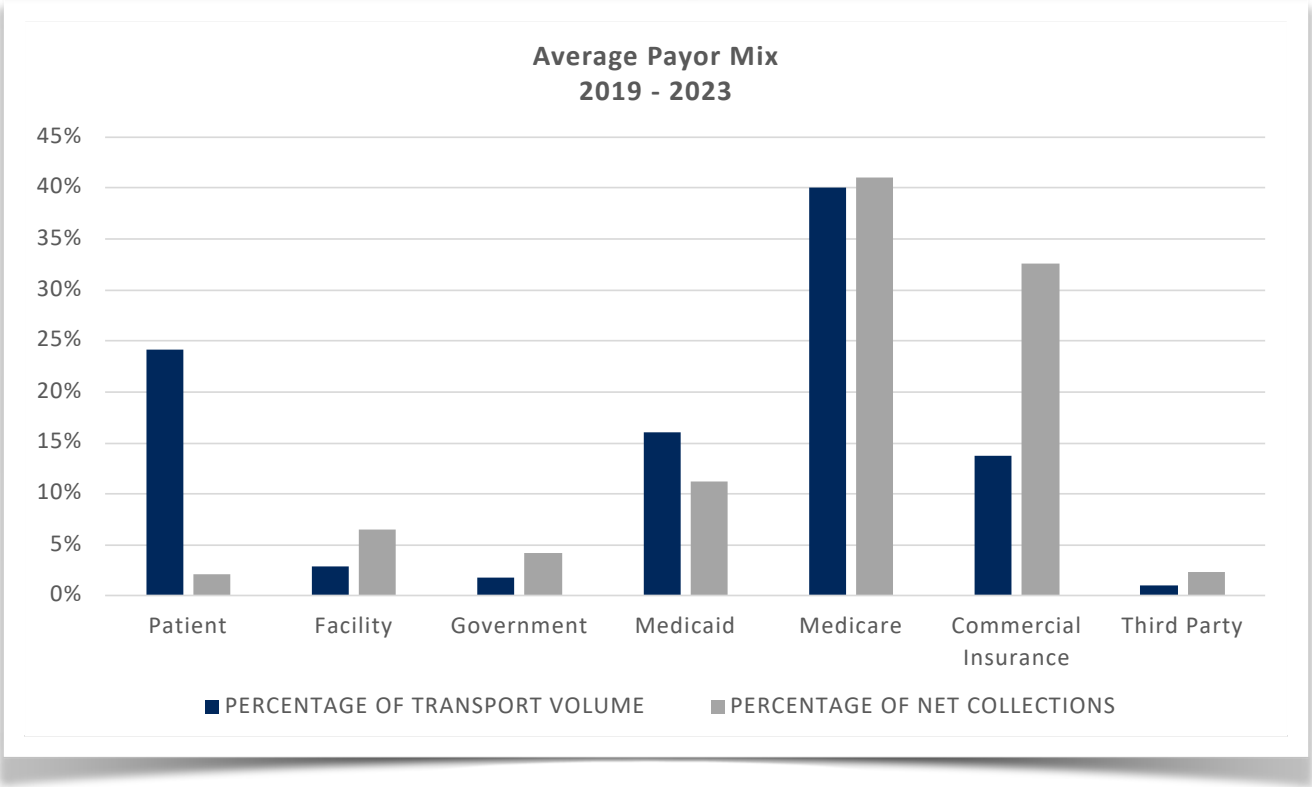
The largest payor class by transport volume is Medicare HMO (24.6%); the second largest is Self-Pay (22.8%), followed by Commercial Insurance (17.2%), Medicare (16.4%), Medicaid HMO (15%), Facility Contracts (3.4%), and Medicaid (fewer than 1%) representing the lowest percentage of billed transports.

Observation

The payor mix contains a lower Medicare volume and higher Medicaid volume compared to agencies of comparable size that we have reviewed across the country.

The payor mix contains a lower Medicare volume and higher Medicaid volume compared to agencies of comparable size that we have reviewed across the country. The service area has a higher percentage of Commercial insurance compared to the national average for commercial insurance, which, as mentioned previously, is the payer that reimburses at the highest amount.

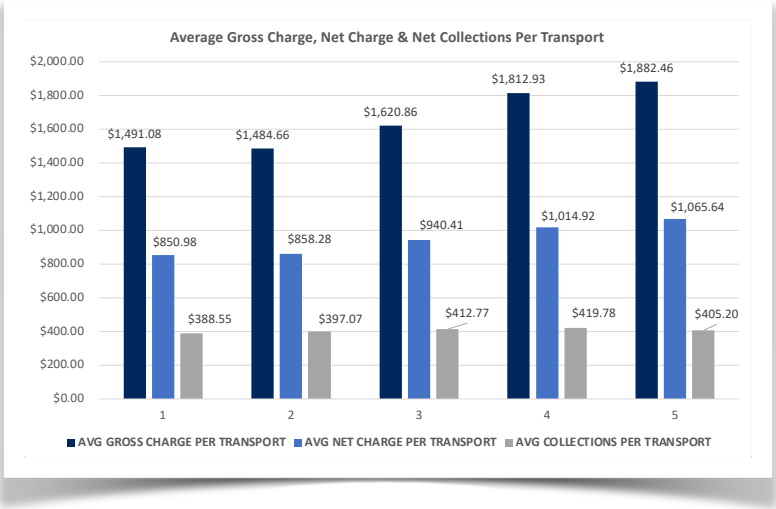
The relatively low commercial insurance rate and Medicaid rates may be contributing to the high Private Pay experience. In addition, it is commonly found that documentation accuracy is a contributing factor to Private Pay because that is the final payor class if it can't be assigned elsewhere.



Evaluation of Charges and Collections

MedStar System Gross & Net Charges vs Net Collections

An industry best practice is to examine and compare the rates of similar-sized EMS services throughout the state to current rates annually. This ensures rates are sufficiently above Medicare to collect the maximum amount commercial payors allow. *FITCH* analyzed the gross and net charges, contractual adjustments, net collections, and net collection rate for 2019 – 2023. The average net cash per trip was $404. The average gross charge per trip was $1,658, with a net charge of $946. This demonstrates a lack of association between increasing rates charged for service and actual received net collections. Marginal increases in net revenues are associated with increases in transports. MedStar's 2023 Cost per Transport was $455.10. Average Days in Accounts Receivable or "Days in A/R" is the average time it takes for a service to receive payment from a responsible party.



This metric describes insurance payments and patient payments. Agencies need to know how to calculate days in A/R to quantify the efficiency of their billing operations.

Recommendation

The average net cash per trip was $404.

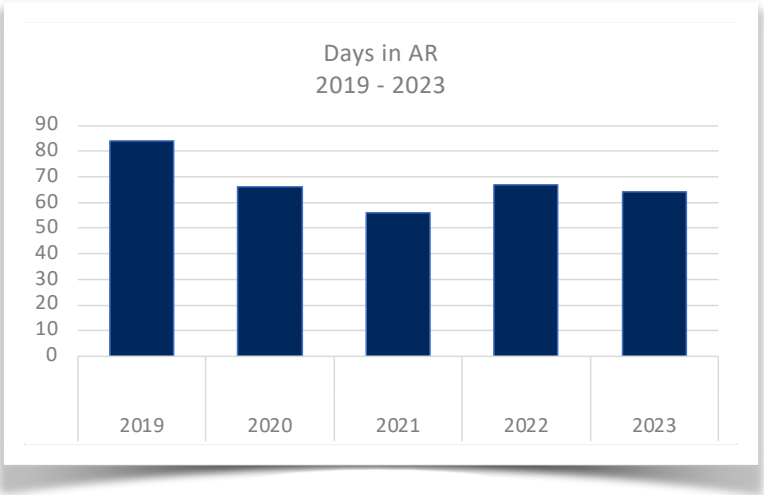
The average gross charge per trip was $1,658, with a net charge of $946.

Demonstrates a lack of association between increasing rates charged for service and actual received net collections.

Marginal increases in net revenues are associated with increases in transports.

MedStar's 2023 Cost per Transport was $455.10.

The standard calculation for days in A/R is computed by adding up the charges for a rolling period, dividing it by revenue collected, and multiplying by the analyzed period. MedStar reported Days in A/R of 64 in 2023, outperforming the industry average of fewer than 90 days. The DSO should be monitored for fluctuations that could indicate issues in a variety of areas, and benchmark DSO for agencies should be fewer than 50 days and as close to or approaching 30 days as possible.



Evaluation of Hospital Wall Time

Ambulance delays at the receiving facilities has been an ongoing topic of concern across the nation for several years. While certain localities have historically experienced significant delays, on the national scale the Covid-19 Pandemic certainly exacerbated the issue.

The concern with "wall time" is that ambulance crews are held at the receiving facility waiting to transfer care so that the ambulance can return to service for another call. Therefore, the hospital's receiving department's inability to manage patient flow causes an unfunded mandate on the ambulance providers that are losing efficiency.

However, when examining the MedStar systems' wall time performance, the average wall time was 26 minutes with a 90% value at 38 minutes. The best practice recommendation would be to manage wall time to 20 minutes or less at the 90th percentile. Overall, the performance was better than much of the country, but an opportunity for improvement remains.

Call Type and Response Protocol	Average (Minutes)	90th Percentile (Minutes)	Number of Responses
911	**26.7**	**38.1**	**97,413**
Emergency, Lights and Sirens	27.9	40.0	36,971
Non-Emergency, No Lights and Sirens	26.0	36.8	60,439
Unknown	--	--	3
Transfer	**26.1**	**39.3**	**29,179**
Emergency, Lights and Sirens	29.1	41.5	6,396
Non-Emergency, No Lights and Sirens	25.3	38.5	22,783
Total	**26.6**	**38.3**	**126,592**

Observations

The system average wall time was 26.7 minutes and the 90th percentile was 38.3 minutes in 2023.

The wall time is better than expected and better than much of the national experience.

JPS and THR Fort Worth represent 54% of the transport destinations.

Recommendations

The system is encouraged to work with the receiving facilities to achieve a 20-minute or less wall time at the 90th percentile.

The evaluation is for illustrative purposes only and should be updated with the actual UHC of the final implemented alternative model.

Values	Items
Reduction in Wall Time	10
2023 Transports	138,296
Overage Minutes on the Wall	1,382,960
Hours on the Wall	23,049
Unit Hour Cost	$ 173.67
Annual Cost of Wall Time	***$ 4,002,943***
12 Hour Shifts Per day	***5.26***

An evaluation of the economic impact to the MedStar system is provided below. This is illustrative of what a 10-minute reduction in average wall time would represent in cost shifting $4,002,943 to the ambulance provider.

Description of MedStar's 2024 Adopted Budget

MedStar's 2024 adopted budget was evaluated in an attempt to understand and normalize the values for further comparisons across financial models. For these purposes, all inherent assumptions and calculations provided by MedStar are adopted without validation or adjustment. The 2024 adopted budget anticipated a net positive income of $85,172. Depending on the fidelity of filling the schedule, the system UHU will be a minimum of 56.3% at 100% deployment and 71.2% at the base schedule.

However, testing the fiscal sustainability of the 2024 budget through the next five years demonstrates that the current budget has a structural deficit if all conditions remain the same with the exception of a conservative 2% growth on transport revenue and a 5% increase in expenditures.

Observations

MedStar's 2024 adopted budget is reported to have a net positive position of $85,172.

This budget is presented as provided by MedStar with the exception of revenue/expenditure estimates for future years.

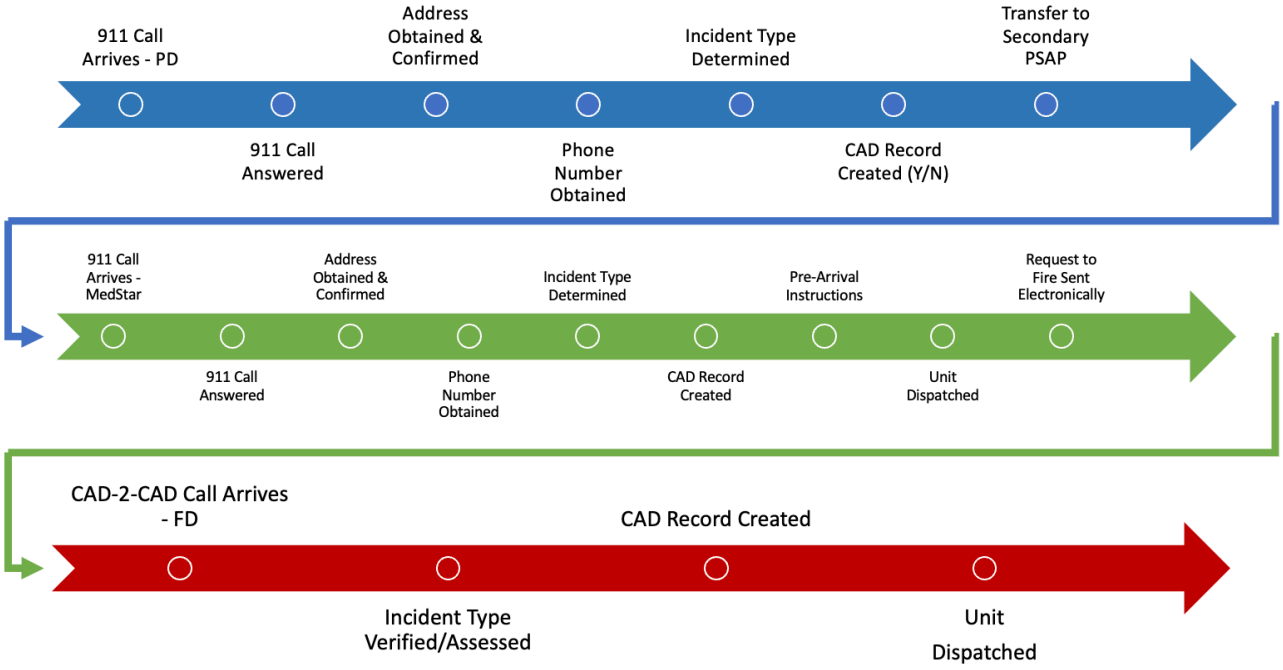
Results suggest that public funding will be needed beginning in 2025.

The assumptions are based on CMS's typical increase of 1.8% and MedStar's average increase in expenditures of 5.86% over the last 5 years.

MedStar 2024 Budget	Year 1	Assumptions	Year 2	Year 3	Year 4	Year 5
Non-Transport Revenue	$ 5,256,050		$ 5,256,050	$ 5,256,050	$ 5,256,050	$ 5,256,050
Transport Revenue	$ 60,156,652	2.0%	$ 61,359,785	$ 62,586,981	$ 63,838,720	$ 65,115,495
Revenue Total	***$ 65,412,702***		***$ 66,615,835***	***$ 67,843,030***	***$ 69,094,770***	***$ 70,371,544***
Direct Labor Overhead Labor	$ 37,692,992	5.0%	$ 39,577,642	$ 41,556,524	$ 43,634,350	$ 45,816,067
Fringe	$ 8,344,299	5.0%	$ 8,761,514	$ 9,199,590	$ 9,659,569	$ 10,142,548
Direct Materials	$ 7,189,684	5.0%	$ 7,549,168	$ 7,926,626	$ 8,322,958	$ 8,739,106
Overhead Materials	$ 7,793,059	5.0%	$ 8,182,712	$ 8,591,847	$ 9,021,440	$ 9,472,512
Depreciation/Amortization	$ 4,307,496	5.0%	$ 4,522,871	$ 4,749,014	$ 4,986,465	$ 5,235,788
Expense Total	***$ 65,327,530***		***$ 68,593,906***	***$ 72,023,602***	***$ 75,624,782***	***$ 79,406,021***
Income / (Loss)	***$ 85,172***		***$ (1,978,072)***	***$ (4,180,571)***	***$ (6,530,012)***	***$ (9,034,476)***

Impact of 911 Call Transfers on Response Time

The 911 system is designed to route a caller to the most appropriate public safety answering point (PSAP), also referred to as an emergency communications center (ECC). A **Primary PSAP** is defined as a PSAP to which 911 calls are routed *directly from either a landline or cellular device.* A **Secondary PSAP** is a PSAP to which 911 calls are transferred *from a Primary PSAP*. In the current system, Fort Worth Police is a primary PSAP, as are other Tarrant County law enforcement agencies. Fort Worth Fire and MedStar are classified as secondary PSAPs. A graphic representation of a typical EMS call within Fort Worth is reflected below.



The use of CAD data for call processing analysis is the most common practice in the industry, typically utilizing the earliest timestamp from the CAD system until an emergency unit is dispatched. Recent medical research concluded that primary to secondary PSAP transfers are not included in this typical performance measure, and prevent EMS agencies from meeting out-of-hospital cardiac arrest performance recommendations, stating that:

> *Technical barriers to accurate time measurement and inconsistencies in EMS response interval definitions also lead to a significant amount of time being unaccounted for and together these factors may lead to falsely optimistic assessments of system performance.*

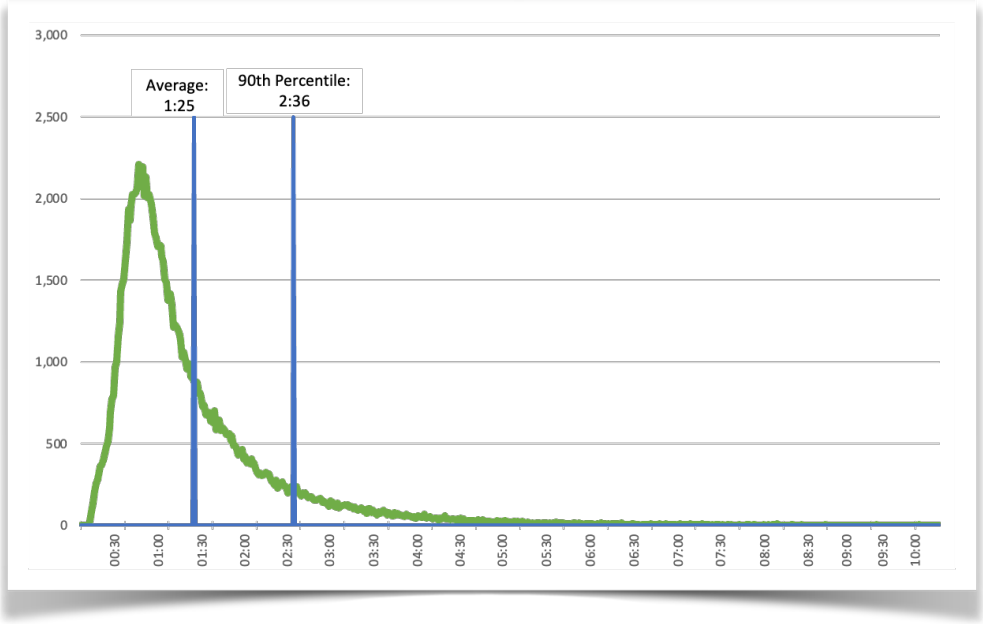
FITCH addresses this limitation by analyzing the county's 911 system infrastructure data. Unlike CAD data, this 911 data was extracted from the Motorola Vesta telephony system employing ECaTS reporting software.

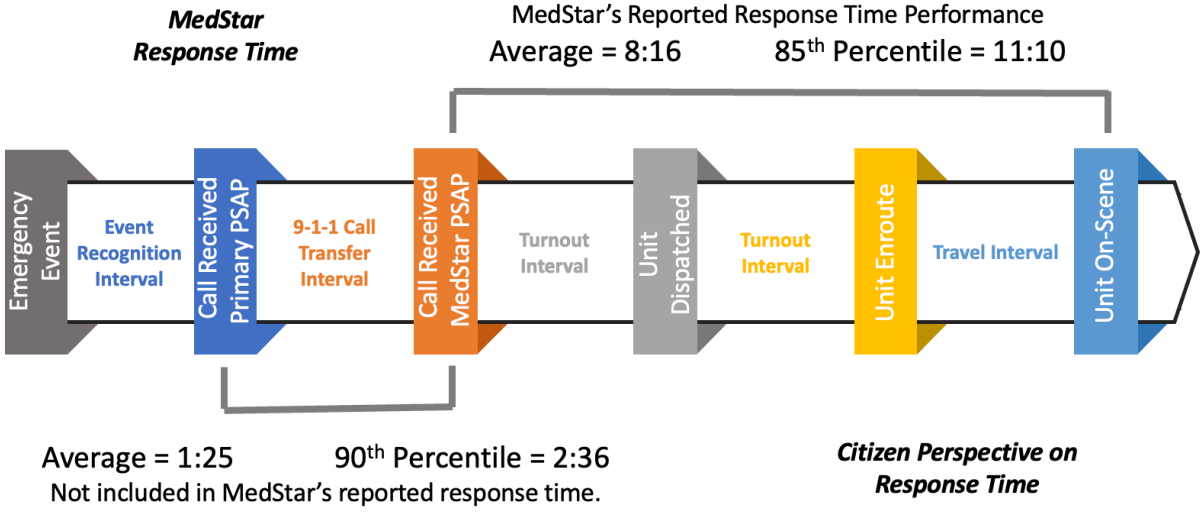
Impact of 911 Call Transfers on Response Time

MedStar provided raw data that were imported into a relational database application, encompassing a full year of 911 calls from October 1, 2022, through September 30, 2023. The following analysis calculates the call transfer interval as the difference between when a call arrives at a primary PSAP until it arrives at the MedStar PSAP. The results reflect a significant delay in getting a 911 caller to MedStar's secondary PSAP.

Metric	Performance
Average	00:01:25
25th	00:00:47
Median	00:01:05
75th	00:01:41
90th	00:02:36
Count	137,459

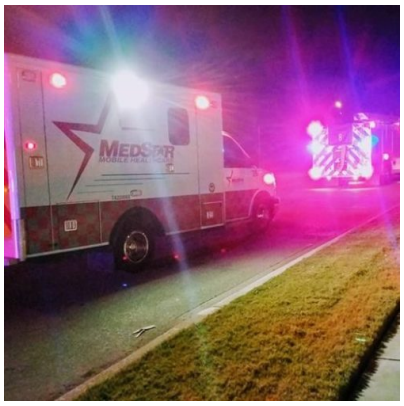
As reflected below, the unreported time - from a citizen's perspective - results in response times that are 1:25 on average, and over 2½ minutes at the 90th percentile greater than currently reported. The graphic below reflects MedStar's performance as reported for September 2023, but also reflects the additional impact from 911 call transfers as experienced from the citizen perspective.





First Arrival System Performance by Agency

Analyses were completed assessing the relative first arrival performance between MedStar and the Fort Worth Fire Department for emergency responses (Priorities 1-4). The analyses identified which agency arrived first and provided the 90th percentile total response time. The first table is without the telephony data that begins when PD answers the call and the second table begins at the time Fort Worth PD answers the 911 incident.



As designed, the fire department arrives first on scene approximately 65% to 70% of the time. Conversely, MedStar arrives first on scene approximately 30% to 35% of the time.

However, the observations may be overstating the true performance of the medical first response provided by the FWFD, because the current dispatch process notifies them last after MedStar has been dispatched for all medical calls that did not inadvertently get processed by the FWFD Communications Center that received rollover calls when the FWPD Communications Center couldn't answer the call within the desired performance parameters.

Priority Level and Priority	FWFD Arrived First				MedStar Arrived First				Total Number of Calls
	Number of Calls	Percentage of Calls	FWFD 90th Percentile Response Time without ECaTS	MedStar 90th Percentile Response Time without ECaTS	Number of Calls	Percentage of Calls	MedStar 90th Percentile Response Time without ECaTS	FWFD 90th Percentile Response Time without ECaTS	
1	**1,460**	**67.3**	**7.4**	**13.9**	**708**	**32.7**	**9.0**	**10.0**	**2,168**
1A	1,460	67.3	7.4	13.9	708	32.7	9.0	10.0	2,168
1/2	**56**	**81.2**	**9.3**	**20.2**	**13**	**18.8**	**13.1**	**19.5**	**69**
1A/2A	56	81.2	9.3	20.2	13	18.8	13.1	19.5	69
2	**13,311**	**64.1**	**8.3**	**15.8**	**7,469**	**35.9**	**10.1**	**10.6**	**20,780**
2A	13,311	64.1	8.3	15.8	7,469	35.9	10.1	10.6	20,780
3	**4,060**	**66.1**	**8.4**	**17.0**	**2,083**	**33.9**	**10.6**	**10.7**	**6,143**
3A	4,050	66.1	8.4	17.0	2,078	33.9	10.6	10.7	6,128
3A/3A+C	10	71.4	10.6	22.7	4	28.6	–	–	14
3A+C	0	0.0	–	–	1	100.0	–	–	1
3/4	**44**	**78.6**	**9.6**	**27.7**	**12**	**21.4**	**28.9**	**37.6**	**56**
3A/3A+C/4B	44	78.6	9.6	27.7	12	21.4	28.9	37.6	56
4	**3,043**	**74.6**	**8.9**	**15.8**	**1,038**	**25.4**	**9.6**	**14.2**	**4,081**
4B	3,043	74.6	8.9	15.8	1,038	25.4	9.6	14.2	4,081

Priority Level and Priority	FWFD Arrived First				MedStar Arrived First				Total Number of Calls
	Number of Calls	Percentage of Calls	FWFD 90th Percentile Response Time with ECaTS	MedStar 90th Percentile Response Time with ECaTS	Number of Calls	Percentage of Calls	MedStar 90th Percentile Response Time with ECaTS	FWFD 90th Percentile Response Time with ECaTS	
1	**1,460**	**67.3**	**10.4**	**15.7**	**708**	**32.7**	**10.9**	**13.8**	**2,168**
1A	1,460	67.3	10.4	15.7	708	32.7	10.9	13.8	2,168
1/2	**56**	**81.2**	**11.9**	**22.3**	**13**	**18.8**	**15.0**	**23.1**	**69**
1A/2A	56	81.2	11.9	22.3	13	18.8	15.0	23.1	69
2	**13,311**	**64.1**	**11.5**	**17.5**	**7,469**	**35.9**	**11.8**	**14.9**	**20,780**
2A	13,311	64.1	11.5	17.5	7,469	35.9	11.8	14.9	20,780
3	**4,060**	**66.1**	**12.0**	**19.0**	**2,083**	**33.9**	**12.4**	**16.5**	**6,143**
3A	4,050	66.1	12.0	19.0	2,078	33.9	12.3	16.4	6,128
3A/3A+C	10	71.4	–	–	4	28.6	–	–	14
3A+C	0	0.0	–	–	1	100.0	–	–	1
3/4	**44**	**78.6**	**12.6**	**31.5**	**12**	**21.4**	**--**	**--**	**56**
3A/3A+C/4B	44	78.6	12.6	31.5	12	21.4	–	–	56
4	**3,043**	**74.6**	**11.8**	**19.1**	**1,038**	**25.4**	**13.0**	**17.2**	**4,081**
4B	3,043	74.6	11.8	19.1	1,038	25.4	13.0	17.2	4,081

Observations

The FWFD arrives first on scene to emergency response (lights and sirens) EMS incidents nearly 70% of the time.

However, the process to navigate calls through the three communications centers results in delays and are highly duplicative.

The current design has the first responder agency, FWFD, as the last agency in the process to assess and dispatch the first response units.

Therefore, the arrival time for the FWFD is overstated if compared to being able to dispatch earlier in the process.

Recommendation

It is recommended that the FWFD and MedStar dispatch centers are integrated into a unified center to significantly improve services and reduce costs and duplication of effort.

On prioritized incidents, first responders should be dispatched at the earliest point in the process to maximize the benefits of existing capacity.

Consideration of Alternative System Designs

Four broad models were created to compare alternative EMS system designs for consideration. In all of the models evaluated, the recommended change in the governance model was applied. These models ranged from maintaining the current system provider, to considering municipal provider models, and finally to returning to a more historical PUM design of providing market controls through cyclical procurement with private contractors.

Current System Provider — 1

The City of Fort Worth elects to change the governance to City Council and provides public funding to MedStar to continue operations that best preserve the status quo.

Fire Department Based Model (Dual-Role Personnel or Single-Role) — 2

The City of Fort Worth Fire Department establishes a division of EMS, and either dual-role personnel or a single-role personnel model is implemented.

Third Service Model (City of Fort Worth Operated) — 3

The City of Fort Worth establishes a third public safety service that provides emergency medical services. This evaluation includes the inclusion of MedStar at current costs plus municipal benefits.

Private Contractor Model (Purchased Unit Hours) — 4

The City of Fort Worth (Authority) contracts with a private contractor through a competitive request for proposals process, utilizing a purchased unit hour model. Includes the option to contract with MedStar.

The total number of deployed unit hours is consistent across each alternative service delivery model.

The materials necessary to operate an EMS agency.

The cost of ambulances and capital equipment necessary to operate an EMS agency.

UHU measures the utilization of the resources deployed within the system, measured from when the units are dispatched to an incident until they are available.

All of the models included the same adherence to the system unit hours required to provide an 8-minute travel time to 90% of the incidents and control for workload by keeping the system UHU at or below 50%. Similarly, all capital and materials costs were held constant across each of the models.

Finally, the following assumptions were applied to each of the models. The only exception is that Model 1 continued with MedStar's current costs. In other words, in all of the subsequent analyses the reader will see that the $8m set aside approach was not applied to MedStar as those costs are currently held within the current provider model.

MedStar Communications

Costs were removed for the alternative models and set aside for the future 911 Integration Project.

The System will incur the costs but will depend on who is the payer.

Anticipated fiscal savings after 911 integration.

~$6.4m

Personnel Costs

Private Models were calculated on the Average Value of MedStar's 2024 compensation.

Fire Single-Role and 3rd Service was calculated on the median value of the market plus 10% in salary and municipal benefits.

MedStar Legal Counsel

Legal expenses were pulled out and set aside in the municipal models.

Assumed under the governance model, city legal could incur a significant portion of the current costs.

They remained accounted for in the private and MedStar models.

~$445k

OMD

Removed revenues, personnel costs, and any expenses from the 2024 budget.

Allocated personnel for training and agency-level QA/QI .

Costs were not specifically reduced but rather redistributed.

The total 2024 Budget for OMD was $2.2m.

~$771k

MedStar Transformation and Innovation

Set aside all costs for the department.

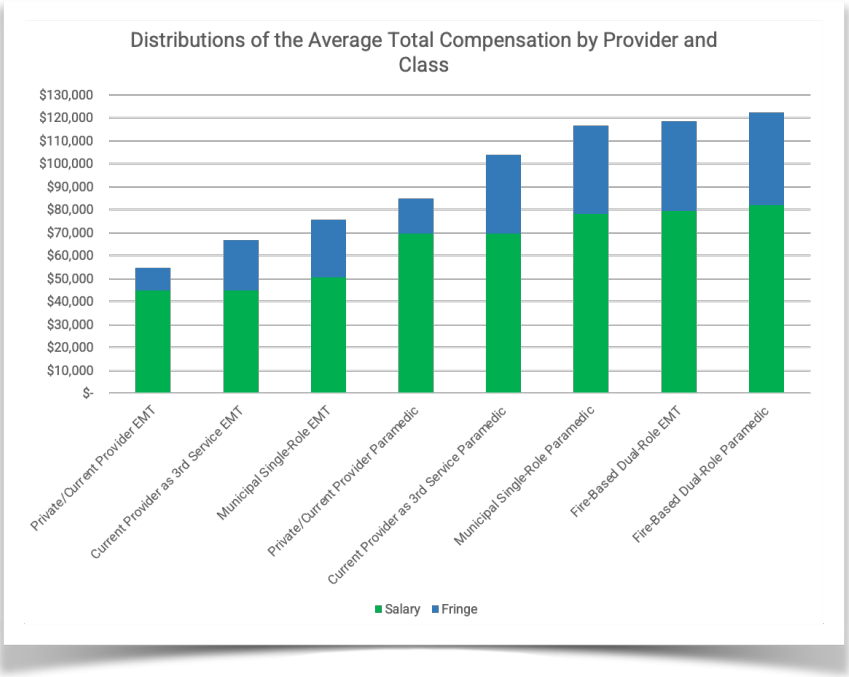
It has yet to be determined if all alternative models will require the position and investment.

Will reallocate costs to any alternative models, if selected.

~$437k

Personnel Costs and Capital/Assets

A high-level market comparison was completed to identify the appropriateness of the current salary strategies utilized by MedStar as well as to identify the desired salary for some of the alternative models. According to this high-level market survey, MedStar is reasonably competitive in the market.



The median of the market survey for MedStar would be $32.10 for PM and $21.41 for EMT. MedStar's actual average is $30.40 for PM and $19.47 for EMT. Across all agencies in the market survey, the PM rate would be $30.84 for PM and $21.20 for EMT. Therefore, to maintain consistency across the private models, MedStars current salary ranges were replicated.

The municipal 3rd Service and FD-Single Role models utilized the median market value plus a 10% increase to attempt to improve recruitment and reduce historically high attrition rates.

The acquisition of capital assets and/or start up costs were set aside within the comparisons of the alternative models because of the uncertainty in how the assets and capital will be addressed. The following figure provides two broad pathways. First, (left) is the pro rata distribution of assets if the provisions afforded within the ILA are exercised. Second, (right) is if the pro rata distribution of assets were not exercised. Under the second alternative, there would be significant start-up costs required that will begin at a minimum of $40m.

Pro Rata Distribution of Assets

Under certain provisions in the ILA, all assets would be distributed by the pro rata share for each member city.

- ✓ 70+ Ambulances (need minimum of 59)
- ✓ 3 Facilities
- ✓ Equipment
- ✓ Cash – Approximately $10m after debt
- ✓ Etc.

Purchase of Assets

If the provisions within the ILA were not exercised, then any of the municipal-based models would require significant capital outlay.

Private providers would bring their assets.

Estimated costs to purchase MedStar assets:

- ✓ 59 Ambulances – $24m
- ✓ Facilities – Unknown market value ($15m depreciation)
- ✓ A minimum cost of $40m in start-up

Model 1 - Current Provider

One of the options in all system evaluations is to considering continuing with the status quo. In this case, that would be referencing the provider as all models would experience the same system enhancements and recommended change in governance. In this model, the city would not collect any revenues, enter a contractual relationship, or assume any additional administrative or operational risk for the provision of services.

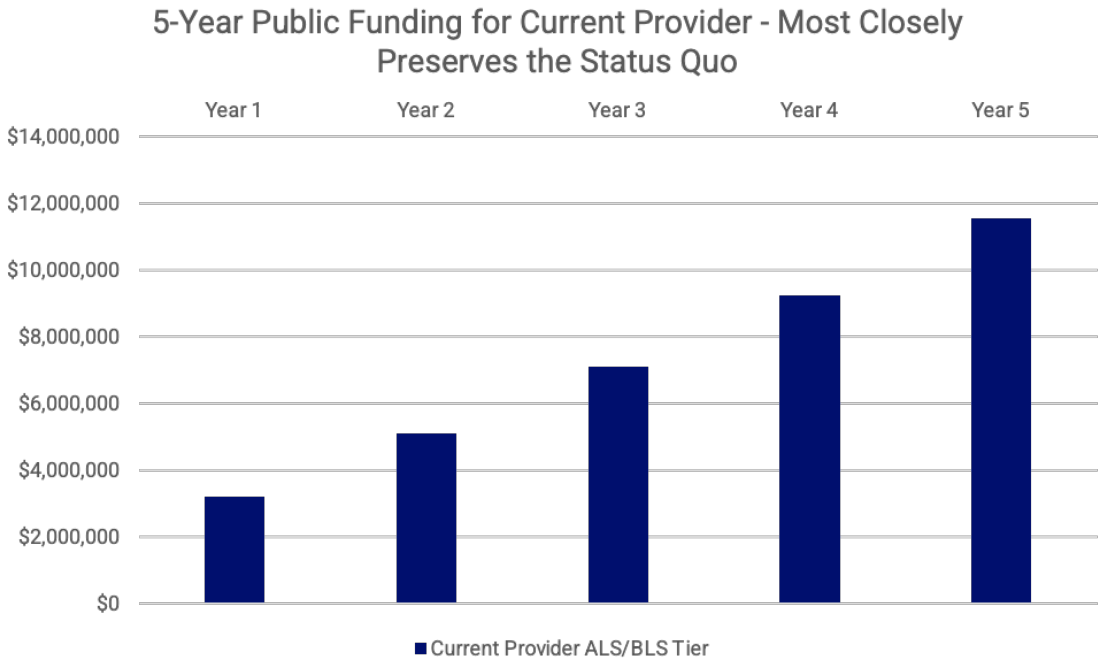
Compared with the other models, this will preserve the greatest degree of status quo and the least fiscal impact of any of the alternatives. Overall, this largely preserves the status quo and may limit the full efficacy of other models that provide more robust structural changes. The model would be the most fiscally conservative and have the easiest transition and implementation.

Pros

1. Long-term local provider
2. Low-cost provider
3. Ease of implementation
4. Assets currently exist within the system

Cons

1. Legacy perceptions regarding transparency and accountability
2. Less attractive pay and benefits
3. Potential for continued high attrition rates



Model 2 - Fire Department-Based Models

Two fire department based models were created that either used dual-role personnel such as FF/PM and FF/EMT and a single-role model. Each of these utilized a high-efficiency dynamic deployment on 12-hour shifts.

In these models, the city would collect all revenues, enter a contractual relationship with the member cities, and assume the additional administrative and operational risk for the provision of services.

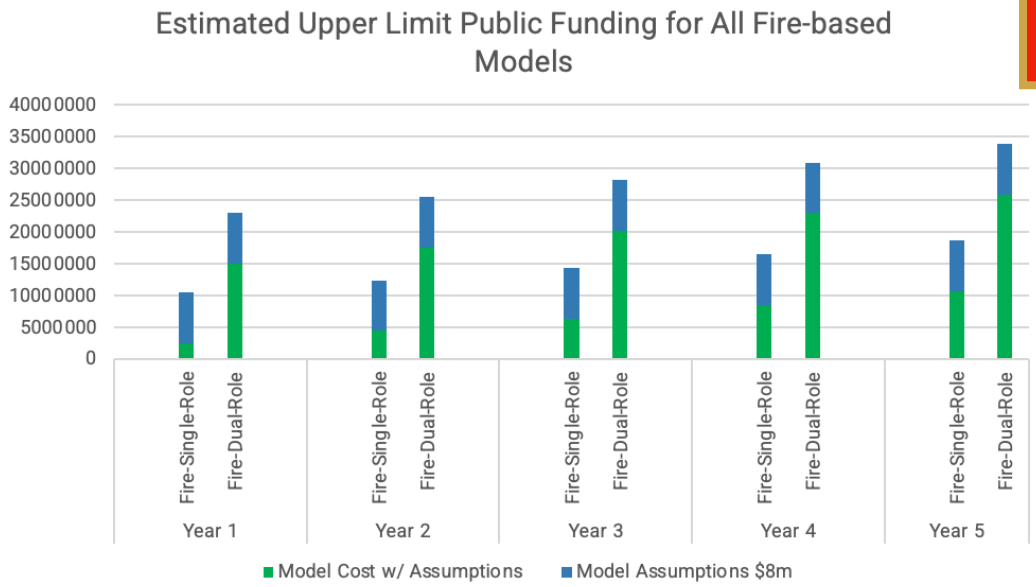
The Single-Role models with an ALS/BLS tier require the least public funding considered under the fire department models. Models include a 10% increase in base salary to improve recruitment, retention, and sustainability. This would require a longer implementation and transition period than Model 1, but less than Model 3.

Pros (Single-Role)

1. Long-term local provider of emergency services
2. More attractive compensation, benefits, and pension
3. Improved recruitment and retention
4. Direct control over services
5. Improved diversity within the fire department
6. Economies of scale in administrative and support services within the city infrastructure

Cons (Single-Role)

1. Higher cost than the private or current providers



Model 3 - Third Service Models

Two 3rd Service models were created that either assumed that MedStar could be absorbed into the city government with all current costs and operations or that created an independent 3rd Service model with the increased salary and benefits previously described.

In these models, the city would collect all revenues, enter a contractual relationship with the member cities, and assume the additional administrative and operational risk for the provision of services.

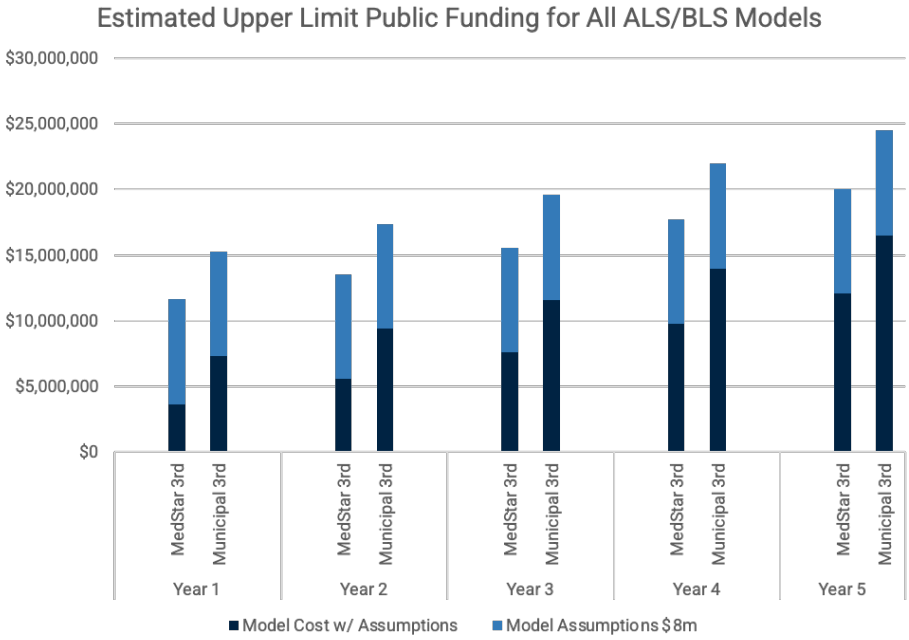
The municipal 3rd service model discussed here would require the longest implementation and transition period. With the exception of the dual-role model, this model would also have the highest costs of any of the alternative models, largely due to the limited ability to utilize existing organizational structures and administrative capacity.

Pros (Municipal)

1. More attractive compensation, benefits, and pension
2. Improved recruitment and retention
3. Direct control over services
4. Improved diversity within emergency services

Cons (Municipal)

1. Higher cost than the private or current providers
2. Less potential for economies of scale



Model 4 - Purchase Unit Hour Models

As the EMS Authority, the City of Fort Worth would contract with a private provider through a competitive RFP process and or directly with MedStar, utilizing a purchase unit hour model.

In this model, the city would collect all revenues, enter a contractual relationship with the member cities, and assume the additional administrative and operational risk for the provision of services.

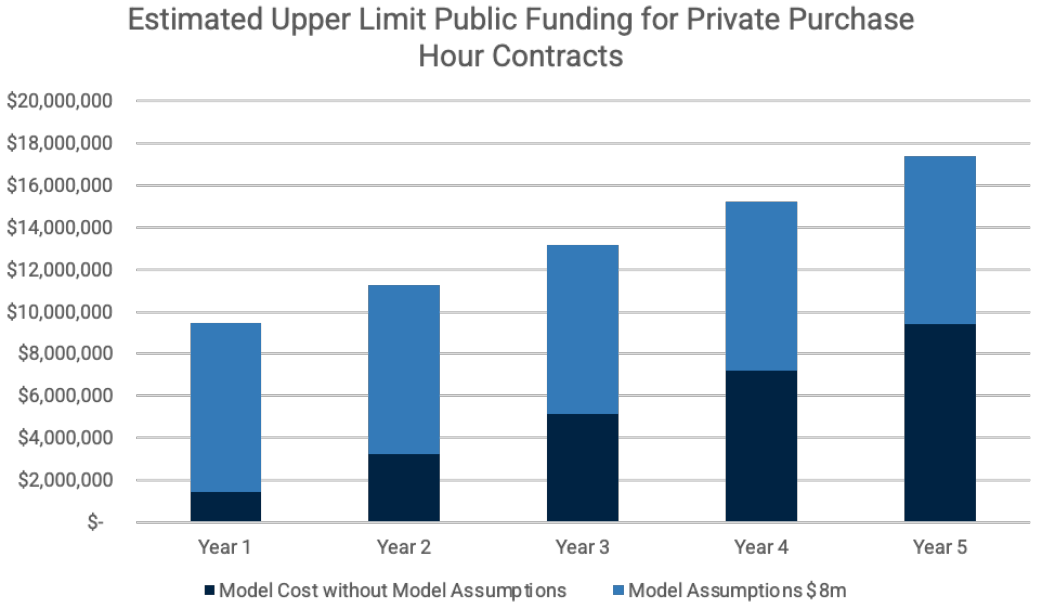
Compared with the traditional private performance-based models, this model provides greater clarity and accountability for public investment as the agency is contractually bound and incentivized to fulfill the desired deployment and schedules. All models include a 10% positive margin for fiscal sustainability. It is common for the fire department to provide contract oversight when local government is the contractee.

Pros (Municipal)

1. Low-cost provider
2. Can readily provide their own assets
3. Periodic opportunity for market corrections
4. Corporate fiscal backstop
5. Contractual obligations for system performance

Cons (Municipal)

1. Less attractive pay and benefits
2. Potential for high attrition rates
3. Organizational disruption when providers change



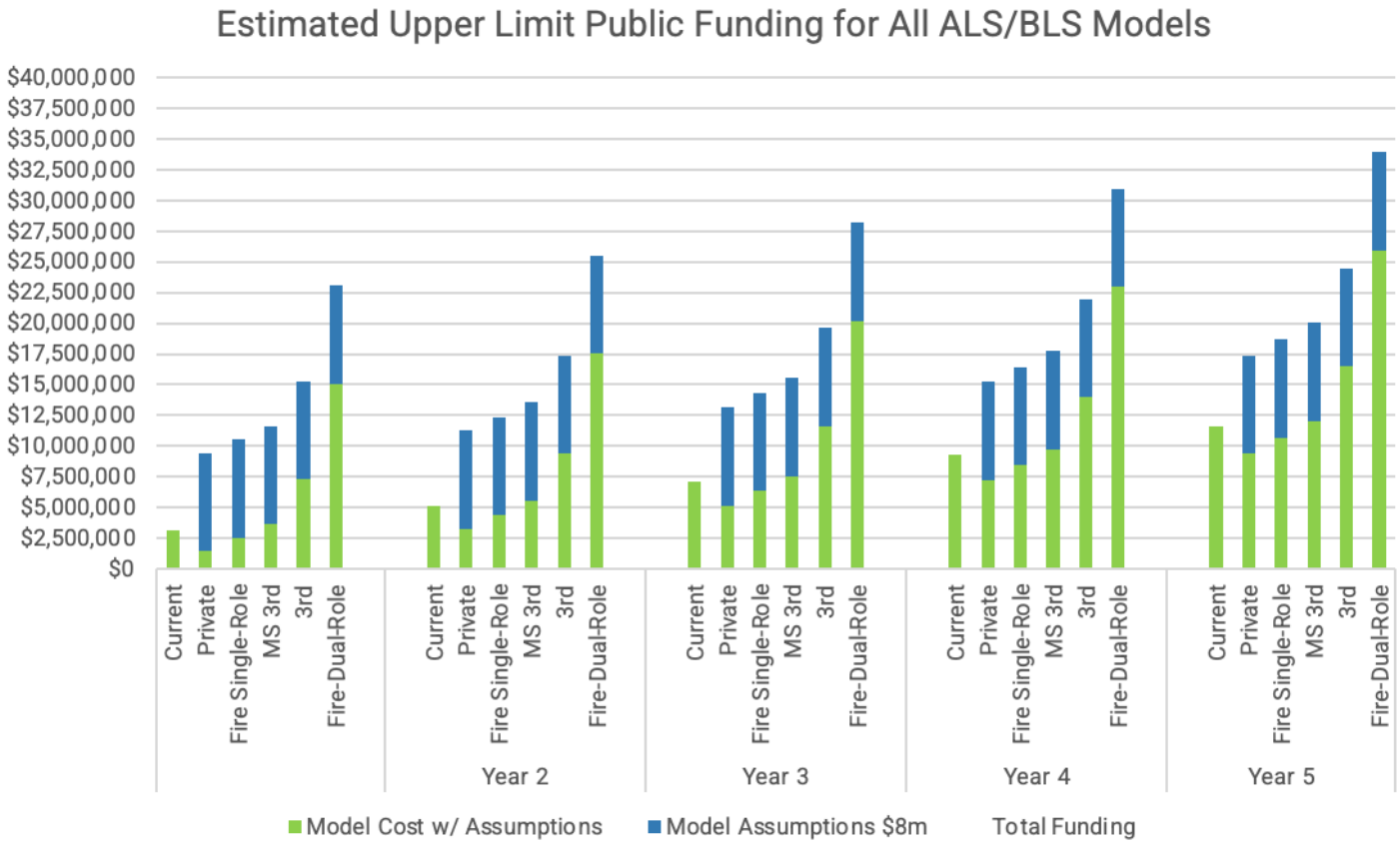
Summary of Annual Operating Costs by Model

A 5-year summary of the estimated costs for each of the proposed models is presented here. Each of the models include the estimated model cost with all assumptions (dark blue) and then the $8m set aside assumptions are additive (light blue), excluding the "current" provider as those costs were already included.

However, it is anticipated that the $8m would be the upper limit for these models as there are anticipated efficiencies for consolidation of the dispatch centers and other policy related decisions that may be optioned with the preferred alternative model.

Observations

It is anticipated that the $8m would be the upper limit for these models as there are anticipated efficiencies for consolidation of the dispatch centers and other policy related decisions that may be optioned with the preferred alternative model.



Summary of Expenses by Model

A summary of the distribution of expense categories across the alternative models are presented below.

As discussed during the budget assumptions the fire-based single-role model and the 3rd service models include a 10% increase over the median market value.

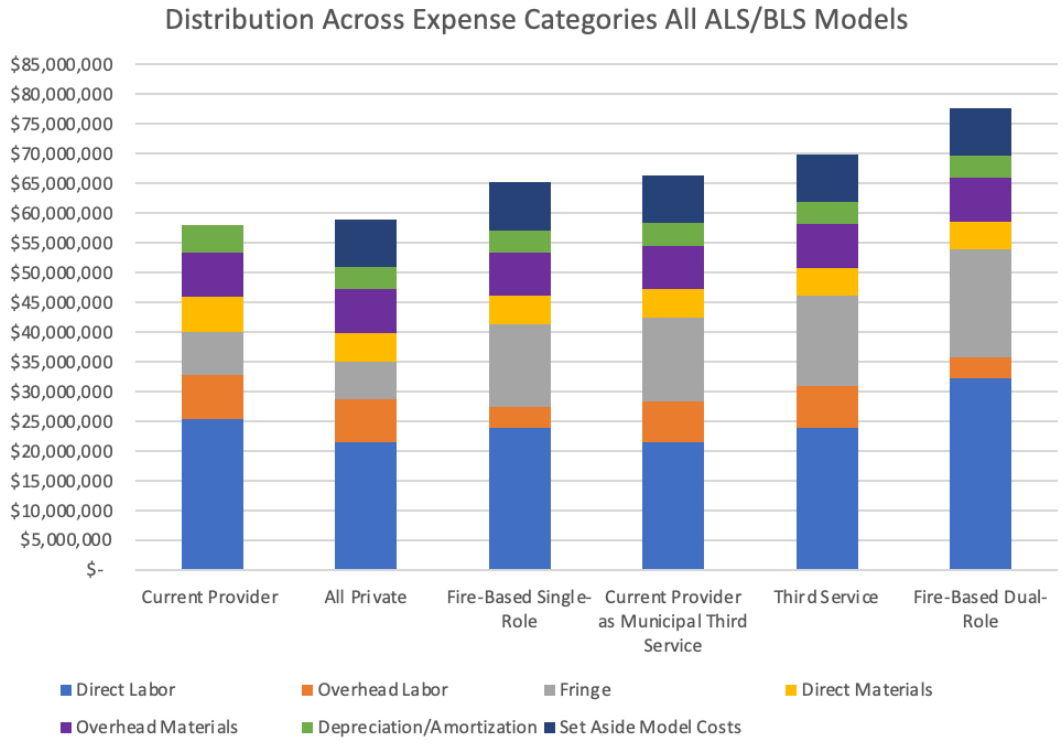
The fire-based dual-role model is based on existing classification and total compensation from the city.

The municipal-based models have a higher fringe value due to increased benefits for city employment.

FITCH estimated that the fire department would benefit from utilizing existing administrative capacity that would not require the full administrative buildup required of an independent or new agency.

If these efficiencies cannot be validated or realized, then the committee should assume that the upper limit for the fire-based single-role model would be more closely aligned with the municipal 3rd service model.

All materials and depreciation are identical across all models.



Summary of Alternative EMS Models

The following tables provide a summary of the alternative EMS models with costs, set aside budget assumptions, and minimum start-up costs differentiated by whether the ILA provisions were exercised or not exercised.

The tables are classified by the four prime goals of the EMS Ad Hoc Committee to review *Governance, Service Levels, Financial Stability, and Patient-Focused Clinical Care.*

Summary of Alternative EMS Models with ILA Exercised

	Governance	Service Levels		Financial Stability				Patient-Focused Clinical Care
EMS Model		**UHU**	**90% Travel Time (911 Only ALS/BLS Tier)**	**Public Funding (Year 1)**	**Capital Outlay (Start-up)**	**Set Aside Costs**	**Total Potential Costs w/o Any Realized Efficiencies**	
Current System Provider – Status Quo	Mayor/Council	0.50	8-Minutes	$3.2m	$0	$0	$3.2m	✓
Private Provider (includes MedStar)	Mayor/Council	0.50	8-Minutes	$1.4m	$0	$8m	$9.4m	✓
Current Provider as Municipal Third-Service	Mayor/Council	0.50	8-Minutes	$3.6m	$0	$8m	$11.6m	✓
Third-Service	Mayor/Council	0.50	8-Minutes	$7.3m	$0	$8m	$15.3m	✓
Fire-based Single-Role	Mayor/Council	0.50	8-Minutes	$2.5m	$0	$8m	$10.5m	✓
Fire-based Dual-Role	Mayor/Council	0.50	8-Minutes	$15m	$0	$8m	$23m	✓

Summary of Alternative EMS Models with ILA Not-Exercised

	Governance	Service Levels		Financial Stability				Patient-Focused Clinical Care
EMS Model		**UHU**	**90% Travel Time (911 Only ALS/BLS Tier)**	**Public Funding (Year 1)**	**Capital Outlay (Start-up)**	**Set Aside Costs**	**Total Potential Costs w/o Any Realized Efficiencies**	
Current System Provider – Status Quo	Mayor/Council	0.50	8-Minutes	$3.2m	$0	$0	$3.2m	✓
Private Provider (includes MedStar)	Mayor/Council	0.50	8-Minutes	$1.4m	$0	$8m	$9.4m	✓
Current Provider as Municipal Third-Service	Mayor/Council	0.50	8-Minutes	$3.6m	$0	$8m	$11.6m	✓
Third-Service	Mayor/Council	0.50	8-Minutes	$7.3m	$40m	$8m	$55.3m	✓
Fire-based Single-Role	Mayor/Council	0.50	8-Minutes	$2.5m	$40m	$8m	$50.5m	✓
Fire-based Dual-Role	Mayor/Council	0.50	8-Minutes	$15m	$40m	$8m	$63m	✓

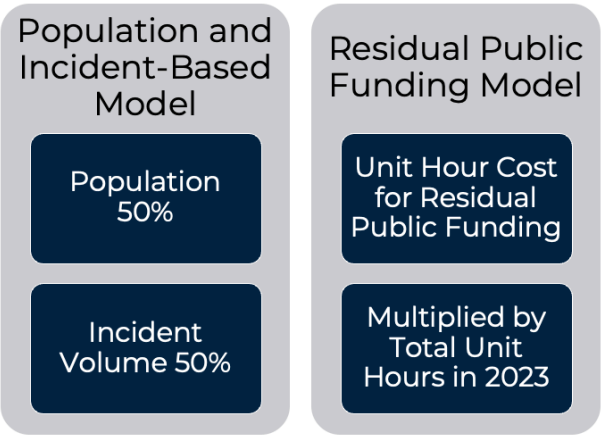
Member City Cost Allocation Considerations

All analyses confirm that the long-term sustainability of the MedStar system is in jeopardy. All scenarios project that public funding will be required to maintain long-term sustainability. Therefore, cost allocation strategies were created to begin a dialogue between the member cities.

At the time of this writing, no specific policy direction has been adopted by the Fort Worth City Council. Therefore, cost allocation examples were created for all four comparison models. The cost allocation strategies focused on the residual costs to the system defined as net revenue less total expenditures. This residual value would be considered as the required public funding to support each model.

Recommendations

Under the assumption that public funding is required, it is recommended that a fair and equitable cost allocation strategy is adopted by the member cities.



Two cost allocation strategies were created. First, is a weighted distribution where 50% of the value is associated with the percentage of population of each community versus the entire MedStar service area, and 50% of the value is associated with the percentage of the total incidents against the whole of the service area. These weighted values were multiplied by the total public funding required.

Second, is the calculated Unit Hour Cost (UHC) to deploy an ambulance for one hour multiplied by the actual unit hours consumed in each member city. This product was multiplied by the total public funding required. The UHC allocation strategy provides the best insulation against concerns that member cities would have to unduly bare the costs of growth in other cities as the costs are anchored on the actual hours that ambulances were deployed within each member agency.

Finally, an example of Alternative Model 2 is provided for illustrative purposes only with an estimated upper limit for public funding of approximately $10.5m.

In general, the City of Fort Worth would account for approximately 90% of the system's residual public funding requirements.

Community	Unit Hours	Population & Incident Distribution	Residual Public Funding X UHC
Blue Mound	161	$16,026	$11,889
Edgecliff Village	308	$27,321	$22,793
Forest Hill	2,186	$141,235	$161,945
Fort Worth	126,156	$8,904,880	$9,345,133
Haltom City	4,049	$353,325	$299,897
Haslet	424	$25,869	$31,401
Lake Worth	1,348	$68,229	$99,884
Lakeside	212	$13,998	$15,667
Naval Air Station	13	$624	$956
River Oaks	735	$59,534	$54,416
Saginaw	2,076	$179,372	$153,774
Sansom Park	950	$54,597	$70,402
Westover Hills	30	$4,641	$2,193
Westworth Village	491	$26,912	$36,342
White Settlement	2,610	$169,280	$193,309

Member City Cost Allocation Considerations

Model 1

Community	Unit Hours	Population & Incident Distribution	Residual Public Funding X UHC
Blue Mound	161	$4,884	$3,623
Edgecliff Village	308	$8,326	$6,946
Forest Hill	2,186	$43,043	$49,355
Fort Worth	126,156	$2,713,868	$2,848,040
Haltom City	4,049	$107,680	$91,397
Haslet	424	$7,884	$9,570
Lake Worth	1,348	$20,794	$30,441
Lakeside	212	$4,266	$4,775
Naval Air Station	13	$190	$291
River Oaks	735	$18,144	$16,584
Saginaw	2,076	$54,666	$46,865
Sansom Park	950	$16,639	$21,456
Westover Hills	30	$1,414	$668
Westworth Village	491	$8,202	$11,076
White Settlement	2,610	$51,590	$58,913

Model 3

Community	Unit Hours	Population & Incident Distribution	Residual Public Funding X UHC
Blue Mound	161	$23,352	$17,324
Edgecliff Village	308	$39,811	$33,213
Forest Hill	2,186	$205,799	$235,977
Fort Worth	126,156	$12,975,682	$13,617,194
Haltom City	4,049	$514,844	$436,992
Haslet	424	$37,695	$45,755
Lake Worth	1,348	$99,420	$145,545
Lakeside	212	$20,397	$22,829
Naval Air Station	13	$909	$1,392
River Oaks	735	$86,749	$79,292
Saginaw	2,076	$261,371	$224,071
Sansom Park	950	$79,556	$102,586
Westover Hills	30	$6,762	$3,195
Westworth Village	491	$39,214	$52,955
White Settlement	2,610	$246,665	$281,678

Model 4

Community	Unit Hours	Population & Incident Distribution	Residual Public Funding X UHC
Blue Mound	161	$14,347	$10,644
Edgecliff Village	308	$24,459	$20,405
Forest Hill	2,186	$126,439	$144,979
Fort Worth	126,156	$7,971,988	$8,366,119
Haltom City	4,049	$316,310	$268,479
Haslet	424	$23,159	$28,111
Lake Worth	1,348	$61,081	$89,420
Lakeside	212	$12,532	$14,026
Naval Air Station	13	$559	$855
River Oaks	735	$53,297	$48,715
Saginaw	2,076	$160,581	$137,665
Sansom Park	950	$48,877	$63,026
Westover Hills	30	$4,155	$1,963
Westworth Village	491	$24,092	$32,534
White Settlement	2,610	$151,546	$173,057

Pros/Cons and Implementation Considerations

Pros and Cons for Each Alternative EMS Delivery Model

Current Provider MedStar

Pros
- Long-term local provider
- Low-cost provider
- Ease of implementation
- Contractual obligations for system performance
- Assets currently exist within the system

Cons
- Legacy perceptions regarding transparency and accountability
- Less attractive pay and benefits
- Potential for continued high attrition rates

Private Provider Models

Pros
- Low-cost provider
- Can readily provide their own assets
- Periodic opportunity for market corrections
- Corporate fiscal backstop
- Contractual obligations for system performance

Cons
- Less attractive pay and benefits
- Potential for high attrition rates
- Organizational disruption when providers change

Fire-based Single-Role Model

Pros
- Long-term local provider of emergency services
- More attractive compensation, benefits, and pension
- Improved recruitment and retention
- Direct control over services
- Improved diversity within the fire department

Cons
- Higher cost than the private providers

3rd Service Model

Pros
- More attractive compensation, benefits, and pension
- Improved recruitment and retention
- Direct control over services
- Improved diversity within the emergency services

Cons
- Higher cost than the private providers
- Less potential for economies of scale

Fire-based Dual-Role Model

Pros
- Long-term local provider of emergency services
- More attractive compensation, benefits, and pension
- Improved recruitment and retention
- Direct control over services

Cons
- The highest cost of all the alternatives

High-Level Implementation Considerations for Each Alternative EMS Delivery Model

All Models

- Consider and adopt one of the provider models identified
- Identify needed changes to the ILA for governance
  - 1 Month
- Identify needed changes to the ILA to accommodate the desired provider model
  - 1-2 Months
- **The estimated time to change ILA is 6 months**
- Identify the process to create a CMS license for patient billing and process for transferring to the City including how to address aging receipts.
  - 2 Months

Current Provider MedStar

- Identify the needed changes of "incorporation"
  - 1-2 Months
- Formally create a new entity that can contract with the Authority or City for services
  - 6 Months
- Change employer for all personnel
  - 6 Months
- **Total Implementation estimated at 9-12 months**

Private Provider Models

- Create a purchase unit hour model request for proposal (RFP)
  - RFP must include reasonable and good faith protections for current MedStar personnel
  - 9 Months
- Evaluate the RFP and select the preferred bidder
  - 3 Months
- The total time for new provider to begin services after notification of the award
  - 6 Months
- **The total time to secure a new provider would be 1.5 years.**

Municipal-based Models

- Create job descriptions for new positions
  - 1 Month
- Identify the process for hiring with reasonable and good faith protections for current MedStar personnel
  - 1 – 2 Months
  - Hiring – 6 Months
- Acquire requisite capital and assets
  - Assuming assets – 1 Month
  - Purchasing assets – 2 years
- Work with the independent OMD to accommodate any changes in protocol, and certifications, establish QA/QI and training processes, etc.
  - 3 Months and ongoing
- Train personnel to new clinical standards and city government
  - 1 – 2 Months
- Identify and address the dispatch process
- **The total estimated time for implementation is 1 to 2 years.**

Appendices - Supporting Documents

The following supporting documents have been provided as foundational resources that were used to inform the Executive Summary Report. Reports include the following:

- MedStar System Quantitative Data Report
- MedStar System GIS Report
- City of Fort Worth GIS Report
- Comparison of Peer Communities
- Comparison of Select AimHI Agencies
- Comparison of MAEMSA Member Agencies
- Comparison and Community Survey of Peer Agencies