Advanced Life Support Services in Delaware County

Overview of Current Operational Data

August 9, 2023

Presented by PFM Group Consulting LLC

Contents

Goal of County Engagement with PFM

- In late 2022, Delaware County (the "County") engaged PFM Group Consulting LLC ("PFM") to provide an **analysis of municipal Advanced Life Support (ALS) services** in the County.

- The primary goal of this project is to provide elected and appointed leaders with analyses and options to help make informed choices balancing the efficiency, operations, and cost certainty of ALS services.

- The engagement provides each municipality with a set of data and a costing tool:

  - A municipality-specific report detailing ALS performance.

  - A Microsoft Excel-based ALS costing calculator that municipalities can use to enter various assumptions to identify potential high-level cost impacts.

Municipality Performance Review

- Utilizing data sourced from Delaware County's computer aided dispatch (CAD) system, PFM developed a comprehensive report on ALS performance across the County and in each of its 49 municipalities (See *Delaware County ALS Performance Data Packet*).

- The County provided a data set covering mid-October 2019 through mid-January 2023. PFM's analysis focuses primarily on 2022 while using 2020 and 2021 as historical reference points.[*]

- The CAD data was cleaned to identify calls with valid time entries indicating when units were dispatched, en route, arrived on scene, transported, arrived at the transport destination, and marked themselves as available for the next call.

- For 2022 data, PFM created analyses that filtered municipalities by response time, transport time, calls per 100 residents, and share of calls where the "first on scene provider" was the municipality's primary ALS service provider.

- The analyses also detail the performance of individual ALS units by response and transport time.
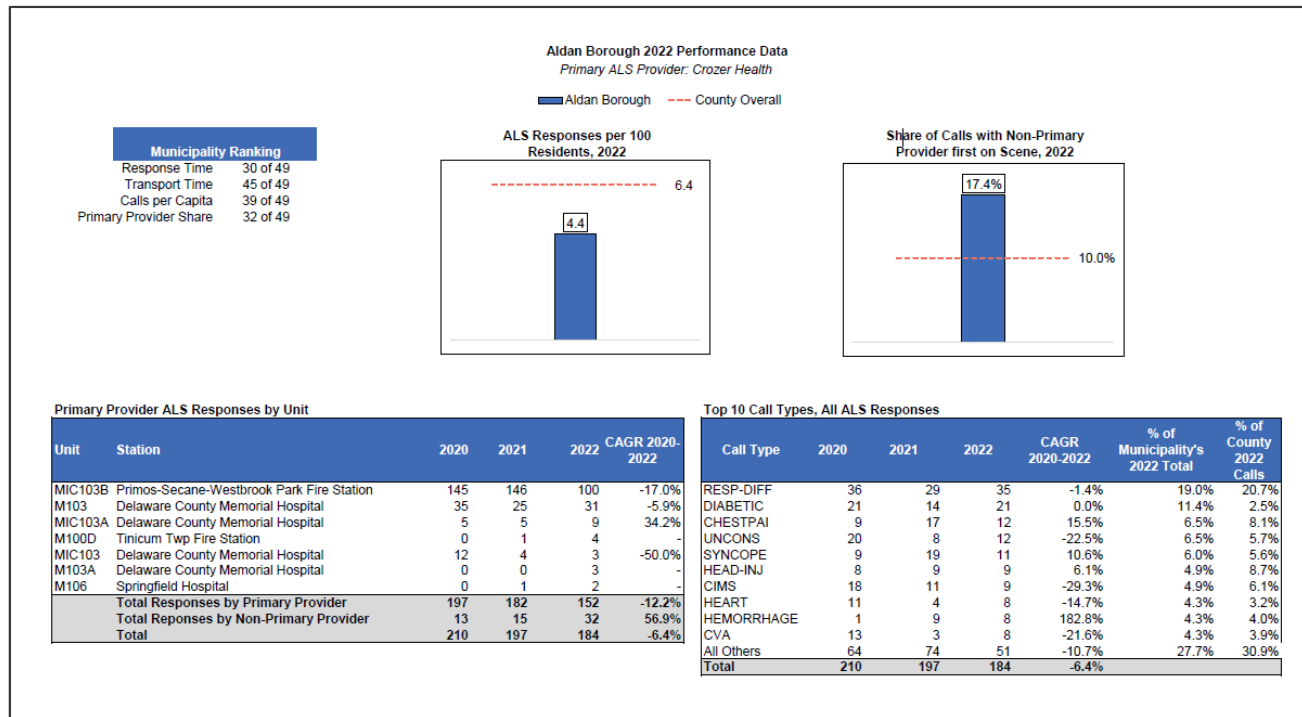
The 2022 closure of two emergency departments in Delaware County hospitals – most prominently Delaware County Memorial Hospital in late 2022 – are likely to have affected some of the resultant time intervals for the post-closure periods.

MUNICIPALITY RANKINGS, 2022

			Response Time
Rank	Municipality	Primary ALS Provider	90th Percentile
1	Upland Borough	Crozer Health	0:08:14
2	Trainer Borough	Crozer Health	0:08:40
3	Glenolden Borough	Crozer Health	0:08:49
4	Sharon Hill Borough	Mercy-Fitzgerald	0:09:17
5	Upper Chichester Township	Boothwyn	0:09:23
6	Collingdale Borough	Mercy-Fitzgerald	0:09:24
7	Brookhaven Borough	Crozer Health	0:09:25
8	Lower Chichester Township	Crozer Health	0:09:27
9	Chester City	Crozer Health	0:09:27
10	Ridley Park Borough	Crozer Health	0:09:46
11	Marcus Hook Borough	Crozer Health	0:09:46
12	Darby Borough	Mercy-Fitzgerald	0:09:49
13	Prospect Park Borough	Crozer Health	0:09:52
14	Parkside Borough	Crozer Health	0:09:58
15	Norwood Borough	Crozer Health	0:10:01
16	Haverford Township	Narberth	0:10:02
17	Media Borough	Media	0:10:04
18	Eddystone Borough	Crozer Health	0:10:05
19	Ridley Township	Crozer Health	0:10:06
20	Aston Township	Crozer Health	0:10:06
21	Chester Township	Crozer Health	0:10:11
22	Clifton Heights Borough	Mercy-Fitzgerald	0:10:13
23	Lansdowne Borough	Mercy-Fitzgerald	0:10:15
24	Upper Providence Township	Media	0:10:18
25	Radnor Township	Radnor	0:10:25
26	Yeadon Borough	Mercy-Fitzgerald	0:10:31
27	Marple Township	Marple	0:10:35
28	Tinicum Township	Crozer Health	0:10:37
29	Springfield Township	Crozer Health	0:10:46
30	Aldan Borough	Crozer Health	0:10:47
31	Darby Township	Mercy-Fitzgerald	0:10:48
	County Overall		**0:10:56**
32	Folcroft Borough	Mercy-Fitzgerald	0:10:58
33	Morton Borough	Crozer Health	0:11:04
34	Chester Heights Borough	Riddle	0:11:11
35	Middletown Township	Riddle	0:11:13
36	Colwyn Borough	Mercy-Fitzgerald	0:11:21
37	Swarthmore Borough	Crozer Health	0:11:25
38	East Lansdowne Borough	Mercy-Fitzgerald	0:11:32
39	Nether Providence Township	Crozer/Media	0:11:58
40	Newtown Township	Riddle	0:12:11
41	Rose Valley Borough	Media	0:12:30
42	Rutledge Borough	Crozer Health	0:12:31
43	Concord Township	Riddle	0:12:40
44	Edgmont Township	Riddle	0:12:46
45	Upper Darby Township	Crozer Health	0:12:47
46	Chadds Ford Township	Riddle	0:12:57
47	Bethel Township	Crozer Health	0:13:06
48	Millbourne Borough	Crozer Health	0:13:32
49	Thornbury Township	Riddle	0:14:53

Delaware County ALS Performance Data Packet

Municipality Performance Review

- The municipality-specific performance reviews compare local ALS data to County-wide averages across multiple data points (e.g., the number of calls for service by responding unit, top 10 call types, etc.).

- The municipality-specific performance reviews are intended to help local elected and appointed leaders better understand ALS services within their borders – and in context of services within the county – as they think about the future of ALS services in their community.

Aldan Borough 2022 Performance Data
Primary ALS Provider: Crozer Health

Aldan Borough ---- County Overall

Municipality Ranking

Response Time	30 of 49
Transport Time	45 of 49
Calls per Capita	39 of 49
Primary Provider Share	32 of 49

ALS Responses per 100 Residents, 2022: 6.4 (County Overall), 4.4 (Aldan Borough)

Share of Calls with Non-Primary Provider first on Scene, 2022: 17.4% (Aldan Borough), 10.0% (County Overall)

Primary Provider ALS Responses by Unit

Unit	Station	2020	2021	2022	CAGR 2020-2022
MIC103B	Primos-Secane-Westbrook Park Fire Station	145	146	100	-17.0%
M103	Delaware County Memorial Hospital	35	25	31	-5.9%
MIC103A	Delaware County Memorial Hospital	5	5	9	34.2%
M100D	Tinicum Twp Fire Station	0	1	4	-
MIC103	Delaware County Memorial Hospital	12	4	3	-50.0%
M103A	Delaware County Memorial Hospital	0	0	3	-
M106	Springfield Hospital	0	1	2	-
	Total Responses by Primary Provider	197	182	152	-12.2%
	Total Reponses by Non-Primary Provider	13	15	32	56.9%
	Total	210	197	184	-6.4%

Top 10 Call Types, All ALS Responses

Call Type	2020	2021	2022	CAGR 2020-2022	% of Municipality's 2022 Total	% of County 2022 Calls
RESP-DIFF	36	29	35	-1.4%	19.0%	20.7%
DIABETIC	21	14	21	0.0%	11.4%	2.5%
CHESTPAI	9	17	12	15.5%	6.5%	8.1%
UNCONS	20	8	12	-22.5%	6.5%	5.7%
SYNCOPE	9	19	11	10.6%	6.0%	5.6%
HEAD-INJ	8	9	9	6.1%	4.9%	8.7%
CIMS	18	11	9	-29.3%	4.9%	6.1%
HEART	11	4	8	-14.7%	4.3%	3.2%
HEMORRHAGE	1	9	8	182.8%	4.3%	4.0%
CVA	13	3	8	-21.6%	4.3%	3.9%
All Others	64	74	51	-10.7%	27.7%	30.9%
Total	210	197	184	-6.4%		

Delaware County ALS Performance Data Packet

ALS Costing Calculator

● In addition to the municipality-specific data analyses, PFM developed an Excel-based ALS costing tool. This tool can be used by municipalities enter various assumptions – in isolation or in combination – to identify potential high-level cost impacts.

● Municipalities can enter their real or assumed cost per ALS unit, volume of ALS units, annual calls for service, and ratio of reimbursable costs. The resulting output can help municipal analyses of current and future services to inform policy choices that seek to balance efficiency, effective operations, and cost certainty of ALS services.

ALS Costing Assumptions Tool for Delaware County Municipalities

Notes on ALS Costing Calculator:
- Cells in red require input. Cells in green contain formulas - editing these cells will impact the calcuations. Cells in orange contain notes on how to input required data.
- Please note that these calcuations are meant to simplify the high-level cost estimates for ALS services; these calculations do not account for the impact of various factors that can drive variation (e.g., demographics, wall times, shared ALS personnel, etc.)
- The results of entered assumptions (red cells) flow through to the output of costs in cells G4 and G5. The results are simply the output of entered assumptions. As your municipalitiy explores different assumptions in isolation or in combination, the results can be used to inform your decisions on ALS services.
- If your municipality is interested in exploring a the cost of regional partnerships, all partner municipalities' data should be entered to yield a combined costs/volumes between the partnering municipalities and then, depending upon potential cost share decisions, your municipality could assess its share of the resultant total costs.

Cost per Ambulance/MICU	Enter the cost per ambulance/MICU. For the most accurate results, include the total cost for the vehicle, personnel, insurance, maintenance, supplies, and any other costs surrounding the operation of each ambulance/MICU.	$500,000
Number of Ambulances/MICUs	Enter the number of ambulances/MICUs in operation. Since some units serve multiple municipalities, adjust the volume of ambulances/MICUs based on the average unit utilization (i.e., if your municipality has an average 40% utilization of 3 shared ambulances/MICU units, the number of ambulances/MICUs input would be: 40% * 3 ambulances/MICUs = 1.2 units).	0.8
Cost per Chase Car Unit	Enter the cost per chase car unit. For the most accurate results, include the total cost for the vehicle, personnel, insurance, maintenance, supplies, and any other costs surrounding the operation of each chase car unit.	$250,000
Number of Chase Car Units	Enter the number of chase car units in operation. Since some units serve multiple municipalities, adjust the volume of chase cars based on the average unit utilization (i.e., if your municipality has an average 40% utilization of 3 shared chase car units, the number of chase car units input would be: 40% * 3 chase cars = 1.2 units).	0.5
Number of Events within Catchment Area	Enter the total annual calls for ALS service within your municipality's jurisdiction or catchment area. For the most accurate results, enter the most recent year's total calls for service or a recent 3-year average.	450
Value of Cost Recovery	Enter the average percentage of ALS costs that are able to be reimbursed (e.g., the percentage of costs that can be covered by Medicare/Medicaid).	30.0%

Average *Net* Cost per Call for Service	$817
Total *Net* Cost of ALS Services	$367,500

© PFM

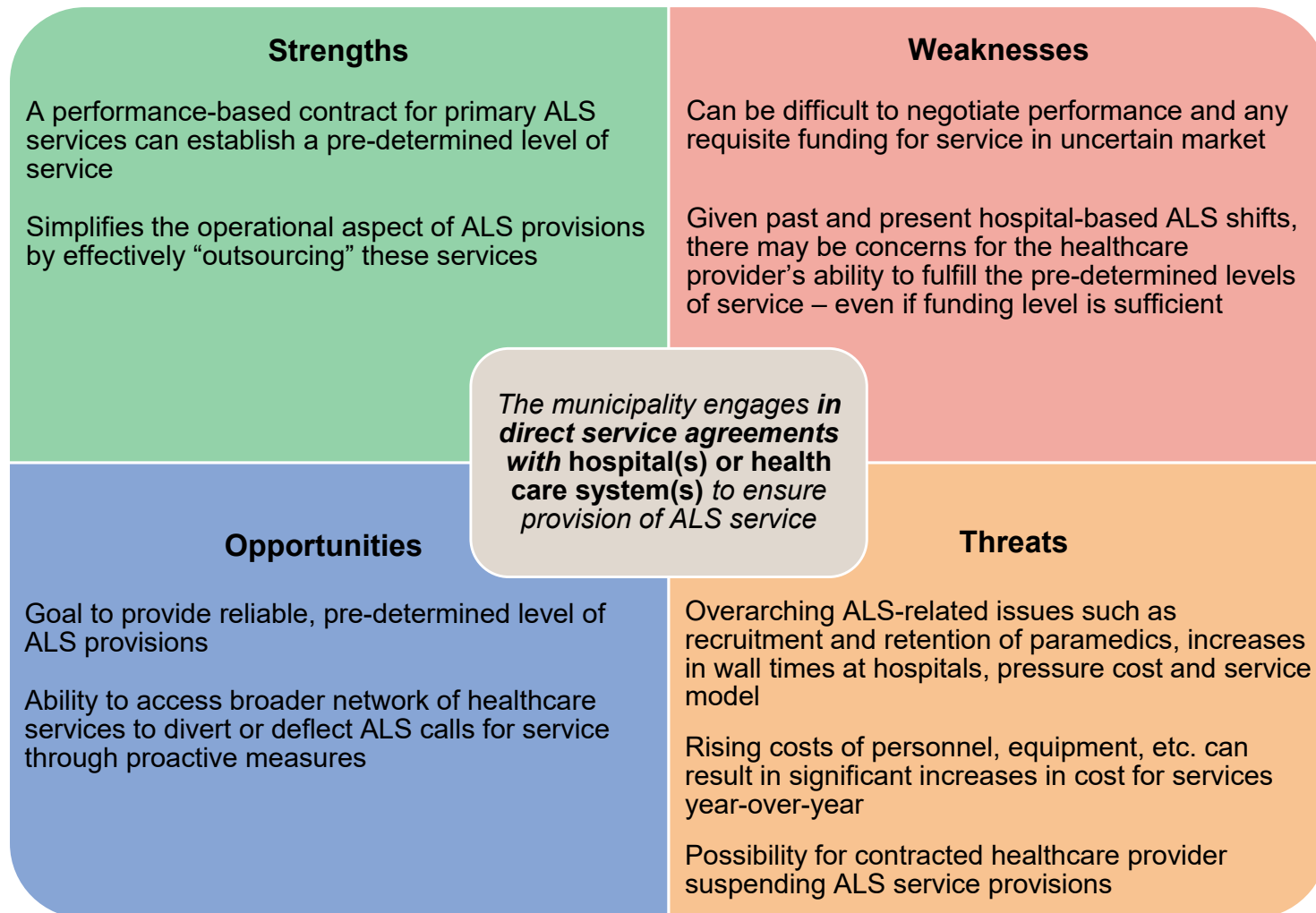# Additional Considerations for Municipalities

High-Level Operational Considerations

- PFM's analyses found that, generally, most Delaware County municipalities provide ALS services in one of three ways:

  1. **Service Agreement Model**

     - The municipality engages **in direct service agreements with hospital(s) or health care system(s)** to ensure provision of ALS service

  2. **Independent Services Model**

     - A locally-based not-for-profit ALS entity is **funded in part or in whole by the municipality**, or the service is delivered directly by a municipality

  3. **Regionalization Model**

     - The municipality formally or informally **partners with surrounding municipalities** to fund and/or operate ALS services

- The application of each model varies based on each municipality's population, demographics, current funding structure, etc.

- The Service Agreement Model is the most common ALS delivery model in Delaware County (42 of 49 municipalities, or 85.7%). The Independent Service Model (5 of 49 municipalities, or 10.2%) and Regionalization Model (2 of 49 municipalities, or 4.1%) are less common

- The following slides detail the strengths, weaknesses, opportunities, and threats of each model
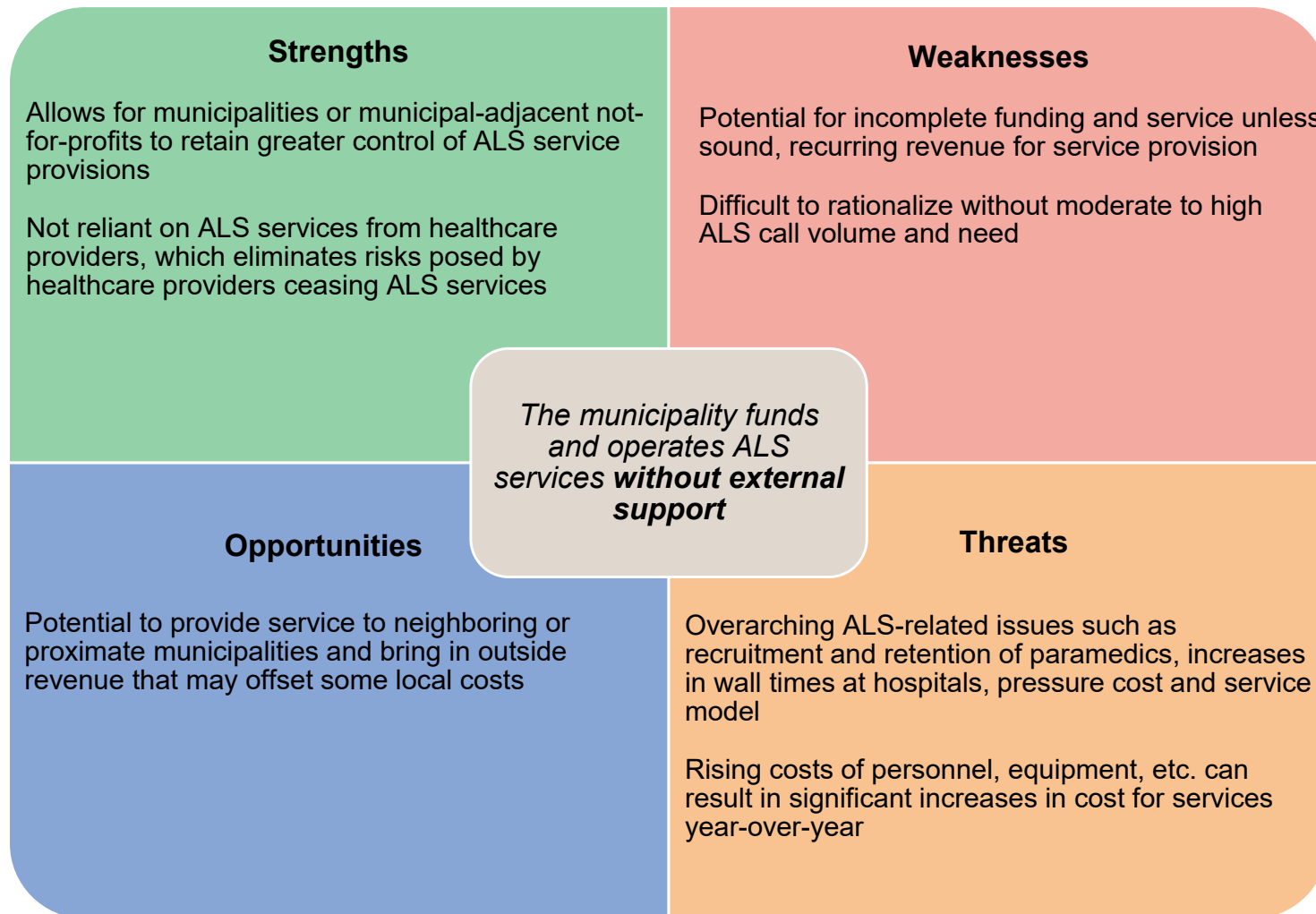
Service Agreement Model

Strengths

A performance-based contract for primary ALS services can establish a pre-determined level of service

Simplifies the operational aspect of ALS provisions by effectively "outsourcing" these services

Weaknesses

Can be difficult to negotiate performance and any requisite funding for service in uncertain market

Given past and present hospital-based ALS shifts, there may be concerns for the healthcare provider's ability to fulfill the pre-determined levels of service – even if funding level is sufficient

*The municipality engages **in direct service agreements with** hospital(s) or health care system(s) to ensure provision of ALS service*

Opportunities

Goal to provide reliable, pre-determined level of ALS provisions

Ability to access broader network of healthcare services to divert or deflect ALS calls for service through proactive measures

Threats

Overarching ALS-related issues such as recruitment and retention of paramedics, increases in wall times at hospitals, pressure cost and service model

Rising costs of personnel, equipment, etc. can result in significant increases in cost for services year-over-year

Possibility for contracted healthcare provider suspending ALS service provisions

Independent Services Model

Strengths

Allows for municipalities or municipal-adjacent not-for-profits to retain greater control of ALS service provisions

Not reliant on ALS services from healthcare providers, which eliminates risks posed by healthcare providers ceasing ALS services

Weaknesses

Potential for incomplete funding and service unless sound, recurring revenue for service provision

Difficult to rationalize without moderate to high ALS call volume and need

*The municipality funds and operates ALS services **without external support***

Opportunities

Potential to provide service to neighboring or proximate municipalities and bring in outside revenue that may offset some local costs

Threats

Overarching ALS-related issues such as recruitment and retention of paramedics, increases in wall times at hospitals, pressure cost and service model

Rising costs of personnel, equipment, etc. can result in significant increases in cost for services year-over-year

Regionalization Model

Strengths

Potentially attractive for municipalities unable to sufficiently budget for local provision of primary ALS services or dissatisfied with service agreement model

Smaller municipalities with low call volumes may be able to efficiently receive and pay for ALS services from other local non-profit or municipal providers

Weaknesses

Start-up costs may be a challenge unless there is a dedicated revenue stream against which to borrow

Need to dedicate collaboration time to operate the ALS services consortium

Need to properly allocate municipalities' resources to create this consortium; possibility for unequal investments within the group of municipalities

*The municipality formally or informally **partners with surrounding municipalities** to fund and/or operate ALS services*

Opportunities

A consortium could allow multiple municipalities to regionalize usage of ALS services to increase the efficiency of ALS service delivery.

Comparatively smaller municipalities with lower call volumes may indicate interest in the possibility of regionalization

Threats

All municipalities involved must ensure proportional involvement in the ALS services consortium

Call volumes within each participating municipality may vary by year, which can be difficult to account for (and proportionately budget for / "true up")

Rising costs of personnel, equipment, etc. can result in significant increases in cost for services year-over-year

Status of County-Wide ALS Services

Municipalities may find it helpful to review the performance data with several "big picture" questions in mind:

- What are the strengths of our current relationship with our primary ALS provider?

- What are the challenges of our current relationship with our primary ALS provider?

- What are the 2-3 biggest opportunities to discuss with our primary ALS provider?

- Beyond this snapshot, how is ALS-related data captured and reported in our municipality?

  - Do we regularly receive information to help us understand operations and make informed policy choices?

  - If not, what type(s) of data would be helpful?

- Is the current performance data aligned with our policy goals and fiscal realities?

- How do we compare to our surrounding jurisdictions?

  - If there are differences, are those because of one or more of: distance to hospital, available provider resources and allocation thereof, funding level for ALS, differences in key variables among population served, etc.?

    - If so, are any of those things our jurisdictions can or wants to change? If not, what steps can or should our jurisdiction take (if any) to advance our priorities for ALS services?

  - Are we a net "receiver" or "user" of mutual aid or coverage support? Does that affect how we think about our priorities and goals?

Status of County-Wide ALS Services (*Continued*)

- Are there recruitment and retention concerns for our primary ALS provider?

  - How can we support their short- and long-term recruitment and retention efforts?

  - How can we collaborate with surrounding municipalities to address this issue?

- Based on the most common "types" of ALS calls for service in our municipality, what steps can we take (on our own or in partnership with others) to decrease the volume of preventable calls for ALS services?

  - Are there other resources in our community that could or should be part of ALS service provision?

  - What are initiatives that we can focus on that may result in a healthier community?

  - Should we consider an investment in community paramedicine – on our own or regionally?

  - How can we collaborate with others to invest in preventative care for our constituents?

- Given answers to all the preceding questions, what is the best "fit" for ALS service delivery in our municipality? Is that "fit" likely to be the same in 1, 2, or 5 years? Why or why not?

Appendix

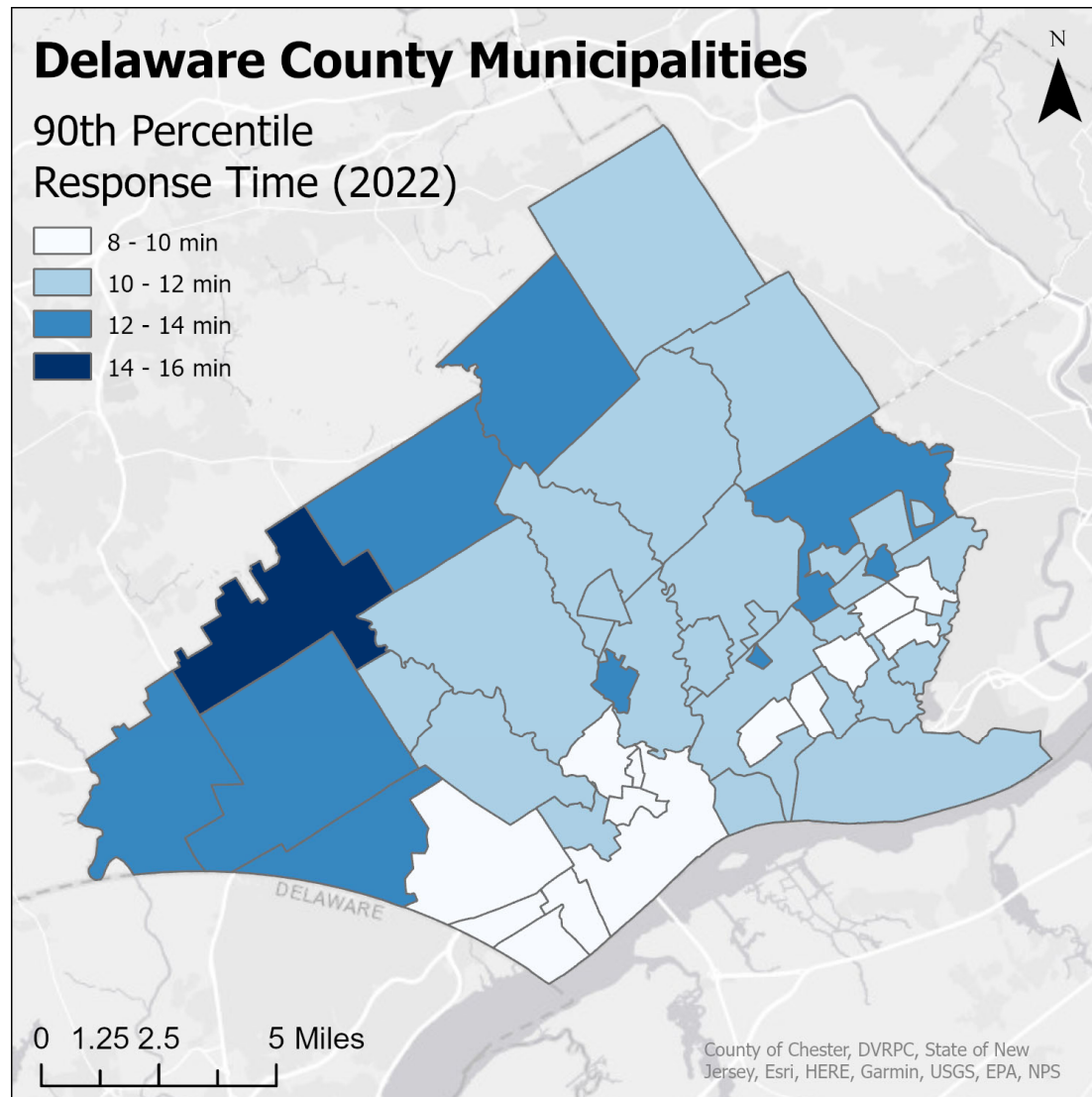# Overview of 2022 ALS Data in Delaware County
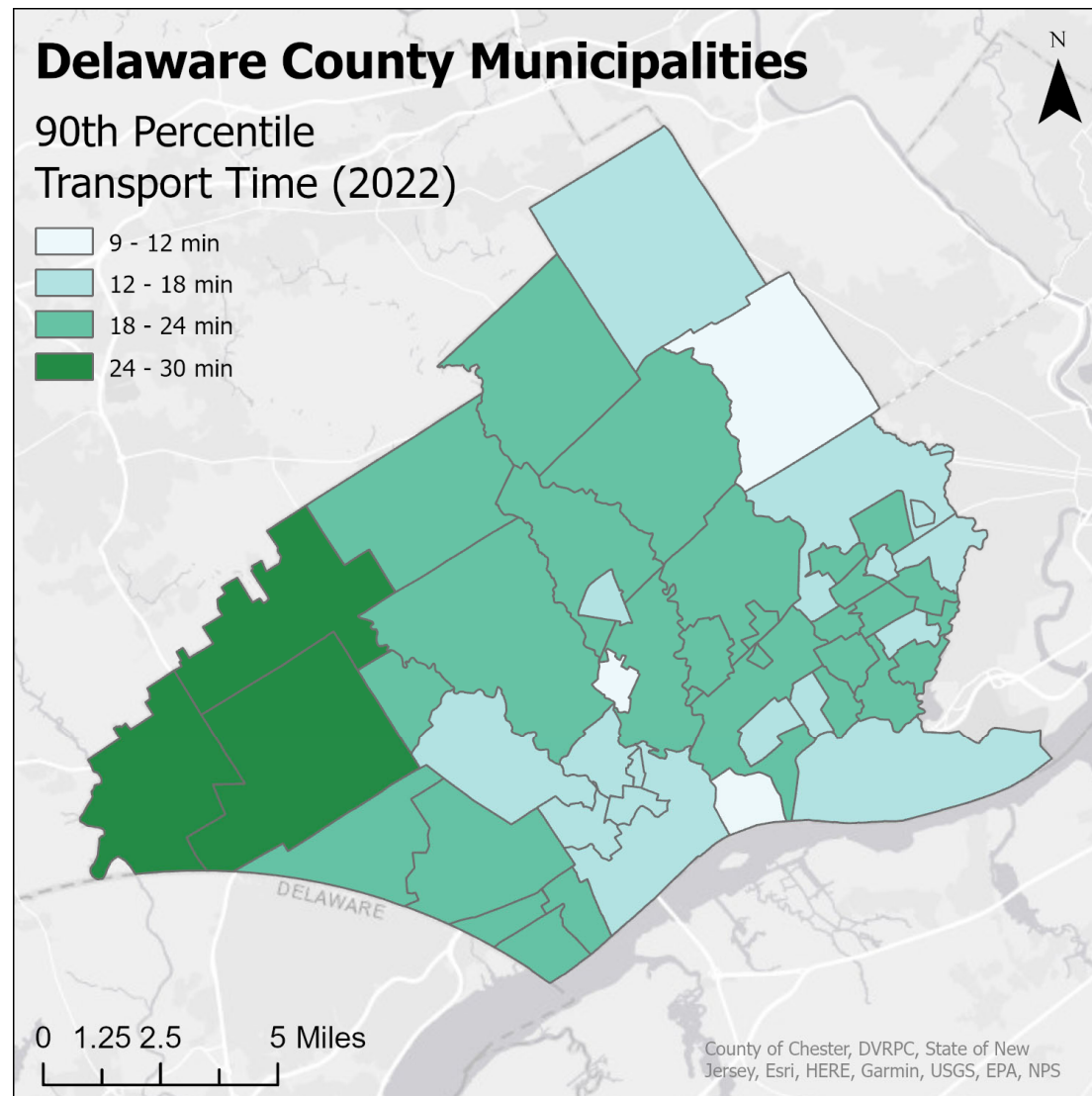
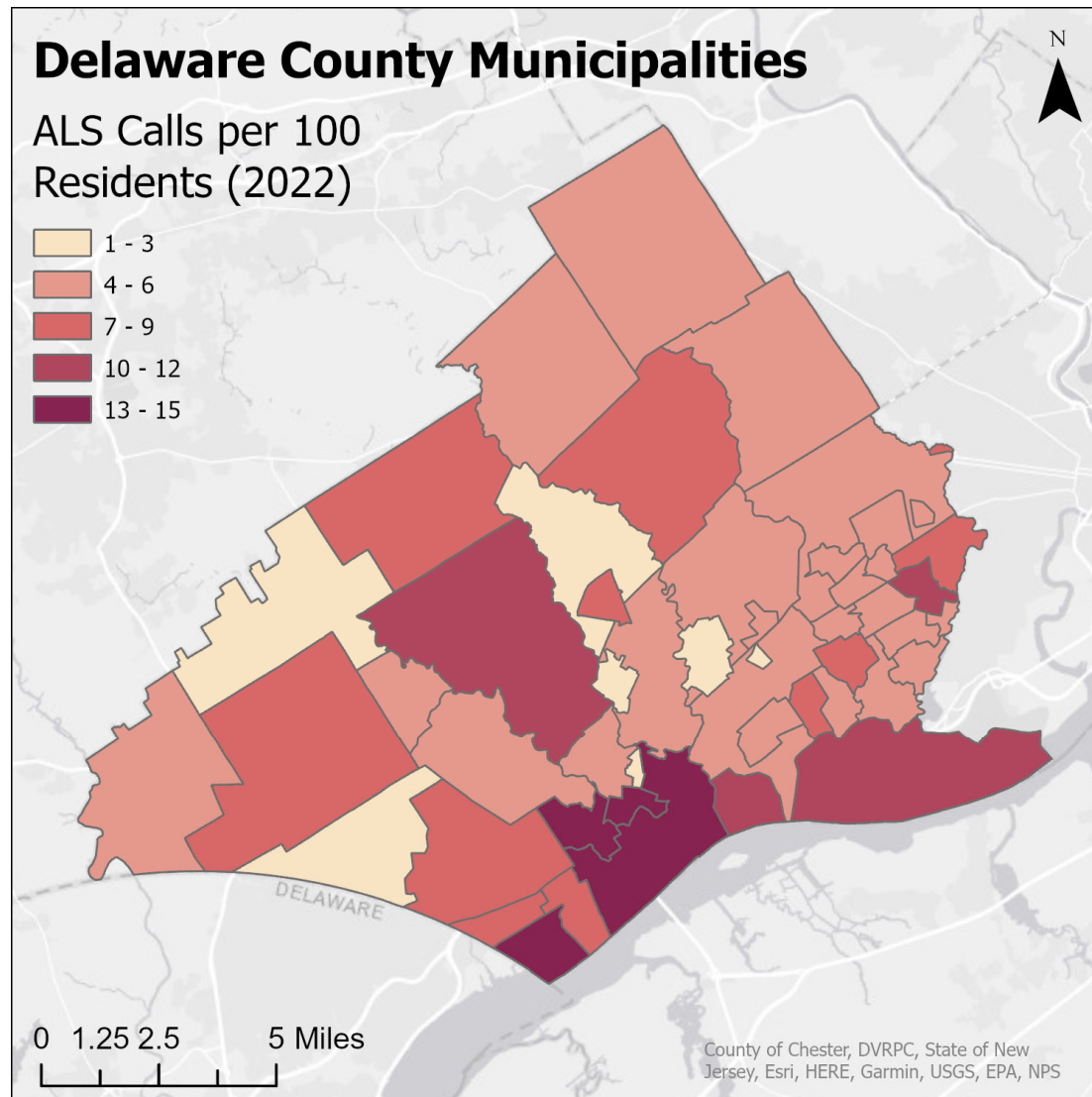# Primary ALS Provider Coverage (2022)
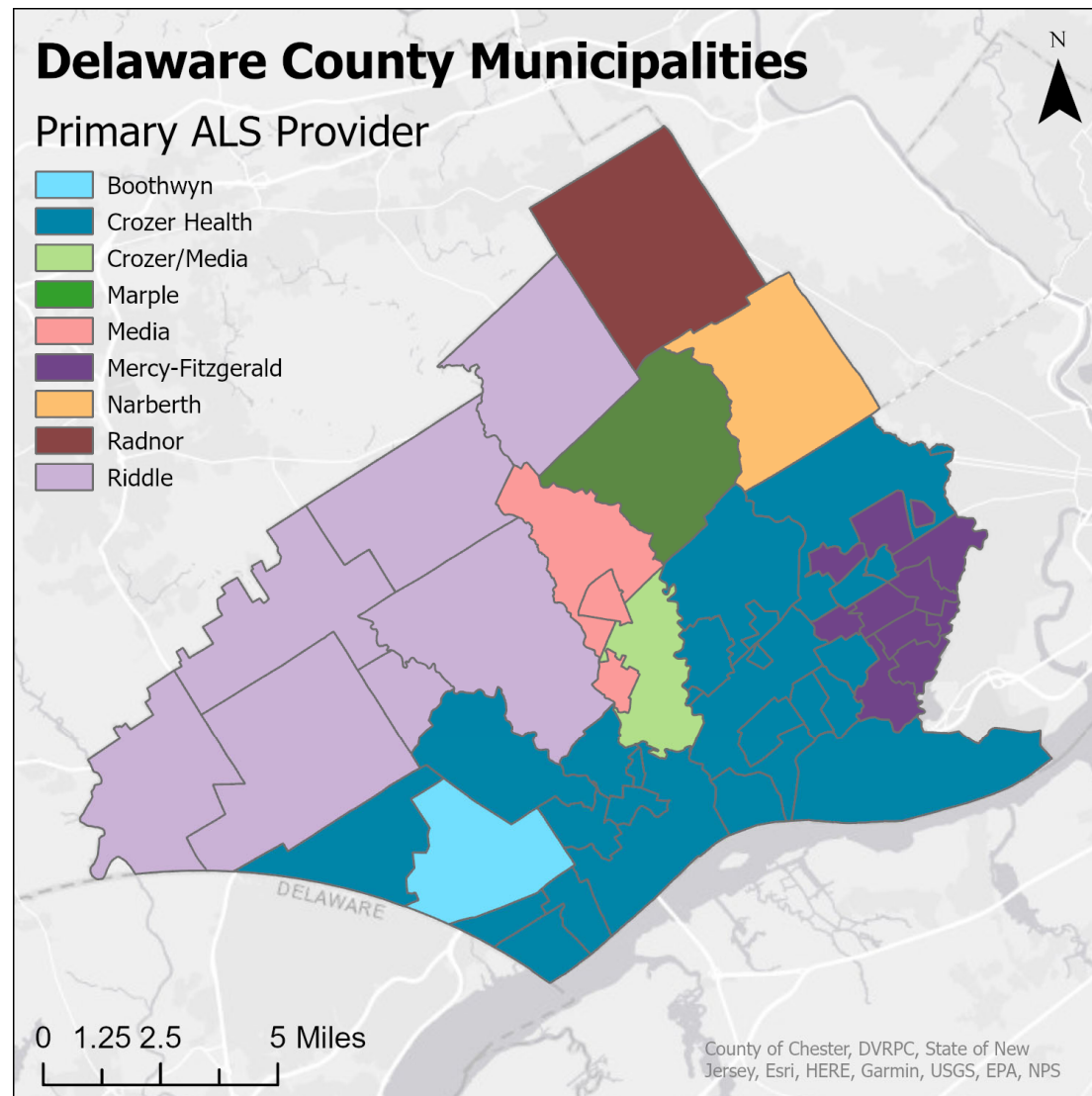
90th Percentile Response Time (2022)

90th Percentile Transport Time (2022)

Delaware County Municipalities

90th Percentile
Transport Time (2022)

- 9 - 12 min
- 12 - 18 min
- 18 - 24 min
- 24 - 30 min

0 1.25 2.5   5 Miles

County of Chester, DVRPC, State of New
Jersey, Esri, HERE, Garmin, USGS, EPA, NPS

ALS Calls per 100 Residents (2022)

Delaware County Municipalities

ALS Calls per 100 Residents (2022)

- 1 - 3
- 4 - 6
- 7 - 9
- 10 - 12
- 13 - 15

0 1.25 2.5   5 Miles

DELAWARE

County of Chester, DVRPC, State of New Jersey, Esri, HERE, Garmin, USGS, EPA, NPS

Overview of 2020-2022 ALS Data in Delaware County

ALS Calls, by Municipality
Top 15 Municipalities by 2022 Call Volume

- The top 15 municipalities by 2022 call volume accounted for nearly three quarters of total calls that year. Upper Darby and Chester City are the top two municipalities by 2022 call volume. Together, they accounted for more than one quarter of total calls in the County.

- Since 2020, calls have increased rapidly in Haverford, Marple, Middletown, Concord, Springfield, and Radnor Townships.

	2020	2021	2022	CAGR	% of 2022 Total
Upper Darby Township	5,552	5,576	5,264	-2.6%	14.3%
Chester City	4,892	5,164	4,657	-2.4%	12.6%
Haverford Township	1,773	1,833	2,229	12.1%	6.0%
Marple Township	1,441	1,625	1,737	9.8%	4.7%
Ridley Township	1,618	1,800	1,718	3.0%	4.7%
Middletown Township	1,397	1,515	1,701	10.3%	4.6%
Concord Township	1,271	1,390	1,575	11.3%	4.3%
Springfield Township	1,064	1,205	1,369	13.4%	3.7%
Radnor Township	899	1,080	1,223	16.6%	3.3%
Upper Chichester Township	1,057	1,108	1,179	5.6%	3.2%
Yeadon Borough	926	952	1,079	7.9%	2.9%
Darby Borough	1,224	1,299	1,018	-8.8%	2.8%
Newtown Township	621	847	888	19.6%	2.4%
Aston Township	673	847	776	7.4%	2.1%
Nether Providence Township	598	608	586	-1.0%	1.6%
All Others	9,119	10,258	9,934	4.4%	26.9%
Total	**34,125**	**37,107**	**36,933**	**4.0%**	

Source: PFM analysis of Delaware County computer-aided dispatch system data

ALS Calls per 100 Residents, by Municipality
Top 15 Municipalities by 2022 Calls per 100 Residents

- On a per resident basis, Chester City tops the list at 14.2 calls per 100 residents. Chester City has both a high absolute number of calls and a high per resident amount.

- Crozer Health serves the top four municipalities by this metric.

Municipality	ALS Provider	Calls per 100 Residents
Chester City	Crozer Health	14.2
Marcus Hook Borough	Crozer Health	13.0
Upland Borough	Crozer Health	13.0
Tinicum Township	Crozer Health	11.3
Middletown Township	Riddle	10.4
Trainer Borough	Crozer Health	10.3
Eddystone Borough	Crozer Health	10.1
Darby Borough	Mercy-Fitzgerald	9.5
Yeadon Borough	Mercy-Fitzgerald	9.0
Chester Township	Crozer Health	8.8
Concord Township	Riddle	8.7
Media Borough	Media	8.6
Lower Chichester Township	Crozer Health	8.4
Millbourne Borough	Crozer Health	8.3
Prospect Park Borough	Crozer Health	7.4
County Overall		**6.4**

Source: PFM analysis of Delaware County computer-aided dispatch system data

Provider Coverage Areas

● Crozer Health is responsible for primary coverage of an area including nearly half the County's population, 24.5 municipalities, and nearly 64 square miles.

● The next largest provider, Mercy-Fitzgerald, covers about 13.5 percent of the County's population and 10 municipalities.

	Population	Share of County Population	Square Miles Served	Share of County Square Milage	Municipalities Served
Crozer Health	280,472	48.9%	63.70	33.4%	24.5
Mercy-Fitzgerald	76,842	13.4%	9.17	4.8%	10
Riddle	67,341	11.7%	67.17	35.2%	7
Narberth	50,111	8.7%	10.01	5.2%	1
Radnor	33,408	5.8%	13.77	7.2%	1
Media	24,833	4.3%	9.66	5.1%	3.5
Marple	24,070	4.2%	10.51	5.5%	1
Boothwyn	16,806	2.9%	6.73	3.5%	1
Total	**573,883**	**100.0%**	**190.72**	**100.0%**	**49**

Source: PFM analysis of Delaware County computer-aided dispatch system data

Call Volume by First ALS Provider On Scene

- Crozer Health also responds to the most calls, accounting for more than half in 2022.

- Mercy-Fitzgerald is the only provider to see a decrease in call volume compared to 2020.

- Riddle's call volume has increased significantly since 2020 and replaced Mercy-Fitzgerald as the second-highest provider in 2022.

	2020	2021	2022	% of 2022 Total	CAGR 2020 - 2022
Crozer Health	18,989	20,491	19,710	53.4%	1.9%
Riddle	3,762	4,228	4,605	12.5%	10.6%
Mercy-Fitzgerald	5,102	5,471	4,526	12.3%	-5.8%
Narberth	1,816	1,913	2,444	6.6%	16.0%
Marple	1,355	1,523	1,657	4.5%	10.6%
Media	1,163	1,378	1,506	4.1%	13.8%
Boothwyn	1,033	1,015	1,252	3.4%	10.1%
Radnor	905	1,088	1,233	3.3%	16.7%
Total	**34,125**	**37,107**	**36,933**		**4.0%**

Source: PFM analysis of Delaware County computer-aided dispatch system data

Municipal ALS Performance Data Packet

How to Use ALS Performance Data

● The Performance Data Packet includes:

  • Municipality rankings on key ALS response and coverage metrics

  • An overview of primary provider service for each municipality, including comparisons to overall county metrics

● ALS performance data can be used by the County and its municipalities to:

  • Assist in asking informed questions about ALS service

  • Identify areas of need

  • Engage the public

  • Make policy decisions

Source: Delaware County ALS Performance Data Presentation

pfm