AIMHI

ACADEMY OF INTERNATIONAL MOBILE HEALTHCARE INTEGRATION

# 2022 High-Performance EMS Benchmarking Study

## *Part 1: System Demographics and Operational Performance*

The AIMHI benchmarking studies perform a fundamental service to EMS by providing tools through which we can continue to learn about the successes and opportunities of today's emergency care system, ensure its progress and growth, and work to expand the reputation and efficiency of EMS nationally and internationally. The 2022 study is the latest addition to the body of knowledge required for effective service delivery and improvement.

Since the first study in 1998, AIMHI has developed valuable ***evidenced-based*** studies to share ***clinical, operational, and economic*** data across EMS systems serving diverse geographic and demographic communities. Our goal is to provide the EMS community, elected and appointed officials, and regulators with tools, data, and outcomes that demonstrate the value of high-performance, high-value mobile healthcare as the initial point of entry to, and the safety net of, the healthcare continuum.

| Agency Name | Organizational Structure |
|---|---|
| Emergency Medical Services Authority (Oklahoma City, OK) | Public Utility Model: Self-Operated |
| Emergency Medical Services Authority (Tulsa, OK) | Public Utility Model: Self-Operated |
| Mecklenburg EMS Agency (Charlotte, NC) | Public Utility Model: Self-Operated |
| Medic Ambulance (Solano, CA) | Private |
| MEDIC EMS (Davenport, IA) | 501c3 |
| MedStar Mobile Healthcare (Fort Worth, TX) | Public Utility Model: Self-Operated |
| Metropolitan EMS (Little Rock, AR) | Public Utility Model: Self-Operated |
| Niagara Emergency Medical Services (Region of Niagara, CA) | Third Service Model |
| Northwell Health Center for EMS (Syosset, NY) | Health System Based EMS Agency |
| Novant Health New Hanover EMS (New Hanover County, NC) | Hospital-Based |
| Pinellas County EMS - Sunstar (Pinellas County, FL) | Public Utility Model: Contracted |
| Pro EMS (Cambridge, MA) | Contractor |
| Regional Emergency Medical Services (Reno, NV) | Public Utility Model: Self-Operated |
| Richmond Ambulance Authority (Richmond, VA) | Public Utility Model: Self-Operated |

## What Is High Performance/High Value EMS (HP/HVEMS)?

HP/HVEMS systems share key features of system design rarely associated with less cost-effective systems. Characteristics typically include:

- **Sole provider:** All emergency and non-emergency ambulance services are granted to a sole and often competitively selected provider for a specific population or service area.
- **Control center operations:** The ambulance provider has control of the dispatch center.
- **Accountability:** HP/HVEMS systems have performance requirements that can result in financial penalties or replacement of the provider when the requirements are not met. HP/HVEMS systems use and collect data regularly to meet these performance requirements, which has allowed for the ability to collect data for the HP/HVEMS Market Study.
- **Revenue maximization:** HP/HVEMS systems incorporate the business function into their operations, resulting in an understanding of the billing requirements, thus collecting all appropriate revenues from Medicare, Medicaid, self-pay and other third-party payors.
- **Flexible production strategy:** HP/HVEMS match scheduled resources with predicted changes in response demand based on time of day, day of week and time of year.
- **System Status Management (SSM):** HP/HVEMS systems use the dynamic deployment techniques to position resources in anticipation of when and where ambulances will be needed.

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## Key Metrics & Takeaways

- **36%** of the HP/HVEMS systems have **transitioned from an all-ALS ambulance deployment to a Tiered Deployment (ALS/BLS)** to better match resources with emergency needs and enhance ALS provider utilization and experience.

- **64%** of HP/HVEMS systems **do not use Medical First Response on all calls**, reserving MFR for calls with a higher medical acuity, based on EMD determinants derived through an accredited communications center.
  - Across these systems, **an average of 52% of EMS calls do not receive Medical First Responders**.

- **61%** of the emergency responses in the HP/HVEMS systems **receive a lights & siren (HOT) response**.
  - **9%** of the patients transported to hospitals receive a **HOT transport**.

- The **Median ambulance response time** for high acuity responses in HP/HVEMS systems is **8 minutes, 41 seconds**.
  - The response time calculation begins at time call received in **42%** of HP/HVEMS systems

- AIMHI Member agencies serve a **combined population of 17.6 million** people and a geography of over **14,000 square miles.**

- Member agencies responded to **1.5 million emergency ambulance calls** in 2021, **transporting 996,080** patients for a **transport ratio of 67.8%.**

- **100% of AIMHI member agencies hold at least one accreditation. 93% are accredited by the *Commission on the Accreditation of Ambulance Services (CAAS)*** and **79% of member dispatch centers are accredited by the *International Academies of Emergency Dispatch***.

### CURRENT AIMHI MEMBERS

**Emergency Health Service**
Halifax, NS

**Emergency Medical Services Authority**
Tulsa & Oklahoma City, OK

**Mecklenburg EMS Agency**
Charlotte, NC

**Medic Ambulance**
Vallejo, CA

**MEDIC Emergency Medical Services**
Davenport, IA

**MedStar Mobile Healthcare**
Fort Worth, TX

**Metropolitan Emergency Medical Services**
Little Rock, AR

**New Hanover EMS**
Wilmington, NC

**Niagara Emergency Medical Services**
Niagara-On-The-Lake, ON

**Northwell Health Center for EMS**
Syosset, NY

**Pinellas County EMS Authority/Sunstar Paramedics**
Largo, FL

**Pro EMS**
Cambridge, MA

**Regional EMS Authority**
Reno, NV

**Richmond Ambulance Authority**
Richmond, VA

**Three Rivers Ambulance Authority**
Fort Wayne, IN

**Learn more about membership at www.aimhi.mobi!**

### About the Academy of International Mobile Healthcare Integration

The Academy of International Mobile Healthcare Integration (AIMHI) represents high performance emergency medical and mobile healthcare providers in the U.S. and abroad. Member organizations employ business practices from both the public and private sectors. By combining industry innovation with close government oversight, AIMHI affiliates are able to offer unsurpassed service excellence and cost efficiency. www.aimhi.mobi | hello@aimhi.mobi | @AIMHI_MIH | www.fb.me/aimhihealthcare

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## Table 1: EMS System Delivery Changes

| Agency | What was the change? |
|---|---|
| Emergency Medical Services Authority (Oklahoma City, OK) | Transitioned from a contracted provider to a self-operated PUM.<br>Changed from all ALS to tiered ambulance deployment. |
| Emergency Medical Services Authority (Tulsa, OK) | Transitioned from a contracted provider to a self-operated PUM.<br>Changed from all ALS to tiered ambulance deployment. |
| Mecklenburg EMS Agency (Charlotte, NC) | Changed response time goal for low-acuity medical responses. |
| MedStar Mobile Healthcare (Fort Worth, TX) | Changed from all ALS to tiered ambulance deployment. |
| Niagara Emergency Medical Services (Region of Niagara, CA) | Recent update to MPDS v13.3 Omega included a determinant-by-determinant review that included linked hospital outcome data.<br><br>This data was used in to update response priorities based on information such as aggregate 1- and 7-day mortality, number of ER interventions, length of stay, SCU admissions and length of stay. |
| Pinellas County EMS - Sunstar (Pinellas County, FL) | Changed from all ALS to tiered ambulance deployment. |
| Regional Emergency Medical Services (Reno, NV) | Changed from all ALS to tiered ambulance deployment.<br>Additional further utilization of Nurse Health Line for low acuity call determinants. |

## Table 2: Medical First Response Utilization

| Agency Name | Percentage of calls with Medical First Response (MFR) |
|---|---|
| Emergency Medical Services Authority (Oklahoma City, OK) | 46% |
| Emergency Medical Services Authority (Tulsa, OK) | 53% |
| Mecklenburg EMS Agency (Charlotte, NC) | 77% |
| MEDIC EMS (Davenport, IA) | 75% |
| MedStar Mobile Healthcare (Fort Worth, TX) | 70% |
| Metropolitan EMS (Little Rock, AR) | 40% |
| Novant Health New Hanover EMS (New Hanover County, NC) | 31% |
| Regional Emergency Medical Services (Reno, NV) | 40% |
| Richmond Ambulance Authority (Richmond, VA) | 40% |

## Table 3: HOT Vehicle Operations

| Agency Name | HOT Response % | HOT Transport % |
|---|---|---|
| Emergency Medical Services Authority (Oklahoma City, OK) | 36.7% | 8.4% |
| Emergency Medical Services Authority (Tulsa, OK) | 31.5% | 7.9% |
| Mecklenburg EMS Agency (Charlotte, NC) | 21.0% | 6.1% |
| Medic Ambulance (Solano, CA) | 79.2% | 4.2% |
| MEDIC EMS (Davenport, IA) | 73.9% | 13.7% |
| MedStar Mobile Healthcare (Fort Worth, TX) | 72.4% | 4.8% |
| Metropolitan EMS (Little Rock, AR) | 98.1% | 7.4% |
| Niagara Emergency Medical Services (Region of Niagara, CA) | 25.0% | 20.6% |
| Northwell Health Center for EMS (Syosset, NY) | 80.0% | 16.0% |
| Novant Health New Hanover EMS (New Hanover County, NC) | 68.8% | 9.4% |
| Pinellas County EMS - Sunstar (Pinellas County, FL) | 71.1% | 2.0% |
| Pro EMS (Cambridge, MA) | 100.0% | 0.0% |
| Regional Emergency Medical Services (Reno, NV) | 74.6% | 6.8% |
| Richmond Ambulance Authority (Richmond, VA) | 75.2% | 0.6% |
| **Overall Average** | **60.9%** | **8.9%** |

## Table 4: Accreditations by Agency

| Agency Name | Agency Accreditations or Awards |
|---|---|
| Emergency Medical Services Authority (Oklahoma City, OK) | CAAS; IAED/ACE |
| Emergency Medical Services Authority (Tulsa, OK) | CAAS; IAED/ACE |
| Mecklenburg EMS Agency (Charlotte, NC) | CAAS; IAED/ACE |
| Medic Ambulance (Solano, CA) | CAAS; IAED/ACE; AMBY (AAA) / CAASE (CAA) |
| MEDIC EMS (Davenport, IA) | CAAS; IAED/ACE |
| MedStar Mobile Healthcare (Fort Worth, TX) | CAAS; IAED/ACE; AMBY (AAA) |
| Metropolitan EMS (Little Rock, AR) | CAAS; IAED/ACE |
| Niagara Emergency Medical Services (Region of Niagara, CA) | IAED |
| Northwell Health Center for EMS (Syosset, NY) | CAAS; IAED/ACE; CAMTS |
| Novant Health New Hanover EMS (New Hanover County, NC) | CAAS; Mission: Lifeline Gold Plus |
| Pinellas County EMS - Sunstar (Pinellas County, FL) | CAAS; IAED/ACE; CAMTS |
| Pro EMS (Cambridge, MA) | CAAS |
| Regional Emergency Medical Services (Reno, NV) | CAAS; IAED/ACE |
| Richmond Ambulance Authority (Richmond, VA) | CAAS; IAED/ACE |

## Table 5: Population, Service Area & Population Density

| Agency Name | Jurisdiction Type | Service Area Population | Service Area (Sq. Miles) | Population Density |
|---|---|---|---|---|
| Emergency Medical Services Authority (Oklahoma City, OK) | Multiple | 787,047 | 714 | 1,102 |
| Emergency Medical Services Authority (Tulsa, OK) | Multiple | 514,100 | 261 | 1,973 |
| Mecklenburg EMS Agency (Charlotte, NC) | Single | 1,115,482 | 546 | 2,043 |
| Medic Ambulance (Solano, CA) | Single | 451,716 | 821 | 550 |
| MEDIC EMS (Davenport, IA) | Multiple | 175,000 | 450 | 389 |
| MedStar Mobile Healthcare (Fort Worth, TX) | Multiple | 1,139,236 | 433 | 2,631 |
| Metropolitan EMS (Little Rock, AR) | Multiple | 400,000 | 1,800 | 222 |
| Niagara Emergency Medical Services (Region of Niagara, CA) | Single | 481,727 | 716 | 673 |
| Northwell Health Center for EMS (Syosset, NY) | Multiple | 10,253,230 | 1,455 | 7,049 |
| Novant Health New Hanover EMS (New Hanover County, NC) | Single | 229,018 | 192 | 1,193 |
| Pinellas County EMS - Sunstar (Pinellas County, FL) | Single | 980,810 | 280 | 3,503 |
| Pro EMS (Cambridge, MA) | Multiple | 350,000 | 200 | 1,750 |
| Regional Emergency Medical Services (Reno, NV) | Multiple | 486,492 | 6,302 | 77 |
| Richmond Ambulance Authority (Richmond, VA) | Single | 226,610 | 63 | 3,622 |
| **Total/Average** | | **17,590,468** | **14,232** | **1,236** |

## Table 6: System EMS Responses

| Agency Name | Total Emergency Responses |
|---|---|
| Emergency Medical Services Authority (Oklahoma City, OK) | 110,500 |
| Emergency Medical Services Authority (Tulsa, OK) | 108,835 |
| Mecklenburg EMS Agency (Charlotte, NC) | 139,327 |
| Medic Ambulance (Solano, CA) | 48,000 |
| MEDIC EMS (Davenport, IA) | 27,083 |
| MedStar Mobile Healthcare (Fort Worth, TX) | 138,993 |
| Metropolitan EMS (Little Rock, AR) | 91,000 |
| Niagara Emergency Medical Services (Region of Niagara, CA) | 64,428 |
| Northwell Health Center for EMS (Syosset, NY) | 164,740 |
| Novant Health New Hanover EMS (New Hanover County, NC) | 46,693 |
| Pro EMS (Cambridge, MA) | 15,000 |
| Pinellas County EMS - Sunstar (Pinellas County, FL) | 170,059 |
| Regional Emergency Medical Services (Reno, NV) | 71,659 |
| Richmond Ambulance Authority (Richmond, VA) | 48,292 |
| **Total** | **1,244,609** |

## Table 7: Response Time Goal

| Agency Name | High Acuity Call Compliance Standard | Low Acuity Call Compliance Standard |
|---|---|---|
| Emergency Medical Services Authority (Oklahoma City, OK) | 90% < 10:59 | 90% < 24:59 |
| Emergency Medical Services Authority (Tulsa, OK) | 90% < 10:59 | 90% < 24:59 |
| Mecklenburg EMS Agency (Charlotte, NC) | 90% < 10:59 | 90% < 60:00 |
| Medic Ambulance (Solano, CA) | 9:00 | 25:00 |
| MEDIC EMS (Davenport, IA) | 90% < 07:59 | 90% < 14:59 |
| MedStar Mobile Healthcare (Fort Worth, TX) | 85% < 11 minutes, no more than 1.5% > 16:30 | 85% < 17 minutes, no more than 1.5% > 25:30 |
| Metropolitan EMS (Little Rock, AR) | 90% < 08:59 | 90% < 12:59 |
| Niagara Emergency Medical Services (Region of Niagara, CA) | SCA 55% < 6:00; CTAS 1 80% < 8:00 | CTAS 2 90% < 15:00; CTAS 3 90% < 60:00 |
| Northwell Health Center for EMS (Syosset, NY) | 90% < 12:00 | 90% < 30:00 |
| Novant Health New Hanover EMS (New Hanover County, NC) | N/A | 90% < 19:59 |
| Pinellas County EMS - Sunstar (Pinellas County, FL) | 91% < 10:00 | No Standard |
| Pro EMS (Cambridge, MA) | 90% < 14:59 | No Standard |
| Regional Emergency Medical Services (Reno, NV) | 8:59 | 90% < 20:59 |
| Richmond Ambulance Authority (Richmond, VA) | 90% < 8:59 | 90% < 29:59 |

## Table 8: Average Response Time

| Agency Name | High Acuity Average Response Time | Low Acuity Average Response Time |
|---|---|---|
| Emergency Medical Services Authority (Oklahoma City, OK) | 11:23 | 18:37 |
| Emergency Medical Services Authority (Tulsa, OK) | 08:20 | 14:07 |
| Mecklenburg EMS Agency (Charlotte, NC) | 08:10 | 11:44 |
| Medic Ambulance (Solano, CA) | 05:00 | 10:52 |
| MEDIC EMS (Davenport, IA) | 06:45 | 09:36 |
| MedStar Mobile Healthcare (Fort Worth, TX) | 09:13 | 12:16 |
| Metropolitan EMS (Little Rock, AR) | 07:30 | 12:59 |
| Niagara Emergency Medical Services (Region of Niagara, CA) | 06:18 | 09:31 |
| Northwell Health Center for EMS (Syosset, NY) | 09:47 | 17:41 |
| Novant Health New Hanover EMS (New Hanover County, NC) | 05:56 | 07:53 |
| Pinellas County EMS - Sunstar (Pinellas County, FL) | 06:30 | 10:30 |
| Regional Emergency Medical Services (Reno, NV) | 06:48 | 09:30 |
| Richmond Ambulance Authority (Richmond, VA) | 09:19 | 20:56 |
| **Median** | **08:41** | **12:31** |