Rural EMS Regionalization - Opportunities and Policy Considerations

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Abstract

Purpose

This policy brief explores Emergency Medical Services (EMS) regionalization across rural states in the United States and evaluates the structural barriers, emerging models, and policy dynamics affecting EMS's long-term viability. The paper provides insights for policymakers, EMS agencies, and rural health advocates, showing how regionalization can improve EMS services as a component of rural healthcare.

Key Findings

The following key findings emerge regarding effective EMS regionalization strategies:

- Continued workforce challenges, including recruitment, retention, and training, which affect service quality in rural areas, as declining volunteerism creates significant service gaps.
- Effective EMS regionalization requires strong medical direction, community involvement, and practical consideration of available resources rather than one-size-fits-all mandates.
- Overly rigid regulatory EMS frameworks (as seen in California and New York) impede innovation and adaptation to local needs; flexible models demonstrate greater success.
- Diverse approaches to EMS regionalization reflect states' unique geographic, demographic, and regulatory environments—there is no one-size-fits-all solution.
- Minnesota's Primary Service Area (PSA) system represents a particularly successful model of EMS regionalization that balances regional coordination with local autonomy through clearly defined service boundaries.
- Outcome-focused EMS quality metrics show more value than traditional response time measurements alone for evaluating service effectiveness.

Introduction

Emergency medical services, or EMS, are provided by skilled pre-hospital clinicians who respond to emergencies. EMS clinicians are not only first responders but also practitioners of community medicine and identifiers of potential community health emergencies.[1] EMS include the collaborative work of agencies, ground transporting, helicopters, and other emergency personnel, to deliver robust medical care prior to emergency department (ED) and inpatient care. EMS integrates healthcare, public health, emergency management, and public safety to protect community health. In this paper, we focus on EMS services providing emergency medical response and transportation.[2]

Each year, EMS professionals serve nearly 10 million rural Americans, addressing emergency medical needs across approximately 23,272 ambulance agencies.[3] Seventy-three percent of these agencies report serving rural areas.[4] In underserved rural areas, EMS systems include crucial access points (on-site and in emergency departments) for emergency medical care, often compensating for the lack of nearby hospital facilities. Despite this essential role, rural EMS systems face compound operational, workforce, and policy challenges that hinder their effectiveness.

EMS regionalization can mitigate these limitations by structuring EMS into coordinated zones that share resources, standardized protocols, and dispatch functions. Regionalization aims to create standardization through cooperation between EMS regions across a state.

Regionalization is defined as "the systematic method of bringing patients with time-critical illness to designated facilities in a defined geographic region with the capabilities and resources immediately available to provide appropriate, specialized treatment."[5] As demonstrated by state-level analyses, regionalization also reduces operational costs, improves care quality, and reduces response times.[6]

Acronym Definitions

EMS: Emergency Medical Services – A system that provides out-of-hospital acute medical care, transport, and coordination with health facilities.

EMR: Emergency Medical Responder – Entry-level EMS provider trained to deliver immediate basic care prior to the arrival of EMTs or paramedics.

EMT: Emergency Medical Technician – A provider trained to deliver basic emergency care and transportation within the EMS system.

Paramedic: A more advanced EMS provider trained in both BLS and ALS, including medication administration and advanced airway management.

BLS: Basic Life Support – Emergency care focused on non-invasive procedures like CPR, AED use, and basic airway support.

ALS: Advanced Life Support – Emergency care that includes more complex procedures like IV therapy, cardiac monitoring, and medication delivery.

PSA: Primary Service Area – A geographic region assigned to a specific EMS provider, often designated by local or state authorities.

However, regionalization efforts vary significantly across states, with limited research on national progress. There are no formal definitions describing the continuum of regionalization; therefore, we offer the following working definitions:

> **Full regionalization** represents the most comprehensive designation. States with full regionalization have designated regions that coordinate care statewide. EMS regions in these states are responsible for both standardizing and providing care within their region.
>
> **Partial regionalization** refers to states that may have formally designated EMS regions but do not fully utilize them. These regions may be used only for limited tasks such as protocol standardization or training. Alternatively, there may be robust regionalization

efforts in these states concentrated around urban hubs, with minimal coordination in rural areas.

Limited regionalization describes states that have designated EMS regions but use them only for administrative functions or oversight, not for direct care coordination.

No regionalization applies to states that have not formally designated any EMS regions.

Examples of each definition are:

- "Full" regionalization: Minnesota, Vermont, Colorado
- Partial regionalization: Texas, California, Florida, New York, Illinois, Maryland
- Limited regionalization: Alabama, Wyoming, South Dakota, Missouri
- No regionalization: Iowa, Utah, Montana

Challenges Facing Rural EMS Agencies:

Large geographic areas are one of the biggest challenges for rural EMS agencies—difficult terrain and long distances lead to prolonged response and transportation times. For severe conditions, these delays can have life-threatening consequences, as evidenced by increased mortality for rural patients receiving initial care more than an hour after an incident. The closure of rural hospitals exacerbates this issue by increasing transportation times for patients. Since 2005, the closure of 176 rural hospitals has led to transportation time increases of over 75 percent.[7] Prehospital time, which includes the time from receiving the alarm to the arrival at the care center, is significantly longer in rural areas and can overburden EMS workloads, which determine ambulance queues and dispatch efficiency.[8]

Importantly, financial challenges exist in rural EMS agencies due to services being viewed as transportation, not healthcare services. Transportation payments may not fully cover healthcare provider costs, such as necessary clinical training and medical equipment. Moreover, outdated reimbursement models, such as the Medicare Ambulance Fee Schedule, are often inadequate to sustain low volume rural EMS operations that need to cover high fixed costs with comparatively fewer incidents creating revenue. Agencies have traditionally relied on volunteers and successful regionalization has provided a clearly defined local role, particularly for their volunteer staff. Volunteers comprise a large portion of EMS teams, especially in rural settings.[9] In less populated rural areas, it is estimated that volunteers account for 90 percent of the EMS workforce.[10] In Minnesota, when a local ambulance agency closed due to too few calls, volunteers from that agency still wanted to remain engaged. However, there is growing concern about the recruitment and retention of the number of volunteers needed to run local ambulance agencies, leading to an increasing need for paid staff, such as emergency medical technicians (EMTs). Yet EMTs often earn less than other emergency personnel, making attracting and retaining them challenging as well.[11] Additionally, many rural EMS agencies cannot afford to provide the ongoing education

needed to keep their staff up-to-date on best practices, especially in managing high-risk, low-frequency events like strokes and severe trauma.

EMS oversight is fragmented across various federal and state agencies, including the Department of Transportation (DOT), the Department of Health and Human Services (HHS), and others. Efforts like the 1973 EMS Systems Act aimed to support regional EMS systems but were undermined by coordination challenges and funding shifts, such as the Omnibus Budget Reconciliation Act (OBRA) of 1981, which replaced targeted federal funding with block grants to states.[12]

Assessing Potential Benefits of Regionalization

Regionalization is an effective method to optimize the use of limited resources and improve efficiency in the delivery of EMS services, especially in rural settings. Key potential benefits are described in the text that follows.

Resource Sharing

Pool resources such as ambulances, personnel, and medical equipment across the region to ensure that they are available where they are most needed.

Standardized Protocols

Establish common treatment guidelines and operational procedures across the region to ensure consistency in care.

Coordinated Dispatch

Implement a centralized dispatch system that efficiently allocates the nearest and most appropriate EMS resources to an emergency.

Improved Training and Education

Ensure that all EMS personnel in the region receive consistent and high-quality training, which can lead to better patient outcomes.

Data Sharing and Analysis

Facilitate the sharing of data across different EMS agencies to monitor performance, identify improvement areas, and plan for future needs.

Address Shortages

Regionalization can be particularly beneficial in rural or underserved areas where individual agencies might struggle to maintain the requisite levels of service independently.

Methods

This project assessed the landscape of EMS regionalization across all 50 states and identified opportunities for policy improvement. The research approach employed both qualitative and quantitative measures across the 50-state analysis, as well as a key informant interview.

Data were gathered between November 2024 and April 2025, during which time a review of publicly available material was conducted. To supplement the document review and gain an understanding of best practices, a semi-structured interview was conducted with Dr. Mike Wilcox, a physician and EMS director with experience in EMS system development and oversight in Minnesota.

Information from state websites and maps was used to classify each state into one of four regionalization categories: full, partial, limited, or none. The classification framework was developed internally, which reflected a working definition of EMS regionalization levels. The findings of the interview were used to contextualize the effectiveness of regionalization approaches and to inform policy considerations.

Some states presented classification challenges due to incomplete or inconsistent information. In some cases, state EMS region maps were accessible, but further documentation could not be found. This inconsistency in public data posed a limitation on the precision of the classification for some states.

The project did not require IRB approval.

Results

Variation in Regionalization Across States

Full Regionalization States

Minnesota, Vermont, and Colorado are examples of states that have fully regionalized EMS systems. These states divide their geography into distinct EMS regions (also referred to as districts), with dedicated offices and coordinators overseeing emergency medical services in their respective areas. Then, each regional office receives authorization to coordinate care within that region. The structure of fully regionalized systems varies by state; for instance, Minnesota operates with eight regions, while Vermont takes a more granular approach with 13 EMS districts based on hospital catchment areas. Minnesota's regionalization model is successful due in large part to its Primary Service Area (PSA) system, which will be explored in detail later in this report. The Vermont regional system has experienced success with the additional establishment of technical advisory groups and the collaborative effort of EMS personnel across regions to

develop protocols and standardize EMS training. In the west, Colorado has established 11 Regional Emergency Medical and Trauma Services Advisory Councils (RETACs), each encompassing five or more counties and tasked with creating implementation plans for emergency medical and trauma care delivery.

Partial Regionalization States

States vary widely in the implementation of partial regionalization. States with partial regionalization designate EMS regions but do not fully utilize these regions. States like Texas and California have distinct approaches to partial regionalization. Texas operates through 22 Regional Advisory Councils (RACs) that are responsible for developing, implementing, and monitoring an expansive EMS system with over 800 licensed EMS agencies, including fire department-embedded services, "third service" systems separate from fire and police, hospital-based operations, contract EMS, and non-profit EMS. California maintains 34 local EMS systems covering its 58 counties, organized into seven regional systems and 26 single-county agencies, with regional systems typically serving rural areas and single-county systems operating in more urban locations.

Other states show varying degrees of partial regionalization. Florida has been working toward a unified EMS system with a comprehensive state plan updated every five years. New York and Illinois demonstrate fragmentation in their systems, though they maintain strong regional coordination in major metropolitan areas like New York City and Chicago. Other states, like Maryland, maintain a coordinated administrative arm that supports the EMS region, leaving service provision to local agencies.

Limited Regionalization States

States with limited EMS regionalization typically designate regional EMS jurisdictions, but these regions have little operational authority. States like Alabama, South Dakota, and Wyoming have minimal regional coordination. Alabama's regional offices primarily focus on continuing education, while Missouri has regional committees that oversee protocol and standardization. Other states are actively working to improve their regionalization efforts. One such state is South Dakota, which has recently announced grant funding opportunities for its defined EMS districts through the American Rescue Plan Act (ARPA) to support ongoing regional EMS development. Similarly, the Wyoming legislature appropriated $10,000,000 of ARPA funds to increase regionalization efforts in 2022 and designated EMS districts in 2023. These investments suggest that states with limited EMS regionalization are exploring the value that this approach could bring.

No Regionalization States

States with no EMS regionalization operate through centralized state agencies. Iowa has no regionalized system and operates primarily through local jurisdictions. Utah and Montana

currently lack defined regional systems, though Montana has identified regional coordination as a future goal.

Figure 1: State-by-State EMS Regionalization Map

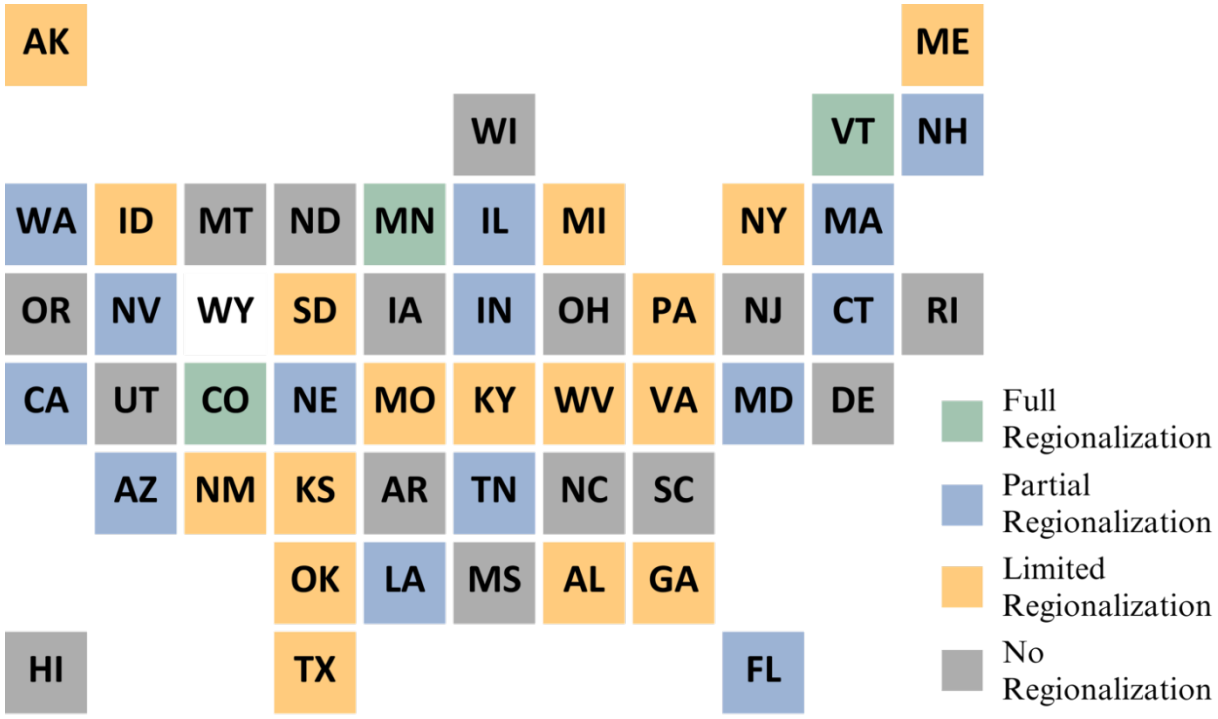

Table 1: State-by-State EMS Regionalization

State	EMS Zone Type	Number of Zones /Districts	Zone Designation Criteria	EMS as an "Essential Service"
Alabama	Limited	6	Population density, geographic size, response times and existing EMS resources in place	No
Alaska	Limited	11	Location, population density, and availability of EMS resources	No
Arizona	Partial	5	Population density, geography, transportation infrastructure, and availability of medical resources	No
Arkansas	None			No
California	Partial	337	Designed to combine high-density and low-density areas to ensure market feasibility to effectively support provision of service to entire population	No

Colorado	Full	11		No
Connecticut	Partial	5	Population density, geography, and availability of medical resources	Yes
Delaware	None			No
Florida	Partial	7	Population density, geography, and availability of medical resources	No
Georgia	Limited	10	Population density, geography, and availability of medical resources	No
Hawaii	None			Yes
Idaho	Limited	6	Population density, geography, and availability of medical resources	Yes
Illinois	Partial	11	Population density, geography, and availability of medical resources	No
Indiana	Partial	10	Population density, geography, and availability of medical resources	Yes
Iowa	None			Yes
Kansas	Limited	6	Population density, geography, and availability of medical resources	No
Kentucky	Limited	6	Population density, geography, and availability of medical resources	No
Louisiana	Partial	9	Population density, geography, and availability of medical resources	Yes
Maine	Limited	6	Population density, geography, and availability of medical resources	Yes
Maryland	Partial	5	Population density, geography, and availability of medical resources	No
Massachusetts	Partial	5	Population density, geography, and availability of medical resources	No
Michigan	Limited	8	Population density, geography, and availability of medical resources	No
Minnesota	Full	6	Number of hospitals and trauma centers in the area and availability of EMS personnel and equipment	No
Mississippi	None			No
Missouri	Limited	6	Geographic, population, and demographic factors	No
Montana	None			No
Nebraska	Partial	4	Location, population density, transportation corridors, and local EMS resources	Yes
Nevada	Partial	4	Population density, geography, and availability of medical resources	Yes
New Hampshire	Partial	11	Population density, geography, and availability of medical resources	No
New Jersey	None			No
New Mexico	Limited	6	Geographic boundaries	No

New York	Limited	18	Population density, geographic size, response times and existing EMS resources in place	No
North Carolina	None			No
North Dakota	None			No
Ohio	None			No
Oklahoma	Limited	11	Population density, geography, and availability of medical resources	No
Oregon	None			Yes
Pennsylvania	Limited	13	Population density, geography, and other factors	Yes
Rhode Island	None			No
South Carolina	None	9	Geographic and population factors, and availability of EMS resources such as hospitals, ambulances, etc.	Yes
South Dakota	Limited	4	County boundaries, population, geography, and availability of medical resources	No
Tennessee	Partial	8	Geography and population density	Yes
Texas	Limited	22	Population density, geography, and availability of medical resources	No
Utah	None			No
Vermont	Full	13	Geography, population, local emergency response and infrastructure	No
Virginia	Limited	11	Geography, demography, population, transportation, hospital locations, and other medical resources	Yes
Washington	Partial	10	Geography, population factors, and input from local stakeholders	No
West Virginia	Limited	11	Population density, geography, existing EMS structure, transportation and response times	Yes
Wisconsin	None			No
Wyoming	Unknown	6	Response times, population, geography, and availability of resources	No
Totals	**None:** 15 **Limited:** 17 **Partial:** 13 **Full:** 4 **Unknown:** 1			**Essential Service** **Yes:** 15 **No:** 36

Minnesota Case Study

Minnesota's approach to Emergency Medical Services (EMS) regionalization stands as a prominent example of balanced coordination and local autonomy that support high-performing rural emergency care delivery. In the early 1970s, Minnesota's rural EMS system operated as a

"free-for-all," with ongoing conflicts over service areas and inconsistent coverage. Recognizing the need for systemic organization, a coalition of physicians and EMS executives advocated for a structured regional approach, which resulted in the establishment of an eight-area EMS system in 1973. Each region was further divided into Primary Service Areas (PSAs), each assigned to a specific ambulance service provider, which discouraged corporate EMS providers from cherry-picking profitable areas. This system was later improved with the creation of the independent EMS Regulatory Board in 1995. This board was established to provide state-level oversight while maintaining flexibility for local adaptation. The system continues to evolve and respond to the needs of individuals across Minnesota.

Minnesota's success is largely due to its PSA system. Originally established through the Department of Health and then fine-tuned at the local level through municipalities, PSA boundaries are determined through detailed analysis of existing crew locations, staffing levels, training levels, and optimal service times. The number of PSAs within a region is determined by its size and population. Importantly, these boundaries undergo annual review based on evolving community needs and population shifts. In low-volume rural areas, if the Basic Life Support (BLS) crew is running below a pre-determined minimum number of runs per year and staffing is low, then another nearby unit can suggest to the state that they take on the area, and the other organization that previously handled the PSA dissolves. In some cases, volunteers in the dissolved unit become Emergency Medical Responders (EMRs) who provide immediate care while awaiting transport units.

The system accommodates varying levels of EMS providers, from BLS to Advanced Life Support (ALS) and air transport services. Mutual assistance agreements between these providers enables seamless coordination when transferring critically ill patients. Mutual aid agreements in Minnesota's EMS system extend beyond basic ambulance services to specialized care for burn, trauma, stroke, and cardiac emergencies. These agreements—which can cross EMS regional and even state lines—provide seamless coordination between EMS providers and specialty hospitals, facilitating rapid transport to the most appropriate facilities based on patient needs.

Recommendations for other states:

1. Establish and sustain strong medical direction, ensuring high standards of patient care, effective protocols, and continuous training for EMS providers. Medical direction plays a pivotal role in coordinating services, guiding clinical decision-making, and maintaining the quality of emergency medical response.
2. Avoid excessive state control which can hinder innovation and responsiveness. States with rigid statutory requirements have struggled to implement flexible EMS models due to strict regulatory frameworks that limit what EMS providers can do. Minnesota has maintained a regulatory structure that allows for adaptability/flexibility to leverage their own individual resources.

3. Maintain long-term sustainability. Traditional EMS funding is largely transportation-based, meaning services are reimbursed only when a patient is transported to a hospital. This outdated model does not account for EMS's broader role in community health, such as providing on-site care delivery. Further, EMS services, particularly in rural areas, have historically relied on volunteer staff, but volunteerism is declining, making it difficult to maintain coverage.

Minnesota's approach to quality assurance focuses on patient outcomes rather than solely on traditional metrics like response times. In many cases, a focus on response time alone can be misleading and may overshadow the caliber of care provided based on resources at hand. Training programs for EMRs allow for advanced skills like defibrillation and IV access, to provide high-quality immediate care even while waiting for transport; however, not all states allow that level of care. To improve care quality and efficiency, states should consider modernizing scope of practice laws to reflect current training standards and support the full utilization of EMS personnel, particularly in resource-limited or rural areas.

Overall, implementation models should emphasize unambiguous regional boundaries, provide medical direction, and involve the community. Common barriers that states must address include statutory limitations on practice, outdated funding models, resistance to change, and workforce constraints. Minnesota's case shows that challenges can be overcome through thoughtful system design and ongoing commitment to improvement.[13]

Discussion

Policy Considerations

1. States should pass legislation that would authorize EMS professionals to practice at the full extent of their licensure. This authorization would support the optimal use of the existing scarce EMS workforce, especially in rural areas, where staffing remains a barrier, as well as ensure that trained professionals are not restricted by scope-of-practice limitations.
2. States should enact legislation supporting flexible EMS regulatory frameworks that allow for regional adaptation rather than imposing a one-size-fits-all model across the state. The evidence from Minnesota demonstrates that flexibility in regulation was a key component of successful regionalization, as it allows regional EMS systems to respond to community-specific needs.
3. States should integrate EMS clinical leaders (such as EMS medical directors) to inform regional EMS system design and implementation. Minnesota's experience highlights the importance of strong medical direction and a clinical champion in driving regionalization while maintaining high standards of care.
4. States should consider enacting legislation to implement primary service areas (PSAs) models as part of regional EMS structures. The PSA system has been critical to

Minnesota's success, as it allows for the creation of service boundaries that reduce duplication and ensure accountability across EMS regions within a state.

Conclusion

As rural healthcare systems continue to transform in the wake of hospital closings and demographic shifts, there will be an increased need for regionalized EMS systems to provide access to timely emergency care for Americans who reside in nonmetropolitan areas. The issues common to rural EMS services such as geographic barriers, limited finances, workforce shortages, and fragmented oversight, impede the delivery of timely, quality emergency care in many rural regions. This analysis shows that EMS regionalization is a viable way to meet the challenges available to address these challenges through shared resources, standardized care protocols, coordinated dispatch, orientation, and integration of data.

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