Emergency Medical Services System Sustainability Task Force

Phase I Report

September 2023

Table of Contents

Acknowledgements

The Task Force extends its deepest appreciation to several key contributors whose dedication and support have been vital in propelling this project forward.

Special recognition goes to Senator Rachel Zenzinger (inaugural Task Force chair) and Senator Mark Baisley for co-sponsoring the enabling legislation (SB22-225). Their steadfast leadership, relentless commitment, and pivotal roles in the development of this initiative have led to its substantial progress.

Equally crucial to the Task Force's advancements is the tenacious leadership of the current Chair, Senator Mark Baisley, and Vice Chair, Representative Ryan Armagost. Their unwavering resolve has proven instrumental in evolving Colorado's EMS systems.

Moreover, the Task Force extends heartfelt thanks to the EMS Stakeholders across the state who actively participated in the meetings. Their invaluable inputs have significantly shaped the Task Force's work. Special appreciation is reserved for the EMS Stakeholders who unified in 2022, whose visionary leadership led to the creation of this Task Force. Their commitment to their profession, dedication to community protection, and aspiration for a sustainable EMS system in Colorado have been truly inspiring.

Acknowledgement is also due to the personnel of the CDPHE EMTS Branch. Their expert provision of technical expertise, data analytics, and logistical support has been an invaluable asset to the Task Force's operations.

Furthermore, the Task Force wishes to express gratitude to its members, who represent a diverse range of sectors within the EMS profession and the community. Their voluntary contributions of time and expertise have played a crucial role in the operations of the Task Force.

Lastly, the Task Force extends appreciation to SafeTech Solutions, LLC, for their exceptional technical support in the creation of this Phase 1 report. Their professional assistance has significantly aided the work of the Task Force.

The Task Force acknowledges and appreciates the collective efforts of all involved in shaping a resilient, sustainable, and effective EMS system for the benefit of all Colorado residents. The commitment and dedication demonstrated by these contributors are sincerely valued.

Executive Summary

For over half a century, an exceptional network of local Emergency Medical Service (EMS) agencies and providers have admirably ensured that residents and visitors of Colorado have access to ambulances and out-of-hospital emergency care. These dedicated providers respond to medical, traumatic, behavioral health, and substance use emergencies 24/7, in any weather and circumstance, offering medical treatment and patient transportation throughout a complex healthcare system. Consequently, the public strongly expects these services to always be available, to deliver superior medical care, and to provide an indispensable service accessible reliably through a 911 call.

Despite public expectations, a widening disparity exists between these anticipations and the prevailing reality. Initiated through Legislation (Senate Bill 22-225) the EMS System Sustainability Task Force of Colorado has identified these gaps and embarked on a comprehensive five-year journey to investigate their root causes, understand their effects, research potential improvements, and propose solutions. The goal is to enhance the future of EMS throughout the state.

The vulnerabilities uncovered present significant challenges to equitable access to emergency medical services and affect the reliability, patient outcomes and sustainability of EMS. These issues are most pronounced in rural and frontier communities, but they also significantly impact urban and suburban areas, underlining their widespread prevalence. The challenges primarily stem from inadequate funding, workforce shortages, diminishing volunteerism, and the heightened complexity of systems.

However, the root causes extend beyond these symptomatic issues. They are deeply entrenched in the way EMS was historically developed, understood, planned, structured, valued, resourced, and regulated. This complex issue demands a comprehensive, multifaceted response, which the task force is committed to providing.

In the initial year of the EMS System Sustainability Task Force's work, several critical observations surfaced, highlighting the imperative for wide-ranging reform:

- **Lack of Statewide Planning**

  EMS in Colorado, like most of the nation, in the 1970s and 1980s was under local control. This resulted in a lack of statewide planning and determination of the optimal distribution of EMS resources based on demand, required levels of clinical care, and geographic proximity to tertiary care.

- **Limited Data and Information Utilization**

  The historic licensing of ground ambulance agencies at the county level, along with a myriad of state confidentiality regulations, laws, and policies, has led to fragmented and limited use of critical data and information essential for a comprehensive evaluation of EMS sustainability and the progression to a fully integrated state-wide system. The resulting information fragmentation has significant implications not only for statewide emergency and disaster planning but also for resource mobilization and intrastate patient movement.

- **Insufficient Funding**

  Many (if not most) EMS agencies in Colorado are operating without sufficient funding. Most are underfunded for readiness because insurance reimbursements are significantly less than actual costs and many agencies are dependent on the use of low-wage and volunteer labor even though these labor sources are rapidly diminishing.

- **Hidden Costs**

  Volunteerism, low-wage labor and the local approach to EMS have hidden the full and true cost of providing services, resulting in an underfunded and unsustainable service model for the public.

- **Lack of Government mandate**

  Despite the essential nature of EMS and the expectation that EMS responders will quickly arrive when 911 is called, the actual provision of EMS across Colorado depends solely on local initiative and investment, health care market forces, and altruism with no legal obligation for government entities to ensure EMS is provided in specific geographic areas.

- **Unprotected Service Areas**

  In many areas, the geographic areas served by EMS agencies lack formal description, protection, and standard regulation, making them vulnerable to unassured responses, competition, and potential service discontinuity, particularly when agencies become strained or cease operations.

- **Workforce Shortages**

  Workforce shortages are reported by agency leaders to be the greatest daily threat to EMS reliability. However, because of how agencies are locally regulated, as well as the limited provision of state-level resources, a specific and comprehensive understanding of workforce need, demand, supply, and turnover is lacking. This knowledge gap impedes effective workforce analysis and planning.

- **Unsustainable Rural Agencies**

  Many rural EMS agencies are currently unsustainable, and efforts to transition to sustainable models can be a multi-year process. There is a general lack of public awareness about the unsustainability that exists in many of these agencies.

- **Inadequate Funding and Competing Governance of Clinical Care**

  The lack of sufficient funding and support for physician EMS medical direction curtails the effectiveness of medical directors in carrying out vital quality management activities, crucial for enhancing clinical care and ensuring consumer protection. Furthermore, overlapping jurisdictions and conflicting responsibilities introduce obstacles for some EMS medical directors in adhering to state-level medical direction requirements, mandates from the board of health, and in offering an impartial, focused approach towards improving the quality of care, oversight, and safeguarding consumer protection.

- **Positioning and Influence**

  EMS within state government is currently not afforded the same position, perception, understanding, or resources as other essential services like law enforcement, the fire service, public health, public works, and public education. Furthermore, EMS in Colorado is not legislatively declared or funded as an essential service. This discrepancy undermines the recognition and support that EMS deserves as a vital component of the healthcare system and emergency response infrastructure of the state.

Even with these challenges, Coloradans are becoming more aware of the vulnerability of the EMS system, and steps are being taken to address these issues. The "Ambulance Service Sustainability and State Licensing" bill (SB 22-225) was signed into law by Governor Polis on June 1, 2022. This legislation transferred the licensing of ambulance agencies to the state, effective from July 1, 2024, and established a five-phase, five-year project to include the formation of an EMS System Sustainability Task Force.

CDPHE hosts The Task Force within the Health Facilities and Emergency Medical Services Division as an advisory entity. The Task Force's mandate is to recommend statutory, rule, and policy changes that

preserve, promote, and expand access to emergency medical services for Colorado's residents and visitors. The five phases address the following areas:

Phase I: Providing input on the regulatory structure for ambulance service oversight, and overseeing the completion of an environmental scan that will generate a report on the state of EMS in Colorado.

Phase II: Addressing inequity and disparity in access to EMS.

Phase III: Recruiting and retaining the EMS workforce.

Phase IV: Ensuring financial sustainability of the statewide EMS system.

Phase V: Long-term sustainability of the statewide EMS system.

The completion of Phase I has led to the identification of 19 sustainability gaps and challenges, along with 22 recommendations to address the gaps. The following are recommendations from the EMS System Sustainability Task Force and do not reflect the recommendations of the Colorado Department of Public Health and Environment. To facilitate the transition of EMS towards sustainability and support the subsequent phases of the EMS System Sustainability Task Force, the following eight items are proposed for action by the Colorado General Assembly in 2023-2024:

- **Ensure Adequate Funding For Statewide Licensing of Ambulance Services:** Allocate necessary resources to ensure a smooth transition and ongoing maintenance of ambulance service licensing from counties to the state. The Emergency Medical & Trauma Services Branch of the Colorado Department of Public Health and Environment (Department) has been tasked with licensing ambulance services as of July 1, 2024, but lacks sufficient staff and resources for this responsibility.

- **Examine Data Accessibility:** Examine current law and regulation to identify mechanisms for improved data accessibility for the Task Force, enabling a comprehensive assessment of sustainability and completion of Phases II-V. Enhancing data access will support evidence-based decision-making.

- **Designate EMS as an Essential Service:** Designate and resource EMS as an essential service in Colorado, and delegate the responsibility of ensuring the local provision of EMS to local and regional government entities; assigning the role of standardized licensing, EMS credentialing and medical direction to the state, and commit to a collaborative approach of ongoing system planning among state and regional levels. This designation not only highlights and invests in the crucial role of EMS within the healthcare system but also issues a clear mandate for its continued availability. This approach will foster a broader, more comprehensive perspective that emphasizes the essentiality of EMS and promotes coordinated planning and licensing at a statewide scale.

- **Conduct a Comprehensive Statewide EMS Systems Analysis**: Senate Bill 22-225 allocated funding for an environmental scan - the results of which are included in this report. The environmental scan and Phase 1 work has identified the need for additional data collection and analysis. Resources should be allocated for performing a thorough statewide assessment of the existing out-of-hospital emergency medical services. The objective of this analysis is to pinpoint all potential disparities in access to ambulances, identify fragile or unsustainable EMS services, and locate coverage gaps. The assessment should encompass the identification and mapping of current response boundaries, evaluation of dispatch data, financial analysis of the system, and a workforce study. This exhaustive evaluation, in conjunction with the shift of ground ambulance licensing from county-level to the Department, will equip the Task Force with essential data-driven insights for informed decision-making. The analysis should, at the very least, include a focused assessment of the following:

    - **Establish Equitable Coverage Process:** Carry out mapping and evaluation of the existing EMS response service zones to identify gaps and ensure optimal coverage for all communities. This would empower the taskforce to propose a transparent process to ensure responsibility and equity in the distribution and coverage of 911 ambulance agency service areas.

    - **Conduct Workforce Planning Study**: A thorough analysis of Colorado's EMS workforce should be conducted with a specific focus on sustainable workforce planning. This study, which aligns with Phase III of the EMS System Sustainability Task Force project, will provide a comprehensive understanding of EMS workforce entry levels, needs, demands, supply, and turnover rates. This will enable effective planning and allocation of resources to address workforce shortages.

    - **Evaluate True Costs**: An examination of the real costs of providing EMS should be carried out, especially highlighting the costs in rural and frontier settings. This information will give an accurate understanding of the economic implications and challenges EMS providers face, allowing for informed decision-making on funding and resource allocation. This coincides with Phase IV of the EMS System Sustainability Task Force project.

- **Enhance the Consultative Visit Program (CVP):** Authorize and appropriate additional funding to enhance and better resource the CVP coordinated through the Emergency Medical & Trauma Services Branch to provide guidance and support to Regional Emergency Medical and Trauma Services Advisory Councils (RETACs) and communities, especially those in rural areas, with transitions from unsustainable EMS models to sustainable ones. The CVP would also be a resource to provide guidance and support to enhance Regional Medical Director, Quality Assurance and Improvement programs, disaster and mass casualty response and recovery programs, injury prevention, and other technical assistance services to offer expertise and assistance with implementation for effective EMS related practices and programs at the local, regional, and state levels.

Through the enactment of these recommendations, the Colorado General Assembly has the opportunity to establish a robust infrastructure for improving EMS sustainability, thereby enhancing the availability of

high-quality emergency medical services for the state's inhabitants and visitors. The Task Force believes adoption of these strategic measures will help construct a resilient EMS system, equipped to adapt and respond effectively to the dynamic healthcare demands of our diverse communities.

Introduction

Securing access to reliable, high-quality out-of-hospital emergency medical care is of utmost importance for the safety and wellbeing of Colorado's 5.8 million[1] residents, as well as an anticipated 90 million visitors per year by 2024. This vital service, incorporating life-saving medical transportation and patient movement, is a pivotal component of Colorado's complex healthcare system. As an integral part of the broader public health system, EMS not only provides immediate response and treatment in emergencies but also contributes to expansive health monitoring and prevention initiatives. The role of EMS as an essential component of the state's public health system was underscored during the COVID-19 pandemic, where EMS providers were frequently on the front lines of crisis response.

The development and provision of these professional medical services in Colorado has been sculpted by the state's unique geography, size, and socio-economic growth over the past five decades. As a result of this evolution, a myriad of locally-based EMS agencies have arisen from individual initiatives and urgent community needs. Each of these agencies is testament to the shared recognition of the essential role EMS plays within the broader health system, ensuring rapid, life-saving care is readily available when and where it's most needed.

Despite these concerted efforts, however, ongoing concerns persist among EMS stakeholders and community leaders. Issues such as the availability of EMS providers to staff ambulances and the sustainability of local agencies present serious challenges, highlighting the growing pressures within Colorado's EMS infrastructure. As we look to the future, it is imperative that we view EMS not merely as a response mechanism, but as an integral part of our larger health system, one that requires sufficient support and resources to continue saving lives and contributing to public health.

Similar to law enforcement, fire service, and public works, the provisioning of EMS has become an expected public service in Colorado and across the United States. Citizens and visitors alike anticipate prompt and reliable access to ambulances and emergency medical services, whether at home, work, shopping centers, recreational venues, or during travel.

In recent years, the provision of EMS has encountered significant obstacles on a national scale. Research reports and media accounts have spotlighted numerous issues, including declining rural EMS volunteerism, workforce challenges, local leadership issues, unsustainable funding models, service and hospital closures, as well as a growing demand for improved clinical quality and accountability.[2] These

[1] US Census Bureau (2023, July 27). https://www.census.gov/quickfacts/fact/table/CO/PST045222

[2] Hassanein, N. (2023, June 26.) What if the ambulance doesn't come? Rural America faces a broken emergency medical system. *USA Today*.

- King, N., Pigman, M., Huling, S., Hanson, B. Services in Rural America: Challenges and Opportunities. National Rural Health Association Policy Brief. Published May 2018. Accessed July 2, 2023.

- Kaufman, B, Thomas, S, Randolph, R, Perry, J, Thompson, K, Holmes, G, Pink, G. The rising rate of rural hospital closures. The Journal of Rural Health. 2016; 32(1): 35-43.

- Ambulance Deserts: Geographic Disparities in the Provision of Ambulance Services (May 2023). The Maine Rural Health Research Center.

- National Association of State EMS Officials. 2020 National Emergency Medical Services Assessment. May 2020.

- Federal Interagency Committee on Emergency Medical Services. 2011 National EMS Assessment. U.S. Department of Transportation, National Highway Traffic Safety Administration, DOT HS 811 723, Washington, DC, 2012.

- Patterson DG, Skillman SM, Fordyce MA. Prehospital Emergency Medical Services Personnel in Rural Areas: Results from a Survey in Nine States. Final Report #149. Seattle, WA: WWAMI Rural Health Research Center, University of Washington, August 2015.

challenges have started to significantly affect the sustainability of local EMS agencies, and Colorado is not insulated from these trials. Awareness of the hurdles confronting EMS and its stability has grown among EMS stakeholders, the public, government officials, and healthcare organizations. The proactive measures presented in this Phase I report illustrate the initial findings and recommendations of the Task Force's efforts to address these concerns.

The Legislative Mandate

This report marks the beginning of a significant five-phase, five-year project initiated by Senate Bill 22-225, also known as the "Ambulance Service Sustainability and State Licensing"[3] bill. On June 1, 2022, Governor Polis signed this bill into law, setting the groundwork for the project.

This legislation established a 20-member EMS System Sustainability Task Force, comprising a diverse group of stakeholders, leaders, providers, and representatives from various organizations, with the mission of proposing statutory, rule, and policy changes to protect, enhance, and expand consumer access to emergency medical services in Colorado. Members appointed to the Task Force by the Executive Director of the Colorado Department of Public Health and Environment (Department) include EMS stakeholders; municipal and county leaders; physicians; legislators; EMS providers; agency leaders; and representatives of healthcare, the fire service, and the Department.

The five phases of the Task Force's work are designed to cover a comprehensive range of aspects related to access to ambulances and Emergency Medical Services (EMS) in Colorado. Phase I work encompassed the regulatory structure for ambulance service oversight and a comprehensive report on the status of emergency medical services throughout Colorado. Future work includes addressing inequities and disparities in EMS access (Phase II), tackling workforce recruitment and retention issues (Phase III), ensuring the financial sustainability of the statewide EMS system (Phase IV), and securing long-term sustainability for the overall EMS system (Phase V).

This report represents the completion of Phase I and an overview of the current state of EMS in Colorado. It includes a list of 19 specific challenges and gaps and 22 recommendations, including recommendations for administrative rules and standards pertaining to state licensing of ground ambulances. These recommendations aim to build the foundation for addressing the current challenges and gaps in Colorado EMS, to guide leaders, legislators, communities, and stakeholders in taking specific actions.

Furthermore, this report presents the preliminary observations of the Task Force, laying the groundwork for further analysis and subsequent action in the upcoming phases. It is important to emphasize that this project is in its early stages. While some challenges may require immediate attention, a comprehensive understanding of the root causes underlying these issues will likely necessitate the full five-year duration of this project to resolve.

To date, the Task Force has convened for eleven meetings, during which a wide array of topics have been presented and deliberated upon. These discussions have led to the formation of three dedicated work groups, each focusing on critical aspects of EMS system sustainability, namely finance, human resources, and leadership and governance.

Throughout this first phase, the EMS System Sustainability Task Force has been in constant communication and collaboration with the Department's Ground Ambulance Licensing Task Force. This parallel task force has been charged with drafting the administrative rules pertaining to ground ambulance licensing, a mission critical to the future of Colorado's EMS system.

[3] The full text of SB 22-225 can be found at: https://leg.colorado.gov/bills/sb22-225.

Furthermore, the Task Force's discussions and decisions have been significantly enriched by insights from a variety of key stakeholders. These have included Colorado EMS leaders, national EMS experts, and representatives from other state EMS programs, each contributing invaluable perspectives and expert knowledge to the ongoing discourse. These collaborative efforts have greatly enhanced the Task Force's ability to holistically evaluate and address the complex challenges facing the sustainability of Colorado's EMS system.

Presentations to Task Force 2022 – 2023
Northeast Colorado RETAC
National Perspectives on EMS System Sustainability and Equity - Douglas Wolfberg, JD, PWW, LLP
Southeastern Colorado RETAC
System Design and Economies of Scale
Northwest Colorado RETAC
Rural and frontier recruitment and retention
Idaho Sustainability Task Force - Wayne Denny
Maine Strategic Planning Process – Sam Hurley
Central Mountains Colorado RETAC
Colorado EMS financial model
Colorado EMS Challenges and Gaps presentation
Task Force recommendations presentation
Regular data updates from EMTS Branch

The Concept of Sustainability

As Colorado looks toward the future, it seeks to ensure reliable and timely access to out of hospital emergency medical care, address the growing need for medical transportation between healthcare facilities, and establish a strong and sustainable system for emergency medical services in the state. The public, businesses, visitors, healthcare facilities, and governments want emergency medical services that are high-quality and reliable. Unlike reliability and quality, which are experienced directly and immediately, sustainability works behind the scenes, enabling the long-term delivery of these services. A brief review of these terms can help us understand the challenges Colorado faces.

Reliability is about the EMS system having the ability and capacity to respond to 100% of requests in a practicable, need-appropriate, and system-appropriate manner. Achieving reliability requires suitably prepared resources and staff, strategically placed and readily responsive when called upon by efficient call-taking and dispatch systems.

Consistent reliability – especially the EMS responsiveness – is a basic indicator of the health of EMS in a geographic area. When EMS agencies are struggling to staff units, motivate personnel, or are experiencing demand that exceeds capacity, response times increase and reliability declines. System failures, including increasing response times or missed responses are often early indicators that EMS is struggling or becoming fragile.

Quality, on the other hand, refers to the extent to which EMS enhances the probability of achieving desired outcomes that align with the expectations of the served population, as well as current professional medical knowledge and evidenced based practices. Achieving quality is dependent on establishing and adhering to standards, expectations, and regulations, as well as providing education, training oversight and evaluation. While the establishment of concrete clinical quality measures is an ongoing effort at the national level, quality in EMS often encompasses the perception of the service provided.

Sustainability is about EMS's ability to consistently deliver reliability and quality over an extended period. It reflects the present and long-term health and stability of the EMS agency or system, ensuring that there are adequate resources to meet current needs without compromising future requirements. Achieving sustainability involves maintaining sufficient financial and human resources and utilizing them in an efficient, humane, and viable manner. It also requires attention, planning, leadership, organizational structure, and fostering healthy growth and development. Sustainability is crucial for the continued provision of reliable and high-quality EMS.

Constraints of this Report

While this report offers valuable insights, it is important to acknowledge its limitations. Due to the restricted resources and time allocated for Phase I, it does not present a fully comprehensive evaluation of EMS in Colorado. As highlighted throughout the report, there are significant gaps in both quantitative and qualitative data, resulting in a lack of exhaustive information about Colorado's EMS landscape. This data deficit can be traced back to the historical development and the current structure of EMS. Examples of the missing data include, but are not limited to, mapping of all service response areas (including transport and first response), data from Public Safety Answering Points (PSAPs), accurate workforce data, and other vital metrics. It's crucial to understand these limitations in order to grasp the challenges that Colorado's EMS system faces and to strategize effectively for future improvements.

However, as the Department takes on licensing responsibilities for ground ambulance agencies in 2024, there is an expectation that accessibility to ambulance agency data will improve. As the sustainability project progresses and further information about Colorado's EMS becomes available, the recommendations provided by the Task Force will continue to evolve. It is crucial to recognize that this report marks only one step in a dynamic process, and as the understanding of the EMS landscape in Colorado grows, the recommendations will be refined and updated accordingly over time. The ultimate goal is to address and continuously improve the EMS system in Colorado and ensure its long-term sustainability for the benefit of the community and its residents.

EMS History and Roots of Sustainability Challenges

The modern era of EMS in the United States was initiated in the 1960s due to an urgent concern regarding highway trauma. Factors such as a higher number of drivers, faster and larger cars, and poor safety standards contributed to a significant increase in highway injuries and deaths. By 1966, the annual number of highway deaths had exceeded 50,000. The public, medical professionals, and politicians began recognizing the need for improved care for trauma victims.

In 1965, the President's Commission on Highway Safety released a report recommending the implementation of a nationwide program to reduce fatalities and injuries resulting from highway accidents.[4] The following year, the National Academy of Sciences National Research Council (NAS-NRC) published a seminal paper titled "Accidental Death and Disability: The Neglected Disease of Modern Society."[5] This report shed light on the deficiencies in emergency patient care, the poor quality of ambulance services, and the lack of trained personnel in the field.

The NAS-NRC report highlighted the alarming fact that seriously wounded soldiers in the Vietnam War had better chances of survival within the combat zone than traffic accident victims on the streets or highways of America. It brought attention to the observation that half of the ambulance services were being operated by funeral homes primarily because hearses could accommodate a patient stretcher. Furthermore, it emphasized the absence of trained ambulance attendants, the lack of radio communications in most ambulances, the unsuitability of vehicles for providing active care during transportation, the shortage of equipment and supplies, and the absence of a systematic approach to caring for trauma victims.[6]

Both reports recommended the establishment of national programs, sparking a period of unprecedented attention, development, and activity towards planning and creating a national EMS system. It is important to note that these efforts were spearheaded by the federal government, envisioning a nationwide EMS system that would ensure all Americans have access to competent emergency medical care and transportation.

> Colorado's concern for highway deaths began in 1958 with a Colorado Legislative Council research publication on Highway Safety in Colorado. The report expresses great concern for the number of highway traffic injuries and fatalities. However, the report only seeks to address the problem through law enforcement and the courts, driver education, teenage drivers, drunken driving, driver licensing, and highway safety research including accident records and statistics, etc. It makes no mention of emergency medical care or ambulance services.
>
> *Highway Safety in Colorado: Report to Colorado General Assembly.* Colorado Legislative Council, Research Publication No. 26. 1958.

The development of EMS began with the Highway Safety Act of 1966, which created the Department of Transportation and granted it legislative and financial authority to improve EMS by establishing standards and activities to enhance ambulance services and the training of ambulance personnel.[7] Funds were allocated for EMS demonstration projects, and the Act required states to have highway safety programs and develop regional EMS systems. For the first time, ambulance vehicles, equipment, training, personnel, and administration costs were funded through highway safety programs.

---

[4] President's Commission on Highway Safety. Health, Medical Care, and Transportation of Injured. Washington, DC: US Government Printing Office, 1965, pp. 10– 19.

[5] National Academy of Sciences and National Research Council. Accidental Death and Disability: The Neglected Disease of Modern Society. Washington (DC): National Academies Press; 1966. EMERGENCY FIRST AID AND MEDICAL CARE. Available from: https://www.ncbi.nlm.nih.gov/books/NBK222964/.

[6] Ibid.

[7] United States Public Law 89-593. National Traffic and Motor Vehicle Safety Act of 1966. https://www.govinfo.gov/content/pkg/STATUTE-80/pdf/STATUTE-80-Pg718.pdf#page=1.

These funds provided resources on the ground to establish and improve local ambulance services throughout the nation, including in Colorado. Early on, it was understood by EMS developers that a broad, systematic approach was needed to deal with highway trauma that could occur anywhere. It was also understood that local communities, and especially rural communities, would not have the needed resources to develop ambulance services and would need help. Likewise, EMS developers foresaw a regional approach and regional financing would be needed to develop economies of scale and sustainability. Between 1968-1979 the Department of Transportation (DOT) put more than $142 million into the development of regional EMS systems. Other federal initiatives in the late 1960s and early 1970s allocated additional funding toward research, demonstration projects, and the creation of a lead federal EMS agency in the Department of Health, Education, and Welfare (DHEW).

By the late 1960s and early 1970s, EMS development rapidly spread across the nation. EMS system demonstration projects were underway in Arkansas, Florida, Illinois, Ohio, and California. Everywhere local communities were buying ambulances and equipment with federal help. People were being trained and tested to be Emergency Medical Technicians. The first advanced cardiac care programs had begun in Columbus, Seattle, Los Angeles, and Dade County, Florida, and the concept of paramedics was developing.

In Colorado, the first EMTs were trained during this period. Throughout the state people began to learn about the availability of training and equipment and began to see ambulance service as much more than rapid horizontal transportation. Funeral home services morphed into local ambulance services and other communities created start-ups. Denver General Hospital, with a long history of ambulance service, quickly expanded its training of personnel and created one of the nation's early paramedic programs and Advanced Life Support (ALS) service.

In 1972, following the models of MASH units in the Korean War and the Dustoff Medevac programs in the Vietnam War, St. Anthony Central Hospital in Denver created the nation's first civilian hospital-based EMS helicopter program, *Flight For Life Colorado*. The need to provide rapid response and the transport of patients from Colorado's remote mountain and rural areas drove the development of the program that became a model for programs across the nation.

While EMS was progressing across America, another NAS-NRC report in 1972 asserted that the federal government could do more in ensuring the provision and upgrading of EMS. It recognized the expense associated with developing and sustaining EMS and recommended that President Nixon propose action by Congress to ensure access to emergency care was universal. The report called for the integration of all federal resources under a lead agency and recommended that the focal point for local EMS be at the state level, and that all federal efforts be coordinated through regional programs.[8]

Initially, the Nixon administration was hesitant to invest in such a program. However, relentless advocacy by Congressional EMS champions eventually led to the passage of the EMS Services Development Act of 1973. This Act recognized that the development of a comprehensive EMS system would need leadership, planning, and funding. It created a lead federal EMS agency in the Department of Health, Education, and Welfare (DHEW) led by an EMS savvy physician from Illinois named David Boyd. The plan was to develop EMS across the nation to deliver needed care and meet the unique needs of local communities. The vision was for EMS, after initial set-up help, to be sustainable without federal monies.

The nation was divided into 304 EMS regions. Planning was centered around ensuring that each region had "resources sufficient in quality and quantity to meet a wide variety of demands, and the discrete geographic regions established must have sufficient populations and resources to enable them to

[8] Committee on Emergency Medical Services, Division of Medical Sciences. Roles and resources of federal agencies in support of comprehensive emergency systems. Washington, DC: National Academy of Sciences–National Research Council; March 1972.

eventually become self-sufficient."[9] The regions were to be developed as systems around 15 essential EMS components that would ensure commonality in structure and uniformity in the emergency care delivered.

States began to get serious about the development of EMS. In 1973, the Colorado General Assembly passed the Emergency Medical Services System Act, which established the Colorado EMS system and designated the Colorado Department of Health as the state agency responsible for EMS regulation and oversight. This legislation provided a framework for the development and coordination of EMS services throughout the state, including training and certification of EMS personnel, development of EMS scope of practice, and establishment of the concept of regional coordination of services.

By 1976, in line with the Department of Health, Education, and Welfare's (DHEW) regional planning approach, Colorado had established five EMS regions. These regions were theoretically organized in such a way as to optimally allocate resources, ensure coverage and accessibility of services, and adapt to the unique needs of the local communities within each region. In accordance with the EMS Services Development Act of 1973, the intent was for these regions to eventually become self-sufficient. This meant reducing their dependence on federal funds over time and cultivating sustainable, local funding models and resources. The regional structure also aimed to encourage a planned systems-approach that would ensure the resilience and effectiveness of Colorado's EMS system.

Across the nation, the development of regional EMS systems, though gradual, showed promise. As of 1979, out of the 304 regions originally planned, 17 had reached the envisioned state of full development and self-sufficiency. Progress was noticeable elsewhere, too, with numerous other regions on the trajectory towards self-sufficiency and 96 actively in the planning stage. This journey of development wasn't without its challenges and disputes, but the cycle of planning, executing, and learning continued undeterred. It became clear that developing a national EMS system through the regional approach would take time but would result in a true system with sustainability built in.

However, this trajectory was disrupted in 1981 when the federal Omnibus Budget Reconciliation Act was signed into law. This act effectively put an end to federal leadership in the development of a national EMS system. Instead, it restructured federal funding for EMS into block grants that were allocated at the local level. By 1982, it was apparent that all federal support for the EMS system would cease, leaving the continuation of regional EMS programs to the devices of states or local communities. The central federal EMS agency was disbanded, and the federal government's role was reduced to providing technical assistance and coordination.[10]

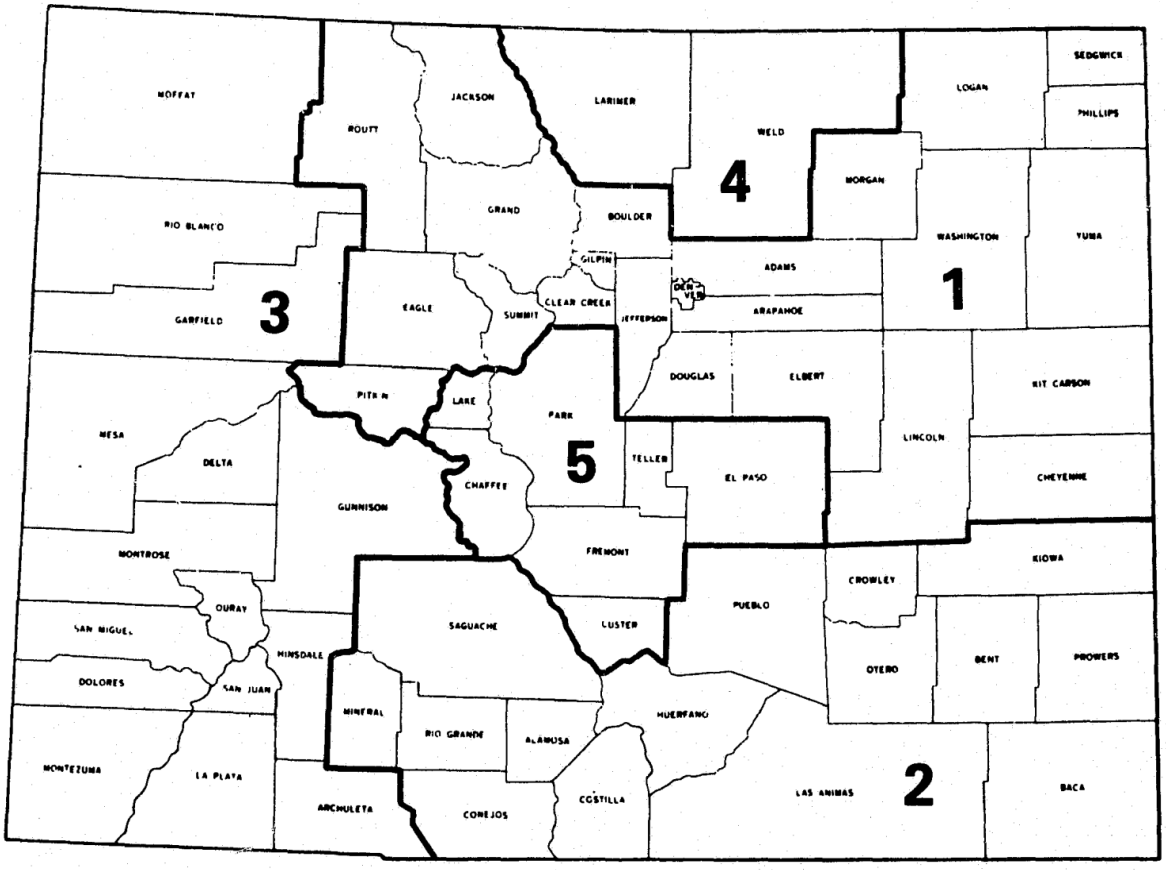
Because many regions were still in the nascent stages of development or hadn't yet begun, and most states failed to approach EMS development with actual operational plans, lead governmental agencies, and the needed start-up funding, local communities were left to develop EMS on their own. For many states, including Colorado, the primary focus quickly pivoted towards certifying ambulance personnel, developing the clinical scope of practice, approving educational programming, and working with medical oversight and quality. Moreover, it was during this transitional period that most states took on the responsibility of licensing and regulating agencies that provided ambulance services. However, the outcome of these efforts varied greatly, leading to a lack of uniformity and consistency in the EMS systems across the country.

[9] Bass, R. (2015). History of EMS. In D. Cone, J. Brice, T. Delbridge, J. Myers (Eds.), Emergency Medical Services: Clinical Practice and Systems Oversight, Clinical Aspects of EMS, Second Edition. Wiley Online Library. Downloaded June 3, 2023.

https://onlinelibrary.wiley.com/doi/abs/10.1002/9781118990810.ch1#pane-pcw-related.

[10] Ibid.

Project Regions within the State of Colorado (1976)



The flurry of activity and media attention given to EMS raised awareness and created a desire for people to have local EMS. It has also created provider levels, the concepts of Basic Life Support (BLS) and Advanced Life Support (ALS), and models of how it might be done. Absent was operational funding, planning, system leadership, economies of scale, and the broad public understanding that could have been achieved through a regional and systematic approach.

As a result, EMS development in Colorado continued, but in a more organic, grassroots manner. The creation and growth of local ambulance services often had to rely on the interest, motivation, altruism, and volunteerism of local people and local government. For instance, in Salida, Colorado, ambulance services emerged in the early 1970s when community members banded together to voluntarily deliver ambulance services based at a local mortuary, utilizing a small Chevrolet Suburban ambulance. Over time, Chaffee County assumed the operations of the service and the service grew to meet the needs of the county with paid staff, two stations, and advanced life support (ALS) responding to more than 2000 annual calls.

Despite these local success stories, the economics of EMS in Colorado still do not fully support sustained growth and resilience. The lack of a coordinated and systematic approach, along with inadequate financial support, has hindered the overall growth and stability of EMS services in the state. As a result, there remains a need for a more comprehensive and unified strategy to address these challenges and ensure the long-term sustainability and success of EMS in Colorado.

In the absence of concerted leadership for EMS at the federal and state levels, this type of organic development became a local endeavor and local responsibility. In some rural communities where populations are small and ambulance service is only occasionally needed, such development can be hard to sustain. While ambulance services can be set up and operate, long-term sustainability depends on having enough local people who will help, and residents who are willing to support ambulance services. This underscores the necessity of not just creating EMS services, but also designing sustainability models and fostering a local culture and infrastructure that can sustain them over the long term.

Many local communities have been forced to create and operate ambulance services on limited budgets due to minimal support and funding at local, regional, and state levels. While significant pride exists in developing ambulance services to support their communities, the lack of additional support hampers their ability to meet growing demands and develop regional approaches.

In the 1980s, economist Jack Stout proposed a pioneering approach to sustainable EMS systems. Given the limited funding available for EMS, Stout introduced the concept of a Public Utility Model (PUM) for delivering EMS services. This model aimed to establish accountable, efficient, and reliable systems that delivered advanced quality care.

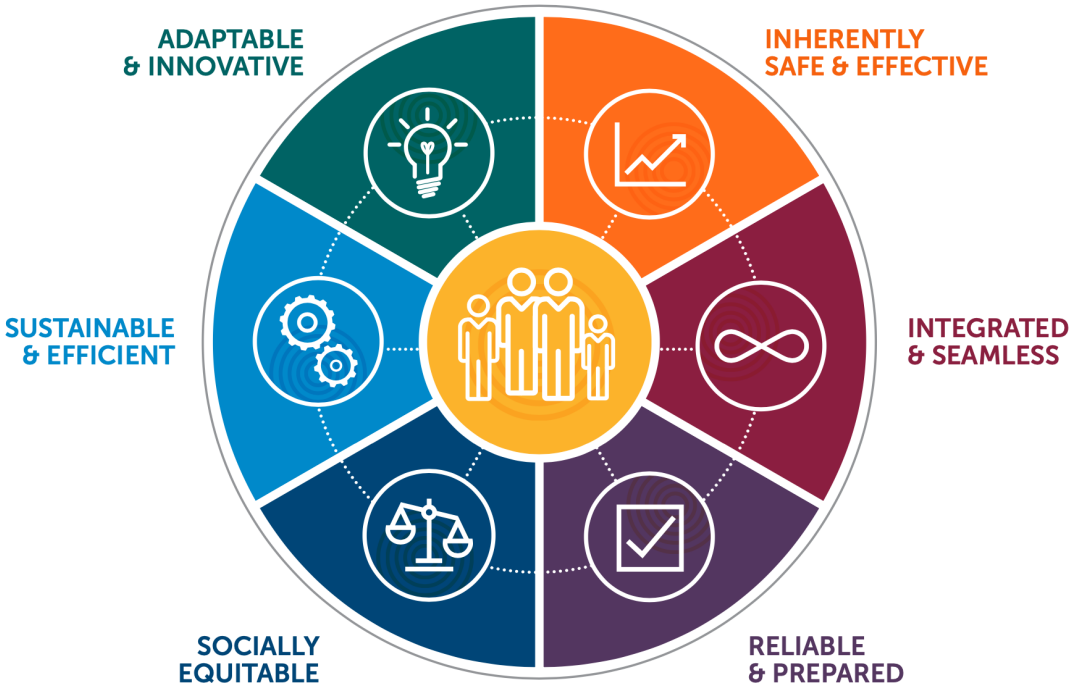
Drawing inspiration from the funding and delivery of utility services like water, electricity, and gas, as well as quasi-governmental entities and public trusts, Stout's model emphasized regional planning and resource efficiency. Stout contended that when effectively applied, the PUM strategy could provide stable, clinically sound prehospital care, achieving an economic efficiency that ensured long-term sustainability and delivered appropriate value to the communities served. PUMs were recognized as "high-performance systems" that continuously monitored the system's status or needs, deploying EMS resources accordingly.[11]

While the public utility model has seen varying degrees of success, Stout's work continues to shape EMS delivery today. It underscores the need to understand EMS as a complex system with significant costs. Addressing these costs necessitates careful planning, a regional approach, adequate funding, and stringent oversight to ensure reliable, accountable, high-quality, and sustainable EMS services.

Since the 1980s, EMS has continued to evolve, despite a lack of regional development and planning. A variety of delivery systems have emerged in Colorado and across the nation. As a business and industry, EMS has undergone several periods of consolidation.

Federal efforts have focused on the attempt to create guiding visions for EMS and data collection. The 1996 Department of Transportation's *EMS Agenda for the Future* emphasized the enhancement of EMS clinical care and its integration into broader healthcare and prevention efforts. In 2019, the *EMS Agenda 2050* project calls for a future where EMS is inherently safe and effective, seamlessly integrated, reliable and prepared, socially equitable, sustainable and efficient, and adaptable and innovative. This comprehensive national report also advocates for the recognition and support of EMS as an 'essential service' in communities nationwide.

[11]Stout J. The public utility model, Part I: Measuring your system. *Journal of Emergency Medical Services*. 6(3):22–25, 1980.



Aligned with these initiatives, the National Highway Safety Administration (NHTSA) Office of EMS has significantly invested in standardizing data collection from EMS agencies through the National Emergency Medical Services Information System (NEMSIS). NEMSIS has evolved into the national system used to collate, store, and disseminate EMS data from agencies across the nation, thereby facilitating the creation of a National EMS Data Repository. It's noteworthy to mention that Colorado's EMTS Data team is widely recognized and respected nationally as leaders in EMS data collection and analysis, further adding to the credibility of the initiatives.

While clinical care continues to advance and become refined and focused, EMS has become integral to systems of care for trauma, cardiac care, and strokes. Slowly, new innovative concepts such as community paramedicine and mobile integrated health are deepening EMS's integration into healthcare. These advances have led to the public coming to expect and rely on EMS, no matter where one might be.

In 2006, the National Academy of Sciences' Institutes of Medicine released a comprehensive evaluation of EMS in the United States, titled *Emergency Medical Services at the Crossroads*. This stark report presented an array of persistent challenges related to workforce, funding, sustainability, collaboration, and planning. It described the nation's EMS as 'highly fragmented,' battling significant issues that were difficult to resolve due to this fragmentation:

> EMS operates at the intersection of health care, public health, and public safety and therefore has overlapping roles and responsibilities. Often, local EMS systems are not well integrated with any of these groups and therefore they receive inadequate support from each of them. As a result, EMS has a foot in many doors but no clear home.[12]

[12] Emergency Medical Services At the Crossroads. 2007. Institute of Medicine of the National Academies. The National Academies Press. p. 29.

Throughout the intermountain states, Great Plains, and much of rural America, EMS remains a patchwork of local agencies, many of which are revealing signs of strain and unsustainability. This lack of sustainability is directly related to five important developmental areas:

1. The Development of EMS without Broad System Planning

While EMS is often referred to as a system, its growth and operations have largely lacked a strategic approach. Resources are inefficiently deployed, with placement and quantity seldom being determined by necessity. Despite prior attempts to establish a true statewide plan for the coordination and provision of EMS in Colorado, the plans were not implemented due to a lack of finances or political will. This has contributed to the sustainability issues faced by many EMS agencies in Colorado today.

2. Leadership and Positioning of EMS

EMS representation and oversight within the federal and state governments have struggled to find positioning that complements its mission. This impacts its ability to garner the attention and leadership needed to create long-term sustainability.

3. Funding

EMS has historically been viewed as both a service and a business, with substantial revenue reliance on billing for medical transportation rather than healthcare service delivery. This perspective has consistently undermined EMS funding. The sector's dependence on low-wage and volunteer labor conceals expenses, creating a gap between the true service value and the public's comprehension of EMS's need for essential service funding. Currently, neither state nor federal levels recognize EMS as a healthcare benefit, which undermines appropriate compensation for 911, community paramedic, and non-transport care.

4. Clinical Advancement without Compensatory Resources

From the beginning of modern EMS, a great emphasis has been placed on clinical care. Over the years, clinical care has continued to advance with providers being asked to deliver advanced levels of care and learn more, do more, and become more clinically accountable. But often these advances have come without the necessary compensatory resources and support to sustain them. Furthermore, advancements in clinical care must have appropriate consumer protection through quality management and high-quality medical direction which is not considered in the overall compensation of EMS to support these roles.

5. Workforce Development

The historical evolution of EMS has resulted in a climate where the welfare and experiences of EMS providers have frequently been overlooked. In the past, providers often made severe personal sacrifices, compromising their health, family life, and career progression to ensure the availability of EMS services. Other professions such as nursing, law enforcement, and firefighting have witnessed significant labor movements in the 20th century, which led society to acknowledge their value and enhance their working

conditions. In contrast, EMS hasn't experienced a comparable movement. As a consequence, numerous EMS providers have served for decades with meager compensation, no retirement benefits, and opaque career advancement pathways.

Volunteerism within EMS has notably declined compared to the past, further intensifying the issues faced by the EMS workforce. Today's workforce yearns for a sustainable work-life balance that fosters their personal and professional growth. They aspire to be part of a system that appreciates their contribution, provides adequate compensation and benefits, and presents opportunities for career development. Regrettably, Colorado's existing EMS system isn't structured to fulfill these expectations, leading to escalating concerns about the recruitment and retention of EMS providers.

Furthermore, it's important to acknowledge the evolving societal perceptions of medical service careers, particularly within the EMS sector. Historically, roles in the medical field, and EMS specifically, were revered as badges of honor, seen as noble and rewarding endeavors. These positions carried a heroic acclaim, a testament to the selfless service provided by these professionals. However, notably in the aftermath of the pandemic, the prestige and honor typically linked to serving as a medical professional, especially within EMS, have been significantly eroded. In Colorado specifically, the EMS sector has come under increasing scrutiny. This societal shift, combined with low wages and the high potential for stress and trauma, has rendered recruitment and retention an even more challenging task.

Despite the hurdles and obstacles, local communities in Colorado have shown exceptional resilience in establishing and maintaining access to ambulances and emergency medical services. Nevertheless, contemporary realities have brought about significant changes, rendering many historic models for providing ambulance services no longer sustainable. As a result, the EMS system in Colorado is facing challenges related to funding, lack of systems support, and appropriate expectations for the new generation of EMS professionals. Additionally, there has been a decline in volunteerism, which is further compounded by the unprecedented growth in the state's population and tourism.

Colorado's EMS system, much like those across the nation, evolved organically, with each community independently paving its way, resulting in an inconsistent and fragmented environment. While this decentralized approach may have been the only feasible solution for addressing localized needs in the past, it's currently posing challenges in building a cohesive, sustainable, and reliable statewide EMS system.

This localized method of EMS development is also deeply embedded in Colorado's structure of local governance and administration. Scheduled for a transition in July 2024, Colorado is the last state where ambulance services are licensed and regulated at the county level. This has culminated in a patchwork system with considerable variation in operational methods and standards across counties. Current endeavors are geared towards consolidating 64 county-based ground ambulance regulations into a singular statewide ground ambulance licensing model.

The state's financial support for EMS has also seen changes over the years. After the Congressional Omnibus funding bill was implemented in the early 1980s, Colorado lost the primary federal funding for EMS system development. In response, the Colorado General Assembly approved a $1 fee to be added to each Motor Vehicle Registration in 1989. This fee was used to fund the state EMS office, with at least 60% of the funds used for provider grants to support local EMS.

In 2000, the Regional Emergency Medical and Trauma Services Advisory Councils (RETACs) were founded, financed by a segment of this $1 fee. This reintroduced the regional approach to EMS. However, it's crucial to understand that by statute, RETACs function primarily as advisory bodies. They lack the resources or legislative authority to ensure the dependability, resilience, and sustainability of EMS within each region.

Furthermore, the jurisdictional borders of many of Colorado's EMS agencies do not align neatly with individual county jurisdictions. In fact, many agencies cover portions of multiple jurisdictions. This adds a layer of complexity to the implementation and coordination of EMS services across the state, further highlighting the limitations and challenges faced by the RETACs.

In 2009, due to the erosion of purchasing power and inflation, the $1 motor vehicle fee was doubled to $2. However, this fee, which has not changed since then, is once again being negatively affected by persistent inflation and escalating demands. The EMS fee forms a part of the wider Highway Users Tax Fund (HUTF), a fund that has often been at the center of political controversy in the state legislature over the years.

In 2018, the Colorado Department of Revenue concluded that the fee - which had been levied for over two decades - did not apply to non-motorized registrations, such as trailers. This resulted in an abrupt annual reduction of the EMS Account funding by $2 million beginning in 2019. Furthermore, the rise in the number of motorized vehicles in Colorado does not correspond to the increase in EMS call volumes and requirements across the state, thereby jeopardizing the financial stability of the system. Moreover, the massive influx of tourists in Colorado, which adds pressure on EMS services, is not accounted for in the HUTF fees.

In a pivotal move, Governor Polis signed the "Ambulance Service Sustainability and State Licensing" bill (SB 22-225) into law on June 1, 2022. This legislation not only shifted the licensing of ambulance agencies to the state, effective from July 1, 2024, but it also initiated a five-phase, five-year project that included the formation of an EMS System Sustainability Task Force.

Today, Colorado stands at a pivotal crossroads. The state is grappling with the challenge of transitioning from a patchwork of individual, community-based EMS systems to a more integrated, effective, and sustainable statewide model. While the path forward is complex, the devotion and commitment demonstrated by local communities in establishing their EMS systems provide a sturdy foundation for this evolution. The aim is to create a system that provides reliable, high-quality EMS services to all Colorado residents, regardless of their location, and ensures its sustainability for future generations.

EMS in Colorado Today

Overview

Colorado is renowned for its diverse geography and stunning landscapes. It spans approximately 104,094 square miles, making it the eighth largest state in the United States. With a population exceeding 5.7 million residents, Colorado ranks as the 21st most populous state in the nation. The state's attractiveness for outdoor activities and commerce drew 86.9 million visitors in 2019,[13] and preliminary 2022 data is indicating a record number of visitors are coming to Colorado.[14]

The state's diverse geography, ranging from alpine environments to arid plains, presents both challenges and opportunities for healthcare delivery. Population density varies significantly across the state, with Hinsdale County in western Colorado having less than one person per square mile, while El Paso County on the front range I-25 corridor boasts 4,674 persons per square mile. The distribution of population across urban centers, suburban areas, and rural communities, along with the rugged terrain, influences access to healthcare services and emergency medical care throughout the State.

Colorado's out-of-hospital emergency medical response and transportation services are provided by a diverse array of resources, providers, call centers, responder organizations, transport entities, educators, leaders, medical directors, healthcare systems, regulators, and funders. While these individual components address immediate needs, they often fail to integrate effectively, resulting in a lack of "a coordinated and seamless system of emergency medical care." [15] This absence of centralized planning and coordination leads to significant variations in access to services across the state.

EMS response, care, and transportation in Colorado involve a complex network of entities. Approximately 83 separate Public Safety Answering Points (PSAPs) and an unknown number of secondary dispatch centers handle emergency calls. Over 200 ground transport agencies, 31 air medical services, and more than 240[16] non-licensed non-transporting first response and rescue agencies play crucial roles in providing assistance. Colorado has over 20,000 certified and licensed EMS personnel spread across 11 EMS regions. In FY 2022, these dedicated individuals and services responded to more than 750,000 calls and transported over 482,000 patients. Among the cases, approximately 20% were trauma-related, while 72% were medical emergencies. Additionally, interfacility transfers (the transfer of a patient from one licensed medical facility to another licensed medical facility) accounted for 32% of total transports, totaling 154,590.

Statewide emergency response for EMS is generally facilitated through an enhanced E911 call system, however the Task Force identified that some communities in Colorado may still be reliant on older technology or non-standardized approaches. In communities with E911, calls are answered by Public Safety Answering Points (PSAPs) and dispatched accordingly, either through the PSAP or secondary dispatch centers. The response varies based on location, available resources, and the nature of the call. It may involve a tiered approach with basic life support (BLS) and/or advanced life support (ALS) clinical levels of non-transporting and transporting services responding. Patients receive assessment, treatment, and transportation to one of the more than 100 hospitals located across the state.

---

[13] Colorado Office of Economic Development & International Trade (2023). https://oedit.colorado.gov/about/oedit-reports#ctoresearch

[14] Denver's Convention and Visitors Bureau reported a record high of 36.3 million visitors in 2022, surpassing all historic tourism totals by a large margin. https://www.prnewswire.com/news-releases/denver-tourism-surges-to-a-record-36m-visitors-in-2022-301857189.html#:~:text=Denver%20welcomed%2036.3%20million%20total,13%20percent%20increase%20over%202021

[15] National Highway Traffic Safety Administration, Office of Emergency Medical Services. (2021). *What is EMS?* NHTSA.gov. https://www.ems.gov/whatisems.html.

[16] Non-licensed, non-transport agencies provide an essential element of EMS care in Colorado, however they are not regulated by the state or counties. The Task Force SMEs estimated the number of these entities to be at least 240, but the actual number is unknown.

Colorado's hospitals operate below the national average in terms of healthcare capacity, offering 1.9 hospital beds per 1,000 residents as compared to the national average of 2.4.[17] Notably, 13 out of Colorado's 64 counties lack a hospital, which adds complexity to healthcare provision in those regions. The state has over 123 licensed facilities capable of receiving ambulance patients, including hospitals and freestanding emergency departments. Among these facilities, 85 have trauma center designations ranging from Level I to V. However, over half of Colorado's hospitals are located in urban areas, with the remaining facilities scattered across the state's rural regions. Although Colorado possesses a comprehensive hospital and trauma system, it heavily relies on EMS for the provision of high-acuity, long-distance Interfacility Transfers (IFTs).

Trauma Center Designation		
Number of Hospitals	**ACS Trauma Level**	**Description**
7	I	Provides the highest level of surgical care to trauma patients. It has a full range of specialists and equipment available 24 hours a day and admits a minimum required annual volume of severely injured patients. Also involved in prevention, research, and education efforts.
12	II	Provides comprehensive trauma care and supplements the clinical expertise of a Level I institution. It provides 24-hour availability of all essential specialties, personnel, and equipment but does not have the same research and education requirements.
26	III	Provides assessment, resuscitation, emergency surgery, and stabilization of trauma patients and if needed, referral to a higher level trauma center. It has 24-hour immediate coverage by emergency medicine doctors and the prompt availability of general surgeons and anesthesiologists.
36	IV	Provides advanced trauma life support (ATLS) before transfer to a higher level trauma center. It has 24-hour coverage by doctors and nurses trained in trauma care and provides evaluation, stabilization, and diagnostic capabilities.
4	V	Provides initial evaluation, stabilization, diagnostic capabilities, and transfer to a higher level of care. It may not have 24-hour availability of surgeons but must have after-hours protocols if not staffed 24 hours a day.

Colorado also has 32 hospitals designated as Critical Access Hospitals (CAHs) by the Centers for Medicare & Medicaid Services (CMS). To qualify for this designation, rural hospitals must have 25 or fewer inpatient beds and be located more than 35 miles away from another hospital. The purpose of the CAH designation is to provide financial support to vulnerable rural hospitals and improve healthcare accessibility by maintaining essential services in rural communities. In the State, 12 of these CAH facilities also operate ambulance services. However, it's important to note that CAH funding is not

[17] Community hospital beds and average annual percent change, by state: United States https://www.cdc.gov/nchs/data/hus/2019/043-508.pdf

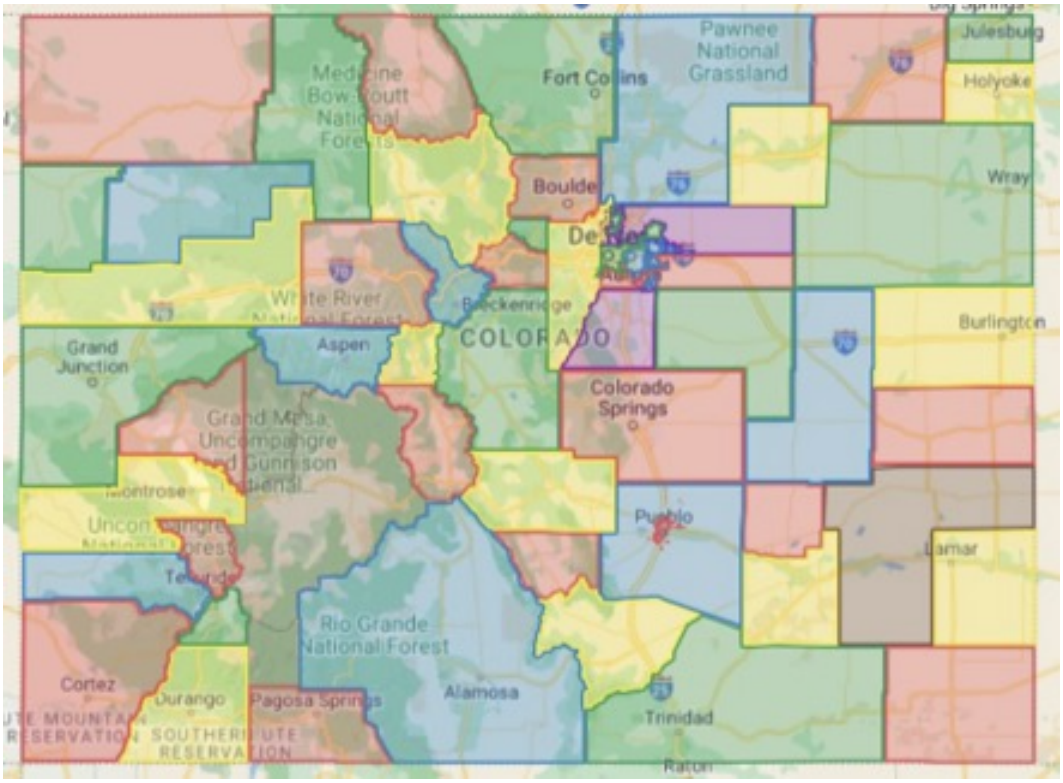
intended to assist in the development of an interfacility transport system. As a result, many hospitals, including larger urban hospitals, still rely on local EMS services for interfacility transfers (IFTs).

The regulation of EMS in Colorado falls under the purview of the Colorado Department of Public Health and Environment (Department) and its Emergency Medical and Trauma Services Branch (referred to as the Branch). Additionally, ambulance services are currently licensed by the 64 counties in the state. Several professional associations provide support and advocacy for EMS in Colorado, including the Emergency Medical Services Association of Colorado, the Colorado EMS Educators Association, National Association of EMS Physicians Colorado Chapter, American College of Emergency Physicians Colorado Chapter, the Colorado State Fire Chiefs Association, and the Colorado Professional Fire Fighters.

Access, Call-Taking, and Dispatch

Call-taking, dispatch, and communication duties are performed by at least 83 primary Public Safety Answering Points (PSAPs) and an indeterminate number of secondary dispatch centers, with some staffed by trained and certified emergency medical dispatchers. The Colorado Public Utilities Commission oversees the regulation of Basic Emergency Service, as stated in § 40-15-201, C.R.S. This service is defined as the aggregation and transportation of a 911 call to a designated point with a governing body or PSAP, regardless of the technology used. It also includes the collection of calls from one or more OSPs or IASPs for the purpose of selectively routing and transporting 911 calls directly to a governing body or PSAP, as well as the provision of location information (4 CCR 723-2-2131 (i)).

Colorado 911 PSAP Collection Areas



Local Agencies

With over 200 ground ambulance agencies, Colorado has a complex EMS landscape, currently regulated at the county level until July 1, 2024. Each county sets its unique licensure prerequisites. A significant proportion of Colorado's EMS agencies are strategically located along the densely populated I-25 corridor, stretching from Fort Collins through Denver and Colorado Springs to Pueblo. However, it's worth noting that 63% of all ground ambulance agencies in Colorado respond to less than 1000 calls per year, with 48% handling fewer than 500 calls annually. Industry research indicates that each Advanced Life Support (ALS) unit requires more than 1,400 annual transports to potentially reach the break-even point based on billing.[18]

Ground Ambulance Agency Volume	
% of Ground Ambulance Agencies	**Annual Responses**
26%	<100
22%	100-499
15%	500-999
14%	1,000 - 2,499
6%	5,000 - 9,999
8%	>10,000

The relatively lower call volume for some ground ambulance agencies can be attributed to a variety of factors. Primary factors are geography and population density- frontier and rural communities necessitate nearby ambulance services to ensure a prompt response, given the considerable distances. Yet, there's another critical aspect rooted in the organic evolution of local ambulance services. Over the years, these services, born out of community initiatives, have often remained independent, resisting consolidation into larger regional systems. A contrast is observable in the integration witnessed in areas like South Metro and Eagle County, compared to some local ambulance services that have persevered with distinct operations despite low call volumes. While such an approach is community-centric, it potentially hinders efficiencies and economies of scale that might be realized through consolidation or regional coordination.

Ground ambulance agencies in Colorado exhibit a variety of management and organizational structures, incorporating non-profit, for-profit, special district, municipal, tribal, and county-owned entities. Additionally, these services span diverse sectors, including fire-based, hospital-based, governmental, and private.

Staffing in Colorado's ambulance agencies is similarly diverse. Around 50% of agencies employ solely paid staff, whereas 37% utilize a mix of volunteers and paid personnel. The remaining 13% rely entirely on volunteer staffing.

In addition to ground ambulance agencies, Colorado also relies upon a network of non-transport EMS agencies. The number of non-transporting EMS agencies is not known, but could surpass 240, encompassing various organizations like first responder groups, event medical teams, fire departments, ski patrols, and search and rescue teams. However, as these agencies aren't under the regulatory purview of the Department, they often have minimal agency-level EMS regulation. Consequently, comprehensive information regarding their operations, including care levels, provided services, personnel count, and

[18] Used by SafeTech Solutions, LLP, a national EMS consulting firm in its EMS assessment work.

response statistics, is currently lacking. Although these agencies are essential components of Colorado's EMS landscape, assessing their impact, needs, and health proves challenging due to the absence of statewide data.

Aeromedical Resources

Colorado has 31 licensed air ambulance services, encompassing both rotor-wing and fixed-wing operations. Among these, 21 are licensed by the state, while an additional 10 are recognized by Colorado but hold licenses issued by other jurisdictions. The state's role includes licensing and regulating these air ambulance services, while also acknowledging services from other states that operate within Colorado.

A state-licensed air ambulance service maintains a fixed base of operations in Colorado or frequently initiates patient transports within the state. Recognized air ambulance services are licensed in states other than Colorado and begin patient transports in Colorado 12 or fewer times per year. If an air ambulance service is licensed in a different jurisdiction and only transports patients from outside Colorado to a healthcare facility within the state, there is no requirement for the service to be licensed in Colorado.

Air ambulance services serve a vital role in Colorado's EMS infrastructure, transporting and treating approximately 10,000 patients annually. They provide rapid and potentially life-saving transport to patients across the state's diverse geographic landscape. However, it's worth mentioning that due to certain geographical and weather constraints, air ambulance transport may not always be feasible, leading to long-distance overland patient transfers conducted by ground ambulance services in many situations.

Workforce

The EMS workforce plays a crucial role in Colorado's EMS system, and these providers undertake extraordinary work in demanding conditions. They offer first response, medical treatment, and patient transport across a wide range of challenging environments, including extreme weather conditions, bustling urban areas, expansive suburban regions, remote farm and ranch areas, and rugged terrains. Their dedication is instrumental in saving lives and ensuring prompt medical attention for those in need.

Currently, Colorado has over 20,000 licensed or certified EMS personnel. Additionally, there are 378 emergency medical responders (EMRs) who are not required to become registered and overseen by the Department but may do so in order to hold themselves out as Colorado-registered emergency medical responders.

The Branch is responsible for certifying and licensing EMS providers in Colorado. To become certified or licensed, individuals must first obtain certification from the National Registry of Emergency Medical Technicians (NREMT) at the appropriate level. Additionally, they are required to undergo a fingerprint-based criminal history record check through national and state criminal justice databases. Furthermore, they must possess training credentials specific to their certification or license level, which may include certifications in CPR (Cardiopulmonary Resuscitation), ACLS (Advanced Cardiovascular Life Support), and other relevant skills and knowledge necessary for their respective roles. This rigorous process ensures that EMS providers meet the necessary qualifications and standards to deliver competent and effective emergency medical care in the state.

EMS providers who have completed a bachelor's degree in a healthcare or related field are issued a license rather than certification. Regardless of certification or licensing, all providers must renew their credentials every three years and either maintain certification with the NREMT or fulfill state requirements for continuing education, reinforcing their commitment to continuous professional development.

EMS providers can only practice under the guidance of a physician EMS medical director. Additionally, they may have the opportunity to work in other healthcare facilities as permitted by those facilities. Paramedics have the option to receive endorsements as critical care paramedics and/or community paramedics by meeting the specific requirements for these endorsements.

Overall, the certification and licensing process ensures that all EMS providers in Colorado meet high standards and are equipped to provide competent and quality care to those in need.

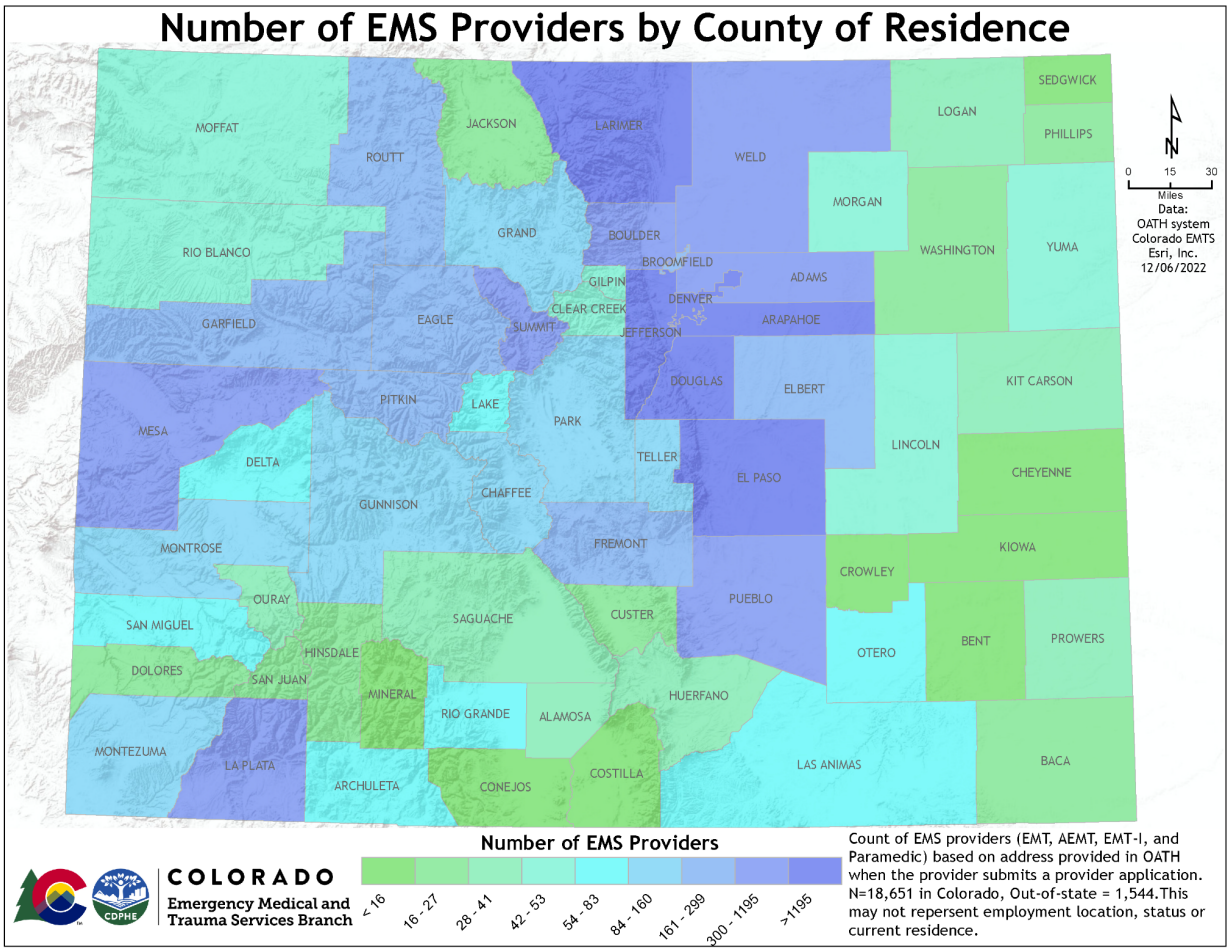
Current data from the Branch shows the following EMS personnel numbers statewide:

Colorado's EMS Workforce[19]		
Emergency Medical Responders (Registered)[20]		415
Emergency Medical Technician[21]		14,521
Advanced EMT		432
EMT-Intermediate		287
Paramedic		5,604
- Critical care (CC) endorsed paramedics	573	
- Community paramedic (CP) endorsed paramedics	45	
- CC and CP endorsed paramedics	30	
Total licensed or certified		**20,844**

[19] 2023 Q3 EMTS Branch Report

[20] EMR registration with the Department is voluntary. The total EMR workforce is unknown.

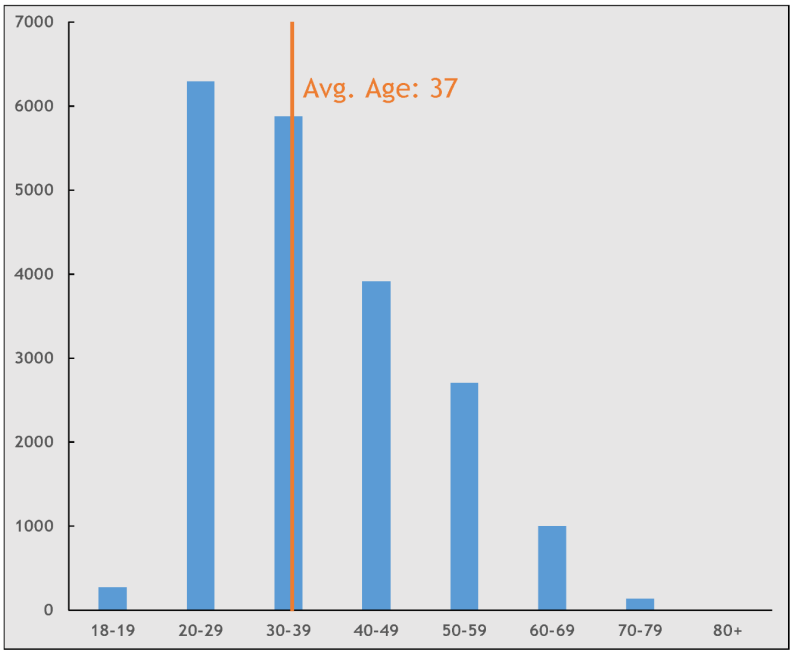
[21] Colorado also has an expanded scope EMT, the EMT-IV. This level is not certified or licensed by the Department and the total number of providers is unknown.



Beyond certifying and licensing EMS providers, and performing oversight work, like responding to complaints against EMS providers and taking necessary administrative enforcement action, the Branch does not track where or whether certified or licensed providers actively practice. The number of personnel actively engaged in the EMS workforce is unknown. However, in linking certified or licensed personnel employers with Colorado Labor and Wage data, it appears that 34% of EMS providers are employed by EMS-specific agencies, 22% by governmental employers (these may include government operated EMS or fire department agencies), 19% by non-healthcare organizations, 15% by hospitals, 7% by other healthcare organizations, and 3% by educational organizations.

Workforce data provides information about the ages of EMS providers (as depicted in the chart below), but much remains unknown about the diversity of the workforce. Equally, data is scarce regarding EMS personnel's work hours, employers, reasons for choosing or leaving EMS, or what makes an employment offer attractive to them. Moreover, affordable housing has emerged as a significant issue affecting the recruitment and retention of EMS personnel. While reports suggest a decline in volunteerism and agencies are experiencing challenges in recruitment and retention, there is currently no comprehensive and consistent method of investigating and understanding workforce needs.

Certified / Licensed EMS Providers and Their Age (2022)



Certifcation/License Level	Average Age
EMT	36
Advanced EMT	38
EMT-Intermediate	49
Paramedic	41
Paramedic with Critical Care Endorsement	36
Paramedic with Community Paramedic Endorsement	47
Paramedic with Critical Care Endorsement & Community Paramedic Endorsement	37

[1] EMS providers certified or licensed in Colorado as of 12/7/2022. (N=20,194)

Page 1 Prepared by EMTS Data Section Data Extracted: 12/5/2022

The Human Resources Workgroup of the Colorado EMS System Sustainability Task Force identified several critical issues affecting the EMS workforce in the State including access to education, the cost of education, lack of career ladders, poor leadership, poor organizational culture, long-distance interfacility transfers, aging populations, and housing costs and shortages as all impacting Colorado's EMS workforce. They identified that both rural and urban EMS have unique challenges that require improved efforts across all regions to support mental wellbeing. Improved efforts across all regions are necessary to address mental health and well-being, as EMS providers face unique stressors and traumas in their line of work. Providing access to evidence-based wellness programs and establishing peer support teams can be crucial in helping EMS providers cope with the emotional and psychological demands of their roles.

Presently, the fundamental data required for accurate workforce planning remains unknown. This includes not only the number and certification levels of EMS providers necessary to fill the gap, but also the current supply of providers. The gap between the needs and the existing supply, as well as the turnover and pipeline requirements for new workers, remain largely unclear. Therefore, it's challenging to determine the total number of EMS personnel needed to fully staff Colorado's EMS system. Additional analysis will be required to fully understand the true workforce requirements.

EMS Education

EMS education programs offered across a variety of settings throughout Colorado facilitate the growth, education, and training of EMS providers. These programs are hosted by diverse entities such as agencies, higher education institutions, schools, hospitals, healthcare organizations, public safety and fire agencies, as well as independent educational businesses. The Branch authorizes programs that offer initial education, as well as education groups providing continuing education. Technical support is provided to these programs, and as of 2022, there were 216 recognized education programs operating in the state. Among them, Colorado has 35 programs approved to provide initial Emergency Medical Technicians (EMT) education, and 10 accredited Paramedic education programs.

However, despite the overall success of these programs, the Task Force has identified several challenges concerning access and accessibility, particularly for potential students in rural and frontier regions of Colorado. As explored in greater detail later in this report, financial barriers persist, and while the availability of hybrid education options has increased, travel requirements for clinical education still pose significant obstacles for many potential EMS students.

From January 2020 through December 2022, out of 35 EMT programs with candidates participating in the national certification exam, (a requirement for State certification or licensure), 25 of Colorado's educational programs met the criteria for being classified as a "High Performing Program."[22] Similarly, out of the 10 Paramedic programs with candidates taking the NREMT Paramedic national certification exam, seven programs met the criteria for being classified as a "High Performing Program." Even the program with the lowest pass rate achieved an impressive 80% success rate.

In Colorado, the success of EMS education is largely due to a program-centric approach. Unlike many states, Colorado does not individually certify or license EMS instructors. Instead, the State EMS Office concentrates its technical assistance and resources on the educational programs responsible for delivering EMS instruction. Like other professions, these programs are trusted and empowered to select the appropriate subject matter experts for instruction. This method guarantees consistent standards and the delivery of high-quality education throughout the state.

Table: NREMT Cognitive Exam Performance				
National Cumulative Pass Rate (2022)			**Colorado Cumulative Pass Rate (2022)**	
EMT	77%		EMT	86%
AEMT	69%		AEMT	78%
Paramedic	84%		Paramedic	96%

**Data report provided by NREMT.org "Pass/Fail Report"; data for the prior 24 months will change as candidates test. Updated 7/1/2023.

[22] A "High Performing Program" refers to a program with a pass rate higher than the national average during the same period.

Clinical Care

In Colorado, the scope of practice for EMS providers defines the clinical care and medications, known as medical acts, they are authorized to perform and administer (6 CCR 1015-3). This scope of practice is determined based on the provider's certification or license level, education, training, and approval from their EMS medical director. Chapter Two of State rules sets a ceiling for provider scope of practice unless a medical director applies for a waiver to advance care further. EMS providers undergo comprehensive training to develop skills in conducting accurate field assessments, identifying potential causes of a patient's condition, providing appropriate interventions, and making decisions regarding hospital destinations.

The specific scope of practice for EMS providers in Colorado is outlined in Chapter Two of the State's EMS rules (6 CCR 1015-3), which are adopted by the Department's Chief Medical Officer. These rules align with the guidelines developed by NHTSA's Office of EMS, including the National EMS Scope of Practice Model and the National EMS Education Standards. The National EMS Scope of Practice Model serves as the basis for the certification process conducted by the NREMT for EMTs, AEMTs, and paramedics. NREMT certification is required to be initially certified in Colorado.

EMS providers in Colorado, although individually certified or licensed and accountable for their medical care provision and decision-making, do not possess the same independent practice authority that physicians and some advanced practice providers enjoy. Hence, EMS providers are mandated to operate under the supervision of a Colorado licensed physician. This stipulation applies to both ambulance agencies and non-transport agencies that employ or utilize EMS providers at the EMT and higher levels. Each of these agencies must have a physician EMS medical director who is integral in overseeing the medical care provided by the agency and its personnel.

Physician Delegated Practice vs EMS Personnel Scope of Practice
It is crucial to understand the nuanced distinction between 'physician delegated practice' and the functioning of certified and licensed EMS providers. Physician delegated practice, which is permissible under the medical board rules, refers to a physician's ability to delegate certain tasks to another medical professional under their supervision. This delegated individual operates under the physician's authority and is not independently accountable for their practice. Contrastingly, EMS providers, while operating within a defined scope of practice, are individually licensed or certified. They carry individual responsibility for the care they provide, even though they do not have the same level of independent practice as physicians. They practice under the supervision of a physician, but their care provision is not considered 'physician delegated practice'. This key distinction underscores the unique role of EMS providers in the healthcare system.

EMS medical directors play a crucial role in ensuring the quality and safety of the care provided by EMS. Their responsibilities encompass a wide range of tasks, including establishing medical continuous quality improvement (CQI) programs for the EMS agencies they oversee, monitoring and supervising EMS providers on their clinical care and field performance, ensuring the appropriateness of protocols based on provider certifications, licenses, and skill levels, and ensuring compliance with accepted standards of medical practice. Moreover, medical directors need to possess a comprehensive understanding of EMS education, training, knowledge, and skills to ensure that providers receive proper training and consistently demonstrate knowledge and skills competency.

Colorado regulations do not stipulate specific education or training requirements for EMS medical directors. Neither the Department nor the Branch holds authority over medical directors. The ultimate authority over medical directors lies with the Colorado Medical Board, which is responsible for regulating the practice of medicine and issuing physician licenses. To serve as a medical director, a physician must maintain a current medical license in good standing, actively engage in the provision of EMS in the community served by the EMS agency they oversee, maintain regular involvement with the EMS agency, and receive training in Advanced Cardiac Life Support.

Since 2013, physicians certified by the American Board of Emergency Medicine and American Osteopathic Board of Emergency Medicine may attain subspecialty certification in EMS by meeting eligibility criteria, fulfilling specific credential requirements, and passing the EMS Certification Examination. This EMS board certification for eligible medical directors represents the highest standard of EMS medical direction.

The Colorado Medical Board, apart from licensing physicians, also investigates potential violations of standards of conduct as outlined in the Colorado Medical Practice Act. In such instances, the Board holds the authority to discipline physicians, which may include the suspension or revocation of their medical licenses.

The scope of practice for EMS providers in Colorado is explicitly outlined in administrative regulations. While physician medical directors may limit the scope of practice for any EMS provider, the scope of practice cannot be expanded by medical directors. Only the Chief Medical Officer for the Department has the authority to grant waivers to these administrative regulations, thereby enabling modifications, expansions, or updates to accommodate specific locations, unique conditions, or advancements not yet included in the established scope of practice. Historically, this adaptability in adjusting the scope of practice has been particularly beneficial in rural areas, where maintaining an adequate number of EMS providers skilled in delivering certain life-saving procedures or medications may pose a challenge. To facilitate these modifications, an active waiver application, review, and approval process is in place, currently comprising 363 active scope of practice waivers.

A waiver, authorized by the Department, represents an exception to a rule. The ability to waive scope of practice rules is specifically permitted in statute, as is the imposition of conditions on those waivers by the Department. This practice is common because a singular set of regulations cannot cover every potential circumstance that may arise in a regulatory setting. Typically, waivers to the scope of practice regulations are issued as the field of medicine evolves to incorporate procedures, practices or medications not currently within EMS providers' scopes of practice as established in rule. In these instances, a rulemaking process—which can take anywhere from six months to two years—would be required to integrate these new practices or medications into the regulations, whereas the waiver process allows for more timely response to changes in medical practice.

Waivers also play a crucial role in enabling rural EMS agencies, which may struggle to maintain a staff of advanced level providers, to perform or administer certain life-saving acts or medications. The Department's governor-appointed Emergency Medical Practice Advisory Council (EMPAC) monitors all granted waivers. If data indicates that the waived acts and medications have been safely and effectively implemented, EMPAC may recommend incorporating these "waivered" acts and medications into the providers' scopes of practice through a rule change. Past examples of waived medications subsequently adopted into scope based on EMPAC's recommendations as safe alternatives to opioids for pain management include intravenous Acetaminophen (Tylenol) for AEMT, EMT-I, and paramedic levels, and Ketorolac (Toradol) for paramedics.

When a physician medical director discerns a need for a waiver for their EMS service, the initial step involves identifying whether the waiver request is novel or pertains to a medication or procedure previously approved by the Department. In either case, the physician must apply to the department. This application details the specific medication or procedure, incorporates a literature review, justify the

medical necessity, and provide a training plan. Applications for existing waivers are reviewed independently by the Department.

For novel waiver requests, the Department forwards the request to EMPAC. EMPAC, serving as a multidisciplinary Type-2 board, is tasked with reviewing the request. Through a series of subject matter experts and public meetings, EMPAC may recommend that the department either approve or deny the requested waiver.

If EMPAC recommends approval, it also formulates a set of standard guidelines, protocols, and data surveillance to ensure the effective and safe implementation of the waiver. This methodical approach helps to ensure that any waivers granted align with the goal of providing the highest quality care to patients in all situations.

While EMPAC's recommendation plays a crucial role in the decision-making process, the ultimate authority to grant or deny a waiver request rests with the Chief Medical Officer of the Department. This ensures a final layer of medical review and oversight, underlining the commitment to maintain the highest standards of patient care throughout the state.

Community Paramedicine

In Colorado, paramedics have the opportunity to attain a Community Paramedic (P-CP) endorsement, allowing them to perform an expanded scope of medical practices under the license of a Community Integrated Health Care Service Agency (CIHCS). The setting and services provided by CIHCS are stipulated in C.R.S. 25-3.5-1301, and licensing rules are provided in 6 CCR 1011-3. The specific scope of practice for Community Paramedics is outlined in Section 17 of 6 CCR 1015-3, Chapter Two - Rules Pertaining to EMS Practice and Medical Director Oversight.

Beginning January 1, 2018, CIHCS-licensed agencies have been granted permission to deliver certain out-of-hospital services to patients in their homes. These services primarily target 'gap' patients who are ineligible for home care or hospice services and have limited access to medical resources, thus relying on the emergency medical response system for non-emergent or non-medical aid. A variety of entities are eligible for this license, including licensed ambulance services, municipal fire departments, health service districts, and private corporations. Regardless of holding any other type of health facility license, these CIHCS agencies are obliged to ensure their personnel strictly adhere to their respective certification, licensure, or registration limits.

It is mandatory for each CIHCS agency to assign a medical director, and in cases where the agency employs community paramedics with a P-CP endorsement, the medical director must be a physician licensed in Colorado. These endorsed community paramedics are authorized to deliver a broad range of out-of-hospital medical services, such as initial and subsequent patient assessments, approved medical interventions, care coordination, resource navigation, patient education, medication inventory management and review, laboratory and diagnostic data collection, and other approved tasks.

EMS providers without a P-CP endorsement can offer non-medical, non-emergent services like driving and contributing to the Community Assistance Referral and Education Services (CARES) program. However, their functions do not include the comprehensive healthcare services rendered by community paramedics.

Looking ahead, it is crucial to note that legislation governing CIHCS, specifically C.R.S. 23-3.5-1307, is scheduled for repeal on September 1, 2025. Ahead of this repeal, a sunset review of the law will be undertaken to evaluate its efficacy, relevance, and necessity, potentially leading to its extension, amendment, or discontinuation. This forthcoming legislative review highlights the need for the Task Force to be actively involved as subject matter experts, ensuring that the future of community

paramedicine in Colorado is incorporated into the EMS system sustainability planning, model, and recommendations. The review's results could significantly alter the structure of CIHCS and the role of community paramedics within Colorado's healthcare system.

The Structure and Regulation of EMS

The current structure and regulation of EMS in Colorado is shaped by prevailing values of protecting the public, self-sufficiency, independence, autonomy, and local self-determination. Rather than systematically planned, EMS in Colorado has developed organically, without comprehensive planning to ensure the provision and long-term sustainability of equitable EMS services throughout the state.

EMS in Colorado is largely a local function. There is no State requirement or mandate that EMS be provided. Whether a community has access to EMS depends on their interest, concern, willingness to invest, economics, motivation, local leadership, perseverance of local people as well as economic factors. Whether funding for EMS is provided and sustained is also largely left to local decision-making.

The local nature of EMS in Colorado means that quality, level of services, reliability, and sustainability are determined at the community, group, or sometimes individual, level. Likewise, the power to change, improve, open, or close a service, or seek a certain level of clinical care, is determined locally. An entity, business, or organization may respond to emergencies without necessarily receiving any certification or regulation by the State, but only licensed ambulance services may transport patients.

At present, every county in Colorado maintains its unique set of ground ambulance agency licensing requirements, a factor that amplifies the decentralized character of EMS operations within the state.

Moreover, Colorado statutes empower a diverse range of jurisdictions to "organize, own, operate, control, direct, manage, contract for, or furnish ambulance services" or similar authority. These include Counties, Municipalities, Ambulance Districts, Fire Protection Districts, Health Services Districts, and Metropolitan Districts. Additionally, counties and municipalities are legislatively obligated to be part of a Regional Emergency Medical and Trauma Services Advisory Council (RETAC) and to submit a plan for EMS and Trauma services.

Despite this, while various entities possess the authority to operate and manage ambulance services, and a mandate exists to participate in advisory councils, no explicit structure of responsibility or accountability has been defined to ensure universal access to ambulance services across all Colorado jurisdictions. Thus, the provision of these critical services remains dependent on localized decision-making and resources, leading to potential gaps and disparities in coverage across the state.

To set standards for the provision of EMS and protect the public, the State of Colorado has sought to regulate EMS. The Colorado State Board of Health enacts rules governing EMS and Trauma Services, which are overseen by the Department’s Emergency Medical and Trauma Services Branch. This body not only regulates but also supports and aids the development of a robust and sustainable EMS system in Colorado.

With a staff of 22, the Emergency Medical and Trauma Services Branch is responsible for the following:

- Licensure and certification of personnel
- Enforcement of EMS standards through personnel investigations and discipline
- Licensing of air ambulance services
- Staff support for State Emergency Medical and Trauma Advisory Council(SEMTAC), Emergency Medical Practice Advisory Council (EMPAC) and the EMS System Sustainability Task Force.

- Approval of initial EMS education and continuing EMS education, which includes education site visits, administrative reviews, quality reviews, technical assistance, complaints, and investigations.
- Collection, analysis and dissemination of EMS and trauma data including patient care data, trauma organizational profile data, waiver act data.
- Coordination of the statewide trauma program including collection of trauma data, trauma center designation and regulation
- Administration of the Provider Grants program
- Issuing licensing endorsements to community paramedics (P-CPs) and providing technical assistance to CIHCS agencies
- Technical assistance, contract management and funding for Regional Emergency Medical and Trauma Services Advisory Councils (RETACs)
- Administering registration of EMS medical directors and providing technical assistance
- Monitoring and administering scope of practice waivers (currently monitoring 363 waivers)
- Monitoring and reporting on ketamine use by EMS agencies
- Coordinating, funding, and managing the peer support mental health program for EMS
- Coordinating Office of Cardiac Arrest including the cardiac arrest and AED registries, promoting public awareness of cardiac arrest, and data analysis of cardiac arrest
- Providing operational support and coordination to Office of Emergency Preparedness and Response

The Department receives guidance from two Type-2 advisory councils, both appointed by the governor, including the State Emergency Medical and Trauma Services Advisory Council (SEMTAC) and the Emergency Medical Practice Advisory Council (EMPAC).

SEMTAC is composed of 25 members and seven non-voting (ex-officio) members, who represent the interests of citizens and emergency medical service providers. This council advises the Department and the Division on developing, implementing, and improving emergency medical and trauma services throughout the state.

EMPAC consists of 11 members and two non-voting members. This council advises the Department and the Division on defining the appropriate scope of practice for EMS providers. This includes reviewing applications for waivers to the standard scope of practice and setting the criteria for physicians to serve as EMS medical directors.

EMS Data in Colorado

In Colorado, the EMTS Branch manages and maintains a sophisticated EMS data collection system. Central to the Branch's planning, implementation, and evaluation of statewide services, this system enables a comprehensive examination of various facets of patient care across the state.

The EMS data collection process involves both air and ground ambulance services submitting patient care reports to a database maintained by the Department. Adhering to the National EMS Information System (NEMSIS) Data Dictionary NHTSA Version 3.5.0, set by the National Highway Traffic Safety Administration's (NHTSA) Office of Emergency Medical Services, this process is required under Colorado administrative regulations (6 CCR 1015-3, Chapter Three). NEMSIS serves as a national data standard for collecting patient care information. It was primarily designed to enhance care through data standardization, aggregation, and utilization at the local, state, and national levels. Furthermore, it provides a platform for formal research and analysis of EMS data.

Annually, Colorado's licensed ambulance services contribute over 700,000 patient care reports, offering a wealth of data on EMS incidents. The Colorado EMS data repository leverages this data to produce comprehensive regional compliance reports, injury summaries, and benchmark reports for internal and external stakeholders. Updates to Colorado’s rules (6 CCR 1015-3, Chapter Three) in June 2022 further enhanced data quality standards and timeliness, as agencies are now required to submit patient care reports to the state repository within 48 hours. This significantly improved the state's capacity to monitor and respond to time-sensitive issues.

Data from fiscal year 2022 was extensively utilized to evaluate multiple components of the emergency medical services system, such as data submission, timeliness, and volume, as well as specific incident details including age groups, geographic areas, emergent responses, and transported medications. Additionally, analysis covered naloxone use; opioid-associated resuscitative emergencies; snow sport-related emergencies; air medical transports; use of lights and sirens responses; and cardiac arrest, trauma, and stroke events. This in-depth analysis allowed ambulance agencies to retrieve benchmark data and compare their performance to regional and statewide standards, stimulating continuous improvement in the EMS system.

However, as stipulated by § 25-3.5-704 (2)(h)(II), C.R.S., any data submitted to the Department that could identify an individual patient’s, provider’s, or facility’s care outcomes must remain strictly confidential. The confidentiality protections provided in § 25-3.5-704 (2)(h)(II), C.R.S. extend to the EMS data submitted to the Department. Administrative regulations (6 CCR 1015-3, Chapter Three) further stipulate that the Department "shall not release patient care data from the EMS data system that could reasonably be expected to identify individual patients or care outcomes that, when combined with other data, identifies an individual, provider, agency, or facility." Despite the EMTS Branch's access to extensive high-quality patient care and response data, usage limitations apply, particularly with respect to sharing care outcomes or the performance of individual EMS agencies with outside entities.

The EMTS Branch in Colorado stands out for its advanced data analysis capabilities. Supported by a committed team of data analysts and engineers, the Branch has garnered national acclaim for its EMS data collection, quality, and analytics. Notably, in 2023, Colorado was the first state to successfully transition from NEMSIS version 3.4 to 3.5, demonstrating its dedication to data analysis. Although restrictions exist on disseminating data that might reveal disparities in EMS agencies' care outcomes, the remarkable commitment to data analysis ensures ongoing improvement in EMS service quality throughout the state.

The Economics of EMS in Colorado

The economics of EMS is a complex, misunderstood, and sometimes even hidden subject. As with most places nationwide, the development of EMS in Colorado has significantly influenced the complexity of its structure and economics. In Colorado, EMS spans a variety of organizational and economic models. These include unfunded or poorly funded volunteer non-profits, private for-profit and venture capital businesses, branches of healthcare from hospitals, and local governments like special taxing districts and municipal or county departments.

Despite the diversity, one constant remains: much of the EMS in Colorado functions within an economic environment of stark contrasts. Some EMS operations are well-funded and have well-compensated personnel, while others do not. Most rural agencies face financial struggles as they transport extremely low volumes of patients to hospitals, generate low assessed values from property taxes to fund equipment and other operational costs, and rely on donated volunteer labor. For-profit EMS agencies operate on razor-thin margins, but only in areas with sufficient population density and economies of scale. Almost universally, EMS throughout Colorado is grappling with the elevated costs associated with providing services. The primary drivers of rising costs, post-pandemic, include shortages of EMS providers, increased fuel and vehicle costs, and escalating medical equipment and supply costs.

To comprehend the complexities of EMS economics, it's vital to acknowledge that EMS in Colorado is not designated or funded as an essential service.[23] Though EMS provides crucial and indispensable public services, it lacks the essential service designation enjoyed by public works, law enforcement, fire departments, public health, and public education. These sectors are considered essential services that require steady and dedicated public funding. This lack of designation significantly impacts the economic prospects of EMS, particularly within the context of fee-for-service reimbursement systems. Third-party payers often perceive EMS as a transportation benefit rather than a healthcare benefit, which adversely affects how EMS is remunerated and funded.

EMS is distinct from all other healthcare providers as its services are not denied to anyone for any reason. EMS is non-excludable; it doesn't select patients, deny care based on payor source or schedule responses based on convenience. Unlike other healthcare providers, EMS remains operational at all times, unable to compensate for financial losses through funding from other service lines. EMS fills the gap for consumers without healthcare coverage or resources and when other healthcare providers are unavailable because their practices are closed or overbooked. However, because EMS is not recognized as an essential service, areas around the state lack ambulance services, face slow response times, offer inconsistent care, and the full costs of EMS remain unpaid. Classifying EMS as an essential service, especially for payment from third-party payers, would significantly ensure that EMS costs are covered, and reliable services are maintained.

Many people assume that EMS handles a call, sends a bill, and subsequently receives a check. EMS agency administrators wish it were that straightforward. Unfortunately, the funding system is complex. Payments from third-party payers (private insurance, Medicare, Medicaid, auto insurance, and the patients themselves) are tied to an antiquated billing and reimbursement model based on transport services. EMS is only paid if a patient is transported by an ambulance to an approved facility, typically a hospital. Since EMS is categorized as a transportation benefit rather than a healthcare benefit, treatments provided on the scene (Treatment in Place or TIP), which represent about 35-45% of all calls, go uncompensated. This restriction disincentivizes ambulances from providing lower-cost, on-scene TIP services, including

[23] EMS is increasingly viewed as an essential service and common good in that EMS is expected by the public, necessary to the safety and welfare or society, and cannot be assured of readiness and equitable access and distribution without government support.

An Analysis of Prehospital Emergency Medical Services as an Essential Service and as a Public Good in Economic Theory. National Academy of Public Administration. May 2014. https://www.ems.gov/assets/Prehospital_EMS_Essential_Service_And_Public_Good-1663689363.pdf

Recognition of EMS as an Essential Public Function. NAEMT Position Statement. Revised March 2021. https://www.ems.gov/assets/ems-as-an-essential-service-revised-2-25-21.pdf

telehealth with EMS-Physician collaboration. It is neither beneficial for the patient nor the agency as it results in higher costs for both. Reimbursement strategies for ambulance services need to be updated to improve patient outcomes and satisfaction and reduce costs.

To receive payments from third-party payers for ambulance services, arbitrary medical necessity requirements must be met before a bill is issued. Conditions that don't meet medical necessity are still treated but often go unpaid. Payers do not adhere to a consistent EMS payment fee schedule, leading to vastly varied and inconsistent payments. Commercial payers (private insurance) do not negotiate reasonable payments with EMS providers and attempt to hold the ambulance service providers to surprise billing standards, despite EMS currently being exempt from such regulations. Paradoxically, no payer reimburses anywhere near the cost-of-service provision, which is why EMS is increasingly transitioning to a publicly funded model with tax subsidies, including but not limited to local property and sales taxes to fund and sustain ambulance operations - provided the taxpayers consent to higher taxes.

While it's challenging to precisely quantify the annual cost of providing EMS in Colorado, the Task Force Funding Workgroup repurposed and fine-tuned an EMS financial cost estimating model previously used by the State of Maine. This modified model estimates the annual cost of providing EMS in Colorado to be $728 million, equating to $124 per capita or $341 per household. The model also explores the discrepancy between transport reimbursements and the expenses associated with EMS services. While projected annual expenses are estimated to be $728 million, a mere $285 million (39%) is projected to be covered by billing and reimbursement revenues. The estimated shortfall of $443 million is likely unevenly compensated for by the efforts of volunteer and low-wage labor, and supplemented by local tax subsidies. The model is based on roughly 750,000 annual EMS responses statewide, of which over 30% of patients are not transported.

Estimated Cost per Call Based on the Size of the EMS Agency

Annual EMS Agency Call Volume	Number of EMS Agencies	Calculated Cost per Patient Transport
<150	46	$13,030
150-599	46	$3,936
600-2,499	46	$2,883
2,500-14,999	35	$962
15,000+	12	$901

The model reveals that EMS in Colorado incurs substantial costs. These costs can be broadly classified into two categories: readiness and transport. The costs of readiness, which pertain to the fixed expenses associated with maintaining equipped, staffed, and ready-to-deploy ambulances, constitute the most significant portion. Readiness costs encompass staffing, training, facilities, vehicles, and administration, among other necessary expenditures to ensure that ambulances are always ready for deployment. Such costs escalate due to various factors, including geographic spread and distances, climate, low population density, the decentralized nature of delivery models, and challenges related to providing training and staffing. On the other hand, variable response costs include only those expenses directly tied to individual transports, such as fuel, wear and tear on vehicles, salaries spent, and consumables used during transports – all of which are significantly lower than readiness costs.

The model further demonstrates that, when combined, the significant variations in annual transport volume (i.e., economies of scale) underscore that readiness costs drive up per-transport costs, which are reflected in ambulance bills and are not fully reimbursed by third-party payers. It is estimated that 70-80% of the costs associated with EMS are readiness costs, while only 20-30% are associated with transport. From the perspective of third-party payers, they only cover response costs and not readiness costs because the fixed costs of ambulance readiness don't fit neatly into the in-network payment process. It's important to note that both readiness (fixed) and transport (variable) costs must be paid, as ambulances can't respond to a call if they are not prepared to do so in the first place. While billing rates vary widely between individual services, the model estimates the average ambulance bill to be at least $1,519, and the average payment across all payers to be $594, or 39%.

Costs not otherwise covered by fee-for-service billing activities are met through various funding sources. The State of Colorado provides some grants that local services use for equipment, training, and personnel; however, besides these, no sustainable funding for EMS is appropriated at the state level.

Significant sources of funding for EMS includes:

Table: Sources of Funding, Colorado EMS	
Donated labor (Volunteerism)	If all EMS volunteer hours statewide were to be valued at fair market wages, volunteerism would likely emerge as the largest subsidizer/funder of EMS in Colorado.
Transport revenues	These are the revenues collected from billing insurance companies, Medicare, Medicaid, and private payers.
Local tax funding	This comes from municipal or county funding through taxes or the general fund.
Local fundraising	This accounts for all local fundraising events.
Provider grants	Grants that come from the Branch budget for largely vehicles and equipment
Other grants	Grants from government programs or private foundations or corporations
Philanthropy	Gifts from individuals, foundations, or corporations
Donations	Private donations, mostly to volunteer services
In-kind services	Many hospitals and physicians provide donated or low-cost in-kind professional services to support and supplement the readiness components of EMS systems. This includes physician medical direction, EMS Education, quality assurance, etc.

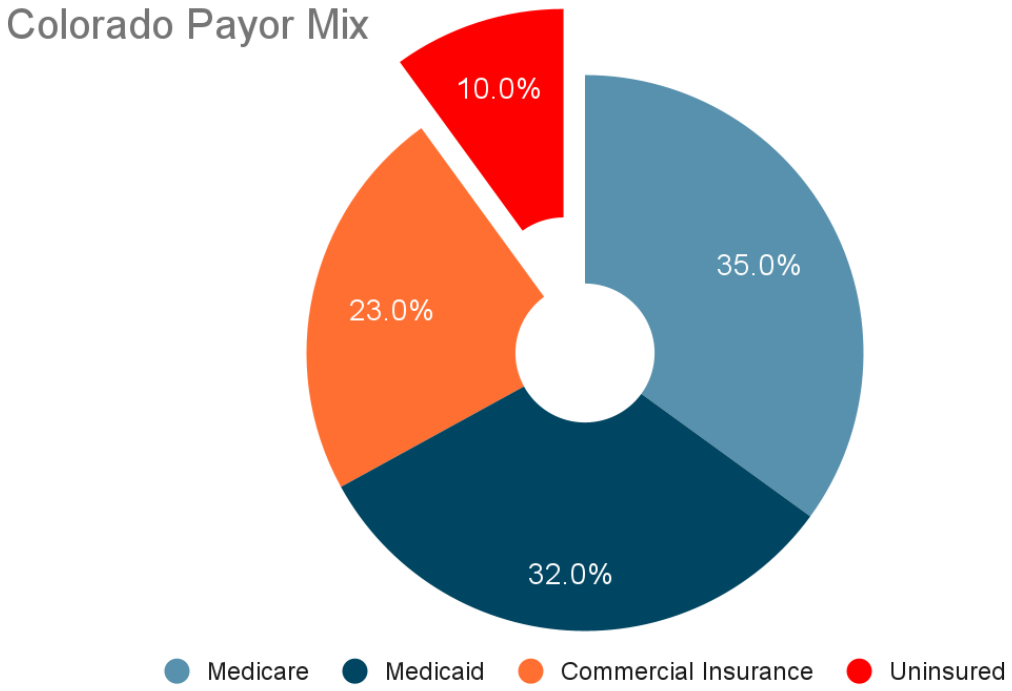
Historically, Emergency Medical Services have relied on reimbursements from medical and auto insurance, Medicare, Medicaid, and private payers for medical transportation costs. However, the revenues from these sources are sufficient only if the agency handles a significant volume of calls and a balanced mix of payers,[24] including private insurance or private party payments. It is estimated that to cover the overhead and operational costs of a single 24/4 staffed Advanced Life Support (ALS) ambulance, more than 1,400 annual transports are required.[25]

While an EMS agency might bill the total costs, the Centers for Medicare and Medicaid Services (CMS) dictate the reimbursement rates and standards for EMS, both within Colorado and across the nation. Approximately 35% of Coloradans rely on Medicare, 32% on Medicaid, and 23% on commercial

[24] Payer mix is the percentage of runs billed out to each type of payer Medicare, Medicaid, Commercial Insurance (Auto and Liability Insurances) and patients (i.e. patient pay or self-pay).

[25] Used by SafeTech Solutions, LLP, a national EMS consulting firm in its EMS assessment work.

insurance to pay their ambulance bills.[26] The remaining 10% are uninsured. Depending on their locality and volume, Colorado EMS agencies receive payments for only 29-51% of an average ambulance bill, according to estimates by the Task Force Funding Workgroup.



The Task Force Funding Group's model suggests that solely relying on transportation-based reimbursements is untenable for most Colorado EMS agencies. Therefore, significant public funding or volunteer/low-wage labor becomes indispensable. In the past, the rural EMS workforce has depended on donated labor (volunteers) and low-wage labor. However, volunteerism nationally is rapidly decreasing.

In Colorado, some local jurisdictions fund EMS through county and municipal property and sales taxes and by establishing special taxing districts. But this approach has its limitations, particularly in rural areas, communities, and counties lacking a substantial population or visitor base, or assessed value. Moreover, competition for limited local tax dollars and rising reluctance among taxpayers to approve tax increases hinder this approach. The recent outcry over soaring assessed values and higher property taxes underscores this point.

One effective strategy to achieve sustainable funding is resource consolidation to establish economies of scale. The urban South Metro Fire Rescue (SMFR) and the rural Eagle County Paramedic Services (ECPS) exemplify successful implementation of this strategy. Initially operating as a volunteer fire agency, SMFR successfully navigated mergers to maximize special taxing districts to create a more sustainable EMS, fire, and all-hazard service. SMFR now incorporates the communities of Littleton, Sheridan, Highlands Ranch, Lone Tree, and Parker, as well as portions of Arapahoe, Douglas, and Jefferson counties. Another example is the rural Eagle County Health Service District merged with Western Eagle County Health Service District forming Eagle County Paramedic Services (ECPS), a local tax-supported special district servicing nearly all of Eagle County. Through successful mergers, they've

[26] Enrollment figures for CMS programs at https://data.cms.gov/summary-statistics-on-beneficiary-enrollment/medicare-and-medicaid-reports/medicare-monthly-enrollment

Medicare in Colorado, https://www.healthinsurance.org/medicare/colorado/#enrollment

established sustainable, cost-effective, and integrated emergency services, achieving savings in procurement, training, maintenance, and other operational aspects.

This evolution has yielded economies of scale, offering cost-saving in various areas such as procurement, training, maintenance, and other operational aspects in urban and rural environments. By optimizing resources, SMFR and ECPS can deliver cost-effective services to their communities while efficiently utilizing available funds. Consolidating resources in this manner has facilitated the creation of more sustainable and integrated emergency services organizations.

Urban areas in Colorado face fewer challenges in funding publicly funded EMS due to economies of scale associated with high transport volumes and higher tax bases. Nonetheless, EMS private urban agencies operating without public funding struggle to sustain operations on transport revenue alone. These constraints, coupled with restrictive regulations, can lead to slim profit margins, often driving private entities out of business.

However, the situation is even more challenging in rural Colorado due to lower call and transport volumes, higher costs, and significant transport times, further complicated by challenging terrain and distances between communities and healthcare facilities. These services largely depend on volunteer labor or part-paid and part-volunteer organizations. The largest expense for any EMS agency is labor, and in Colorado, this expense is primarily addressed through volunteer labor. But with declining volunteerism, these hidden labor costs become glaringly apparent, forcing organizations to consider paying staff or ceasing operations.

In 2020, an average volunteer hour in Colorado was valued at $34.36 per hour.[27] This value is based on the minimal amount needed to replace a volunteer with a fully paid employee, including wages and benefits (23.02 per hour with $11.34 for benefits, payroll costs, etc.). At this rate, the labor costs to staff one 24-hour ambulance unit would be at least $601,987 annually.

Of the known ground ambulance agencies, 75 use some volunteers (combination departments), and 26 report using all volunteers. If these services were to replace their volunteers with 24/7 paid staff at $34.36 per hour, the annual cost is estimated to exceed $38 million annually.[28] Recognizing the value of volunteer labor is critical for communities, residents, and governments to understand the true costs of the emergency medical services they receive.

Funding for the Colorado EMS system also includes EMS system support provided through the various activities of the facilities (hospitals) and the EMTS Branch. Much of the ongoing continuous medical education, quality management, and medical direction services are funded by facilities (hospitals) through their EMS support service departments. Rural EMS agencies depend highly on hospitals' benevolence to provide these critical services. Hospital funding for these critical services is disappearing as facilities prioritize hospital needs over EMS needs even though the hospitals generate significant revenue from patients EMS brings to them. As facilities cease to provide these critical medical oversight services, rural EMS agencies do not possess the expertise and funds to provide these services independently, and these critical services are lost. In addition, urban based services are also at the same risk of loss of these donated services, though may have a better revenue base to support taking on these costs.

[27] This calculation comes from the Independent Sector, a non-profit organization that calculates the value of a volunteer hour based on data from the Bureau of Labor Statistics. https://independentsector.org/resource/vovt_state_2021/.

[28] This annual cost of volunteer replacement is calculated for each agency with a basic assumption that each agency will at least staff one 24/7 unit with 2 personnel. For combination agencies, only the cost of one crew member was counted as needed to be replaced with paid staff. For the all-volunteer services agencies both crew members were counted as needing to be replaced. The formula is: (Number of crew members) x (Value of volunteer hour, $34.36) x (24 hours) x (365 days) = Annual Cost.

Compounding the loss of hospital funding to support medical direction and quality management services is the uncompensated costs EMS agencies shoulder when performing interfacility transport services, especially from rural critical access hospitals to urban hospitals. Patients experiencing medical and trauma-related illnesses and injuries that cannot be appropriately managed in small rural hospitals must be moved to urban hospitals. Local EMS agencies are usually the closest and quickest ambulance services to provide these necessary transport services; however, they perform these services almost always at a financial loss. Making matters even worse, the financial losses and the need to pay additional crews to staff additional ambulances to cover when the other is out of town is impossible to manage. Supplemental funding must be found to finance the movement of patients between rural and urban hospitals. The critical access hospitals can't absorb these costs; however, the receiving larger hospitals may be able to offset these losses. Another potential revenue stream to supplement transport costs may come from the already-established Hospital Provider Fee program since both the sending and receiving hospitals have a need to move these patients, and the Hospital Provider Fee funds can be utilized to offset local ambulance losses from moving these patients. This limited funding for interfacility transport also results in the inability for rural areas to staff with advanced level providers that are frequently needed for time-sensitive transports to higher levels of care. These delays are compounded by the long transport times resulting in decreased access to care and worse outcomes in rural areas for trauma and time-sensitive medical conditions.

Finally, statewide system support is also a function of the Branch funded by the two-dollar Highway Users Tax Fund (HUTF) levied on license plates statewide. The Branch coordinates and funds countless statewide support functions that benefit the EMS community. These support functions include credentialing and oversight of EMS providers; managing and funding the provider and CREATE grant programs; coordinating RETAC activities and Regional Medical Direction programs for quality management; managing the activities of SEMTAC and EMPAC, including numerous task forces and subcommittees; managing the statewide trauma and trauma registry programs; and coordinating the the PEER support services activities. The Department is now responsible for implementing and financing the statewide ground ambulance licensing program. Additionally, neither PEER support nor the ground ambulance licensing programs were appropriated sufficient funds by the legislature to implement and sustain these programs. Compounding the lack of funding for these new programs, the EMS Account lost two million dollars of HUTF funding when the State excluded trailers from the $2 registration fee. Additionally, the statutory responsibilities of the RETACs were never fully funded in statute commensurate with the delegated responsibilities and the purchasing power of the funding has deteriorated over time due to inflation and higher costs of additional local RETAC responsibilities. Regional Medical Direction quality management programs needed for consumer protection and patient safety remain chronically underfunded and, therefore, ineffective. Finally, the higher costs associated with other Branch responsibilities have eroded the EMTS provider grant programs leaving fewer dollars to assist agencies in putting necessary ambulances and medical equipment on the streets. Consequently, the branch does not have adequate funding for its staff and administration, even as its responsibilities and expectations continue to expand. It is evident that the motor vehicle registration fee, without adjustment for over a decade, fails to adequately reflect the inflation, population growth, and increased demands placed on EMS services in Colorado. More funds are necessary for vital support programs of the Branch, RETACs, Regional Medical Direction, ground ambulance licensing, PEER support, and the EMTS provider grant program. In all cases, funding for all levels of EMS support has been determined to be inadequate and in dire need of supplementation.

Regional EMS Programs

Given Colorado's expansive geography, diverse population densities, and unique challenges, a regional approach to emergency medical and trauma services is both desirable and necessary. Consequently, the state is divided into 11 RETACs, or Regional Emergency Medical and Trauma Services Advisory Councils.

Formed in 2001 by legislation, RETACs were conceived to deliver a coordinated regional approach to emergency medical and trauma care. Each council is composed of at least five participating counties and is statutorily responsible for biennially submitting implementation plans and annual budget reports to the State Emergency Medical and Trauma Advisory Council (SEMTAC). In turn, SEMTAC submits a comprehensive plan every other year to the Department encompassing all RETACs in the state.

The 11 Colorado Regional EMS and Trauma Advisory Councils (RETACs) are tasked with an array of statutory responsibilities, which include, but are not limited to:

- Providing minimum services and care, considering factors such as geography, population density, available facilities, and regional resources.
- Ensuring compliance among facilities and counties with the regional plan.
- Developing and implementing public information, education, and prevention programs.
- Establishing and executing quality improvement processes.
- Identifying regional emergency medical and trauma system needs.
- Preparing reports that pinpoint problems under the regional plan, along with recommendations for their resolution.
- Ensuring efficient public safety dispatch and communication, encompassing ambulance-to-facility, facility-to-facility, among service agencies, and among counties and RETACs.
- Identifying key resource facilities for the region to coordinate inter-facility transfer policies and processes.

Although the 11 Colorado Regional EMS and Trauma Advisory Councils (RETACs) are statutorily assigned an extensive array of responsibilities, their capacity to carry out these tasks is significantly constrained by a lack of resources, including staffing. Currently, funding supports only a single coordinator position per RETAC. Additionally, not until 2011 was grant funding provided to RETACs for medical direction, thus facilitating a more widespread regional model for medical direction. However, this program remains severely underfunded and consequently struggles to fulfill the state's requirements. An additional limitation is the advisory nature of RETACs. They lack the authority to ensure the implementation or accomplishment of legislative deliverables, further complicating their effectiveness. Therefore, while Colorado's regional model for emergency medical and trauma services is technically established and operational, its 11 RETACs are not adequately resourced nor empowered, limiting their ability to fully execute their extensive responsibilities.

The Urban-Rural Divide

Much has been written about the urban-rural healthcare divide in the United States. Researchers, academics, and policy makers have investigated disparities in urban versus rural communities' health, whether regarding access to healthcare or in health outcomes.

According to a 2017 report by the U.S. Centers for Disease Control and Prevention (CDC), the rates of heart disease, cancer, unintentional injury, chronic respiratory disease, and stroke are all higher in rural communities than in urban ones.[29] Rural communities across the U.S. are affected the most by physician and medical personnel shortages including those in mental and behavioral healthcare. In addition, demographic changes in the U.S. show that rural diversity is increasing. As one researcher of health disparities notes, "We look at differences through rural-urban classifications, but when you layer in the issues of race and ethnicity, you find even greater disparities [within rural populations]."[30] The urban-rural healthcare divide is complex and requires understanding multiple factors and layers of vulnerability.

Colorado is no exception and like many states in the nation, its urban-rural divide is multifaceted and complex. While 77% of Colorado's landmass is considered rural or frontier, comprising 47 of the state's 64 counties, just 12.1% of its population lives in rural regions.[31] Vast distances and geographic challenges exacerbate the usual issues related to access in rural areas, and an aging population in rural and remote areas of the state as well as growing diversity in both urban and rural regions illustrate the complexity of planning for emergency medical and trauma services. The challenge is to establish equitable systems that are efficient and cost effective and that provide consistent, high-quality care to all Coloradoans and visitors whether in frontier, rural, urban, or suburban regions of the state.

[29] Garcia, M.C., Faul, M., Massetti, G., Thomas, C.C., Hong, Y., Bauer, U.E., Iademarco, M.F. (2017). Reducing potentially excess deaths from the five leading causes of death in the rural United States. *MMWR Surveillance Summaries, 66*(SS-2): 1-7. https://www.cdc.gov/mmwr/volumes/66/ss/ss6602a1.htm?s_cid=ss6602a1_w.

[30] Warshaw, R. (2017, October). Health disparities affect millions in rural U.S. communities. *Association of American Medical Colleges (AAMCNews)*. https://www.aamc.org/news-insights/health-disparities-affect-millions-rural-us-communities.

[31] https://leg.colorado.gov/sites/default/files/images/committees/2016/11_-_colorado_rural_health_center_-_2016_snapshot.pdf

Sustainability Challenges and Gap Analysis

The Task Force considered a variety of gaps related to EMS sustainability, including gaps in: access to EMS care; the distribution, training, recruitment, and retention of EMS personnel; EMS personnel access to resiliency, mental health, and wellness programs; the long-term sustainability of frontier, rural, suburban, and urban EMS agencies; the legislative or regulatory framework; financial sustainability; access to and distribution of statewide EMS grants; and the form, structure, operation, and organization of Colorado's EMS system. These considerations are woven into the following 19 identified gaps that have a significant impact on EMS sustainability in Colorado. This gap analysis presents the view of the EMS System Sustainability Task Force and is not endorsed by the Department of Public Health and Environment.

1. The transition from County to State licensing of ground ambulance services is not adequately resourced.

In 2022, the Colorado Legislature passed, and Governor Polis signed, SB 22-225, "Ambulance Service Sustainability And State Licensing," to address the fragmented regulation of ground ambulances in Colorado. Unlike other states, Colorado's 64 counties have, since 1977, been individually responsible for regulating and licensing EMS agencies and ground ambulances within their jurisdiction. The persistence of this decentralized approach inadvertently led to duplication, inefficiency, and complications for EMS agencies operating across multiple jurisdictions. Furthermore, it has resulted in inconsistencies in service standards and health equity, and has introduced obstacles for the public in filing complaints or reporting concerns.

Recognizing the need for statewide oversight and uniform standards, the National Highway Safety Administration's (NHTSA) Office of EMS conducted two statewide assessments of EMS in Colorado.[32] Both reports highlighted the absence of statewide oversight or regulation for EMS agencies and ground ambulances and recommended the development of statewide standards to ensure consistent ambulance licensing, while allowing counties the authority to exceed these standards.

In response to these concerns and recommendations, and with strong support from stakeholders and the public, Colorado enacted SB 22-225 in 2022. This legislation centralized ambulance licensing and addressed the fragmented approach to ground ambulance agency regulation. It also recognized the necessity of statewide oversight and accountability for EMS agencies and ground ambulances.

The new statutes introduced by SB 22-225 will align Colorado with national best practices by ensuring uniform standards for all ground ambulances, standardizing ambulance licensure, and providing for transparency and accountability. The legislation mandates the transfer of these responsibilities to the Department by July 2024, making the Department the licensing and oversight authority for ground ambulance services across Colorado.

However, meeting this mandate with existing resources is proving to be a considerable challenge. Constraints in staffing, funding, complications with substantially increasing costs associated with licensing requirements, and the tight deadline for establishing a licensing unit are all significant hurdles to overcome.

The Department did not attempt to estimate the fiscal impact of the new ground ambulance licensing program in the fiscal note for SB22-225, because the program's structure was contingent

[32] December 1988 and November 1997

upon the regulations recommended through a stakeholder process and the final adoption by the State Board of Health. While the final rules have not been adopted, the regulations have reached a sufficient level of development to allow for estimating program costs. The stakeholder process began in September 2022 and is expected to conclude in September 2023.

2. EMS in Colorado does not operate as a fully integrated system.

The provision of Emergency Medical Services in Colorado is currently characterized by an assortment of independent agencies. These agencies, which developed in a local and organic fashion, operate largely in isolation due to a lack of substantial regional or statewide planning and coordination. This operational fragmentation has given rise to several gaps in both regional and statewide EMS performance, impeding its unified functioning.

This absence of a comprehensive, systems approach to EMS in Colorado manifests in various ways, including:

- An insufficient pool of data and information, hindering the ability to evaluate EMS performance accurately.
- A noticeable lack of coordinated regional and statewide planning with respect to identifying needs, resource allocation, and promoting efficiencies.
- Current regional advisory councils grapple with insufficient authority and lack the necessary budgets to execute effective regional planning.
- Inequalities exist in the distribution and deployment of EMS resources across the state.
- A disproportionate distribution of workforce across the different regions.
- Varied levels of oversight, medical direction, and clinical care throughout the state.
- Absence of a centralized, coordinated leadership mechanism.
- Lack of a systematic strategy for interfacility transfers.
- Disparities in EMS funding across different regions.
- Challenges in fostering long-term sustainability in the EMS framework.
- Other EMS-related issues, including advocacy, systems of care, mobile integrated health, etc., require attention.

In an ideal scenario, a 'system' should consist of an organized network of interconnected components or subsystems that collectively work towards achieving an overarching objective (like providing the best care for all patients). In a high-performing system, a constant feedback loop exists among various components or subsystems, ensuring the system's strength and focus on achieving the desired goal. Any changes to a component — whether it is weakened, removed, or damaged — can alter the system's overall function and impact its ability to achieve its goal. Consequently, if any part of the system fails or is misaligned, the system must make necessary adjustments to effectively achieve its goal and protect its components. This is the hallmark of a truly effective system.

3. There is a mismatch between the importance of EMS as a common good and its positioning and resourcing at the State level.

The ongoing evolution of EMS in Colorado requires increasing levels of attention, leadership, advocacy, planning, regulation, and resourcing. Today the components of EMS within the State government are not all found under one umbrella and are difficult to coordinate. The State EMS Office (the EMTS Branch within the Department) is not positioned and resourced in a manner that matches the mission of EMS. The mission of EMS is like that of law enforcement, the fire service, and public health; yet EMS does not share similar positioning and resourcing.

4. The regional approach to EMS is not appropriately structured and resourced to meet the needs of a system, local agencies, and local providers.

In light of Colorado's vast and diverse geography, a regional approach to planning, coordination, and local EMS support is paramount. Given the concentration of major hospitals in metropolitan areas, it is customary for Colorado residents to seek healthcare services at a regional or even statewide level. The Regional Emergency Medical and Trauma Services Advisory Councils (RETACs)—consisting of eleven councils—are statutorily tasked with providing a coordinated approach to emergency medical and trauma care. Their responsibilities span ongoing regional EMS care planning and evaluation, development of quality improvement plans, injury prevention programming, public education initiatives, interfacing regional disaster planning, and development of destination protocols.

However, the resources allocated to RETACs and Regional Medical Direction Programs, in terms of funding, personnel, and support, are insufficient. This resource constraint impedes the ability of these organizations to fulfill their statutory obligations. More critically, it hampers the ability of RETACs to foster local EMS sustainability through planning and guiding the evolution of regional EMS, a process integral to ensuring access to quality care in each unique region. Current organizational structures vary across regions, each with its own set of advantages and limitations.

Compounding these challenges, the RETACs serve in an advisory role, limiting their authority to enforce compliance or implementation of their recommendations. Furthermore, essential data elements, beyond patient care report elements, needed for comprehensive system planning are not available. This lack of access to crucial data obstructs data-driven decision-making, thereby hindering the optimization and evolution of regional EMS services.

5. The public and governmental understanding and valuing of EMS are impacting long-term sustainability.

Across Colorado, residents, visitors, and government offices expect EMS will respond when called, yet have very limited understanding of how these services are provided. EMS workforce shortages, funding shortages, declining volunteers, and increasing demands and expectations for EMS affect long-term sustainability. Beneath all these concerns, however, lies a paucity in public and governmental attention, understanding, and valuing of EMS. The public's expectation of EMS is on par with that of law enforcement, public works, public education, and public health; however, the public and government largely do not understand and value the following:

- Operational EMS is a local function dependent solely on local initiative;
- EMS developed in an environment of scarcity and has provided low-cost EMS at a bargain that is no longer sustainable;
- EMS has always needed financial resources beyond what it can collect from reimbursements from insurance, Medicare and Medicaid, and self-pay;
- Attention to EMS is often eclipsed by law enforcement, fire, and disaster planning, yet EMS response comprises 80-90% of all calls in fire services that also perform EMS response;
- The future sustainability of EMS will require more attention and support from the public and government;
- The regionalization of medical specialties has dramatically increased demands on EMS particularly in terms of interfacility transfer demand;

- As Colorado's demographics shift to an older population, service requests continue to increase; and
- As currently structured, EMS sustainability is fragile.
- Robust medical direction and quality management both at local and regional levels is necessary for consumer protection and patient safety.

Without more public and governmental understanding, EMS will not receive the attention and resources needed to meet its mission and be sustainable long-term.

6. Responsibility for the local provision of EMS depends solely on local initiative, the market, and altruism.

EMS is not established in Colorado statute as an essential service, and there is no statutory requirement or entity of government responsible for ensuring EMS is provided in Colorado. Because there is no requirement for EMS, the existence of local EMS hinges a variety of factors. In many rural areas, EMS depends on the initiative and altruism of a small group of local people interested in creating and maintaining EMS operations. In other areas, EMS exists because it has been supported by local government or operates as a viable business proposition and is dependent on the market size.

As the local sustainability of EMS has become questioned in reports and the media, many residents and government officials are surprised to learn that EMS is not required and that there is no entity responsible for the provision of EMS.

The lack of responsibility for the provision of EMS becomes a major sustainability concern when local commitment, initiative, and/or resources shrink, at the same time the expectation for and demand for EMS increases. If an EMS agency becomes unable to meet the demand or goes out of business, there is no requirement that EMS be replaced, and no governmental entity responsible for ensuring EMS is available.

While there is no authoritative legal or policy definition of an essential service in the United States, a study conducted by the National Academy of Public Administration for The National Emergency Medical Services Advisory Council (NEMSAC) found that EMS may be considered an essential service based on two different, but complementary, definitions.

First, EMS is essential because it is ensuring public health and safety. EMS is a public service the interruption of which would endanger the life, personal safety, or health of the whole or part of the population. Second, EMS is essential in ensuring equal access to emergency medical care. EMS is a service to which all residents should be guaranteed access. EMS is an essential service insofar as the public generally has come to expect that emergency medical services will be available every hour of every day to all residents regardless of ability to pay.[33]

7. Geographic service areas are not clearly coordinated, and EMS coverage is driven by local boundaries, market factors, and informal collaboration.

Today, the geographic areas served by most local EMS agencies across Colorado are not formally designated or regulated. These service areas are a patchwork of informal historical expectations,

[33] An Analysis of Prehospital Emergency Medical Services as an Essential Service and as a Public Good in Economic Theory (2014). National Academy of Public Administration. Published by National Highway Traffic Safety Administration p.3.

jurisdictional boundaries and agreements that came about as services developed over the past 50 years. Some service areas fit obvious boundaries such as the city limits of municipalities or counties. Other service areas overlap and may be shared. Some areas, particularly remote or backcountry locations, may not be officially covered by any service. Often these service areas have been informally demarcated or commonly understood over time.

This presents a variety of issues, including how to cover an area if a service closes; how to work with competition; how to respond efficiently to mass casualty and disaster events; and how to ensure both 911 area readiness and interfacility transfer response without losing 911 readiness. Without clear and coordinated service areas, EMS reliability, dependability, and efficiency remain vulnerable to sustainability challenges and are therefore fragile.

8. The full and true cost of providing EMS is largely hidden.

Sustainability is related to the cost of providing EMS. There are many costs associated with providing EMS, including: labor; training and education; clinical oversight (medical direction) and quality assurance; facilities; vehicles; equipment and supplies; supervision, management, and leadership; call taking; dispatch; and much more. A significant cost of 911 EMS is the cost associated with being ready and available 24/7.

As modern EMS developed locally and organically in Colorado with scarce financial resources, agencies used a variety of ways to provide services as efficiently as possible. Much EMS is provided by small agencies frequently supported by local governments. Organizational models and levels of support vary widely from volunteer agencies that operate with limited organization structure to sophisticated organizations with large numbers of full-time staff. Some EMS is provided by dual-trained fire department personnel or hospital-based personnel. Some EMS is provided by governmental agencies that share facilities and administrative costs with other parts of the government. Some EMS is provided by for-profit businesses. These various organizational structures often account for costs differently.

Costs may be hidden in a variety of ways. The use of donated or low-wage labor has left the full costs of labor hidden. Hospital and fire-based agencies often blend the cost of providing EMS with other provided services. Often the cost of readiness – having a crew, vehicle, and equipment ready to respond – is not fully accounted for. More than 30 percent of requests for EMS in Colorado do not result in transportation of a patient, and often these costs are not accounted for due to lack of reimbursement for on scene care including treatment in place, telehealth, and tele-behavioral health.

Thus, the full and true costs of providing EMS have been obscured. As the public has come to expect and rely on EMS and increasing levels of EMS clinical care, the costs of the services have not been understood. As sustainability has become a concern, understanding all costs – including the costs associated with readiness, oversight, evaluation, administration, and planning – has become necessary.

9. The funding of EMS is complex and often insufficient.

EMS developed across the United States lacking the requisite financial planning – and Colorado is no exception. Many EMS agencies, especially those in rural areas, operate with insufficient funding and without significant financial reserves. Today, EMS is typically funded through a complex combination of reimbursements for medical transportation (insurance, Medicare and Medicaid, and private payers) and a variety of subsidies.

The full cost of providing EMS can be partially met through transportation reimbursements only if there is a high volume of transports (as in urban environments), though even high-volume agencies often fail to meet the full and true costs of providing EMS. In recent years, reimbursements for medical transportation have largely remained stagnant or declined. EMS has not been successful in significantly increasing reimbursements on par with rising costs.

Resources not funded through reimbursements for transportation include donated or low-wage labor, local taxes, financial donations, fundraising, and grants. Since much of EMS in Colorado is resourced through donated and low-cost labor, as this source of labor disappears, other financial resources must be developed if EMS is to be financially sustainable.

10. The long-term impact of disappearing volunteerism on Colorado EMS is not fully appreciated.

Half of the transporting ambulance agencies in Colorado utilize volunteers to staff their units. However, many of these agencies are facing shrinking rosters and a dramatic decline in their ability to recruit volunteer members. A 2018 report on the national volunteer rate demonstrates a continuing decline in Americans' ability to volunteer (across all fields, not just EMS). Volunteerism reached a high of 28.8% following the 9/11 attacks in 2001, but since then has continued a pervasive decline. Rural volunteering fell from 30.9% in 2003 to 25.3% by 2015. The report states, "Fewer Americans are engaging in their community by volunteering and giving than at any time in the recent past."[34]

In 2021, Colorado ranked 26th in the nation in volunteerism. Across the nation, the rate of formal volunteering through organizations dropped by seven percentage points, from 30% in 2019 to 23.2% in 2021.[35] Research among rural EMS volunteers in the intermountain states and across the Great Plains by the national consulting firm, SafeTech Solutions, LLP suggests the following causes of declining volunteerism:

- ***Socioeconomic changes*:** Rural individuals and families report needing to work more hours and more jobs to support themselves and their families. People report commuting greater distances to jobs. These socioeconomic changes are related to changes in agriculture, manufacturing, healthcare, and retail businesses.

- ***Changing demographics*:** Rural communities across the Great Plains continue to become older and grayer as young people leave for urban areas.[36] This same trend is seen within the eastern plains of Colorado.

- ***Increasing demands of the role*:** Over the past 50 years, there has been a significant transformation in the realm of EMS. The public expectations for medical care have expanded considerably, the legal environment has become more complex, and the scope of practice has widened. Coupled with a technological surge, these changes have

[34] From an analysis of data from the U.S. Bureau of Labor Statistics and the Census Bureau's Current Population Survey (CPS). Reported in the University of Maryland School of Public Policy (2018), "America's Volunteers? A Look at America's Widespread Decline in Volunteering in Cities and States." https://dogood.umd.edu/sites/default/files/201907/Where%20Are%20Americas%20Volunteers_Research%20Brief%20_Nov%202018.pdf.

[35] Volunteering and Civic Life in America. The US Census Bureau and AmeriCorp. 2021. https://americorps.gov/about/our-impact/volunteering-civic-life

[36] Zhang, W. (2016). Aging in South Dakota. Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. South Dakota State University. Downloaded June 2023 from: https://openprairie.sdstate.edu/cgi/viewcontent.cgi?article=1013&context=census_data_newsreleases.

significantly increased the demands of an EMS role. EMS is a specialized medical profession, necessitating comprehensive knowledge, higher levels of care, and detailed patient care reports. These increased demands and the reduction in volunteer numbers have resulted in a smaller roster of active volunteers bearing a larger workload. This evolution makes it increasingly challenging to sustain volunteer-based EMS services.

- ***Less commitment to the local community*:** Rural communities continue to undergo significant sociological changes. The commerce center of rural America has moved from locally owned and operated Main Street businesses to regional box stores where people often shop without a relationship or connection to the people or companies they are doing business with. Oftentimes, the newer generations experience less of a connection to the small towns they live in than have previous generations, and thus younger people may be less likely to feel the need to volunteer.

- ***Changing attitudes about volunteering*:** Young people today are less likely to volunteer than previous generations, and how they volunteer and why is changing. The emerging generation is also more likely to ask, "Why must EMS be volunteer?" They believe EMS positions should be paid in the same way rural positions in law enforcement, education, public works, or other areas of healthcare are paid.

- ***The regionalization of healthcare*:** Because of the regionalization of hospitals and healthcare facilities, volunteering is demanding more time to transport patients to distant tertiary hospitals and between healthcare facilities.

As the number of volunteers on rosters declines, fewer people are left carrying the load. Some volunteers report high levels of stress related to ensuring someone is available for calls. However, despite the challenging statistics, many ambulance agencies across Colorado are demonstrating a determination to preserve the volunteer model for the near future. This determination emerges from a variety of sources including: a desire to preserve the status quo; a lack of faith that other viable options exist; a reluctance to lose the intrinsic rewards associated with being a paramedic or EMT; a fear of what might replace the current service; and a lack of leadership to navigate change.

There are no indications of a forthcoming resurgence in volunteerism. Consequently, communities must consider the future of EMS within a post-volunteer environment. It is crucial for individuals and communities to understand the significant costs of EMS labor and to proactively strategize and plan for alternative ways of meeting local EMS needs, especially in low population areas.

11. There is an absence of support and guidance to aid communities in navigating the transition from unsustainable EMS delivery models to sustainable models.

There exists a critical gap in support and guidance that would assist communities in transitioning from unsustainable EMS delivery models to sustainable ones.

Many EMS agencies in Colorado are grappling with the reality that their current mode of operation lacks long-term sustainability. Yet, transitioning to a more sustainable model presents significant challenges. Factors such as small population size, low call volume, distance from other communities, limited financial resources, and a lack of feasible alternatives can obscure the path

to sustainable change. For many, transforming into fully paid operations or establishing an employment environment attractive enough to recruit workers may not be viable, and alternative options might appear out of reach.

When an agency or community acknowledges that their current EMS operations cannot sustain in the long run, they often require external assistance. Experiences from projects in Maine, South Dakota, Utah, Nebraska, Wyoming, and other states reveal that the shift from unsustainable to sustainable models can significantly benefit from external expertise providing guidance, facilitation, leadership, and support.[37] Well-defined and tested transition processes, now being employed nationwide, can guide the agency and community through steps to explore various options and determine the best course of action.[38]

The change process encompasses acknowledging the need for significant change, assembling a team beyond volunteer agency personnel to guide the transition, assessing the current situation (including needs, resources, unique challenges, and opportunities), understanding the comprehensive and true costs of EMS, considering an array of options, selecting what's best for the community, devising a roadmap for implementing the change, and undertaking concrete steps toward change.

Navigating this transition demands the assistance of expert services skilled in the change process, offering essential assessment, guidance, and facilitation support often referred to as technical assistance. The Emergency Medical and Trauma Services (EMTS) Branch and Regional EMS and Trauma Advisory Councils (RETACs) have previously addressed these needs through grant-funded consultative visits. However, present circumstances reveal that RETACs are grappling with severe underfunding and inadequate staffing and resources, thus restricting their ability to meet these pressing demands. Despite these constraints, RETACs hold a unique position in understanding local community needs, integrating seamlessly with agencies via collaborative strategies, and functioning as trusted entities. Provided they receive adequate funding and resources, they can efficiently provide these essential technical resources.

Furthermore, the existing consultative assessment and reporting process demands substantial time and resources from the local community, which is likely already navigating challenges related to sustainability. These communities are tasked with the responsibility of applying for and administering a grant, while concurrently providing support during the process. Complications escalate due to the lack of a designated governmental entity accountable for ensuring access to EMS. This often results in the non-implementation of the recommendations provided by the assessments. This lack of mandated responsibility significantly impedes the enactment of proposed improvements. Addressing this gap in accountability and streamlining the process is crucial. This will help alleviate the burden on struggling communities and pave the way for more effective implementation of sustainability measures.

---

[37] Template for Emergency Medical Services Informed Community Self Determination (ICSD). 2020 NASEMSO Rural Committee.

https://nasemso.org/wp-content/uploads/2020-Template-for-Informed-Community-Self-Determination-v-6.1.pdf

[38] *Sustainable Rural EMS: Navigating Change, An Introduction and Guide*. 2021. The National Rural Health Resource Center This resource can be obtained at:

https://www.ruralcenter.org/sites/default/files/Sustaining%20Rural%20EMS%20Guide%20Nov%202021.pdf

12. Workforce development and workforce shortages are complex and not well understood, hampering successful workforce planning.

Of great concern to many EMS leaders and stakeholders in Colorado is the availability of enough qualified EMS workers. Many agencies are reporting workforce shortages and perceive this to be the greatest threat to EMS sustainability. Apart from the fact that providers are leaving EMS and agencies are having increasing difficulty recruiting, however, little is known about these workforce shortages and how to overcome them.

Workforce shortages are likely related to a variety of issues, including growing demands, insufficient wages and benefits, changing worker expectations, poor working environments, lack of structured leadership, and insufficient workforce planning and development. However, these issues are not well understood and have received only limited study and attention. Barriers to future planning and development include:

- An inability to quantify the demand for workers in terms of clinical level and geographic distribution;
- An inability to quantify the current supply of workers and the pipelines that create supply;
- An incomplete understanding of issues driving turnover;
- Not knowing if shortages are more a distribution challenge than a real shortage;
- Not understanding what constitutes a compelling employment value proposition (intrinsic and extrinsic rewards) for today's worker;
- Not understanding the expectations of a new generation of workers; and
- The need to clarify the specific workforce needs of urban, suburban, rural, and frontier environments.

Developing a sustainable EMS workforce for the future requires specific data, information, knowledge, and understanding.

13. Disparities in access to EMS education and training across the state are impacting workforce development.

Equitable access to EMS education and training is a critical factor that directly influences the recruitment and retention of EMS providers. While urban and suburban areas in Colorado offer relatively easy access to initial and continuing education opportunities, the situation is more challenging in frontier and rural regions, creating disparities that are likely impacting workforce development. Task Force members report that EMS providers are increasingly looking for more quality education that is accessible and easy to obtain.

The obvious challenges for rural and frontier providers who must travel some distance to in-person programs include travel expenses (fuel, lodging, and meals), time away from work, home, and childcare. In addition, with the current limited resources in rural and frontier areas, agencies frequently cannot send EMS providers to long distance continuing education because no providers would be available for EMS response.

While online education and training can improve access, some individuals may struggle with limited internet connectivity or lack familiarity with online learning platforms and online testing. The hands-on nature of EMS requires a combination of didactic and clinical education. Rural students face challenges in obtaining enough clinical education and hands-on experience. In addition, the clinical experience for rural providers is often limited, with providers completing their training without experiencing many of the conditions they will be called upon to treat.

14. A shortage of prepared, capable, and experienced EMS leaders, and a paucity of ongoing programming and support for EMS leadership development, are undermining EMS progress and sustainability.

As EMS continues to progress on a national scale, with increasing demands being placed on agencies and providers, the cultivation of effective leadership and management is emerging as a critical concern. The EMS field has traditionally operated on the assumption that clinical experience gathered over years in EMS equips individuals for successful management and leadership roles. Simultaneously, there's been an implicit belief that accomplished field providers will naturally transition into proficient leaders. Over time, however, both of these notions have proven to be unfounded. Authentic leadership fundamentally hinges on the ability to influence others and guide them towards a shared goal. The cultivation of effective leaders requires a balanced combination of knowledge, preparation, skills, resources, and support. Importantly, it's essential to recognize that leadership and management are distinct skill sets, each necessitating unique approaches and competencies.

Task Force representatives from EMS agencies report that the majority of EMS leadership development occurs locally and is largely learned on the job. With the exception of occasional leadership academies offered by the EMS Association of Colorado and management and leadership sessions at the Colorado State EMS Conference, there is a conspicuous lack of sustained and proactive initiatives in Colorado to nurture, cultivate, and support EMS leaders.

The EMS field faces specific gaps and challenges, including:

- Uncertainty about the precise experiences and educational background needed for leadership roles within EMS;
- Limited access to educational programs tailored to nurture essential leadership skills;
- Ambiguity surrounding the EMS career progression, including opportunities for supervision, management, and leadership roles;
- Absence of widely recognized leadership programs and credentials across organizations;
- The need to cultivate a 'bench' of future leaders to succeed those nearing retirement;
- The requirement for ongoing resources and support for both emerging and established leaders;
- A misbelief that any licensed physician is automatically qualified to take on the role of an EMS medical director;
- An inadequate understanding of the distinction between EMS board-certified physicians and non-board-certified physicians functioning in EMS medical director leadership roles.

To effect significant change and ensure the long-term sustainability of EMS, it is of utmost importance to prioritize the development and support of competent EMS leaders at the local, regional, and state levels.

15. An increasing concern for the emotional and psychological wellbeing of EMS providers is highlighting a deficit in mental fitness programming and EMS-knowledgeable//-experienced mental health resources.

Support for emotional and psychological wellbeing is a growing expectation in agencies and the emerging EMS workforce in Colorado. Concern about EMS provider emotional and psychological wellbeing often manifests in a focus on after-incident debriefings and workshops on the prevention of psychological breakdown, post-traumatic stress, substance abuse, depression, and suicide.

In 2019, the Colorado General Assembly passed the Peer Health Assistance Program for Emergency Medical Service Provider bill (SB 19 (SB19-065) that created a free and confidential resource for EMS providers in need of mental health and wellness support who may not otherwise have access to a mental health program. The bill sought to provide for prevention, education, referrals to more appropriate treatment, and counseling for Colorado's EMS providers and their family members. Unfortunately, the bill's funding mechanism was insufficient and has limited the success and growth of this effort. Furthermore, due to lack of funding, maintaining the Path4EMS program is reducing funding for provider equipment and training grants.

Providers who are experiencing mental health issues may now receive help through the Path4EMS program. The program helped more than 30 EMS providers in the first six months of 2023 and reports that it is receiving increasing numbers of inquiries and requests. Some limitations continue to include adequate funding to easy access to care.

While these developments are positive, there continues to be a gap in helping workers achieve the preventative mental fitness and resilience needed to meet the mental challenges of EMS work and find the intrinsic rewards they hoped for when they signed up. The gap in mental fitness and wellbeing programming is an opportunity for the development of appropriate EMS-friendly mental health resources that are available when needed.

16. Interfacility transfers (IFTs) pose a growing challenge to 911 capabilities due to their rising demand and the lack of a coordinated approach, which monopolizes scarce resources.

Colorado currently grapples with a gap in the coordination and organization of Interfacility Transfers(IFTs). IFTs account for approximately 27% of EMS transports statewide, but demand up to 43% of the total resource allocation time. These transfers consume substantial EMS resources, especially in rural and frontier regions, necessitating a significant time commitment as healthcare specialties become more regionalized.

Numerous EMS agencies in Colorado face immense pressure in catering to the rising demand for IFTs. Given the considerable distances between tertiary care facilities, interfacility transfers often leave EMS crews physically and mentally drained. This scenario engenders safety concerns due to crew fatigue during the transfer and return phases. The burgeoning demand for IFTs exacerbates concerns about crew safety and well-being, thus amplifying the sustainability issues linked to these transfers.

Furthermore, healthcare facilities often expect swift and efficient execution of these services to ensure speedy patient movement between facilities, but do not offer resources to aid in the transfers. These expectations place additional strain on private, local government, and volunteer agencies, potentially undermining the availability of 911 services during these transfers.

Rural ambulance agencies handling low call volumes bear the brunt of the challenges posed by interfacility transfers, as they frequently involve lengthy travel distances. Agencies handling 603 calls or fewer per year average 81 loaded miles per transport. As a result, these agencies typically

spend roughly 4.5 hours or more on each transfer. Their small size and staffing issues can leave large service areas devoid of 911 coverage for extended durations during transfers.

Even larger, busier services allocate significant resources to IFTs, which can vary in complexity from requiring critical care resources to straightforward transport without advanced resources. The inefficient resource allocation for IFTs often leads to ambulance resources covering vast distances without a patient onboard, due to Colorado's expansive geography. Ambulance services can only invoice for 'loaded miles' - the distance covered with a patient onboard. However, ambulances frequently transport patients over great distances, with only one leg of the journey being billable. A more efficient, coordinated transport model would strive to synchronize patient transfers in both directions as much as possible. This bidirectional coordination can considerably enhance resource utilization and efficiency. Additionally, the scarcity of advanced level providers for IFTs in rural and frontier areas can negatively impact patient outcomes, particularly for critical and time-sensitive cases.

A state-wide ambiguity exists regarding who bears responsibility for interfacility transfers. Without a coherent, coordinated approach, IFTs can lead to delays, a mismatch between patient needs and EMS capabilities, a reduction in local 911 capabilities, and inefficient use of EMS resources. The ensuing immediate fatigue and long-term burnout of EMS personnel threaten EMS's long-term sustainability and hinder the prioritization of optimal clinical care for patients.

Addressing the coordination gap in IFTs is of paramount importance. Doing so will enhance the efficiency, effectiveness, and sustainability of Colorado's EMS. Prioritizing a solution not only serves the welfare of patients and EMS personnel but also ensures the safety of local citizens and visitors.

17. An uneven distribution of clinical care across the state is a challenge for long-term sustainability and requires more study.

The Task Force suspects there are unacceptable variations in the quality and level of clinical care provided across different regions in Colorado. These variations are attributed to several factors.

First, there is no standardized expectation regarding the level of care individuals can expect to receive, with disparities between Basic Life Support (BLS) and Advanced Life Support (ALS) care. Second, the deployment of EMS resources is often influenced by factors unrelated to patient need, such as population density, call volume, proximity to education and training centers, agency support, and funding availability. This results in what is commonly known as the “Paramedic Paradox,” where advanced, skilled, and experienced resources are scarce in areas where they are needed the most, such as rural and frontier regions. Third, there is inconsistency in the oversight of clinical practices and the implementation of Quality Assurance and Quality Improvement programs. Finally, providers working in rural and frontier areas often face challenges in maintaining their skills due to limited exposure to certain cases, as well as difficulties in accessing high-quality continuing medical education opportunities.

Identifying concrete disparities in care based on geographic location and population is challenging due to a lack of data, information, and research in this area. Colorado has not conducted a comprehensive statewide EMS assessment to evaluate needs and current deployment of resources. More study is needed to gain a clearer understanding of these disparities and work towards ensuring all Colorado residents and visitors are provided the clinical care needed.

18. Medical Direction and Clinical Quality Assurance and Improvement (QA/QI) suffer from weaknesses in how they are positioned, resourced, funded, and governed.

All EMS agencies in Colorado are required to have a physician EMS medical director who assumes responsibility for overseeing the medical care provided by the agency and its personnel. EMS medical directors are required to establish protocols and training programs for providers under their supervision, as well as perform Quality Assurance and Quality Improvement functions related to clinical care. That said, the establishment and funding of medical direction in each agency are not governed by specific state laws. As a result, the delivery of EMS medical direction, as well as QA/QI, can vary significantly across agencies.

While the Department's EMTS Branch regulates the minimum standards and requirements for medical direction oversight by EMS medical directors, it does not mandate any education or training for these medical directors, nor does it require them to obtain specific credentials or certifications, such as EMS board certification. Additionally, the Department does not provide guidance on how to structure, fund, or evaluate the effectiveness of medical direction or QA/QI programs. As a result, there is considerable variability in how clinical care is overseen and evaluated. In addition, the regional medical direction programs are severely underfunded and variable by RETAC, which results in limited ability for RETACs to provide technical support to local medical direction.

Sustainability and How to Get There

The EMS System Sustainability Task Force believes that enabling EMS in Colorado to consistently deliver reliability and quality in the coming decades requires a proactive, deliberate, and purposeful approach that is flexible, inclusive, and honors the accomplishments and dedication of the past 50 years. Sustainability is not just about meeting the present requirements, but also about providing sufficient resources for the future.

Paradigm Shift: From EMS Mindset to Sustainable Thinking

The way EMS leaders and providers address challenges and opportunities often reflects a distinctive operational paradigm or mindset, characterized by reactivity, symptom management, and functioning within a scarcity context. These characteristics can be readily seen in the fieldwork of EMS providers. For instance, upon receiving a call, providers promptly react and respond. They adapt to the volatile environment of an emergency scene and respond swiftly to changes in a patient's condition. Providers are specifically trained to manage symptoms, such as bleeding, pain, shortness of breath, or abnormal heart activity.

In addition, the EMS industry functions within an environment of scarcity, frequently grappling with limited time, help, space, information, focus, resources, and funding. While these adaptive traits serve EMS well in immediate emergency situations, enabling providers and response teams to perform effectively under extreme circumstances, they may not necessarily be conducive to long-term planning and strategic decision-making. The need for a shift towards a more proactive, strategic mindset is crucial for the sustainability and advancement of the EMS field.

EMS Operating Paradigm	
Paradigm Characteristic	**Resulting Mindset/Action**
Reactivity	Immediate action to fix, mitigate, rescue or help
Symptom management	Address what's on the surface and most obvious
Scarcity	Approach solutions with limits (i.e., time, resources, support)

This EMS operating paradigm and the characteristics of reactivity, symptom management, and scarcity often show up in how EMS deals with organizational, developmental, structural, financial, and system-wide challenges. When an urgent challenge is recognized, there is often a quick reaction with a flurry of activity to immediately help and fix. The focus will be on the mitigation of the immediate surface problems (symptoms). Solutions will be framed within the context of what can be done with limited or insufficient resources.

To become long-term sustainable, EMS in Colorado will need to flip this paradigm and mindset on its head. It needs to transform reactivity into thoughtful proactivity, allowing time for data collection and root cause analysis of shortcomings, barriers, and challenges. Transparency will allow for all stakeholders to understand the true strengths and risks of our current system to mitigate these risks for decades to come. Proactivity will grant the time needed to gather the data, information, and knowledge needed for a root cause analysis of shortages, barriers, and challenges. Finally, with an understanding of what is beneath, solutions can be approached from a place of hope and envisioning enough, if not abundant, resources. This flip in mindset is fundamental to successful planning, even if the old mindset is extremely difficult to hold at bay and will continue to surface.

Needed EMS Paradigm Transformation	
EMS Paradigm Characteristic	**Needed Transformation**
Reactivity	Proactively think ahead and plan to create the future
Symptom management	Engage in root cause analysis looking for what's beneath. Manage the disease, not the symptoms.
Scarcity	Approach solutions of perspective of enough or an abundance (i.e., time, resources, support)

Elements of Change

Creating a healthy and sustainable EMS system in Colorado is a challenging task that cannot be achieved by a single leader or group. The establishment of the Task Force is a crucial starting point and plays a significant role in spearheading this process. However, the Task Force holds that to ensure the success of this endeavor, the following 10 elements[39] are essential:

1. Shared Concern and Hope:

There must be a widespread recognition of the importance and urgency of the current challenges, especially those related to access to quality care, the EMS provider's experience, and the resources needed to create sustainability. This shared concern must be framed in a manner that creates both urgency and a hope that solutions are possible. This will fuel the collective effort towards achieving the desired outcomes.

2. Enhanced Understanding:

It is crucial to gain a comprehensive understanding of the current state of EMS in Colorado. This includes research and data collection to identify fragile agencies and underserved areas; workforce development specifics; current and future costs of EMS provision; and resistance to change. This data must be available to the Task Force in a manner that is effective to understand the true issues and potential solutions. In addition, sustainability will require a deeper understanding of why EMS does not receive the attention and resources its mission suggests.

3. A Powerful Coalition of Engaged Stakeholders:

The involvement and collaboration of various stakeholders, including frontline providers, agency leaders, medical directors, healthcare organizations, municipal and county leaders, legislators, government agencies, community organizations, and the public, are vital to understanding challenges and forging the path forward. A strong and diverse coalition will bring together different perspectives, expertise, and resources. The Task Force is a powerful tool for beginning and building this coalition.

[39] These elements draw on the seminal work of John Kotter, international thought leader on change. His work is well known and utilized in governments, organizations, industries, and communities around the world. His approach to change is fully described in Kotter, J.(1996). *Leading Change*. Harvard Business School Press.

4. A Vision of a Compelling Future:

The Task Force's work signals an important threshold in the development of EMS in Colorado. The threshold opens onto a future that is now being envisioned. A vision is an imagined picture of the future. The Task Force is beginning to shape a vision of a future where EMS is truly valued and resourced; operates in a manner that is humane, safe, and healthy for providers; and ensures the public and patients have the right response, in the right time, at the right clinical level. in the safest possible fashion. Successful visions must be eminently compelling, eminently practical, and easily described to those who will turn them into reality.

5. Effective Communication of the Vision:

Change is difficult for humans. However, as social beings, humans often change when those around them begin to change. Visions that become realities need an army of people that believe in the vision and take action. Building the army comes when the vision is effectively communicated to all stakeholders and the broader community. This vision should instill hope, generate enthusiasm, and create a sense of shared purpose and commitment.

6. Specific Steps and Plans:

Concrete steps and action plans need to be established to translate the vision into tangible results. These plans should outline the strategies, timelines, and responsibilities necessary for achieving the identified goals.

7. Leaders at Every Level:

Effective leadership will be essential at every level of EMS development, from local communities to the regional and state levels. Building a corps of leaders who are committed to the vision and can drive the necessary change is crucial for long-term success.

8. Legislative Champions:

The success of EMS at the national and state level has always necessitated legislative champions. The path ahead will necessitate bipartisan legislative champions who recognize the importance of sustainable EMS and are willing to advocate for necessary policies and funding. Engaging lawmakers and policymakers in the process is key to overcoming regulatory and financial barriers.

9. Early Wins:

Demonstrating early successes and tangible improvements is essential in generating momentum, building confidence, and garnering support. Because there is so much cynicism today around government, change, and collaboration, it is ever more vital that people see progress by getting some early wins. Celebrating and publicizing these early wins will reinforce the commitment to sustainability.

10. Ongoing Movement:

The development of a reliable and sustainable EMS system is a continuous process that necessitates ongoing evaluation, adaptation, and enhancement. It is imperative to sustain this momentum to ensure that efforts towards establishing a resilient EMS system do not stagnate, but continue to evolve and adapt to changing needs.

By implementing these ten elements and fostering a collaborative environment, Colorado can chart a path towards a robust, sustainable EMS system. Such a system will guarantee high-quality, safe care for all its residents and visitors, thereby solidifying the state's commitment to health and safety.

Task Force Recommendations

Upon concluding the first year of fulfilling its legislative mandate, the Task Force, composed of subject matter experts representing a diverse cross-section of Colorado's EMS providers, agencies, regulators, supporters, and consumers, has collectively volunteered hundreds of hours towards this endeavor. This section outlines the specific recommendations generated by the Task Force. These recommendations are independent from and not endorsed by the Department of Public Health and Environment:

- **Ensure Adequate Funding For Statewide Licensing of Ambulance Services.**

  The imminent transfer of ground ambulance service licensing from individual Colorado county jurisdictions to the Department represents a major shift in policy and operational procedures. Effective July 2024, in accordance with SB 22-225, this change brings Colorado EMS into alignment with the rest of the nation and all other licensed health care programs in the state.

  While the legislation provides a clear roadmap for this transition, it fails to allocate the necessary funding for the associated operational costs. To facilitate a smooth and effective transfer and execution of this new mandate, the Department must be equipped with ample resources and staff.

  Given that the Department will be overseeing over 200 ground ambulance services across Colorado, substantial resources are imperative. Efforts have already been initiated by the Ground Ambulance Licensing Task Force (GALTF), established by the State Emergency Medical and Trauma Services Advisory Council (SEMTAC), to collaborate with the EMS community and stakeholders to develop necessary regulations. However, given the legislation's deadline to begin the licensing and inspection processes by July 1, 2024, there is an urgent need to secure the necessary fiscal resources.

  Meeting this mandate will necessitate the formation of a new work unit within the Emergency Medical and Trauma Services (EMTS) Branch, within the Health Facilities and Emergency Medical Services Division (HFEMSD). This unit is expected to require 9 additional Full-Time Equivalents (FTEs). The plan is to complement the existing single FTE dedicated to the air ambulance licensing program and the EMS provider and air ambulance licensing enforcement staff. The newly integrated organizational structure aims to form a unified, efficient unit responsible for licensure of both air and ground ambulance services. The estimated annual operational expense for staff support, travel, and other requirements is projected to be between $1 to $1.3 million annually.

  Historically, the EMTS Branch has been financed through trauma center designation fees, air ambulance license fees, and notably, the Highway Users Tax Fund (HUTF). As detailed earlier in this report, the core operations of the EMTS Branch are primarily funded by the HUTF EMS Account. However, over the past decade the HUTF funds have been considerably diminished due to inflation, the integration of underfunded programs, and an increasing demand for necessary equipment and resources financed via the EMS system grant program. This funding is responsible for covering several essential programs and operations, including EMS personnel licensing and certification (without a fee), coordination of the governor appointed State Emergency Medical and Trauma Services Advisory Council (SEMTAC) and Emergency Medical Practice Advisory Council (EMPAC), the data collection and analysis team, the investigations compliance and enforcement program, the Path4EMS Peer Assistance Program, Regional Emergency Medical and Trauma Services Advisory Councils (RETACs), the statewide trauma designation program and the statewide EMS and trauma grant program. The annual funds available in the HUTF EMS Account are inadequate for financing the requisite staff and infrastructure required for the effective implementation of the Ground Ambulance Licensing program, in conjunction with preserving critical support for pre-existing programs.

As the Department investigates methods to fund a statewide ambulance licensing process, a fee-based model - akin to the one currently employed in the Air-Ambulance licensing process (that funds the entirety of the Air Ambulance Program) - has been thoroughly scrutinized. However, this approach faces considerable obstacles, predominantly attributed to the variety of ambulance transport service models operating across Colorado. This diversity signifies a broad spectrum of financial capacities, extending from services functioning in major urban areas with high call volumes, to smaller, resource-limited rural regions. Numerous smaller agencies are dependent on supplemental funding from local government, special district taxes, or alternative external sources to bolster their operations.

Taking this into account, a "shared" cost source is proposed to ease the financial pressure on local agencies and owners. Funding could be derived from the general fund, HUTF, or other funding sources to mitigate the burden. A critical factor to consider is that dividing the total program costs by the number of ground ambulance services would result in exorbitantly high and unsustainable ambulance service license fees without substantial subsidy.

Given the relatively short time frame to design, develop, and implement this transition, it is crucial to promptly identify and secure sufficient funding. This approach will ensure the Department is adequately prepared for the phased development of the program, commencing in FY 2023-2024. Appropriating funds for this transition are not only vital for the seamless implementation of SB 22-225, but also for ensuring the sustained delivery of safe and effective ground ambulance services across Colorado.

- **The Task Force recommends the following:**
  - Identify and secure additional funding sources to cover the projected operational expenses.
  - Initiate the hiring process for the 9 FTEs as soon as possible.
  - Develop a sustainable and fair fee structure for ambulance services that considers the diversity of these services and their financial capacities.
  - Engage with stakeholders in the EMS community to address the sustainability and reliability issues of the ambulance services.
  - Immediately begin the development of the necessary support systems and resources for the licensing and inspection processes, to meet the legislative deadline.

- **Examine Data Accessibility.**

  A thorough examination of current laws and regulations is necessary to identify gaps in data collection and devise ways to enhance data accessibility. This action is crucial for a comprehensive evaluation of EMS sustainability, thereby ensuring successful progression through Phases II-V. Improved data accessibility promotes well-informed, evidence-based decision-making. Currently, a wealth of data essential for holistic statewide EMS system planning is either compartmentalized across various local and state entities, or not collected at all. These datasets include, but are not limited to, Public Safety Answering Point (PSAP) dispatch data, financial and reimbursement data, workforce data, data from non-transport first response agencies, and information on designated EMS response area assignments.

- **Designate and Support EMS as an Essential Service and Assign Responsibility.**

  The enduring sustainability of EMS in Colorado hinges on both the public's perception and the government's treatment of EMS as an essential service. The 1996 *EMS Agenda for the Future* describes EMS as the public's "emergency medical safety net."[40] The National Association of Emergency Medical Technicians asserts that emergency medical services are a "critical element of our nation's disaster and mass casualty response infrastructure," which "fulfill an essential public function to the best of their ability for all patients in need within their limited resources."[41] As the COVID-19 pandemic emphasized, EMS is a vital, cross-cutting element that integrates public health, prevention, and emergency medical care. Recognizing EMS as an essential service moves it from a discretionary service to a mandatory one, that must be provided irrespective of interest, motivation, or altruism.[42]

  It is critical to acknowledge and resource EMS as an "essential service"—a service of paramount importance, and one to which every resident or visitor should have guaranteed access. Given the struggles local agencies face with reliability (the capacity to respond to every call) and sustainability (maintaining operations), it is essential to define which governmental entity (whether county, municipality, or regional entity) bears the responsibility of ensuring reliable EMS provision in each geographic area.

  Other states such as North Carolina and Tennessee have designated counties responsible for ensuring EMS is provided, but without the responsibility to license, regulate, or operate EMS agencies. Counties only must ensure that EMS is provided and available 24 hours a day. The North Carolina statute states, "County governments shall establish EMS systems," and the EMS system must have a defined geographic area of at least one county (but may extend into others), and care must be offered to residents 24 hours a day.[43]

  As counties in Colorado have familiarity with EMS agencies, it is recommended that the state designate EMS as an essential service and assign a local or regional governmental entity the responsibility of ensuring that EMS is provided.[44]

---

[40] National Highway Traffic Safety Administration. *EMS Agenda for the Future*. Washington, D.C.: National Highway Traffic Safety Administration; 1996.

www.ems.gov/pdf/2010/EMSAgendaWeb_7-06-10.pdf

[41]National Association of Emergency Medical Technicians, Recognition of EMS as an Essential Public Function, 2013. https://www.naemt.org/docs/default-source/advocacy-documents/positions/EMS_as_an_Essential_Public_Function.pdf?sfvrsn=0

[42] Today Colorado statute describes essential employees as follows: "employees performing essential law enforcement, highway maintenance, and other support services directly necessary for the health, safety, and welfare of patients, residents, and inmates of state institutions or state facilities."

State of Colorado statute C.R.S. 24-50-104.5(1), Colorado Personnel Rules and Administrative Procedures

under rule 3-37. http://hr.colorado.edu/es/Classified/Documents/EssentialServiceFAQ.pdf

[43] North Carolina statute 10A NCAC 13P .0201 EMS SYSTEM REQUIREMENTS. www.ncdhhs.gov/dhsr/rules/ems/011409/13P_0201.pdf

[44] Extensive information for this recommendation can be found in the following detailed study: An Analysis of Prehospital Emergency Medical Services as an Essential Service and as a Public Good in Economic Theory. National Academy of Public Administration. May 2014. https://www.ems.gov/assets/Prehospital_EMS_Essential_Service_And_Public_Good-1663689363.pdf

- **Establish an Equitable Coverage Process.**

  Create a transparent process to ensure responsibility and equity in the coverage and distribution of 911 ambulance agency geographic service areas. This should include mapping and evaluating the current service areas to identify gaps and ensure optimal coverage for all communities.

- **Conduct a Comprehensive Statewide EMS Systems Analysis.**

  Senate Bill 22-225 allocated funding for an environmental scan - the results of which are included in this report. The environmental scan and Phase 1 work has identified the need for additional data collection and analysis. Resources should be allocated for performing a thorough statewide assessment of the existing out-of-hospital emergency medical services. A comprehensive EMS assessment entails a thorough investigation, including the collection and review of extensive quantitative and qualitative data. Such assessments involve multiple data sources; a systematic review of all available data; surveys targeting providers, stakeholders, and agencies; and numerous interviews and listening sessions, followed by an in-depth analysis. It is worth noting that the 1988 and 1997 assessments conducted by the National Highway Traffic Administration's Office of EMS were limited to a few days of stakeholder interviews and did not constitute a comprehensive statewide EMS assessment. The objective of this analysis is to pinpoint all potential disparities in access to ambulances, identify fragile or unsustainable EMS services, and locate coverage gaps. The assessment should encompass the identification and mapping of current response boundaries, evaluation of dispatch data, financial analysis of the system, and a workforce study. This exhaustive evaluation, in conjunction with the shift of ground ambulance licensing from county-level to the Department, will equip the Task Force with essential data-driven insights for informed decision-making. The analysis should, at the very least, include a focused assessment of the following:

  - **Establish Equitable Coverage Process:** Carry out mapping and evaluation of the existing EMS response service zones to identify gaps and ensure optimal coverage for all communities. This would empower the taskforce to propose a transparent process to ensure responsibility and equity in the distribution and coverage of 911 ambulance agency service areas.

  - **Conduct Workforce Planning Study:** One of the greatest challenges facing EMS in Colorado is the continuing shortage of EMS providers at all levels. Workforce planning is a process that aims to ensure there are enough of the right workers, with the right preparation, experience, and licensure available to meet the need. A thorough analysis of Colorado's EMS workforce should be conducted with a specific focus on sustainable workforce planning. This study, which aligns with Phase III of the EMS System Sustainability Task Force project, will provide a comprehensive understanding of EMS workforce entry levels, needs, demands, supply, and turnover rates. This will enable effective planning and allocation of resources to address workforce shortages.

  - **Evaluate True Costs:** Patient transport revenues rarely cover the full cost of providing EMS in Colorado. Across the state EMS is subsidized by low-wage labor and donated labor (volunteerism), local taxes, grants, donations, and other mechanisms. Likely the largest subsidization of EMS in Colorado is donated and low-wage labor. Donated labor and low-wage labor have likely hidden the full and true cost of providing EMS (especially the costs of readiness) from residents and governments. An examination of the

real costs of providing EMS should be carried out, especially highlighting the costs in rural and frontier settings. This information will give an accurate understanding of the economic implications and challenges EMS providers face, allowing for informed decision-making on funding and resource allocation. This coincides with Phase IV of the EMS System Sustainability Task Force project.

- **Enhance the Consultative Visit Program (CVP)**

  Many Colorado EMS agencies currently face long-term sustainability issues related to workforce and funding. Each is unique. Moving to sustainable models of EMS delivery will be an in-depth change process requiring an informed approach, leadership, guidance, expertise, and support. The process often takes several years and involves guiding agencies and communities in:

  - Determining if they are sustainable;
  - Forming a process and group to lead change;
  - Conducting an assessment of all aspects (needs, full costs, available resources, opportunities);
  - Engaging the community;
  - Choosing an appropriate model; and
  - Implementing change.

  This process has been extensively studied, defined, and tested.[45] While generally described, the process will demand that Colorado develop services and support for assisting agencies and communities through change by addressing lack of funding and resources for RETAC, RMD, and State support.

  The recommendation is to fund, support, enhance and expand the current Consultative Visit Program (CVP) to provide guidance and support to all communities in transitioning from unsustainable EMS models to sustainable ones. This resource will offer expertise and assistance in navigating the complexities of transitioning and implementing effective EMS practices.

- **Increase Governmental and Public Understanding and Valuing of EMS.**

  EMS in Colorado has accomplished a great deal over the past 50 years, but it requires increased attention and support from the public and government. There must be a continuous effort to inform, promote, educate, and create broad awareness of the EMS system, its value, delivery models, and the real and full costs involved. EMS should be viewed, understood, and valued similarly to other public services such as law enforcement, fire service, public works, public health, public education, parks, emergency management, and public safety answering points, etc.

  Creating more understanding and valuing of EMS will require the following:

  - Recognizing the gap between the public's expectations and praise for EMS and its understanding of how EMS functions and is resourced;
  - EMS agencies, associations, leaders, stakeholders, and providers uniting to tell a single, powerful story about EMS and its value, costs, and needs;
  - Broad collaboration on when and what issues, initiatives, and requests are brought to decision-makers and the Colorado General Assembly for action;

[45] The National Rural Health Resource Center lays out this process in its 2021 guide: *Sustainable Rural EMS: Navigating Change, An Introduction and Guide*. This resource can be obtained at:

https://www.ruralcenter.org/sites/default/files/Sustaining%20Rural%20EMS%20Guide%20Nov%202021.pdf

- The continuous development of shared talking points to ensure a consistent message is used whenever EMS is discussed in public, the media, and governmental settings;
- A positive use of current issues and events to deepen the public's understanding of EMS, including what it does and its value, costs, and needs;
- A proactive effort to continuously inform and educate government officials about the EMS system rather than assuming understanding where it may not exist; and
- A proactive effort to educate the public on the opportunities, needs, and challenges of EMS in a manner that fosters support, valuing, and public advocacy for EMS.

- **Ensure EMS's Position and Resourcing within State Government.**

  EMS is indisputably critical in Colorado, spanning the spheres of public health, healthcare, public safety, emergency management, and transportation. While the importance of EMS is universally recognized, it unfortunately lacks legal classification or the provision of resources commensurate with its role as an essential public service.

  The positioning of EMS within the executive branch of government varies significantly nationwide, indicating the absence of a standardized approach. For instance, Maryland and Kansas operate EMS as an independent state agency, whereas Virginia integrates EMS within its health infrastructure.

  This diversity in how EMS is understood and organized underlines its unique role in government structures, combining various disciplines that are typically segregated. State EMS Offices bear the responsibility of licensing practitioners and accrediting institutions, inspecting, and permitting ambulances, managing health data systems, conducting epidemiological studies, and handling consumer complaints and investigations. Such an extensive range of duties exceeds traditional government structures, thereby underscoring the strategic positioning and resourcing of EMS within state government.

  Healthy, sustainable, and functional EMS models across the nation concur that it is crucial for the lead State EMS Office to be appropriately positioned and resourced within the State government. With the addition of ground ambulance licensing and the need for a systems approach to EMS planning, Colorado must ensure equitable resourcing for State EMS leadership. This should be prioritized, on par with other vital statewide services such as the police, fire department, and disaster response units. This allocation should account for the multifaceted responsibilities of EMS, from regulatory roles to public health advocacy.

  Implementing these recommendations would strengthen the EMTS Branch, enabling it to offer high-quality emergency medical services and foster cross-sector collaboration. It would ensure a more comprehensive approach to emergency management across Colorado, aligning with the state's unique needs and context. This repositioning and resource allocation would also respect the unique nature of EMS, acknowledging its vital place and responsibilities in Colorado.

- **Foster a More Systematic Approach to EMS in Colorado.**

  Though it is often referred to as an EMS system, EMS in Colorado is structured and behaves more like a collection of independent entities than an interconnected system. To address reliability, quality, and sustainability, EMS across Colorado must continue to evolve as a system integrated into systems of care. Systems thinking must inform all decisions and recommendations.[46]

  To transform a network of independent entities into a system will require more connection, communication, cooperation, and collaboration leading to a greater interdependence and synergy. This will require a mindset of continuously viewing EMS across Colorado as a system, not simply a collection of separate, local entities. Planning, coordination, and regulation must take on an approach that is committed to *collectively* delivering the best care and service for all Colorado residents and visitors. EMS in Colorado will only be as strong as its weakest link.

  To foster a more systematic approach, the Task Force will explore ways to:

  - Ensure a statewide EMS assessment is conducted from a systems perspective;
  - Identify gaps between needed and existing EMS resources in all geographic areas;
  - Improve RETAC and RMD resources and empowerment;
  - Create a statewide plan focused on need and EMS resources in all geographic areas;
  - Foster systematic planning around the development, deployment, and distribution of EMS resources;
  - Create expectations that all EMS agencies collaborate regionally;
  - Engage PSAPs in collecting reliability data;
  - Structure the delivery of 911 services, IFT services, and expanded scope services from the perspective of system-wide collaboration;
  - Limit the negative impact of competition; and
  - Ensure EMS is viewed as part of the overarching healthcare infrastructure and part of healthcare and systems of care.

- **Assess and Strengthen the Regional Emergency Medical and Trauma Services Advisory Council (RETAC) programs and Regional Medical Direction (RMD) programs.**

  Regional approaches to supporting local agencies and providers have been vital to the evolution of EMS in Colorado. However, there is a mismatch between the legal requirement for Colorado's RETACs and RMD programs, on the one hand, and the funding and staffing of these programs, on the other. Regional leadership and guidance will be needed to help unsustainable agencies transition to sustainable models.

  The recommendation is to evaluate the RETAC and RMD programs with an eye on creating true EMS systems and a systemwide approach to sustainability. With an evaluation in hand, recharter the RETAC programs to ensure there is clarity about the responsibility of the RETACs and each RETAC is appropriately resourced to meet its responsibility.

[46] Systems are organized collections of elements or parts (or subsystems) that are integrated to accomplish an overall goal (such as best-care-for-all-patients). High-functioning systems continually exchange feedback among the various parts, elements, or subsystems to ensure the system remains strong and collectively laser-focused on achieving the goal. If an element of the system is changed, weakened, removed, or damaged, the nature of the overall system changes, impacting the goal. This means that if any element or activity in the system is weakened, misaligned, or fails, the system makes necessary adjustments to effectively achieve its goal and protect the elements of the system. This is a true collection of elements functioning as a system.

- **Invest in the Well Being, Mental Fitness, and Resilience of EMS providers.**

  The experience of EMS providers in their work is crucial for the sustainability of the system. It's not only humane but also beneficial for the vitality of EMS to maintain a workforce that is mentally fit, safe, resilient, and mutually supportive in promoting wellbeing. The emerging workforce increasingly expects proactive investment in clinician wellbeing and positive work experience. In light of this, this recommendation supports sustainable funding of the Path4EMS program, established by SB19-065, and advocates for the creation of ongoing programming that:

  - Proactively focuses on supporting EMS providers in thriving and having a best-possible-experience of working in EMS;
  - Helps agencies develop mental fitness awareness, training, and conditioning as a regular activity that receives as much focus as operational and clinical preparedness;
  - Creates resources for supporting wellbeing through peers;
  - Provides a platform for easy access to counseling and peer support efficiently and equitably across all regions;
  - Identifies knowledgeable and experienced mental health professionals who are experienced in working with first responders; and
  - Has an approach to critical events that is welcomed and accepted by frontline providers.

- **Develop and Support EMS Leadership.**

  Moving Colorado to higher levels of EMS sustainability will require prepared, capable, confident, and visionary leadership at all levels – local, regional, and state. This recommendation includes:

  - Viewing leadership as a unique and distinct domain of learning and performance (not merely an extension of operational and clinical expertise);
  - Ensuring the availability of ongoing leadership educational programming for leaders at all levels (but especially local agency leaders and frontline supervisors);
  - The ongoing support of leaders and the time and resources it takes to lead (adequate leadership time and the span of control must be factored into the full cost of providing EMS);
  - The development of an appealing and valued credentialing process; and
  - An emphasis on developing a bench of leaders and always preparing the next generation of leaders.
  - Support a funded fellowship program for a limited number of EMS leaders to obtain advanced degrees with the expectation of applying some of their academic efforts towards current issues within Colorado's EMS system
  - Support development of EMS fellowships within Colorado to further growth of future EMS board certified medical directors.
  - Support regional medical direction (RMD) programs to assure experienced, knowledgeable regional medical directors to mentor and support new local EMS medical directors.

- **Create a Systematic Approach to Interfacility Transfers (IFTs)**.

  Interfacility transfers are becoming a vital part of Colorado's healthcare system, which is increasingly developing sophisticated systems of care and regionalizing specialties. Colorado needs a process that ensures:

  - The appropriate, timely movement of patients between healthcare facilities;
  - Efficient use of EMS resources;
  - That local 911 services are not compromised; and
  - The continual monitoring, evaluation, and improvement of patient movement by matching needs with resources.

  This may involve creating regional or statewide centralized transfer centers.

- **Increase Funding for the Current EMTS Grant Program and Ensure Equitable Access.**

  The EMTS grant program in Colorado, operational since 1989, provides critical support for EMS agencies, but the mounting costs and burgeoning needs have surpassed the current statutory funding model. Numerous agencies depend on this program for ambulances, medical equipment, and personnel training. Therefore, ensuring the sustainability of the program and equitable access to these grants, especially for smaller and understaffed agencies, is essential.

  Furthermore, it is important to note that the last adjustment to the HUTF-EMS fee was made in 2009, when it was raised from $1 to $2. Since then, various factors such as the impact of inflation, the 2018 exclusion of non-motorized vehicles from the fee resulting in a $2M reduction, the necessity to back additional critical programs (like the Path4EMS peer support and mental health program for EMS providers), and the uptick in EMS system demands have imposed substantial strain on this resource. Therefore, it's imperative to explore diversified funding mechanisms to ensure the sustainability of the program.

- **Study Non-transporting Agencies.**

  Investigate the role, impact, and sustainability of non-transporting EMS agencies to better understand their contributions and challenges within the broader EMS system. Non-transporting agencies will continue to be a vital part of ensuring rapid access to care. Currently, not enough is known about non-transporting agencies. This recommendation seeks to learn about the opportunities and challenges of this EMS resource and how to support its sustainability.

- **Evaluate the Interface between EMS, PSAPs, and with the role of Emergency Medical Dispatch (EMD) programs.**

  Examine the relationship between EMS and PSAPs along with the role of EMD programs to identify areas for improvement, collaboration, and integration of services. Not all PSAPs utilize EMD, which can provide pre-EMS arrival instructions for care of patients including lifesaving interventions, CPR instructions, and bleeding control amongst other roles. It is not currently known the locations, breadth, and benefit of these programs in Colorado. EMD programs are a critical link in providing immediate bystander care to patients while EMS response is occurring, and therefore must be evaluated by the Task Force.

- **Invest in Accessibility to EMS Education.**

  Priority must be placed on expanding funding and resources for EMS education, thereby cultivating a proficient and adept EMS workforce. Innovative solutions are needed to widen the reach and improve the equity of EMS education access. These strategies could encompass subsidized and expanded online learning platforms, flexible scheduling, and financial aid programs, all aimed at mitigating potential financial obstacles. Even though post-pandemic funding has temporarily enhanced access to EMT and Paramedic education in Colorado's community colleges, this source is expected to be phased out soon. Therefore, it's crucial to have resources readily available to all state-recognized EMS Education Centers and Groups, ensuring comprehensive and inclusive coverage. Additionally, the introduction of programs aimed at incentivizing program graduates to work in rural communities, akin to rural physician programs, warrants exploration.

- **Review Community Integrated Health Care and Community Paramedic Statutes.**

  Statutes in Colorado (25-3.5-1307 C.R.S) that regulate the practice of community paramedicine and mobile integrated health are scheduled for a sunset review by the Department of Regulatory Agencies (DORA), and potential repeal, on September 1, 2025. Instituted in 2016, these statutes have significantly contributed to the development and oversight of these services, thereby extending the scope of EMS beyond traditional emergency response and transport. The introduction of these laws has stimulated the creation of several model programs. To sustain the growth of these programs and foster the development of robust community paramedic initiatives across Colorado, it is critical to maintain supportive legislation. As the sunset date draws near, there is an urgent need to examine the effectiveness and influence of this legislation and to establish the most suitable legislative framework to secure the continuation of the program beyond 2025. It is imperative that the EMS Task Force be included in the sunset review of this legislation and consulted as subject matter experts when considering new Community Integrated Health Care and Community Paramedic Statutes. This will ensure alignment with the comprehensive plan for Colorado's EMS system.

- **Establish a Systematic Approach to Medical Direction for EMS in Colorado.**

  Colorado must establish a systemic, well-structured, adequately resourced, and effectively governed approach to EMS medical direction. Currently, the system for EMS medical direction throughout the state is fragmented and ambiguous, with funding and support coming from agency, hospital, multi-agency, county, and regional levels. This complexity, coupled with the lack of clear oversight from county, state, and Board of Health jurisdictions, hinders medical directors' abilities to provide unencumbered quality management, oversight, and assurance of evidence-based consumer protection, agency and provider support, and patient safety. It is therefore imperative that a comprehensive, systematic approach be understood, funded, and developed at local, regional, and state levels to support the commitment to assuring unencumbered medical direction support to EMS and the community by physicians knowledgeable in EMS medical direction, including EMS board certification.

- **Establish a Systematic Approach to Quality Assurance and Improvement for EMS in Colorado.**

  Quality Assurance through overall quality management is critical to assure consumer protection and patient safety while delivering excellence in prehospital patient care. At the core, quality management is overseen by medical direction. Sufficient resources for support of local, regional, and statewide quality management programs; as well as the ability to ensure availability of data in protected fashion must ensure appropriate overlap between these entities for continued quality growth of EMS abilities and safe care of patients. A systematic approach at the regional level through the RETACs and RMD programs to support regional medical direction that can function independent of hospital, political, or other affiliations to act as a patient and community advocate must be developed. In addition, requirements of EMS non-transport, EMS transport, and healthcare systems to provide shared data in patient care and outcomes in a protected manner is critical to continuous evaluation of the EMS system and its effects on morbidity and mortality.

Appendix A: Task Force Membership

Senator Mark Baisley	Chair
Representative Ryan Armagost	Vice Chair
Cherilyn Wittler	EMS & Ambulance Service Agency (1 of 4)
Gina Carr	EMS & Ambulance Service Agency (2 of 4)
Christopher Williams	EMS & Ambulance Service Agency (3 of 4)
Scott Van Slyke	EMS & Ambulance Service Agency (4 of 4)
Jeremy DeWall	Board Certified EMS Physician
James Robinson	EMS Provider (1 of 2)
Lisa Ward	EMS Provider (2 of 2)
Annie Dorchak	Community Integrated Health Care Service Agency
Sean Caffrey	Group Representing EMS Providers
Tim Dienst	Chair of SEMTAC
Jim Keating	Group Representing Fire Chiefs
Matthew Sammond	Group Representing Professional Fire Fighters
Daniel Barela	Group Representing EMS Educators
Brandon Daruna	Group Representing Special Districts
Sean Wood	Group Representing County Associations (1 of 2)
Mike Freeman	Group Representing County Associations (2 of 2)
Barbara Huber	Group Representing Municipalities
Elaine McManis	CDPHE (Department) Representative

Appendix B: Emergency Medical Services Acronyms

ACS - American College of Surgeons

AEMT - Advanced Emergency Medical Technician

ALS - Advanced Life Support

BLS - Basic Life Support

CPR - Cardiopulmonary Resuscitation

CDPHE - Colorado Department of Public Health and Environment ("Department")

CRS - Colorado Revised Statutes

CVP - Consultative Visit Program

DHEW - Former United States Department of Health, Education & Welfare

DOT - United States Department of Transportation

EMR - Emergency Medical Responder

EMPAC - Emergency Medical Practice Advisory Council, a Type 2 Board

EMS - Emergency Medical Services

EMSAC - Emergency Medical Services Association of Colorado

EMT - Emergency Medical Technician

EMT-I - EMT-Intermediate

EMTS - Emergency Medical & Trauma Services Branch (of CDPHE)

HFEMSD - The Health Facilities & EMS Division (of CDPHE)

HUTF - Highway Users Tax Fund

NHTSA - The National Highway Traffic Safety Administration

NREMT - National Registry of Emergency Medical Technicians

P-CC - Paramedic with Critical Care Endorsement

P-CP - Paramedic with Community Paramedic Endorsement

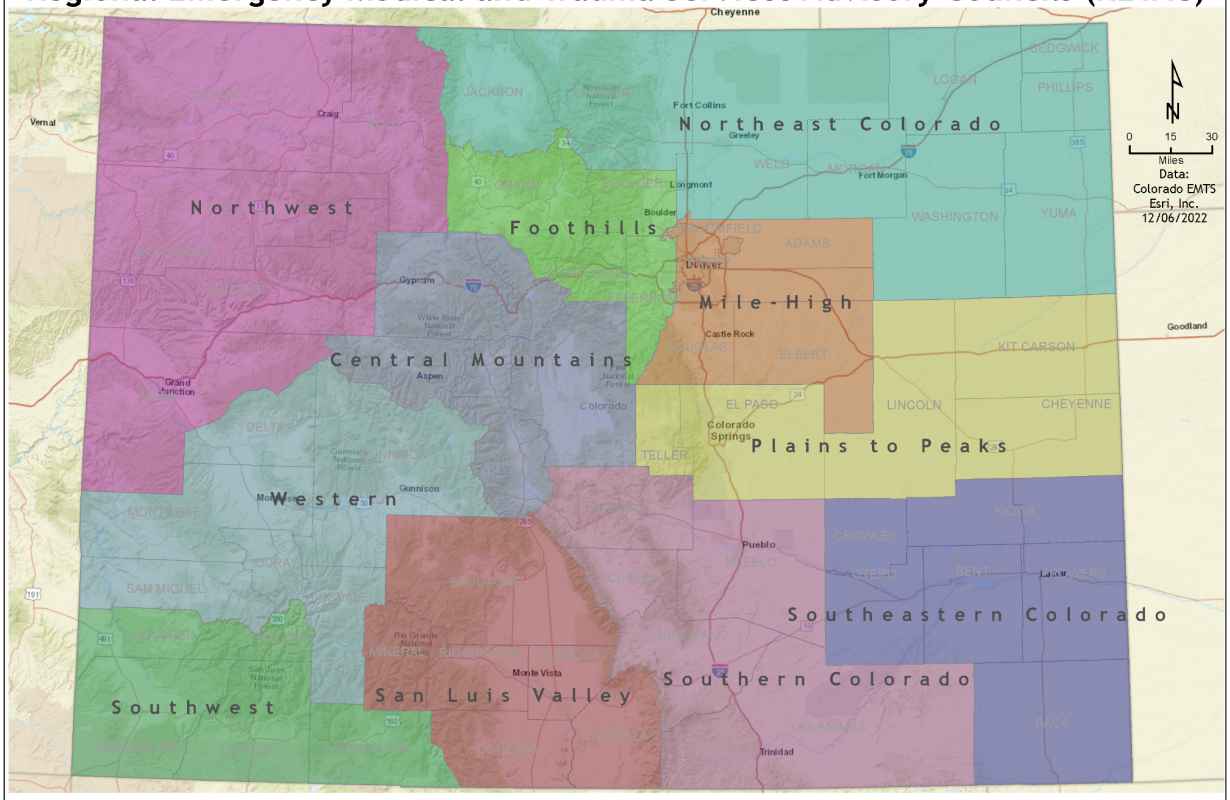
RETAC - Regional Emergency Medical and Trauma Services Advisory Councils

RMD - Regional Medical Direction Program

SEMTAC - State Emergency Medical and Trauma Advisory Council, a Type 2 Board

Appendix C: Maps and Data

Regional Emergency Medical and Trauma Services Advisory Councils (RETAC)



COLORADO
Emergency Medical and Trauma Services Branch

Colorado has 11 Regional Emergency Medical and Trauma Services Advisory Councils (RETAC). RETACs are authorized by statute to provide a coordinated approach to emergency medical and trauma care. Each council consists of five or more participating counties. Each RETAC is responsible for creating an implementation plan for delivering emergency medical and trauma care in the region.

COLORADO
Health Facilities & Emergency Medical Services Division
Department of Public Health & Environment

Response, FTE, and Agency Counts by RETAC, 2022

For and Released To:
EMS System and Sustainability Task Force

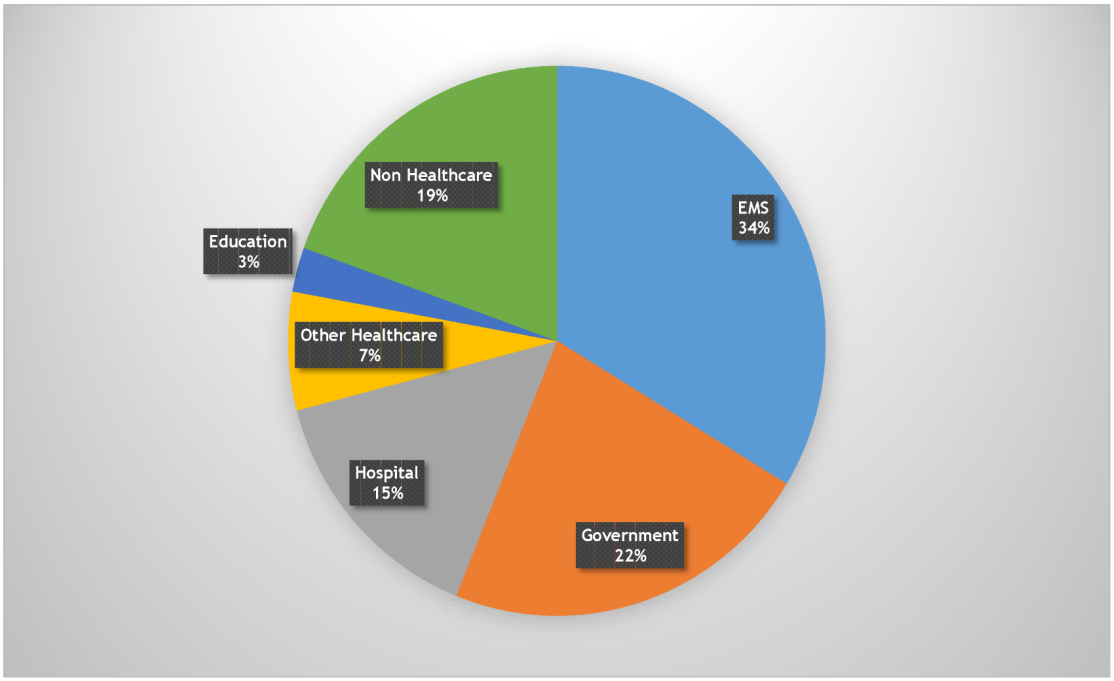
RETAC	Total Count of Responses[1]	Sum of FTE Count [2]	Total Count of Licensed Agencies [2]	Count of Licensed Agencies by Organization Type [2]					
				Fire Department	Governmental, Non-Fire	Hospital-based	Private, Nonhospital	Tribal	Missing
A	304634	1934	34	20	1		9		4
B	115584	1393.5	25	17	4	1	3		
C	103532	464	23	12	6		4		1
D	84420	890	26	9	8	4	1		4
E	47886	178	15	4	3	1	5		2
F	30949	453.5	27	20	1	2	1		3
G	17470	321	9	4	4	1			
H	13706	151	12	6	4	1			1
I	12415	215	9	4	1	2	1	1	
Air Ambulance	10100	1614.8	30			8	22		
K	7282	47.8	10	2	5		3		
L	6883	38	12	3	4	2	1		2
Grand Total	*754861*	*7700.6*	*232*	*101*	*41*	*22*	*50*	*1*	*17*

[1] Patient Care Reports (PCRs) from licensed ambulance agencies included this report if incident occurred between 7/1/2021-6/30/2022, AND incident state is equal to Colorado (GNIS=08). Duplicates were identified and removed utilizing patient care report number and unique agency ID. (N=754,861)
[2] Data from agencies' self reported organizational profile completed as of 10/19/2022. Seventeen agencies missing organizational profile information.

COLORADO
Health Facilities & Emergency Medical Services Division
Department of Public Health & Environment

Colorado Cerified or Licensed EMS Provider Employer Groups 2022[1]

For and Released To:
EMS System and Sustainability Task Force

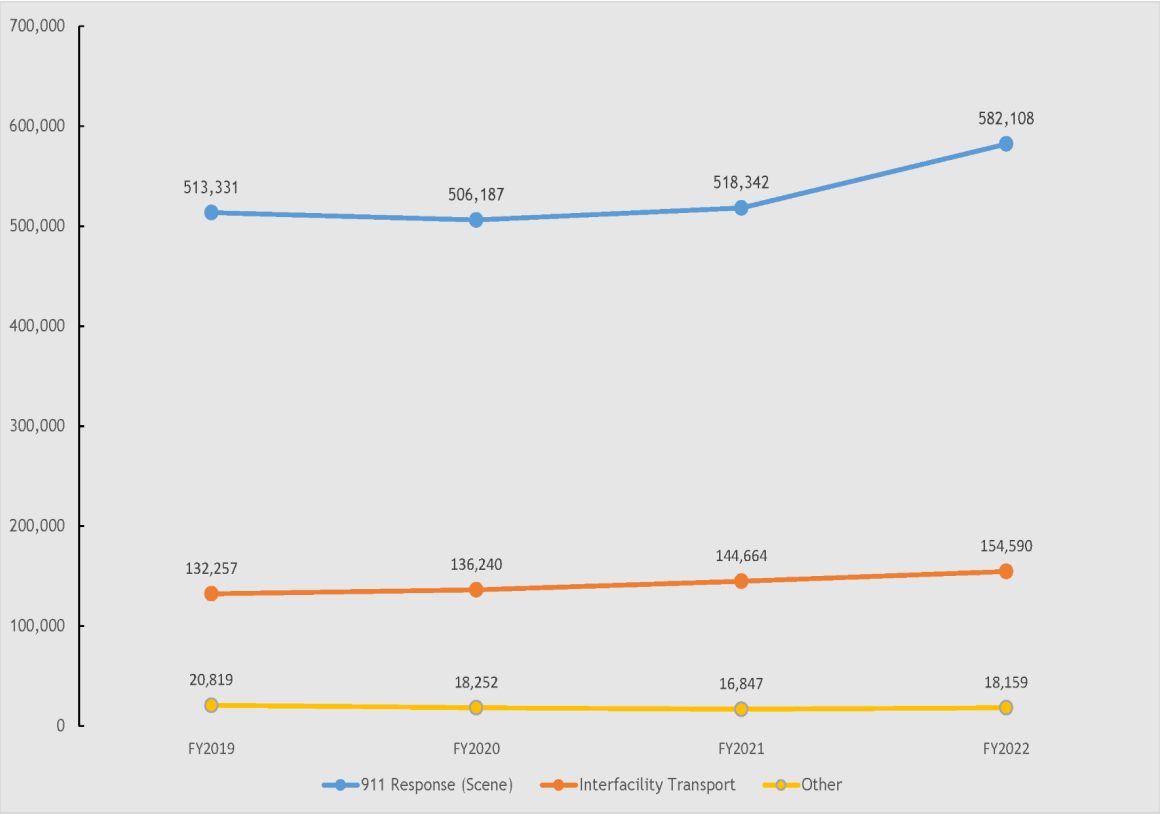


[1] EMS providers certified or licensed in Colorado and linked with Labor and Wage database with valid employer listed Q3 2022. (N=15,585 of 20,521)

COLORADO
Health Facilities & Emergency Medical Services Division
Department of Public Health & Environment

Count of Responses FY2019 to FY2022[1]

For and Released To:
EMS System and Sustainability Task Force



[1] Patient Care Reports (PCRs) from licensed ambulance agencies included this report if incident occurred between 7/1/2018-6/30/2022, AND incident state is equal to Colorado (GNIS=08). Duplicates were identified and removed utilizing patient care report number and unique agency ID. Interfaciity Transport includes Medical Transport. Other includes Mutual Aid, Intercept, Standby, and Public Assistance/Other Not Listed.