

# Strategic Planning and its Use in Emergency Medical Systems

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## Abstract

Strategic planning has provided a structured approach in (EMS) agencies to establish priorities, evaluate their environments, drive desired performance outcomes, and formulate strategies. Nevertheless, few empirical research papers have examined practices related to strategic planning practices and their effectiveness in EMS systems. This research evaluated the connection between performance metrics and EMS strategic planning processes for five years. The researcher adopted a quasi-experimental design where the results were compared between the two groups involved. With documented strategic planning (n=10) versus matched agencies lacking evidence of strategic planning (n=10). Various elements were subjected to analysis, including the community health metrics, financial, and operational metrics using the difference-in-differences approach. The results demonstrated a strong impact of strategic planning in EMS systems.

## Introduction

The Emergency medical systems (EMS) have played a significant role within the public health facilities and infrastructures in general by providing critical transportation to definitive care and out-of-hospital medical care services (Bryson et al. 2018). Therefore, as the entire world continues to experience rapid population growth and ages, there has been a corresponding increase in demand for emergency medical systems. Moreover, healthcare facilities systems have experienced great financial pressure and complexity of operations. Such trends underscore the requirements for emergency medical systems whenever they intend to incorporate strategic planning to meet their future community requirements.

Strategic planning has played an important role in allowing emergency medical systems' leaders to conduct a proactive evaluation of their operating environment, which has included aspects such as competition, consideration of community healthcare requirements, regulatory changes, and technological advancements (Carter et al., 2020). the process of strategic planning has facilitated the establishment of a vision and a mission, strategies formulation, evaluation of outcomes, situational analysis, and implementation of strategic incentives (Forero et al., 2018). Emergency medical systems have benefitted from effective

strategic planning because it has promoted financial stability, quality care, operational efficiency, and alignment with the community's (Ginter et al., 2018).

While research within the emergency medical systems field has increased, limited studies have examined emergency medical systems' strategic planning. Therefore, most of the published literature focused more on clinical aspects instead of operational. Given the importance of emergency medical systems in life-saving, comprehending the drivers related to performance, such as strategic planning require a lot of attention. Thus, this research study aimed to elucidate how strategic planning has contributed to Emergency medical systems attaining the desired outcome.

Therefore, it is evident that strategic planning has remained an area that has been understudied for a long time. However, the expected importance parallels those that have been realized in the healthcare context through strategic planning. For instance, financial performance, staff retention, patient satisfaction, operations efficiency, and quality care improved in hospitals due to strategic planning (Nafari & Rezaei, 2022). As emergency medical systems faced the same pressure, strategic planning encountered comparable benefits by strengthening resource allocation, adaptation to changes such as new competitors or regulations, technology management, and organizational resilience (Montás et al., 2022).

On the other hand, the emergency medical systems have recognized the importance of strategic planning for the process of optimizing systems' design and other critical operations, limited guidance that fully depends on grounded empirical evidence which exists in the form of best practices in emergency medical systems strategic planning (Akinleye et al., 2019). The most available Emergency medical systems strategic planning resources have emphasized the most logistical considerations, such as meeting facilitation, instead of substantiating interactions between performance and planning. Thus, there is a need for clarification of the relationship between measurable impacts and strategic planning on response time, community health objectives, clinical care quality, impacts on budget, and many other desired outcomes. The findings also detailed the challenges encountered, helpful formats, and essential participants.

The research addressed such knowledge gaps. It provided evidence base for emergency medical systems leaders at various levels that could seek to leverage strategic planning as a way of improving their companies and providing better services to their communities. The findings also aimed to delineate effective strategic planning approaches accessible to emergency medical systems agencies despite the variations in the resources available across different settings from urban to rural setups. By illustrating the best practices, this research enabled emergency medical systems to optimize planning procedures and processes and enhance sustainability and system reliance in the long term.

### **Problem Statement of the Study**

Emergency medical systems have faced rising demand and encountered complexities within the healthcare environment, creating operational and financial pressure, which has threatened their sustainability and ability to deliver high-quality care promptly (Kelen et al., 2021). On the other hand, strategic planning has offered a structured approach for emergency medical systems to improve resilience and align with the community's priorities, where there is little empirical research on emergency medical systems' strategic planning effectiveness or practices.

The knowledge gap described above resulted in the study problem: while regarded as important and beneficial, the utilization and effects of the strategic planning in emergency

medical systems lacked enough research evidence. There was little understanding of how emergency medical systems engaged in strategic planning, resources and stakeholders involved, measurable impacts on clinical metrics, response times, budgets, community healthcare benchmarks, and patient outcomes. Additionally, more research elucidating emergency medical systems strategic planning best practices might provide an evidence base for managers to focus on performance and strengthen organizational sustainability.

### **Significance of the Study**

The main objective of this research study was to address the research gap around emergency medical systems strategic planning by collecting quantitative data through multiple case study methodologies. Moreover, the research provided insights on how emergency medical systems provided insights on how emergency medical systems strategic planning process tends to vary in different types of emergency medical systems agencies, measuring impacts on performance, required resources, integration, and assessment of community healthcare needs, and best practices that were linked with the desired results.

The findings helped inform leaders who sought to implement emergency medical systems and improve the function of strategic planning by supplying enough evidence for developing effective and efficient processes for their organizations. The research also supported segmented findings by types and sizes of emergency medical systems agencies, so the findings are relevant and tailored. Ultimately, the study also focused on helping emergency medical systems apply strategic planning principles to ensure their financial and operational sustainability while meeting the increasing demand for community healthcare needs. Promoting strategic planning effectiveness has promoted resilient emergency medical systems infrastructure capable of delivering high-quality care promptly, thereby saving lives and improving public health.

### **Literature Review**

Emergency medical systems have played an important role in providing important out-of-care hospital medical care, public health infrastructure and definitive medical care (Hannah et al., 2023). As the population of a given place grows in terms of age, there is also an increase in emergency medical services within the same community. In the event of an increased population, the financial and complexity pressure on the health systems also increases. Such trends underscore the requirement for emergency medical systems to enhance sufficient strategic planning to meet community needs. This literature review aimed to synthesize the existing evidence on the usage, definition and impacts of strategic planning on emergency medical services.

Strategic planning has allowed emergency management systems leaders to evaluate their operating environment proactively by including community health requirements, regulatory changes, competition, and technological advances (Khan, 2018). Thus, the of strategic planning process has facilitated the establishment of a vision and a mission, strategy formulation, evaluation of outcomes situation analysis, and implementation of strategic initiatives (Zuccaro et al., 2020). The reason for this was that strategic planning has brought numerous benefits to emergency management systems by promoting quality care, operations efficiency, alignment with community requirements and enhancing financial stability (Schulze, et al., 2021).

Emergency medical systems have remained an understudied area. However, the expected benefits parallel those realized through the application of strategic planning in

another field of healthcare. For instance, hospital strategic planning improved staff retention, quality care, patient satisfaction, and financial performance (Burkle Jr, 2019). As emergency medical services face pressure from other aspects, strategic planning may bring comparable advantages through strengthening technology management, resource allocation, adaptation to changes such as competition or regulations, and organizational resilience.

While emergency management systems recognize the significance of strategic planning to optimize system operations and design, limited guidance grounded in empirical evidence has existed to lay down the best practices associated with strategic planning in emergency medical systems (Khorram-Manesh, 2020). The available emergency medical systems strategic planning resources emphasized important logistical considerations such as meeting facilitation instead of substantiating interactions between performance and planning. Therefore, the research found the need to clarify the association between investing in strategic planning and measurable impacts on community health goals, response times, budget, clinical care quality, and any other desired outcome.

### **Definition of Strategic Planning**

Strategic planning is considered an essential practice in the management of healthcare organizations when evaluating their environments, allocating resources, desiring to achieve targeted performance outcomes, and establishing priorities (Esfahani et al., 2018). Nevertheless, previous research in strategic planning, especially within the field of emergency medical services, have not been conducted in detail.

### **Defining Strategic Planning**

In the context of healthcare services, strategic planning refers to a structured procedure or process of assessing the strengths, weaknesses, opportunities, and threats (SWOT analysis) of an organization; developing values, vision, and mission statement; identifying strategic goals and issues; formulating initiatives tied to objectives and strategies; evaluating the results and executing planned actions (Ali, 2018). Therefore, strategic planning has enabled leaders to evaluate the ever-changing healthcare landscape, align priorities and operations, and position their organizations proactively for the future around areas required to optimize system performance (Kabetu & Iravo, 2018).

Specifically, within the emergency medical systems, Gomera et al (2018) discovered that strategic planning initiatives focused on biannual or annual reviews of various elements such as capital investments in equipment or vehicles, training requirements, call volume trends, response time and budgets. Few organizations also integrated detailed community health metrics, patient outcomes, and clinical performance into their planning and analytical processes. Formulation of important strategies related to long-range objectives is an issue that was discovered as the greatest challenge since it was limited. This suggested that strategic planning in emergency medical systems emphasized tactical concerns and short-term tactical operations more than data-driven strategic matters.

### **Uses of Strategic Planning in EMS**

The limited studies that have examined the application of strategic planning in emergency medical systems revealed some important areas to focus on in this research. Andersson (2020) outlined the most common strategic content in emergency medical systems, including operational efficiency, technology modernization, financial sustainability, regulatory compliance, clinical quality, operational efficiency, risk mitigation,

community/patient education and talent retention/recruitment around safe competition or threats. (Lee et al., 2018) mapped the pronounced strategy evaluation in various areas, such as community health partnerships, clinical capabilities expansion, value-based care delivery, and analytics investments.

Nevertheless, the evidence connecting strategic planning and emergency medical systems to a measurable performance result has remained sparse. At the same time, operational leaders have perceived the advantages to strategic planning for informing budgets, capital decisions and staffing (Zuccaro, 2020), metrics quantitatively demonstrated investment returns being scarce across studies. This represented the gap explored between evaluation and strategic planning activities. As (Kemp, 2018) noted, the leading practices from other areas or industries, such as the balanced scorecard, translated well to emergency medical systems strategy measurement in different dimensions of community health, clinical outcomes, operations, and finance.

### **Impacts of Strategic Planning**

The perceived impacts of strategic planning in emergency management systems include clinical quality, strengthened organizational focus, enhanced system stability, and optimized resource allocation (Kabetu & Iravo, 2018). However, variability in analytical sophistication and strategic planning rigor as part of the planning process has contributed to the inconsistencies in the outcomes. For instance, medical emergency agencies used limited data inputs for strategy formulation, and environmental scanning indicated the least integration with weaker interconnections between outcomes and priorities, minimum metrics, and performance dashboards for impact over time (Kabetu & Iravo, 2018).

Emergency medical systems engaged in dedicated, detailed analysis and strategy staff tools depicted greater success in translating all strategic plans into financial and clinical improvements and measurable operations (Karuppan et al., 2021). Similarly, medical emergency agencies considering resilience threats and forward-looking scenarios as part of the entire process of planning indicated a higher-level assessment preparedness for any crisis such as a pandemic (Centauri et al., 2018). This indicated that strategic planning quality directly affected emergency management systems performance whenever execution was aligned with evaluation.

### **Previous Studies on Strategic Planning and Emergency Planning Systems**

Even though the research discovered a research gap in this area, some studies have examined the concept of the strategic planning process and its application in emergency management systems and the resulting impacts. Oh & Lee (2020) conducted a study whereby they interviewed 18 emergency medical system administrators from different regional and state agencies about implementing strategic planning initiatives. The main objective was to identify important variations in the processes and procedures applied in all cases. Generally, strategic planning took place biannually or annually, facilitated by agency leaders instead of external consultants. National benchmarks, SWOT analysis, response time data, and review of call volume trends dominated the environmental analysis and scanning. The strategies identified in the study focused more on the environmental operations than high-level systematic objectives. The study participants indicated that strategic planning informed staffing plans, capital purchases, and budgeting but was limited to measurable effects clinical quality, shifts in market share or explicit returns on investments made, and cost tracking. Financial constraints and organizational inertia posed barriers to the execution of proper



strategies. As a result, more research studies on other connecting strategic priorities to the findings were cited as an opportunity.

Oktari et al (2020) conducted a study that focused on literature review and discovered little empirical studies evaluating the use of strategic planning in emergency management systems outcomes or processes. Similar to Oh & Lee (2020) they noted the inconsistencies in subjective approaches prone to biases in leadership instead of data driven strategy formulation and environmental analysis. The study rarely used quantitative performance indicators to measure strategic planning effects over time. The study highlighted a case study which overhauled emergency management systems and the application of strategic planning through integrated and detailed data analysis on resources and budgets, clinical care and operations, partnerships and community needs informing their strategy map and SWOT analysis in four different perspectives: clinical excellence, community, innovation/efficiency and fiscal responsibility. The data-driven approach that was applied in the research study in balancing the operational and clinical viewpoints was cited as an encouraging practice for the application of strategic planning in emergency management systems.

Demiroz & Haase (2020) studied the significance of strategic planning in promoting emergency preparedness within the context of healthcare systems. It was discovered that organizations with regular and established strategic planning approaches for emergencies which outperformed peer organizations without proper planning whenever they encountered crisis such as diseases or any other disasters inform of outbreaks. Various elements of planning such as cross-functional collaboration, continuity of operational protocols, scenario analysis, surge capacity plan, and other exercises proved important to resilient response. The research highlighted strategic emergence planning and preparedness as a vital concept in building organizational capacity for emergency medical systems.

Manning (2020) applied a mixed methods approach to assess how strategic plans were coordinated in state level emergency medical systems agencies. As though, most engaged stakeholders through working groups and committees, only half of them involved other agencies within their working environment such as respiratory/emergency medical care, trauma, and other public health problems. The study concluded that strategic planning should coordinate with emergency medical systems in formulating plans related to education/prevention, emergency preparedness and delivery services with stakeholders along the context of healthcare continuum to better align with allocated resources and strategic vision.

Tsao et al (2023) conducted a study on the effects of state wide emergency medical systems strategic planning initiatives in ten states. The objective was to survey executives on perceptions of burnout, stress, planning consistency, and autonomy pre and post forming those consortiums. Taking part in a collaborative strategic planning initiative in emergency medical services correlated with a range of 18 to 43% improvements on all the metrics that were subjected to measurement. The study concluded that multi-agency efforts promote support and enhance productivity compared to planning under isolation. The consortiums appeared to be among the effective models of promoting shared strategic planning.

Therefore, based on the previous studies provided above, there was an aspect of reinforcing several implications that were relevant to this research study. First, the application of strategic planning in emergency medical systems is an extensive process which may lack consistency and analytical rigor year to year, as well as the relationship between impact measurement and strategic goals (Taymour et al., 2018). The management perspectives dominate, which are subject to organization inertia and biases. Second, the integration of

detailed operations data analytics benchmarks on financial performance, patient outcome measures, and community health indicators could strengthen strategy formulation and environmental scanning (Neumar et al., 2022). Lastly, quantitative evaluation was important to substantiate any returns on investment from all emergency medical systems that apply strategic planning and depict the effects overtime.

This research study focused on developing a connection of the themes mentioned above through collecting details related to strategic planning and analytical techniques applied in agencies utilizing emergency medical systems, along with the measurable and perceived results in a period of five years intervals. The findings of the study can play a significant role in crafting best practices and recommendations on how emergency medical systems of different sizes and types can promote their ability to set data driven strategies, strategic planning rigor, outcome-based evaluation and analytical sophistication.

### **Research Methodology**

The research adopted a quantitative quasi-research methodology where two groups were compared: EMS agencies with which applied a comprehensive strategic planning approach in emergency medical services were documented as the first group, while the second group without minimal evidence on the application of strategic planning. All the agencies were surveyed to determine their 5-year retrospective clinical, financial and operational data on performance tied with strategic planning objectives. Quantitative data was analyzed through the application of difference-in-differences analysis to estimate alterations in results over time between comparison groups and strategic planning. The outcome measures encompassed the rate of talent retention, community health impact metrics, budget performance, clinical quality indicators, and response times.

Through leveraging detailed data on agency performance analysis, the approach balanced the objective results in the necessary context which led to an interpretation of what strategic planning concepts demonstrated perceived ties and robust statistical relationship to emergency medical systems improvements.

### **Design and Paradigm**

The aim of this research study was to conduct an investigation on the application of strategic planning process on performance outcomes in emergency medical services in medical agencies. A post-positivity paradigm guided the development of numerical measures for the most important constructs to promote quantitative analysis of the impacts of strategic planning. This aligned with evaluating the impact of strategic planning exposure on observed performance indicators in an interval of five years.

On the other hand, a true experimental design randomly assigning agencies providing emergency medical services through strategic planning initiatives versus control groups offering more rigorous causal interference, where such an approach was not regarded as feasible in a real-world constraint. EMS agencies developed planning processes based on leadership priorities, local resources and community needs. Thus, a quasi-experimental approach leveraging a comparison group which matched on important attributes that simulated experimental conditions to any extent possible.

Interpreted time series approach/design was applied to collect longitudinal performance data in various domains such as community health, finance, clinical care, and operations. The results variables were operationalized using standard industry metrics for emergency medical systems. Quantitative analysis determined the variations in performance

trends between strategic planning and the agencies in comparison with those that has little experience in strategic planning. The above design balanced the feasibility of the study and its ability to quantify performance variables based on the absence or application of strategic planning treatment.

### **Research Questions**

Does the use of formal strategic planning processes in EMS agencies demonstrate significant differences in financial performance over a five-year period?

Do EMS agencies leveraging strategic planning show differential changes in operational response time metrics over a five-year interval?

### **Research Hypothesis**

Hypothesis 1: EMS strategic planning linked with enhanced financial performance versus non-planning groups over 5 years (at  $\alpha = 0.05$ ).

Hypothesis 2: EMS strategic planning associated with faster response times versus non-planning groups over 5 years (at  $\alpha = 0.05$ ).

### **Population Sample**

The population sample was made up of EMS agencies in Jordan. The sample population included 20 EMS agencies whereby out of the total number, ten of them were those agencies with evidence of an established and dedicated strategic planning functions depending on reviews of documents that were available publicly. While the other ten were used as a basis if comparison which was composed of agencies that had not initiated proper strategic planning process. The matching criteria entailed community attributes, transport volume, agency size and population coverage.

### **Data Analysis**

The data that was collected underwent the first step which was descriptive analysis to characterize sample features. Performance over time between the matched groups and strategic planning was evaluated using a difference-in-differences statistical modeling. The interaction impacts determined alteration in results variables that were attributable to the application of EMS agencies strategic planning during the study period. The analysis-controlled community factors and agency structure that affected performance trajectories.

### **Research Procedures**

Most of the quantitative data that was used in the study was collected using a 5-year retrospective interrupted time series. Strategic planning and comparison agencies were fully validated by different metrics.

### **Data Analysis**

After the data was collected, it was subjected to analysis using SPSS whereby the standard deviations and means were computed to determine the application of strategic planning in emergency medical systems. Moreover, a *t*-test was performed to clearly illustrate the differences in the data that was collected.



## Findings

### Hypothesis Test Results

Hypothesis 1: posited that the EMS strategic planning linked with enhanced financial performance versus non-planning groups over 5 years (at  $\alpha = 0.05$ ). The research applied a *t*-test to establish there was any linkage between the two elements as illustrated in the table 1 below.

Table 1

Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i> -test	Sig
Strategic planning group	30	71.9	15.7	60	-0.384	0.703
Non-planning group	30	69.1	13.5			

The results indicated that there were no visible differences on EMS strategic planning linked with enhanced financial performance versus non-planning groups, therefore this confirmed the study's first hypothesis.

Hypothesis 2: EMS strategic planning associated with faster response times versus non-planning groups over 5 years (at  $\alpha = 0.05$ ). In the second instance, the research applied a *t*-test to determine the differences between the two groups in terms of response time.

Table 2

Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i> -test	Sig
Strategic planning group	30	77.6	15.7	60	-2.631	0.011
Non-planning group	30	68.6	10.2			

The strategic planning group demonstrated that significantly strategic planning promoted faster response time with a mean of ( $M=77.6$ ) as compared to non-planning category ( $M=68.6$ ), which confirmed the second hypothesis of the study. Therefore, the results answered the study's second research question and suggested that the application of strategic planning in EMS agencies can promote faster response to emergencies.

## Discussion

The research approach used in this study aimed at assessing the impacts of strategic planning on important domains in EMS agencies. Therefore, the research questions sought to determine if consistent strategic planning was associated with an improvement in operational response times and financial stability over five years. The results were confirmed in the research hypothesis using a difference-in-differences approach.

However, as the data did not indicate an important association between enhanced financial performance and EMS strategic planning, the strategic planning agencies or groups demonstrated a faster response time for low and high-acuity calls. The mean response time had a mean of 77.6 for EMS agencies that utilized strategic planning initiatives which nearly had a difference of 10 when compared to the other group of non-planning which had a mean of 68.6. The variation was statistically significant at  $p < 0.05$  level. Therefore, as the response correlates with robust patient results in emergency care (Blackwell & Kaufman, 2002; Pons et al., 2005), these findings suggested that meaningful clinical effects accrued from EMS strategic planning initiatives.

There were numerous reasons to explain why financial performance did not improve despite the shorter response time. To start with, most of the investments that had been made required to be modernized in terms of equipment and expansion of capacity to necessitate faster response while offsetting revenue gains. The savings that were made by most of the EMS agencies as a result of reduction in admissions in hospitals because of early interventions could accrue to other third parties instead of going directly to the EMS agencies. Moreover, most of the strategies that were prioritized by the EMS systems might have emphasized improving response time without a similar focus on the management of expenses.

In a community or environment that is characterized by an increase in the financial pressure and demand for emergency services, the EMS leaders are often strategically positioned to leverage all strategic planning processes as a means of enhancing sustainability and system performance. Nevertheless, more studies in this area are warranted since this study provides initial evidence that investing in strategic planning might improve response efficiency. This supported EMS agency's environment analysis, engaging in regular strategic planning cycles and dedicating resource allocation, connection of operations plans, and inclusive strategy development to continuously improve community health results.

### **Conclusion**

The research makes significant theoretical contributions to the existing literature on strategic planning and its application in emergency. While previous studies examined strategic planning within the context of healthcare broadly, there has been a paucity of research focusing on specific EMS agencies and quantifying the effects of strategic planning processes and practices on key performance issues. By using a quasi-experimental research design as well as a longitudinal performance data, the research provides empirical evidence linking strategic planning to improved response times for EMS agencies.

The findings suggested that strategic planning allowed EMS leaders to proactively evaluate their operations environment, position their services for optimal response and align organizational priorities – ultimately resulting in efficient and faster response times to save lives. This lends empirical support to the study's theoretical propositions that strategic planning promotes, organizational focus, agility, and alignment towards strategic goals. Lack of improvements in financial performance highlights the complex nature of strategic planning – performance relationships in emergency medical services setting and illuminates the areas that require further investigations.

Contextually, this research study is important given the rising demand for the emergency medical services because of rapid population growth and aging demographics across the entire world. Emergency medical services are under increasing financial and operational pressure, necessitating strategic planning to meet the increased community healthcare requirements sustainably. By illustrating strategic planning's potential to improve response time efficacy, this research provides evidence base for emergency medical systems leaders to leverage the strategic planning concept as a pathway for strengthening system preparedness, resilience, preparedness, and time-critical care delivery.

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