



Cornell University  
Cornell Institute for Public Affairs

# Tompkins County Council of Governments Emergency Medical Services Task Force

## Final Research Report

**Prepared by:**

Quetrell Heyward | Melissa Murray | André Hook

**Prepared for:**

Tompkins County Council of Governments  
Emergency Medical Services Task Force

**Prepared on:**


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**Abstract:** This report serves to provide stakeholders with a broad base of research surrounding EMS, particular to rural settings whenever possible, and provides a recommended methodology to approach opportunities for future study. Ultimately this report is intended to be the first of three reports over three semesters. The first phase, the results of which are covered in this report, is an overall research phase to build a strong base of knowledge surrounding EMS best practices, volunteerism strategies, and regulatory barriers and opportunities.



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Tompkins County Council of Governments – Emergency Medical Services Task Force

# **FINAL RESEARCH REPORT**

Prepared by:

Quetrell Heyward	Cornell University
Melissa Murray	Cornell University
André Hook	Cornell University
Professor Rebecca Brenner	Cornell University
Clifford Chen	Cornell University

**Spring 2017**



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## Table of Contents

Acknowledgements .....	1
Scope of Study .....	2
Executive Summary .....	3
Tompkins County Emergency Medical Services Overview .....	5
Tompkins County Emergency Medical Service Task Force Meeting Summaries .....	5
Tompkins County Emergency Medical Services Distribution.....	7
Additional Context Describing Tompkins County Current State.....	8
Project Overview and Research Methods .....	9
Project Stakeholders .....	9
Project Goals and Objectives .....	9
Project Methods + Strategies .....	11
Project Literature Review and Associated Findings .....	14
EMS Best Practice Findings .....	14
EMS Recruitment and Retention Findings .....	25
Project Opportunities.....	30
Develop a Shared Vision for EMS in Tompkins County.....	30
Host Roundtable Discussions to Facilitate Care Coordination Innovations .....	31
Build a Current State Assessment of Both Data Results and Tracking Systems .....	31
Identify Funding Sources that will Best Support the EMS Future State .....	32
Consider Marketing Strategies to Support Volunteer Recruitment .....	32
Limit Burdens Common to Volunteer Retention .....	33
Curate an Inventory of Community Partners to Support Volunteer Recruitment.....	33
Engage Students with Tompkins County EMS Opportunities .....	33
Collaborate Across Municipalities to Share Remote Training Best Practices .....	33
Project Next Steps .....	35
Appendix – Final Presentation Slides.....	A





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- **Brian Wilber**, Department of Fire and Emergency Response, Dispatch Operations, Assistant Director



## Scope of Study

In January 2017, the Tompkins County Council of Governments Emergency Medical Services Task Force (TCCOG EMS-TF) engaged Cornell Institute for Public Affairs (CIPA) to assemble a student consulting team to address the TCCOG EMS-TF's concern over significant challenges to the long-term sustainability for the county's emergency medical services (EMS).

This report serves to provide stakeholders with a broad base of research surrounding EMS, particular to rural settings, and provides a recommended methodology to approach opportunities for future study. Ultimately this report is intended to be the first of three reports spread over three semesters. Phase I, the results of which are covered in this report, is an overall research phase to build a strong base of knowledge surrounding EMS best practices, volunteerism strategies, and regulatory barriers and opportunities.

In 2006, the Institute of Medicine under the National Academies of Science Engineering, and Medicine, released three reports to define the challenges faced by EMS and other emergency care services across the nation. These challenges included inadequate funding, fragmented services, and an overarching stress on the system from increasing patient volumes.<sup>1</sup> These reports sparked the National Institute of Health (NIH) to create a task force, the Office of Emergency Care Research (OECR) in 2012.<sup>2</sup> In 2013, the OECR was made a permanent office of the NIH indicating that these issues are not going away.<sup>3</sup> The findings of this office continually confirm that the state of emergency care is in crisis, and that the public is largely unaware of how quickly this issue may affect them when illness or injury occur.<sup>4</sup> On a local level, Tompkins County, New York has experienced a 49% growth in EMS dispatch volumes in the last ten years.<sup>5</sup>

These issues motivate this report's recommendation that Phase II of this project should focus on working with the TCCOG EMS-TF to curate a compelling picture of the urgent situation that Tompkins County EMS is currently facing. This approach will provide a platform for the TCCOG EMS-TF to engage community stakeholders to discuss related issues like care coordination and community awareness to inform a future vision for EMS in Tompkins County. Phase III will devise this future vision in order to direct the development of an implementation plan for strategic evolutions of EMS in Tompkins County. These three phases were crafted to allow Tompkins County to create an exemplary model of emergency medical care that other rural communities can use to improve the system in their communities.

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<sup>1</sup> "Emergency Medical Services At the Crossroads." (2006 June 13). The National Academies of Science, Engineering, and Medicine. Last accessed May 14, 2017, from: <http://www.nationalacademies.org/hmd/Reports/2006/Emergency-Medical-Services-At-the-Crossroads.aspx>.

<sup>2</sup> "NIH Creates Office of Emergency Care Research." (2012). The National Academies of Science, Engineering, and Medicine. Last accessed May 14, 2017, from: <http://www.nationalacademies.org/hmd/Activities/Quality/emergencycare/Action-Taken.aspx>

<sup>3</sup> "OECR History." (2016). National Institute of Health. Last accessed May 14, 2017, from: <https://www.nigms.nih.gov/about/overview/OECR/Pages/history.aspx>

<sup>4</sup> Ibid.  
<sup>5</sup> Note: time period defined as 2006 to 2016 and volumes include inter-county mutual aid and EMS assists. | Source: Shurtleff, L. (2017 February 22, 2017). "Tompkins County Department of Emergency Response." Last accessed May 24, 2017, from: [http://www.tompkinscountyny.gov/files/tccog/Shared\\_Services/EMS\\_Task\\_Force/Documents/EMS%20Overview%20Part%201%20compressed.pdf](http://www.tompkinscountyny.gov/files/tccog/Shared_Services/EMS_Task_Force/Documents/EMS%20Overview%20Part%201%20compressed.pdf)



## Executive Summary

In November of 2016, representatives from Tompkins County created the Tompkins County Council of Governments Emergency Medical Services Task Force (TCCOG EMS-TF) to improve the operations and financial efficiency of the county's emergency medical services (EMS). In January of 2017, the Cornell Institute of Public Affairs (CIPA) student consulting team was recruited to help develop a project that helps the TCCOG EMS-TF in their endeavor of improving county-wide EMS. Based on the breadth of the project, the CIPA student consulting team recommended splitting the project into three phases:

- 1) conducting research to identify national EMS challenges and potential opportunities for improvement,
- 2) performing a current state assessment of the county's emergency medical services (EMS), and
- 3) implementing tailored recommendations to improve county-wide EMS based on the first two phases


Over the course of the Spring 2017 Semester, the CIPA student consulting team completed the first phase of the project and segmented their research into the following three categories based on the overarching goals of the task force: volunteerism, best practices, and the regulatory impacts of each.

When looking at volunteerism, the main impediments to optimal EMS staffing include a lack of interest in EMS as a profession, difficulty attaining certification requirements, and an increased rate of mental health disorders among volunteers that stem from intense day-to-day operations. In addition to issues surrounding volunteerism, EMS organizations across the country are experiencing extensive operational issues. For example, multiple sources have mentioned increases in demand stemming from the continued growth of the national population as well as the increased prevalence of over-utilizers, people who excessively use emergency services. The literature also mentions widespread inefficiencies such as the ability of EMS organizations to track costs as well as outdated operational models. With the prevalence of these problems related to cost and demand, the literature cites resulting quality concerns such as increased response times.

Finally, regarding EMS policy, the regulatory environment in the United States is complex and disjointed with the majority of oversight coming from the Departments of Health and Transportation. Rural areas are at a noted disadvantage because even at the regional level EMS governance organizations tend to prioritize EMS agency needs specific to urban communities. However, the literature review also revealed several key findings that Tompkins County can use to improve both EMS volunteerism and operations including opportunities to increase the flexibility of EMS continuing education requirements, and funding sources such as the Delivery System Reform Incentive Payment (DSRIP) Program.

Based on the literature review, there are several opportunities for future study that can build volunteerism, reduce demand, improve quality, and decrease costs. These opportunities include initiatives such as implementing stress-relief programs to improve volunteer retention and care-coordination models to reduce demand and costs while ensuring high quality care. Based on these opportunities, the following list of questions have been compiled to guide the TCCOG EMS-TF as they enter Phase II of the project:

1. What is the visibility of EMS in Tompkins County, and how does that visibility affect people's perceptions of EMS?

- 
2. What are the reasons current EMS volunteer personnel decide to leave or stay with the organization?
  3. What are the reasons behind the high prevalence of over-utilizers in the county, and can this be mitigated through community paramedicine, increased education, and other means?
  4. What are the costs of having municipality-specific EMS agencies, and how can those costs be defrayed?

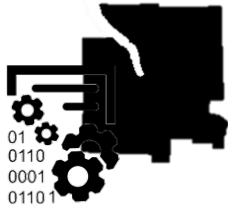
The TCCOG EMS-TF can utilize this project's Phase I research to inform an inventory of questions such as those included in this report to inform the Phase II current state assessment of EMS in Tompkins County which the student consulting team expects to be completed in the fall of 2017. The three phases of this project will allow the county and its stakeholders to define, and ultimately deliver on, expectations for EMS in the next five years and further into the future.



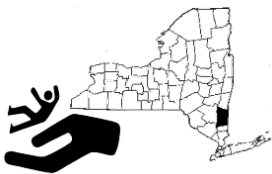
# Tompkins County Emergency Medical Services Overview

As part of Phase I of this project, the CIPA student consulting team worked to set the future CIPA student consulting teams up for success. This work included summarizing the TCCOG EMS-TF meetings that were attended throughout the semester, outlining the current distribution of the dual-levels (basic and advanced life support) of EMS in Tompkins County, and noting other information provided by the community representative members of the project steering committee.

## Tompkins County Emergency Medical Service Task Force Meeting Summaries



**On March 8, 2017**, Lee Shurtleff, Director of Tompkins County Department of Fire and Emergency Response, presented on the “sobering aggregate data”<sup>6</sup> apparent in Tompkins County. Overall, he spoke on how demand for EMS was increasing due to an aging population, and systematic issues stemming from avoiding liability for patient falls at care settings like skilled nursing facilities or substance abuse patients from the police force.<sup>7</sup> Mr. Shurtleff also discussed falling volunteer rates, growing stress on paid paramedic staff, and inability of billable services to cover Tompkins County’s costs.<sup>8</sup>



**On March 22, 2017**, the TCCOG EMS-TF held a general discussion to review findings of a study completed on EMS services in Dutchess County, NY.<sup>9</sup> In addition, the subject of patient falls in skilled nursing facilities and nursing homes was identified as a strain on EMS. Although the discussion was unclear about whether regulation restricts nurses at nursing homes from providing hands-on contact with residents, it illustrated the belief that nurses tend to frequently utilize EMS services because they are concerned about the liability surrounding assisting patients after they fall.

Moreover, the discussion touched on the fact that county-wide EMS systems differ greatly from municipality-based EMS systems with respect to funding, call-systems, and other operational aspects. These differences spark the need for further study and research to determine the optimal model.<sup>10</sup>



**On April 11, 2017** during the last meeting attended by the CIPA consulting team, Susie Surprenaut, the Executive Director of Central New York Emergency Medical Services, discussed the similarities between EMS infrastructure throughout New York State and Tompkins County. Across the nation, some EMS agencies are municipal, some are non-profit, and some are privately owned.<sup>11</sup> Furthermore, Ms. Surprenaut clarified that crossing municipalities is usually off limits unless one municipality’s resources are

<sup>6</sup> Shurtleff, L. (2017 March 8). *Providing EMS in Tompkins County*. [Presentation]. Last accessed May 13, 2017, from: [http://www.tompkinscountyny.gov/files/tccog/Shared\\_Services/EMS\\_Task\\_Force/Documents/ProvidingEMS.pdf](http://www.tompkinscountyny.gov/files/tccog/Shared_Services/EMS_Task_Force/Documents/ProvidingEMS.pdf)


<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

<sup>9</sup> TCCOG EMS-TF. (2017 March 22). *Dutchess County, NY Findings Discussion*. :[Meeting Minutes]. Last accessed May 14, 2017, from: [http://www.tompkinscountyny.gov/tccog/EMS\\_Task\\_Force](http://www.tompkinscountyny.gov/tccog/EMS_Task_Force)

<sup>10</sup> Ibid.

<sup>11</sup> Surprenaut, S. (2017 April 11). *Inter-State and Municipality EMS Partnerships and Policies*. Minutes link not available as of May 14, 2017.



saturated.<sup>12</sup> If one municipality feels as though their operating territory should be expanded, they can submit a certificate of need to the state, which can be cumbersome to the municipality.<sup>13</sup>

Additionally, Ms. Surprenaut validated that mental health is a prevalent issue state-wide among EMTs.<sup>14</sup> A decline in volunteer retention rates, discussed in the findings section of this report, was acknowledge to be caused, in part by, continuing education requirements.<sup>15</sup> EMS managers are often finding that volunteers are not going back for recertification due to the stringent requirements and lack of available time. Furthermore, while wages for EMS in New York State are very comparable to the rest of the country, EMT wages in general are not bountiful, which impairs retention as well as recruitment.<sup>16</sup>

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<sup>12</sup> Ibid.

<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

<sup>15</sup> Ibid.

<sup>16</sup> Ibid.

## Tompkins County Emergency Medical Services Distribution

Through project work, the steering committee ensured that the nuances of the two-tiered EMS structure in Tompkins County were properly communicated and understood. Currently, there are four ambulance organizations in the county that provide advanced life support (ALS) as illustrated in Figure 1.<sup>17</sup>

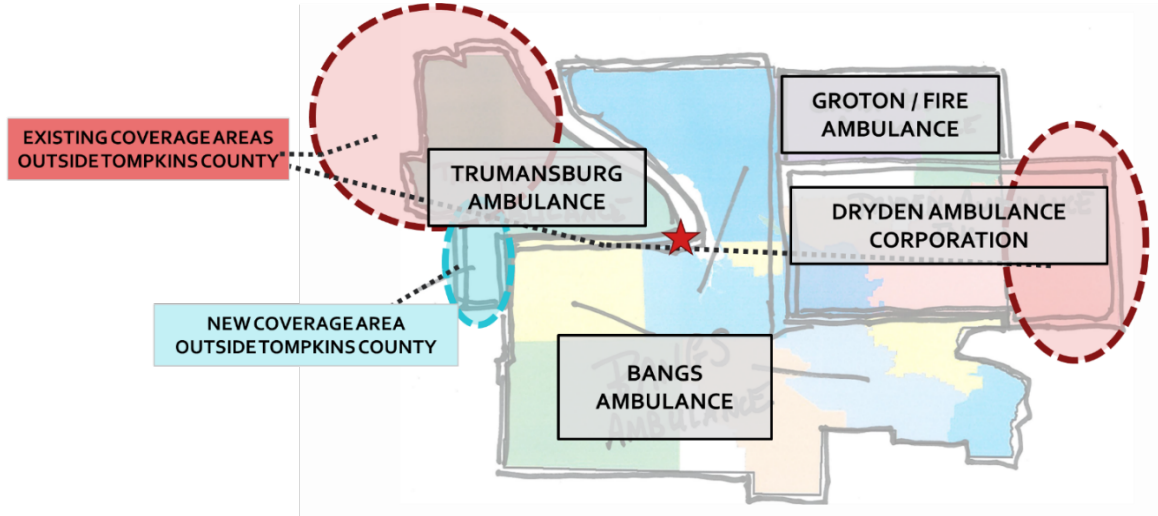
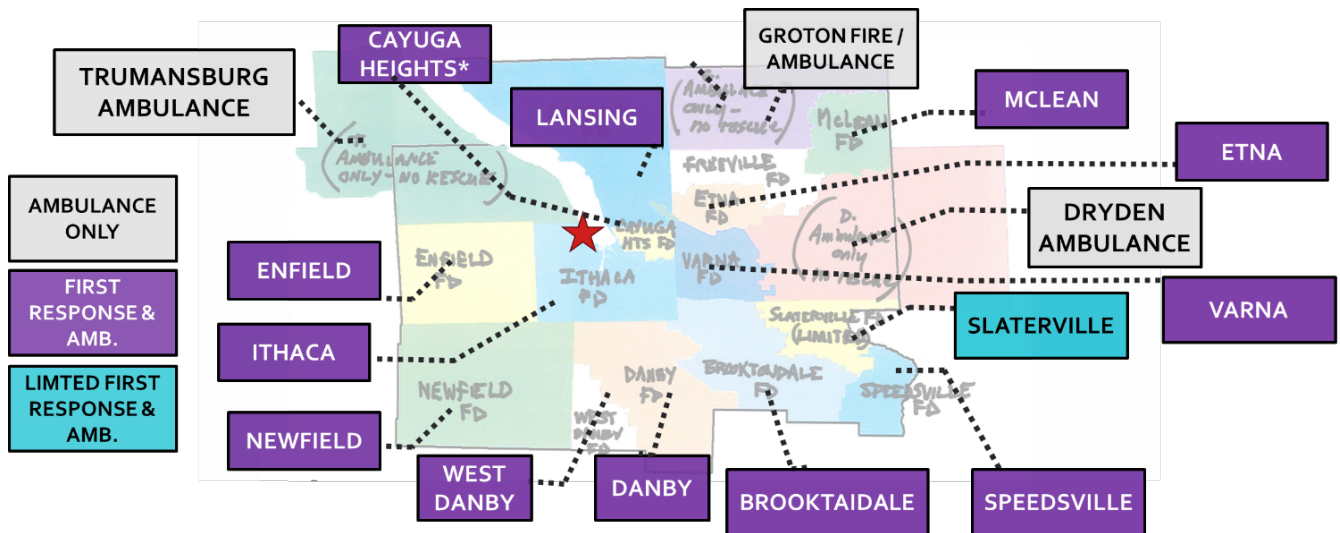


Figure 1. Tompkins County Ambulance Coverage<sup>18</sup>

However, as Figure 2. shows, the EMS structure in Tompkins County consists of more than just ambulance services and also incorporates an extensive first responder component that is heavily provided by volunteers.<sup>19</sup>



Notes: \* indicates that Cayuga Heights first responders are all Advance Life Support (ALS)

Figure 2. Tompkins County EMS Coverage Types<sup>20</sup>

<sup>17</sup> Shurtleff, L. (2017 May 8). *EMS Structure in Tompkins County*. E-mail from Lee Shurtleff.

<sup>18</sup> Shurtleff, L. (2017 May 8). *EMS Structure in Tompkins County*. E-mail from Lee Shurtleff.

<sup>19</sup> Ibid.

<sup>20</sup> Ibid.



## **Additional Context Describing Tompkins County Current State**

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Further, the steering committee supplemented the CIPA consulting team's research efforts with literature and findings developed prior to the CIPA consulting team's arrival. This research consisted of the following findings:

1. Tompkins County is aging at a rate similar to the rest of the nation. From 2000 to 2010, the Tompkins County population, ages 60 and older, grew 34 percent. Additionally, the working age adults per retired (those age 65 and older) is projected to fall from 4.3 to 3.2 by 2020. Moreover, by 2030, it is expected that there will be 2.7 persons for every 1 person of retirement age. Finally, according to survey results, 90 percent of this aging population desire to stay in Tompkins County.
2. Eldery EMS users anecdotally do not always require a trip to the emergency department when dialing 9-1-1. Care coordination and community paramedicine efforts such as those illustrated by a Northwell Health study demonstrate promise regarding these issues in urban environments.
3. Past EMS projects between the Johnson School at Cornell University and Tompkins County EMS provide a useful baseline profile of Cornell University EMS as well as exploration of a potential partnership with the Tompkins County Emergency Services.
4. A study of Erie County's New York Fire Services demonstrates a unique finding that volunteer models may be more costly in the long-term than traditional, paid models as a result of high costs associated with volunteer recruitment, training, and high turnover.



## Project Overview and Research Methods

This section of this report provides a high-level overview of the project and details the process that the CIPA student consulting team completed. This process was led by two primary objectives, which included clearly understanding the issues facing Emergency Medical Services (EMS) in the United States and identifying a menu of potential opportunities for EMS in Tompkins County to meet the needs of the approximately 100,000 residents in the 16 Tompkins County municipalities.

### Project Stakeholders

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In November 2016, the TCCOG formed the EMS-TF. The TCCOG is the county-wide forum where local governments discuss strategies for “more efficient and fiscally responsible delivery of government services. [Their] goals include expanding cooperation among taxing entities and resolving duplication of services, improving communication among local governments in Tompkins County and improving involvement with School Districts.”<sup>21</sup>

These goals led the TCCOG EMS-TF to engage the CIPA Non-Profit and Government Consulting course for the 2017 Spring Semester. This course provided a three-student CIPA consulting team, who worked with a steering committee made up of TCCOG EMS-TF members. The TCCOG EMS-TF members included both stakeholders within the county’s Department of Emergency Response as well as local legislature representatives. Specifically, the steering committee’s community representatives encompassed the following individuals:

- Lee Shurtleff, Director of Fire and Emergency Response, Tompkins County
- Brian Wilber, Assistant Director, Dispatch Operations, Tompkins County
- Dan Klein, Legislator, District 7, Tompkins County
- Irene Weiser, Co-Chair of TCCOG, and Councilwoman, Town of Caroline, Tompkins County

The three student consulting team members included:

- Quetrell Heyward, MD / MBA Candidate
- Melissa Murray, MHA Candidate
- Andre Hook, RN, MBA / MHA Candidate

This project partnership aimed to leverage the experience of the community representatives with the outside perspective of the student consultants to create a plan to address the EMS-TF’s goals and objectives.

### Project Goals and Objectives

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The primary goal of the EMS-TF steering committee was to research and develop methods and strategies to ensure adequate and optimal emergency medical response and transport for Tompkins County. Furthermore, given the large scope of the Tompkins County EMS project, the consulting team divided the project into three phases (as illustrated in Figure 3. below) to best accommodate the ambitious goals laid out by the project steering committee and the TCCOG EMS-TF. This was to ensure that all project aims were realistic to a 14-

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<sup>21</sup> “TCCOG Home.” (2017). Tompkins County Council of Governments. Last accessed May 13, 2017, from: <http://www.tompkinscountyny.gov/tccog>.

week timeline and could ultimately be met with high-quality deliverables. These goals were identified within the steering committee to be (1) a need for a solid current state assessment to understand cost and sustainability of EMS, (2) the desire to balance opportunities for shared services with hesitation to remain independent, and (3) addressing the issues surrounding education of the public on urgent versus emergency care in order to reduce demand.

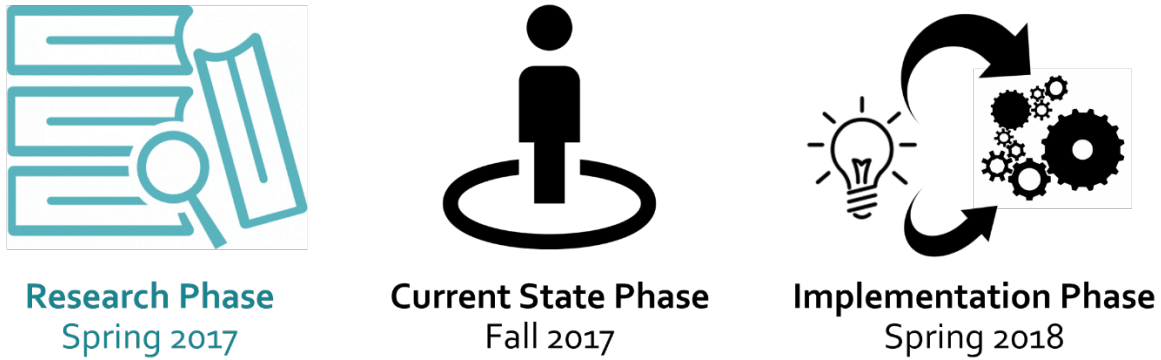


Figure 3. Overarching Phases of Project

Within the current Research Phase, the steering committee aimed to support efforts to address the project challenges by identifying three primary branches of research: EMS best practices, volunteerism strategies, and the regulatory impacts of each.

The primary object of phase one was to identify and articulate opportunities in these three primary branches of research to support the future design of the phase current state study. This will allow the next CIPA consulting team to quickly understand the major issues surrounding EMS structure and which metrics would best espouse a useful current state study of EMS in Tompkins County. More specifically, the team wanted to answer the following questions:

- What are the best practices currently being discussed in EMS across the nation, and why do communities find them helpful strategies?
- What are the issues surrounding volunteerism for EMS, and what are the ways communities are addressing these challenges?
- Finally, what are the regulatory barriers, if any, that would impede a community from implementing any of the opportunities found in the EMS best practice or volunteerism strategies research?

Additionally, a secondary goal for the CIPA consulting team included applying classroom knowledge to real-world clients and situations. To that end, the CIPA consulting team members leveraged their experiences as a current medical student, a practiced critical care nurse, and an experienced healthcare consultant to best apply class assignments and readings to support the TCCOG EMS-TF and the goals listed above.



## **Project Methods + Strategies**

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The first phase of this three-phased project spanned the 2017 Spring Semester. The CIPA consulting team activities included attending bi-weekly steering committee and monthly TCCOG EMS-TF meetings, conducting secondary research in the form of a literature review, leading a directed discussion of current findings and next steps with the TCCOG EMS-TF, and developing a final presentation and report on the project thus far.

### **Bi-weekly Steering Committee Meetings**

In January 2017, the project team and other steering committee members set bi-weekly meeting dates to review project progress. Before each meeting, the CIPA consulting team would distribute a packet of slides and other documents to be discussed as a committee. These meetings served primarily to talk through the research and decide which items were most relevant for Tompkins County based on the insight of the community representatives.

March 23, 2017, 1:30 to 2:30pm – the first meeting covered the team’s initial research in the three branches of study. From this meeting, a preliminary findings memo was submitted to the community representatives on the steering committee. This memo outlined the next steps of continued inquiry into the three branches of research as well as a narrowing of the literature to tailor this research to best address Tompkins County’s specific needs including determining which EMS or volunteer best practices relate to similar rural settings as well as have implementation results.

Concurrently, the CIPA consulting team set a date to meet with Lee Shurtleff on Monday April 10<sup>th</sup> before the regular steering committee meeting to review and collect the available data.

April 10, 2017, 1:00 to 3:00pm – The intent of this meeting was to identify data available from Tompkins County to assess transferable best practices for Tompkins County and identify any regulatory risk areas that might need mitigation strategies, which could possibly be found by looking at how similar rural areas navigate policy and regulation. However, this data was ultimately not collected by the CIPA consulting team, as the data collection and analysis work for this project was shifted into the phase two current state assessment.

April 10, 2017, 4:30 to 5:30pm – At the steering committee’s second meeting, the CIPA student consulting team presented another set of research findings, which again allowed for further refinement of the team’s research questions, which are listed in the Project Goals and Objectives portion of this section.

April 27, 2017, 1:30 to 2:30pm – At the third meeting, the CIPA student consulting team recommended blending the regulation portion of the research into the EMS best practices and volunteerism findings; the research indicated that the perceived regulatory barriers largely did not apply to the best practice and volunteerism strategies studied as part of phase one of this project.

May 8, 2017, 4:30 to 6:30pm – The final steering committee meeting served as an opportunity to run through the final presentation before the CIPA student consulting team presented to the larger TCCOG EMS-TF body. At this meeting the course instructor, Professor Rebecca Brenner, also attended. Largely, the community



representatives believed the presentation to be finalized. The CIPA consulting team was asked only to clarify the context of a few statistics in the EMS best practices section.

### Monthly TCCOG EMS-TF Meetings

In addition to bi-weekly steering committee meetings, members of the CIPA student consulting team joined the monthly TCCOG EMS-TF meetings. At these meetings, the CIPA student consulting team took note of the information presented and integrated the discussions into the team’s research plan. For instance, at the March 8<sup>th</sup> meeting, Lee Shurtleff presented on the “sobering statistics of Tompkins County’s EMS system.”<sup>22</sup> This presentation indicated to the CIPA consulting team that a current state assessment would benefit from an entire semester of work. This was the main motivation of delineating the three phases of project work: research, a current state assessment, and implementation plan development.

The TCCOG EMS-TF meetings are outlined in Table 1 below:

March 8 <sup>th</sup> , 5:30 – 6:30pm	March 22 <sup>nd</sup> , 5:30 – 6:30pm	April 11 <sup>th</sup> , 5:30 – 6:30pm
Tompkins County EMS Today presented by: Lee Shurtleff Director, Tompkins County Department of Emergency Response	Dutchess County Findings Discussion Taskforce Group Discussion	Inter-State and Municipality EMS Policies presented by: Susie Surprenaut Executive Director Central NY Emergency Medical Services

Table 1. TCCOG EMS-TF Meeting Schedule, Topics, and Speakers

### Literature Review

The review of the relevant literature focused on three features of EMS: volunteerism recruitment and retention, EMS best practices, and the policy and regulatory environment. Since the current structure of EMS in Tompkins County depends upon volunteer first responders, volunteerism emerged as one of the major areas of research supporting this project. Additionally, given the disparate EMS models in practice across the United States, the second major area of research focused on uncovering EMS best practices and the strategies and environmental features that make them successful. The third major area was selected to ensure that TCCOG EMS-TF and future CIPA consulting teams are able to quickly and efficiently understand the current structure and rules surrounding EMS in Tompkins County as well as to inform the ultimate strategies recommended in this report.

Given the need to find literature applicable to the environment today, the literature review was limited to documents published within the last 12 years, and where possible, developed by established and credible organizations including academic journals, recent periodicals, as well as public law documents and other community EMS manuals. Initially, the CIPA consulting team cast a wide net in order to educate the team on the topic, but as the project continued, the team increasingly focused on EMS models serving similar

<sup>22</sup> Shurtleff, L. (2017 March 8). *Providing EMS in Tompkins County*. [Presentation]. Last Accessed May 13, 217, from: [http://www.tompkinscountyny.gov/files/tccog/Shared\\_Services/EMS\\_Task\\_Force/Documents/ProvidingEMS.pdf](http://www.tompkinscountyny.gov/files/tccog/Shared_Services/EMS_Task_Force/Documents/ProvidingEMS.pdf).



demographic areas with comparable resources to those of Tompkins County. Finally, the team acknowledged that this initial body of work should only cover the first phase of materials to ensure time to curate quality work; therefore, the team identified additional sources across each research objective for future study in the subsequent project phases.

### Directed Discussion

Finally, the project methods included a directed discussion. On May 9<sup>th</sup> after a fifty-minute final presentation (Appendix A), the CIPA consulting team led a directed discussion centered around four groupings of topics as suggested by the steering committee, which are illustrated in Figure 5.



Figure 4. Directed Discussion Topics

This discussion consisted of approximately ten minutes of prompted, but open ended questions on each grouping. These questions were designed so that the CIPA consulting team could record initial reactions of the TCCOG EMS-TF for use of the Phase II team in the fall semester. The final ten minutes of the directed discussion were introduced to the group as an open forum to introduce any ideas not mentioned previously. This information was collected and recorded to identify the need for any further research not covered in the first phase of the project.



## Project Literature Review and Associated Findings

The CIPA student consulting team utilized data and information both presented at the TCCOG EMS-TF meetings as well as supplemental information from Lee Shurtleff, the Director of Tompkins County Department of Fire and Emergency Response. Mirroring the literature review in this report, the data analysis is divided into three areas: EMS best practices, volunteer recruitment and retention, and policy and regulatory barriers. The findings described in this section provide a menu of opportunities that the TCCOG EMS-TF and future CIPA consulting teams will utilize in future project phases.

### **EMS Best Practice Findings**

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According to the literature, “Medical care provided by rural EMS providers is no different than the care provided by urban and suburban EMS providers. Patients have the same acute and chronic medical conditions requiring EMS response, treatment, and transportation”<sup>23</sup>. However, rural EMS organizations face unique challenges of their own, especially relating to their providers, services, and systems<sup>24</sup>.

It should be noted that every rural EMS service is different<sup>25</sup>. “From design, to funding, to staffing, every rural EMS agency takes its own approach to delivering EMS care in the best way possible given its circumstances.”<sup>26</sup> However, many rural EMS organizations do share these similar challenges. According to a report on rural EMS organizations by Jonathan Busko, these challenges include: “personnel recruiting and retention, primary and continuing education, skills retention, maintaining adequate coverage with prolonged transport times, obtaining qualified medical oversight, and inadequate community healthcare sources of any sort.”<sup>27</sup>

In addition, populations located in rural communities face unique healthcare disparities that can perpetuate these issues.<sup>28</sup> Lack of healthcare professionals, geographic barriers, access to services, and motor vehicle accident rates are just some of the many challenges that rural communities face.<sup>29</sup> This portion of the literature review, focusing on articles found in databases that also are within a 12-year timeline, serves to assess best practices related to sustainable strategies that have shown promise to reduce demand, increase quality, and/or control costs.

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<sup>23</sup>Busko, J. (2008). “Rural EMS.” Medical Oversight of EMS; volume 2. p 218–228. Last accessed May 18<sup>th</sup>, 2017, from: <http://www.emergencymedicine.pitt.edu/sites/default/files/Rural%20EMS%20Systems.pdf>

<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

<sup>26</sup> Ibid.

<sup>27</sup> Ibid.

<sup>28</sup> Stanford Health. (2017). Healthcare Disparities & Barriers to Healthcare. Last accessed on April 10th, 2017 from <http://ruralhealth.stanford.edu/health-pros/factsheets/disparities-barriers.html>.

<sup>29</sup> Ibid.



## **Finding 1: Tompkins County Is Not Alone**

EMS providers across the nation are struggling to overcome the challenges of increasing health care access, financial sustainability, and maintaining quality and outcomes<sup>30</sup>. Therefore, it is clear that Tompkins County EMS is not alone in its challenges. Across the nation, many EMS organizations claim similar issues and constraints. Currently, there are three different rural EMS task forces, in New York–Madison County, Greene County, and Dutchess County, who have recently released final reports that exemplify very similar issues related to sustainability and quality. Dutchess County states that, “EMS is severely strained, as demonstrated by lengthening response times and reduced levels of care, and in some cases, has failed the community as local services no longer exist or cannot respond, even if they appear on paper that they can.”<sup>31</sup> In fact, Madison County recently had a consulting firm, Fitch and Associates, help them address these issues. The report cites staffing, quality, efficiency, and affordability issues<sup>32</sup>. From a national perspective, issues of community engagement, limited healthcare system collaboration, disparities in response times, uncertain quality of care, a lack of quality metrics, fragmentation, and limited evidence-based practice are all evident and have been around since 2007<sup>33</sup>.

## **Finding 2: Approaching Excess Demand Through Identification of High Utilizers May Highlight Opportunities for Improvement**

Demand, in this report, refers to the amount of calls that emergency medical services organizations are receiving, a direct measurement illustrating the amount of people who are requiring emergency services. Recently, Tompkins County found that they have had a 70 percent total increase in their call demand over the past 12 years. This finding is especially concerning given that, like other rural EMS organizations, Tompkins county is constrained on staff, equipment, as well as other resources necessary to adequately accommodate such a large change. It is also troubling because it may be a symptom of a much larger issue such as a lack of community resources or education on proper usage of the healthcare system.

Repeat EMS use is a common national issue<sup>34</sup>. “High-utilizers” are local citizens that excessively use emergency services. Historically, they are defined as citizens who have been to the emergency department three or more times within a six-month period. Generally, their use of these services is due to a lack of resources or, more simply, a lack of education on the availability of other resources. This finding also has significant cost implications. For example, according to the Institute of Medicine, “a large proportion of healthcare resources in the United States are consumed by a relatively small number of individuals.

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<sup>30</sup> Mears, G., Armstrong, B. Fernandez, A., et al. (2011). National EMS Assessment. Last accessed on April 10<sup>th</sup>, 2017 from [https://www.ems.gov/pdf/2011/National\\_EMS\\_Assessment\\_Final\\_Draft\\_12202011.pdf](https://www.ems.gov/pdf/2011/National_EMS_Assessment_Final_Draft_12202011.pdf).

<sup>31</sup> Dutchess County EMS Task Force. (2017). Final Report. Last accessed on April 10th, 2017 from [www.townofnortheastny.gov/wp-content/uploads/2017/03/EMS-Task-Force-Final-Report-March-2017-Final.pdf](http://www.townofnortheastny.gov/wp-content/uploads/2017/03/EMS-Task-Force-Final-Report-March-2017-Final.pdf)

<sup>32</sup> Fitch and Associates. (2016). EMS Study. Last accessed on April 10th, 2017 from [www.madisoncounty.ny.gov/sites/default/files/madisoncty\\_finalfinal\\_june2016\\_rev.pdf](http://www.madisoncounty.ny.gov/sites/default/files/madisoncty_finalfinal_june2016_rev.pdf)

<sup>33</sup> Institute of Medicine (2007). National Academies Press. Emergency Medical Services: At the Crossroads. Last accessed on April 10th, 2017 from <https://www.nap.edu/read/11629/chapter/2>

<sup>34</sup> Shah, M., Swanson, P. Rajasekaran, K. and Dozier, A. (2010). Repeat EMS by Older Adults in a Rural Community: Impact on Research Methods and Study Length. Last accessed on March 8, 2017 from <http://europepmc.org/articles/PMC2657922>



Approximately one-fourth of U.S. health care expenses are incurred by one percent of the U.S. population, and half of all expenses are incurred by five percent of the population<sup>35</sup>.

According to article Shah et al., who analyzed and broke down the call center data of the Geneseo Fire Department Ambulance to determine how many of their 65 and older population had been frequent users of their service, approximately 30 percent of their calls were from citizens who were not first-time users<sup>36</sup>. This could mean that 30 percent of their calls represent users who may qualify as “frequent flyers”. This retrospective, longitudinal study provides a solid baseline for approaching a reduction in demand and segmenting the data to determine which citizens may need further support accessing these resources or additional education on how to best utilize the healthcare system.

These phenomena among the elder population are likely to be currently affecting Tompkins County as its overall population is getting older<sup>37</sup>. In fact, the adult population is projected to continue to grow until approximately 2040. This is largely because the Baby Boomer generation is reaching the age of 60. Between 2000 and 2010, there was an 89 percent increase in the population between 60 and 64. By 2040, the 85+ generation will increase by 54 percent. This trend is concerning, especially given that the aging population expresses a desire to stay in Tompkins County<sup>38</sup>. In fact, a recent survey found that 90 percent want to stay in the area.<sup>39</sup> Given that EMS services are already stretched thin with current demand levels, how can Tompkins County EMS prepare for this predicted, logical increase in utilization? Care coordination could be the answer.

### **Finding 3: Reducing Demand and Costs Are Possible with Care Coordination Strategies**

Care coordination is frequently an issue when it comes to rural areas with limited resources. In addition, incorporating paramedics with down-time as well as engaging the local emergency department can improve outcomes and reduce the use of emergency medical services<sup>40</sup>.

According to Pennel et al., extending EMS roles to include home visits can reduce demand. The study supporting this extended EMS model compares three case studies of rural settings where EMS staff conduct home visits and other care coordination functions for members of the community, who would be otherwise underserved or considered frequent-flyers.<sup>41</sup> Furthermore, the studies provide anecdotal evidence of how rural EMS may start to shift from episodic emergency care to more of a coordinated care role within the community.<sup>42</sup> Additionally, the studies were able to define characteristics specific to rural settings that influence how EMS care coordination can be conducted, how care coordination can improve patient self-care

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<sup>35</sup> Weiss, A et al. (2012). Characteristics of Hospital Stays for Super-Utilizers by Payer. Last accessed on April 12th, 2017 from <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb190-Hospital-Stays-Super-Utilizers-Payer-2012.pdf>

<sup>36</sup> Ibid.

<sup>37</sup> Tompkins County Office for the Aging. (2016). A Portrait of Tompkins County's Older Adults.


<sup>38</sup> Ibid.

<sup>39</sup> Ibid.

<sup>40</sup> Pennel, C. Tamayo, L., Wells, R., & Sunbury, T. (2017). Emergency Medical Service-Based Care Coordination for Three Rural Communities. Last accessed Mar 8, 2017 from <https://muse-jhu-edu.proxy.library.cornell.edu/article/634885>

<sup>41</sup> Ibid.

<sup>42</sup> Ibid.



of chronic conditions related to aging, as well as the long term sustainability of EMS-based care coordination efforts.<sup>43</sup>

This literature, as well as some of the case studies below, indicates that EMS-based care coordination is a promising model for successfully alleviating the issues of rural residents who frequently use EMS. Patients reported having improved access to health care services, including connections to primary care providers, dentists, mental health providers, other specialists, medication and medication assistance, and health insurance.<sup>44</sup> The concept of care coordination is a compelling one, especially given that another recent study involving 1,708 patients showed that up to 78 percent were able to stay out of the ambulance and be treated at home<sup>45</sup>

Allina Health EMS, in Minneapolis, has employed its own team of community paramedics using this care coordination philosophy. Having undergone an additional 300-plus hours of specialized training, the Allina community paramedics are credentialed to take on a preventive role<sup>46</sup>. They visited patients in their homes to teach them about proper nutrition, check for objects that increase the risk of falling, instruct them how to access the healthcare system in the most effective way and more<sup>47</sup>. With a primary goal of prevention and coaching, as well as patient navigation, Allina has been able to reduce readmissions and ED visits for all patients, including those with a history of frequent readmission. For patients with history of chronic diseases such as mental health issues, congestive heart failure, chronic obstructive pulmonary disease, and heart attacks, 30-day readmission rates were reduced to 5 percent compared to the national average of 18.4 percent<sup>48</sup>. Among those who were high-frequency, defined as those who visited 10 or more times in three months, 78 percent did not revisit<sup>49</sup>.

Further, Montgomery County of Maryland was recently awarded the “Star of Life” award at an EMS conference in Washington, D.C. for their ability to reduce their calls up to 50 percent based on their care coordination efforts<sup>50</sup>. Through collaborating with its community to help keep patients out of emergency situations, Montgomery County EMS was able to excel compared to its competition. This is also known as “community paramedicine”, a term meaning integration of care utilizing facets of primary, social service, elder, specialized, and alternative care as well as transport to deliver the necessary care to the community<sup>51</sup>. The implications of reducing demand can have tremendous effects on the entire EMS system. With the transition of reimbursement toward value-based care, preventing emergency situations can not only significantly improve quality of care, but also lessen the burden on the healthcare system financially and

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<sup>43</sup> Pennel, C. Tamayo, L., Wells, R., & Sunbury, T. (2017). Emergency Medical Service-Based Care Coordination for Three Rural Communities. Last accessed Mar 8, 2017 from <https://muse-jhu-edu.proxy.library.cornell.edu/article/634885>

<sup>44</sup> Ibid.

<sup>45</sup> Span, P. (2016). Going to the Emergency Room Without Leaving the Living Room. Last accessed on April 10th, 2017 from [https://www.nytimes.com/2016/11/08/health/older-patients-community-paramedics.html?\\_r=0](https://www.nytimes.com/2016/11/08/health/older-patients-community-paramedics.html?_r=0)

<sup>46</sup> Heightman, A.J. (2016). 10 Things Every EMS System Should Be Doing. Last accessed on April 30th, 2017 from <http://www.jems.com/articles/print/volume-41/issue-2/features/10-things-every-ems-system-should-be-doing.html>


<sup>47</sup> Ibid.

<sup>48</sup> Heightman, A.J. (2016). 10 Things Every EMS System Should Be Doing. Last accessed on April 30th, 2017 from <http://www.jems.com/articles/print/volume-41/issue-2/features/10-things-every-ems-system-should-be-doing.html>

<sup>49</sup> Ibid.

<sup>50</sup> Shurtleff, Lee. (2017, May 22). Personal interview.

<sup>51</sup> Dutchess County EMS Task Force Final Report (2017). Last accessed on April 10th, 2017 from <http://www.townofnortheastny.gov/wp-content/uploads/2017/03/EMS-Task-Force-Final-Report-March-2017-Final.pdf>



operationally.<sup>52</sup> Authors Traver and Fellow provide substantial facts to support the potential cost implications of poor care coordination in their article, “The Promise of Care Coordination”. They state, “In fact, inadequate care coordination is estimated to have caused between \$25 and \$45 billion in wasteful spending in 2011 alone due to avoidable complications and unnecessary hospital readmissions”<sup>53</sup>.

#### **Finding 4: Quality Initiatives Can Be Difficult to Organize for Rural EMS Services**

Large disparities exist between rural and urban communities among factors such as access to care and healthcare professionals, geographic barriers, and motor vehicle accident rates<sup>54</sup>. One of the disparities most commonly referenced is the throughput time of EMS service, or in other words, the “response time”. The literature regarding rural EMS and operational models illuminates a substantial lack of research specific to the rural settings. Although most studies were for urban settings, there remains a great deal of potential for rural organizations to borrow approaches that may translate to their settings. According to Chanta et al., there is a current bias regarding operational models. “Current models favor locating ambulances in more densely populated areas, resulting in higher times for those located in more rural areas”<sup>55</sup>.

#### **Finding 5: A Bi-Objective Operations Model Helps to Reduce Variability in Coverage**

Chanta et al. utilized a bi-objective covering location model for EMS systems. Citing the lack of a universal definition of fairness in EMS systems, they proposed three alternatives. In their article, “Improving emergency service in rural areas: a bi-objective covering location model for EMS systems”, they suggest the following alternatives: (1) minimize the maximum distance between each uncovered demand zone and its closest opened station, (2) minimize the number of uncovered rural demand zones, and (3) minimize the number of uncovered demand zones (notice that this last objective is not the same as maximizing the number of covered calls, as each zone has a different demand)<sup>56</sup>.

They also mention, “Models for locating EMS resources typically use variations of the maximal covering location problem (MCLP), where facilities are located at existing stations on the network to maximize the demand that can be served in a specified time or distance.”<sup>57</sup> Additionally, MCLPs tend not to account for the possibility of busy ambulances. Chanta et al. state, “Servers do not operate independently and thus may have different busy probabilities which depend on the server location”<sup>58</sup>. To address this issue, they developed correction factors for the busy probabilities in their Hypercube model<sup>59</sup>. This statistical model uses a 9-minute

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<sup>52</sup> Traver, A., Fellow, V. (2013). The Promise of Care Coordination. Last accessed on April 10th, 2017 from [http://familiesusa.org/sites/default/files/product\\_documents/Care-Coordination.pdf](http://familiesusa.org/sites/default/files/product_documents/Care-Coordination.pdf)

<sup>53</sup> Traver, A., Fellow, V. (2013). The Promise of Care Coordination. Last accessed on April 10th, 2017 from [http://familiesusa.org/sites/default/files/product\\_documents/Care-Coordination.pdf](http://familiesusa.org/sites/default/files/product_documents/Care-Coordination.pdf)

<sup>54</sup> Stanford eCampus Rural Health. (2010). Healthcare disparities & barriers to healthcare. Last accessed on April 12th, 2017 from [http://ruralhealth.stanford.edu/health-pros/factsheets/downloads/rural\\_fact\\_sheet\\_5.pdf](http://ruralhealth.stanford.edu/health-pros/factsheets/downloads/rural_fact_sheet_5.pdf)


<sup>55</sup> Chanta, Mayoral, & McClay. (2010). Improving emergency service in rural areas: a bi-objective covering location model for EMS systems. Last accessed on Mar 8 2017 from [https://www.researchgate.net/publication/225928480-Improving\\_emergency\\_service\\_in\\_rural\\_areas\\_a\\_bi-objective\\_covering\\_location\\_model\\_for\\_EMS\\_systems](https://www.researchgate.net/publication/225928480-Improving_emergency_service_in_rural_areas_a_bi-objective_covering_location_model_for_EMS_systems)

<sup>56</sup> Ibid.

<sup>57</sup> Ibid.

<sup>58</sup> Chanta, Mayoral, & McClay. (2010). Improving emergency service in rural areas: a bi-objective covering location model for EMS systems. Last accessed on Mar 8 2017 from [https://www.researchgate.net/publication/225928480-Improving\\_emergency\\_service\\_in\\_rural\\_areas\\_a\\_bi-objective\\_covering\\_location\\_model\\_for\\_EMS\\_systems](https://www.researchgate.net/publication/225928480-Improving_emergency_service_in_rural_areas_a_bi-objective_covering_location_model_for_EMS_systems)

<sup>59</sup> Ibid.



standard, based on urban settings, for response time, and attempts to optimize three goals: coverage, equity, and outcomes.<sup>60</sup> Based on their study, “For a call to be responded to within 9 minutes, at least one facility should be open within 4 miles of the demand zone”<sup>61</sup>. Although a 9-minute standard is ambitious regarding rural EMS settings and each goal is unique to its organization, this approach could prove helpful for Tompkins County as the task force has cited the unpredictable nature of when their vehicles become busy and how it has proved to be a significant challenge to their operations.

Combining statistical simulations with geographic information systems, improvements in predicting demand as well as maximizing coverage have been proven to be very helpful regarding operational initiatives. For example, a study using this approach in Alabama, utilizing geographical information system software, “EMS response time to MVCs could be improved in rural areas by optimal location of ambulance stations based on geographical highest concentration of MVCs and vicinity of major roads”<sup>62</sup>.

Ultimately, improving operations could reduce the strain on first responders, paramedics, and others as the potential improvements could allow more effective solutions which lead to less stress, higher quality, more predictable demand, and higher satisfaction from citizens and employees alike. Studies have also shown that, with geographic information systems and simulation models, increased survival and cost-effectiveness were among the main benefits<sup>63</sup>.

### **Finding 6: Proper Collection, Measurement, and Analysis of Data Is Vital to the Development and Sustainability of Best Practice Initiatives**

According to their report, “Safety Management Systems in EMS”, Greene, Bigham, and Patterson state, “To gain reassurance that a workplace is working properly, reliable and valid measurement is needed. To compare and contrast measurements over time or with other organizations, an organization needs reliable and valid measurement. Does the proposed tool for measurement actually measure what it is intended to measure? If not, the tool is not valid and of no use to anyone.”<sup>64</sup> In other words, making documentation and record-keeping a priority can not only affect the culture of your organization, but eventually the quality. According to their article, something as simple or trivial as a checklist to ensure certain protocols are followed has been “associated with reductions in the rates of death and complications.”<sup>65</sup>.

### **Finding 7: Optimal Staffing Ratio Research Is Limited for Rural Areas and Demonstrates that More Is Not Always Better**

While research articles on optimal staffing models are scarce, one approach to identifying the best staffing ratio is to look at outcomes research. Pirrallo et al. studied the association between EMS staffing patterns and out-of-hospital cardiac arrest survival. Their findings were counterintuitive. “Return of spontaneous

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<sup>60</sup> Ibid.

<sup>61</sup> Ibid.


<sup>62</sup> Gonzalez, Cummings, Harlan, Mulekar, and Rodning. (2011). EMS relocation in a rural area using geographic information system can improve response time to motor vehicle crashes. Last accessed on April 30th, 2017 from <https://www.ncbi.nlm.nih.gov/pubmed/21986742>

<sup>63</sup> Ibid.

<sup>64</sup> Greene, Bigham, & Patterson. (2012). Safety Management Systems in EMS. Last accessed on April 30th, 2017 from [http://www.fitchassoc.com/download/Safety\\_Mgmt\\_Systems\\_EMS.pdf](http://www.fitchassoc.com/download/Safety_Mgmt_Systems_EMS.pdf)

<sup>65</sup> Greene, Bigham, & Patterson. (2012). Safety Management Systems in EMS. Last accessed on April 30th, 2017 from [http://www.fitchassoc.com/download/Safety\\_Mgmt\\_Systems\\_EMS.pdf](http://www.fitchassoc.com/download/Safety_Mgmt_Systems_EMS.pdf)





circulation was not influenced by the number of paramedics present<sup>66</sup>. They concluded that “the presence of three or more paramedics at the scene of OHCA was not associated with improved survival to hospital discharge when compared to crews with two paramedics. Additional research is needed to determine the potential cause of this finding.”<sup>67</sup>

While these studies can be exciting and show promise in optimizing cost and quality, many of them are not related to rural settings and are therefore difficult to translate to these settings. Moreover, the “inaccuracy of patient care reports for identification of critical resuscitation events during these cardiac arrests can make research studies such as this very difficult to lead to change”.<sup>68</sup> For example, they explain that “patient care reports are not a reliable source of information for assessing the presence of the return of spontaneous circulation and post-arrest electrocardiogram rhythm”<sup>69</sup>. Their recommendations are for “medical providers to consider augmenting data collection with continuous defibrillator recordings before documenting and making conclusions about the resuscitation events”<sup>70</sup>.

Lastly, this literature inspired thoughts as to how EMS organizations may be able to triage more efficiently. In other words, it may be worth it for organizations to perform their own internal reviews of staff allocation to get a sense of whether ALS providers need to be present at every call. More studies are needed to explore these types of relationships when it comes to ensuring quality.

### **Finding 8: Unification of Resources Shows Promise Regarding Reducing Costs and Maintaining Quality**

Many of the above findings have their own inherent, subtle cost improvements. For example, reducing demand has been proven to reduce overall healthcare costs as well as readmissions for preventable diseases<sup>71</sup>. From the literature above, it has been mentioned that optimizing staffing, operations, and data management can prove to reduce costs as well. In addition to these findings, another option that has demonstrated much promise regarding improved operations, finances, and overall communication is the unification of organizations and/or pooling together of resources.

Unification of resources and entities has demonstrated the potential to eliminate duplicative equipment expenditures, improve response times, and standardize the accounting, billing, and budgeting of organizations. Furthermore, studies have shown that it helps to reduce duplicative operational and administrative costs, as well as share equipment expenditures, oversight, and quality control. In addition, these studies show that it can improve flexibility in the deployment of responders, management of call volume, as well as regional collaboration.

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<sup>66</sup> Pirallo, R., Aufderheide, T., Lerner, B. (2009). The Association between Emergency Medical Services Staffing and Out-of-Hospital Cardiac Arrests Survival. Last accessed Mar 8 2017 from <https://newcatalog.library.cornell.edu/search?q=The+Association+between+Emergency+Medical+Services+Staffing+Patterns+and+Out-of-Hospital+Cardiac+Arrest+Survival>

<sup>67</sup> Ibid.


<sup>68</sup> Sundermann, M., Salcido, D., Koller, A., Menegazzi, J. (2015). Inaccuracy of patient care reports for identification of critical resuscitation events during out-of-hospital cardiac events.

<sup>69</sup> Ibid.

<sup>70</sup> Ibid.

<sup>71</sup> Fries, J et al. Reducing Healthcare Costs by Reducing the Need for Healthcare Services. Last accessed on April 30th, 2017 from <http://www.nejm.org/doi/full/10.1056/NEJM199307293290506#t=article>





For example, the unification of North Greenbush Fire with Defreetsville Fire into the North Greenbush Fire led to a uniform fire protection scheme as well as reduced municipal costs. The realized savings amounted to \$22.08 per household.<sup>72</sup> Moreover, according to the Department of State’s article, “Public Safety, Fire, and EMS Services Cost Reduction Strategies”, “Schenectady County reached a consensus to create a Unified Communications Center (UCC) that will receive all emergency calls and dispatch emergency service agencies countywide. Savings over a four-year period are projected to be over a million dollars.” To be precise, the savings are projected to amount to \$1,706,400.<sup>73</sup>

Furthermore, the same article provides a great example of sharing equipment and its potential cost savings. It states, “The City of Watervliet and the Village of Green Island pooled resources to purchase a new, 95-foot aerial ladder truck, avoiding the additional expense that each would have incurred had they both purchased one individually. Watervliet paid for the truck and Green Island paid to equip the truck.”<sup>74</sup> This arrangement led to a one-time savings of \$792,000 for Green Island taxpayers and \$67,000 for Watervliet taxpayers<sup>75</sup>.

Finally, as an example relating to regional planning, Albany County developed 12 different models to assess which option would best address their Public Safety Answering Points (Eg11) issue. According to the research, “they had 6 primary and 4 secondary locations comprising 42 call taker positions. Through assessing current systems, including staff, equipment, and operations, they determined the feasibility and logistics of implementing improvements based on best practices and other dispatch models. The most efficient scenario would have every municipality and agency combine into a single communications center, with all emergency and 10-digit calls coming to a single public-safety answering point. This scenario will produce cost savings of over six million dollars” To be precise, this cost savings is expected to amount to \$6,221,775<sup>76</sup>.

### **Finding 9: Proper Data Measurement and Analysis is a National Issue for EMS Organizations**

So how and why do EMS organizations fail? According to Mr. Washko’s article in the Journal of Emergency Medical Services, insight into why so many EMS systems fail lies in the lack of adherence to measuring progress<sup>77</sup>. While 88 percent of EMS states have a State EMS Data System, only 22 percent of them collect 100 percent of their events. Moreover, only 30 percent of them are able to track 911 dispatches and only 50 percent have protocol guidance by the state that is implemented locally (conversely, 50 percent have no statewide protocol guidance but do have local implementation). Furthermore, only 50 percent of states maintain a list of approved medications to be used by EMS, 24 percent maintain a list of approved procedures

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<sup>72</sup> Department of State Local Government Efficiency Program of New York (2013). Public Safety, Fire, and EMS Services Cost Reduction Strategies. Last accessed on April 28<sup>th</sup>, 2017 from <https://reforminggovernment.ny.gov/assets/document/Savings%20Strategies-%20FireEMS.pdf>


<sup>73</sup> Department of State Local Government Efficiency Program of New York (2013). Public Safety, Fire, and EMS Services Cost Reduction Strategies. Last accessed on April 28<sup>th</sup>, 2017 from <https://reforminggovernment.ny.gov/assets/document/Savings%20Strategies-%20FireEMS.pdf>

<sup>74</sup> Ibid.

<sup>75</sup> Ibid.

<sup>76</sup> Ibid.

<sup>77</sup> Washko, J. (2015). Journal of Emergency Medical Services: Understanding Why EMS Systems Fail



by EMS at each professional level, and only 6 percent have determined the cost and reimbursement implications related to their EMS ambulance transport.<sup>78</sup>

Without proper awareness and understanding of the importance of tracking this data and best practices, it is hard to make calculated progress toward sustainability. However, it is not necessarily the fault of these organizations. “There are no national standards or benchmarks for the delivery of EMS; there are national standards to obtain and maintain provider certification/licensure. Quality and consistency benchmarks are inconsistent across service boundaries.”<sup>79</sup> This is not just an opinion, but a shared consensus among every rural EMS status report analyzed. By documenting and measuring each initiative taken, best practices and evidence-based solutions may reveal themselves and give these organizations a clear path to sustainability.

### **Finding 10: Culture and a Shared Vision Are Vital for the Sustainability of Organizations and Require Balanced Approaches**

According to Parr’s article, “Culture Eats Strategy for Lunch”, culture is a the result of many different factors such as attitude, beliefs, and ultimately action.<sup>80</sup> An organization’s approach to culture can result in strong, incredible progress or weak, frustrating complacency.<sup>81</sup> “A strong culture flourishes with a clear set of values and norms that actively guide the way a company operates. Culture, like brand, is misunderstood and often discounted as a touchy-feely component of business that belongs to [Human Resources]. It’s not intangible or fluffy, it’s not a vibe or the office décor. It’s one of the most important drivers that has to be set or adjusted to push long-term, sustainable success.”<sup>82</sup>

Tsai’s research article also shows the positive correlation between culture and performance. “In other management fields, empirical research of organizational culture has provided impressive evidence of the role of organizational culture in improving performance.”<sup>83</sup> “Because organizational culture reflects the values, beliefs and behavioral norms that are used by employees in an organization to give meaning to the situations that they encounter, it can influence the attitudes and behavior of the staff.”<sup>84</sup>

“The only visions that take hold are shared visions—and you will create them only when you listen very, very closely to others, appreciate their hopes, and attend to their needs.”<sup>85</sup> This review of the literature regarding the importance of culture and a shared vision solidifies the importance of considering them when assessing its ability to orchestrate and implement potential change.

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<sup>78</sup> Mears, G., Armstrong, B. Fernandez, A., et al. (2011). National EMS Assessment. Last accessed on April 10<sup>th</sup>, 2017 from [https://www.ems.gov/pdf/2011/National\\_EMS\\_Assessment\\_Final\\_Draft\\_12202011.pdf](https://www.ems.gov/pdf/2011/National_EMS_Assessment_Final_Draft_12202011.pdf)

<sup>79</sup> Ibid.

<sup>80</sup> Parr, S. (2016). Culture Eats Strategy For Lunch. Last accessed on April 21st, 2017 from <http://wellbeing.nd.edu/news/culture-eats-strategy-for-lunch/>


<sup>81</sup> Ibid.

<sup>82</sup> Ibid.

<sup>83</sup> Tsai, Y. (2011.) Relationship between Organizational Culture, Leadership Behavior, and Job Satisfaction. Last accessed April 22nd, 2017 from [www.ncbi.nlm.nih.gov/pmc/articles/PMC3123547/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3123547/)

<sup>84</sup> Tsai, Y. (2011.) Relationship between Organizational Culture, Leadership Behavior, and Job Satisfaction. Last accessed April 22nd, 2017 from [www.ncbi.nlm.nih.gov/pmc/articles/PMC3123547/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3123547/)

<sup>85</sup> Kouzes, J. (2009). To Lead, Create a Shared Vision. Last accessed on April 22nd, 2017 from <https://hbr.org/2009/01/to-lead-create-a-shared-vision>



Moreover, Kouzes reinforces these points and provides recommendations toward identifying a shared vision—a seemingly vital aspect to every successful organization. In his article, “To Lead, Create a Shared Vision”, he states, “Through communicating and promoting the organizational vision to the staff, and in getting their acknowledgement of the vision, it is possible to influence their work and attitudes. Further, when there is frequent interaction between the leader and the rest of the staff, there will be positive contributions to team communication and collaboration.”<sup>86</sup> This article also illustrates how the creation of a shared vision can create employee buy-in that leads to the successful execution of the objectives that lead the success of the overall mission.<sup>87</sup>

Additionally, incorporating an open and inviting culture that allows front-line employees to help identify issues and create a plan to implement organizational improvements has led to success.<sup>88</sup> “The key is to establish an environment where workers on the front line are not only on the lookout for potential improvements but also have confidence that their ideas will reach receptive ears.”<sup>89</sup> Ways to nurture this type of environment are to: stress continuous improvement (make it a common theme), repetition (daily, weekly, bi-weekly, monthly meetings), create mechanisms for idea collection and approval, foster a team mentality, recognize your successes and the people behind them, and keep it fresh.<sup>90</sup>

According to Bellak’s research, bottom-up techniques can prove to build morale, improve productivity, and help reach goals through collaboration<sup>91</sup>. “Bottom-up management allows all levels of an organization to become a part of the process and helps make everyone feel a large part of the goal<sup>92</sup>. This may help build morale and even improve productivity. Employees are more open to work and strive harder to reach goals and objectives in ways that work best for them. It also provides the potential for the employee’s full talents to be utilized. For example, a lower-level employee may have the best solution for how to solve a common problem. Through sharing solutions, this kind of collaboration can improve processes in new ways”.<sup>93</sup>

Bellak also mentions the benefits of top-down management. “Making decisions from the top-down allows leaders to be clear on goals and expectations. It also gives employees more time to focus on work duties instead of attending meetings discussing potential directions of the company. Top-down decisions are often successful when they are highly researched by the leadership.”<sup>94</sup> While there is little empirical evidence on which method is better regarding emergency medical services, determining whether to take a top-down or bottom-up approach depends on the stage of the planning as well as the nature of the organization. With EMS’ dependency on volunteerism and its community, a top-down approach may be helpful to initiate and guide the conversations around vision, but a bottom-up approach could be vital in obtaining buy-in from each

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<sup>86</sup> Ibid.

<sup>87</sup> Ibid.

<sup>88</sup> Bellak, J. (2016). “Building a Manufacturing Culture from the bottom up.” Last accessed on April 28<sup>th</sup>, 2017 from <http://www.ame.org/target/articles/2016/building-manufacturing-culture-bottom>

<sup>89</sup> Ibid.


<sup>90</sup> Ibid.

<sup>91</sup> Ibid.

<sup>92</sup> Ibid.

<sup>93</sup> Ibid.

<sup>94</sup> Bellak, J. (2016). “Building a Manufacturing Culture from the bottom up.” Last accessed on April 28<sup>th</sup>, 2017 from <http://www.ame.org/target/articles/2016/building-manufacturing-culture-bottom>



employee to successfully determine short and long-term goals as well as implement any of these desired changes.

Overall, the literature cites many potential organizational benefits from a strong culture and shared vision. The benefits that result from a powerful culture are improved focus, motivation, connection, cohesion, and spirit.<sup>95</sup> Based on these literature findings, it is clear that without the unified, shared vision of Tompkins County's municipalities as well as the focus of the culture necessary to implement the desired change, none of the interventions undertaken will be successful. EMS organizations must be keenly aware of these factors when considering any initiative, especially regarding any that incorporate best practices.

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<sup>95</sup> Parr, S. (2016). Culture Eats Strategy For Lunch. Last accessed on April 21st, 2017 from <http://wellbeing.nd.edu/news/culture-eats-strategy-for-lunch/>

## EMS Recruitment and Retention Findings

As discussed in the previous section, many EMS agencies across the country are facing challenges with respect to the increasing demand for emergency services in their respective community as well as the constant struggle involving the recruitment and retention of volunteers. However, as Freeman et al. shows, while there are certainly problems facing EMS in both urban and rural areas, there are inherent differences between the two that may cause additional challenges for rural EMS providers. In that study, local EMS directors in both settings throughout the United States were sent surveys by mail addressing the issues surrounding volunteer recruitment and retention. Based on the surveys, volunteer recruitment and retention are clearly major issue across the United States, but more so overall in non-metropolitan EMS organizations as shown in Tables 2. and 3.:

Impediments to Recruitment	Percent of Rural Respondents	Percent of Urban Respondents
Lack of time to volunteer	60.1	57.3
Lack of certified EMTs or paramedics in the area	57.7	54.4
Lack of interest in volunteering	52.9	49.9
Training programs are too long	44.1	36.3
Training programs are too far	32.0	13.0
Training programs are too expensive	25.0	16.8

Table 2. Rural EMS Organizations' Primary Impediments to Recruitment <sup>96</sup>

<sup>96</sup> Freeman, V. A., Patterson, D., & Slifkin, R. T. (2008). *Issues in Staffing Emergency Medical Services: Results from a National Survey of Local Rural and Urban EMS Directors* (pp. 1-30, Rep. No. 93). Chapel Hill, NC: NC Rural Health Research & Policy Analysis Center.

<b>Impediments to Retention</b>	<b>Percent of Rural Respondents</b>	<b>Percent of Urban Respondents</b>
Time or scheduling conflicts	65.8	63.8
Burnout, job too stressful	42.4	33.6
Difficulty in meeting continuing education requirements	40.8	32.9
Inadequate pay	36.9	40.0
Lack of advancement opportunities	24.2	28.4
Inadequate benefits	23.7	23.1

Table 2. Primary Impediments to Retention for Rural Areas<sup>97</sup>

In a more qualitative study by Patterson et al., focus groups with EMTs of all different levels were performed to identify factors that contribute to EMS volunteerism in the United States. A total of 21 persons participated in the focus groups, and the data revealed three common themes: (1) “EMS is a professional afterthought,” (2) “EMS is an emotional paradox,” and (3) “EMS is an educational black box.”<sup>98</sup>

The first theme, “EMS is a professional afterthought,” represents the viewpoint that those who entered the EMS world did not originally plan on becoming EMTs with the primary reasons for the career change being that they either completed their first career or failed to complete training for another, more attractive profession. The second theme, “EMS is an Emotional Paradox,” centers on the idea that an EMS career may bring an exorbitant amount of stress and job dissatisfaction one day, and then completely change and bring fellowship and satisfaction another day. In other words, many paramedics who participated in the focus groups reported experiencing intense conflict due to this emotional variation, which transferred into tension at home. Finally, the third theme, “EMS is an educational black box,” revolves around the notion that, despite postings from the Department of Health, the educational process for EMTs and paramedics remains unknown to many. Multiple persons in the study reported that EMTs are given little to no formal guidance on what it takes to both become an EMT and remain up-to-date on training requirements as well as the extent to which their training is recognized beyond the EMS world.<sup>99</sup>

<sup>97</sup> Freeman, V. A., Patterson, D., & Slifkin, R. T. (2008). *Issues in Staffing Emergency Medical Services: Results from a National Survey of Local Rural and Urban EMS Directors* (pp. 1-30, Rep. No. 93). Chapel Hill, NC: NC Rural Health Research & Policy Analysis Center.

<sup>98</sup> Patterson, P. D., Probst, J. C., Leith, K. H., Corwin, S. J., & Powell, M. P. (2005). Recruitment and Retention of Emergency Medical Technicians: A Qualitative Study. *Journal of Allied Health*, 34(3), 153-162.

<sup>99</sup> Ibid.



## **Finding 11: Stress Relief Programs Have Shown the Ability to Mitigate Retention Barriers**

With the epidemic of issues surrounding volunteerism in the country, researchers sought to find solutions to mitigate them and identified stress-relief programs as a potential strategy to increase volunteer retention. The literature outlines these wellness initiatives, which include critical incident stress management (CISM) programs and employee assistance programs (EAPs), and propose that they have enormous potential to help EMS staff with burnout, post-traumatic stress disorder (PTSD), anxiety, depression, and a host of other mental health issues. While CISM programs are more informal, peer-driven, and centered around focus groups, EAPs are generally formal constructs concentrated around mental health professionals such as therapists and psychologists; nevertheless, both serve as an outlet of support for EMS providers. In fact, according to a research study performed by Fitch and Associates' Ambulance Service Manager Program, stress-relief programs can be extremely effective, but the efficacy of these programs are, at least in part, dependent on the culture of one's organization. For example, in their survey of 4,022 EMS responders across the United States, 63 percent specified that CISM programs were at least very helpful while 53 percent cited EAPs as at least very helpful. However, when stratifying the respondents into varying groups based on the extent of peer/management support, 74 percent of those in the group with extensive support found these programs at least very helpful compared to the 44 percent of those in the group with little to no support. Furthermore, those in supportive organizations were more likely to seek support when needed with 52 percent of those in the very supportive group seeking assistance compared to the 30 percent in agencies with minimal support. Taking all of this into account, stress-relief programs should undoubtedly be considered for all EMS programs, but before committing, an extensive look at the ethos of the EMS agency must be completed to determine whether these initiatives would be effective.


## **Finding 12: Engaging Community Members Early in Adulthood for EMS Training Can Enhance Recruitment Pipelines**

Another solution that has shown great promise, specifically with respect to volunteer recruitment, has been the incorporation of EMS curricula into high school and college programs. The research noted three high schools, in particular, who had great success with their EMS programs. In addition, they each structured their EMS curricula to provide a unique experience for their students while meeting the needs of their community. Rancho High School in Las Vegas, NV, for instance, organized a one-year, senior-level EMS course within their high school's medical/health curriculum not only to increase the prevalence of EMTs but also to help their students with whatever careers they decide to enter, whether they be EMS, medicine, or any other profession. They organized their course by teaching students first aid and Basic Life Support (BLS) skills necessary to become an EMT. They also had their students run simulated 9-1-1 calls in order to further solidify the topics covered in class. The course concludes with the NREMT exam, for which Rancho High School has a 100 percent pass rate.<sup>100</sup> Similarly, Pima County, AZ has also provided a one-year EMS course focused on BLS and first aid skills. However, the one key difference in their model is that the course is not provided within a high school. Instead, Pima County created a vocational school known as the Pima County Joint Technical

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<sup>100</sup> Kinnunen, S. (2016, January 29). Medical magnet high school prepares students for EMS careers. Last accessed April 16, 2017, from <https://www.ems1.com/ems-education/articles/55287048-Medical-magnet-high-school-prepares-students-for-EMS-careers/>.





Education District (JTED). With this structure, high school students obtain a portion of their education at the vocational school campus and receive credits that may transfer and count toward their high school requirements.<sup>101,102</sup> Nevertheless, both programs demonstrate that the one-year teaching model can have success in instructing the younger generation about EMS; however, other models such as the one organized by Hoboken High School in Hoboken, NJ, have also been proven effective. As opposed to an EMS curriculum that only lasts for one year, Hoboken has organized their program to encompass all four years of high school with the first two years revolving around developing basic skills required of EMTs, while the final two years involve learning more advanced EMT skills in addition to standing by at high school athletic games and aiding certified EMTs with community calls. By the end of the program, students become full-fledged EMTs with the opportunity to continue on and become a paramedic.<sup>103</sup>

### **Finding 13: Public Engagement Starts with Marketing EMS Education and Information**

Along with marketing EMS to students through these programs, many EMS agencies also find it helpful to improve their general marketing strategies to increase volunteer recruitment. According to a Journal of Emergency Medical Services article written by Gary Ludwig, EMS marketing involves incorporating three important concepts: public information, public education, and public relations. Public information refers to the distribution of information to the community about a particular EMS organization including, but not limited to, its organizational expertise, area of operations, staffing, and regulatory guidelines. Public education involves changing the community's view of EMS. This usually encompasses teaching the public when it is appropriate to call 9-1-1 as opposed to utilizing an alternative source of care such as an urgent care center or a primary care provider; however, it can also focus on emergency prevention and general wellness. Finally, there is the idea of public relations, which refers to improving the public's view about one's organization.<sup>104</sup> These themes can be communicated in many different ways; the United States Fire Administration (USFA) cites four primary means of marketing: advertising, publicity, promotion, and personal selling. They define advertising as "a campaign that is designed, pretested on target markets, post-tested for results, and presented through selected media in order to influence people to accept a product or idea."<sup>105</sup> Advertising, whether it be through social media, television, or another outlet, has the potential to be effective in all three facets of EMS marketing and can certainly help bring an organization into the minds of consumers. Similar to advertising, publicity also has the potential to increase awareness of an organization; however, as opposed to advertising, the media usually does this naturally and without costs to the EMS organization. For example, publicity may come in the form of news coverage, radio discussion, or even word-of-mouth

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<sup>101</sup> Huicochea, A. (2014, September 22). Az. County Program Helps High School Students Become EMTs. Last accessed April 16, 2017, from <http://www.emsworld.com/news/12005113/az-county-program-helps-high-school-students-become-emts>.


<sup>102</sup> Emergency Medical Technician. (n.d.). Retrieved April 16, 2017, from <http://pimajted.org/programs/emergency-medical-technician/>

<sup>103</sup> Hoboken411. (2008, August 10). Hoboken High School EMT Program. Last accessed April 16, 2017, from <http://hoboken411.com/archives/13153>

<sup>104</sup> Ludwig, G. (2011, June 30). Market Your EMS Agency. Last accessed April 16, 2017, from <http://www.jems.com/articles/print/volume-36/issue-7/administration-and-leadership/market-your-ems-agency.html>.

<sup>105</sup> Palmer, J. A., Buckman, J. M., & Wise, L. R. (n.d.). Emergency Medical Services (EMS) Recruitment and Retention Manual. Bloomington, IN: The United States Fire Administration.





conversation; nevertheless, regardless of the outlet, publicity typically plays a part in engraining a positive impression of one's organization in the eyes of the community. The third key method is personal selling, which primarily encompasses volunteers using their own individual stories and experiences to increase the visibility of EMS. Because EMS staff know firsthand how rewarding it is to be a part of EMS, they are the perfect advocates to increase community involvement along with promotion, which is the last component of EMS marketing. The USFA defines promotion as "marketing strategies that project the EMS organization's message other than by advertising, publicity, and personal selling." Among many channels, this may include options such as local booths at county fairs and other public displays.<sup>106</sup> In summary, taking all of this into account, there is a variety of methods that can be successful in increasing EMS awareness.

### **Finding 14: Local EMS May Be Able to Leverage Existing National Resources to Improve Service in Tompkins County**

According to an article by Kimberly Ettinger, the National Volunteer Fire Council (NVFC) also recognizes the extent to which recruitment and retention are an issue for EMS/Fire organizations and put forth potential solutions as well. One idea that they believe could be implemented is an incentive program that can be used to attract volunteers. These incentives can include "recognition and appreciation for volunteer efforts; direct monetary incentives such as pay-per-call, length of service award programs, or tax breaks; indirect monetary incentives such as parking permits, free passes to movie theatres and other entertainment venues, or free medical examinations; use of department for personal business; or other rewards."<sup>107</sup>

Along with an incentive program, the NVFC also helped to create and administer Fire Corps, which is an agency that recruits community members to aid fire and EMS departments with non-operational tasks. They are aware that it takes much more than EMTs to run an EMS organization; consequently, Fire Corps will help EMS groups recruit volunteers to help with administration, fundraising, public relations, and community outreach among other programs.<sup>108</sup>

Furthermore, the NVFC has organized the National Junior Firefighter program to recruit youth participants by providing them with valuable connections to their local program as well as incentives and recognition for reaching benchmark hours of service. They also award scholarships to achieving junior firefighters along with grants to departments to further their programs.<sup>109</sup>

Finally, Ettinger mentions that the NVFC, through Fire Corps, offers a telephone service (1-800-Fire-Line) that anyone can call in order to find out more about their local EMS organization and how they can volunteer. In conjunction with public service announcements, this number has made great strides across the country in increasing the number of EMS volunteers.<sup>110</sup>

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<sup>106</sup> Palmer, J. A., Buckman, J. M., & Wise, L. R. (n.d.). Emergency Medical Services (EMS) Recruitment and Retention Manual. Bloomington, IN: The United States Fire Administration.

<sup>107</sup> Ettinger, K. (2009, October). NVFC Works to Help Volunteer Fire Departments Meet Retention and Recruitment Challenges. Firehouse.com, 68-69.

<sup>108</sup> Ibid.

<sup>109</sup> Ibid.

<sup>110</sup> Ibid.

## Project Opportunities

Overall, the project steering committee identified ten opportunities for further study in Phase II of the project. These opportunities can be seen in Figure 6. and simply represent a starting point for EMS in Tompkins County. These ten themes, illustrated below, were specifically chosen because they span topics identified in task force meetings, EMS best practices research, as well as volunteerism strategies.



Figure 5. Tompkins County EMS Task Force Opportunities for Further Study

### **Develop a Shared Vision for EMS in Tompkins County**

A shared vision can ensure that each action taken aligns with a core set of organizational beliefs<sup>111</sup>. With this in mind, the most immediate opportunity for the TCCOG EMS-TF is to form a small Advisory Group for Tompkins County EMS. This group will continue to guide EMS once the TCCOG EMS-TF has implemented its chosen solutions. The steering committee recommends that an Advisory Group include the following players:

- Director
- County Representatives including finance and billing, county operations, fire, EMS
- Medical Representatives including a Medical Director, mental health, substance abuse and addiction
- Tompkins County Citizens Representative
- Stakeholders to guide volunteer recruitment and retention

To ensure an Advisory Group is able to be successful, several opportunities exist for further work. The steering committee endorses the development of a shared vision statement and a list of preferred community partners. Finally, to safeguard the development of this group, Summer 2017 should be used to create a set of documents to communicate the need for this group and its purpose when requesting membership from the community stakeholders listed above.

<sup>111</sup> Kouzes, J. (2009). To Lead, Create a Shared Vision. Last accessed on April 22nd, 2017 from <https://hbr.org/2009/01/to-lead-create-a-shared-vision>.



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## Host Roundtable Discussions to Facilitate Care Coordination Innovations

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Nationwide, healthcare innovations are at the forefront of the headlines. Throughout Phase I of this project, the steering committee and TCCOG EMS-TF have discussed the opportunity to establish Tompkins County EMS as an example to be emulated in other counties. The CIPA consulting team believes that hosting discussions with other players and interviewing stakeholders in the county can generate inter-disciplinary ideas to address the current challenges faced by EMS.

In order to best leverage this opportunity, it will be important for the Phase II team to create interview templates from the Phase I materials to standardize open ended conversations with stakeholders so that the results can be easily grouped into overarching categories and support a compelling story to guide Phase III development of an implementation plan for EMS in Tompkins County.

## Build a Current State Assessment of Both Data Results and Tracking Systems

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A major opportunity moving forward will be to complete a current state assessment for EMS in Tompkins County. The literature revealed that the strategic collection, analysis, and management of operational data will help to guide implementation initiatives<sup>112</sup>. For this reason, the opportunity exists to be creative in establishing a baseline performance from existing data sources and tracking systems in Phase II. Phase III can then leverage this analysis to lead discussions with the TCCOG EMS-TF in making any adjustments to these systems to support future goals defined by the Advisory Group.

The literature suggests several elements that could be included in a current state assessment. These include:

- Determination of metrics and standards that best fit the Tompkins County EMS Model
- Identification of high demand zones through data analysis<sup>113</sup>
- Assessment of models such as the Hypercube operation model for fit with Tompkins County EMS<sup>114</sup>

Overall, this opportunity calls for the greatest amount of creativity. Several analyses are suggested by the literature including idle first response or ambulance locations, GPS trackers, and simulation “tracing.”<sup>115</sup> Understanding what is currently possible and what may be desired in a future state will be vital for the success of any initiatives for Tompkins County EMS.

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<sup>112</sup> Greene, Bigham, & Patterson. (2012). Safety Management Systems in EMS. Last accessed on April 30th, 2017 from [http://www.fitchassoc.com/download/Safety\\_Mgmt\\_Systems\\_EMS.pdf](http://www.fitchassoc.com/download/Safety_Mgmt_Systems_EMS.pdf).

<sup>113</sup> Chanta, Mayoral, & McClay. (2010). Improving emergency service in rural areas: a bi-objective covering location model for EMS systems. Last accessed on Mar 8 2017 from [https://www.researchgate.net/publication/225928480\\_Improving\\_emergency\\_service\\_in\\_rural\\_areas\\_a\\_bi-objective\\_covering\\_location\\_model\\_for\\_EMS\\_systems](https://www.researchgate.net/publication/225928480_Improving_emergency_service_in_rural_areas_a_bi-objective_covering_location_model_for_EMS_systems)

<sup>113</sup> Gonzalez, Cummings, Harlan, Mulekar, and Rodning. (2011). EMS relocation in a rural area using geographic information system can improve response time to motor vehicle crashes. Last accessed on April 30th, 2017 from <https://www.ncbi.nlm.nih.gov/pubmed/21986742>.

<sup>114</sup> Ibid.

<sup>115</sup> Ibid.

## Identify Funding Sources that will Best Support the EMS Future State

As with all new initiatives, funding sources are an important consideration. Fortunately, EMS is currently a national concern<sup>116</sup>, leaving an abundance of funding opportunities. Identifying appropriate funding sources for the current and future states of Tompkins County EMS will be an important opportunity to pursue in the next phases of this project. The Phase I CIPA consulting team has identified several promising grant programs to explore.

### STATE-LEVEL GRANTS

- Statewide Interoperable Communications Grant (SICG New York)
- Personal Responsibility Education Program (PREP New York)
- Delivery System Reform Incentive Payment Programs (DSRIP Programs)

### FEDERAL-LEVEL GRANTS

- Evidence-Based Falls Prevention Programs
- Promoting Integration of Primary and Behavioral Health Care
- Enhancing Innovation and Capabilities of the Environmental Public Health Tracking Network

### CORPORATE OR FOUNDATION GRANTS

- Global Ideas for U.S. Solutions (Robert Wood Johnson)
- Healthiest Cities & Counties Challenge (Aetna)

## Consider Marketing Strategies to Support Volunteer Recruitment


The literature revealed several marketing strategies, illustrated in Figure 7., that may be helpful in increasing public awareness of EMS volunteer opportunities.



Notes: PSAs = Public Service Announcements

Figure 6. Marketing Strategies for EMS Volunteer Recruitment

<sup>116</sup> Mears, G., Armstrong, B. Fernandez, A., et al. (2011). National EMS Assessment. Last accessed April 10<sup>th</sup>, 2017 from [https://www.ems.gov/pdf/2011/National\\_EMS\\_Assessment\\_Final\\_Draft\\_12202011.pdf](https://www.ems.gov/pdf/2011/National_EMS_Assessment_Final_Draft_12202011.pdf).



There is an opportunity for future phases to explore not only those strategies used by the county in the past and present, but also to assess the best mix of these strategies for Tompkins County EMS in the future.

### **Limit Burdens Common to Volunteer Retention**

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The literature cites both continuing education requirements and stress as the two major impediments to EMS volunteer retention.

The opportunity exists to emulate the growing number of employee assistance programs. Stress-relief programs have proven to be helpful when battling against depression, anxiety, PTSD, and other mental health conditions that reduce volunteer retention. These include employee assistance programs, which offer more formal support with therapists, psychologists, and other mental health professionals. Additionally, the Phase II team might want to explore Critical Incident Stress Management (CISM) programs, which are generally peer driven and offer general education sessions as well as debriefing assistance following stressful events. This strategy might also help to ease any cultural differences when bringing younger volunteers into the more established volunteer pool, and socializing a shared experience.

### **Curate an Inventory of Community Partners to Support Volunteer Recruitment**

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It will be important for the TCCOG EMS-TF to bring community partners to the same table. The literature, as well as the May 9<sup>th</sup> directed discussion, revealed the need to engage other care providers including skilled nursing facilities and senior living facilities, and other government services such as police forces. Moreover, the directed discussion with the TCCOG EMS-TF prompted the need to engage other non-traditional partners such as DSRIP partners, financial leaders at Cayuga Medical Center, and mental health and substance abuse providers, and even the Presidents of Cornell University, Ithaca College, and TC<sub>3</sub>. Further directed discussions with the TCCOG EMS-TF will most likely be required to ensure that the task force is prepared with concrete agendas and lists of questions they want answered to support a successful formation of community partnership with groups that might not be familiar with the difficulties facing EMS in Tompkins County.

### **Engage Students with Tompkins County EMS Opportunities**

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Students might be an untapped resource for EMS in Tompkins County. Volunteer strategies found that high school EMS programs have shown great promise with respect to increasing interest and improving volunteerism among younger generations. However, the directed discussion with the TCCOG EMS-TF revealed that this opportunity might better serve Tompkins County if efforts to recruit students occur earlier through career fairs in summer camps or during school career days.

Additionally, the directed discussion brought out the idea of engaging student associations of local universities, and even the new university presidents, to build relationships with Tompkins County EMS and Fire. Previous work with the Johnson School of Management at Cornell University revealed that 85 to 88 percent of EMS volunteer candidates are turned away for capacity reasons from Cornell EMS. This leaves the opportunity to recruit additional, qualified college-aged students for county EMS.<sup>117</sup>


### **Collaborate Across Municipalities to Share Remote Training Best Practices**

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Strategies to address continuing education challenges proposed in the literature include “self-study” methods. Due to the large number of continuing education requirements, it was suggested during the

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<sup>117</sup> “Notes on Cornell University EMS.” (2015 December). Tompkins County Fire Department Volunteer Revival Project. [Presentation]. Provided by Irene Weiser on March 23, 2017 via e-mail.



direction discussion with the TCCOG EMS-TF that Bangs Ambulance and the Department of Fire and Emergency Response meet to translate Bangs ability to offer all core hour recertification online thru MSTAR. This would also require an investigation of the requirements to offer more than 50 percent of Tompkins County EMS volunteer training in Groton, Dryden, and Trumansburg online.



## Project Next Steps

This report represents the completion of Phase I and aims to be a transition tool for the next CIPA team. As mentioned previously, this project was divided into three main phases: research, current state, and implementation. Through understanding the implications of the research on EMS volunteerism, recruitment and retention, best practices, and policy, Phase II is ready to commence in the Fall of 2017.

During the Summer of 2017, the TCCOG EMS-TF will create and develop a small advisory group to help distribute Phase I findings and work with the next CIPA group in determining objectives for Phase II. This ambitious, but reasonable timeframe for Phases II and III is as follows:

In August 2017, the Phase II project team will work with CIPA faculty and the advisory group to determine the project description and make revisions as necessary. To assist with this, the advisory group and team will utilize the objectives outlined in the 'Opportunities' section to help prioritize the most urgent of objectives. In December 2017, Phase II will be completed and will lead to a successful third and final implementation planning phase.

This phase will commence in January 2018 and the CIPA team will again work with the advisory group to assist with the development of an implementation plan that incorporates the most promising and urgent findings from Phases I and II. This phase will follow the same process as the two previous phases, determining the project description with faculty and the advisory group.

After the completion of the implementation planning phase in May 2018, Tompkins County will utilize data methodologies as well as other comprehensive feedback models to track performance and gauge the overall success of its implementation strategies.





# Appendix – Final Presentation Slides

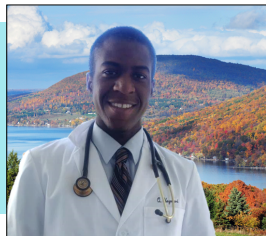
**Tompkins County Council of Governments (TCCOG)**  
**Emergency Medical Services Task Force (EMS-TF)**  
**PADM 5900 – Final Research Presentation**

Presented by  
Quetrell Heyward, MD / MBA Candidate      Melissa Murray, MHA Candidate      André Hook, MBA / MHA Candidate  
May 9, 2017

Image Source: Last Accessed February 21, 2017, from: <http://imgofwallpapers.com/about-project.html>

## PROJECT TEAM

**OUR PROJECT TEAM** is enrolled in the Cornell Institute of Public Affairs (CIPA) Course “Non-Profit and Government Consulting;” to foster a new skill set and engage Tompkins County to make an impact



**Quetrell Heyward**  
MD/MBA Candidate



**Melissa Murray**  
MHA Candidate



**André Hook, RN**  
MBA/MHA Candidate



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## AGENDA

### Agenda

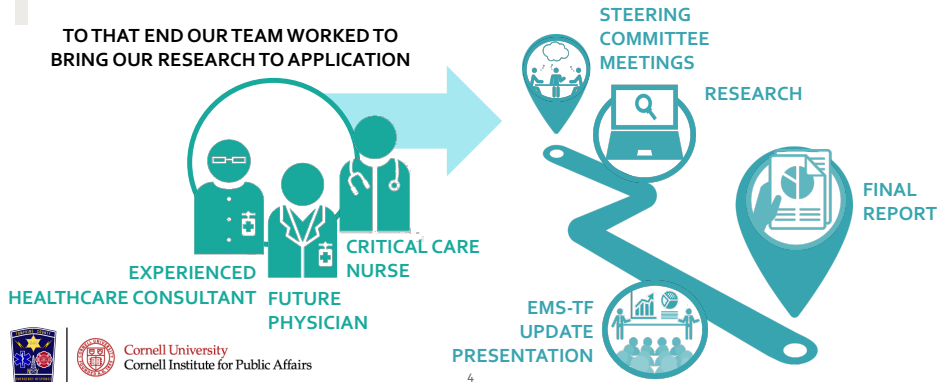
- Introduction
- Project Overview
- Project Methods
- Project Findings
  - Volunteer Strategies
  - EMS Best Practices
  - Tompkins County Current State
- Project Opportunities
- Recommended Next Steps
- Discussion



PROJECT TEAM

**THE CORNELL INSTITUTE OF PUBLIC AFFAIRS (CIPA)** operates within the College of Human Ecology and challenges students to apply our knowledge to real-world clients and situations

TO THAT END OUR TEAM WORKED TO BRING OUR RESEARCH TO APPLICATION

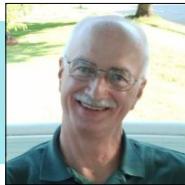


PROJECT TEAM

**TOGETHER WITH THE STEERING COMMITTEE** of the Tompkins County Council of Governments Emergency Medical Services Task Force we worked on phase one of a three phase project



**Lee Shurtleff**  
Dept. of Emergency Response  
Director, Fire and  
Emergency Response



**Brian Wilber**  
Dept. of Emergency Response  
Assistant Director, Dispatch  
Operations



**Dan Klein**  
Legislator, District 7



**Irene Weiser**  
Co-Chair of TCCOG  
Councilwoman, Caroline



5

## Project Overview



6

PROJECT OVERVIEW

**TOMPKINS COUNTY COUNCIL OF GOVERNMENTS EMERGENCY MEDICAL SERVICES TASK FORCE engaged our student consulting team toward the goal of addressing EMS opportunities in the county**

The TCCOG EMS-TF is charged with developing methods and strategies to ensure adequate and optimal emergency medical response and transport for those in Tompkins County.

What are the challenges?	Who are the stakeholders?
<ul style="list-style-type: none"> <li>Need for a solid current state assessment to understand cost and sustainability of EMS</li> <li>Desire to balance opportunities for shared services with hesitation to remain independent</li> <li>Issues surrounding education of the public on urgent versus emergency care to reduce demand</li> </ul>	<p>taskforce members made up of various elected officials, community members, and relevant professionals</p> <p><b>15</b></p> <p><b>100k</b> Tompkins County residents</p> <p><b>16</b> municipalities with varying degrees of resources available for supporting ambulance services</p>

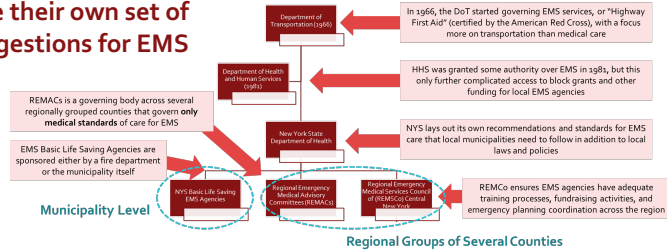


Sources: NYS Health Website. (2017). Tompkins County. Last Accessed February 22, 2017, from <https://www.health.ny.gov/professionals/ems/counties/tompkins.htm> | TCCOG EMS-TF. (2017). EMS Task Force Topics and Client Information Sheet. Submitted via Irene Weiser and Dan Klein.

PROJECT OVERVIEW

**TOMPKINS COUNTY IS NOT ALONE: the historical context of EMS development in this country has contributed to disparate reimbursement, training, and cost of providing these life-saving services**

Distinct agencies at the federal, state, regional, and local levels each provide their own set of guiding suggestions for EMS



PROJECT OVERVIEW

**KEY THEMES** were identified to help guide our team and the EMS-TF Steering Committee to understand, assess, and establish a "vision" for the future of Tompkins County EMS

**INITIAL NEEDS**

- To distinguish the regulatory framework and state-level priorities that will influence future EMS
- To identify recruitment and training strategies
- Best practices used across the US to ensure timely and competent services; assess fit for application to Tompkins County community

**PROJECT VISION**

**FUTURE NEEDS**

- To inventory EMS resources countywide
- To understand costs associated with each town's EMS service and how first responder services are covered
- Ways to meet needs of all residents in the city and rural areas of Tompkins County
- Recommendations for improvement including cost implications

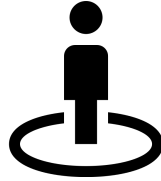


PROJECT OVERVIEW

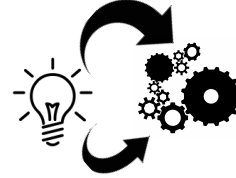
WITH CONTINUED ENGAGEMENT WITH THE CIPA CLASS, the steering committee envisions three phases; ensuring continued progress was a major focus for the consulting team



Research Phase  
Spring 2017



Current State Phase  
Fall 2017



Implementation Phase  
Spring 2018



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## Project Methods



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PROJECT METHODS

At the onset of the project, our team identified several tasks to work toward; along with the steering committee we prioritized task for this first phase



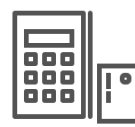
Facilitate task force steering committee meetings  
Attend EMS-TF meetings



Review and summarize initiatives provided by the EMS-TF



Research public data sources  
Identify best practices  
Identify volunteer strategies



Devise a menu of recommended activities for future project phases



Compile a final report of findings for use of the fall 2017 semester CIPA team

PHASE II ACTIVITIES



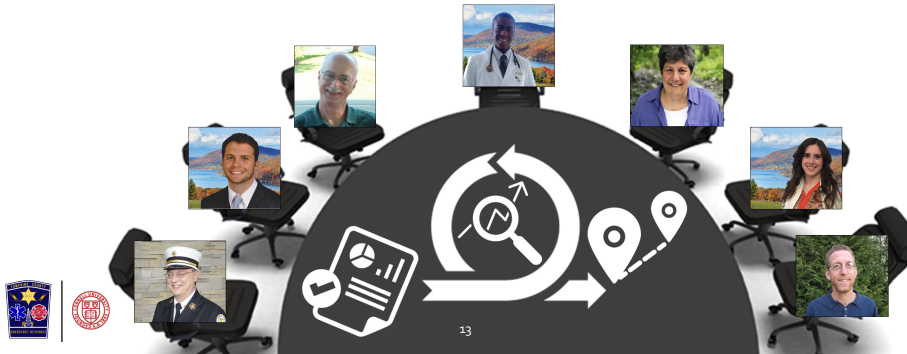
Stakeholder interviews  
Complete hotspot analysis to determine best locations for first responders and/or ambulances  
Calculate cost implications for all recommended models



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## PROJECT METHODS

**BI-WEEKLY STEERING COMMITTEE MEETINGS** allowed our team to build iterations of research to best apply to Tompkins County's needs



13

## RESEARCH METHODS

For our initial literature review we dove into three major topics: **EMS best practices, volunteerism strategies, and any regulatory impacts of both**

- Limited our search to literature published within the past 12 years
- Cast a wide net in order to educate ourselves on the topic, but then focused on EMS models serving similar demographic areas with comparable resources
- Identified a variety of sources spanning scholarly articles, newspaper articles, manuals, public law documents
- Obtained sources across each research objective; and identified further topics for future study



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14 Image Source: Last accessed March 22, 2017, from: <http://www.myjewellearning.com/article/israel-literature/>

## Project Findings

- Volunteerism Strategies
- EMS Best Practices
- Tompkins County Current State



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PROJECT FINDINGS – VOLUNTEER STRATEGIES

The literature cites multiple factors that should be considered when approaching recruitment and retention in EMS organizations

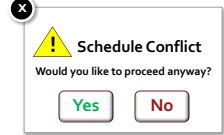
TRAINING REQUIREMENTS



STRESS AND BURNOUT



SCHEDULING ISSUES



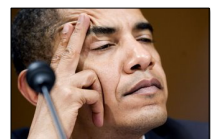
FINANCIAL INCENTIVES



ADVANCEMENT OPPORTUNITIES



COMMUNITY INTEREST



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PROJECT FINDINGS – VOLUNTEER STRATEGIES

60.1%

of community members lack time to volunteer

57.7%

of communities experience a lack of certified EMTs or paramedics in the area

52.9%

of community members are not interested in volunteering



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RECRUITMENT

According to the study, 79% of rural respondents found EMT recruitment to be at least sometimes an issue with 44% finding recruitment a continuous problem



17

PROJECT FINDINGS – VOLUNTEER STRATEGIES

44.1%

of training programs are too long

32.0%

of training programs are too far away

25.0%

of training programs are too expensive



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TRAINING

The study also demonstrated that training requirements are a major barrier to volunteer EMT recruitment





PROJECT FINDINGS – VOLUNTEER STRATEGIES



**65.8%**  
of volunteers report time or scheduling conflicts as a barrier

**42.4%**  
of volunteers report feelings of burnout or job stress

**40.8%**  
of volunteers report difficulty meeting continuing ed. requirements

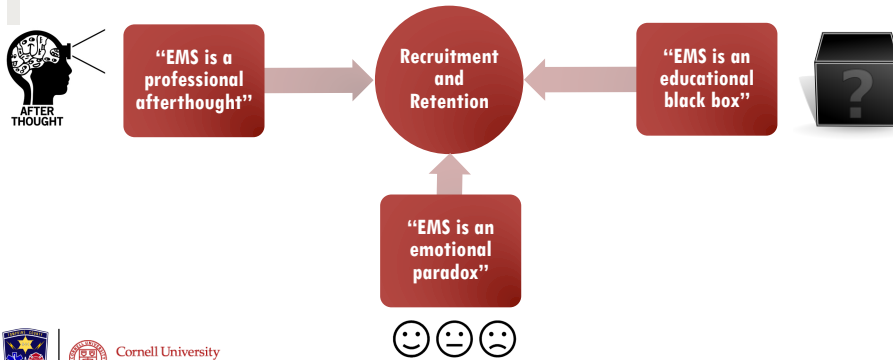
**RETENTION**

The study also showed that **76.8%** of respondents found EMT retention to be at least sometimes a problem with **21.6%** finding retention to be a constant issue



PROJECT FINDINGS – VOLUNTEER STRATEGIES

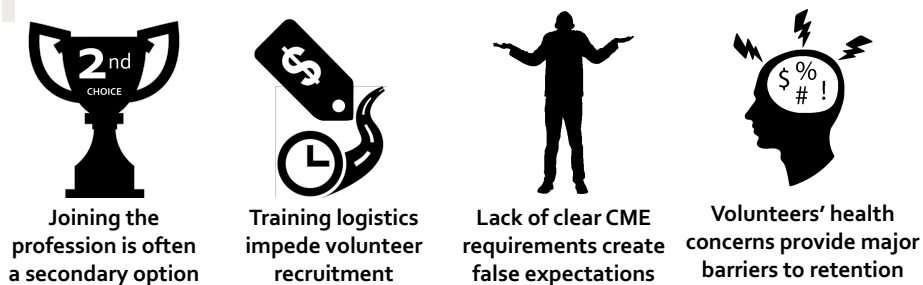
Another approach to looking at volunteerism involves obtaining more qualitative data to identify factors that contribute to recruitment and retention



20

PROJECT FINDINGS – VOLUNTEER STRATEGIES

**SUMMARY:** Several patterns emerge in the literature discussing the issues surrounding recruiting and retaining volunteers in EMS agencies



Notes: CME = Continuing Medical Education



21

## Project Findings

- Volunteerism Strategies
- EMS Best Practices
- Tompkins County Current State



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### PROJECT FINDINGS – EMS BEST PRACTICES

The literature reveals three major goals driving best practice models for emergency medical services' first responder staff

## HOW CAN WE?



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### PROJECT FINDINGS – EMS BEST PRACTICES

One study examined communities in another DSRIP state under a 1115(a) Medicaid Transformation Waiver and demand reduction through improving community care coordination



THREE RURAL COMMUNITIES  
State of Texas  
2013 – 2016

Strategy mirrors those of paramedicine — medicine, public health, and public safety



PATIENTS REPORTED HAVING IMPROVED ACCESS TO HEALTHCARE SERVICES, INCLUDING:

- Connections to primary care providers, dentists, mental health providers, other specialists
- Health insurance, medication, and medication assistance



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Another study in a NYS, also a DSRIP state, community explores the reasons for EMS demand issues



VILLAGE OF GENESEO  
State of New York  
2004 – 2007  
(two six month studies)

70% were first-time users, 30% were "frequent flyers"



Notes: DSRIP = Delivery System Reform Incentive Payment

CARE COORDINATION

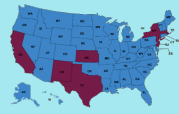


PROJECT FINDINGS –  
EMS BEST PRACTICES

So what is DSRIP?

- Not a grant program, but an **incentive-based payment program**
- The payments received are not service payments. These are **earned bonus payments**. If you reach the project benchmarks then you will receive the payments.
- Performance requirements and benchmarks vary by state but follow the general framework while following the four main areas below:

To Date, 7 States have Adopted DSRIP Waivers



DSRIP PROGRAM



25

PROJECT FINDINGS –  
EMS BEST PRACTICES

CASE STUDY: Allina Health EMS & Montgomery County reallocated paramedic staff to community care coordination in addition to emergency response



**PILOT GOALS**

- EMS prevention, patient coaching, as well as patient navigation
- Home visits to educate potential EMS patients how to access the healthcare system

**PILOT RESULTS**

- 30-day readmission rates reduced to 5% — 207% less than the national average of 18.4%
- 50% reduction in calls
- Among those who were high-frequency EMS users, 78% were successfully prevented from readmission

PARAMEDICINE MODEL



26

PROJECT FINDINGS –  
EMS BEST PRACTICES

The literature focuses on achieving three goals, to identify demand zones, reduce maximum response distances, and minimize the number of uncovered demand zones

ON WHICH CRITERIA SHOULD WE MEASURE THE SUCCESS OF OUR EMS MODEL?



Current models are biased toward ambulance services in more densely populated areas, resulting in higher times for those located in more rural areas

A PROPOSED BI-OBJECTIVE APPROACH ACCOUNTS FOR THIS BIAS

- Use 9 minutes as a target baseline for urban settings
- Use statistical analysis based on coverage, equity, and outcomes to determine best locations
- Account for busy vehicles in vehicle census analyses – emergencies cannot be forecasted

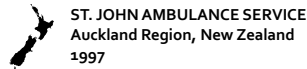
URBAN BEST PRACTICES



27

**PROJECT FINDINGS –  
EMS BEST PRACTICES**

**Along with the bi-objective model, the literature also proposes a statistically driven simulation model approach to EMS tracking quality**



**METHODS**

- Partnership with Cornell's Engineering School
- Installed buttons in ambulance and in call centers to record timestamps of the delivery process steps

**RESULTS**

- Development of decision support tool using GIS and simulation "tracing" to optimize ambulance dispatch

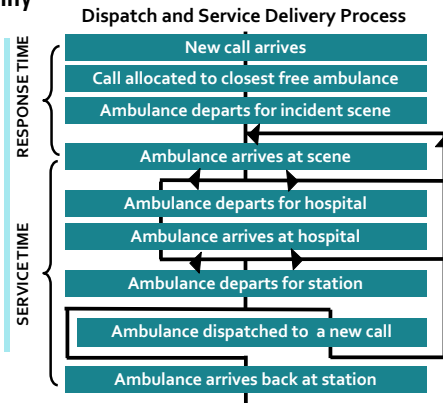
**OPPORTUNITIES FOR FURTHER STUDY**

United Network for Organ Sharing (UNOS) model for projecting "arrival" times is suggested for further study into applicability for operational modeling in EMS



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SIMULATION FOR EMS

**PROJECT FINDINGS –  
EMS BEST PRACTICES**

**Additionally, the literature identified evidence of how staffing models can maintain quality and improve cost containment and demonstrate underlying value of including other tiers of responders**



**STAFFING COST ISSUES**

- Paramedic salaries and training resources are costly
- Paramedics are NOT necessarily required for every call

- 3+ paramedics at the scene of out-of-hospital cardiac arrests is not associated with improved survival to hospital discharge when compared to crews with 2 paramedics
- Opportunity for future study to determine the potential cause of this finding



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TARGET STAFFING

**PROJECT FINDINGS –  
EMS BEST PRACTICES**

**Finally, several case studies on costs associated with fire and emergency services in New York State suggest that community alliances contribute to reduced spending and overall savings**



**UNIFORM FIRE PROTECTION**

North Greensbush and Defreetsville reduced municipal costs of \$22 per household



**SHARED EQUIPMENT**

City of Watervliet and the Village of Green Island one-time savings of \$792,000 for Green Island taxpayers and \$67,000 for Watervliet taxpayers.



**REGIONAL COORDINATION**

Albany County single public-safety answering point. This scenario will produce cost savings of over six million dollars – \$6,221,775



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NYS EMS RESEARCH

PROJECT FINDINGS – EMS BEST PRACTICES

Successful implementation can not be completed without proper measurement and reporting; national literature suggests that data collection, benchmarking, and quality are inconsistent

WHILE

**88%** of states have a state EMS Data System

**ONLY 50%** have statewide coordination without local implementation

**ONLY 30%** of states are able to track 911 calls requesting EMS services

HOWEVER, IMPLEMENTING THIS STRATEGY IS NOT WITHOUT ITS CHALLENGES

- Quality and consistency benchmarks are inconsistent across settings
- National and local outline issues related to quality of care, lack of quality metrics, fragmentation, and limited evidence-based practice
- Standardizing data collection is a common goal
- Review of policies and procedures as well as historical data can shed light on whether the measurements are reliable and valid
- A simple checklist to ensure certain protocols are followed has improved outcomes and reduced complications
- An open, non-punitive risk management feedback model found to improve both quality and culture



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PROJECT FINDINGS – EMS BEST PRACTICES

Finally, our CIPA team believes that developing a shared vision for EMS in Tompkins County will be an important goal in the next phases of this project



“The only visions that take hold are shared visions—and you will create them only when you listen very, very closely to others, appreciate their hopes, and attend to their needs.”



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PROJECT FINDINGS – EMS BEST PRACTICES

**SUMMARY:** Several categories of best practices emerge in the literature to provide a myriad of ideas for addressing EMS in rural communities



Care Coordination



Quality Implications



Staffing Ratios



Operational Implications



Cost Implications



Shared Vision and Culture



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# Project Findings

- Volunteerism Strategies
- EMS Best Practices
- Tompkins County Current State



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## PROJECT FINDINGS – TOMPKINS COUNTY CURRENT STATE

As part of this project, the CIPA team wanted to set the Phase II team up for success; to that end we summarized the EMS Task Force meetings that we attended during the project



TOMPKINS COUNTY  
EMS TODAY

WEDNESDAY MARCH 8<sup>th</sup>

Lee Shurtleff

Dept. of Emergency Response  
Director, Fire and EMS



DUTCHESS COUNTY  
FINDINGS DISCUSSION

WEDNESDAY MARCH 22<sup>nd</sup>

Taskforce Discussion



INTER-STATE AND  
MUNICIPALITY EMS POLICIES

TUESDAY APRIL 11<sup>th</sup>

Susie Surprenaut  
Executive Director  
Central NY Emergency  
Medical Services

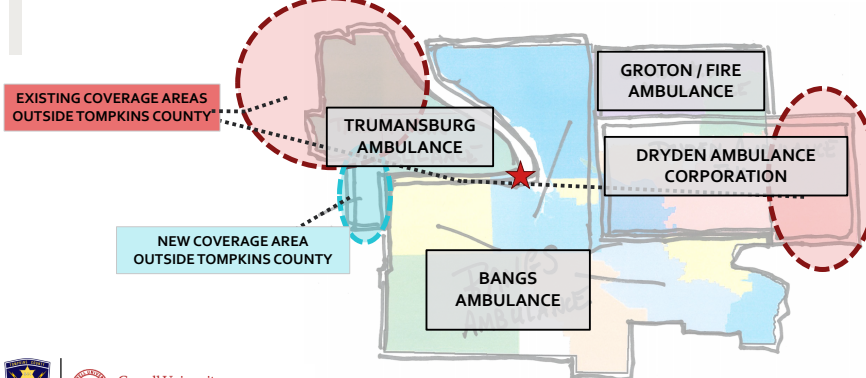


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## PROJECT FINDINGS – TOMPKINS COUNTY CURRENT STATE

In Tompkins County four ambulance organizations provide advance life support

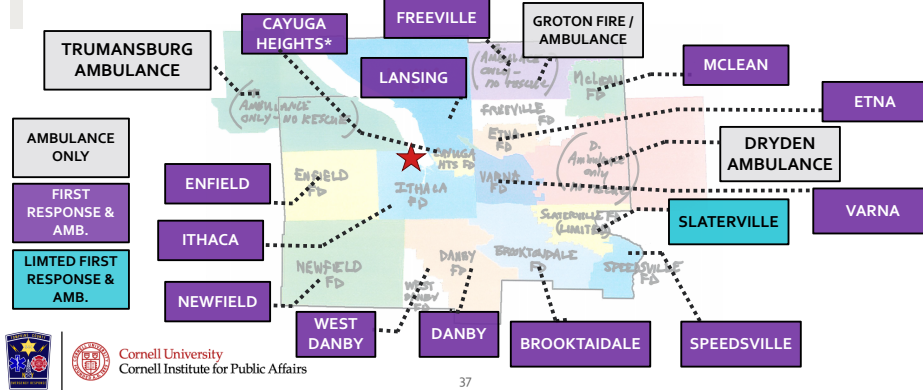


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**PROJECT FINDINGS –  
TOMPKINS COUNTY CURRENT STATE**

However, the EMS structure in Tompkins County is currently much more than ambulances, but also incorporates an extensive first response component that is heavily provided by volunteers



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**PROJECT FINDINGS –  
TOMPKINS COUNTY CURRENT STATE**

Additionally, we have included in our report much of the work that Lee Shurtleff and others have compiled to provide context to the CIPA team to follow us



Tompkins County is aging just like the rest of the nation.  
From 2000 to 2010, the TC population ages 60 and over grew 34%; and the 4.3 working age adults per retired (age 65+) adults in 2010 is projected to fall to 3.2 by 2020.



Elderly EMS users anecdotally do not always require a trip to the Emergency Department when dialing 9-1-1.  
Paramedicine services provided by Northwell Health, one of the largest health systems in the nation, shows promise in urban environments.  
Translation to a rural environment will be critical.



Past EMS projects between the Johnson School at Cornell University and TC EMS provide a baseline profile of Cornell University EMS (CUEMS).  
In addition, the assessment explores the potential for a larger partnership with the Tompkins County Emergency Services.



One study of Erie County, NY Fire Services demonstrates that volunteer models for critical community services like fire and EMS may be more costly in the long run than paid models.

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**PROJECT FINDINGS –  
TOMPKINS COUNTY CURRENT STATE**

The aging population of Tompkins County presents challenges not unique within the nation; a better understanding of the current state in the county can best guide best practice adoption

**"90% want to stay in Tompkins County"**  
2.7 persons for every 1 person of retirement age in 2030  
Lack of care and companionship are issues for older adults in many rural communities, including Tompkins County

**TOMPKINS COUNTY POPULATION TRENDS**

Source: US Census and Cornell Program on Applied Demographics

Year	All Ages	Ages 0 - 59	Ages 60 - 64	Ages 65 - 74	Ages 74 - 84	Ages 85+
2000	96,501	84,534	2,710	4,637	3,368	1,252
2010	99,161	85,522	2,710	5,711	3,421	1,797
2020	101,916	82,699	5,113	8,452	3,947	1,705
2030	103,663	81,303	4,929	9,720	5,756	1,955
2040	98,606	80,059	3,838	6,526	5,462	2,721

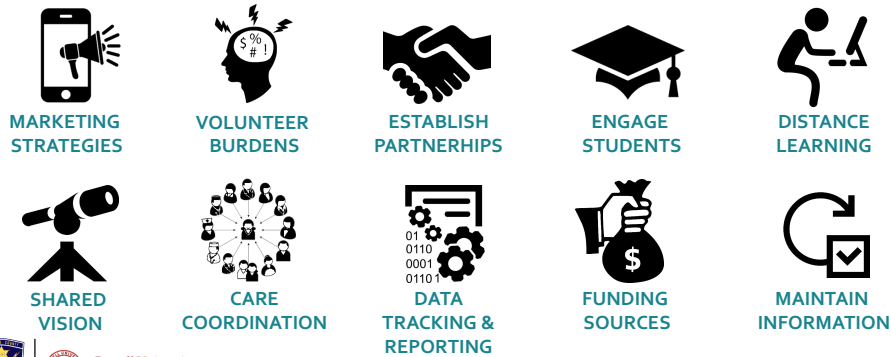
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# Project Opportunities for Further Study



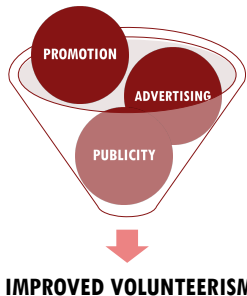
## PROJECT OPPORTUNITIES – SUMMARY

### Overview of Opportunities



## PROJECT OPPORTUNITIES – VOLUNTEER STRATEGIES

Marketing strategies may be helpful in increasing public awareness, education, and other municipal agencies having to do with EMS



Notes: PSAs = Public Service Announcements

<b>ADVERTISING</b> <ul style="list-style-type: none"> <li>PSAs</li> <li>Billboards</li> <li>Radio Ads</li> <li>Newspaper Ads</li> </ul>	<b>PUBLICITY</b> <ul style="list-style-type: none"> <li>TV News Coverage</li> <li>Newspaper Coverage</li> <li>Magazine Coverage</li> <li>Newspaper Ads</li> </ul>
<b>PROMOTION</b> <ul style="list-style-type: none"> <li>Public Displays</li> <li>Educational Forums</li> <li>Community Simulations</li> <li>Local Fundraisers</li> </ul>	<b>PERSONAL SELLING</b>

**PROJECT OPPORTUNITIES – VOLUNTEER STRATEGIES**

**High school EMS programs have shown great promise with respect to increasing interest and improving volunteerism among younger generations**



Rancho High School constructed a one-year EMS course typically taken by high school seniors that prepares them to take the NREMT exam at the year's end



Pima County JTED organized a class similar to Rancho High School; however, this course is not offered within the high school but at a separate vocational school



Hoboken High School utilizes a longitudinal approach that is spread across a student's four years in high school that results in them becoming a state-certified EMT

New York State EMS policies and requirements for volunteers do not necessarily correlate with those of fire services and allow for volunteers under the age of 18 if they are CFR certified. There are also no restrictions on place of residence which allows certified EMTs to volunteer in any municipality.

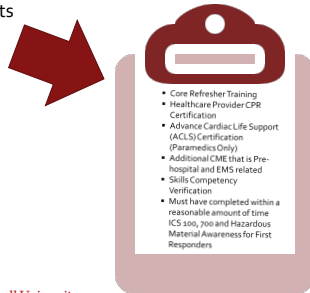


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**PROJECT OPPORTUNITIES – VOLUNTEER STRATEGIES**

**Continuing education requirements are cited as a major impediment to retention and suggests “self-study” methods as a potential solution for volunteers**

To renew certification a provider must complete several continuing medical education (CME) requirements



**NYS has approved that 50% of the total core and additional CME hours may be done through self-study**

- videos/CDs
- internet training courses
- Additional self-study hours are allowed with an approve state waiver application



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**PROJECT OPPORTUNITIES – VOLUNTEER STRATEGIES**

**Stress-relief programs have proven to be helpful when battling against depression, anxiety, PTSD, and other mental health disorders that reduce volunteer retention**



- EAPs offer more formal support with therapists, psychologists, and other mental health professionals
- CISM programs are generally peer driven and offer general educational sessions as well as debriefing and assistance following stressful events



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**PROJECT OPPORTUNITIES – VOLUNTEER STRATEGIES**



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**The National Volunteer Fire Council (NVFC) has put forth and implemented recommendations that can be used to help increase recruitment and retention**

Incorporate a wellness program with the help of the Heart-Healthy Firefighter program

Utilize Fire Corps to help recruit non-operational volunteers

Take advantage of the National Junior Firefighter program

Make use of the 1-800-Fire-Line phone number to increase recruitment



46

**PROJECT OPPORTUNITIES – EMS BEST PRACTICES**

**The most immediate opportunity is to form a small Advisory Group to guide EMS once the taskforce has implemented its chosen solutions**

**WHO SHOULD BE ON THE ADVISORY GROUP?**

- Director
- County Representatives including finance and billing, county operations, fire, EMS
- Medical Representatives including a Medical Director, mental health, substance abuse and addiction
- Tompkins County Citizens Representative
- Stakeholder to guide volunteer recruitment and retention



Shared vision to ensure that each action leads toward that vision

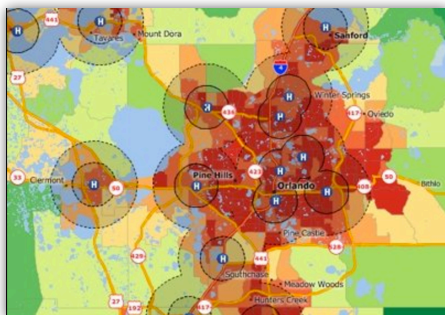


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47

**PROJECT OPPORTUNITIES – EMS BEST PRACTICES**

**Strategic collection, analysis, and management of operational data helps to guide quality improvement initiatives**



- Determine metrics and standards to be utilized
- Identify high demand zones through data
- Utilize Hypercube operations model
- Get creative – Idle locations, GPS tracker



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48



**PROJECT OPPORTUNITIES –  
EMS BEST PRACTICES**

**Furthermore, remaining educated on EMS opportunities will be an important task for an advisory group**

- Monitor for status reports quarterly
- Attend conferences when possible
- Review grant opportunities at least twice per year



**STATE-LEVEL GRANTS**

- Statewide Interoperable Communications Grant (SICG New York)
- Personal Responsibility Education Program (PREP New York)

**FEDERAL-LEVEL GRANTS**

- Evidence-Based Falls Prevention Programs
- Promoting Integration of Primary and Behavioral Health Care
- Enhancing Innovation and Capabilities of the Environmental Public Health Tracking Network

**CORPORATE OR FOUNDATION GRANTS**

- Global Ideas for U.S. Solutions (Robert Wood Johnson)
- Healthiest Cities & Counties Challenge (Aetna)



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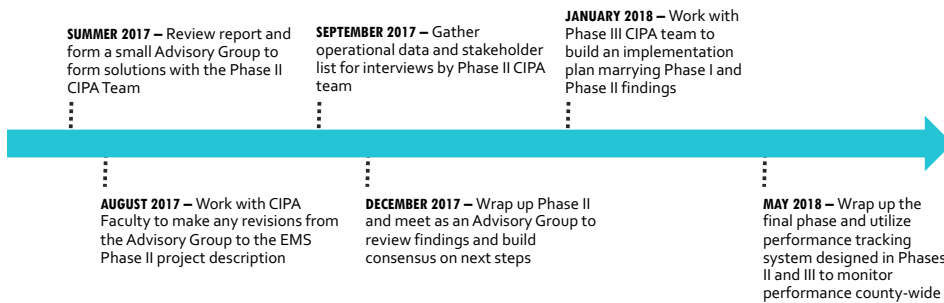
## Next Steps



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**PROJECT NEXT STEPS**

**The CIPA team has laid out an ambitious, but reasonable time frame to implement a tailored solution for Tompkins County EMS by Summer 2018**



NEXT STEPS

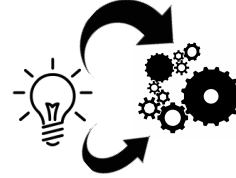
Phase II of this project will consist of gathering and analyzing operational data and completing and compiling stakeholder interviews



Research Phase  
Spring 2017



Current State Phase  
Fall 2017



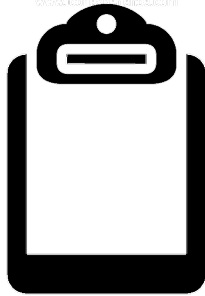
Implementation Phase  
Spring 2018



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NEXT STEPS

Future opportunities include collectively answering several more questions such as, "what is the most useful amount of data to collect?"



PHASES II & III COULD EXPLORE SEVERAL TOPICS

- Perform community assessment
- Analyze utilization of emergency personnel to assess feasibility
- Consider utilizing volunteers if paramedics are maximized
- Identify overutilizers and develop a more proactive approach
- Determine desired frequency and timeline of visits to other sites of care
- Consider the roles necessary to successfully implement



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NEXT STEPS

Now, we hope to engage a directed discussion on the topic's covered today



VOLUNTEER RECRUITMENT  
AND RETENTION



COMMUNITY  
PARTNERSHIPS



TRACKING AND MAINTAINING  
INFORMATION



VISIONING AND  
FUNDING



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# Thank you.

We welcome your questions and comments.