

2025

# Exploring Emergency Medical Service (EMS) Models for Jefferson County

Master of Public Health 780: Evidence-Based Decision-Making



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# Jefferson County EMS Model

A Partnership with Jefferson County EMS Working Group

Written by: Alexis Mercado, Brenna Heelan, Gabbie Gottinger, Kaisa Stolen

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**School of Medicine  
and Public Health**

UNIVERSITY OF WISCONSIN-MADISON

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## **Summary Statement**

Jefferson County comprises 16 towns served by 13 different Emergency Medical Service (EMS) agencies. This is a significant public health concern because residents expect different response times and levels of provider coverage based on where they reside within the county. To increase EMS equity among neighboring towns, countywide oversight is encouraged. Our project aims to understand effective ways to transition Jefferson County from no county involvement to a county-supported system with the intent to set them up for a future county-run system. Through the development of this program, the primary targets will be improving accessibility and quality of care by involving the county in EMS funding, oversight, and standardization of operations. To make this plan feasible, we identified three recommendations for Jefferson County to achieve a smooth first transition to a county-supported system, including a dedicated service director/coordinator role, securing licensing to better position themselves for funding opportunities, and efforts towards increasing employee recruitment and retention. Recommendations are based on a literature review and insights gathered at meetings conducted with Wisconsin counties that utilize different models of a countywide EMS system. The recommendations consider the long process ahead to reach a county-run system and acknowledge the importance of communication with existing EMS municipalities, county lawmakers, and community leaders and members.

## **Public Health Issue**

In the United States today, EMS provides a critical service that is responsible for the safety and wellbeing of citizens. The specific capabilities of EMS allow for handling of public health issues ranging from primary injury prevention to infectious disease control and surveillance (Dunford, 2006). EMS occupies a space that integrates public safety, healthcare, and public health, all of which influence community health. EMS systems can benefit from a public health approach through analysis of resource utilization based on epidemiological data, alternative strategies for public health issues where demographic changes cause increased call volume for EMS systems, and emphasis on population-level health opposed to individual focus.

Per a joint report done by the United States Department of Homeland Security and Department of Health and Human Services, there are more than 23,000 licensed EMS agencies in the United States (Krohmer and Elkins, n.d). Comparatively, there are approximately 800 active EMS services in Wisconsin according to Wisconsin Department of Health Services (DHS) (DHS, 2024). In a survey sent to all ambulance services in Wisconsin, the Wisconsin Office of Rural Health (WORH), found that:

- 41% of EMS agencies rely on 6 or fewer staff to respond to 80% or more calls,

- 78% of EMS agencies provided an ambulance response for a neighboring agency in the past 12 months due to the neighboring agency being unable to staff their primary ambulance, and
- 38% of services anticipate seeking additional funding in the next year such as with a referendum (WORH, 2023).

These results highlight the public health scope that EMS systems and services have at the community level and reveal challenges with recruiting and retaining needed staffing levels. There are not enough EMS professionals to respond to 911 calls within the service area and therefore causes outside community agencies to respond. These increased call times likely lead to excess morbidity and mortality. The combined lack of personnel and funding make EMS systems vulnerable and therefore is a threat to public health. The vulnerability exacerbated by funding leads to EMS agencies unable to keep up with their desired level of equipment upkeep and personnel training. This undermines the critical role of EMS systems providing geographically consistent high-quality care.

## **Jefferson County**

Jefferson County is located in southeastern Wisconsin, midway between the cities of Milwaukee and Madison, and is home to approximately 85,900 people as of 2023 (Data USA, n.d.). The locations with the highest population density within the county are Lake Mills, Jefferson, Fort Atkinson, Whitewater, and Watertown. It is projected that the county population will grow by 10,180 by 2040, largely focused in the more urban areas (Taking the Pulse, 2020). The median age in Jefferson County is currently 41.3 with a median household income of \$80,604, both of which are expected to continue to increase (Data USA, n.d.).

The county is expecting to face demographic changes in the coming years. With the aging population, both in Jefferson County and nationwide, there will be a larger need for assisted living facilities, as the towns of Watertown, Whitewater, Fort Atkinson, and Jefferson are currently home to the largest concentrations of senior living facilities (*Consumer guide: Jefferson County residential care options*, 2025). This demographic shift will also be felt by EMS providers, as senior citizens are some of the largest users of EMS services. Because of the increase in need, there will be further demand for an increase in time and training for EMS providers to accommodate the additional call volume.

Throughout the U.S., specifically in rural areas, EMS systems largely rely on volunteers to staff and service much of the calls. Unfortunately, Jefferson County has also experienced a decline in volunteerism, leading to additional challenges in staffing of EMS to combat the changing demographics of the county. To combat these issues, Jefferson County created an EMS working group focused on improving the EMS system with several goals in mind. Goals include operational consistency and coordination, funding and financial stability, and service quality and scalability. This group includes representatives of EMS from the different municipalities in Jefferson County listed as follows, Koshkonong, Lake Mills, Ixonia, Johnson Creek, Sullivan, Watertown, Oakland, Fort Atkinson, Waterloo, Watertown, and Jefferson as well as a member

from the sheriff's office and a medical director from the county (Finance Committee agenda Jefferson County, 2025).

### **MPH Objective**

The charge from the Jefferson County EMS working group was to conduct an analysis of the Jefferson EMS system and perform outreach with existing programs to determine best practices for implementation in Jefferson County EMS. Underlying goals of this included equalizing cost among all residents of Jefferson County, frameworks that would lead to more equitable care across the county, and how to obtain increased funding.

From literature analysis, three main countywide EMS models utilized in Wisconsin were found. These include a county-run system, hybrid system, and a county-supported system (UniverCity Alliance, 2025). A county-run system entails that it is county-owned and operated, with the county fully owning equipment and managing the staffing and employment of personnel, including a countywide medical director. Both Florence and Marquette Counties operate within a county-run system model. In contrast, a hybrid system is when the county owns some or all equipment and contracts out for personnel. Counties using this model in Wisconsin include Door County, Lafayette County, Oneida County, Portage County, and Taylor County. Lastly, the county-supported system is when the county provides funding and/or administrative services for existing municipalities, but no direct services. This model is used in Bayfield County, Green Lake County, Lincoln County, and Milwaukee County.

After reviewing the existing EMS systems in Wisconsin, we decided to gain an in-depth understanding of both Bayfield County, who uses a county-supported system, and Portage County, who operates a hybrid system, as these two systems are widely different from both one another and the current operations in Jefferson County. Studying these contrasting systems helped us identify the most effective practices and informed the development of our first and second recommendations for Jefferson County's future direction.

### **Bayfield and Portage County EMS**

An interview was conducted with the EMS coordinator of Bayfield County in order to gain further insight into their transition into a county-supported system. Throughout this interview, insight was gained on the successes and challenges of this transition as well as recommendations for implementation in Jefferson County.

Bayfield County's county-supported system is recent. Prior to 2023, Bayfield County operated similarly to Jefferson County without any direct involvement in the EMS system where EMS services were provided to residents by a combination of municipalities and private ambulance contracts. The transition to a countywide EMS system was driven by a decline in volunteerism, absence of available crews to respond to 911 calls, and limited advanced life support (ALS) providers. After conducting a report in 2022, their largest concerns for the

Bayfield County EMS system included funding, staffing shortages, organization of services, legislative initiatives, and training (Ziemann, 2025).

With only 16,000 residents, Bayfield County is the 12th smallest population of permanent residents for counties in Wisconsin (Ziemann, 2025). However, their population doubles in size in the warmer months due to seasonal residents and tourists, leading to an increased demand for EMS. This county has no local hospital and a small number of first responders. Their lack of infrastructure also limited them to service a few calls per week. Although local ambulance systems were intended to operate 24/7, they lacked the capacity to do so, causing calls to roll over to neighboring municipalities or counties until someone responded. In 2024, they hired a consulting group to conduct a review of their system and provide several recommendations to tackle their main concerns. Their recommendations included creating a countywide EMS system in which Bayfield County would be taking on a support role to assist the current transporting ambulance services.

After talking to Bayfield County earlier this fall, greater understanding about successes and challenges of implementing a countywide system was obtained. Since the creation of the recommendations proposal from the consulting group, daily communication was one of their main concerns. They combatted this issue through hiring an EMS coordinator as well as a director for dispatch in June of 2024.

Alternatively, Portage County operates as a longstanding hybrid system going back to their initial contract with Stevens Point Fire Department in 1969 (Krantz, 2025). Their model is led by the sheriff, providing oversight of a singular dispatch center. Their system includes three different providers: Stevens Point Fire Department, Amherst Fire Department, and Plover Fire Department. Personnel include a medical director and 11 first responder teams throughout the county. Using funding from a countywide tax levy, grants have been offered each year for first responders that are based on call volume and credentials. This is to help ensure they are being overseen correctly by the state. First responders get a flat rate of \$5,000 for applying. On top of this, they receive ~\$10 per call for the previous calendar year. If they credential with four providers, they get an additional \$650. There are a lot of grant options for these workers. These grants have significantly improved the retention rate for EMS workers in Portage County.

Portage County shared a few challenges and innovative solutions to address them. The county struggles to fill all of their full-time positions in different towns and municipalities. For example, Plover Fire Department has seven full time positions and only four are currently filled (Krantz, 2025). To combat this, many emergency response nurses that live in the area help with covering shifts in the ambulances. An additional concern is the frequency of needing to call medflight which is about once every two weeks, greater than the average need in a metro area, largely due to response time and not necessarily the severity of the injury (Krantz, 2025).

## **Recommendation 1: Dedicated EMS Service Director/Coordinator position**

In discussions with both Bayfield and Portage County, it was clear that Jefferson County is not alone in the issues they are facing. The approaches that both Bayfield and Portage County have taken to combat similar concerns have worked well in their respective counties and could be modified and applied successfully in Jefferson County.

Our first recommendation is to create a dedicated county position focused on overall Jefferson County health. Based on existing legislation and county models, this position could be titled EMS Service Director or EMS Service Coordinator and ideally would be a full-time role. The position will have several key responsibilities discussed below and situates the county for a smooth transition from individual municipal EMS agencies to a cohesive system, primarily by streamlining the process of the county becoming licensed as an EMS agency. Both Bayfield and Portage County have this position in place, and it has aided the counties in smooth day-to-day operations (Ziemann, 2025; Krantz 2025). An example job description of this position, modeled after Bayfield County's position, can be found in appendix A of the product. One of the primary starting roles of the new position is overseeing the preparation and submission of Jefferson County's state EMS licensing application, the first step in shifting from a municipality-based EMS system to any type of countywide EMS system.

Jefferson County should initially apply for an EMS license under a county-supported system like Bayfield County. This allows for buy-in from existing municipality members and the local community. For Jefferson County, we recommend this due to recent financial difficulties from multiple municipal agencies. Through securing a state licence, doors open up for additional funding through the state in forms of grants. This increase in funding allows for the bypassing of local referendums and allows for an increase in equity across services within the county. Another key responsibility of the new position is to lead strategic partnership and communication efforts, ensuring all stakeholders, including County Chiefs and Captains Associations of the existing EMS services, remain knowledgeable and engaged in the transition. Once there is enough consensus as determined by the Jefferson County EMS working group, the Regional EMS Coordinator Jason Witte, can be asked to attend meetings to help with feasibility of ideas for creating a Jefferson County specific EMS service prior to starting the EMS licence application.

## **Recommendation 2: Securing state licensing**

As stated previously, state licensing is a recommended next step for Jefferson County. It allows the county to implement a countywide tax levy to help solve financial problems that current municipalities are experiencing. Levies are set by legislation through local levy limits, how much municipal property taxes can increase yearly, as seen in Wisconsin state statute 66.0602 (Wisconsin State Legislature, n.d). These can only be bypassed with voters' consent through a referendum or a specific local levy limit exemption (Wisconsin State Legislature, n.d.). Wisconsin state statute 66.0602(3)(e)6 allows for a local levy limit exemption for a countywide

emergency medical system, therefore bypassing the need for a local referendum (Wisconsin State Legislature, n.d.). There are currently 14 countywide EMS levies in Wisconsin including 5 in county-run systems, 5 in hybrid systems, and 4 in county-supported systems (UniverCity Alliance, 2025). These levies allow EMS systems to increase local property taxes to account for personnel, equipment, and infrastructure thereby improving community health. As we explored the licensure process, we identified several considerations:

- *Position appointments:* Prior to starting the application process, a service director/coordinator and service medical director need to be appointed by the county. These roles could be filled by existing Jefferson County employees or from existing EMS municipalities.
- *Advance preparation of application documentation:* Drafts of all documents needed for licensing can be gathered and/or crafted either before or after hiring these positions. Many of the protocols will be similar across EMS services in the county. If the county's intent is to transition to a hybrid EMS system in the future, this would be a good spot to start crafting protocols that can be applied to all service areas. Refer to intervention 2 of the product to see a list of required documents.
- *Connect with Regional EMS Coordinator:* To open an EMS agency license application the service director/coordinator for Jefferson County needs to contact the Wisconsin Department of Health Services (DHS) regional EMS coordinator. Jefferson County is located in region 5 with Jason Witte holding the position of regional EMS coordinator for regions 4 and 5. His contact information is listed in intervention 2 of the product or can be found on the Wisconsin DHS website.
- *Consider service level:* While completing the application, you'll need to select your service level, with your response determining whether a feasibility study must be completed or not. EMR level does not need a feasibility study while EMT and above will need a feasibility study.

Once the application is submitted, Wisconsin DHS has 60 business days to review and provide feedback on the application. It is then returned to the county which then has 60 business days to complete changes. The application will be sent back and forth every 60 business days by DHS and Jefferson County until approved. In addition to being approved by DHS, local legal advice should be sought to check for civil and legal liability.

Once Jefferson County obtains a license, it opens the door to implementing changes, such as consolidating and updating dispatch practices, that can lead to more equitable EMS care across the county. Dispatch consolidation can improve service when responding to large-scale emergencies and reduce redundancies in equipment (The Center for Public Management, 2011). The initial cost of consolidation could be supported by a county EMS tax levy that can be attained after licensure. If this idea is seen as favorable to the county, then updating the GPS fleet tracking system should be done to improve call times by allocating the closest available unit. To facilitate this process, routine communication should be set up between the future Jefferson County service director/coordinator, current dispatch managers, and members of the dispatch

team as they will be the individuals most impacted by this transition, advice shared during discussions with Bayfield County to discuss, among other things, the consolidation of the Ashland-Bayfield Emergency Communications Center. Bayfield County highlighted a lack of communication at all stages of the transition process that resulted in avoidable hurdles during their transition. After the issue and discontent was raised during their consolidation, daily communication was then made which allowed for the project to advance and lead to a successful consolidation. Frequent, clear communication, especially among and between key stakeholders is key.

Having a countywide approach to EMS also allows for the county to ensure that residents are getting equitable access to advanced life support (ALS) providers across the county. The county can implement an ALS intercept program to ensure that all residents in rural communities receive timely and high-quality emergency medical interventions in collaboration with the county's basic life support (BLS) system when medically necessary (Dane County EMS, 2022). When the ALS intercepts are not responding to calls, they can be working as community paramedics offering preventative care, chronic disease management, and health education. This is an effective strategy to address Jefferson County's shifting demographics projected to increase EMS call volume (McConnel & Wilson, 1998; Roldan et al, 2019).

### **Milton School District**

In discussions with the Jefferson County's EMS working group, retention and recruitment of EMS professionals were highlighted as concerning issues. Milton School District (MSD) emerged as a potential model for success in addressing these issues head-on. Following discussions with MSD, we learned of an effective strategy engaging youth to build their own EMS workforce pipeline. Located in Rock County, MSD offers an EMT education course located at the local Fire Department, in collaboration with Mercy Health. This group looks for students who are active members of their community, which they emphasize by offering classes in the middle of the school day to allow students to continue participating in extracurriculars such as work and sports. After the first year of offering the course, eight new EMTs have joined their agencies. The next graduating class has 19 students from MSD. The course is offered at a cost of \$1,067 per student. Funds go towards training costs and the school district. If the student receives their license, the state reimburses the school district for the cost of the program. The state allocated funding to the school district from the funding assistant program, part of which is earmarked for funding EMS agencies. Additional funding is provided by the Allied Health Project Grant, a three-year grant that pays out \$54,000 annually. Though the retention data is still in progress for this specific program, it is expected that high school graduates who get their EMT certifications will stay with their agencies. If this is an approach that is being considered, Milton will provide the retention data once it is finalized.

### **Recommendation 3: Recruitment and Retention Considerations**

By partnering with the current high school training program in Milton School District, Jefferson County EMS could recruit high school students to pursue EMT certification and begin working for Jefferson County EMS. The new position at Jefferson County could lead outreach and recruitment efforts at county schools such as Jefferson High School and Fort Atkinson High School. Additionally, there is an opportunity for Jefferson County to partner with MSD on this initiative. The coordinator who has been working with MSD informed our group of plans to expand and include Janesville for their course next year and has also expressed an interest in collaborating with Jefferson County, so this partnership is definitely feasible (Murray, 2025). Gaining more EMT professionals at an early age will improve the retention of employees when high school graduates decide to enter the workforce early on and pursue a career as an EMT with opportunity to advance into paramedic training. Further information regarding collaboration with this school district can be found in intervention 3, as well as funding resources in appendix C.

It is important to consider both recruitment and retention when addressing the current EMS personnel shortage. According to the Wisconsin DHS (2024), there was a decrease in EMS professionals between 2018 and 2023 from 17,821 to 17,072 providers. In contrast to this earlier trend, the rural number of EMS providers rose from 19,408 in 2024 to 21,855 in 2025 (DHS, 2025). The largest proportion of EMS providers by age category was in the 21-25 years age group, most of which was made up of individuals with an EMT licence. Although this increase represents progress in addressing EMS workforce shortages, it also emphasises concerns about retention. Fluctuations in provider levels are not always a reliable indicator for long-term staffing stability. This concern was highlighted in results from the Freeman et al. (2009) study which found that 55% of surveyed EMS agencies reported retention as a recurring challenge in both urban and rural settings.

Retention is important for EMS services due to the loss of time, resources, and expertise when senior personnel leave and someone new is hired. According to Patterson et al. (2010) the overall weighted average annual rate of turnover was 10.7% with the rate lowest among agencies using an all-paid staffing model (10.2%) and highest among agencies using an all-volunteer staffing model (12.4%). The cost of provider turnover incurred by the agencies included overtime paid due to understaffing along with time and resources for training a new provider (Patterson et al., 2010). The study found that the weighted median cost per termination for all paid staffing models was \$7,161.38. In addition to putting strain on the agency itself, high rates of staff turnover also burden providers. Turnover increases the risk of burnout among remaining staff because there is a smaller pool of providers available to fill critical shifts, and the need to train new recruits adds additional time and workload.

According to the Blau et al. (2016) study, the most cited reason for individuals leaving the EMS workforce was to pursue non-EMS related further education. To better understand this, providers should be broken into categories based on license level: Emergency Medical Responder (EMR), Emergency Medical Technician-Basic (EMT-B), and Paramedic (EMT-P).

For EMT-B the most reported reason for leaving EMS was to pursue non-EMS higher education. This is hard to specifically prepare for besides making EMS advancement options as a career path clear to EMT-B providers. The most likely success at having a big enough EMT-B pool of providers is to increase the base number going into EMS as discussed above. For EMT-P licensed individuals, an increase in pay and benefits was the most important factor when considering leaving EMS. Additionally, EMT-P who had lower "intrinsic job satisfaction" and felt less challenged with task variety had higher intent to leave the profession (Blau et al., 2016). EMT-P is often seen as a terminal position in EMS, and to foster a feeling of perpetual opportunity for advancement, a clinical ladder should be implemented in Jefferson County. This would include emphasis on community paramedics and increase in rewards for leadership training. Implementing such ideas in addition to increasing pay and benefits should help retain the providers at this license level. When considering retention of all levels of providers, "Professional peer-based camaraderie can be a powerful retention source for EMS professionals" (Blau, et al., 2016, p. S110). To expand on this existing feeling of camaraderie, mentor/peer support groups and activities should be implemented (Blau, et al., 2016). These support groups and activities should be intertwined with mental health as EMS providers also report intent to leave due to excessive experience of stress culminating in emotional burnout (Freeman et al., 2009; Blau et al., 2016).

Given that the information above was gathered from a national study, Jefferson County should implement a twice yearly provider survey to assess EMS personnel's intent to leave. This approach would generate current, locally relevant data on the factors driving turnover among Jefferson County EMS providers. By regularly assessing intent to leave, Jefferson County would be better positioned to adjust practices to improve provider retention. Survey questions should initially focus on known factors that influence EMS provider turnover, as discussed above. A section of open response should also be included to allow for providers to identify additional reasons for discontent that was not captured in the studies mentioned previously. This would allow the survey to become tailored overtime to the specific concerns in Jefferson County. In addition to an intent to leave survey, it would be recommended that providers who submit letters of resignation or retirement complete an exit survey. This exit survey should determine if they are leaving the EMS profession or transferring to another agency. These surveys would help Jefferson County identify and understand the unique retention challenges in the area.

### **Future APEX Project Extension**

There are several projects working towards a countywide EMS System in Jefferson County that an Master of Public Health student could support as part of their APEX. For example, they could lead data collection and analysis efforts to identify how many paramedics are needed in the county and specifically how many are needed within specific communities to ensure adequate coverage and response time. They could also analyze this through call volume

data, the density of the population within that county, and research on response times from the past as this data can be helpful for evidence-based decision making.

Related, they could monitor and evaluate the ongoing retention and recruitment challenges that rural countywide EMS Systems go through, collecting data as described above and based on national EMS surveys, to assess yearly job satisfaction and reasons for leaving the profession. Other areas of interest might be focusing on what the pay rates could look like for EMT-B, Advanced EMTs (AEMT), and EMT-P. Researching this can be in coordination with the county's local taxes (tax levy), billing and insurance of a patient, or state/federal programs to maintain retention for a productive EMS system. An MPH student could also assist in conducting a financial analysis of the county's tax levy and how it will be used to determine how every portion of a countywide EMS system will be funded. Lastly, they could support outreach and recruitment efforts for the high school EMS training course.

## **Conclusion**

Jefferson County's EMS system is fragmented across 13 agencies, which results in inconsistent response times, uneven staffing, and inequitable access to care. These challenges are worsening due to the county's aging population and decline in volunteerism. To address these ongoing issues, our group conducted interviews with Bayfield County (county-supported model) and Portage County (hybrid model). Both counties highlighted the values of strong county leadership, coordination, and stable funding as essential elements for improving EMS quality and equity. Their experiences showed that county involvement can enhance communication, reduce service gaps, and support agencies struggling with staffing.

Based on these interviews along with a literature review, we recommend three initial steps for Jefferson County: (1) creating or adding the job duties of a full-time EMS service director/coordinator to a preexisting position that will lead system organization, communication, and planning; (2) obtaining state EMS licensure, which would allow the county to access new grant funding and establish a countywide tax levy without requiring a referendum; and (3) strengthening recruitment and retention through a partnership with Milton's high school EMT training program and implementing support strategies such as improved benefits and routine retention surveys. Together, these steps would position Jefferson County for a smooth transition to a county-supported EMS system and lay the foundation for a fully county-run model.

## References

- Andrea Krantz (EMS Coordinator, Portage County) in discussion with the authors on October 23, 2025.
- Blau, G., & Chapman, S. A. (2016). Why do emergency medical services (EMS) professionals leave EMS? *Prehospital and Disaster Medicine*, 31(S1), S105–S111.  
doi:10.1017/S1049023X16001114
- Bryan Ziemann (Emergency Medical Services Coordinator, Bayfield County) in discussion with the authors on October 14, 2025.
- Consumer guide: Jefferson County residential care options*. Wisconsin Department of Health Services. (2025, August 13). <https://www.dhs.wisconsin.gov/guide/jefferson.htm>
- Finance committee agenda Jefferson County. (2025, October).  
<https://apps.jeffersoncountywi.gov/Supplemental/2025/10062025/Finance%20Committee%20Packet.pdf>
- Freeman, V. A., Slifkin, R. T., & Patterson, P. D. (2009). Recruitment and retention in rural and urban EMS: results from a national survey of local EMS directors. *Journal of Public Health Management and Practice*, 15(3), 246-252.
- Joseph Murray (EMS Service Director, Paramedic, Retired Fire Chief) in discussion with the authors on October 14, 2025.
- Jefferson County, WI| data usa. (n.d.). <https://datausa.io/profile/geo/jefferson-county-wi>
- Krohmer, J. Elkins, K. Healthcare Resilience Task Force: EMS/911. COVID-19 HHS/FEMA 10-1 [COVID-19 EMS 911 Briefing](#)
- McConnel, C.E., & Wilson, R. W. (1998). The demand for prehospital emergency services in an aging society. *Social Science & Medicine*, 46(8), 1027-1031.  
[https://doi.org/10.1016/S0277-9536\(97\)10029-6](https://doi.org/10.1016/S0277-9536(97)10029-6)
- Patterson, P. D., Jones, C. B., Hubble, M. W., Carr, M., Weaver, M. D., Engberg, J., & Castle, N. (2010). The longitudinal study of turnover and the cost of turnover in emergency medical services. *Prehospital Emergency Care*, 14(2), 209–221.  
<https://doi.org/10.3109/10903120903564514>

- 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.
- Roldan, N. V., Coyle, C. E., Ward, M., & Mutchler, J. (2019). Impact of aging populations on municipal emergency medical services. *Innovation in Aging*, 3(Suppl 1), S956.  
<https://doi-org.ezproxy.library.wisc.edu/10.1093/geroni/igz038.3468>
- Strategic Management & Consulting, LLC. (2024). Recommendations for developing a viable and sustainable EMS System in Bayfield County.  
<https://www.bayfieldcounty.wi.gov/DocumentCenter/View/17623/EMS-Study-Recommendations-for-Bayfield-County-FINAL-Report-9-15-24>
- UniverCity Alliance UW Madison.(2025). Countywide EMS Systems Overview <https://docs.google.com/presentation/d/1IkAAZiZjgXnFOo2gUdsOoHtzNm3zVMtM/edit?slide=id.p2#slide=id.p2>
- Wisconsin Department of Health Services. Wisconsin emergency medical services plan 2023-2024. <https://www.dhs.wisconsin.gov/publications/p00576-23-24.pdf>
- Wisconsin Department of Health Services. Wisconsin EMS personnel July 1, 2024, to June 30, 2025. <https://www.dhs.wisconsin.gov/publications/p03710-2025.pdf>
- Wisconsin State Legislature: 66.0602(3)(e)6. (n.d). Local levy limits. Subchapter VI, finance; revenues. Retrieved December 1, 2025, from <https://docs.legis.wisconsin.gov/statutes/statutes/66/vi/0602/3/e/6>

## **Jefferson County-Wide EMS System Interventions**

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## Intervention 1

Hire EMS service director/coordinator: This position will be the liaison between the county and the service directors of the ambulance services that are providing EMS within the county, other municipalities within the county, Jefferson County emergency management office, Jefferson County sheriff's office, fire chiefs providing fire protection within the county, existing dispatch in Jefferson County, and the state EMS office staff. This individual will be the primary person responsible for obtaining an EMS license.

1. Apply for funding to support this new position
2. Hire position. It is recommended that the service director/coordinator be a licensed Wisconsin paramedic. See Appendix A for job description. The job description was modeled after the Bayfield County Service Coordinator job description.

## Intervention 2

Obtaining an EMS License for Jefferson County with the intent of implementing a county-wide EMS Levy to support transition to a county-wide EMS system in future years. To increase the feasibility and longevity of this intervention please refer to appendix B for outreach plan.

What licensing opens the door to:

Current Issue	Proposed Solution
Paramedic Service Gap	Paramedic/ALS Intercepts
Increasing Call Volume	Community Paramedic
*Lack of Providers	Cross-Credentialing (short-term)
Sets up equity across services allowing for ease of implementing ALS Intercepts	County Owned Equipment

\*for additional solution refer to Intervention 3

# Licensing

## Resources for Obtaining EMS License

Jefferson is in EMS Region 5

- Wisconsin Regional EMS Coordinator for Regions 4 & 5: Jason Witte
    - Phone: (608) 261-8360
    - Email: [Jason.Whitte@dhs.wisconsin.gov](mailto:Jason.Whitte@dhs.wisconsin.gov)
    - Reasons for contacting:
      - Attend meeting with existing EMS services within Jefferson County
      - to make the initial account (needs to be done by the service director/coordinator)
      - change the service director/coordinator on license/application
      - change the Medical Director on license/application
      - Making an open record request for existing EMS operation plans
1. Make sure that existing EMS agencies and townships are on board
  2. Hire a service director/coordinator
  3. Hire a Medical Director
  4. The service director/coordinator contacts EMS Region 5 Coordinator to facilitate opening of licensing application
    1. 1 on 1 meeting with service director and EMS Region 5 Coordinator (Jason Witte)
    2. After meeting “EMS Service Provider Application and Operational Plan” will become available on <https://www.dhs.wisconsin.gov/ems/licensing/elicensing.htm>

## Within the WI EMS E-Licensing Application

1. EMS Provider Demographic Information
  1. For Jefferson County at this time: New (Initial Service Provider License)
  2. Select provider level:
    1. EMR: does not need a feasibility study
    2. EMT-Paramedic: needs a feasibility study
  3. Service address
  4. Information needed
    1. Location where service records are kept
    2. Phone number
    3. Fax
    4. Email
2. Classification
  1. What would Jefferson County EMS be classified as?
    - Municipal/County owned-full time
    - Municipal/County Owned- Volunteer
    - Municipal/County Owned- Combination or Paid on Call
3. Primary Resource Hospital

4. Organization type
  1. Select from:
    1. Fire department
    2. **Governmental, Non-Fire**
    3. Hospital
    4. tribal
    5. Private non-hospital
    6. Training center
    7. Dispatch center
5. Organization Status. Select from:
  1. Combination, Paid on Call
  2. Non-Volunteer, Full time, Part time
  3. Volunteer
6. Organization Tax status. Select from:
  1. For Profit
  2. Not For Profit
  3. **Other (ex. Governmental)**
7. Federal Employer Identification Number (FEIN)
8. Public Safety Answering Point (PSAP) Center
  1. PSAP phone number:
9. Dispatch Center
  1. Dispatch Center phone number:
    1. Can work with and list an existing dispatch center within Jefferson County
10. Primary Type of Service. Select From:
  1. 911 Transporting Service
  2. **911 Non-Transporting (likely start as this)**
  3. Air Medical Service
  4. Hazmat Service (Do NOT Select)
  5. Interfacility Transfer Service
  6. Community EMS Service (Do NOT Select)
  7. ALS Intercept Service
  8. TEMS Unit (Do NOT Select)
  9. Critical Care Transport Service
  10. Training Center (Do NOT Select)
11. Other Type Of Service
  1. Can select multiple from the above list, can NOT be the “Do NOT Select” options as those have separate applications
12. Is the Mailing Address the same as the Service’s Physical Address?
13. List all Station Locations
14. Medical Director
  1. Wis. Admin Code DHS 110.47
  2. Can NOT be edited during the application
  3. To change the EMS regional coordinator must be contacted
15. Service Director

1. Wis. Admin Code DHS 110.47
  2. Can NOT be edited during the application
  3. To change the EMS regional coordinator must be contacted
16. Optional and Required Designated Roles
1. One individual can hold multiple roles
    1. Wis. Admin. Code 110.47(3): Infection control
    2. Wis. Admin. Code 110.47(4): quality assurance
    3. Wis. Admin. Code 110.47(5): training designee
    4. Wis. Admin. Code 110.47(6): patient data reporting
17. Ambulance Staffing Options
18. Number of Ambulances
1. 0
19. EMS Provider Responsibility Instructions: check compliance with the following
1. Wis. Admin. Code DHS 110.34(1)
    1. Ch. 256, Stats
  2. Wis. Admin. Code DHS 110.34(2)
  3. Wis. Admin. Code DHS 110.34(5)
  4. Wis. Admin. Code DHS 110.34(6)
  5. Wis. Admin. Code DHS 110.34(7)
  6. Wis. Admin. Code DHS 110.34(8)
  7. Wis. Admin. Code DHS 110.34(9)
  8. Wis. Admin. Code DHS 110.34(9m)
  9. Wis. Admin. Code DHS 110.34(10)
  10. Wis. Admin. Code DHS 110.34(11)
  11. Wis. Admin. Code DHS 110.34(12)
  12. Wis. Admin. Code DHS 110.34(13)
  13. Wis. Admin. Code DHS 110.34(14)
  14. Wis. Admin. Code DHS 110.34(15)
  15. Wis. Admin. Code DHS 110.34(16)
20. EMS provider Certification of Understanding Instructions: Check compliance with the following:
1. Wis. Admin. Code DHS 110.58(1)
  2. Wis. Admin. Code DHS 110.54(2)
  3. Wis. Stat. 256.15(6)(c)
  4. Wis. Admin. Code DHS 110.11(1)
  5. Wis. Admin. Code DHS 110.11(2)
  6. Wis. Admin. Code DHS 110.12
  7. Wis. Admin. Code DHS 110.13(1)
  8. Wis. Admin. Code DHS 110.13(2)
  9. Wis. Admin. Code DHS 110.13(3)
  10. Wis. Admin. Code DHS 110.13(4)
  11. Wis. Admin. Code DHS 110.13(4m)
  12. Wis. Admin. Code DHS 110.13(5)
  13. Wis. Admin. Code DHS 110.13(6)
  14. Wis. Admin. Code DHS 110.13(7)

## 21. EMS Provider Licensing and Operations Instructions

1. Wis. Admin. Code DHS 110.32
2. Wis. Admin. Code DHS 110.33
3. Wis. Admin. Code DHS 110.34
4. Wis. Admin. Code DHS 110.35
5. Wis. Admin. Code DHS 110.38
6. Wis. Admin. Code DHS 110.39
7. Wis. Admin. Code DHS 110.40
8. Wis. Admin. Code DHS 110.41
9. Wis. Admin. Code DHS 110.45
10. Wis. Admin. Code DHS 110.46
11. Wis. Admin. Code DHS 110.47
12. Wis. Admin. Code DHS 110.48

## 22. EMS Provider Licensing Required Documents, Protocols, and Policy Instructions

1. Patient Care Protocols
2. Medication Lists
3. List of Advanced Skills and Procedures
4. Proof of Professional Liability or Medical Malpractice Insurance
5. Operational Policy for Response Cancellation
6. Operational Policy for use of lights and sirens in response to a call
7. Operational Policy for dispatch and response
8. Operational policy for refusal of care
9. Operational policy for destination determination
10. Operational policy for emergency vehicle operation and driver safety training
11. Operational policy for controlled substances
12. Operational policy for continuous quality assurance and improvement programs
13. Operational policy for multiple patient incidents
14. Ambulance Inspection Documentation

## 23. Service Area Instructions

1. Does not apply to the proposed model as a non-transporting agency does not meet the definition of primary service area.

### Timeline

- Once the application is open the future agency has as long as they need to gather materials
- Once the initial application is submitted DHS has 60 business days to send it back for changes
- Then the county has 60 business days to change the application to adhere to the DHS feedback.
- Goes back and forth between DHS and the county every 60 business days until completed.

### Notes

- Some of the “EMS Provider Licensing Required Documents, Protocols, and Policy Instructions” can be drafted before the service director/coordinator is in place.
  - Operational policy for multiple patient incidents
  - Look at existing county policy for MCI/disaster policy
  - Look under public health

- Operational policy for destination determination
  - Will be similar throughout the county can ask existing agencies for assistance or file an open records request with WI DHS.
- Operational policy for controlled substances
  - Will be similar throughout the state. Needs to adhere to law.
- Attainment of Local Legal Advice
  - Needs to be in ADDITION TO working with the DHS Region 5 EMS coordinator
  - Needed to check civil and legal liability

## Intervention 3

Partner with Milton School District to join the EMS high school training program & implement it in Fort Atkinson or Jefferson High School.

1. Meet with all service directors in Jefferson County and identify enrollment issues & main concerns. This is in line with meeting 4 in intervention 2.
2. Reach out to Joseph Murray (Contact information listed below) and discuss implementation in Jefferson County. If funding is needed for implementation, see steps three and four below.
3. Apply to the [Health Care Provider Training Grant](#)
  1. This will support the training program in Jefferson County
4. Apply to the funding assistance program.
  1. This is only available to licensed EMS agencies and Jefferson would be eligible under the non-transporting/ emergency medical responder (EMR) services
  2. This will reimburse the school district for the cost of the program if the students obtains EMS license through the state.
  3. This application (“SFY 2027 FAP Application”) will likely be open mid-August 2026-Late September 2026 and will be available under the E-Licensing in the service’s application tab.
    1. Can be accessed by the service director
  4. Application steps can be found in Appendix C. These are taken from [DHS Emergency Medical Services Funding Assistance Program Guidance](#)

*Milton School District Contact Information:*

Joseph Murray, Jr. MPA, EFO, CFO, EMT-P  
 Email: [jmurray@mhemail.org](mailto:jmurray@mhemail.org)  
 Phone: 608.314.2541 | Fax: 608.756.6352 | Cell: 608.295.6061  
 Address: 580 N Washington St, Janesville, WI 53548

# **APPENDIX A**

## **Job Description for EMS Service Director/Coordinator**

### **Position Identification:**

Title: EMS Service Director/Coordinator

Supervises: Paramedics/Community Paramedics

### **Position Purpose and Summary:**

This position functions as the highest ranked officer for the Jefferson County EMS Team and carries the title of EMS Service Director/Coordinator. Responsibilities include finance, human resources, quality assurance, public relations, managing staff and supervising all aspects of the EMS Service.

### **Essential Duties and Responsibilities:**

This position is ultimately responsible for the communication and management of organizational responsibilities involving all aspects of the EMS Service. Duties include but are not limited to:

#### **Organizational Responsibilities:**

- Liaison with the County Administrator and the Service Directors for the transporting ambulance services in Jefferson County
- Responsible for carrying out Jefferson County Board directives, attending meetings, providing information, and addressing requests from the board.
- Direct the preparation of necessary reports of service activity
- Review and update the state required operational plan
- Maintain current staff organizational chart and eLicensing
- Manage the implementation and continuation of the Incident Command System during multi-agency and multi-casualty incidents
- Research, develop, and implement new programs to facilitate and improve the EMS Service, such as becoming a licensed EMS agency, Community EMS model, training opportunities, etc.
- Liaison with the County Health Department (and/or other departments) to fulfill requested tasks each day.
- Possess a current/active Wisconsin Paramedic license, and remain proficient in Advanced Life Support and can act in the capacity of a single paramedic-providing care for a multitude of patients in different care settings

Administrative:

- Maintain a current knowledge of all laws, rules, regulations, and standards of care that govern the provision of Emergency Medical Care to patients at the service's level of licensure.
- Ensure compliance with all local, state, and federal laws, rules, and regulations governing the service.
  - Areas of compliance include State regulations, provisions of emergency medical care, and labor
- Direct the preparation of the annual budget for the department
- Assist with determining employee benefits that are cost-effective and meet the needs of the service
- Research alternative funding in order to obtain any available grant monies to supplement the budget. Oversee preparation of grant applications, written plans or any other requirements.
- Liaison with Service Medical Director, hospitals, and medical community. Assess and resolve issues raised by the hospitals and other medical facilities.
- Review and develop medical protocols, policies, and procedures.
- Attend EMS related meetings and conferences at the Local, State, and National levels to assure up-to-date knowledge on current topics, trends, and upcoming changes.
- Coordinate initial EMS courses and continuing education classes to assist EMS providers with maintaining their required CEH's.

Supervisory:

- Provide leadership and guidance to staff
- Assess employee needs and address problems and issues through an effective action plan.
- Function independently but capable of interdependent relationships
- Maintain a working liaison with all branches of public safety and other specialties that require interaction including but not limited to: first responder groups, transporting ambulance services, park rangers, lifeguards, etc.

Quality Assurance:

- Assure compliance with all Federal and State regulations pertaining to billing practices
- Manage QA/CQI. Assure necessary programs are provided to employees to address remedial training needs

Personnel:

- Ensure that staffing levels are appropriate to the needs of responding to emergency calls.
- Assure the service complies with all state and federal employment regulations, standards, and practices.

## APPENDIX B

### Outreach Plan to Facilitate and Gauge existing EMS Interest

1. Communicate intent with all existing EMS agencies within Jefferson County
  1. Meeting 1: Organize a meeting with all directors from each municipality
    1. Show data about increasing call volume and drop in EMS personnel across WI.
    2. Outline concerns about feasibility of all of these separate EMS agencies operating into the future without provider burnout and with lack of funding from the municipality tax limits.
    3. Outline what Jefferson County EMS means for municipalities operating within the county.
      1. More working together, but still retain individual identity
      2. What can a countywide EMS system offer Jefferson County?
      3. How is this better than the existing structure?
    4. Questions to ask directors. Have them write on sticky notes and put up on posters
      1. What does the utopia EMS system look like in Jefferson County? (Used in Bayfield EMS meeting)
      2. What traits do you value within an EMS system?
      3. What barriers exist to making your utopia EMS system in Jefferson County?
    5. Additional individual/s to invite: James Small from the Wisconsin Office of Rural Health.
  2. Meeting 2:
    1. Discuss main points of pushback from other counties that have tried County Wide EMS. Invite one of these county representatives to speak.
      1. Bayfield
      2. Lafayette
      3. Portage
    2. Concerns
      - Double tax from both municipality and county
        - Proposed solution: only taxing from the county for EMS services and then dividing between municipalities.
      - Some people are already happy with the EMS system in their area and do not want to see an increase in funding
        - Proposed solution:
      - Loss of independence of EMS agencies
        - Proposed solution
          - Continued meetings with individual EMS municipality directors
          - Assistance of consolidation by the county EMS service director for agencies/municipalities/townships that are interested.
3. Meeting 3:

1. What would services want done with an increase in funding? Have them answer for the individual agency and what they would want it used for in Jefferson County as a whole.
2. Proposed Ideas
  1. Education reimbursement
  2. Paramedic intercepts
  3. County wide service director/coordinator position
    1. coordination of mutual aid between municipalities
    2. community paramedics (if there are a lot of frequent callers that need medication management)
    3. Implementation of a county paramedic intercept if the municipalities or community members think that it is needed
  4. Base funding for agencies
  5. Going towards having services have more equitable pay structures and providing benefits to EMS personnel
  6. Consolidation of dispatch
  7. Updating of ambulance tracking for dispatch (would help with coordination of mutual aid between municipalities).
4. Meeting 4: meeting about Intervention 3
  1. Continuation of the idea that the county tax levy could be used for education reimbursement for providers that sign on for x amount of time at a service within Jefferson County.
  2. Additional individual/s to invite: Milton County
    1. Joseph M Murray Jr MPA, EFO, CFO, EMT-P
      1. Manager, Emergency Medical Services/ Mercy Prehospital and Emergency Services Center – Janesville
      2. Email: [jmurray@mhemail.org](mailto:jmurray@mhemail.org)
5. Meeting 5: creation of a messaging campaign about the EMS county wide levy to community members.
6. Meeting 6: gauge interest in a county level emergency medical director position
  1. Is anyone interested who is already serving at a municipality level?
7. Meeting with municipality politicians
  1. Make sure they understand proposed funding structure and why it needs to happen

## APPENDIX C

### EMS Funding Assistance Program Application Steps

#### **Getting Started**

[Wisconsin Admin. Code § DHS 110.48\(1\)](#) states the [service director](#) serves as the primary contact between the EMS provider and DHS. The service director, for the eligible service, will have access to the EMS FAP application when the application period opens. If there is a change of service director during the application process, the new service director will need to contact the FAP team to determine if any additional steps are needed to ensure the service director change does not affect the application process and information is not lost in the transition.

The service director will need to perform the following steps to complete the EMS FAP application:

- Verify that the service email address entered in the [E-Licensing](#) account is current and accessible.
- Verify service demographics in E-Licensing. If you find incorrect information, please contact your [EMS regional coordinator](#).
- Verify service federal employer ID number.
- Submit a financial report of expenditures for the previous SFY along with the current application in ELicensing.
- Provide [EMS Program Municipal Signature and Population Verification forms](#) from each municipality in your primary service area and upload them to the application. Unless your primary service area changes, Municipal Signature and Population Verification forms need to be submitted only once for each licensing period and all populations entered in the application must match the documentation submitted.
  - Note: Populations still need to be included on the application to determine the total population of your primary service area.
- EMR departments are not required to complete EMS Program Municipal Signature and Population Verification forms unless they opt in for the additional per capita amount. Without these forms, EMR departments will only receive the base rate and, if opting in for, the EMS Practitioner and Emergency Medical Responder Training and Examination Aid.

#### **How to Submit FAP Application**

All Wisconsin EMS applications are located in the Wisconsin E-Licensing system. The following steps will assist you in your application submission process:

1. The service director will log into the Wisconsin E-Licensing system.

2. Once logged into the account, navigate to the “Application” tab.
3. In the “Start Applications” page, go to the “Service Applications.”
4. Under the heading for the service you want to apply for, select “View All Service Applications.”
5. Access your service EMS FAP application, which will have the name “SFY 2026 FAP Application”. If you are a service director for more than one service, an application will need to be completed for each service applying for FAP funds.
6. Complete the application process.
7. Submit the EMS FAP application for review by the deadline.
8. You will receive a confirmation notification email that your service EMS FAP application has been received into the Wisconsin E-Licensing system. If you do not receive a confirmation email, contact the FAP team.
9. The EMS FAP application will be reviewed.
10. If the application is incorrect or missing supporting items, the application will be opened and sent back to the service director for revision. The service director will be notified by email if an application has incorrect or missing information. Do not resubmit an application without making the requested changes. Once corrections have been made, re-submit the EMS FAP application for review by the deadline provided.

# UniverCity Alliance

UniverCity Alliance connects Wisconsin local governments to university resources to solve community-identified challenges. The concept is simple. The community partner identifies projects that would benefit from UW-Madison expertise. Faculty from across the university incorporate these projects into their courses, and UniverCity Year staff provide administrative support to ensure the collaboration's success. The results are powerful. Partners receive big ideas and feasible recommendations that spark momentum towards a more sustainable, livable, and resilient future.

Join us as we create *better places together.*




UniverCity Alliance  
UNIVERSITY OF WISCONSIN-MADISON



[univercityalliance@wisc.edu](mailto:univercityalliance@wisc.edu)

608-890-0330

[univercity.wisc.edu](http://univercity.wisc.edu)

  @UWUniverCity  
 @UniverCity Alliance

2025

# Exploring opportunities and challenges for a countywide EMS billing system

Badger Consulting: Student Research Project



# UniverCity Alliance

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# Jefferson County EMS

# Agenda

**01.** EMS Terms

**02.** Interview Recaps

**03.** Suggestions



# 01.

## EMS Terms

# Terms

---

## NPI

National provider identifier – identifies the healthcare provider or healthcare organization when billing insurance

---

## ePCR

Digital medical report EMS crew complete after each 911 call

---

## EPR FireWorks

Brand of Records Management Software (RMS) designed for fire departments and EMS agencies

---

## EMS MC

EMS Management & Consultants

---

## CAD

Computer Aided Dispatch

---

## Interoperability

The ability of different software systems (CAD and ePCR) to exchange data automatically, eliminating manual entry errors.

---

# Terms

---

## CAD-to-ePCR Integration

A specific link where dispatch data (address, times, incident number) automatically populates the medical report – this is the "Automated Workflow" used by Merrill

---

## NEMESIS Compliant

Software that adheres to the National Emergency Medical Services Information System standards, ensuring data is formatted correctly for government reports

---

## FTP

(File Transfer Protocol): The secure method used to transfer sensitive patient data (HIPAA compliant) from the ambulance service to the billing company.

---

## Payer Mix

The demographic breakdown of who pays the bills (e.g., 40% Medicare, 30% Medicaid, 20% Private Insurance, 10% Self-Pay)

---

## Clean Claim Rate

The percentage of bills submitted that are paid on the first attempt without being rejected or requiring additional info.

---

## Net Collection Rate

The percentage of collectible revenue actually received (e.g., if insurance allows \$500, did we collect the full \$500 or lose \$50 to bad debt?).

---

# Terms

---

## Cost Per Transport

The total operational cost (fuel, salaries, equipment) divided by the number of transports

---

## Days in A/R (Accounts Receivable)

The average number of days it takes to receive payment after a service is provided

---

## Allowance/Write-off

The difference between what the county charges (e.g., \$2,000) and what insurance agrees to pay (e.g., \$450)

---

The rest is "written off" and is not real revenue.

---



# 02.

## Interview Recaps

# City of Watertown

## Current Setup:

- Vendor: EMS MC
- ePCR System: Fireworks ePCR
- Minimal in-house team: 1 dedicated staff, some finance support
- Bill outside Jefferson county
- Each agency maintains separate NPI

## Key Challenges:

- Manual demographic QA processes
- Slow service response times
- Reports disappear after 30 days
- Limited billing performance visibility

# Lincoln County

## Centralized Structure

- Fully in-house billing at county level
- Single NPI owned by Fire Department
- Serves 18 townships with unified approach
- ePCR & Billing: CentralSquare (TriTech) integrated system

## Financial Performance

- Annual revenue: 1.2M
- Call volume: 200-300/month
- County collects all EMS billing revenue centrally
- Funded through county levy
- Federal grants supplement operations

# Lincoln County

## Operational Advantages

- Complete transparency & control
- Integrated reporting within TriTech
- Streamlined workflows (automated for Merrill EMS)
- No vendor dependency
- Direct performance oversight
- Single NPI simplifies billing identity

# Strategy and Constraints

## Objective

Streamline EMS billing across all cities for cost savings and efficiency, without forcing cities to change EMS systems.

## Key Challenges:

Cities do not want to migrate from their current ePCR platforms

High variability in software and staff workflows

Resistance to centralized control or loss of operational independence



# Options

## Option 1: Central Billing Authority

Pros: Consistent policies, shared systems/staff

Cons: Low city buy-in, high upfront costs, county must staff

## Option 2: Standardized ePCR Platform

Pros: Full integration, easier QA/reporting

Cons: Transition cost, licensing, retraining

## Option 3: Outsource to Regional Billing Vendor

Pros: County retains oversight, vendor handles setup

Cons: Less control, higher recurring costs

# Recommended Path



## Use a Unified Billing System

All constituents in Jefferson County get a bill from the county instead of cities.  
Support multiple ePCR data formats.  
Jefferson County has one NPI.



## Phased Opt-In Approach

Pilot with 1-2 cities  
Showcase savings & faster collections



## Outsource to a Capable Vendor

Vendor handles complexity  
Allows city independence



**Thank You!**

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2025  
Visualizing Emergency Medical Service  
(EMS) data in Jefferson County

Optional Practical Training Experience: Independent Student Project



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# Emergency Medical Services

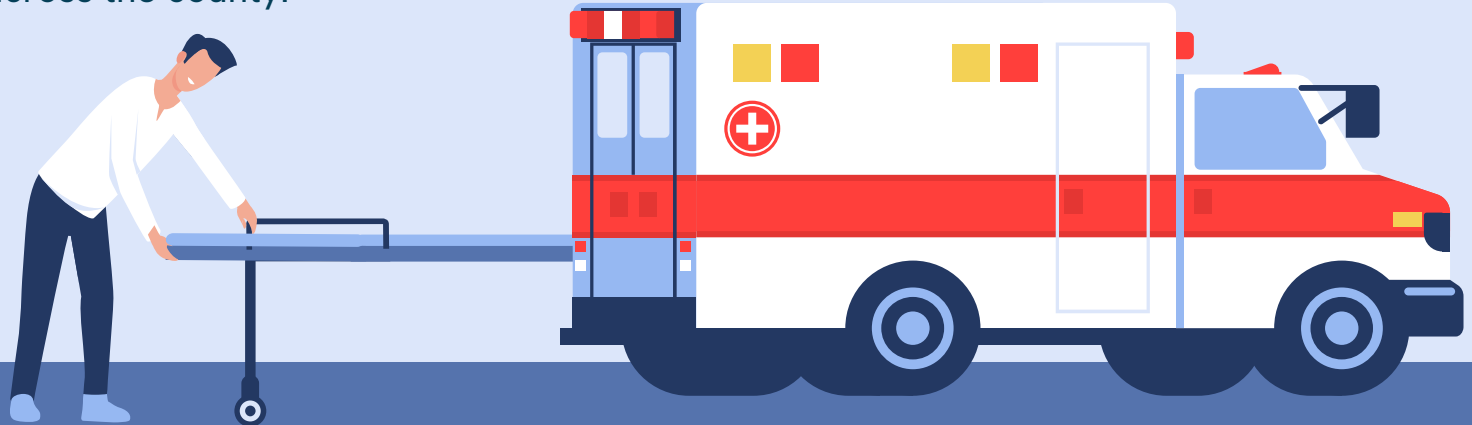
Jefferson County, Wisconsin  
UniverCity Alliance



# Introduction

**Jefferson County** is located in southeastern Wisconsin spanning over an area of **583 square miles** with a population of around **85,000 people**. It is further split into towns and cities.

This project analyzes **EMS Incidents** information for the year **2024**, across the county.



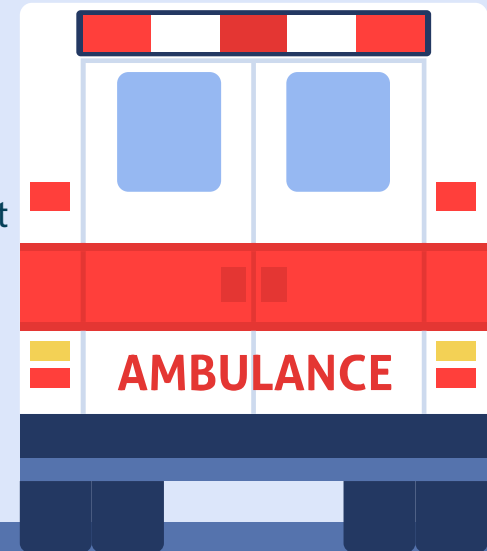
# Demographic

**S** County population: 85,000 (As of 2023).

**Municipalities:** 16 towns, 5 villages, 6 cities.

**Age Group:** Aging population, with median age 42.

Rural-urban mix creates **variable demand and needs** throughout the county.



# Data

**12 Departments:** Cambridge, Edgerton\*, Fort Atkinson, Ixonia, Jefferson, Johnson Creek, Lake Mills, Palmyra, Waterloo, Watertown, Western Lakes, And Whitewater.

**Data Source:** Qualtrics data, stored in a Google Drive folder as Google Sheets.

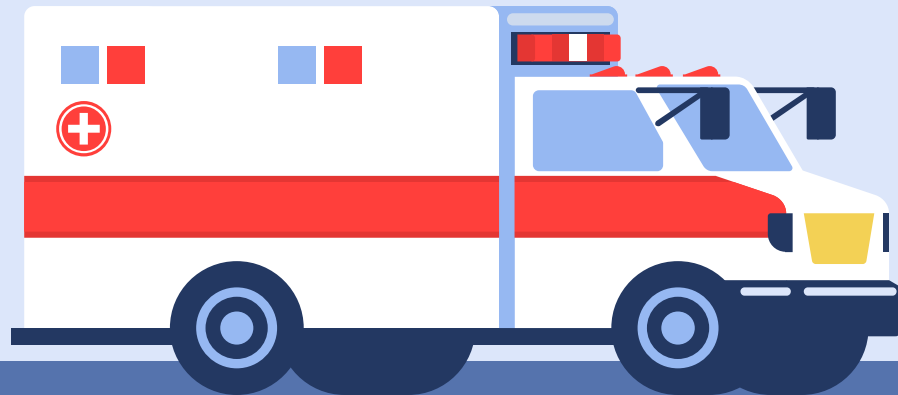
**Data Used:** Incident Date, Incident Time, Number of Incidents, Incident Address, and ZIP.

**Analysis Type:** Descriptive/Historical.

**Visualization Tool:** Power BI.

**Year:** 2024.

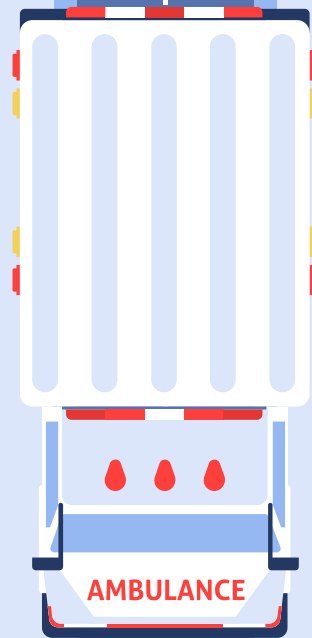
\* Now Lakeside Fire Rescue



# Dashboard Snippets

Departments Referenced\*: Ixonia, Watertown, and Waterloo

\* Not all dept. data is available, and columns are not uniform. NIFIRS has updated columns



# IXONIA EMS

Month	Time of Day	PIN	Level of Care Provided
All	All	All	All

2024

Year

182

Recorded Days

289

Total Incidents

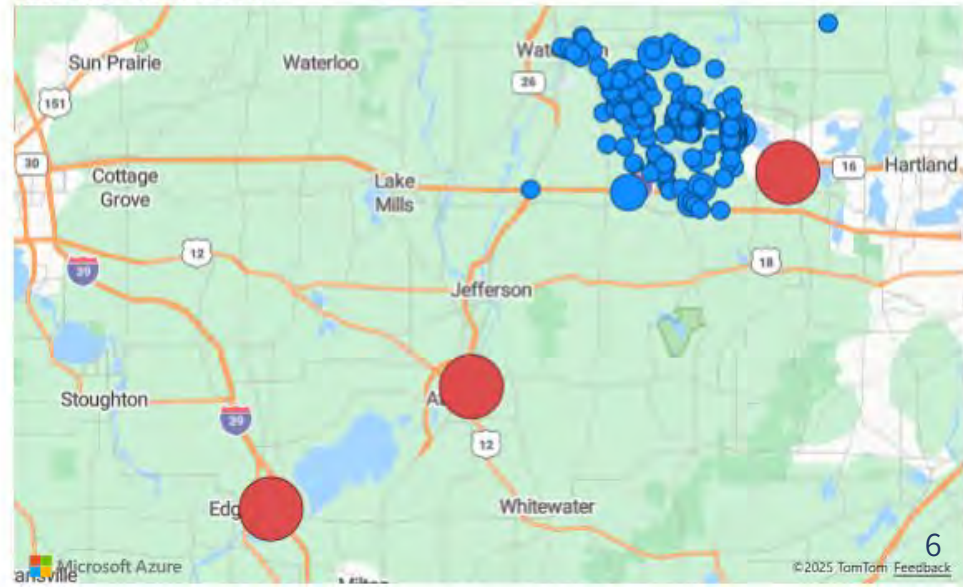
1.59

Average Incidents Per Day

Incidents by Month



Incidents and Hospitals



# WATERTOWN EMS

Month
Time of Day
PIN
Level of Care Provided

All
All
All
All

365

Recorded Days

2033

Total Incidents

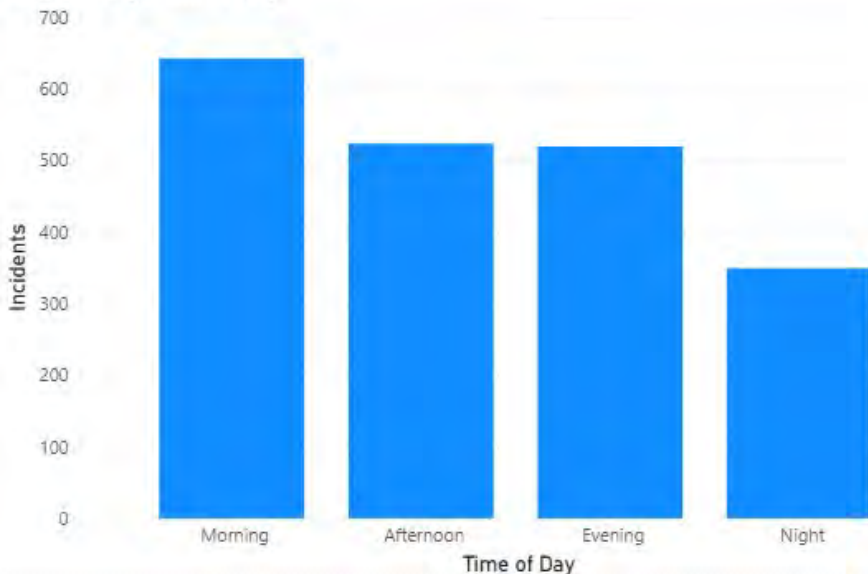
536

Incidents on a Weekend

1497

Incidents on a Weekday

## Incidents by Time of Day



## Day of the Week

Day of the Week	Morning	Afternoon	Evening	Night	Total
Sun	84	74	71	48	277
Mon	75	63	75	55	268
Tue	107	84	72	42	305
Wed	105	76	72	46	299
Thu	103	75	86	49	313
Fri	90	89	82	51	312
Sat	78	62	61	58	259
<b>Total</b>	<b>642</b>	<b>523</b>	<b>519</b>	<b>349</b>	<b>2033</b>

# WATERLOO EMS

Month: 
 Time of Day: 
 PIN: 
 Level of Care:

379

Total Incidents

262

Patients Transported by This EMS Unit

4

Patients Transported by Other EMS Unit

105

Patients Not Transported

177

ALS Care Provided

178

BLS Care Provided

10

Critical Care Provided

14

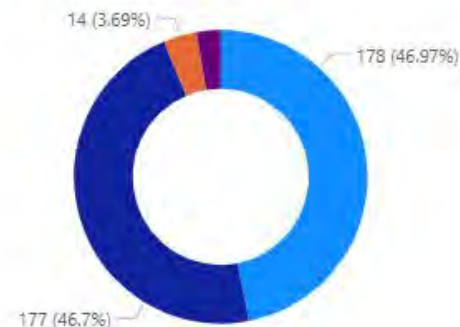
No Care Provided

## Incidents by Transport and Care

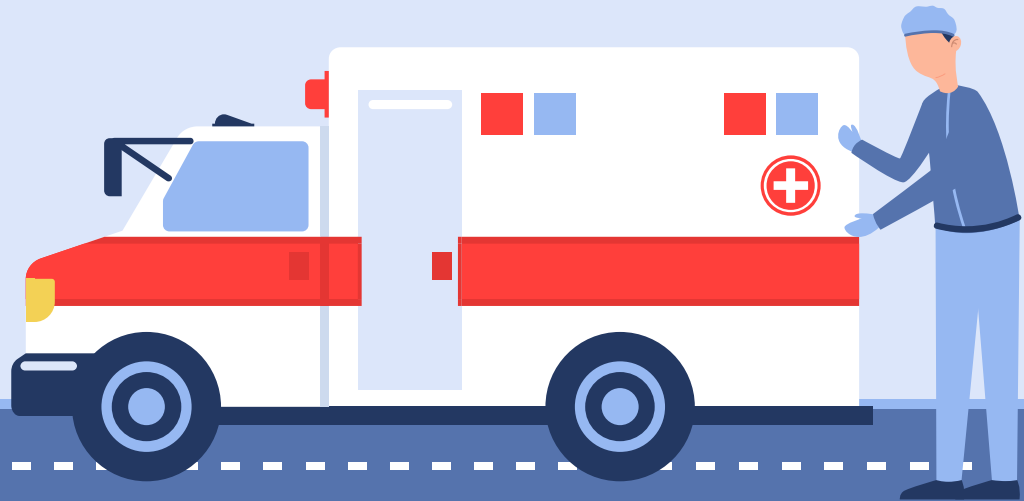
Level of Care: ● ALS - AEMT/Intermediate ● ALS - Paramedic ● BLS - All Levels ● No Care Provided



## Incidents by Care



# Live Demo



# What does this solve?



## Resource Allocation

The dashboards give the spread of incidents, so that you can identify high-concentration areas and outliers. You can use this for assigning units accordingly.



## Demand Planning

The analysis shows information about the calls, split by the time of the day, and by the level of care provided (ALS, BLS, Critical). You can use this for staffing.

# Key Findings



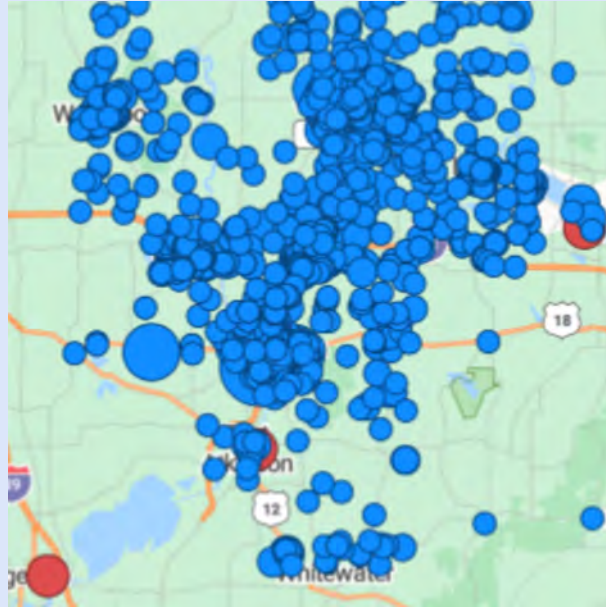
## Incident Concentration

Just 5 of the addresses contribute to around 10% of all incidents



## Highest Incident Month

January is the month with most EMS calls, with 547 incidents



## Time of Day Split

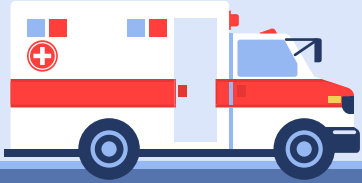
Mornings have the most recorded incidents, and nights have the least



## Municipalities Split

25 municipalities, and 50% are shared across departments

# Jefferson County EMS Files



## Data Folder

A centralized folder containing all the Department-level EMS data, and the Master EMS data, as Google Sheets files. Also includes a Municipalities information file.

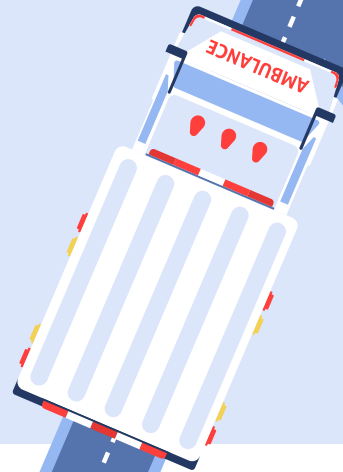


## Visualizations Folder

A folder of all the Power BI\* (.PBIX) report files, with Department-level reports, and a Master EMS report.

\* The Power BI Desktop app only runs on Windows systems

# THANK YOU



# UniverCity Alliance

UniverCity Alliance connects Wisconsin local governments to university resources to solve community-identified challenges. The concept is simple. The community partner identifies projects that would benefit from UW-Madison expertise. Faculty from across the university incorporate these projects into their courses, and UniverCity Year staff provide administrative support to ensure the collaboration's success. The results are powerful. Partners receive big ideas and feasible recommendations that spark momentum towards a more sustainable, livable, and resilient future.

Join us as we create *better places together.*



UniverCity Alliance  
UNIVERSITY OF WISCONSIN-MADISON



[univercityalliance@wisc.edu](mailto:univercityalliance@wisc.edu)

608-890-0330

[univercity.wisc.edu](http://univercity.wisc.edu)

  @UWUniverCity  
 @UniverCity Alliance