

The Strain of Healthcare on EMS in Oregon



A Comprehensive Review of the State of EMS in Oregon



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Introduction

It is imperative that emergency medical services (EMS) respond to life threatening calls in as little time as possible. In almost all medical emergencies, getting health care professionals on scene with the knowledge, tools, and ability to transport to higher care makes the difference between life and death. Ideally, everyone who calls 911 should be able to rest assured that an ambulance will be on scene within a *reasonably quick* amount of time. This reasonably quick amount of time is known as an Ambulance Service Area (ASA) compliance standard and is set by the Oregon Health Authority. They are determined by population density and distance to nearest EMS station, while acknowledging that a quicker response has significant impacts in long-term prognosis of [medical emergencies](#) (AHA, 2023). In the metropolitan area of Portland, the ASA on-time response standard is [8 minutes or less](#) (Templeton, 2023). Of course, an on-time response will be longer in rural areas, during rush hours, or when an area is experiencing a period of high call volume. While these variables cannot be avoided, delayed response times should never become the standard of care. Unfortunately, in a healthcare system dismantled by the recent COVID-19 pandemic, this is becoming a reality across the country. Anecdotes of 911 callers waiting much longer than a *reasonably quick* amount of time are increasing in number year by year.

Heartbreaking stories of lives lost too soon are popping up throughout the country. [In 2020](#), a family living in the Denver metropolitan area called 911 because their nearly 2 month old daughter, Sofia Barazza, stopped breathing (CBS Colorado, 2020). The family's residence is a 9 minute drive from the nearest hospital and has a projected ambulance response time of six and a half minutes according to 2019 call data from Denver health. However, that day it took an ambulance 17 minutes to arrive on scene. The baby's father, Javier Barazza, said "I was scared to death. I didn't want to lose her. She was my daughter....That time felt like forever, like an hour and a half just waiting for the ambulance to pull up. I don't wish this on nobody's family." When Sofia Barazza finally arrived at Denver Health Medical Center, she was pronounced dead. The Denver Health Paramedic Division said during the time the Barazza family called, they were experiencing an extremely high call volume with 28 concurrent calls and only 20 ambulances to respond throughout the city.

While such extenuating circumstances cannot be avoided every so often in EMS, the increasing frequency of delayed response times is transforming the Barazza story from a worst case scenario to the new expectation with EMS. Oregon's Washington county prior EMS provider, Metro-West, reported that call times just within the 2022 calendar year declined [drastically](#). According to local Portland news entity KGW8, in February 2022 90.3% of Metro West's responses to calls met the on-time response standard for the county (Watson, 2023). By December 2022, this dropped to 61%. Metro West lost their bid to Washington county due in part to non-compliance of response time standards. Meanwhile, AMR of Multnomah County hasn't met their county performance target, asking for 90% on-time responses, since [March 2022](#)

according to OPB reporter Amelia Templeton. This phenomenon is happening right in our own backyard, and it has very serious consequences.

This paper hopes to outline the different problems facing EMS today, and to establish that the underlying cause of these challenges are not the fault of individual EMS agencies. What is causing the EMS system to fail is an issue within the greater realm of healthcare. This starts with the hospital systems, their limited capacity, and their workforce shortages. Problems compound within hospital systems and fall on the shoulders of EMS, who are left transporting patients between facilities at near maximum capacity and waiting for hours on end with patients for a free bed to finally open. Much like the hospital systems, EMS does not have adequate funding to keep up with the demand for their services. This is especially pronounced in the rural areas of Oregon. This substantial burden of a crippled hospital system coupled with poor funding manifests as challenges for EMS in many forms. The Oregon State Ambulance Association (OSAA) released a position statement addressing the EMS Workforce Crisis in September 2022. In it, they cited the following as top challenges facing their agencies today:

“Pandemic-driven loss of 1-2 years of paramedic school cohorts”

Increasing demand for hospital paramedic positions which is drawing from the available workforce pool

“Decreasing enrollment in paramedic education programs”

“Increasing labor costs due to premium pay, incentives, higher wages to address staffing shortages”

“[Government agency] incentives that make it difficult for small, rural, and special district agencies to compete with recruitment”

“Workforce burnout”

This paper will address the concerns laid out by the OSAA by...

- analyzing survey responses from EMS and fire agency representatives across the state
- Discussing the training process and education requirements necessary to obtain the different levels of EMS provider certification
- Demonstrating the scarcity of training resources in rural counties
- Utilizing the survey responses to highlight the reasons cited by local departments for what they believe are the biggest contributing factors to staffing shortages
- Illustrating how patient transport presents an undue burden on departments with limited staff and apparatus, and especially on those rural departments where interfacility and out-of-town transfers contribute to staff’s time-on-task.
- Diving into the intricacies of rural EMS and the discrepancies rural agencies face relative to their urban counterparts.
- Using rural critical access hospital status as an example of the relationship between our strained hospital and pre-hospital systems

Throughout the paper, the Lebanon Fire Department serving Lebanon, Oregon and the surrounding areas will be utilized as a sample EMS system. The Lebanon Fire Department is a member of both the OSAA and the OFCA. Lebanon is located in the mid-Willamette Valley and is a rapidly growing community. In fact, the city saw a 27% increase in population between the

2010 and 2020 census. The fire department serving Lebanon provides both fire and EMS transporting services. Lebanon is served by a community Critical Access hospital within its city

limits. Lebanon, like many Oregon communities, contains a mix of urban and rural areas that are served by the same fire/EMS agency and is staffed by both career and volunteer members. Emergencies in rural areas are responded to via volunteers with supporting city ambulances. The challenges faced by the volunteer stations of Lebanon’s fire department reflect many of the challenges of other rural fire departments throughout the state. Meanwhile, centrally located stations staffed with career first responders share many of the same challenges as EMS providers in other more populated cities.



Figure 1A, OSAA Survey Responses to "Has your agency experienced ASA response time compliance challenges in the last 12 months?"



Figure 1B, OFCA Survey Responses to "Has your agency experienced ASA response time compliance challenges in the last 12 months?"

OSAA and OFCA Survey

The Oregon State Ambulance Association ([OSAA](#)) is a membership based group consisting of air and ground ambulance providers in the state of Oregon. The group consists of representatives from 36 EMS agencies across the state, serving both rural and metropolitan areas. [The Oregon Fire Chiefs Association](#) serves as a board for fire chiefs of various ranks in the state of Oregon to advocate for and unite fire and EMS services throughout the state.

In August of 2022, a survey was sent to members of the OFCA and OSAA asking representatives of EMS and fire service districts to report on workforce challenges they were currently facing and anticipated facing in the near future. The survey included 24 questions asking each department representative to share their challenges in free response format (i.e. What are the workforce challenges your agency is currently facing?) or in numerical values (i.e. number of vacant paramedic positions). There were 22 completed survey responses from the OFCA and 20 completed survey responses from the OSAA. Of the participating OFCA agencies,

32% of the responses serve city or government districts, while the remainder serve special districts.

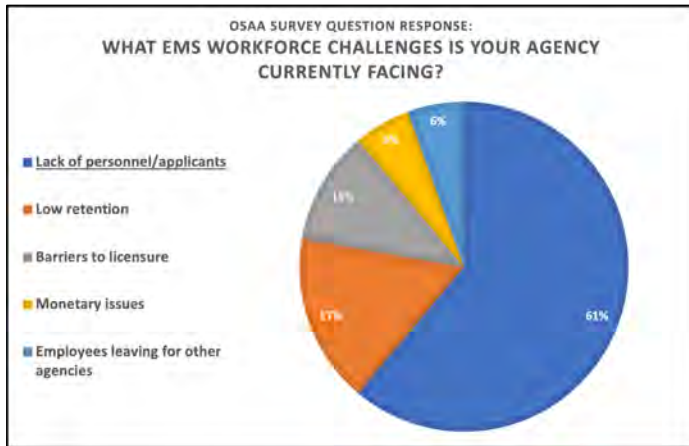


Figure 2A, OSAA Survey Responses to "What are the EMS workforce challenges your agency is facing currently?"

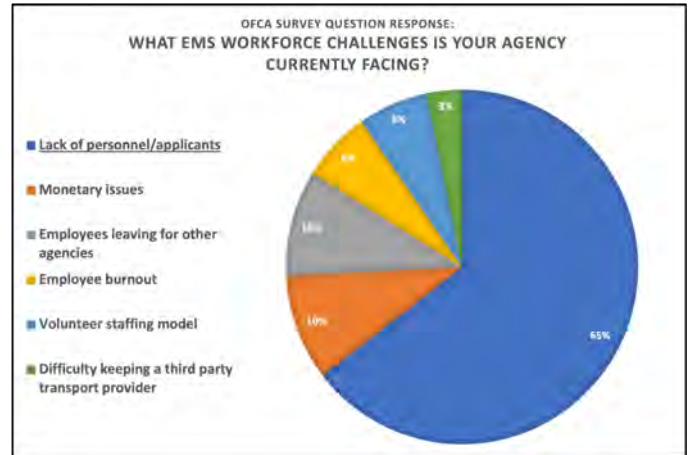


Figure 2B, OFCA Survey Responses to "What are the EMS workforce challenges your agency is facing currently?"

Figures 2a - 3b, graphically represent answers of the free response survey questions that captured EMS provider's hardships and what they believe may be contributing to fewer applicants and greater employee turnover.

The first survey question asked if the EMS agency they represented had any difficulty meeting ASA (ambulance service area) standard response times. EMS providers are asked to respond to a certain percentage of calls, typically between 80-90%, on time in order to meet contracts or government legislation. Complying with an ASA's standard times provide a glimpse into how well an EMS agency is providing service to their community. Time is of the essence in emergency services, but recent workforce challenges have caused many EMS agencies to compromise on meeting this standard. The results of the first survey question are displayed in Figure 1A and Figure 1B. The second question addressed how agencies thought they would perform in meeting ASA compliance times in the future. Of the responding agencies in OSAA, 58% of agencies said they expected upcoming ASA compliance challenges while 32% were unsure. Within the OFCA, 72% of agencies said they expected upcoming ASA compliance challenges, while 18% were unsure. There is increasing concern in both representative groups that response times are not being met. Perhaps even more discouraging is that in areas where ASA standards are being met, EMS agencies are unsure they can maintain the standard.

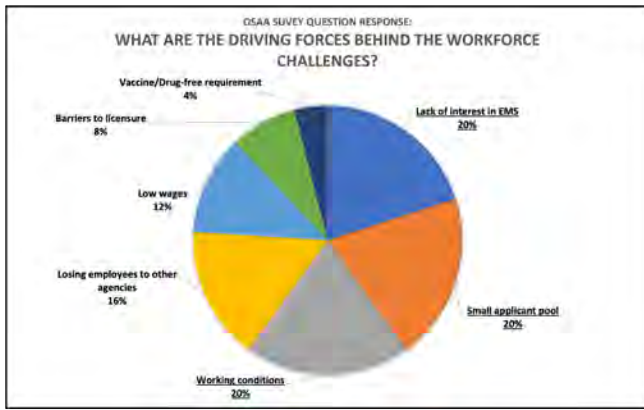


Figure 3A, OSAA Survey Responses to "What are the driving forces behind the workforce challenges?"

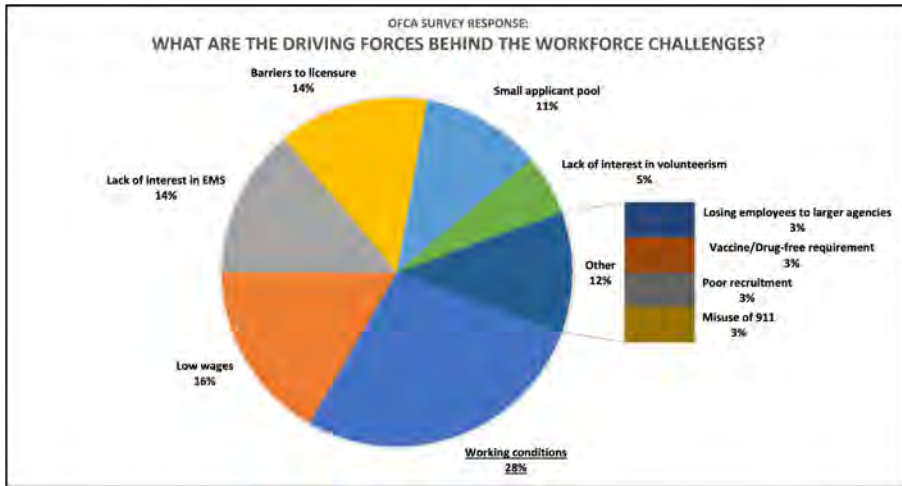


Figure 3B, OFCA Survey Responses to "What are the driving forces behind the workforce challenges?"

Training

Becoming an Emergency Medical Technician-Basic (EMT-B) in Oregon follows the standards set by the National Registry of Emergency Medical Technicians (NREMT). This entails enrolling in a 6 month to 1 year-long class, typically through a community college and occasionally offered to high school seniors, and completing up to 140 hours of didactic training. Upon passing the course, students then must complete 8 hours of shadowing in a hospital emergency department, complete 8 hours of shadowing a licensed EMT or Paramedic, and pass the 2 hour NREMT final examination (Oregon Health Authority). Then, prospective EMTs will apply for a National Registry certification. This is required before applying for an Oregon licensure. Once through this rigorous process, the student can then apply for employment. Some high school students who meet the standard requirements have the option to take an EMT-B course through their high school and graduate with the chance to test for their National EMT-B certification.

Advanced EMTs (AEMTs) receive more training than the EMT-B level. This training provides them with a better knowledge of common disease processes and how to better manage them in the prehospital setting. This allows them to administer more medications than EMT-Bs,

and teaches them how to gain intravenous access. AEMTs are required to already have their EMT-B license before enrolling in a 6 to 9 month course provided by a community college. To test for licensure, AEMTs must complete a field internship, consisting of 8 hours in a hospital/clinical setting, seeing at least 20 patients, and 8 hours of prehospital work supervised by an AEMT or higher scope of practice (Oregon Health Authority).

EMT-Intermediates (EMT-I) provide people who already have their AEMT license to gain more knowledge of prehospital medical care. EMT-I learn Advanced Life Support (ALS) skills that are similar in scope to paramedics, such as obtaining and interpreting EKGs, increased knowledge of disease processes, and the pharmacological interventions available to correct those diseases. Training to become an EMT-I is similar to paramedic training, however it does not go quite as in depth into pathologies and pharmacology as paramedic training does (Oregon Health Authority). The AEMT and EMT-I position plays a vital role in maintaining the functional capacity of a rural EMS district, since it can be difficult to recruit paramedics or retain them due to higher salaries. Having AEMT/EMT-I personnel as the highest level of expertise can allow these rural agencies to continue providing emergency medical care to their communities.

Before becoming a paramedic in Oregon, a prospective candidate must already have their EMT license before enrolling in a 2 year program that includes didactic coursework, clinical rotations, and an externship. On the externship, students are required to assist with 8 cardiac calls, 8 respiratory calls, 8 general medical calls, 8 trauma emergencies, and 40 total EMS calls, with 30 calls requiring advanced life support. These programs must be accredited by the Oregon State Board of Higher Education or the Oregon Department of Education (Oregon Health Authority). Upon completion, students will have earned their Associate's Degree and are eligible to take the National Registry exam. In total, becoming an EMT-B can cost a couple thousand dollars, while becoming a paramedic can cost over 10,000 dollars if no scholarships are awarded, and take years to accomplish.

Currently, there are 16 approved EMS Training Agencies throughout Oregon, and 17 community colleges/universities that offer an EMT-B course, 7 offering AEMT training, and 13 offering EMT-Intermediate training. 9 of these community colleges/universities offer a paramedic course (Oregon Health Authority). Most of these training locations are located within Portland and the Willamette Valley. This presents a difficult situation for rural counties in eastern and central Oregon, since they would have to pull potential recruits from different areas of the state.

EMS Reciprocity refers to the ability of Nationally Registered EMS personnel to work in different states than their state of education for a fee covering the cost of that state's licensure certification. Oregon Administrative Rule 333-265-0050 states that any person can apply to the Oregon Health Authority for licensure by reciprocity at the training level they are registered at or lower. Paramedics are required to submit proof of obtaining an Associate's degree or higher, or proof of having worked 3 of the last 5 years in any state or through the military (Oregon Secretary of State).

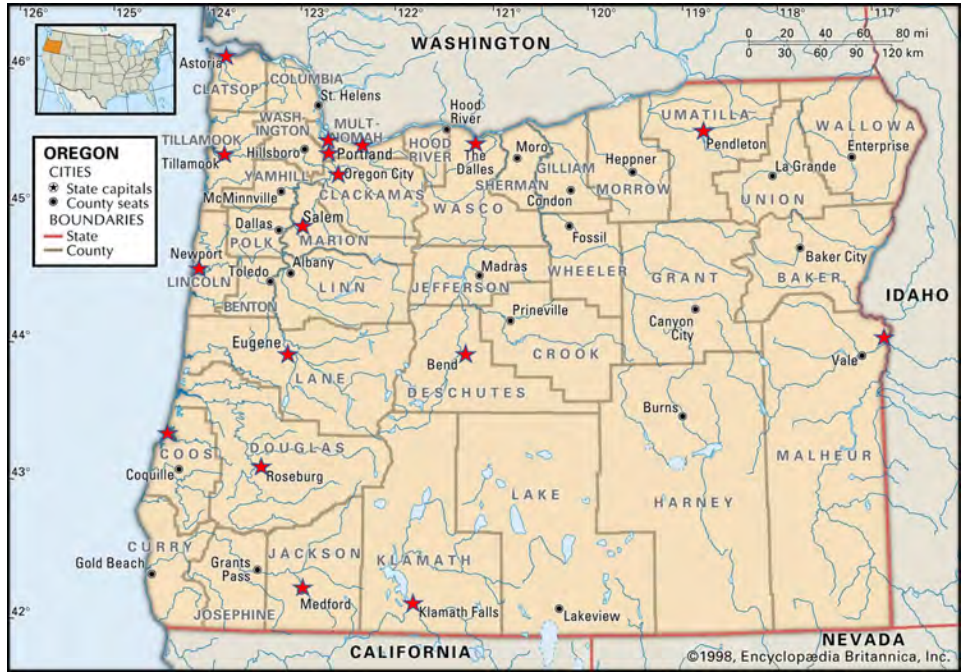


Figure 4-A, EMT-B Certification Courses Map



Figure 4-B, EMT-B through EMT-P certification courses

Staffing

A lack of incentives and/or pay may cause many to reject a career choice when considering all options, and this is exacerbated in EMS, where less applicants are applying to paramedic and EMT positions. In OFCA and OSAA Workforce Responses surveys that were sent to various departments across Oregon, results show the huge need for EMS professionals due to the decrease in number of applicants into these positions. The most highly cited reasons in these surveys for why people thought there were so few applicants was because of low pay, high stress and long hours leading to burnout, and not enough training available.

Low pay appears to be the biggest contributor to why people do not want to work in emergency services as EMT's. The pay for paramedics and EMTs is higher in hospitals than it is with fire departments which drives people to work in clinical settings. People need to pay their bills, and the low pay does not balance out with the high stresses and demands of the job. Urban departments can also pull paramedics and EMTs from rural areas with the promise of higher pay and no increase in living costs because not all departments require employees to live in the area where they work.

EMS providers work in a highly stressful and emotionally challenging environment. They are responsible for responding to lifesaving medical emergencies. When considering this taxing and mentally exhausting work that these partake in, it is without question that burnout is at the top of many table discussions. Burnout is a chronic state of being emotionally, physically, and mentally exhausted as the result of prolonged stress and overwork. When EMS providers are paid low wages, they may need to work longer hours and/or take on multiple jobs just to make it through.

The emotional consequences of this job are significant, and low pay rates make it even more challenging for EMS workers to effectively manage this stress and even add to it. An EMS provider who struggles to make ends meet will often feel overwhelmed, contributing to difficulty focusing at work or at home. Burned-out EMS providers are more likely to make mistakes, which can put patients at risk. Burnout can also lead to lower job satisfaction, and higher turnover rates, further exacerbating the shortage of qualified providers in the industry.

Like all other healthcare professions, EMS is facing a critical shortage of staff. This leads to people working longer hours and having to take on the workload of more people. There are also typically long hours on the job with shifts being 24 hours on and 48 or 96 hours off. Alternatively some departments follow 10-12 hour shifts 3-4 days in a row.

There are several potential solutions to this crisis. One solution is to increase the wages of EMS providers to a living wage which reflects the high cost of living in Oregon. Rural departments would be especially impacted by higher pay and likely incentivize people to stay in rural areas instead of seeking higher paying opportunities in urban departments. This would attract more qualified providers, increase job satisfaction, and reduce employee turnover rates. Additionally, healthcare organizations could provide additional benefits such as paid time off, retirement plans, and health insurance to attract and retain EMS providers.

Patient Transport

Patient transports contribute to a significant proportion of emergency responders' time-on-task. According to the OSAA and OFCA surveys, departments across the state feel strained by increased call volumes, longer ED wait times for patient turnover, and more interfacility transfers. EMS providers are impacted by hospital workforce challenges as strained staffing at facilities receiving transfer patients contributes to longer wall times. Additionally, EMS providers are feeling the burden of strains on hospital capacity as they're forced to drive further to hospitals with available beds. These factors pull EMS providers away from their communities and increase their workload.

A current metric used to evaluate EMS workload is Ambulance Patient Offload Time (APOT). This metric refers to the time interval between the arrival of an ambulance at a hospital's emergency department and the moment when the ambulance crew is able to transfer the patient's care to the hospital staff and leave the hospital. In other words, it is the time required for the ambulance crew to complete their paperwork, handover the patient to the hospital staff, and prepare for their next emergency call. The APOT is a critical performance metric for emergency medical services (EMS) because it affects the availability of ambulances for other emergencies and the quality of care provided to patients. A longer APOT can lead to delays in ambulance response times and can potentially compromise patient outcomes.

Using reported data for 2022, the APOTs for the Lebanon Fire District were analyzed (Lebanon Fire Department, 2023). A distinction was made between Lebanon Community Hospital (LCH) APOT events and any other APOT events that occurred during patient transfers outside of Lebanon (labeled as 'Other' in the figures below).

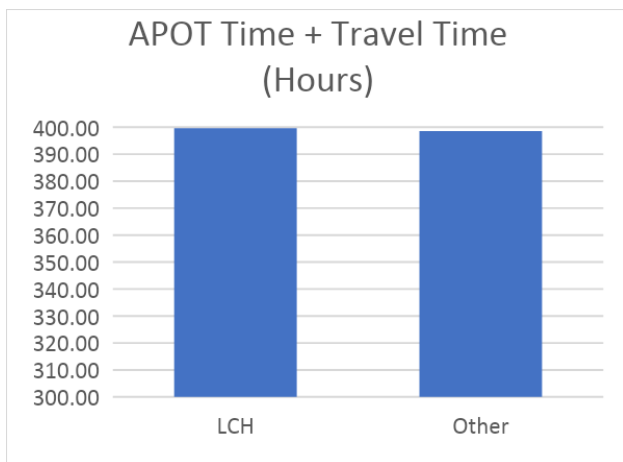


Figure 5-A, APOT Time + Travel time

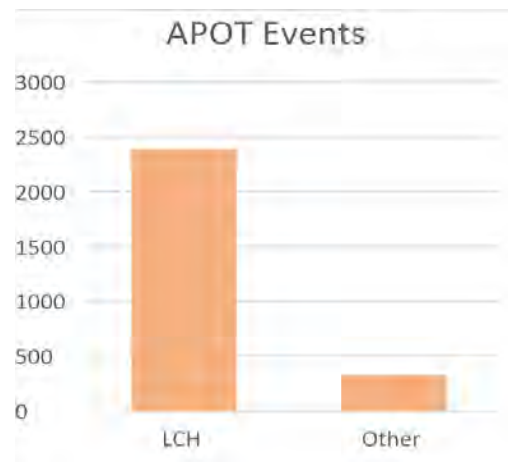


Figure 5-B, APOT Events

Using Google Maps data, round-trip travel time from Lebanon to the various destination hospitals was estimated (Google Maps, n.d.). Average wait-time upon the ambulance's arrival to its destination facility was added to calculate the total APOT for each event APOT was estimated

using Google Maps for round-trip travel time and the average wait-time upon the ambulance's arrival to its destination facility. A comparison between the number of incidents and the average total time spent on APOT and travel times was made. While looking at the base number of APOT events, there were significantly more at LCH. However, the total time spent on APOT events was similar between LCH and hospitals outside of LCH.

It should be noted that the data reported here (from 2022) is skewed from the pandemic. The data portrays healthier APOT events and times. This is due to temporary changes of the Joint Commission standards for CAHs that allowed LCH to keep patients past the 96 hour mark. It is expected that there will be a significant rise in APOT events for 2023 that reflect more accurate pre-pandemic numbers.

Objectively, LFD had more APOT events at LCH than at other hospitals. However, nearly the same amount of time is being spent on each. When taken in context with the current medic staffing situation in Lebanon, the strain being placed on EMS reveals itself. At the time of writing, there are only two medic units available for the area of Lebanon Fire District. When an APOT event occurs, that utilizes one of the medic units. This leaves only one medic unit to serve a very large area, including rural communities. Events that occur at LCH are quickly resolved, allowing the medic unit to resume responding to calls in the area. However, when an APOT event occurs outside of Lebanon the situation becomes more complex. The travel time has a negative impact and keeps medic units outside of the area.

Currently, EMS services are maintaining the status quo. However, as the community continues to grow the strain will cause disruptions in quality and availability of care. In order to stay ahead of this trend, the community needs more resources to be able to provide satisfactory emergency medical services. If action is delayed, and current trends continue, the citizens that reside in the Lebanon Fire District are going to be put at risk.

Issues exacerbated/unique in Rural EMS

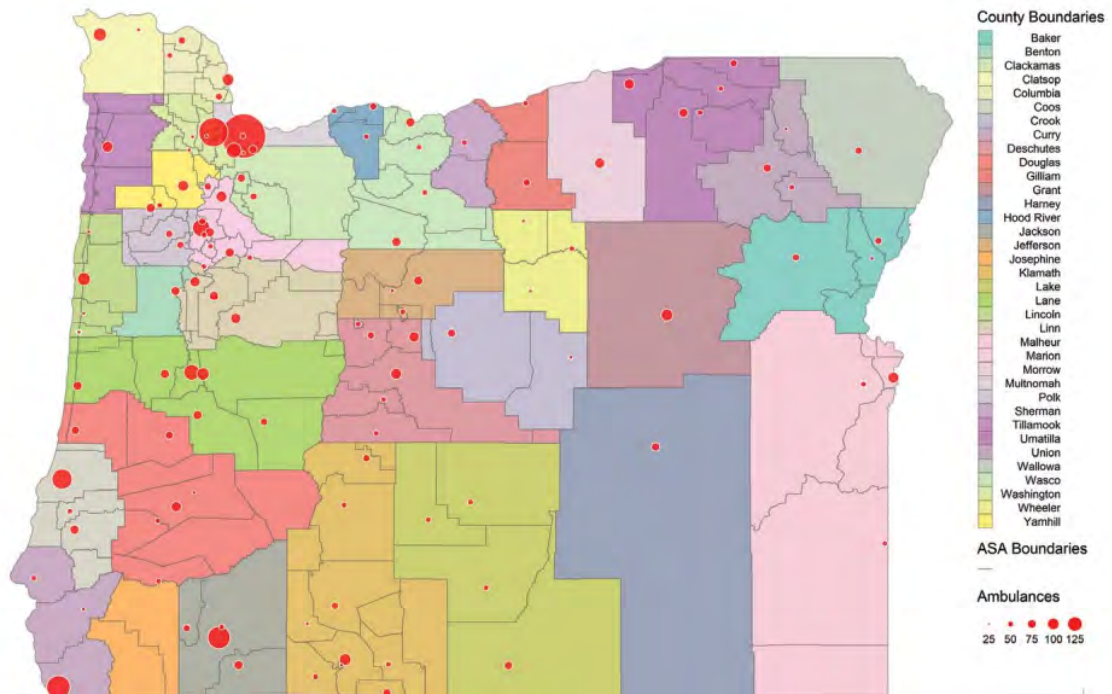


Figure 6, Ambulance service areas by county with the proportion of ambulances in each area quantified in red

In Oregon, Rural EMS is faced with many barriers in regard to funding and staffing. According to the Oregon Health Authority (OHA), approximately 71/111 (~64%) of EMS agencies in Oregon are *rural** (*Oregon Rural & Frontier Emergency Medical Services 2019*). These agencies cover approximately 78% of the state’s land mass with an estimated population of about 1.1 million people. However, the current payment and reimbursement models are often insufficient for rural agencies facing extreme distances for patient transport, the aging population, and recruitment and retention of volunteer/full-time staff.

**Rural* for the purposes of this paper encompasses both rural and frontier counties unless otherwise mentioned.

(Oregon Rural Health defines *rural* as >10 miles from a 40,000+ urban area and *frontier* as counties with 6 or less people per square mile.)

Operating Cost

Rural areas often have longer travel distances and more difficult terrain, which can increase the time and resources needed for ambulance services. In some cases, ambulance services may need to travel long distances to transport patients to the nearest hospital or medical facility, which can result in higher fuel and staffing costs.

Additionally, rural areas may have a smaller pool of qualified healthcare professionals and emergency responders, which can make it more difficult to recruit and retain staff for ambulance services. This can lead to higher staffing costs, as well as increased overtime and training expenses.

Ambulance services in rural areas may need to invest in specialized equipment and technology to address unique challenges, such as limited access to medical facilities or difficult terrain. This can increase the upfront cost of providing ambulance services, as well as ongoing maintenance and repair expenses.

Agencies have also requested an increase in billing capacity through partner programs with larger agencies or the creation of regional billing networks. Some suggest funding for billing technology to enhance the ability of agencies to submit billing. However, reimbursement reform is also needed, as EMS personnel are paid in varying amounts depending on payer type, region of service, and level of service. Though Centers for Medicare & Medicaid Services (CMS) offers a "super-rural bonus" subsidized payment rate for frontier communities, these agencies still report that reimbursement often fails to cover actual costs, such as fuel, equipment replacement/maintenance, and multiple call-outs in place of primary care.

Reimbursement model discrepancies (rural)

According to the Kaiser Family Foundation, as of 2021, approximately 32% of the rural population in Oregon is enrolled in Medicaid, compared to 23% of the urban population (*Total number of Medicare beneficiaries by type of coverage 2021*). In terms of Medicare enrollment, approximately 24% of the rural population in Oregon is enrolled, compared to 20% of the urban population.

This suggests that Medicaid and Medicare enrollment rates are generally higher in rural areas of Oregon compared to urban areas. This may be due in part to factors such as lower incomes, higher rates of chronic illness and disability, and limited access to healthcare services in rural areas.

With this in mind, the extended hurdles that rural EMS agencies endure compounded with poor reimbursement rates to an already underfunded system only exacerbate the reimbursement discrepancy, thus further necessitating a restructuring of the government-sponsored financial reimbursement system in order to support and maintain operations at all levels properly.

Pilots are underway to test reimbursement for treatment without transport or transport to an appropriate alternate site, such as a primary care doctor's office or urgent care clinic. However, challenges continue to impact rural agencies, as initial eligibility requirements for these programs can be difficult to meet. Medicare reimbursement is another issue, as reimbursement is only made to EMS agencies completing transport to an approved care facility. Reimbursement is not available for agencies that hand off to a final destination transporting agency due to geographic extremes or for care provided on-site to patients calling for non-transport issues or who refuse transport.

Volunteer Staffing

Many volunteers have other jobs and obligations which may render them unavailable during particular hours to respond to calls, leading to longer response times which can be life-threatening for someone in need of emergent care. Additionally, volunteer EMS must meet the same certifications and training requirements as paid providers; however, for rural agencies, this can pose a significant barrier for these individuals as far as expenses and travel. As educational and quality reporting requirements increase, volunteer staffing with mostly EMTs in rural EMS agencies may be difficult to sustain long term. This further burdens the overall recruitment and retention of volunteers in these areas making the volunteer model becoming more difficult to maintain.

Oregon EMS agencies also face further barriers in billing and reimbursement and this is highlighted in a survey study which reported 80% of survey participants noting common problems such as lack of adequate billing staff in rural communities. This staff usually takes the form of personnel acting as first responders who do secondary administrative tasks in conjunction. This leaves complications in many areas of the state who have a strong reliance on its volunteer staffing which may further hinder the time and training necessities in these parts of the state.

According to the National EMS Information System (NEMSIS), in 2019, Oregon had a higher proportion of volunteer EMS staff versus the national average (57.2% versus 38.1%) (*State reports 2023*). This quantifies a need for a more robust funding source to allocate to rural EMS agencies which may result in a need to shift many agencies from full/partial volunteer to more of a predominately paid staffing model.

Full Time Staffing

EMS agencies backbone is their full time staff and difficulties with recruitment/retention of this staff has been an ongoing and worsening problem in Oregon. Urban areas have the ability to offer higher salaries and benefits secondary to the higher cost of living and increased demand for healthcare services. Without requirements to live in district, this can offer a substantial incentive for individuals in surrounding communities to commute to these urban areas for

employment rather than working in their home communities, thus pulling potential employment away from the smaller communities. This can be even further highlighted with the substantial lateral transfers from rural departments directly into urban departments. Additionally, a higher pool of applicants may lead to additional benefits attracting those who choose urban agencies such as amenities and work life balance whereas rural agencies may often times find themselves short staffed with their current staff working mandatory overtime for gaps in coverage.

While these factors can certainly entice EMS providers to move from rural to urban agencies, it is important to note that this decision is a complex personal and professional issue. With the appropriate resources, rural agencies may be able to combat this loss of staff by improving the quality of life through pay/benefits as well as work-life balance. Balancing the needs of both urban and rural agencies is critical in maintaining the quality of EMS.

Aging Population with Chronic Health Issues

With aging populations, chronic health conditions arise which further compounds complications in regards to managing the health of rural citizens. According to the US Census Bureau, in Oregon, the median age in rural areas is 45.7 years, while the median age in urban areas is 38.5 years.

AGE GROUP	RURAL	URBAN
<18	21.8%	23.1%
18-24	8.5%	11.9%
25-44	26.1%	33.5%
45-64	29.9%	21.9%
65+	13.7%	9.6%

Figure 7, Breakdown of the age distribution in rural vs urban Oregon, based on data from the 2019 ACS (Demographic and Housing Characteristics 2020)

The older patient population in rural areas can significantly contribute to a higher number of EMS calls/provider relative to their urban equivalents with the allocated resources. Contributing factors include many of the aforementioned barriers to these agencies as well as the higher prevalence of chronic health conditions. As a result, the older residents in rural areas will often require more frequent as well as more immediate care, further burdening the strains on the responding agencies and the population's they serve.

Critical Access Hospital Status

Rural area medical centers face additional operating challenges. According to current guidelines from The Joint Commission, a critical access hospital (CAH) must: 1) be more than 35 miles driving distance from another hospital, 2) maintain no more than 25 inpatient beds, and 3) maintain an average length-of-stay below 96 hours. CAH status was designed to improve access to healthcare and provide financial security to rural hospitals. Generally, CAH status is financially advantageous to hospitals. However, limitations on the number of beds and length of stay present challenges to growing rural communities.

Lebanon Community Hospital is one of 25 CAHs in Oregon. Lebanon has grown by 8.32% since 2020 and is expected to continue on its trajectory of growth in the coming years. Critical access status pushes LCH to divert and transfer patients to the next-nearest facilities, which are consistently near their own patient load limits. Those excess transports become the responsibility of Lebanon's EMS, and ultimately pull strained emergency response resources away from the Lebanon community. (*Critical Access Hospitals (CAHS) 2021*).

Conclusion

The issues facing EMS in Oregon are systemic. Hospital and prehospital care are showing signs of strain and the workforce is bearing the burden. Paramedic and EMT education is unpopular and EMS professionals are seeking higher-paying and more stable jobs, moving away from rural areas, and moving into hospital settings. Departments are struggling to create incentives to compensate for staffing shortages with limited resources. The staff that remain are burnt out. This paper aimed to highlight the threats that the OSAA sees to the health of our EMS systems across the state. The Lebanon Fire Department is an example of how a storm of factors can pose challenges to reliable, timely, and sustainable emergency patient care, from a shrinking pool of qualified and interested job applicants to a strained and undersized hospital. The OSAA and the authors hope that the problems facing EMS in Oregon inspire creative solutions and an influx of resources to sustain this vital public service and the professionals who keep it running.

Appendix

Methods

Surveys were sent to representatives of EMS and fire agencies that are members of OSAA and OFCA in August 2022. Of the 36 agencies represented in OSAA, 20 completed the survey and 22 surveys were completed by OFCA members. Survey results were separated from the agency they represented. The questions asked in both surveys were identical.

To obtain the data presented in Figure 1A and 1B, response percentages for the three possible responses were totalled (Always Meeting, Occasionally Difficult to Meet) and represented in a pie chart graphed using Microsoft Excel software. Each pie chart contained 20 data entries and 22 data entries for the OSAA and OFCA survey reports, respectively.

To obtain the data presented in Figure 2A, 2B, 3A, and 3B, percentages for response types were totalled and graphed in a pie chart presentation using Microsoft Excel, similar to Figures 1A and 1B. Because the questions answered by the results in these figures were free response answers and often contained more than one data point, the received answers were categorized into general topics at the discretion of the authors. For example, a free response provided for the question “What are the contributing factors or driving forces behind the EMS workforce challenges?” was as follows: “Large agencies taking employees and no pool of candidates that are just out of school.” The response was grouped with other responses also addressing the issues of *Losing Employees to Other Agencies* in addition to being grouped with responses that addressed the *Small Applicant Pool*. This response was counted twice as it addressed two broader topics affecting EMS that the authors wanted to address individually. Figure 2A contained 18 data entries with 20 agencies responding, due to some surveys leaving this question unanswered. Figure 2B contained 31 data entries with 20 agencies responding. Figure 3A contained 25 data entries with 20 agencies responding. Figure 3B contained 36 data entries with 22 agencies responding.

Information presented in the “Staffing” section of this paper was taken directly from the surveys. Survey participants were asked to provide information about the current number of vacant paramedic, EMT and support positions. They were also asked to provide a sense of the change in the number of applicants for these vacant positions now versus prior years. Questions such as “what are the EMS workforce challenges your agency is facing currently”, “what are the contributing factors or driving forces behind the EMS workforce challenges”, “what suggestions do you have that could provide temporary or permanent relief for the the EMS workforce challenges”, and “what strategies are you using to address your agency workforce challenges” were asked. The common answers across all departments from both surveys were highlighted in this section.

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