



Committee of the Whole Report

Report Number: EMS2024-002
Meeting Date: May 7, 2024
Title: Paramedic Service Operational Key Performance Indicators
Description: Paramedic Service Operational Key Performance Indicators
Author and Title: Sara Johnston, Paramedic Chief

Recommendation(s):

That Report EMS2024-002, **Paramedic Service Operational Key Performance Indicators**, be received.

Department Head: _____

Financial/Legal/HR/Other: _____

Chief Administrative Officer: _____

Background:

This report provides an overview of a suite of operational key performance indicators (O-KPIs) collected by Kawartha Lakes Paramedic Service for performance reporting to Council and the Public.

The number one priority of Kawartha Lakes Paramedic Service is to provide the best possible out-of-hospital care to the community and to do so in the most effective and efficient method possible. To achieve this, the department performs annual analysis of performance indicators that prioritize patient-centered care, while using a broad and balanced set of clinical, safety, experiential, operational, and financial measures to evaluate the effectiveness of the service. The valuable result of this analysis is evidenced by the Service's ability to meet and exceed response time targets with operating costs that fall below the regional average.

The intention of this suite of O-KPIs is to provide Council and the Public with a detailed view of the Paramedic Service's operational efficiency, to provide benchmarking for ongoing evaluation, and to inform decision making for the department that is evidence-based and proactive.

Analysis:

The O-KPIs described within this report consist of a combination of traditional and legislated measures, joined with a suite of performance metrics developed by the Paramedic Chiefs of Canada (PCC). These measures were designed to contribute to the systematic improvement of EMS delivery through the advancement of national performance measures that are evidence-based, comprehensive and able to be broadly applied.

In Ontario, there are very few sources of comparator data for paramedic service performance and benchmarking. The Municipal Benchmarking Network (MBN – www.mbncanada.ca) includes six Emergency Medical Service measurements and where applicable, this data is included for comparison.

For summary purposes, this report includes a broad sampling of O-KPI's for the Paramedic Service. For a full analysis, O-KPI 2023 Summary Sheet and O-KPI 2023 Infographic are respectively attached as Appendix A and Appendix B of this report.

Call Volume – Vehicle Assignments

Kawartha Lakes Paramedic Service tracks and monitors every vehicle event/assignment created by the dispatch system. We refer to these events as “call volumes” and use this statistic as a useful measure to evaluate trends for service demand. Traditionally, call volume statistics have included all vehicle assignments, but this statistic can be somewhat misleading as it includes stand-by coverage for other areas (Code 8’s) and often, more than one vehicle may be assigned to a response. To provide clarity and to demonstrate demand trends more accurately, this report provides call volume trends in both vehicle assignment (Figure 1) and patient call volume (Figure 2).

As demonstrated in Figure 1 below, the service had a considerable increase in requests for service and vehicle assignments in 2021. This anomaly appears to be associated with the COVID-19 Pandemic. Paramedic Services across Ontario as well as many Hospital Emergency Departments experienced similar trends.

This 12.45% surge in 2021 resulted in the service implementing several growth mitigation strategies, such as decreasing stand-by coverage for other areas (Code 8’s). As such, **Figure 1 below demonstrates the overall decrease in vehicle assignment in 2023, specifically a decrease in Code 8’s, by 4.59%.**

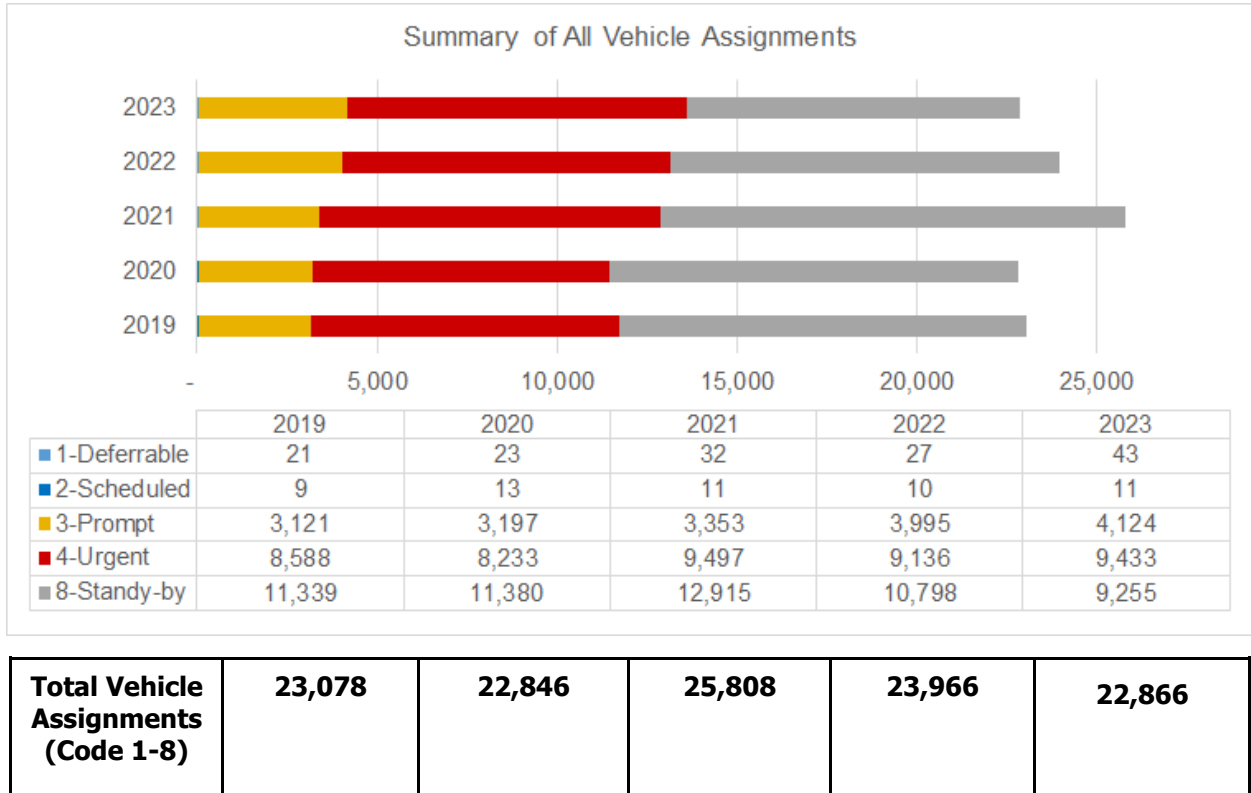


Figure 1

Patient Call Volume

An analysis of individual patient call volume is represented in Figure 2, which provides a more meaningful representation of actual demand for service. In 2022 and 2023 service demand returned to a more predictable and consistent **increase with a rate of 2.13% and 3.36% respectively**. The five-year average rate of increase is 3.82%.

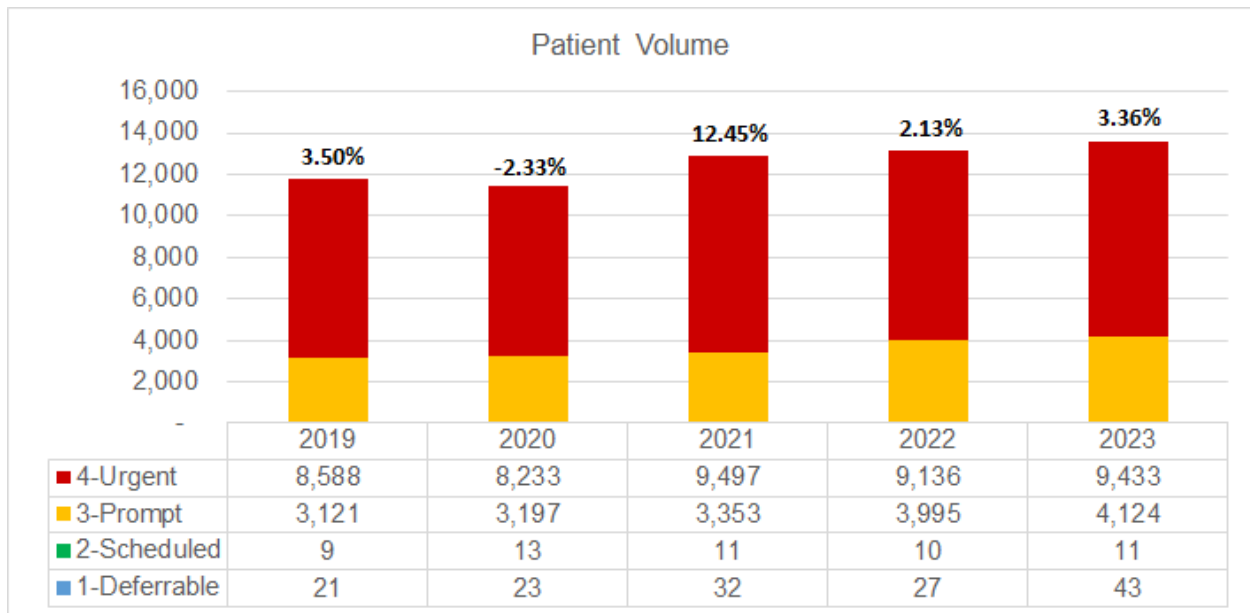


Figure 2

Response Time Performance

As per Regulation 257/00 of the *Ambulance Act*, every upper-tier municipality is responsible for developing response time plans (or targets) and reporting on performance. The plan must provide targets for response times to 911 calls sequenced by acuity using the Canadian Triage and Acuity Scale (CTAS). This tool prioritizes patients based on their chief complaint on a scale from 1-5, 1 being the highest severity and 5 being the lowest.

By no later than October 31 each year, Paramedic Service must submit a copy of the established plan for the following year including expected targets to the Ministry of Health. A complete copy of the previous year’s performance including the percentage of response times to Sudden Cardiac Arrests, CTAS 1,2,3,4 and 5 must be submitted to the Ministry by no later than March 31st.

Figure 3 below represents a measurement of 2023 response time performance against the Council approved Response Time Performance Plan (RTPP). Paramedic Service performance continues to meet and exceed all response time targets.

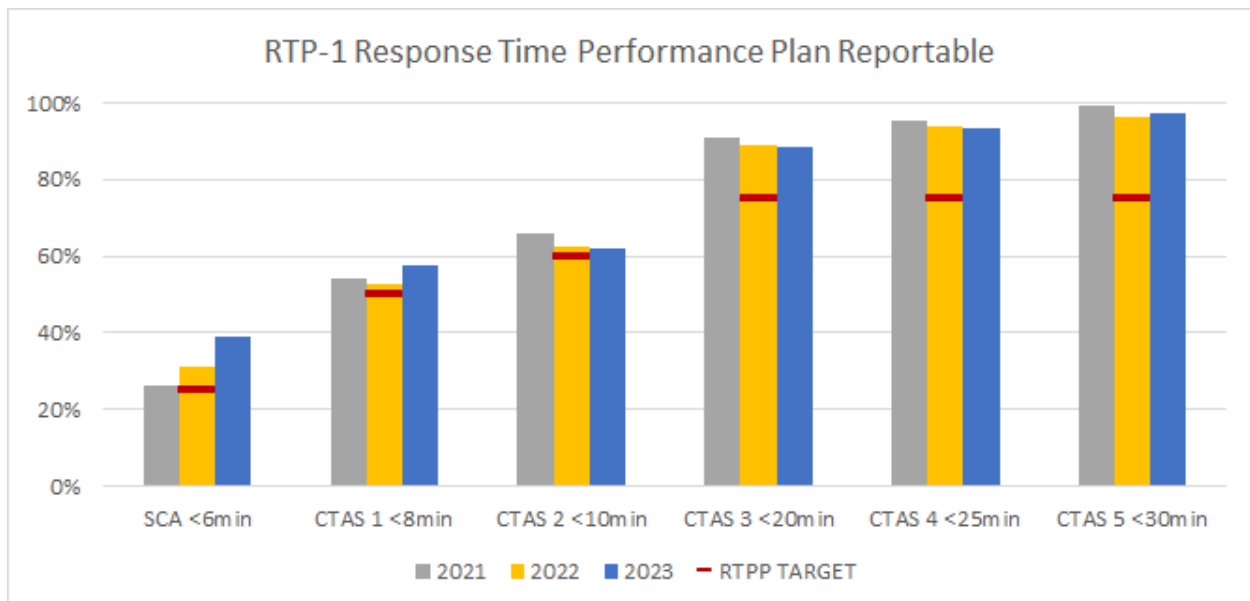


Figure 3

Volume Measures – Per Capita

Figures 4 and 5 below demonstrate volume measures for both emergency Code 3 and 4 calls (Figure 4), and non-emergency Code 1 and 2 calls (Figure 5) for the City of Kawartha Lakes. Emergency responses per capita remains elevated in 2023 at 178/1,000 population.

This demand for service is also significantly higher than those reported by the participants of the Municipal Benchmarking Network (MBN – www.mbncanada.ca) which reports mean EMS demand for service at 127/1,000 population.

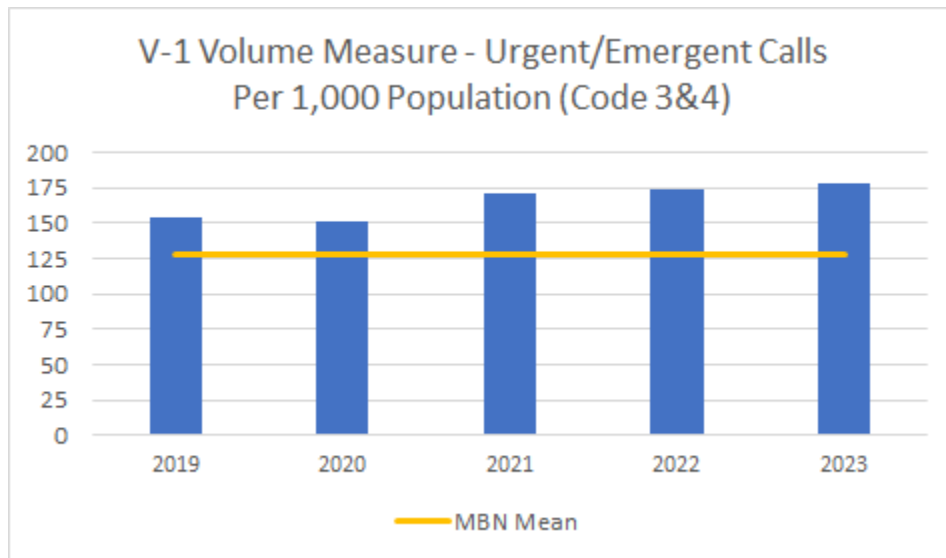


Figure 4

Non-urgent call volume (Figure 5) remains very low in the City of Kawartha Lakes at 0.96/1,000 population. This is a result of deployment plan strategies and the significant volume of patient transfers accommodated by Community Care.

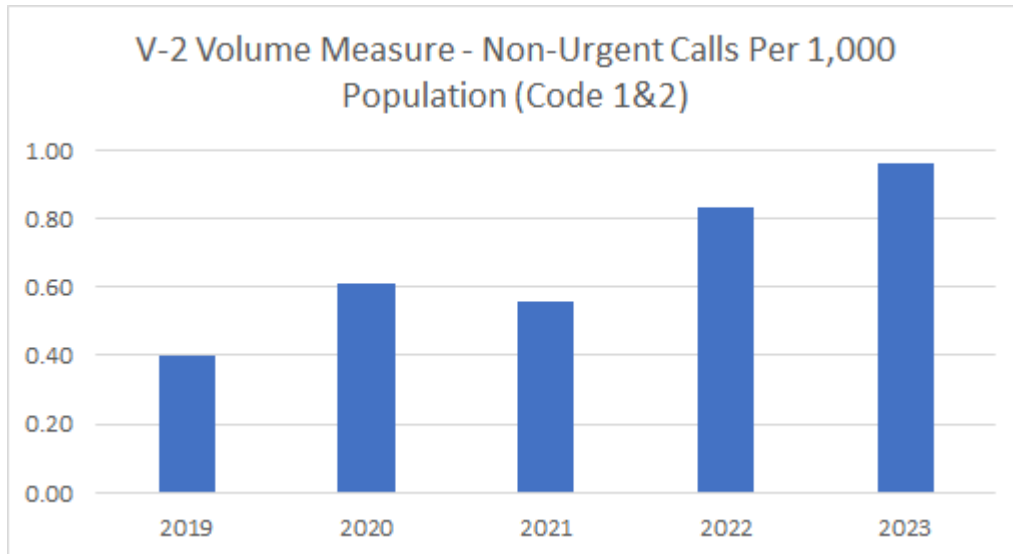


Figure 5

Utilization Measures

UHU, or Unit Hour Utilization, is a standardized, shorthand way to measure and compare workload levels. While Unit Hour Utilization looks at the usage of one “unit” or one ambulance, System Utilization Rate combines all given “units” or ambulances to demonstrate the rate of resource utilization or conversely, rates of ambulance availability for emergency response in the community. The higher the percentage, the busier the system, or put differently, more transports occur from fewer ambulances. The goal is to fully balance and optimize these variables along with clinical factors, response times, employee satisfaction and fiscal realities. Unit Hour Utilization varies greatly among EMS systems, and there is no generally accepted consensus regarding the ideal ratio. This is due to many influencing factors such as system design, population/call density and geographic differences. As a rule, however, it has been theorized that to maintain system reliability, utilization rates should not exceed 35%.

It is also important to note that Unit Hour and System Utilization does not capture productivity outside of responding to emergency calls, such as the completion of required documentation, cleaning, restocking, etc.

Figure 6 below, U-1 System Utilization Rate (UHU%), demonstrates an increase in 2023 System Utilization (UHU) to 33.27% over 30.84% in 2022.

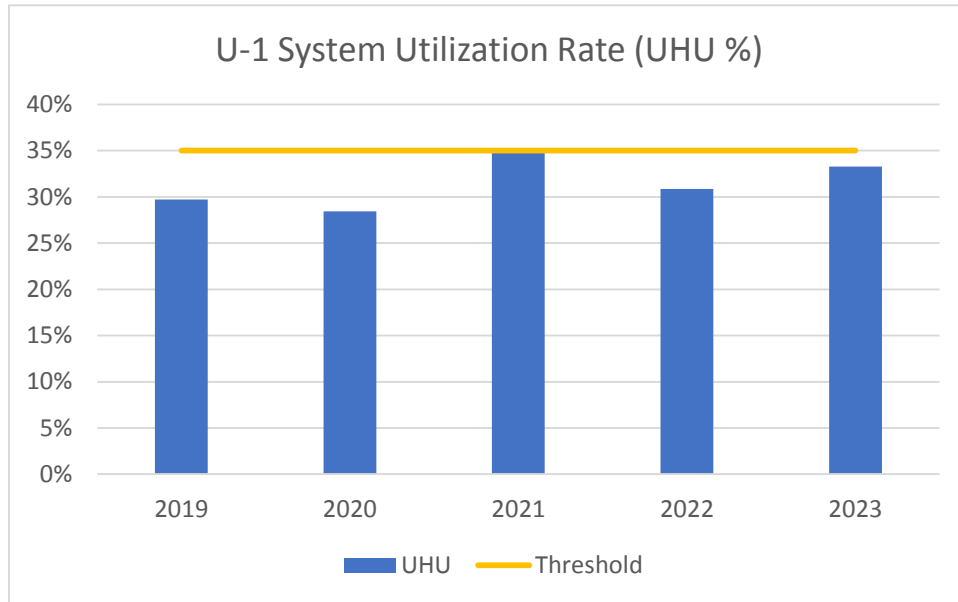


Figure 6

When all ambulances are engaged in calls, the Service is considered to be in Code Zero – meaning there are zero City of Kawartha Lakes ambulances in the area available to respond to emergency calls. Code Zero represents a significant level of patient risk as emergency calls will typically receive a slower than average response time. As depicted by the trendline in Figure 7 below, Code Zero’s have been increasing at an alarming rate, with the service spending 24 minutes each day in 2023 with zero ambulance availability. It is imperative to note that this does not mean calls went unanswered, rather a delay occurred before an ambulance was freed up to respond, or in some cases, attended by a neighbouring service.

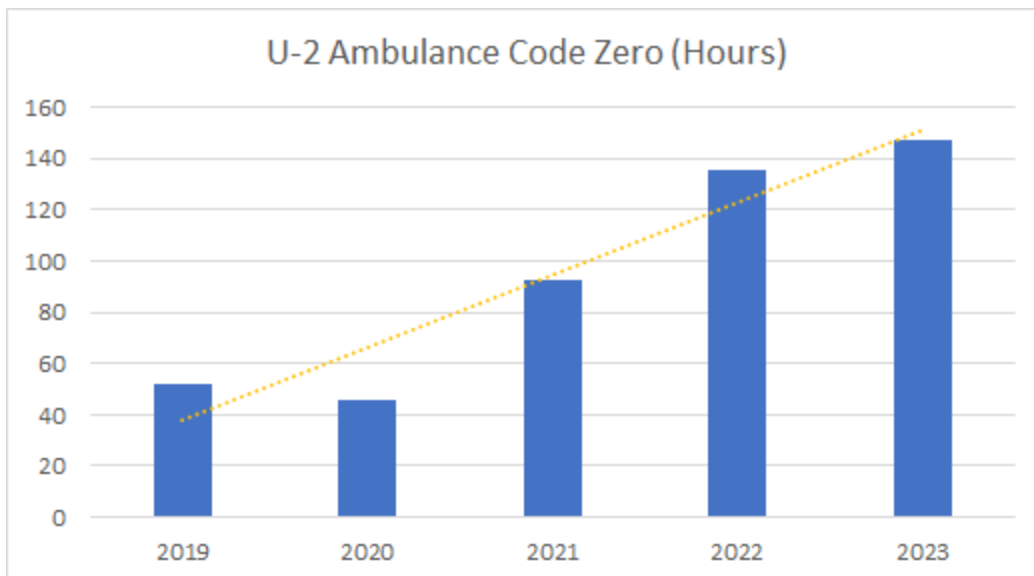


Figure 7

Figure 8 is a utilization O-KPI providing measurement that compares the volume of paramedic service responses within the City of Kawartha Lakes completed by other Municipality’s ambulances, against the volume of response by Kawartha Lakes Paramedics into external municipalities. As demonstrated by Figure 8, the City of Kawartha Lakes is a net receiver of service, with 622 calls within Kawartha Lakes responded to by other municipalities in 2023.

This measure is useful in evaluating the efficacy of the service levels provided in meeting the current needs. The Service has worked diligently to implement deployment strategies that reduce the reliance on neighbouring services, in efforts to mitigate delayed responses and increased costs associated with cross-border billing agreements. The City of Kawartha Lakes currently has one formal cross-border billing agreement with Haliburton, despite sharing borders with other municipalities (Peterborough, Durham). The City of Kawartha Lakes transferred \$118,300 to Haliburton in 2023 for response to calls within City limits.

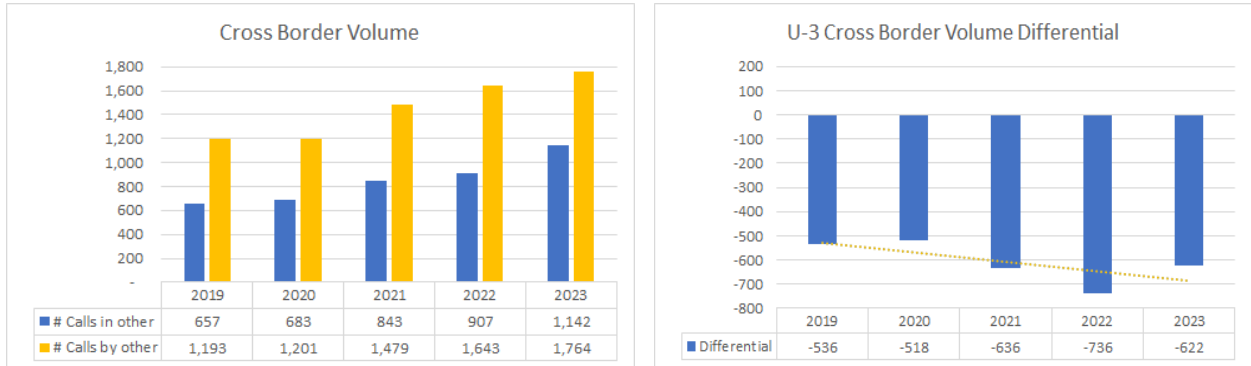


Figure 8

System Design/Deployment Measures

Charted below, in Figure 9, are the System Design and Deployment Measures. The first category shows Average at Hospital Time, with the second category displaying the Average Offload time.

The last two categories are our 90th Percentile at Hospital Time and 90th Percentile Offload Time.

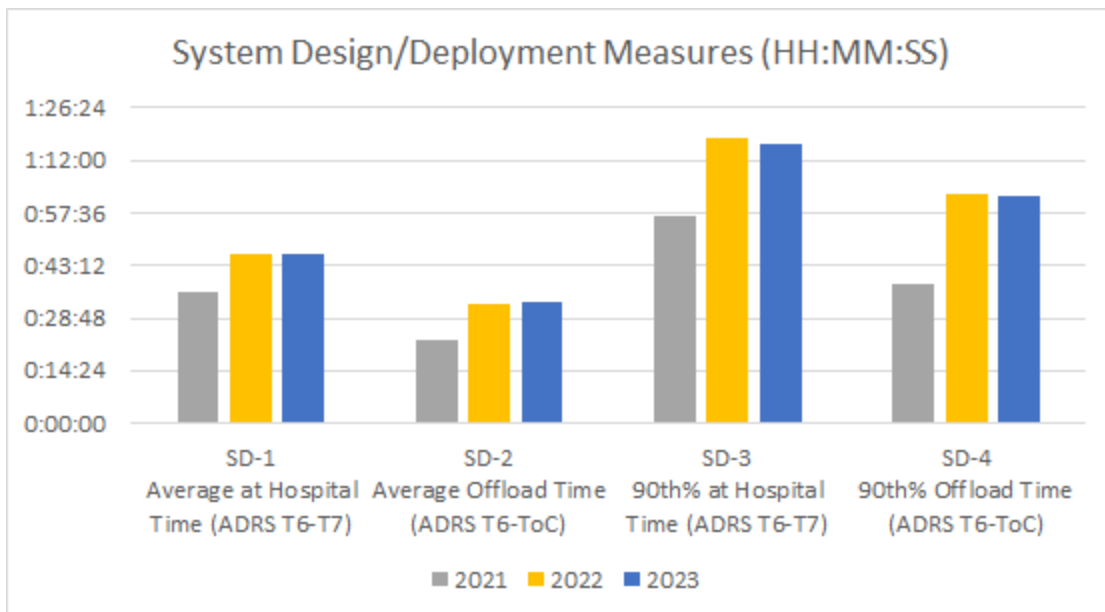


Figure 9

Figure 10, SD – 5 depicts the percentage of emergency responses that received Advanced Care Paramedic (ACP) vs Primary Care Paramedic (PCP) response. SD – 6 represents a comparison of ACP response vs PCP response to CTAS 1 (high acuity) categorized patients. The strategy of the City of Kawartha Lakes to maintain a 50% ACP/PCP ratio has resulted in superior performance in this measurement.

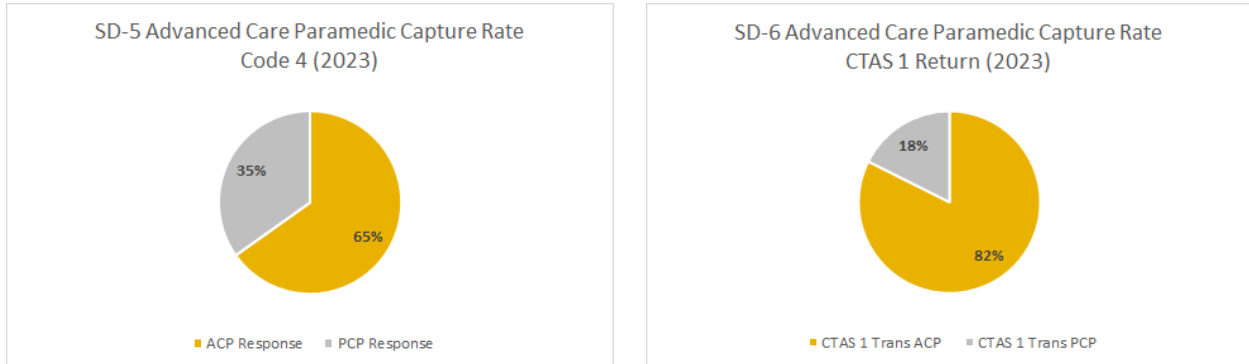


Figure 10

Finance/Funding Measures

Figure 11 compares data for 2023 over previous years for Operating Cost per Capita, Operating Cost per Event, and Operating Cost per Unit Hour. With fluctuating call volumes, inflation, and equipment costs, 2023 Operating Cost Per Event increased over the previous year's rates by 9.02%. Operating Cost per Capita and Operating Cost per Unit Hour have remained static and fall below the MBN comparator mean of \$241.00 per unit hour.

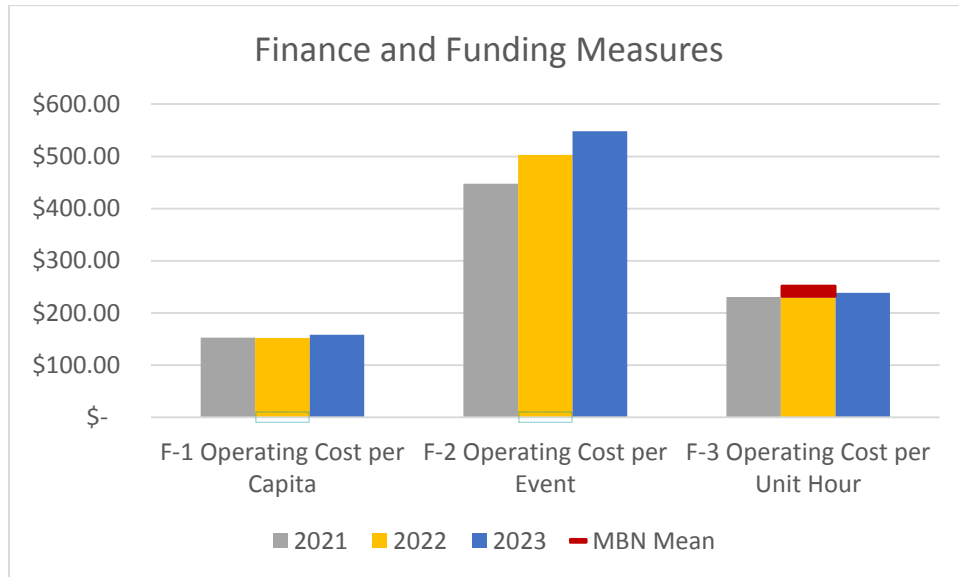


Figure 11

Fleet Measures

Figure 12 below depicts cost per kilometer for both Fleet Maintenance and Fleet Operating costs (maintenance + fuel). Total fleet operating costs increased by \$0.11 per kilometer in 2023 over 2022 with total per kilometer operating cost of \$0.70/km in 2023 over 2022 at \$0.59/km.

Influencing factors related to this performance measure include fuel costs and several significant vehicle repairs, given aging fleet and supply chain challenges. The department exceeded the 2023 budget for fleet maintenance by 158% or \$115,500 and is working closely with the vehicle vendor for timely replacement of aging fleet.

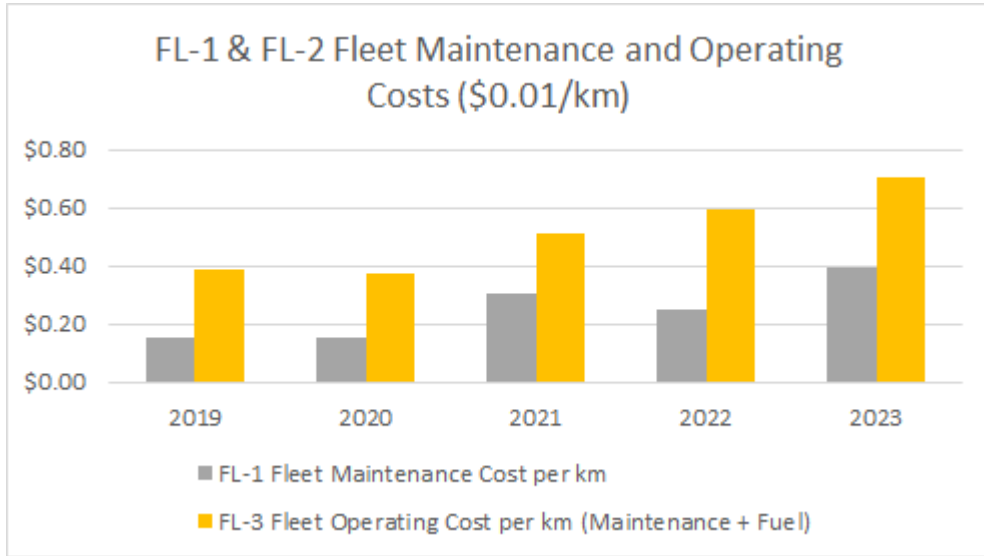


Figure 12

Figure 13 below demonstrates a rate of vehicle incident/collisions on an upward trend per 100,000kms. In 2023, rates indicate an incident/collision instance rate of 2.00 per 100,000 km. The department continues to incorporate driver training into routine training schedules and will be further examining this trend to seek opportunities for improvement.

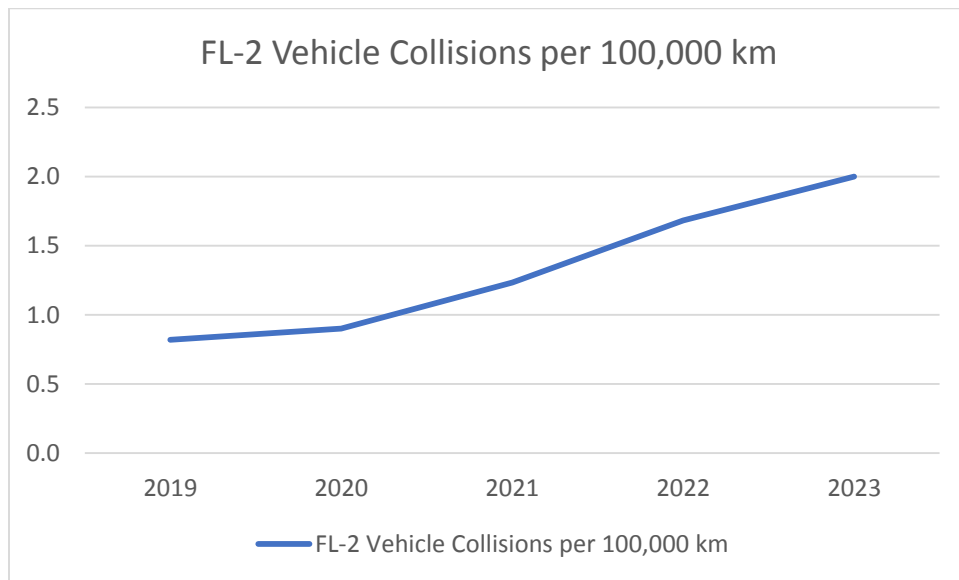


Figure 13

Carbon Emissions Measures

Total Annual Fleet Carbon Emissions and Carbon Emissions per Capita measures increased slightly in 2023 over 2022. Influencing factors for this increase include fleet age/fuel efficiency, vehicle model and size. Ambulances used in the City of Kawartha Lakes are among the largest models and therefore, higher carbon emitters.

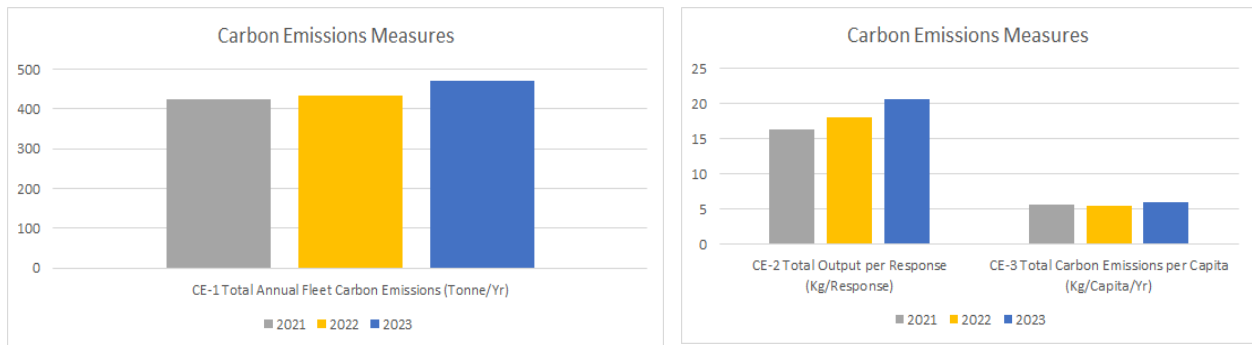


Figure 14

Satisfaction Measures

Paramedic Service Stakeholder Satisfaction measurement is a performance metric under development for the Paramedic Service. Current methodology is limited to the passive approach of a comparison of commendations versus complaints received as a result of service provided. A measurement of time for complaint investigation has been added for inclusion in future KPI reporting.

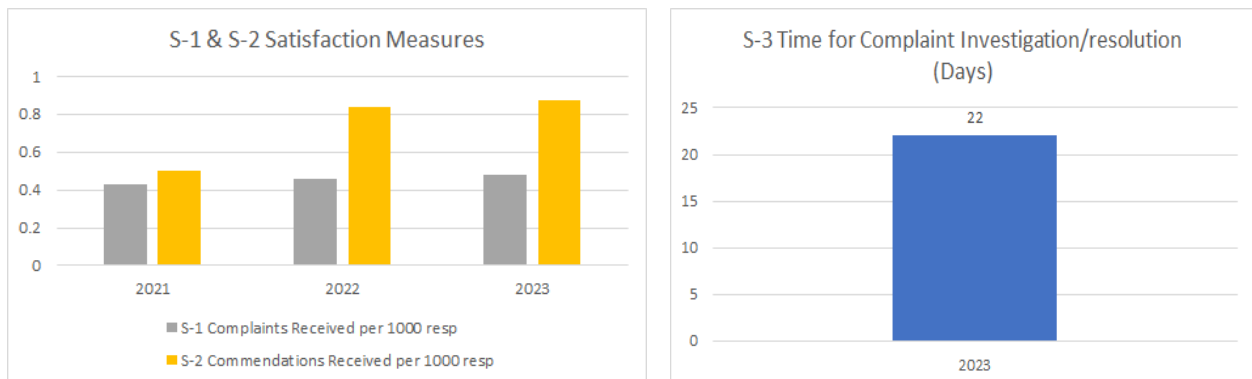


Figure 15

Occupational Health & Safety

Figures 16 and 17 demonstrate Occupational Health and Safety (OHS) Measures, OHS-1 through OHS-4, which evaluate injury rates and resultant lost time claims. The Frequency Rate for Injury and Lost Time Incidents remains lower than many comparators, however the average lost time hours per claim is very high. This metric warrants further analysis to identify causes and opportunities for improvement and mitigation.

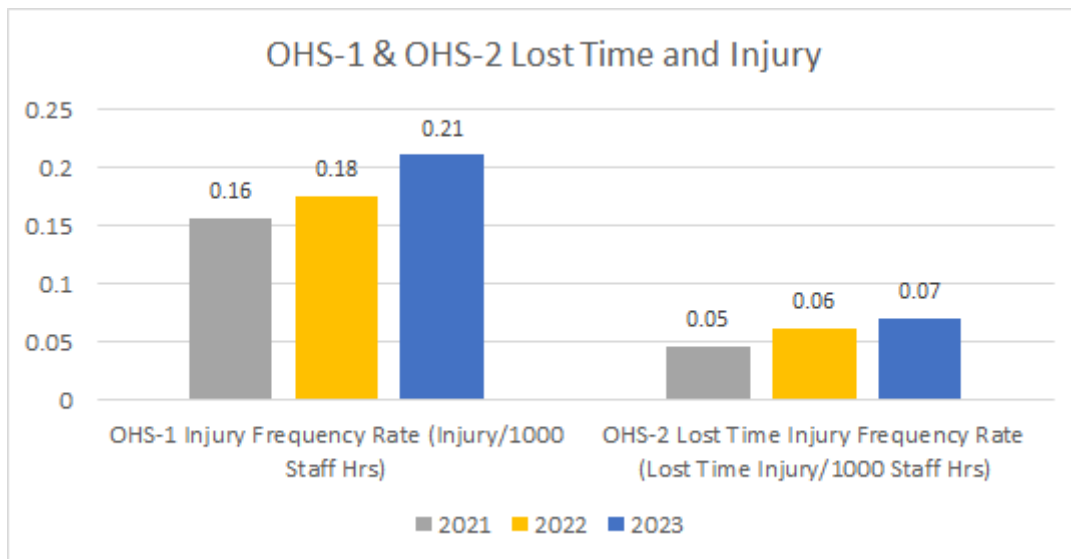


Figure 16

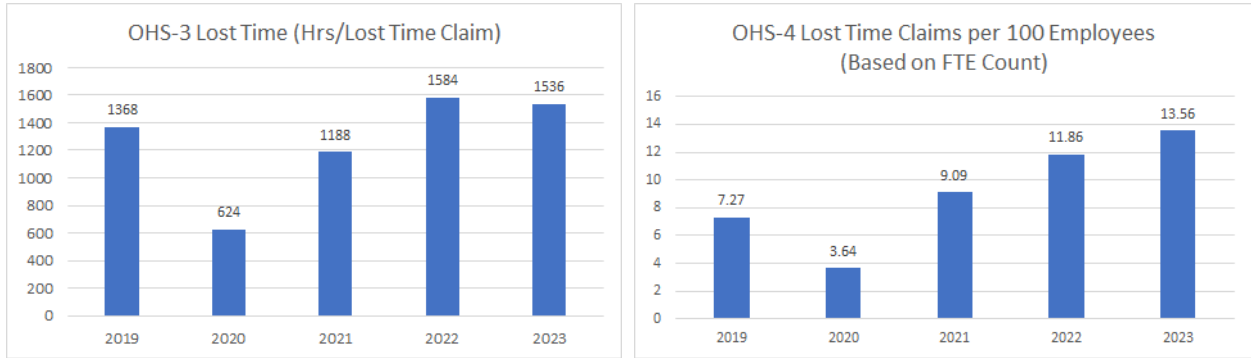


Figure 17

Human Resource Measures

Service staffing levels have remained consistent over the 2023 KPI reporting period as demonstrated in HR-1 and HR-2 (Figure 18). During the same reporting period, call volumes continued to rise, increasing utilization rates, and Code Zero Rates as shown in Figures 7 and 8.

To ensure annual training requirements and certification standards are not only met, but exceeded, paramedics complete 36 hours of legislated and service training each year. (Figure 18)

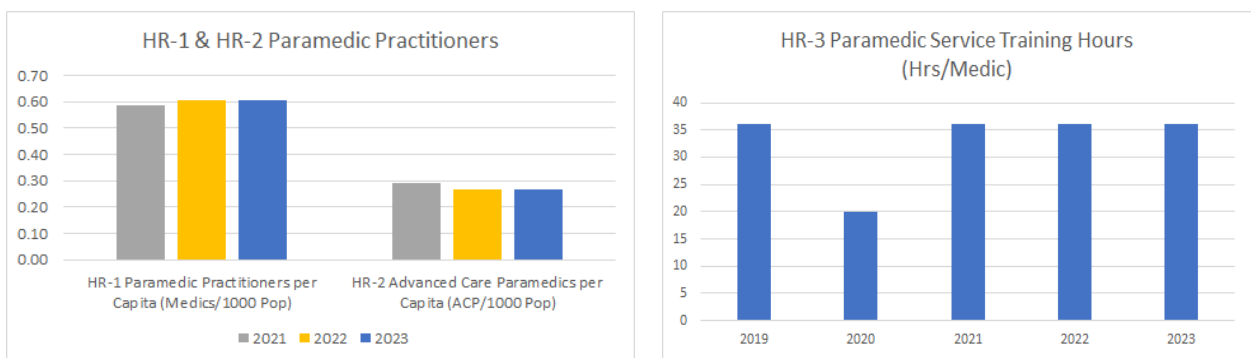


Figure 18

Key Findings:

1. Demand for Service & Resource Level
 - a. Has stabilized to a consistent rate of increase
 - b. Resource Level Zero Rates increased
 - c. Increasing System Utilization Rates/system busyness is trending towards maximum acceptable levels
 - d. Validate Paramedic Service Master Plan roadmap and recommendation "Resourcing additions are required to stabilize system performance and maintain service levels."
2. Financial Performance
 - a. Operating cost per unit hour remains below Municipal Benchmarking Network comparator mean
 - b. Excerpt from Paramedic Service Master Plan "Evidence-driven Transformation will be key in meeting upcoming patient care challenges with finite local \$ resources."
3. Human Resources
 - a. Lost time injury rates require attention
 - b. High quality level of care is consistently provided to the community
4. Fleet
 - a. Fleet costs increasing concurrent with service demand and aging fleet/supply chain challenges
 - b. Safety measures need to be considered to decrease vehicle incident frequency
 - c. Strategies are required to reduce emissions
5. Stakeholder Satisfaction
 - a. The department developed a Patient Experience Survey to qualify service delivery expectation and provide a meaningful measure of performance by the public to be incorporated into future O-KPI reporting

Other Alternatives Considered

N/A

Alignment to Strategic Priorities

The Paramedic Service Key Performance Indicator Report aligns with the following strategic priorities:

Good Government

Development of Performance Metrics supports departmental strategies that ensure municipal assets and operations are managed efficiently and effectively. A continuous review of operational efficiencies ensures that best municipal practices are adopted.

A Vibrant and Growing Economy

Evaluation of Performance Metrics will support effective Paramedic Service response operations and service delivery.

An Excellent Quality of Life and Service Excellence

Implementation of service delivery guided by Performance Metrics will help support efficient delivery of Paramedic Service response operations and assists the general well-being and overall health and safety of residents.

Financial/Operation Impacts:

Performance Metric analysis will be used as a guiding document for the Paramedic Service in supporting and enabling future strategic planning and departmental work plan objectives. Financial impacts either through efficiencies or investment deemed appropriate through O-KPI analysis would be included in future budget deliberation.

Attachments:

Appendix A – O-KPI 2023 Summary Sheet



Appendix A

Appendix B - O-KPI 2023 Infographic



Appendix B

Department Head email: sjohnston@kawarthalakes.ca

Department Head: Sara Johnston, Paramedic Chief