IDENTIFYING AND VALIDATING PERCEIVED WORKLOAD METRICS FOR EMERGENCY MEDICAL SERVICES

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Abstract: Emergency Medical Services (EMS) use workload surrogates to inform decisions such as staffing and dispatching. The most common workload surrogates are overall call volume and Unit Hour Utilization (UHU). However, these surrogates have not been validated as workload metrics in EMS context and their validity has been challenged given that they do not account for indirect work or for the variability in effort associated with different calls. This study investigates the relationship of commonly used EMS operational metrics with perceived workload to evaluate their appropriateness as surrogates. We applied a modified version of the NASA Task Load Index survey to ambulance crewmembers at various points in time during several shifts to assess the corresponding perceived workload and paired the responses with operational measures based on dispatch data. The operational metrics studied included: overall call volume, UHU, priority stratified call volume, initial acuity stratified call volume, call response utilization, mean time between calls, and coefficient of variation of time between calls. Linear regression models were used to evaluate the influence of each metric on perceived workload. Logistic regression models were used to identify if there were well defined values of the candidate metrics indicating having incurred a fair day’s work. We found that overall call volume (p-value = 0.0002, R^2 = 0.32) and UHU (p-value = 0.004, R^2 = 0.23) explain less than half of the variability in perceived workload. Priority-stratified call volume (p-value = 0.002, R^2 = 0.65) explained more of this variability, while priority-stratified call volume was also statistically significant in identifying incurring a fair workload. We conclude that call volume is insufficient to represent perceived workload.

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