



Real-Time Video Review: Data Collection Techniques to Support Situational Awareness

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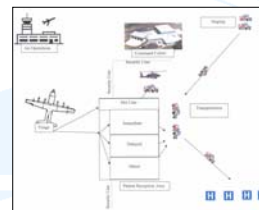


Introduction

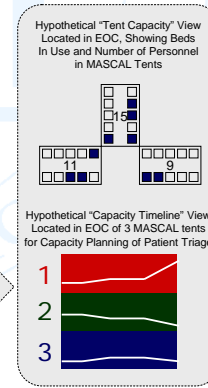
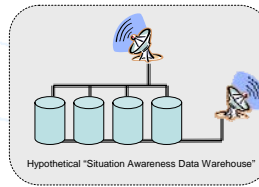
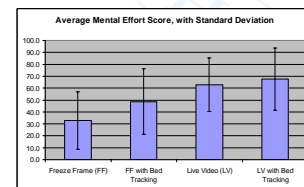
Real-time video data could improve Emergency Operation Center (EOC) situational awareness, resource allocation and planning in mass casualty (MASCAL) triage. Rapid changes, overlapping images and multiple providers obstructing views, limits utility of automated video-extracted MASCAL status reports. Using video from a National Disaster Medical System Functional Exercise (NDMS-FX) we compared two video review techniques.

Methods

Reviewers tracked the number of patients, personnel, and bed occupancy in the MASCAL triage tent. A two-factorial design was used. Four investigators reviewed an 80-minute video segment via “1-minute-freeze-frame” (FF) and “continuous live-video” (LV) review techniques under two mental effort conditions, tracking personnel and patient numbers, and tracking personnel, patient numbers, and patient bed assignment tracking. Count accuracy was compared to a referee standard, and subjective mental effort was recorded.



Reporting Deviation of Participant Review When Compared to Refereed Counts (Negative = under report, Positive = over report, 0 = matches referee count)		
	Freeze Frame	Live Video
Average Reported Deviation	-0.21	0.23
Standard Deviation of Reported Deviation	0.74	2.09
Max Under-Reported Deviation	-4	-10
Median Reported Deviation	0	0
Max Over-Reported Deviation	3	11



Results

A total of 8 patients were processed through the tent during the 80-minute recording. Refereed average tent occupancies by FF and LV techniques were 13.8 and 15.4, respectively. Although overall accuracy by both techniques was within 2%, FF exhibited higher count accuracy as a percentage of reports made (51% versus 19% of 320 reports) and showed reduced accuracy standard deviation (0.74 versus 2.09). Subjective Mental Effort Questionnaire scores were not significantly different across the two review techniques.

Conclusions & Implications

MASCAL data extraction from FF video images could help EOC's determine triage throughput, bed occupancy, and resource use with reasonable mental effort and high (or acceptable) accuracy, while continuous video also has advantages of putting video data in context. Quantified data from the field may be used to improve design of data visualization techniques to increase EOC situation awareness and capacity planning activities.

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