



The Collegiate EMS Mapping Project

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Introduction

Collegiate-based EMS agencies face unique challenges:

- Pedestrian traffic
- Complex building layouts
- Construction, among others.

Analyzing patterns of response efficiency and call distribution may help organizations better understand and address these challenges.

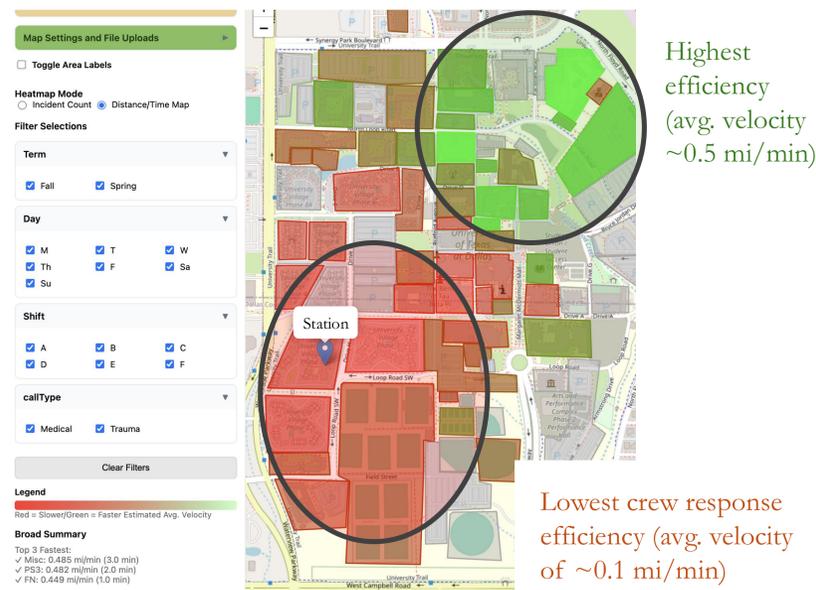
Our program makes these patterns easy to visualize to inform provider training and ensure efficient use of resources that may guide improvements in operational planning, and ultimately patient care.

Methods

- User-defined regions & incident data are matched according to assigned metrics.
- Geospatial analysis using JavaScript and Leaflet/OpenStreetMap (OSM) basemaps.
- OSM routes region centroids to a defined station and estimates shortest distances.

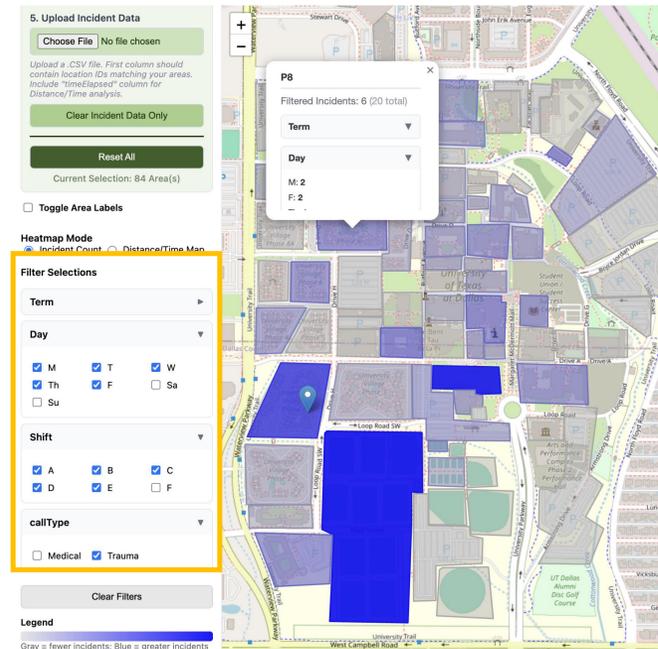
Results

- Highest incidence of traumatic injuries: gymnasiums.
- Highest overall volume: housing from 1420 – 2320.
- Higher avg. crew efficiency to farther incident locations.



The Mapping Program

Incident Volume Maps

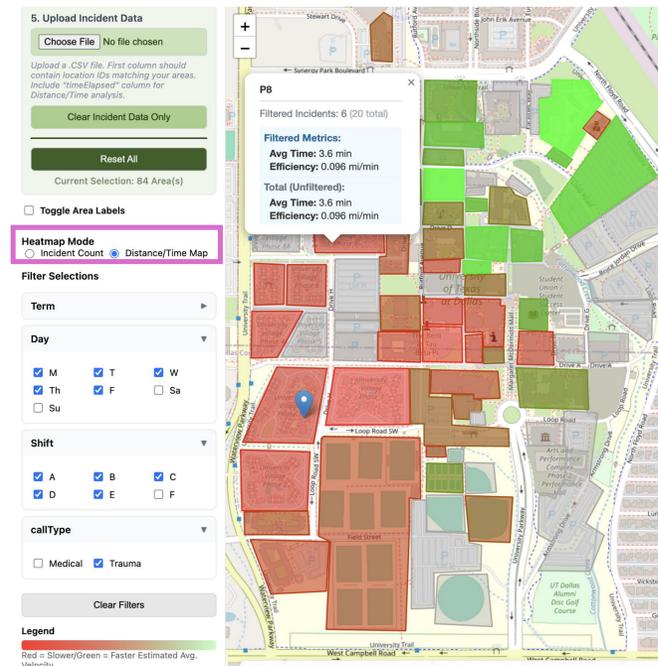


Customizable Filters according to user-generated .CSV files with desired metrics.

We chose to analyze our call distribution by term, day, shift, and broad call type.

*Users define custom regions of interest.

Response Efficiency Maps



Distance/Time maps analyze response times to identify regions of decreased response efficiency.

*Compound Filtering can generate custom heatmaps of (e.g.) seizures occurring on weekends from 0820 – 2020.

Discussion/Conclusion

Campus-Specific Analysis suggests actionable improvements:

- Implementing strategic, temporary staging protocols in high call frequency zones to optimize coverage patterns to demands.
- We are informed in conducting first-aid training and partnering with overdose awareness organizations targeted toward student housing
- Opportunities to condition providers to systematically identified access barriers that hinder response efficiency.

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Advantages

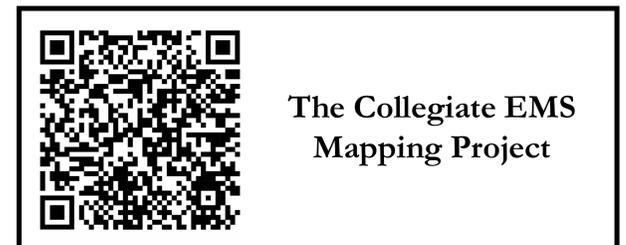
- Visual representations yield valuable insights.
- Adaptable analytics platform for tailored assessments of organizational operations of any EMS agency.

Limitations

- Self-reported data may introduce bias in displayed results.
- Inconsistent crew departure locations may limit the accuracy of calculated efficiency data.

Future Directions

- Expand project applications to municipal EMS systems to assess broader functional applicability.
- Pattern recognition within response areas may inform similar efficiency improvements on this larger scale.



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