

# EPIERAS: Environment & Population Informed Emergency Resource Allocation System

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*In collaboration with:*

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EPIERAS (“Epi”) uses diverse data sources to predict the frequency and nature of local 911 calls, helping us to more efficiently deploy tactical resources and schedule personnel on a daily basis.

## Overview of Data

Epi’s foundational data includes information on the location, time, nature (e.g., dispatch level, caller complaint), type of units dispatched (Rescue, Fire, PD), and climatological factors (e.g., temperature, weather, humidity) associated with every 911 call received by the Albemarle Emergency Communications Center, via the Computer-Aided Dispatch (CAD) system, since 2007. This data is prospectively layered with population characteristics (including demographics, access to public transportation, proximity to recreational areas, unemployment/not in labor force rates), individual patient and incident information, traffic patterns, and police patrol coverage.

## Overview of Analysis & Functionality

Epi serves a variety of purposes, but on a daily basis is used to predict hourly 911 call frequencies throughout the week in order to inform staffing priorities. To do so, Epi uses odds ratios for each of the 27 available variables to adjust a default call volume for each of four daily time intervals (00:00 – 06:00, 06:00 – 12:00, 12:00 – 18:00, 18:00 – 24:00). This default value is pulled from a weighted average of the call volumes for previous years on the associated calendar date and time interval. Epi’s functional performance is measured as the number of “empty-building” calls, which occur when a 911 call drops within a first-due that does not have an available unit (i.e., when the Epi-recommended staffing was not sufficient to meet the call demand for that time interval).

At a higher level, Epi is used to:

- stratify localities based on EMS needs, or “EPIERAS Acuity Level,” in order to optimize staffing and identify chronically underserved communities
- allocate emergency resources and funding throughout the county
- reveal recurrent patterns of certain types of 911 calls within localities
- inform preventative measures by the city and rescue agencies
- elucidate how controllable, systemically-driven factors affect call frequencies and response times.

## ***For more information:***

There are limitations to what can be shared here, but, if you contact us directly, we are happy to answer any specific questions and provide further details on EPIERAS.

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