



GIS for Emergency Response Analysis: *Performance Measuring and Deployment Planning in EMS*

Presented by

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Montgomery County Hospital District





About MCHD

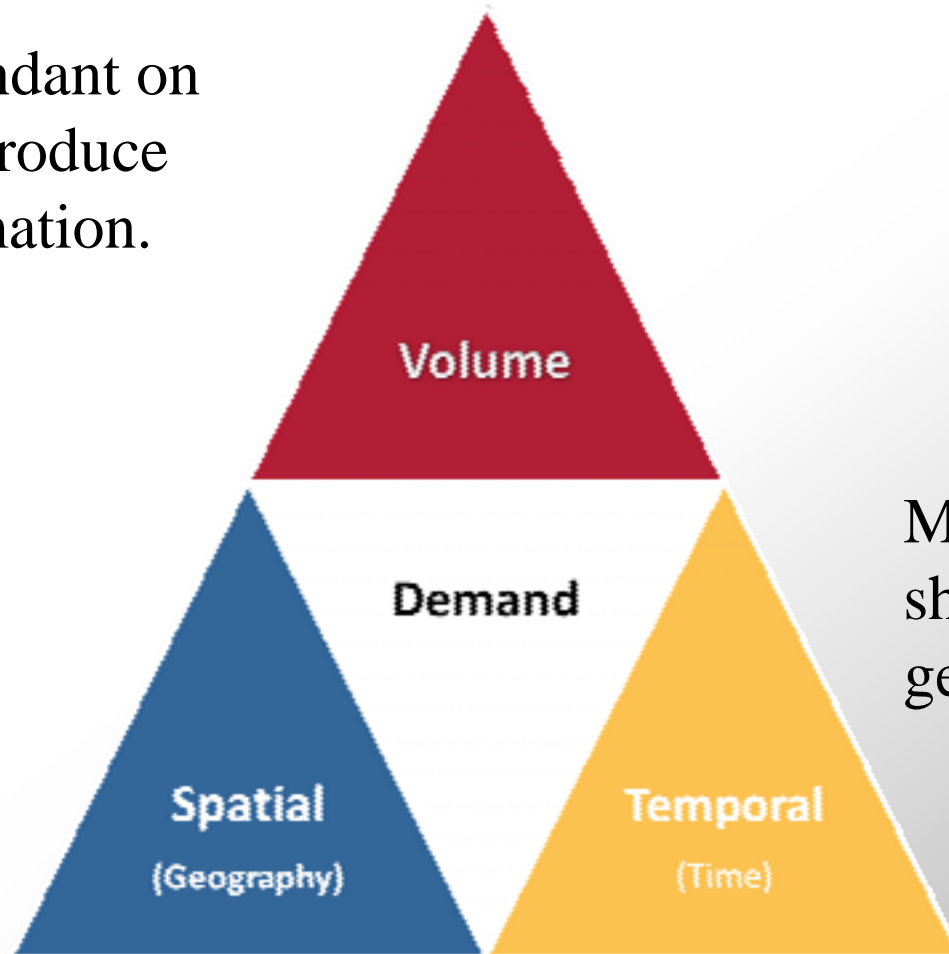
- **Montgomery County Hospital District EMS** serves the citizens of Montgomery County and adjacent areas.
- 1100 Sq Mi just north of Houston, Texas.
- Population > 410,000
- Growing at nearly 6% annually
- 40,000 incidents annually
- 26 Units daily





Demand Analysis Triad

Each is dependant on the other to produce usable information.



Many agencies fall short on the geography.



The Geospatial Advantage

Geospatial

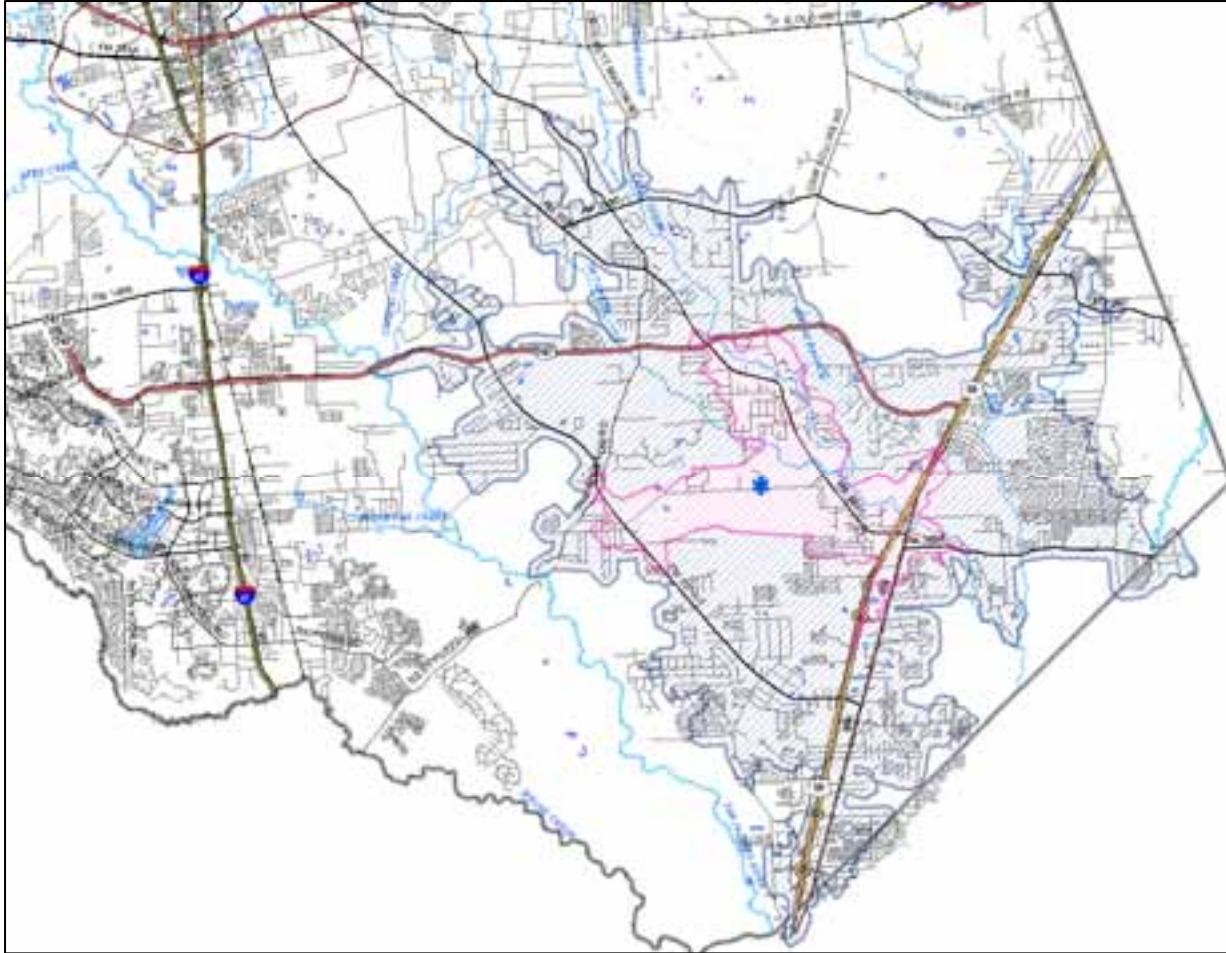
Definition: pertaining to the geographic location and characteristics of natural or constructed features and boundaries on, above, or below the earth's surface; esp. referring to data that is geographic and spatial in nature





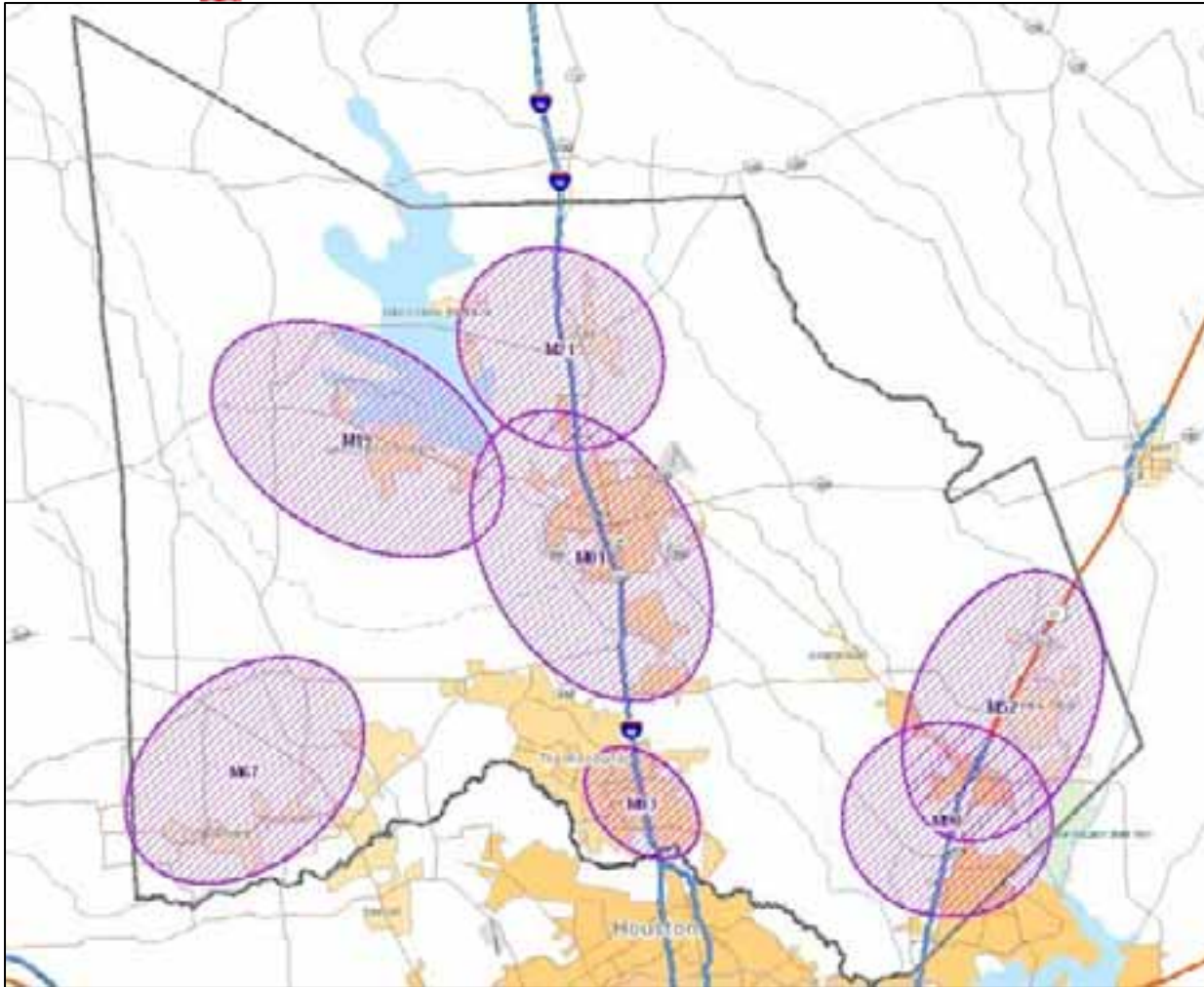
Drive Time Zones

- Network Analyst
 - Depends on a reliable, routable street network dataset.





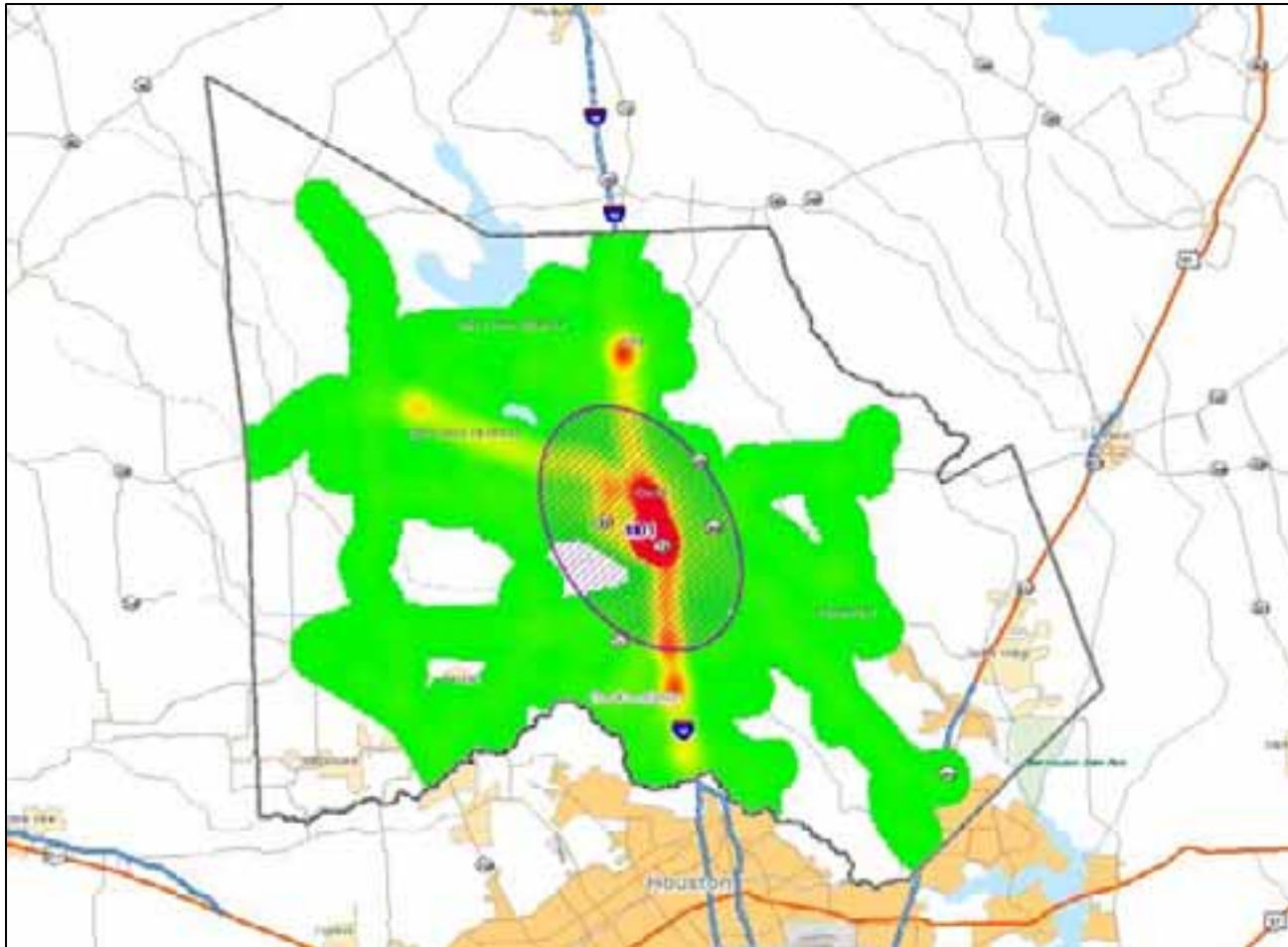
Actual Typical Usage



- Geographic Standard Deviation
- Shape, size, and orientation all have meaning



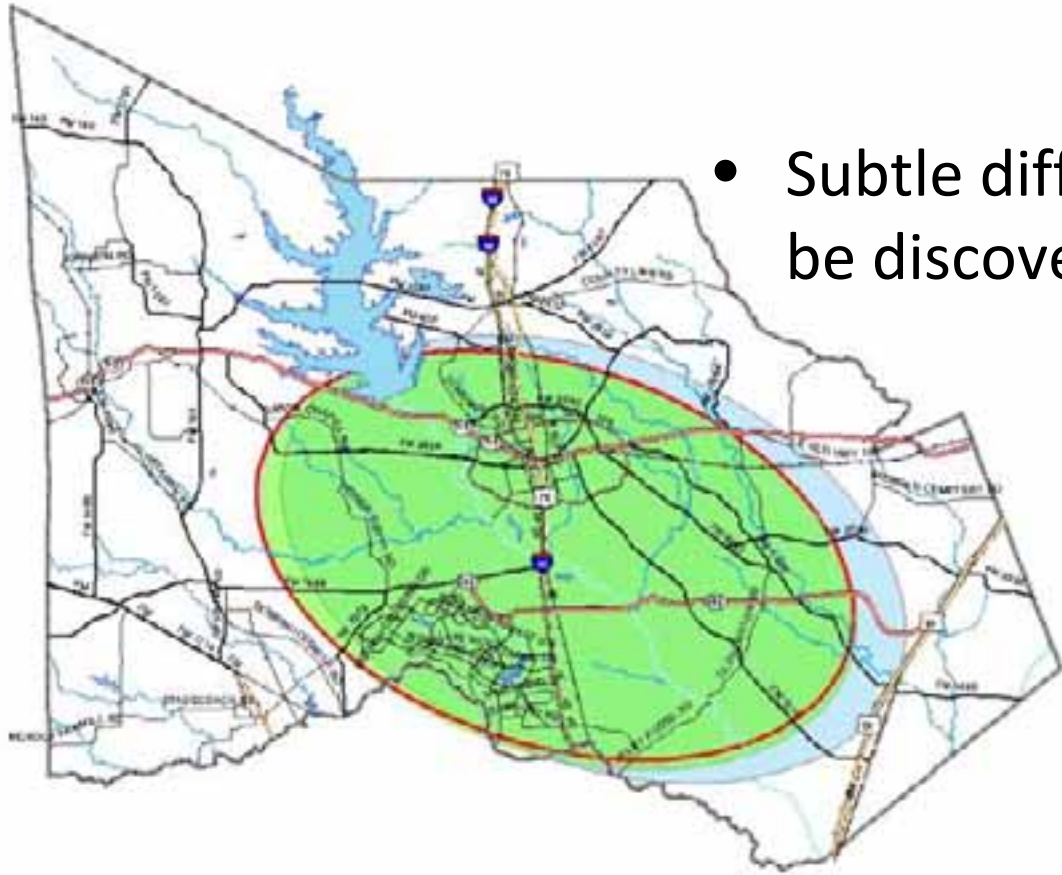
Details of a Unit



- AVL Data – Where do they go?
- SDE of Actual Responses – Where are they used?



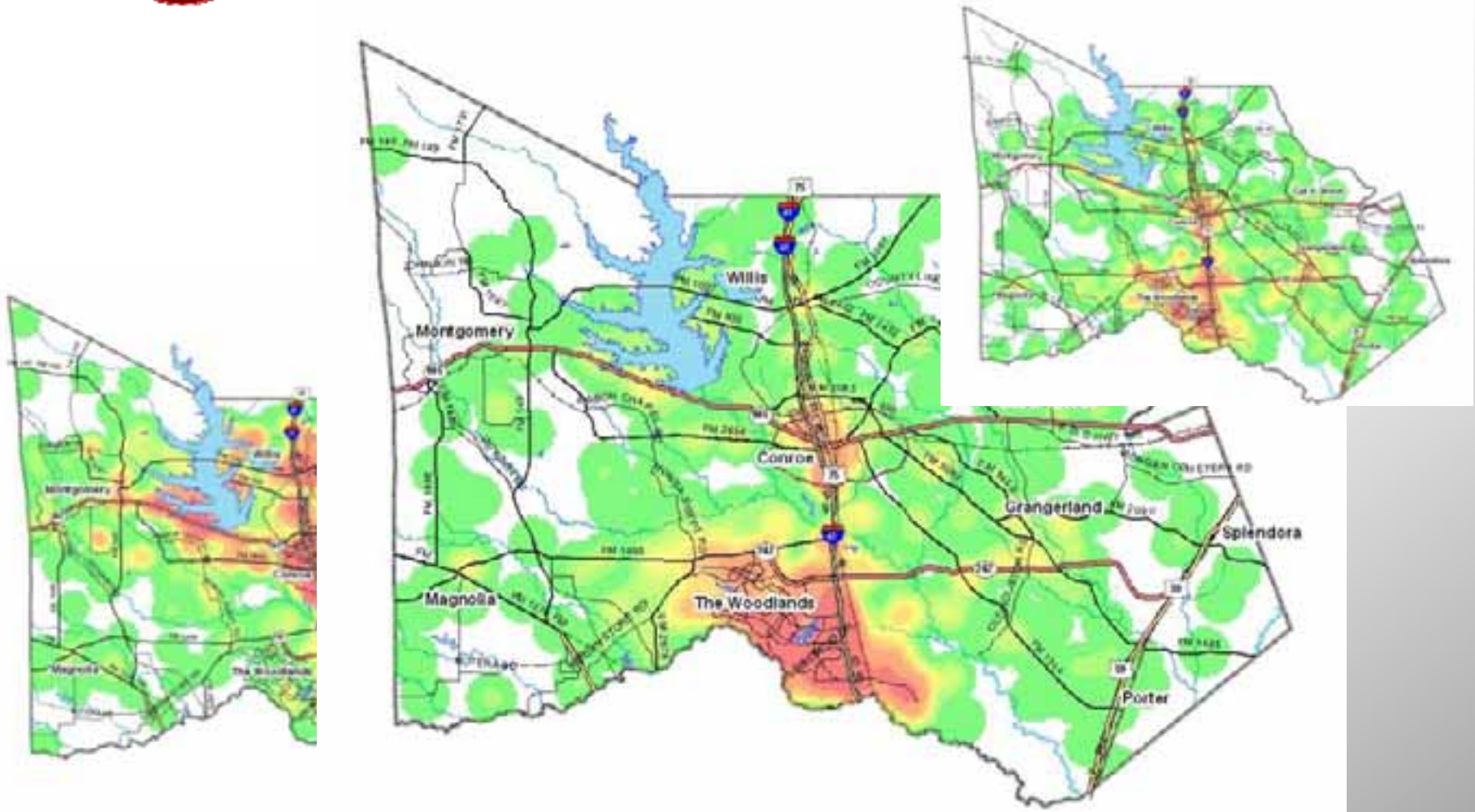
Specific Studies



- Subtle differences can be discovered

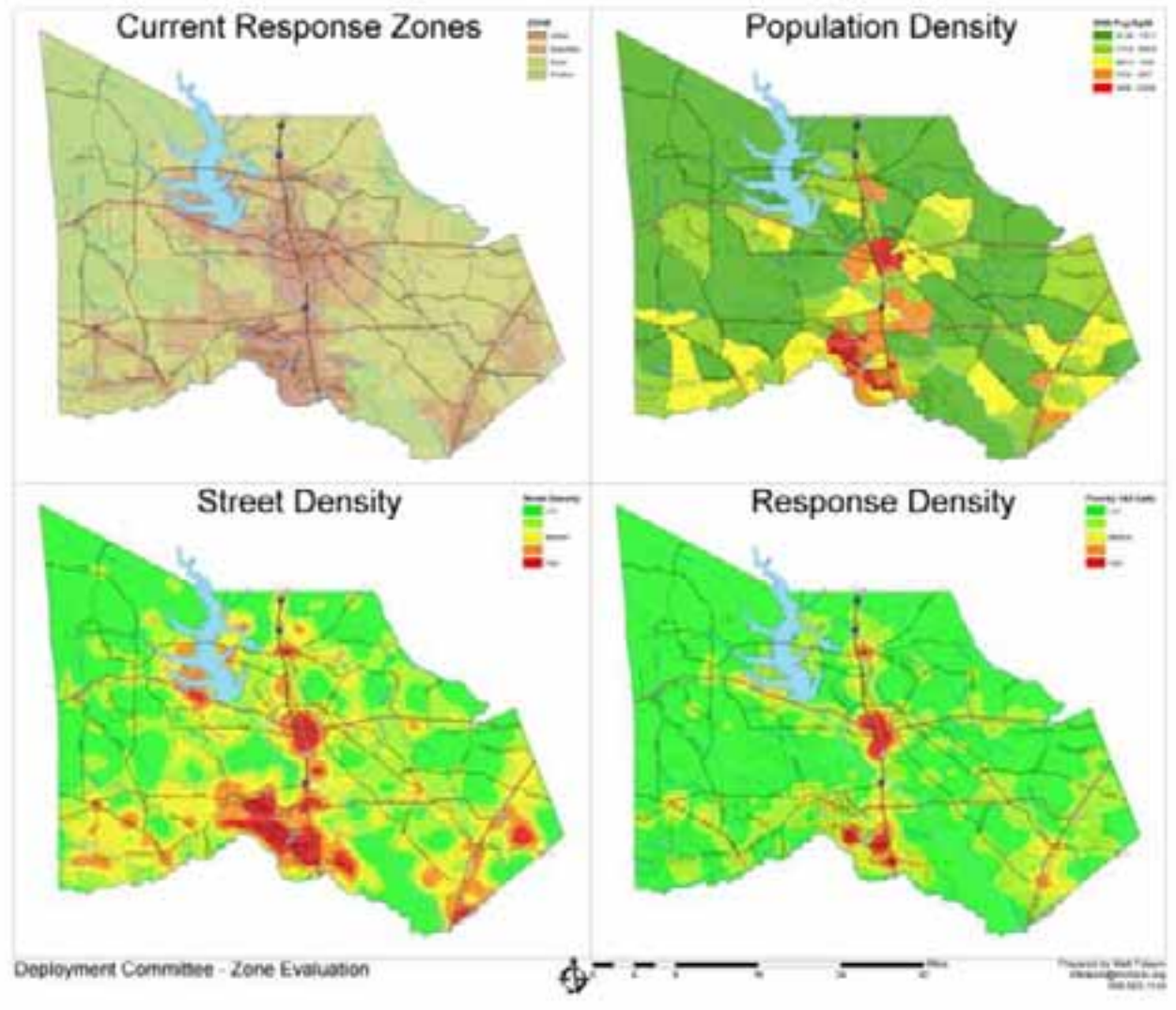


Service Areas of Hospitals





Characteristics of the County

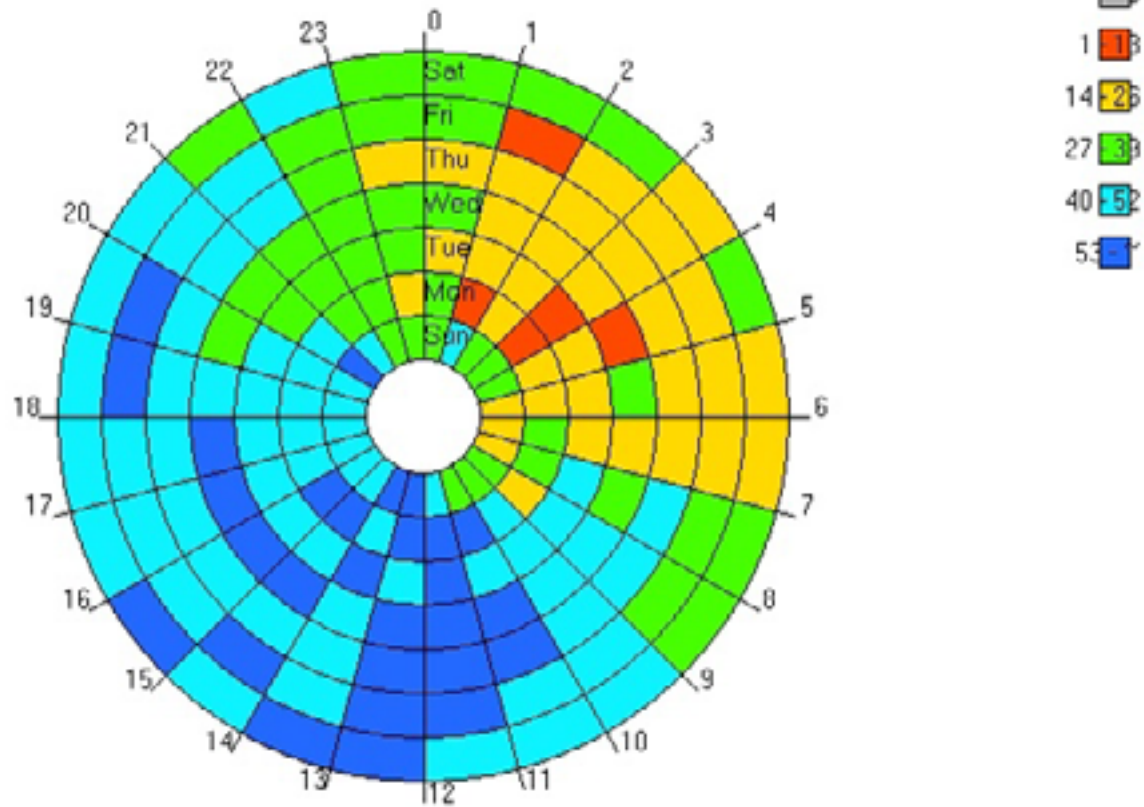




When are we busy?

Time of Day (Temporal) Distribution

Hour of Day / Day of Week

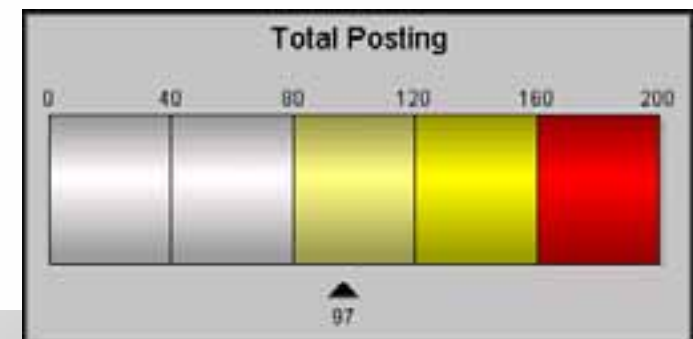


Priority 1 & 2 Temporal Distribution



D's Deployment Methodology

- Performance last quarter
 - Fractal compliance by zone
- Review of Post Plan
 - Compare actual usage versus planned
 - Count of post moves
 - Distribution of calls by medic
- Review last deployment objectives
 - Were objectives met?
 - How effective was the method?





CHD's Deployment Methodology

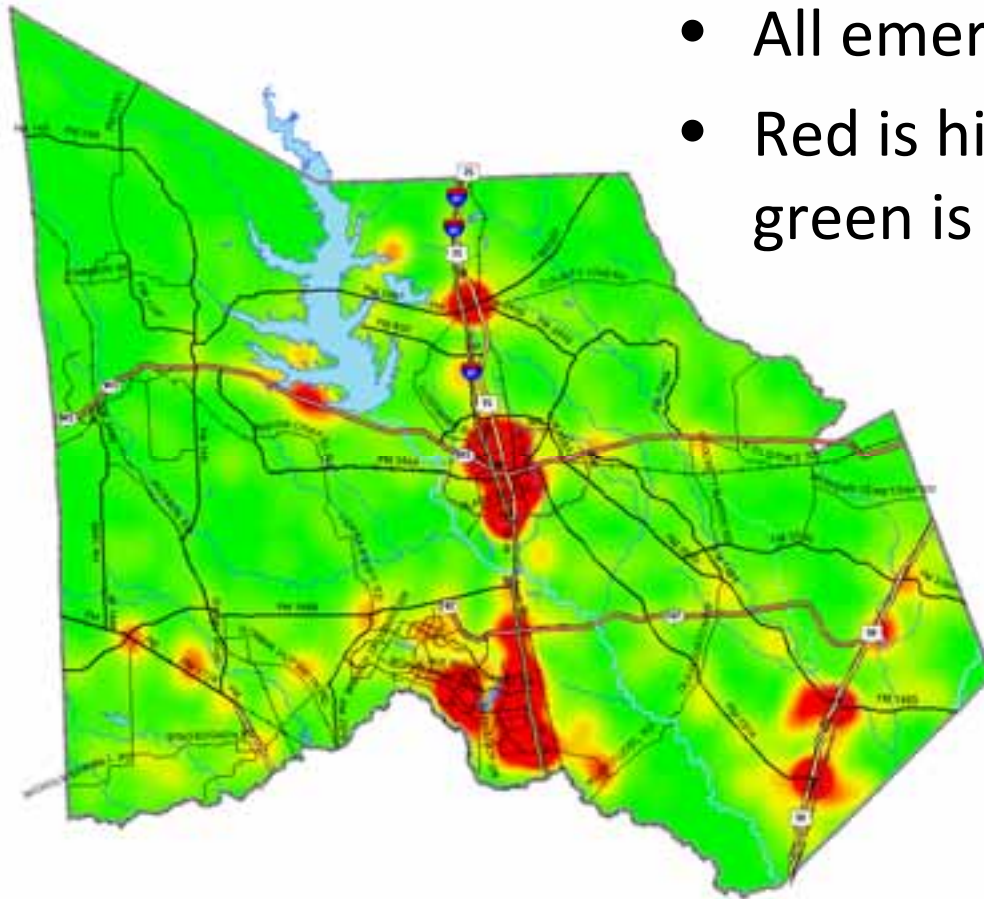
- Set new objectives
 - Geographic coverage issues
 - Demand coverage issues
 - Balancing work load
 - Post moves versus call volume
- Propose new methods
 - Changes must consider 3 items:
 - Crew morale
 - Performance gain
 - Financial impact





Demand Raster

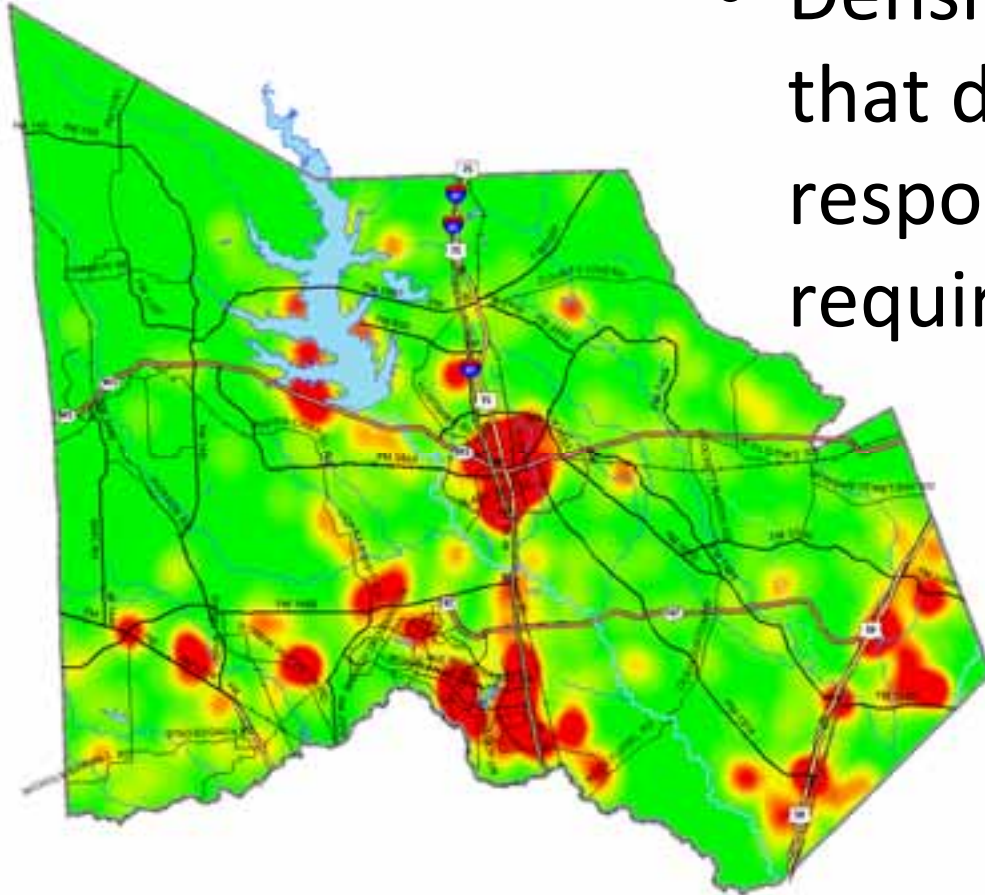
- All emergency calls
- Red is high density, green is low





Exception Raster

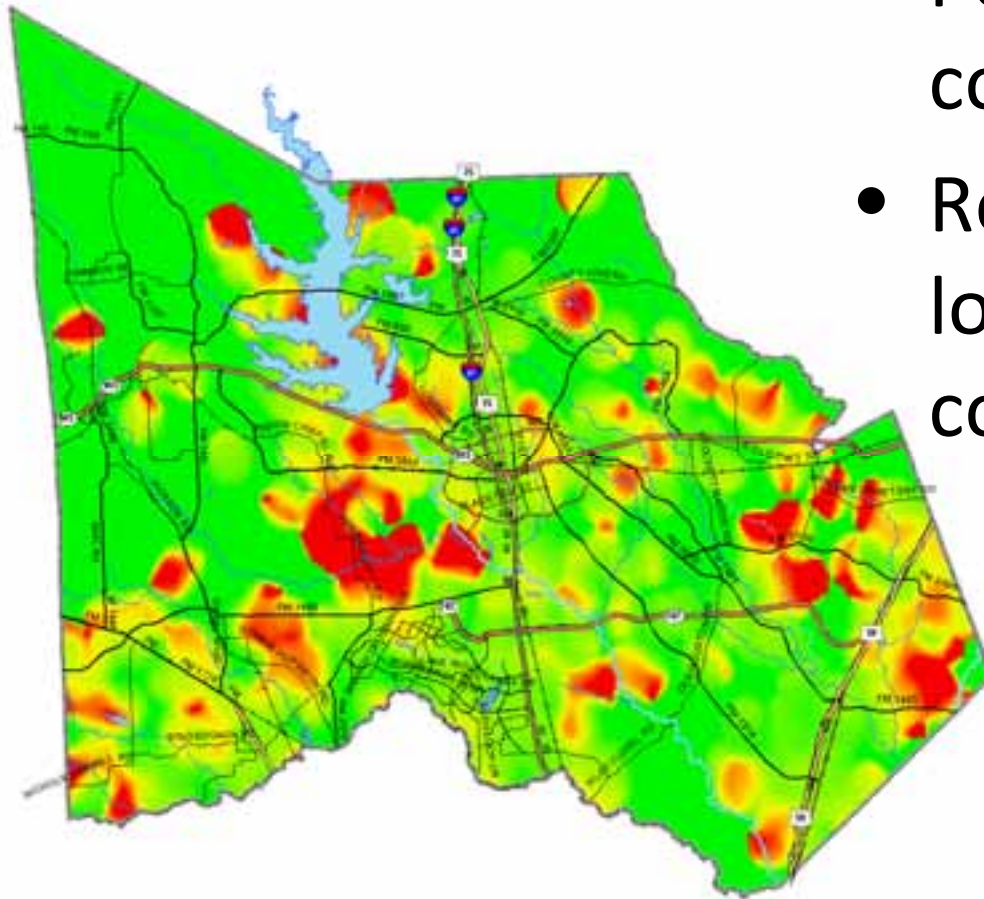
- Density of calls that did not meet response time requirements





Compliance Raster

- Percent compliance
- Red indicates low compliance





3D Model

- ArcGIS Explorer Demo



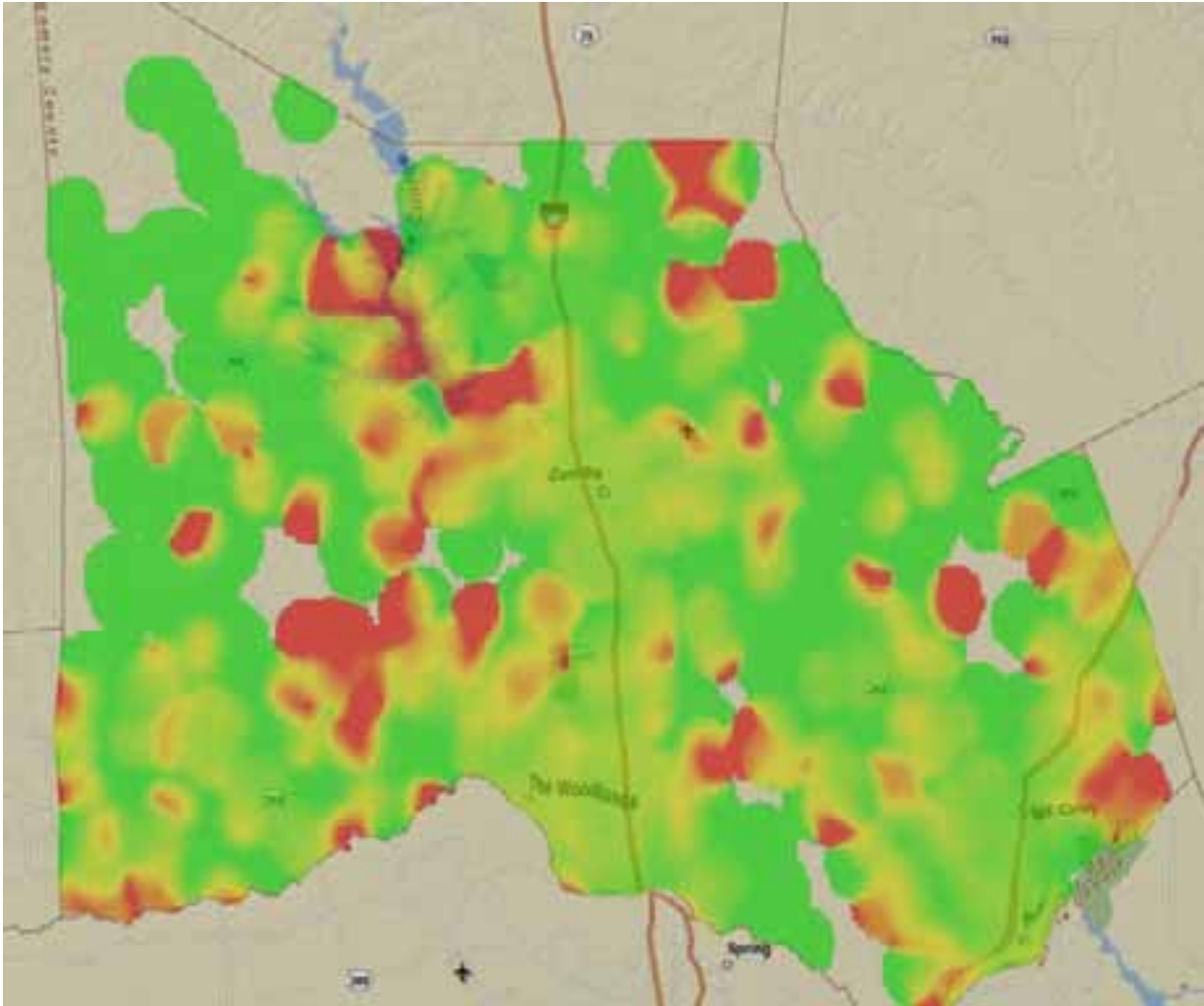


Montgomery County, TX





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