

# Findings and Recommendations for EMS in Kent County

Grand Valley Metro Council  
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President, IPS



# Disclosure

- Report being released under IPS, not KCEMS
- May – November 2010 – Served as lead IPS consultant engaged by KCEMS to evaluate their organization
- January 2011 – Served under an IPS contract to provide interim Executive Director services to KCEMS
- November 2011 – Hired as KCEMS Executive Director

# **Benefits** of this Study

Understand **current system**  
design, operations,  
performance and cost levels

# Understand Medical First Response (MFR) costs

**Marginal** cost perspective

# Opportunities to optimize MFR utilization and availability

# Opportunities to optimize ambulance utilization and availability

Opportunities to improve  
EMS system **governance**

# Opportunities to improve EMS system performance and value

Opportunities to improve  
patient care

# Study Origins

IPS study of KCEMS  
recommended evaluation  
of **overall** EMS system

November 2010

First of **UMMM**  
meetings with KCEMS

January 2011

**currently**

**operates**

**current**

**outcomes**

**recommended**

**improvements**

**Well informed**  
**decisions**

Study **support** from  
UMMM and Kent  
County Government

# EMS Study Steering Committee

- **Hospital Groups** - Metro; Saint Mary's; Spectrum
- **Ambulance Services** – AMR; Life EMS; Rockford
- **Medical First Responders** - Grand Rapids FD; Grandville FD; Kentwood FD; Wyoming FD
- **Kent County Government / 9-1-1 PSAPs** - Kent County Sheriff's Department
- **Medical Control Authority** - Kent County EMS

# Overall System Design & Governance

EMS 'system' has not been  
explicitly **designed**

# Evolved

in response to  
circumstances and  
events over time

Community

**dialog**

**Municipalities should have  
opportunity to make  
explicit, well informed  
choices on key issues in the  
design of their EMS system**

KCEMS has **responsibility**  
for setting standards but  
does not have **authority** to  
enforce

Municipalities have  
**authority** to establish and  
enforce EMS ordinances but  
are not included in KCEMS  
governance

# Need to link **Authority** (municipalities) to **Responsibility** (KCEMS)

Add municipal representation in KCEMS governance structure; Utilize KCEMS for monitoring and collaboration in enforcement

# Michigan's Public Health Code, §333.20948, sub-section (3)

“A local governmental unit may enact an ordinance regulating ambulance operations, nontransport prehospital life support operations, or medical first response services”

Add **municipal  
representation** in KCEMS  
governance structure

Collaborate with KCEMS  
to **monitor and enforce**

**Municipalities should make  
explicit allocations of  
ambulance market rights for  
specific geographic areas  
through performance contracts**

Specify service features, standards,  
and accountabilities

**Municipalities should make  
explicit internal policies for MFR  
and 9-1-1 dispatch, equivalent  
to performance contracts**

Specify service features, standards,  
and accountabilities

# **Conflicts of Interest in current governance structure**

The entities overseen by the  
regulatory agency control  
and voluntarily fund the  
regulatory agency

# IPS Report to KCEMS

November 2010

*“It would be far better to resolve the potential conflict of interest issues and thereby prevent problems rather than have to react to them during or after the fact.”*

# KCEMS Strategic Plan

Adopted October 13, 2011

- 5. RE: “Has an organizational structure free of real or perceived conflicts of interest”
  - 5.1. Develop a set of options for changes in the organizational and/or decision-making structure of KCEMS to resolve or minimize real or perceived conflicts of interest
    - 5.1.1. Work with cities, townships, the County and the KCEMS Governing Board to choose and implement an option

# KCEMS Governance

- Hospitals establish and operate the MCAs per State legislation
- Locally, hospitals **chose** to include ambulance and MFR representation and share the responsibility for funding KCEMS

# Executive Committee (Current)

- Delegated authority from Governing Board
- Hospitals (per State legislation)
  - One rep per hospital group (3)
- Ambulance Services
  - One rep for all of the services (1)
- MFRs
  - One rep for all of the services (1)

# Executive Board (Proposed)

- Full control
- 3 hospital system representatives
- 1 city representative
- 1 township representative
- Chaired by the city or township representative

# Advisory Council (Proposed)

- Venue for communication and collaboration between stakeholders and KCEMS
- 3 ambulance reps
- 3 MFR reps
- 6 hospital reps
  - 3 ED nursing
  - 3 hospital administration
- Chaired by Executive Board President

# Medical Advisory Board (Proposed)

- Venue for **medical** input, consensus and collaboration on **medical** issues
- 3 hospital ED physician reps
- Chaired by KCEMS Medical Director

# Specialty Advisory Panels (Proposed)

- Input to Medical Advisory Board on issues pertaining to their specialty areas
- Promote collaboration between specialty care services between hospitals and with EMS to create 'systems' of care
- Begin with cardiology and trauma
  - 1 specialty physician rep from each hospital group for each panel

# **Set 'System' and Provider Agency Standards**

Policies and processes to  
measure, monitor, verify and  
enforce

# Response Intervals

- Evidence-based
  - Clinical impact
- Informed community support
  - Clinical impact
  - Costs

# Provider Agency Requirements

- Data Reporting
- System-level quality improvement project participation
- System-level public education / prevention participation

# Costs and Value

Establish a **baseline** for costs at  
a **system level** so changes can  
be tracked over time

# Calendar Year 2010 Costs

- Public Safety Answering Points (PSAPs)
- MFRs
- Ambulance Services
- Medical Control Authority

# Marginal Cost Calculations

- PSAPs and MFRs
- Costs that would be eliminated if EMS 'role' was eliminated

# PSAPs (9-1-1 Comm. Ctrs.)

- Emergency medical dispatch is not currently provided by PSAPs, so it was not a cost factor for 2010
- No reported marginal cost reductions

# Medical First Response (MFRs)

- Staffing reductions
  - Minimal; Presumably to maintain ISO ratings
- Medical training and supplies
- Vehicle costs
  - Fuel, added maintenance
- KCEMS assessments

# Ambulance Services

- Proprietary information
  - Agreed to share if data was used in aggregate calculation but not separated out
- Total for all ambulance services included in aggregate total system cost

# Medical Control Authority (KCEMS)

- Annual budget for 2010-11
  - Less MFR and ambulance contributions (already in MFR and ambulance cost calculations)
  - Includes hospital contributions

# 2010 Cost Results

# Aggregate EMS Cost

**\$19,933,773.55\***

\*Estimates accepted at face value; Some MFRs  
did not report financial data

# Kent County Population

602,622

# EMS Cost per Capita

**\$33.08**

**Track it over time**

# Value Quotient

Quantifies the relationship  
between quality and costs

# Value Quotient

How much was spent to  
achieve an observed level  
of quality

# Value Quotient

Track it over time to monitor  
change and detect trends

$$\textit{Value} = \frac{\textit{Quality}}{\textit{Cost}}$$

$$\text{Value Quotient} = \frac{\text{Cardiac arrest survival rate}}{\text{EMS cost per capita}}$$

# Cardiac arrest survival rate (Utstein criteria)

- Leave hospital alive
- Cardiac, witnessed, ‘shockable’ heart rhythm
- **37.3% survival to hospital discharge rate**

# Cardiac Arrest Value Quotient CY 2010

$$1.13 = \frac{37.3\%}{\$33.08}$$

Track over time to detect changes  
and discern trends

# Other Value Quotients

- Emergency response interval
- Heart attacks
- Strokes
- Major trauma
- Patient satisfaction

# Dispatch Services

# Key Issues

- Which entities provides emergency medical dispatch services on 9-1-1 calls
  - Ambulance service or PSAP
- How ambulance service preference requests are handled when in conflict with call location
- How 7 digits calls are handled when it is an emergency condition but located in another ambulance provider's 9-1-1 service area

# Key Recommendations

- Strongly consider shifting EMD to the PSAPs if certain requirements are met
- Set performance standards for call processing and EMD
- All dispatch centers should be using Pro-QA and AQUA software tools and have ANI/ALI transfer capabilities
- Resolve conflicts and pitfalls surrounding caller preference versus designated 9-1-1 territories

# MFR Services

# Key Issues

- Most MFR calls are for EMS
  - Many EMS calls have minimal benefit from MFR;  
For some, MFR is essential
- Lack of formal quality management on MFR activities
- Lack of closest unit response policies on time sensitive calls

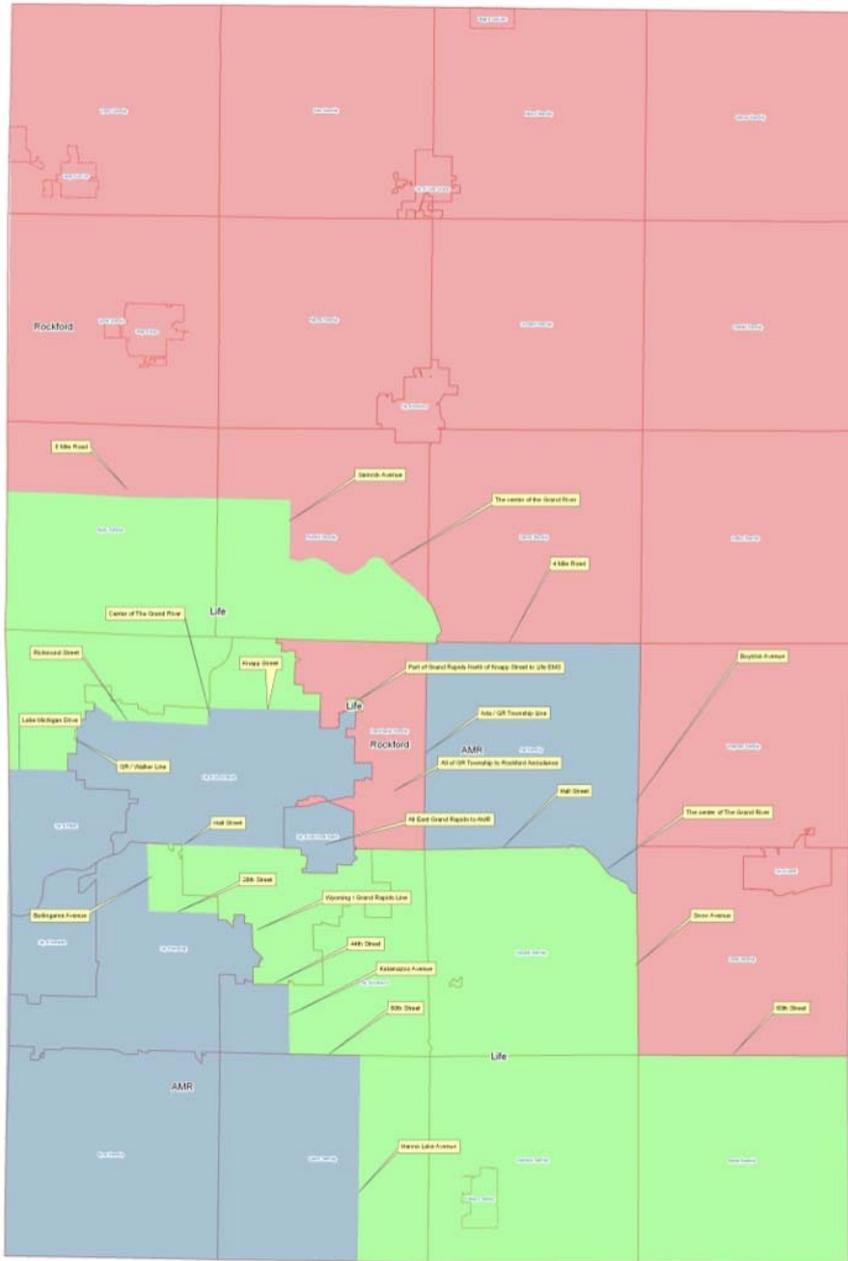
# Key Recommendations

- Municipalities and KCEMS should set performance and accountability standards
- Apply rational guidelines for calls that receive an MFR response
- Establish policies and process for real-time closest MFR unit response on time sensitive calls

# Ambulance Services

# Key Issues

- Ambulance territory designations do not support operational efficiencies
- Municipal involvement lacking in EMS system design and oversight
  - Lack of ambulance service accountability and enforceability
- Closest unit response for time sensitive problems is lacking
- ‘Standard’ services are now provided without government subsidy



# Ambulance Service 9-1-1 Territories

Grey = AMR

Green = Life EMS

Pink = Rockford

# Key Recommendations

- Well informed municipal determination of their ambulance provider
  - Operationally efficient and economically viable service areas
    - Municipalities should work in collaboration, not in isolation
  - Service features, standards and accountabilities
  - Preserve subsidy-free status

# Response Intervals

# Key Issues

- Lack of evidence showing impact of moderate changes (<10 minutes) in response intervals on patient outcome (other than cardiac arrest)
- For cardiac arrest, sooner is better
  - EMS is not fast enough in most cases
  - Community intervention impact unmeasured
- Cost of decreasing response intervals is exponential
- Community expectations need to be considered, but should be well informed on clinical and cost implications
- Integration of time data between PSAP, MFR, ambulance, ED, and specialty care is poor

# Response Interval Data Sources

- CAD data from ambulance services and MFRs dispatched by GRPD
- For MFRs dispatched by KCSO, fire records management systems at each individual fire department
  - Manual entry

# Response Interval Data Limitations

- Missing data from Cannon, Casnovia, GRF Airport, and Oakfield
  - Estimated at 9% of total MFR call volume
- For MFRs dispatched by KCSO, fire records management systems at each individual fire department
  - Manual entry
- Raw data used
  - Data on cases showing long response intervals has not been validated by the MFRs or ambulance services. This will be resolved before the information is published and baselines are set for future comparisons.

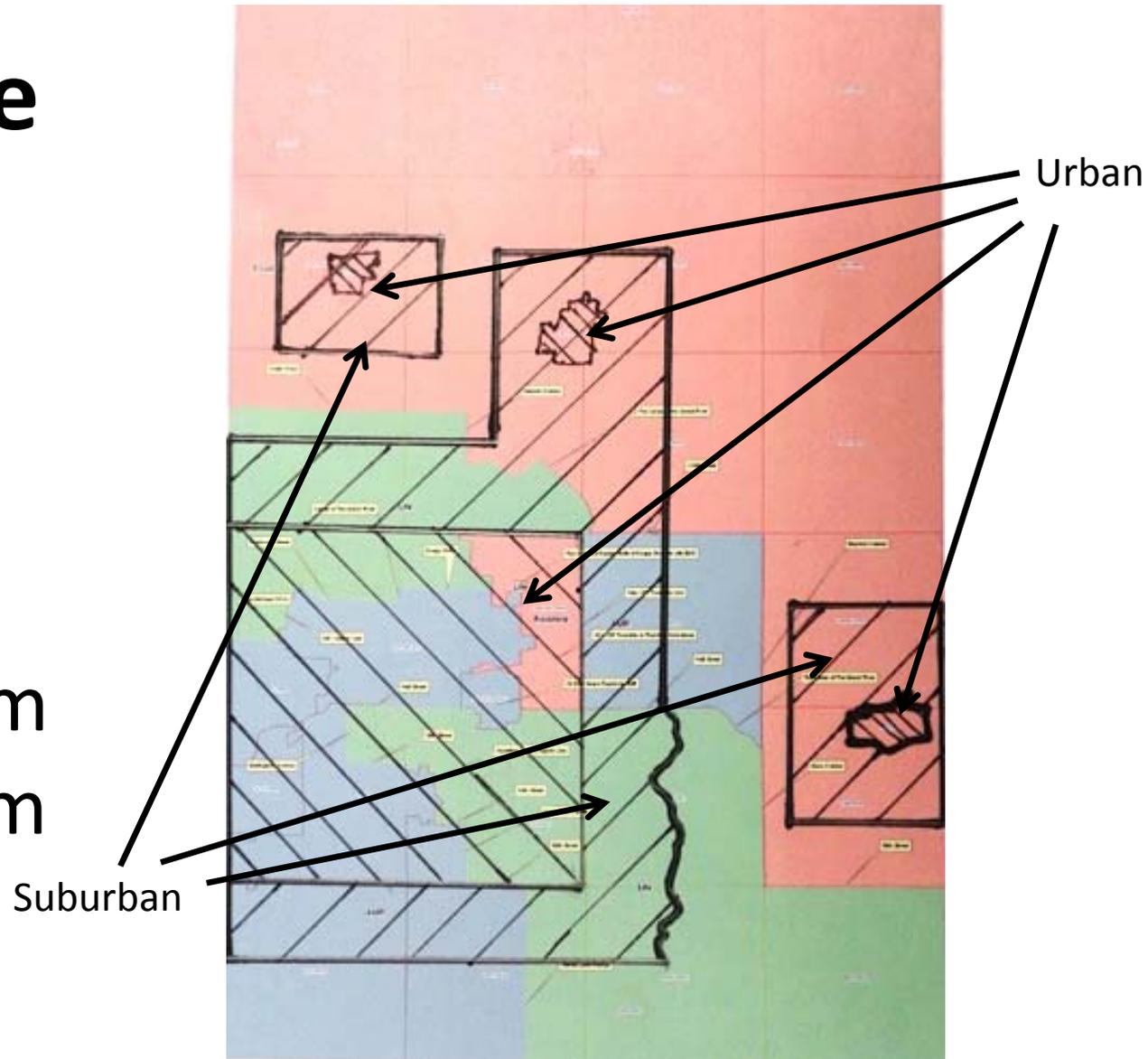
# 2010 MFR Emergency Response Interval Performance

– Average @ 4:59

– **90% reliability @ 9:08**

# Ambulance Response Interval Zones:

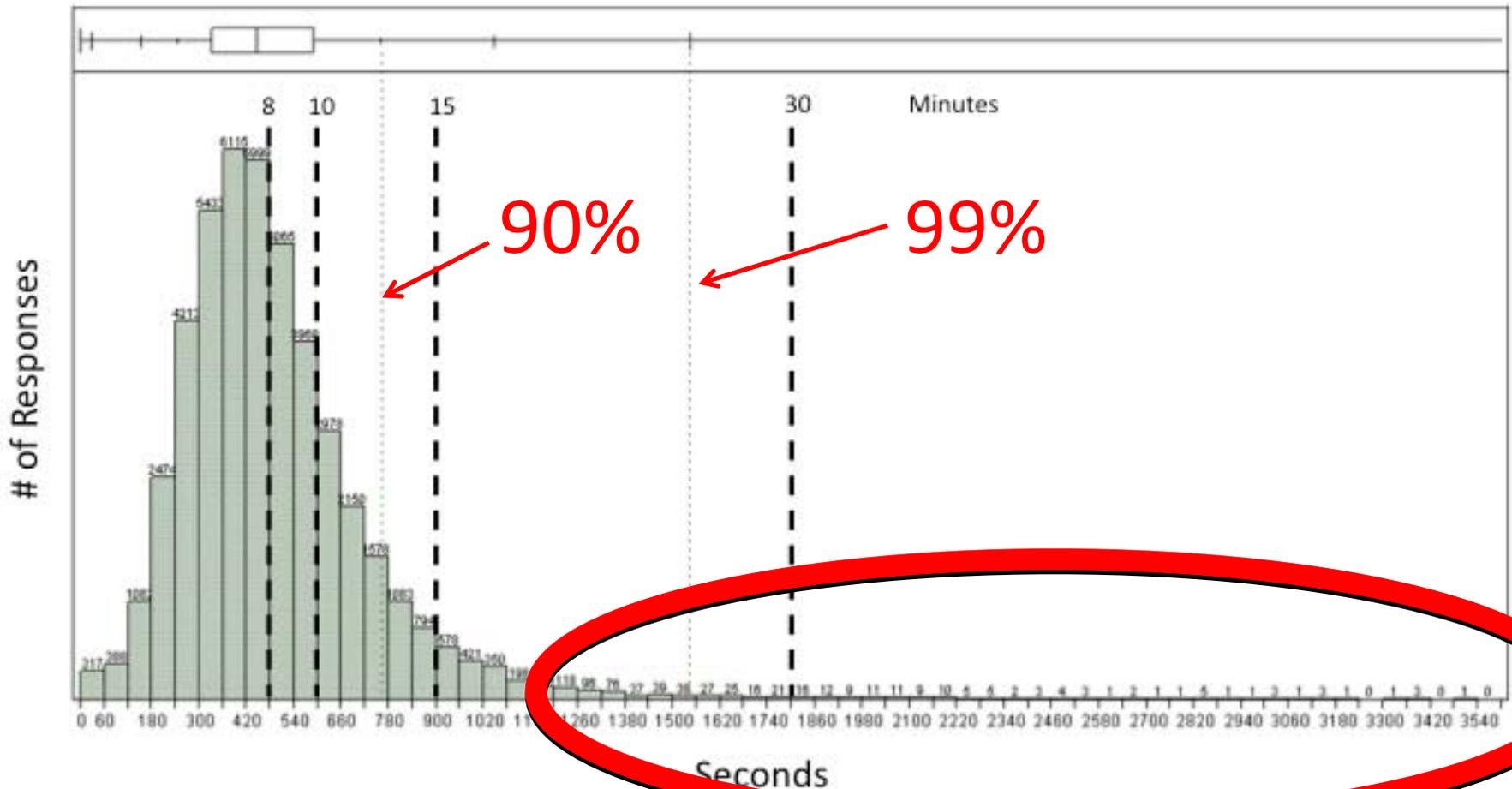
Urban 8m,  
Suburban 12m  
and Rural 15m



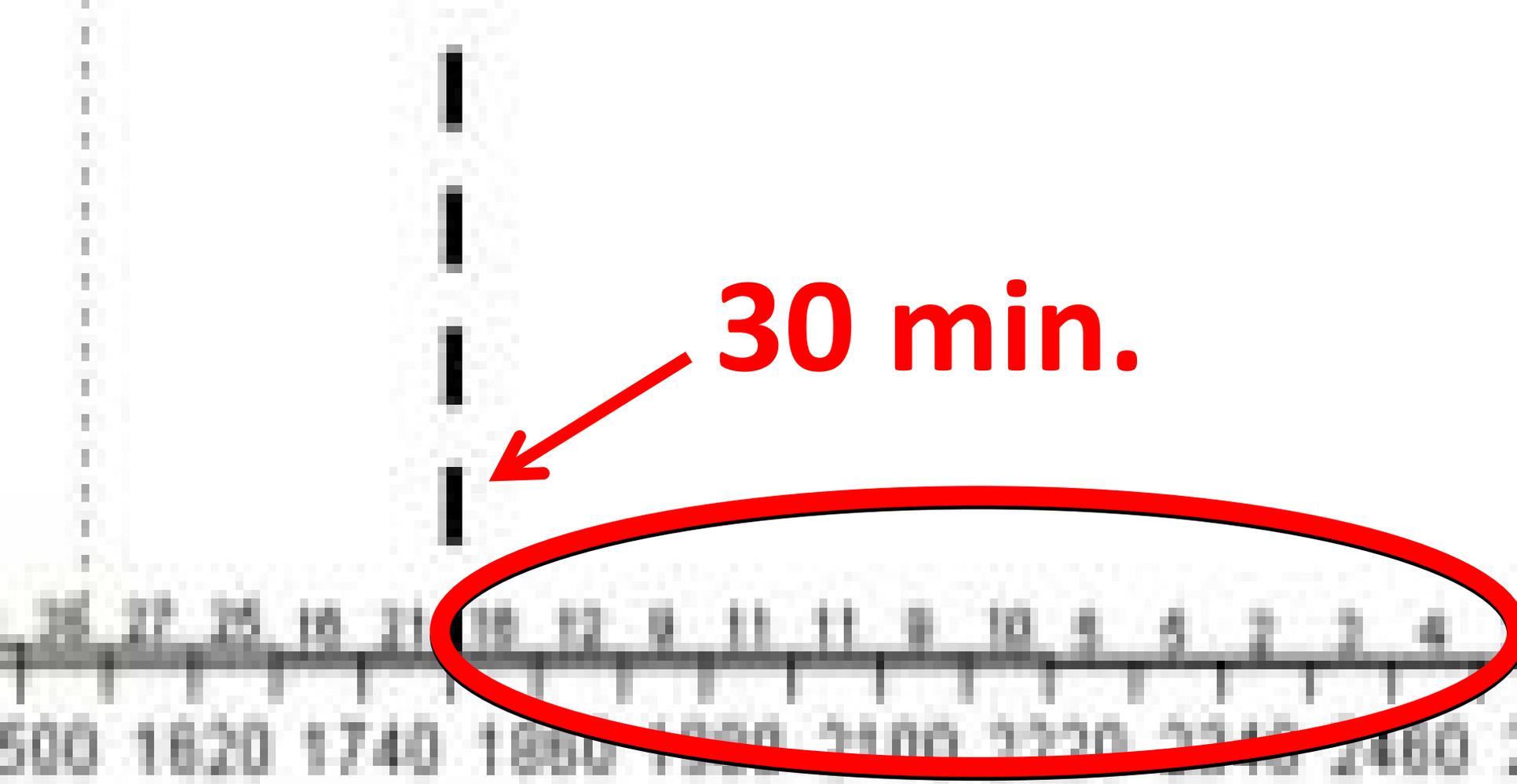
# 2010 Ambulance Response Interval Performance

- All emergency (Med 1) responses
  - No differentiation of urban, suburban, rural
  - Average @ 8:48
  - **90% reliability @ 17:00**
  - Aggregate falls below the least stringent (rural) performance standard

# Sample Reporting Format: Emergency Response Interval Time Distribution



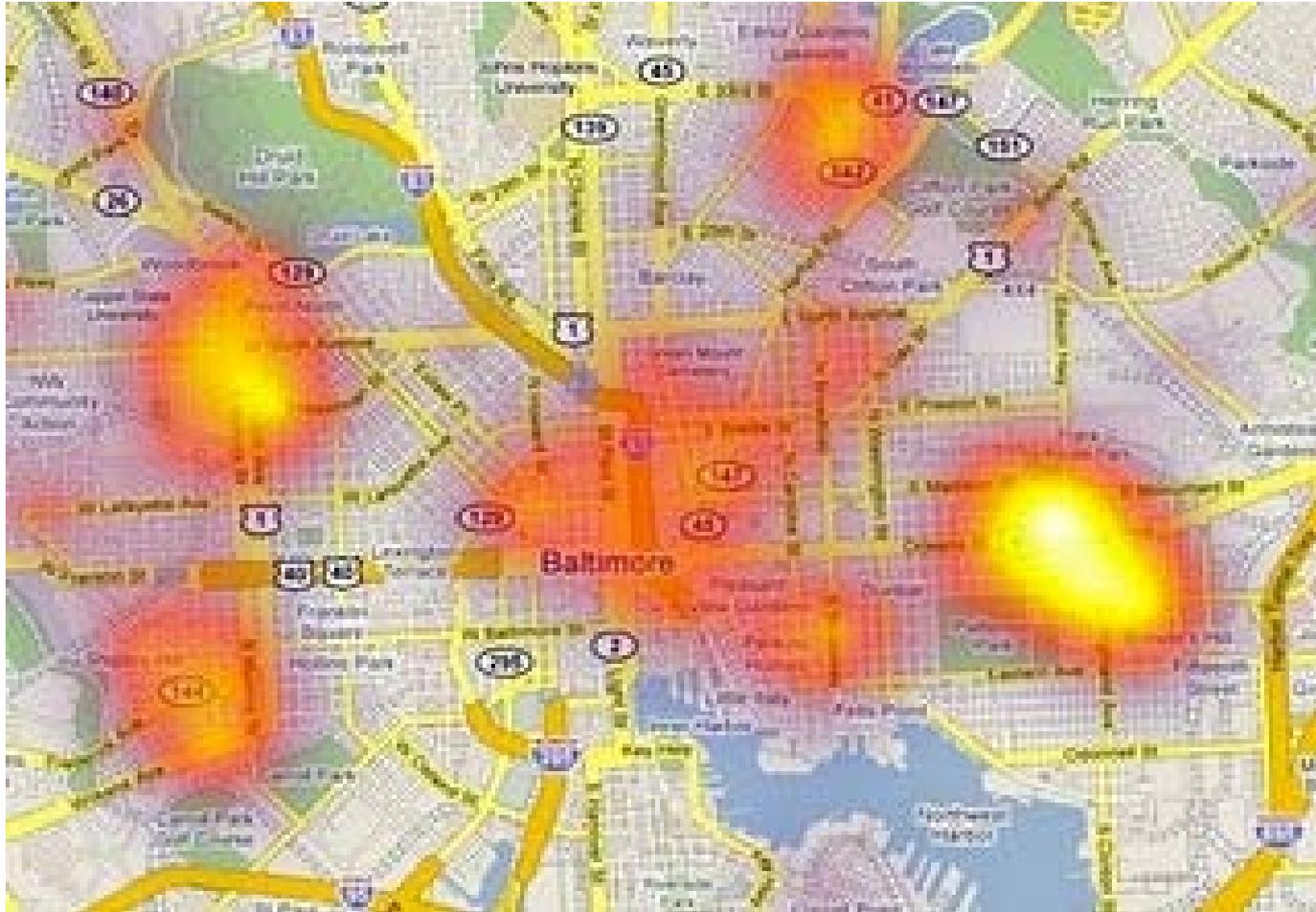




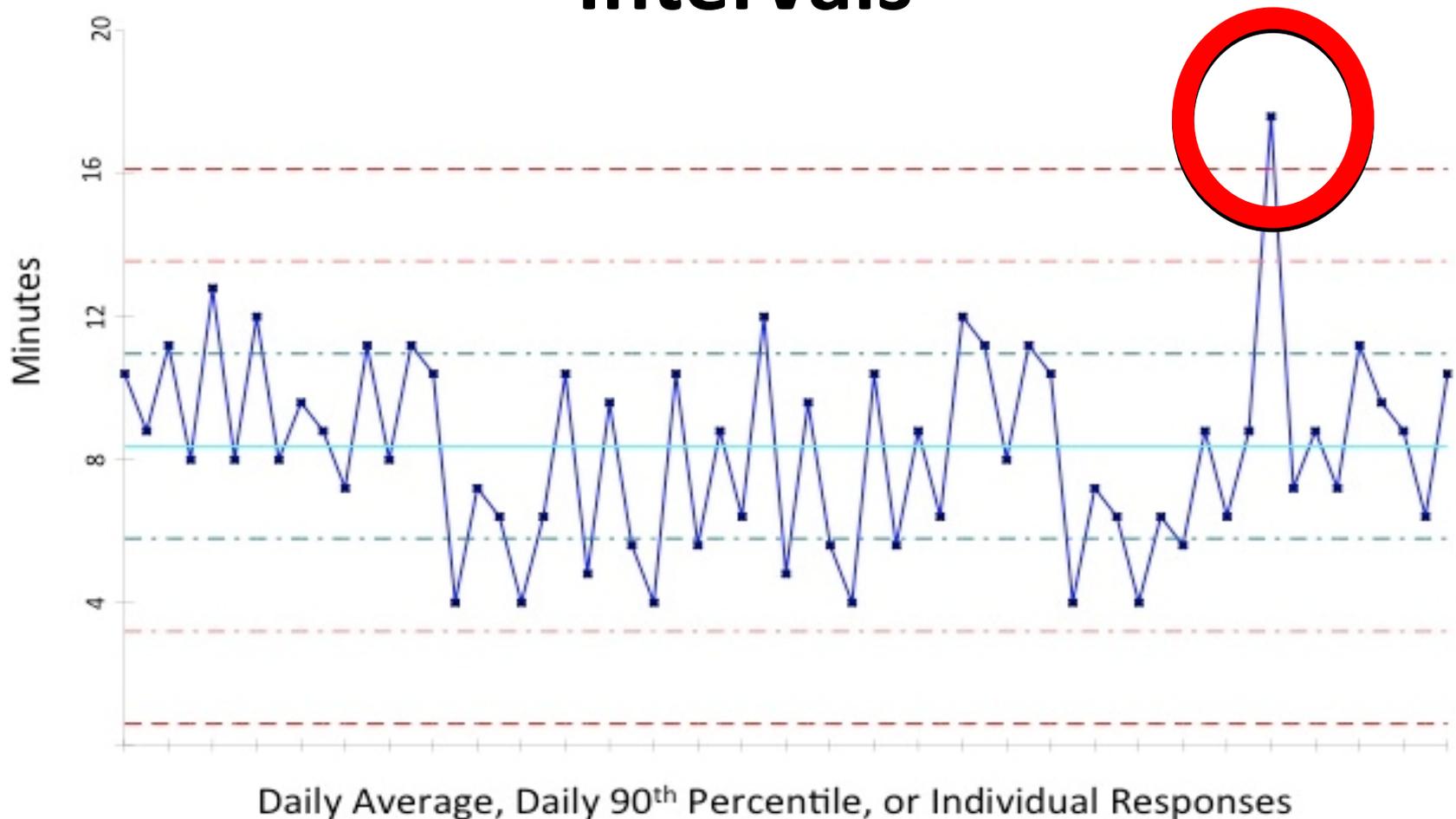
**30 min.**

Seconds

# Sample Reporting Format: Emergency Response Interval Time Distribution



# Sample Reporting Format: Statistical Process Control Chart of Response Intervals



# Key Recommendations

- Re-consider response interval targets based on clinical evidence, cost, and informed community expectations
- Greater emphasis on **community** response to cardiac arrest
  - Community Life Support program
- Include bystander and pre-arrival instruction intervention times in 'system' response interval measurements

# Healthcare System Integration

# Key Issues

- Good integration on true emergency cases
  - Collaboration in developing systems of care for STEMI, stroke, trauma
- Good alignment between ambulance service delivery and non-emergency scheduled medical transportation needs
- Poor integration with other healthcare components (e.g., public health)
- Poor alignment with community utilization of 9-1-1 for non-emergency services

# Key Recommendations

- Stronger integration of data and quality improvement efforts on STEMI, stroke, trauma
- Aggregate all hospital and EMS data to look at performance of community-wide systems of care
- Develop better processes and services for urgencies and chronic care support
  - Frequent 9-1-1 user review and intervention
  - Community paramedicine programs

# Information Systems

# Key Issues

- PSAPs upgrading; Ambulances on ePCR; MFRs on RMS; Hospitals on EMRs
- Lack of data integration to look at complete episodes of care individually or in aggregate
- Poor continuity of data between EMS and hospital ED
  - Delayed and neglected paper faxes of ePCRs to ED
  - Some recent progress
- Extremely limited outcomes feedback to EMS

# Key Recommendations

- Build processes / technology to integrate data from PSAP through hospital care
- Build processes / technology to electronically transfer data from ePCR to hospital EMR on a data field level
- Automate the outcome feedback process

# Evaluation and Quality Management

# Key Issues

- Lack of processes to measure / improve care or operations at a 'system' level
- Lack of guidance from KCEMS to providers on how to evaluate quality of care
- Lack of training for PSAP, MFR, and ambulance managers on contemporary quality management methods

# Key Recommendations

- Develop processes to measure / improve care or operations at a 'system' level
- Provide templates and training to providers on how to evaluate quality of care for specific case types
- Provide training and on-going professional development in quality management to PSAP, MFR, and ambulance managers

# Summary

# Stakeholder Interactions

Despite disagreements, **civility**  
**and professionalism** in  
stakeholders interactions

**Extremely valuable system trait**  
**that provides hope for higher**  
**levels of performance**

Focused on shortcomings and  
improvement opportunities

# Kent County has a **good** EMS system

No acute distress requiring immediate interventions to protect patients, prevent operational collapse, or rescue from financial insolvency

# Excellent Management

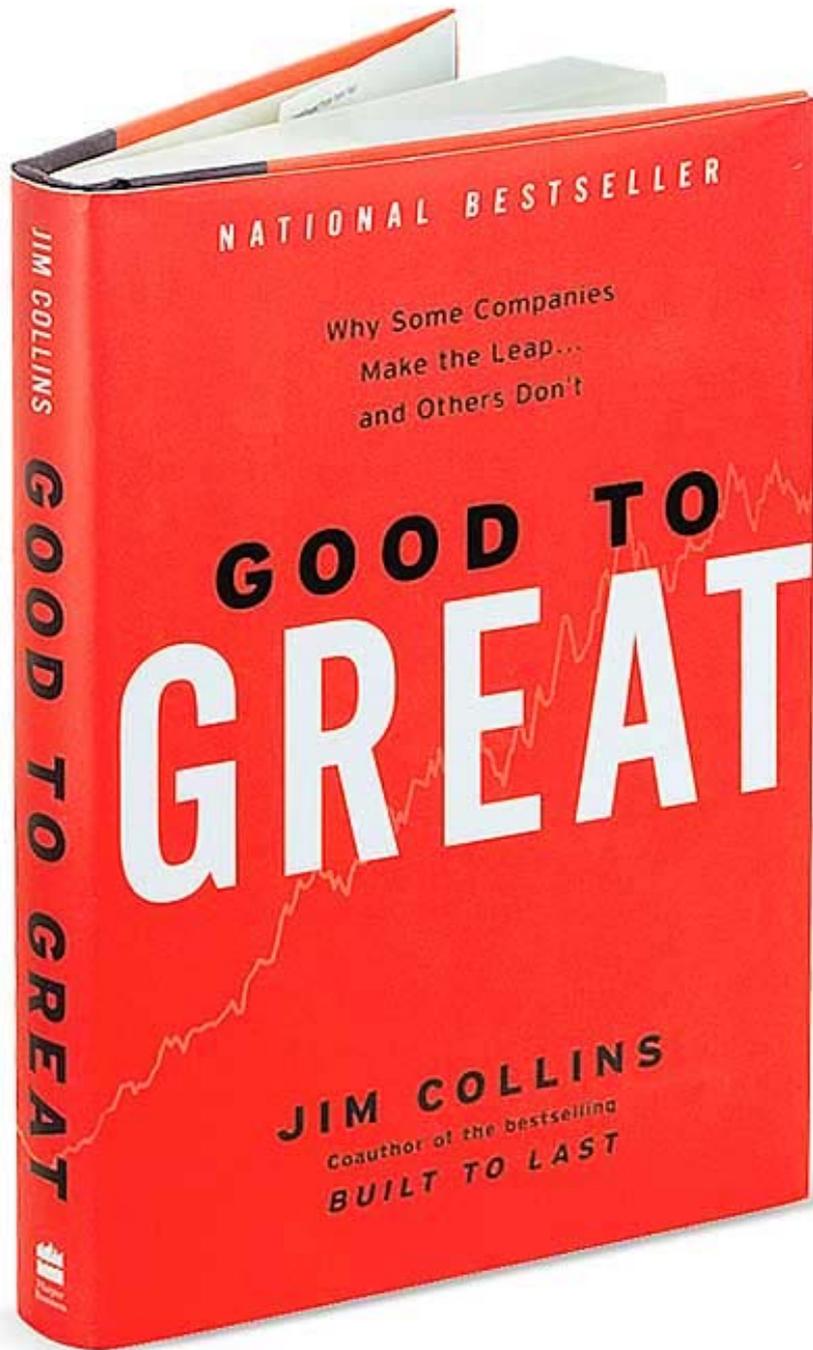
Success of system, despite system design flaws, is a **tribute to the individuals who manage ambulance and MFR operations**

# Clinical Efficacy and Economic Efficiency

Very **little objective evidence**  
at a system level

**Limitations of the  
system design are  
getting in the way of  
better performance**

Difficult problem to overcome in making the system dramatically better is that the system is not 'broken'



*“The vast majority of companies never become great precisely because they become quite good. - and that is their main problem.”*

The elected and senior appointed officials of the municipalities in Kent County have an extraordinary, but time limited, opportunity to catalyze significant improvements in their EMS system that **raises the level of EMS service in their communities without the need to raise taxes.** The resources and talent are already here.

# Next Steps

# Address system governance structure issues

- Link responsibility and authority to establish and enforce standards
- Resolve conflict of interest issues
- Establish KCEMS Board of Directors
  - Full control
  - Substitute ambulance and MFR reps on current Executive Committee with city and township reps

# Dialog among municipalities

# MFR and Ambulance Services

- Desired service features
- Desired performance levels
- Desired accountabilities / reporting

# Ambulance Services

- Well informed decisions on selection and terms for ambulance provider(s)
- Service area(s)

# Project Management

- Support and participation of municipalities
- Goals and objectives
- Milestones and timelines
- Deliverables
- Responsible parties / accountabilities

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