LOUISIANA EMERGENCY RESPONSE NETWORK
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WHITE PAPER

Development of a Network of State-Designated Trauma Centers in Louisiana

July 2016

Purpose

The US Centers for Disease Control and Prevention ranks Louisiana as the 8th highest state for injury deaths (2007 – 2009). The optimal care setting to address significant traumatic injury in the US today is a state-designated *trauma center*. National standards for trauma centers are maintained by the American College of Surgeons, Committee on Trauma.

Louisiana, with only five state-designated trauma centers, is one of the few states that does not have a statewide network of trauma centers. The Louisiana Emergency Response Network (LERN) is utilizing a framework of best practices and lessons learned from other states to promote and facilitate the development of an ideal statewide network of state-designated trauma centers.

The framework is provided and explained in this paper.

Introduction

The Louisiana Emergency Response Network (LERN) is an agency of state government, created by the Louisiana Legislature in 2004 and charged with the responsibility of developing and maintaining a statewide system of care coordination for patients suddenly stricken by serious traumatic injury or time-sensitive illness.

Funding for the establishment of LERN operations began in July 2006. Since that time, the LERN Board has established nine regional commissions populated with stakeholder volunteers that live and work within the region they represent. Recognizing Louisiana's lack of designated trauma centers, step one of LERN's development plan focused on implementing a core of operations that could better identify trauma patients and support more efficient delivery of trauma patients to available definitive care resources. Step one included implementation of EMS provider network agreements, hospital provider network agreements, pre-hospital protocols, and a statewide communications center.

Step two of LERN's development plan is focused on creating a more complete network of designated trauma centers – the anchor component of any statewide trauma system. A complete network of designated trauma centers is a necessary prerequisite to building other key components of a trauma system, including a statewide trauma registry, a trauma system performance improvement (PI) function, trauma education and prevention programs, and integration with the state's all disasters response infrastructure. Establishing a complete network of designated trauma centers also facilitates the development of collaborative regional trauma networks that include vital trauma care support from the smaller community hospitals.

Louisiana law (LA RS 40:2841-2846) states that the *trauma center* label shall be reserved exclusively for hospitals with state-issued trauma center designation. The Health Standards Section of the Louisiana Department of Health and Hospitals (DHH) is charged with the responsibility of designating trauma centers. To receive DHH designation as a Level I, Level II, or Level III trauma center, Louisiana hospitals must successfully complete the trauma center verification process of the American College of Surgeons, Committee on Trauma.

Trauma centers require a sizeable commitment of resources, including human capital, facilities, technology, training, and research. Level I designation is the highest level of trauma center, requiring the greatest commitment of hospital resources.

Given Louisiana's dearth of trauma centers, and given the importance of trauma centers to statewide trauma systems, and recognizing the substantial commitment of resources required to develop and maintain trauma centers, LERN will utilize the following framework to promote and facilitate the building of an ideal Louisiana network of trauma centers.

I. Access to Definitive Care

Drs. R. Adams Cowley and Donald Trunkey are considered the fathers of modern trauma care. The phrase "golden hour," referring to that critical first hour following injury, was coined as the goal of an organized trauma system to provide broad coverage based on the "golden hour concept." Today, trauma system planners across the country regard the "golden hour" as the gold standard for patient access to definitive care.

The American College of Surgeons, Committee on Trauma recommends that all organized trauma systems focus on the goal of providing broad coverage based upon the "golden hour" concept and further recommends the goal of delivering injured patients living in urban communities to a trauma center within a

maximum of 30 minutes from the time of EMS notification.

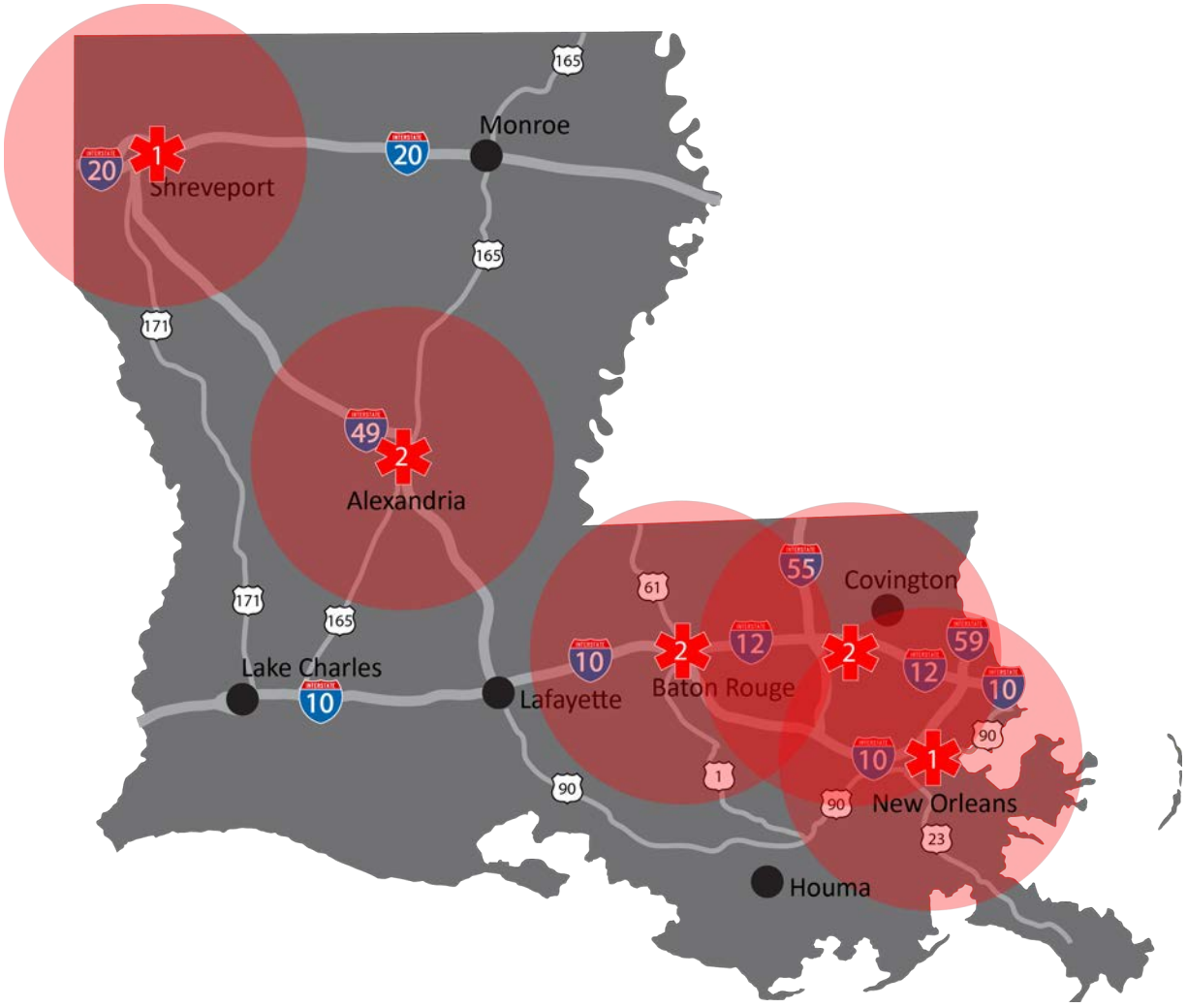
Louisiana should therefore develop a network of designated Level I, Level II, and Level III trauma centers that ensures access to definitive care within the "golden hour." For trauma patients, time is critical – the availability of designated trauma centers appropriately located throughout the state eliminates the need to desperately "shop around" for needed resources and service.

Figure 1 provides a general picture of the "golden hour" coverage available through Louisiana's five existing trauma centers.

II. Patient Volume

Health care quality research has produced an extensive amount of literature that documents superior patient outcomes for hospitals and physicians with higher patient volumes. This literature suggests that substantial reductions in mortality rate can be achieved through regionalized treatment models for certain high-risk conditions.

Figure 1 – "Golden Hour" Overlay



A recent study of trauma patients in Pennsylvania examined the impact of patient volumes and level of trauma center designation on patient outcomes. Pennsylvania has a mature statewide trauma system that delivers "golden hour" coverage to virtually all of its citizens. The study examined data on 88,000 seriously injured patients from 24 Pennsylvania trauma centers. The study found that low volume of trauma admissions was a significant risk factor for mortality in patients with head, chest, brain, and/or lung injury.

Unfortunately, low volume trauma centers are a reality in a number of states and urban locales – a consequence of local market hospital and/or health care system competitive pressures.

The *Resources for Optimal Care of the Trauma Patient 2014*, published by the Committee on Trauma, acknowledges the patient volume/quality outcome dynamic by establishing minimum volumes for Level I trauma centers. Specifically, Level I trauma centers must admit at least 1,200 trauma patients annually or meet the alternate criteria.

The Committee on Trauma's *Optimal Care* guidebook also "… emphasizes the need for various levels of trauma centers to cooperate in the care of injured patients to avoid wasting precious medical resources. For, in the era of health care reform, we not only must strive for optimal care, but we also must try to provide this optimal care in a cost-effective manner."

Louisiana hospitals seeking Level I trauma center status must meet the Committee on Trauma's patient volume requirements for Level I trauma centers. LERN additionally recommends the development of relevant patient volume guidelines for designation of Level II and Level III trauma centers in Louisiana.

Preliminarily, LERN recommends a minimum volume of 400 trauma patient admissions for Level II trauma centers and a minimum volume of 150 trauma patient admissions for Level III trauma centers. Final patient volume guidelines should be adopted by the LERN Board based upon analysis of Louisiana regional trauma case volume data and input from LERN's regional commissioners and other relevant stakeholders.

III. Population Density and Injury Rates

High population areas in Louisiana that currently lie outside of "golden hour" access to trauma centers include the greater metro areas of Lafayette, Lake Charles, Monroe, and the Houma/Thibodaux region. LERN promotes priority development of designated trauma centers in those four regional areas.

Development of additional designated trauma centers in those regions will aid in providing "golden hour" coverage to the surrounding rural population for injuries that exceed the capabilities of rural hospitals.

Figure 2 is a Louisiana population density map. **Figure 3** and **Table 1** provide rates for nonfatal injury-related hospital discharges for all regions of the state.

Figure 2 – Parish Population Density with "Golden Hour" Overlay

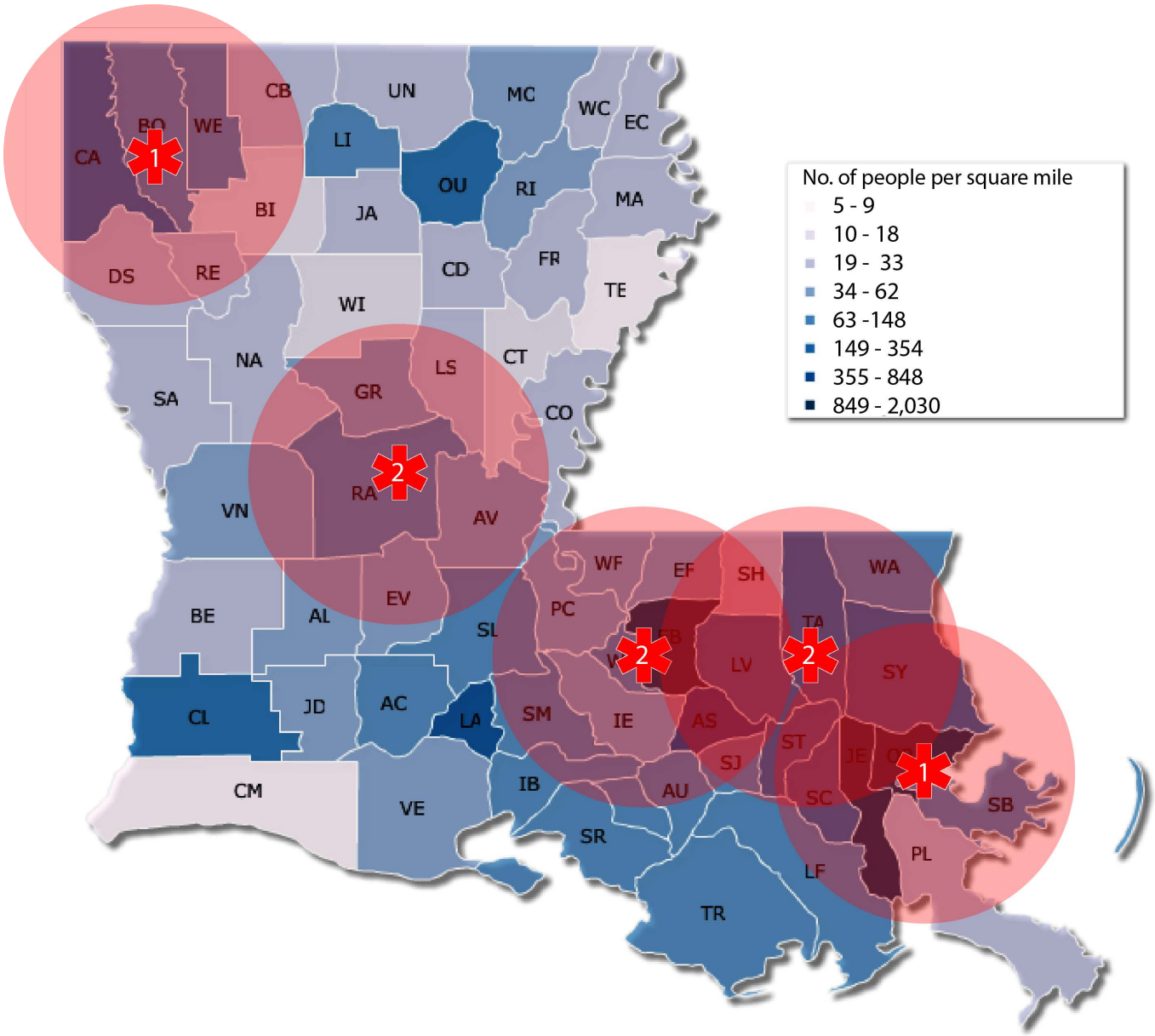


Figure 3 – Rate of Nonfatal Injury-Related Hospital Discharges by OPH Regions, Louisiana 2004

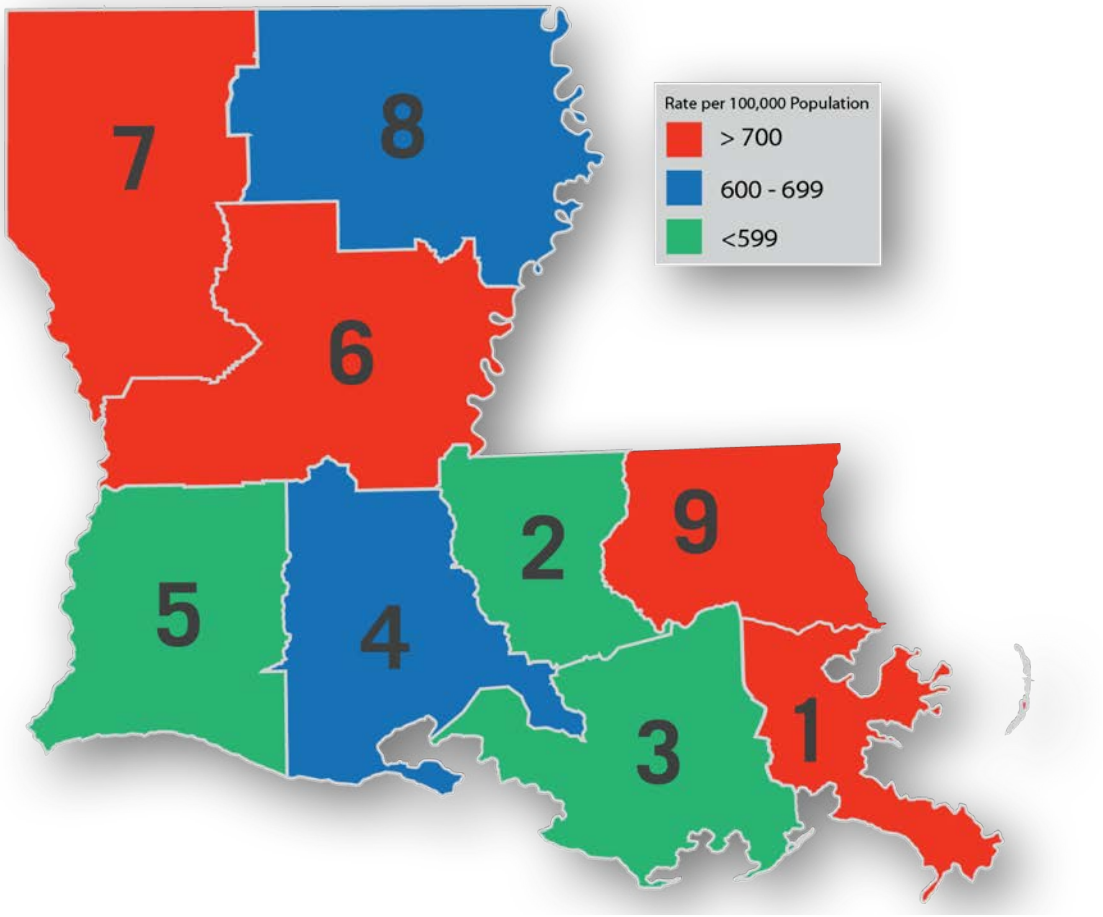


Table 1 – Rate of Nonfatal Injury-Related Hospital Discharges by OPH Regions, Louisiana 2004

DHH Region	Number	Rate/100,000*
Region 1: New Orleans area	7,845	776.4
Region 2: Baton Rouge area	3,233	527.6
Region 3: Houma/Thibodaux area	1,782	455.9
Region 4: Lafayette area	3,699	661.0
Region 5: Lake Charles area	1,450	508.1
Region 6: Alexandria area	2,380	795.1
Region 7: Shreveport area	3,829	726.8
Region 8: Monroe area	2,329	662.2
Region 9: Northshore area	3,582	748.1
Total	**30,129**	**667.2**

Source: IRP from LA OPH Center for Health Statistics, Hospital Inpatient Discharge Data 2004

** Rate per 100,000 population calculated using 2004 US Census Population Estimates 2009*

From 2009 Louisiana Health Report Card

IV. Human Capital/Surgeons

Trauma centers require the presence of surgeons – especially general surgeons, neurosurgeons, and orthopedic surgeons. The trauma surgeons on call must be willing to commit to 15-minute coverage (from patient arrival in Emergency Department) for Level I and Level II trauma centers and 30-minute coverage for Level III trauma centers.

The ready availability of neurosurgeons and orthopedic surgeons is required for Level I and Level II trauma centers. Level III trauma centers do not require neurosurgery support but do require orthopedic support. A scarcity of these surgeons is a well-recognized challenge to the development of ideal trauma networks.

Availability and willingness of surgeons to support a trauma center is a critical factor that impacts the ongoing viability of existing trauma centers and the establishment of new trauma centers in Louisiana. The scarcity of these three surgical groups also argues strongly against unwarranted expansion of trauma center availability in any specific locale.

V. Health Care Financing

When exploring the opportunity to develop a designated trauma center, hospitals must assess the potential financial impact of creating and maintaining such a resource. The cost of maintaining trauma center readiness 24/7/365 and the direct expenses required to properly treat major trauma patients are substantial.

Each interested hospital will need to evaluate trauma patient volumes and length of stay (LOS), case mix (Injury Severity Scores – ISS), and payor mix to gain an understanding of the likely financial impact to their organization.

In some states, special funding mechanisms have been created to provide supplemental financial incentive to help hospitals establish and maintain designated trauma center status. Examples of these special funding mechanisms from other states include add on penalties for motor vehicle violations (speeding, DUIs, etc.), dedicated fees added to motor vehicle registrations, dedication of state tobacco taxes, special use of federal disproportionate share payments, and “play-or-pay” hospital provider fees.

Louisiana currently does not have any special funding mechanisms dedicated to provide supplemental financial support for designated trauma centers. LERN does monitor the constantly evolving practices of other states and maintains ongoing conversations about supplemental funding for trauma care with Louisiana’s trauma care stakeholders.

The federal Medicare program has established a specific reimbursement mechanism for activation of trauma teams. Any trauma center verified by the American College of Surgeons and/or designated by a state authority can bill trauma activation charges when certain conditions exist, including pre-hospital notification given to the trauma center, patient arrival by EMS, patient transferred to the trauma center from another hospital, and the presence of a formal, organized activation response. Trauma centers in Louisiana have access to this reimbursement mechanism through the Medicare program and should investigate all opportunities to utilize trauma activation charges with other payors that serve their local market area.

Conclusion

Louisiana's five trauma centers (in Shreveport, Alexandria, Baton Rouge, Hammond, and New Orleans) are not adequate to provide "golden hour" access to all Louisiana citizens. Significant geographic holes in Louisiana's network of designated trauma centers exist, including the greater metro areas of Lafayette, Lake Charles, Monroe, and the Houma/Thibodaux region.

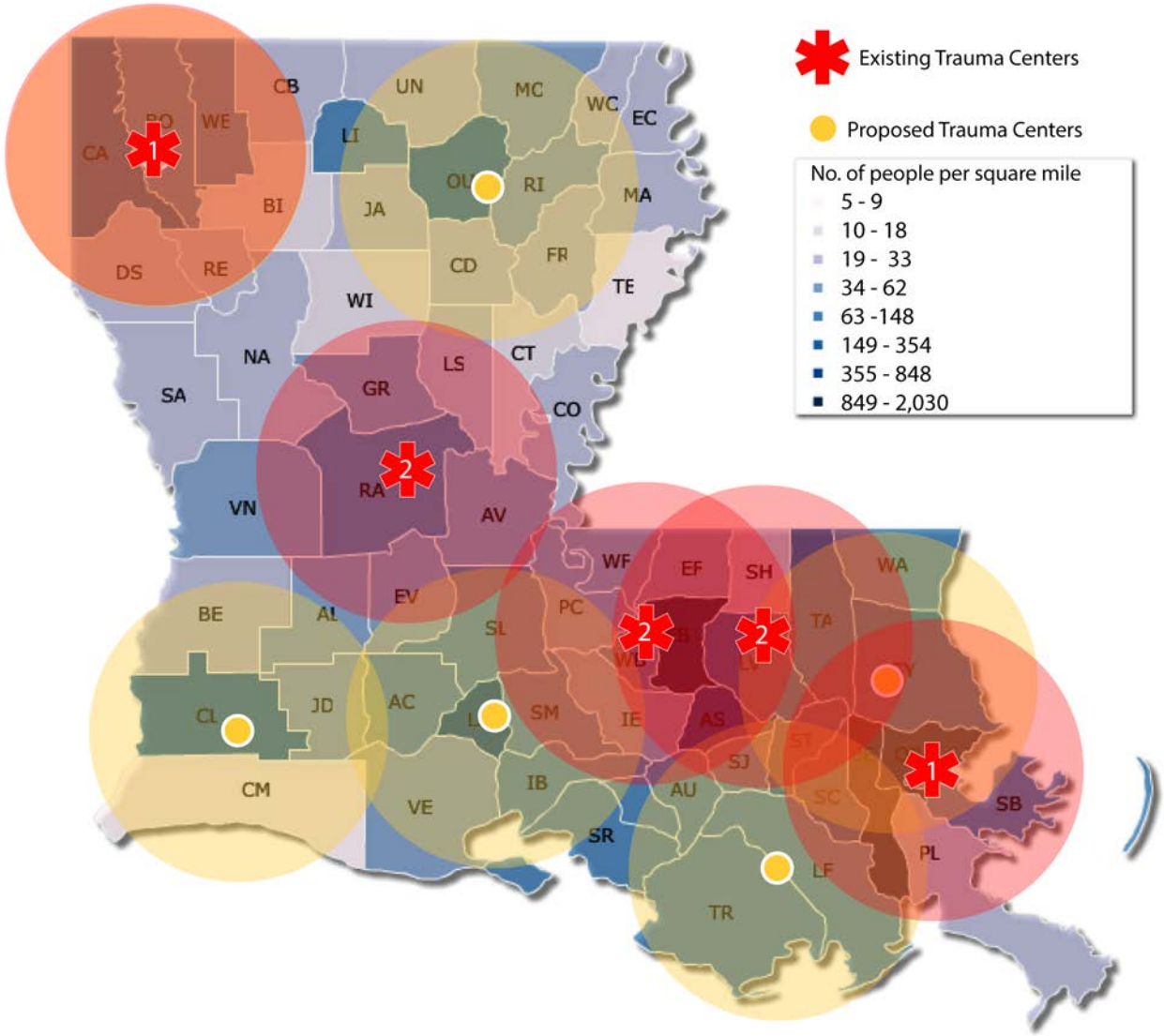
LERN is therefore leading a priority effort to establish new trauma centers that fill these geographic holes in our trauma center network. **Figure 4** depicts that future.

LERN's work in this effort will be guided by the principles laid out in this paper.

- Access to Definitive Care
- Patient Volume
- Population Density and Injury Rates
- Human Capital/Surgeons
- Health Care Financing

The goal is to meet the real trauma care needs of all Louisiana regional areas without creating unnecessary duplication of services or dilution of provider experience and expertise.

Figure 4 – Proposed Trauma Center Map with "Golden Hour" Overlay



Resources

Resources for Optimal Care of the Injured Patient, 2014
American College of Surgeons, Committee on Trauma

Trauma System Consultation, State of Louisiana, 2009
American College of Surgeons, Committee on Trauma

Louisiana Health Report Card, 2009
Louisiana Department of Health and Hospitals

Injury Prevention & Control: Trauma Care
www.cdc.gov/traumacare/
Centers for Disease Control and Prevention

Louisiana Revised Statute 40:2841-2846 Chapter 34. Louisiana Emergency Response Network (LERN)
Louisiana State Legislature, 2010

Executive Summary, White Paper on Needs Assessment for New Trauma Center Development in the Commonwealth of Pennsylvania
Pennsylvania Trauma Systems Foundation

Trauma System Development
www.dshs.state.tx.us/emstraumasystems/etrauma.shtm
Texas Department of State Health Systems

Trauma Section
www.healthy.arkansas.gov/programsServices/injuryPreventionControl/TraumaticSystems/Pages/default.aspx
Arkansas Department of Health

Mississippi Trauma Care System
www.trauma.ms.gov/
Mississippi State Department of Health

Emergency Systems – Trauma
www.ok.gov/health/Protective_Health/Trauma_Division/index.html
Oklahoma State Department of Health

Office of Trauma
www.doh.state.fl.us/demo/trauma/index.html
Florida Department of Health