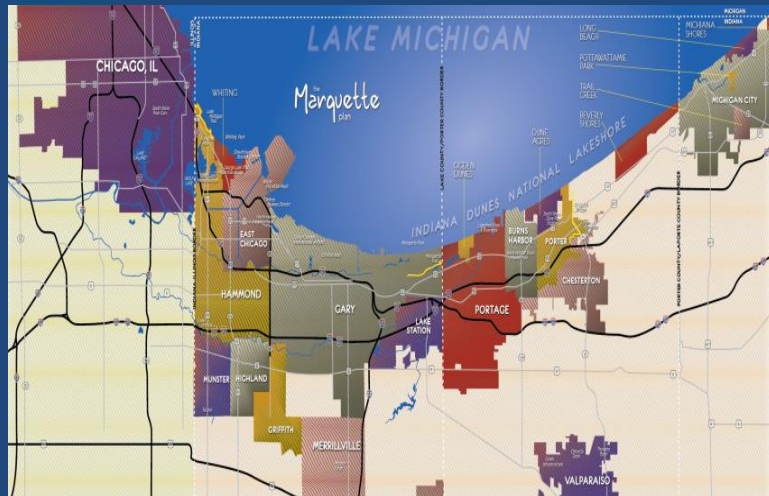




NIRDA Feasibility Studies:
**Trauma and Academic
Medical Centers**

September 1, 2014



An analysis of Northwest Indiana's social, cultural and economic needs for trauma program expansion/development as well as an academic medical school environment.

NIRDA Feasibility Studies: Trauma and Academic Medical Centers

September 1, 2014

Katz, Sapper & Miller

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Project Structure

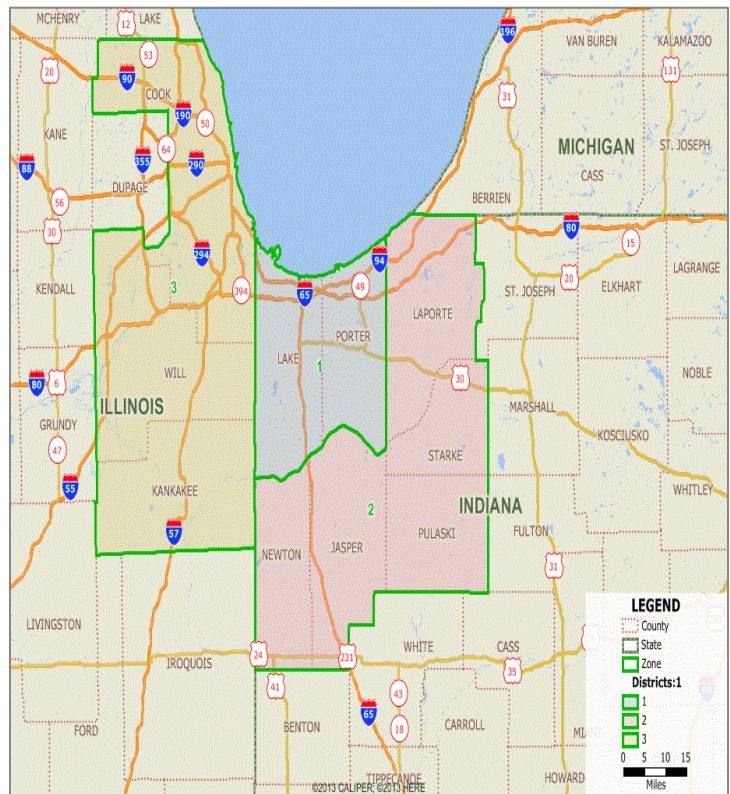
Overview



Northwest Indiana (NWI) is a unique geography for many reasons: It sits between Michigan and Illinois; is less than a few hour drive from the nation's third largest city, Chicago; does not share the same time zone as the rest of Indiana; has significant lakefront property (Michigan); has a major airport in Gary; is home to United States Steel Corporation's largest manufacturing plants; and is also home of the Indiana Dunes – a unit of the National Park system.

In addition to these distinctive characteristics, there is an equally interesting healthcare landscape in Northwest Indiana. With 11 general short-term acute care hospitals in Lake and Porter counties alone, there is a significant healthcare provider presence in the heart of NWI. Katz Sapper and Miller's (KSM's) primary focus for this project is to research and to validate that there is a lack of designated trauma service and support in NWI as well as an economic and social opportunity for the expansion of an academic medical school and/or teaching facility. An enhanced medical education system, a healthcare provider consortium, a graduate medical education program or an accredited academic medical center are all solutions that will be examined.

Katz Sapper & Miller (KSM) analyzed data from various sources throughout the project. The primary source of data was from the Indiana and Illinois Hospital Associations. This data enabled us to capture and measure the trauma volume in Northwest Indiana (NWI), determine the amount of patients seeking care in Illinois and assess the overall healthcare needs of NWI. These feasibility studies aim to validate and answer the research questions regarding trauma, medical education and the quality of healthcare for NWI residents.





❖ **The limited access to a designated trauma care within a reasonable time frame within Lake and Porter counties significantly impacts the lives of Indiana residents as well as those traveling to, from and through the state.**

- a) Injury, not cancer or any disease, is the leading cause of death for Indiana citizens ranging from age 1 to 34.
- b) More than 86,000 Hoosiers are hospitalized, and 5,000 die due to trauma injuries, each year.
- c) Motor vehicle collisions are the leading cause of unintentional injury/death and the second leading cause of unintentional injury overall.
- d) The total cost to Hoosiers of traumatic injuries is estimated to be in excess of \$10 billion.

Until March 2006, Indiana was among eleven states with no laws or regulations granting oversight authority for trauma care. Public Law 155, enacted in 2006, designated the Indiana State Department of Health (ISDH) as the lead agency for a state trauma care system with goals of preventing injuries, saving lives, and improving the care and outcome of individuals injured in Indiana. In November 2009, Governor Mitch Daniels enacted Executive Order 09-08 establishing the Indiana State Trauma Care Committee (ISTCC) and the Indiana State Trauma Care Fund. On January 14, 2013, Governor Mike Pence enacted Executive Order 13-11 for continuing the work of the ISTCC. The Indiana Trauma Care Fund was also reestablished and continued by Executive Order 13-11, to accept gifts, grants and donations to go toward the development of a comprehensive statewide trauma system. This Fund is administered by the ISDH.



After being engaged by the RDA, Katz, Sapper & Miller held a meeting with the RDA in February of 2014 to initiate the project. A four-phase process workplan was presented as well as the detailed steps within each phase. Data was supplied by the Indiana Hospital Association and the Illinois Hospital Association upon the receipt of a formal data request.

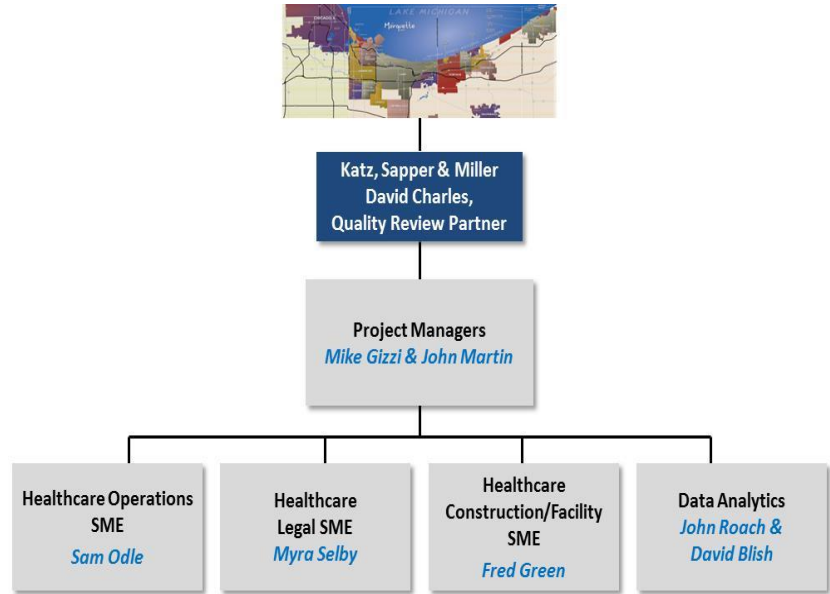
The **four phases** of the workplan were:

- I. Due Diligence**
- II. Financial & Market Implications**
- III. Partnership Possibilities & Healthcare Reform Impact**
- IV. Recommendations & Conclusions**



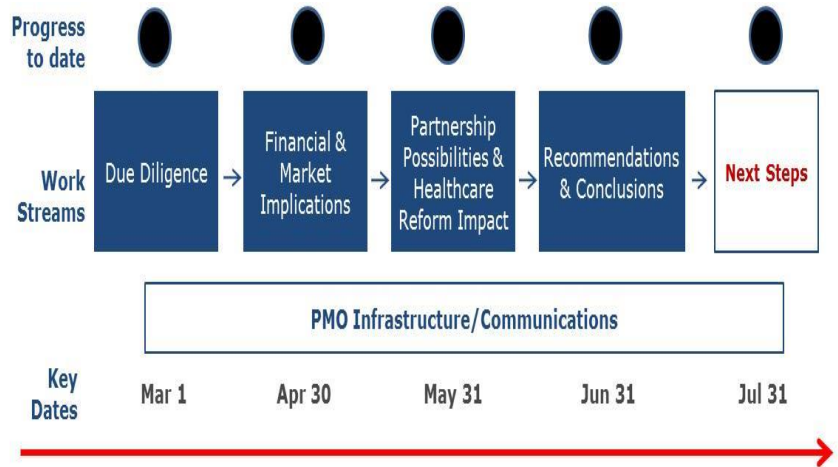
Client Service Team (CST)

The CST was carefully selected to provide the RDA with subject matter expertise in multiple areas of the healthcare industry: legal, facility, project management, hospital reimbursement, strategic alliances and operational performance.



High-level Progress Dashboard

This High-level Progress Dashboard served as a 30,000 ft roadmap for the project's progression.





Recommendations and Key Findings



Trauma Services: Utilize existing facilities in Lake and Porter Counties for trauma services.

- Establishing a Level I or II trauma program at an existing facility is more economically feasible for the region.
- Building a new facility for the purpose of serving as a designated Level I or II trauma program is not recommended.
- Four of the largest hospitals are already moving toward some level of trauma designation
- It is recommended that 2 or more **Level III designated trauma programs** should be established at existing facilities within the next 18 months, with the goal of at least one Level I trauma center being established within the next 5 years.
- Preferential placement of graduate medical education resources should be given to hospitals that are on the path to trauma designation or officially “in the process.”

Academic Medical Center: With current bed capacity in Lake and Porter counties, it is recommended to utilize existing facilities as opposed to building a new Academic Medical Center for teaching and research.

- It is recommended that a new Academic Medical Center (AMC) NOT be created in Lake and Porter counties. However, a Graduate Medical Education (GME) program should be pursued using existing facilities.
- A similar model is being pursued by the IU School of Medicine Southwest in Evansville.
- A GME program providing up to 36 residency positions should be developed and established in Lake and Porter counties using existing facilities in a coordinated approach.

Key Findings



- ❖ Building a new acute care facility is an expensive proposition.
- ❖ Utilizing existing facilities, even with extensive renovation, is the most cost efficient option.
- ❖ Additional beds in Northwest Indiana are not required given the current level of capacity at facilities.
- ❖ A new acute care facility competing for the existing level of activity would likely economically damage the existing providers.
- ❖ There is a **relatively low level of trauma** outmigration to Illinois.
- ❖ There is a **relatively high level of non-trauma** outmigration to Illinois.
- ❖ The vast majority of trauma care to NWI residents is provided by facilities that are not designated trauma facilities.
- ❖ Indiana trauma center designation is relatively new having only been established in 2009; many facilities in NWI plan to seek a trauma designation within 5 years.
- ❖ Four of the largest facilities in NWI deliver 53% of trauma care to 7-county residents, with over 80% of their trauma volume coming from Lake and Porter County residents.
- ❖ Four facilities are candidates for a Level I or II trauma program: Community Hospital (Munster), Methodist Northlake, Methodist Southlake, and Porter Regional.
- ❖ Outmigration to Illinois appears to be a function of economic mobility: Commercially insured trauma patients are 3 times more likely to receive care at IL facilities than at IN facilities.



- ❖ In 2012 there were 326 (4.4% of all adult trauma cases) Indiana residents of the 7-county service area* who travelled to Illinois for trauma care and an additional 2,611 who travelled to Illinois for other inpatient care not related to trauma . In total, 2,916 NWI residents received inpatient care in Illinois.
- ❖ In the first 9 months of 2013, there were 2,83 NWI residents who travelled to Illinois for trauma care and an additional 1,956 who travelled to Illinois for other inpatient care not related to trauma for a total of 2,239 NWI residents who received inpatient care in Illinois.
- ❖ From trends observed from 2010 – 2013, it is expected that approximately the same number of NWI residents will continue to seek care in Illinois for the foreseeable future, unless Lake and Porter counties develop both trauma and GME programs.
- ❖ KSM’s financial analysis estimates that Indiana must retain the following numbers of Indiana residents to offset the incremental expense of trauma and GME programs:

Year	Cases	Revenue
1	1,219	\$14,226,990
2	1,325	\$15,461,186
3	1,431	\$16,695,381
4	1,537	\$17,926,576
5	1,643	\$19,163,771

* The 7 Indiana counties are Lake, Porter, La Porte, Starke, Pulaski, Jasper, and Newton counties.



- ❖ The table below demonstrates how much inpatient outmigration to Illinois must be retained by Indiana facilities in order to cost justify the additional expenses of enhanced trauma services and a GME program.

	Year 1	Year 2	Year 3	Year 4	Year 5
Total Out Migration Revenue	Approximately \$35 million				
Total Out Migration Cases (1)	2,916				
Cases	1,219	1,325	1,431	1,537	1,643
Percentage	42%	45%	49%	53%	56%
<u>Combined Program Revenue</u>					
Incremental Case Revenue	\$14,226,990	\$15,461,186	\$16,695,381	\$17,926,576	\$19,163,771
<u>Combined Program Expense</u>					
Trauma Expense 2 Locations	\$3,594,500	\$3,594,500	\$3,594,500	\$3,594,500	\$3,594,500
Graduate Medical Education	\$832,000	\$1,216,000	\$1,600,000	\$1,984,000	\$2,368,000
Incremental Direct Costs	\$9,800,490	\$10,650,686	\$11,500,881	\$12,351,076	\$13,201,271
Total Program Expense	\$14,226,990	\$15,461,186	\$16,695,381	\$17,929,576	\$19,163,771
Net Income	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

(1) Based on previous patterns, KSM is assuming outmigration is stable.

Economic Benefit cont'd



- ❖ We assume a GME program is operating at full capacity of 36 residents by year 5.
- ❖ Tripp Umbach estimates annual economic benefit as follows:
 - Each resident: \$200,000
 - Each resident who stays in the community after residency - \$1,500,000.

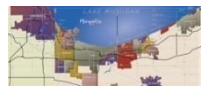
Residents Annually	36
Econ Ben/Resident	\$200,000
Annual Resident Benefit	\$7,200,000
Residents Who Stay	70%
Number of Doctors	25
Econ Ben/Doctor	\$1,500,000
Annual Doctor Benefit	\$37,500,000
Total Economic Benefit	\$44,700,000

Hospital/Partner Recommendation

- ❖ We recommend that the following hospitals be considered for the expanded trauma and GME programs:
 - Methodist Northlake
 - Methodist Southlake
 - Community Munster
 - Porter Regional
- ❖ These hospitals have:
 - Reasonable access to highway systems and are near the highest population densities
 - At least 250 acute beds with adequate capacity to accommodate up to an additional 40 patients per day
- ❖ We recommend that the community pursue partnership among multiple hospitals, the IU School of Medicine, large employers and civic leaders.

Source: Tripp Umbach Consulting – May, 2014

Hospital Profile Summary



❖ This table shows Total Acute Care Beds, Total Available Beds and Percent Capacity available for growth (1)

Facility	Beds	Census	ER No Adm	ER Adm	Available	Capacity %
Methodist Northlake	185	160	17,500	12,300	25	14%
Methodist Southlake (2)	269	190			79	29%
Community Munster	406	266	27,700	15,900	140	34%
Porter Regional Hospital	257	138	25,600	10,200	119	46%
Franciscan St. Anthony Michigan City	149	63	14,800	5,600	86	57%
IU Health La Porte	124	59	6,000	5,000	66	53%
Franciscan St. Margaret Hammond	185	110	10,800	6,100	75	40%
Franciscan St. Anthony Crown Point	240	124	10,400	6,800	116	48%
Franciscan St. Margaret Dyer	158	77	6,300	4,300	81	51%
St. Mary Medical Center	175	140	15,800	8,300	35	20%
St. Catherine Hospital	161	89	17,000	5,700	72	45%

(1) Data from American Hospital Directory www.ahd.com

(2) Reported as part of Methodist Northlake



Current Situation

Project Objectives



In January 2013, the Regional Development Authority (RDA) issued a request for proposal (RFP) regarding specific healthcare provider needs or deficiencies in Northwest Indiana. This discussion, involving specifically Lake and Porter counties, has been ongoing for almost a decade. The purpose of this RFP was to determine:

- 1) Whether the statistical profile of injuries annually sustained by the population of Northwestern Indiana justifies the placement of one (1) or more trauma centers in Northwestern Indiana and, if so, what are the appropriate levels of the trauma centers should be to care for those injuries.
- 2) The feasibility of developing an academic medical center in Northwestern Indiana.

Lake and Porter counties are two drastically different areas. From total population and employment rate to county health status rankings and number of hospitals, these counties, although neighbors, are significantly different in many ways.

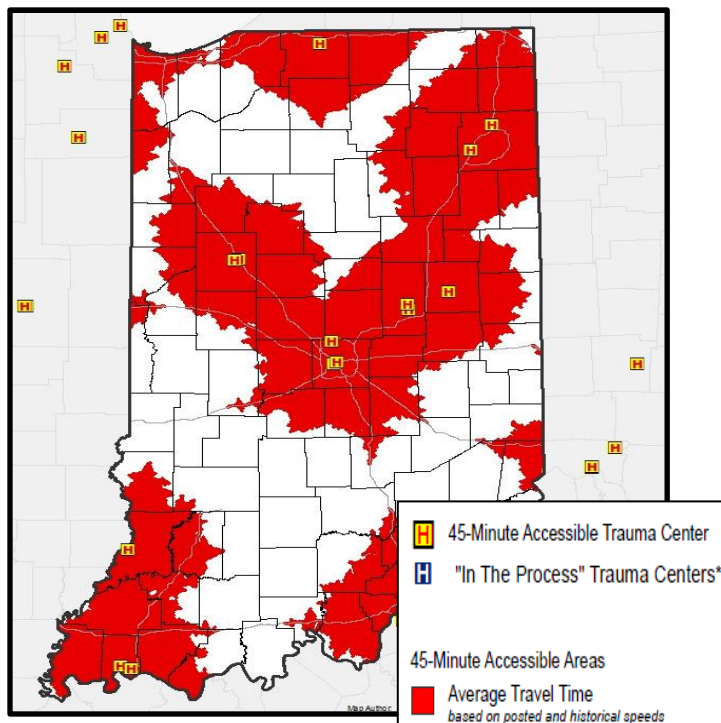
❖ **The RDA was tasked with finding answers and solutions as to how the critical healthcare needs of Northwestern Indiana residents would be met. The research and analysis contained within these feasibility studies aims to answer these question.**



The concept, idea and/or planning of this project has raised some fundamental questions that have been asked and exchanged for several years. KSM has captured these questions after a lengthy interview process. This report aims to answer each question or concern in detail.

1. Is there a lack of trauma care in NWI?
2. Is there a financially sound business case for expanded healthcare options in NWI?
3. Where is the best location for this facility/service offering?
4. Who are the potential partners or alignment options for this initiative – both the trauma center and academic medical center?
5. Is it feasible, based on potential volume and location, to build a new facility or consider a renovated/expanded facility?
6. What are the cultural, social and economic benefits of expanded healthcare options in NWI?
7. What are the major obstacles or concerns?

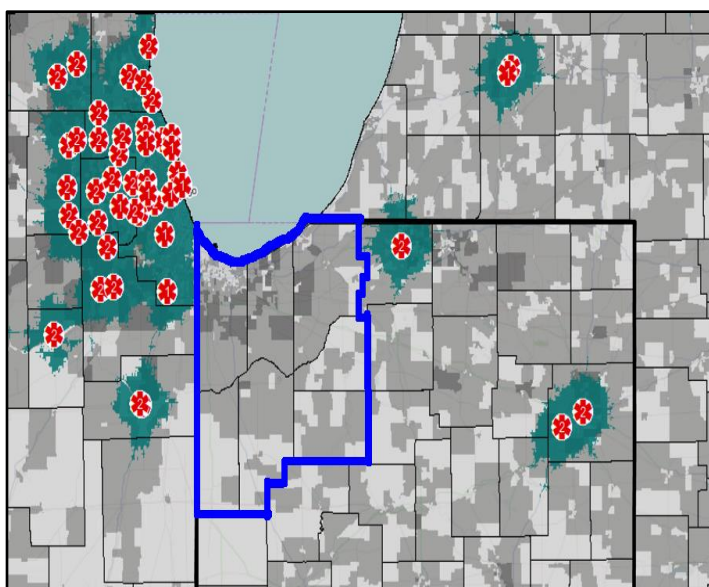
Indiana Trauma Center Access: Areas Within a 45 Minute Drive



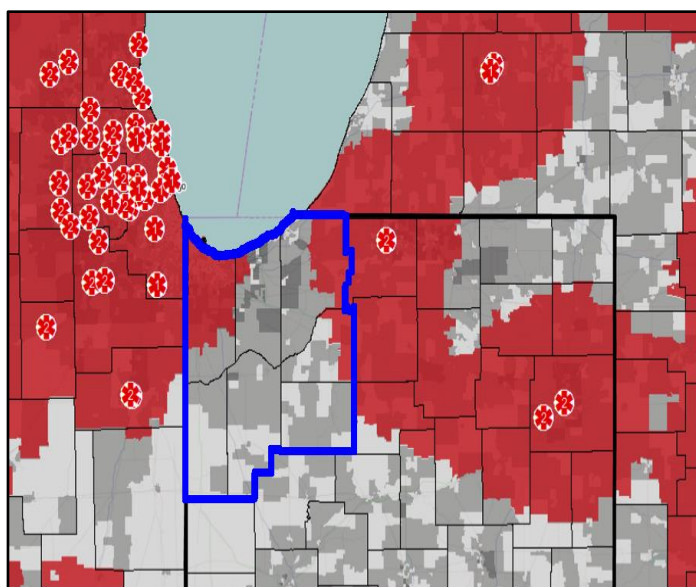
Current Access to Trauma Care in NWI



- ❖ There is a critical need for a designated trauma center or program in NWI based on EMS response time. These maps reflect Emergency Medical Service (EMS) response time and not drive time. The response time of Emergency Medical Services (EMS) is defined as the interval between a call being received by the 9-1-1 operator and EMS arriving at the scene. Data to precisely measure this interval was not available to KSM. As a proxy measure of response time, the transit time to a facility was used.



Automotive Access to Trauma Care, <45mins
(2% of the population of the 7-county region)



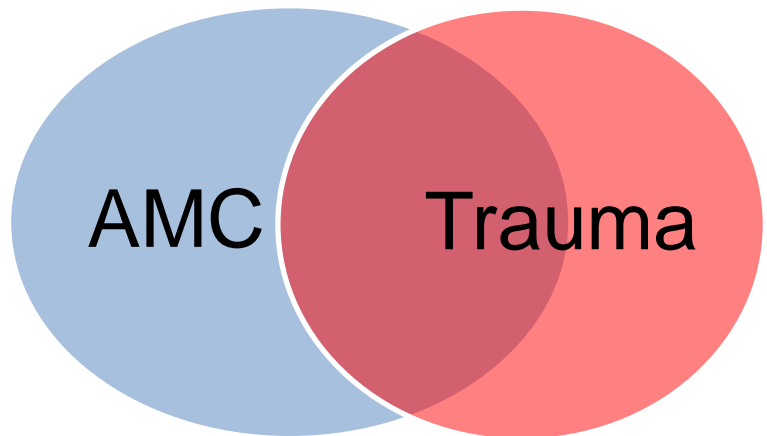
Helicopter Access to Trauma Care, <45mins
(65.7% of the population of the 7-county region)

Historically, 5% of trauma patients *can* access care in 45 minutes by car, 25% by helicopter. Much of this access is provided by hospitals in Illinois.

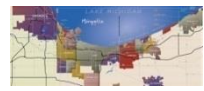


The feasibility assessments for an Academic Medical Center and a Trauma Center can be evaluated both separately or interdependent. There is significant overlap in structure, services provided, outcomes, challenges and benefits. This overlap represents synergies between the two programs that could potentially create a functional model in NWI. However, it is also possible for each program to exist and operate independently.

- A new AMC could be established without regard for trauma services. But most high quality trauma programs are at AMC/teaching institutions due to the availability of residents.
- A new AMC that added bed capacity to NWI would negatively impact existing providers that already have excess capacity.
- One or more designated trauma centers could be established independent of any planned AMC effort. But, if an AMC were to be developed, it would logically include a trauma program.
- Existing facilities may need to pursue modernization/replacement efforts to accommodate increased activity.



Notable Interviews



As part of both feasibility studies, interviews were conducted with key stakeholders from NWI area business, education and healthcare institutions. All the interviewees provided in-depth insight and perspective of NWI's current situation regarding trauma care and healthcare needs that are currently migrating to Illinois. We also discussed the value, potential financial impacts, social impacts and the feasibility of an accredited academic medical center on the Indiana University Northwest campus in Gary.

INTERVIEWEE	Title
Don Fesko	CEO Community Hospital Munster
Charlie Brown	Indiana State Representative D-3
Chris White	Publisher, The TIMES
Dennis Rittenmeyer	Executive Director, One Region
Patrick Bankston	Assoc. Dean, IU School of Medicine Northwest
William Lowe	Chancellor, IU Northwest
Dr. Mike Davenport	Interim CEO, The Methodist Hospitals
Bill Stephan	IU, Vice President for Engagement
Tom Morrison	Vice President for Capital Planning & Facilities
John Lewis	Associate VP, Capital Planning & Real Estate
Steven Lunn	CEO, Porter Hospital
Taffy Arias	Porter Hospital, CNO
Sherri Ziller	COO, RDA
Shelly Major	CNO & VP Methodist Hospitals
Jennifer Mullen	Trauma Program Dir., Methodist Hospitals
Beth Wrobel	CEO, Healthlinc
Dr. Janet Seabrook	CEO, Healthnet
Gary Atherton	Director, Porter EMS

INTERVIEWEE	Title
Bill Hanna	President and CEO of the RDA
Janice Ryba	CEO, St. Mary Medical Hospital
Jill Ritchie	Former US Steel Director of Public Policy
Mark Tade	Director, Employee Relations, U. S. Steel
Dr. Joe Farris	U.S. Steele
Mamon Powers	Board Chair Methodist Hospitals NWI, CEO of Powers Construction
Deven Gibbs	U.S. Dept. of Housing and Urban Development
Jack Bebiak	Consultant
Senator Charbonneau	Former Senator
Forest Hayes	Dir. of Commerce & Economic Dev. Gary, IN
Karen F. Wilson	Mayor Gary, IN
Kelly Credit	Director of Strategy & Marketing, Porter Health
Denise Dillard	Chief Consultant, Government & External Affairs, Methodist
Dr. Michael McGee	Medical Director, EMS - Methodist Hospitals
Mike Reinbold	ISMA, Dir. of Government Relations
Janice Wilson	CEO, Northshore Health Centers
Dan Campbell	Fire Assistant EMS Chief, Gary

What We Heard Summary



The table below summarizes the key findings from the interviews during this engagement. Both sections refer mutually to trauma service expansion and a more robust academic or graduate medical program.

Advantages / Benefits	Challenges / Concerns
<ul style="list-style-type: none"> ▪ Improved access to healthcare in NWI ▪ Improved overall health status of NWI residents ▪ Socioeconomic benefit to Lake and Porter counties – more jobs (both direct employment at trauma or AMC facility as well as new employers), more tax dollars, housing market improvements, investment and development in business ▪ Ripple effect – possible improved roadways, sidewalks and traffic patterns ▪ IU Northwest is already aligned and working with area hospitals. ▪ Development of much needed state trauma registry 	<ul style="list-style-type: none"> ▪ Financing ▪ Potential alignment with large health system ▪ Geographic challenges ▪ Stigma or stereo-type of “the region” ▪ Reimbursement issues for trauma-related cases ▪ Potential closure of area hospitals with a new trauma center/academic medical center ▪ Attracting quality physicians to support a new trauma center/academic medical center ▪ Turf battles with hospitals/health systems ▪ Politics and bureaucracy ▪ “Defeating” or “combatting” the significant advertising/marketing efforts of major Illinois healthcare providers

NOTE – This is a summary of reactions, comments and opinions regarding ***both*** the trauma and academic medical center studies. The verbiage has ***not*** been changed in order to capture a more realistic understanding of the spectrum of opinions surrounding this project. KSM has not expressed an opinion or bias in these interview themes or summary.



Economic Impact of Expanded Healthcare Options in NWI

- Documented positive economic impacts have been presented in years past.
- State-of-the-art facilities and conditions will attract the best physicians and possibly pull from Illinois market.
- NWI (specifically Gary) needs a robust trauma center, and the IU Northwest campus in Gary is the ideal partner from an economic standpoint.
- IU Northwest's *University Park Program* is an initiative that has already started the positive economic momentum in Gary.

Social and Community “Halo” of Expanded Healthcare Options in NWI

- Years of debate over this topic need to be set aside and the needs of NWI residents should be at the top of the list.
- Perception of the community or “the region” has been an obstacle for Gary and all of NWI .
- Positive relationships already exist – hospitals in Lake and Porter counties are already working with IU Northwest through the medical education program.
- The “halo effect” would impact the associated hospital significantly because as the ED gets busier, more high acuity patients who will require additional hospital services.

Key Definitions

Halo Effect – describes the indirect effects, both negative and positive, of a certain action, transaction or occurrence.

Perception of the “region” – Gary, IN, and NWI have been referred to as “the region,” and there is an existing feeling, consensus, belief or stereo-type about this area that carry's a negative connotation.

Please see slide 25 for description of this What We Heard section.



Alignment Options and Opportunities in NWI

- One participant stated that Indiana University Health seemed like an ideal partnership option – “an IU sign on a new facility in Gary would positively change the healthcare landscape in NWI forever.”
- Collegiality and collaboration – hospitals and physician groups need to work together to achieve this goal of expanded healthcare services including trauma and academic medical education. There are too many great healthcare providers for this initiative to fail.
- Major companies or industries in NWI need to be involved through industrial partnerships, sponsorships or private equity funding.
- Possibility of a neutral facility, brand or site to ensure all parties participate
- Each hospital administrator interviewed was very interested in growing their respective hospital’s trauma presence in both counties – aligning and partnering with a new trauma program/concept was very favorable.

Affects of Accountable Care and Healthcare Reform

- It was stated that “there is an enormous and demonstrated need for more quality physicians in NWI.”
- With uninsured residents receiving healthcare coverage and the current state of Medicaid in Indiana, are there sufficient provider and insurance resources in the region?
- Collaboration is the only recipe for success in dealing with healthcare reform and providing more and better service in NWI.

Location

- Gary is central and ideal location, primarily because of the IU Northwest campus and potential alignment.
- Porter is geographically central to NWI, despite lack of population density.
- No room in NWI for academic medical center – several exist within 60 miles in Illinois
- Community Hospital Munster is too close to Illinois hospitals and not centrally located.

Please see slide 25 for description of this What We Heard section.



Concerns

- Effect on existing local hospitals and health systems if a new facility or program is developed
- Challenging to find funding for a new facility
- Finding the ideal location to provide access to the greatest number of residents
- Operational concerns – who will operate, staff and run a new or expanded facility/program if that is the result of the study
- Will a new facility be sustainable or will it be created at the expense of one or more existing facilities?
- Physician shortage, especially with Healthcare reform and the Affordable Care Act
- “Trauma data reporting is not accurate in region and has not been regulated by Trauma Registry until 2013” – **Until 2014, hospitals were not required to report to Trauma Data Registry. KSM relied on Hospital Association data and applied trauma metrics to those data sets.**
- State regulations for all EMS companies when a designated trauma center is not available.

Please see slide 25 for description of this What We Heard section.



Northwest Indiana Service Area (Focus Area)

Demographics (Lake and Porter Counties)



- ❖ Although similar in land area (square miles), Lake and Porter counties are vastly different in their demographic make up, health outcomes and health factors.

Exhibit 2

Quick Facts	Lake County	Porter County	Lake & Porter Counties/ Average	Indiana (% change)
Pop 2013 estimate	491,456	166,557	658,013	6,570,902
Pop 2010	496,005	164,343	660,348	6,483,802
Pop % Change	-.9%	1.3%	0%	1.3%
Persons under 5	6.4%	5.5%	6%	6.4%
Persons under 18	24.8%	23.1%	24%	24.1%
Persons over 65	14.2%	13.8%	14%	13.9%
Female	51.7%	50.9%	51%	50.7%
White (a)	70.7%	93.1%	82%	86.3%
Black or African American (a)	25.5%	3.6%	15%	9.5%
Hispanic or Latino (b)	17.8%	9.2%	14%	6.4%
Bachelor degree or higher, 25+, 2008-12	19.7%	25.2%	22%	23%
Mean travel time to work, workers 16+	27.9 min	27 min	27.5 min	23.2 min
Persons below poverty level, 2008-12	17.4%	9.8%	14%	14.7%

Source: United States Census Bureau

(a) Includes persons reporting only one race.

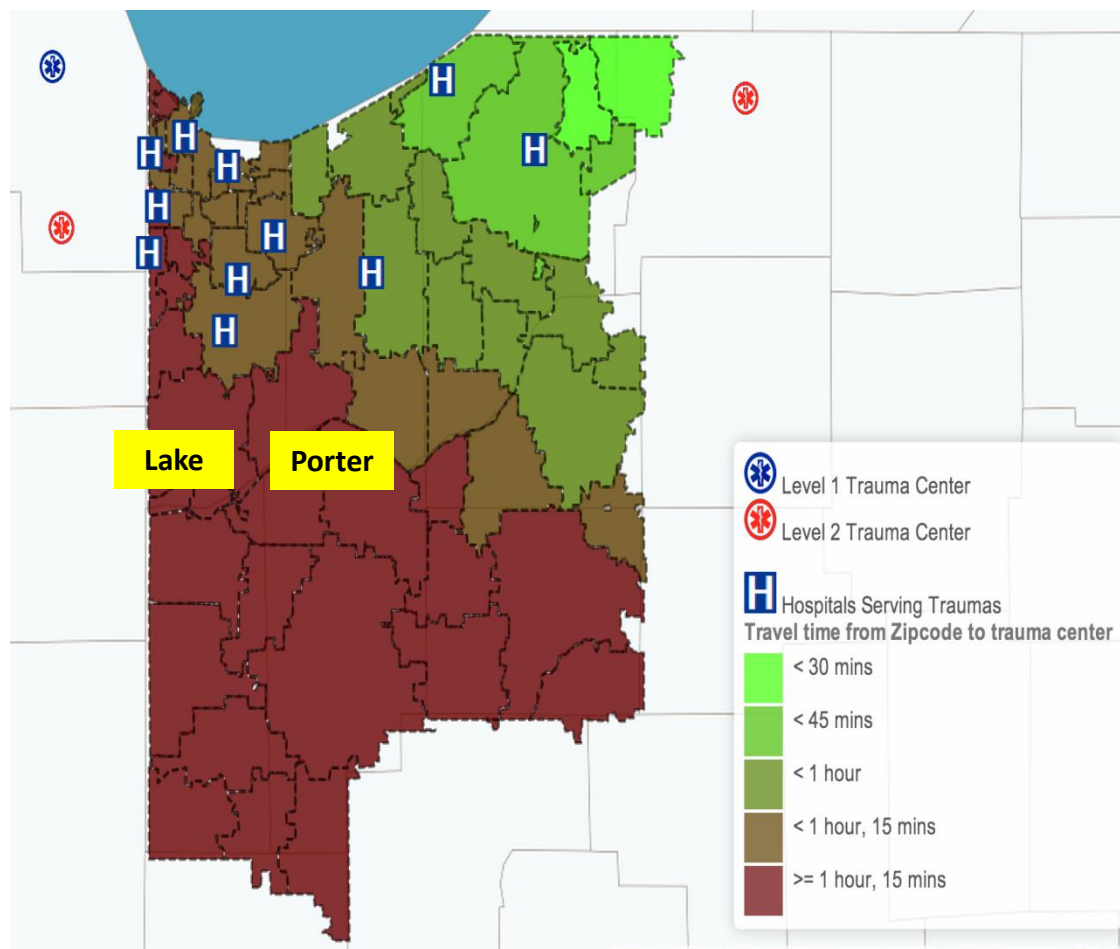
(b) Hispanics may be of any race, so also are included in applicable race categories.

Drive Times to Trauma Centers in NWI



- ❖ The following Exhibit displays the drive times from the 11 selected hospitals in Lake and Porter counties. The lack of a designated trauma facility and program is apparent.

Exhibit 3



Source: Indiana Hospital Association data and KSM analytics.

Focus Area Population



- ❖ For the purpose of data analytics, KSM examined hospital discharge data from 10 counties, 3 in Illinois and 7 in Indiana. A Focus Area was created in order to accurately capture volume, cost and market share as it pertains to emergency room and trauma related cases. Focus Area consists of almost 7 million residents

Exhibit 4

County	Population	% of total in Indiana / Illinois
Lake	491,456	7%
Porter	166,557	3%
La Porte	111,281	2%
Starke	23,197	0%
Pulaski	13,007	Less than 1%
Jasper	33,389	Less than 1%
Newton	14,087	0%
Total Indiana (7 counties)	852,974	13%
Cook	5,240,700	41%
Will	682,829	5%
Kankakee	112,120	1%
Total Illinois (3 counties)	6,035,649	47%

Total 6,888,623

Source: United States Census Bureau

(a) Includes persons reporting only one race.

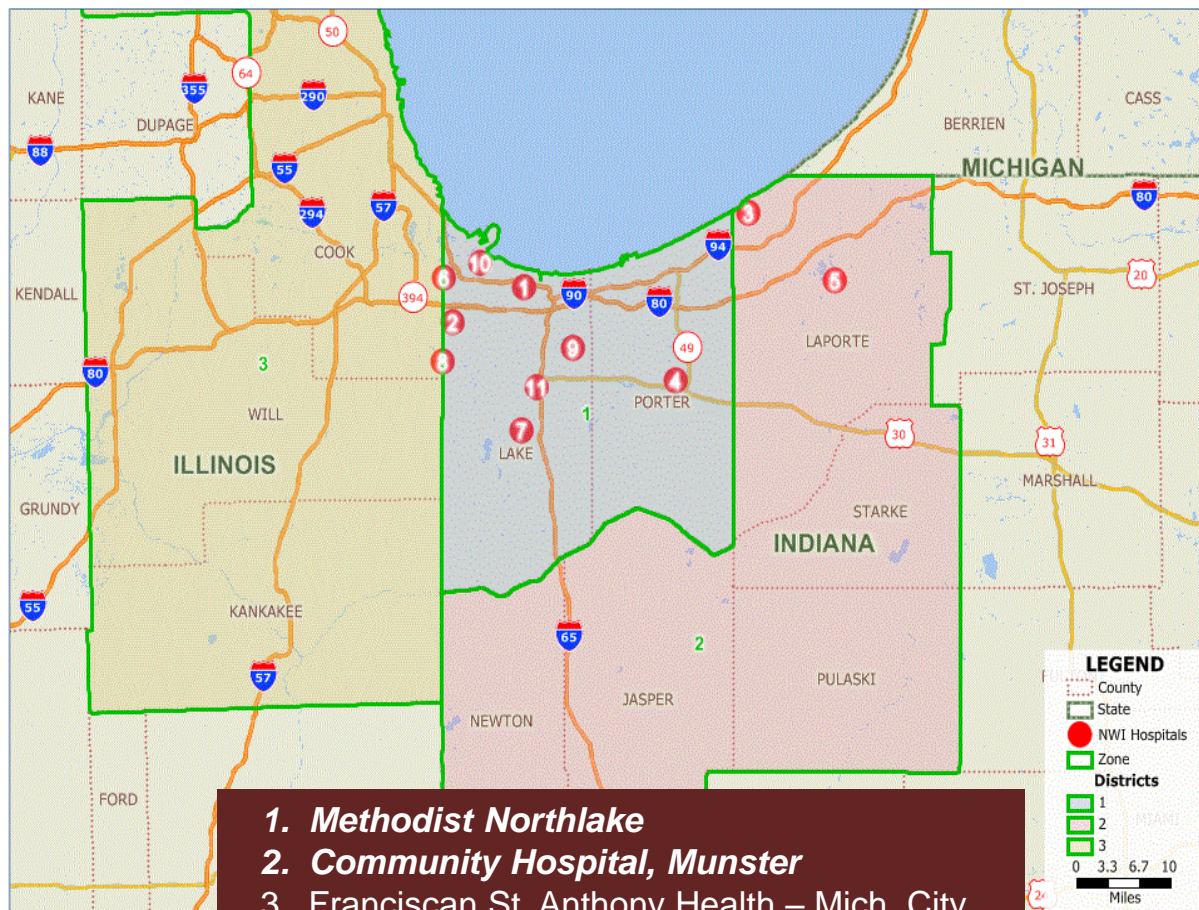
(b) Hispanics may be of any race, so also are included in applicable race categories.

Focus Area Target Hospitals



- ❖ There are 11 full-service general short-stay acute care hospitals in NWI. The list was narrowed for further evaluation based on bed size, bed capacity, existing volumes, and location/access.

Exhibit 5



- 1. Methodist Northlake**
- 2. Community Hospital, Munster**
- Franciscan St. Anthony Health – Mich. City
- 4. Porter Valparaiso Hospital**
- Indiana University Health La Porte Hospital
- Franciscan St. Margaret Health - Hammond
- Franciscan St. Anthony Health - Crown Point
- Franciscan St. Margaret Health - Dyer
- St. Mary Medical Center
- St. Catherine Hospital
- 11. Methodist Southlake**

Note: Locations evaluated for facility suitability of Level 1 trauma center.



RFP Questions and Responses

Trauma Center Feasibility



1. Identify the number and distribution of trauma centers in and around Northwestern Indiana.

There are 11 Level I trauma and academic medical centers in Cook County, Illinois – less than 60 minutes from Gary, Indiana (Mapquest.com). This does not take into consideration the other hospitals, surgery centers and healthcare providers in the adjoining counties to NWI (Will and Kankakee). Many of these facilities treat thousands of Indiana residents annually, both for trauma and non-trauma.

The map on the following page (Exhibit 2) illustrates precise locations for these centers.

Exhibit 6

	Cook County, Illinois - Level I Trauma / AMC	Minutes
1.	Advocate Christ Medical Center	36
2.	Advocate Illinois Masonic MC	45
3.	Advocate Lutheran General Hospital	57
4.	John H. Stroger, Jr. Hospital	38
5.	Loyola University Medical Center	39
6.	Mount Sinai Hospital	51
7.	NorthShore U Evanston Hospital	55
8.	Northwestern Memorial Hospital	36
9.	Presence Saint Francis Hospital	56
10.	Ann & Robert H. Lurie Child Hospital	39
11.	University of Chicago Medical Center	30



Exhibit 7

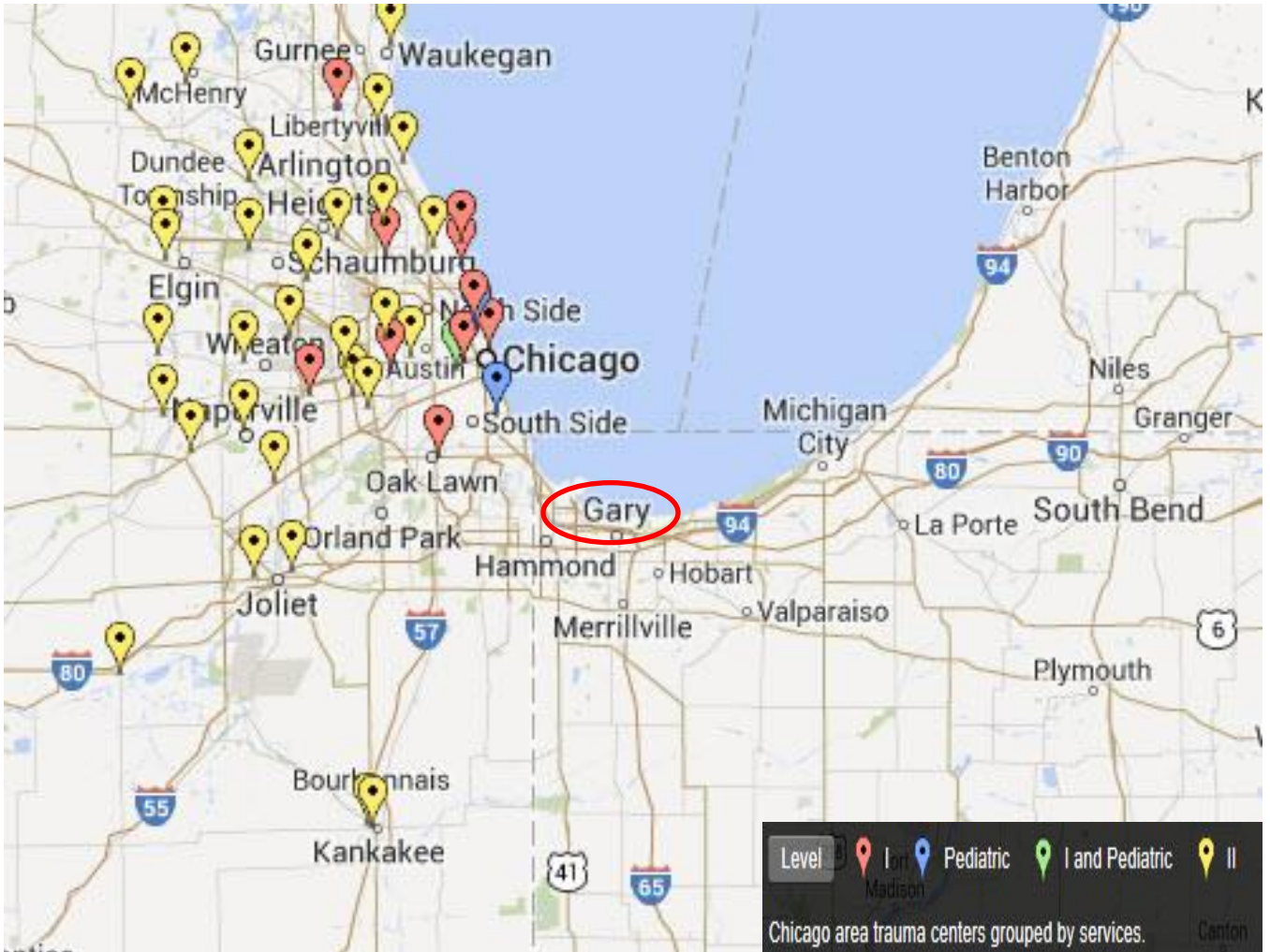




Exhibit 8 displays the trauma patients for Memorial Hospital in South Bend Indiana. Memorial is the region's only Level II trauma center. NWI patients or trauma victims go either to Memorial Hospital in South Bend, Illinois trauma centers or are taken to Indianapolis for designated trauma care.

Heatmap of NWI Patients for Memorial Hospital of South Bend

Exhibit 8

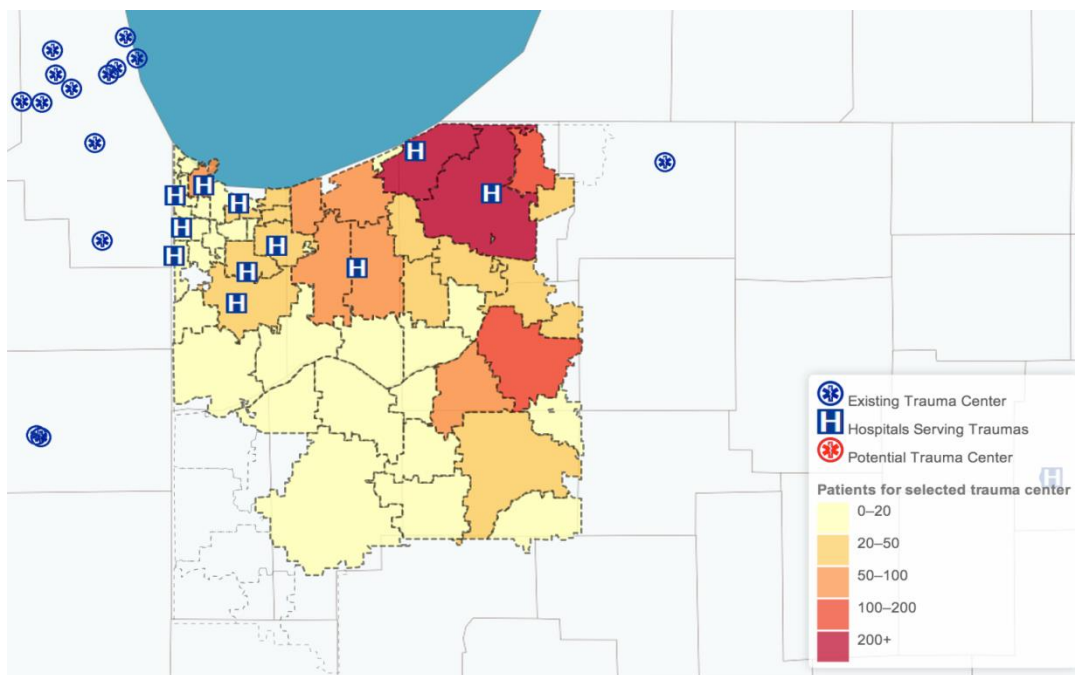
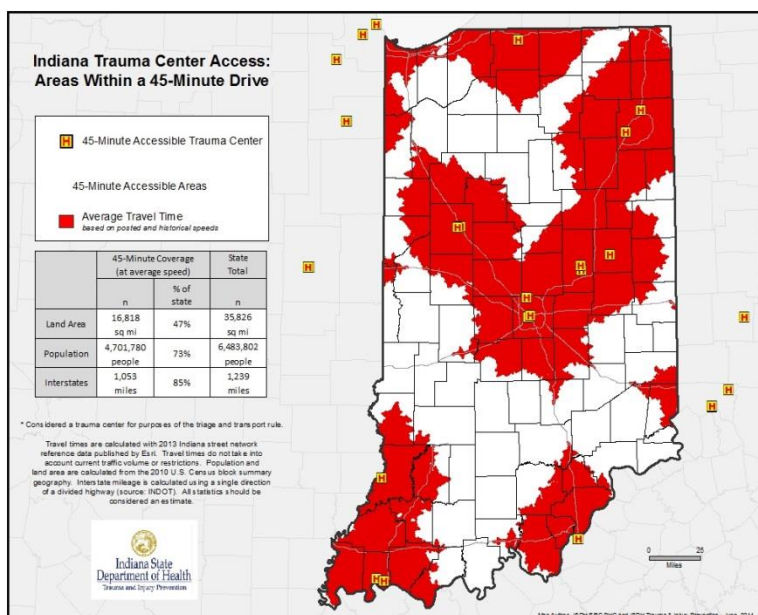


Exhibit 9

Exhibit 9 is the Indiana State Trauma Center Access within 45-minute drive map that highlights the point that in NWI, Memorial is the only Level I or II in the region. There is a significant lack of state mandated coverage in NWI for designated trauma coverage or programs.





2. *Identify volumes of patients at trauma centers and non-trauma centers for the past three years.*

Trends in Healthcare Utilization by NWI Residents

Healthcare Utilization Trends

An integral part of our analysis centered on the “load” or “strain” placed on the NWI healthcare system, and how utilization of the system changed over time. As a first step, we sought a concise answer to the following question: How many NWI residents were treated in Indiana and Illinois trauma centers during the period, and where did they come from? To address this question we used our interactive map to plot trauma centers as points, then rendered heatmaps of patient volume by ZIP code for each trauma center. Additionally, we plotted other NWI hospitals that treated trauma cases, and included ZIP-level information to produce heatmaps. We also generated data tables with summary statistics, which are located in the Appendix.

We note that our analysis was based on data for 9 out of the 10 trauma centers in Indiana, 4 of which had a significant patient population from NWI. The years for which we had data were also different between Indiana and Illinois. Data from Indiana did not have patient charges for the final quarter of 2013. For that same period, data from Illinois was missing entirely. We extrapolated charges for Indiana during 2013 Q4 using a seasonal autoregressive integrated moving average (ARIMA) model, yielding the total annual inpatient and trauma charges by year. The same technique was applied to the missing Illinois data to arrive at annual figures for incidents, traumas, and charges. In addition, we extrapolated Indiana charges at the county level for high-level statistics of the NWI region.

We must also mention that while there were visitors to Indiana trauma centers who did not live in Indiana, the vast majority of trauma cases were for NWI residents (12,005 NWI resident trauma cases from 2012-2013 / 13,789 total trauma cases in Indiana during those years, or 87.1%). These out-of-region residents were counted in sum totals on a per-trauma center basis. As we studied the volume and severity of trauma cases that originated in NWI, we assumed that cases occurred in NWI ZIP codes when the residents were in NWI, and assumed that cases for non-NWI residents occurred evenly along highways, as done in Section 2. We used the total trauma cases for all residents to get an idea of patient volume and case severity in the NWI region.



Classification of Trauma Cases

A significant challenge we had to address was the lack of an explicit field in the data that denoted an incident as being a trauma case. By extension, we had no information on the severity of cases, even if they were traumas. Typically, healthcare practitioners classify a case as major or minor trauma using the Injury Severity Score (ISS)[3]. In this trauma grading system, any case with an ISS of 15 or greater is considered a major trauma [3]. With no fields in the data corresponding either to ISSs or traumas outright, we introduced a derived variable for each. Using the diagnosis codes (ICD-9s) and the Indiana Trauma Registry Inclusion/Exclusion Criteria as defined by the Indiana State Department of Health, we were able to classify incidents as being traumas for both Indiana and Illinois. Any case that had at least one of its diagnosis codes in the inclusion criteria was classified as a trauma. Inferring the severity of cases, however, relied upon a more sophisticated methodology.

To create a proxy for the severity of a trauma case, we computed a severity score using quantile ranges for age, total charges, and length of stay. Possible values for quantiles ranged from 1 to 4, i.e.

$$q \in [1; 2; 3; 4]$$

as done with the demographic data detailed in Section 2. For Indiana the trauma severity score was of the form

$$sIN = q_{stay} * q_{charge} * (1 + 1 * q_{age} + b_{critical})$$

where “q” denotes the quantile (first, second, third, or fourth) in which the variable in the subscript falls for a given case, and “b” denotes a binary for whether or not the trauma victim spent at least one day in critical care. This accomplished a regularization of the scores and also bounded them on the interval [1.25, 48].



The score for Illinois was

$$\text{SIL} = \text{qstay} * \text{qcharge} * (1 + 1/\text{qage})$$

since Illinois's data did not contain a field for whether or not a patient entered critical care. Illinois's score was bounded on the interval [1.25, 32]. To compare the severity scores between Illinois and Indiana, both ranges were compressed to rest on the interval [1, 10]. While it may seem at first that the term for critical care in the Indiana severity score would lead to more cases being labeled as having a higher severity, in practice this was not the case (Figs. 12 and 13). The additional term in Indiana's score equation only led to the range of scores being higher; a greater percentage of trauma cases in Illinois, not Indiana, hospitals were labeled as severe. In fact, nearly two thirds of trauma cases treated in Illinois were severe, while roughly one third of those treated in Indiana were severe.

Once each trauma case was scored, a machine learning algorithm called a self-organizing map was applied to uncover clusters of severity scores within the trauma data. These clusters were then used to impose bounds on the severity score for classification purposes. For instance, if the severity score for a certain trauma case was below a given threshold, it would not be classified as severe, and vice-versa. Figures 12 and 13 show the histograms of severity scores for Indiana and Illinois, respectively. What can be seen from these histograms is that most trauma cases fall below a certain threshold for severity and are not counted as being severe. There is in each state's data, however, a clear distribution of cases for which the severity score is well above the overall mean. Some scores are not possible due to the underlying algebra of the severity scoring metrics.

Indiana Trauma Center Utilization – Incidents by Year, Treated in Indiana

For the two-year span of 2012-2013, NWI residents primarily sought care near where they lived, either in Indiana or Illinois. Memorial Hospital of South Bend was the most frequented Indiana trauma center by NWI residents, followed by Riley Hospital for Children in Indianapolis (Table 5). See Table 12 for a summary of the four most frequented Indiana trauma centers, and Table 5 for annual aggregates. This data does include patients originating “outside” of NWI or the Focus Area and did receive care in a NWI hospital. looked at every patient treated at any hospital in NWI regardless of their location of origin.



Exhibit 10

Incidents by Year, Treated in Indiana

Year	Inpatients	Trauma Cases	Severe Trauma Cases	Trauma Rate per 1000 Incidents	% of Trauma Classified as Severe
2012	128,847	7,069	2,674	54.9	37.8 %
2013	121,041	6,720	2,048	55.5	30.5%

Illinois Trauma Center Utilization - Incidents by Year, Treated in Illinois

From 2012 to 2013 (Quarter 3), Illinois’s trauma centers received 5,176 patients who lived in NWI, while Indiana trauma centers received 5,078. Table 6 has Illinois’s data in annual figures. Again, it should be noted that we did not have information on the location of incidents. It is entirely possible, therefore, that cases in which NWI residents were treated in Illinois trauma centers were partly the result of commuting individuals who work near the Chicago area. In other words, commuters may have access to trauma centers because of their commute, not because they live in close proximity to them. On weekends, for example, the commuting population of NWI would likely be less able to receive prompt trauma care.

Exhibit 11

	Inpatients	Trauma Cases	Severe Trauma Cases	Trauma Rate per 1000 Incidents	% of Trauma Classified as Severe
2011	2,923	274	174	93.7	63.5%
2012	2,937	326	202	111.0	62.0%
2013*	2,914	391	239	128.4	61.1%

* 2013's values during Q4 were extrapolated from previous years' data

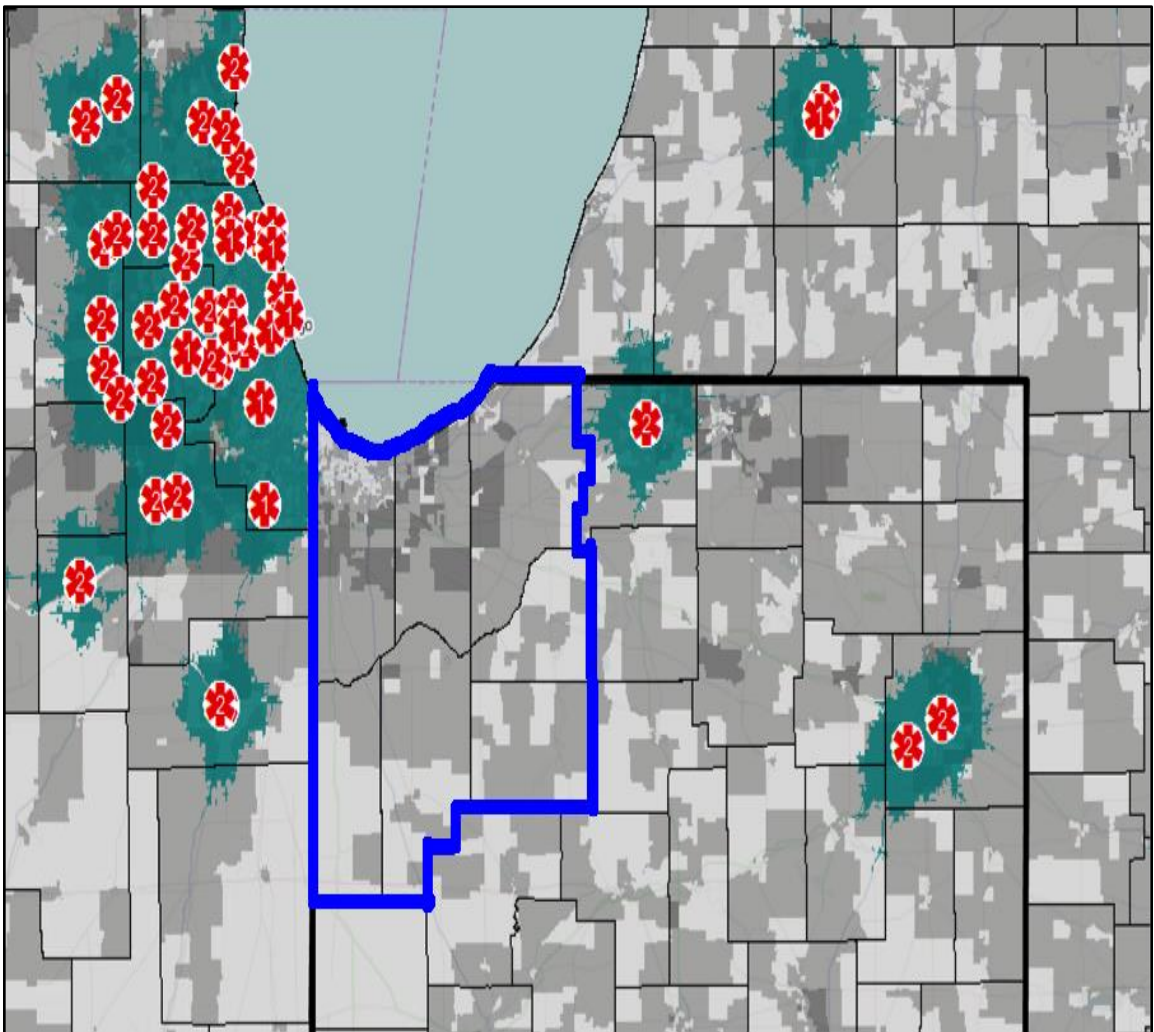


3. *Develop a comprehensive map of the existing trauma centers in and around Northwestern Indiana that provides for a graphical representation of the areas served by medical ground and medical air transport.*

There is a critical need for a trauma center or program in NWI. Historically, 5% of trauma patients can access care in 45 minutes by car, 25% by helicopter. Much of this access is provided by hospitals in Illinois. Of the seven Indiana counties, there are no designated trauma programs that report to the Indiana Trauma Registry. Level I is indicated by a number one and Level II is indicated by a number two.

**Automotive Access to Trauma Care, <45mins
(2% of the 7-county region)**

Exhibit 12

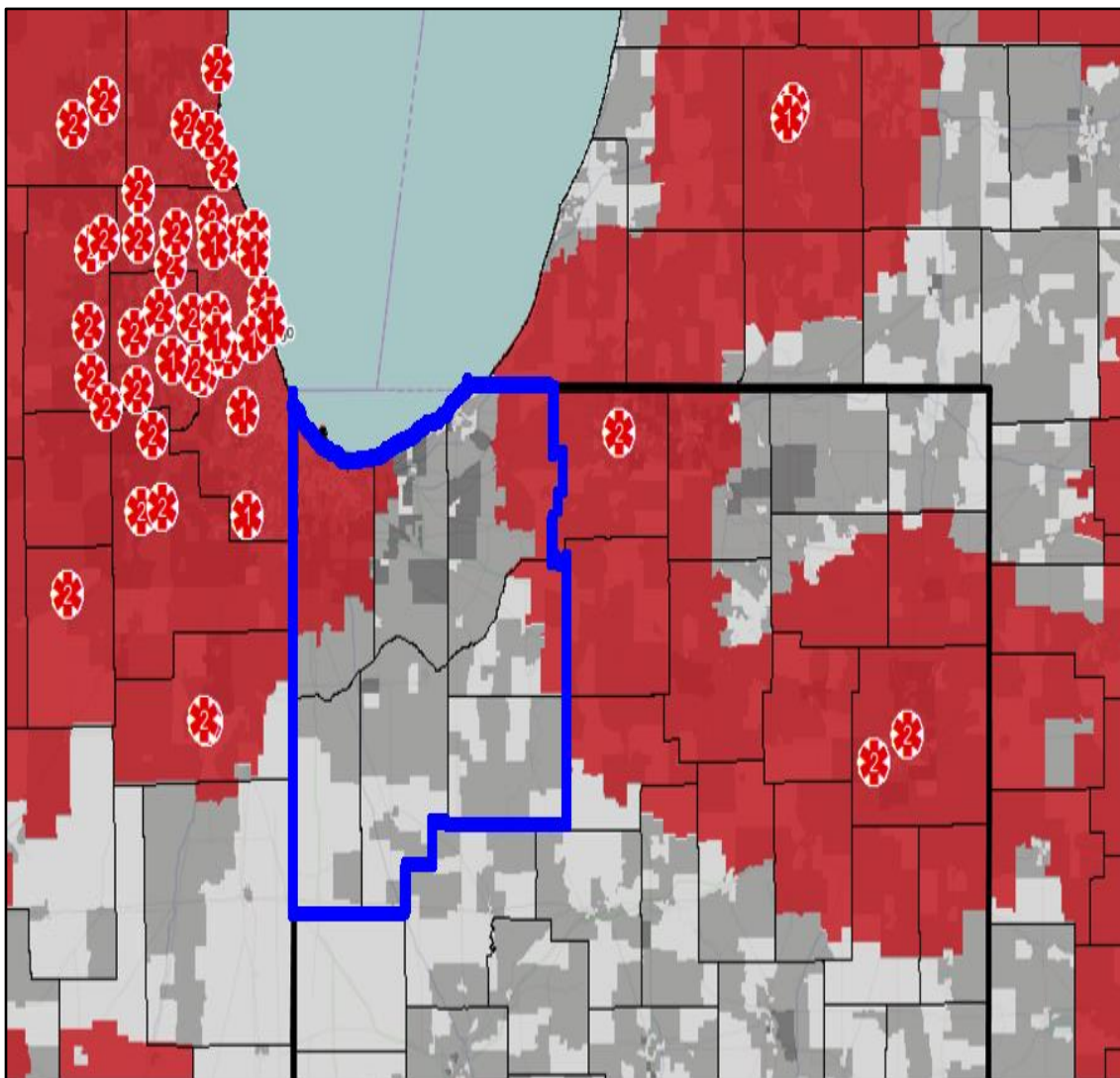




Level I is indicated by a number one and Level II is indicated by a number two.

Helicopter Access to Trauma Care, <45mins (65.7% of the 7-county region)

Exhibit 13





- Analyze whether the current distribution of trauma centers provides for medically appropriate ground and air travel times (based on levels and severity of trauma cases).*

Ground and Air Travel Time Distribution

Upon reviewing the problem statement in the request for proposal (RFP), we initially studied how those living in NWI obtain trauma care. In particular, we were interested in how the amount of time needed to reach a trauma center changed based upon location within NWI, for both ambulatory and helicopter services. Given the importance placed on understanding the regional dynamics underpinning the NWI healthcare system, we decided that an interactive map would be the most appropriate way in which to represent the areas served by medical ground and medical air transport. In addition to creating our own mapping interface, we also used maps generated by the University of Pennsylvania Cartographic Modeling Laboratory website, TraumaMaps.org [2]. By working with both mapping systems we were able to get a clear sense of care access for NWI.

Some explanations should be made about the assumptions underlying our analysis. First, none of the data from the INHA or the ILHA contained information on incident location. The only geospatial data were ZIP codes of patient residence; patient address was therefore used as the indicator for incident location. This implicitly assumed that the distribution of cases occurred in the ZIP codes inhabited by NWI residents [5]. Next, we assumed that cases involving non-NWI residents occurred evenly along highways, most likely while commuting or traveling through the Chicago area. We also assumed that the implicit severity associated with outpatient incidents was lower than for inpatient cases. After inspecting the outpatient data, which was only available for Indiana, we decided it was not a necessary component for our study. From our investigation of the data we found that 2% of inpatient and 0.58% of outpatient cases were treated in Indiana trauma centers, nearly a fourfold difference in magnitude. Due to the fact that the primary concern of the RFP was to determine the viability of a new NWI trauma center rather than a non-trauma certified hospital, we favored the inpatient dataset as the principal means to model and visualize patient flows for care.



The following figures were produced with TraumaMaps.org's mapping utility, and were used to understand the ease with which cases originating in NWI may be transported to nearby trauma centers. All figures referenced herein are located in the Appendix following this report.

Figures 2 through 4 show the areas from which patients can reach trauma centers by helicopter within 45 and 60 minutes; these times are inclusive of activation, response, on-scene, and transit time to trauma center. Recalling the consequence of safely transporting a trauma victim to a trauma center within the golden hour, it is notable that a large section of NWI remains outside of the possible areas serviced by helicopter quickly.

Figures 5 through 7 show access to adult trauma centers by ambulance within 45 and 60 minutes. Figure 7 is the same as Figure 6, except it also has the locations of general hospitals plotted. INHA data are consistent with the patient flows implied by these maps. For instance, the vast majority of Indiana trauma cases were treated at non-trauma centers (13,322 out of 13,900 traumas, or 95.8%), but many of them (7,356 out of 13,900 total Indiana trauma cases, or 52.9%) were not classified as being severe (data from 2012 thru 3rd quarter of 2013).

Another important aspect to consider with respect to treatment and outcomes concerns access to pediatric care, shown in Figures 9 through 11. While there are areas in NWI capable of reaching a pediatric trauma center, coverage gaps do exist in Newton and Jasper counties to such an extent as to make quick transit to pediatric care impossible for all but the northernmost portions of those counties. Furthermore, being in close proximity to Chicago (in cities such as Gary, Hammond, Portage, and north Merrillville) almost entirely determines the ability to reach a pediatric trauma center within an hour. If we restrict the available or desired trauma centers to those located solely in Indiana, as in Figure 11, we can see that nearly the entire 7-county region comprising NWI exists outside of the one-hour time window necessary to get to a trauma center with pediatric specialists on staff.

Coverage Gaps

When viewing the ambulance access maps in Figures 5 through 8, it is easy to get an idea of how difficult it is to transport a victim to an appropriate care center in a timely manner.



As an example, consider Hebron, IN, which can be thought of as being located near the population centroid (center of mass) of the 7-county region comprising NWI. Starting in Hebron, which is in southern Porter County, it takes 57 minutes to get to Advocate Christ Trauma Center in Oak Lawn, IL, and 1 hour 19 minutes to travel to Memorial Hospital in South Bend (Google Maps API). From this basic approximation of incident location and the map in Figure 6, it is readily apparent that essentially any incident occurring outside of Gary or Hammond will not reach a trauma center by ambulance within the golden hour. These conclusions on care access are summarized succinctly in the following tables. We note that these provide percentages for access to trauma care within 45 minutes, and that this time window is inclusive of activation, response, on-scene, and transit times.

**Exhibit 14:
Population Percentage in 7-County Region with Access to Trauma Center via
Ambulance in 45 Minutes**

Exhibit 14

Name	Total Population	Population Access by Ambulance in 45 Minutes	Percentage
Lake	496,005	17,077	3.44%
Porter	164,343	0	0%
La Porte	111,467	0	0%
Newton	14,244	0	0%
Jasper	33,478	0	0%
Starke	23,363	0	0%
Pulaski	13,402	0	0%
Total	856,302	17,077	1.99%



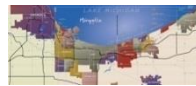
Population Effects

The detriment caused by coverage gaps is borne by different segments of the NWI population to varying degrees. As noted in Flint, Buckley, and Spann, disparities in healthcare are worsened for racial subgroups residing in NWI. The authors note that in 2012 “transfers [out of NWI to receive trauma care] for African Americans [were] more than triple their proportion of the region’s population.” The literature also notes differences in mortality rates between racial groups, with African Americans having the highest rate overall. While African Americans account for only 17% of the total NWI population, several ZIP codes in Lake County have African-American proportions exceeding 80 or 90% of the population (U.S. Census Bureau, 2012). Furthermore, most transfers out of NWI were needed by African Americans. Thus, a new trauma center placed in Lake or Porter County would reduce or eliminate the need for many out-of-the-region transfers, and would ameliorate the racial imbalance in mortality rates.

For all of the ZIP codes that constitute NWI, we acquired summary demographic data from the Census Bureau’s 2012 American Community Survey. We specifically gathered information on educational attainment, median age, median household income, median gross rent, income inequality (Gini coefficient), and total population with counts by race. Once these data were compiled, they were added back into the inpatient dataset as quantiles. A quantile is simply a division of data into equal pieces, each containing the same fraction of the total set. For our purposes we used quartiles, which split the data evenly into 4 groups or quarters. For example, consider actual data for total patient charges in Indiana. The first quartile ranges from the minimum value, \$6,835, to the first quartile’s value, \$15,734. Any case with a total charge falling in this range would be sorted into the first charge quantile. The second quartile, or 50th percentile, is also the median. Any value falling in between the 25th and 50th percentiles was grouped into the second charge quantile. This process was completed for each ZIP code’s demographic data, resulting in pieces of information that were easy to work with, understand, and compare.

Using the interactive mapping tool that we built, ZIP code demographics may be viewed simply by hovering over areas of interest. If, for example, the travel time distribution for a particular trauma center is plotted, the users can look at an individual ZIP code’s demographic profile, conveniently placed into quartiles for intuitive comparison with neighboring ZIPs. The mapping tool provides a way to view the areas in NWI best positioned to obtain trauma care, and which population subgroups are affected when care is inaccessible. (1)

(1) Carr, Brendan G., Joel M. Caplan, John P. Pryor, and Charles C. Branas. “A Meta-Analysis of Prehospital Care Times for Trauma”. *Prehospital Emergency Care*, Vol. 10, No. 2, pp. 198-206. 2006.



5. *Identify the number and distribution of Northwestern Indiana residents who have been treated in Indiana trauma centers in the past three years.*

Definition of Trauma Care

For the purpose of this study, patient encounters have been identified as trauma cases if they meet the Indiana Trauma Registry Inclusion/Exclusion Criteria as defined by the Indiana State Department of Health. This criteria includes:

- ICD-9 diagnosis codes **ranging from 800-959.9**, with the exclusion of:
 - ✓ **905-909.9 (late effects of injury)**
 - ✓ **910-924.9 (superficial injuries such as blisters, contusions, abrasions, etc.)**
 - ✓ **930-939.9 (foreign bodies-ingested, eye, etc.)**
- Hospital admission and/or patient transfers via EMS transport from one hospital to another hospital, even if later discharged from the emergency department (ED); and/or, death resulting from the traumatic injury, independent of hospital admission or hospital transfer status.
- ❖ **Information in this study will identify Emergency Department cases meeting the above coding criteria as “Trauma” and cases with ICD-9 Injury and Poisoning codes that are excluded in the above criteria as “Injury.” The term Injury/Trauma will be used to refer to all cases with any Injury and Poisoning ICD-9 code.**



What is a Trauma System?

- A pre-planned, comprehensive, inclusive network of trained and equipped trauma care providers, throughout the state
- Includes EMS, hospitals, trauma centers, MD's, RN's, rehab specialists, trauma registrars, and injury prevention
- An organized, coordinated effort that integrates existing resources to achieve improved patient outcomes
- Delivers the full range of care to all injured patients
- Integrated with the local public health system
- Value derived from seamless transition between each phase of care

INDIANA TRAUMA SYSTEM



- ❖ **The success of a trauma system or program at the state and community levels, is largely determined to the degree by which it is supported by public policy.**

Indiana Triage and Transport Rule

Patients who EMS personnel determine fall into Step One or Step Two of the Centers for Disease Decision Scheme shall be transported to the nearest trauma center **unless**:

- It will take more than 45 minutes to take patient to nearest trauma center, **or**
 - The patients life will be endangered if care is delayed by going to the nearest trauma center.
- If either of these two exceptions occur, the patient should be taken to the nearest appropriate hospital as determined by the EMS provider's protocols.
- The 45 minutes begin when the patient is placed in the ambulance and the ambulance is ready to depart the scene. It ends when the patient is in the hands of hospital personnel.



There were 5,023 total cases and 564 trauma related cases in Indiana trauma centers in 2012 and 2013 (thru the 3rd quarter of 2013). This data consists of NWI residents who sought care outside of the Focus Area but were treated by Indiana trauma centers.

Indiana Trauma Center Data (2012-2013Q3)

Exhibit 15

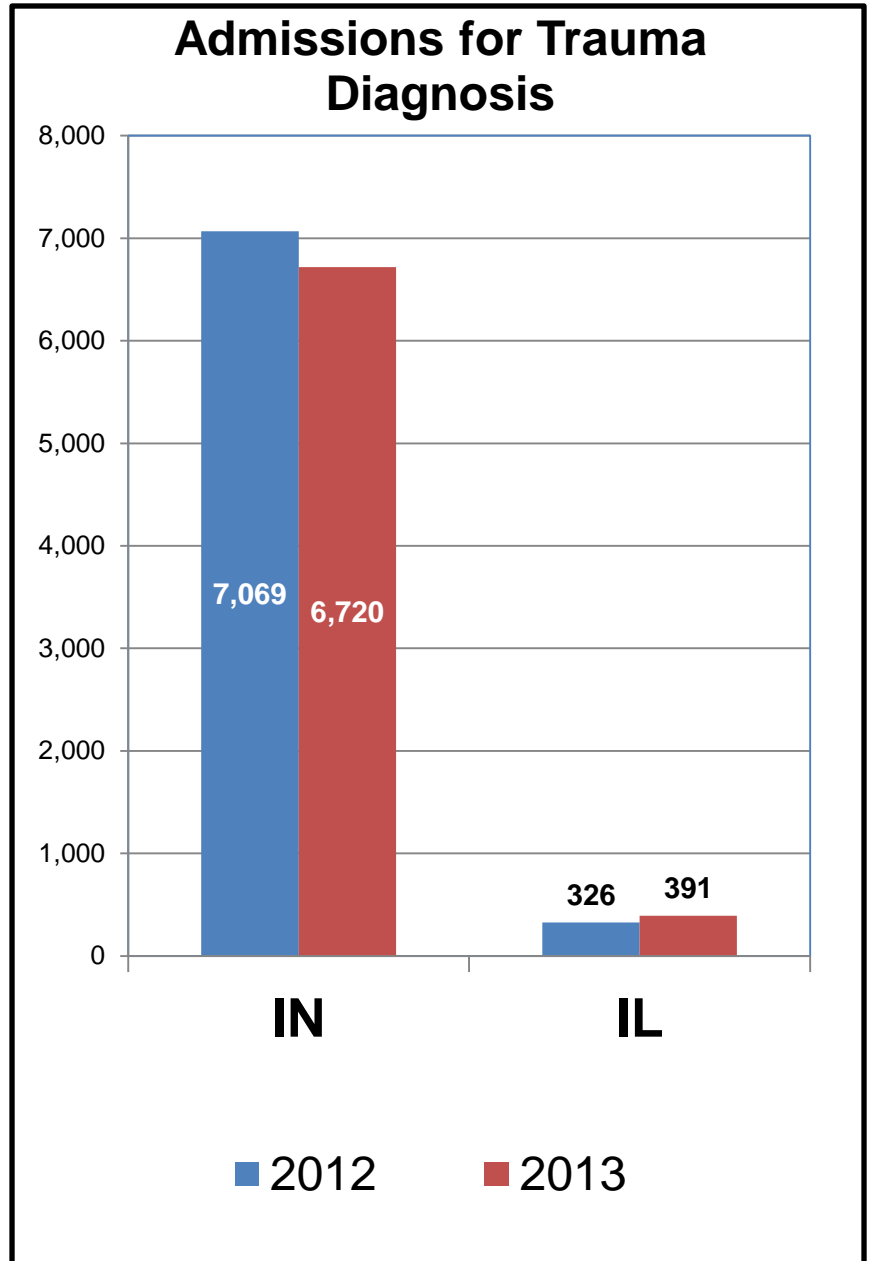
Hospital Name	Year	Total Incidents	Total Charges	Total Traumas	Total Trauma Charges
Memorial Hospital of South Bend	2012	1366	\$ 50,229,447	148	\$ 8,793,785
Memorial Hospital of South Bend	2013	1318	\$ 38,180,409	158	\$ 9,854,041
Indiana University Health Methodist Hospital	2012	376	\$ 36,715,275	70	\$ 7,094,665
Indiana University Health Methodist Hospital	2013	406	\$ 31,309,159	70	\$ 6,330,695
St. Vincent Indianapolis Hospital	2012	219	\$ 14,642,857	22	\$ 1,484,066
St. Vincent Indianapolis Hospital	2013	158	\$ 7,836,603	15	\$ 551,851
Riley Hospital for Children at Indiana University Health	2012	625	\$ 40,530,021	43	\$ 2,390,939
Riley Hospital for Children at Indiana University Health	2013	555	\$ 34,216,023	38	\$ 1,337,595
Totals	2012-2013 Q3	5023	\$ 253,659,794	564	\$ 37,837,637



6. *Identify the number and distribution of Northwestern Indiana residents who have been treated by out-of-state trauma centers in the past three years.*

Exhibit 16

- The vast majority (95%) of trauma care required by NWI* residents is delivered by Indiana hospitals.
- Outmigration to Illinois facilities for trauma care is low:
 - 1) 326 residents of the 7-counties of NWI were admitted to an IL hospital for a trauma diagnosis in 2012; 391 cases in 2013.
 - 2) **Most of the outmigration is from Lake and Porter County residents: 276 cases (2012), 323 (2013).**



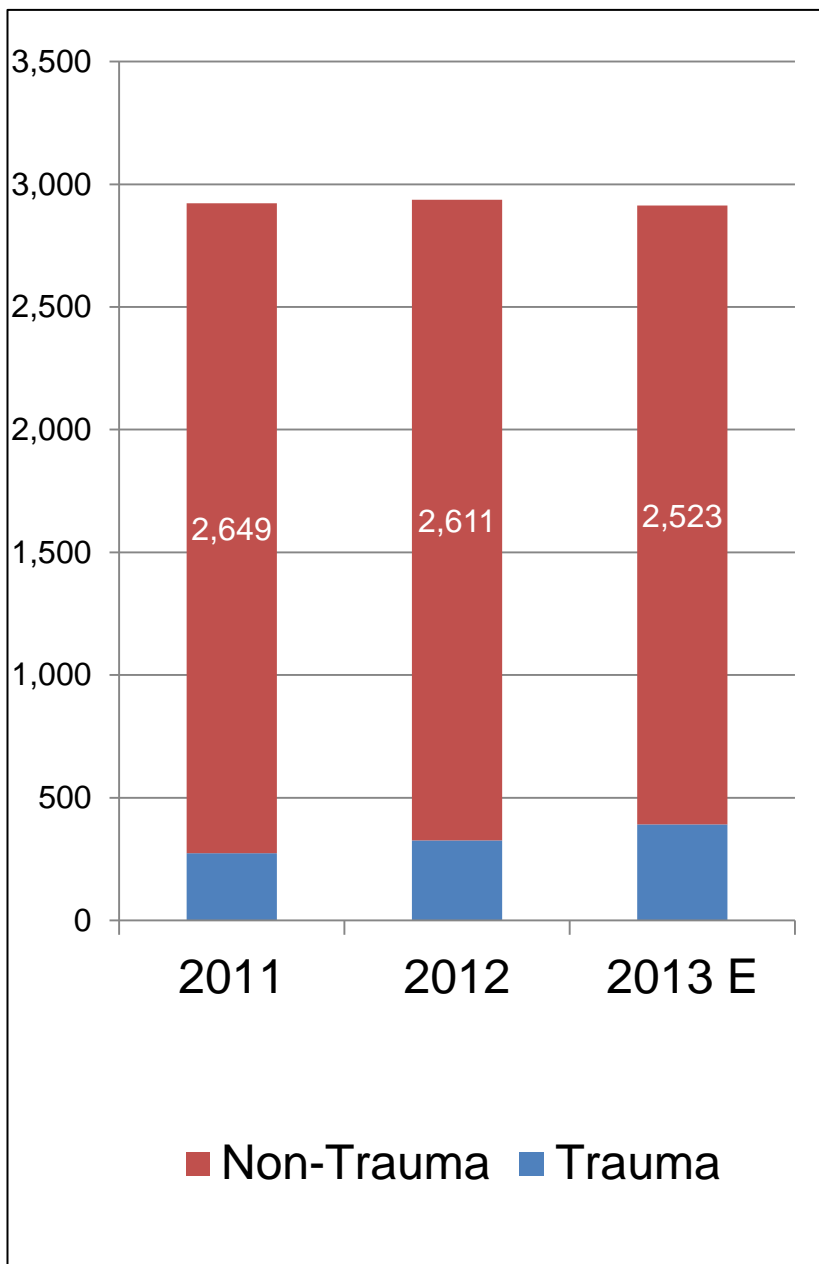
* 7 Indiana counties used for data analytics are Lake, Porter, La Porte, Starke, Pulaski, Jasper, and Newton counties.



Indiana Residents Seeking Care in Illinois

- Nearly 90% of admissions of NWI residents* to Illinois hospitals are for non-trauma diagnosis.
- The billed charges associated with these admissions is nearly \$175 million based on Illinois Hospital Association data.
- Net revenue for these admissions is estimated at \$97million.
- Retaining some portion of this outmigration will have a significant positive effect on Indiana hospitals.

Exhibit 17



* 7 Indiana counties used for data analytics are Lake, Porter, La Porte, Starke, Pulaski, Jasper, and Newton counties.



7. *Analyze whether the State of Indiana or health insurance companies are providing payments for Northwestern Indiana residents who secure healthcare services in Illinois and, if so, analyze the additional costs incurred by the State and insurance companies.*

An estimated \$14.5M of payments were made to Illinois providers on behalf of Indiana adult trauma patients in 2012 and less than \$1M of payments were on behalf of Medicaid patients and therefore paid directly by the State of Indiana.

There is also a major difference in commercially insured patients in the two states: 49% of the cases receiving trauma care in Illinois were commercially insured and only 23% of the trauma cases staying in Indiana were commercially insured – a variance of 26%. The proportion of commercially insured Hoosiers seeking non-trauma care in Illinois is higher: 57% of the care delivered to by Illinois hospitals is to Indiana residents with commercial insurance

The total flow of funds, trauma and non-trauma inpatient care, leaving the state to Illinois providers is estimated at \$112M. The Medicaid portion, paid by the state of Indiana, is approximately \$1.5M



8. *Collect available data for the volume and severity of trauma cases originating in Northwestern Indiana for the past three years.*

Table 1 displays the number of trauma cases on average, by facility and also includes average annual inpatient volume. This list of facilities was selected according to bed size and average number of trauma annual cases.

Exhibit 18: Annual Average Trauma

Hospital	Cases	Inpatient Beds	Current Average Yearly Trauma Volume	Current Average Yearly Inpatient Volume
Community Hospital - Munster		427	1343 (\$36.0M)	22,143
Porter Valparaiso Hospital - Valparaiso		301	749 (\$33.5M)	13,714
St Mary Medical Center - Hobart		170	683 (\$16.3M)	11,566
Franciscan St Anthony Health - CP		208	616 (\$18.8M)	10,762
Franciscan St Margaret Health - Hammond		215	421 (\$14.0M)	7,436
St Catherine Hospital - East Chicago		168	399 (\$7.9M)	8,375
Franciscan St Margaret Health - Dyer		198	376 (\$11.0M)	8,451
Methodist Hospital – Gary, Merrillville		536	325 (\$8.7M)	8,313

Per capita trauma rates are derived by taking a percentage of the whole per city or county. Lake County had the highest per capital rate in both 2012 and 2013. As indicated by the population figures, a designated trauma program or facility would have a larger case load in Lake County.

Exhibit 19: Per Capita Trauma Rate in 2012-2013 for 7-County Region

County	2012 Traumas Cases	2012 Population	2012 per capita trauma rate	2013 Traumas Cases	2013 Population	2013 per capita trauma rate
Lake	4094	495,230	8.27%	3,906	491,456	7.95%
Porter	1053	164,386	6.41%	989	166,557	5.94%
La Porte	789	111,335	7.09%	772	111,281	6.94%
Newton	68	14,087	4.85%	66	14,087	4.69%
Jasper	259	33,369	7.76%	230	33,389	6.89%
Starke	129	23,310	5.53%	129	23,197	5.56%
Pulaski	95	13,395	7.09%	97	13,007	7.46%
Total	6487	855,112	7.59%	6,189	852,974	7.26%



9. *Establish criteria and define the methodology for determining the number and levels of trauma centers needed to serve the population of Northwestern Indiana.*

In determining criteria and defining methodology for the number and levels of trauma centers, KSM looked at several key variables. We analyzed the following critical areas:

- Existing bed capacity at the potential candidate hospitals for expansion or renovation
- Renovation or expansion costs from a facility perspective
- Geography
- Population density
- Existing and projected trauma volumes

These factors enabled us to conclude that there is indeed a need for designated trauma expansion as well as greater access and improved quality of care in NWI. KSM recommends a gradual move toward improved and increased access to trauma care being provided at designated trauma facilities. Given the volume of trauma in Lake and Porter counties, NWI should consider at least 2 Level III trauma centers initially. The next phase would be to create a pathway to at least one Level I trauma center within 3-5 years. This will allow NWI to migrate toward better trauma registry compliance, greater state mandated/measured drive time coverage on the trauma 45 minute map, better trauma outcomes and improved overall patient care.

The credibility, regulatory environment and efficiencies of designated level I, II, or III trauma centers will also alleviate some unwarranted negative perception about healthcare provisions in NWI, specifically Lake county. Lake and Porter county residents not only are taken to trauma facilities by either car or helicopter, but are also electing to pursue out of state care for non trauma related events as well. Having at least one designated trauma program can and will alter this thinking in a positive way.



Exhibit 20: Example Timeline for Trauma Expansion

Exhibit 20

	2014	2015	2016	2017-18
Trauma Care Activities	<ul style="list-style-type: none">• Report distribution and discussion• Confirmation of trauma status any planning efforts	<ul style="list-style-type: none">• Level 3 certification achieved by at least one facility in each of Lake and Porter County	<ul style="list-style-type: none">• Level 3 certification pursued by additional facilities	<ul style="list-style-type: none">• Level 1 or 2 certification achieved by 1 facility in Lake and Porter County



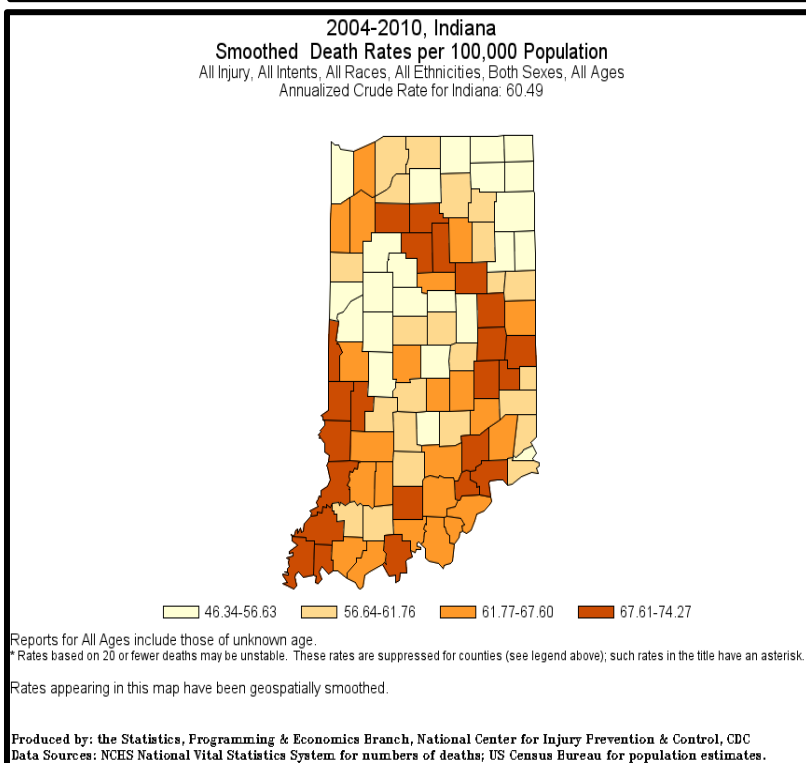
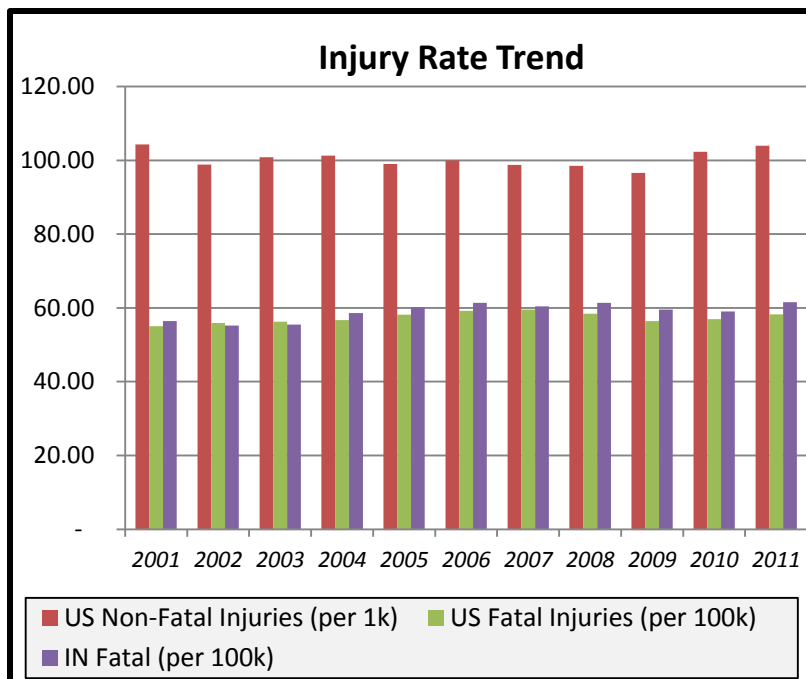
10. Project future demand for trauma services in Northwestern Indiana.

The most complete data available for trauma is from the federal Centers for Disease Control. Because the state of Indiana has not historically had a trauma registry, only those injuries resulting in a fatality are available at the state or county level.

The chart at right shows that Indiana has a small but persistently higher death rate from injuries when compared to the national rate. The Indiana rate is on average 1.7 deaths per 100,000 population higher than the national rate. In 2011, the most recent year that data is available, the Indiana rate was 61.51 while the national rate was 58.26. (Both rates are age-adjusted per 100,000 population.) The difference in the two rates infers that, based upon the published 2011 population of Indiana, there were 212 excess deaths in the state.

Within the state of Indiana, Lake County has a lower injury fatality rate than the state while Porter County has a higher rate. Trended data at the county level is not available at this time.

Exhibit 21

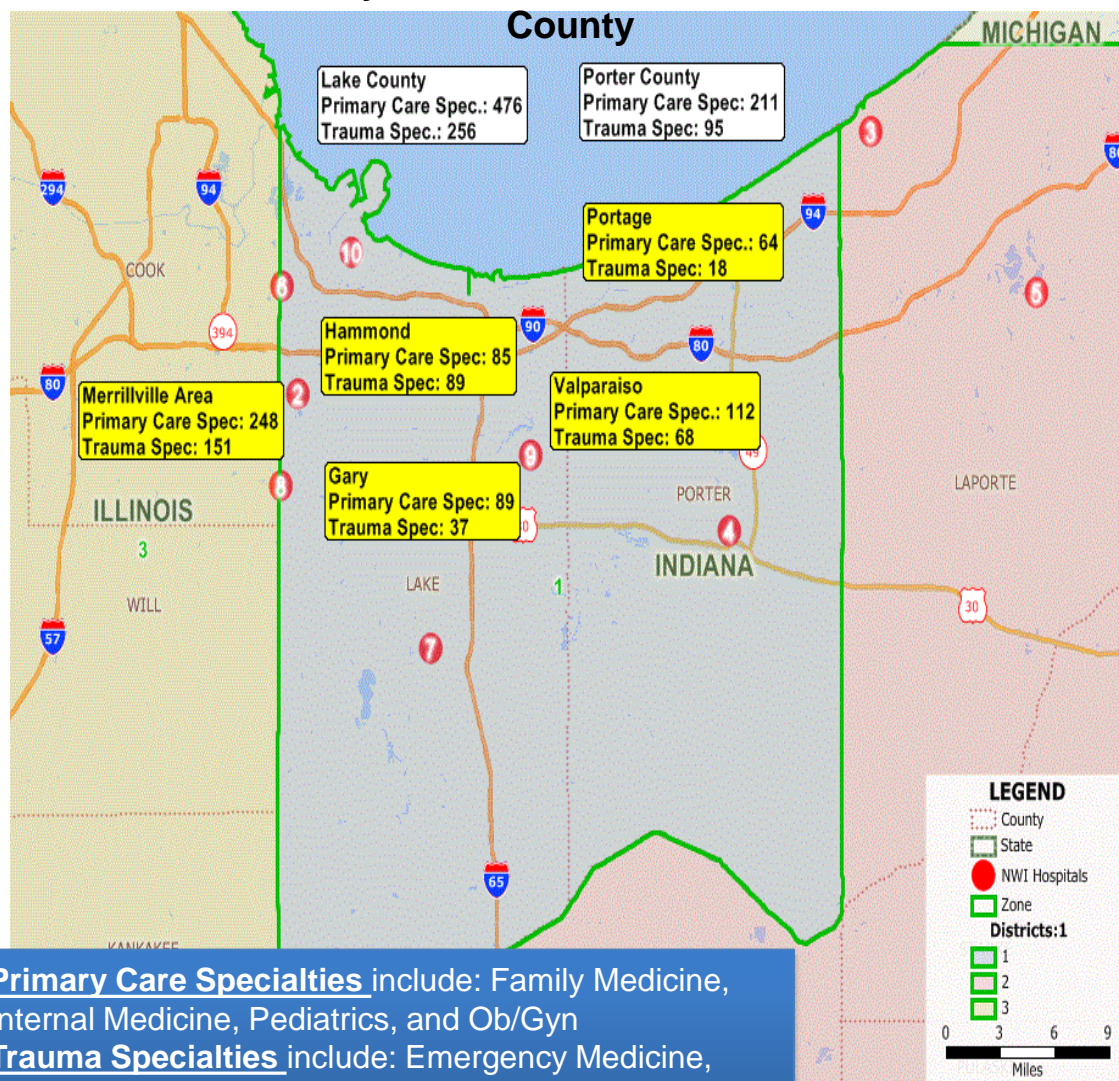


Source: Centers for Disease Control, WISQARS injury surveillance system



11. Identify the current inventory of healthcare resources in and around Northwestern Indiana (e.g., trauma surgeons, neurosurgeons, nurses, and other practitioners that support trauma centers) and provide comparative analysis as to the sufficiency of resources.

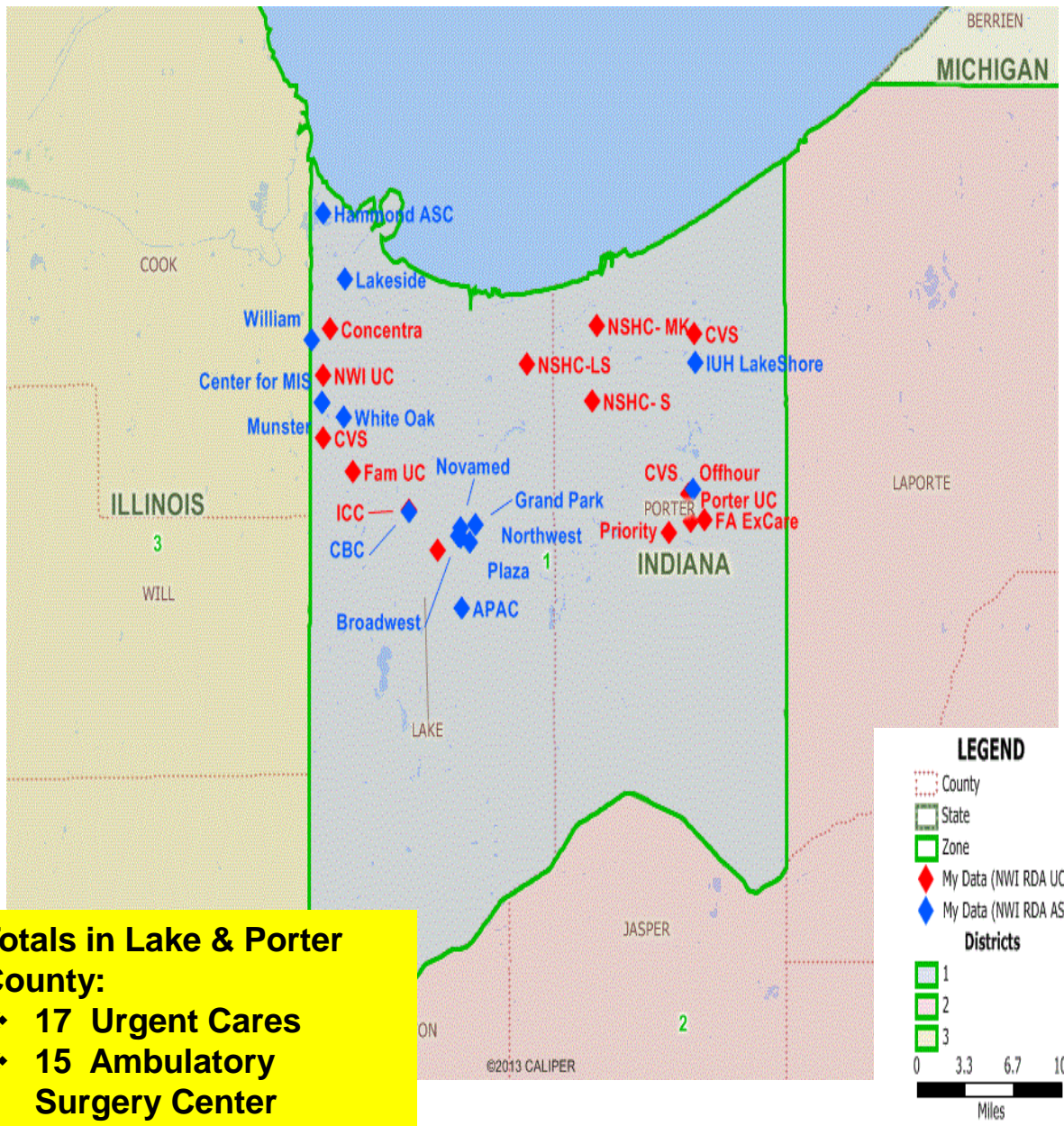
Exhibit 22: Physician Resources in Lake and Porter County



Primary Care Specialties include: Family Medicine, Internal Medicine, Pediatrics, and Ob/Gyn
Trauma Specialties include: Emergency Medicine, Orthopedic Surgery, General Surgery, Neurosurgery, and Anesthesia



Exhibit 23: Urgent Care and Ambulatory Service Offerings in Lake and Porter County





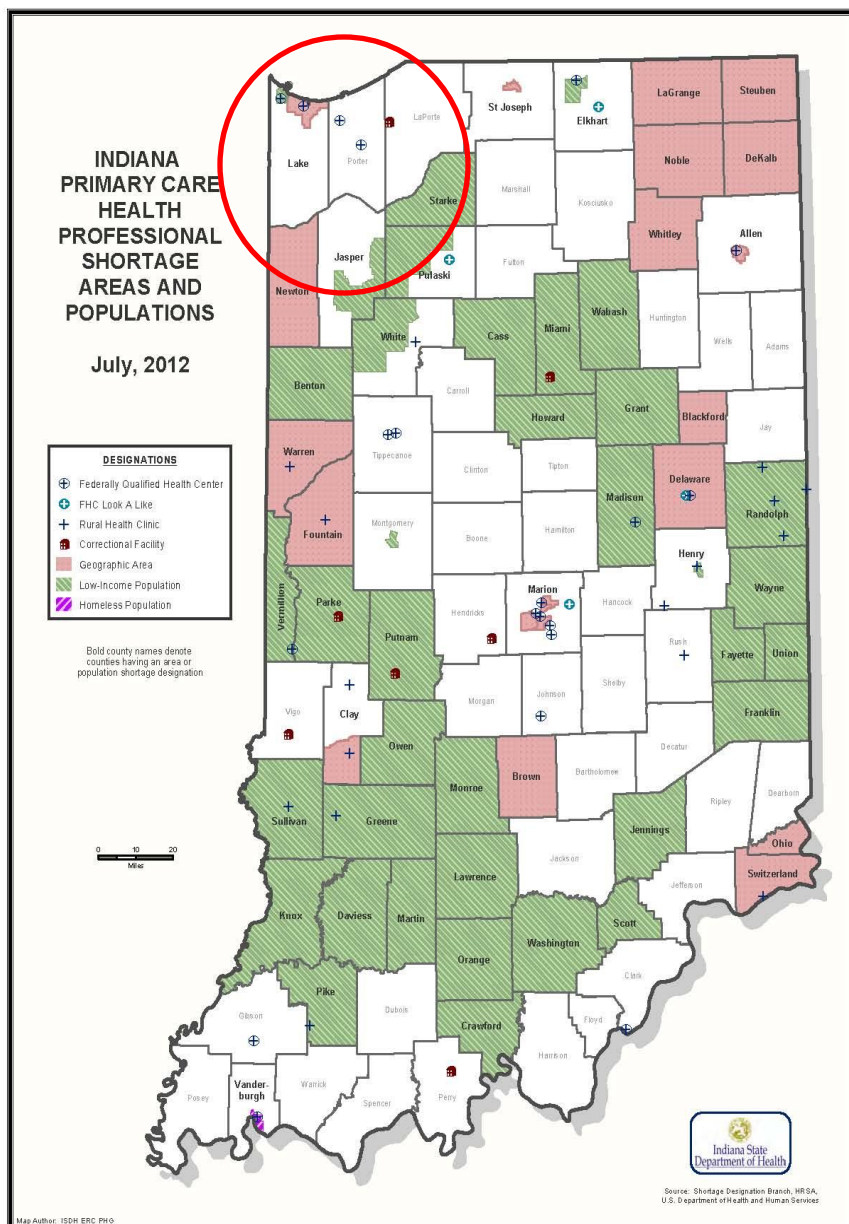
Primary Care Capacity in NWI

❖ **Primary Care Shortage** – Indiana Ranked 38th out of 50 states by AAMC in 2010 in number of physicians per 100k population.

❖ Lake and Porter counties are two counties that have the greatest need for PCP's.

❖ There are 4 Federally Qualified Health Centers (FQHC) in Lake and Porter County

Exhibit 24



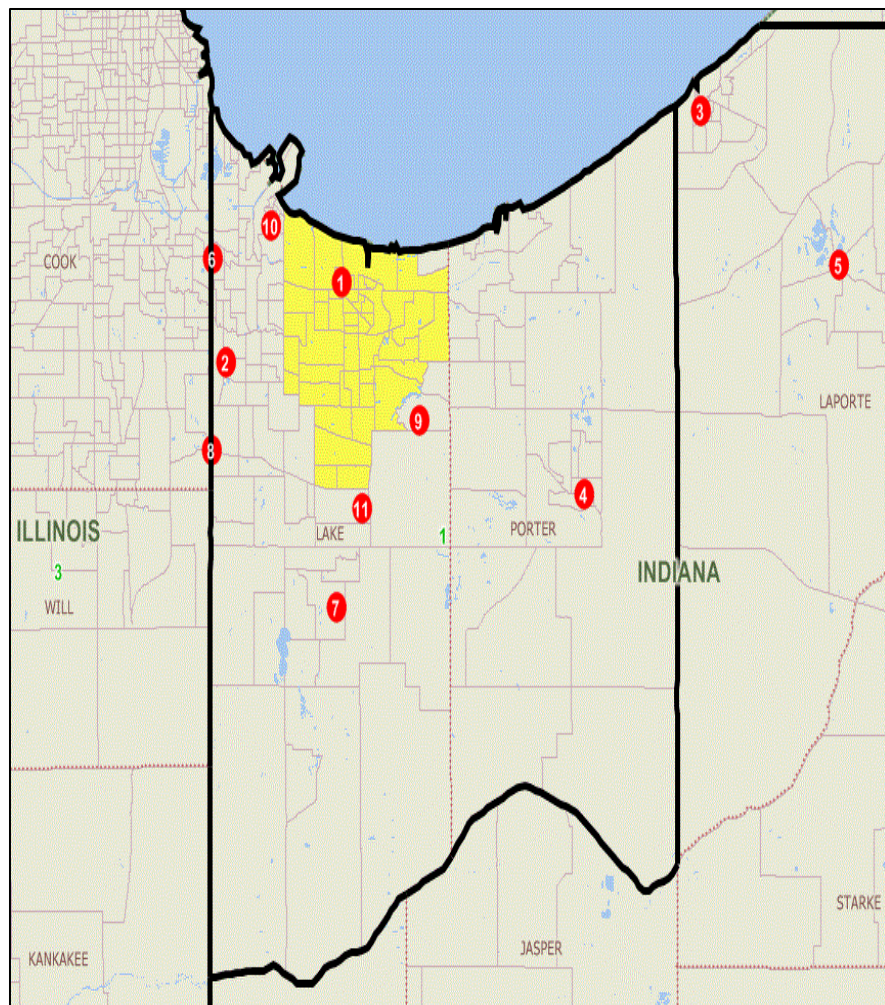
Source: Shortage Designation Branch, HRSA, U.S. Department of Health and Human Services



Health Professional Shortage Areas in NWI

- Several areas of Lake County are designated as a Health Professional Shortage Area (HPSA) for Primary Care by the Health Resources and Services Administration
- HPSA status is granted when the population to primary care ratio exceeds 3,500:1
- As of May 2014, an additional 6 primary care physicians are needed in the selected census tracts to achieve the targeted ratio

Exhibit 25





12. *Provide commentary on and make recommendations on how best to improve trauma care in Northwestern Indiana.*

Trauma care in NWI, as well as the entire state of Indiana, is far behind neighboring states and sits at the bottom of the national rankings. There is no simple solution and a significant amount of collaboration in NWI must take place if a successful system, timeline and process are to be effective.

First and foremost, a governing task force or committee should be formed to drive and assist in guiding at least two hospitals in Lake and Porter counties in achieving designation as Level III trauma centers. This is the first and critical step to answering some of NWI's trauma needs. Some hospitals in the area are currently providing "trauma" care to patients who would be more appropriately cared for in a trauma designated center. This Level III designation should be acquired by two facilities in 2015 and 2016.

In following the example timeline on page 53, the end goal of a designated Level I or II facility in 2017 - 2018 would be achieved. KSM feels that this "ramp up" in trauma services would best position NWI to serve residents from a trauma perspective. This report documents key financial measures such as volume, reimbursement, projected volume and market share. However, the most significant benefit of becoming a designated trauma center/program will be the effect on NWI residents **quality and access to care**:

- Local access to improved and expanded services for the community. Injured patients treated in a trauma center receive specialized diagnostic evaluation and clinical interventions more quickly, leading to improved outcomes, faster recovery and increased patient satisfaction.
- Increased traffic from the emergency medical services agencies for trauma patients and those with conditions such as chest pain, stroke, etc. lead to increase in overall ED volume. Increased ED volume results in increased volume for ancillary services; increased surgery volume, increase in inpatient admissions.
- Trauma designation requires a robust trauma quality improvement program, which has been shown to improve the process of care, decrease mortality and decrease costs.



- Increased patient and surgeon satisfaction. 24/7 onsite trauma surgeon can fill-in for general surgeons who do not desire to take call, leading to increased physician satisfaction, decreased surgery wait time, decreased after-hours cases, and improved productivity/utilization of existing on-site surgery staff. General surgeons often appreciate not being required to take call, which can be disruptive to their daily office schedules. This is also helpful when recruiting new general surgeons.
- Trauma verification by the American College of Surgeons implies a level of capability unmet by non-verified hospitals, and is a beneficial marketing tool, a driver of improved perception and similar to other Center of Excellence designations.
- According to a 2013 study by Stanford School of Medicine, nationally there is a 25% improvement in survival rates among injured patients treated at trauma centers vs. non-trauma hospitals
- Enables verified hospital the potential to more confidently manage appropriate inpatients in their own community and offers the potential to repatriate patients who need rehab or swing-bed capabilities.
- Participating in a system designed to provide an organized, pre-planned response to the trauma patient helps assure both optimal patient care and the most efficient use of limited healthcare resources.

Systemized trauma care influences other aspects of medical care provided (called the halo effect). Trauma potentially affects:

- Education - provides educational opportunities to staff that are useful for other time sensitive conditions such as stroke, heart attack, etc...
- ED – Staff and equipment are available for use in any emergent condition.
- Inpatient Care – trauma protocols can also improve care of medical patients
- Performance Improvement - for trauma carries over to medical patients and boosts overall clinical performance improvement throughout the hospital
- Verified Centers - can charge a trauma activation fee for cases meeting criteria



13. Analyze impacts of above recommendations on existing Northwestern Indiana hospitals.

Based on our study, we believe the most economically responsible way to provide trauma and medical education services in the area is through partnership with existing facilities as opposed to new construction. Existing facilities already have excess bed capacity, have an existing infrastructure or process that provides medical education to medical students, and have expressed an interest in pursuing both trauma (both expanded and or designated) and graduate medical education. If pursued through partnership, these services will be additive to existing hospitals, create additional jobs, and provide a new option for a higher quality of care to residents of NWI.

If the decision is to construct a new Academic Medical Center that will also provide trauma services, the area is likely to be harmed economically. With the current bed capacity already existing in the region, building a new facility is likely to have the effect of causing one or more facilities in the region to be closed. It was believed for years that there was a very large amount of trauma volume out-migrating to Illinois. Our findings have disproved this theory and we have discovered a larger than expected bed capacity amount.

Exhibit 27

Facility	Beds	Census	Capacity %
Methodist Northlake	185	160	14%
Methodist Southlake (2)	269	190	29%
Community Munster	406	266	34%
Porter Regional Hospital	257	138	46%
Franciscan St Anthony Michigan City	149	63	57%
IU Health La Porte	124	59	53%
Franciscan St Margaret Hammond	185	110	40%
Franciscan St Anthony Crown Point	240	124	48%
Franciscan St Margaret Dyer	158	77	51%
St Mary Medical Center	175	140	20%
St Catherine Hospital	161	89	45%



14. If a new trauma center is recommended, provide commentary on and make recommendations on appropriate mix of revenue sources to support a new center including, but not limited to, both capital expenditures and operations.

The process of developing two Level III designated trauma programs in NWI in the next two years and a Level I or II by 2018 will require an investment by the designated facilities. The capital cost will be significant but the new revenue stream and halo effects of designation should provide a positive return on investment.

The selected hospitals would fund their individual expansion or renovation projects independently as each hospital moves towards Level III trauma designation. Four facilities were assessed during this project and the below ranges represent the capital cost for expanding to meet the Level I, II or III facility trauma requirements.

<p>❖ Community</p> <ul style="list-style-type: none"> “ Helipad “ ED renovation for additional treatment rooms 	<p>\$1,446, 024 ↔ \$4,011,536</p>
<p>❖ Porter</p> <ul style="list-style-type: none"> “ 24,000 sf vertical ICU addition ▪ If built new and as an adjacent addition or structure, the cost projection is between \$6,601,902 and \$8,970,000. 	<p>\$4,305,600 ↔ \$5,908,240</p>
<p>❖ *Methodist</p> <ul style="list-style-type: none"> “ ED renovation “ ICU renovation 	<p>\$2,777,998 ↔ \$4,364,271</p> <ul style="list-style-type: none"> “ New ICU in renovated space “ New CT in existing location

*Methodist improvements are limited to Northlake campus as a designated trauma point of entry.



Facility Cost Assessment Scope

The Hospital Assessment and Evaluation was conducted using a combination of subjective and objective criteria. The criteria were created by standards set in the most recent “Guidelines for Design and Construction of Health Facilities” published by The Facility Guidelines Institute and American College of Surgeons recommendations. This guideline is the standard that JCAHO and the ISDOH apply to designation levels, and the recommendations of the American College of Surgeons form the basis for Level I accreditation.

The Guideline and Recommendations both stress that specific requirements are minimum requirements and that all spaces and designs must meet the requirements of the specific program, including services and equipment being used at the individual facility. Since a full operational program has yet to be developed, our facility assessment and program are based upon code requirements, in addition to space needs and criteria for similar Trauma programs.

The capacity of any ED/Trauma Department is impacted by many factors in addition to the number of visits. Downstream department capacity can greatly influence the operational efficiency for moving patients through the ED area. Although information was gathered related to the capacity and issues with the ICU, Imaging, Surgery, and Cath Labs; analyzing any causes or corrections to capacity issues in those areas was beyond the scope of this analysis.

The Capacity for the hospitals’ ED was based upon current census numbers and recognized throughput challenges. The impact of Trauma designation on ED patient volumes deserves further analysis, but is not explored within this evaluation. All hospitals are continually impacted by the opening or closing of services within the service area and final design of a new Trauma unit should reflect corporate processes for expanding and contracting in a modular design and staffing plan.

As a point of comparison, a new freestanding ED option is also presented. This is a complicated prospect as the functional program must assume a number of important operational criteria. Variables such as patient volume, acuity



distribution, regional census influences, and related services have a significant influence on the sustenance of a new provider in the region and the health of existing providers. Traffic generated and inpatient admissions need to be accommodated. Expensive imaging and surgical facilities need to be utilized for a reasonable return on investment. This is an expensive and complicated option and the solution presented here would require significant additional communication, feasibility, and design effort to validate.

Facility Cost Assessment Intent

As part of an effort to identify what would be required to establish a Level I Trauma program in northwest Indiana, Cripe|Architecture + Interiors was contracted to evaluate the impact to physical facilities. The anticipated approach would involve engagement with an existing trauma program, with the intent to incentivize and facilitate the measures required to attain Level I designation. This study engaged three existing hospitals, all currently providing emergency services within northwest Indiana, as directed by Katz Sapper & Miller.

Benchmarking

Various high level benchmarks are documented in current research for the appropriate size and number of beds for an emergency department and trauma center. The operational plan and flow among the ED and all related departments can have a considerable impact on the efficiency and therefore the system needs to be studied as a whole.

This study provides a benchmark range that gives an indicator of how each current emergency department fits along the benchmark spectrum. Being high or low is not a direct indicator of the ED's capacity or ability to become a trauma center. Many existing hospitals and trauma centers are undergoing Lean planning to improve and therefore may find additional capacity through more efficient utilization in departments that seem undersized.

The objective metrics used for this evaluation are defined and explained further in the evaluation section of this report.



With the objective data, the subjective assessment of systems and processes is also a valuable indicator of suitability. This report has utilized a weighted scoring approach to quantification of the subjective assessments. This is also defined and explained further in the evaluation section of this report.

Methodology of the Cost Opinion

The cost opinions for each facility are based upon unit costs. The unit costs come from national hospital projects, but are normalized to the Indiana environment Q1 2015. Within the range of costs, we have used the 75 percentile for a new acute care hospital construction. The components have been further broken down to the specific area being considered.

This early analysis is a high-level assessment and therefore associated comments will be provided noting assumptions made. We have applied the unit costs uniformly across each facility to assure consistency in the assessments.

Required renovations have been assigned the fit out costs for each specific department, and then classified into four levels weighting the intensity of renovation required.

Level 1 – Cosmetic renovations that pertain mostly to finishes although may include replacement of cabinets and countertops. This work would be 18%-20% of a complete rebuild. This level would not include any changes to the wall layout.

Level 2 – Minor alterations to the functional layout of the department with limited modifications required for Heating Ventilation and Air Conditioning (HVAC). The estimated cost of this work would be 20% - 30% of a complete rebuild.

Level 3 – Moderate renovations to the department with some significant changes to the functional layout and relocation of walls requiring more significant modifications to the HVAC systems in the area with some structural and plumbing modifications. The cost of this work would range from 30% - 50% of a complete rebuild.

Level 4 – Major Renovation to the department that would include a near total demolition of the internal space and systems. The cost of this work would range from 50% - 75% of a complete rebuild.



15. Identify additional funding sources available for trauma care in Northwestern Indiana including, but not limited to, local, state, and federal sources.

Funding sources for the provision of direct patient care are increasingly difficult to locate. Governmental agencies are struggling to meet budgets, insurance companies are reducing reimbursement, and the federal government is attempting to reduce its aggregate Medicare spending.

One challenge of most trauma centers is the amount of indigent care they provide. A key goal of the Affordable Care Act (“ACA”) is to make health insurance available to those without coverage today. Assuming the ACA functions as intended, many of today’s patients who are uninsured will be insured tomorrow. Many of the uninsured population will have access to coverage through Medicaid which has low reimbursement. While these sources do not solve the reimbursement gap entirely, they do cover a significant portion of the gap.

Additionally, if coupled with an academic medical center or a graduate medical education program, participating hospitals will receive additional reimbursement support for graduate medical education. Some of the residents in these programs will provide direct patient care to trauma patients.

Below are funding options for a GME program that will and could potentially assist in trauma program development:

- ❖ Federal GME funding
- ❖ Potential for State funds
- ❖ Federal and Private Grants
- ❖ Research funding (National Institutes of Health)
- ❖ Private funding



16. Analyze the impact of the Affordable Care Act on current and future trauma care in Northwestern Indiana.

Affordable Care Act Can Strengthen Trauma Programs

Although significant progress has been made over the past few decades in the improvement of statewide trauma programs, trauma injuries and are still the leading cause of death and disability for people under the age of 45. These trauma related incidents are a major factor in the rising healthcare costs that are encountered by many in today's marketplace.

According to section 3505 of the Affordable Care Act, there are funds of \$100 million in annual grants that could and will "further the mission of trauma programs." The emphasis on coordinated care and the continuum of care fosters an alignment of trauma programs with the very core goals of the Affordable Care Act. Trauma injuries and cases are indeed expensive, but if treated effectively at the onset and with the immediate and appropriate level of care, millions of dollars can be saved as well as many lives. According to experts at Johns Hopkins, "continued commitment to this model on the part of the states and the federal government is critical."

However, in NWI and across the country, there are immediate challenges that the Affordable Care Act will create:

- Close to 40 million newly insured additional healthcare beneficiaries will be added to the current system.
- There will likely be a significant Medicare aggregate reduction in payments going forward.
- The use and popularity of healthcare exchange based products will provide consumers with more affordable premiums but with higher deductibles, which may be difficult.

These changes will only magnify NWI's lack of designated trauma care.

Source: Johns Hopkins Bloomberg School of Public Health



RFP Questions and Responses

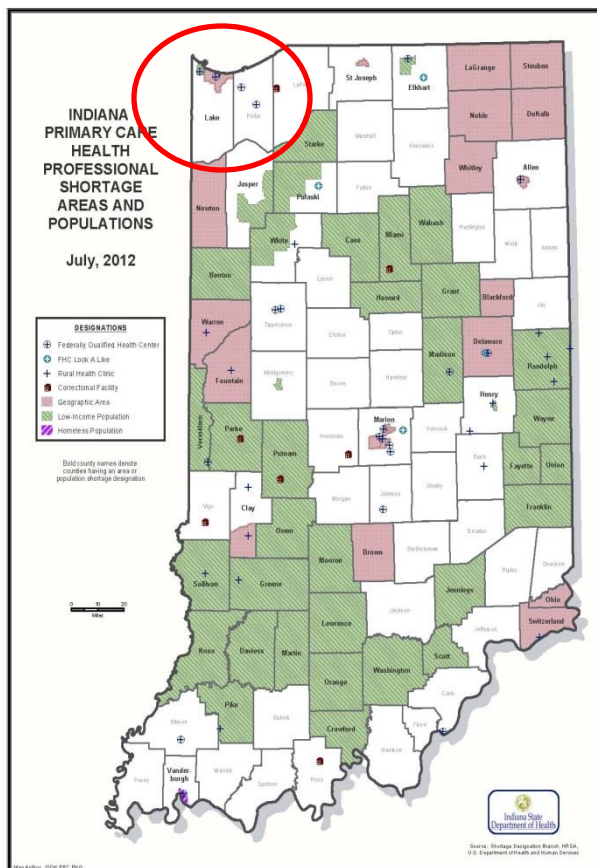
Academic Medical Center Feasibility



1. *Prepare a general inventory of health care services that are available within the geographic boundaries of northwestern Indiana;*

- ❖ Lake and Porter counties, combined, have over 18 hospitals (including specialty or post-acute facilities), 17 ambulatory surgery/endoscopy centers and 15 urgent-care clinics (including CVS minute clinics; excluding employer-based clinics).
- ❖ 41 states in the U.S. have a statewide integrated trauma system. Indiana’s system is relatively new. Lake and Porter counties, as well as the 5 Indiana bordering counties, do not have a level I, II or III designated trauma center.
- ❖ Although vastly different in demographic makeup, both Lake and Porter counties are experiencing a primary care physician shortage.

Exhibit 28



- ❖ **Primary Care Shortage** – Indiana Ranked 38th out of 50 states by AAMC in 2010 in number of physicians per 100k population.
- ❖ Lake and Porter counties are two counties that have the greatest need for PCP’s.



There is a significant amount of healthcare provider presence just across the border in Illinois. Level I, II and III trauma facilities as well as multiple Academic Medical Centers. This neighboring competition presents a challenge for both an academic medical center and a GME program in NWI.

With current bed capacity in Lake and Porter counties, it is recommended to utilize existing facilities as opposed to building a new Academic Medical Center for teaching and research. It is recommended that a new Academic Medical Center (AMC) NOT be created in Lake and Porter counties. However, a Graduate Medical Education program should be pursued using existing facilities. For the purposes of the RFP issued by the RDA, KSM has addressed many of the details surrounding academic medical centers in NWI.

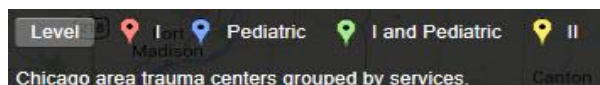
Tough Competition...

All of these Cook County, IL Level I Trauma / AMC facilities are less than one hour from Gary, Indiana.

Exhibit 29

	Cook County, Illinois - Level I Trauma / AMC	Minutes
1.	Advocate Christ Medical Center	36
2.	Advocate Illinois Masonic MC	45
3.	Advocate Lutheran General Hospital	57
4.	John H Stroger, Jr Hospital	38
5.	Loyola University Medical Center	39
6.	Mount Sinai Hospital	51
7.	NorthShore U Evanston Hospital	55
8.	Northwestern Memorial Hospital	36
9.	Presence Saint Francis Hospital	56
10.	Ann & Robert H Lurie Child Hospital	39
11.	University of Chicago Medical Center	30

Exhibit 30





2. *Analyze whether the healthcare needs of the population of Northwestern Indiana are adequately covered by the current health-care delivery system and, if coverage gaps exist, analyze where current residents go to fulfill such healthcare needs;*

I. Access Disparities

In order to fully ascertain whether the proposed Academic Medical Center will alleviate access disparities in Northwest Indiana, it is necessary to identify the extent of the access disparities that currently exist. It appears two major access disparity issues currently plague Northwest Indiana. First, multiple parts of Northwest Indiana are medically underserved, meaning citizens living in certain areas of Northwest Indiana do not have basic access to needed medical care. Second, many individuals within Northwest Indiana are either uninsured or underinsured. However, the Patient Protection and Affordable Care Act's (ACA) mandate requiring virtually every citizen to obtain health care insurance may address this second category of access disparity.

A. Current Access Disparity Issues in Northwest Indiana

With regard to the concern that certain areas of Northwest Indiana are medically underserved, a Purdue University study analyzing health care access in Indiana offers intriguing insight. In 2008, the Purdue University Center for Regional Development used state and federal data to examine how health care access in Indiana differed by county. First, the study generally observed that Indiana ranks below the national average in providing health care services to its citizens. Specifically, Indiana offers only 213 practicing physicians per 100,000 residents. Only 11 states featured a lower physician-to-resident ratio. An Indiana University Center for Health Policy project suggested Indiana needs 5,000 more physicians statewide in order to adequately care for the state's population. Indiana University Center for Health Policy project suggested Indiana needs 5,000 more physicians statewide in order to adequately care for the state's population. The Purdue study explained that the United States Department of Health and Human Services (HHS) designated numerous areas within Indiana as Health Professional Shortage Areas (HPSA



A HPSA is an area where the resident to primary care professional ratio falls below 1:3,500, or where the ratio is closer, but the need for medical service in the area is greater. With specific regard to Northwest Indiana, HHS has designated portions of Newton, Lake, and Jasper Counties as Health Professional Shortage Areas. The Purdue study also ranked each county within Indiana in terms of access to physicians and access to healthcare services. Newton County ranked as the seventh lowest county in terms of access to physicians. Newton County also ranked as one of the lowest counties in terms of access to health care services. However, Lake and Porter Counties ranked among the top ten counties in the state in the same category (attached hereto as Appendix A). Ultimately, the Purdue study concluded that where an Indiana citizen lives within the state determines what kind of medical care that citizen obtains.

Research from County Health Rankings and Roadmaps, which is underwritten by the Robert Wood Johnson Foundation and the University of Wisconsin's Population Health Institute, seems to support the Purdue study's conclusion that an Indiana citizen's ability to access healthcare may depend on the citizen's location within the state. Lake and Newton Counties ranked as two of the lowest six counties in the state in terms of "Overall Health Factors." Porter County, conversely, ranked as the 12th best county in the state under the same category. More relevantly, under the subcategory "Access to Care," Newton County ranked 87th, while LaPorte and Lake Counties ranked or in the bottom half. Porter and Jasper Counties ranked 9th and 36th respectively. Likewise, a search of Indiana's Medically Underserved Areas, as determined by Health Resources and Services Administration (HRSA), shows that areas in LaPorte, Lake, Newton, Jasper, and Porter Counties are medically underserved. The Indiana State Department of Health also suggests that portions of Newton, Lake, and Porter Counties are medically underserved (attached hereto as Appendix B). Collectively, these reports and studies indicate that, to a varying degree, citizens in each county within Northwest Indiana lack needed access to medical care.

A review of the current inventory of healthcare resources in and around Northwest Indiana reveals a shortage of healthcare professionals in the area. As part of its 2008 series studying Indiana's healthcare system, the Indiana University Center for Health Policy examined the projected physician and nurse shortage in Indiana. The study provided a county-by-county analysis of Indiana physicians and nurses.



The study showed that while Lake County serves as home to over 495,000 citizens, there were only 121 family medicine physicians, 18 general internal medicine physicians, 8 general pediatric physicians, 95 osteopathic physicians, and 70 nurse practitioners practicing in Lake County in 2008. Porter County, with a population of over 165,000 residents, featured only 41 family medicine physicians, 38 general internal medicine physicians, 10 general pediatric physicians, 30 osteopathic physicians, and 20 nurse practitioners. LaPorte County, with its population of over 111,000 citizens, featured 34 family medicine physicians, 1 general internal medicine physician, 10 osteopathic physicians, 17 nurse practitioners, and no general pediatric physicians. Similarly, Jasper County is home to over 33,000 residents, but there were only 15 family medicine physicians, 2 general internal medicine physicians, 1 osteopathic physician, and 4 nurse practitioners in Jasper County in 2008. There were no general pediatric physicians in Jasper County. While Newton County only has around 14,000 residents, it also only had 1 family medicine physician, 1 general internal medicine physician, 1 osteopathic physician, and 3 nurse practitioners in 2008. There were also no general pediatric physicians in Newton County. As mentioned, due to the insufficient amount of health care resources, portions of Lake, LaPorte, Porter, and Newton Counties have been designated as medically underserved.

Issues of race and poverty in Northwest Indiana present more complex issues of access disparity in the area. In 2011, the Indiana Minority Health Coalition (IMHC)—an organization generally dedicated to eliminating health disparities among racial and ethnic minority populations in Indiana—published a detailed study entitled “Addressing Indiana’s Health Disparities.” While focusing on the IMHC’s role in eliminating health care disparities, the study examined the factors impeding certain citizens’ access to health care. In relevant part, the IMHC stated, “Current information available from the Indiana State Department of Health demonstrates that minority populations in Indiana experience health disparities.” including disparities in access to care. Specifically, the IMHC remarked that, “the adequacy of the health care delivery system exerts a huge impact on the health of minority populations in Indiana.” Similarly, the IMHC maintained that there are “racial/ethnic disparities among the uninsured in Indiana.” In 2012, the Henry J. Kaiser Family Foundation reported that over 13 percent of Indiana citizens were medically uninsured, and



EnrollAmerica indicates that over 25 percent of Lake County residents under 65 are uninsured. The IMHC's study found that Black/African Americans, Latinos/Hispanics, and Asians/Pacific Islanders in Indiana were uninsured at higher rates than Whites. Cities within LaPorte and Lake Counties feature diverse populations, suggesting that citizens within those counties may be disproportionately uninsured. For instance, over 84 percent of the citizens living in Gary in 2012 were "Black or African American" and over 37 percent of the city's residents lived below the poverty line. Given the correlation observed by the IMHC, many of Gary's citizens are likely uninsured. While the ACA's mandate requiring nearly every Indiana citizen to obtain health insurance will likely decrease the amount of uninsured citizens in Indiana, the effectiveness of the ACA in achieving its goal remains to be seen. Even if the ACA is ultimately successful, it may take years before all of Indiana's citizens become medically insured. Furthermore, evidence from the Robert Wood Johnson Foundation suggests that 8.2 percent of Indiana children, aged 18 and younger, are still without healthcare coverage. As the Coalition suggested, one option for eliminating the health disparity issues in Indiana may be to "eliminate the shortage of . . . medical . . . health providers" or "increase access to care."

B. Ability of Proposed Academic Medical Center to Alleviate Access Disparities

Given the access disparity problems currently existing in Northwest Indiana, the question then becomes whether the proposed Academic Medical Center could alleviate any of these access disparity issues. As a One Region discussion of health care in Northwest Indiana explained, "We can guess at regional effects and disparities and their causes, but we do not have hard data on which to base policy and action." The Association of American Medical Colleges (AAMC) maintains that teaching hospital staff members "provide the full range of patient care to those in need—from routine hospital services to critical procedures and treatments—and all to a degree greatly disproportionate to their numbers." First, teaching hospitals may help combat the increasing physician shortage by providing hospitals with new, well-trained doctors. AAMC contends that "by 2015, the shortage will reach 62,900 physicians in all specialties; 91,500 doctors by 2020." The AAMC projections hypothesize that many specialties will face



nationwide shortages by 2025. Thus, AAMC argues that more physicians are needed to meet the nation's increasing health care needs. Teaching hospitals help train and educate future physicians.

In training future physicians, teaching hospitals also account for a substantial percentage of all hospital care in the country. According to AAMC, while AAMC-member teaching hospitals comprise only 6 percent of all hospitals in the country, they account for over 20 percent of all hospital care. Given their ability to handle complex injuries and illnesses, AAMC-member teaching hospitals also receive 40 percent of all transferred patients.

Because “a substantial percentage of doctors end up practicing where they did their residency training,” constructing a new teaching hospital or implementing a new residency training program in the area may also help keep more physicians in Northwest Indiana. While only 39 percent of doctors practice in the same state where they attended medical school, 48 percent practice in the state where they completed their graduate medical education. Indiana ranks above the national average in this regard, as over 50 percent of Indiana medical school graduates remain in the state. In fact, Indiana ranked as the sixth best state in the country in retaining graduating physicians. However, because there is no teaching hospital in Northwest Indiana, it is unclear how many graduating physicians choose to practice in Northwest Indiana. Theoretically, a new teaching hospital in Northwest Indiana may incentivize physicians to remain in the area after graduating, which may help curb the area's physician shortage problem.

With regard to care for the uninsured or underinsured, AAMC contends that teaching hospitals also provide a great deal of charity care throughout the nation. Specifically, while AAMC-member major teaching hospitals comprise only 6 percent of all hospitals in the nation, they account for 41 percent of the charity care costs. This suggests that teaching hospitals frequently serve charity patients—patients from which no payment is expected—and offer needed care to the medically uninsured or underinsured. Indeed, “a substantial percentage of the 46 million Americans who lack health insurance and the 48 million children, adults, seniors, and disabled Americans covered by Medicaid programs turn to [teaching hospitals] for medical care.” AAMC's figures suggest that teaching



hospitals' burden for caring for charity patients rose within the last decade. In 2007, teaching hospitals spent over \$12 billion on charity care. Again, the ACA may help reduce the need for charity care. If the ACA is effective, teaching hospitals will no longer have to bear the burden of providing extensive charity care to uninsured patients.

In sum, research regarding access disparities in Northwest Indiana revealed two main issues. First, numerous areas within the region are medically underserved, meaning citizens within those areas lack access to needed care. Second, pending data analyzing the effectiveness of the ACA, it appears a number of Northwest Indiana citizens may also be uninsured or underinsured. Studies from AAMC indicate that teaching hospitals may be useful in resolving both of the main access disparity issues currently plaguing Northwest Indiana citizens. First, teaching hospitals train new professionals, which may ultimately help alleviate the physician shortage in the area. Additionally, teaching hospitals also provide a disproportionate amount of medical care. Second, AAMC statistics revealed that teaching hospitals also deliver a large portion of the nation's charity care to uninsured patients. Consequently, it appears the proposed Academic Medical Center or GME program in Northwest Indiana could potentially alleviate the access disparities that current exist in the area.

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3. *Analyze the ability of existing Northwestern Indiana hospitals to integrate, both operationally and administratively, with Indiana University School of Medicine;*

NWI hospitals currently have a working relationship with the Indiana University School of Medicine in Northwest Indiana (IUNW). IUNW provides medical education in surrounding hospitals but does not provide internships or residencies. IUNW is not an academic medical center, does not have Graduate Medical Education programs (GME) and does not have an existing residency program in place. However, there is an increasing number of medical students in the matriculating at the IUNW campus:

✓ Class of 2015	12 students
✓ Class of 2016	13 students
✓ Class of 2017	27 students
✓ Class of 2018	26 students

All of the local hospitals that currently participate in medical education efforts in NWI have expressed an interest in officially and formally working with IUNW to provide GME.

- ❖ **51.5% of IUSM graduates stay in Indiana**
- ❖ **78.5% of those completing GME stay in Indiana**
- ❖ **Goal of 100 PCP available for every 100k people across the state of Indiana (currently only 51)**

GME Expansion in NWI

Recent state legislation has been proposed, supported by the Indiana State Medical Association, for state funding to be provided for additional resident positions in the state of Indiana. Tripp Umbach has found that the population of Indiana can currently support an additional 500 resident positions. The recommendation in this report is to expand the residency count or number of positions by 300 statewide in the near future. Of these 300 available, 36 would practice in Northwest Indiana and IUNW.

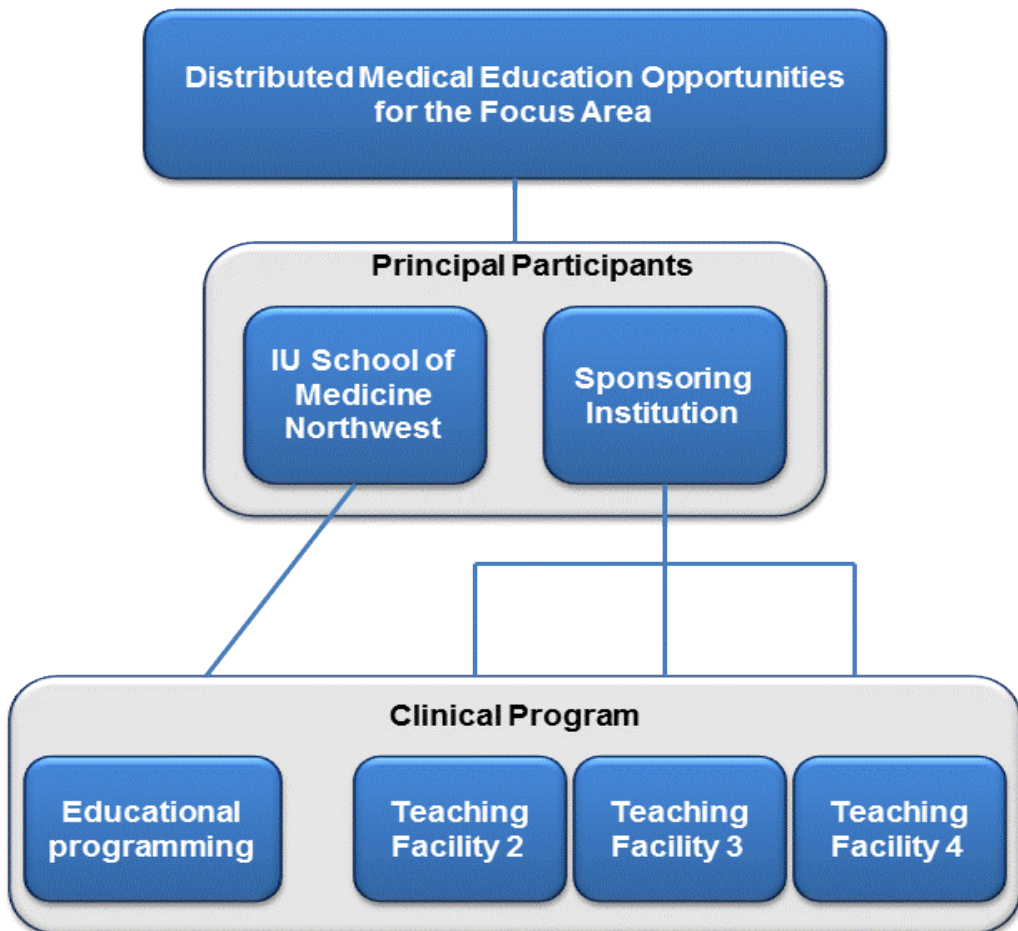
Source: Information provided by Indiana University Northwest, office of the Dean



Existing working relationships, newly proposed legislation, willing healthcare providers in NWI and the desire and commitment of IUNW to grow this program are all positive factors that point to a successful program. Below is a proposed model for the structure of a Graduate Medical Education program. Also willing to participate in this consortium of NWI healthcare providers are many NWI (FQHC) Federally Qualified Health Centers (FQHC). FQHC's serve an underserved area or population, offer a sliding fee scale, provide comprehensive services, have an ongoing quality assurance program, and have an independent board of directors. These FQHC's provide another ally, clinical site or building block for GME expansion and development.

Exhibit 31

Recommended Model



Source: Information provided by Indiana University Northwest, office of the Dean



4. *Conduct a cost-benefit analysis on the establishment of an academic medical center in Northwestern Indiana;*
5. *Conduct a cost-effectiveness analysis on the establishment of an academic medical center in Northwestern Indiana;*

The recommendation by KSM was to not develop a new academic medical center. With this in mind, the table below demonstrates how much outmigration to Illinois must be retained in order to cost justify the additional expenses of enhanced trauma services and a GME program.

Exhibit 32

	Year 1	Year 2	Year 3	Year 4	Year 5
Total Out Migration Revenue	Approximately \$35 million				
Total Out Migration Cases (1)	2,916				
Cases	1,219	1,325	1,431	1,537	1,643
Percentage	42%	45%	49%	53%	56%
<u>Combined Program Revenue</u>					
Incremental Case Revenue	\$14,226,990	\$15,461,186	\$16,695,381	\$17,926,576	\$19,163,771
<u>Combined Program Expense</u>					
Trauma Expense 2 Locations	\$3,594,500	\$3,594,500	\$3,594,500	\$3,594,500	\$3,594,500
Graduate Medical Education	\$832,000	\$1,216,000	\$1,600,000	\$1,984,000	\$2,368,000
Incremental Direct Costs	\$9,800,490	\$10,650,686	\$11,500,881	\$12,351,076	\$13,201,271
Total Program Expense	\$14,226,990	\$15,461,186	\$16,695,381	\$17,929,576	\$19,163,771
Net Income	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

(1) Based on previous patterns, KSM is assuming outmigration is stable.



We assume a GME program is operating at its full capacity of 36 residents by year 5. It has been estimated that the annual economic benefit of each resident is \$200,000. Each resident who stays in the community after or post residency generates \$1,500,000 in economic growth.

Exhibit 33

Residents Annually	36
Economic Benefit (per resident)	\$200,000
<i>Annual Resident Benefit</i>	<i>\$7,200,000</i>
Residents Who Stay	70%
Number of Doctors	25
Economic Benefit (per/doctor)	\$1,500,000
<i>Annual Doctor Benefit</i>	<i>\$37,500,000</i>
<i>Total Economic Benefit</i>	<i>\$44,700,000</i>

I. Financial Feasibility of Academic Medical Center

While the practical feasibility of the proposed Academic Medical Center likely depends on the ability of the proposed Center to obtain needed accreditation, the Center's financial feasibility depends largely on the availability of federal and state funding. While several federal funding opportunities exist, state funding sources appear limited.

A. Medicare and Medicaid Funding for Academic Medical Centers

A new teaching hospital may receive certain Medicare and Medicaid payments. In 2012, AAMC issued an informative guide detailing how certain teaching hospitals may receive Medicare funding. The guide explains that new teaching hospitals may receive two different types of Medicare payments.

Source: Tripp Umbach Consulting – May, 2014



However, before investigating the Medicare and Medicaid funding requirements, it is first necessary to discuss whether the proposed Academic Medical Center would constitute a “new” teaching hospital for the purposes of Medicare funding. The AAMC guide clarifies that transferring an existing residency program from one hospital to another would not qualify the hospital receiving the existing residency program for Medicare funding. However, the Centers for Medicare and Medicaid Services (CMS) may also look beyond whether the program merely transferred from another hospital. Indeed, CMS may consider: “whether the program director is new; whether the teaching staff is new; whether the residents have come from an existing residency program; the relationship between the hospitals; the degree to which the hospital with the original program continues to operate its own program in the same specialty; whether the program has been relocated for a hospital that closed; if the program was relocated from a closed hospital, whether the program was part of the closed hospital’s full time equivalent (FTE) resident cap determination; and whether the program is part of any existing hospital’s FTE cap determination.” CMS makes this determination—whether the program is “new” for the purposes of Medicare funding—on a case-by-case basis. Also, as discussed above, a teaching hospital may receive Medicare funding only if it conducts an approved medical training program. Again, this requires accreditation from ACGME, the American Osteopathic Association, the American Dental Association, the American Podiatric Medical Association, or the American Board of Medical Specialties.

If CMS determines that the residency program is eligible for Medicare funding, the institution may be eligible for two different types of payment. First, Direct Graduate Medical Education (GME) payments cover Medicare’s share of the teaching hospital’s costs directly related to educating residents. These direct educational costs may include: “resident stipends and fringe benefits, salaries and fringe benefits of supervising faculty, other direct costs, and allocated overhead costs.” The amount of GME funding afforded to each teaching hospital depends on a calculation of “a hospital-specific per resident amount (PRA), a measure of [the] hospital’s Medicare utilization, and the count of residents the Medicare program will fund.” If CMS sets the proposed Academic Medical Center’s PRA at \$100,000 and the Center’s Medicare share is 40 percent, then the Center would receive \$40,000 in GME payments per 1.0 FTE resident.



It should be noted that most residents do not equate to a full 1.0 FTE since many residents conduct their training at multiple hospitals and some of their time will not count toward the hospital's total FTE count. Submitting accurate resident costs initially is important, because after CMS initially establishes the PRA, the PRA becomes permanent. As discussed below, it is also important to determine the projected scope and size of the residency program because after a five-year window expires, Medicare sets a permanent cap on the number of FTE residents a hospital may claim. Additionally, President Obama's FY2013 Budget called for an increase of \$14.6 billion during the next decade to train more healthcare providers with more than \$5.2 billion going to a competitive GME program to incentivize training of PEPS.

Second, teaching hospitals also receive Indirect Medical Education (IME) payments to help offset the increased costs that accompany medical teaching programs. The purpose of the IME payments is generally to compensate teaching hospitals for treating severe and self paying or underinsured patients, and to help offset large overhead costs. The IME payment amount, as dictated by 42 CFR §412.105, depends partially on the hospital's resident-to-bed ratio. A multiplier set by Congress is used to help determine the final IME payment amount. IME payments are made as a "percentage add-on" to basic Medicare payments. The Medicare program spends billions of dollars annually on IME payments to teaching hospitals nationwide. However, it should be noted that President Obama's FY 2013 Budget proposed to cut IME payments by 10 percent, and his FY 2015 Budget includes \$14.64 billion in reductions to Medicare IME payments. IME and GME payments appear to be the largest sources of funding available to new teaching hospitals.

However, the Medicare program only pays for a particular resident for a set period of time. Indeed, for GME payments, Medicare will count a resident at a teaching hospital as a 1.0 FTE resident only for the Initial Residency Period (IRP). The IRP, which is determined by referencing the ACGME program requirements, varies based on the resident's particular specialty. For example, the IRP for internal medicine is three years. The maximum amount of time Medicare counts any resident as a 1.0 FTE resident is five years. For GME payments, if a resident trains beyond the resident's IRP, Medicare will only count the resident as a 0.5 FTE resident for any time beyond the IRP. IME payments would, however,



continue to count as 1.0 FTE residents even if they train beyond their respective IRPs.

Medicare also limits the number of “FTE residents each hospital may claim for GME and IME purposes.” Initially, Medicare assigned each hospital a permanent resident cap based on the amount of residents the teaching hospital claimed during the hospital’s first three years of operation. However, the American Osteopathic Association indicates that the window for establishing a resident cap was recently extended to five years. The “resident cap will equal the sum, for all programs, of the largest number of FTE residents in any post-graduate year (PGY) during the [fifth] year of the cap-building window, multiplied by the IRP for that residency program.” While a teaching hospital can add residents to its program and exceed the cap established in the initial five-year window, Medicare will only pay for the amount of residents within the cap. Thus, teaching hospitals must exercise foresight when beginning a new teaching hospital program. If a teaching hospital operates initially on a small-scale basis and Medicare sets the teaching hospital’s cap at a relatively low number of residents, the teaching hospital will not be able to receive Medicare funding for new residents if it later wants to expand its program. A hospital’s FTE count is not subject to a cap within the five-year window. GME caps are often higher than IME caps because GME resident training time is counted differently than IME training time.

B. National Institutes of Health (NIH) Funding

The National Institutes of Health (NIH), the world’s largest source for medical funding, also provides federal funding opportunities for various new teaching hospitals. Specifically, NIH provided over \$24 billion in funding to various research projects and programs throughout the nation in 2013. The NIH website claims the organization offers “almost 50,000 competitive grants to more than 300,000 researchers” In order to obtain NIH funding, an applicant must apply for a specific type of grant. Because NIH generally focuses on medical research projects and programs, the proposed Academic Medical Center here would likely have to prove that its training program could be used to conduct certain research projects in order to be eligible for any NIH funding. Depending on the nature of the training programs offered by the proposed Academic Medical Center, it appears the proposed Center may be eligible for various NIH grants. For instance,



the NIH Exploratory/Developmental Research Grant Award “encourages new, exploratory and developmental research projects by providing support for the early stages of project development,” and the award is occasionally used to fund “pilot and feasibility studies.” The proposed Center may also be eligible for NIH’s Education Grant, which provides funding “to develop and/or implement a program as it relates to a category in one or more of the areas of education, information, training, technical assistance, coordination, or evaluation.” NIH also offers non-profit entities certain Construction Grants. If awarded, an NIH Construction Grant may be used to fund the construction of new buildings. However, it should be noted that NIH “lost \$1.7 billion during sequestration and has seen a 25 percent reduction in overall funding since 2003.” This suggests that the proposed Center may face competition in securing NIH’s increasingly limited funding.

C. Teaching Health Center Graduate Medical Education Funding

Pursuant to 42 U.S.C. §293I-1, federal funding for the proposed Academic Medical Center may also be available through the Teaching Health Center Graduate Medical Education program (THCGME). The statute authorizes the U.S. Department of Health and Human Services (HHS) to award grants “to teaching health centers for the purpose of establishing new accredited or expanded primary care residency programs.” HHS, through its Health Resources and Services Administration agency (HRSA), further clarifies “[t]he THCGME program is a \$230 million, five-year initiative which began in 2011 to support an increased number of primary care residents and dentists trained in community-based ambulatory patient care settings.” According to subsection (b) of the statute, the grants may be used for three years and may provide up to \$500,000 in funding. Funding from the THCGME program can be used to cover costs associated with operating a medical training program, including: “(A) curriculum development; (B) recruitment, training and retention of residents and faculty; (C) accreditation by the Accreditation Council for Graduate Medical Education (ACGME), the American Dental Association (ADA), or the American Osteopathic Association (AOA); and (D) faculty salaries during the development phase.” In order to receive a grant, the applying entity must be a community-based ambulatory patient care center that operates a primary care residency program. The applying entity must also be accredited by ACGME or another accreditation body listed in 42 U.S.C. §256h. HRSA administers the THCGME program. In 2013, the THCGME program received \$12 million to aid 32 teaching hospitals in 21 different states.



administers the THCGME program. In 2013, the THCGME program received \$12 million to aid 32 teaching hospitals in 21 different states.

D. Department of Agriculture Funding

The U.S. Department of Agriculture also offers Community Facility Grants to eligible entities. The grants are designed to “assist in the development of essential community facilities in rural areas and towns of up to 20,000 in population.” Grant funding can be used, in part, to construct new health care facilities. The grant amount varies based on the median income and population of the relevant community, but grant assistance “may be available for up to 75 [percent] of project costs.” As aforementioned, however, only communities with less than 20,000 citizens are eligible for these grants. Consequently, it appears that Newton County, with its population of around 14,000 citizens, would be the only Northwest Indiana county eligible for a Community Facility Grant. Because Newton County is not the ideal location for the proposed Academic Medical Center, and because the U.S. Department of Agriculture favors smaller communities, this source of funding is unlikely.

E. State Funding

State funding for the proposed Academic Medical Center is theoretically available, but whether such funding is actually obtainable is unclear. Ind. Code §21-44-5-7 directs IUSM to “establish a plan for statewide medical education.” Under this plan, “medical institutions throughout Indiana may apply for grants-in-aid to the [Medical Education Board] or the Indiana University School of Medicine for financial support of personnel or programs. The grants may permit funding of programs not affiliated with Indiana University School of Medicine.” While Ind. Code §21-44-5-11 appears to provide funding opportunities for certain medical institutions, there is no indication that any Indiana medical institution has actually obtained funding through this statute. Indeed, the IUSM website contains no information regarding the application process or the existence of a grant-in-aid program. Likewise, the Indiana State Department of Health website also makes no mention of the program. In fact, the Indiana State Department of Health website, which lists all of the State Medical Boards, fails to recognize the existence of a Medical Education Board. Ind. Code §21-44-5-11 (2014).



Thus, while the proposed Academic Medical Center may theoretically be eligible for state funding, the process for obtaining such funding remains unclear. It is important to recognize, however, that the proposed Center would not need an affiliation with IUSM in order to qualify for funding under Ind. Code §21-44-5-11.



6. *Provide commentary on and make recommendations on the most sustainable way to provide medical education, conduct academic medical research, and care for the sick given the current inventory of health care resources in and around Northwestern Indiana (e.g., surgeons, doctors, pharmacists, nurses, and other practitioners that participate in the healthcare delivery system);*

Our research and findings have lead us to recommend a consortium, alliance or collaborative partnership of NWI healthcare providers leading a charge or campaign for GME or medical education in NWI. This model is already in place in Evansville, Indiana and KSM feels, based on our findings, that this would be the best approach in NWI. Large employers and civic leadership are other components that are critical to the success of a GME program.

Benefits of a GME or medical education program are:

- Improved quality of care
- More efficient cures and treatment therapies
- Decreased length of stay for major illnesses
- Improved outcomes and survival rates
- Specialized surgeries

Providing medical education and conducting medical research, in areas that are declared medically underserved, will enhance the current delivery system in NWI which will positively effect the residents of NWI and the quality of healthcare they receive.



7. *Provide commentary on whether an academic medical center in Northwestern Indiana will alleviate any access disparities that currently exist.*

If we increase number of physicians in the area, we were increasing access in area. The goal of increasing the supply of physicians in Indiana can be achieved without construction by expanding the number of residency spots for physicians in training. Rather than the construction of a new building, we propose to create more capability using residents in selected specialties that will care for patients in the existing NWI facilities.

A consortium approach to residency position similar to what is being developed at IU SofM Southwest (Evansville) has several advantages:

- IU SofM is familiar with the approach.
- The academic consultants (TrippUmbach) recommend this approach.
- The costs of program administration are distributed among several providers.
- It promotes and institutionalizes coordination among hospitals and providers.

❖ *Facilities that progress toward the higher levels of trauma certification will be logical sites for (more) residents and additional specialties.*



8. *Provide commentary on the federal and state budgetary pressures and their impact on the potential location of an academic medical center in Northwestern Indiana.*

If constructing the proposed Academic Medical Center is practically and financially feasible, a discussion regarding the proposed Center's location appears relevant. The aforementioned funding sources, in combination with various budgetary pressures, may impact the location of the proposed Academic Medical Center. In order to understand how certain federal, state, and local budgetary pressures may potentially affect the location of the proposed Academic Medical Center, it is necessary to detail the nature of the current budgetary pressures.

Federal and State Budgeting Pressures

First, much of the evidence regarding state budgetary pressure focuses on Indiana's recent cuts in certain state-run healthcare programs. For instance, "the state cut Medicaid hospital payment rates by five percent in November 2009, held payments to Medicaid and CHIP plans at previous levels through June 2011, and cut payments to its enrollment broker by 10 percent to 15 percent. In addition, the state in 2010 reduced the scope of services and eligibility for Care Select, Indiana's care management program for its Medicaid aged, blind and disabled population (exclusive of dual eligibles and the nursing home population), leading to a significant drop in enrollment from about 73,000 to 32,000 people." State budgetary pressures, in combination with federal healthcare spending cuts, have forced Indiana hospitals to terminate the employment of hundreds of employees. A USA Today article noted that the Indiana School of Medicine laid off 900 workers in 2013 in an effort to trim its budget. Moreover, the Indiana State Department of Health's (ISDH) Biennium Budget experienced a six million dollar cut in 2012, and further cuts are planned in 2014. More generally, the Washington Post noted that Indiana is one of seven states expected to miss its respective budget forecast this year. Because Indiana is not expected to meet its FY 2014 budget, and because Indiana has already shown a willingness to cut certain medical expenses, funding for the proposed Academic Medical Center may be difficult to obtain at the state level, regardless of location.



Federal budgetary pressures also indicate that funding at the federal level may be difficult to obtain. Through sequestration, President Obama recently authorized numerous federal healthcare budgetary cuts. For instance, recently approved federal cuts include a two percent reduction in Medicare payments to hospitals. Because many hospitals rely on Medicare reimbursements to stay financially viable, these Medicare cuts may result in hospital closings or an increase in hospital employee lay-offs. In his FY 2015 budget, President Obama proposed cutting a further \$400 billion from Medicare spending over the next decade. Other potential federal funding sources, like NIH, have also experienced budget cuts as a result of the federal government's efforts to cut overall healthcare spending. In 2012, NIH lost \$1.71 billion in federal funding through sequestration, which ultimately means less funding for health-related research projects and grants. Thus, it appears that federal and state budgetary pressures may impact not only the location of the proposed Academic Medical Center, but perhaps its existence in Northwest Indiana in general.

Local Budgeting Pressures

However, in determining the effect that state and federal funding sources may have on the ultimate location of the proposed Academic Medical Center, it may also be necessary to look at the financial situations of the proposed locations. First, the Indiana School of Medicine's Northwest branch is located in Lake County, making Lake County a logical location for the proposed Academic Medical Center. Furthermore, major highways also run through Lake County, meaning any medical center in the area would likely be easily accessible. However, Lake County's well-documented financial struggles may present a few challenges. In 2012, Lake County's poverty rate was 19.6 percent, ranking it highest in that category among the potential locations. While this may show a need for an Academic Medical Center, as teaching hospitals frequently provide treatment to the uninsured or underinsured, the high poverty rate may make building a new hospital in the area financially difficult. Earlier this month, the Gary School Board voted to close six schools due to \$27.3 million budget hole, further indicating the financial instability of the area. In an effort to reduce a \$60 million revenue shortfall, Lake County also recently enacted a 1.5 percent tax on personal income tax for all Lake County residents and workers. Furthermore, over 20,000 Lake County citizens remain unemployed. However, of the Northwest Indiana counties examined, Lake County



does maintain the largest total budget.

Nearby LaPorte County's poverty rate was 17.1 percent in 2012, and close to eleven percent of its citizens remain unemployed. Porter County, while providing its citizens with the best access to healthcare services, is not without problems of its own. The Porter County Council recently instructed all Porter County government department heads to cut their department's respective budgets by 10 percent to help make up for a \$5 million budget shortfall. Newton County may be a logical location for the proposed Academic Medical Center, as its citizens currently have the least amount of access to health care services. In fact, Newton County is one of only sixteen counties in the state without a hospital. Newton County's budget, however, pales in comparison to the respective budgets of the other Northwest Indiana counties. Thus, despite Newton County's need for increased medical services, it is unclear whether Newton County could afford to implement a hospital. Furthermore, because it is largely a rural county, is not an ideal location for an Academic Medical Center.

If the proposal for a new Academic Medical Center is approved, Northwest Indiana politicians will likely make the ultimate decision about the location of the Center. The counties that appear to be the most in need of healthcare services (Lake, LaPorte, and Newton) each have their own respective budgetary issues. Because state and federal funding may be limited, due mostly to recent widespread health-care cuts, the financial well-being of the proposed location may be determinative. While Porter County's financial situation appears relatively favorable, due to its low poverty and unemployment rates, the need for an Academic Medical Center in the area is not as strong as the need in the other Northwest Indiana counties.



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Conclusions



Trauma Services: Utilize existing facilities in Lake and Porter counties for trauma services.

- Establishing a Level 1 trauma program at an existing facility is more economically feasible to the region.
- Building a new facility for the purpose of serving as a designated Level 1 Trauma program is not recommended.
- Four largest hospitals are already moving toward some level of trauma designation
- It is recommended that 2 or more **Level 3 designated trauma programs** should be established at existing facilities within the next 18 months with the goal of at least one Level 1 trauma center being established within the next 5 years.
- Preferential treatment should be given to those hospitals that are on the path to trauma designation or officially “in the process.”

Academic Medical Center: With current bed capacity in the Lake and Porter counties, it is recommended to utilize existing facilities as opposed to building new Academic Medical Center for teaching and research.

- It is recommended that a new Academic Medical Center NOT be created in Lake and Porter counties. However, a Graduate Medical Education (GME) program should be pursued using existing facilities.
- A similar model is being pursued by IU School of Medicine Southwest in Evansville.
- A Graduate Medical Education program providing up to 36 residency positions should be developed and established in Lake and Porter counties using existing facilities in a coordinated approach.



Next Steps



Immediate Next Steps

The timing of the next steps and ability to drive this long process are critically important to the healthcare needs of NWI residents. Based on our experience, we find that studies of this magnitude need a champion who will develop a workplan and not only define accountability for all participant, but monitor and facilitate the process to ensure results. The following six steps should be considered at the very conclusion of this project:

1. Define Key Drivers for success, including:
 - **Trauma**
 - Given volume of trauma in Lake and Porter counties, consider at least 2 Level III trauma centers initially
 - Create pathway to at least one Level I trauma center within 3-5 years
 - **Graduate Medical Education**
 - Create up to 36 residencies within the next 5 years
 - Employ a consortium approach and provide medical education at existing hospitals in Lake and Porter counties
 - **Interconnectivity/Consideration**
 - Graduate Medical Education should be provided, preferentially, at those hospital(s) that also commit to developing trauma services
2. Form Task Force or committee to begin discussing next steps to bring designated trauma and graduate medical education to Lake and Porter counties.
3. Perform further analysis on which specialties should be the initial focus of the GME program.



4. Task Force or committee to include:

- Retired community business leader – Chair
- Regional Development Authority
- Methodist Hospitals
- Community – Munster
- Porter Regional Hospital
- Franciscan Alliance
- IU School of Medicine Northwest
- IU School of Medicine Indianapolis

5. Task Force or committee should also include members from 3-5 of the largest employers in the market:

- Approach large employers regarding funding assistance for the programs
- By helping to provide graduate medical education, residents may staff satellite locations such as employer and community based wellness centers

6. Task Force or committee should work with the Indiana State Medical Association and other appropriate lobbying organizations to help further legislative bill(s) related to state funding of graduate medical education.



Recommended Timeline

We recommend a Task Force or committee be created to formally coordinate the efforts of the various parties: Hospitals, IU School of Medicine, Physicians, civic leaders, and key business leaders. One of the first tasks will be to establish a vision and consensus on implementation phasing. An example timeline of major activities and milestones is shown here:

Exhibit 34

Example Timeline	2014	2015	2016	2017-18
Trauma Care Activities	<ul style="list-style-type: none"> • Report distribution and discussion • Confirmation of trauma status any planning efforts 	<ul style="list-style-type: none"> • Level 3 certification achieved by at least one facility in each of Lake and Porter County 	<ul style="list-style-type: none"> • Level 3 certification pursued by additional facilities 	<ul style="list-style-type: none"> • Level 1 or 2 certification achieved by 1 facility in Lake and Porter County
Graduate Medical Education Activities	<ul style="list-style-type: none"> • Report distribution and discussion • Financial evaluation by hospitals • Socialization, identification of candidate preceptors • Formal coordination with IU School of Medicine 	<ul style="list-style-type: none"> • Consortium development to coordinate GME efforts • Consensus on residency spots by specialty and initial phasing • Creation of residency program infrastructure • IU School of Medicine NW facility planning, RFP 	<ul style="list-style-type: none"> • Residency infrastructure validated; spots approved • Training sites, preceptors formally designated • Level 3 Trauma centers prepare for resident staffing • IU School of Medicine selects path for teaching, research facility requirements 	<ul style="list-style-type: none"> • First residents start at initial training sites • IU School of Medicine initiates facility plan (construction, if required)



Appendix



KATZ
SAPPER
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The Feasibility and Need of a Trauma Center in Northwest Indiana

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Abstract

Background. The Northwest Indiana Regional Development Authority (NIRDA) seeks to understand the necessity of, and associated options for a trauma center in Northwest Indiana (NWI). Following a thorough analysis of treatment incidence data and publicly available transportation, population, and infrastructure data, we developed a mathematical framework for addressing the questions posed by the NIRDA. **Methods.** We built a mapping interface capable of displaying NWI ZIP codes and nearby hospitals and trauma centers, both in Indiana and Illinois. Upon surveying academic literature, we compiled average activation, response, and on-scene times for incidents, and added accurate transit times to generate heatmaps of care access. We analyzed diagnosis data to classify incidents as trauma and created a scoring metric to infer the severity of trauma cases. Our analysis of travel times in the region led us to construct a graph-based model for optimal site selection, and we ranked potential locations by proprietary utility scores. **Results.** The population of NWI sustains 6,000 trauma cases on average per year, with one third of those being severe. We found that 2% of the NWI population is capable of reaching trauma care by ambulance in 45 minutes or less. Traumas treated in Illinois are classified as severe twice as often as those treated in Indiana. Annually, an average of 10% of financial charges from trauma cases occurring among NWI residents flow to Illinois hospitals. **Conclusions.** Most of the 7-county NWI region remains outside of a viable time window for trauma care.

1 Introduction

Our team sought a data-driven understanding of the current healthcare system in NWI in order to determine whether or not an additional trauma center is needed. By relying upon literature-supported methods, healthcare industry facts, and empirically tested hypotheses, we were able to conduct our analysis with a focus on rigor and actionable insight. We conducted our analysis in two parts, and used the results from the first part to critically evaluate conclusions drawn from the second. In the first step, we gathered appropriate data to model the present state of the NWI healthcare delivery system, paying particular attention to the coverage afforded to the NWI population relative to the volume and severity of incidents. The second step involved discovering the social and fiscal impact that a new trauma center would have with respect to the improvement of trauma care access for NWI residents as well as the costs and benefits thereof. We will expound on these two steps after brief explanations of our methodology and supplementary data.

We included five neighboring counties of Lake and Porter in our analysis (LaPorte, Starke, Newton, Jasper, and Pulaski) to get a better sense of patient flows in the NWI region, and to have a more complete idea of how health coverage differs between regions. As a common metric for care access, we used the so-called “golden hour,” a common rule of thumb in healthcare which states that, in general, outcomes for trauma care will be best if a patient receives care within one hour. The golden hour we used was inclusive of activation, response, on-scene and transit times, rather than being merely a multiple of the time needed to transport a trauma victim to adequate care.

In addition to using the datasets acquired from the Indiana Hospital Association (INHA) and the Illinois Hospital Association (ILHA), we integrated publicly available data, including: real-world travel times from the Google

Maps API; access to major highways and interstates from the Indiana Department of Transportation (INDOT); population and demographic information from the U.S. Census Bureau; and the mean amount of time necessary for each of the activation, response, and on-scene components of the total prehospital time from the Journal of Prehospital Care [1].

The first step of our analysis concerned the ability of NWI residents to access trauma care, in terms of prehospital time, population effects of lack of care, and coverage gaps that exist in the region. We also researched the trends associated with healthcare system utilization in NWI, and computed statistics for the out-of-state trauma center usage by the NWI population. We used patient diagnosis data to deduce trauma severity and annual volume figures to assess the stress placed on the healthcare system as a whole. This allowed us to have a complete picture of the present set of circumstances surrounding the NWI healthcare system, and provided a baseline for the following analysis on how to improve them.

The second step had two goals, each using aspects of the definitions and data described above. We began by selecting a list of ZIP codes as potential locations for a new trauma center, with a stipulation that those ZIPs must provide the highest possible population coverage within the golden hour. We then created another list of ZIP codes in which the transportation infrastructure contained in each allowed both in- and out-of-state travelers to access trauma care within the golden hour. Finally, we compared a list of hospitals that could viably be converted into trauma centers with our lists of location ZIP codes, and ordered these hospitals' locations by overall utility. The goals of this portion of our analysis stemmed from a basic principle: any location chosen to be the site of a new trauma center must improve the overall ability of NWI residents to obtain trauma care.

2 Current Access to Trauma Care in Northwest Indiana

2.1 Ground and Air Travel Time Distribution

Upon reviewing the problem statement in the request for proposal (RFP), we initially studied how those living in NWI obtain trauma care. In particular, we were interested in how the amount of time needed to reach a trauma center changed based upon location within NWI, for both ambulatory and helicopter services. Given the importance placed on understanding the regional dynamics underpinning the NWI healthcare system, we decided that an interactive map would be the most appropriate way in which to represent the areas served by medical ground and medical air transport. In addition to creating our own mapping interface, we also used maps generated by the University of Pennsylvania Cartographic Modeling Laboratory website, TraumaMaps.org [2]. By working with both mapping systems we were able to get a clear sense of care access for NWI.

Some explanations should be made about the assumptions underlying our analysis. First, none of the data from the INHA or the ILHA contained information on incident location. The only geospatial data were ZIP codes of patient residence; patient address was therefore used as the indicator for incident location. This implicitly assumed that the distribution of cases occurred in the ZIP codes inhabited by NWI residents [5]. Next, we assumed that cases involving non-NWI residents occurred evenly along highways, most likely while commuting or traveling through the Chicago area. We also assumed that the implicit severity associated with outpatient incidents was lower than for inpatient cases. After inspecting the outpatient data, which was only available for Indiana, we decided it was not a necessary component for our study. From our investigation of the data we found that 2% of inpatient and 0.58% of outpatient cases were treated in Indiana trauma centers, nearly a fourfold difference in magnitude. Due to the fact that the primary concern of the RFP was to determine the viability of a new NWI trauma center rather than a non-trauma certified hospital, we favored the inpatient dataset as the principal means to model and visualize patient flows for care.

The following figures were produced with TraumaMaps.org's mapping utility, and were used to understand the ease with which cases originating in NWI may be transported to nearby trauma centers. All figures referenced herein are located in the Appendix following this report.

Figures 2 through 4 show the areas from which patients can reach trauma centers by helicopter within 45 and 60 minutes; these times are inclusive of activation, response, on-scene, and transit time to trauma center. Recalling the consequence of safely transporting a trauma victim to a trauma center within the golden hour, it is notable that a large section of NWI remains outside of the possible areas serviced by helicopter quickly.

Figures 5 through 7 show access to adult trauma centers by ambulance within 45 and 60 minutes. Figure 7 is the same as Figure 6 except it also has the locations of general hospitals plotted. INHA data are consistent with

the patient flows implied by these maps. For instance, the vast majority of Indiana trauma cases were treated at non-trauma centers (13,322 out of 13,900 traumas, or 95.8%), but many of them (7,356 out of 13,900 total Indiana trauma cases, or 52.9%) were not classified as being severe.

Another important aspect to consider with respect to treatment and outcomes concerns access to pediatric care, shown in Figures 9 through 11. While there are areas in NWI capable of reaching a pediatric trauma center, coverage gaps do exist in Newton and Jasper counties to such an extent as to make quick transit to pediatric care impossible for all but the northernmost portions of those counties. Furthermore, being in close proximity to Chicago (in cities such as Gary, Hammond, Portage, and north Merrillville) almost entirely determines the ability to reach a pediatric trauma center within an hour. If we restrict the available or desired trauma centers to those located solely in Indiana, as in Figure 11, we can see that nearly the entire 7-county region comprising NWI exists outside of the one-hour time window necessary to get to a trauma center with pediatric specialists on staff.

2.2 Coverage Gaps

When viewing the ambulance access maps in Figures 5 through 8, it is easy to get an idea of how difficult it is to transport a victim to an appropriate care center in a timely manner. As an example, consider Hebron, IN, which can be thought of as being located near the population centroid (center of mass) of the 7-county region comprising NWI. Starting in Hebron, which is in southern Porter County, it takes 57 minutes to get to Advocate Christ Trauma Center in Oak Lawn, IL and 1 hour 19 minutes to travel to Memorial Hospital in South Bend (Google Maps API). From this basic approximation of incident location and the map in Figure 6, it is readily apparent that essentially any incident occurring outside of Gary or Hammond will not reach a trauma center by ambulance within the golden hour. These conclusions on care access are summarized succinctly in the following tables. We note that these provide percentages for access to trauma care within 45 minutes, and that this time window is inclusive of activation, response, on-scene, and transit times.

Table 1:
Population Percentage in 7-County Region with Access to Trauma Center via Ambulance in 45 Minutes

Name	Total Population	Population Access by Ambulance in 45 mins	Percentage
Lake	496,005	17,077	3.44%
Porter	164,343	0	0.00%
La Porte	111,467	0	0.00%
Newton	14,244	0	0.00%
Jasper	33,478	0	0.00%
Starke	23,363	0	0.00%
Pulaski	13,402	0	0.00%
Total	856,302	17,077	1.99%

Table 2:
Population Percentage in 7-County Region with Access to Trauma Center via Helicopter in 45 Minutes

Name	Total Population	Population Access by Helicopter 45 mins	Percentage
Lake	496,005	490,608	98.91%
Porter	164,343	38,891	23.66%
La Porte	111,467	40,904	36.70%
Newton	14,244	0	0.00%
Jasper	33,478	0	0.00%
Starke	23,363	7,684	32.89%
Pulaski	13,402	0	0.00%
Total	856,302	578,087	67.51%

Table 3:
Historical Trauma Percentage in 7-County Region with Access to Trauma Center via Ambulance in 45 Minutes

Year	Percentage
2012	5.18%
2013	4.75%

Table 4:
Historical Trauma Percentage in 7-County Region with Access to Trauma Center via Helicopter in 45 Minutes

Year	Percentage
2012	25.8%
2013	25.1%

Our interactive visualization tool was also used to evaluate the prevalence of coverage gaps in NWI. By incorporating data retrieved from the Google Maps API, we obtained realistic transport times from ZIP code centroids to trauma centers in Indiana and Illinois. As noted previously, we broke the total prehospital time into four sections: activation, response, on-scene, and transport. Using mean values from the literature for the first three sections, we added all four times together to get the total prehospital time from a particular ZIP code centroid to a hospital of interest. Once this was complete, we added a capability of our mapping tool to plot heatmaps of total prehospital times from ZIP codes to a hospital of interest. An example of this can be seen in Figure 14. Due to the fact that we divided the total prehospital time into four segments using mean values, we often constrained the golden hour to 45 minutes. We asserted that the standard deviation of each time component would lengthen the prehospital time and cause a one-hour limit to be biased downward. In other words, since we felt it was unrealistic to expect the total prehospital time not to take variability into account, we adjusted the timeline according to values corroborated by the literature [1].

Based upon the time distribution maps in Figures 2 through 11, the maps generated by our mapping utility, and state and national guidelines, it follows that for the majority of NWI residents the current trauma center locations do not provide medically appropriate air and ground travel times. In fact, the figures show that residents who do not live in Lake County are far less likely to be able to reach a nearby trauma center within the golden hour time limit. Acknowledging that any trauma case necessitating the use of a helicopter is almost certainly severe, the helicopter coverage maps show that few places in the region are able to receive timely helicopter service.

2.3 Population Effects

The detriment caused by coverage gaps is borne by different segments of the NWI population to varying degrees. As noted in Flint, Buckley, and Spann, disparities in healthcare are worsened for racial subgroups residing in NWI [1]. The authors note that in 2012 “transfers [out of NWI to receive trauma care] for African Americans [were] more than triple their proportion of the region’s population” [1]. The literature also notes differences in mortality rates between racial groups, with African Americans having the highest rate overall [6]. While African Americans

account for only 17% of the total NWI population, several ZIP codes in Lake County have African-American proportions exceeding 80 or 90% of the population (U.S. Census Bureau, 2012). Furthermore, most transfers out of NWI were needed by African Americans [4]. Thus, a new trauma center placed in Lake or Porter County would reduce or eliminate the need for many out-of-the-region transfers, and would ameliorate the racial imbalance in mortality rates.

For all of the ZIP codes that constitute NWI, we acquired summary demographic data from the Census Bureau's 2012 American Community Survey. We specifically gathered information on educational attainment, median age, median household income, median gross rent, income inequality (Gini coefficient), and total population with counts by race. Once these data were compiled, they were added back into the inpatient dataset as quantiles. A quantile is simply a division of data into equal pieces, each containing the same fraction of the total set. For our purposes we used quartiles, which split the data evenly into 4 groups or quarters. For example, consider actual data for total patient charges in Indiana. The first quartile ranges from the minimum value, \$6,835, to the first quartile's value, \$15,734. Any case with a total charge falling in this range would be sorted into the first charge quantile. The second quartile, or 50th percentile, is also the median. Any value falling in between the 25th and 50th percentiles was grouped into the second charge quantile. This process was completed for each ZIP code's demographic data, resulting in pieces of information that were easy to work with, understand, and compare.

Using the interactive mapping tool that we built, ZIP code demographics may be viewed simply by hovering over areas of interest. If, for example, the travel time distribution for a particular trauma center is plotted, the users can look at an individual ZIP code's demographic profile, conveniently placed into quantiles for intuitive comparison with neighboring ZIPs. The mapping tool provides a way to view the areas in NWI best positioned to obtain trauma care, and which population subgroups are affected when care is inaccessible.

3 Trends in Healthcare Utilization by NWI Residents

3.1 Healthcare Utilization Trends

An integral part of our analysis centered on the "load" or "strain" placed on the NWI healthcare system, and how utilization of the system changed over time. As a first step, we sought a concise answer to the following question: How many NWI residents were treated in Indiana and Illinois trauma centers during the period, and where did they come from? To address this question we used our interactive map to plot trauma centers as points, then rendered heatmaps of patient volume by ZIP code for each trauma center. Additionally, we plotted other NWI hospitals that treated trauma cases, and included ZIP-level information to produce heatmaps. We also generated data tables with summary statistics, which are located in the Appendix.

We note that our analysis was based on data for 9 out of the 10 trauma centers in Indiana, 4 of which had a significant patient population from NWI. The years for which we had data were also different between Indiana and Illinois. Data from Indiana did not have patient charges for the final quarter of 2013. For that same period, data from Illinois was missing entirely. We extrapolated charges for Indiana during 2013Q4 using a seasonal ARIMA model, yielding the total annual inpatient and trauma charges by year. The same technique was applied to the missing Illinois data to arrive at annual figures for incidents, traumas, and charges. In addition, we extrapolated Indiana charges at the county level for high-level statistics of the NWI region.

We must also mention that while there were visitors to Indiana trauma centers who did not live in Indiana, the vast majority of trauma cases were for NWI residents (12,005 NWI resident trauma cases from 2012-2013 / 13,789 total trauma cases in Indiana during those years, or 87.1%). These out-of-region residents were counted in sum totals on a per-trauma center basis. As we studied the volume and severity of trauma cases that originated in NWI, we assumed that cases occurred in NWI ZIP codes when the residents were in NWI, and assumed that cases for non-NWI residents occurred evenly along highways, as done in Section 2. We used the total trauma cases for all residents to get an idea of patient volume and case severity in the NWI region.

3.2 Classification of Trauma Cases

A significant challenge we had to address was the lack of an explicit field in the data that denoted an incident as being a trauma case. By extension, we had no information on the severity of cases, even if they were traumas. Typically, healthcare practitioners classify a case as major or minor trauma using the Injury Severity Score (ISS) [3]. In this trauma grading system, any case with an ISS of 15 or greater is considered a major trauma [3]. With

no fields in the data corresponding either to ISSs or traumas outright, we introduced a derived variable for each. Using the diagnosis codes (ICD-9s) and the Indiana Trauma Registry Inclusion/Exclusion Criteria as defined by the Indiana State Department of Health, we were able to classify incidents as being traumas for both Indiana and Illinois. Any case that had at least one of its diagnosis codes in the inclusion criteria was classified as a trauma. Inferring the severity of cases, however, relied upon a more sophisticated methodology.

To create a proxy for the severity of a trauma case, we computed a severity score using quantile ranges for age, total charges, and length of stay. Possible values for quantiles ranged from 1 to 4, i.e.

$$q \in [1, 2, 3, 4]$$

as done with the demographic data detailed in Section 2. For Indiana the trauma severity score was of the form

$$s_{IN} = q_{stay} \cdot q_{charge} \cdot \left(1 + \frac{1}{q_{age}} + b_{critical}\right)$$

where “q” denotes the quantile (first, second, third, or fourth) in which the variable in the subscript falls for a given case, and “b” denotes a binary for whether or not the trauma victim spent at least one day in critical care. This accomplished a regularization of the scores and also bounded them on the interval [1.25, 48].

The score for Illinois was

$$s_{IL} = q_{stay} \cdot q_{charge} \cdot \left(1 + \frac{1}{q_{age}}\right)$$

since Illinois’s data did not contain a field for whether or not a patient entered critical care. Illinois’s score was bounded on the interval [1.25, 32]. To compare the severity scores between Illinois and Indiana, both ranges were compressed to lie on the interval [1, 10]. While it may seem at first that the term for critical care in the Indiana severity score would lead to more cases being labeled as having a higher severity, in practice this was not the case (Figs. 12 and 13). The additional term in Indiana’s score equation only led to the range on scores being higher; a greater percentage of trauma cases in Illinois, not Indiana, hospitals were labeled as severe. In fact, nearly two thirds of trauma cases treated in Illinois were severe, while roughly one third of those treated in Indiana were severe.

Once each trauma case was scored, a machine learning algorithm called a self-organizing map was applied to uncover clusters of severity scores within the trauma data. These clusters were then used to impose bounds on the severity score for classification purposes. For instance, if the severity score for a certain trauma case was below a given threshold, it would not be classified as severe, and vice-versa. Figures 12 and 13 show the histograms of severity scores for Indiana and Illinois, respectively. What can be seen from these histograms is that most trauma cases fall below a certain threshold for severity and are not counted as being severe. There is in each state’s data, however, a clear distribution of cases for which the severity score is well above the overall mean. Some scores are not possible due to the underlying algebra of the severity scoring metrics.

3.3 Indiana Trauma Center Utilization

For the two-year span of 2012-2013, NWI residents primarily sought care near where they lived, either in Indiana or Illinois. Memorial Hospital of South Bend was the most frequented Indiana trauma center by NWI residents (Figure 15), followed by Riley Hospital for Children in Indianapolis (Table 5). See Table 12 for a summary of the four most frequented Indiana trauma centers, and Table 5 for annual aggregates.

Table 5: Incidents by Year, Treated in Indiana

Year	Inpatients	Trauma Cases	Severe Trauma Cases	Trauma Rate per 1000 Incidents	Percent of Traumas Classified as Severe
2012	128,847	7,069	2,674	54.9	37.8%
2013	121,041	6,720	2,048	55.5	30.5%

3.4 Illinois Trauma Center Utilization

From 2012 to 2013Q3, Illinois’s trauma centers received 5,176 patients who lived in NWI, while Indiana trauma centers received 5,078. Table 15 contains summary statistics for Illinois trauma centers from 2011 to 2013Q3, and Table 6 has Illinois’s data in annual figures.

Again, it should be noted that we did not have information on the location of incidents. It is entirely possible, therefore, that cases in which NWI residents were treated in Illinois trauma centers were partly the result of commuting individuals who work near the Chicago area. In other words, commuters may have access to trauma centers because of their commute, not because they live in close proximity to them. On weekends, for example, the commuting population of NWI would likely be less able to receive prompt trauma care.

Table 6: Incidents by Year, Treated in Illinois

Year	Inpatients	Trauma Cases	Severe Trauma Cases	Trauma Rate per 1000 Incidents	Percent of Traumas Classified as Severe
2011	2,923	274	174	93.7	63.5%
2012	2,937	326	202	111.0	62.0%
2013*	2,914	391	239	128.4	61.1%

* 2013’s values during Q4 were extrapolated from previous years’ data

4 Improving Trauma Center Access

In this section we develop a rigorous quantitative methodology for determining an optimal location for a trauma center to serve the residents of Northwest Indiana and relieve pressure on existing healthcare resources. A 2012 study presented at the annual meeting of the Indiana Academy of the Social Sciences [4] raised the following findings: (1) patient volumes of the region’s hospitals clearly warrant the creation of a regional trauma center; (2) 23.8% of patients transferred to trauma centers outside the region were non-region residents involved in severe motor vehicle crashes on interstate highways; (3) most region residents live outside the “golden hour” radius, which is a clinical guideline for the maximum transit time a trauma victim can sustain to achieve an optimal medical outcome.

These results motivated our analysis to achieve the following goals: (1) select ZIP codes for the location of either one or two trauma centers that will provide maximal population coverage under the golden hour rule; (2) select ZIP codes with sufficient transportation infrastructure to reach a maximal number of interstate and regional highways to improve ground-transit time for region residents and out-of-state residents. ZIP codes constitute the highest level of geospatial granularity for which robust population demographics and economic data are readily available, therefore our analysis concludes with a list of trauma center location ZIP codes ranked by the extent to which they satisfy the stated objectives.

4.1 Optimal Trauma Center Site Selection

Our analysis began by obtaining a list of ZIP codes contained in Jasper, Lake, LaPorte, Newton and Porter counties as well as adjacent areas. Using the API provided by the Census Bureau, we were able to obtain population counts as of 2011 for each location. With the Google Maps API, we determined the geographic coordinates of the centroid of each ZIP code as well as the pairwise distance and minimum ground-transit time between them.

An in-depth overview of the mathematical methods involved in this portion of our analysis may be found in the Appendix.

Table 7: Top Five ZIP Codes Ordered by Connectivity

Connectivity	ZIP Code	City	County
78	46307	Crown Point	Lake County
78	46341	Hebron	Porter, Jasper, Lake, La Porte
75	46355	Leroy	Lake County
75	46325	Hammond	Lake County
75	46308	Crown Point	Lake County

Table 8: Bottom Five ZIP Codes Ordered by Connectivity

Connectivity	ZIP Code	City	County
20	46601	South Bend	St. Joseph County
21	46985	Star City	Porter, Jasper, Lake, La Porte
21	46960	Monterey	Pulaski
23	47948	Goodland	Newton
25	47951	Kentland	Newton

These locations are clearly clustered in Lake County, which is due to the high number of smaller, more easily reachable ZIP codes relative to other parts of the region. This is further emphasized by the high ranking of Leroy and Hebron, rural areas with small populations and insufficient economic and transportation infrastructure to support a major trauma center but are reachable within an hour from a large number of ZIP codes; results suggesting that reachability is proportional to but not directly suited for application as a suitability function for site selection in this application.

The results demonstrated in Table 9 show a clear preference for population centers as potential trauma center locations. Because of the relatively continuous distribution of locations, we decided to augment our utility score by a factor that captures the existing ground transit infrastructure for each ZIP code. In order to obtain this variable,

we manually tabulated the number of major state roads and interstate highways intersecting each ZIP code in our set. We analyzed the distribution of highway and interstate counts and determined that a simple multiple of the two was a sufficient scoring metric. Table 11 captures these results.

Table 9: Top Five ZIP Codes Ordered by Utility

Utility	ZIP Code	City	County
1703803	46307	Crown Point	Lake
1435326	46350	La Porte	LaPorte
1399347	46368	Portage	Porter
1373899	46360	Michigan City	LaPorte
1359429	46383	Valparaiso	Porter

Table 10:
Bottom Five ZIP Codes Ordered by Utility

Utility	ZIP Code	City	County
16104	46379	Sumava Resorts	Newton
21819	46960	Monterey	Pulaski
24452	46985	Star City	Porter, Jasper, Lake, La Porte
25869	46376	Schneider	Lake County
29516	46393	Wheeler	Porter

Table 11:
Top Five ZIP Codes by Population Utility and Transitability

Utility	ZIP Code	City	County
7524027	46350	La Porte	LaPorte
5954981	46360	Michigan City	LaPorte
5662909	46368	Portage	Porter
5059427	46304	Chesterton	Porter
3664386	46307	Crown Point	Lake

Appendix A Mathematical Derivations

Let us begin by defining the following quantities:

Transit Time $\Delta_t(i, j)$: a function for the minimum transit time between ZIP codes $i \rightarrow j$

Population $\|i\|$: the population at ZIP code i

Following the golden hour rule, $\Delta_t(i, j) < 1$ hour, let us define a matrix A whose elements $a_{i,j}$ are defined as follows:

$$a_{i,j} = \begin{cases} 1 & \text{if } \Delta_{i,j}(t) \leq 1 \text{ hour} \\ 0 & \text{if } \Delta_{i,j}(t) > 1 \text{ hour} \end{cases}$$

This matrix, known from Graph Theory as an adjacency matrix, enumerates all possible pairs of ZIP codes that are both reachable and unreachable by ground transport within a one hour window. With this structure we can quickly identify the set of nodes (ZIP codes) that are most central to the network, thus providing maximal golden hour coverage to the network as a whole.

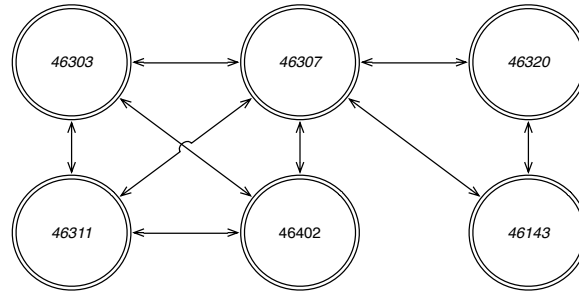


Figure 1: Graphical depiction of the ZIP code node reachability network. Lines between nodes represent values $a_{i,j} = 1$, or paths between nodes reachable within one hour.

This selection corresponds with the solution of the first-degree connectivity equation in $i \in S$, the set of all ZIP code nodes:

$$f(i) = \max_{i \in S} \sum_{j \in S} a_{i,j}$$

The above equation solves the centrality problem by identifying the most directly reachable node in the network. Table 7 shows the connectivity score and locations of the top five most reachable ZIP codes.

We must shift our thinking about suitability to a question of reachability for the maximum number of people, a measure better suited to the task of optimizing for healthcare access to the largest population.

Let us define a weight $w_{i,j}$ on choosing of choosing site i , where $\|j\|$ represents the total population of location j as reflected in the 2011 community survey.

$$w_{i,j} = a_{i,j} \cdot \|j\|$$

We can measure the total benefit of location i (number of people with access) simply by summation over j in the set of all potential locations S . The ranked list of locations following this metric are shown in Table 9

$$f(i) = \max_{i \in S} \sum_{j \in S} w_{i,j} = \max_{i \in S} \sum_{j \in S} a_{i,j} \cdot \|j\|$$

Appendix B Tables

Table 12:
Indiana Trauma Center Utilization and Statistics (2012-2013Q3)

Hospital Name	Trauma Level	Total Incidents	Trauma Cases	Severe Trauma Cases	Total Charges	Total Trauma Charges	Mean Stay (days)	Mean Crit. Care Days	Mean Charges	Median Charges	Mean Age
Memorial Hospital of South Bend	2	2,684	306	144	\$88,409,856	\$18,647,826	4.9	1.9	\$32,940	\$16,964	38
IU Health Methodist Hospital	1	782	140	76	\$68,024,434	\$13,425,360	8.1	5.5	\$86,988	\$54,049	52
St. Vincent Indianapolis Riley	2	377	37	14	\$22,479,460	\$2,035,917	7.4	2.7	\$59,627	\$35,845	48
Hospital for Children at IU Health	1	1,180	81	22	\$74,746,044	\$3,728,534	7.6	4.0	\$63,344	\$27,530	6

Table 13: Indiana Trauma Center Data (2012-2013Q3)

Hospital Name	Year	Total Incidents	Total Charges	Total Traumas	Total Trauma Charges	Mean Stay in Days	Median Stay	Mean Charge	Median Charge	Mean Age	Median Age	Total Critical Care Days	Mean Critical Care Days
Memorial Hospital of South Bend	2012	1,366	\$50,229,447	148	\$8,793,785	5.1	3.0	\$36,771	\$21,255	38.1	38.0	2,678	2.0
Memorial Hospital of South Bend	2013	1,318	\$38,180,409	158	\$9,854,041	4.7	3.0	\$28,968	\$12,473	37.9	37.0	2,340	1.8
Indiana University Health Methodist Hospital	2012	376	\$36,715,275	70	\$7,094,665	8.6	5.0	\$97,647	\$59,217	50.4	53.0	2,232	5.9
Indiana University Health Methodist Hospital	2013	406	\$31,309,159	70	\$6,330,695	7.6	5.0	\$77,116	\$47,605	53.0	55.0	2,108	5.2
St. Vincent Indianapolis Hospital	2012	219	\$14,642,857	22	\$1,484,066	6.8	4.0	\$66,862	\$43,935	51.1	56.0	684	3.1
St. Vincent Indianapolis Hospital	2013	158	\$7,836,603	15	\$551,851	8.4	3.0	\$49,599	\$26,216	44.7	52.0	329	2.1
Riley Hospital for Children at Indiana University Health	2012	625	\$40,530,021	43	\$2,390,939	7.3	3.0	\$64,848	\$30,054	6.2	4.0	2,349	3.8
Riley Hospital for Children at Indiana University Health	2013	555	\$34,216,023	38	\$1,337,595	8.0	4.0	\$61,650	\$25,142	5.5	4.0	2,331	4.2
Totals	2012-2013 Q3	5,023	\$253,659,794	564	\$37,837,637								

Table 14: Indiana Data for Traumas Treated in Hospitals (2012-2013Q3)

Hospital	Year	Total Traumas	Severe Traumas	Total Charges	Mean Charges	Mean Stay in Days	Mean Age	Mean Critical Care Days
Community Hospital - Munster	2012	1,278	504	\$38,764,336	\$30,332	7	72	2
Community Hospital - Munster	2013	1,408	438	\$33,324,426	\$23,668	7	74	2
Deaconess Hospital, Inc.	2012	1	-	\$67,056	\$67,056	3	18	2
Deaconess Hospital, Inc.	2013	1	-	\$14,882	\$14,882	1	70	1
DeKalb Health	2013	1	-	\$-	\$-	7	87	4
Elkhart General Hospital	2012	2	-	\$106,890	\$53,445	2	57	0
Elkhart General Hospital	2013	1	-	\$-	\$-	4	82	0
Franciscan St. Anthony Health - Crown Point	2012	692	248	\$22,628,976	\$32,701	6	67	2
Franciscan St. Anthony Health - Crown Point	2013	540	146	\$14,935,052	\$27,658	6	68	1
Franciscan St. Anthony Health - Michigan City	2012	415	128	\$12,114,255	\$29,191	5	65	1
Franciscan St. Anthony Health - Michigan City	2013	383	91	\$8,883,174	\$23,194	6	67	0
Franciscan St. Elizabeth Health - Lafayette Central	2012	1	-	\$23,011	\$23,011	3	80	0
Franciscan St. Elizabeth Health - Lafayette Central	2013	6	4	\$347,980	\$57,997	8	57	4
Franciscan St. Elizabeth Health - Lafayette East	2012	31	8	\$1,257,580	\$40,567	4	66	1
Franciscan St. Elizabeth Health - Lafayette East	2013	42	9	\$2,751,790	\$65,519	6	71	2
Franciscan St. Francis Health - Indianapolis	2012	1	-	\$11,012	\$11,012	2	60	0
Franciscan St. Francis Health - Indianapolis	2013	2	1	\$82,025	\$41,013	5	74	0
Franciscan St. Margaret Health - Dyer	2012	391	117	\$13,037,938	\$33,345	6	62	2
Franciscan St. Margaret Health - Dyer	2013	361	75	\$9,008,533	\$24,954	5	61	2
Franciscan St. Margaret Health - Hammond	2012	487	189	\$17,533,681	\$36,003	6	62	1
Franciscan St. Margaret Health - Hammond	2013	355	103	\$10,511,428	\$29,610	6	63	1

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Hospital	Year	Total Traumas	Severe Traumas	Total Charges	Mean Charges	Mean Stay in Days	Mean Age	Mean Critical Care Days
Indiana University Health Bloomington Hospital	2013	3	-	\$22,008	\$7,336	2	21	0
Indiana University Health LaPorte Hospital	2012	301	97	\$13,173,525	\$43,766	5	68	2
Indiana University Health LaPorte Hospital	2013	286	85	\$10,336,628	\$36,142	5	70	2
Indiana University Health West Hospital	2012	2	1	\$48,323	\$24,162	8	88	0
Indiana University Health West Hospital	2013	2	1	\$95,723	\$47,862	9	59	0
King's Daughters' Health	2013	1	-	\$38,967	\$38,967	5	73	0
Logansport Memorial Hospital	2012	1	-	\$36,761	\$36,761	2	16	0
Lutheran Hospital of Indiana	2012	4	-	\$75,575	\$18,894	3	39	1
Lutheran Hospital of Indiana	2013	2	1	\$96,597	\$48,299	9	58	2
Marion General Hospital	2012	1	-	\$37,524	\$37,524	5	53	0
Marion General Hospital	2013	1	-	\$9,147	\$9,147	1	74	0
Methodist Hospitals, Inc., Northlake Campus	2012	348	109	\$9,569,979	\$27,500	6	47	2
Methodist Hospitals, Inc., Northlake Campus	2013	302	90	\$7,839,601	\$25,959	7	52	2
Methodist Hospitals, Inc., Southlake Campus	2012	606	308	\$27,180,604	\$44,852	8	62	3
Methodist Hospitals, Inc., Southlake Campus	2013	604	230	\$21,835,848	\$36,152	8	61	3
Parkview Hospital	2012	14	5	\$751,286	\$53,663	5	44	3
Parkview Hospital	2013	19	6	\$669,591	\$35,242	4	50	1
Porter Regional Hospital	2012	753	240	\$37,403,880	\$49,673	5	65	2
Porter Regional Hospital	2013	745	177	\$29,594,365	\$39,724	5	67	1
Rehabilitation Hospital of Fort Wayne	2012	1	1	\$81,904	\$81,904	20	32	0
River Bend Hospital	2013	4	1	\$56,622	\$14,156	11	30	0
Sidney & Lois Eskenazi Hospital	2012	7	2	\$429,228	\$61,318	6	38	4
Sidney & Lois Eskenazi Hospital	2013	16	4	\$755,832	\$47,240	4	41	3
St. Catherine Hospital, Inc.	2012	406	90	\$8,744,634	\$21,539	5	60	1
St. Catherine Hospital, Inc.	2013	392	90	\$7,025,066	\$17,921	5	59	1

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Hospital	Year	Total Traumas	Severe Traumas	Total Charges	Mean Charges	Mean Stay in Days	Mean Age	Mean Critical Care Days
St. Mary Medical Center	2012	704	225	\$17,830,104	\$25,327	6	70	1
St. Mary Medical Center	2013	662	182	\$14,772,689	\$22,315	7	70	2
St. Vincent Indianapolis Hospital	2012	22	12	\$1,484,066	\$67,458	6	55	2
St. Vincent Indianapolis Hospital	2013	15	2	\$551,851	\$36,790	11	46	2
Totals	2012-2013Q3	12,623	4,020	\$395,951,953				

Concluded

Table 15: Illinois Trauma Center Utilization and Statistics, 2011-2013Q3

Hospital	Total NWI Cases	Total Trauma Cases	Severe Trauma Cases	Total Charges	Mean Charges	Total Trauma Charges	Mean Trauma Charges	Mean Stay in Days	Mean Age
Adventist Bolingbrook Hospital	15	1	1	\$242,385	\$17,313	\$30,728	\$30,728	3	38
Adventist Glenoaks Hospital	15	0	-	\$194,160	\$12,944	-	-	5	35
Adventist Hinsdale Hospital	95	8	4	\$4,722,555	\$51,332	\$756,594	\$94,574	4	51
Adventist Lagrange Memorial Hospital	28	0	-	\$860,526	\$30,733	-	-	4	44
Advocate Christ Hospital & Medical Center	1,684	464	303	\$129,885,812	\$78,623	\$43,363,584	\$93,456	7	30
Advocate Condell Medical Center	22	4	4	\$1,011,326	\$45,969	\$198,186	\$49,547	3	49
Advocate Good Samaritan Hospital - Downers Grove	131	6	3	\$10,474,177	\$82,474	\$585,435	\$97,572	3	60
Advocate Good Shepherd Hospital	4	0	-	\$73,753	\$18,438	-	-	3	24
Advocate Illinois Masonic Medical Center	130	12	1	\$5,212,995	\$40,411	\$483,742	\$40,312	4	42
Advocate Lutheran General Hospital	68	2	0	\$3,594,546	\$52,861	\$61,649	\$30,825	5	51
Advocate Sherman Hospital	8	0	-	\$209,308	\$26,164	-	-	2	70
Alexian Brothers Medical Center	28	1	0	\$1,585,119	\$58,708	\$15,518	\$15,518	5	55
Carle Foundation Hospital	58	18	11	\$3,406,571	\$58,734	\$922,531	\$51,252	6	57
Centegra Hospital - McHenry	1	0	-	\$21,728	\$21,728	-	-	4	91
Centegra Hospital - Woodstock	4	0	-	\$51,410	\$12,852	-	-	2	37
Central Dupage Hospital	99	4	3	\$10,133,419	\$102,358	\$2,458,297	\$614,574	4	59
Delnor Hospital	7	0	-	\$179,204	\$25,601	-	\$-	3	50
Edward Hospital	35	1	0	\$1,624,272	\$49,220	\$17,756	\$17,756	5	55
Elmhurst Memorial Hospital	48	6	3	\$3,354,538	\$69,886	\$457,951	\$76,325	4	57
Franciscan St James Health/Olympia Fields	201	4	2	\$6,309,061	\$31,545	\$350,796	\$87,699	3	55
John H Stroger Jr. Hospital Of Cook County	113	22	15	\$3,722,925	\$33,845	\$1,045,140	\$47,506	5	37

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Continued from previous page

Hospital	Total NWI Cases	Total Trauma Cases	Severe Trauma Cases	Total Charges	Mean Charges	Total Trauma Charges	Mean Trauma Charges	Mean Stay in Days	Mean Age
Loyola Gottlieb Memorial Hospital	16	2	1	\$596,094	\$37,256	\$106,120	\$53,060	4	41
Loyola University Medical Center	704	180	107	\$49,885,306	\$71,777	\$16,888,749	\$93,826	7	52
Macneal Hospital	55	3	2	\$1,898,473	\$35,820	\$195,535	\$65,178	4	44
Morris Hospital & Healthcare Centers	5	1	0	\$139,453	\$27,891	\$27,877	\$27,877	2	54
Mount Sinai Hospital	66	16	10	\$2,539,380	\$38,475	\$946,405	\$59,150	4	41
Northshore Glenbrook Hospital	27	0	-	\$1,215,502	\$45,019	-	-	3	65
Northshore Highland Park Hospital	19	4	1	\$591,408	\$31,127	\$102,902	\$25,726	4	56
Northshore Skokie Hospital	59	2	1	\$3,515,402	\$59,583	\$127,287	\$63,644	3	58
Northwest Community Hospital - Arlington Heights	33	1	0	\$1,117,581	\$34,924	\$16,484	\$16,484	3	52
Northwestern Lake Forest Hospital	19	3	1	\$363,624	\$21,390	\$83,221	\$27,740	3	47
Northwestern Memorial Hospital	3,904	83	54	\$305,858,996	\$79,547	\$7,898,942	\$95,168	6	53
Presence Mercy Medical Center	9	1	0	\$588,451	\$65,383	\$277,069	\$277,069	8	44
Presence Saint Joseph Hospital - Elgin	8	0	-	\$372,155	\$46,519	-	-	5	73
Presence Saint Joseph Medical Center - Joliet	48	8	4	\$1,879,015	\$39,146	\$361,274	\$45,159	4	51
Presence St Francis Hospital - Evanston	31	0	-	\$1,428,443	\$46,079	-	-	2	52
Presence St Mary's Hospital	61	9	5	\$2,898,004	\$48,300	\$491,961	\$54,662	4	55
Riverside Medical Center - Kankakee	222	15	5	\$7,752,894	\$35,401	\$685,925	\$45,728	4	58
Rush-Copley Medical Center	2	0	-	\$60,151	\$30,076	-	-	1	47
St Alexius Medical Center	17	2	2	\$657,000	\$38,647	\$96,002	\$48,001	4	46
Totals	8,099	883	549	\$570,227,123		\$79,053,660			

Concluded

Table 16:
Total Inpatient Charges by Year, Indiana

Year	Total Charges
2012	\$3,657,409,792
2013*	\$3,604,190,522

Table 17:
Total Inpatient Charges by Year, Illinois

Year	Total Charges
2011	\$201,040,280
2012	\$205,774,904
2013*	\$200,800,094

Table 18:
Total Trauma Charges by Year, Illinois

Year	Total Charges
2011	\$21,291,560
2012	\$32,239,247
2013*	\$33,126,091

Table 19:
Total Trauma Charges by Year, Indiana

Year	Total Charges
2012	\$258,414,100
2013*	\$264,334,007

* 2013 values from Q4 were extrapolated from past data

Table 20:
Per Capita Trauma Rate in 2012-2013 for 7-County Region

County	2012 Traumas Cases	2012 Population	2012 per capita trauma rate	2013 Traumas Cases	2013 Population	2013 per capita trauma rate
Lake	4094	495,230	8.27	3906	491,456	7.95
Porter	1053	164,386	6.41	989	166,557	5.94
La Porte	789	111,335	7.09	772	111,281	6.94
Newton	68	14,087	4.83	66	14,087	4.69
Jasper	259	33,369	7.76	230	33,389	6.89
Starke	129	23,310	5.53	129	23,197	5.56
Pulaski	95	13,395	7.09	97	13,007	7.46
Total	6487	855,112	7.59	6189	852,974	7.26

Appendix C Figures

Figure 2:
Access to Illinois or Indiana Adult Trauma Centers by Helicopter in 45 Minutes or Less

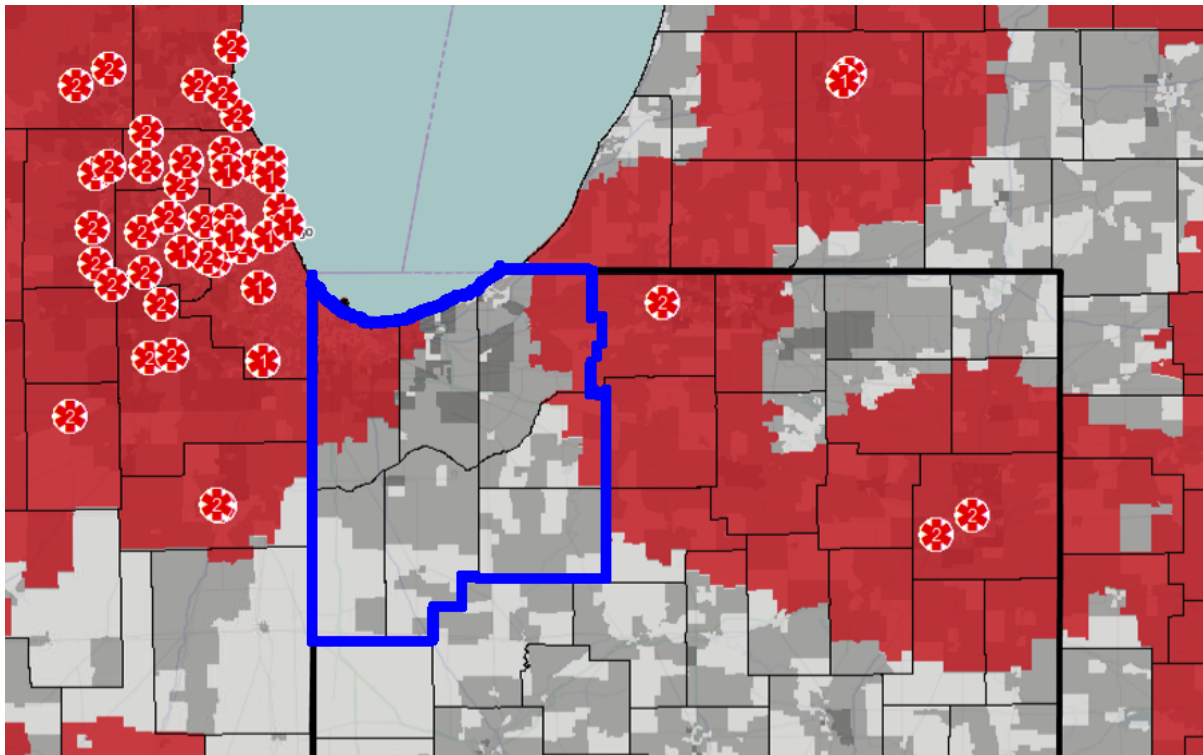


Figure 3:
Access Only to Indiana Adult Trauma Centers by Helicopter in 45 Minutes or Less

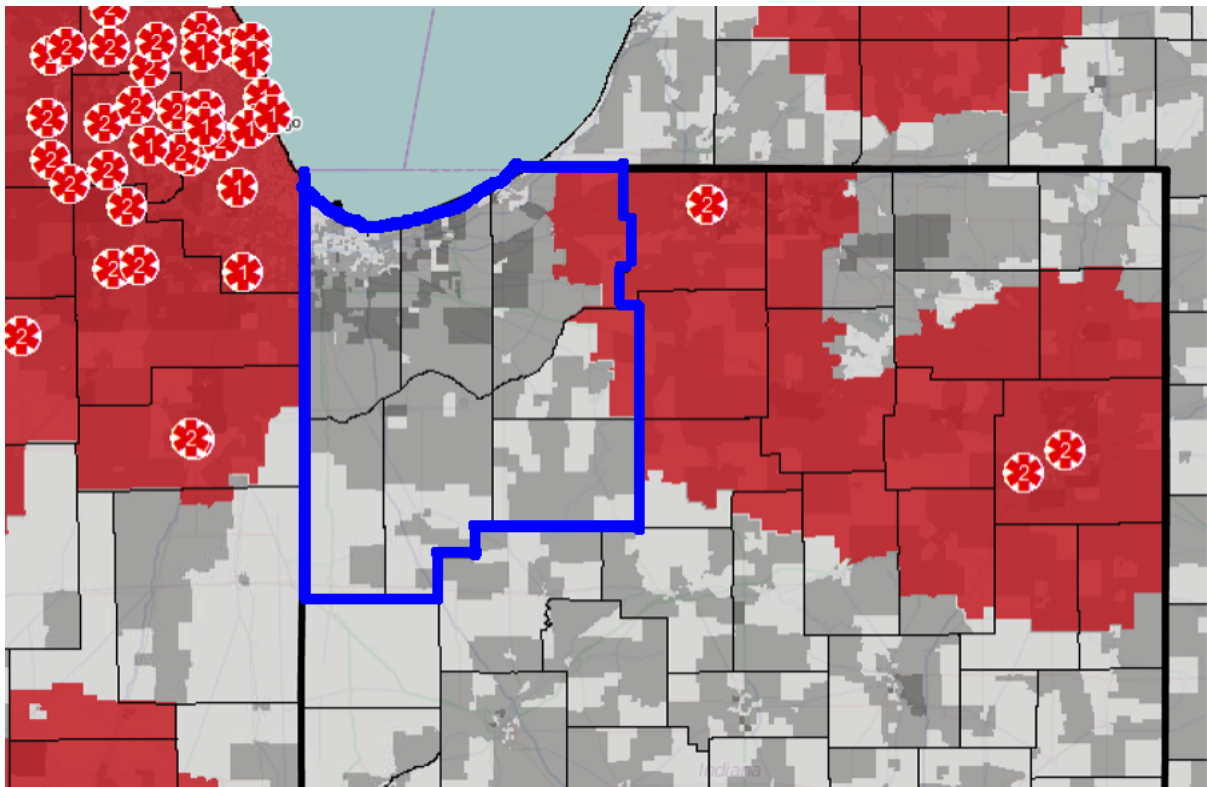


Figure 4:
Access Only to Indiana Adult Trauma Centers by Helicopter in 60 Minutes or Less

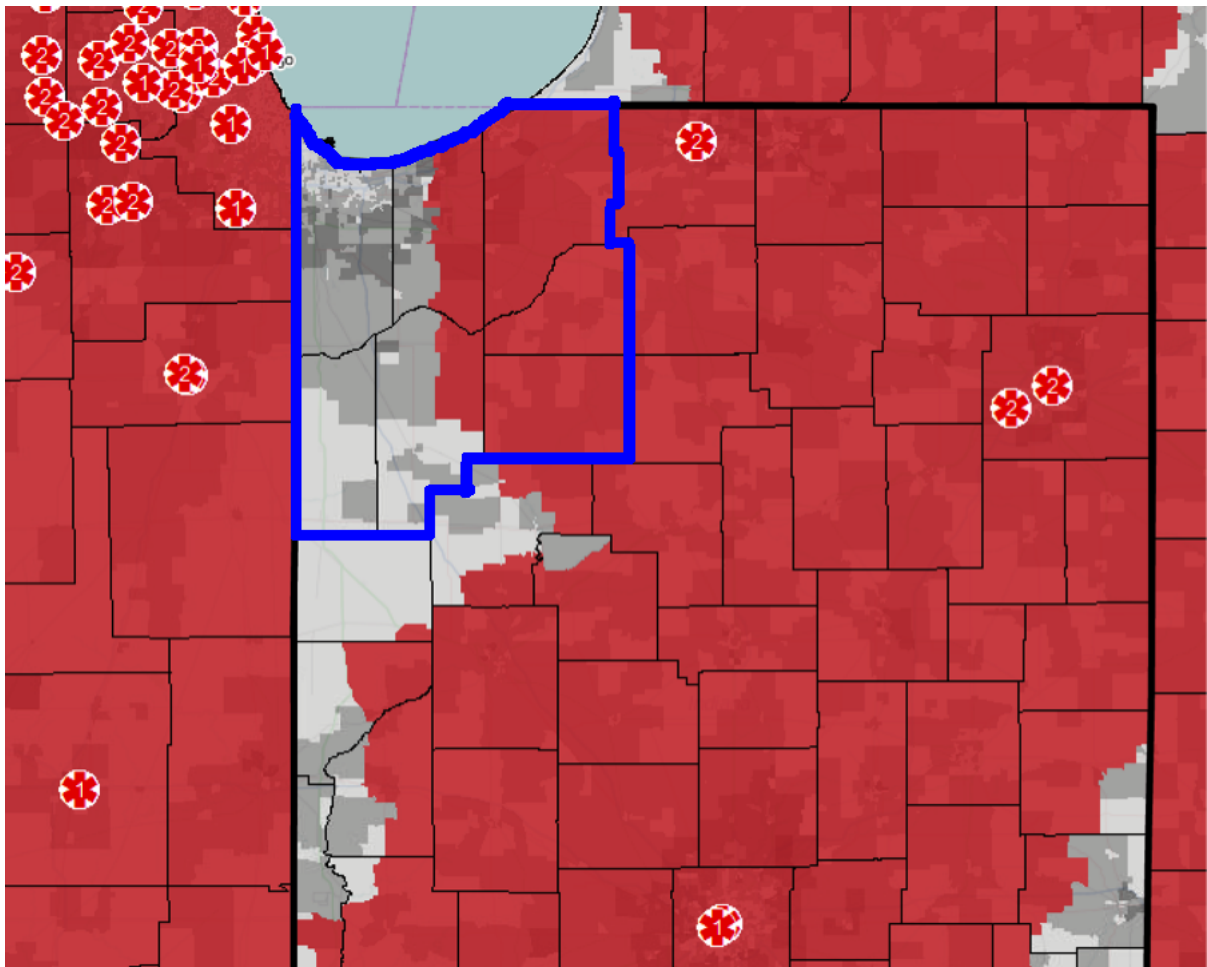


Figure 5:
Access to IL or IN Adult Trauma Centers by Ambulance in 45 Minutes or Less

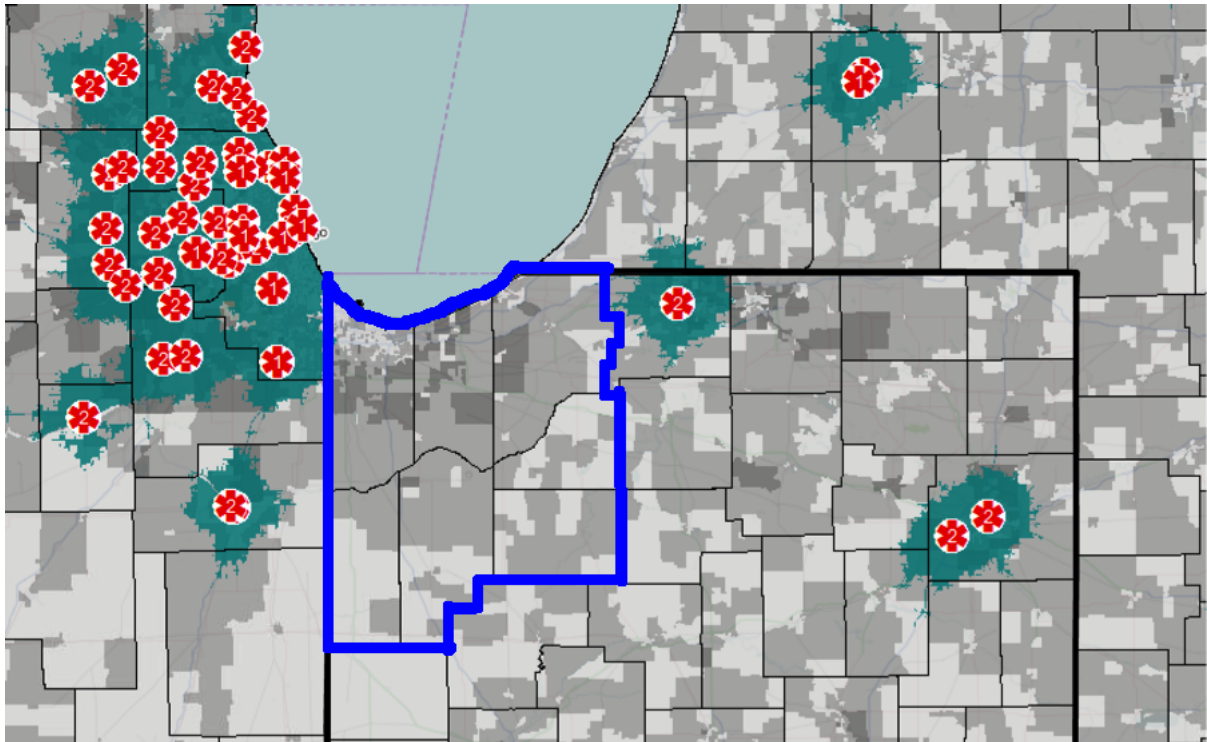


Figure 6:
Access to IL or IN Adult Trauma Centers by Ambulance in 60 Minutes or Less

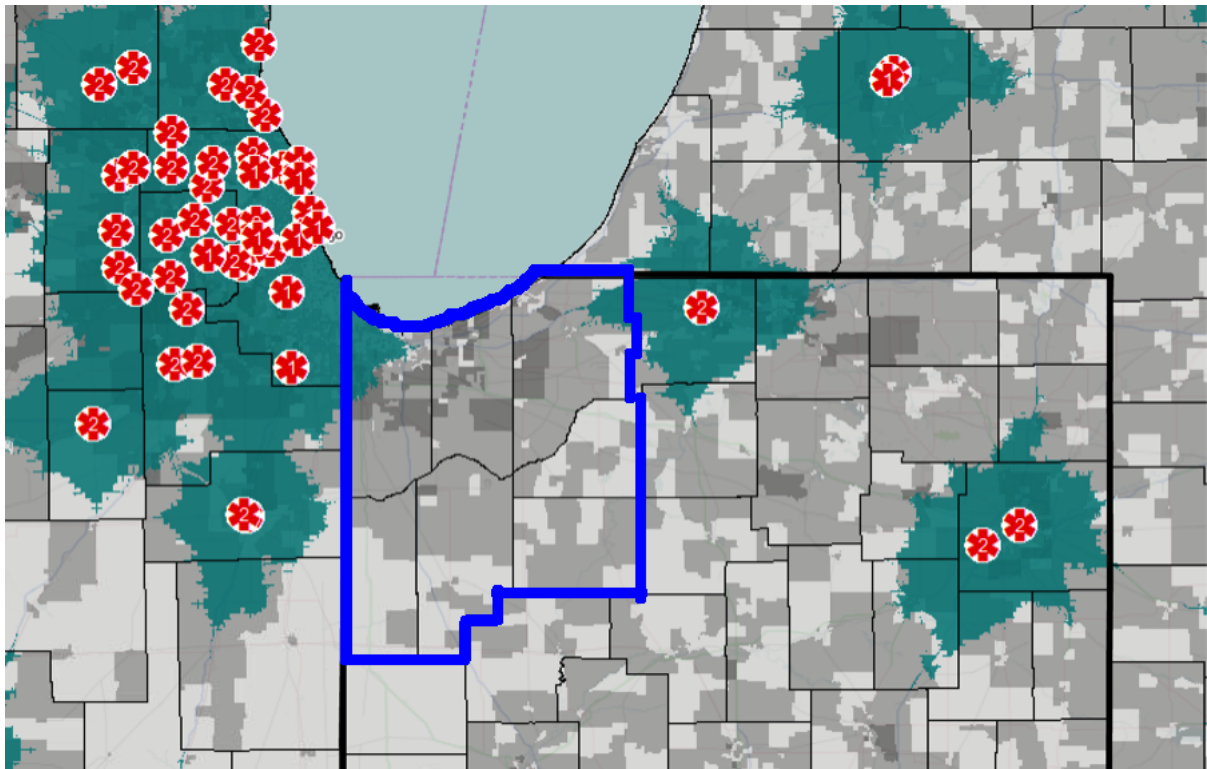


Figure 7:
Access to IL or IN Adult Trauma Centers by Ambulance in 60 Minutes or Less,
Regular Hospitals Overlaid for Comparison

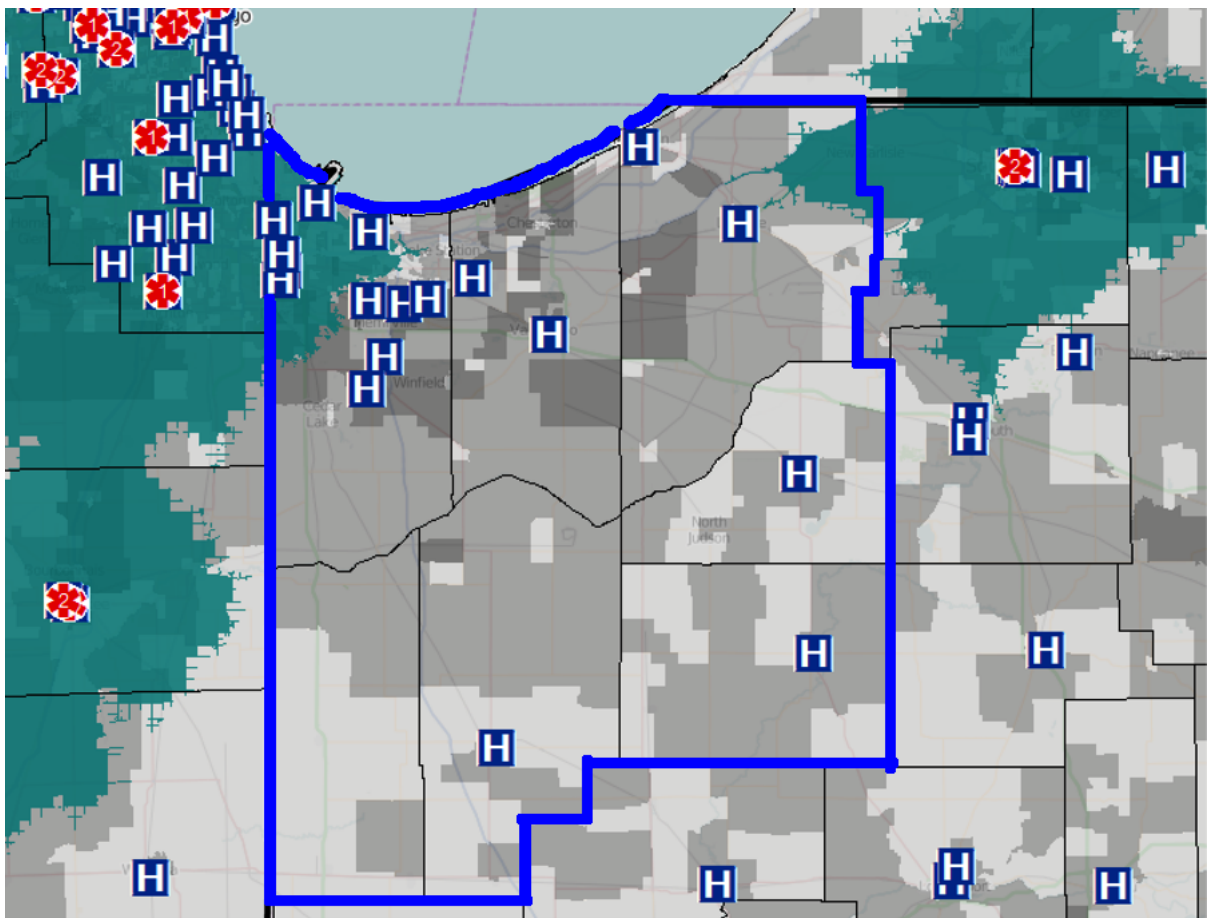


Figure 8:
Access to IL or IN Pediatric Trauma Centers by Ambulance in 60 Minutes or Less

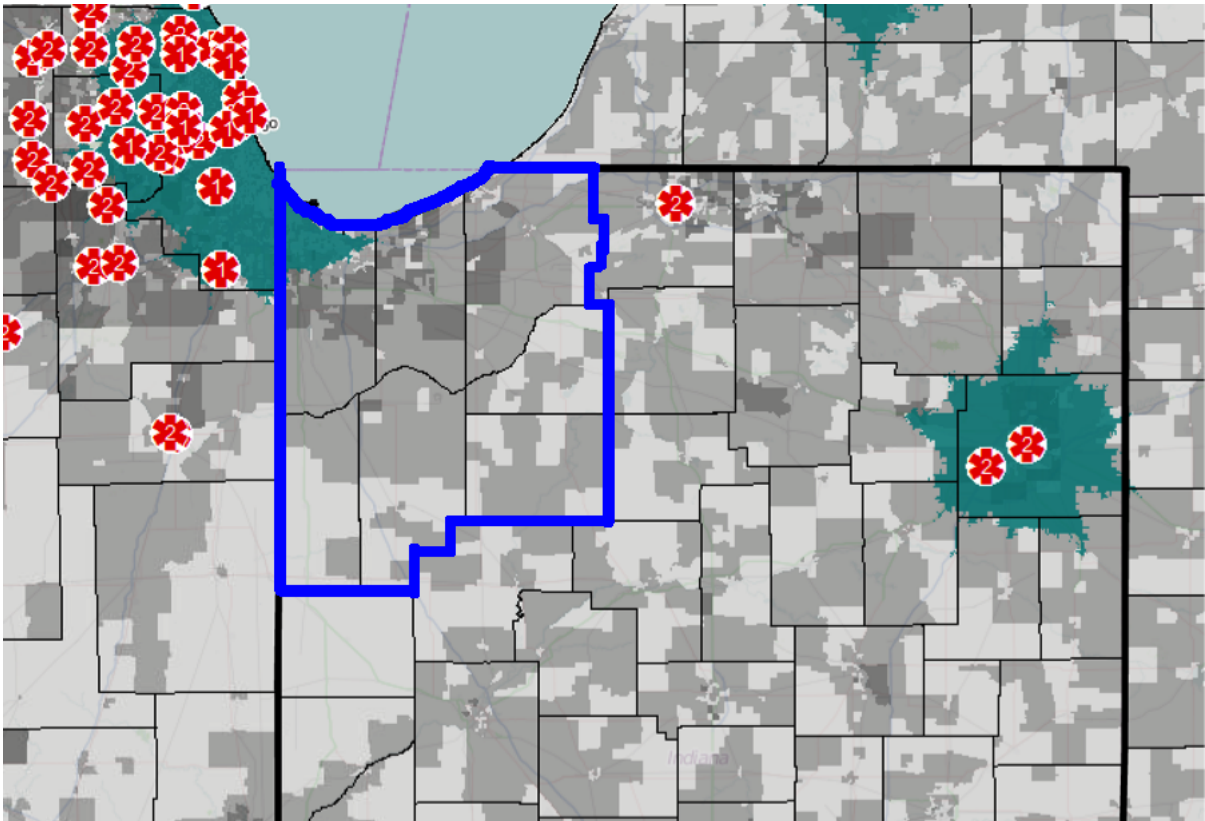


Figure 9:
Access to IL or IN Pediatric Trauma Centers by Helicopter in 60 Minutes or Less

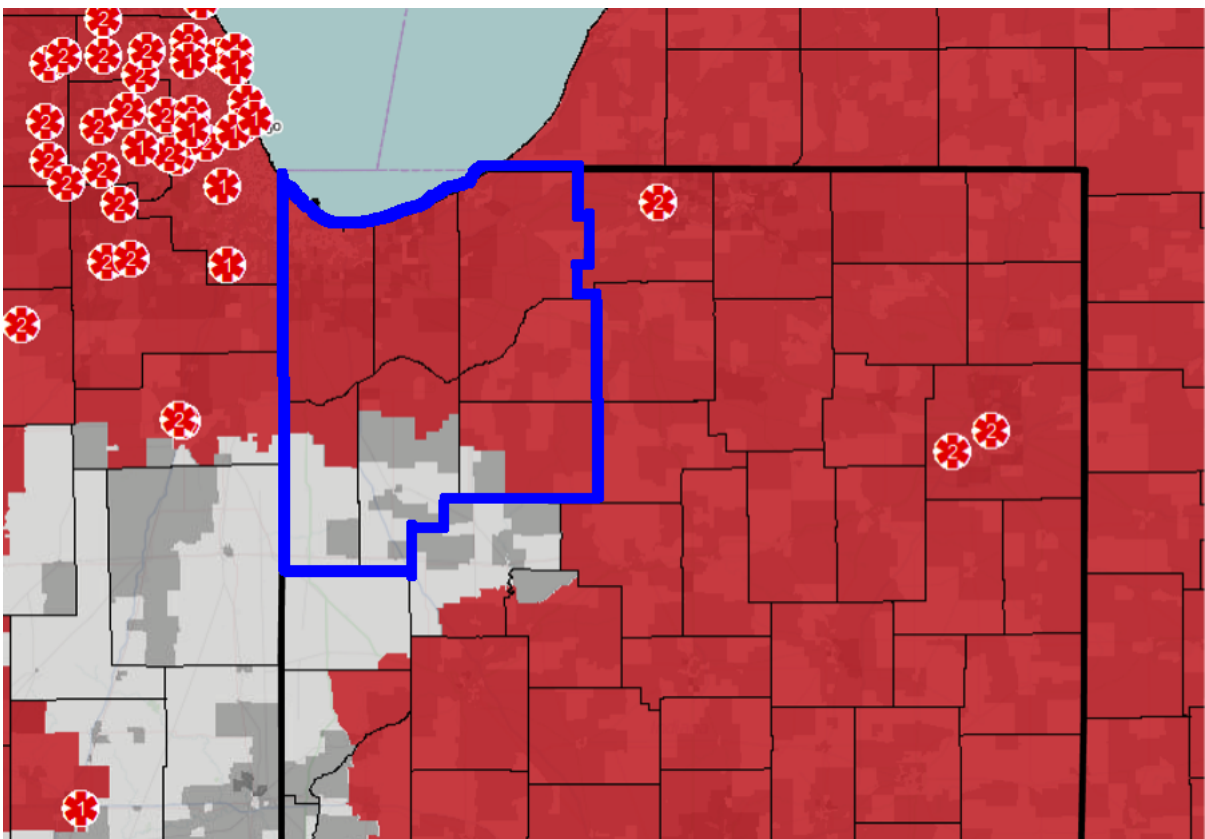


Figure 10:
Access to IL or IN Pediatric Trauma Centers by Helicopter in 45 Minutes or Less

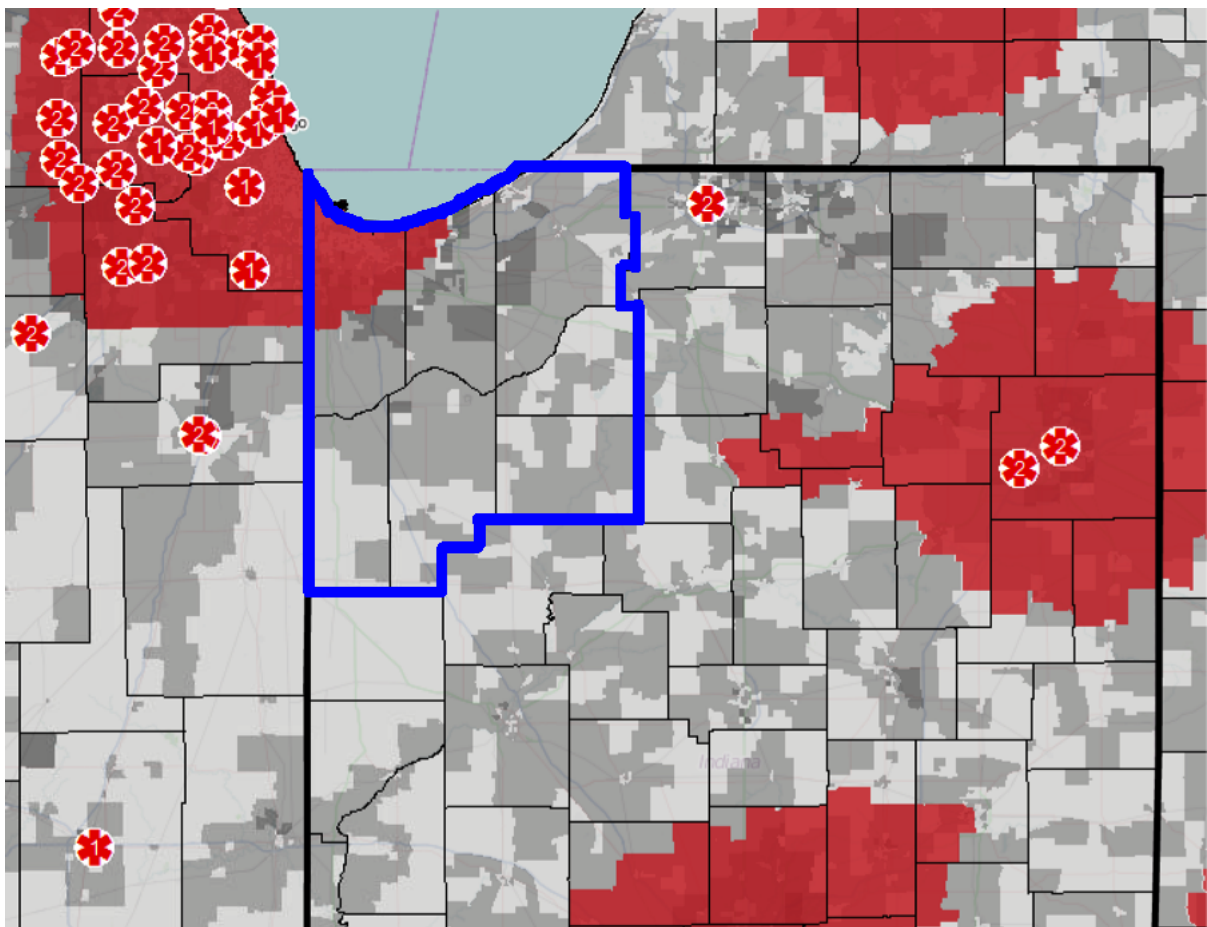


Figure 11:
Access to Indiana Pediatric Trauma Centers by Helicopter in 60 Minutes or Less

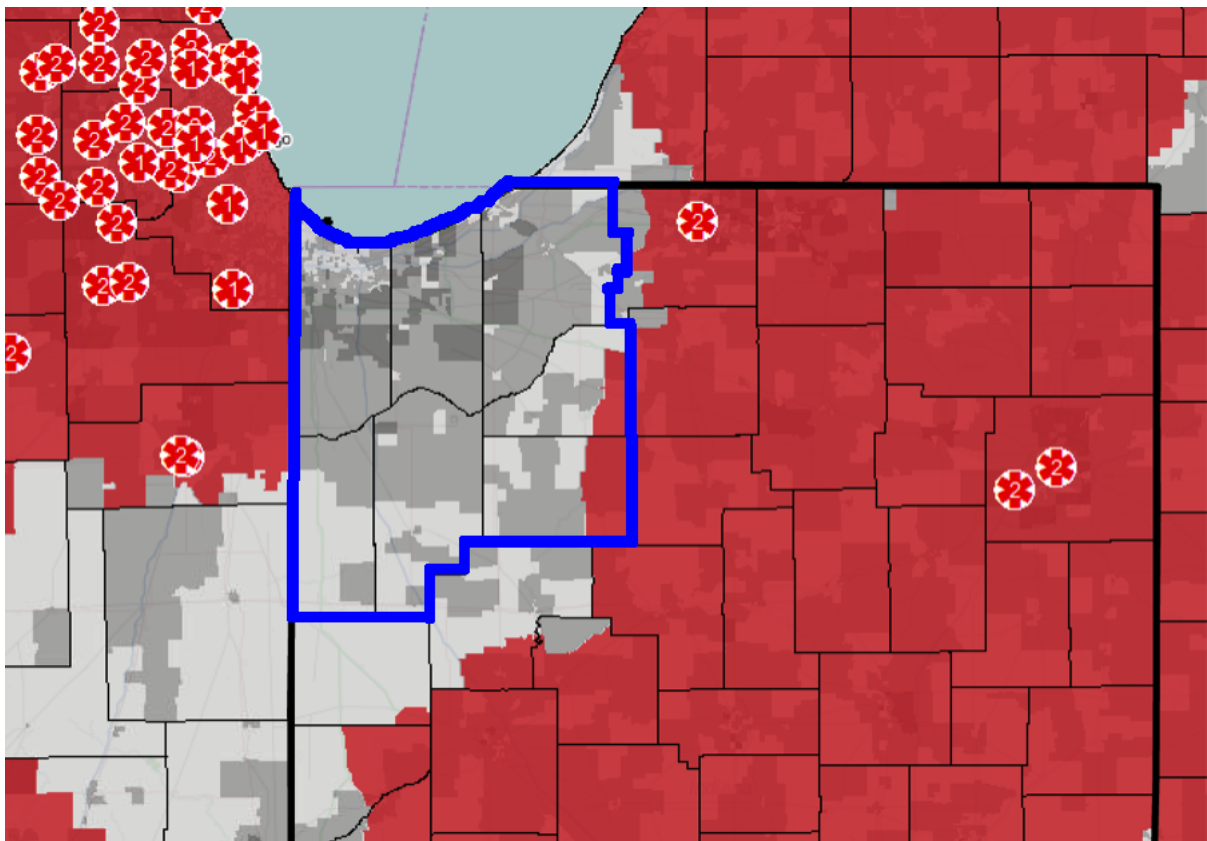


Figure 12:
Histogram of Trauma Scores for Illinois

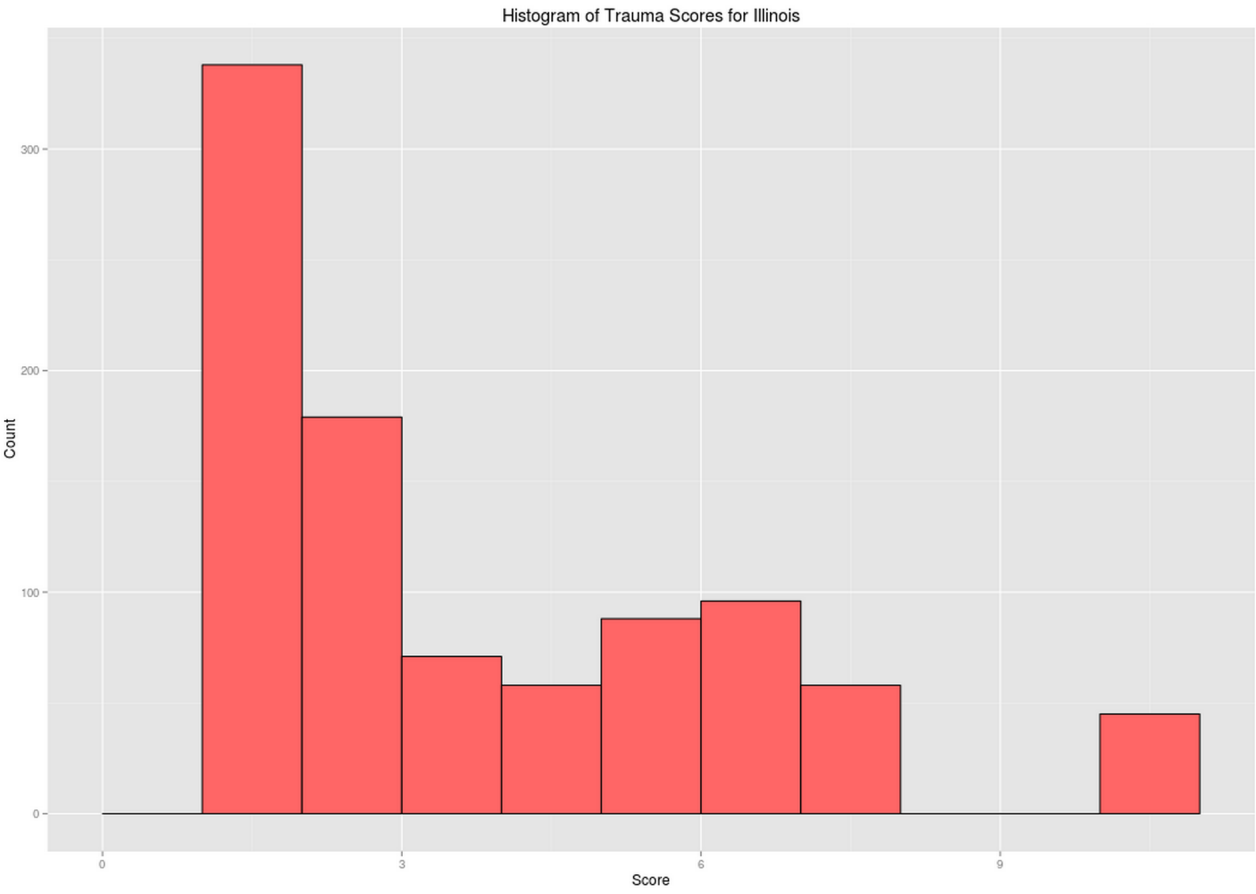


Figure 13:
Histogram of Trauma Scores for Indiana

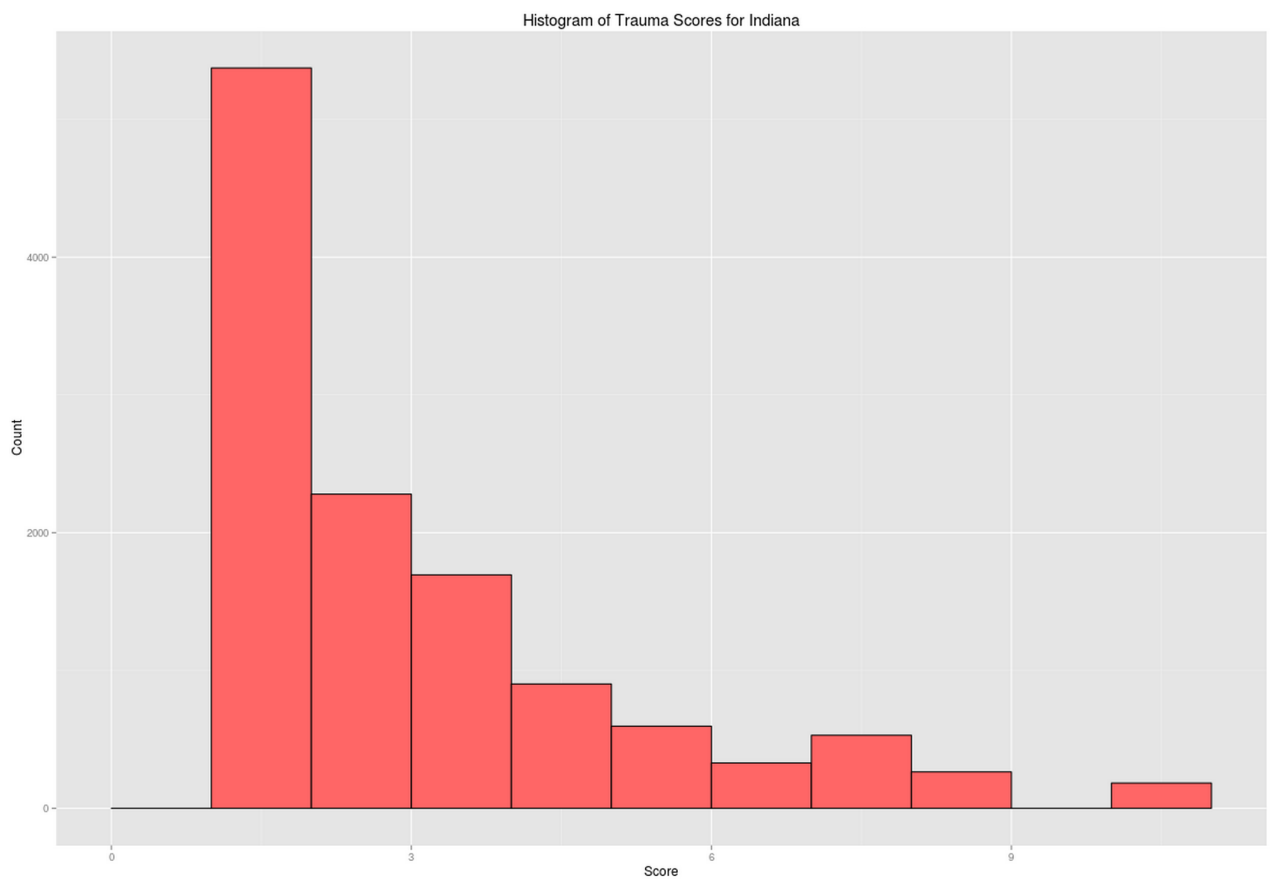


Figure 14:
Distance from NWI ZIP Codes to Memorial Hospital of South Bend

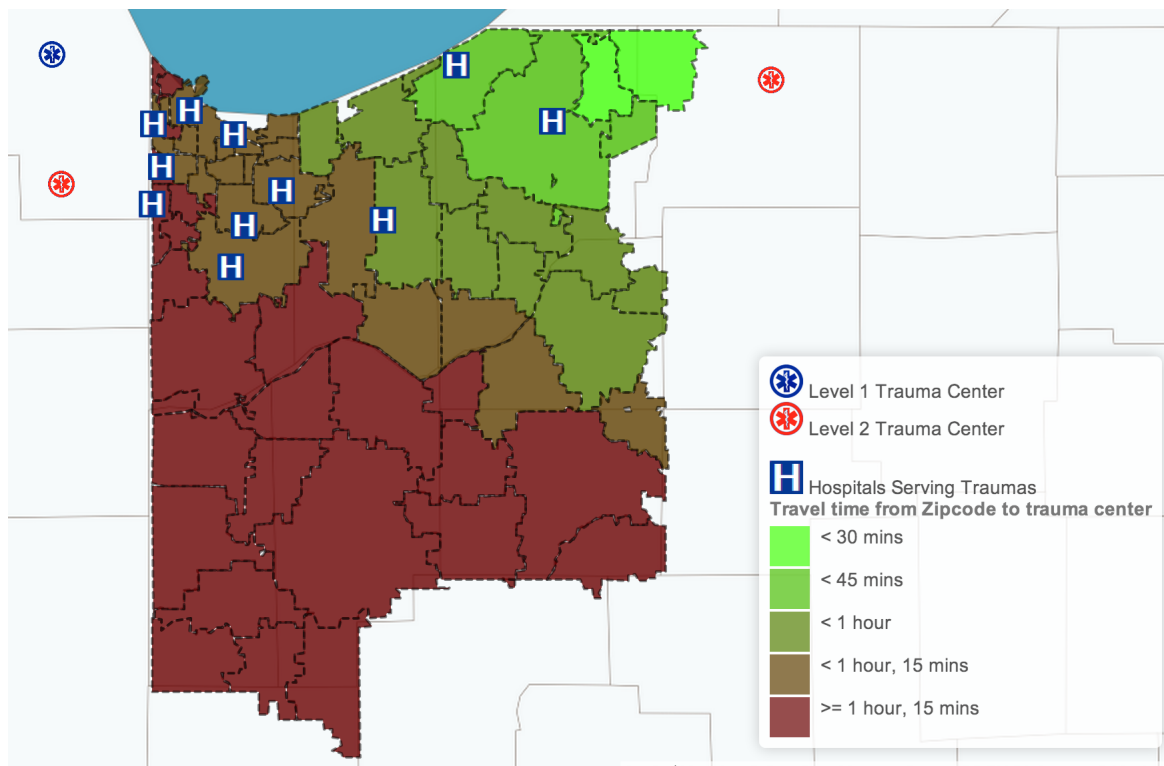


Figure 15:
Heatmap of NWI Patients for Memorial Hospital of South Bend

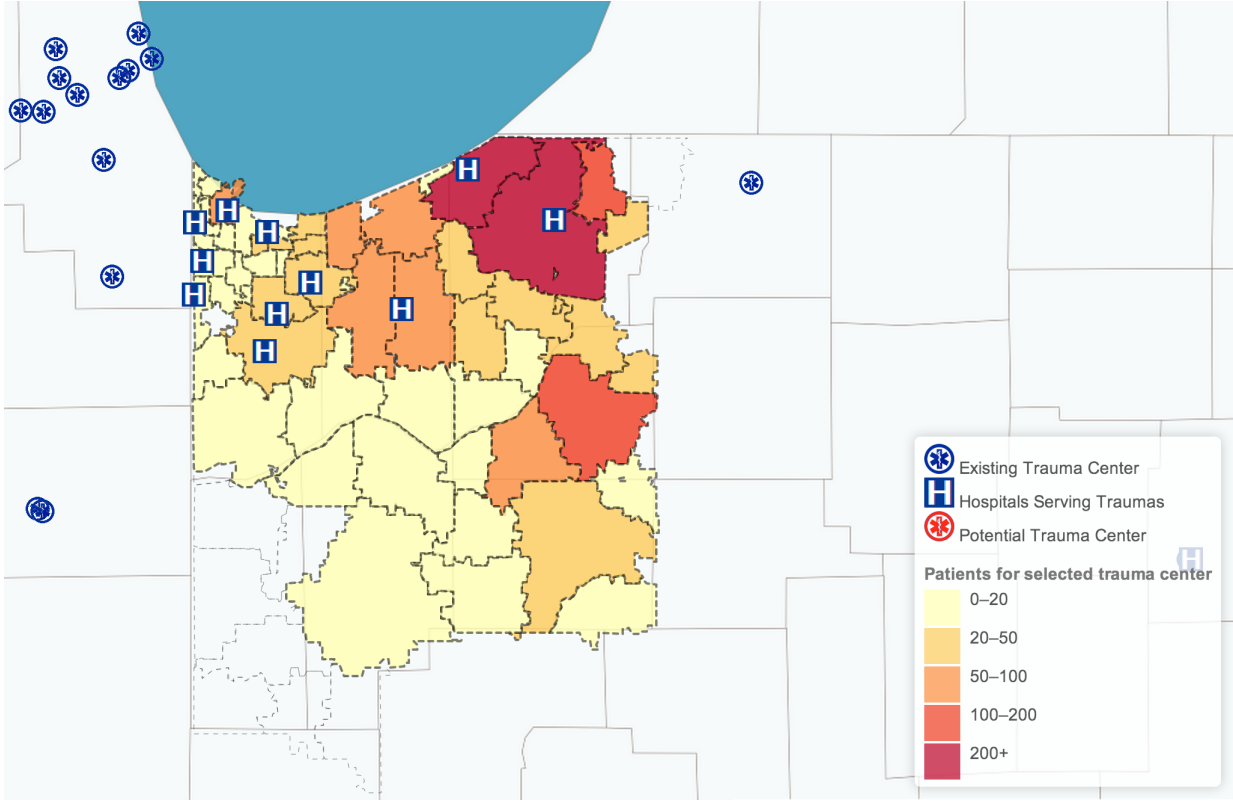


Figure 16:
Adjacency Score by ZIP Code

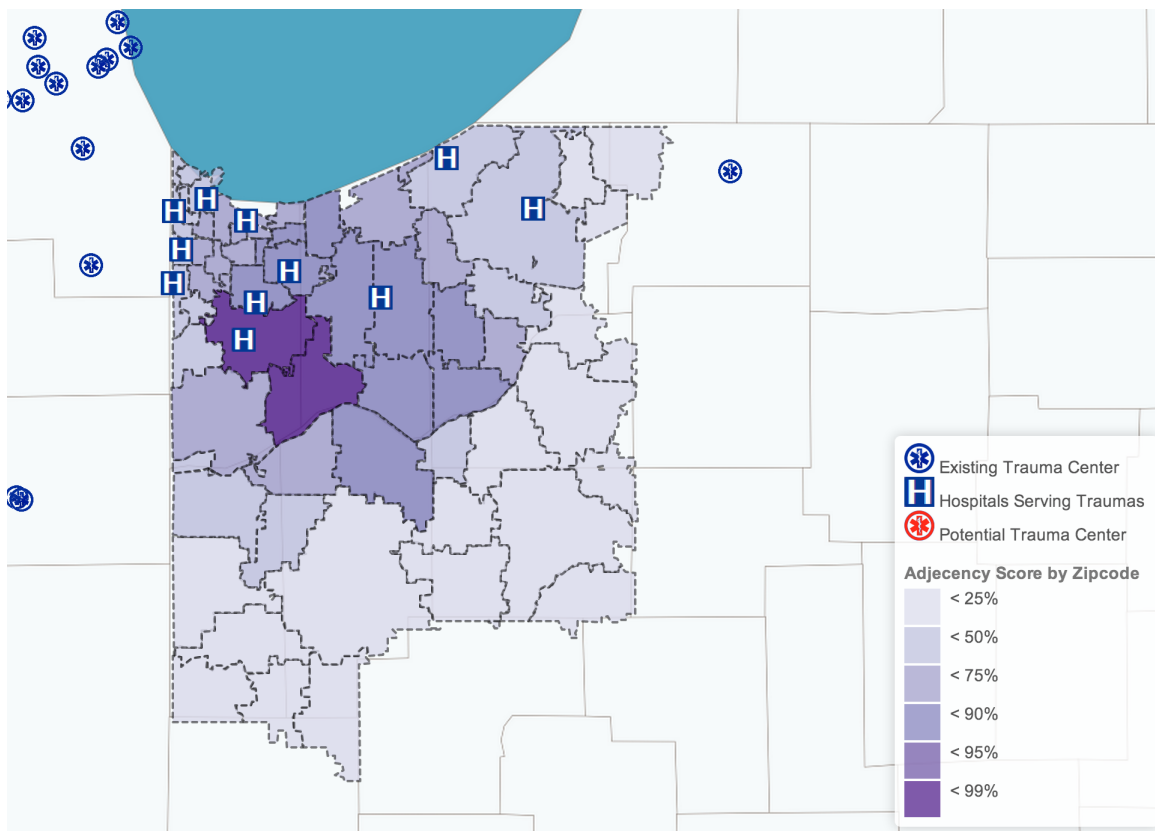


Figure 17:
Transit Score by ZIP Code

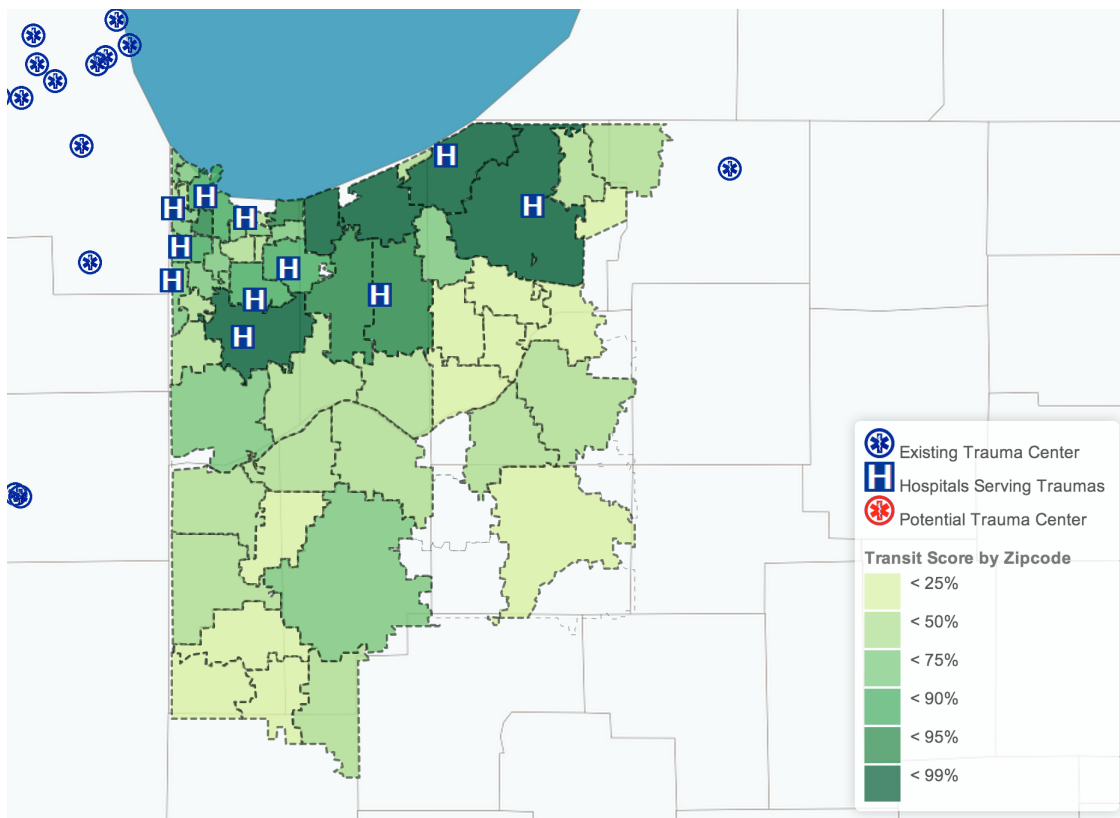
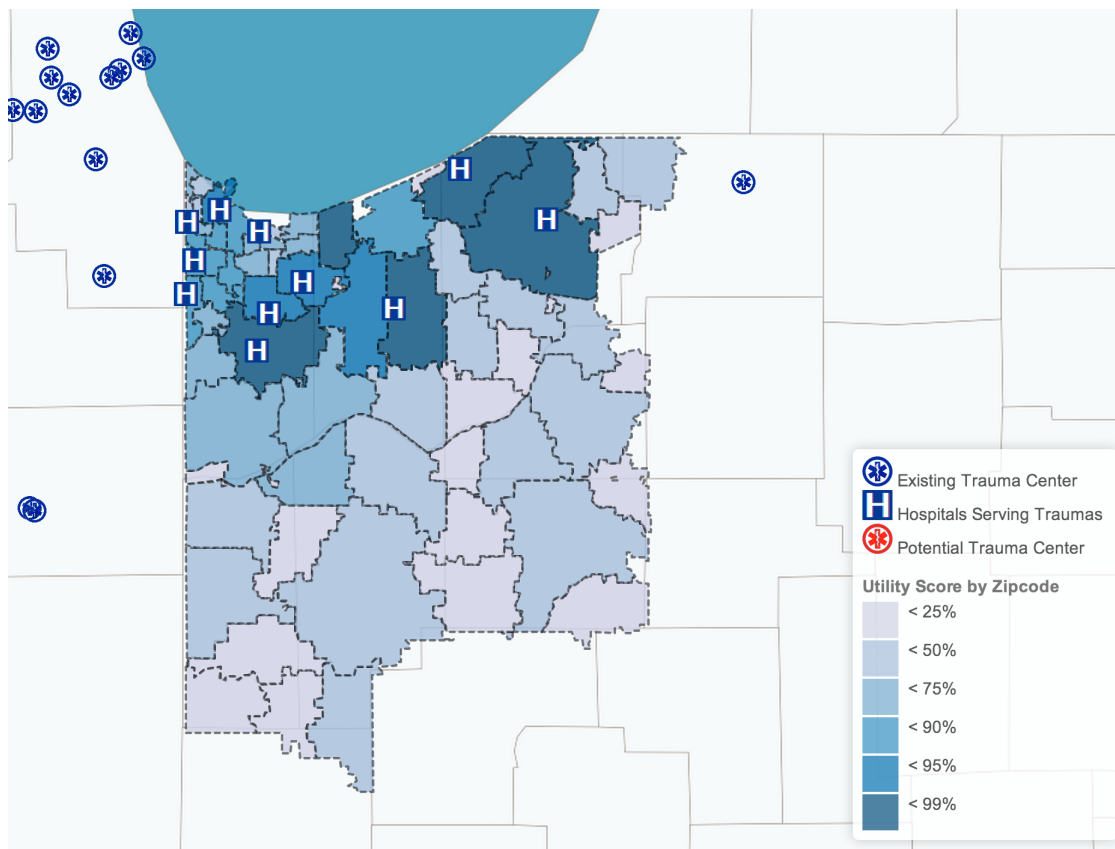


Figure 18:
Utility Score by ZIP Code



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Facility Requirements Assessment for Level I Trauma Center Northwest Indiana

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EXECUTIVE SUMMARY

Findings

The following report shows that any of the 3 hospitals studied have the ability to become Level I Trauma Centers. Each hospital also has limiting factors that will require building improvements and meeting necessary requirements. Maintaining necessary patient volumes and meeting staffing requirements may be the greatest challenge for any of the facilities.

None of the hospitals have the strong academic affiliation or presence at their facility that is required for a Level I center. All are equal on the academic parameter and therefore we did not attempt to determine what should be added to achieve teaching, office or on-call space within or adjacent the buildings. The academic options require a much more extensive programmatic study with operational plans, before assessing physical space capabilities.

Each individual assessment section highlights the weaknesses found and in most cases, the leadership groups for those facilities have plans to strengthen those weaknesses. This study focuses on identifying weaknesses, but the many strengths at each facility provide a great foundation for any new programs.



Community - Munster, IN



Porter – Valparaiso, IN



Methodist, Southlake – Gary, IN



Methodist, Northlake – Gary, IN

INTRODUCTION

Scope

The Hospital Assessment and Evaluation was conducted using a combination of subjective and objective criteria. The criteria were created by standards set in the most recent "Guidelines for Design and Construction of Health Facilities" published by The Facility Guidelines Institute and American College of Surgeons recommendations. This guideline is the standard that JCAHO and the ISDOH apply to designation levels, and the recommendations of the American College of Surgeons form the basis for Level I accreditation.

The Guideline and Recommendations both stress that specific requirements are minimum requirements and that all spaces and designs must meet the requirements of the specific program, including services and equipment being used at the individual facility. Since a full operational program has yet to be developed, our facility assessment and program are based upon code requirements, in addition to space needs and criteria for similar Trauma programs.

The capacity of any ED/Trauma Department is impacted by many factors in addition to the number of visits. Downstream department capacity can greatly influence the operational efficiency for moving patients through the ED area. Although information was gathered related to the capacity and issues with the ICU, Imaging, Surgery, and Cath Labs; analyzing any causes or corrections to capacity issues in those areas was beyond the scope of this analysis.

The Capacity for the hospitals' ED was based upon current census numbers and recognized throughput challenges. The impact of Trauma designation on ED patient volumes deserves further analysis, but is not explored within this evaluation. All hospitals are continually impacted by the opening or closing of services within the service area and final design of a new Trauma unit should reflect corporate processes for expanding and contracting in a modular design and staffing plan.

As a point of comparison, a new freestanding ED option is also presented. This is a complicated prospect as the functional program must assume a number of important operational criteria. Variables such as patient volume, acuity distribution, regional census influences, and related services have a significant influence on the sustenance of a new provider in the region and the health of existing providers. Traffic generated and inpatient admissions need to be accommodated. Expensive imaging and surgical facilities need to be utilized for a reasonable return on investment. This is an expensive and complicated option and the solution presented here would require significant additional communication, feasibility, and design effort to validate.

Intent

As part of an effort to identify what would be required to establish a Level I Trauma program in northwest Indiana, Cripe | Architecture + Interiors was contracted to evaluate the impact to physical facilities. The anticipated approach would involve engagement with an existing

trauma program, with the intent to incentivize and facilitate the measures required to attain Level I designation. This study engaged three existing hospitals, all currently providing emergency services within northwest Indiana, as directed by Katz Sapper & Miller.

Method

Engagement involved a web-based fact gathering platform (on-line survey) to establish certain characteristics, as well as in-person discussions. Each facility was visited in person by Mr. Doug Morris and Mr. Frank Hindes of Cripe | Architecture + Interiors in late June/early July of 2014. Representatives from each facility were made available for a focused discussion on-site. In all instances, the facilities were very welcoming, accommodating, and helpful with regard to the inquiries.

Cripe thanks all those who contributed time and input to this effort including Mr. Mike Gizzi from Katz Sapper & Miller. A list of those involved from each location is provided here.

NAME	FACILITY	ROLE
Valerie MacCartney	Community	Assistant Nurse Manager, ED
Anne Yakubik	Community	Assistant Nurse Manager, ED
Rob Hoskins	Community	Nurse Manager, ED
David Otte	Community	Vice President of Engineering
John Olmstead	Community	Director of Emergency & Surgical Services
Michael Woods, MD	Porter	ER Interim Medical Director
Brenda Rogers	Porter	Director Emergency Services
Christian Goss	Porter	Director of Engineering
Kelly Credit	Porter	Director System Strategy & Marketing
Taffy Arias	Porter	Chief Nursing Officer
David Cummins, MD	Porter	EMS Medical Director
Shelly Major	Methodist	Chief Nursing Officer
Jennifer Mullen	Methodist	Trauma Program Coordinator
Dan Plank	Methodist	Director of Facilities
Reuben C. Rutland, MD	Methodist	Trauma Director

Benchmarking

Various high level benchmarks are documented in current research for the appropriate size and number of beds for an emergency department and trauma center. The operational plan and flow among the ED and all related departments can have a considerable impact on the efficiency and therefore the system needs to be studied as a whole.

This study provides a benchmark range that gives an indicator of how each current emergency department fits along the benchmark spectrum. Being high or low is not a direct indicator of the ED's capacity or ability to become a trauma center. Many existing hospitals and trauma

centers are undergoing Lean planning to improve and therefore may find additional capacity through more efficient utilization in departments that seem undersized.

The objective metrics used for this evaluation are defined and explained further in the evaluation section of this report.

With the objective data, the subjective assessment of systems and processes is also a valuable indicator of suitability. This report has utilized a weighted scoring approach to quantification of the subjective assessments. This is also defined and explained further in the evaluation section of this report.

Methodology of the Cost Opinion

The cost opinions for each facility are based upon unit costs. The unit costs come from national hospital projects, but are normalized to the Indiana environment Q1 2015. Within the range of costs, we have used the 75 percentile for a new acute care hospital construction. The components have been further broken down to the specific area being considered.

This early analysis is a high level assessment and therefore associated comments will be provided noting assumptions made. We have applied the unit costs uniformly across each facility to assure consistency in the assessments.

Required renovations have been assigned the fit out costs for each specific department, and then classified into four levels weighting the intensity of renovation required.

Level 1 – Cosmetic renovations that pertain mostly to finishes although may include replacement of cabinets and countertops. This work would be 18%-20% of a complete rebuild. This level would not include any changes to the wall layout.

Level 2 – Minor alterations to the functional layout of the department with limited modifications required for Heating Ventilation and Air Conditioning (HVAC). The estimated cost of this work would be 20% - 30% of a complete rebuild.

Level 3 – Moderate renovations to the department with some significant changes to the functional layout and relocation of walls requiring more significant modifications to the HVAC systems in the area with some structural and plumbing modifications. The cost of this work would range from 30% - 50% of a complete rebuild.

Level 4 – Major Renovation to the department that would include a near total demolition of the internal space and systems. The cost of this work would range from 50% - 75% of a complete rebuild.

Glossary of Terms Related to This Report: Borrowed from Frank Zilm & Corlett Orr (Abridged here)

EMERGENCY: Emergency admissions apply to medical conditions or acute trauma such that life, limb, or the body function of the patient depends on the immediacy of medical treatment. In an emergency admission, the condition requires immediate medical attention and any time delay would be harmful to the patient. The patient does not have to be admitted via the Emergency Room to be considered an emergency admission.

URGENT: Urgent admissions involve medical conditions or acute trauma such that medical attention, while not immediately essential, should be provided very early in order to prevent possible loss or impairment of life, limb, or body function. This group includes those cases where very early medical evaluation or treatment is necessary because the patient has either serious disease or injury or symptoms of such disease or injury. A true emergency does not exist but the physician considers the patient must have the next available bed.

ASSIGNABLE SQUARE FEET: The sum of all areas on all floors of a building assigned to or available for assignment to an occupant, including every type of space functionally useable by an occupant (except custodial, circulation area, and mechanical).

BED: Any bed that is set up and staffed for use for inpatients is counted as a bed in a facility. In the National Master Facility Inventory, the count is of beds at the end of the reporting period; for the American Hospital Association, it is of the average number of beds during the entire period. The World Health Organization defines a hospital bed as one regularly maintained and staffed for the accommodation and full-time care of a succession of inpatients and situated in a part of the hospital where continuous medical care for inpatients is provided.

LICENSED: the number of beds a hospital is allowed to maintain, as determined by a governmental regulatory agency, usually of the state.

STAFFED: the number of beds the hospital is able to adequately service, depending upon the size of staffing.

CONSTRUCTION COST ESTIMATE: includes cost of new construction or renovation. Does not include local responsibility costs such as those for site acquisition, site development and parking; costs of equipment and furnishings not in contract; professional fees; or planning cost budget.

DEPARTMENTAL GROSS SQUARE FEET (DGSF): the space inside the centerline of the walls separating the department from other areas and includes internal walls, internal corridors, etc.

GROSS SQUARE FEET (GSF): the sum of the floor areas included within the outside faces of exterior walls for all stories or areas which have floor surfaces.

GROSSING FACTORS: multiplication factors applied 1) to net areas for each room or element within a department, and 2) to gross departmental areas. These factors allow for space requirement not included in original net measurements.

HOSPITAL: According to the American Hospital Association (AHA) and National Master Facility Inventory (NMFI), hospitals are institutions licensed as hospitals whose primary function is to provide diagnostic and therapeutic patient services for medical conditions and which have at least six beds, an organized physician staff, and continuous nursing services under the supervision of registered nurses. AHA data differ slightly from those of NMFI, since data from NMFI reflect osteopathic hospitals as well as hospitals not register with AHA. Non-AHA hospitals comprise 5-10 percent of all hospitals in the country. The World Health Organization considers an establishment a hospital if it is permanently staffed by at least one physician, can offer inpatient accommodation, and can provide active medical and nursing care. Hospitals may be classified by type of service, ownership, and length of stay.

INTENSIVE PATIENT CARE: patient care requiring intense nursing care, special monitoring, or equipment. Typically the nurse:patient ratio is 1:2 in an ICU, compared to 1:5-6 on a general acute unit.

INTERMEDIATE PATIENT CARE: a patient requiring patient monitoring or nursing care at a level higher than provided on an acute nursing unit, but less than an ICU.

NET AREA, NET DEPARTMENTAL AREA: measurements used in space tabulation. The net area for a room or element is measured to the interior finished surfaces of all walls and partitions. No deduction is made for columns and small duct and similar spaces within each room. The net area for a department or component, or for a service space, is the total of all the rooms or elements within it. It excludes interior partitions, exterior walls, corridors within the department, and general circulation areas. It also excludes other unlisted items in space tabulation, such as large ducts, telephone alcoves and electrical closets.

NET SQUARE FEET (NSF): the space within the walls of a room, or the useable floor area assigned to a function in an open ("landscape") design.

OCCUPANCY: The National Master Facility Inventory and American Hospital Association define hospital occupancy rate as the average daily census divided by the number of hospital beds during a reporting period. The occupancy rate for other facilities is calculated as the number of residents reported at the time of the interview divided by the number of beds reported.

Evaluations:

The findings noted here are a summary of the more detailed information gained from data gathering and surveys completed by hospital personnel, and site visits.

The findings for each hospital surveyed will be presented in the following manner:

Overview – Provides a statement as to whether the existing hospital's facility meets the minimum requirements of a Level I trauma center, and if not what would be needed to achieve that level.

Metrics – Compares the facility against national benchmarks for the department's capacity. There are no standard metrics for gross square footage per bed or number of treatment stations necessary within an emergency department or trauma center. Published data from numerous sources has been used to develop a range within which many facilities operate. This gauge is presented as a guide for determining the capacity of each emergency department. These benchmarks are also used for determining the ability for absorbing and treating a larger number of patients, if the designation as a trauma center projects added volume. Other departments or operational processes may also affect the department's capacity. If we have identified problems or opportunities it is noted in this section.

Improvements – Identifies the weaknesses within the existing facility that should be addressed to strengthen the hospital's ability to function at the new trauma level.

Costs – Lists the capital improvements needed or suggested with the anticipated cost of each. The findings for each hospital surveyed will be presented in the following manner:

OBJECTIVE METRICS

The metrics in the table below were used as a common baseline for assessment.

	Community Hospital			Trauma Center	
Annual Visits Per Bed or Treatment Station	2000	1700	1500	1300	1100
Gross Department Square Feet Per Bed	600	650	750	900	900
Single Exam Room Size	120 sf min.				
Bariatric Exam (Minimum 1)	200 sf min.				

These metrics impact the suitability as a Level I trauma center in many interactive ways, but a summary of why these metrics were selected is provided below.

Annual Visits Per Bed or Treatment Station	This metric is indicative of the capacity of the ED to receive patients on a regular basis. Lower numbers may indicate more availability, or shorter wait times. Lower numbers may also indicate higher volumes of low acuity patients. Higher numbers may indicate less availability at peak periods and/or longer boarding times.
Gross Department Square Feet Per Bed	This metric is indicative of the density of the ED related to treatment spaces and provider spaces. Room size and circulation have significant impact on this metric. Higher numbers may indicate larger treatment spaces or more comfortable circulation, but may also indicate greater provider support spaces. Higher numbers may also indicate more opportunity for internal reorganization to accommodate required improvement. Lower numbers may indicate a limited ability to expand within the current ED boundaries. As with all data, context is important.
Single Exam Room Size	There is a minimum required exam room size. The metric presented will be representative as each room will be slightly different, but will give a good idea of the current design parameters. This metric in context of those above will shed additional insight into departmental density and ability to accommodate improvements.
Trauma Room Size	There is a minimum required trauma room size. The metric presented will be representative as each room will be slightly different, but will give a good idea of the current design parameters. This metric in context of those above will shed additional insight into departmental density and ability to accommodate improvements and best practices.

SUBJECTIVE METRICS - TRAUMA CENTER COMPONENT CHARACTERISTICS

For the purposes of this analysis, each component is given a subjective value from “-3” to “3” representing its impact on the capacity and quality of the ED and future Trauma Unit. If a characteristic is neutral to that component's impact, it has a “0” value. As some characteristics have greater impact on the overall success, or whose impact is transferred to other components, it is given a higher weight factor from 1 to 3 in order to achieve an overall weighted value. The weighted value is calculated using the following formula:

$$(\text{Score}) * (\text{Weight} + 3) = \text{Value}$$

A value of three is added to the weight factor to soften the overall effect of the weighted calculation. A weight of 3 is not necessarily 3 times more important than a weight of 1. In the final analysis this study will assume that the minimum necessary components will be achieved at each facility considered and the scoring will highlight the weakness or strength in achieving that end result and the quality and strength of that achievement. The study and evaluation will focus on the building and assume that all hospitals being considered will achieve the physician, staffing, training and operational requirements.

CHARACTERISTIC: Hospital ED

Description: The hospital Emergency Department is one key entry point to the hospital's services. Most people in the community know that if they are concerned about any urgent healthcare issue, they will find help at the closest ED. The capacity and current issues within the existing hospital department form the core to determining capacity for expanding the program into a Level I Trauma Center.

Importance: This study will assess that the building meets all minimum requirements and if not, what is needed and the difficulty of achieving the minimum needs. The performance metrics of the existing ED will highlight the weaknesses or strengths of the hospital's current facility and operating processes. Not all performance weaknesses shown in the ED are directly a result of this department's performance and therefore, similar performance assessments are checked in related departments for a high level view of overall hospital capabilities and weaknesses.

Criteria:

- *Physical Space*
- *Gross Department Space per bed*
- *Number of visits per emergency bed*
- *Door to Physician time*
- *Left Without Being Seen*
- *Outstanding deficiencies*

CHARACTERISTIC: Hospital Surgery

Description: It is assumed that all hospitals considered in this study have a surgery department and the necessary support services. The surgery capacity and issue review focuses on services required to support the expanded needs of a trauma unit.

Importance: A trauma hospital needs to have 24-hour surgery capability 7 days a week for trauma use. The hospital will need to establish a staffing plan to achieve the requirement. This analysis will focus on the current utilization of operating rooms and the building's physical capability to meet the requirements. While most hospitals have processes to get an OR when needed, the requirements for a Trauma Center insist that the process must be more formalized and tested regularly.

Criteria:

- *Physical space*
- *Current OR utilization*
- *Proximity to the ED*

CHARACTERISTIC: Hospital ICU / CCU

Description: Having ICU capabilities is a basic requirement for being a Trauma Center. All hospitals being reviewed have at least one unit with staffing / utilization for their current patient load.

Importance: The evaluation in this study is just to see if the current hospital has capacity problems or conditions that would be compounded if a trauma unit were established, and might also create upstream problems for patient movement to appropriate care.

Criteria:

- *Staffed beds*
- *Daily and annual utilization*
- *Condition*
- *Current deficiencies*

CHARACTERISTIC: Hospital Imaging Capabilities

Description: Complete imaging capabilities are a necessity for any hospital, which rise to a higher importance when the hospital serves a Trauma Center.

Importance: Imaging has always been very important to the ED with advanced imaging continually gaining in importance. CT, MRI and Interventional Radiology are becoming standard for trauma units. These services need to be available in the hospital and the closer to the Trauma Center the better. New emergency

departments are being constructed with essential services within the department.

Criteria:

- *Current imaging equipment*
- *Equipment proximity to the ED*
- *Equipment current utilization*

CHARACTERISTIC: Hospital Laboratory

Description: A hospital lab provides essential analysis for caregivers to make critical treatment decisions throughout the hospital and possibly for other organizations.

Importance: In an Emergency and Trauma situation it is extremely important to have the analysis immediately available. The study checks the capacity and ability to meet increased needs of a trauma facility.

Criteria:

- *24 hr. analysis of blood, urine and other body fluids*
- *Microsampling capabilities*

CHARACTERISTIC: Hospital Blood Bank

Description: The hospital's blood bank is where blood products are stored and may also include a collection area. Many times the blood bank is included as a portion of the lab and in addition to collection and storage, will perform blood typing, cross matching, coagulation studies etc.

Importance: A very high importance for a trauma center to have an available supply of blood and it is critical to have 24/7 capabilities for stat typing and matching.

Criteria:

- *Capabilities*
 - *Blood typing*
 - *Cross matching*
 - *Coagulation studies*
 - *Blood gasses*
 - *Microbiology*
- *Storage*
 - *Red blood cells*
 - *Fresh frozen plasma*
 - *Platelets*
 - *Cryoprecipitate*
 - *Coagulation factors*

CHARACTERISTIC: Hospital Infrastructure

Description: For the purposes of this study, the infrastructure being considered is the main utilities and mechanical systems supporting the hospital. Although not normally noted as a utility, for this study we will include street access and emergency vehicle including helicopter access.

Importance: All hospitals require a high level of reliability for their utility systems and support mechanisms, but at a Level I Trauma Center, the ED will be the center of a response mechanism that will need to be available in a disaster situation where normal utility systems may be disrupted.

Criteria:

- *Utilities*
 - *Water*
 - *Sewer*
 - *Electricity*
 - *Gas*
- *Hospital Systems*
 - *HVAC*
 - *Oxygen*
 - *Medical air*
 - *Vacuum*
- *Patient access*
 - *Street access*
 - *Ambulance access*
 - *Helicopter access*

COMMUNITY HOSPITAL – MUNSTER

Overview

The Community Hospital's physical structure meets the minimum requirements to achieve Level I Trauma Center status. The Emergency Department was renovated and opened in January 2009 and meets all the requirements in the "Guidelines for Design and Construction of Healthcare Facilities". In June of 2014 the hospital completed construction of a vertical expansion above the ED creating new floors of inpatient beds; although not increasing the overall number of staffed beds in the hospital.

The metrics indicate that the number of visits per treatment station is at the very high end of the benchmark scale. With numbers in this range it is expected that there will be times of backup within the department. The metrics also show the department has a positive Treatment/DGSF that could allow for renovations to create additional treatment stations.

Hospital representatives have recognized that when delays occur for treatment stations, it seems beds are full with patients no longer needing that space for care delivery. The hospital has an ongoing Throughput Committee to improve hospital efficiency. A possible solution may involve a discharge pending space to make treatment space more quickly available for incoming patients. Leadership of the department has recognized both of these needs and has indicated a desire to seek corrections for these conditions with or without designation as a trauma center.

The hospital's helipad location is very poor for support of a trauma center. The current helipad is located on an adjacent parking garage with patients being moved a considerable distance through corridors to reach the ED. This location has been acceptable for transporting patients out of the facility but is not acceptable for trauma. With a proper transport plan from the pad to the ED, this weakness would not eliminate this site as a Trauma Center although it would still not be desirable.

Emergency Department Metrics

- 36,640 Department Gross Square Footage (DGSF)
- 30 Treatment stations.
- 2011: 59,982 ED Visits
- 2012: 63,532 ED Visits
- 2013: 61,677 ED Visits

Annual Visits per bed or Treatment Station

Benchmark: Trauma 1,100 -1,300 – 1500 – 1700 - 2000 Community ED

Community is currently operating at 2,056 visits per station

The high volume per treatment station indicates a high number of cases, many of which

may be of low severity. With this volume and only 30 treatment stations, there will be increased pressure to maximize a fast track processes and to utilize a discharge holding area to free up treatment capacity.

Gross Department Square Feet per Bed

Benchmark: Community ED 600 - 650-750 – 900 Trauma

Community has 1,221 DGSF/ Treatment Bed

The DGSF/Treatment bed is good and indicates there may be some space within the existing emergency department for developing treatment beds, fast track services or discharge holding to ease congestion when volume surges. A workflow study should be considered to determine which options best handle future growth.

This very high level assessment of the department's physical size indicates it has the DGSF to handle the anticipated needs of a trauma unit with the current number of visits, but the treatment beds are a limiting factor. This capacity assessment does not confirm that the space is adequately designed to maximize the efficiency of the department.

Improvements

It would be most desirable to have a new helipad constructed on top of the recent addition with an elevator from the ED extended to the roof. Other alternatives for an improvement might be possible at a lower elevation to the west of the ED with connection to the existing unit, but flight paths may be restricted due to significant electrical lines just north of the hospital.

Renovation of the ED for fast track, discharge holding and additional treatment beds or a combination of these will help manage the current volume and future growth.

Costs

The cost for capital improvements could vary considerably depending upon the final design solutions. This section has briefly described some options and cost ranges for each.

Helipad

Options:

Roof mounted with an elevator extension

\$1,250,000 to \$2,000,000

Slightly elevated west of the ED

\$350,000 to \$1,000,000

Additional treatment rooms

Renovation of the existing ED

\$1,341,024 to \$2,011,536

Totals: \$1,446,024 to \$4,011,536

PORTER REGIONAL HOSPITAL

Overview

Porter Hospital is a new facility that was recently completed in August 2012 on a green field site at the intersection of US highway 6 and IN highway 49 north of its previous location in Valparaiso, Indiana. The Emergency Department meets all the building requirements for an ED and a Trauma Center. The hospital's new design has placed all required services in good proximity to the ED recognizing current best practice in facility design with Radiology, CT and MRI immediately adjacent the department.

The only noted shortfall was identified relating to the hospital experiencing several diversions from the ED when ICU beds were not available. The hospital's leadership has already recognized the need for additional beds and has an expansion project in the planning phase.

The hospital was planned for Level II Trauma designation so there are no substantial facility issues that would preclude moving toward Level I Trauma designation.

Emergency Department Metrics

- 24,600 Department Gross Square Footage (DGSF)
- 30 Treatment stations.
- *The number of visits prior to 2013 is not relevant since this location opened in August of 2012.*
- 2013: 40,000 ED Visits

Annual Visits per bed or Treatment Station

Benchmark: Trauma 1,100 -1,300 – 1500 – 1700 - 2000 Community ED

Porter currently operating at 1,333 visits per station

Porter's new design provides good triage and fast track options in addition to two designated observation rooms in the middle of the ED that help them manage surge volumes.

Gross Department Square feet per bed

Benchmark: Community ED 600 - 650-750 – 900 Trauma

Porter has 820 DGSF/ Treatment Bed

In addition to being within the department size to meet trauma service, it is also of note that none of the ED square footage included imaging.

Improvements

The new facility has no identified deficiencies requiring correction, and the ED has capacity for growth if there is an adequate number of inpatient beds. The hospital is planning for another floor to double the number of intensive care beds from 32 to 64. The additional floor will be approximately 23,921 GBSF

Costs

The portion of the existing building above the two-story ED and ICU was designed for vertical expansion. There is a complexity of construction over a functioning ED and ICU as well as some economies. Our cost projection is between **\$4,305,600 and \$5,908,240** for a vertical expansion of this size. Final design and construction sequencing could have significant impact on the cost.

If built new as an adjacent addition our cost projection is between **\$6,601,902 and \$8,970,000**.

METHODIST HOSPITAL – NORTHLAKE CAMPUS

Overview

The Methodist building can meet the requirements of a trauma center. It is evident that through the years, Methodist's facility has suffered deferred maintenance, but has made recent strides to reverse that trend. Ongoing infrastructure improvements are being made and the hospitals' leadership has identified preliminary plans for improvements to resolve the weaknesses identified in this study.

One of the greatest weakness for this facility functioning as a trauma center is the distance a patient travels for a CT scan. The CT room is on the same level but not immediately adjacent the Emergency Department, requiring that patients be transported some distance using public corridors. The CT unit is currently being replaced, but the location will remain the same. CT usage is becoming increasingly more important for trauma care. Since renovation plans are still in conceptual stages, incorporation of CT into the emergency department should be considered.

The facility currently uses a mobile decontamination unit but has incorporated a space for this function into the renovation plans.

Intensive care beds were also noted as a weakness but there are plans for renovating the current unit immediately adjacent the emergency department and building another patient floor in a vacant portion of the hospital.

Surgery is adjacent the Emergency Department for easy transport of patients.

No building infrastructure deficiencies we noted that would affect the department's performance as a trauma center.

Emergency Department Metrics

- 21,063 Department Gross Square Footage (DGSF)
- 24 Treatment stations.
- 2013: 35,000 ED Visits

Annual Visits per bed or Treatment Station

Benchmark: Trauma 1,100 -1,300 – 1500 – 1700 - 2000 Community ED

Methodist currently operating at 1,458 visits per station

This ratio is in the benchmark's midrange for treatment station capacity.

Gross Department Square feet per bed

Benchmark: Community ED 600 - 650-750 – 900 Trauma

Methodist has 877.6 DGSF/ Treatment Bed

The area per treatment bed seems at a high level, but there are two imaging rooms and an interior corridor that reduces efficient space utilization for other emergency department functions. Hospital leadership has plans for renovation to improve efficiency and to move from cubicle treatment spaces to enclosed treatment rooms.

Improvements

ED Renovation

This renovation would include enclosing the treatment stations, creation of a decontamination area and streamlining the flow of ambulatory ED patients. It is also assumed that all finishes and minor system improvements will be made at the same time.

ICU Renovation

The existing ICU will be fully renovated with the creation of individual rooms thereby reducing the number of rooms from 12 to 8 and upgrading all building and medical systems.

New ICU in Renovated Space

This project will be a renovation of a second floor space for a new 12 bed ICU. This will be completed prior to the renovation of the current ICU. When complete, the two units will offer a total of 20 ICU beds.

New CT in existing location

The hospital already has this equipment replacement in process.

Costs

The cost for capital improvements could vary considerably depending upon the final design solutions. This section has briefly described some options a cost ranges for each.

ED Renovation (22,474 sf of Level 3 renovation)

\$1,348,440 to \$2,247,400

ICU Renovation (4,475 sf of Level 4 renovation)

\$554,900 to \$827,875

New ICU in Renovated Space (6,712 sf of Level 4 renovation)

\$832,288 to \$1,241,720

New CT in existing location (446 sf of Level 1 renovation)

\$42,370 to \$47,276

Totals: \$2,777,998 to \$4,364,271

Methodist Hospital – SouthLake Campus

Overview

The South Lake ED building seems undersized to meet the requirements of a trauma center but could support the Gary facility. The ED at this facility is fairly small but does use a fast track unit to handle low intensity cases. There is a ground level helipad immediately adjacent the ED that could facilitate transfers of patients when additional inpatient capacity is needed.

The requirements for a level I trauma center requires all essential functions be on one campus, but for capacity and support such as rehab, patient may utilize another facility. In combination with the North campus, SL may provide a good combination for servicing the NW area.

Radiology department is adjacent to the ED, but the patient must be transported through several corridors to get to the necessary imaging rooms. Surgery is on the same level of the emergency department but it is not adjacent and requires transport some distance to the operating rooms.

No building infrastructure deficiencies we noted that would affect the department's performance.

The characteristics of this facility are combined with Northlake for the purpose of the assessment as the two facilities function as a single entity. They are however on two detached campuses and patient transfer is required to maximize efficiency. This is primarily as a patient is admitted. If bides are not available at one campus, the patient may be transferred to the other. It is not practical to upgrade both facilities to Level I Trauma, so improvements are directed to Northlake campus where upgrade is more practical. Patient transport would coordinate trauma delivery to Northlake for severe trauma.

Emergency Department Metrics

- 8,641 Department Gross Square Footage (DGSF)
- 13 Treatment stations.
- 1,000 DGSF Fast Track Area
- 2013: 32,000 ED Visits

Annual Visits per bed or Treatment Station

Benchmark: Trauma 1,100 -1,300 – 1500 – 1700 - 2000 Community ED

Methodist currently operating at 2,462 visits per station

The high volume per treatment station indicates a high number of cases, many of which may be of low severity. With this volume and only 13 treatment stations, there will be increased pressure to maximize the fast track processes and to utilize a discharge holding area to free up treatment capacity.

Gross Department Square feet per bed

Benchmark: Community ED 600 - 650-750 – 900 Trauma

Methodist has 742 DGSF/ Treatment Bed

This space indicates that with using the combined fast track space, the department has adequate department space for the number of treatment beds.

Improvements

No improvements have been identified at this campus.

Freestanding Trauma Center

Overview

The following functional program is an estimation of the spaces required to support a full function Level I Trauma Center if built as a new construction. The program drives the building area (in square feet). The building area drives the construction cost (in dollars per square feet). Construction costs-per-square-foot is presented in quartiles and additive multipliers are applied to accommodate equipment and general cost associated with new construction.

A large range of cost is presented due to the uncertainty surrounding the operational and functional plan of a projected new facility. The operational program of a new facility is a complicated task that has been abbreviated here to facilitate a point of comparison.

APPENDIX 1

SURVEYS

BUILDING INFORMATION

PLANS

AERIALS

REFERENCES

COST SUPPORT

FREESTANDING TRAUMA CENTER PROGRAM



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SAPPER
& MILLER

MEMORANDUM

DATE: June 3, 2014

RE: RDA Feasibility Study

Questions Presented:

- 1- **Given the current inventory of health resources in and around Northwest Indiana, whether a new academic medical center in Northwest Indiana represents the most sustainable way to provide needed medical care and alleviate access disparities in the area. If so, whether constructing a new academic medical center in Northwest Indiana is practically and financially feasible. If so, whether budgetary pressures or pressure from funding sources will affect the location of the new academic medical center.**

- 2- **Considering the medical capabilities of current Northwest Indiana hospitals, whether constructing a new trauma center in Northwest Indiana represents the best method for improving trauma care in the area. Whether, or to what extent, a new trauma center would affect currently existing Northwest Indiana hospitals. Considering the impact of the Patient Protection and Affordable Care Act on trauma centers, whether constructing a new trauma center in Northwest Indiana is practically and financially feasible.**

Academic Medical Center

I. Access Disparities

In order to fully ascertain whether the proposed Academic Medical Center will alleviate access disparities in Northwest Indiana, it is necessary to identify the extent of the access disparities that currently exist. It appears two major access disparity issues currently plague Northwest Indiana. First, multiple parts of Northwest Indiana are medically underserved, meaning citizens living in certain areas of Northwest Indiana do not have basic access to needed medical care. Second, many individuals within Northwest Indiana are either uninsured or underinsured. However, the Patient Protection and Affordable Care Act's (ACA) mandate requiring virtually every citizen to obtain health care insurance may address this second category of access disparity.

A. Current Access Disparity Issues in Northwest Indiana

With regard to the concern that certain areas of Northwest Indiana are medically underserved, a Purdue University study analyzing health care access in Indiana offers intriguing insight.¹ In 2008, the Purdue University Center for Regional Development used state and federal

¹ Purdue Center for Regional Development. *Healthcare Access in Indiana*. Available at: <http://www.pcrd.purdue.edu/documents/publications/PCRD-R-5.pdf>

data to examine how health care access in Indiana differed by county. First, the study generally observed that Indiana ranks below the national average in providing health care services to its citizens. Specifically, Indiana offers only 213 practicing physicians per 100,000 residents. Only 11 states featured a lower physician-to-resident ratio. An Indiana University Center for Health Policy project suggested Indiana needs 5,000 more physicians statewide in order to adequately care for the state's population.² The Purdue study explained that the United States Department of Health and Human Services (HHS) designated numerous areas within Indiana as Health Professional Shortage Areas (HPSA).³ A HPSA is essentially an area where the resident to primary care professional ratio falls below 1:3,500, or where the ratio is closer, but the need for medical service in the area is greater. With specific regard to Northwest Indiana, HHS designated portions of Newton, Lake, and Jasper Counties as Health Professional Shortage Areas. The Purdue study also ranked each county within Indiana in terms of access to physicians and access to health care services. Newton County ranked as the seventh worst county in terms of access to physicians. Newton County also ranked as one of the worst counties in terms of access to health care services. However, Lake and Porter Counties ranked among the top ten counties in the state in the same category (attached hereto as Appendix A). Ultimately, the Purdue study concluded that where an Indiana citizen lives within the state determines what kind of medical care that citizen obtains.

Research from County Health Rankings and Roadmaps, which is underwritten by the Robert Wood Johnson Foundation and the University of Wisconsin's Population Health Institute, seems to support the Purdue study's conclusion that an Indiana citizen's ability to access health care may depend on the citizen's location within the state.⁴ Lake and Newton Counties ranked as two of the worst six counties in the state in terms of "Overall Health Factors." Porter County, conversely, ranked as the 12th best county in the state under the same category. More relevantly, under the subcategory "Access to Care," Newton County ranked 87th, while LaPorte and Lake Counties ranked near the bottom half. Porter and Jasper Counties ranked 9th and 36th respectively. Likewise, a search of Indiana's Medically Underserved Areas, as determined by HRSA, shows that areas in LaPorte, Lake, Newton, Jasper, and Porter Counties are medically underserved.⁵ A graph from the Indiana State Department of Health also suggests that portions of Newton, Lake, and Porter Counties are medically underserved (attached hereto as Appendix B). Collectively, these reports and studies indicate that, to a varying degree, citizens in each county within Northwest Indiana lack needed access to medical care.

A look at the current inventory of health care resources in and around Northwest Indiana also reveals a shortage of health care professionals in the area. As part of its 2008 series studying Indiana's health care system, the Indiana University Center for Health Policy examined

² Indiana University Center for Health Policy. *Critical Shortage of Physicians and Nurses Projected for Indiana* (June 2008). Available at:

<http://www.healthpolicy.iupui.edu/PubsPDFs/Critical%20Shortage%20of%20Physicians%20and%20Nurses.pdf>

³ Purdue Center for Regional Development. *Healthcare Access in Indiana*. Available at:

<http://www.pcrd.purdue.edu/documents/publications/PCRD-R-5.pdf>

⁴ County Health Rankings & Roadmaps. *Indiana*. Available at:

<http://www.countyhealthrankings.org/app/#!/indiana/2014/overview>

⁵ Health Resources and Services Administration. *Find Shortage Areas: MUA/P by State and County*. Available at:

<http://muafind.hrsa.gov/index.aspx>

the projected physician and nurse shortage in Indiana.⁶ The study provided a county-by-county analysis of Indiana physicians and nurses. The study showed that while Lake County serves as home to over 495,000 citizens, there were only 121 family medicine physicians, 18 general internal medicine physicians, 8 general pediatric physicians, 95 osteopathic physicians, and 70 nurse practitioners practicing in Lake County in 2008. Porter County, with a population of over 165,000 residents, featured only 41 family medicine physicians, 38 general internal medicine physicians, 10 general pediatric physicians, 30 osteopathic physicians, and 20 nurse practitioners. LaPorte County, with its population of over 111,000 citizens, featured 34 family medicine physicians, 1 general internal medicine physician, 10 osteopathic physicians, 17 nurse practitioners, and no general pediatric physicians. Similarly, Jasper County is home to over 33,000 residents, but there were only 15 family medicine physicians, 2 general internal medicine physicians, 1 osteopathic physician, and 4 nurse practitioners in Jasper County in 2008. There were no general pediatric physicians in Jasper County. While Newton County only has around 14,000 residents, it also only had 1 family medicine physician, 1 general internal medicine physician, 1 osteopathic physician, and 3 nurse practitioners in 2008. There were also no general pediatric physicians in Newton County. As aforementioned, due to the insufficient amount of health care resources, portions of Lake, LaPorte, Porter, and Newton Counties have been designated as medically underserved.

Furthermore, issues of race and poverty in Northwest Indiana present more complex issues of access disparity in the area. In 2011, the Indiana Minority Health Coalition (IMHC)—an organization generally dedicated to eliminating health disparities among racial and ethnic minority populations in Indiana—published a detailed study entitled “Addressing Indiana’s Health Disparities[.]”⁷ While focusing on the IMHC’s role in eliminating health care disparities, the study examined the factors impeding certain citizens’ access to health care. In relevant part, the IMHC stated, “Current information available from the Indiana State Department of Health demonstrates that minority populations in Indiana experience health disparities[,]” including disparities in access to care. Specifically, the IMHC remarked that, “The adequacy of the health care delivery system exerts a huge impact on the health of minority populations in Indiana.” Similarly, the IMHC maintained that there are “racial/ethnic disparities among the uninsured in Indiana.” In 2012, the Henry J. Kaiser Family Foundation reported that over 13 percent of Indiana citizens were medically uninsured, and EnrollAmerica indicates that over 25 percent of Lake County residents under 65 are uninsured.⁸ The IMHC’s study found that Black/African Americans, Latinos/Hispanics, and Asians/Pacific Islanders in Indiana were uninsured at higher rates than Whites.⁹

⁶ Indiana University Center for Health Policy. *Critical Shortage of Physicians and Nurses Projected for Indiana* (June 2008). Available at:

<http://www.healthpolicy.iupui.edu/PubsPDFs/Critical%20Shortage%20of%20Physicians%20and%20Nurses.pdf>; StatsIndiana. *Population Estimates for Indiana Counties, 2010-2011*. Available at: http://www.stats.indiana.edu/population/popTotals/2011_cntyest.asp

⁷ Indiana Minority Health Coalition. *Addressing Indiana’s Health Disparities* (March 2011). Available at: http://www.imhc.org/downloads/2011health_disparities_executive_summary.pdf

⁸ Henry J. Kaiser Family Foundation. *Health Insurance Coverage of the Total Population*. Available at: <http://kff.org/other/state-indicator/total-population/?state=IN>; EnrollAmerica. *Indiana*. Available at: <http://www.enrollamerica.org/state-maps-and-info/state-profiles/indiana/>

⁹ Indiana Minority Health Coalition. *Addressing Indiana’s Health Disparities* (March 2011). Available at: http://www.imhc.org/downloads/2011health_disparities_executive_summary.pdf

Cities within LaPorte and Lake Counties feature diverse populations, suggesting that citizens within those counties may be disproportionately uninsured. For instance, over 84 percent of the citizens living in Gary in 2012 were “Black or African American[,]” and over 37 percent of the city’s residents lived below the poverty line.¹⁰ Given the correlation observed by the IMHC, many of Gary’s citizens are likely uninsured. While the ACA’s mandate requiring nearly every Indiana citizen to obtain health insurance will likely decrease the amount of uninsured citizens in Indiana, the effectiveness of the ACA in achieving its goal remains to be seen. Even if the ACA is ultimately successful, it may take years before all of Indiana’s citizens become medically insured. Furthermore, evidence from the Robert Wood Johnson Foundation suggests that 8.2 percent of Indiana children, aged 18 and younger, are still without health care coverage.¹¹ As the Coalition suggested, one option for eliminating the health disparity issues in Indiana may be to “eliminate the shortage of . . . medical . . . health provides [sic]” or “increase access to care.”¹²

B. Ability of Proposed Academic Medical Center to Alleviate Access Disparities

Given the major access disparity problems currently existing in Northwest Indiana, the question then becomes whether the proposed Academic Medical Center could alleviate any of these access disparity issues. As a One Region discussion of health care in Northwest Indiana explained, “We can guess at regional effects and disparities and their causes, but we do not have hard data on which to base policy and action.”¹³ The Association of American Medical Colleges (AAMC) maintains that teaching hospital staff members “provide the full range of patient care to those in need—from routine hospital services to critical procedures and treatments—and all to a degree greatly disproportionate to their numbers.”¹⁴ First, teaching hospitals may help combat the increasing physician shortage by providing hospitals with new, well-trained doctors. AAMC contends that “[b]y 2015, the shortage will reach 62,900 physicians in all specialties; 91,500 doctors by 2020.” AAMC projections hypothesize that many specialties will face nationwide shortages by 2025. Thus, AAMC argues that more physicians are needed to meet the nation’s increasing health care needs. Teaching hospitals help train and educate future physicians. In training future physicians, teaching hospitals also account for a substantial percentage of all hospital care in the country. According to AAMC, while AAMC-member teaching hospitals comprise only 6 percent of all hospitals in the country, they account for over 20 percent of all hospital care.¹⁵ Given their ability to handle complex injuries and illnesses, AAMC-member teaching hospitals also receive 40 percent of all transferred patients.

¹⁰ United States Census Bureau. *State & County QuickFacts: Gary (city), Indiana*. Available at: <http://quickfacts.census.gov/qfd/states/18/1827000.html>

¹¹ Groppe, Maureen. *Lafayette Courier-Journal. Report: More Kids in Indiana Have Health Insurance* (April 10, 2014). <http://www.courier-journal.com/story/news/local/indiana/2014/04/10/report-kids-indiana-health-insurance/7522923/>

¹² Indiana Minority Health Coalition. *Addressing Indiana’s Health Disparities* (March 2011). Available at: http://www.imhc.org/downloads/2011health_disparities_executive_summary.pdf

¹³ One Region. *2012 Quality of Indicators Report: Northwest Indiana Profile* (November 2012). Available at: <http://www.oneregionwi.org/wp-content/uploads/2012/12/OneRegion-IndicatorsReport-2012.pdf>

¹⁴ Association of American Medical Colleges. *Why Teaching Hospitals Are Important to All Americans*. Available at: https://www.aamc.org/advocacy/campaigns_and_coalitions/gmefunding/factsheets/253374/teaching-hospitals.html

¹⁵ Association of American Medical Colleges. *What Roles Do Teaching Hospitals Fulfill?* Available at: <https://www.aamc.org/linkableblob/70248-6/data/teachhospfacts1-data.pdf>

Additionally, because “a substantial percentage of doctors end up practicing where they did their residency training[,]” constructing a new teaching hospital or implementing a new residency training program in the area may also help keep more physicians in Northwest Indiana.¹⁶ While only 39 percent of doctors practice in the same state where they attended medical school, 48 percent practice in the state where they completed their graduate medical education. Indiana ranks above the national average, as over 50 percent of Indiana medical school graduates remain in the state.¹⁷ In fact, Indiana ranked as the sixth best state in the country in terms of retaining graduating physicians. However, because there is no teaching hospital in Northwest Indiana, it is unclear how many graduating physicians choose to practice in Northwest Indiana. Theoretically, a new teaching hospital in Northwest Indiana may incentivize physicians to remain in the area after graduating, which may help curb the area’s physician shortage problem.

With regard to care for the uninsured or underinsured, AAMC contends that teaching hospitals also provide a great deal of charity care throughout the nation.¹⁸ Specifically, while AAMC-member major teaching hospitals comprise only 6 percent of all hospitals in the nation, they account for 41 percent of the charity care costs. This suggests that teaching hospitals frequently serve charity patients—patients from which no payment is expected—and offer needed care to the medically uninsured or underinsured. Indeed, “a substantial percentage of the 46 million Americans who lack health insurance and the 48 million children, adults, seniors, and disabled Americans covered by Medicaid programs turn to [teaching hospitals] for medical care.” AAMC’s figures suggest that teaching hospitals’ burden for caring for charity patients rose within the last decade.¹⁹ In 2007, teaching hospitals spent over \$12 billion in providing charity care. Again, the ACA may help negate the need for charity care. If the ACA is effective, teaching hospitals will no longer have to bear the burden of providing such extensive charity care to uninsured patients.

In sum, research regarding access disparities in Northwest Indiana revealed two main issues. First, numerous areas within the region are medically underserved, meaning citizens within those areas lack access to needed care. Second, pending data analyzing the effectiveness of the ACA, it appears a number of Northwest Indiana citizens may also be uninsured or underinsured. Studies from AAMC indicate that teaching hospitals may be useful in resolving both of the main access disparity issues currently plaguing Northwest Indiana citizens. First, teaching hospitals train new professionals, which may ultimately help alleviate the physician shortage in the area. Additionally, teaching hospitals also provide a disproportionate amount of medical care. Second, AAMC statistics revealed that teaching hospitals also deliver a large portion of the nation’s charity care to uninsured patients. Consequently, it appears the proposed Academic Medical Center in Northwest Indiana could potentially alleviate the access disparities that current exist in the area.

¹⁶ Krupa, Carolyne. American Medical News. *How States are Keeping Doctors from Moving Out* (Dec. 19, 2011). Available at: <http://www.amednews.com/article/20111219/profession/312199944/1/>

¹⁷ Anderson, Ryan. Indiana Economic Digest. *U.S. Faces Doctor Shortage* (June 30, 2013). Available at: <http://indianaeconomicdigest.com/Main.asp?SectionID=31&SubSectionID=146&ArticleID=70383>

¹⁸ Association of American Medical Colleges. *How Do Teaching Hospital’s Serve America’s Communities?* Available at: <https://www.aamc.org/linkableblob/70256-3/data/teachhospfacts2-data.pdf>

¹⁹ Association of American Medical Colleges. *Data on Teaching Hospitals and Charity Care*. Available at: <https://www.aamc.org/linkableblob/70260-5/data/teachinghospitalscharitycare-data.pdf>

Although largely unrelated to access disparity issues, teaching hospitals may also provide certain economic benefits.²⁰ In 2008, “AAMC members accounted for more than 3.3 million full-time jobs” and \$512 billion. AAMC members in Indiana generated close to \$8 billion in overall revenue and supplied over 52,000 jobs. The economic benefit teaching hospitals offer may provide a further incentive to construct a new teaching hospital in the area.

II. Practical Feasibility

If the proposed Academic Medical Center can, in fact, alleviate access disparities in Northwest Indiana, the relevant inquiry then becomes whether constructing the proposed Academic Medical Center is practically and financially feasible. In order to operate as a legal and reputable academic medical center, the proposed Academic Medical Center will likely need to seek accreditation from multiple medical accreditation organizations.

A. Accreditation Council for Graduate Medical Education (ACGME) Accreditation Requirements

The Accreditation Council for Graduate Medical Education (ACGME) is a private organization that accredits residency education programs and institutions in the United States and Canada. The language in 42 U.S.C. §256h(j)(1)(B) suggests that in order for a teaching hospital to receive Medicare or Medicaid payments, the teaching hospital must meet the accreditation criteria established by ACGME. Specifically, the statute directs the Secretary of the U.S. Department of Health and Human Services to make payments “for direct expenses and for indirect expenses to qualified teaching health centers that are listed as sponsoring institutions by the relevant accrediting body for expansion of existing or establishment of new approved graduate medical residency training programs.”²¹ The statute later defines “approved graduated medical residency training programs” as those that meet the “criteria for accreditation (as established by the Accreditation Council for Graduate Medical Education, the American Osteopathic Association, or the American Dental Association).”²² The language of the statute indicates, therefore, that each teaching hospital must meet ACGME’s accreditation standards, or the standards of other accrediting bodies, in order to receive funding. Furthermore, an instructive guide issued by the Association of American Medical Colleges (AAMC) states that Medicare funding is limited only to those programs that have been approved by ACGME, the American Osteopathic Association, the American Dental Association, the American Podiatric Medical Association, or the American Board of Medical Specialties. Because the indication here is that the proposed Academic Medical Center will not specialize in osteopathy, dentistry, or podiatry, this portion of the memorandum will focus on the ACGME accreditation process.

While the ACGME accreditation process appears to be fairly complex, the ACGME website attempts to break down the accreditation process into six simplified steps.²³ Step 1 of the accreditation process requires the applying entity to determine whether its sponsoring institution has previously obtained institutional accreditation through ACGME. Before ACGME

²⁰ Association of American Medical Colleges. *The Economic Impact of AAMC-Member Medical Schools and Teaching Hospitals*. Available at: <https://members.aamc.org/eweb/upload/The%20Economic%20Impact.pdf>

²¹ 42 U.S.C. §256h(a)(1)(B) (2014).

²² 42 U.S.C. §256h(j)(1)(B) (2014).

²³ Accreditation Council for Graduate Medical Education. *Instructions on Applying for Accreditation of a New Program*. Available at: <http://www.acgme.org/acgmeweb/Portals/0/ApplicationInstructions.pdf>

approves a residency education program, ACGME must first approve the sponsoring institution. If the sponsoring institution has already obtained institutional accreditation from ACGME, then the applying entity may proceed to Step 2. However, if the sponsoring institution is not accredited by ACGME, it must apply and obtain institutional accreditation before proceeding. For instance, ACGME awarded the Indiana University School of Medicine (IUSM) continuing institutional accreditation in 2009.²⁴ Consequently, if IUSM sponsored the proposed Academic Medical Center in Northwest Indiana, assuming IUSM continues to comply with ACGME's accreditation requirements, it appears no further institutional accreditation would be needed. Conversely, if a different entity sponsored the proposed Academic Medical Center, and ACGME had not yet institutionally accredited that sponsoring entity, the entity would need ACGME institutional accreditation before any residency training program could be approved. In order to obtain ACGME institutional accreditation, the sponsoring entity would have to comply with each of the institutional requirements listed on the ACGME website. Because the requirements for institutional accreditation seem very stringent and detailed, finding a sponsoring institution that already has ACGME institutional accreditation will be important.

After the sponsoring institution has obtained ACGME institutional accreditation, the focus of the accreditation process turns to the specialty or subspecialty of the residency training program. ACGME generally divides specialty programs into three general categories: (1) Hospital-Based Specialties, (2) Medical Specialties, (3) Surgical Specialties. The ACGME website provides a list of ACGME-accredited specialties and subspecialties. If the entity applying for program accreditation is applying for a subspecialty program, the sponsoring organization must confirm that it “sponsors an ACGME-accredited program with a status of Continued Accreditation in the core specialty.” If the sponsoring organization does sponsor an ACGME-accredited program in the core specialty, then the application process moves to Step 3.

Step 3 provides two further sets of program accreditation requirements: (1) institutional requirements and (2) specialty program requirements. The specialty program requirements vary based on the chosen specialty. The specialty requirements are extremely detailed. For instance, the document explaining the Adult Cardiothoracic Anesthesiology requirements, which constitute only a portion of the entire Anesthesiology specialty requirements, is twenty-three pages long.²⁵

Step 4 requires the applying entity to determine the relevant deadline for submission. The relevant deadline for submission depends largely on whether an on-site visit from an ACGME representative is needed. For those programs requiring an on-site visit, the visit must occur before the ACGME Review Committee can review the application. The visits are scheduled at least four months in advance, and the Review Committee must receive the Site Visit Report two months before it meets to discuss the program's accreditation. Consequently, it appears the application process may be particularly lengthy if an on-site visit is required. However, if the program does not require an on-site visit due to the specialty or subspecialty of the program, the application is due approximately two months before the Review Committee meeting.

²⁴ Indiana School of Medicine. Office of Graduate Medical Education. Available at: <http://medicine.iu.edu/residents/>

²⁵ Accreditation Council for Graduate Medical Education. *ACGME Program Requirements for Graduate Medical Education in Adult Cardiothoracic Anesthesiology*. Available at: <http://www.acgme.org/acgmeweb/Portals/0/PFAssets/ProgramRequirements/041pr206.pdf>

Step 5 requires the sponsoring institution's Designated Institutional Officer (DIO) to initiate the application for a new program through the ACGME website. After the DIO begins the application and designates a new program director for the proposed program, the program director must complete the application through the ACGME website.

Finally, Step 6 instructs the applicant to contact the relevant Review Committee staff member. Different Review Committee staff members are assigned to each specialty, and each member is apparently able to answer specific questions regarding the application process within that particular specialty. This suggests that the application process is an ongoing and interactive one. A Review Committee staff member could also likely answer any informal questions regarding the status of a submitted application.

B. Association of American Medical Colleges (AAMC) Accreditation Requirements

The proposed Academic Medical Center should likely also seek membership with the Association of American Medical Colleges (AAMC), or its subsidiary organization, the Council of Teaching Hospitals and Health Systems (COTH). COTH currently represents and serves over 400 of the nation's teaching hospitals and health systems.²⁶ COTH provides its members with numerous benefits, including: "legislative and regulatory monitoring of federal health issues impacting hospital and physician payment, biomedical research, technology, medical education, and the physician workforce; representation and testimony at key congressional hearings; access to the AAMC's numerous databases; and staff support in the interpretation and analysis of national policy issues[.]" However, only organizations affiliated with medical schools accredited by the Liaison Committee on Medical Education (LCME) are eligible for COTH membership.²⁷ The only Indiana medical school accredited by LCME is the Indiana University School of Medicine (IUSM).²⁸ Seven Illinois schools have either obtained LCME accreditation, or are currently awaiting accreditation. Applying organizations usually must also "sponsor or participate significantly in at least four approved, active residency programs." If the proposed Academic Medical Center wished to become a COTH member, it appears the proposed Center would likely apply for COTH's Individual Teaching Hospital Membership.²⁹ The COTH Administration Board must approve any organization's application for membership before the organization becomes an official COTH member.

More generally, it appears that membership with COTH may include membership with AAMC. Indeed, AAMC and COTH's requirements for membership appear to be identical.³⁰ AAMC represents and serves 141 accredited member schools, 128,000 faculty members, 83,000 medical students, and 110,000 resident physicians. AAMC members "enjoy benefits that include

²⁶ Association of American Medical Colleges. *Council of Teaching Hospitals and Health Systems (COTH)*. Available at: <https://www.aamc.org/members/coth/>

²⁷ Association of American Medical Colleges. *What Can COTH Membership Do For You?* Available at: <https://www.aamc.org/members/coth/membership/>

²⁸ Liaison Committee on Medical Education. *Medical School Directory*. Available at: <http://www.lcme.org/directory.htm>

²⁹ Association of American Medical Colleges. *What Can COTH Membership Do For You?* Available at: <https://www.aamc.org/members/coth/membership/>

³⁰ Association of American Medical Colleges. *Membership*. Available at: <https://www.aamc.org/about/membership/>

professional groups and meetings, valuable data, service programs, and numerous publications.” IUSM is an AAMC member.³¹

III. Financial Feasibility

While the practical feasibility of the proposed Academic Medical Center likely depends on the ability of the proposed Center to obtain needed accreditation, the Center’s financial feasibility depends largely on the availability of federal and state funding. While several federal funding opportunities exist, state funding sources appear limited.

A. Medicare and Medicaid Funding

As aforementioned, new teaching hospitals may receive certain Medicare and Medicaid payments. In 2012, AAMC issued an informative guide detailing how certain teaching hospitals may receive Medicare funding.³² The guide explains that new teaching hospitals may receive two different types of Medicare payments.

However, before investigating the Medicare and Medicaid funding requirements, it is first necessary to discuss whether the proposed Academic Medical Center would constitute a “new” teaching hospital for the purposes of Medicare funding. The AAMC guide clarifies that transferring an existing residency program from one hospital to another would not qualify the hospital receiving the existing residency program for Medicare funding.³³ However, the Centers for Medicare and Medicaid Services (CMS) may also look beyond whether the program merely transferred from another hospital. Indeed, CMS may consider: “whether the program director is new; whether the teaching staff is new; whether the residents have come from an existing residency program; the relationship between the hospitals; the degree to which the hospital with the original program continues to operate its own program in the same specialty; whether the program has been relocated for a hospital that closed; if the program was relocated from a closed hospital, whether the program was part of the closed hospital’s full time equivalent (FTE) resident cap determination; and whether the program is part of any existing hospital’s FTE cap determination.” CMS makes this determination—whether the program is “new” for the purposes of Medicare funding—on a case-by-case basis. Also, as discussed above, a teaching hospital may receive Medicare funding only if it conducts an approved medical training program. Again, this requires accreditation from ACGME, the American Osteopathic Association, the American Dental Association, the American Podiatric Medical Association, or the American Board of Medical Specialties.

If CMS determines that the residency program is eligible for Medicare funding, the institution may be eligible for two different types of payment. First, Direct Graduate Medical Education (GME) payments cover Medicare’s share of the teaching hospital’s costs directly

³¹ Association of American Medical Colleges. *Member Directory Search Result- Medical School*. Available at: <https://members.aamc.org/eweb/DynamicPage.aspx?site=AAMC&webcode=AAMCOrgSearchResult&orgtype=Medical%20School>

³² Association of American Medical Colleges. *Becoming a New Teaching Hospital: A Guide to the Medicare Requirements*. Available at:

http://depts.washington.edu/fammed/system/files/Becoming%20a%20New%20Teaching%20Hospital_0.pdf

³³ *Id.* at 3.

related to educating residents.³⁴ These direct educational costs may include: “resident stipends and fringe benefits, salaries and fringe benefits of supervising faculty, other direct costs, and allocated overhead costs.” The amount of GME funding afforded to each teaching hospital depends on a calculation of “a hospital-specific per resident amount (PRA), a measure of [the] hospital’s Medicare utilization, and the count of residents the Medicare program will fund.” So, if CMS sets the proposed Academic Medical Center’s PRA at \$100,000 and the Center’s Medicare share is 40 percent, then the Center would receive \$40,000 in GME payments per 1.0 FTE resident. However, it should be noted that most residents do not equate to a full 1.0 FTE since many residents conduct their training at multiple hospitals and some of their time will not count toward the hospital’s total FTE count. Submitting accurate resident costs initially is important, because after CMS initially establishes the PRA, the PRA becomes permanent. As discussed below, it is also important to determine the projected scope and size of the residency program because after a five-year window expires, Medicare sets a permanent cap on the number of FTE residents a hospital may claim. Additionally, President Obama’s FY2013 Budget called for an increase of \$14.6 billion during the next decade to train more healthcare providers with more than \$5.2 billion going to a competitive GME program to incentivize training of PEPS.

Second, teaching hospitals also receive Indirect Medical Education (IME) payments to help offset the increased costs that accompany medical teaching programs.³⁵ The purpose of the IME payments is generally to compensate teaching hospitals for treating severe and unwanted patients, and to help offset large overhead costs. The IME payment amount, as dictated by 42 CFR §412.105, depends partially on the hospital’s resident-to-bed ratio. A multiplier set by Congress is used to help determine the final IME payment amount. IME payments are made as a “percentage add-on” to basic Medicare payments. The Medicare program spends billions of dollars annually on IME payments to teaching hospitals nationwide. However, it should be noted that President Obama’s FY 2013 Budget proposed to cut IME payments by 10 percent, and his FY 2015 Budget “includes \$14.64 billion in reductions to Medicare IME payments.”³⁶ IME and GME payments appear to be the largest sources of funding available to new teaching hospitals.

However, the Medicare program only pays for a particular resident for a set period of time.³⁷ Indeed, for GME payments, Medicare will count a resident at a teaching hospital as a 1.0 FTE resident only for the “Initial Residency Period” (IRP). The IRP, which is determined by referencing the ACGME program requirements, varies based on the resident’s particular specialty. For example, “[t]he IRP for internal medicine is three years.” The maximum amount of time Medicare counts any resident as a 1.0 FTE resident is five years. For GME payments, if a resident trains beyond the resident’s IRP, Medicare will only count the resident as a 0.5 FTE

³⁴ *Id.* at 6-7.

³⁵ *Id.* at 7-9.

³⁶ Mann, Sara. Association of American Medical Colleges. *Proposed Federal Budget Cuts GME, Freezes NIH Funding* (March 2012). Available at: <https://www.aamc.org/newsroom/reporter/march2012/276736/budget.html>; Association of American Medical Colleges. *Washington Highlights President’s FY 2015 Budget Once Again Cuts Medicare Providers* (March 7, 2014). Available at: <https://www.aamc.org/advocacy/washhigh/highlights2014/371956/030714presidentsfy2015budgetonceagaincutsmedicareproviders.html>

³⁷ Association of American Medical Colleges. *Becoming a New Teaching Hospital: A Guide to the Medicare Requirements*, at 5. Available at:

http://depts.washington.edu/fammed/system/files/Becoming%20a%20New%20Teaching%20Hospital_0.pdf

resident for any time beyond the IRP. However, for IME payments, residents continue to count as 1.0 FTE residents even if they train beyond their respective IRPs.

Moreover, Medicare also limits the number of “FTE residents each hospital may claim for GME and IME purposes.”³⁸ Initially, Medicare assigned each hospital a permanent resident cap based on the amount of residents the teaching hospital claimed during the hospital’s first three years of operation. However, the American Osteopathic Association indicates that the window for establishing a resident cap was recently extended to five years.³⁹ The “resident cap will equal the sum, for all programs, of the largest number of FTE residents in any post-graduate year (PGY) during the [fifth] year of the cap-building window, multiplied by the IRP for that residency program.”⁴⁰ While a teaching hospital can add residents to its program and exceed the cap established in the initial five-year window, Medicare will only pay for the amount of residents within the cap. Thus, teaching hospitals must exercise foresight when beginning a new teaching hospital program. If a teaching hospital operates initially on a small-scale basis and Medicare sets the teaching hospital’s cap at a relatively low number of residents, the teaching hospital will not be able to receive Medicare funding for new residents if it later wants to expand its program. A hospital’s FTE count is not subject to a cap within the five-year window. GME caps are often higher than IME caps because GME resident training time is counted differently than IME training time.⁴¹

B. National Institutes of Health (NIH) Funding

The National Institutes of Health (NIH), the world’s largest source for medical funding, also provides federal funding opportunities for various new teaching hospitals. Specifically, NIH provided over \$24 billion in funding to various research projects and programs throughout the nation in 2013.⁴² The NIH website claims the organization offers “almost 50,000 competitive grants to more than 300,000 researchers ...”⁴³ In order to obtain NIH funding, an applicant must apply for a specific type of grant. Because NIH generally focuses on medical research projects and programs, the proposed Academic Medical Center here would likely have to prove that its training program could be used to conduct certain research projects in order to be eligible for any NIH funding. Depending on the nature of the training programs offered by the proposed Academic Medical Center, it appears the proposed Center may be eligible for various NIH grants. For instance, the NIH Exploratory/Developmental Research Grant Award “[e]ncourages new, exploratory and developmental research projects by providing support for the early stages of project development[,]” and the award is occasionally used to fund “pilot and feasibility

³⁸ *Id.* at 10.

³⁹ American Osteopathic Association. *What Funding is Available?* Available at: <http://www.osteopathic.org/inside-aoa/Education/OGME-development-initiative/Pages/what-funding-is-available.aspx>

⁴⁰ Association of American Medical Colleges. *Becoming a New Teaching Hospital: A Guide to the Medicare Requirements*, at 10. Available at: http://depts.washington.edu/fammed/system/files/Becoming%20a%20New%20Teaching%20Hospital_0.pdf

⁴¹ The budget also includes other certs to funding that offset teaching hospitals. These include a reduction in Disproportionate Share Hospital (DSH) payments for Medicare and Medicaid and reduction of bad debt payments to providers.

⁴² National Institutes of Health. *Funding: Funding Facts*. Available at: <http://report.nih.gov/fundingfacts/fundingfacts.aspx>

⁴³ National Institutes of Health. *About NIH*. Available at: <http://www.nih.gov/about/>

studies.”⁴⁴ The proposed Center may also be eligible for NIH’s Education Grant, which provides funding “to develop and/or implement a program as it relates to a category in one or more of the areas of education, information, training, technical assistance, coordination, or evaluation.”⁴⁵ NIH also offers non-profit entities certain Construction Grants.⁴⁶ If awarded, an NIH Construction Grant may be used to fund the construction of new buildings. However, it should be noted that NIH “lost \$1.7 billion during sequestration and has seen a 25 percent reduction in overall funding since 2003.”⁴⁷ This suggests that the proposed Center may face competition in securing NIH’s increasingly limited funding.

C. Teaching Health Center Graduate Medical Education Funding

Pursuant to 42 U.S.C. §2931-1, federal funding for the proposed Academic Medical Center may also be available through the Teaching Health Center Graduate Medical Education program (THCGME). The statute authorizes the U.S. Department of Health and Human Services (HHS) to award grants “to teaching health centers for the purpose of establishing new accredited or expanded primary care residency programs.”⁴⁸ HHS, through its Health Resources and Services Administration agency (HRSA), further clarifies “[t]he THCGME program is a \$230 million, five-year initiative which began in 2011 to support an increased number of primary care residents and dentists trained in community-based ambulatory patient care settings.”⁴⁹ According to subsection (b) of the statute, the grants may be used for three years and may provide up to \$500,000 in funding.⁵⁰ Funding from the THCGME program can be used to cover costs associated with operating a medical training program, including: “(A) curriculum development; (B) recruitment, training and retention of residents and faculty; (C) accreditation by the Accreditation Council for Graduate Medical Education (ACGME), the American Dental Association (ADA), or the American Osteopathic Association (AOA); and (D) faculty salaries during the development phase.”⁵¹ In order to receive a grant, the applying entity must be a community-based ambulatory patient care center that operates a primary care residency program.⁵² The applying entity must also be accredited by ACGME or another accreditation body listed in 42 U.S.C. §256h. HRSA administers the THCGME program. In 2013, the THCGME program received \$12 million to aid 32 teaching hospitals in 21 different states.⁵³

⁴⁴ National Institutes of Health. *Grants & Funding: Types of Grants*. Available at: http://grants.nih.gov/grants/funding/funding_program.htm#PSeries

⁴⁵ National Institutes of Health. *Grants & Funding: Activity Search Code Results*. Available at: http://grants.nih.gov/grants/funding/ac_search_results.htm?Activity_Code=R25&Search_Type=Indiv

⁴⁶ National Institutes of Health. *Grants & Funding: NIH Grants Policy Statement*. Available at: http://grants.nih.gov/grants/policy/nihgps_2012/nihgps_ch10.htm

⁴⁷ Micheli, Mark. The Atlantic. *The Budget Deal: An Okay End to a Very Bad Year for Medical Research* (December 18, 2013). Available at: <http://www.theatlantic.com/politics/archive/2013/12/the-budget-deal-an-okay-end-to-a-very-bad-year-for-medical-research/282489/>

⁴⁸ 42 U.S.C. §2931-1(a) (2014).

⁴⁹ Health Resources and Service Administration. *Teaching Health Center Graduate Medical Education (TCHGME)*. Available at: <http://bhpr.hrsa.gov/grants/teachinghealthcenters/index.html>

⁵⁰ 42 U.S.C. §2931-1(b) (2014).

⁵¹ 42 U.S.C. §2931-1(c) (2014).

⁵² Health Resources and Service Administration. *Teaching Health Center Graduate Medical Education (TCHGME)*. Available at: <http://bhpr.hrsa.gov/grants/teachinghealthcenters/index.html>

⁵³ U.S. Department of Health and Human Services. *HHS Awards \$12 Million to Help Teaching Health Centers Train Primary Care Providers* (July 19, 2013). Available at: <http://www.hhs.gov/news/press/2013pres/07/20130719a.html>

D. Department of Agriculture Funding

The U.S. Department of Agriculture also offers Community Facility Grants to eligible entities.⁵⁴ The grants are designed to “assist in the development of essential community facilities in rural areas and towns of up to 20,000 in population.” Grant funding can be used, in part, to construct new health care facilities. The grant amount varies based on the median income and population of the relevant community, but grant assistance “may be available for up to 75 [percent] of project costs.” As aforementioned, however, only communities with less than 20,000 citizens are eligible for these grants. Consequently, it appears that Newton County, with its population of around 14,000 citizens, would be the only Northwest Indiana county eligible for a Community Facility Grant. Because Newton County is likely not the ideal location for the proposed Academic Medical Center, and because the U.S. Department of Agriculture appears to favor smaller communities, this source of funding may not be particularly valuable.

E. State Funding

While state funding for the proposed Academic Medical Center is theoretically available, whether such funding is actually obtainable is unclear. Ind. Code §21-44-5-7 directs IUSM to “establish a plan for statewide medical education.” Under this plan, “[m]edical institutions throughout Indiana may apply for grants-in-aid to the [Medical Education Board] or the Indiana University School of Medicine for financial support of personnel or programs. The grants may permit funding of programs not affiliated with Indiana University School of Medicine.”⁵⁵ While Ind. Code §21-44-5-11 appears to provide funding opportunities for certain medical institutions, there is no indication that any Indiana medical institution has actually obtained funding through this statute. Indeed, the IUSM website contains no information regarding the application process or the existence of a grant-in-aid program. Likewise, the Indiana State Department of Health website also makes no mention of the program. In fact, the Indiana State Department of Health website, which lists all of the State Medical Boards, fails to recognize the existence of a Medical Education Board. Thus, while the proposed Academic Medical Center may theoretically be eligible for state funding, the process for obtaining such funding remains unclear. It is important to recognize, however, that the proposed Center would not need an affiliation with IUSM in order to qualify for funding under Ind. Code §21-44-5-11.

IV. Effect of Funding Sources on Location of Academic Medical Center

If constructing the proposed Academic Medical Center is practically and financially feasible, a discussion regarding the proposed Center’s location appears relevant. The aforementioned funding sources, in combination with various budgetary pressures, may impact the location of the proposed Academic Medical Center. In order to understand how certain federal, state, and local budgetary pressures may potentially affect the location of the proposed Academic Medical Center, it is necessary to detail the nature of the current budgetary pressures.

A. Federal and State Budgeting Pressures

⁵⁴ U.S. Department of Agriculture: Rural Development. *Community Facility Grants*. Available at: http://www.rurdev.usda.gov/had-cf_grants.html

⁵⁵ Ind. Code §21-44-5-11 (2014).

First, much of the evidence regarding state budgetary pressure focuses on Indiana's recent cuts in certain state-run health care programs. For instance, "the state cut Medicaid hospital payment rates by five percent in November 2009, held payments to Medicaid and CHIP plans at previous levels through June 2011, and cut payments to its enrollment broker, MAXIMUS, reportedly by 10 percent to 15 percent. In addition, the state in 2010 reduced the scope of services and eligibility for Care Select, Indiana's care management program for its Medicaid aged, blind and disabled population (exclusive of dual eligibles and the nursing home population), leading to a significant drop in enrollment from about 73,000 to 32,000 people."⁵⁶ State budgetary pressures, in combination with federal health care spending cuts, have forced Indiana hospitals to terminate the employment of hundreds of employees. A USA Today article noted that the Indiana School of Medicine laid off 900 workers in 2013 in an effort to trim its budget.⁵⁷ Moreover, the Indiana State Department of Health's (ISDH) Biennium Budget experienced a six million dollar cut in 2012, and further cuts are planned in 2014.⁵⁸ More generally, the Washington Post noted that Indiana is one of seven states expected to miss its respective budget forecast this year.⁵⁹ Because Indiana is not expected to meet its FY 2014 budget, and because Indiana has already shown a willingness to cut certain medical expenses, funding for the proposed Academic Medical Center may be difficult to obtain at the state level, regardless of location.

Federal budgetary pressures also indicate that funding at the federal level may be difficult to obtain. Through sequestration, President Obama recently authorized numerous federal health care budgetary cuts. For instance, recently approved federal cuts include a two percent reduction in Medicare payments to hospitals.⁶⁰ Because many hospitals rely on Medicare reimbursements to stay financially viable, these Medicare cuts may result in hospital closings or an increase in hospital employee lay-offs. In his FY 2015 budget, President Obama proposed cutting a further \$400 billion from Medicare spending over the next decade.⁶¹ Other potential federal funding sources, like NIH, have also experienced budget cuts as a result of the federal government's efforts to cut overall health care spending. In 2012, NIH lost \$1.71 billion in federal funding through sequestration, which ultimately means less funding for health-related research projects and grants.⁶² Thus, it appears that federal and state budgetary pressures may impact not only the location of the proposed Academic Medical Center, but perhaps its presence in Northwest Indiana in general.

⁵⁶ Katz, Aaron, Grace Anglin, Emily Carrier, Marisa K. Dowling, Lucy B. Stark, and Tracy Yee. Center for Studying Health System Change. *Indianapolis Hospital Systems Compete for Well-Insured, Suburban Patients* (Dec. 2011). Available at: <http://www.hschange.org/CONTENT/1270/>

⁵⁷ Davidson, Paul and Barbara Hansen. USA Today. A Job Engine Sputters as Hospitals Cut Staff (Oct. 13, 2013). Available at: <http://www.usatoday.com/story/money/business/2013/10/13/hospital-job-cuts/2947929/>

⁵⁸ Indiana State Department of Health. *Biennium Budget* (Dec. 12, 2012). Available at: http://www.in.gov/sba/files/BC_Hearing_2012_400_ISDH_Presentation.pdf

⁵⁹ Chokshi, Niraj. Washington Post. *Seven States are Expected to Miss Their Budget Forecasts This Year* (May 9, 2014). Available at: <http://www.washingtonpost.com/blogs/govbeat/wp/2014/05/09/seven-states-are-expected-to-miss-their-budget-forecasts-this-year/>

⁶⁰ Davidson, Paul and Barbara Hansen. USA Today. A Job Engine Sputters as Hospitals Cut Staff (Oct. 13, 2013). Available at: <http://www.usatoday.com/story/money/business/2013/10/13/hospital-job-cuts/2947929/>

⁶¹ Demko, Paul and Jessica Zigmond. Modern Healthcare. *Healthcare Providers Oppose Medicare Cuts in Obama's 2015 Budget* (March 4, 2014). Available at: <http://www.modernhealthcare.com/article/20140304/NEWS/303049971>

⁶² Micheli, Mark. The Atlantic. *The Budget Deal: An Okay End to a Very Bad Year for Medical Research* (December 18, 2013). Available at: <http://www.theatlantic.com/politics/archive/2013/12/the-budget-deal-an-okay-end-to-a-very-bad-year-for-medical-research/282489/>

B. Local Budgeting Pressures

However, in determining the effect that state and federal funding sources may have on the ultimate location of the proposed Academic Medical Center, it may also be necessary to look at the financial situations of the proposed locations. First, the Indiana School of Medicine's Northwest branch is located in Lake County, making Lake County a logical location for the proposed Academic Medical Center. Furthermore, major highways also run through Lake County, meaning any medical center in the area would likely be easily accessible. However, Lake County's well-documented financial struggles may present a few challenges. In 2012, Lake County's poverty rate was 19.6 percent, ranking it highest in that category among the potential locations.⁶³ While this may show a need for an Academic Medical Center, as teaching hospitals frequently provide treatment to the uninsured or underinsured, the high poverty rate may make building a new hospital in the area financially difficult. Earlier this month, the Gary School Board voted to close six schools due to \$27.3 million budget hole, further indicating the financial instability of the area.⁶⁴ In an effort to reduce a \$60 million revenue shortfall, Lake County also recently enacted a 1.5 percent tax on personal income tax for all Lake County residents and workers.⁶⁵ Furthermore, over 20,000 Lake County citizens remain unemployed.⁶⁶ However, of the Northwest Indiana counties examined, Lake County does maintain the largest total budget.⁶⁷

Nearby LaPorte County's poverty rate was 17.1 percent in 2012, and close to eleven percent of its citizens remain unemployed.⁶⁸ Porter County, while providing its citizens with the best access to health care services, is not without problems of its own. The Porter County Council recently instructed all Porter County government department heads to cut their department's respective budgets by 10 percent to help make up for a \$5 million budget shortfall.⁶⁹ Newton County may be a logical location for the proposed Academic Medical Center, as its citizens currently have the least amount of access to health care services. In fact, Newton County is one of only sixteen counties in the state without a hospital.⁷⁰ Newton County's budget, however, pales in comparison to the respective budgets of the other Northwest

⁶³ StatsIndiana. *Lake County, Indiana*. Available at:

http://www.stats.indiana.edu/profiles/profiles.asp?scope_choice=a&county_changer=18089

⁶⁴ The Times of Northwest Indiana. *Gary School Board Votes to Close 6 Schools* (June 4, 2014). Available at:

http://www.nwitimes.com/news/state-and-regional/indiana/gary-school-board-votes-to-close-schools/article_5cb7329b-d5b7-5565-9412-96cb03883290.html

⁶⁵ Dolan, Bill. The Times of Northwest Indiana. *Lake County Officials are Told to Spend Less, Listen More* (May 18, 2014). Available at: http://www.nwitimes.com/news/local/lake/lake-county-officials-are-told-to-spend-less-listen-more/article_63ca267b-8e12-5c26-a08a-b1a358b2bf77.html

⁶⁶ StatsIndiana. *Lake County, Indiana*. Available at:

http://www.stats.indiana.edu/profiles/profiles.asp?scope_choice=a&county_changer=18089

⁶⁷ Indiana Local Government Information Website. *Local Government Budget Data by County*. Available at:

<http://www.agecon.purdue.edu/crd/localgov/data.htm>

⁶⁸ StatsIndiana. *LaPorte County, Indiana*. Available at:

http://www.stats.indiana.edu/profiles/profiles.asp?scope_choice=a&county_changer=18089

⁶⁹ Ross, Doug. The Times of Northwest Indiana. *Editorial: Cut Porter's Budget, But Be Judicious* (June 4, 2014).

Available at: http://www.nwitimes.com/news/opinion/editorial/editorial-cut-porter-s-budget-but-be-judicious/article_7b408836-dced-5b3c-83cf-b6ddec57608.html

⁷⁰ Indiana State Department of Health. *Indiana Hospital Directory*. Available at:

<http://www.in.gov/isdh/reports/QAMIS/hosdir/>

Indiana counties.⁷¹ Thus, despite Newton County's need for increased medical services, it is unclear whether Newton County could afford to implement a hospital. Furthermore, because it is largely a rural county, it may not be an ideal location for an Academic Medical Center.

If the proposal for a new Academic Medical Center is approved, Northwest Indiana politicians will likely make the ultimate decision about the location of the Center. The counties that appear to be the most in need of health care services (Lake, LaPorte, and Newton) each have their own respective budgetary issues. Because state and federal funding may be limited, due mostly to recent widespread health care cuts, the financial well-being of the proposed location may be determinative. While Porter County's financial situation appears relatively favorable, due to its low poverty and unemployment rates, the need for an Academic Medical Center in the area is not as strong as the need in the other Northwest Indiana counties.

⁷¹ Indiana Local Government Information Website. *Local Government Budget Data by County*. Available at: <http://www.agecon.purdue.edu/crd/localgov/data.htm>

Trauma Center

I. Improvement of Trauma Care in Northwest Indiana

A. Current Trauma Care Issues in Northwest Indiana

The statistics regarding the importance of quality trauma care are both plentiful and staggering. “[N]early 45 million Americans do not arrive at a Level I or II trauma center within one hour of being injured. As a result, injury remains the leading cause of death among individuals under age 44.”⁷² A 2013 American Journal of Public Health article similarly indicates the importance of local and accessible trauma care. The article details the effect of “trauma deserts”—areas where no trauma center is within a certain amount of miles—on trauma patients in Chicago.⁷³ After reviewing trauma care data supplied by the Illinois State Trauma Registry from 1999 to 2009, the article concludes that decreased access to immediate care adversely affected mortality rates for gunshot wound victims. Importantly, the article noted that “each additional mile from a trauma center increases transportation times by 1.5 minutes.” Consequently, delays in treatment “contribute[] to mortality rates of about 21 percent in areas where there are trauma center deserts.” Simply put, “[h]aving access to level one trauma [centers] does increase survival rates.”

Unfortunately for Northwest Indiana residents, the closest trauma center may be in a different state. As a Times of Northwest Indiana (Times) article clarified, because of the lack of trauma care centers in the area, “region hospitals send their most critical patients to trauma centers in Chicago, Indianapolis and South Bend.”⁷⁴ For many trauma victims, that means traveling over an hour before receiving needed treatment. Indeed, Indiana only features two Level I trauma centers in the entire state, and both are located in Indianapolis. It would take a patient over two hours to travel from Gary to a Level I trauma center in Indianapolis. The Loyola University Medical Center, Illinois’s only Level I trauma center verified by the American College of Surgeons (ACS), is located almost an hour away from Gary.⁷⁵ The University of Chicago’s Comer Hospital, a Level I trauma center, is close to thirty minutes away from Gary, but it is not ACS-verified. Even the closest Indiana Level II trauma center, South Bend’s Methodist Hospital, is around an hour away from Gary.

Occasionally, Northwest Indiana patients who need trauma center care seek care at the Methodist Hospital in Gary (Gary Methodist Hospital). Gary Methodist Hospital is not a certified trauma center, yet it is often obligated to provide services to patients in need of trauma care because of the lack of other trauma center options in the area. This may prove costly for the

⁷² Reed, Jack, Patty Murray, Daniel K. Akaka, Benjamin L. Cardin, Michael F. Bennet, and Robert Mendez. *Letter to Kathleen Sebelius* (May 14, 2012). Available at: <http://www.facs.org/ahp/trauma/ems-sebelius051412.pdf>

⁷³ Crandall, Marie M.D., et. al. American Journal of Public Health 103:6. *Trauma Deserts: Distance From a Trauma Center, Transport Times, and Mortality From Gunshot Wounds in Chicago* (June 2013). Available at: <http://www.scribd.com/doc/142464205/Trauma-Deserts-Distance-From-a-Trauma-Center-Transport-Times-and-Mortality-From-Gunshot-Wounds-in-Chicago>

⁷⁴ Tompkins, Sarah. The Times of Northwest Indiana. *Northwest Indiana May Get Its First Trauma Center* (Nov. 8, 2009). Available at: http://www.nwitimes.com/news/local/northwest-indiana-may-get-its-first-trauma-center/article_266bb66a-c053-5502-898c-da9b84df42f7.html

⁷⁵ American College of Surgeons. *Trauma Programs: Verified Trauma Centers*. Available at: <http://www.facs.org/trauma/verified.html>

patients, as ACS found “victims of traumatic injury who obtain access to a Level I trauma center are 25% more likely to survive than those treated at a general hospital.”⁷⁶

B. Improving Trauma Care through New Trauma Center

1. Financial Benefits

The question then becomes how to best improve trauma care in Northwest Indiana. While continuing to send or transfer trauma patients to general hospitals and other states’ trauma centers is seemingly the least costly and most convenient response, such a view appears misguided. First, establishing the proposed Trauma program may be the most financially viable option for improving trauma care in Northwest Indiana. As ACS contends, “Research has documented that trauma care is more cost effective than many other treatment modalities in terms of productivity and life years saved parameters.”⁷⁷ Becker’s Hospital Review similarly observes hospitals with trauma centers may receive disproportionate funding from Medicare.⁷⁸ Likewise, Becker’s Hospital Review also claims that if a hospital is designated as a trauma hospital, the hospital can then “actually bill and collect for certain activation fees that are paid both by Medicare and other private insurance companies.” Information from both Texas and Montana also suggests that trauma centers may use Medicare funding to help cover trauma-related costs.⁷⁹ Moreover, Becker’s Hospital Review hypothesizes that because the ACA reinstated the National Trauma Stabilization Act, more government funding should become available for trauma centers. As addressed below, while the Affordable Care Act did authorize increased funding for trauma centers, the federal government has not yet appropriated any money for the approved programs or grants.

Additionally, if a hospital is completely unable to provide care to a patient due to the patient’s injury, the hospital may have to transfer the patient to the closest trauma center. This may be an expensive endeavor. As Dr. Michael McGee, the chief medical director of emergency medicine at Methodist Hospitals, explained, “The cost of airlifting a patient to the University of Chicago Medical Center is about \$7,000, and ambulance transfers cost about \$1,500.”⁸⁰ In addition to high transportation costs, transferring patients may also negatively affect Northwest Indiana’s economy. If Northwest Indiana trauma patients were able to receive trauma care within Northwest Indiana, health care money currently being spent in Illinois may instead remain

⁷⁶ American College of Surgeons, et. al. *Letter to Assistant Secretary Nicole Laurie and Administrator Mary Wakefield* (Oct. 4, 2011). Available at: <http://www.facs.org/ahp/trauma/FY2013-101211.pdf>

⁷⁷ *Id.*

⁷⁸ Josephs, John M.D. Becker’s Hospital Review. *Side Effects: 8 Wide-Reaching Benefits of Becoming a Trauma Center* (August 16, 2013). Available at: <http://www.beckershospitalreview.com/hospital-management-administration/side-effects-8-wide-reaching-benefits-of-becoming-a-trauma-center.html>

⁷⁹ Brown, Deb R.N. Dell Children’s Medical Center of Central Texas. *The Nuts and Bolts of Trauma Activation Fees*. Available at: <http://www.aterf.org/wp-content/uploads/2013/08/The-Nuts-and-Bolts-of-Trauma-Activation-Fees-by-Deb-Brown.pdf>; Montana Department of Health and Human Services. *Developing a Trauma Activation Fee*. Available at: <http://www.dphhs.mt.gov/ems/trauma/coordinator/documents/TraumaActivationFeeTC.pdf>

⁸⁰ Tompkins, Sarah. The Times of Northwest Indiana. *Northwest Indiana May Get Its First Trauma Center* (Nov. 8, 2009). Available at: http://www.nwitimes.com/news/local/northwest-indiana-may-get-its-first-trauma-center/article_266bb66a-c053-5502-898c-da9b84df42f7.html

in Northwest Indiana. Gary's State Representative, Charlie Brown, maintained that the area was "losing \$2 billion annually that goes over into Illinois for overall healthcare."⁸¹

2. Health Benefits

More importantly, the proposed Trauma Center would also offer undeniable health benefits to Northwest Indiana citizens. A Times article offers a relevant example. The article explains that "[o]n a recent Saturday night . . . EMTs wheeled four badly injured patients into the Gary emergency room. They had been in a head-on collision, and two of the adult patients needed orthopedic or reconstructive surgery. Because there were no specialists on call, the patients waited until Monday for surgery."⁸² In 2011, a Gary woman's 13-month-old son died after being shot. Gary Methodist Hospital was not equipped to handle the child's injuries, and the child died before he could be helicoptered to Chicago.⁸³ In Illinois, a teenaged gunshot victim recently died after he was forced to travel between 30 and 45 minutes before reaching the closest trauma center.⁸⁴ Based on ACS data, a closer, more accessible trauma center may result in fewer trauma-related deaths in the Northwest Indiana region.

Indeed, the potential increase in health outcomes, offered through a more local trauma center, is perhaps the strongest argument in favor of constructing the proposed Trauma Center in Northwest Indiana. As ACS states, "[t]he care provided by trauma centers, their specialist physicians and the supporting trauma team has a dramatic impact on subsequent quality of life . . ."⁸⁵ Gary's homicide rate has been well-documented, but a closer look at the statistics provides a compelling case for the construction of the proposed Trauma Center. In October 2013, Gary's homicide rate, 53 per capita, equaled one homicide victim for every 1,900 residents.⁸⁶ "In 2007 and 2008, more than half of the [Methodist Hospitals'] severe trauma patients suffered gunshot wounds or stabbings."⁸⁷ Furthermore, over 16,000 automobile collisions occurred in Lake County in 2011, making it the county with the second highest collision total in the state.⁸⁸ Of those collisions, 39 caused fatal injuries and 2,801 caused other, non-fatal injuries. Over 15 fatal crashes occurred in both Porter and LaPorte Counties as well. Whether a more local and

⁸¹ Puente, Michael. Chicago Public Media: WBEZ 91.5. *Northwest Indiana's Trauma Dilemma* (Nov. 4, 2011). Available at: <http://www.wbez.org/content/northwest-indianas-trauma-dilemma>

⁸² Tompkins, Sarah. The Times of Northwest Indiana. *Northwest Indiana May Get Its First Trauma Center* (Nov. 8, 2009). Available at: http://www.nwitimes.com/news/local/northwest-indiana-may-get-its-first-trauma-center/article_266bb66a-c053-5502-898c-da9b84df42f7.html

⁸³ Puente, Michael. Chicago Public Media: WBEZ 91.5. *Northwest Indiana's Trauma Dilemma* (Nov. 4, 2011). Available at: <http://www.wbez.org/content/northwest-indianas-trauma-dilemma>

⁸⁴ Lynch, La Risa. Progress Illinois. *U.S. Rep. Rush Seeks Federal Funding to End Trauma Center Deserts* (Aug. 1, 2013). Available at: <http://www.progressillinois.com/quick-hits/content/2013/08/01/us-rep-rush-seeks-federal-funding-end-trauma-center-deserts>

⁸⁵ American College of Surgeons, et. al. *Support Funding for Trauma and EMS Programs Authorized under the Public Health Service Act*. Available at: <http://www.aans.org/pdf/Legislative/Trauma%20FY%202014%20Funding%20Request%204%2012%20%2013.pdf>

⁸⁶ Keagle, Lauri Harvey. The Times of Northwest Indiana. *Gary Homicides Reaching Alarming Rate* (Oct. 26, 2013). Available at: http://www.nwitimes.com/news/local/lake/gary/gary-homicides-reaching-alarming-rate/article_daf2640f-6cdd-5533-a94a-f2ec386d84fd.html

⁸⁷ Tompkins, Sarah. The Times of Northwest Indiana. *Northwest Indiana May Get Its First Trauma Center* (Nov. 8, 2009). Available at: http://www.nwitimes.com/news/local/northwest-indiana-may-get-its-first-trauma-center/article_266bb66a-c053-5502-898c-da9b84df42f7.html

⁸⁸ Indiana Criminal Justice Institute, et. al. *Indiana Crash Facts: 2011*. Available at: http://www.in.gov/cji/files/T_Fact_Book_2011.pdf

accessible trauma center could have prevented some of these homicide deaths or fatal automobile injuries is unknown. However, as stated above, the importance of immediate trauma care has been established and generally accepted. As the Centers for Disease Control and Prevention Fact Sheet states, “getting care at a Level I trauma center can lower [a severely injured patient’s] risk of death by 25 percent.”⁸⁹ Art Logsdon, the assistant commissioner for the Indiana Health and Human Services Commission, noted that ACS recommends that Indiana have 15 or 16 trauma care centers.⁹⁰ Currently, Indiana only has 12. In bringing Indiana closer to ACS’s total goal, a new trauma center would likely offer needed health benefits to the Northwest Indiana community.

3. Public Policy Benefits

Finally, there may also be certain public policy arguments for constructing a new trauma center in Northwest Indiana. As Gary’s State Representative, Charlie Brown, argued “It’s unconscionable that all of these years, all of these decades, there has not been a trauma center in all of Northwest Indiana, and we have to rely on emergency services in Illinois for people that live here.”⁹¹ According to data from 2010 and 2011, over 1,000 patients were transferred from Northwest Indiana hospitals for trauma care.⁹² While the exact amount of patients transferred to Illinois is unknown, because the trauma center in Illinois is one of the closest options, it is reasonable to assume that a fair percentage of these patients were transferred to Illinois for treatment. The inability to treat Indiana patients in Indiana arguably reflects poorly on Indiana’s health care system. In fact, a doctor at Gary Methodist Hospital, who had previously worked in Chicago, noted that other states or areas do not simply send trauma victims to the nearest hospital. Rather, he argued that Northwest Indiana was the only place in the country that still operated in that fashion, maintain that the practice “really sets [Northwest Indiana] back in the times. It’s almost embarrassing.”⁹³

C. Improving Trauma Care through Existing Hospitals

However, construction of an entirely new facility may not be completely necessary or preferable. For instance, representatives at Gary Methodist Hospital appears willing to expand their current services to include trauma care . Initially, the Times reported that Gary Methodist Hospital was seeking to become a Level II trauma center, and that the hospital planned to submit an application to ACS in 2009. When the state of Indiana created a formal trauma network, that likely required hospital leadership to refocus their efforts on meeting the state standards. Whether Gary Methodist ever submitted an application to either ACS or ISDH is unknown, but it appears the hospital refocused its efforts and now is seeking designation as an Indiana Level III

⁸⁹ Centers for Disease Control and Prevention. *Access to Trauma Centers in the United States*. Available at: <http://www.cdc.gov/traumacare/pdfs/traumacentersfactsheet20090921-a.pdf>

⁹⁰ Renderman, Vanessa. The Times of Northwest Indiana. *Trauma Center Efforts Advance* (Jan. 15, 2014). Available at: <http://www.methodisthospitals.org/trauma-center-efforts-advance.aspx>

⁹¹ Tompkins, Sarah. The Times of Northwest Indiana. *Northwest Indiana May Get Its First Trauma Center* (Nov. 8, 2009). Available at: http://www.nwitimes.com/news/local/northwest-indiana-may-get-its-first-trauma-center/article_266bb66a-c053-5502-898c-da9b84df42f7.html

⁹² Renderman, Vanessa. The Times of Northwest Indiana. *Trauma Center Needs to Remain Top Issue* (Dec. 10, 2012). Available at: http://www.nwitimes.com/niche/get-healthy/health-care/trauma-center-need-remains-top-issue/article_bd3f8e0c-bcd1-5411-a5a0-c54a7e933033.html

⁹³ Puente, Michael. Chicago Public Media: WBEZ 91.5. *Northwest Indiana’s Trauma Dilemma* (Nov. 4, 2011). Available at: <http://www.wbez.org/content/northwest-indianas-trauma-dilemma>

trauma center.⁹⁴ In anticipation of a trauma center designation, Gary Methodist recently named a trauma medical doctor and a trauma nurse specialist. Franciscan Hospitals in Dyer and Crown Pointe are also awaiting decisions on pending trauma center applications. Transforming an existing hospital into a trauma center may represent a cost-effective way to bring trauma care to Northwest Indiana, although the project would still require considerable funding. Because trauma centers require certain equipment and staff members, adding a trauma center to an existing hospital may still prove costly.

However, while a Level III trauma center would certainly be a step in a positive direction, there appears to be a real need for a Level II or Level I trauma center in Northwest Indiana. According to ACS, Level III trauma centers “demonstrate[] an ability to provide prompt assessment, resuscitation, surgery, intensive care and stabilization of injured patients and emergency operations.”⁹⁵ However, these hospitals are not able to treat all trauma patients. Consequently, depending on the nature of the patients’ injuries, a Level III trauma center may still be required to transfer trauma patients to Level I or Level II trauma centers. Level II trauma centers can “initiate definitive care for all injured patients[,]” while Level I trauma centers are “capable of providing total care for every aspect of injury – from prevention through rehabilitation.” Consequently, even if Gary Methodist obtains a Level III trauma center designation, Northwest Indiana’s aforementioned medical needs may still require a Level I or II trauma programs in the area. The hospital may pursue an incremental approach in which Level II or higher is sought after Level III is obtained. Movement on such an investment continuum will likely depend on the need for trauma care and available funding.

Hospitals will seek state level designation first. Where there is no state trauma system, ACS verification was important. Now, the states have essentially incorporated by reference the ACS standards. If you meet a state’s level II, you likely meet ACS level II. Not a given, but very likely that everyone has a similar playbook. State designation has the added benefit (over ACS) of mandating EMS routing.

II. Effect of New Trauma Center on Existing Hospitals

As detailed above, Northwest Indiana hospitals, none of which are currently have designated trauma programs, are often tasked with treating trauma patients strictly out of necessity. While construction of a new trauma center would likely cause the overall amount of trauma patients admitted to other Northwest Indiana hospitals to decline, financial data and various comments from hospital representatives suggest the drop may be welcome. Indeed, caring for trauma patients without the requisite resources appears to be a financial and stressful burden for Northwest Indiana hospitals.

A trauma center cannot exist in isolation however and it must have an attached hospital of significant size and scope. While current providers may welcome the decrease in uncompensated trauma care, the services of a new provider would not be limited to only trauma.

⁹⁴ Renderman, Vanessa. The Times of Northwest Indiana. *Trauma Center Efforts Advance* (Jan. 15, 2014).

Available at: <http://www.methodisthospitals.org/trauma-center-efforts-advance.aspx>

⁹⁵ American Trauma Society. *Trauma Categorization Explained*. Available at:

<http://www.amtrauma.org/resources/trauma-categorization/index.aspx>

The existing hospitals would face competition in several service lines that would likely dilute their profitability. This, in turn, may have the undesired effect of forcing the existing hospitals to decrease their subsidy of necessary but low-margin services such as emergency care and charity care.

The comments from Gary Methodist physician, Dr. Nick Johnson, epitomize the benefit area hospitals may receive if Northwest Indiana adds a new trauma center. In discussing Gary Methodist's current practice of treating various trauma patients despite being ill-equipped to do so, Johnson stated, "When I first started here four years ago, I was terrified when I came into work because I was so worried that a trauma patient would have some injury that I couldn't do deal [sic] with and needed specialty care or some definitive care that I wouldn't be able to at least arrange for the patient in this hospital[.]"⁹⁶ Similarly, Dr. Ahmed Zegar, an ER doctor at Gary Methodist, commented that he "worries that not having a certified trauma center nearby diminishes a patient's chance of survival."⁹⁷ The doctors' respective comments imply that currently existing Northwest Indiana hospitals are not equipped to handle trauma patients, and that the doctors employed in these hospitals recognize this inadequacy. Dr. Johnson added, "When I came [to Gary Methodist Hospital] and I learned that trauma patients, no matter where you were in Northwest Indiana, no matter what type of injury you had, were brought directly to the closest hospital, it surprised me[.] I didn't think anywhere in the country still operated like that, and it really sets us back in the times. It's almost embarrassing."⁹⁸ Northwest Indiana doctors do not appear to be alone in their desire for better trauma programs. Emory Garwick, the Emergency Medical Services Coordinator at Methodist Hospitals, also believes the area needs "to develop a facility to treat severe trauma."⁹⁹ Dr. McGee, chief medical director of emergency medicine at Methodist Hospitals, observed that the lack of trauma programs in Northwest Indiana means transfers to outside trauma center are common. Dr. McGee essentially argued that this practice burdened the other trauma centers "because they have their own patient populations."¹⁰⁰

Consequently, whether a new trauma center in Northwest Indiana will significantly impact existing hospitals in the area likely depends on the extent to which the existing hospitals value the revenue gained by treating trauma patients. Undoubtedly, the creation of a new trauma center will result in fewer trauma patients for currently existing Northwest Indiana hospitals. And while the loss of revenue from trauma cases may be manageable, the introduction of a new hospital would fundamentally alter the competitive landscape for all regional providers.

III. Practical and Financial Feasibility

A. Federal Funding

⁹⁶ Puente, Michael. Chicago Public Media: WBEZ 91.5. *Northwest Indiana's Trauma Dilemma* (Nov. 4, 2011). Available at: <http://www.wbez.org/content/northwest-indianas-trauma-dilemma>

⁹⁷ *Id.*

⁹⁸ *Id.*

⁹⁹ *Id.*

¹⁰⁰ Tompkins, Sarah. The Times of Northwest Indiana. *Northwest Indiana May Get Its First Trauma Center* (Nov. 8, 2009). Available at: http://www.nwitimes.com/news/local/northwest-indiana-may-get-its-first-trauma-center/article_266bb66a-c053-5502-898c-da9b84df42f7.html

First, the federal government, or at least representatives within the federal government, recognized a need to build and fund new trauma centers throughout the United States. ACS, represented by Senators Jack Reed and Patty Murray, helped draft a letter to Kathy Sebelius, the former Secretary of the U.S. Department of Health and Human Services (HHS), highlighting the need for increased federal funding for new trauma centers.¹⁰¹ Specifically, the letter asked Sebelius to “prioritize funding for trauma and emergency medical services (EMS) programs in fiscal years 2013 and 2014.” Unfortunately, however, when asked about how HHS currently operates the federal grant programs authorized under the Public Health Service Act, Sebelius responded that HHS had not received any appropriations to fund the federal grant programs. Sebelius instead pointed the ACS to HHS’s increased emphasis on state and local coalitions and preparedness. While relevant, her response offered little in the way of suggesting possible sources of federal funding.

Theoretically, Sections 1201-4, 1211-32, 1241-46 and 1281-2 of the Public Health Service Act authorize federal funding efforts for new trauma centers. However, despite consistent efforts from ACS, it appears the Public Health Service Act currently provides little financial help for new, or existing, trauma centers. Specifically, under the ACA, HHS may use \$100 million to fund the Trauma Care Center program, which allows federal funding to be given to “trauma centers to allow them operating funds to maintain their core missions, to compensate them for losses from uncompensated care, and to provide emergency awards to centers at risk of closure.”¹⁰² The ACA also authorizes HHS to use \$100 million to fund Trauma Service Availability Grants, which are grants that can be “channeled through the States and used for a number of activities to address shortfalls in trauma services and improve access to and the availability of these essential life-saving services.” The Trauma Care System Grants, which are similarly approved by the ACA, can be used to fund “state development of trauma systems.” Finally, the Regionalization of Emergency Care Pilots project is intended to fund at least four multi-year projects involving “innovative models of regionalized emergency care systems.” The ACS, in coordination with other emergency health care groups, requested \$11 million in Trauma Care Center Grants, \$11 million in Trauma Service Availability Grants, \$3 million for Trauma Systems Planning Grants, and \$3 million for Regionalization of Emergency Care Pilots in 2014.¹⁰³ While the Affordable Care Act authorizes a total of \$224 million in funding for these programs, there is no indication that any money has been appropriated for these programs. In fact, a letter from Sebelius strongly suggests that these programs have received no federal funding.¹⁰⁴

If ACS is successful in its efforts to convince HHS to appropriate the money as authorized, then it appears the proposed Trauma Center in Northwest Indiana could be eligible for funding through these programs. At minimum, it appears the proposed Trauma Center may be eligible for the Trauma Care System Grants initially, and possibly the Trauma Service Availability after opening. However, it appears ACS, in coordination with other trauma or

¹⁰¹ Reed, Jack, Patty Murray, Daniel K. Akaka, Benjamin L. Cardin, Michael F. Bennet, and Robert Mendez. *Letter to Kathleen Sebelius* (May 14, 2012). Available at: <http://www.facs.org/ahp/trauma/ems-sebelius051412.pdf>

¹⁰² American College of Surgeons. *Trauma & EMS: Trauma Programs*. Available at: <http://www.facs.org/ahp/trauma/>

¹⁰³ American College of Surgeons, et. al. *Letter to Assistant Secretary Nicole Laurie and Administrator Mary Wakefield* (Oct. 4, 2011). Available at: <http://www.facs.org/ahp/trauma/FY2013-101211.pdf>

¹⁰⁴ Sebelius, Kathy. *Letter to Senator Jack Reed* (Aug. 30, 2012). Available at: <http://www.facs.org/ahp/trauma/hhs-response-re-trauma-ems.pdf>

emergency service groups, has consistently requested federal funding for these programs with no success. Consequently, the proposed Trauma Center likely should not rely on federal funding from these programs.

B. State and Local Funding

Unfortunately, the state funding outlook is equally bleak, and local funding opportunities appear limited. While the Indiana State Department of Health formed a task force in 2004 to “develop, organize, and maintain a state trauma system[,]” it appears this was a largely fruitless endeavor.¹⁰⁵ While many states use state funding to help create a coordinated statewide trauma system, Indiana currently has no such system in place. According to the chief medical doctor at Methodist Hospitals, Dr. Michael McGee, “Indiana is one of about two states of the 50 states without trauma coordination.”¹⁰⁶ Indiana House Bill 1215, which would have authorized funding support for trauma centers, was defeated and never became a law.¹⁰⁷ According to a 2009 Indiana State Department of Health study, Indiana ranked as the worst state in the nation for per capita public health funding. The study also noted that no trauma-specific federal funding or state funding source existed. The Indiana State Department of Health website similarly states, “Indiana currently has no state funding for trauma system development and infrastructure support.”¹⁰⁸ The Indiana State Department of Health alleges that it has used some federal and Indiana Criminal Justice System funding to begin the development of a trauma system in the state. However, how the Indiana State Department of Health actually uses this funding is unclear. There is no indication that any funding is available for new trauma centers.

Locally, the Northwest Indiana Regional Development Authority (RDA) provides funding, in part, to “economic development initiatives to attract business and jobs to the region.”¹⁰⁹ While the RDA formerly focused its funding efforts on different priorities, it appears the RDA now gives top funding priority “to job-creating economic development proposals.” Because constructing a new trauma center would likely create jobs in Northwest Indiana and stimulate the area’s economy, it appears the trauma center may be eligible for RDA funding. However, in order to obtain RDA funding, the group seeking funding for the trauma center would first need to submit a one-page letter of inquiry to the RDA’s President and CEO.¹¹⁰ If the applicant receives a Notice to Proceed from the President and CEO, the applicant must then submit a full application online. After receiving the online application, the RDA staff checks the application for completeness and the RDA President and CEO make a recommendation

¹⁰⁵ Perkins, Susan R.N. and Tracie Pettit R.N. Indiana State Department of Health. *Trauma System Development: The State of Trauma in Indiana* (June 17, 2009). Available at:

http://www.in.gov/isdh/files/Trauma_System_Development_ENA_06-2009.pdf

¹⁰⁶ Tompkins, Sarah. The Times of Northwest Indiana. *Northwest Indiana May Get Its First Trauma Center* (Nov. 8, 2009). Available at: http://www.nwitimes.com/news/local/northwest-indiana-may-get-its-first-trauma-center/article_266bb66a-c053-5502-898c-da9b84df42f7.html

¹⁰⁷ Perkins, Susan R.N. and Tracie Pettit R.N. Indiana State Department of Health. *Trauma System Development: The State of Trauma in Indiana* (June 17, 2009). Available at:

http://www.in.gov/isdh/files/Trauma_System_Development_ENA_06-2009.pdf

¹⁰⁸ Indiana State Department of Health. *Financing for Indiana Trauma System*. Available at:

<http://www.state.in.us/isdh/25399.htm>

¹⁰⁹ Northwest Indiana Regional Development Authority. *Guidelines*. Available at: <http://www.in.gov/rda/2329.htm>

¹¹⁰ Northwest Indiana Regional Development Authority. *Application Process*. Available at:

<http://www.in.gov/rda/2377.htm>

regarding “acceptance” to the RDA Board. The RDA Board subsequently decides whether to grant the project funding.

C. General Hospital Funding

While federal or state trauma-specific funding appears limited, the proposed Trauma Center may also apply for general hospital funding. The Health Care and Other Facilities Construction Program provides multi-million dollar funding, in part, for the construction of new hospitals.¹¹¹ In order to obtain funding from the Health Care and Other Facilities Construction Program the proposed Trauma Center would need to apply for funding and comply with the relevant rules. The Program allows funds to be used for new construction, with or without equipment, so long as funded project complies with federal, state and local laws, rules, and ordinances. However, the Program is limited only to the “entities and purposes defined in the annual HRSA appropriation.” The NIH also offers certain construction grants to non-profit entities.¹¹² Because the NIH funds mostly research-based projects, the proposed Trauma Center would likely need to demonstrate the trauma facility would be used, in part, to conduct certain research program activities.

Other federal funding programs also exist, although varying restrictions may limit their applicability here. For instance, the Community Facility Grants could provide funding for the construction of a new hospital, but only areas with less than 20,000 people are eligible. While counties may apply for the grant, it appears only Newton County (around 14,000 residents) would be eligible for the grant here. As aforementioned, despite its eligibility for possible federal funding, Newton County does not appear to be an ideal location for the proposed Trauma Center.

Finally, the Hospital Financial Service Corporation administers a privately funded Trade Grant program that provides funding to hospitals that decrease energy consumption and increase efficiency in accordance with the program’s guidelines.¹¹³ Specifically, the Corporation offers a maximum of \$2 million in funding for hospitals participating in its Energy Conservation Roofing or Energy Conservation Flooring programs. While completed projects and projects already under contract are not eligible for the funding, neither requirement appears to be an issue here. The proposed Trauma Center, however, would have to complete a seven-step application in order to obtain any funding.

D. Private Funding

In addition to obtaining funding through various federal or state funding sources, the proposed Trauma Center may also seek funding from private sources. Large companies or organizations headquartered in Northwest Indiana may find funding the proposed Trauma Center worthwhile for various reasons. First, by funding the proposed Trauma Center, private organizations may further strengthen their ties to the area. Indeed, private organizations may

¹¹¹ Health Resources and Services Administration. Health Care and Other Facilities Awards (HRS-05-144). Available at: <http://www.reginfo.gov/public/do/DownloadDocument?documentID=36006&version=1>

¹¹² National Institutes of Health. Grants & Funding: NIH Grants Policy Statement. Available at: http://grants.nih.gov/grants/policy/nihgps_2012/nihgps_ch10.htm

¹¹³ Hospital Financial Service Corporation. *Smart Hospital Efficiency Programs*. Available at: <http://www.hospitalfinancial.com/index.php>

view this funding opportunity as a chance to generate positive publicity or increase organizational exposure. For instance, after a private foundation agreed to fund state-of-the-art trauma centers at certain United States military bases, the New York Times published an article detailing the foundation's fundraising efforts.¹¹⁴ More locally, Peyton Manning received numerous public accolades after partially funding a children's hospital in Indianapolis.¹¹⁵ Here, the potential for positive public relations may similarly entice private organizations or companies to make considerable donations to the proposed Trauma Center. Furthermore, the desire to provide employees living in the area with better access to care may compel private companies to fund the proposed Trauma Center. As mentioned above, citizens in Northwest Indiana lack access to trauma care. Therefore, employees of large companies in the area may frequently travel outside the area to receive trauma care. Large companies committed to operating in the area may view funding the proposed Trauma Center as a chance to help better the quality of life for their employees. Moreover, potential employees may consider the lack of health care access in the area when determining whether to work for a company located in Northwest Indiana. Thus, local companies may benefit from a trauma center in the area, as the potential for increased access to care may help the companies recruit or retain employees.

In order to better understand the private funding landscape in Northwest Indiana, examining potential private funding sources appears necessary. Given the aforementioned benefit a trauma center may provide workers employed in Northwest Indiana, large private companies in the area may help fund the proposed Trauma Center. In 2010, Cleveland State University's College of Urban Affairs conducted a regional analysis of Northwest Indiana.¹¹⁶ As part of the project, the study ranked Northwest Indiana's fifty largest employers. ArcelorMittal, NiSource, Weil-McLain, and various Northwest Indiana casinos each ranked in the top twenty five. NiSource, a company located in Merrillville, ranked as one of the Indiana's fifteen Fortune 1,000 companies. While not listed, United States Steel also conducts significant business in the area. The study also referenced a list of the nation's fastest growing private firms. The list mentioned three Northwest Indiana firms, Trai-Cor Processing, ESW, and Dekker Vacuum Technologies. For varying reasons, each of the aforementioned companies may provide funding for the proposed Trauma Center.

First, the Trauma Center may seek private funding from the area's largest employer, ArcelorMittal. While headquartered in Luxembourg, ArcelorMittal operates North America's largest steelmaking facility in East Chicago, Indiana.¹¹⁷ According to the company's website, the 3,100-acre East Chicago plant employs 4,900 hourly employees and 777 salaried employees. The Cleveland State University study similarly indicated that the company employed around 6,000 individuals in East Chicago in 2010, ranking it first among all Northwest Indiana

¹¹⁴ Dao, James. The New York Times. *Group Planning Centers to Treat Combat Trauma* (June 12, 2012). Available at: http://www.nytimes.com/2012/06/13/us/private-group-to-build-trauma-centers-for-military.html?pagewanted=all&_r=0

¹¹⁵ Associated Press. ESPN. *Children's Hospital Named After Peyton Manning* (Sept. 5, 2007). Available at: <http://sports.espn.go.com/espn/wire?id=3006586>

¹¹⁶ Austrian, Ziona, Ph.D., et. al. Cleveland State University's Maxine Goodman Levine College of Urban Affairs. *Northwest Indiana Regional Analysis: Demographics, Economy, Entrepreneurship and Innovation* (Jan. 2011). Available at: http://urban.csuohio.edu/publications/center/center_for_economic_development/Northwest_Indiana_Consolidated_Final.pdf

¹¹⁷ ArcelorMittal. *Indiana Harbor*. Available at: <http://usa.arcelormittal.com/Our-operations/Flat/Indiana-Harbor/>

companies.¹¹⁸ Northwest Indiana's second largest employer, as determined by the study, only employs 3,000 individuals. Given its large presence in the area and the amount of Northwest Indiana workers it employs, ArcelorMittal may find value in funding the proposed Trauma Center. ArcelorMittal's financial well-being may also allow it to help fund the proposed Trauma Center. In 2013, the multinational company earned over \$79 billion in total revenue.¹¹⁹

Additionally, recent fatal accidents involving ArcelorMittal employees may also motivate the company to contribute to the construction of the proposed Trauma Center. In November 2013, a Northwest Indiana resident working as a contractor for ArcelorMittal died in a work-place accident at the East Chicago steel mill.¹²⁰ The local coroner suggested blunt force trauma caused the man's death. The accident also critically injured two additional ArcelorMittal employees. In February 2014, an ArcelorMittal employee sustained severe injuries after falling into scalding water while working at the East Chicago plant.¹²¹ Despite six weeks of care at the University of Chicago Medical Center, the man failed to overcome his work-place injuries and died. Admittedly, nothing definitively indicates that a more local trauma center could have saved either employee. However, both employees apparently died due to trauma-related injuries sustained on the job. Given ACS's statistics regarding the importance of obtaining immediate trauma care, a trauma center in Northwest Indiana may have increased the employees' chances of survival. Instead, the lack of trauma care in the area likely forced the employees to seek care elsewhere. For instance, the second employee obtained trauma care in Chicago. Due to the nature of the work conducted at ArcelorMittal's East Chicago plant, similar injuries may occur in the future. If ArcelorMittal seeks to avoid similar fatal results, it may choose to help fund the proposed Trauma Center.

Similarly, NiSource, a regulated energy company headquartered in Merrillville, may also serve the proposed Trauma Center as another source of private funding. In general, NiSource "engage[s] in natural gas transmission, storage and distribution, as well as electric generation, transmission and distribution[.]" while servicing over 3.8 million customers.¹²² NiSource's consolidated operating earnings totaled over \$1 billion in 2012, and the company reported net operating earnings of over \$258 million in the first quarter of 2014.¹²³ Although NiSource enjoys a status as one of the nation's Fortune 500 companies, the company maintains significant ties to Northwest Indiana. In addition to operating its corporate headquarters in Merrillville, NiSource also controls the Northern Indiana Public Service Company (NIPSCO). NIPSCO, one

¹¹⁸ Austrian, Ziona, Ph.D., et. al. Cleveland State University's Maxine Goodman Levine College of Urban Affairs. *Northwest Indiana Regional Analysis: Demographics, Economy, Entrepreneurship and Innovation* (Jan. 2011). Available at: http://urban.csuohio.edu/publications/center/center_for_economic_development/Northwest_Indiana_Consolidated_Final.pdf

¹¹⁹ ArcelorMittal. *ArcelorMittal Reports Fourth Quarter 2013 and Full Year 2013 Results*. Available at: <http://corporate.arcelormittal.com/news-and-media/press-releases/2014/feb/07-02-2014>

¹²⁰ Pete, Joseph. The Times of Northwest Indiana. Accident Kills Contractor at ArcelorMittal in East Chicago (Nov. 13, 2013). Available at: http://www.nwitimes.com/business/local/accident-kills-contractor-at-arcelormittal-in-east-chicago/article_c3695aee-899e-5242-92d4-0324a05ffdb0.html?print=true&cid=print

¹²¹ Pete, Joseph. The times of Northwest Indiana. *AcelorMittal Worker Dies After February Accident*. Available at: http://www.nwitimes.com/business/local/arcelormittal-worker-dies-after-february-incident/article_26b6b6d2-30c9-539a-8d97-e15fcb234b07.html?print=true&cid=print

¹²² NiSource. Corporate Profile. Available at: <http://ir.nisource.com/overview.cfm>

¹²³ NiSource. *NiSource Reports 2012 Earnings* (Feb. 19, 2013). Available at: <http://ir.nisource.com/releasedetail.cfm?ReleaseID=741161>; NiSource. *NiSource Announces First Quarter Results*. Available at: <http://ir.nisource.com/results.cfm>

of the state's largest natural gas and electric distribution companies, "provides Northern Indiana with safe reliable gas and electric services."¹²⁴ NiSource employs around 1,000 workers in Northwest Indiana.¹²⁵ Given its strong presence in the region and its financial well-being, NiSource may consider funding the proposed Trauma Center. Indeed, NIPSCO's alleged commitment to the Northwest Indiana region suggests NiSource may help fund the proposed Trauma Center. Specifically, NIPSCO's website states, "NIPSCO is committed to supporting and enhancing the quality of life through community partnerships, volunteering, charitable giving and economic development throughout northern Indiana." According to numerous studies, adding a new trauma center in Northwest Indiana would enhance the quality of life in the area. Consequently, if NIPSCO, through its parent company NiSource, is genuinely committed to Northwest Indiana, it may help fund the proposed Trauma Center.

Furthermore, United States Steel has also shown a strong commitment to Northwest Indiana. According to the company's website, U.S. Steel operates four plants in Northwest Indiana, with the largest plant located in Gary.¹²⁶ While the Cleveland State University study failed to mention U.S. Steel as one of the region's top employers, U.S. Steel apparently employs around 5,800 employees at its Gary plant alone.¹²⁷ A Times article asserted that "[m]ore than 6,000 people work for U.S. Steel in Northwest Indiana."¹²⁸ Considering the top employer on the study's list, ArcelorMittal, only employs 6,000 workers, it appears the study likely overlooked one of the area's largest employers. If U.S. Steel is committed to bettering the quality of life for its employees in Northwest Indiana, the company has the financial means to help fund the proposed Trauma Center. In 2010, U.S. Steel earned over \$17 billion in total revenue.¹²⁹ With regard to charitable donations, U.S. Steel "provide[s] support in a planned and balanced manner for educational, scientific, charitable, civic, cultural and health needs . . ." through its U.S. Steel Foundation. Specifically, the Foundation, through the "Safety, Health, and Human Services" division of its grant program, offers "a limited number of direct capital and operating grants to health and human service providers in U.S. Steel's operating areas."¹³⁰ Consequently, the proposed Trauma Center appears eligible to receive funding from the Foundation. Given U.S. Steel's presence in and commitment to the Northwest Indiana region, if the proposed Trauma Center applies for funding from the Foundation, U.S. Steel may financially contribute to the proposed Trauma Center.

¹²⁴ NIPSCO. Our Services. Available at: <https://www.nipSCO.com/our-services>

¹²⁵ Austrian, Ziona, Ph.D., et. al. Cleveland State University's Maxine Goodman Levine College of Urban Affairs. *Northwest Indiana Regional Analysis: Demographics, Economy, Entrepreneurship and Innovation* (Jan. 2011). Available at: http://urban.csuohio.edu/publications/center/center_for_economic_development/Northwest_Indiana_Consolidated_Final.pdf

¹²⁶ United States Steel Corporation. *Facility*. Available at: <http://www.ussteel.com/uss/portal/home/aboutus/history>

¹²⁷ Pete, Joseph. The times of Northwest Indiana. Steelmaking Idled at Gary Works. Available at: http://www.nwitimes.com/business/local/steelmaking-idled-at-gary-works/article_089e0dcf-c395-5d95-b151-457d90c23839.html?print=true&cid=print

¹²⁸ Tweh, Bowdeya. The Times of Northwest Indiana. *Coats Praises U.S. Steel's Commitment to NWI* (Sep. 24, 2012). Available at: http://www.nwitimes.com/news/local/lake/gary/coats-praises-u-s-steel-s-commitment-to-nwi/article_bd0ec90a-4815-5ad7-acae-ce8cda7b7f61.html?print=true&cid=print

¹²⁹ United States Securities and Exchange Commission. *2010 Form 10-K, United States Steel Corporation*. Available at: <http://www.sec.gov/Archives/edgar/data/1163302/000119312511042228/d10k.htm>

¹³⁰ United States Steel Foundation, Inc. Grant Application Guidelines. Available at: http://www.ussteel.com/uss/wcm/connect/17ab6c9d-ef66-4985-8c66-bc35c0a73c64/Final_Grant+Guidelines_Jan.+2013+rev+4_.pdf?MOD=AJPERES&CACHEID=17ab6c9d-ef66-4985-8c66-bc35c0a73c64

While operating on a smaller scale, Weil-McLain also maintains noteworthy ties to the Northwest Indiana area. According to its website, “Weil-McLain is a leading designer, manufacturer and marketer of gas and oil-fired hot water and steam boilers for space heating in residential, commercial and institutional buildings.”¹³¹ The company employs around 600 workers at its Michigan City plant.¹³² While Weil-McLain recently opened an administrative office in Illinois, the company still operates a facility and a customer service center in Michigan City.¹³³ Weil-McLain’s parent company, SPX Corporation, “posted revenues of \$1.6 billion in 2011[.]” meaning the company has the financial ability to help fund the proposed Trauma Center.¹³⁴ However, because SPX is only loosely connected to Northwest Indiana, the parent company may be less inclined to fund the proposed Trauma Center.

Northwest Indiana casinos also employ thousands of Northwest Indiana workers. For instance, the Horseshoe Casino in Hammond employs 2,200 workers, while the Blue Chip Casino in Michigan City and the Ameristar Casino in East Chicago each employ 1,800 workers.¹³⁵ The aforementioned casinos rank as three of Northwest Indiana’s top ten employers. Moreover, while the casinos only operate as subsidiaries of larger entertainment companies, each casino’s parent company enjoys billions of dollars in revenue each year. Furthermore, each parent company appears willing to help fund community projects. For instance, Blue Chip Casino’s parent company, Boyd Gaming, insists that the company “is committed to improving the quality of life of the communities in which [the company’s employees] live and work.”¹³⁶ In support of this position, Boyd’s website allows groups to request charitable donations.¹³⁷ Pinnacle Entertainment, which owns and operates the Ameristar Casino, avows a similar commitment to local communities. According to the company’s website, “At the core of Pinnacle Entertainment, Inc.’s corporate philosophy is a commitment to the communities in which [the company] operate[s] — not only as a major employer, but as a significant contributor to local schools, infrastructures and charities.”¹³⁸ Pinnacle Entertainment’s website also allows groups to submit charitable donation requests, but the company generally refuses to fund capital projects.¹³⁹ While these parent entertainment companies seem generally committed to supporting local communities, their willingness to fund an extensive local project, like the

¹³¹ Weil-McLain. *Weil-McLain*. Available at: <http://www.weil-mclain.com/en/weil-mclain/>

¹³² Austrian, Ziona, Ph.D., et. al. Cleveland State University’s Maxine Goodman Levine College of Urban Affairs. *Northwest Indiana Regional Analysis: Demographics, Economy, Entrepreneurship and Innovation* (Jan. 2011). Available at: http://urban.csuohio.edu/publications/center/center_for_economic_development/Northwest_Indiana_Consolidated_Final.pdf

¹³³ Weil-McLain. *Locations*. Available at: <http://www.weil-mclain.com/en/weil-mclain/about-us/locations/>

¹³⁴ Furnace Compare. *Weil-McLain Boilers*. Available at: <http://www.furnacecompare.com/manufacturers/weil-mclain.html>

¹³⁵ Austrian, Ziona, Ph.D., et. al. Cleveland State University’s Maxine Goodman Levine College of Urban Affairs. *Northwest Indiana Regional Analysis: Demographics, Economy, Entrepreneurship and Innovation* (Jan. 2011). Available at: http://urban.csuohio.edu/publications/center/center_for_economic_development/Northwest_Indiana_Consolidated_Final.pdf

¹³⁶ Boyd Gaming. *Corporate Social Responsibility*. Available at: <http://www.boydgaming.com/about-boyd-gaming/corporate-social-responsibility>

¹³⁷ Boyd Gaming. *Charitable Donation Request*. Available at: <http://www.boydgaming.com/about-boyd/corporate-responsibility/charitable-donation-request>

¹³⁸ Pinnacle Entertainment. *About Us: Commitment to Community*. Available at: <https://www.pnkinc.com/about-us/commitment-to-community/>

¹³⁹ Pinnacle Entertainment. *Pinnacle Entertainment Foundation: Pinnacle Entertainment Foundation Guidelines and Request Form*. Available at: <https://www.pnkinc.com/pinnacle-entertainment-foundation/pinnacle-entertainment-foundation-guidelines-and-request-form/>

proposed Trauma Center, is unclear. The websites for the respective parent companies seem to champion smaller charitable causes. However, the possibility of generating positive publicity by funding the proposed Trauma Center may entice the respective parent companies to contribute to the Center's funding.

While Trai-Cor Processing, ESW, and Dekker Vacuum Technologies each employ less than 100 workers, the Cleveland State University study included all three companies in its list of Northwest Indiana's fastest growing private firms.¹⁴⁰ Trai-Cor and ESW both earned around \$5 million in total revenue from 2004 to 2007, while Dekker earned around \$12.1 million during the same time frame. While these revenue numbers are modest compared to those of ArcelorMittal or U.S. Steel, each of these companies experienced considerable growth. Thus, these companies may represent funding opportunities for the proposed Trauma Center in the future. Moreover, because these smaller companies may seek increased recognition or exposure in the Northwest Indiana area, they may help fund the proposed Trauma Center.

At first glance, the private companies operating Northwest Indiana's toll roads also appear to be logical sources for private funding. However, the private operators' severe financial troubles may preclude the companies from funding the proposed Trauma Center. According to a Times article, the operators struggled to meet their interest payment in December 2013, and the Toll Oversight Board recently inquired about the June 2014 interest payment that the operators apparently cannot make.¹⁴¹ Moreover, according to one of the operators, "[s]ome \$3.9 billion of debt matures in 12 months and will have to be refinanced by June 2015" The Times article suggested that the companies may not operate the Toll Road much longer.

IV. Impact of Patient Protection and Affordable Care Act on Trauma Care

As mentioned in the "Federal Funding" subsection above, the Affordable Care Act significantly affected the funding available for certain trauma centers or programs. Specifically, the Affordable Care Act authorized the U.S. Department of Health and Human Services (HHS) to use a total of \$224 million to fund four trauma-related programs. Again, the Affordable Care Act authorized \$100 million to fund the Trauma Care Center Grants, which "provide operating funds that enable trauma centers to maintain their core missions[,] " "compensate trauma centers for losses from uncompensated care[,] and provide emergency awards to centers at risk of closure."¹⁴² HHS may also use \$100 million to fund Trauma Service Availability Grants, which "are intended to be channeled through the states and used for activities that address shortfalls in trauma services and improve access to and the availability of these essential lifesaving services." The Affordable Care Act authorized HHS to use \$24 million to fund the Trauma Care Systems Planning and Development Act "to support state development of trauma systems." Finally, the Affordable Care Act also directed HHS to "incorporat[e] of a new Regionalization of Emergency

¹⁴⁰ Austrian, Ziona, Ph.D., et. al. Cleveland State University's Maxine Goodman Levine College of Urban Affairs. *Northwest Indiana Regional Analysis: Demographics, Economy, Entrepreneurship and Innovation* (Jan. 2011). Available at: http://urban.csuohio.edu/publications/center/center_for_economic_development/Northwest_Indiana_Consolidated_Final.pdf

¹⁴¹ Benman, Keith. The Times of Northwest Indiana. *Indiana Monitors Toll Road Operators' Financial Troubles* (June 18, 2014). Available at: http://www.nwitimes.com/business/local/indiana-monitors-toll-road-operators-financial-troubles/article_3f17f962-8d30-50dd-ab97-3abd27861553.html?print=true&cid=print

¹⁴² Mir, Hassan R. M.D. American Academy of Orthopedic Surgeons. *Who is Funding Your Trauma System?* Available at: <http://www.aaos.org/news/aaosnow/may11/advocacy3.asp>

Care Pilot Program.” Unfortunately, despite the Affordable Care Act’s authorization, it appears the federal government has not actually appropriated any money to fund these programs or grants.

Some health care scholars have argued that the Affordable Care Act may “purify” the patient mix at trauma centers, meaning because virtually every citizen will have health care insurance, fewer patients will seek to use trauma centers for primary care. However, whether this opinion is supported by reputable data is unclear. Hospitals in Arkansas, for instance, reported that emergency room visits in the state are down by 2 percent, and emergency room visits by uninsured patients are down 24 percent.¹⁴³ A study conducted by the Center for Healthcare Research and Transformation in Michigan revealed that “[t]en percent of the uninsured use the hospital emergency department for routine primary care, compared with 3 percent for those with insurance[.]”¹⁴⁴ However, the Journal of American Medical Association downplayed the frequency of emergency room visits for primary care purposes, contending that “only 6.3 percent of emergency department visits were determined to have ‘primary care treatable’ discharge diagnoses.”¹⁴⁵ Moreover, a survey conducted by the American College of Emergency Physicians demonstrated that the volume of emergency room patients rose in 43 percent of hospitals, while declining in only 23 percent of hospitals during the first three months of 2014.¹⁴⁶ Of the physicians employed in hospitals experiencing a decline in emergency room visits, only 13 percent believed the decrease was due to more patients going to primary care physicians. Additionally, 96 percent of the surveyed physicians answered that they expected the volume of emergency room visits to increase or remain the same over the next three years. Primary care physicians also reported that new patients accounted only for 17 percent of their primary care visits in the first months after the ACA’s implementation. Multiple sources suggest that some hospitals may be experiencing an increase in emergency room visits simply because the shortage of physicians forces patients to seek primary care through emergency room visits.¹⁴⁷ While this data mostly analyzes emergency room visits, and not trauma center visits necessarily, it should be noted that the Affordable Care Act may not “purify” the patient mix in trauma centers as anticipated.

Because EMTALA requires hospitals receiving Medicare to at least screen and stabilize all patients, it appears some patients seek medical care at hospitals simply because EMTALA assures they will receive some degree of medical attention. Additionally, because EMTALA requires hospitals to assess and stabilize all patients seeking care, the patient mix at trauma centers may never be truly “purified.” Similarly, prior to the Affordable Care Act, some private health insurance companies would select a network of approved emergency care providers,

¹⁴³ Young, Jeffrey. Huffington Post. *ER Visits Jump As Obamacare Kicks In Doctors Say* (May 21, 2014). Available at: http://www.huffingtonpost.com/2014/05/21/obamacare-emergency-room_n_5352987.html

¹⁴⁴ Greene, Jay. Crain’s Detroit Business. *Report: Uninsured Patients 3 Times More Likely to Use Emergency Departments, Are Sicker* (June 22, 2011). Available at: <http://www.craisdetroit.com/article/20110619/FREE/110619892/report-uninsured-patients-3-times-more-likely-to-use-emergency#>

¹⁴⁵ American College of Emergency Physicians. *Myths and Facts About Emergency Care*. Available at: <http://newsroom.acep.org/index.php?s=20301&item=30031>

¹⁴⁶ American College of Emergency Physicians. *2014 ACEP Polling Results* (April 2014). Available at: <http://newsroom.acep.org/ACEP-Emergency-Visits-Up-Since-Implementation-of-ACA>

¹⁴⁷ Armour, Stephanie and Louise Radnofsky. *ER Visits Rise Despite Law* (May 21, 2014). Available at: <http://online.wsj.com/news/articles/SB10001424052702304422704579574390961658638>

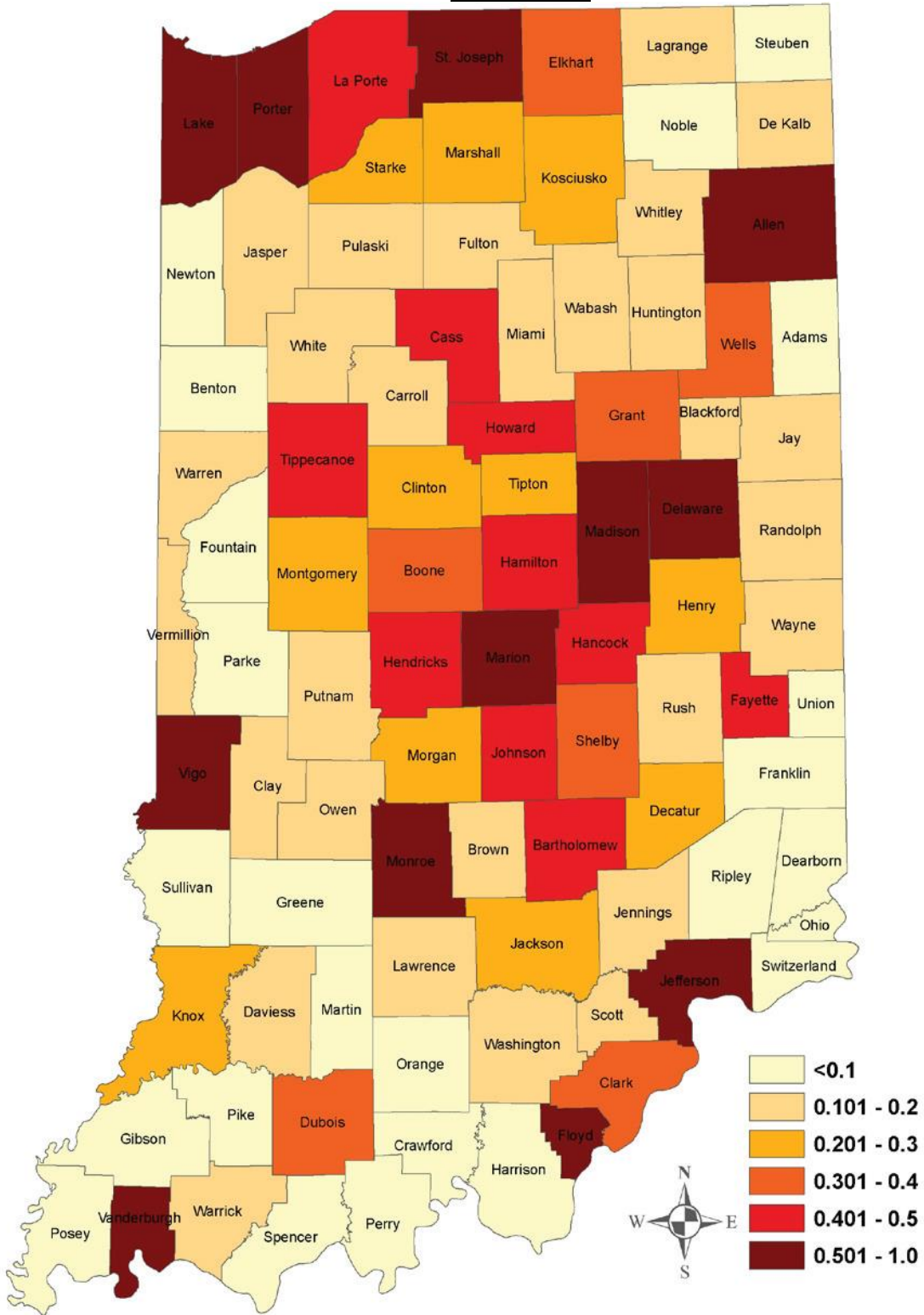
meaning a patient would often incur significant costs if the patient was forced to seek emergency treatment from an unapproved emergency care provider.¹⁴⁸ However, the Affordable Care Act “prevent[s] health plans from requiring higher copayments or co-insurance for out-of-network emergency room services. The new rules also prohibit health plans from requiring you to get prior approval before seeking emergency room services from a provider or hospital outside your plan’s network.” If the fear of incurring out-of-network emergency room costs is removed, more patients—including patients seeking only primary care—may seek care in emergency rooms or trauma centers.

Moreover, while some prognosticators maintained that the Affordable Care Act’s mandate requiring nearly all citizens to obtain health care insurance would financially benefit trauma centers, a 2010 study found that the benefits of the Affordable Care Act on trauma centers depends largely on the nature of the reimbursement provided.¹⁴⁹ The study concluded that “compensation for the care of uninsured trauma patients at Medicare or Medicaid rates will lead to continuing losses for trauma centers.” Thus, if current compensation systems operate similarly to Medicare or Medicaid, then the effect of the Affordable Care Act on trauma centers’ bottom lines may not be as favorable as anticipated.

¹⁴⁸ U.S. Department of Health and Human Services. *ER Access & Doctor Choice*. Available at: <http://www.hhs.gov/healthcare/rights/drchoice/index.html>

¹⁴⁹ Shafi, Sahid M.D. *The Journal of Trauma and Acute Care Surgery* 73:5. *Insuring the Uninsured: Potential Impact of Health Care Reform Act of 2010 on Trauma Centers* (November 2012). Available at: <http://journals.lww.com/jtrauma/pages/articleviewer.aspx?year=2012&issue=11000&article=00042&type=abstract>

Appendix A






“The higher the score, the better the access.”

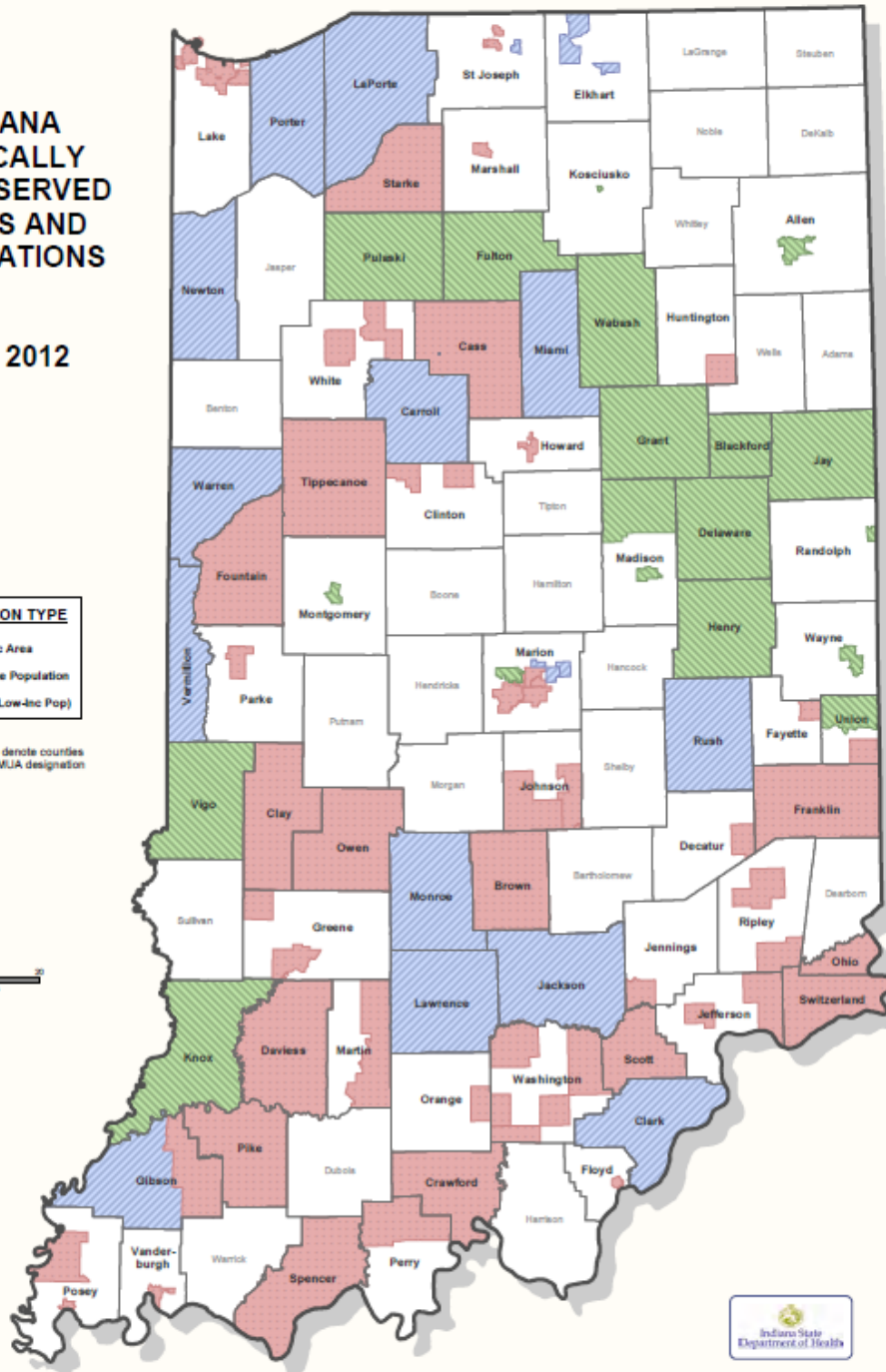
Appendix B

INDIANA MEDICALLY UNDERSERVED AREAS AND POPULATIONS

July, 2012

DESIGNATION TYPE	
	Geographic Area
	Low-Income Population
	Governor (Low-Inc Pop)

Bold county names denote counties having any type of MUA designation



Source: Shortage Designation Branch, HRSA, U.S. Department of Health and Human Services

Map Author: IDOH ERC PHG



KATZ
SAPPER
& MILLER