Flint Hills
Regional Growth Plan

# Health Care & Mental Health

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# Health Care and Mental Health


## Section Summary

*Regional population growth of 32 percent over the next five to six years will strain the current health care infrastructure if communities do not add resources to address increased volumes. The current shortfall in physicians will become more acute, inpatient beds at one to two facilities will approach capacity, and current wait times of one to two weeks for mental health care will lengthen.*

Accompanying these demographic changes will be a shift in the type of health care resources required to treat patients. It is anticipated that the under 15 age group will grow by over 60 percent from 2006 to 2012 (or 15,000 persons) and the 15 to 24 age group by an additional 30 percent (or 7,200 persons). Consequently, the demand for primary care services including pediatrics, family practice, and obstetrics and gynecology will increase.

### Existing Conditions

For purposes of assessing health care and mental health care resources, this section focuses primarily on the three county area of Riley, Geary, and Pottawatomie Counties. Most providers, however, deliver services across a broader geographic area. The overall utilization rate for care in the Flint Hills will decrease as the population becomes younger. The number of discharges per 1,000 population will decline from 103.2 to 101.6. Despite this trend, the overall population growth will cause a 30 percent increase in inpatient discharges (11,545 to 14,991) and will raise the regional average daily census to 164 patients. 2,198 of the 3,446 growth in discharges will be for medical/ surgical beds and 799 for pediatric beds.

The population growth will be concentrated near Fort Riley, so that the hospitals located nearby, Mercy Regional Hospital and Geary Community Hospital, will incur the largest increases in inpatient and outpatient demand. The current regional bed supply will still yield an excess of 120 beds for the entire region; however, it is expected that Mercy will experience a bed occupancy rate increase from 60 percent to 88 percent. Geary Community will experience a similar trend with its bed occupancy growing from 32 percent to 66 percent. Current capital investments to add inpatient beds at Mercy Regional and to make all inpatient rooms private at Geary Community will add to their capacities and will help meet the community's need for these resources.

**Key Documents Related to this Section:**

- Strategic Action Plan and Growth Impact Assessment for the Flint Hills Region, RKG Associates, October 2006
- Centers for Disease Control and Prevention, 2006. "National Hospital Discharge Survey: 2004 Annual Summary with Detailed Diagnosis and Procedure Data."
- American Hospital Association, 2006, Annual Hospital Metrics
- The Mental Health Consortium, AIMS Data Summary Reports, 2007
- Kansas Department of Social and Rehabilitation Services, State Adult Consumer Outcome and Satisfaction Reports 2006

### Assessment/Gap Analysis

With the arrival of additional military personnel to Flint Hills, mental and behavioral health volumes will be affected. While the Army seeks to meet the health care needs of its soldiers at Fort Riley, officials at Irwin Army Community Hospital acknowledge an inability to deliver comprehensive services. The private sector must continue to offer care to military personnel; however, requests for specific information on the quantity and type of health care services that Fort Riley is currently referring to community providers or the quantity and type of health care services provided by community providers to persons covered by TRI-CARE, the insurance provider for military personnel and dependents have not yielded any results for this report.

Pawnee Mental Health Center, the primary outpatient provider of behavioral and mental health services in Flint Hills, currently has waiting times ranging up to 2-weeks in some of its clinics. An increase in demand for these services will cause wait times to extend for longer periods unless Pawnee can recruit and support additional providers at its facilities.

The current regional supply of 126 physicians results in a density of 1.13 physicians per 1,000 population, which is lower than both the state and national rates. Furthermore, the current physician shortage will grow from 10 to 50 physicians, of which the most severe deficits are in primary care. The analysis projects a total deficit of 50 physicians by 2012, which can drastically curtail the community's access to care. The most severe shortages are forecasted to occur in those highly specialized service lines that are the most difficult positions for hospitals to fill (e.g., obstetrics and gynecology, cardiology, and pediatrics). Regional solutions to recruit physicians to Flint Hills will require leaders to adopt new strategies such as working together through a regional health organization.

The current aggregate physician deficit represents less than a 10 percent shortage; however, there is an uneven distribution of physicians between rural and urban areas in Flint Hills. For instance, low physician densities in the rural northern portion of the study area may result in a severe restriction on access to care for that population. Riley County has the highest density of physicians with 1.4 physicians per 1,000 population, and Pottawatomie County has the lowest with 0.6 physicians per 1,000 population. Physician densities of 0.6 physicians per 1,000 population are an indication that patients must drive long distances for services.

## Recommendations

While the overall health care infrastructure of the region satisfies existing needs, the dramatic increase in population in the Flint Hills Region will challenge the ability of local providers to meet future demand. The principal recommendations of the health care section of the Flint Hills Regional Growth Plan are the following:

- Flint Hills should establish a Regional Health Care Council. This organization should consist of representatives from local hospitals, the military post, mental and behavioral health centers, private practitioners, and county public health departments. Its purposes should be the following:
- Collecting and disseminating regional health care data (inventory of services, utilization data, benchmark data against other localities);
- Identifying opportunities for regional collaboration in recruiting physicians, nurses, and other health care workers to Flint Hills;
- Establishing a consistent and on-going discussion between Irwin Army Medical Center and the region's hospitals to ensure that adequate health care resources are available to military personnel and their families; and,
- Maintaining a web site as a one-stop source of health care information, including pricing and quality indicators of local hospitals to allow patients to shop around for care.
- Securing funding to establish a regional health information network that would permit patients to show up for care at any facility and allow physicians to "pull" the patients medical history from an electronic database.
- In order to be successful, this regional entity must meet regularly and involve key decision-makers from local provider groups. The lack of participation from any of the providers, especially Fort Riley, will hamper the ability of the council to find regional solutions to important issues facing the people living in Flint Hills.
- The current shortage of physicians and nurses will become more acute over the next six years; therefore, recruiting physician specialists in key services, as well as nurses and other allied health professionals, to the area should be a regional effort. Creative solutions that include establishing a local nursing school that offers a full-undergraduate curriculum at Kansas State University and scholarship opportunities in return for a work commitment should be explored.
- The local structure for providing mental and behavioral health services must be able to adapt to substantial increases in patient volume. In 2006, Pawnee Mental Health reported a 21 percent growth in patient cases over the two-year period from 2004, and a growing population will generate additional demand for such services. Current wait times for mental health services range from one to two weeks for routine care; therefore, any additional volume can be expected to increase these already long wait times. The projected demand requires recruiting additional mental health workers to Flint Hills, and, perhaps, the need for an additional mental health center.
- A recent change to the Medicaid regulations will permit Medicaid enrollees to utilize any licensed mental health specialist rather than limiting access to state designated community mental health centers. This will reduce the current wait time for care and patients living far from a designated mental health center may now have service options closer to home. While it is difficult to predict the full effect of this policy change, the planning team believes that the increased resources will bring out a level of additional latent demand for these services.
- The scope of health care services provided by Irwin Army Medical Center and the community providers should be coordinated. The Regional Health Care Council recommended above could serve as the forum in which such coordination occurs. Military service members and their families will benefit from the continuity of care that is possible when all providers coordinate care.

- Community providers have not been informed in regard to how Irwin Army Medical Center is planning to meet the increased demand for services from arriving troops; therefore, they do not know which services to grow. A first step to meeting any military healthcare needs would be for Mercy Regional Hospital and Geary Community Hospital to increase the number of TRI-CARE eligible physicians on their medical rosters. Increasing the quantity of providers who treat military patients would help buffer the effect of referral volume increases from Irwin Army Medical Center.
- The range of covered services and their payment rates by TRI-CARE (military health insurance) should be examined in more detail than possible within the scope of this study to identify how they affect access to services in the community. It should be recognized that adjustments in the rates can quickly improve the community's ability to recruit and retain providers, as well as to make appropriate capital investments in facilities. Navigant Consulting supports the recommendations of the President's Commission on Care for America's Wounded Warriors to expand TRI-CARE payments for the combat injured and military dependents.
- The current shortage of physicians and nurses will become more acute over the next six years; therefore, recruiting physician specialists in key services, as well as nurses and other allied health professionals, to the area should be a regional effort. Creative solutions that include establishing a local nursing school at Kansas State University and scholarship opportunities in return for a work commitment should be explored.
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## Implementation

The following are recommended implementation actions: each is broken out by time frame, implementation partner, and funding sources. Additional information can be found in the Fiscal section of this report.

## Maps

The following maps shown here are also depicted as 11x17 documents in the accompanying Flint Hills Regional Growth Plan Draft Map Book.

| Flint Hills Regional Growth Plan<br>Implementation Strategy Matrix (2007)<br>HEALTHCARE PROVIDERS | | Implementation Partners | | Implementation Timing | | | Est. Public Cost | Funding Sources | Additional Information |
|---|---|---|---|---|---|---|---|---|---|
| | | Public | Private | Short-Range 2007-2009 | Mid-Range 2010-2012 | Long-Range 2013-2020 | | | |
| HEALTH CARE & MENTAL HEALTH | | | | | | | | | |
| | | | | | | | | | |
| ISSUE: | The lack of an organized healthcare delivery system has resulted in in-efficient provision of services, lack of access for rural residents and under-served citizens, and a general misunderstanding of healthcare issues in the Flint Hills region. | | | | | | | | |
| GOAL: | Improve regional communication between health-care providers, health care leaders from all major health organizations and Fort Riley. Improve efficiency of service provision by centralizing data collection and recruiting efforts. | | | | | | | | |
| OBJECTIVE: | Establish an active and functional regional health entity. | | | | | | | | |
| Action 1: | The regional health organization should serve as a data clearinghouse by acquiring and disseminating reliable data to local health organizations that would aid in the monitoring of regional health performance and establishing regional healthcare milestones (such as wait times). | CC / RHO / FR | H / MD / PMH | X | | | D | HMF / FG | |
| Action 2: | The regional health organization should act as a conduit in bringing together leaders from Irwin Army Community Hospital and local facilities to determine the services that local providers will be responsible for providing to military personnel and identifying strategies to increase access for behavioral and mental healthcare. | RHO / FR | H / MD / PMH | X | | | | | |
| Action 3: | The regional health organization should create a regional strategy for recruiting physicians to Flint Hills. | RHO / FR | H / MD / PMH | X | | | | | |

| Flint Hills Regional Growth Plan Implementation Strategy Matrix (2007) HEALTHCARE PROVIDERS | | Implementation Partners | | Implementation Timing | | | Est. Public Cost | Funding Sources | Additional Information |
|---|---|---|---|---|---|---|---|---|---|
| | | Public | Private | Short-Range 2007-2009 | Mid-Range 2010-2012 | Long-Range 2013-2020 | | | |
| Action 4: | The regional organization should identify if there would be a large enough volume of patients under the projected growth scenario to substantiate recruiting specialized physicians (e.g., neurosurgeons) to treat disorders that currently are migrating out of the area to Lincoln, Wichita, Topeka, and Kansas City for care. | RHO / FR | H / MD / PMH | X | | | | | |
| Action 5: | The regional healthcare organization should establish a strategy to advocate local and state policymakers to improve access to care for the uninsured, children, and military personnel. | RHO / FR | H / MD / PMH | X | | | | | |
| Action 6: | The regional healthcare organization should establish and maintain a website as a one-stop source of healthcare information | RHO / FR | H / MD / PMH | X | | | | | |
| Action 7: | As the regional health system continues to become more transparent, the regional organization should post quality scores and health care prices with guidelines that patients can use to compare local hospitals and outpatient services. | RHO / CC / FR | H / MD / PMH | | X | | | | |
| Action 8: | Build a regional health information network allowing secured accessibility to patient history at any regional healthcare provider. | RHO / CC / FR | H / MD / PMH | | | X | | | |

| Flint Hills Regional Growth Plan Implementation Strategy Matrix (2007) HEALTHCARE PROVIDERS | | Implementation Partners | | Implementation Timing | | | Est. Public Cost | Funding Sources | Additional Information |
|---|---|---|---|---|---|---|---|---|---|
| | | Public | Private | Short-Range 2007-2009 | Mid-Range 2010-2012 | Long-Range 2013-2020 | | | |
| OBJECTIVE: | Establish direct communication from Fort Riley to the health care leaders, including the mental health care providers. | | | | | | | | |
| Action 1: | Ensure that Fort Riley is represented in the regional healthcare organization's leadership structure. | RHO / CC / FR | H | X | | | A | | |
| ISSUE: | The current physician shortage will continue to grow. In addition the regional nursing shortage will continue to grow, resulting in higher nursing salaries, and making it even more difficult to retain nurses in the region. | | | | | | | | |
| GOAL: | Establish and maintain an adequate workforce of physicians and nurses to serve the growing Flint Hills region. | | | | | | | | |
| OBJECTIVE: | Begin recruiting almost every medical specialty to the Flint Hills, especially obstetricians, cardiologists and pediatricians. | | | | | | | | |
| Action 1: | Ensure that recruiting of specialty doctors is incorporated in the regional healthcare organization's recruiting strategy | RHO / FR | H / MD / PMH | X | | | A | RHO | |
| Action 2: | Compile marketing material for the Flint Hills region and distribute to the various professional associations for specialty healthcare providers. | RHO / FR | H / MD / PMH | X | | | B | H / RHO | |
| OBJECTIVE: | Create education opportunities in the region for healthcare providers including nurses, dental assistants and other technicians. | | | | | | | | |
| Action 1: | Establish a nursing program at KSU | CC / KSU | | | X | | E | KSU | |
| Action 2: | Integrate student nurses into local healthcare facilities throughout their training | RHO | H | | X | | A | HMF / KSU | |
| Action 3: | Offer scholarships to nurses in return for a work commitment in the region. | CC / RHO | H | | X | | D | KSU | |
| Action 4: | Explore the creation of nursing programs and other training programs at community colleges for radiology technicians, health information technicians, and other medical assistants. | CC / RHO | H | | X | | B | HMF / KSU | |

| Flint Hills Regional Growth Plan Implementation Strategy Matrix (2007) HEALTHCARE PROVIDERS | | Implementation Partners | | Implementation Timing | | | Est. Public Cost | Funding Sources | Additional Information |
|---|---|---|---|---|---|---|---|---|---|
| | | Public | Private | Short-Range 2007-2009 | Mid-Range 2010-2012 | Long-Range 2013-2020 | | | |
| ISSUE: | Physical capacity at regional and local facilities is not planned to keep up with the projected growth in need. | | | | | | | | |
| GOAL: | Actively plan for projected physical facility needs to enhance and sustain the region's patient care. | | | | | | | | |
| OBJECTIVE: | Identify in-patient capacity needs and begin actively planning strategies to address these needs. | | | | | | | | |
| Action 1: | Begin identifying ways to finance the additional construction of inpatient beds at Geary Community Hospital rather than re-converting private rooms to semi-private units when additional IP rooms are required (not expected to occur prior to 2012). | | H | X | | | B | H | |
| Action 2: | Complete Mercy Regional Health Center's current plan to add inpatient capacity. | | H | X | | | | H | |
| Action 3: | Identify facility growth opportunities for Pawnee Mental Health due to the constraint at the current location. | | PMH | X | | | B | PMH | |
| Action 4: | Evaluate facility needs for inpatient services for the Mercy Regional Health Center psychiatric services unit | | H | X | | | C | H | |
| OBJECTIVE: | Improve access to clinics and other rural healthcare providers | | | | | | | | |
| Action 1: | Explore opportunity to offer care through any of the three area Wal-Marts by collaborating with local professionals such as licensed physician assistants to staff these clinics. | RHO | H / MD | | X | | A | H / RHO | |

| Flint Hills Regional Growth Plan<br>Implementation Strategy Matrix (2007)<br>HEALTHCARE PROVIDERS | | Implementation Partners | | Implementation Timing | | | Est. Public Cost | Funding Sources | Additional Information |
|---|---|---|---|---|---|---|---|---|---|
| | | Public | Private | Short-Range 2007-2009 | Mid-Range 2010-2012 | Long-Range 2013-2020 | | | |
| ISSUE: | The high rate of AIDS, Chlamydia, and gonorrhea are a result of the young population and an indication of unsafe sexual practices in the Flint Hills region. | | | | | | | | |
| GOAL: | Decrease the high rates of sexually transmitted diseases among the population in the Flint Hills | | | | | | | | |
| OBJEC-TIVE: | Increase outreach and education efforts about prevention of sexually transmitted diseases. | | | | | | | | |
| Action 1: | Professionals in health education need to increase their outreach efforts to Kansas State University and Fort Riley in order to educate young adults about the prevention of sexually transmitted diseases. | RHO / KSU / FR | H / MD | X | | | C | CPH | |
| Action 2: | Create health education materials on identifying symptoms of STDs, the importance of practicing safe sex and treatment options. | RHO / KSU / FR | | X | | | B | CPH | |
| ISSUE: | It is unclear how the range of covered services and their payment rates by TRI-CARE affect access to services in the community and recruiting efforts for physicians. | | | | | | | | |
| GOAL: | Integrate all aspects of healthcare provision, including healthcare insurance coverage policies, in regional efforts to improve the healthcare services to residents. | | | | | | | | |
| OBJEC-TIVE: | Understand the full affects of TRI-CARE policies on the Flint Hills | | | | | | | | |
| Action 1: | Work with TRI-CARE policymakers and state lawmakers to adjust TRI-CARE rates to appropriate levels for the state and the Flint Hills region. | RHO / CC /FR | H / TC | X | | | A | OEA / RHO | |
| Action 2: | Undertake an in-depth study to examine in detail how TRI-CARE payment rates and range of covered services affect access to services in the community. | CC / FR | H / TC | X | X | | B | OEA / RHO | |

## Implementation Table Key

**Cost Key:**

(A) $0-$25,000
(B) $25,000-$50,000
(C) $50,000-$100,000
(D) $100,000-$250,000
(E) $250,000-$500,000
(F) $500,000-$750,000
(G) $1 million +
(--) – Unknown or no cost

**IMPLEMENTATION CODES**

**PUBLIC SECTOR**

CC – City or County Council/Commission
DOC- Department of Commerce
KACCRRA - Kansas Resource and Referral Agency
KDOT - Kansas Dept of Transportation
KSU - Kansas State University
LG - Local Governments
LRRA - Local Resource & Referral Agency
PC – Planning Commission/Department
RPE - Regional Planning Entity
FR - Fort Riley
PH - Local Public Health Department
PS - Public School System
PP - Public Process
WFC- Workforce Centers

**PRIVATE SECTOR/NON-PROFIT**

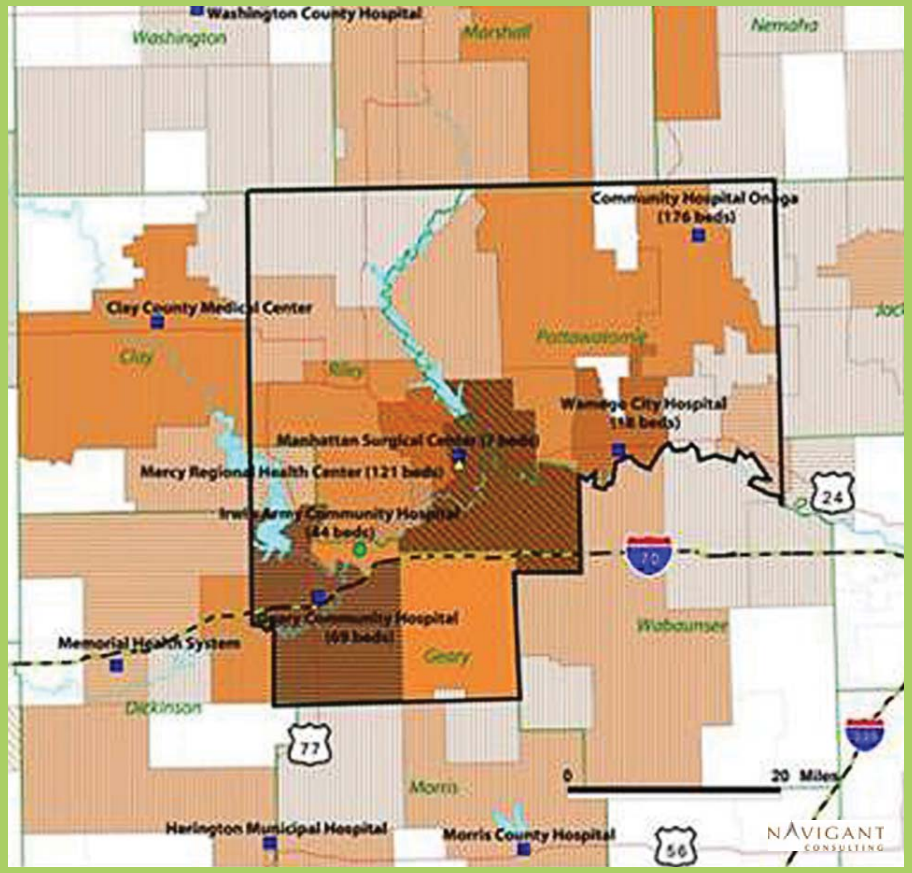
B - Businesses
C – Private consultants
CoC – Chamber of Commerce
CVB – Convention and Visitors Bureau
D – Private Developer
PO – Property Owner
V – Volunteers
DM – Downtown Merchants/Main Street
CNGO - Conservation Group
RE - Realtors
SSP - Social Service Providers

**FUNDING SOURCES**

GR - General Revenue
SMRT - Kansas Smart Start Grants
KS - State Revenue Source
SID - Special Improvement Districts
BID - Business Improvement Districts
TID - Tax Increment Districts
CDBG - Community Development Block Grants
KDOT - Statewide Transportation Funds
CFF - Community Facility Fee
OEA - Office of Economic Adjustment
CF - Conservation Funds

## Admission Origins, Kansas 2006

### Flint Hills' Hospitals




Legend

**Hospital Affiliation**
- Department of the Army
- Independent
- Via Christi Health System

**Population Per Square Mile**
- 4 - 25
- 26 - 89
- 90 - 202
- 203 - 329
- 330 - 1,711

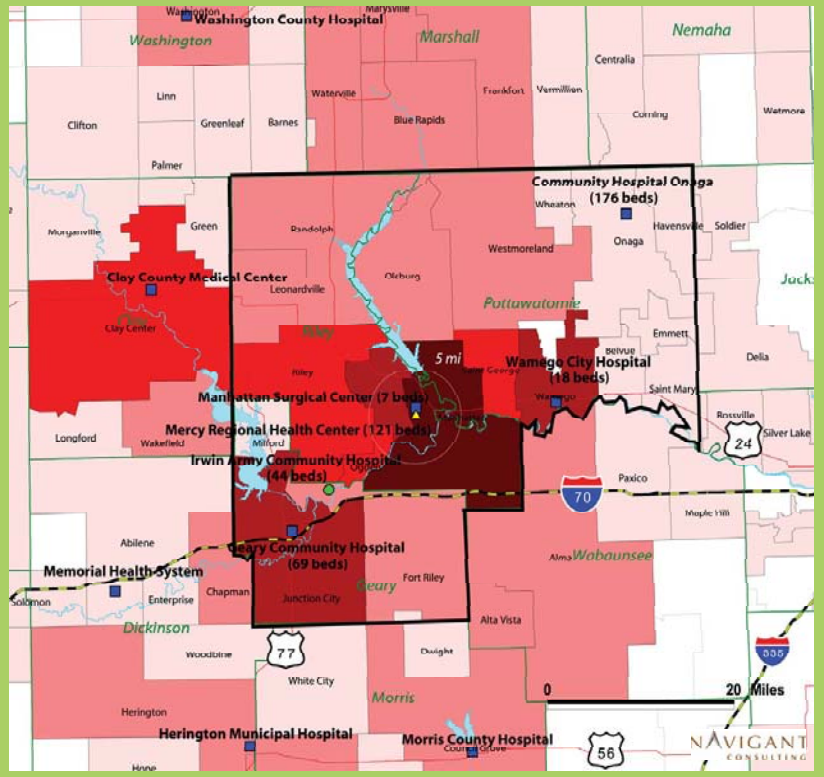
**Number of Admissions**
- 10 - 51
- 52 - 117
- 118 - 260
- 261 - 652
- 653 - 3,022

Created by: EDAW Fort Collins
Status: Draft
Date: August 20, 2007

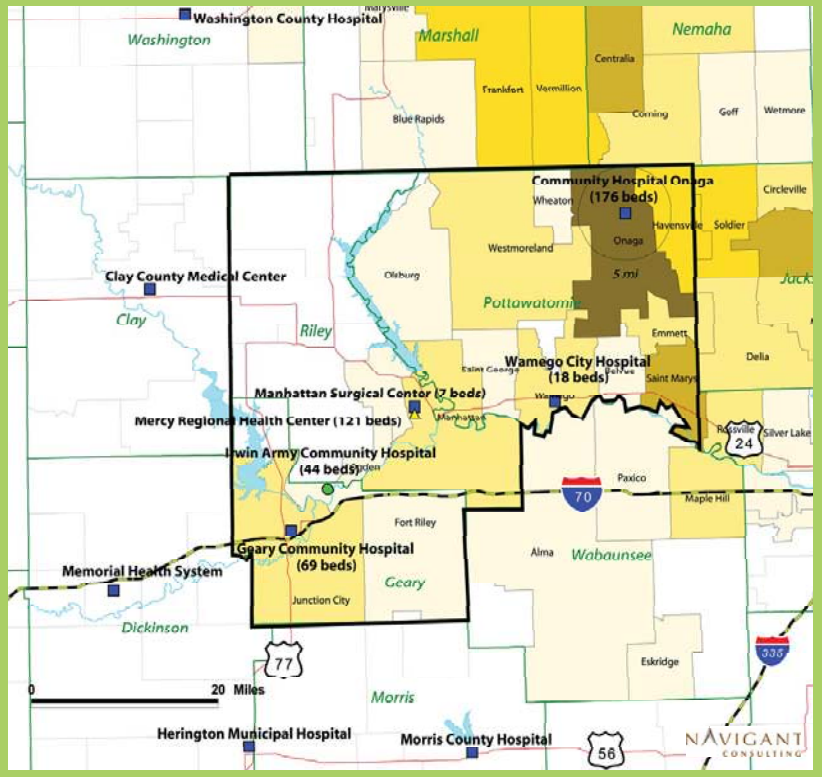
Map HC.2 - Admission Origins, Kansas 2006

## Admission Origins, Kansas 2006

### Mercy Regional Health Center




### Community Hospital Onaga




Legend

Hospital Affiliation
- Department of the Army
- Independent
- Via Christi Health System

Admissions
- 1 - 29
- 30 - 99
- 100 - 186
- 187 - 637
- 638 - 2,950

Legend

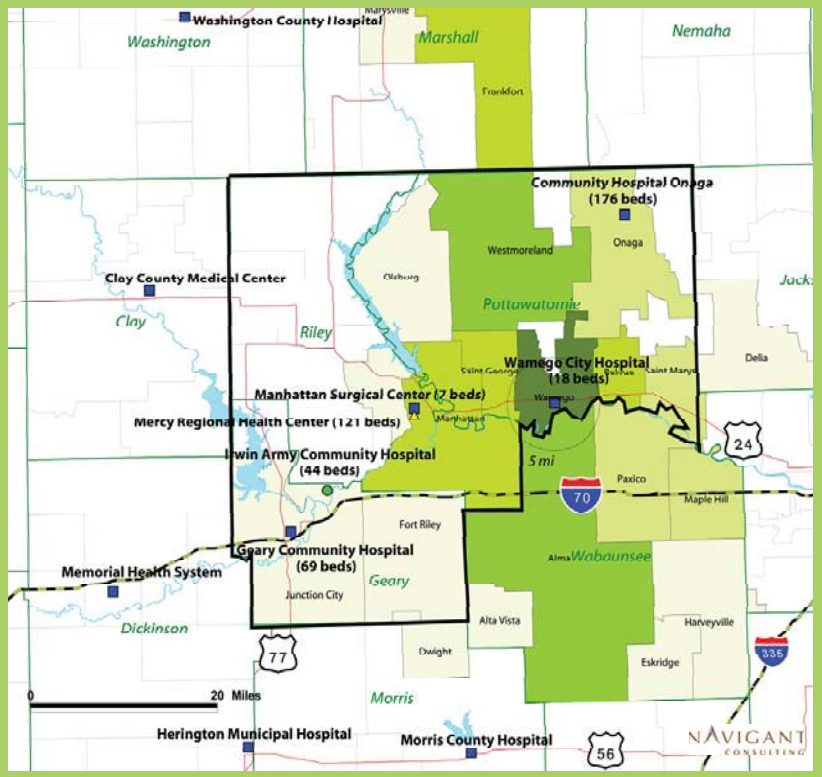
Hospital Affiliation
- Department of the Army
- Independent
- Via Christi Health System

Admissions
- 1 - 9
- 10 - 27
- 28 - 62
- 63 - 123
- 124 - 226

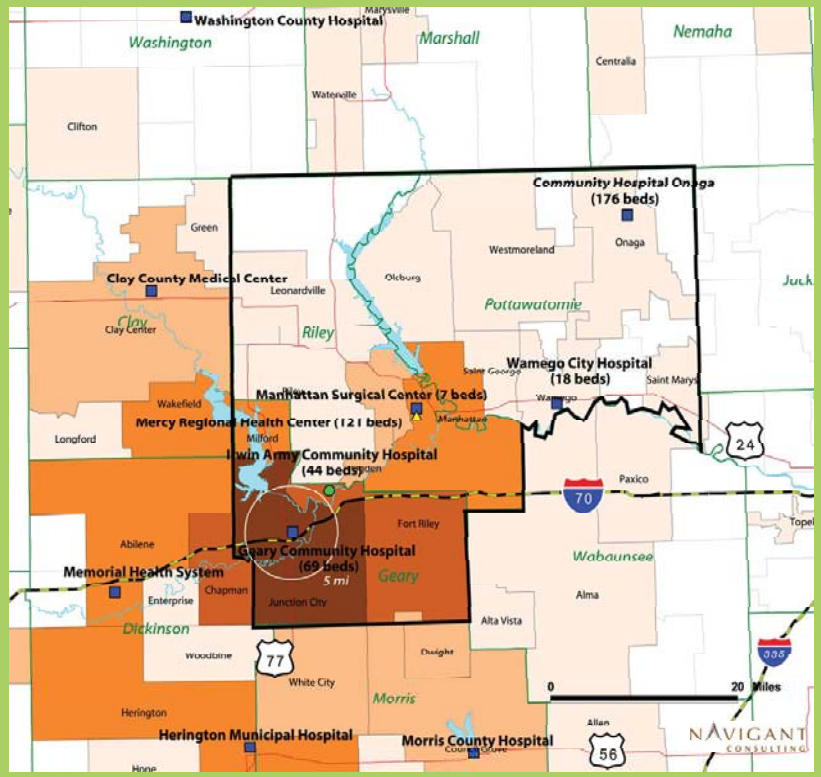
Created by: EDAW Fort Collins
Status: Draft
Date: August 20, 2007

## Admission Origins, Kansas 2006

### Wamego City Hospital




### Geary Community Hospital




Legend

Hospital Admissions
- Department of the Army
- Independent
- Via Christi Health System

Admissions
- 0 - 2
- 3 - 5
- 6 - 15
- 16 - 33
- 34 - 220

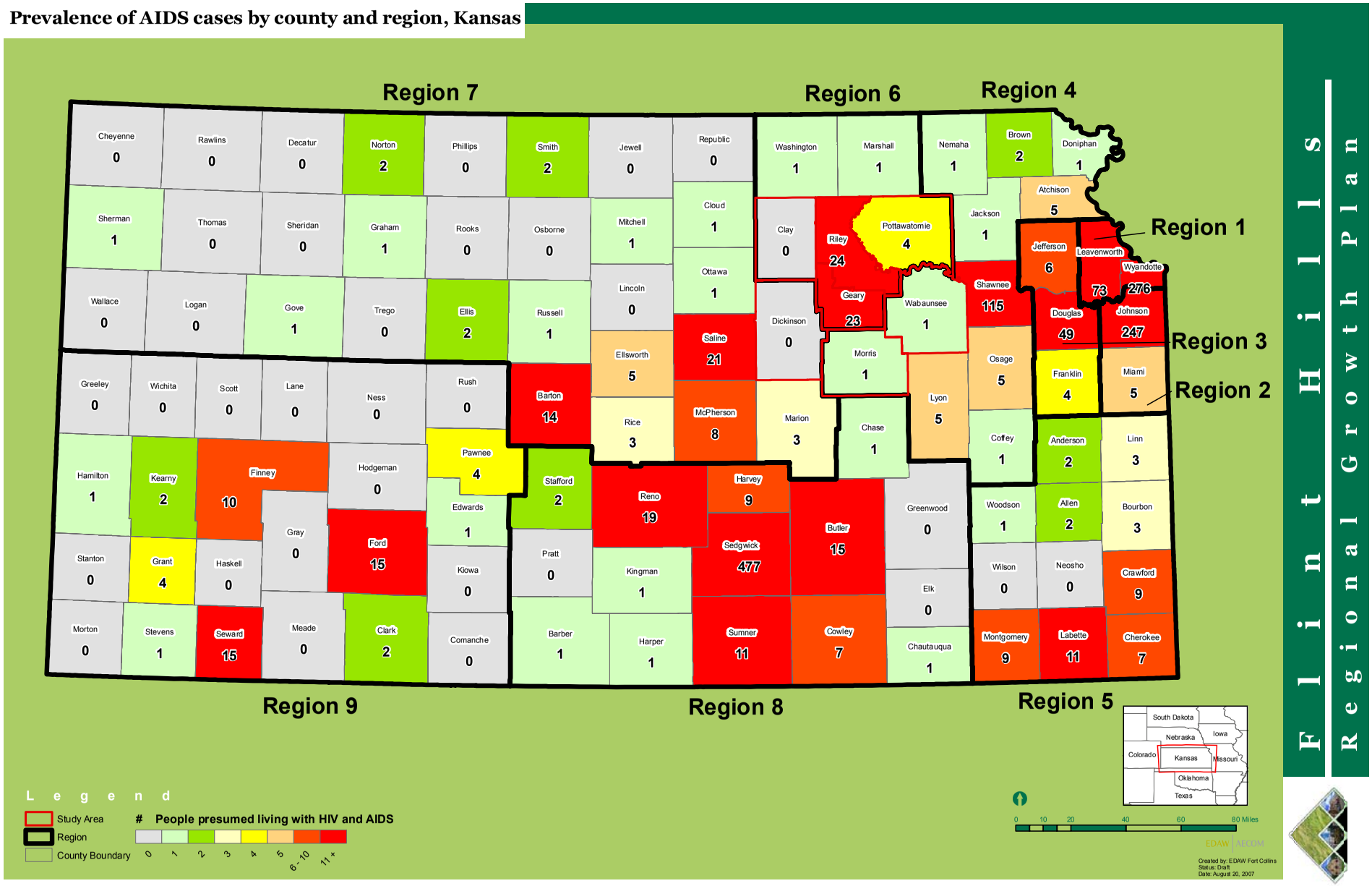
Legend

Hospital Affiliation
- Department of the Army
- Independent
- Via Christi Health System

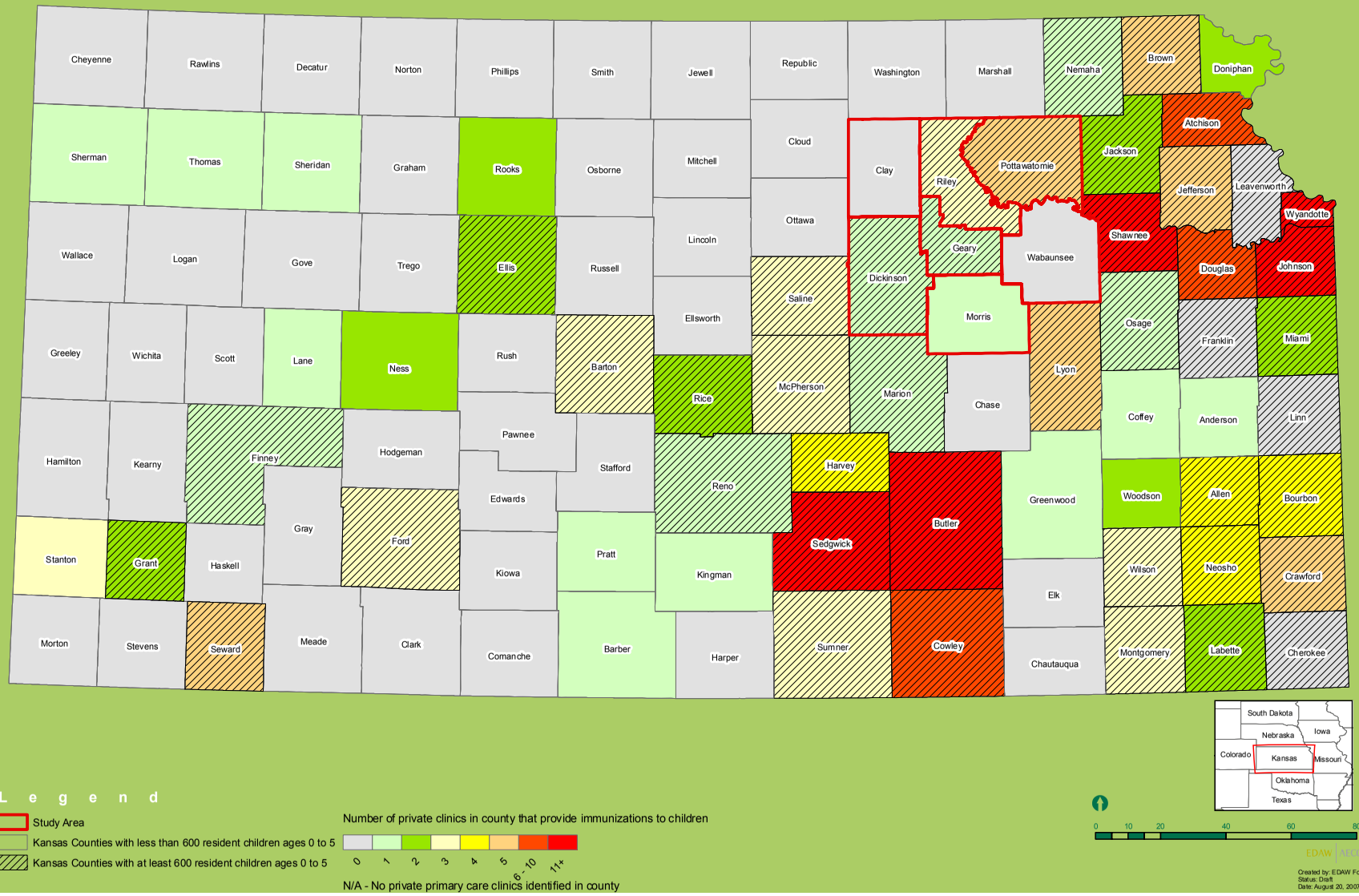
Admissions
- 0 - 7
- 8 - 23
- 24 - 51
- 52 - 101
- 102 - 1,439

Created by: EDAW Fort Collins
Status: Draft
Date: August 20, 2007

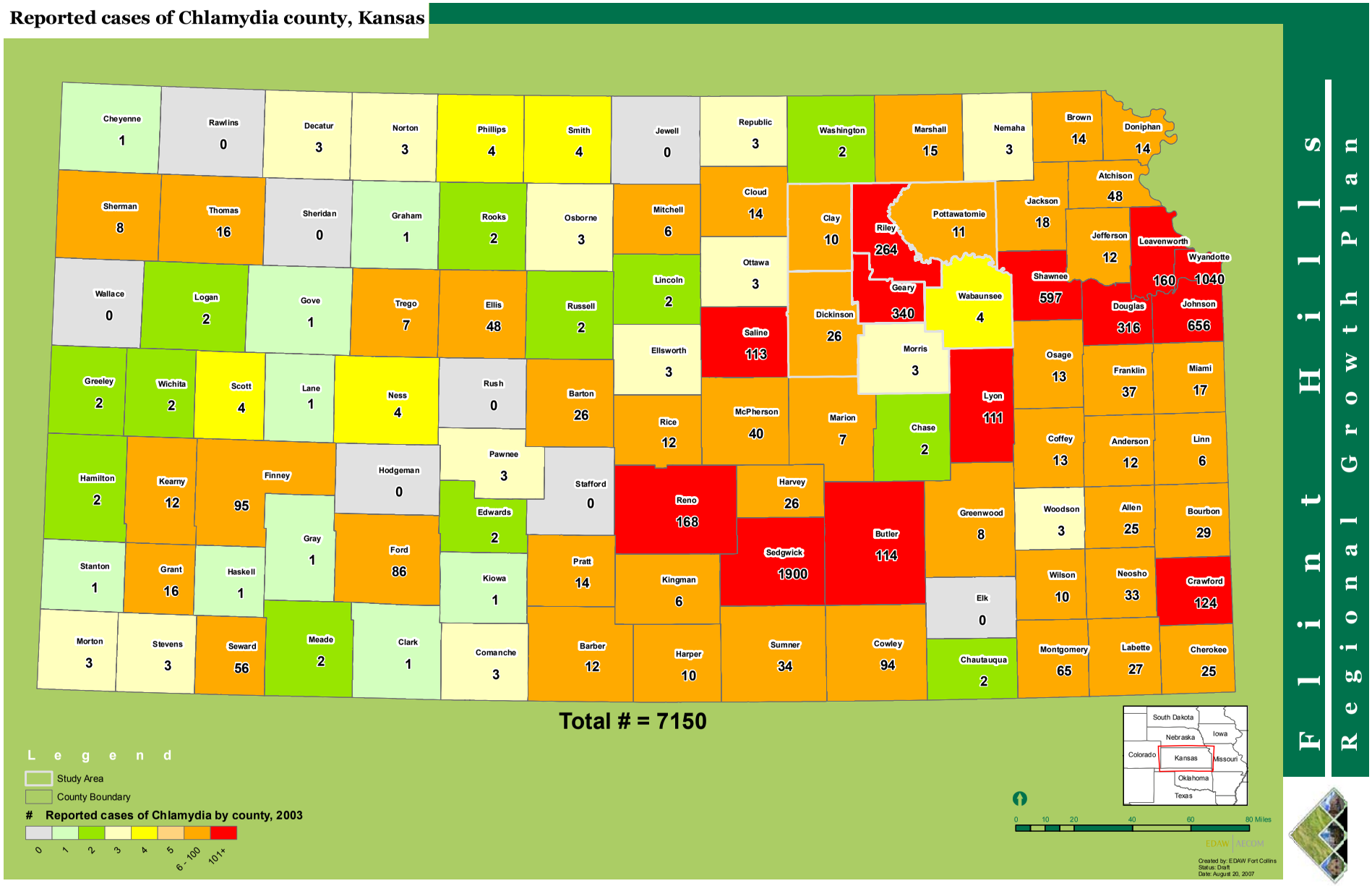
Map HC.4 - Prevalence of AIDS Cases by County and by Region, Kansas



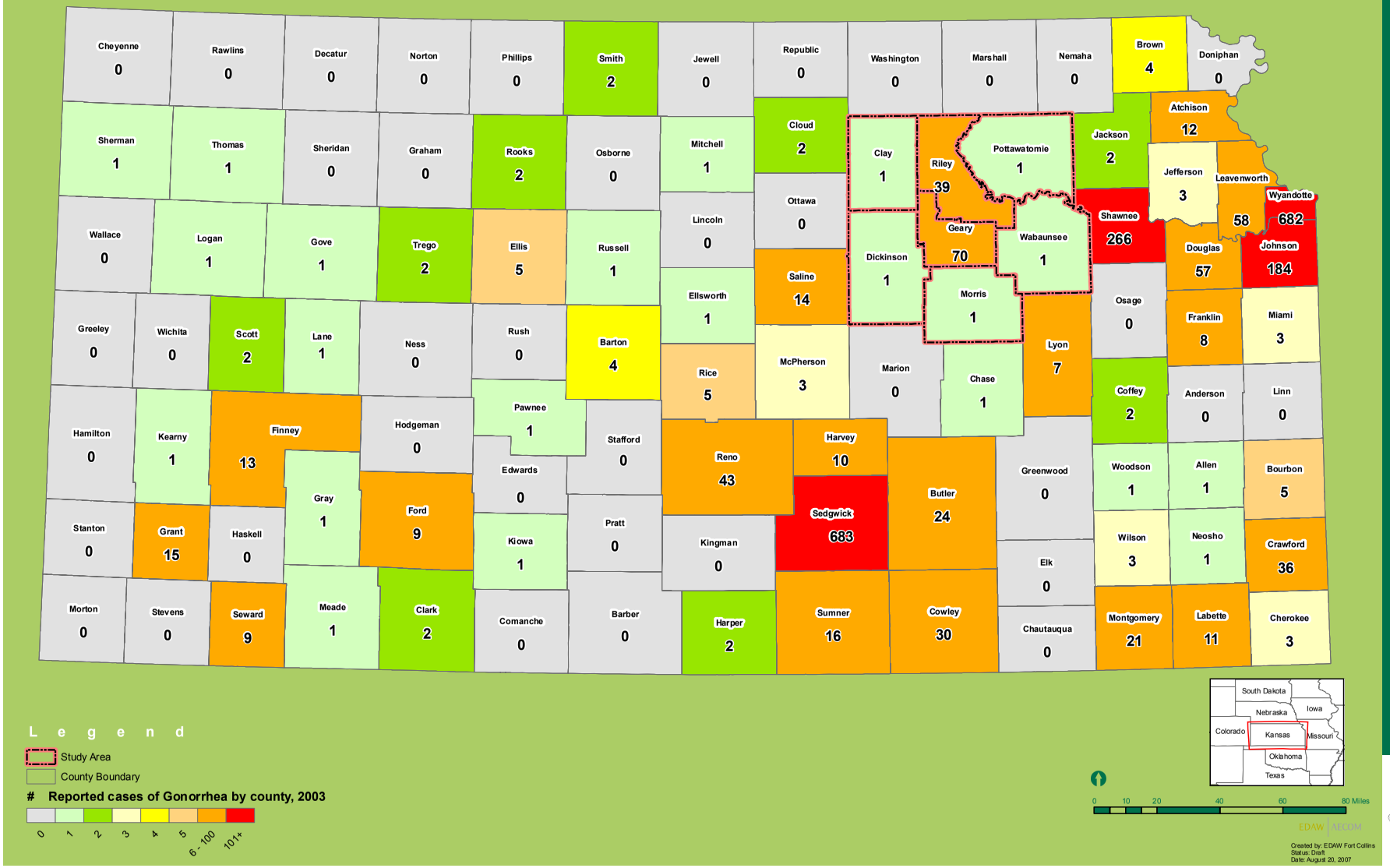
**Number of clinics that provide immunizations to children by county and number of resident children ages 0-5, Kansas 2006**



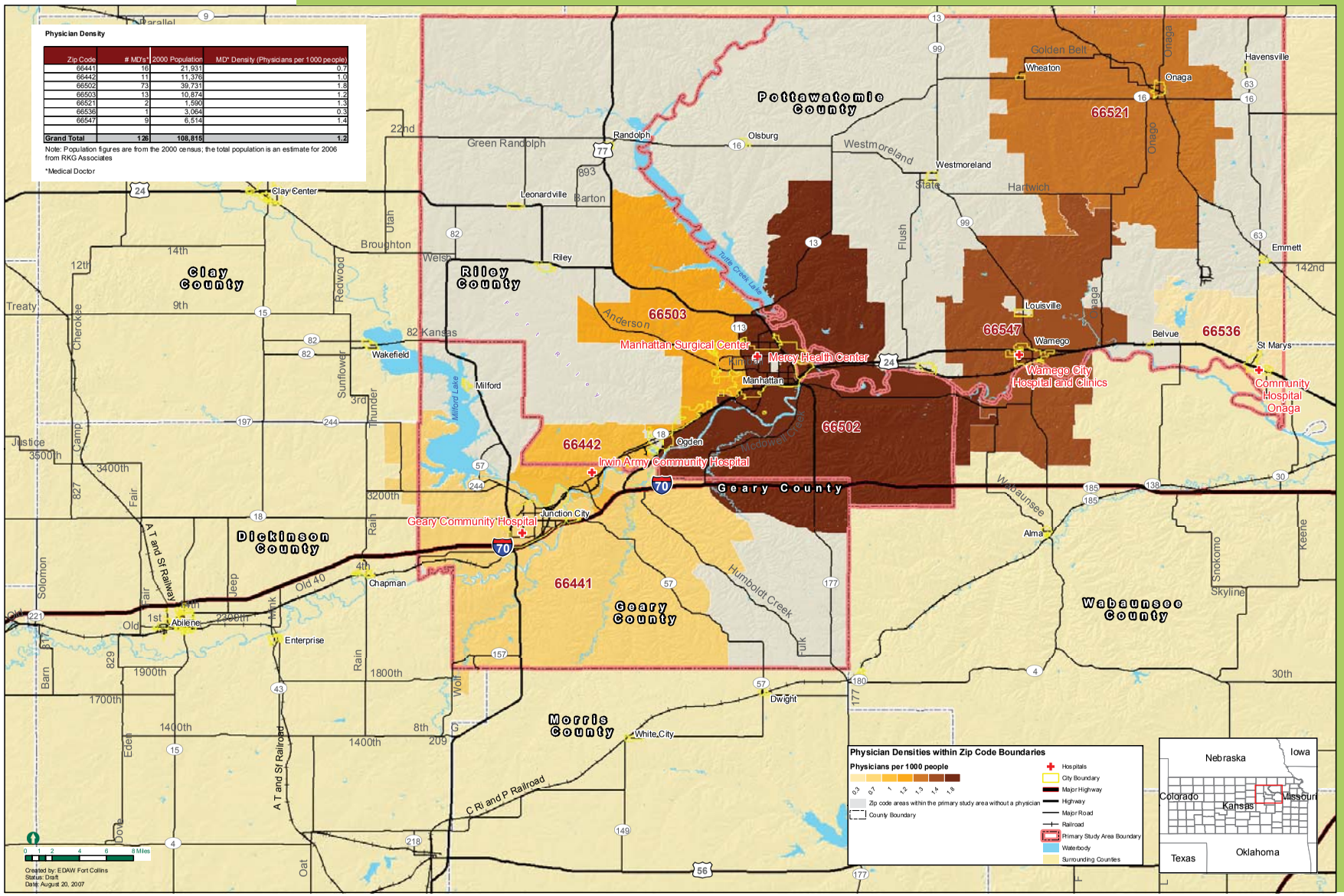
Map HC.6 - Reported Cases of Chlamydia by County, Kansas



## Reported cases of Gonorrhea by county, Kansas



# Physician Densities



# Health Care and Mental Health


## A. Introduction and Methodology

### *A.1 Introduction*

Communities surrounding Fort Riley will experience significant population growth over the next 5 years as a result of the Department of Defense's implementation of the Base Realignment and Closure (BRAC) initiative of 2005. This component of the Flint Hills Regional Growth Plan addresses the incremental health care and mental health care infrastructure requirements necessary to meet increased demand.

The Flint Hills area's quality of life depends in large part upon the availability of quality health care services to promote wellness, treat and cure illnesses, and manage chronic and debilitating conditions. Accurately assessing and then successfully providing the right amount of service coverage is therefore essential to maintaining a healthy, prosperous and sustainable community.

### *A.2 Methodology*

Compiling data and performing an analysis of the health care environment requires the assistance of informed providers from the Flint Hills region and beyond. The consulting team gathered information in face-to-face and phone interviews, from data clearinghouses and publicly available databases, and from internal Navigant Consulting, Inc. ("NCI") data-sets. Acquiring reliable data laid the foundation for the analysis of health care utilization trends, the assessment of any current gaps in service provision, and prediction of future needs.

In February 2007, NCI participated in a series of stakeholder sessions to discuss the impacts of population growth over the next five years. Over a dozen face-to-face interviews gave an overview of current or planned service delivery resources. Subsequent interviews explored health care provider capacity limits, as well as planned expansion projects intended to accommodate the population growth.

# B. Baseline Analysis and Background

*B.1 Study Area*

For purposes of assessing health care infrastructure, this analysis will focus on the three-county area (herein referred to as "Flint Hills" or "primary study area") of Geary, Pottawatomie, and Riley.

*B.2 Upcoming Troop Realignments*

Fort Riley will experience an increase in troop strength over the next 5 to 10 years. According to the February 2007 issue of *Big Red One and Fort Riley Community Update*[1], 10,060 soldiers lived in the Flint Hills region in September 2005. By September 2006, 12,533 military personnel resided in the area, indicating that troop arrivals are already underway. The modeling results of the "Strategic Action Plan and Growth Impact Assessment for the Flint Hills Region," suggest that military related growth by 2012 will include 9,700 troops, 2,000 civilian workers, and another 17,000 persons consisting of military families and economic migrants.

*B.3 Relationship to Previous Plans and Studies*

This section of the study builds upon the chapter on health care in the "Strategic Action Plan and Growth Impact Assessment for the Flint Hills Region," a study completed by RKG Associates, Inc. in October 2006. That document identified the assumptions, issues, and growth projections associated with the increase in the military population at Fort Riley, identified the capacity limitations of the current health care infrastructure and projected the future need for inpatient beds, physicians, nurses, and behavioral health professionals.

# C. Key Issues and Assumptions

*C.1 Key Issues*

Health care and mental health care services in the Flint Hills region must both expand and adapt to meet future levels of demand. A variety of factors will continue to affect the delivery capacity of providers and the ability of residents to access needed care, including the following:

- Supply of physicians and other care providers;
- Availability of behavioral and mental health services, especially for troops returning from conflict zones in Iraq and Afghanistan and their families;
- Number of facilities and inpatient beds;
- Distribution of resources within the study area;
- Increases in service utilization and/or demand;
- Level of health insurance coverage in Flint Hills;
- Quantity and availability of providers accepting TRI-CARE payments to service military personnel and their dependants;
- Lifestyle issues associated with young populations, including binge drinking, STDs, and access to pre-natal care.

It is this section's objective to identify the degree to which both labor and capital resources must expand to meet future health care and mental health care demand.

[1] Big Red One and Fort Riley Community Update. [February 2007.]

*C.2 Assumptions*

## Population

This section analyzes health care demand based upon population increases as identified in the Expected Growth Scenario from the "Strategic Action Plan and Growth Impact Assessment" (see Table C-1). Close to one-half or 43 percent of the total baseline and military related growth for the three-county area (15,366 of 35,704) will be in the under 15 years of age cohort and another 34 percent in the 25-to-64 age group. The elderly over 65 will increase the most slowly at 2 percent, yielding a percent of population in this category (8.0 percent) that is well below the national average of 14 percent. The young age of this population reflects the presence of Kansas State University and Manhattan Christian College, as well as Fort Riley.

Table C.1. Tri-County Population Projections

| | 2006 | 2012 | % Growth since 2006 |
|---|---|---|---|
| Total Population | 111,846 | 147,550 | 31.9% |
| Under 15 | 24,139 | 39,505 | 63.7% |
| 15 to 24 | 23,458 | 30,663 | 30.7% |
| 25 to 64 | 54,336 | 66,582 | 22.5% |
| Over 64 | 9,913 | 10,800 | 8.9% |

## Utilization Rates

Hospital utilization rates vary widely across the country and within local communities.[2] For the purposes of this study, the analysis relies on regional utilization rates adjusted to reflect the most recent local inpatient data.

The source of the regional rates is the annual report "Hospital Discharge Survey" by the Centers for Disease Control and Prevention (CDC). It contains discharge information by location, age, and service line. [3]

The analysis applies the adjusted discharge rates for each age cohort to the region's projected population, providing a reliable estimate of the total hospital discharges in Flint Hills.

## Bed Supply

NCI calculated patient days by multiplying the number of projected discharges by the national average length of stay (ALOS) to obtain the region's expected total patient days. Dividing the annual days by 365 yields the average daily census (ADC) or the quantity of beds required to meet the region's future inpatient care needs.

## Physician Supply

Physicians comprise the foundation of the health care delivery system by virtue of their multiple roles in diagnosis, treatment, and patient management. An adequate supply of physicians is necessary to ensure a healthy community; therefore, NCI identified an adequate number of physicians by specialty in 2006. Comparing this result to the actual physician supply reveals how well the current system can meet demand.

Next, NCI projected the physician supply required to meet the demand of an increased population in the Flint Hills region. The analysis assumes that any physician over 65 years of age in 2006 will retire by 2012. Subtracting these physicians from the 2006 supply more accurately indicates the total number of additional physicians needed in 2012.

NCI used the firm's proprietary physician staffing model to calculate the number and type of physicians needed in 2006 and 2012. Using assumptions in regard to population size, types of insurance coverage, age, gender, and the median physician throughput statistics, the model determined the appropriate physician supply by specialty service.

[2] Dartmouth Atlas data

[3] Centers for Disease Control and Prevention, 2006. "National Hospital Discharge Survey: 2004 Annual Summary with Detailed Diagnosis and Procedure Data."

### Nurse Supply

The analysis assessed the supply of nurses within the study area by aggregating data from the American Hospital Association's 2007 Hospital Planning Database and benchmarking the results against state and national nurse density ratios.

### Mental Health Services

NCI conducted interviews with mental health staff and reviewed the supply of physicians and patient wait times to identify potential gaps in mental health service coverage. Mental health issues have become an increasingly public topic in military life, thus warranting a heightened review of current practices.

# D. Existing Inventory

*D.1. Current Hospital Supply*

The six local hospitals in the study area offered 435 staffed beds, incurred 11,545 inpatient admissions, and provided 471,528 outpatient visits in 2006.

Mercy Regional Health Center had the largest number of patient admissions (6,710) and delivered the most babies (882) in 2006. According to its CEO, Dick Allen, Mercy "provides care to a large number of military personnel who either opt out of receiving care from Irwin or as a result of Irwin not offering certain treatments." [4]

Table D.1[5] shows that the hospitals in Flint Hills range from a four minute drive time to a 98 minute drive from Fort Riley (1.7 miles to 56 miles).[6] The region's largest medical centers—Geary Community Hospital and Mercy Regional Health Center—are a 14 minute and 25 minute drive time away from the post, respectively.

[4] Allen, Dick., Personal Interview; February 2007.
[5] American Hospital Association, 2006, Annual Hospital Metrics
[6] Google Maps. www.google.com/maps.

Table D.1. Hospitals in Tri-County, 2006

| Hospitals | Distance from Fort (miles) | Driving Time (miles) | County | Staffed Beds | Admissions | OP Visits | Births |
|---|---|---|---|---|---|---|---|
| Irwin Army Community Hospital | 1.7 | 4 | Geary | 44 | 993 | 150,646 | 270 |
| Geary Community Hospital | 6.4 | 14 | Geary | 69 | 2,086 | 172,016 | 271 |
| Manhattan Surgical Center | 16.3 | 25 | Riley | 7 | 353 | | |
| Mercy Regional Health Center | 16.3 | 25 | Riley | 121 | 6,710 | 101,338 | 882 |
| Wamego City Hospital | 29.7 | 44 | Pottawatomie | 18 | 360 | 22,611 | 0 |
| Community Hospital Onaga | 56 | 98 | Pottawatomie | 25 | 1,043 | 80,007 | 73 |
| **Totals** | | | | **284** | **11,545** | **526,618** | **1496** |

*D.2 Inpatient Admissions*

In 2006, there were 11,545 admissions in Flint Hills.[7] As Table D.2 shows, the majority of these admissions (8,940) were to a medical/surgical bed and the other 2,573 were split almost evenly between psychiatric, pediatric, and obstetric units.

Table D.2. Hospital Admissions by Bed Types

| Bed Type | Admissions |
|---|---|
| Med/Surgical | 8,940 |
| Ob/Gyn | 821 |
| Pediatrics | 946 |
| Psychiatric | 838 |
| **Total** | **11,545** |

Identifying the origin of patient admissions to the hospitals in Flint Hills provides local providers with an understanding of how health care utilization varies across the study area.

As a result of the higher population in the southwestern portion of the study area, more admissions originated from the areas east and south of Fort Riley than to the northern and northeastern portions of Flint Hills. Map HC-1 illustrates the admission origin for hospitals in Flint Hills paired with population density across the region.[8]

[7] American Hospital Association (AHA), 2007; Kansas Hospital Association (KHA), 2007.

[8] Kansas Hospital Association, 2007.

Table D.3[9] provides the market share breakout by county for Geary Community, Mercy Regional, Wamego City, and Community Hospital of Onaga. Geary Community has the highest market share within its county, while Mercy Regional has the highest market shares in Riley and Pottawatomie Counties.

RKG Associates projected Geary County to have the highest population growth (17,040) in the study area by 2012, followed by Riley (15,366) and Pottawatomie Counties (3,214).[10] The strong presence of Geary Community Hospital and Mercy Regional Medical Center in these areas is expected to result in higher inpatient growth at their facilities than at Wamego City Hospital or Community Hospital Onaga.

*D.3. Inpatient Bed Analysis*

According to the AHA, there were 284 total hospital beds or 2.5 per 1,000 population in the study area in 2006. This ratio exceeds the national average, but falls below the state average, indicating that bed supply may be able to absorb some of the projected growth in inpatient demand by 2012.

As described in the previous section, there were 11,545 inpatient admissions in 2006.[11] With an average length

[9] Kansas Hospital Association, 2007

[10] Loc. cit., RKG Associates, October 2006.

[11] Loc. cit., AHA 2007; KHA, 2007.

Table D.3. Hospital Market Share by County

| | Community Hospital | Mercy Regional Health Center | Wamego City Hospital | Community Hospital Onaga |
|---|---|---|---|---|
| Geary County | 74% | 25% | 0% | 1% |
| Pottawatomie County | 1% | 43% | 23% | 33% |
| Riley County | 1% | 98% | 0% | 1% |
| Rest of Kansas | 14% | 63% | 3% | 20% |
| Out of State | 31% | 61% | 1% | 6% |

of stay (ALOS) of 4.0 days,[12] these admissions translated into 46,180 total hospital patient days (multiplication of admissions by ALOS). Dividing the total number of patient days by 365 (the number of days in a year) results in an average regional daily census of 127 (number of beds in use, on average, per day in Flint Hills).

Table D.4. Comparison of Bed Supply to State and National Figures

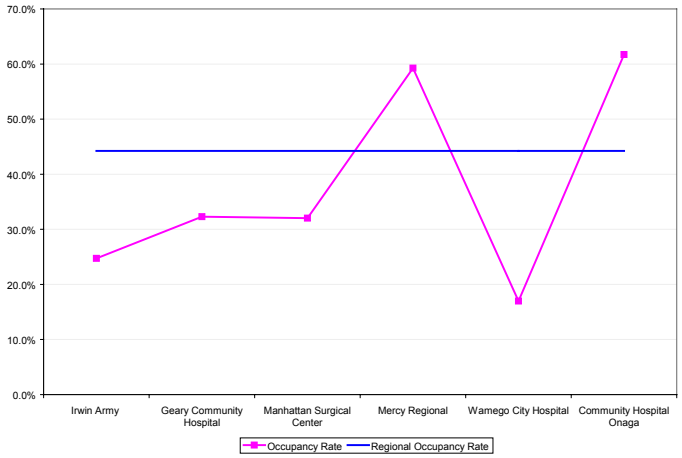
| | Beds/1,000 Persons | Number of Beds, 2006 |
|---|---|---|
| United States | 2.8 | 874,268 |
| Kansas | 3.8 | 10,503 |
| Flint Hills | 2.5 | 284 |

In 2006, Flint Hills' hospitals had significant excess bed capacity. A bed supply of 284 was available to meet an average daily census of 127, resulting in an average of 157 unoccupied beds per average day. This quantity of unused inpatient beds is large even when taking into consideration the seasonal fluctuation in patient demand. A regional average bed occupancy rate of 44 percent indicates that volume growth would be advantageous to hospitals looking to fill their inpatient bed resources.

While the region has an excess number of beds, at least one individual hospital, Mercy Regional Health Center, may need to invest in new beds to accommodate a growing demand for its services and high average daily occupancy rates. Shifting patients from this facility to others to obviate the need for new bed construction is unrealistic given the increasingly competitive health care environment.

Excess regional bed capacity is the sum of all of the hospitals in Flint Hills and does not indicate an excess supply at individual hospitals. Figure D.1 illustrates the differences in bed occupancy between the six inpatient providers in Flint Hills.

Figure D.1 Average Bed Occupancy Rates, 2006




** Hospital names were not identified for this Figure and were designated by letter.*

Figure D.1 shows that four hospitals are below the regional occupancy rate of 44 percent and two above – Mercy Regional and Community Hospital Onaga. While the facility in Onaga is already at 61 percent occupancy, their location does not necessitate growing their inpatient bed supply based on an analysis of the location of population growth.

The two hospitals that are expected to absorb the majority of the population growth, Mercy Regional and Geary Community Hospitals, have the two highest occupancy levels (60 percent and 32 percent according to the latest available figures). Interviews with Mercy Regional executives indicate that the current census levels are now closer to 80 percent, and that they are preparing for future growth through facility additions.

[12] Hospital Benchmarks, 2007

*D.4 Current Physician Supply*

According the American Medical Information, Inc., 126 total practicing physicians from 23 different medical specialties practice in Flint Hills (See Table D.5).

Table D.5. Physician Supply by Specialty

| Specialty | # | Specialty | # |
|---|---|---|---|
| Bariatrician | 1 | Ophthalmology | 3 |
| Cardiovascular Disease | 2 | Orthopedic Surgery | 6 |
| Dermatology | 6 | Otorhino-laryngology | 3 |
| Emergency Medicine | 2 | Pathology | 4 |
| Family Practice | 25 | Pediatrics | 10 |
| Gastroenterology | 1 | Plastic Surgery | 1 |
| General Practice | 10 | Psychiatry | 5 |
| General Surgery | 6 | Pulmonary Disease | 2 |
| Internal Medicine | 15 | Radiation Oncology | 1 |
| Medical Oncology | 1 | Radiology | 5 |
| Neurology | 3.8 | Urlology | 3 |
| Obstetrics & Gynecology | 12 | | |

This supply results in a density of 1.13 physicians per 1,000 population. As Table D.6 illustrates, Flint Hills' density is lower than state and national rates of 1.44 and 2.08 respectively.

Table D.6. Physicians per 1,000 Population, 2006

| | Physicians/ 1,000 People | # of Physicians, 2006 |
|---|---|---|
| United States | 2.08 | 627,797 |
| Kansas | 1.44 | 3,967 |
| Flint Hills | 1.13 | 126 |

Of the three counties, Riley has the highest density with 1.38 physicians per 1,000 population (Table D.7).[13] Geary and Pottawatomie Counties have densities of 0.94 and 0.60 respectively.

Table D.7. Physician Distribution in Flint Hills

| County | Zip Code | # of Phys. | Pop. | Phys. Dens. |
|---|---|---|---|---|
| Geary | 66441 | 16 | | |
| | 66442 | 11 | | |
| Total | 1.13 | 27 | 28,744 | 0.94 |
| Pottawatomie | 66521 | 2 | | |
| | 66536 | 1 | | |
| | 66547 | 9 | | |
| Total | | | 19,860 | 0.60 |
| Riley | 66521 | 73 | | |
| | 66536 | 13 | | |
| | 66505 | 1 | | |
| Total | | 87 | 63,242 | 1.38 |
| **Grand Total** | | **126** | **111,846** | **1.13** |

Comparing physician densities is a method of identifying an excess or deficiency in labor supply; however, a lower density does not necessarily show an inability to meet patient volumes. Utilization rates drive labor supply needs;

[13] American Medical Information Group, 2006. Physician counts provided by the AMI Group for this study.

therefore, regional demographics and patient throughput affect the level of service required within a community.[14]

Map HC-8 is a physician density map that indicates those communities within Flint Hills that may experience barriers to care resulting from a lack of locally accessible physicians. Physician supply varies dramatically across the entire study area, with a high number of doctors practicing in and around Manhattan and very low numbers in the northern areas of the region. The lack of practicing physicians in northern Riley and Pottawatomie Counties may limit health care access for certain residents, particularly those without a reliable means of transportation to the closest treatment facility.

### *D.5 Current Nursing Supply*

A national shortage of nurses affects the ability of local hospitals to recruit and retain nurses. Interviews with hospital executives and staff at Mercy Regional and Pawnee Mental Health indicate that the nursing shortage in the Flint Hills is a significant issue.

Nurses are the essential front line staff in meeting the patient care responsibilities of hospitals. The rising inpatient care needs of an aging population will continue to strain the nursing supply, particularly as fewer personnel enter the profession and as practicing nurses grow older. A regional plan to recruit young nurses to Flint Hills is an important goal in ensuring the health care infrastructure's ability to care for patients.

Table D.8. Nurse Supply in Flint Hills, 2006

| Location | Nurses/1,000 Persons | # of RN's, 2005 |
|---|---|---|
| United States | 4.0 | 1,198,652 |
| Kansas | 4.31 | 11,918 |
| Flint Hills | 3.22 | 360 |

The nurse to population ratio in Flint Hills falls well below state and national benchmarks indicating a potential nurse shortage. On average, there is one fewer nurse per 1,000 population in Flint Hills than in the state of Kansas.[15] To assess more accurately if the current nurse supply is meeting demand, NCI performed a search of nursing vacancies at the hospitals in Flint Hills. The latest search of the employment directories identified at least 39 job openings for registered nurses (RN) and 5 openings for licensed practical nurses (LPN). Additional positions may be available in the medical/surgical unit at Geary Community Hospital; however, the bulletin stating "nurse openings" was counted as one opening.[16] The 39 open positions represent a nurse shortage of 11 percent in the region.

14 An actual gap analysis of the current and projected supply and demand for physicians follows in a later section of this report.

15 AHA, 2007. Nursing supply extracted from the AHA's Health Care Quick Disk for national, state, and Flint Hills' comparisons.

16 Individual hospital sites accessed on May 15, 2007

*D.6 Mental and Behavioral Health*

From 2002 to 2005, Kansas' penetration rate for mental health services increased from 32.9 patients per 1,000 population to 37.5 per 1,000 population. During the same time, the national rate for mental health services remained constant at 19.8 per 1,000 population, almost one-half the state's rate.

A number of local providers deliver mental health services to Flint Hills' residents. Table D.9 lists the main centers for care and their service offerings. [17] [18]

Service volumes have increased by 5.1 percent (112,949 to 118,737 cases) in the Community Mental Health Centers (CMHC) across Kansas from 2004 to 2006 and by 16 percent at Pawnee Mental Health (4,329 to 5,009 cases)[19].

17 Pawnee Behavioral Heatlth Center, Cole, R. Personal interview. February 21, 2007.

18 Mercy Regional Health Center, Interview, May 10, 2007

19 The Mental Health Consortium, AIMS Data Summary Reports, 2007.

Table D.9. Selected Mental Health Providers in Flint Hills, 2006

| Institution | Target Population | Services | Comments |
|---|---|---|---|
| Irwin Army Community Hospital | Active military | Mental health screenings, alcohol and substance abuse treatment, marital and family therapy, individual and group therapy, family advocacy | The quantity of services rendered and ability to meet future needs is undetermined due to a lack of data from the facility. |
| Pawnee Behavioral Health Center | Active military, military families, community members | Mental health screenings, alcohol and substance abuse treatment, individual land group therapies, mental health treatment | • Wait times for initial evaluation range from 9 days (Clay Center) to 11 days (Junction City) and from 1 to 6 weeks for medical evaluation.<br>• It appears there is only minimal room for facility growth.<br>• Difficulty in recruiting and retaining staff as a result of salary inflation for certain provider types.<br>• Care is provided to any person requiring service without regard of their ability to pay. |
| Mercy Regional Health Center | Inpatient services | Inpatient mental and behavioral health, emergency care, individual and group counseling | Recent demand increases for behavioral and mental health care. Approximately 20 percent of patient population is TRI-CARE enrollees. Wait times for outpatient evaluations are approaching one week. |
| Private Practice Providers | Community members, military families, active military | Individual and group counseling | Unknown |

*Across the state, providers served over 102,600 total clients, including 3,515 in state hospitals. Just over half of the clients were female and 57 percent were between the ages of 21 and 64.*

Pawnee's large two-year growth can be attributed to various factors, including an increased demand for services from military personnel and dependents, who may not be TRI-CARE eligible.[20]

Within the study area, Riley County has incurred the largest growth in patients seen (21%) and hours of service provided (50%) since 2005. Riley County also has the highest percentage of patients that are TRI-CARE eligible (6%).

Tremendous growth has occurred in Riley County; 439 of the 680 new patients since 2005 were in Riley. In addition, 293 of the new patients were under 14 years of age and another 211 cases were between 15 and 24.

As a result of the increased demand, current wait times for a routine case are between 9 days in Riley County and 12 days in Geary County.[21] Additionally, wait times at for an urgent case range from 1 to 4 days (2.0 in Riley Co., 1.3 in Pottawatomie Co., and 3.7 in Geary Co.);[22] however, all emergent clients are seen immediately regardless of where they present for service or time of day. [23]

Pawnee Mental Health appears to have some facility constraints in meeting current and projected volumes at its Manhattan location. A lack of expansion options in its current building may prevent Pawnee Mental Health from increasing capacity. In addition, according to interviews, Pawnee Mental Health has struggled in recruiting clinicians to meet higher demand.

Despite the rapid escalation in demand for services, Pawnee Mental Health scores above the state average in client satisfaction in each of the five indicators for care. As Figure D.4 shows, Pawnee Mental Health has a 91 percent client

Figure D.2. Age Distribution of Mental Health Services in Kansas, 2004

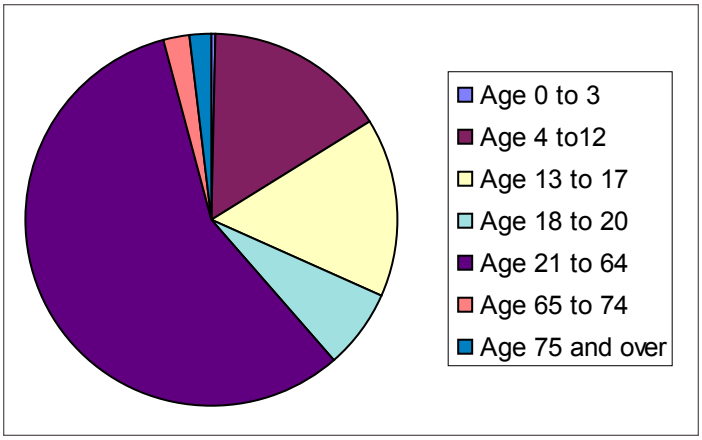



Figure D.3. Service Area Change in Volume and Patient Care Hours, 2005 to 2007

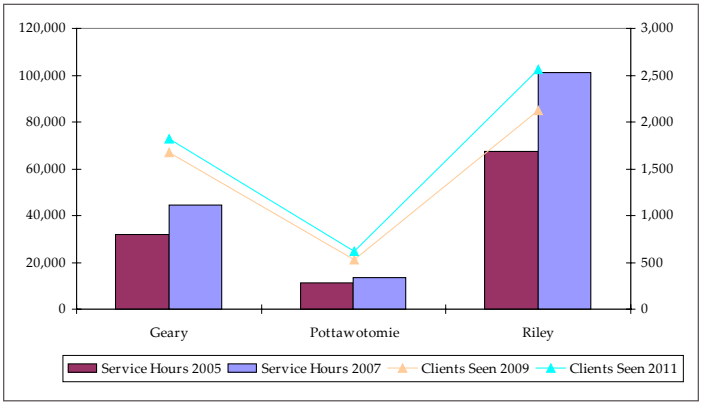
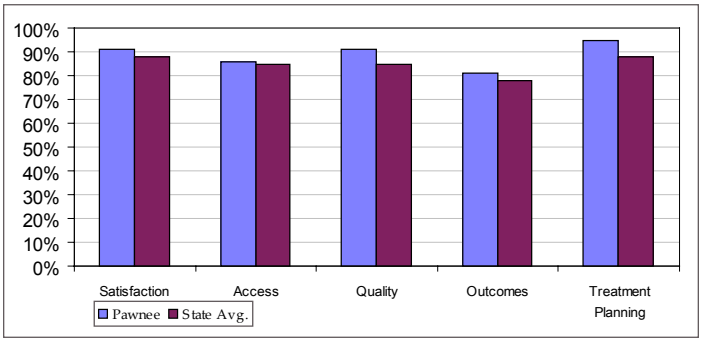



Figure D.4. Client Satisfaction Comparison, % of Clients Indicating Satisfied or Very Satisfied, 2005




20 Statistics in this report reflect numbers from the Pawnee CMHC service area which includes counties outside of the study area for this report.

21 Pawnee Mental Health Services; Personal Interview; February 2007.

22 Pawnee Mental Health Services; Data Provided; July 2007

23 Wait times at Pawnee Mental Health provided in January and may currently be less resulting from hiring additional staff and wait times for outpatient care at Mercy Regional Health Center and one private care clinic were between 5 to 7 days.

satisfaction score and 86 percent score for access to care.[24] Pawnee Mental Health scores better than the national average for each of the five indicators of care.

While Pawnee Mental Health data indicate a 10-day wait for routine care, 86 percent of respondents were either satisfied or very satisfied with the ease of accessing care. Pawnee Mental Health appears to be filling an important community need by offering care to every person regardless of their ability to pay. However, the arrival of more troops at Fort Riley will exacerbate the challenges of limited space and clinician volume, and thus affect the ability of Pawnee Mental Health to provide care to the growing military population and the uninsured.

### *D.7 Caring for the Uninsured* [25]

In July 2005, a group of retired physicians established an evening medical clinic providing basic services to uninsured patients free-of-charge. The clinic, currently housed in the North Central - Flint Hills Area Agency on Aging office in Manhattan, has received over 1,000 individuals, and current monthly volumes have risen to 140 cases. The demand for services by the uninsured has increased beyond current capabilities resulting in a two-week wait time for care. The City of Wamego operates a similar clinic.

According to an interview with the Manhattan-based director, the clinic serves a "growing number of military significant others that do not have health insurance." While it cannot be confirmed, a number of sources have indicated that the uninsured dependents, typically unmarried partners of military members, are having difficulty accessing care since they do not receive medical benefits under the TRI-CARE program. Though the clinic is a free service option for military families, lengthening wait times and restricted care offerings limit its ability to fill an emerging need.

This clinic is currently open every Tuesday and Thursday evenings; however, it is considering ways of extending the operating hours to a third evening. Recruiting new clinicians to donate their time would equip the clinic with enough staff to provide care to hundreds of additional patients per year.

Two full-time staffed patient coordinators, employees of Mercy Regional Health Center, are responsible for recruiting physicians to donate their time to the clinic, scheduling physician clinic time, and handling patient needs. The clinic anticipates instituting income guidelines to allow patients 200 percent below the federal poverty level to continue receiving care at the clinic, while working to find other sources of care for those that will not qualify.

Uninsured patients across the United States often rely on the most expensive outlet for routine care—the emergency room. These clinics deliver basic services to the population, reducing the number of patients forced to seek care in local emergency departments.

### *D.8 Immunization Programs*

According to the Kansas Health Institute (KHI), the overall funding levels for immunization programs were sufficient to immunize 90 percent of Kansas children under 3 years of age; however, structural barriers and a shortage of primary care providers lowered actual immunization rates.

Shifting funds from one financing stream to another, the lag time between introduction of vaccines until use by public programs, and the high cost of new vaccines pose obstacles to ensuring all children access to vaccinations. [26]

Currently, 78 percent of Kansas children between 19 and 35 months of age have received the full course of recommended vaccines, placing the state 42nd overall in the United States. [27]

24 Kansas Department of Social and Rehabilitation Services, State Adult Consumer Outcome and Satisfaction Reports 2006

25 Finnegan, Megan; Phone Interview, May 18, 2007

26 Kansas Health Institute, October 2006. "Financing Childhood Immunizations in Kansas: Report to the Immunize Kansas Kids Steering Committee"

27 Kaiser Family Foundation, 2006. "Percent of Children Age 19-35 Months Who Are Immunized." Accessed on May 13, 2007

All Kansas children are at least partially covered for the costs related to immunizations, yet less than 80 percent of Kansas children between 19 and 35 months of age have received the full course of recommended vaccinations (Hepatitis B, DPT, HIB, Polio, MMR, and Varicella). The federal government provides over 50 percent of all funding to the immunization series for Kansas children, including funding for Medicaid eligible children, uninsured children up to age 18, and underinsured children through federally qualified and rural health clinics.[28]

Federal funding for vaccines in Kansas has been volatile with a large decrease in funding from 2003 to 2004 ($3.6 to $0.8 million) followed by a large increase from 2004 to 2005 ($0.8 to 1.8 million); however, overall funding has decreased by half during this two-year period. [29] In 2005, federal funding was the highest source of payment for childhood vaccinations, contributing to 34 percent of the total costs.

Self-insurance and commercial insurance payments funded 27 percent of the costs, while the state government paid 5 percent of costs. [30] As the largest source of funding for immunization programs, erratic funding by the federal government may result in gaps in access for children needing vaccines. State funding should seek to eliminate these gaps regardless of federal funding streams.

Commercial insurance plans are required to provide the "first dollar coverage" for childhood immunizations by covering routine and necessary vaccines for children up to 6 years of age without a co-payment, deductible, or co-insurance.

Commercial payment has increased by 15 percent from 2003 to 2005 ($3.7 to 4.3 million) for immunization care.

States with the highest immunization rates have targeted the provider community, rather than parents, with education material and participatory incentive programs. In a study interviewing 11 states on their immunization program, the top performing states offered statewide universal coverage. Table D.10[31] shows the results of the study with corresponding national rankings.

Table D.10. Selected State Programs and Rankings, 2006

| Program | States | National Immunization Rank |
|---|---|---|
| Universal Purchase | Massachusetts | 2 |
| | Rhode Island | 4 |
| | New Hampshire | 6 |
| | Vermont | 11 |
| Universal Select | Connecticut | 3 |
| | North Carolina | 21 |
| | South Carolina | 6 |
| VFC and Underinsured | Minnesota | 11 |
| VFC and Underinsured Select | Kansas | 42 |
| VFC Only | Iowa | 6 |
| | Mississippi | 14 |
| | Nebraska | 21 |

According to data from the AHA, there were approximately 1,500 births in the study area in 2004.[32] KHI reports that the average costs of immunizing children with the vaccine series is between $412.10 and $611.43 per child;[33] therefore, the total cost to immunize every child in the three counties would have been between $618,150 and $917,145.

28 Loc. cit., KHI, 2006.
29 Loc. cit., KHI, 2006
30 Loc. cit., KHI, 2006
31 Loc. cit, KHI, 2007
32 Loc. cit., AHA, 2006
33 Loc. cit., KHI, 2006

Table D.11 shows that Flint Hills has 18 more patients per doctor at vaccination clinics than the state average. Of the three counties, Geary County has the highest patient load with 65.9 per provider – the 13th highest rate of the 105 counties in the state.[34] The three counties are grouped into the "semi-urban area" along with 29 other counties. The patient load to provider ratio of 35 for the semi-urban counties is much lower than in Flint Hills.

Table D.11 indicates that Pottawatomie has five clinics providing immunizations, Riley three, and Geary one, but a number of surrounding counties have either none or one clinic to provide immunizations (Wabaunsee, 0; Morris, 1; Clay, 0; Marshall, 0; Washington, 0, Republic, 0; Cloud, 0; Clay, 0; Ottawa, 0). A lack of access to clinics in surrounding communities diminishes their ability to meet patient needs and will result in the in-migration of patients to the three-county area, further stressing the patient per provider load.[35]

### *D.9 Sexually Transmitted Diseases*

The occurrence of sexually transmitted diseases (STD), including AIDS, syphilis, Chlamydia, and gonorrhea are of concern to state and national public health officials.

34 Kansas Health Institute, January 2007. "Who Vaccinates Our Children? A Map of the Immunization Delivery System in Kansas"

35 Loc. cit., KHI, January 2007.

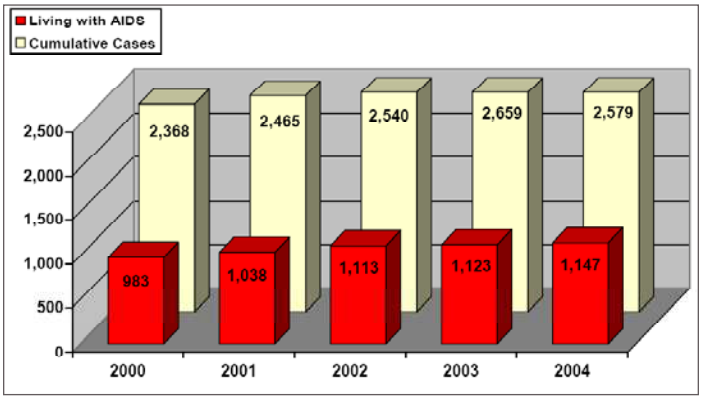
## AIDS

In 2004, Kansas reported 2,579 AIDS cases.[36] Over 70 percent of total HIV cases were Caucasians, followed by African Americans (17 percent), and Hispanics (8 percent).

Sixty-one percent of the cases were transmitted through sexual encounters between men.

Figure D.5 shows that the number of cumulative AIDS cases in Kansas has remained relatively stable over the past five years with increases in each of the years between 2000 and 2003 followed by a decline in 2004.[37]

Figure D.5. AIDS Cases, 2000 to 2004




36 Center for Disease Control and Prevention. "HIV/AIDS, STD, and TB Prevention."

37 AIDS Action, State Facts. "HIV and AIDS in Kansas"

Table D.11. Comparison of Vaccination Clinics between Kansas and Flint Hills, 2006

| | Primary Care Clinics | Clinics Offering Immuniz. | | VFC Clinics | | # Children 0 to 5 | Birth Cohort | Patient Load per Clinic | # of Doctors | Patient Load per Doctor |
|---|---|---|---|---|---|---|---|---|---|---|
| | | # | % | # | % | | | | | |
| Kansas | 424 | 277 | 65.3 | 141 | 50.9 | 188,708 | 37,742 | 136 | 1,153 | 32.7 |
| Flint Hills | 13 | 9 | 69.2 | 3 | 33.3 | 7,572 | 1,514 | 168 | 30 | 50.5 |
| Geary | 4 | 1 | 25.0 | 1 | 100 | 2,635 | 527 | 527 | 8 | 65.9 |
| Pottawa-tomie | 6 | 5 | 83.3 | 2 | 40.0 | 1,351 | 270 | 54 | 9 | 30.0 |
| Riley | 3 | 3 | 100 | 0 | 0.0 | 3,586 | 717 | 239 | 13 | 55.2 |

As Map HC-4[38] shows, Riley County had 24 AIDS cases, Geary 23, and Pottawatomie 4. Flint Hills has the highest number of regional cases in northeast Kansas with the lone exception of the counties immediately adjacent to the more populous Kansas City. Prevention efforts should focus on reaching out to the local college campuses and military post.

### Gonorrhea and Chlamydia

The two most frequently reported STDs in Kansas in 2003 were gonorrhea and Chlamydia with 7,150 and 2,595 cases respectively. Chlamydia and gonorrhea are the leading causes of pelvic inflammatory disease (PID) and serious complications of PID include ectopic pregnancy (which leads to fetal/embryonic death) and infertility. Chlamydia is the leading cause of infertility in the state of Kansas.[39]

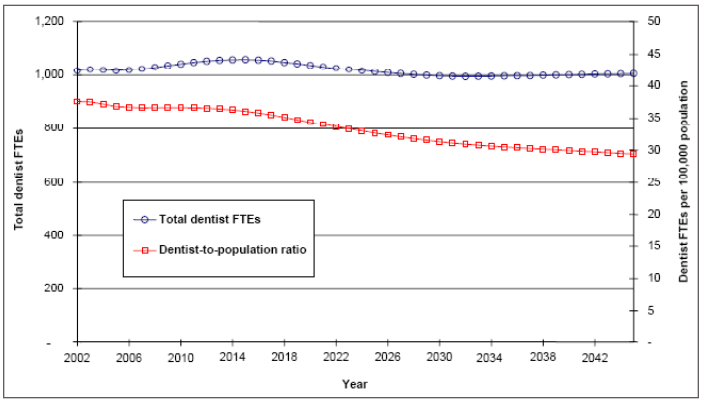
## *D.10 Oral Health*

Dental health has significantly improved in the U.S. over the last several decades as a result of widespread fluoridation of public water supplies, increased utilization of preventative dental care, and a rising expectation of healthy teeth. According to KHI, state levels of access to dental care are slightly higher than the national average; however their study revealed significant gaps in access for low-income and rural populations. [40]

According to the KHI report, the American Dental Association predicts a decline in the dentist-to-population ratio from 5.5 per 10,000 in 1994 to 5.0 by 2025. The dental workforce in Kansas is below the national average with 4.4 dentists per 1,000 in 2002 and a projected ratio of 3.8 by 2025, thereby, ranking Kansas 33rd in dentists per capita in the U.S.

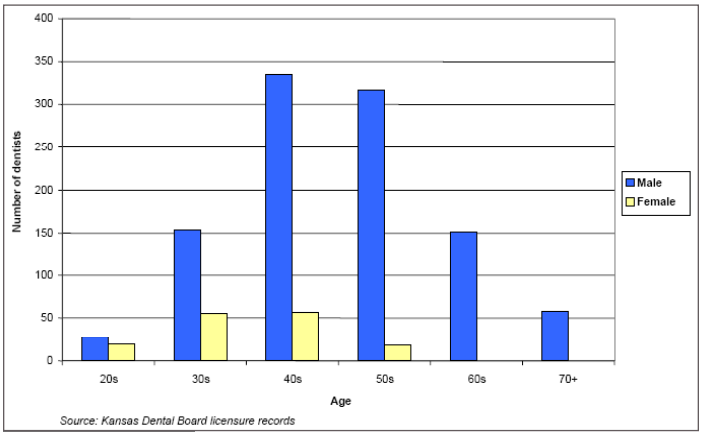
As Figure D.6[41] shows, the dentist-to-population ratio is predicted to steadily decline from 2010 onwards with a similar reduction in the overall dentist supply from 2015 through 2025.

Figure D.6. Projection of Total Dentists and Dentist-to-Population Ratio in Kansas




The projected decline in dentists is a direct result of the aging of dental providers. Predictions indicate that the proportion of the dental workforce over age 65 will double in the next 15 years; thereby, resulting in a large number of retirements and a corresponding shrinking of the labor supply. According to an interview with Teresa Schwab, the Director of Oral Health Kansas, more than half of the current supply of dentists is over 50 years of age.[42] The current age distribution is shown in Figure D.7.[43]

Figure D.7. Age Distribution of Dentists in Kansas, 2002




38 Kansas Department of Health and Environment, March 2004. "Kansas HIV/STD Surveillance Update"

39 Loc. cit., Kansas Department of Health and Environment, 2004.

40 Kansas Health Institute, January 2005. "The Declining Supply of Dental Services in Kansas: Implications for Access and Options for Reform."

41 Loc. cit., KHI, January 2005

42 Schwab, Teresa; Phone Interview; May 25, 2007.

43 Loc. cit., KHI, January 2005.

As a result of a dwindling number of dental providers, patients in Kansas will experience more difficulty in accessing dental care, especially individuals in rural areas and those without health insurance. According to a study of dental health in Kansas' children, 88 percent of third graders in North Central Kansas (the region including the study area) had dental decay, the highest percentage of any of the six regions.

According to a paper commissioned by the Geary Community Healthcare Foundation, eight to ten percent of children from Fort Riley had evidence of dental decay. The paper attributed the "out of control periodontal disease" to a low regional awareness regarding dental care, the heavy consumption of sugared soda, and a lack of private dentists.[44]

It does not appear that the poor dental health is a result of a lack of dental insurance for Kansas' children since 91 percent of third graders in the North Central region are insured. The lack of dental awareness, as stated above, may result in an underutilization of care despite insurance status. Long drive times to access care may also act as a barrier to treatment. [45]

### *D.11 Public Health*

Public health departments are an essential component of the region's health care system, particularly for residents without health care coverage. Below is a summary of programs administered by the Junction City-Geary, Riley–Manhattan, and Pottawatomie Departments.

#### Junction City - Geary County Health Department

The Junction City – Geary County Health Department offers an array of clinical and support services to prevent disease investigate communicable disease, monitor the health status of the community, and educate the community about health issues, including:

- Teen pregnancy case management
- Prenatal classes
- Maternal and infant care program
- Women, infants, and children program
- Physicals and immunizations
- Preventative dentistry care for children 6 months to 18 years old
- Family Planning/Well woman exam
- Disease surveillance/education of infectious diseases and sexually transmitted diseases
- Immunizations
- Income based mammograms/sonograms
- Tobacco prevention/Cessation
- Community health education and environmental impact assessments
- Child care licensing and registration
- Health promotion program
- Environmental health services
- Junction City Youth Clinic

#### Riley County – Manhattan Health Department

The Riley County – Manhattan Health Department provides various clinical services and community programs to county residents, including:

- Breast & cervical cancer screening
- Family planning
- Flu shots and vaccines
- Communicable disease education

44 Geary Community Healthcare Foundation, 2006. "The Geary County Story"
45 Kansas Health Institute, 2004. "Smiles Across Kansas."

- Health education
- HIV/AIDS care and case management
- Low cost primary care for residents without medical insurance
- Family and Child Resource Center
- Family Connections
- Women, Infants, and Children program

**Pottawatomie County Health Department**

The Pottawatomie County Health Department delivers the following public health services to its residents:

- Children First Program, which promotes prenatal care, pregnancy education and parenting skills
- Child Guidance Clinic
- Child health and immunizations
- Family Planning Program
- STD examinations, health education, and referral services
- Women's health initiative
- Women, Infants, and Children program

Stakeholders representing public health departments noted a variety of ongoing challenges in caring for the region's residents, including an increasing number of uninsured military partners, a rise in the incidence of "lifestyle" issues associated with a young and transient population, such as STDs, binge drinking and pregnancies, the difficulty in recruiting and retaining medical personnel, and funding shortfalls.

*D.12 Konza Prairie Community Health Center* [46]

Konza Prairie has been providing care to the Junction City community since 1995 and has focused its efforts on expanded its service offerings to meet the unique needs of its patients. As a not-for-profit Community Health Center (CHC) partially funded by the federal government, Konza Valley offers a sliding fee scale to individuals who qualify for need based assistance in order to provide care to the poor and uninsured.

Konza Prairie accepts most major insurances, including Blue Cross, TRI-CARE, Medicare, and Medicaid and will reduce the complexity of navigating the insurance legalities by filling out any paperwork for its patients. In addition, Konza offers health coverage plans for local employers to help reduce their healthcare expenses.

Over the past two years, patient encounters at Konza have increased by 208% from 1,200 to 3,700. [47] Konza offers a low-cost prescription program, comprehensive primary care services, immunizations, mental health care, and will soon be launching a new dental clinic for Medicaid children.

Every Konza physician is TRI-CARE eligible, and as a result, the facility has seen tremendous growth from military members and their family members, specifically from the TRI-CARE prime program.

Konza currently has plenty of physical space and is planning to open a future satellite clinic to increase its service reach and offerings. The facility is always looking to recruit physicians, dentists, and mental health specialists to complement its current staff.

46 Konza Prairie Community Health Center Website, Accessed 2007
47 Dolan, M. Phone Interview, June 5, 2007

# E. Desired Level of Service

Regional population growth will strain the current health care infrastructure if new resources are not added to address increased volumes. Current service levels must be benchmarked to identify any changes resulting from expected population increases.

In Section J, four benchmark indicators are presented that can be used to monitor the performance of the region in meeting the health care needs of its residents. Health care providers should supplement these indicators with resource utilization benchmarks (e.g. bed utilization rates, appointment wait times, and physician utilization levels) to ensure that patients can access needed health services.

Benchmarking against current service levels does not guarantee adequate access to care. As later sections of this section demonstrate, current service levels are inadequate in some communities across Flint Hills as a result of a low number of physicians, long drives to providers, and the inability to access care for certain specialized services. Benchmarks that measure access across the region may obscure service level deficiencies in certain rural areas; therefore, each county and provider must assess opportunities for improving their local delivery system.

# F. On-going and/or Planned Projects

Enhancing the service delivery system in Flint Hills to meet future demands will require additional investments in buildings and equipment, as well as the recruitment of new physicians and other health care personnel. Health care leaders are aware of and planning for the expansion of the military installation by increasing their physical capacities and initiating physician recruitment efforts. The following are the ongoing and/or planned initiatives for each facility that will either increase service capacities or improve the patient experience within the hospital through more integrated work flows.

### *F.1 Irwin Army Community Hospital*[48]

While officials seek to meet the health care needs of military personnel at Irwin Army Community Hospital and at other military outpatient centers, they acknowledge their inability to provide comprehensive service offerings. Without a constant supply of patients accessing treatment in highly specialized services, the military will continue to depend upon other facilities to care for its members.

Over the next five years, the military is planning to increase their inpatient capacities by improving efficiencies at Irwin rather than adding physical space within the current facility; however, current plans indicate that the military will build a new hospital in 2013. It is premature to determine the scope of this project or if the new facility will increase the capacities of Irwin.

In 2008, Irwin will increase its outpatient capacity by building a new primary care clinic to serve about 5,000 active military members per year and in 2009 will build a new primary care clinic for family members.

48 Bergeson, MAJ., Email correspondence

### *F.2 Mercy Regional Health Center*

Recently, Mercy's Board of Directors approved an additional $30 million bond to invest in a new cafeteria, new meeting rooms, 25 to 30 additional private patient rooms, and the construction of shell space that can be converted to another 25 to 30 private inpatient rooms in the future. This $30 million additional bond issuance follows a previous $65 million dollar project to build all private rooms at Mercy.[49]

Mercy currently has a high bed occupancy rate and is anticipating future growth in inpatient demand; therefore, the hospital is aggressively expanding capacity to absorb demand from Fort Riley personnel. In addition, Mercy is actively recruiting targeted specialists to their facility to enhance their capabilities in cardiology, pulmonology, obstetrics and behavioral health.

### *F.3 Geary Community Hospital*

Geary Community Hospital is effectively doubling the size of its facilities with an 110,000-square foot project to be completed in December 2009. While this expansion will not add to the total number of licensed beds, it will replace outdated double-occupancy patient rooms with all single-occupancy rooms. To provide future flexibility in bed capacity, some of the single rooms will be outfitted with headwall units allowing for the addition of a second bed. The hospital's staffed bed complement is currently 69, comprised of 49 acute and critical care beds, 11 inpatient rehabilitation beds, and 9 geriatric psychiatry beds.

The project will free up a considerable portion of the current hospital building with vacated space to be used for expansion of the hospital's diagnostic and treatment departments in subsequent phases of renovation. In fact, the current phase of construction is increasing the number of operating rooms from five to six to accommodate the higher volume of outpatient procedures the hospital has experienced.

49 Philipp, MD, Joseph; Personal Interview,; May 8, 2007

In regard to physician office space, Geary Community Hospital has two medical office buildings that provide space for approximately 16 full-time physicians plus several physicians who rotate their patient schedules through Geary. [50]

### *F.4 Community Hospital of Onaga*

Community Hospital of Onaga currently has no plans for any expansion of its services.[51] With its principal location in Onaga, an hour's drive from the northeast gate of Fort Riley, the hospital offers services throughout Pottawatomie County in five locations. It employs 13 primary care physicians and hosts rotating physicians traveling to its various sites principally from Topeka and Manhattan. The hospital's licensed bed capacity is 25, and it is not affiliated with any system.

The sites and the services offered are listed below.

Onaga

- 24 – Hour Emergency Care
- Acute Care (Medical / Surgical / Respite)
- Assisted Living
- Audiology Clinic
- Cardiology Clinic
- Cardiopulmonary Services
- Diabetic Care
- Durable Medical (Home) Equipment
- Ear, Nose & Throat Clinic
- Family Practice Clinic
- Fitness Center

50 Information obtained in telephone interview with Steve Repport, Geary Community Hospital, May 1, 2007

51 Information from Greg Unruh, CEO, Community Hospital Onaga, April 30, 2007.

- Foundation
- Gastroenterology Clinic
- Home Health Services
- Laboratory Services
- Medical Imaging Services (CT / MRI / Ultrasound)
- Mental Health Counseling
- Neurology Clinic
- Nutrition Services
- Obstetrical Services (or Maternity Services)
- Optometry
- Ophthalmology Clinic
- Outpatient Observation, Respite & IV Therapy
- Orthopedic Clinic
- Pain Clinic
- Podiatry Clinic
- Physical, Occupational and Speech Therapy
- Pulmonology Clinic
- Respiratory Therapy
- Skilled Nursing Services in Swing Bed setting
- Surgical Services
- Urology Clinic
- Woman's Health Services
- Wound Care

Centralia

- Diabetic Care
- Durable Medical (Home) Equipment
- Family Practice Clinic
- Fitness Center
- Home Health Services
- Laboratory Services
- Long Term Care including:
- Adult Day Care
- Respite Care
- Skilled Nursing (Medicare Part A)
- Special Care Dementia and Alzheimer's Unit Nutrition Services
- Obstetrical Services (or Maternity Services)
- Physical, Occupational and Speech Therapy
- Women Health Services
- Wound Care

Holton

- Diabetic Care
- Durable Medical (Home) Equipment
- Family Practice Clinic with Extended Hours
- Fitness Center
- Home Health Services
- Laboratory Services
- Medical Imaging Services
- Nutrition Services
- Obstetrical Services (or Maternity Services)
- Personal Fitness Training
- Physical, Occupational and Speech Therapy
- Radiology Services
- Woman's Health Services

St. Marys

- 24 – Hour Emergency Care
- Acute Care (Medical / Surgical / Respite)
- Audiology Clinic
- Cardiology Clinic
- Diabetic Care
- Durable Medical (Home) Equipment
- Ear, Nose & Throat Clinic
- Family Practice Clinic
- Home Health Services
- Laboratory Services
- Long Term Care (including Adult Day Care)
- Medical Imaging Services (CT / MRI / Ultrasound)
- Medicare and Medicaid Services
- Neurology Clinic
- Nutrition Services
- Obstetrical Services (or Maternity Services)
- Outpatient Observation, Respite & IV
- Therapy
- Orthopedic Clinic
- Podiatry Clinic
- Physical, Occupational and Speech Therapy
- Pulmonology Clinic
- Respiratory Therapy
- Urology Clinic
- Woman's Health Services
- Skilled Nursing Services in Swing Bed setting

Frankfort

- Diabetic Care
- Durable Medical (Home) Equipment
- Family Practice Clinic
- Fitness Center
- Home Health Services Laboratory Services
- Obstetrical Services (or Maternity Services)
- Radiology Services
- Physical, Occupational and Speech Therapy
- Women Health Services

### *F.5 Wamego Community Hospital* [52]

Given that the excess capacity at Wamego is sufficient to meet increasing demands, current hospital projects will seek to improve the overall patient experience, rather than increase the facility's space.

To increase patient satisfaction with the hospital, Wamego has identified the following projects:

- Building a new cafeteria and new kitchen
- Transitioning current rooms to private rooms as a method to provide patient privacy, ensure confidentiality and meet current health planning guidelines

52 Interim CEO; Phone Interview; May 3, 2007

# G. Needs Assessment

### *G.1 Number of Admissions, 2006*

Inpatient beds are a key resource in health care planning; therefore, it is necessary to analyze the number of inpatient admissions per bed type in order to best predict inpatient capacities in 2012. A lack of inpatient beds requires transferring patients across town to another facility or utilizing a bed type not consistent with medical diagnosis, thus resulting in a disruptive experience for patients.

This analysis uses national and regional discharge rates published by the CDC in October 2006 to estimate the discharge patterns for Flint Hills.[53] These benchmarks, as well as local data, allow the consulting team to identify the number of discharges by specialty and bed type per age strata.

The CDC report provided national discharge ratios as well as regional factors. Table G.1[54] shows the regional utilization factor applied for the Midwest. While discharge ratios differed significantly across the country, Flint Hills benchmarked accurately with the Midwest data when a 5 percent out-migration factor was applied.

Table G.1. Discharge Ratios by Region, 2004

| | USA | North-East | Mid-west | South | West |
|---|---|---|---|---|---|
| Rates per 1,000 | 119.2 | 135.5 | 117.0 | 125.8 | 97.8 |
| Compare to National Rates | 1.0 | 1.1 | 0.98 | 1.1 | 0.8 |

Multiplying this regional factor to national data yields the discharge ratios for Flint Hills. Current discharge ratios are shown on the following pages in Table G.2.[55] As expected, the over 64 age group incurred a significantly higher discharge ratio than any other group and is more than 3 times higher than those between ages 45 to 64. Discharges from diseases of the circulatory system far outnumbered the discharge ratios of any other disease.

Applying the Midwest utilization data-set with a 5 percent out-migration factor resulted in 11,545 calculated discharges in Flint Hills in 2004 – the same number of discharges for Flint Hills from the AHA data shown previously. The actual number of discharges is presented on the following pages in Table G.3.[56]

### *G.2 Projected Number of Admissions, 2012*

The analysis for 2012 holds utilization factors from 2006 constant and then adjusts population data to the 2012 figures shown in Table G.4. Multiplying the utilization rates for Flint Hills by the 2012 population yields the 2012 discharge volumes.

Table G.4. Projected Flint Hills Population, 2012

| Age Groups | Population | Geary | Riley | Pottawatomie |
|---|---|---|---|---|
| Under 15 | 39,505 | 17,373 | 17,288 | 4,844 |
| 15 to 44 | 74,080 | 22,987 | 39,508 | 11,585 |
| 45 to 64 | 23,165 | 3,008 | 16,577 | 3,580 |
| Over 65 | 10,800 | 2,416 | 5,319 | 3,065 |
| Totals | 147,550 | 45,784 | 78,692 | 23,074 |

The increased population forecast of 147,550 will result in a 30 percent increase in discharges within the six-year period (11,545 to 14,991). Growth levels across the region will inhibit access to care unless additional clinicians are recruited. The regional inpatient daily average census will increase from 127 to 164.

53 Loc. Cit., Centers for Disease Control and Prevention, 2006. "National Hospital Discharge Survey: 2004 Annual Summary with Detailed Diagnosis and Procedure Data."

54 Loc. cit., CDC, 2006.

55 Loc. cit. Centers for Disease Control and Prevention, 2006.

56 Solucient, 2005. "Profiles of US Hospitals."

Table G.2. Rate of Discharges from Short-Stay Hospital by Age and First-Listed Diagnosis, Midwest, 2004

| Category of first-listed diagnosis and ICD-9-CM Code | All Ages | Under 15 | 15 to 44 | 45 to 64 | Over 64 |
|---|---|---|---|---|---|
| | Rates per 1,00 | | | | |
| All Conditions | 117.00 | 41.48 | 85.03 | 115.59 | 356.10 |
| Infectious and parasitic diseases | 3.18 | 2.51 | 1.35 | 2.95 | 11.05 |
| Septicemia | 1.37 | 0.12 | 0.22 | 1.25 | 7.70 |
| Neoplasms | 5.51 | 0.61 | 2.26 | 8.42 | 19.18 |
| Malignant neoplasms | 4.04 | 0.45 | 0.98 | 5.94 | 16.90 |
| Malignant neoplasm of large intestine and rectum | 0.54 | 0.00 | 0.08 | 0.68 | 2.78 |
| Malignant neoplasm of trachea, bronchus and lung | 0.55 | 0.00 | 0.10 | 0.75 | 2.63 |
| Benign neoplasms | 1.28 | 0.13 | 1.19 | 2.28 | 1.56 |
| Benign neoplasm of uterus | 0.73 | 0.00 | 0.85 | 1.44 | 0.00 |
| Endocrine, nutritional and metabolic diseases and immunity disorders | 5.88 | 3.05 | 3.04 | 6.72 | 18.73 |
| Diabetes mellitus | 2.01 | 0.49 | 1.17 | 2.89 | 5.71 |
| Volume Depletion | 1.74 | 2.04 | 0.50 | 1.14 | 6.63 |
| Diseases of the blood and blood-forming organs | 1.5 | 0.94 | 0.85 | 1.36 | 4.97 |
| Anemias | 1.06 | 0.44 | .71 | 0.87 | 3.68 |
| Mental Disorders | 7.75 | 2.06 | 9.87 | 9.19 | 7.25 |
| Phychoses | 5.38 | 0.00 | 6.65 | 6.43 | 5.96 |
| Schizophrenic disorders | 1.11 | 0.00 | 1.39 | 1.72 | 0.75 |
| Major depressive disorder | 1.55 | 0.00 | 2.11 | 1.72 | 1.31 |
| Diseases of the nervous system and sense organs | 1.85 | 1.30 | 1.05 | 1.84 | 5.62 |
| Diseases of the circulatory system | 21.25 | 0.50 | 3.52 | 26.13 | 108.24 |
| Essential hypertension | 1.15 | 0.00 | 0.38 | 1.94 | 4.11 |
| Heart Disease | 14.68 | 0.30 | 2.09 | 18.11 | 75.35 |
| Acute myocardial infarction | 2.45 | 0.00 | 0.33 | 3.19 | 12.42 |
| Coronary atherosclerosis | 3.57 | 0.00 | 0.38 | 6.11 | 15.56 |
| Other ischemic heart disease | 0.62 | 0.00 | 0.12 | 1.06 | 2.47 |
| Cardiac disrhythmias | 2.56 | 0.08 | 0.44 | 2.43 | 14.23 |
| Congestive heart failure | 3.66 | 0.00 | 0.30 | 3.24 | 22.08 |
| Cerebrovascular disease | 3.04 | 0.00 | 0.37 | 3.02 | 17.23 |
| Diseases of the respiratory system | 11.91 | 11.09 | 2.72 | 10.23 | 48.14 |
| Acute bronchitis and bronchiolitis | 0.89 | 3.22 | 0.13 | 0.22 | 0.92 |

Table G.2 (con't.). Rate of Discharges from Short-Stay Hospital by Age and First-Listed Diagnosis, Midwest, 2004

| Category of first-listed diagnosis and ICD-9-CM Code | All Ages | Under 15 | 15 to 44 | 45 to 64 | Over 64 |
|---|---|---|---|---|---|
| | Rates per 1,00 | | | | |
| Pneumonia | 4.46 | 2.92 | 0.81 | 3.39 | 21.63 |
| Chronic Bronchitis | 1.63 | 0.00 | 0.09 | 2.08 | 8.72 |
| Asthma | 1.67 | 3.06 | 0.72 | 1.56 | 2.82 |
| Diseases of the digestive system | 12.01 | 4.00 | 6.76 | 14.86 | 37.97 |
| Appendicitis | 1.05 | 1.32 | 1.24 | 0.76 | 0.56 |
| Noninfectious enteritis and colitis | 1.06 | 0.90 | 0.74 | 0.97 | 2.59 |
| Intestinal obstruction | 1.02 | 0.23 | 0.26 | 1.18 | 4.71 |
| Diverticula of intestine | 1.05 | 0.00 | 0.32 | 1.29 | 4.79 |
| Choelelithiasis | 1.19 | 0.00 | 0.96 | 1.43 | 3.43 |
| Acute pancreatitis | 0.82 | 0.00 | 0.60 | 1.31 | 1.93 |
| Diseases of the genitourinary system | 6.52 | 1.35 | 4.56 | 6.89 | 21.14 |
| Calculus of kidney and ureter | 0.58 | 0.00 | 0.57 | 0.94 | 0.78 |
| Urinary tract infection | 1.44 | 0.42 | 0.27 | 0.91 | 8.16 |
| Complications of pregnancy, childbirth and the puerperium | 1.76 | 0.00 | 4.09 | 0.00 | 0.00 |
| Diseases of the skin and subcutaneous tissue | 2.56 | 0.00 | 1.69 | 2.92 | 6.32 |
| Cellulitis and abscess | 1.88 | 0.86 | 1.30 | 2.36 | 4.70 |
| Diseases of the musculoskeletal system and connective tissue | 6.45 | 0.62 | 2.45 | 9.46 | 24.05 |
| Osteoarthritis and allied disorders | 2.34 | 0.00 | 0.18 | 3.41 | 11.55 |
| Invertebral disc disorders | 1.24 | 0.00 | 1.02 | 2.13 | 2.30 |
| Congenital anomalies | 0.69 | 2.30 | 0.26 | 0.30 | 0.25 |
| Certain conditions originating in the perinatal period | 0.69 | 3.27 | 0.00 | 0.00 | 0.00 |
| Symptoms, signs and ill-defined conditions | 0.83 | 0.95 | 0.62 | 0.88 | 1.26 |
| Injury and poisoning | 9.55 | 3.88 | 6.52 | 9.84 | 28.89 |
| Fractures, all sites 3 | 3.48 | 1.18 | 1.89 | 2.65 | 14.43 |
| Fractures of the neck of femur | 1.11 | 0.00 | 0.00 | 0.43 | 7.81 |
| Poisoning | 0.86 | 0.31 | 1.18 | 0.86 | 0.68 |
| Certain complications of surgical and medical care | 2.92 | 0.74 | 1.42 | 4.42 | 8.84 |
| Supplementary classifications | 17.01 | 1.31 | 33.41 | 3.59 | 13.06 |
| Females with deliveries | 0.00 | 13.88 | 0.00 | 32.43 | 0.15 |

Table G.3. Actual Discharges from Short-Stay Hospitals by Age and First Listed Diagnosis, Flint Hills, 2006

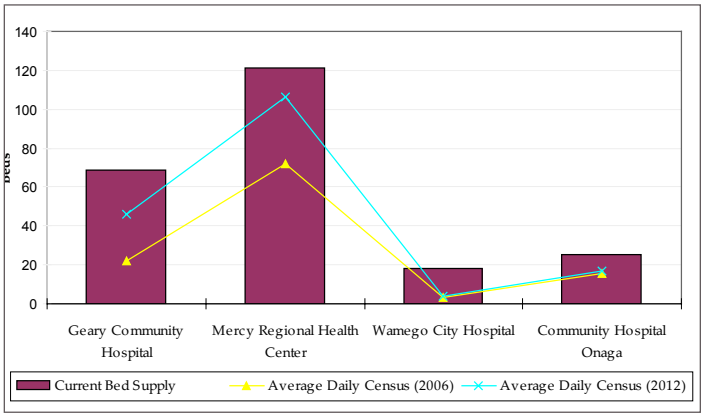
| Category of first-listed diagnosis and ICD-9-CM Code, 2006 | All Ages | Under 15 | 15 to 44 | 45 to 64 | Over 64 |
|---|---|---|---|---|---|
| All Conditions | 11,545 | 969 | 5,029 | 1,991 | 3,556 |
| Infectious and parasitic diseases | 298 | 58 | 79 | 50 | 109 |
| Septicemia | 113 | 3 | 13 | 21 | 76 |
| Neoplasms | 480 | 14 | 132 | 144 | 190 |
| Malignant neoplasms | 337 | 10 | 58 | 101 | 167 |
| Malignant neoplasm of large intestine and rectum | 44 | 0 | 5 | 12 | 28 |
| Malignant neoplasm of trachea, bronchus and lung | 45 | 0 | 6 | 13 | 26 |
| Benign neoplasms | 127 | 3 | 70 | 39 | 15 |
| Benign neoplasm of uterus | 75 | 0 | 50 | 25 | 0 |
| Endocrine, nutritional and metabolic diseases and immunity disorders | 550 | 71 | 178 | 115 | 186 |
| Diabetes mellitus | 186 | 11 | 68 | 49 | 57 |
| Volume Depletion | 162 | 47 | 29 | 19 | 66 |
| Diseases of the blood and blood-forming organs | 144 | 22 | 50 | 23 | 49 |
| Anemias | 103 | 10 | 41 | 15 | 36 |
| Mental Disorders | 856 | 48 | 579 | 157 | 72 |
| Phychoses | 559 | 0 | 390 | 110 | 59 |
| Schizophrenic disorders | 118 | 0 | 82 | 29 | 7 |
| Major depressive disorder | 166 | 0 | 124 | 29 | 13 |
| Diseases of the nervous system and sense organs | 179 | 30 | 62 | 31 | 56 |
| Diseases of the circulatory system | 1,737 | 12 | 207 | 446 | 1,072 |
| Essential hypertension | 96 | 0 | 22 | 33 | 41 |
| Heart Disease | 1,186 | 7 | 123 | 309 | 746 |
| Acute myocardial infarction | 197 | 0 | 20 | 54 | 123 |
| Coronary atherosclerosis | 281 | 0 | 22 | 104 | 154 |
| Other ischemic heart disease | 50 | 0 | 7 | 18 | 24 |
| Cardiac disrhythmias | 210 | 2 | 26 | 42 | 141 |
| Congestive heart failure | 292 | 0 | 18 | 55 | 219 |
| Cerebrovascular disease | 244 | 0 | 22 | 52 | 171 |
| Diseases of the respiratory system | 1,068 | 257 | 159 | 175 | 477 |
| Acute bronchitis and bronchiolitis | 95 | 75 | 7 | 4 | 9 |

Table G.3 (con't.). Actual Discharges from Short-Stay Hospitals by Age and First Listed Diagnosis, Flint Hills, 2006

| Category of first-listed diagnosis and ICD-9-CM Code, 2006 | All Ages | Under 15 | 15 to 44 | 45 to 64 | Over 64 |
|---|---|---|---|---|---|
| Pneumonia | 388 | 68 | 48 | 58 | 214 |
| Chronic Bronchitis | 127 | 0 | 5 | 36 | 86 |
| Asthma | 167 | 71 | 42 | 27 | 28 |
| Diseases of the digestive system | 1,119 | 93 | 397 | 254 | 376 |
| Appendicitis | 122 | 31 | 73 | 13 | 6 |
| Noninfectious enteritis and colitis | 106 | 21 | 43 | 17 | 26 |
| Intestinal obstruction | 87 | 5 | 15 | 20 | 47 |
| Diverticula of intestine | 88 | 0 | 19 | 22 | 47 |
| Choelelithiasis | 115 | 0 | 56 | 24 | 34 |
| Acute pancreatitis | 77 | 0 | 35 | 22 | 19 |
| Diseases of the genitourinary system | 626 | 31 | 268 | 118 | 209 |
| Calculus of kidney and ureter | 57 | 0 | 33 | 16 | 8 |
| Urinary tract infection | 122 | 10 | 16 | 16 | 81 |
| Complications of pregnancy, childbirth and the puerperium | 240 | 0 | 240 | 0 | 0 |
| Diseases of the skin and subcutaneous tissue | 212 | 0 | 99 | 50 | 63 |
| Cellulitis and abscess | 183 | 20 | 76 | 40 | 47 |
| Diseases of the musculoskeletal system and connective tissue | 558 | 14 | 144 | 162 | 238 |
| Osteoarthritis and allied disorders | 183 | 0 | 10 | 58 | 114 |
| Invertebral disc disorders | 119 | 0 | 60 | 36 | 23 |
| Congenital anomalies | 76 | 53 | 15 | 5 | 2 |
| Certain conditions originating in the perinatal period | 76 | 76 | 0 | 0 | 0 |
| Symptoms, signs and ill-defined conditions | 86 | 22 | 36 | 15 | 12 |
| Injury and poisoning | 926 | 90 | 382 | 168 | 286 |
| Fractures, all sites 3 | 327 | 27 | 111 | 45 | 143 |
| Fractures of the neck of femur | 85 | 0 | 0 | 7 | 77 |
| Poisoning | 98 | 7 | 69 | 15 | 7 |
| Certain complications of surgical and medical care | 264 | 17 | 83 | 75 | 88 |
| Supplementary classifications | 2,181 | 30 | 1,960 | 61 | 129 |
| Females with deliveries | 877 | 321 | 0 | 554 | 1 |

In addition to the growth in discharges, the distribution of discharges across the region will adjust to reflect population change. Analyses indicate that Mercy Regional Health Center and Geary Community Hospital will gain most from the projected population growth patterns.

Figure G.1. Change in Bed Occupancy, 2006 to 2012




From 2006 to 2012, Mercy Regional's bed occupancy is projected to increase from 72 beds to 106 (60 percent to 88 percent occupancy rate) and Geary Community Hospital's average occupancy will increase from 22 to 46 beds (32 percent to 66 percent occupancy rate).[57]

Typically, hospitals with semi-private rooms cannot plan to accommodate an average occupancy rate over 80 to 85 percent since inefficiencies related to isolating patients with certain medical conditions and rooming patients of the same gender will result in unutilized bed space. These room assignment requirements are not an operational constraint for hospitals with private rooms.

While the overall number of discharges will increase by 30 percent, the utilization rate will decrease by 0.2 percent (Table G.5 Change in Discharges per 1,000 Population – 2006 to 2012). This decrease in utilization is a result of the population becoming younger due to more children under 15 in Flint Hills.

57 This analysis assumes that individual hospital market shares per county remain constant from 2006 to 2012.

Table G.5. Change in Discharges per 1,000 Population – 2006 to 2012

| Year | Admissions | Admissions per 1000 Person |
|---|---|---|
| 2006 | 11,545 | 103.2 |
| 2012 | 14,991 | 101.6 |

### *G.3 Discharges by Bed Type, 2006 to 2012*

The data allow NCI to identify the number of discharges by the following bed types:

- Medical/Surgical
- OB/GYN
- Pediatrics
- Psychiatric

The greatest growth in discharges will be to medical/surgical beds (+2,198); however, pediatrics will have the largest percentage increase (79.5%). The increase in pediatric cases reflects a projected 64 percent increase in the population for this age strata as military members bring their children to the region.

Table G.6. A Comparison of Discharges by Bed Type, 2006 to 2012

| | Admissions | | Change |
|---|---|---|---|
| Bed Type | 2006 | 2012 | 2012 |
| Med/Surgical | 8,940 | 11,138 | 24.6% |
| Ob/Gyn | 821 | 1,095 | 33.3% |
| Pediatrics | 946 | 1,699 | 79.5% |
| Psychiatric | 838 | 1,060 | 26.6% |
| Total | 11,545 | 14,991 | 29.9% |

Table G.4. Projected Discharges, 2012

| Category of first-listed diagnosis and ICD-9-CM Code, 2006 | All Ages | Under 15 | 15 to 44 | 45 to 64 | Over 64 |
|---|---|---|---|---|---|
| All Conditions | 14,991 | 1,699 | 6,530 | 2,776 | 3,987 |
| Infectious and parasitic diseases | 402 | 103 | 104 | 71 | 124 |
| Septicemia | 138 | 5 | 17 | 30 | 86 |
| Neoplasms | 615 | 25 | 173 | 202 | 215 |
| Malignant neoplasms | 426 | 18 | 75 | 143 | 189 |
| Malignant neoplasm of large intestine and rectum | 53 | 0 | 6 | 16 | 31 |
| Malignant neoplasm of trachea, bronchus and lung | 55 | 0 | 8 | 18 | 29 |
| Benign neoplasms | 169 | 5 | 91 | 55 | 17 |
| Benign neoplasm of uterus | 100 | 0 | 66 | 35 | 0 |
| Endocrine, nutritional and metabolic diseases and immunity disorders | 730 | 125 | 234 | 161 | 210 |
| Diabetes mellitus | 243 | 20 | 90 | 70 | 64 |
| Volume Depletion | 224 | 84 | 38 | 27 | 74 |
| Diseases of the blood and blood-forming organs | 192 | 39 | 66 | 33 | 56 |
| Anemias | 135 | 18 | 54 | 21 | 41 |
| Mental Disorders | 1,145 | 84 | 758 | 221 | 81 |
| Phychoses | 732 | 0 | 511 | 154 | 67 |
| Schizophrenic disorders | 157 | 0 | 107 | 41 | 8 |
| Major depressive disorder | 218 | 0 | 162 | 41 | 15 |
| Diseases of the nervous system and sense organs | 241 | 53 | 81 | 44 | 63 |
| Diseases of the circulatory system | 2,130 | 20 | 271 | 628 | 1,212 |
| Essential hypertension | 122 | 0 | 29 | 47 | 46 |
| Heart Disease | 1,452 | 12 | 161 | 435 | 844 |
| Acute myocardial infarction | 241 | 0 | 26 | 77 | 139 |
| Coronary atherosclerosis | 350 | 0 | 29 | 147 | 174 |
| Other ischemic heart disease | 62 | 0 | 9 | 25 | 28 |
| Cardiac disrhythmias | 255 | 3 | 34 | 58 | 159 |
| Congestive heart failure | 348 | 0 | 23 | 78 | 247 |
| Cerebrovascular disease | 294 | 0 | 29 | 73 | 193 |
| Diseases of the respiratory system | 1,447 | 454 | 209 | 246 | 539 |
| Acute bronchitis and bronchiolitis | 157 | 132 | 10 | 5 | 10 |

Table G.4 (con't.). Projected Discharges, 2012

| Category of first-listed diagnosis and ICD-9-CM Code, 2006 | All Ages | Under 15 | 15 to 44 | 45 to 64 | Over 64 |
|---|---|---|---|---|---|
| Pneumonia | 506 | 120 | 63 | 81 | 242 |
| Chronic Bronchitis | 154 | 0 | 7 | 50 | 98 |
| Asthma | 249 | 125 | 55 | 37 | 32 |
| Diseases of the digestive system | 1,465 | 164 | 519 | 357 | 425 |
| Appendicitis | 174 | 54 | 95 | 18 | 6 |
| Noninfectious enteritis and colitis | 146 | 37 | 57 | 23 | 29 |
| Intestinal obstruction | 110 | 9 | 20 | 28 | 53 |
| Diverticula of intestine | 109 | 0 | 25 | 31 | 54 |
| Choelelithiasis | 147 | 0 | 74 | 34 | 38 |
| Acute pancreatitis | 99 | 0 | 46 | 31 | 22 |
| Diseases of the genitourinary system | 808 | 55 | 350 | 165 | 237 |
| Calculus of kidney and ureter | 75 | 0 | 44 | 23 | 9 |
| Urinary tract infection | 152 | 17 | 21 | 22 | 91 |
| Complications of pregnancy, childbirth and the puerperium | 314 | 0 | 314 | 0 | 0 |
| Diseases of the skin and subcutaneous tissue | 271 | 0 | 130 | 70 | 71 |
| Cellulitis and abscess | 244 | 35 | 99 | 57 | 53 |
| Diseases of the musculoskeletal system and connective tissue | 710 | 25 | 188 | 227 | 269 |
| Osteoarthritis and allied disorders | 225 | 0 | 14 | 82 | 129 |
| Invertebral disc disorders | 155 | 0 | 78 | 51 | 26 |
| Congenital anomalies | 124 | 94 | 20 | 7 | 3 |
| Certain conditions originating in the perinatal period | 134 | 134 | 0 | 0 | 0 |
| Symptoms, signs and ill-defined conditions | 122 | 39 | 47 | 21 | 14 |
| Injury and poisoning | 1,219 | 159 | 500 | 236 | 323 |
| Fractures, all sites 3 | 419 | 48 | 145 | 64 | 162 |
| Fractures of the neck of femur | 98 | 0 | 0 | 10 | 87 |
| Poisoning | 132 | 13 | 90 | 21 | 8 |
| Certain complications of surgical and medical care | 344 | 30 | 109 | 106 | 99 |
| Supplementary classifications | 2,852 | 54 | 2,566 | 86 | 146 |
| Females with deliveries | 1,349 | 568 | 0 | 779 | 2 |

Table G.7. Population Break-down, Flint Hills, 2006

| Male Population (age) | | | | | |
|---|---|---|---|---|---|
| 0 – 14 | 15 - 44 | 45 - 64 | 65 - 84 | 85+ | Total |
| 11,977 | 31,648 | 9,078 | 4,454 | 808 | 57,966 |
| Female Population (age) | | | | | |
| 0 – 14 | 15 - 44 | 45 - 64 | 65 - 84 | 85+ | Total |
| 11,189 | 29,567 | 8,481 | 4,162 | 755 | 54,155 |

### *G.4 Physician Gap Analysis, 2006*

Section E outlined the current physician supply, but did not analyze the adequacy of physician labor. This analysis uses regional population demographics, utilization rates, and the national median physician throughput levels[58] to calculate the number of physicians required within the study area.

As Table G.8 shows, service demands in 2006 required 123 physicians; however, the region had only 114 physicians to meet patient demands,[59] producing an overall shortage of ten physicians; however, there does not appear to be a significant shortage in a particular service line. [60]

58 Health Care Financial Management, 2007

59 The total overall physician supply of 126 was reduced by physician groups that typically do not offer scheduled services -- emergency room physicians, radiologists, and pathologists. Similarly, the demand for services does not include the demand for these services.

60 Information was used from a variety of sources to quantify the supply or shortage of physicians in Flint Hills. Physician supply was provided by American Medical Information, Inc.; physician throughput was benchmarked to the median national figures from MGMA; utilization rates were provided by Merriman USA; population assumptions were provided by RKG Associates.

### *G.5 Projected Physician Supply Needs, 2012*

Military growth plans and organic population increases will require a larger number of providers in 2012. Military personnel and their families, economic migrants, and natural population growth will all contribute to an increased use of health care in Flint Hills.

In order to identify the number of physicians that need to be recruited to the area over the next 5 to 6 years, the physician supply used in Section H4 was reduced by the number of practitioners over 65 to reflect expected retirement by 2012.

In addition, NCI assumed that the community would not recruit any new physicians to the area during the intermediate years; therefore, the total physicians that must be recruited to the region are the total demanded in 2012 less the current supply minus physicians over 65.

The increased population resulted in a need for 27 additional physicians, yet the supply is expected to shrink by 14 resulting in a shortage of 50 total doctors that would drastically curtail the community's access to care. The most severe shortages are forecasted to occur in highly specialized service lines that are the most difficult positions for hospitals to recruit, such as:

- Cardiology (3.6);
- Neurosurgery (2.5);
- Obstetrics/Gynecology (6.7);
- Pediatrics (8.2); and
- Psychiatry (2.8).

This analysis indicates the opportunity for hospitals within the study area to expand their primary and specialty services in order to meet patient volumes. Growing the highly specialized services will increase average per case payments as the facility's case mix index becomes more severe.

Table G.8. Physician Gap Analysis, Flint Hills, 2006

| Specialty | 2006 Demand (FTEs) | 2006 Supply (#) | 2006 Surplus/ (Deficit) |
|---|---|---|---|
| Family/General Practice | 32.4 | 35.0 | 2.6 |
| Internal Medicine | 14.3 | 15.0 | 0.7 |
| Pediatrics | 11.2 | 10.0 | (1.2) |
| OB/Gyn | 12.9 | 12.0 | (0.9) |
| Allergy/ Immunology | 1.9 | 0.0 | (1.9) |
| Cardiology | 4.6 | 2.0 | (2.6) |
| Dermatology | 3.2 | 6.0 | 2.8 |
| Endocrinology | 0.8 | 0.0 | (0.8) |
| Gastroenterology | 2.7 | 1.0 | (1.7) |
| Hematology/ Oncology | 1.2 | 1.0 | (0.2) |
| Infectious Disease | 1.0 | 0.0 | (1.0) |
| Nephrology | 0.7 | 0.0 | (0.7) |
| Neurology | 1.8 | 2.0 | 0.2 |
| Pulmonary Medicine | 1.7 | 2.0 | 0.3 |
| Rheumatology | 0.6 | 0.0 | (0.6) |
| CT Surgery | 1.9 | 0.0 | (1.9) |
| Vascular Surgery | 1.4 | 0.0 | (1.4) |
| Colorectal Surgery | 0.9 | 0.0 | (0.9) |
| Oncology Surgery | 1.6 | 0.0 | (1.6) |
| General Surgery | 2.2 | 7.0 | 4.8 |
| Neurosurgery | 2.1 | 0.0 | (2.1) |
| Ophthalmology | 4.3 | 3.0 | (1.3) |
| Orthopedics | 4.5 | 6.0 | 1.5 |
| ENT | 3.3 | 3.0 | (0.3) |
| Plastic Surgery | 0.5 | 1.0 | 0.5 |
| Urology | 2.2 | 3.0 | 0.8 |
| Psychiatry | 6.2 | 5.0 | (1.2) |
| Physical Medicine/ Rehab | 1.7 | 0.0 | (1.7) |
| TOTAL | 123.6 | 114.0 | (9.6) |

Table G.9. Projected Physician Supply Requirements, 2012

| Specialty | 2012 Demand (FTEs) | 2012 Supply (FTEs) | 2012 Surplus/ (Deficit) |
|---|---|---|---|
| Family/General Practice | 36.2 | 32.0 | (4.2) |
| Internal Medicine | 15.6 | 13.0 | (2.6) |
| Pediatrics | 18.2 | 10.0 | (8.2) |
| OB/Gyn | 15.7 | 9.0 | (6.7) |
| Allergy/ Immunology | 2.6 | 0.0 | (2.6) |
| Cardiology | 5.6 | 2.0 | (3.6) |
| Dermatology | 3.8 | 4.0 | 0.2 |
| Endocrinology | 1.0 | 0.0 | (1.0) |
| Gastroenterology | 3.1 | 1.0 | (2.1) |
| Hematology/ Oncology | 1.4 | 1.0 | (0.4) |
| Infectious Disease | 1.2 | 0.0 | (1.2) |
| Nephrology | 0.8 | 0.0 | (0.8) |
| Neurology | 2.2 | 2.0 | (0.2) |
| Pulmonary Medicine | 2.0 | 2.0 | 0.0 |
| Rheumatology | 0.7 | 0.0 | (0.7) |
| CT Surgery | 2.1 | 0.0 | (2.1) |
| Vascular Surgery | 1.8 | 0.0 | (1.8) |
| Colorectal Surgery | 1.1 | 0.0 | (1.1) |
| Oncology Surgery | 2.0 | 0.0 | (2.0) |
| General Surgery | 2.7 | 5.0 | 2.3 |
| Neurosurgery | 2.5 | 0.0 | (2.5) |
| Ophthalmology | 5.3 | 3.0 | (2.3) |
| Orthopedics | 5.6 | 6.0 | 0.4 |
| ENT | 4.3 | 3.0 | (1.3) |
| Plastic Surgery | 0.7 | 1.0 | 0.3 |
| Urology | 2.6 | 1.0 | 1.6 |
| Psychiatry | 7.8 | 5.0 | (2.8) |
| Physical Medicine/ Rehab | 2.1 | 0.0 | (2.1) |
| TOTAL | 150.6 | 100.0 | (50.6) |

In addition, as the population grows and the number of patients requiring specialized care increases, the region will be able to support full-time specialists, rather than continuing the common practice of sending patients to Wichita, Topeka, or Lincoln, NE.[61] Estimates indicate that up to 80 percent of cardiology cases are leaving Flint Hills for treatment in Topeka.[62]

Providing specialized services in Flint Hills would be beneficial for emergency cases that would otherwise require transfer via a helicopter to another city. "We currently are having a very difficult time recruiting certain specialists here," explained Mr. Allen, CEO of Mercy Regional Medical Center. [63] Efforts to attract highly specialized physicians require collaboration among hospitals to promote the region. Recruitment efforts should intensify over the next five years with a focus on assessing current hospital practice patterns and marketing the Flint Hills region to prospective hires.

### *G.6 Mental and Behavioral Health Supply Needs, 2012*

[To be completed when requested data arrives.]

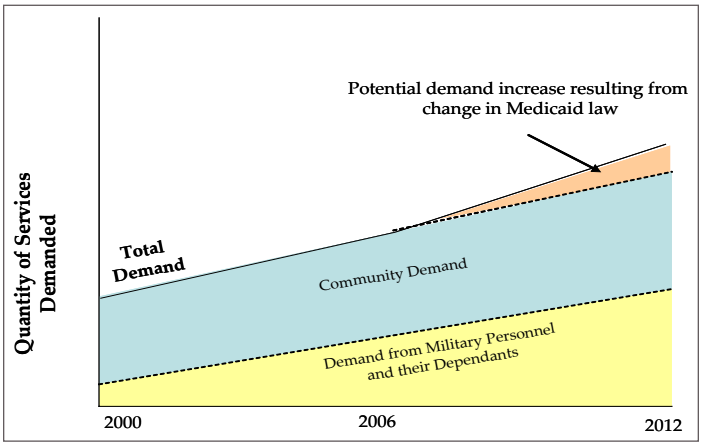
In 2006, the average patient wait times for a non-emergent appointment were between one to two weeks. Pawnee Mental Health experienced a 21 percent increase in demand for its services from 2004 to 2006 and a large increase in demand from military personnel and their dependants.

Projected regional population growth of over 30 percent will dramatically impair the current mental health system's ability to offer care without long wait times. The current number of providers within the system is not adequate to absorb large increases in patient volumes. In addition, Pawnee's outpatient center in Manhattan does not appear to have the extra capacity to expand service offerings, and, therefore, may require a new facility.

61 Interim CEO, Wamego Hospital. Personal Interview. May 3, 2007.
62 Huber, Lydia. Personal Interview. February 14, 2007.
63 Allen, Dick. Personal Interview. February 14, 2007.

As Table G.10 shows,[64] [65] the demand for mental health is projected to increase for military and non-military populations as a result of the population growth. Without a strong recruitment effort of behavioral and mental health clinicians, current wait times will become unacceptable for patients in need of services.

Table G.10. Projected Growth in Mental Health Demand, 2006 to 2012




On July 1, 2007, Kansas will adopt a Managed Care system for Medicaid beneficiaries that will loosen the restriction for providers who deliver services to Medicaid-insured patients.[66] Currently, Kansas' Medicaid program will only pay for mental health services for its patients to an established Community Mental Health Center, as stated by the Mental Health Reform Act of 1990. [67] The 1990 law provided participating centers funding opportunities from a variety of sources including state and federal funds, state aid, mental health reform grants, and state hospital closure grants. In addition, the centers are allowed to bill Medicaid for the services they provide eligible beneficiaries; however,

64 This Figure is not representative and current or projected demand in Flint Hills, but shows how Navigant will analyze the demand for healthcare services when the requested information is provided by a variety of sources, including Pawnee Mental Health and TRI-WEST.
65 The change in demand for mental health services resulting from the new Medicaid law in Kansas that will begin on July 1, 2007, in currently unknown.
66 Cole, Robbin, Pawnee Mental Health; Phone Interview.
67 MedicaidTraining.org, 2007. "Contract for Kansas Mental Health Prepaid Ambulatory Health Plan between the Kansas Department of Social and Rehabilitative Service and Kansas Health Solutions."

state regulations require community mental health centers to provide necessary mental health services to all clients regardless of their ability to pay.

After the rule change in July, Medicaid beneficiaries will be able to seek care from any qualified provider throughout the state, including providers outside of the CMHC. [68] The reform will eliminate the concept of a "catchment area" for beneficiaries, thus expanding the number of mental health providers that can care for Medicaid eligible patients.

The expansion of suppliers to low-income patients isa benefit to patients in rural areas or people that reside far from the currently designated Community Mental Health Center. This study does not assess the affect of the rule change on the total demand for mental health care; however, it is thought that demand will rise as accessibility for care is improved.

In addition, the rule change will result in additional competitors for patient volume to Pawnee Mental Health; however, the affect on demand at Pawnee is currently unknown.

68 Meier, Tim; Mental Health Consortium; Email correspondence, May 8, 2007.

# H. Quality of Life Indicators

## *H.1 Introduction*

Health care influences a community's quality of life through prevention, education, and treatment of disease. This section proposes four key indicators to address these influences and assess overall well being in Flint Hills. These indicators measure high-level trends and will allow community leaders to gauge progress over time.

NCI has identified four key indicators that, taken together, evaluate the effectiveness of the community's health care services and, by extension, its quality of life. They are the following:

- Percentage of population with health insurance;
- Number of doctors per capita;
- Percentage of births that are a low-birth weight; and,
- Suicide rates.

## *H.2 Key Points*

Health status is determined by a complex set of factors, many of which are difficult or impossible to measure because of their subjectivity and wide variability. The set of key indicators outlined for this project, however, are relatively accessible as measures of the direction and magnitude of changes in regional health status.

By the same token, the community may adopt other factors to benchmark health status. The planning team encourages the creation of a voluntary commission of healthcare leaders to discuss well being indicators, such as health care services resources and their utilization patterns. This commission should include participation by the principal providers in the community, including hospitals, physicians and allied health professionals. It could function as a clearing house of information and a focus of attention upon health care issues for the local governments, education system, and other community members, such as religious organizations.

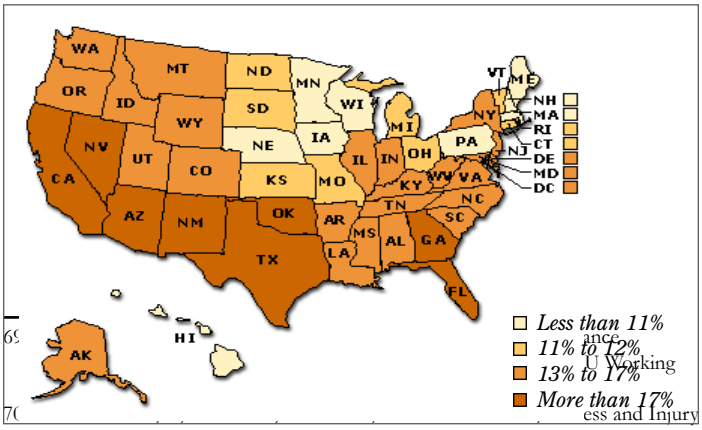
## *H.3 Indicator 1: Percent of Population with Health Insurance*

Health insurance coverage is a key indicator of access to health care services. An inability to pay results in delayed medical assistance for routine or non-emergent episodes of chronic illness or denial by private physicians for lack of payment. Evidence in literature reinforces this relationship among ability to pay, access to care, and overall well being:

- Nearly one-quarter (23 percent) of the uninsured reported changing their way of life significantly in order to pay medical bills, thereby, often causing a reduction in a patient's quality of life. [69]
- In addition, 50 percent of all bankruptcy filings were partly the result of medical expenses.[70]
- The discrepancy in health status between the insured and uninsured is well documented.

In 2005, 11 percent of Kansas residents were uninsured, below the national average of 15 percent. In Minnesota, the state with the highest level of insured, 92 percent of its citizens had health insurance. [71] Figure H.1[72] depicts a state-by-state analysis of uninsured rates in the US.

Figure H.1. State by State Comparison of Uninsured Rates, 2005




as Contributors to Bankruptcy, " Health Affairs Web Exclusive W5-63, 02 February , 2005.

71 The Kaiser Family Foundation, "Health insurance coverage of the total population, 2005." [Online.] www.http://www.statehealthfacts.org

72 Loc. cit, Kaiser Family Foundation, 2007.

Kansas benchmarks very well against other states in the percentage of children that have insurance. Estimates indicate 93 percent of children under age 18 have health insurance compared to the national average of 89 percent. Massachusetts and Hawaii ranked first with 95 percent

### *H.4 Indicator 2: Quantity of Physicians*

A community's ability to access health care is directly affected by the number of practicing physicians. As Table H.1 shows, Flint Hills has a lower physician density rating than the state and national averages. The difference between Kansas and the nation may be attributed to the lower utilization rate in the Midwest. [73]

Table H.1. Comparison of Physicians per 1,000 Population, 2006

| | Physicians/1,000 Persons | # of Physicians, 2006 |
|---|---|---|
| United States | 2.08 | 627,797 |
| Kansas | 1.44 | 3,967 |
| Flint Hills | 1.13 | 126 |

### *H.5 Indicator 3: Percentage of Births that are Low-Birth Weight (less than 2,500 grams)*

The low-birth-weight (LBW) infant is at much higher risk of mortality than the infant with normal weight at birth. In the neonatal period, when most infant deaths occur, the proportion of LBW infants, especially those with very low weight, is the major determinant of the magnitude of the mortality rates.[74]

Nationally, 8.1 percent of all births are of LBW; Kansas fared slightly better with 7.3 percent. This result ranked Kansas as 17th, behind the national leaders Oregon and Nebraska at 6 percent. [75]

Table H.2. Comparison of Infant Mortatlity and Low Birth Weights

| Locality | Comparison Rates | |
|---|---|---|
| | Infant Mortality Rate per 1,000 Births | Low Birth Weight (%) |
| Kansas | 7.1 | 7.3% |
| National Average | 6.9 | 8.1% |
| KS National Rank | 27 | 17 |

KIDS COUNT is a national project of the Annie E. Casey Foundation that tracks the health, economic and educational status of children in the United States. The latest KIDS COUNT profiles collect 2007 data by county for various measures of children's health and compares the results against a peer group of Kansas counties with similar population density patterns as expressed in residents per square mile (rpsm). Table H.3 [76] displays the percentage of live births weighing less than 5.5 pounds in Geary and Pottawatomie Counties. The 2007 Riley County data will be available shortly. The data demonstrate that both Geary and Pottawatomie Counties exceed the rates of low birth weight documented in both peer group counties and the state overall and suggest the continued importance of strengthening educational awareness of and access to prenatal care for the region's mothers.

Research indicates that infant health and development can be

73 Centers for Disease Control and Prevention, 2006. "National Hospital Discharge Survey: 2004 Annual Summary with Detailed Diagnosis and Procedure Data." The national rate is

74 McCormick, MC. (1985). The contribution of low birth weight to infant mortality and childhood morbidity. New England Journal of Medicine 312: 82-90.

75 Kaiser Family Foundation, 2007. "Births of a Low Birth Weight as a Percentage of all Births, 2004." [Online.] www.statehealthfacts.org

76 Note:
a. Percent of live births weighing less than 5.5 pounds. (Rate per 100; current data from 2005; trend data from 2001-2005)
b. Geary County falls into the semi-urban peer group of 40.0-149.9 rpsm.
c. Pottawatomie County falls into the densely-settled rural peer group of 20.0-39.9 (rpsm).

greatly enhanced through breastfeeding. In 2000, *Healthy People 2010* [77] set the target of 75 percent of new mothers breastfeeding in the hospital, 50 percent maintaining breastfeeding for at least 6 months, and 25 percent continuing for 1 year. Parental education on breastfeeding could improve the health of infants in Flint Hills.

Table H.3. Comparison of Low Birth Weights

| Locality | County | | Peer Group | | State | |
|---|---|---|---|---|---|---|
| | County | Trend | County | Trend | County | Trend |
| Geary County | 9.79% | -0.08% | 7.21% | 0.12% | 7.18% | 0.07% |
| Potta-watomie County | 8.36% | 0.14% | 7.27% | 0.08% | 7.18% | 0.07% |
| Riley County | *Awaiting Availability of 2007 Data.* | | | | | |

### *H.6 Indicator 4: Suicide Rates*

Suicide is an important health care issue and suicide rates are a strong proxy for the mental health of a community. As the 8th leading cause of death among US men and the 3rd leading cause of death among individuals between 15 and 24, reducing the suicide rate has become an important health care issue. [78]

Suicide took the lives of 30,622 people in 2001 and another 132,353 individuals were hospitalized following suicide attempts in 2002.[79] In 2004, Kansas ranked 34th in the number of suicides with 13.5 per 100,000 population compared to a national average of 11.1. This illustrates that suicides are more frequent in Kansas than the majority of the US states and reinforces the need for additional preventative actions.

Suicide was the 10th overall leading cause of death in Kansas with 370 deaths in 2004. [80] Fifty-five percent of these deaths occurred through the use of a firearm, 21 percent via suffocation, and another 18 percent from poisoning.

As a proxy for mental health status, the high suicide rate would indicate an opportunity to improve the mental health status of citizens in Kansas. Recent reports of an increased risk of mental health disease among troops returning from combat may cause the Flint Hills to have higher rates of mental illness than the state average. This area should begin monitoring the utilization of mental health services to identify trends in disease occurrence and to ensure the proper supply of treatment providers.

77 Health People 2010. [Online.] http://www.healthypeople.gov/

78 Anderson RN, Smith BL. Deaths: leading causes for 2001. National Vital Statistics Report 2003;52(9):1-86.

79 Centers for Disease Control and Prevention, 2007. "Suicide Fact Sheet." [Online.] http://www.cdc.gov/ncipc/factsheets/suifacts.htm

80 Centers for Disease Control and Prevention, 2007. "Ten Leading Causes of Death in Kansas, 2004." [Online.] http://webappa.cdc.gov/cgi-bin/broker.exe

# I. Key Findings

### *I.1 Current Scenario, 2006*

Five regional hospitals, one ambulatory surgery center, and numerous public and private health agencies currently provide care to the citizens of Flint Hills. The following summarizes the current infrastructure:

1. There were 46,180 total hospital inpatient days for an average regional daily census of 127, and a regional supply of 435 beds in 2006. This excess capacity indicates room for future patient growth; however, a large variation in average occupancy at the hospitals skews the results. At least one facility, Mercy Regional Health Center, will require expansion of inpatient bed offerings to ensure the delivery of care to increasing patient volumes.
2. 126 practicing physicians work in Flint Hills, resulting in a physician density of 1.13 physicians per population, which is lower than the 1.44 and 2.08 state and national densities. Low physician densities in the northern portions of the study area may inhibit the ability of patients to access care within reasonable drive times. Additionally, there is a physician shortage of at least 9.6 full-time-equivalent physicians. [81] The largest shortage in physicians is experienced in cardiology and the largest excess in general surgery.
3. 360 registered nurses are employed in the three-county area, resulting in a nurse density ratio of 3.22 nurses per 1,000 population, which is lower than the state and national rates of 4.31 and 4.00. Current job postings indicate 39 vacancies for registered nurses (RN) and five openings for licensed practical nurses (LPN) at the five regional hospitals. Dividing the shortage of nurses (identified as nurse job openings) by the supply results in a current shortage of 11 percent. Continued aging of nursing staff will further result in a diminishing supply and increased staff shortages.
4. Current wait times for mental health services range from one to two weeks. Inpatient psychiatric occupancy rates at Mercy Regional Medical Center are increasing and are currently at approximately 50 percent. Pawnee Mental Health has experienced a 21 percent increase in volume from 2004 to 2006, while the state incurred a 5 percent increase over the same time period. Continued lengthy deployments by military personnel and the arrival of additional troops to Fort Riley will result in growing demands on the mental health community.
5. Childhood immunization rates in Kansas currently hover around 78 percent, far below the state's goal of 90 percent; consequently, the state ranks 42nd nationally in childhood immunization. Nine clinics within the study area provide childhood immunization; however, the patient load to physicians at vaccination clinics is much higher than the state average (50.5 compared to 32.7). It appears that there is adequate funding for immunization at the state level; however, a shortage in providers may be having a detrimental affect on the rates in Flint Hills.

### *I.2 Projected Scenario, 2012*

Projected population increases will result in significantly heightened demand for health care. Maintaining current service levels and increasing service levels in areas that benchmark poorly against state and national data should be a priority for the health care leaders in Flint Hills.

In order to project the future demand on key resources, utilization rates were held constant within age cohorts; however, a change in population ratios among the age cohorts will affect the overall utilization rate. As stated previously, a large portion of the population growth in

81 Since the physician data from the American Medical Group, Inc. does not break-out physicians by their employment status – full time versus part time – we cannot determine the total number of full-time physicians. The 9.6 physician shortage is expected to be about 7 to 10 percent higher.

Flint Hills is projected to occur in the under 15 age cohort, resulting in a lower health care utilization level (from 103.2 to 101.6 admissions per 1,000 population between 2006 and 2012).

Despite the scaled back utilization rate, the overall population growth will place additional strain on the health care infrastructure. The number of inpatient admissions will increase by 30 percent from 11,545 to 14,991 resulting in an increase of regional average daily census from 127 to 164. Despite this increase in census, the current supply of 435 regional staffed beds will still provide an excess of 271 beds. Since Mercy Regional and Geary Community have the strongest market shares in areas likeliest to experience growth, NCI anticipates that their facilities will be called upon to absorb the majority of new patient demand. According to the latest published data, Mercy Regional is operating at 60 percent occupancy (80 percent according to one interview) and the size of the projected increase in demand warrants investment in more inpatient capacity.

As a result of an aging physician staff, the supply of doctors is expected to shrink by 14 by 2012, while the demand is projected to increase by 27 resulting in a total shortage of 50. The most severe deficiencies in physician supply will be in a number of specialties that are difficult to recruit: pediatrics, obstetrics, and family practice (8.2, 6.7, and 4.2 respectively). The largest excess capacity will remain in general surgery (2.3).

Of the total growth in inpatient bed needs, the medical/surgical and pediatric units will experience the greatest growth in admissions (2,198 and 752 admissions respectively). In addition, NCI projects additional admissions for OB/GYN and psychiatric beds of 273 and 223 respectively.

# J. Recommendations

*J.1 Short-Term Actions*

1. Immediate attention should be devoted to establishing an active and functional regional health entity that would be comprised of health care leaders from all of the major health organizations in the study area that would be responsible for the following:

   - Serve as a data clearinghouse by acquiring and disseminating reliable data to local health organizations that would aid in the monitoring of regional health performance and establishing regional healthcare milestones;
   - Act as a conduit in bringing together leaders from Irwin Army Community Hospital and local facilities to determine the services that local providers will be responsible for providing to military personnel and identifying strategies to increase access for behavioral and mental healthcare;
   - Create a regional strategy for recruiting physicians to Flint Hills so local providers can reduce the physician shortfall that is expected to worsen. The regional organization should identify if there would be a large enough volume of patients under the projected growth scenario to substantiate the recruiting of highly specialized physicians (e.g. neurosurgeons and other highly-skilled doctors) to treat disorders that currently are migrating out of the area to Lincoln, Wichita, Topeka or Kansas City for care;
   - Advocate local and state policymakers to improve access to care for the uninsured, children, and military personnel;
   - Maintain a website as a one-stop source of healthcare information.

2. The current physician shortage will grow from 10 to 50 as a result of a shrinking physician supply and heightened demand. It is imperative to begin recruiting almost every medical specialty to Flint Hills, especially obstetricians, cardiologists and pediatricians.

3. Similarly, the national nurse shortage has permeated Flint Hills with a current estimated shortage of 11 percent. As the current nursing supply continues to age, a more severe shortage will result in higher nursing salaries, making it very difficult for hospitals to recruit the demanded number of nurses. Leaders in Flint Hills should work with Kansas State University to create a nursing program that would train new nurses, provide local facilities with student nurses throughout their training, and then offer scholarships to nurses in return for a work commitment. The lack of nursing schools is one factor explaining the inability to replace retiring personnel. A local program can help supply local hospitals and health providers with new, young nurses.

4. NCI supports Mercy Regional Health Center's current plans to add inpatient capacity. Mercy will incur an increased demand for their inpatient services to levels requiring the addition of inpatient beds. Mercy's Board of Directors has already given permission for executives to enter into the debt market for $30 million to build up to 60 new inpatient beds in two stages. Stage I will consist of constructing 30 new beds and adding the capabilities to build another 30 beds in the future.

   In addition, Geary Community Hospital is expected to see its bed occupancy rates increase from 32 percent to 66 percent by 2012. The hospital is currently in the midst of an expansion project that will double the size of the hospital, but will not add to the total number of beds. Instead, the project will convert current inpatient rooms to private rooms; thereby, expanding

the capacity of the hospital by allowing the hospital management to operate at a higher average inpatient census than a facility with semi-private units. NCI recommends that Geary begin identifying ways to finance the additional construction of inpatient beds, rather than reconvert the current units to semi-private units with multiple beds in each room.

5. Current wait times of one to two weeks for outpatient non-emergency care should be monitored to ensure they do not drastically increase as military personnel begin arriving at Fort Riley. There must be direct communication from Fort Riley to the health care leaders in Flint Hills, including the mental health providers that deliver an increasing amount of care to military members and their families.

   Pawnee Mental Health should begin identifying facility growth opportunities that would allow for expanded service offerings since the current space has limited growth potential.

   Anecdotal evidence suggests that additional inpatient psychiatric units may be required. Many patients currently exit Flint Hills to receive care in another locality despite the long drive times associated with care in Topeka, Wichita or Lincoln. Mercy Regional Health Center currently has 10 inpatient beds; however, a growing occupancy rate in this unit will require leadership to begin considering expansion of the unit.

6. Professionals in health education need to increase their outreach efforts to Kansas State University and Fort Riley in order to educate young adults about the prevention of sexually transmitted diseases, the identification of the symptoms of sexually transmitted diseases, the importance of practicing safe sex, and treatment options. The high rate of AIDS, Chlamydia, and gonorrhea are a result of the young population and an indication of unsafe sexual practices in Flint Hills.

7. The range of covered services and their payment rates by TRI-CARE should be examined in more detail than possible within the scope of this study to identify how they are affecting access to services in the community. It should be recognized that adjustments in the rates can quickly improve the community's ability to recruit and retain providers, as well as to make appropriate capital investments in facilities.

### *J.2 Long-Term Actions*

1. A regional health care organization could play a key role in helping the local health delivery system to become more patient friendly:

   - As the health system continues to become more transparent with its pricing and quality indicators, a regional organization could post quality scores and health care prices with guidelines that patients can use to compare local hospitals and outpatient centers;

   - The organization should work with hospitals and other providers to secure funding to establish a regional health information network that would permit patients to show up for care at any facility and allow physicians to "pull" the patients medical history from an electronic database. The electronic network would be a key method to linking patients to their medical histories in emergency situations when a patient is unable to communicate and would provide a single source of information on all patients, thereby, reducing communication errors when transferring patients between providers. The regional system would design and implement a standards-based network prototype usable by local health care providers.

2. In addition to starting a nursing program, the local community should explore creating other programs to train health professionals in medicine, dentists and dental assistants, radiology technicians, physician assistants, health information technicians, and/or medical assistants. Kansas State University's current

health care training programs are limited to a number of "pre-health" disciplines such as pre-nursing.

3. Access to care in the rural northern areas of Flint Hills is more limited due to long drives to local providers and a lack of an organized delivery system. Over the next 2 to 3 years, Wal-Mart will open 400 in-store clinics and up to 2,000 clinics in five to seven years. These facilities will provide primary care services intended to complement the retailer's 76 existing clinics. Local leaders should explore the opportunity to offer care through any of the three area Wal-Marts (Junction City, Manhattan and Marysville, Marshall County) by collaborating with local professionals. Licensed physician assistants and advanced nurse practitioners could staff such clinics with the aid of a primary care physician.

# K. Appendix

*K.1 List of Interviewees*

Table K.1. List of Interviewees.

| Name | Organization | Title | Phone | Email Address |
|---|---|---|---|---|
| David Menefee | Colorado State Health Department | Director | | david.menefee@state.co.us |
| Clyde Jones | Community Health Council | Chair | 785-537-4662 | |
| Greg Unruh | Community Hospital Onaga | CEO | | |
| | Family Care Center | Director | | |
| Megan Finnegan | Free Health Clinic | Director | 785-323-4351 | |
| Steve Reppert | Geary Community Hospital | Facilities Director | 785-238-4131 | |
| Kristin Miller | Irwin Army Hospital | Chief, Medical Management | 785-239-7735 | kristin.r.miller@amedd.army.mil |
| MAJ Berguson | Irwin Army Hospital | Chief, Medical Officer | 785-239-7521 | lance.bergeson@us.army.mil |
| Tim Meier | Mental Health Consortium | Data Integration Specialist | 785-296-2269 | tmeier@srs.ks.gov |
| Dick Allen | Mercy Regional Health Center | Chief Executive Officer | 785-776-3322 | richard_allen@mercyregional.org |
| Joseph Phillipp, MD | Mercy Regional Health Center | Chief Medical Officer | 785-776-2826 | joseph_phillipp@mercyregional.com |
| Lydia Huber | Mercy Regional Health Center | VP, Planning & Development | 785-587-4290 | lydia_huber@mercyregional.com |
| Maggie | Mercy Regional Health Center | Director, Dept. of Psychiatric Services | | |
| Teresa Swabb | Oral Health Kansas | Executive Director | 785-235-6039 | |
| Robbin Waldner Cole, LSCSW | Pawnee Mental Health Services | Executive Director | 785-587-4300 | robbin.cole@pawnee.org |
| Charles Murphy | Riley County Public Health Department | | 785-776-4779 | rchealth@kansas.net |
| James Joy | TRI-Care | | | |
| John Bromberg | Wamego Hospital | Interim CEO | | |

*K.2 List of Outstanding Items to Complete*

The following remain areas of further investigation before delivery of the final report:

1. Obtain mental health utilization figures, historical growth rates, TRI-CARE rates.

   Navigant has submitted a data request to Pawnee Mental Health for their data to ensure data accuracy and for consistency in study area definitions.

   In addition, Navigant has contacted the Tri-West, the intermediary for the Fort Riley / Flint Hills area, for utilization data, and we expect compliance with this request within the next week to ten days.

2. Obtain public health service offerings, historical volumes, and staffing matrices.

   NCI is waiting for data to arrive via mail from the Riley County Department of Public Health and will initiate contact with the Pottawatomie and Geary public health departments.

3. Complete results and recommendations

   Navigant will continue to refine its recommendations and action plans moving forward. In accordance with the request for proposal, Navigant will complete the following:

   - "Prepare a phased implementation plan for the provision of the capacity needs."
   - "Identify areas of possible regional cooperation in providing the needed health and mental health services."
   - "Provide an action step matrix to clearly identify entity responsibilities for implementation, opportunities for coordination, description of recommended action, timeframe from implementation, phasing, relevant order of magnitude or unit costs for capital improvements, personnel and other resources required, and funding sources/financial strategies."